Life Is On | Schneider Electric

PAC Systems Eycon 10/20 Visual Supervisor

User Guide

HA029280 Issue 13

Date: November 2020

Eurotherm®

Expertise in systems and solutions, services and support

Restriction of Hazardous Substances (RoHS)

Product group Eycon-10/Eycon-20

Table listing restricted substances

Chinese

限制使用材料一览表

产品 Eycon-10/ Eycon-20	有毒有害物质或元素					
	铅	汞	镉	六价铬	多溴联苯	多溴二苯醚
印刷线路板组件	X	O	O	O	O	O
附属物	O	O	O	O	O	O
显示器	O	X	O	O	O	O
O	表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11363-2006 标准规定的限量要求以下。					
X	表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006 标准规定的限量要求。					

English

Restricted Materials Table

Product Eycon-10/ Eycon-20	Toxic and hazardous substances and elements					
	Pb	Hg	Cd	Cr(VI)	PBB	PBDE
PCBA	X	O	O	O	O	O
Enclosure	O	O	O	O	O	O
Display	O	X	O	O	O	O
O	Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.					
X	Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006.					

Approval

Name:	Position:	Signature:	Date:
Martin Greenhalgh	Quality Manager	Martin Greenhalgh	15 Feb 2007

Table of Contents

Legal Information

The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the products contained herein. This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Eurotherm Limited, Schneider Electric or any of its affiliates or subsidiaries shall not be responsible or liable for misuse of the information contained herein.

If you have any suggestions for improvements or amendments or have found errors in this publication, please notify us.

You agree not to reproduce, other than for your own personal, non-commercial use, all or part of this document on any medium whatsoever without permission of Eurotherm Limited, given in writing. You also agree not to establish any hypertext links to this document or its content. Eurotherm Limited does not grant any right or license for the personal and non-commercial use of the document or its content, except for a non-exclusive license to consult it on an ‘as-is’ basis, at your own risk. All other rights are reserved.

All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use Eurotherm Limited software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.

Eurotherm, EurothermSuite, ECAT, EFit, EPack, EPower, Eycon, Chessell, Mini8, nanodac, piccolo and versadac are trademarks of Eurotherm Limited SE, its subsidiaries and affiliated companies. All other trademarks are the property of their respective owners.

Safety Information

Important Information

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this manual or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

⚠ WARNING

A WARNING indicates danger of potential loss of life or limb, or instrument damage.

⚠ CAUTION

A CAUTION indicates danger of instrument damage.

Note: A NOTE provides supplementary information to clarify or simplify a procedure.

Safety Notes

⚠ WARNING

This unit is intended for use with low voltage dc supplies. Connection of mains (line) supply voltages will not only damage the unit, but may also cause an electrical shock hazard to be present at operator accessible surfaces.

⚠ WARNING

The supply voltage connector has two 0V pins, commoned together by the circuit board backplane, and two 24V (nom) pins which are also shorted together internally. This allows easy 'daisy-chaining' of multiple units. Two separate power supply units may not be connected as to do so may result in damage to the unit, and/or a potential fire or explosion hazard.

⚠ CAUTION

Local lightning protection must be fitted if the dc power supply unit is located more than 30 metres from the visual supervisor(s) it is supplying.

Note: in order to comply with the requirements of safety standard BS EN61010, the recorder shall have one of the following as a disconnecting device, fitted within easy reach of the operator, and labelled as the disconnecting device.

a. A switch or circuit breaker which complies with the requirements of IEC947-1 and IEC947-3

b. A separable coupler which can be disconnected without the use of a tool

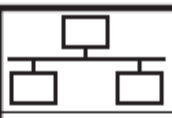
c. A separable plug, without a locking device, to mate with a socket outlet in the building.

1. If a hazard could arise from an operator's reliance on a value displayed by the equipment, the display must give an unambiguous indication (e.g. a flashing alarm) whenever the value is over range or under range.
2. Where conductive pollution (e.g. condensation, carbon dust) is likely, adequate air conditioning/filtering/sealing etc. must be installed in the equipment enclosure.
3. The equipment is designed for process monitoring and supervision in an indoor environment. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment might be impaired.
4. The battery within the unit must not be short circuited. When exhausted, the battery must be disposed of in accordance with local regulations for poly-carbonmonofluoride/lithium cells.
5. When connecting a USB device, it must be plugged directly into the instrument. The use of extension USB leads may compromise the unit's ESD compliance.
6. There are no specific insulation requirements for external circuitry.

7. In order to comply with CE requirements, the Protective-conductor terminal must be connected to a protective conductor.

Symbols Used on the Equipment Labelling

One or more of the symbols below may appear as a part of the unit's labelling.

	Refer to the manual for instructions		Ethernet connector
	Protective Earth Ground terminal		USB connector
	This instrument for dc supply only		Serial communications connector
	Precautions against static electrical discharge must be taken when handling this unit.		For environmental reasons, this unit must be recycled before its age exceeds the number of years shown in the circle.

⚠ CAUTION

When accessing the battery, or setting DIP switches etc. the operator must be at the same electrical potential as the casing of the instrument.
When fitting USB devices, both the operator and the device must be at the same electrical potential as the casing of the instrument.

Preventive Maintenance

The unit may be cleaned using a lint-free cloth, moistened if necessary with a weak detergent solution. Aggressive cleaning materials such as isopropyl alcohol may not be used as they damage the touch screen.

The average life of the battery is approximately five years. It is recommended that the 'BadBatt' flag is set in the database header block, to trigger an instrument alarm when the battery needs to be replaced. The battery should be replaced as soon as possible after the appearance of this alarm.

Compact Flash (CF) Card Precautions

The Compact Flash card supplied with this unit contains data (such as the instrument's MAC address and options settings), which, if lost, cause the instrument to malfunction. These items cannot be replaced by the user, so if they are lost, they have to be replaced by the Visual Supervisor manufacturer, and the cost of this procedure may include the full charge for the options.

The following 'rules' should therefore be observed:

1. The card must not be reformatted.
2. Folders and / or System files must not be deleted.

3. The card must not be removed from the reader without the correct removal procedure having first been followed. This procedure varies according to the version of Windows being used.
4. A backup copy of all the folders and files on the card should be made, so that they may be restored in the event of accidental removal. (This does not allow recovery from card reformatting or the loss of options settings etc.)

For software updates, follow the published update procedure. This copies the relevant files to the Flash card, overwriting files where necessary. Files should not first be deleted.

Notes:

1. It may be useful to keep a backup copy of details of any option changes. This should include the MAC address, the Change Code and the Validation Code.
2. For units with software prior to V3.0: When moving a Flash card from one instrument to another everything is transferred, including any options. The Visual Supervisor stores its options within its internal memory and reads option information from the Flash card only if the options within its internal memory have become corrupt. For this reason, it ignores the options on the new card. This problem can be resolved in two ways: firstly, by removing the battery for approximately two hours (to force a fault) or secondly, by re-entering the options selection and the validation code.

Cybersecurity

What's in this Chapter

This chapter outlines some good practice approaches to cybersecurity as they relate to use of the Eycon Visual Supervisor, and draws attention to several Eycon features that could assist in implementing robust cybersecurity.

Introduction

When utilising Eycon Visual Supervisors in an industrial environment, it is important to take cybersecurity into consideration: in other words, the installation's design should aim to prevent unauthorised and malicious access. This includes both physical access (for instance via the Eycon front panel or USB connector), and electronic access (via network connections and digital communications).

Secure Network Topologies and Good Practices

Overall design of a site network is outside the scope of this manual. The Cybersecurity Good Practices Guide, Part Number HA032968 provides an overview of principles to consider. This is available from www.eurotherm.com.

Typically, an industrial instrument such as the Eycon Visual Supervisor together with any associated LIN connected devices and controlled devices should not be placed on a network with direct access to the public Internet. Rather, good practice involves locating the devices on a fire-walled network segment, separated from the public Internet by a so-called 'demilitarized zone' (DMZ).

Security Features

The sections below draw attention to some of the cybersecurity features of Eycon Visual Supervisors.

Instrument Password

To help prevent unauthorized access to the instrument, every Eycon Visual Supervisor requires an ‘Instrument Password’ to be set. This must be set using Network Explorer or via the panel. Until a valid Instrument Password has been set, the instrument cannot be accessed for configuration nor can it run any application.

Refer to "Getting Started" on page 27 for details on setting the Instrument Password.

Whitelisting PCs and File Types

It is necessary to ‘whitelist’ any PC that requires runtime data communications with the instrument. By doing this, the PC will always be authorised for runtime data access to the instrument for which it is whitelisted. Be aware that whitelisting does not provide access to an instrument for configuration. To do this, it will always be necessary to enter the Instrument Password. Whitelisting is carried out using the Instrument Options Editor (part of LINtools).

Note: Runtime communications between controllers does not require whitelisting. Whitelisting is only applicable to unattended PCs that wish to interact with an instrument (for access to cached blocks or to exchange files).

It is also possible to whitelist specific file types for further security.

Refer to "Whitelisting a PC" on page 48 and "Whitelisting file types" on page 49 for details.

Legacy Mode

Legacy Mode enables instrument behaviour that previously existed. It removes the need to whitelist PC in runtime communication and allows configuration of the instrument without entry of the Instrument Password. It can be used for operational cases where the security provided by Instrument Passwords is not appropriate. For example, when using instruments as spares in an existing system, prior to implementing a more secure system solution requiring use of Instrument Passwords.

Notes:

1. To enable Legacy Mode, the Instrument Password must have been set.
2. Putting an instrument into Legacy Mode is NOT recommended unless there are strong operational reasons to do so.

Refer to "Secure Mode" on page 50 for details.

Principle of Secure by Default

Some of the digital communication features on the Eycon Visual Supervisor can provide greater convenience and ease-of-use (particularly in regards to initial configuration), but also can potentially make the instrument more vulnerable. For this reason, it is recommended that features that are not being used are left disabled. This can include the terminal configurator and the serial ports. Also, by default, LIN communication does not allow cross-subnet working. Cross-subnet working should only be enabled when it is really required.

Ethernet Security Features

Ethernet connectivity is always available on Eycon Visual Supervisors. This connectivity is vulnerable to cyberattacks. One form of cyberattack is to try to make a controller process so much Ethernet traffic that this drains system resources and useful control is compromised. For this reason, the Eycon includes an Ethernet rate protection algorithm, which will detect excessive network activity and help to ensure the controller's resources are prioritized on the control strategy rather than the Ethernet. It is noted in '*.udz' files.

A 'broadcast storm' is a condition which may be created by cyberattack: spurious network messages are sent to devices which cause them to respond with further network messages, in a chain reaction that escalates until the network is unable to transport normal traffic. The rate protection described in the previous paragraph also provides protection against this type of attack.

Configuration Backup and Recovery

Eurotherm's LINtools software is used to configure an Eycon Visual Supervisor. This configuration is stored locally on the PC running the tool. Thus it is available to be copied onto another controller, or can be used to restore the instrument’s original settings.

It is important that backups of the configurations are maintained.

Memory Integrity

When an Eycon Visual Supervisor powers up and attempts a 'hot start', it automatically performs an integrity check on the contents of its internal non-volatile memory devices. If this integrity check fails, the hot start fails. Non-volatile memory is not used.

This is separate from the flash filing system, which is non-volatile storage.

Firmware

Eurotherm can supply replacement Compact Flash Memory cards pre-programmed with the latest firmware version. This allows the user to upgrade the Eycon Visual Supervisor just by replacing the card. In such cases, the user is responsible for reloading configuration files. Alternatively, the manufacturer’s agents can upgrade the firmware version with the card in situ thus retaining the user configuration.

⚠ WARNING

NON-SCHNEIDER ELECTRIC FIRMWARE

There is a potential risk that an attacker could upgrade an Eycon Visual Supervisor with non-genuine firmware that contains malicious code. Care must be taken to ensure all firmware updates are genuine.

Failure to follow this instruction can result in injury or equipment damage.

Decommissioning

When an Eycon Visual Supervisor is at the end of its life and being decommissioned, Eurotherm advises clearing the contents of the instrument's E: drive. This can help to protect against subsequent data and intellectual property theft if the controller is then acquired by another party.

Installation

Note: See also Profibus Master Option for installation details for units fitted with the Profibus option and Flush Mounting Option Installation for details of the 'Flush-mounting' option.

This chapter is intended for use by those responsible for the installation and commissioning of the instrument and consists of the following sections:

Unpacking

Mechanical installation

Electrical Installation

Unpacking

The unit is despatched in a special pack designed to protect it during transit.

If the outer box of the pack shows signs of damage, please open it immediately and examine the instrument. If there is evidence of damage, contact the manufacturer's local representative for instructions. Do not operate the instrument in the meantime.

If the outer box is not damaged, remove the instrument from its packing with all accessories and documentation.

Once the unit has been installed, store any internal packing with the external packing in case of future despatch.

Mechanical Installation

1. Check that the mounting panel is no thicker than 22mm (typically for wood or plastic) and no thinner than 2mm (for steel).
2. In the panel, cut an aperture 138mm x 138mm (small frame) or 281mm x 281mm (large frame). If more than one instrument is to be mounted in the panel, the recommended minimum spacings are as shown in Figure 1/Figure 2.
3. From the front side of the mounting panel, insert the instrument (rear end first) through the aperture.
4. Insert the two panel clamps into the rectangular apertures at the sides of the instrument case.
5. Whilst ensuring that the sealing gasket is flat against the front of the panel, tighten the screws of the clamps sufficiently to hold the unit firmly in position. IMPORTANT: Do not use excessive force to tighten the screws. It could distort the case and render the instrument inoperative.

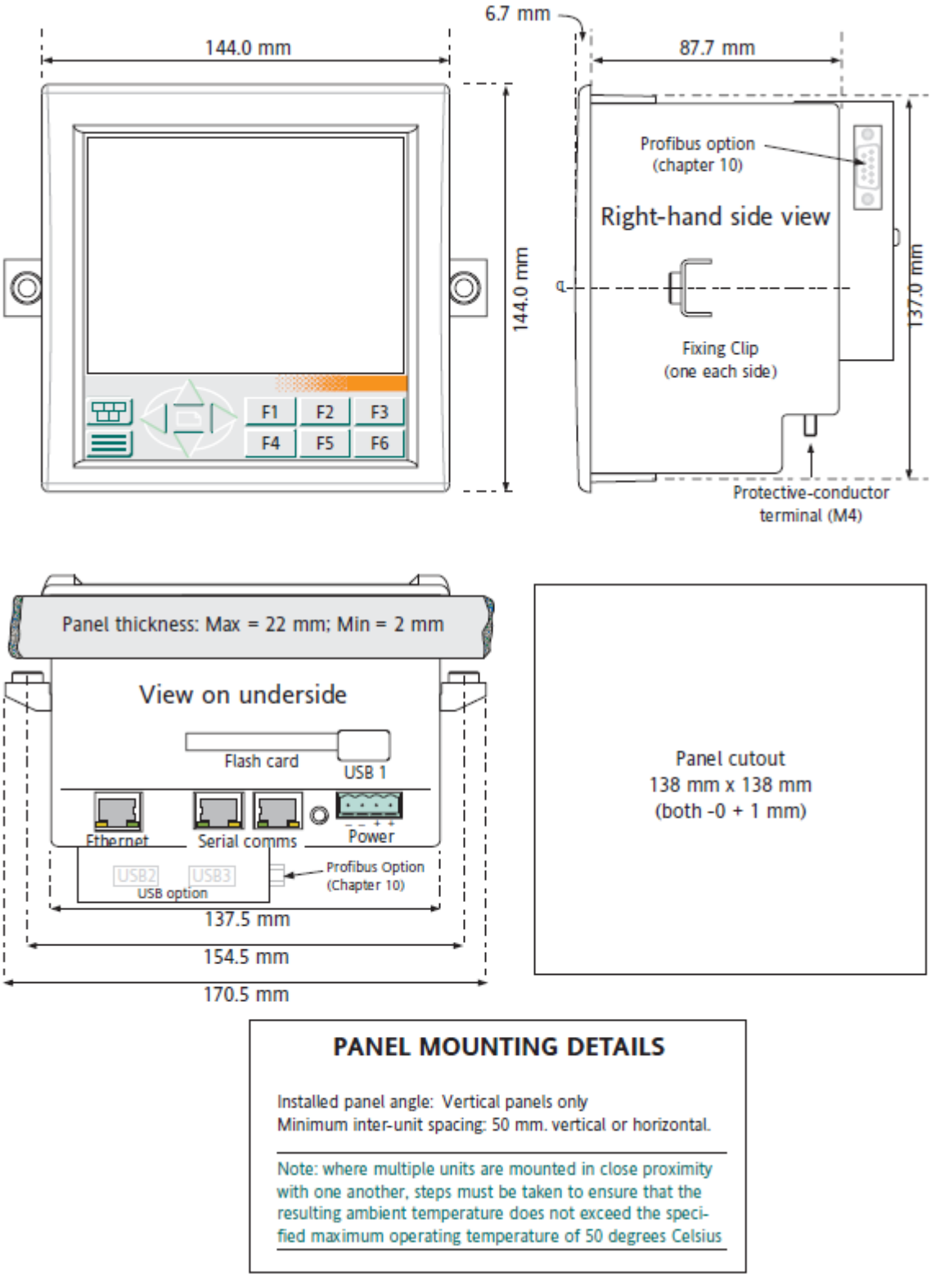


Figure 1 Small-frame Unit Mechanical Installation

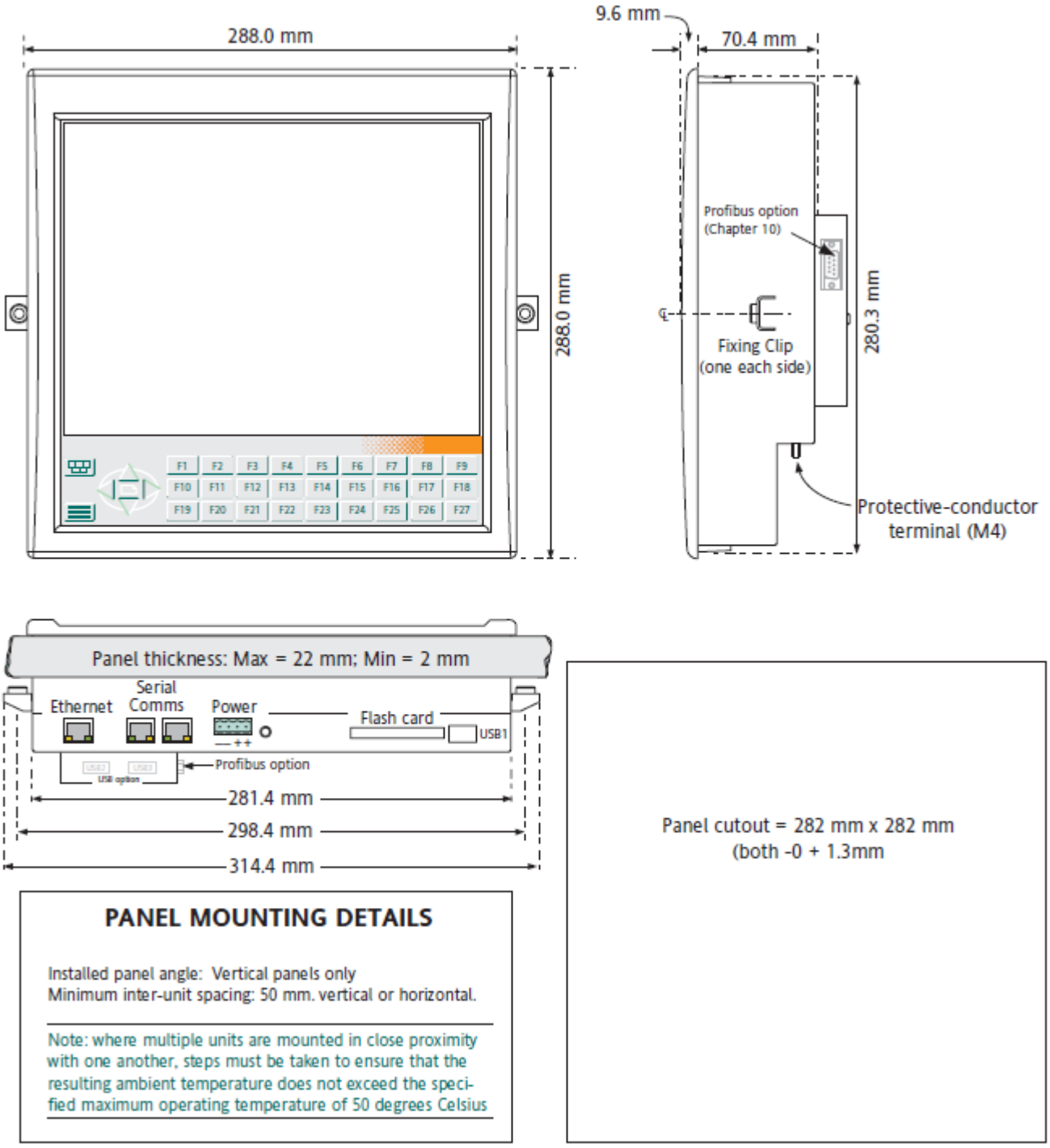


Figure 2 Large-frame Unit Mechanical Installation

Electrical Installation

Note: Before carrying out any wiring, please read the Safety Notes and warnings at the beginning of this manual.

Supply Voltage Wiring

The 24V dc supply voltage wiring is terminated at a four-way connector located on the underside of the unit, as shown in Figure 1 or Figure 2. The supply wiring should be terminated as shown in Figure 3, and Figure 4, below. If any USB peripheral is to be left permanently inserted, it is recommended that the supply voltage cable be twisted 1½ times through a 'snap-on' ferrite.

Note: Pins 1 and 2 are internally connected together, as are pins 3 and 4.

Power Requirements

Voltage range: 19.2 to 28.8 V dc (24V dc ± 20%)

Permissible ripple: 1 V max.

Maximum power requirements (at 24 V): Small frame = 20 Watts; Large frame = 24 Watts

Inrush current: 10A

Internal fusing: Not user replaceable

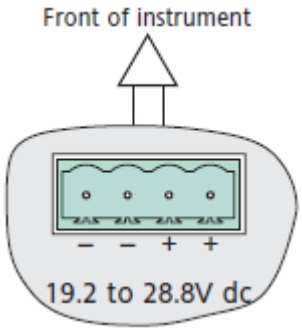


Figure 3 Supply Voltage Wiring (View on Underside of Instrument)

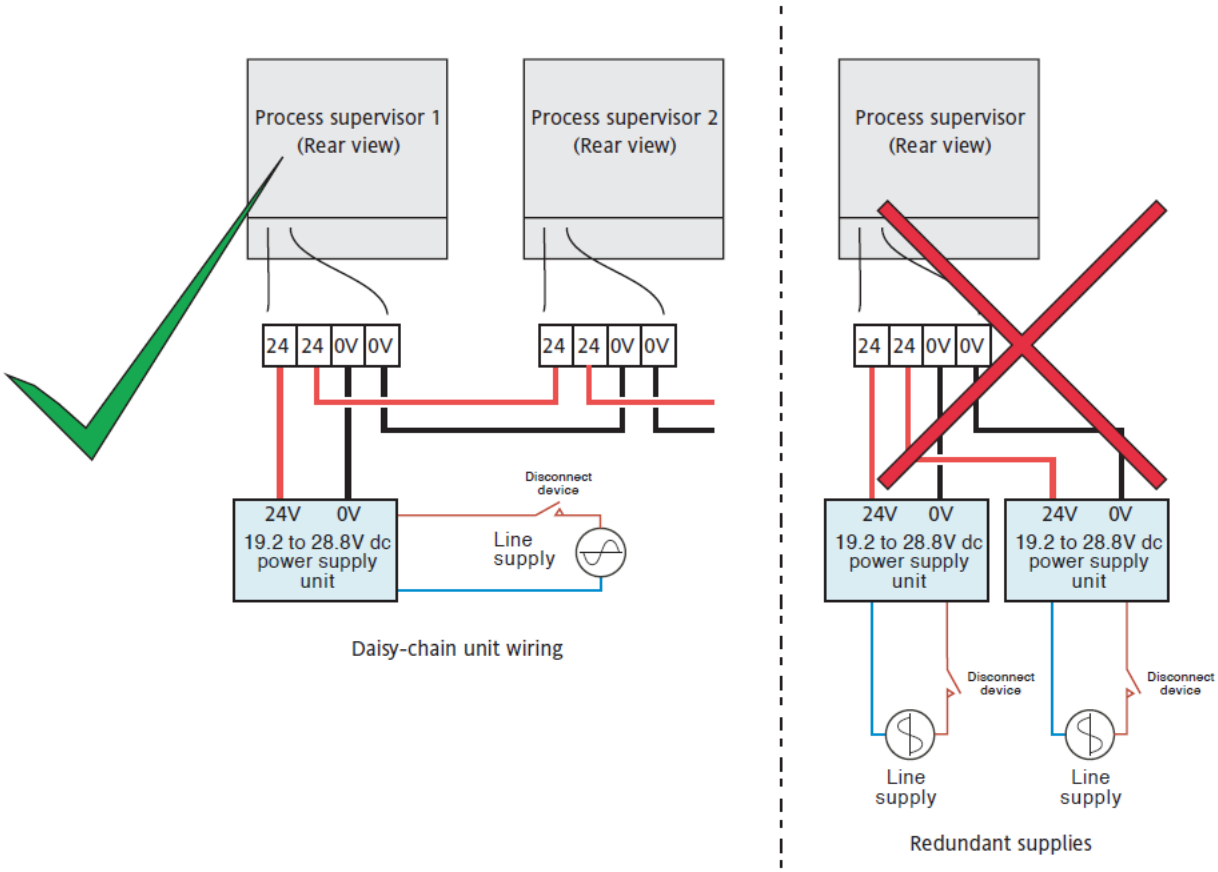


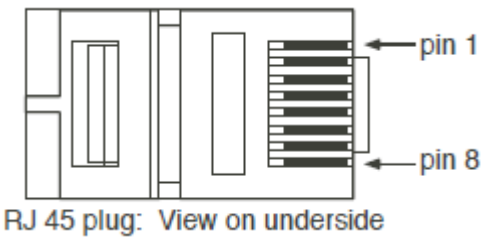
Figure 4 Supply Voltage Connection Examples

EIA485 Connections

This pair of adjacent RJ45 connectors, are located on the underside of the instrument, as shown in Figure 1 and Figure 2. These connectors can be configured, by means of a 4-gang DIP switch each, as Master or Slave. Further sections of the switches allow 120 Ohm terminating resistors to be switched in and out of circuit. The DIP switches are accessible by carefully removing the access cover at the rear of the unit (taking care not to damage any associated connector or loom).

Table 1 shows the pinout for master and slave connections. Figure 5 and Table 2 show the switch details for the small frame unit (large frame unit similar).

Note: When using a EIA485 port to communicate with a printer, the master or slave connection should be chosen according to the type of cable being used.



Pin	5 wire Master	5 wire Slave	3-Wire Master/Slave
1	RxB	TxB	B
2	RxA	TxA	A
3	Common	Common	Common
4	NC	NC	NC
5	NC	NC	NC
6	Common	Common	Common
7	TxB	RxB	NC
8	TxA	RxA	NC

Table 1: Serial Communication Port Pinout.

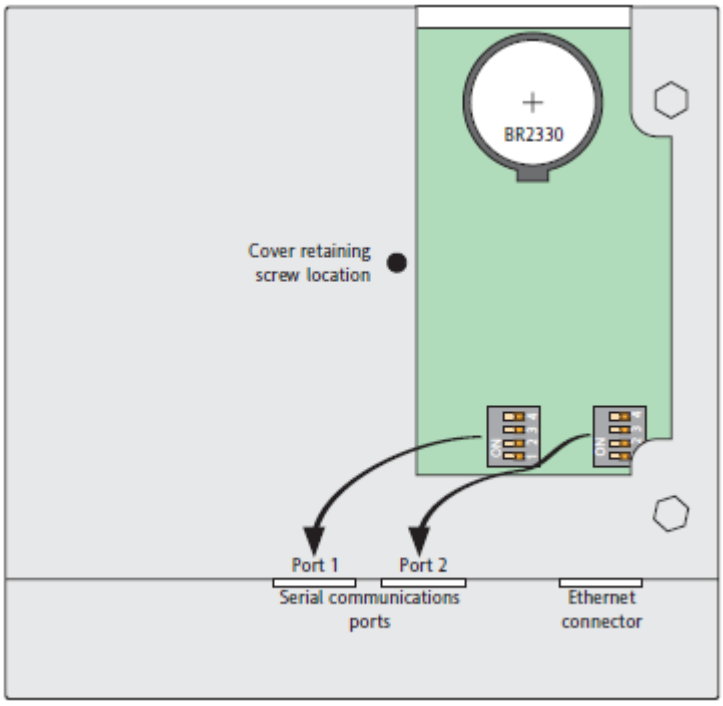


Figure 5 Serial Communications Hardware Configuration

⚠ CAUTION

The user must be at the same electrical potential as the instrument housing when accessing internal items such as batteries and switches.

Segment	ON (left)	OFF (right)
4	Slave	Master
3	5-wire	3-wire
2	120 Ohm terminating resistor fitted across pins 7 and 8	No terminating resistor across pins 7 and 8
1	120 Ohm terminating resistor fitted across pins 1 and 2	No terminating resistor across pins 1 and 2

Table 2: Communications DIP Switch Settings

LED Indicators

There are two LED indicators associated with the Serial Communications RJ45 connectors:

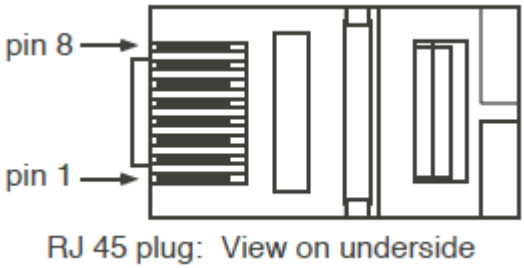
The yellow LED indicates when the unit is transmitting.

The green LED illuminates when 5-wire (full duplex) communications is selected (see above).

ETHERNET (100/10 Base-T) Connector

The pinout for the Ethernet RJ45 connector is as shown in Figure 6, below. The connector is located on the underside of the unit, as shown in Figure 1 and Figure 2, above.

Note: The LED indicators integral with the connector socket are not used in this application.



ELIN	
1	TxD+
2	TxD-
3	RxD+
4	not used
5	not used
6	RxD-
7	not used
8	not used
Plug shroud wired to cable screen	

Figure 6 Ethernet (ELIN) Connector Pinout.

USB Connectors

⚠ CAUTION

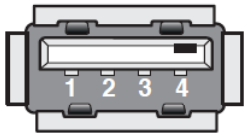
Both the user and the USB device must be at the same electrical potential as the instrument housing before the USB device is connected.

USB1 is supplied as standard; USB2 and USB3 can be supplied as an option. The USB connectors are used to connect a maximum of two printers, two readers (or any other device which produces an ASCII string output) and one memory stick (but see notes 3 and 4 below). The maximum current which may be drawn is 500mA per USB connector. The connectors are located as shown in Figure 1 and Figure 2, above; pinout is shown in Figure 7, below

Notes:

1. USB peripherals must be fitted with high quality screened cable.
2. Where the unit is to be used in an electrically ‘noisy’ environment (i.e. with fast transient bursts exceeding ±500V) it is recommended that the user bring USB sockets to front of panel, via short extension leads. This is because the USB may ‘lock up’ or reset in noisy environments and the only means of recovery is to remove the device, then re-insert it. EMC-related failure during a write might cause corruption of the data held on a USB memory stick. For this reason the data on a memory stick should be backed-up before insertion, and checked after removal.
3. Printers and readers may also be communicated with using EIA485 connectors, but the maximum of two printers and two readers per instrument is fixed, no matter which connector type is used.

4. Printers (but not readers) may also be communicated with using Ethernet connectors, but the maximum of two printers per instrument is fixed, no matter which connector type is used.
5. EMC compliance is not guaranteed if two high-power USB peripherals are connected to a Visual supervisor with the Profibus option fitted.



View on non-solder end of fixed socket

Pin	Definition
1	+ 5V
2	uSB - (D-)
3	uSB + (D+)
4	Ground

Figure 7 USB Connector Pinout

Wiring the Visual Supervisor to I/O Units

For a fixed, permanent installation, cables should be a low-loss type (Eurotherm part no. S9508-5/2RJ45/xxx/-, where xxx is the length in metres, with an implicit decimal point as in ‘xx.x’, and a maximum of 99.9 metres). For a temporary set-up, cables can be general purpose types. Category 5 cable can be used for runs of up to 100 metres. For runs greater than this, one or more pairs of hubs using fibre optic connection is recommended.

Wiring between the Visual Supervisor and I/O units may be carried out using the EIA485 connectors, or the Ethernet connector, all of which are located at the rear of the unit, as shown in Figure 1 and Figure 2. Figure 8 shows two simple wiring examples. Figure 9 gives a more complex example. For full details of the I/O unit wiring, consult the documentation supplied with the I/O unit.

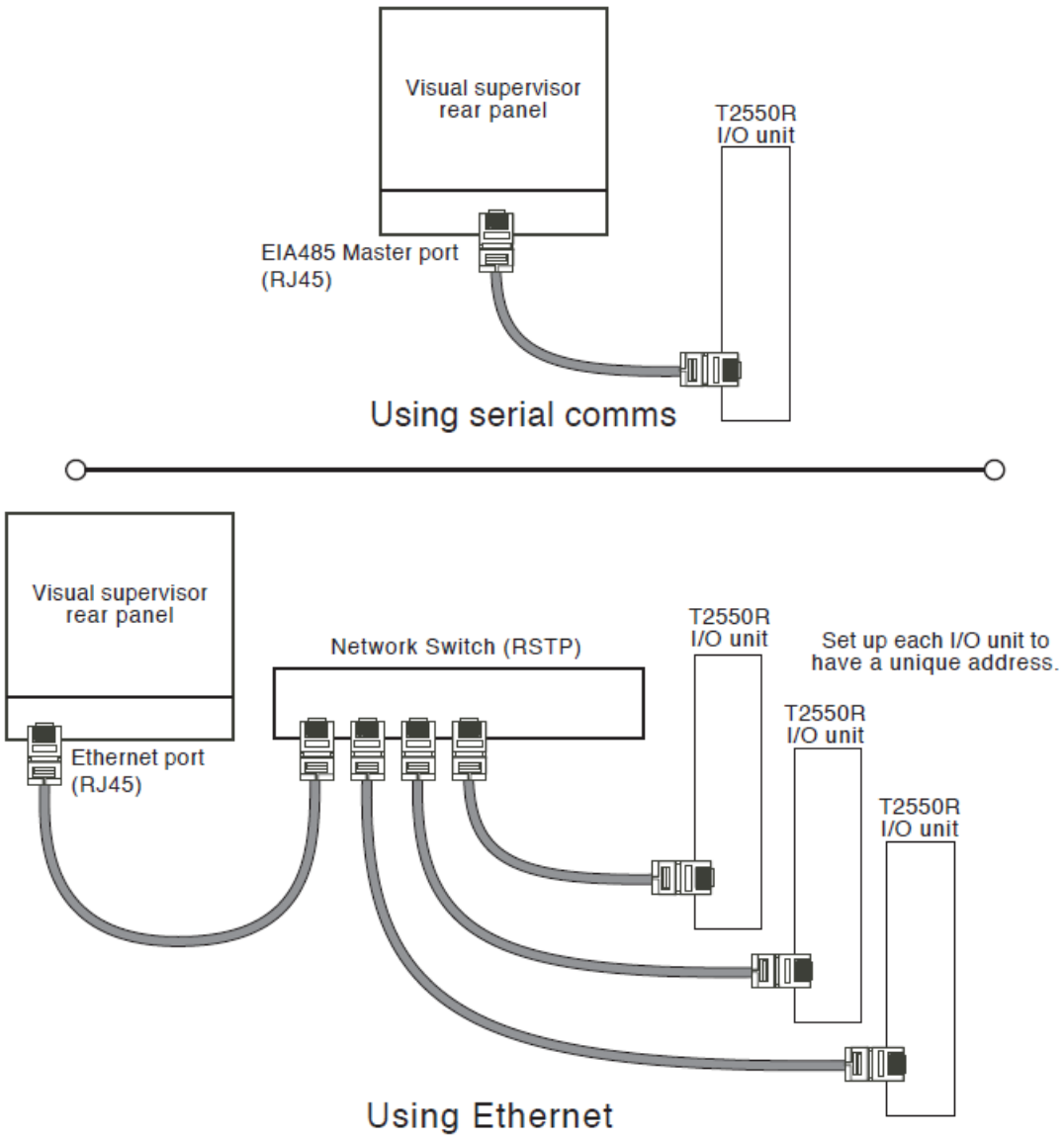


Figure 8 Visual Supervisor to I/O Unit Wiring Examples (Simplex Operation).

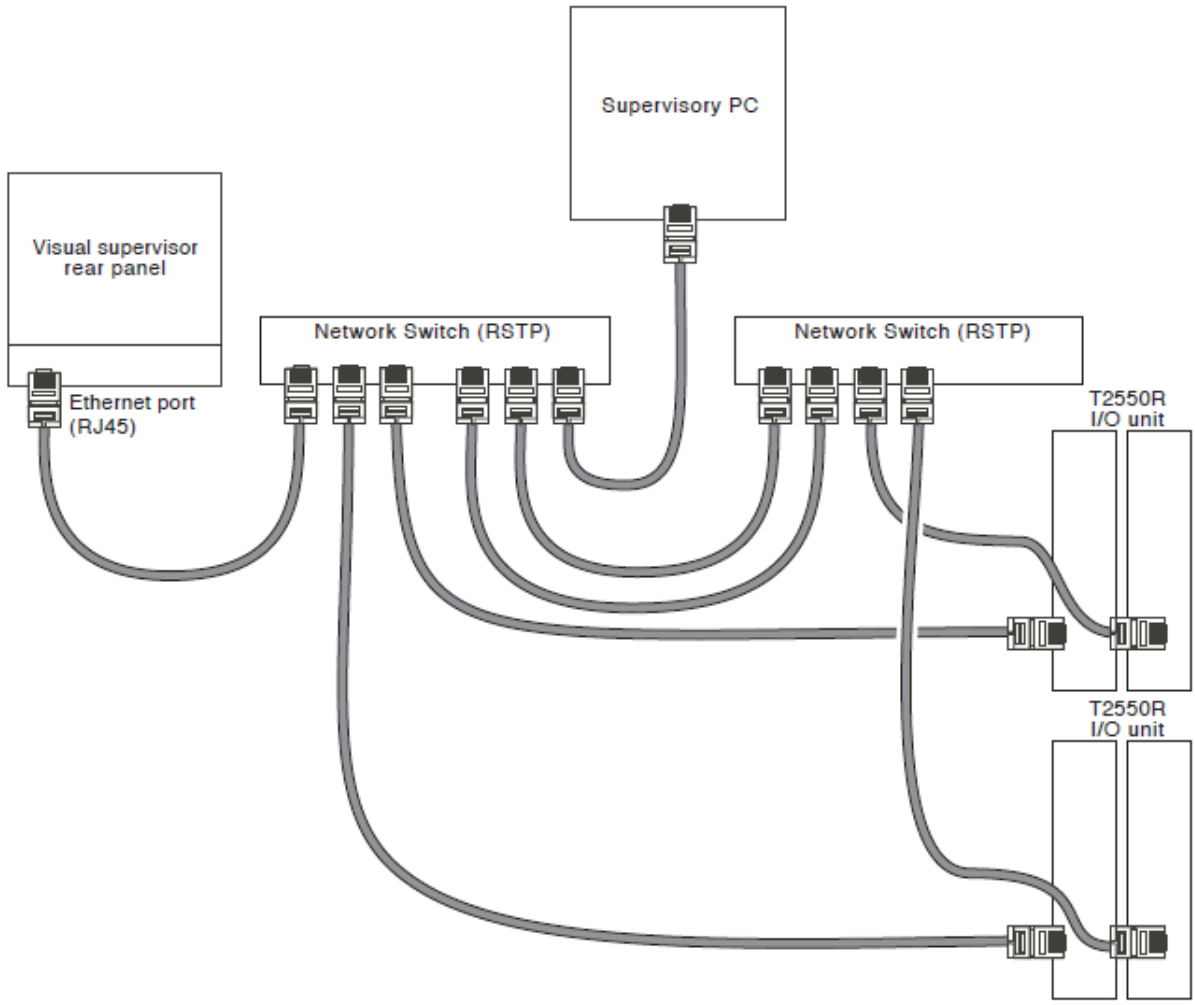


Figure 9 Visual Supervisor to I/O Unit Wiring Example (Redundant I/O Operation)

Profibus Wiring

Refer to Profibus Master Option for details of the Profibus Master 9-way D-Type connector.

Refer to the Modbus/Profibus communications handbook for Profibus network topology recommendations.

Getting Started

This chapter consists of the following sections:

Instrument Password

Notes:

1. A fresh from factory unit will have neither Instrument Password nor panel access passwords defined. Blocking popups will be displayed on the panel. No other panel activity will be possible until these two items are defined.
2. Setting of the Instrument Password will have to be via the panel (see "Instrument Password" on page 29) for a new instrument because LIN communication settings will not be configured either. Setting via panel or Network Explorer will be possible on a firmware upgrade of an existing instrument, or if a previous Instrument Password has been deleted.
3. The panel access password can only be initialised from the panel ("Gaining Access" on page 45).

Switch-On and the Opening Display

Switch on

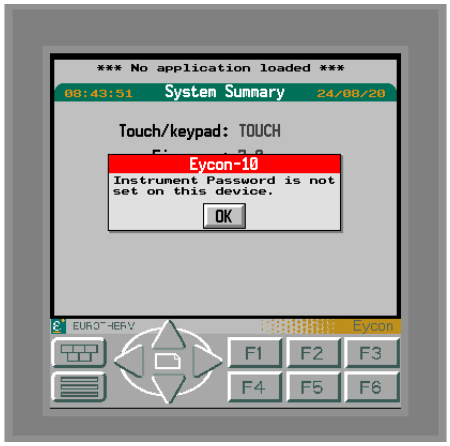
The Instrument is not fitted with a power switch, so the switch-on arrangements depend upon the particular installation. After switch-on, the screen will remain blank for a few seconds before brightening, then, after approximately 15 seconds, an opening display appears that fills most or all of the screen area.

Note: The user interface is open to customisation, either before operation or with the instrument taken out of service. For example the opening page (called the Home page) can differ, other pages can be changed, and ‘User pages’ (‘User screens’) can be added. The size of the panes can differ, the legends on the buttons can differ, and indeed the buttons need not exist at all. In the extreme the entire architecture of the interface can differ.
"Getting Started" to "Management" of this manual describe the system of menus and pages supplied by the manufacturer, before any customisation by the user. This menu system is called the Standard Interface. "Customising" describes how to customise this Standard Interface, if required.

Instrument Password

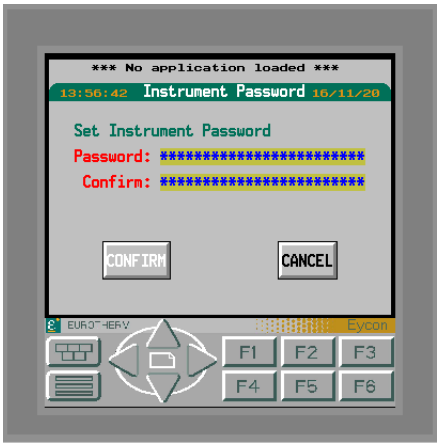
Setting the Instrument Password from Eycon Panel

1. Without an Instrument Password set, the following screen is displayed:



Note: This dialog will be removed without panel interaction if the Instrument Password is set from Network Explorer.

2. Press OK. This will display the following screen:



3. To set the Instrument Password, create and enter a Password twice (in the “Password:” and “Confirm:” fields).

   There are minimum complexity criteria for the Instrument Password:
   At least 12 characters and must contain:

   a. one upper case letter (A-Z)

   b. one lower case letter (a-z)

   c. one of number (0-9)

   d. one special character (!"#$%&'()*+,-./:;<=>?@[\]^_`{|}~)

   Until these criteria are met, “Password:” shows as red. Similarly, “Confirm:” is red (and the CONFIRM button is greyed) until both the complexity criteria are met and both entered passwords match.

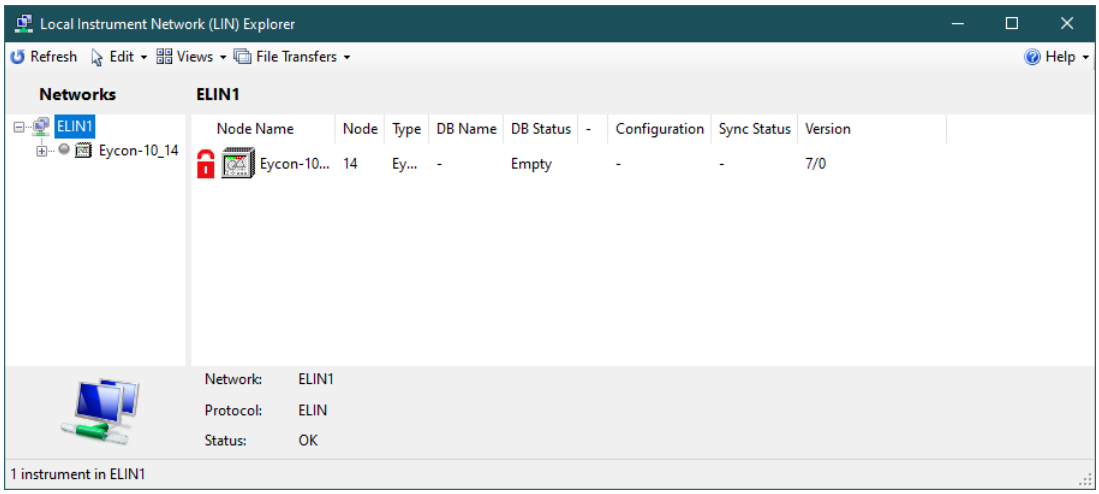
   Once both entered passwords match and complexity criteria are met, the CONFIRM button is un-greyed. Press this button to confirm the setting of the Instrument Password.

Setting the Instrument Password from Network Explorer

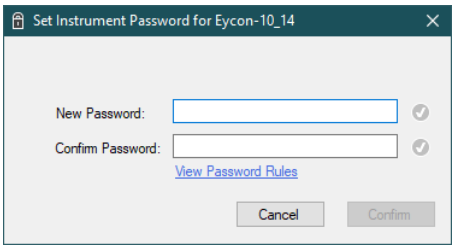
Setting the Instrument Password will have to be via the panel for a new instrument because LIN communication settings will not be configured either. Setting via Network Explorer is possible on a firmware upgrade of an existing instrument, or if a previous Instrument Password has been deleted.

1. Launch the LIN Network Explorer tool located in the Start menu. After a short delay, the connected instruments should be displayed. An example is shown in the following figure.

   Note: The red padlock next to each instrument indicates that the Instrument Password has not yet been set for that instrument. A password must be set before the instrument can be accessed. A dedicated point-to-point Ethernet link should be used when first setting the instrument password.

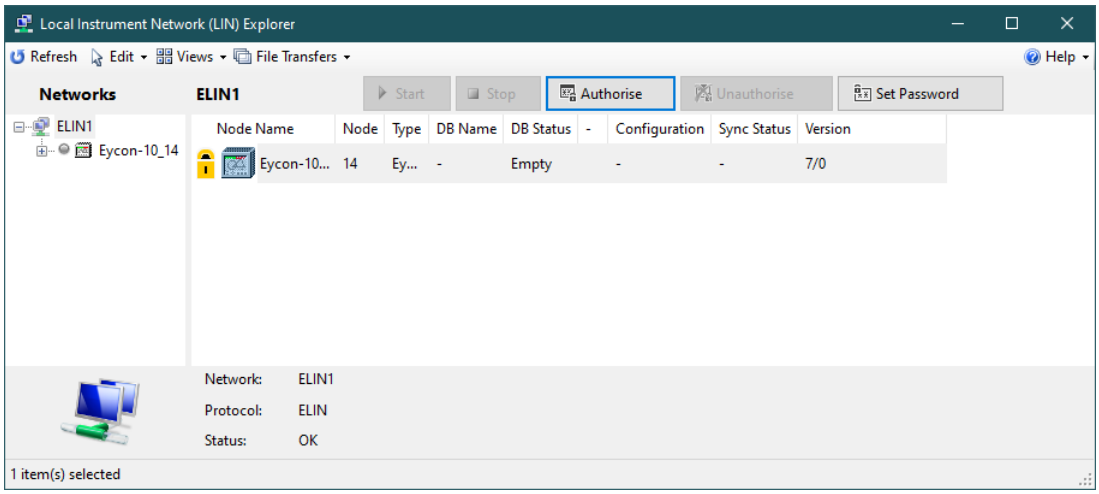


2. Click on an instrument to highlight it and click ‘Set Password’. The ‘Set Instrument Password for Eycon***’ dialog is displayed:

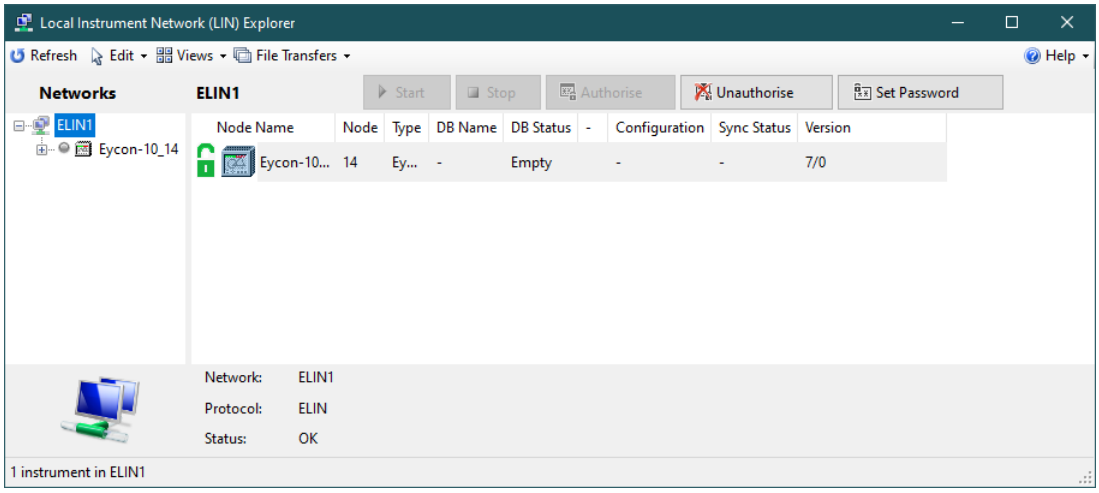


3. Create and enter a password in both the New Password and Confirm Password boxes, then click ‘Confirm’.
   The padlock changes to Yellow for each instrument with a password.

Note: The yellow padlock next to an instrument indicates that the Instrument Password has been set for that instrument.



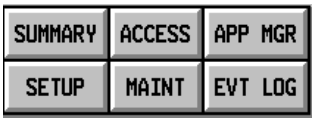
4. The next step is to authorise the instrument. Click on the instrument to highlight it and click ‘Authorise’.
5. In the Authorising dialog, Enter the Instrument Password and click ‘OK’. After a short delay, the padlock changes to green. You can now access the instrument.



Changing an Instrument Password

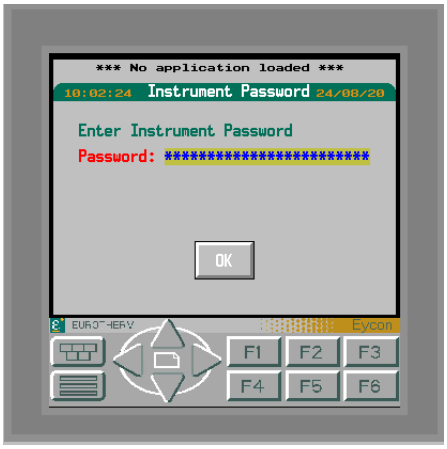
It may be necessary to change an Instrument Password.

1. Pressing the Menu button displays the following:

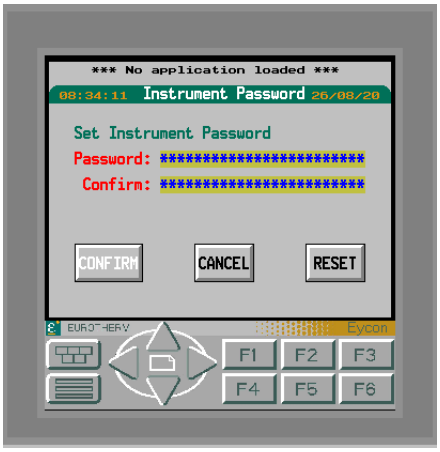


2. Pressing the MAINT button displays the following:

3. Press INS PASSWD button displays the Instrument Password entry page:



4. Enter the existing Instrument Password, and press OK. After a few seconds, the display changes to:



From this screen it is possible to either change the Instrument Password or reset it to the factory state (Instrument Password not set).

5. To change the Instrument Password, enter a new Instrument Password twice (in the “Password:” and “Confirm:” fields).

   There are minimum complexity criteria for the Instrument Password:
   At least 12 characters and must contain:

   a. one upper case letter (A-Z)

   b. one lower case letter (a-z)

   c. one of number (0-9)

   d. one special character (!"#$%&'()*+,-./:;<=>?@[\]^_`{|}~)

Until these criteria are met, “Password:” shows as red. Similarly, “Confirm:” is red (and the CONFIRM button is greyed) until both the complexity criteria are met and both entered passwords match.

Once both entered passwords match and complexity criteria are met, the CONFIRM button is un-greyed. Press this button to confirm the change to the Instrument Password.

6. To reset the Instrument Password back to the factory state, press RESET. An ‘Are you sure?’ warning is displayed.
7. Press OK if you are certain you want to reset the Instrument Password.

The Standard Interface

The Standard Interface consists of a number of display ‘panes’ and a group of ‘Navigation’ keys as described below. Figure 10 shows a small-frame (1/4 VGA) unit; Figure 11, a large-frame (XGA) unit. (These images are not to the same scale).

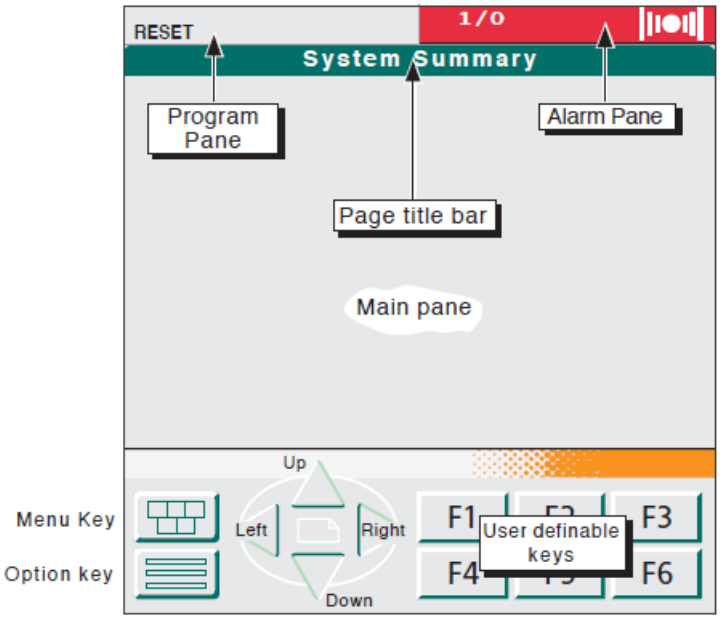


Figure 10 1/4 VGA Layout

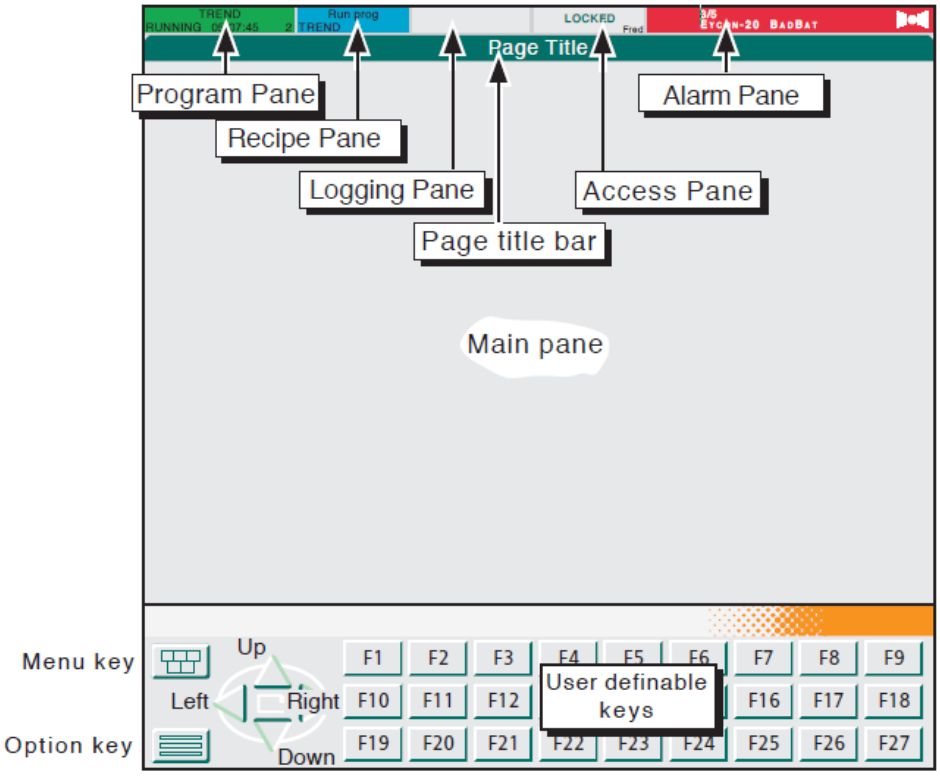


Figure 11 XGA Screen Layout

Main Pane

This area contains the keys, menus, pick-lists, dialogue boxes, windows and pages that make up the standard menu system of the Visual Supervisor.

Program Pane

This displays information about the state of the program that is currently loaded or running.

Alarm Pane

This displays alarm signals and messages.

Logging Pane

For XGA units only, touching this area calls the logging menu to the main pane. The logging pane does not appear on 1/4VGA units.

Access Pane

For XGA units only, displays the currently logged-in user. Touching this area calls the access menu to the main pane. The access pane does not appear on 1/4VGA units.

Recipe Pane

For XGA units, fitted with the recipe software option only, this pane shows the status of the current recipe line. See chapters 3 and 4 for details of the recipe application.

Navigation Keys

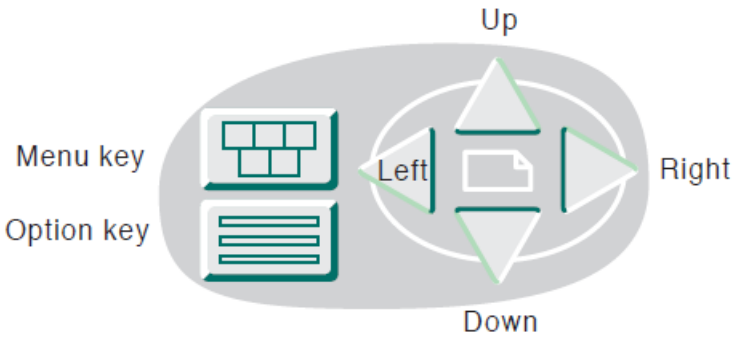


Figure 12 The Navigation Keys

These touch-sensitive printed keys at the bottom of the screen carry the following functions:

UP	Goes up one level of menu hierarchy.
DOWN	Goes down one level or cycles the screen according to context.
LEFT	Jumps across (left) in the hierarchy, at the same level. Also moves forward (left) between successive pages of tabular data. Action depends upon context.
RIGHT	Jumps across (right) in the hierarchy, at the same level. Also moves back (right) between successive pages of tabular data. Action depends upon context.
OPTION	Brings up a menu, or an extra set of keys, for options specific to the page on display.
MENU	Brings up the main (top-level) Pop-up menu of the hierarchy.

User Defined Keys

These keys, F1 to F6, or F1 to F27, according to model, are configurable using User Screen Editor software running in a PC. This software, available from the Visual Supervisor manufacturer includes a full Help system to explain how to carry out user screen configuration. A printable (html) form of this help system is downloadable under part number HA260749U005.

The Opening Display

Note: if the system has been configured with an overview screen, then the opening display will be that overview screen - refer to "Area and Group Displays" on page 74.

The opening display of the Standard Interface is the System Summary page depicted in Figure 13, below.

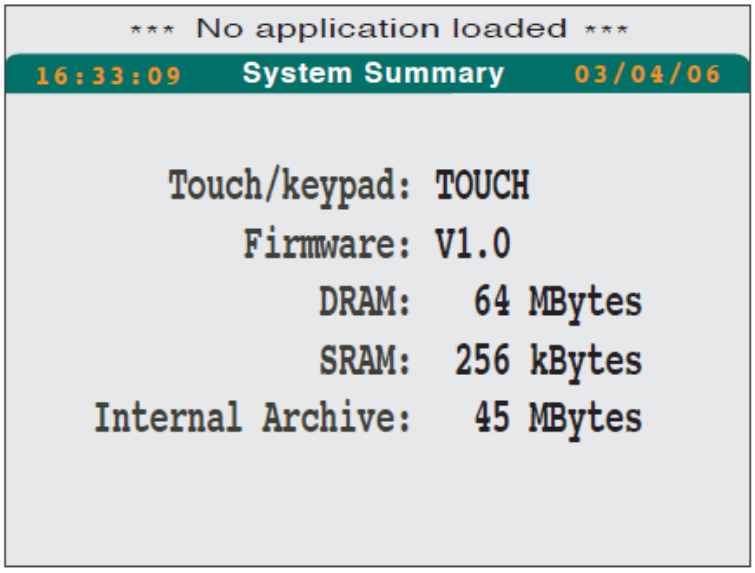


Figure 13 System Summary Page

The System Summary page confirms the order options that were specified for this instrument.

Operation of the down arrow key calls a software options display, showing the software options fitted.

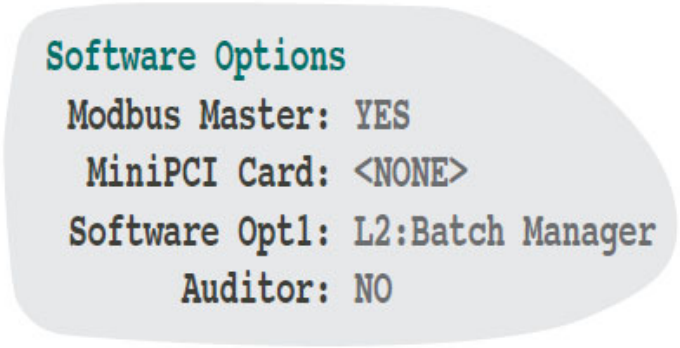


Figure 14 Software Options Display

Initially the opening display is ‘Locked’. In this state, the only interactive items are the Menu key, and, for the XGA version of the instrument only, the ACCESS pane. Operation of the menu key causes the opening ‘Pop-up’ menu of the Standard Interface to appear ("The Pop-Up Menu" on page 37). Operation of the ACCESS pane calls the Security access page as described in "Access Pane" on page 45 of this manual. This allows the display to be unlocked using an appropriate password or an ident.

The Main Pane

The Main pane is the display area for collecting information from the user by means of keys, menus, pick-lists, dialogue boxes and windows; and for displaying information to the user by means of dialogue boxes, windows, panes and pages.

Information Display

The Standard Interface is a menu system whose structure is hierarchical like a family tree. At the top is the Pop-up menu which offers a choice of submenus as depicted below.

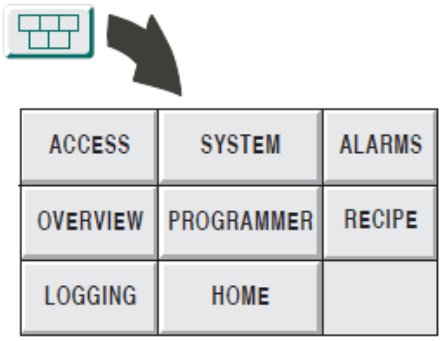


Figure 15 The Standard Interface: Top Level

ACCESS, SYSTEM and ALARMS appear on every instrument; others appear only if configured. Of these, PROGRAMMER and RECIPE are the most frequently used. Below this menu level, there are usually two or three further levels of functions that give users successively more detailed control of different aspects of programs, applications, and the instrument itself.

Information Entry

Information entry is by touching areas on the screen with a finger, the eraser end of a pencil or similar. Hard, sharp or pointed implements such as pens, keys and fingernails must never be used or damage will be caused to the touch screen.

The keys and other items of the Standard Interface which appear in the Main Pane are not all touch-sensitive, and those that are sensitive (‘active’) are not active all the time. You can tell which items are active at any time by their pale yellow background, and you can tell which active item was the last one you selected by its bright yellow background.

The Pop-Up Menu

Note: In the following description of the Pop-up menu, and indeed of all the screen displays throughout this manual, it is important to note that almost everything is open to customisation. On any particular instrument the legends on the buttons can be different from those shown here, indeed the buttons need not exist at all, and in fact the whole architecture of the interface can differ.

Throughout this manual what is called the Standard Interface is described. This is generated by the manufacturer, before any customisation by the user. This is not the same as the Minimum Interface, which is generated by the minimum configuration necessary for the instrument to function.

The Minimum Interface Pop-up menu consists of three panes: ACCESS, SYSTEM and ALARMS. With the display ‘Locked’ - that is, before a password is entered and access gained, only ACCESS and SYSTEM are active.

However, most users will operate the Standard Interface. This features five more panes: PROGRAMMER, LOGGING, OVERVIEW, RECIPE and HOME/USER SCREENS. In this case, with the display locked, ACCESS, SYSTEM, OVERVIEW and HOME/USER SCREENS will be active. Other (i.e. non-active) keys are distinguishable by having their text in white.

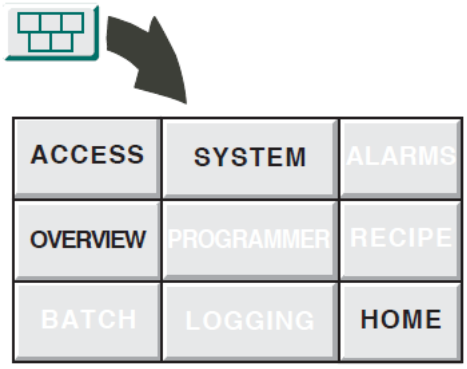


Figure 16 The ‘Standard’ Pop-up Menu, Display Locked

From this menu, without a password, menu systems can be explored and information displayed. The SYSTEM, OVERVIEW and USER SCREENS displays are view-only at this locked stage; only ACCESS will respond fully to menu and key selections, to grant access as described in "Gaining Access" on page 45.

The functions of each pane:

ACCESS	With a valid password, this pane is the gateway to the functions-sets below that are needed to do the job.
SYSTEM	is the gateway to the system functions of the instrument (that is, the instrument-specific and application-specific functions, as opposed to the program-specific functions).
ALARMS	is the gateway to the alarm functions.
PROGRAMMER	If configured, this is the gateway to the programming (Engineer) functions of editing setpoint programs. This key is also the gateway to the operational (Operator) functions of loading, running, pausing and aborting setpoint programs.
RECIPE	If configured, this allows access to the recipe monitoring and editing functions.
BATCH	If configured, this provides a means by which batches can be loaded, started and monitored.
LOGGING	If configured, this is the gateway to the data logging functions
OVERVIEW	If configured, this provides an overview of the function blocks in the database, with information about each.
HOME/USER SCREENS	If configured, this returns you to the Home page. The Home page may be a single page, or it may be the root page of a user-written hierarchy of pages. If HOME/USER SCREENS is not configured, the System Summary page acts as a default Home page, displayed after a timeout.

Of the two or three further levels in the hierarchy, all are available to Engineers, but only some are available to Operators and Commissioning Engineers. This helps to improve usability, by hiding those facilities which are not currently required.

The Program Pane

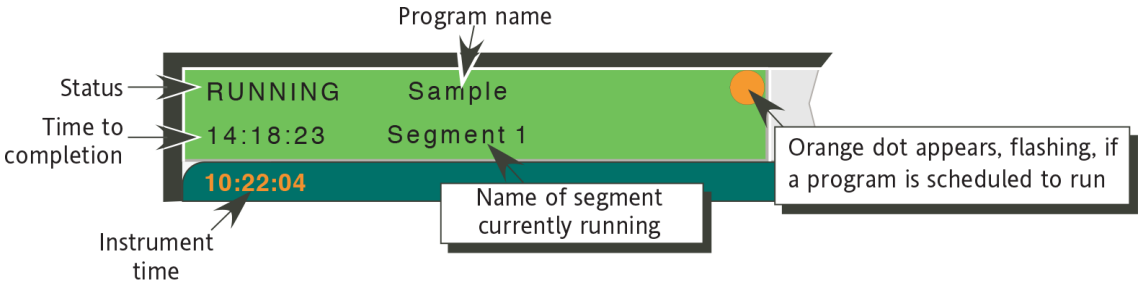


Figure 17 Typical Program Pane Display

Located at the top left of the screen, this area (which varies in appearance according to instrument type, and options fitted) has the following functions:

1. To display data about the status (state) of the program currently running, if any
2. As a touch pad, to call the Programmer menu directly.
3. If a flashing orange dot appears in the top right corner, it indicates that another program has been scheduled to run.

Displaying Program Status

With No Program Loaded

When there is no program loaded, the Program pane is white, and blank except for the word ‘RESET’.

With a Program Loaded

In the example shown in Figure 17 the program pane reports the following:

1. that a program called SAMPLE is loaded,
2. that it is Running,
3. that it is expected to complete at 14hr 18mins 23secs’
4. that the name of the segment currently running is Segment 1,
5. another program has been scheduled to run

A loaded program can be in one of the following states, reported on the Program pane:

Unloaded, Inhibit, Running, Hold, Idle, Complete.

With the program in ‘Running’ state, the Program pane is green, and displays the following data:

1. The name of the program;
2. The program status (e.g. Running)
3. The estimated time to completion of the program
4. The name of the segment currently running.

The pane is similar with the program in Hold state, except that the Program pane is yellow, and has the word ‘HELD’ instead of ‘RUNNING’.

In Idle state, the Program pane is white and displays the word ‘IDLE’ and the time is displayed as ??:??:??. There is no current segment.

In Complete state, the Program pane is pale blue, with the word ‘COMPLETE’ displayed.

In Error state (e.g. comms failure), the whole Program pane flashes red.

Programmer Menu Access

With access granted, the Programmer menu is called either by touching the Program Pane.or by pressing the printed Menu key below the screen, and then the PROGRAMMER key in the resulting Pop-up menu.

The Programmer Menu

Broadly, the Programmer menu combines the programming functions (for the Engineer) of editing programs, with the operational functions (for the Operator) of loading, scheduling, running, monitoring, pausing and aborting programs.

With the display locked, or with it unlocked but no program loaded, only PROGRAMS and SCHEDULE appear.

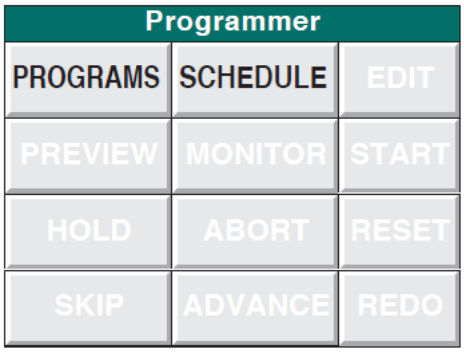


Figure 18 The Programmer Menu, Display Locked

With the display unlocked and a database loaded, the full menu appears:

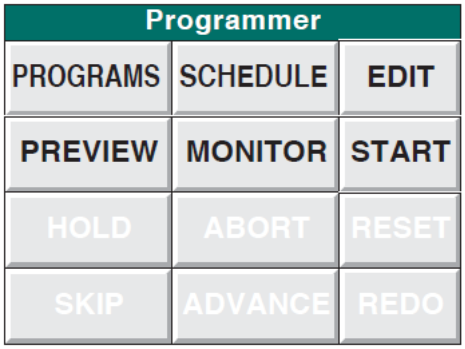
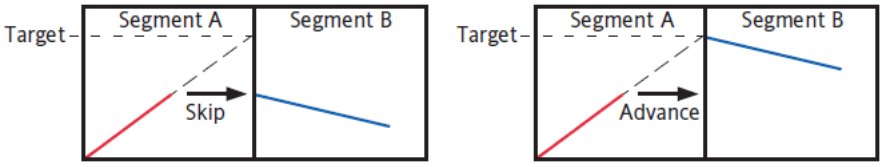


Figure 19 The Programmer Menu, Display Unlocked

Disabled (greyed-out) buttons are not relevant to the current program status.

PROGRAMS	Allows a program to be selected from those available in the instrument’s flash memory.
SCHEDULE	Allows a time and date, to be entered as the start time of the program.
EDIT	Allows Engineers to edit, and Operators to view, the set-points of the current program, displayed as a table.

PREVIEW	PREVIEW is a graphical version of EDIT (below) and displays the profile of the loaded program, so that it may be checked prior to being run. Target values for the variables can be displayed for any time/date, by moving a vertical cursor along a horizontal time-base.
MONITOR	Displays text and graphical details of the program currently loaded.
START/RESTART	Runs a program from the start, or re-starts a program, after a Hold, from the point at which it paused.
HOLD	Stops a program running, and holds it paused at that point.
ABORT	Switches a program from ‘Hold’ state to ‘Idle’.
RESET	Resets a program from ‘Complete’ to‘ Idle’.
SKIP	Terminates the current segment and proceeds immeditely to the next segment which starts at the value obtaining when skipped (see figure below).
ADVANCE	Ramps to the segment’s target value and proceeds immeditely to the next segment which starts at that target value (see figure below).
REDO	Repeats the current dwell or step segment. Disabled for other segment types



The Alarm Pane

The Alarm pane appears at the top right-hand corner of the screen and is used to display any alarm signals (triggered by abnormal conditions detected in the process under control), instrument alarms etc.

Figure 20 A typical Alarm Pane Display

(In this particular example, BADBAT means that voltage delivered by the battery has fallen below its operational threshold).

In general, there are four possible types of alarm annunciation as summarised in Table 3 below. The question mark symbol on a flashing orange/black background means that there is a new message to be investigated as described in ‘ACTIVE MESSAGE DISPLAY’ below.

Alarms can be set to be latching or non-latching (auto acknowledging). Latching alarms are annunciated until acknowledged; auto-acknowledge alarms are annunciated until the alarm trigger returns to a non-alarm state. Decisions on which conditions should trigger an Auto-Ack Alarm rather than an Acknowledge Alarm (latching alarm) are made during configuration.

Alarm State Indication

Alarm state is active or inactive, acknowledged or not. An alarm is triggered (becomes active) when the value it is monitoring moves outside a pre-set value or range of values. It becomes inactive when the signal returns to within the preset value or range of values. These values are set up during configuration.

Alarm indicators flash until the alarm has been acknowledged, at which time they become illuminated steadily. To acknowledge an alarm, the alarm pane can be touched, followed by 'ACK'. (Access permission needs to be set.)

Indication	Definition
Flashing Red/Black	one or more active alarms are present, one or more of which have not been acknowledged.
Steady Red	one or more active alarms are present, all of which have been acknowledged.
Flashing White black	one or more unacknowledged alarms were active, but have now returned to their non-active states.
Steady White	There are no active alarms present and there are no non-active, unacknowledged alarms present.

Table 3: Alarm Annunciation Summary

In summary:

If the indication is red an active alarm is present and if it is flashing it has not been acknowledged.

In more detail:

Flashing red/black means that there is at least one abnormal condition that requires attention, and at least one active alarm has not been acknowledged.

Flashing white/black means there has been at least one abnormal condition, which has now returned to normal, without being acknowledged.

Steady red means there is at least one abnormal condition that requires attention, all of which have been acknowledged, either manually or automatically

Steady white means that there are no current active or inactive/unacknowledged alarms.

The Alarm pane gives a summary of all alarms, not information about a particular alarm. For instance, if the pane is flashing red, it means that there is at least one current unacknowledged alarm which may or may not be the one displayed in the alarm pane.

In order to gain more details, the alarm history display can be referred to ("Responding to Alarms" on page 43).

Active Message Display

In addition to the normal alarm displays described above, a further alarm icon, in the form of a question mark on a orange/black flashing background, may appear at the left side of the alarm pane as shown in Figure 20, above. If this indicator appears, there are one or more messages to be acknowledged or reviewed. Further details of these messages are to be found in "Alarms / Message Response" on page 68 of this manual

Responding to Alarms

There are four possible responses to an alarm:

1. Do nothing
2. Get more information, by bringing up the Alarm History page, which is a list of past and current alarms and events
3. Acknowledge the alarm, by bringing up the Alarm window and pressing a pane
4. Report and then remedy the abnormal condition.

Do Nothing

Doing nothing is acceptable when the light just shows steady white. This indicates that a non-serious abnormal condition did exist but it has now returned to normal, and that it has been acknowledged.

Doing nothing is also acceptable with a steady red indication that is not the result of its having been manually acknowledged. In this case, the alarm will have been triggered by an Auto-Ack alarm, which does not require active intervention but will give information about a slightly abnormal condition.

Alarm History Page

Figure 21 and b show the alarm history page for XGA and 1/4VGA versions of the instrument respectively (not drawn to the same scale). The major difference is the ‘ACK column which appears only in the XGA version.

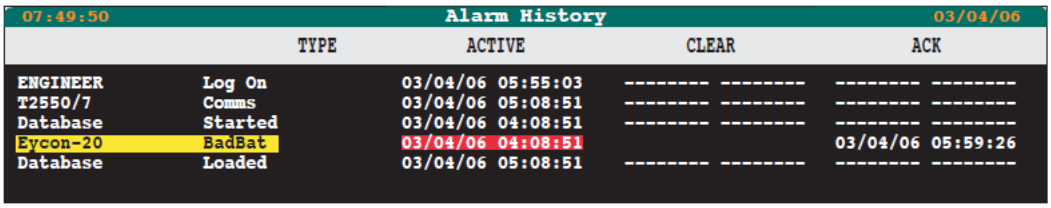


Figure 21 Alarm History Page (XGA)

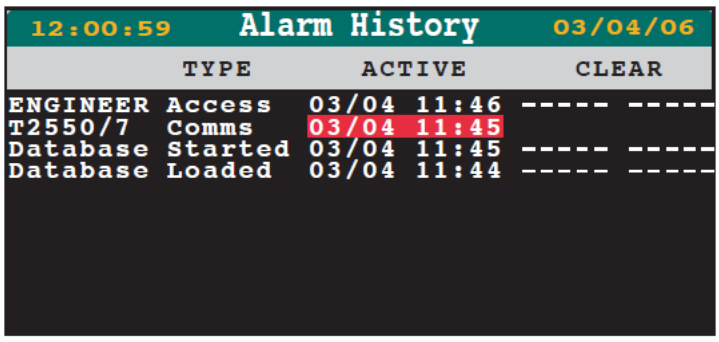


Figure 22 Alarm History Page (1/4 VGA)

The Alarm History page displays a list of alarm conditions and Events, showing when they occurred, and if appropriate, when they were cleared or acknowledged (large frame (XGA) versions only). Events and other items which are not clearable or which cannot be acknowledged display -------- -------- in the Clear and ACK columns.

The Alarm History record starts in the first instance from when the instrument is powered up for the first time. Thereafter it is preserved through any automatic restarts called hot starts (see "Setting the Start-up Strategy" on page 131 Setting the Start-up strategy); but the record is lost and a new one started whenever a new application database is loaded.

The instrument can retain and display a total of 500 alarms or Events. Once these limits are exceeded the oldest item in each case is deleted when a new addition is made to the list.

Two Line Display

Operation of the down arrow key toggles between single-line and double-line working. Single line working is a described above, and as shown in Figure 21 Figure 22. When in two-line working, each alarm has a second line showing one or two User IDs.

For units without the Auditor option, one ID is displayed (in parenthesis), and this ID is that of the user who was logged on at Event time (Figure 23).

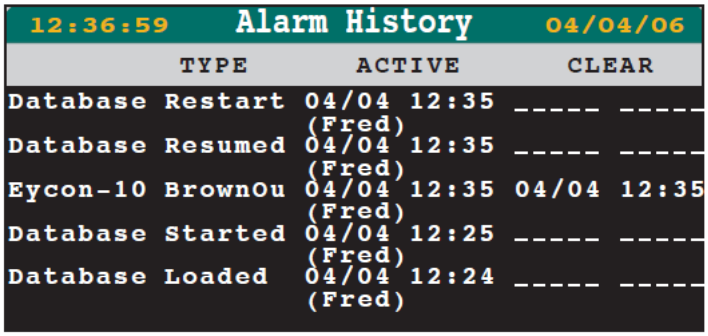


Figure 23 Two-line History Display (1/4 VGA Screen)

For units with the Auditor option:

a. If the event did not need signing, then one ID is displayed (in parenthesis), and this ID is that of the user who was logged on at Event time (Figure 23).

b. If the event was signed, one ID is displayed, and this ID is that of the user who signed for the action.

c. If the event was authorised, two IDs are displayed, the first (left-most) ID is that of the user who signed for the action, the second is that of the authoriser.

d. If a text reason for the event is given, when signing, then this (max. 16-character) text string also appears, E.G.:

Alarm Acknowledgement

Unacknowledged alarms are made evident by the flashing of the alarm pane, and a flashing background in the alarm history page.

It is recommended that an alarm is acknowledged before any attempt is made to rectify the cause of the alarm. Alarms are acknowledged by calling the ‘Alarms’ menu box (either by touching the alarm pane, or by touching the menu key, then the ‘ALARMS’ key) and operating the ACK key.

Logging Pane

This area is displayed only on XGA versions of the instrument. Touching this area calls the logging menu shown below. The logging function allows data to be saved to internal archive as described in "Logging Data" on page 65 of this manual. That section also shows how to access the logging menu from the menu key.

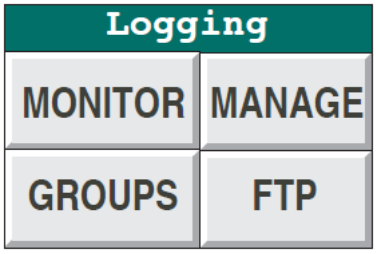


Figure 24 Logging Menu

Access Pane

This area is displayed only on XGA versions of the instrument. Touching this area calls the first of the access pages described in ‘Gaining access’ below. This is an alternative to using the menu key followed by ‘ACCESS’ as described below.

Gaining Access

There are two methods of gaining access to the instrument configuration, the standard system, and the User ID Access Method. The instrument is supplied with the standard access system in operation, but it can be converted (irreversibly) to the User ID version as described in "Controlling Access" on page 118 of this manual. For units fitted with the ‘Auditor’ option, see also "Administrative Functions" on page 239.

Standard Access

For the Visual Supervisor there are nominally three types of users: Operators, Commissioning Engineers, and Engineers.

Each of these three types has what is known as a level of access to the facilities of the instrument, based upon the needs of the job, and they gain access to that level by typing in a password. The level of access is fixed for each type of user. That is to say, all Operators share the same password to their level of access; all Commissioning Engineers share the same password to their level of access; and all Engineers share the same password to their level of access. The Engineer-level password gives access to every facility in the instrument. Only from Engineer-level can passwords be changed.

The hierarchy of levels is LOCKED (lowest), OPERATOR (next lowest), COMMISSION (middle), ENGINEER (highest). You need a password to change up levels, but not to change down. No password is needed for Locked.

What follows are step-by-step instructions on how to navigate the menu system to get access to your level of facilities. The assumption is that you have your password ready. Passwords are set and re-set by the Engineer.

For first-time access, immediately after commissioning, "Controlling Access" on page 118 should be referred to.

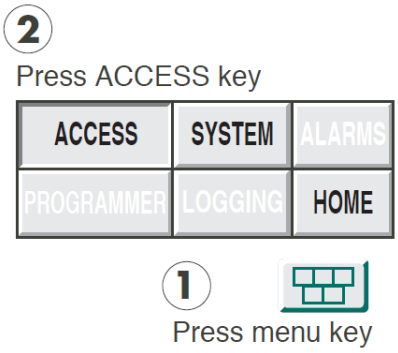
1. With the instrument powered up, press the menu key below the screen.

   In the Main pane the restricted version of the pop-up menu (Figure 16) appears.

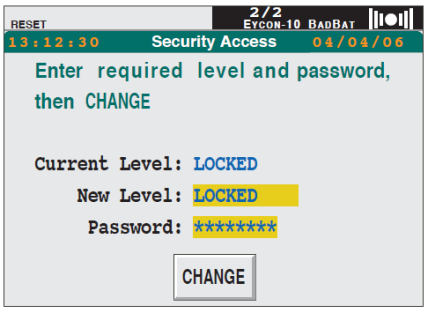
Note: This menu is context sensitive. The actual display may differ from that shown here.

2. Press ACCESS

The Security Access page appears.



3. Press the field showing LOCKED on yellow, opposite 'New Level'.



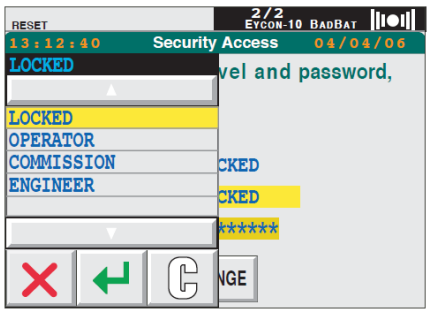
   In the left half of the screen a pick-list of the access levels appears:

   LOCKED

   OPERATOR

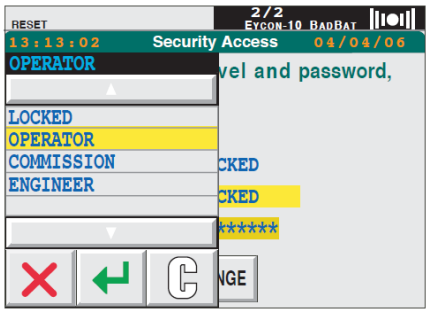
   COMMISSION

   ENGINEER.



4. Select a level -Operator for example.

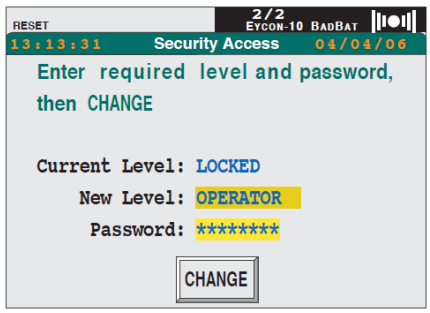
   The background highlights yellow, confirming the choice:



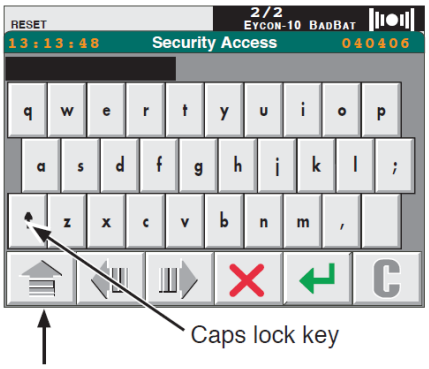
5. Press the Return key (the green arrow ↵)

The pick-list disappears, revealing the full Security Access page again, showing the selected level (OPERATOR, COMMISSION or ENGINEER) in the New Level field, on yellow.

6. Press the Password field (shown as asterisks on pale yellow)



A ‘qwerty’ keyboard display appears, with a cursor flashing under the first character-space in the black confirmation bar at top left.



7. If the password contains characters not visible on this display, press the ‘up-arrow’ at bottom left to view others available. A numeric/symbol keyboard appears. A further operation of the Up Arrow calls a keyboard of accented lower-case letters. A final operation returns the original keyboard to the display.

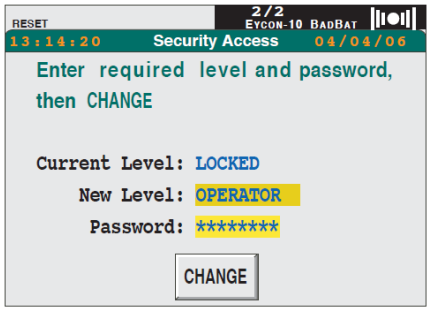
   In entering the password as described in step 8 below, the characters can be selected from all three keyboards as required

8. Enter the first character of the password. It appears in the black confirmation bar at top left, and the cursor moves under the next space. Enter the next character, and so on.

   Erroneous characters can be deleted by positioning the cursor under the relevant character and pressing the ‘C’ key. Alternatively, to return to the Security Access page, press the ‘red cross’ key.

9. When the confirmation bar shows the correct password, press the Return key.

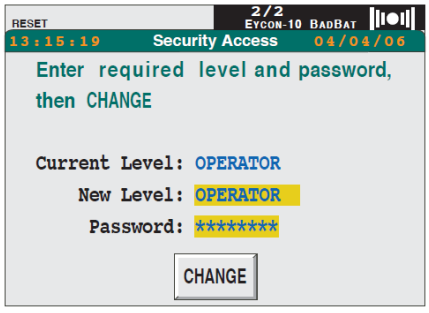
   The Security Access page reappears, unchanged from step 6.



10. Press CHANGE

The display blanks momentarily, and returns showing the selected level (OPERATOR, ENGINEER or COMMISSION) in the Current Level field as well as the new level field.

If not, an incorrect password must have been entered. Check that the password is correct for the level selected in step 4, and then repeat from step 3 onward.



User ID Access Method

In order to gain access using this system, a ‘User Identity’ is entered, instead of an access level, before the password is entered. User ID, access level and password are all entered as described in "User ID System" on page 120.

To access the Security Access page, either touch the logging pane (XGA units only), or touch the menu key then the ACCESS key as described above.

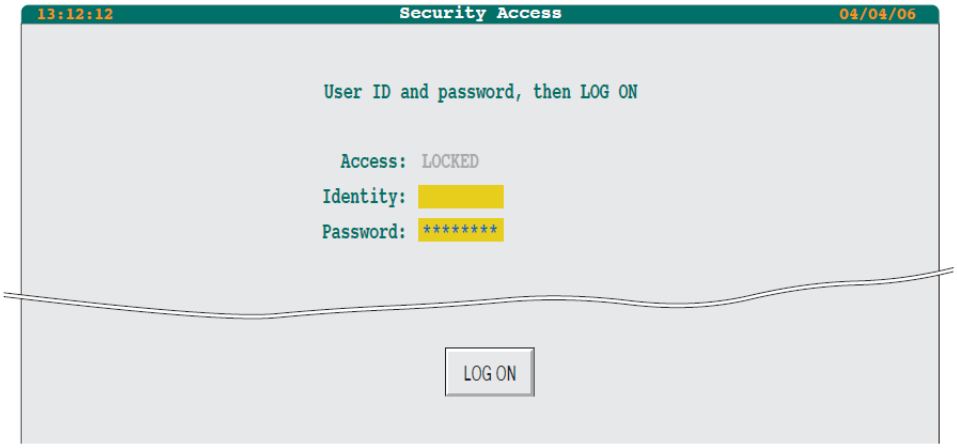


Figure 25 Security Access Page (XGA)

The user identity and password can now be entered by touching each yellow area in turn and using the resulting keyboard to enter the relevant character strings. Once this has been completed, the LOG ON key is operated.

If the instrument fails to respond with the relevant access level, either the Identity or the Password has been incorrectly entered.

Note: The character strings are case sensitive e.g. Identity ‘Fred’ is different from identity ‘FRED’.

Whitelisting a PC

It is necessary to ‘whitelist’ any PC that requires runtime data communications with the instrument. By doing this, the PC will always be authorised for the instrument for which it is whitelisted. Whitelisting is carried out using the Instrument Options Editor (part of LINtools).

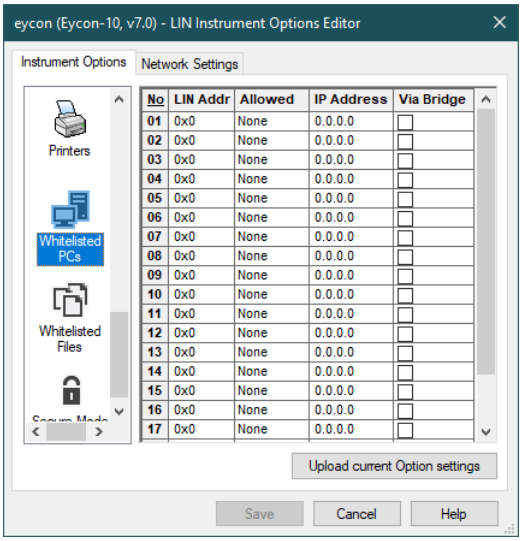
Notes:

1. Runtime communications between controllers does not require whitelisting.
2. When a computer has more than one LIN Address then the correct address need to be chosen to be added to the whitelist. Only the address (or addresses) that is being used to communicate with the instrument needs to be added. It is possible that more than one LIN Address from a single computer is being used to communicate with an instrument, e.g. one address might be reserved for tools access and another could be used for runtime access. In that scenario the LIN Address being used for tools access would not be expected to be whitelisted. It is also valid, if required, to add multiple addresses from the same computer (same IP Address but different LIN Address) to the PC whitelist.

To whitelist a PC:

1. In LINtools, right-click on the instrument in the left-hand tree view.

2. Select Instrument Options from the context menu. The LIN Instrument Options Editor is displayed.
3. Scroll down to display ‘Whitelisted PCs’.



4. Enter the required information. Check ‘Bridged’ if the PC communicates with the Eycon Visual Supervisor via a LIN bridge, rather than via a direct connection).

Note: The aspects that can given access to are set in the ‘Allowed’ column and are:

- None - no access is allowed.
- DB - blocks can be cached and values can be read from and written to blocks. For use with data servers in an HMI system.
- File - some files may be accessed (for example for use with File Synchronisation), see next section: Whitelisting file types.
- DB+File - both blocks and files can be accessed (see previous points).

5. Click ‘Save’.

Whitelisting file types

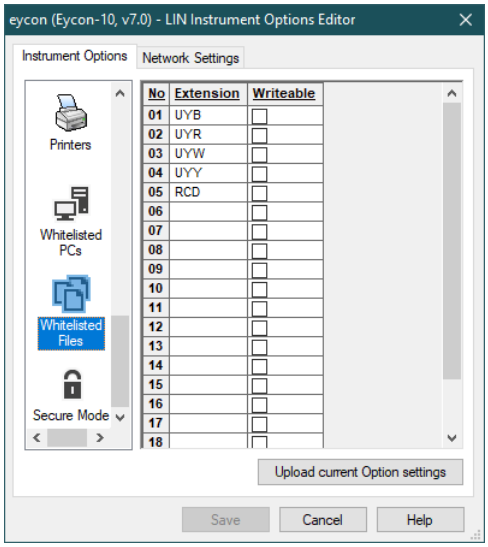
You can additionally specify which file types a whitelisted PC can access. This may be useful for File Synchronisation.

Note: It is only applicable if ‘File’ (or ‘DB+File’) is selected in ‘Allowed’, above.

To whitelist one or more file types:

1. Display the LIN Instrument Options Editor as described in the previous section.

2. Scroll down to display the Whitelisted Files.



3. The five file types as displayed above are always whitelisted by default.
4. Enter other file types as required, up to a maximum of 20.
5. If you wish the PC to be able to write to a certain file type, click in the appropriate Writeable checkbox.
6. Click ‘Save’.

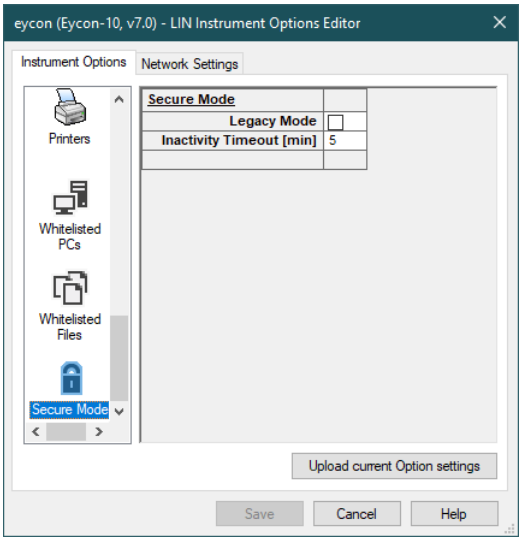
Secure Mode

You can implement Legacy Mode for an instrument which removes the need for authorisation and you no longer need to enter the Instrument Password.

If not in Legacy Mode, you can specify the timeout period (in minutes) of how long the system is left idle before authorisation (by Instrument Password) is removed.

To set these parameters:

1. Display the LIN Instrument Options Editor as described previously.
2. Scroll down to display the Secure Mode.



3. To set the instrument into Legacy Mode, click the checkbox.
4. If required, change the timeout period from the default 5 minutes.
5. Click Save.

ELIN Communication Modes

Note: No configuration or cached block communication is possible until an Instrument Password has been set.

The general principle is that access via any HMI (PC based) must be authorised but is otherwise unrestricted.

If, however, a PC is whitelisted, then DB connections are permitted when not authorised. Additionally some whitelisted PCs will have limited file system access.

Access from remote instruments does not need to be authorised but is restricted to those operations appropriate to strategy execution.

ELIN Mode is managed individually for each remote LIN node. For example, dual redundant data servers are managed separately so both must be whitelisted. Each computer where configuration tools are used is also managed separately and users must enter the password at each computer as they use the tools.

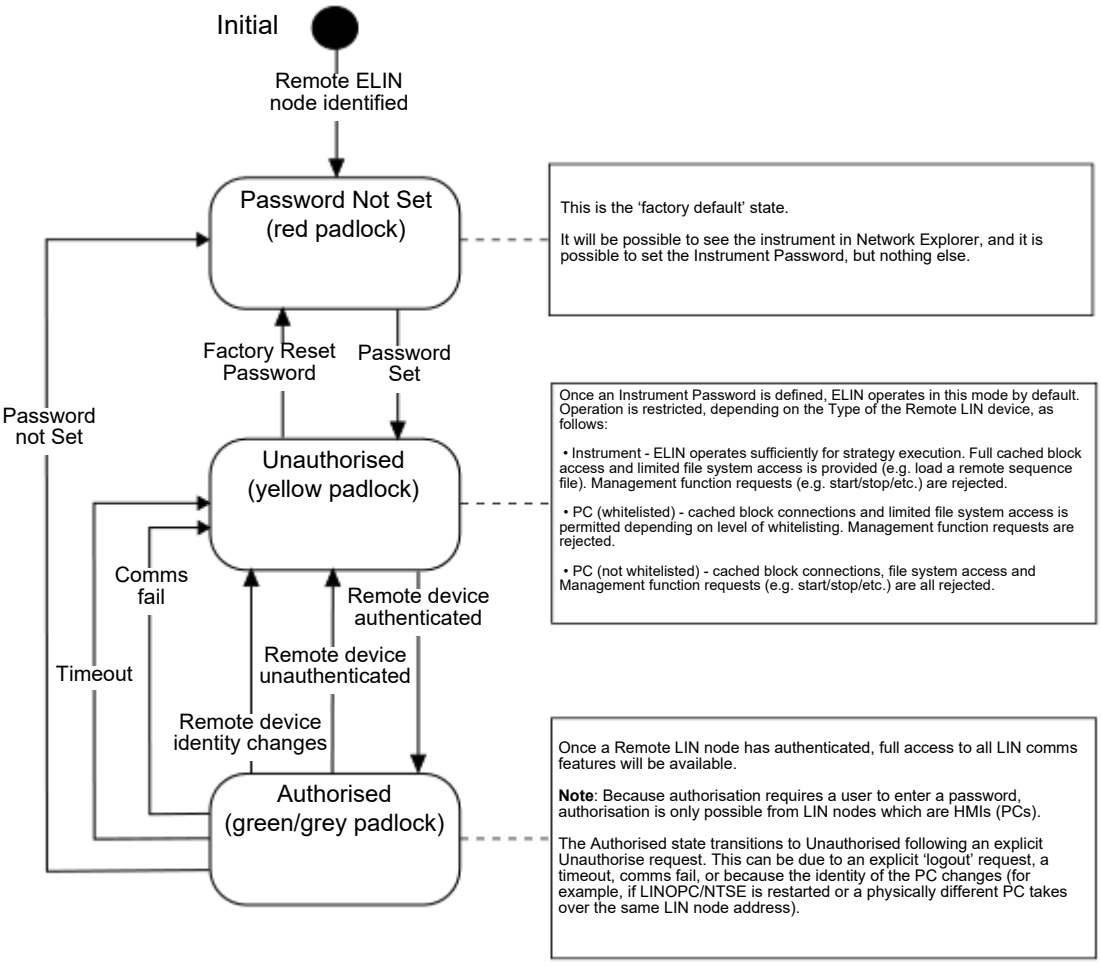


Figure 26 ELIN Mode State Machine

Operation

The tasks in this chapter all require at least the ‘Operator’ level of access to the instrument.

The chapter consists of the following sections:

Running a program

Holding and Aborting a Program

Monitoring a Program

Logging Data

Alarms / Message Response

Area and Group Displays

Downloading Recipes

Batches

All the descriptions assume that access at Operator level has already been gained as described in "Access Pane" on page 45 above

If, at any point, the display shows results that differ from those that the instructions tell you to expect, then the Menu key at the bottom of the screen can be operated to call the Pop-up menu and the beginning of the task or another facility if required.

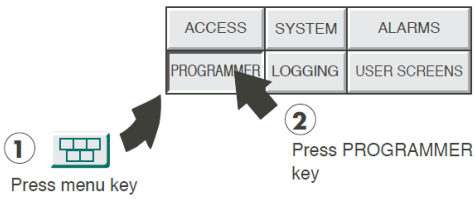
Running a Program

Programs can be run as soon as they are loaded ("Running a Program Now" on page 53), or they can be scheduled to start at a specified time and date ("Scheduling a Program" on page 55).

Running a Program Now

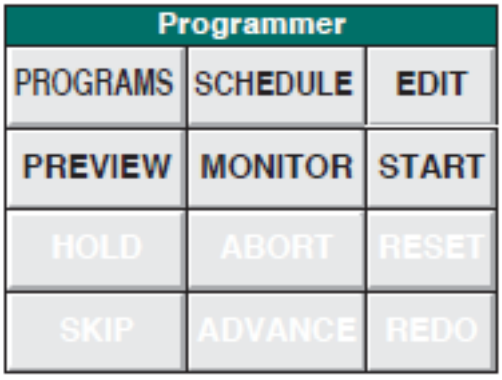
1. Press the Menu key to call the Pop-up menu.

   The Program pane displays RESET if there is no program loaded at the moment, or IDLE if a program has already been selected.



2. Select PROGRAMMER.

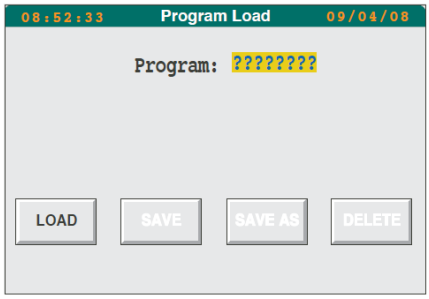
   The Programmer window appears.



3. Select ‘PROGRAMS’.

The Program Load page* appears, prompting for a file name. To the left of the page title is the current time, and to the right is the current date.

Note: Up to eight setpoint programs can be supported simultaneously. Where more than one such program is running, the 'Program Load' page has an additional field 'Unit' which allows the user to specify which programmer is to run this program.

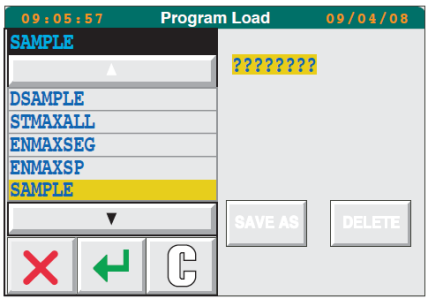


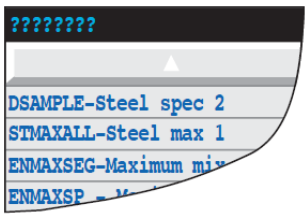
All display pages refer to the program associated with the currently selected 'Unit'.

For any particular programmer display page, the identical page for other valid units can be scrolled-through, using the right and left arrow keys.

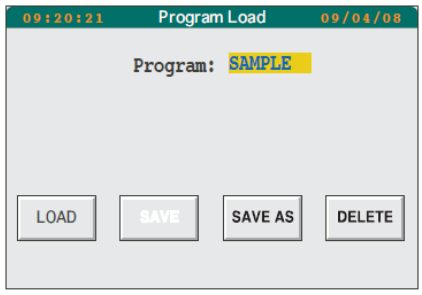
4. Press the yellowed field of question marks.

   A pick-list of the available programs appears in the left-hand side of the screen. The small-frame display is shown to the right of this description. The large-frame product is similar but includes the File Name and the Program Name, separated by a hyphen, as shown below.



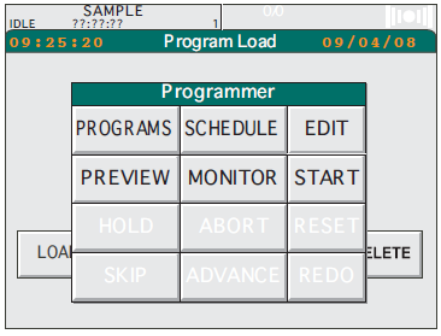


5. Press the name of the required program. The background of the selected program's name changes to yellow.
6. Press the Return key (the green arrow). The pick-list disappears and the Load/Save Program page now shows the name of the selected program on a yellow background.

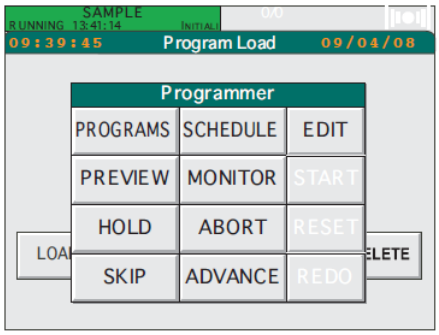


7. Press the LOAD key

The full Programmer menu appears. The Program pane reads IDLE, showing the program is loaded but idling, not running.

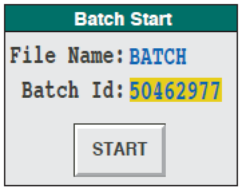


8. Press START



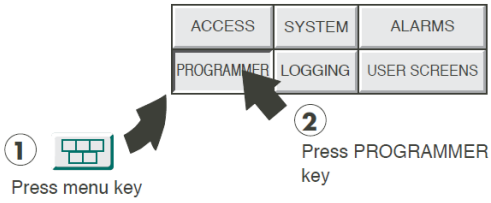
The Program pane changes to green, with status RUNNING. The expected time of completion and the number of the segment currently executing are also displayed.

If a program is configured to operate as part of a batch, then the batch pop-up appears, requiring confirmation of batch details before the program and batch are started.

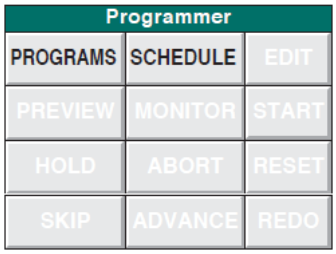


Scheduling a Program

This allows the setting of a date and time at which a program is to start automatically. Once configured, a flashing orange dot appears in the top right-hand corner of the program pane as shown in Figure 17.



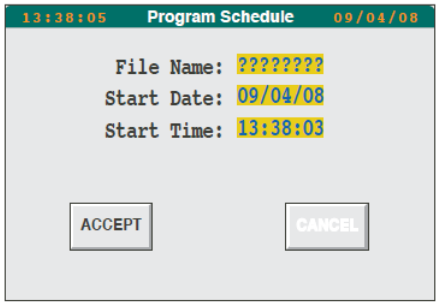
If another program is running at the scheduled start time, the program start is delayed. The late start is recorded in the Alarm History.



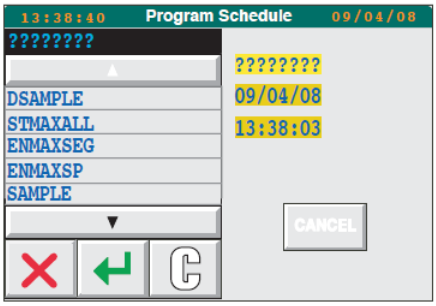
Program Selection

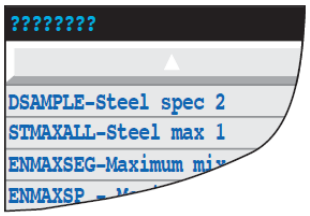
1. Press the Menu key.
2. Select ‘PROGRAMMER’ from the pop-up menu that appears
3. Select SCHEDULE.

   The Schedule Program page appears, with the instantaneous date and time.
4. Press the File Name (????????) field.



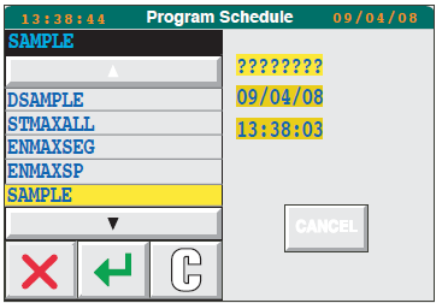
A pick-list of the available programs appears in the left-hand side of the screen. The small-frame display is shown to the right of this description. The large-frame product is similar but also includes the File Name and the Program Name, separated by a hyphen, as shown below.





5. Select the required program.

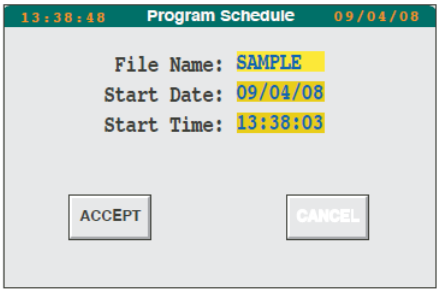
The background of the program name changes to yellow.



6. Press the Return key (the green arrow)

The pick-list disappears, and the File Name field shows the name of the selected program.

The program is now ready for scheduling.

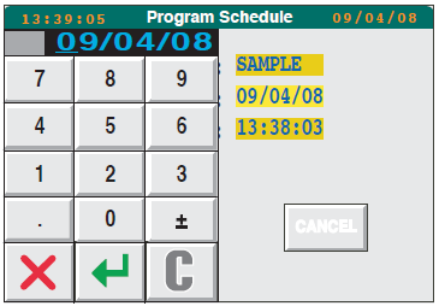


Note: If the program is to run immediately after the currently-running program ends, the Start Date and Start Time can be left at their current values, and 'ACCEPT' pressed.

Specifying the Program Start Date

7. Press the 'Start Date:' field.

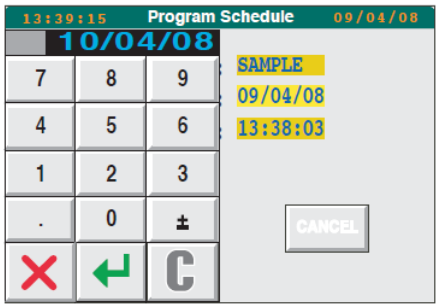
The left side of the screen shows a numeric keyboard, with a cursor flashing under the first number in the black confirmation bar at the top.

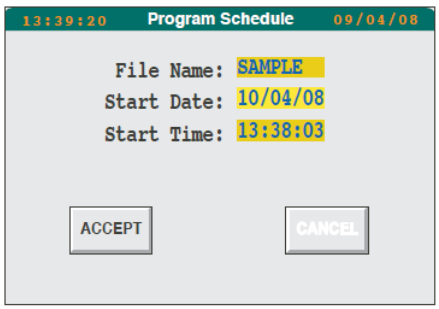


8. Key in the required date, in the format set for your instrument (ask your Engineer).

   After the first digit has been keyed-in, the cursor moves to the next character, and so on - there is no need to enter the'/' character.

   The field can be cleared to ??/??/?? by pressing the 'C' key. The red cross key can be used to abort the whole date-entry process and return to the Program Schedule page.



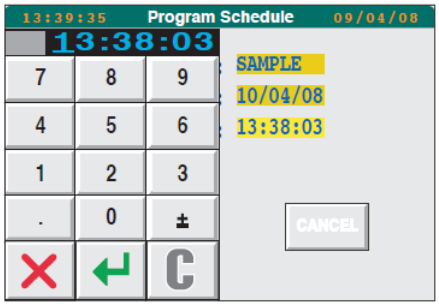


9. When the required date has been entered, the Return key is used to return to the Program Schedule page, which now shows the newly specified date.

Specifying the Program Start Time

10. Press the 'Start Time:' field.

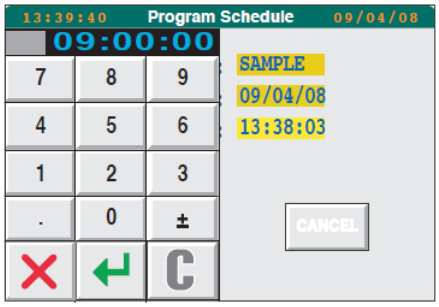
    The left side of the screen shows a numeric keyboard, with a cursor flashing under the first number in the black confirmation bar at the top.

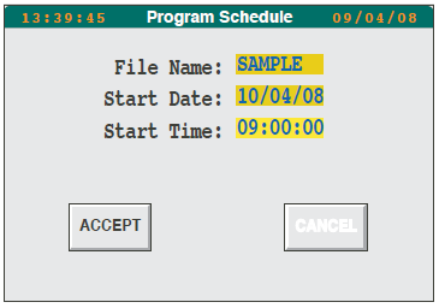


11. Key in the time in the format hh:mm:ss.

    After the first digit has been keyed-in, the cursor moves to the next character, and so on - there is no need to enter the colons.

    The field can be cleared to ??:??:?? by pressing the 'C' key. The red cross key can be used to abort the whole date-entry process and return to the Program Schedule page.





12. When the required time has been entered, the Return key is used to return to the Program Schedule page, which now shows the newly specified start time.

Skip

Skipping a program segment causes the program to stop running its current segment and start running the next segment immediately, starting at the current value. Skip is initiated from the Programmer menu.

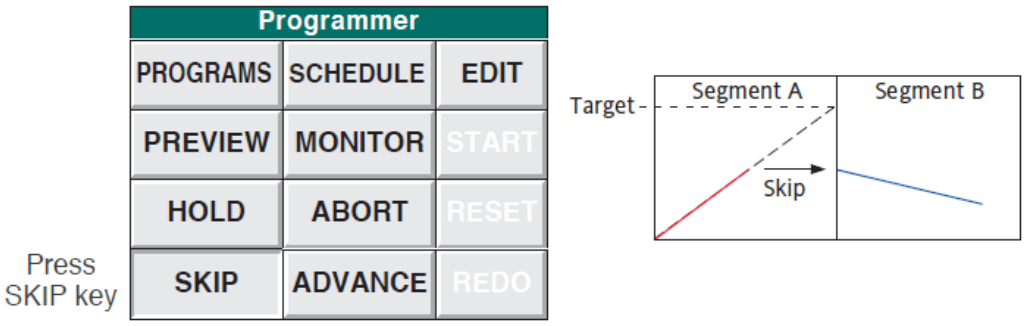


Figure 27 Segment Skip

Segment Transition Consequences

From DWELL, Set or Servo (SP or PV) to any other Type

These transitions are ‘safe’ and provide a bumpless transition of SP from one segment to the next. The program finishes early.

From Ramp to Set

Not Bumpless. The ramp is terminated early. The resulting bump is larger or smaller than that programmed depending on the direction of the ramp compared with the SET.

From Ramp to Dwell

Almost bumpless, with the SP being servoed to the current working SP at time of Skip. Usually results in a slight bump in the opposite sense to that of the preceding ramp.

From ramp to ramp

1. Same direction; Same Rate

   The ramp continues to the new target SP at the same rate. Combined duration is the same as if unskipped.

2. Same direction; Second Rate higher than the first

   At Skip, the SP starts ramping at the new rate. Overall duration is less.

3. Same direction; Second Rate lower than the first

   At Skip, the SP starts ramping at the new rate. Overall duration might be greater.

4. Opposite directions.

   At Skip, the SP immediately changes ramp direction and it is likely that the previously programmed peak or trough will not be reached. It is also likely that the SP will reach the new target sooner than expected and in such a case, unless a further Skip is performed, the SP will dwell until the next segment starts.

From Ramp to End (Starting Values)

Not bumpless. Same effect as if the Program is aborted.

From Ramp to Complete (Infinite Dwell)

Not bumpless. Terminates the ramp and steps to the final target setpoint.

To Ramp from any other Type

1. Ramp-at-rate. Rate is maintained.
2. Time-to-target. Duration is maintained.

Advance

Similar to ‘Skip’, described above. Advancing to the next program segment causes the program to stop running its current segment and start running the next segment immediately, but starting at the previous segment’s target value instead of the instantaneous current value. Advance is initiated from the Programmer menu.

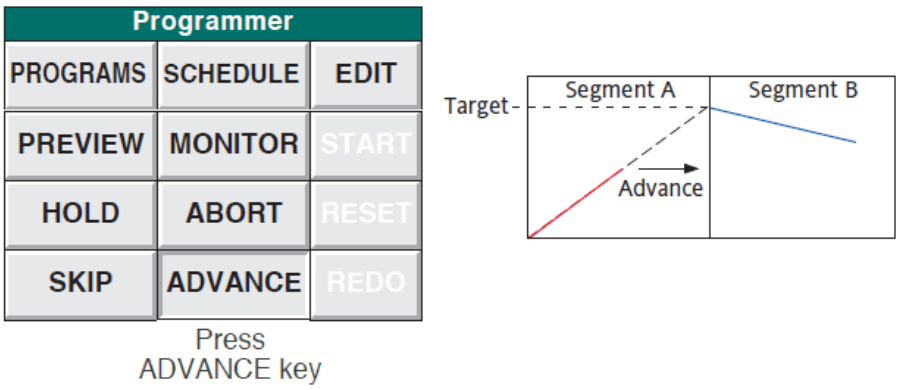


Figure 28 Segment Advance

Edit

Edit allows the operator to view the program segments (small-frame default - see Figure 29) and if so configured, (at Engineer level), to schedule, monitor and preview information. Not all this of information can be displayed simultaneously on the small frame version. Full details of Programmer Edit are given in "Editing a Program (Spreadsheet)" on page 93.

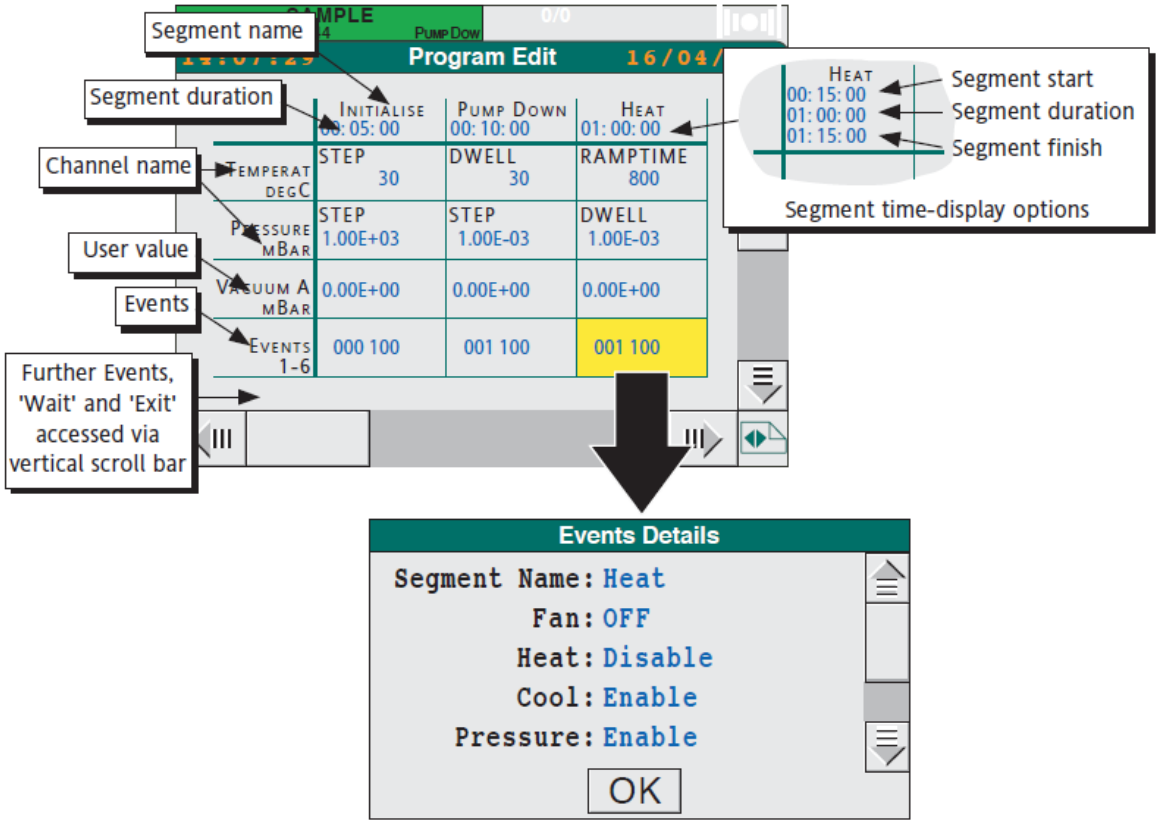


Figure 29 Program Edit - Default View

The appearance of the page depends on how it has been configured. The default display shows Segment Duration, but it is possible to configure (see "Editing a Program (Spreadsheet)" on page 93) any or all of Segment start, Segment duration and Segment finish times to appear (where start and finish are relative to the start of the program, not real-time). Figure 29 also shows that information related to the various ‘cells’ is displayed when the cells are touched. At Operator level, these items are only viewable; editing can be carried out only at Engineer level of access.

The display can be configured to include Preview, Monitor and Schedule, although not all these items can be displayed simultaneously on the small-frame unit. Figure 30, below, shows the display configured to include ‘Preview’. ‘Monitor’ adds the monitor function keys below the graph. Schedule displays the file name and its start date and time.

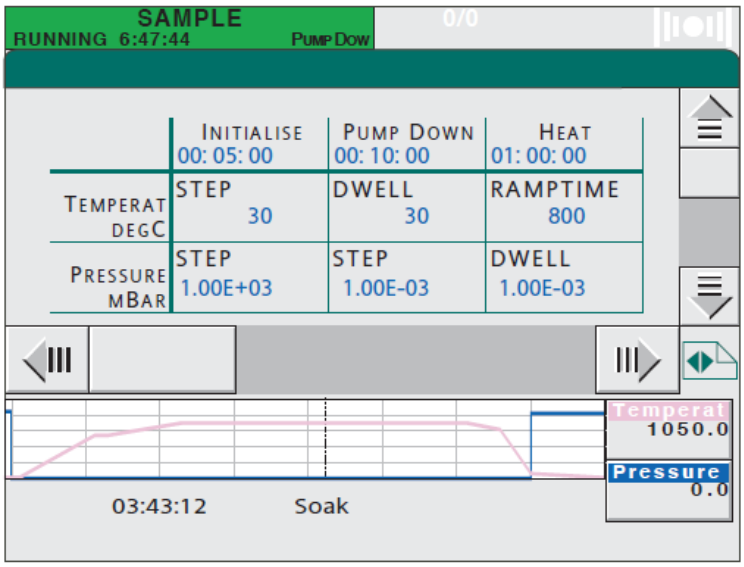


Figure 30 Program Edit with ‘Preview’

Edit Option Keys

Operating the Option key produces a number of function keys. The small frame unit cannot display all these keys at once, so the Option key is used a number of times in order to scroll through them all. At Operator level, all these are disabled except for NEW and REVISION.

New	Not used at Operator level
Revision	Shows the number of times the program has been edited since it was first saved (version 1), together with the time and date of the most recent edit.

Holding and Aborting a Program

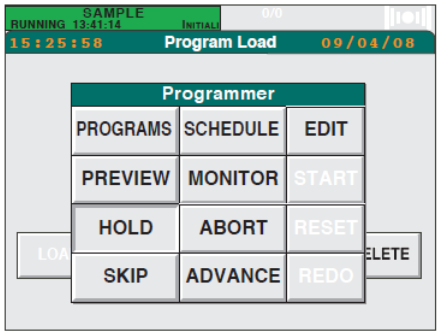
The Hold facility allows the user to:

1. pause a program when a problem arises in the process under control, and to hold the program at that point while attempts are made to fix the problem
2. make on-line changes to a running program (‘Engineer’ access level required).

This chapter is for Operator access level; see "Editing a Program (Spreadsheet)" on page 93 for item two in the above list.

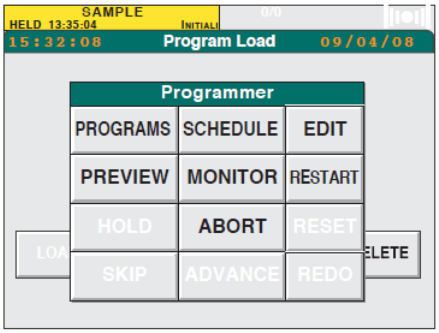
Holding a Program

1. With a program running, and the full Programmer menu displayed (as at step 8 in "Running a Program Now" on page 53. Running a program), press HOLD.



The Program pane changes to yellow and reports HELD.

To the left of the page title is the current time. The MONITOR facility ("Monitoring a Program" on page 62, below) can be used to view the time-into-program.



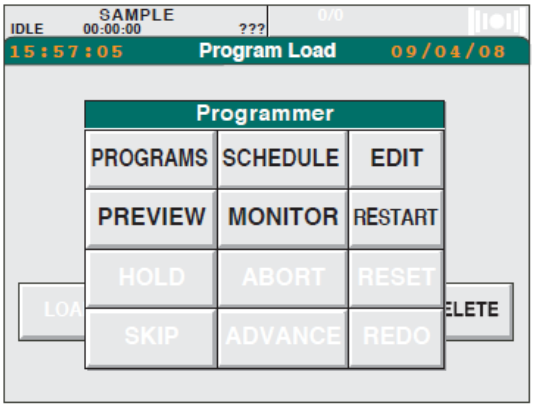
If the attempts to solve the problem are successful, the program is usually continued using RESTART. If the attempts are unsuccessful, the program can be aborted, as described in "Aborting a Program" on page 62 below.

Aborting a Program

Starting from the end of "Holding a Program" on page 61 above, press ABORT.

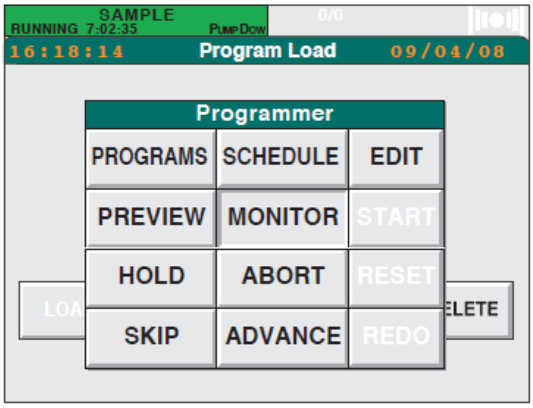
The Program pane reports IDLE.

The program is now idling, which means that it is still loaded in short-term memory but not being run. At this point the same program can be run again from the start, or a new program run (see "Running a Program Now" on page 53).



Monitoring a Program

The default Program Monitor page is displayed by operating the MONITOR key (see "Running a Program Now" on page 53 if necessary).



The monitor page contains:

1. a profile of up to five* channels, together with a moving cursor showing the current position.
2. one‘faceplate’ per profiled channel
3. the name of the segment currently running

4. times to completion for the segment and for the program as a whole
5. a number of push-button keys.

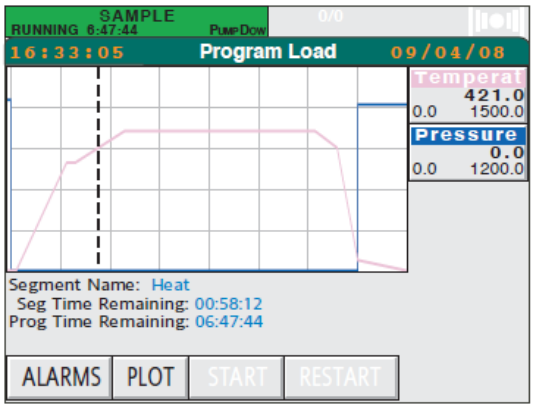


Figure 31 Program Monitor Display

Program Profile

This provides a graphical representation of the program. By default, omly the program channels are drawn on the graph. The PLOT key (active only for Engineer level access) allows the graph content to be edited to include a maximum of five[1] items.

Note: The first time the Visible Plot Select window is opened all plots are set to 'None'. All required plots must be entered (even those already appearing) as any plots left at 'None' will be removed from the graph when 'OK' is pressed.

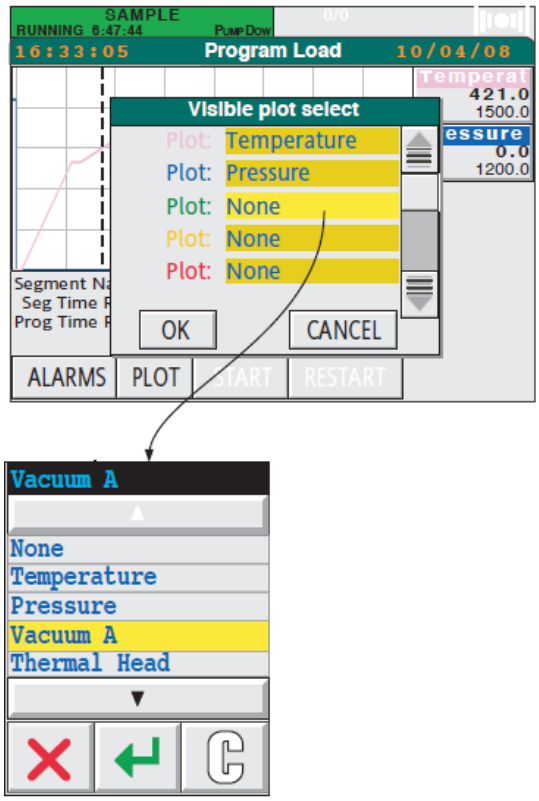


Figure 32 Plot Editing

1. *16 for large-frame units

Faceplates

A faceplate for each configured plot appears to the right of the graph. The faceplates show the plot colour and name, along with the current value and high and low range values.

Note: For the small-frame unit, parameter names are truncated to the first eight characters. Thus, for example, Temperature1' and 'Temperature2' would both appear as 'Temperat', whereas 'Temp1' and 'Temp 2' would appear in full.

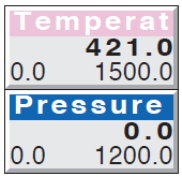


Figure 33 Sample Faceplates

Segment Status

Segment Name

The name of the segment which is currently running (or held).

Seg Time Remaining

The time until this segment is complete. The value decrements if the segment is running, or stops if the program is held.

Prog Time Remaining

As for Seg Time Remaining, but for the entire program.

Push-button Keys

A number of push-buttons appear at the bottom of the screen. With the large-frame unit, all the keys are visible at once; with the small frame unit up to four keys appear at any one time - hidden keys being accessed by operating the 'Option' key. As well as these fixed-function keys, a number of user-specified keys can appear, but these are not described here.

The keys are disabled (white text) if they are not appropriate, or if the user does not have a suitable access level.

Alarms

Operating this key calls the Alarm History display, described in "Alarm History Page" on page 68, below. This display contains only those alarms and events relevant to the running program.

Batch

If present, this key causes batch details to be displayed.

Plot

Operating ‘PLOT’, allows the user to edit the graphical representation of the program, as described in "Program Profile" on page 63, above.

Remaining Keys

The remaining keys (START, RESTART, HOLD, ABORT, RESET, SKIP, ADVANCE, REDO) have functions described in "Running a Program" on page 53 and "Holding and Aborting a Program" on page 61, above.

Preview

This presents a graphical view of the program segments, including a vertical cursor which can be touch-dragged across the width of the chart. Program parameters are represented by faceplates, to the right of the graph, which contain the values of the parameters at the cursor position. The segment name and the time-into-program appear below the graph, for the cursor position.

Operation of the option key causes a ‘PLOT’ key to appear, and if the instrument is configured with more than one programmer, a ‘UNIT’ key also appears.

PLOT operates in the same way as described in "Program Profile" on page 63, above,, and as in that section, requires Engineer level access before it is enabled.

UNIT calls a dialogue box showing the currently displayed unit name. This can be changed by touching the name field and selecting the required unit from a pick-list.

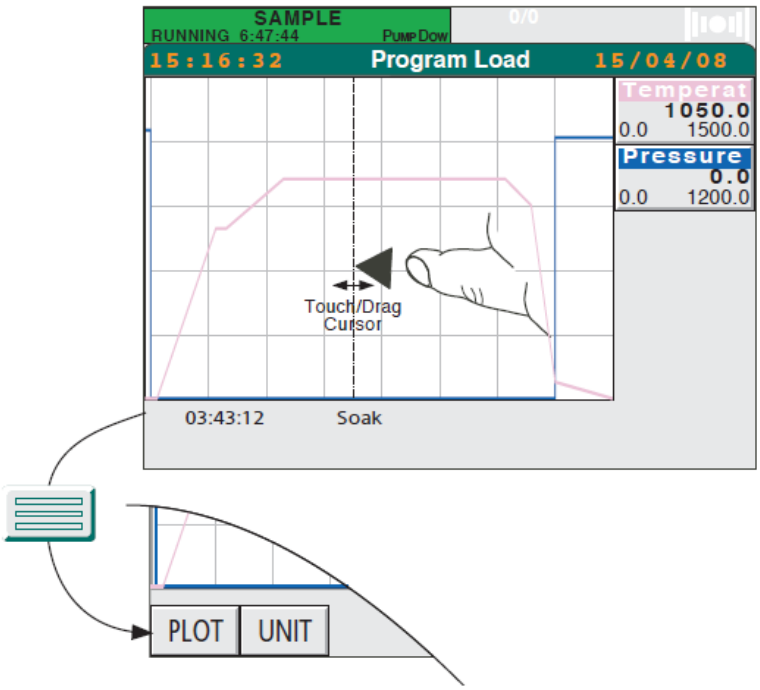


Figure 34 Preview Display

Logging Data

This section describes how incoming data can be logged (archived) to an archive device.

Types of Files

The selection of file type (ASCII or UHH) is made in the Archive Groups page. Selection can be made only by users with Engineer level access, and only when logging is ‘OFF’.

ASCII

ASCII files are human-readable, and can be imported into standard spreadsheets. Files of this type have ‘.ASC’ extensions.

UHH

UHH format is a non human-readable file format which can be interpreted only by Review software. UHH files have Sequence file names (see below) and the extension .UHH. If ‘Hourly’ or ‘Daily’ is selected, then new UHH sequence files are created at hour or day boundaries respectively.

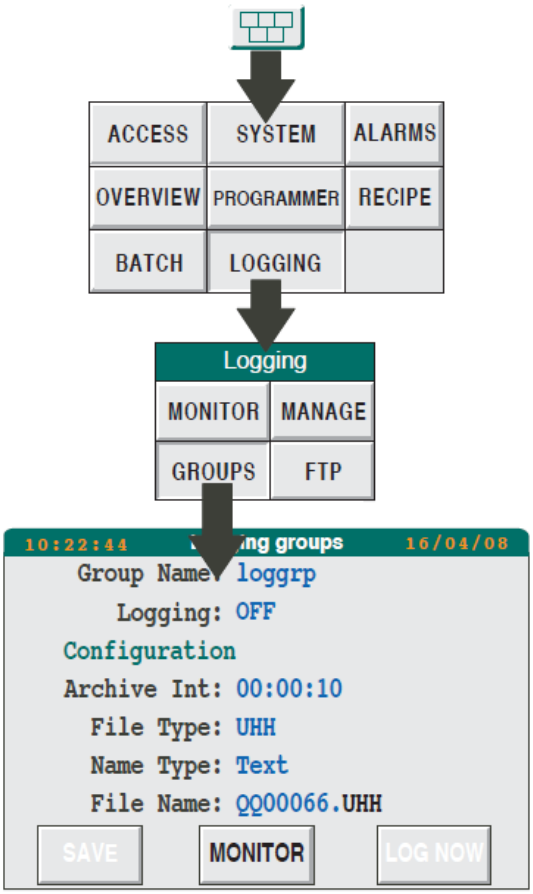


Figure 35 Logging ‘Manage’ Page

Name Types

The selection of name type (Text, Hourly, Daily, Sequence) is made in the Logging Groups window, described in "Logging Groups of Data" on page 104, later in this document. name type can be viewed but not selected at Operator level.

Text

A Text file is a continuous file that starts when logging starts and stops when logging stops. The file must have an 8-character file name with the usual MS-DOS constraints; the instrument adds the file type suffix .asc or .uhh. If .uhh files are used and TEXT is selected, the files are treated as SEQUENCE (see below).

Hourly

Hourly means that the instrument automatically parcels the archive into files of one-hour length. For the sequence of files that result, the user supplies the first two letters of the file name(s) and the instrument assigns the last six to indicate the time (month hour day) that the recording started for that particular file. For example, were ‘Monday’ to be typed-in, then a file name for an hourly-type file might be ‘mo010323’, which would mean that archive started at the beginning of hour 23 of day 3 of month 1.

Daily

Daily is similar to Hourly. The instrument parcels the recording into files that start at the beginning of each day (midnight) and run for 24 hours. The user supplies the first four letters of the file set and the instrument supplies the last four (month day).

Sequence

With Sequence filenames, only the first two characters are supplied by the user, the remainder of the file name being automatically appended by the instrument as a six digit number, starting at 000001. This number is incremented each time a new file of this form is created.

Manage

The Logging Manage facility allows the export of files to a removable storage device.

Archive Export

The ability to export files to a ‘Memory stick’ is provided from the ‘Archive Manage’ page. Exported (copied) files are not deleted from the internal archive.

Export	This pushbutton causes the currently displayed file to be copied to the USB device, as selected.
Export all	This pushbutton causes all files in the internal archive to be copied to the USB device. If the device becomes full during archive, a message appears asking the user to fit a new memory device.

If a file to be exported has the same name as one already on the storage device, the following occurs:

a. If the file is identical, the file will not be exported, but be marked as ‘skipped’.

b. If the new file is longer than the one on the storage device, but has the same initial data, it will be exported to replace the existing file.

c. If neither a. nor b. is true, the user is prompted for a decision.

During export, the screen is normally ‘locked’ to the Archive Manage page. Setting ‘Page Locked’ to ‘No’, causes normal screen navigation to be restored, with the export continuing as a background task. Once export is complete a message appears to tell the user that the memory device may be removed. Any other export messages also appear at the user’s current display page.

The user may return to the Archive manage page at any time.

Note: The large frame unit displays an ‘archiving in progress’ icon at the top of the screen. The icon consists of a disk shape with an inward pointing arrow to the left. The arrow, and the upper central portion of the disk shape, flash green during export.

Data Integrity

Although the Visual Supervisor is designed to maintain logged data in a secure manner in the event of sudden loss of power, it is not always possible to guarantee that no data will be lost, or that any data record currently being written will be complete.

Such problems will be minimised if logging is stopped prior to a controlled power down. Logging can be stopped by turning logging off in LOGGING/MONITOR or by using the STOP button in SYSTEM/APPLN/APP MGR.

FTP

Archive of data to a remote computer can also be carried out. See "FTP Transfer" on page 107

Alarms / Message Response

"The Alarm Pane" on page 41, above, describes the alarm pane and the way in which it is used by the instrument to annunciate alarm, event and message occurrence. The sections below describe the alarm history page, and how to acknowledge alarms, events and messages.

Time Representation

If time synchronisation is configured, then the date and time of a cached block are the date and time of alarm/event occurrence at the originating block, and are displayed as DD/MM HH:MM. If it is not certain that the original block’s instrument has its own clock synchronised, then the date and time of detection of the alarm or event will be used, and these are displayed as DD*MM HH*MM.

Alarm History Page

To display the alarm history page, either

1. Press the Menu key below the screen, then press ALARMS in the pop-up menu, or
2. Press the Alarm pane

ACCESS	SYSTEM	ALARMS
OVERVIEW	PROGRAMMER	RECIPE
BATCH	LOGGING	

The Alarms menu appears. The name of the current alarm condition is displayed in the Alarm pane.

3. Press HISTORY

Alarms		
ACK	ACK ALL	HISTORY
SUMMARY	LOG	NOTE
ARCHIVE	MESSAGES	

The Alarm History page, depicted in Figure 36, below, appears.

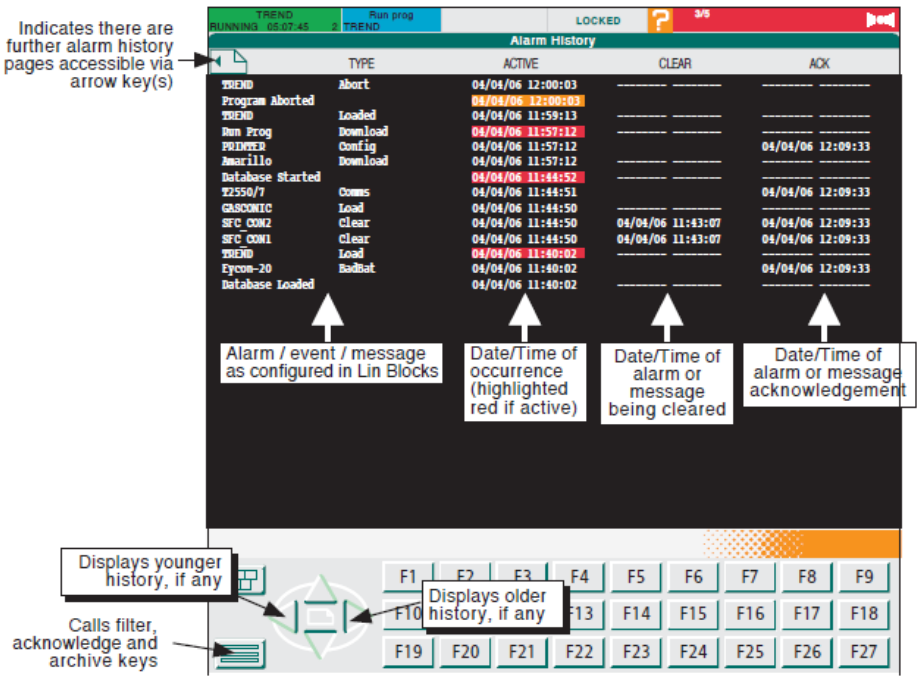


Figure 36 alarm History Display (XGA Version) to Log (Archive)

Information is arranged in a number of columns as shown above. (The figure shows the XGA version; the 1/4VGA version is similar but does not have the 'Ack' column.) The CLEAR and ACK columns contain one of the following:

1. Dashed lines (for events - defined as one-off occurrences which, by their nature are not 'Clearable').
2. Blank spaces (for alarms or messages that are still active).
3. Time and date (showing when the item ceased to be active or was acknowledged).

For brevity, ‘Alarms’, ‘Events’ and ‘Messages’ are all referred to as ‘events’ in the following description.

As can be seen from Figure 36 above, the alarm history displays a list of events that have occurred since the database was loaded*, giving the date and time of occurrence, and where appropriate, the time of clearing and (for XGA units only) time of acknowledgement. Where more ‘events’ have occurred than can be displayed on one page, a ‘page turn’ symbol appears at the top left of the page. Table 4, below, shows the various symbols which can appear.

	Use right arrow key to view earlier events
	Use right arrow key to view earlier events or left arrow key to view later events
	Use left arrow key to view later events

Table 4: Page Turn Symbol Interpretation

It is possible to limit (filter) the display of ‘events’ in a number of ways, so that only those items of current interest are included in the list. To achieve this, the ‘Option’ key at the bottom of the display is pressed, to cause the option bar to be displayed (Figure 37). This contains not only ‘filter’ keys, but also ARCHIVE and ACK(nowledge) keys.

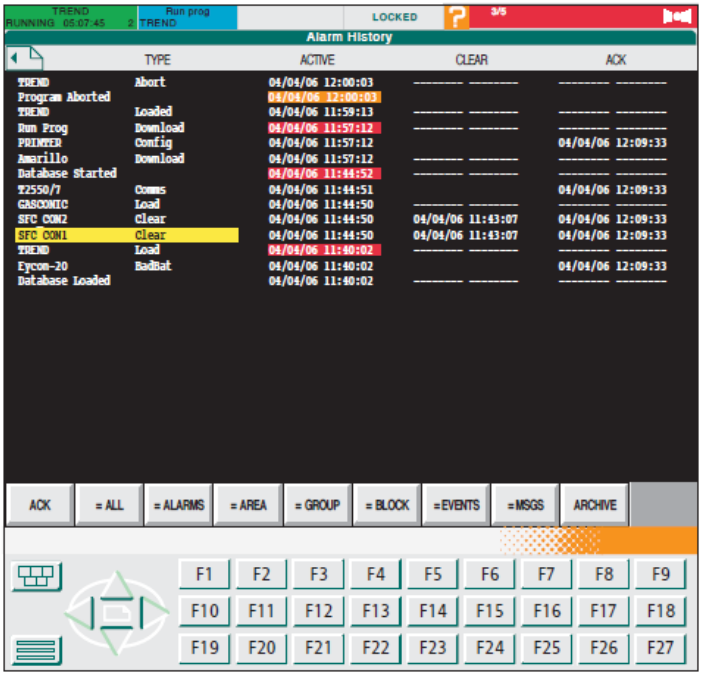


Figure 37 Alarm History Display with Option Bar.

Two Line Display

As described in "Responding to Alarms" on page 43, above, operating the down arrow key toggles between single line working, (e.g. as shown in Figure 36, above), and two line working where the second line is used to display the operator ID of the user who was logged on at the time of the alarm. See Figure 21 for an example.

Filter Keys

ALL	Displays all Alarms and Events.
= ALARMS	Displays only Alarms.
= EVENTS	Displays only Events.
= AREA	If an Alarm name is touched (highlights yellow), then pressing =AREA causes only those alarms configured to be in the same ‘Area’ as the highlighted alarm to be displayed.
= GROUP	As for =AREA, but for Group.
= BLOCK	As for =AREA, but for function block.
= MSGS	Displays only messages

ACK Key

Pressing this key acknowledges (after confirmation) all current, unacknowledged (i.e. flashing) alarms. Touching an alarm name (highlights yellow) before pressing ACK, causes just that alarm to be acknowledged.

Archive

Allows the alarm history to be archived as described in "Alarm History Page" on page 68 below.

Alarm/Message Acknowledgement

Alarms

Alarms can be acknowledged the following ways:

1. Press the Menu key below the screen. In the pop-up menu which appears, press ‘ALARMS’, then press ACK to acknowledge the displayed alarm, or ‘ACK ALL’ to acknowledge all current unacknowledged alarms.
2. Press the Alarm Pane. In the pop-up menu which appears press ACK to acknowledge the displayed alarm, or ‘ACK ALL’ to acknowledge all current unacknowledged alarms.
3. From the option bar in the Alarm History page ("Alarm History Page" on page 68) or the Alarm summary page ("Alarm Summary Page" on page 73), press the ACK key.

Messages

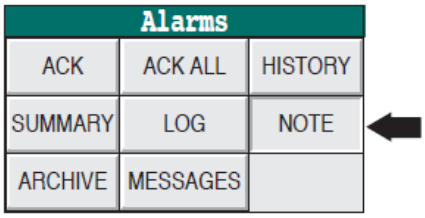
Some messages are cleared by the system itself without operator intervention. In such cases, entries appear in the Alarm history page CLEAR column, but not in the acknowledge column (large frame units only). All message indication stops.

For other messages, touching the alarm pane, or operating the Menu/Alarms/Messages key displays the latest message in a pop-up window. Subsequent operation of the OK button for this window, both clears and acknowledges the message.

Adding Notes to Alarm History

The NOTE facility allows an operator-defined text message to be added to the alarm history as follows:

In the Alarms menu press NOTE

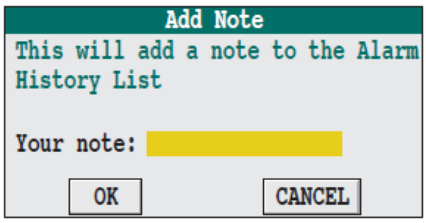


The Add Note window appears.

To enter the note, press the yellowed field, then key in a string of (max.) 16 characters at the pop-up keyboard, followed by 'Enter'.

To abandon the note before completion, press CANCEL.

When the message is compete, press OK. The note is added to the alarm history, where it is displayed along with its time of entry.



Alarm History Archive

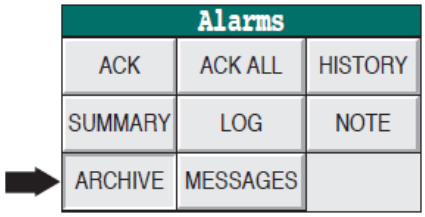
The ARCHIVE facility permits the current alarm history to be saved in ASCII format to the USB memory stick.

Note: In order to avoid the possibility of loss of logging data it is strongly recommended that archiving is performed with normal logging turned off.

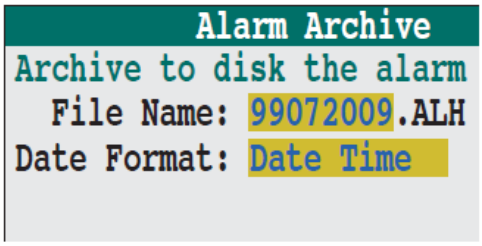
1. In the Alarms menu, press ARCHIVE

   The Alarm Archive window appears.

   The File Name field shows the default of YYMMDDHH. ALH, which the instrument supplies automatically. To change this name, press the field to get the keyboard display, and enter a new name. The file extension is always .ALH, (not editable).



2. To abandon the name before completion, press CANCEL.
3. When the correct name has been entered, press OK.



If required the 'Date Format' field can be edited in a similar fashion. The format options (Date Time, Spreadsheet and Integer) are described in "Log Initiation" on page 104 and "Changing Language and Date/Time Formats" on page 136.

Alarm Summary Page

This provides an alternative way of displaying only those alarms which are currently active (acknowledged or not) and previously active alarms which are now cleared but which have not been acknowledged.

The alarm summary page is displayed by touching the SUMMARY key in the Alarm menu.

Operating the Option key calls an option bar like that described in "Alarm History Page" on page 68 for the alarm history display, except that it includes only ACK, ALL, AREA, BLOCK and GROUP keys.

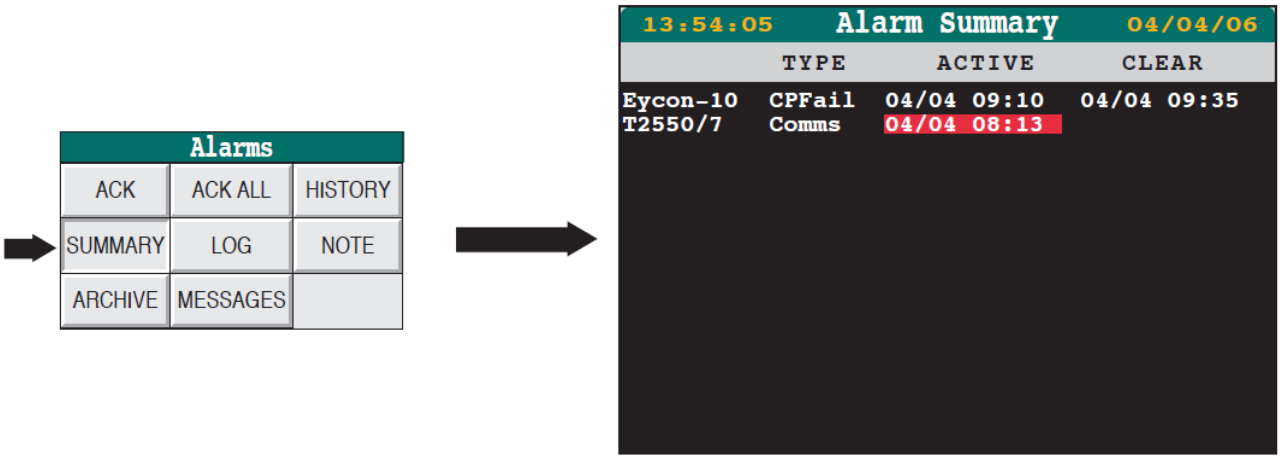


Figure 38 Alarm Summary Access

Note: Initially, the display shows only the highest priority alarm in each block. Operation of the down arrow key below the screen causes the display to change such that it shows all alarms. A further operation of the keys returns to the single alarm/block display, and so on.

Event Log

The event log page is accessed either a) by operating the 'Log' key in the alarm menu, or b) by operating the EVT LOG key in the root menu (only with no application loaded). The page displays the alarms and events that have been output to trend displays, printers or log files. This data is lost on power cycling.

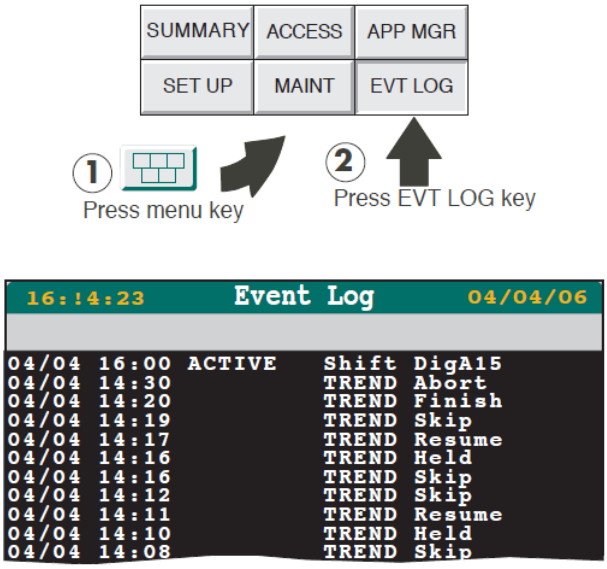


Figure 39 Event Log Display - Single Line Display Mode

Two Line Display

The down arrow key can be used to toggle between single line and two line display. The two line display adds a second line to each event, used to display text that would not fit onto the single line display.

Area and Group Displays

Overview

As a part of configuration (Lintools), an 'area' page can be defined which can contain up to sixteen 'groups'. Each group can contain up to 16 points, where each point represents a function block. The area page contains group 'faceplates' which, when any one is touched displays that group's first six point faceplates. For the 1/4VGA unit, if there are more than six points in the group, a slider control appears at the right side of the display to allow access to hidden points. To return to the area display, the up-arrow key is pressed.

If a point faceplate is touched a 'close-up' of the faceplate appears giving further information about the point, the nature of this extra information depending on the type of faceplate.

To return to the group display, the up arrow key can be used. To return to the area display, the up arrow key can be used twice, or the menu key can be pressed, followed by ‘Overview’.

Note: If only one group is configured, the area page does not appear.

To access the area page, the menu key is pressed, followed by operation of the ‘Overview’ key as shown in Figure 40.

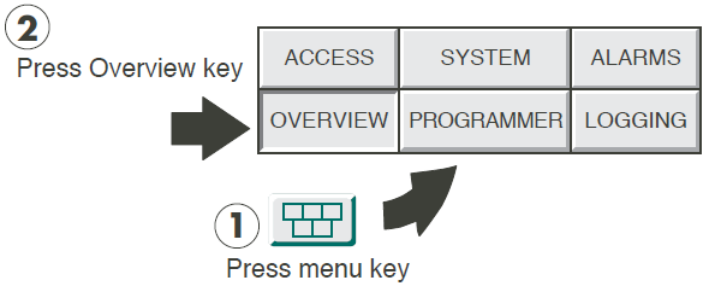


Figure 40 Access to ‘Area’ Page.

Figure 41 shows typical area, group and point displays. A selection of typical point displays is given in "Function Block Faceplates" on page 76 below.

Trend Displays

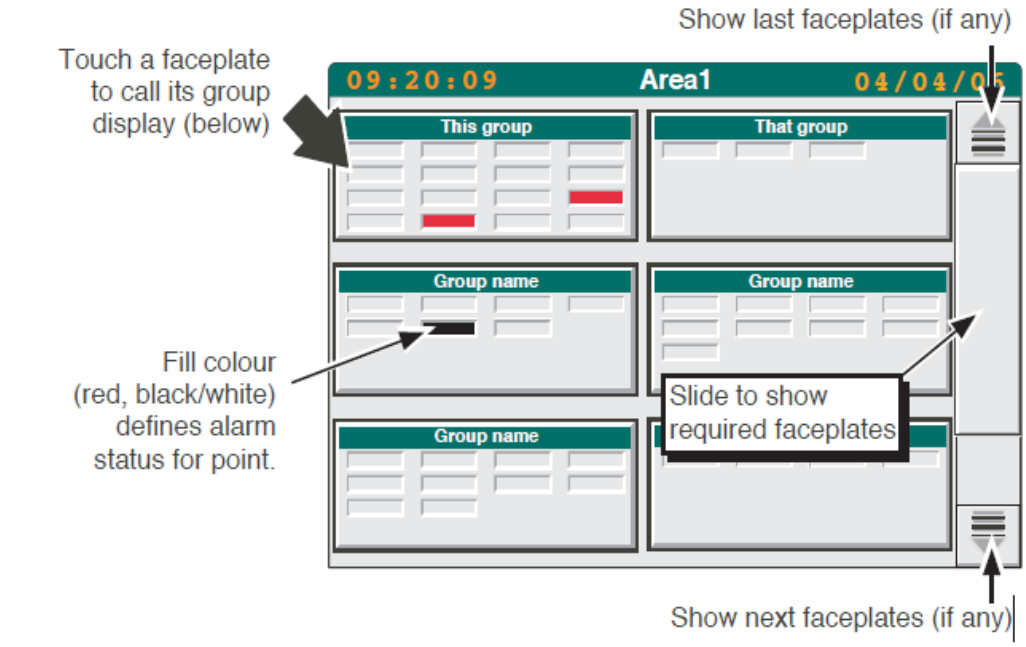
Operation of the down arrow key whilst in group display mode, calls one of up to four trend displays - Horizontal, Vertical, Full width horizontal, Full width vertical. In each case, it is possible to enter review mode, allowing historical data to be viewed. "Display Modes" on page 78, below gives more details.

Alarm Indication

Alarm annunciators take a variety of forms, and cover different groups of points or function blocks, but all operate the same ‘protocol’ as follows:

Indicator colour	Definition
Unfilled	No active alarm.
Black	There was an active alarm which returned to its non-active state before it was acknowl-edged.
Steady red	There is an active alarm that has been acknowledged.
Flashing red	There is an active alarm that has not been acknowledged.

For more details of alarms including acknowledgement see "Alarms / Message Response" on page 68.



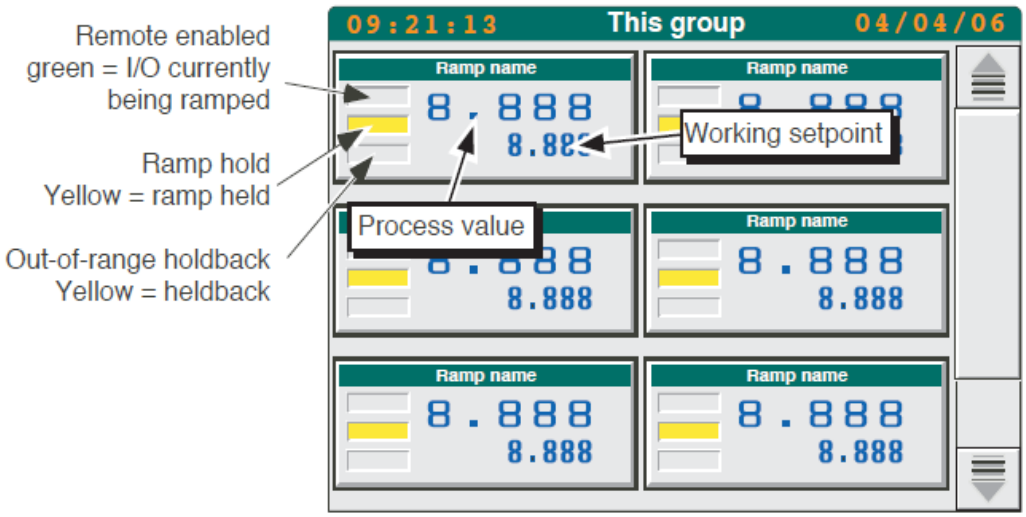


Figure 41 Typical Area and Group Displays

Note: The vertical sliders/push-buttons appear only for 1/4VGA unit displays

Function Block Faceplates

The following section shows typical function block faceplates, called to the display by touching the relevant faceplate in the group display (Figure 41, above).

Ramp Faceplates

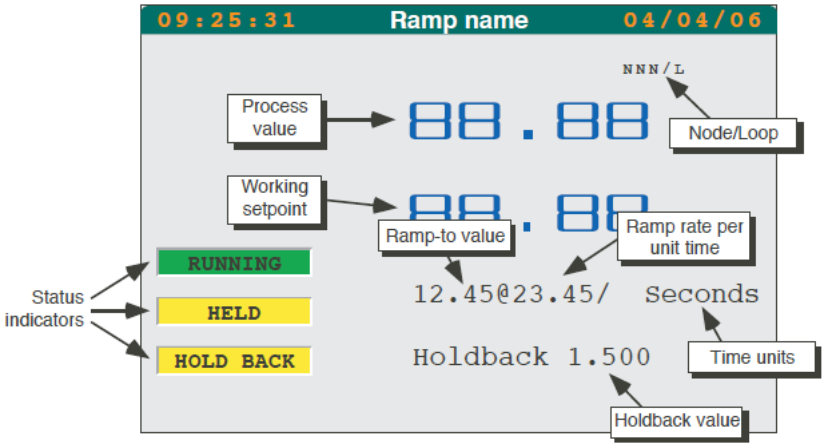


Figure 42 Ramp Faceplate

Node/Loop	Shows the system address (node number) of the I/O unit and the ramp number.
Process value	Shows the last known process value associated with the ramp
Working setpoint	Shows the last known working setpoint value associated with the ramp.
Status indicators	RUNNING Shows that the associated I/O channel is being ramped. Filled green when active, otherwise unfilled, with no text. HELD When filled (yellow), this shows that the ramp demand is held to allow the process to 'catch up'; otherwise unfilled, with no text. HOLDBACK When filled (yellow), this shows that the holdback value has been exceeded; otherwise unfilled, with no text.
Ramp-to valu0e	Shows the value to which the process variable is to ramp.
Ramp rate per unit time	Shows how quickly the ramping is to take place, in the time units defined (seconds in this case).
Time units	Shows the time units set for the ramp rate.
Holdback value	The 'safe' band (associated with this ramp), within which the process value may fall, without triggering a holdback.

PID Faceplates

Displays a process style faceplate for PID, PID_LINK and PID_CONN function blocks.

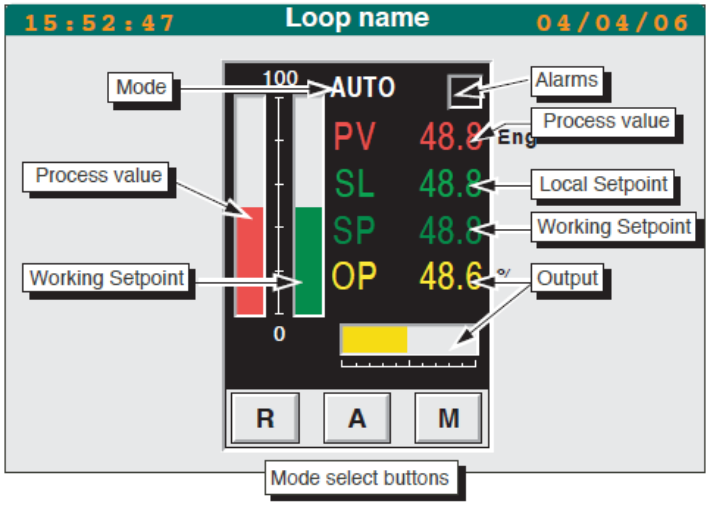


Figure 43 PID Faceplate

Process value	Shows the last known process value associated with the loop
Working setpoint	Shows the last known working setpoint value associated with the loop.
Local setpoint	Shows the last known value for the local setpoint value associated with the loop.
Output percentage	Shows the current percentage (0 to 100%) of full scale of the output.
Mode	Shows the current mode (Auto, Manual or Remote).
Alarm	The alarm beacon is red if the block is in alarm. The beacon is continuously red if the alarm has been acknowledged, or flashes if unacknowledged.
Mode select	These buttons allow the mode to be selected as ‘R’ (Remote), ‘A’ (Auto) or ‘M’ (Manual).

Display Modes

Group data can be displayed in a number of formats, as listed below. When a group is touched, in the Area and Group Displays ("Overview" on page 74 above), it appears in the format last used. Other modes are scrolled-to by means of the down arrow key. The display modes are described below in the order in which they appear after a power up. This order is:

1. User screen (if one has been set up) (not described here)

2. Faceplate display
3. Numeric Display
4. Vertical Bargraph
5. Horizontal Bargraph
6. Vertical Trend with Faceplate
7. Vertical Trend - Full Width - without faceplates
8. Horizontal Trend with Faceplate
9. Horizontal Trend - Full Width - without faceplates

Each of the above-mentioned displays supplies a real-time display of point data. By using the option key, then ‘VIEW’, trend displays become trace-history displays. In such displays, real-time trending stops (although it is still held in the database for later display), and using various control sliders, the history of the traces can be displayed at a selectable magnification.

Faceplate Display

This display shows the contents of the group as what are called ‘faceplates’. This particular display is fully described in the Overview ("Overview" on page 74 above). To scroll to the next display mode, touch the down arrow key.

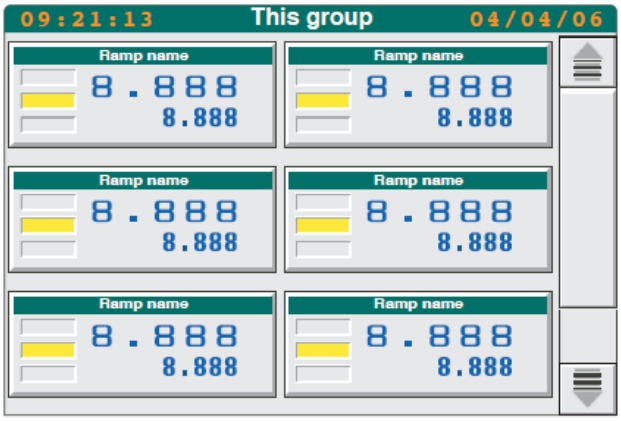


Figure 44 Faceplate Display Mode

Numeric Display

This shows point values as seven segment displays, with faceplates.

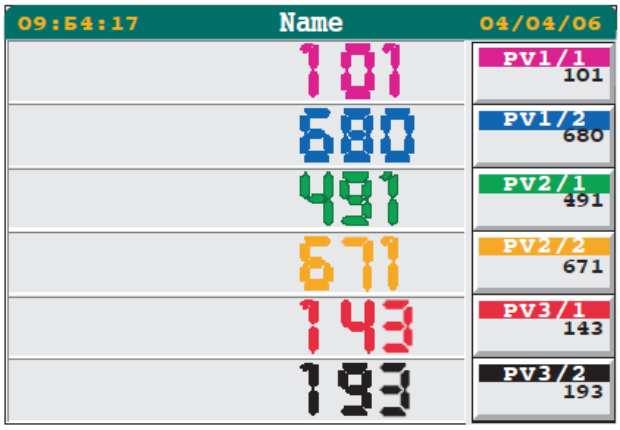


Figure 45 Numeric Display Mode

Vertical Bargraph

This mode shows the current point values as vertical bars with faceplates. The height of each bar is proportional to the current value of its associated point. Zero and full scale values appear to the left of the bars.

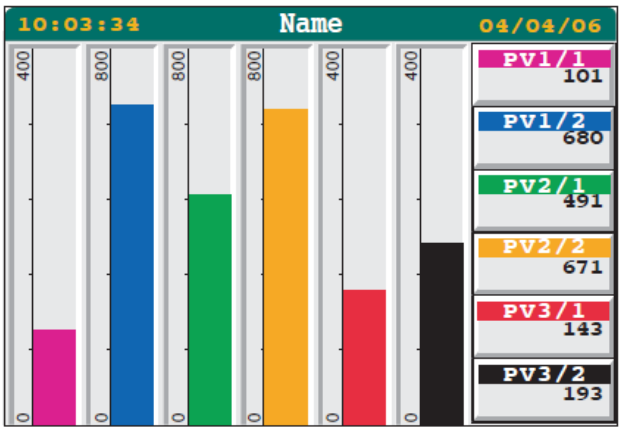


Figure 46 Vertical Bargraph Display Mode

Horizontal Bargraph

This mode shows the current point values as horizontal bars with faceplates. The length of each bar is proportional to the current value of its associated point Zero and full scale values appear below the bars.

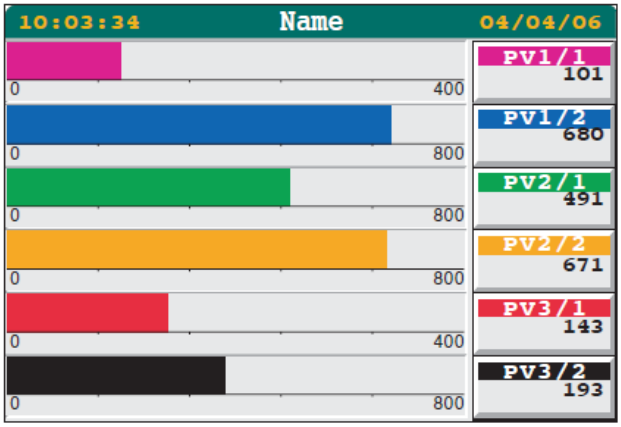


Figure 47 Horizontal Bargraph Display Mode

Vertical Trend with Faceplate

Standard Display

This view displays points as though they are being traced on a chart which is rolling downwards. The latest data is at the top of the display, and the extent of the data shown on the screen is displayed, at the bottom left of the screen, in hours and minutes.

For 1/4 VGA (XGA) displays Only the faceplates associated with the first six (16) group items can be displayed. Where there are more than six (16) trends, these are plotted without faceplate. As a part of the group's configuration, it is possible to re-order the group contents to define which faceplates are displayed.

The colour bar at the top of each faceplate is that of its associated trend.

Scroll Bar Display

An alternative view can be obtained by pressing the option key to display the options bar, then pressing 'VIEW'. This calls the scroll bar display shown in Figure 49 below. If no further action is taken, trend data will continue to update normally.

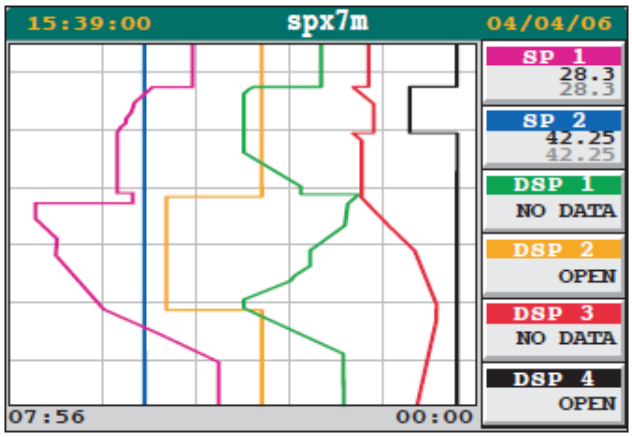


Figure 48 Vertical Trend with Faceplates

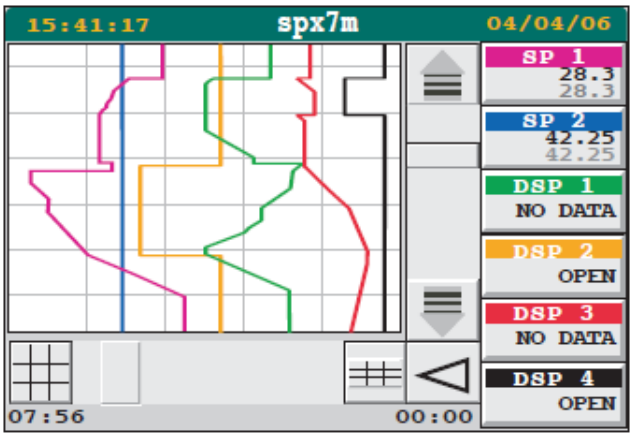


Figure 49 Vertical Trend with Scroll Bars

Review Mode

It is possible to enter review (trace history) mode by

a. Touching the screen in either the Standard or the scroll bar displays described above or the full-width display described below.

b. Using the slider or push-button controls in the scroll bar display

c. Touching the slide area between the slider and a push button.

Although data is still read and stored in 'trace history' by the instrument, the traces remain static on the screen (unless the 'zoom' or 'pan' controls are used).

The Option/Live keys or the 'Back Live' key are used to return to the standard/scroll bar display

CURSOR	On entry to review mode a cursor is located at the top of the screen. The cursor is repositioned either by touching it and dragging it to the position required, or by touching the screen at the desired point (or a combination of both), The exact temporal position of the cursor is shown at the bottom of the screen, and the values shown in the faceplates are those at the cursor time and date.

ZOOM	These controls allow the amount of data displayed on the screen to be varied, either continuously, using the slider, or in steps (using the keys). The expansion/contraction of the trends is centred on the cursor position.
PAN	These controls allow a particular section of the trend history to be selected for display. The length of this displayed section is determined by the zoom setting.

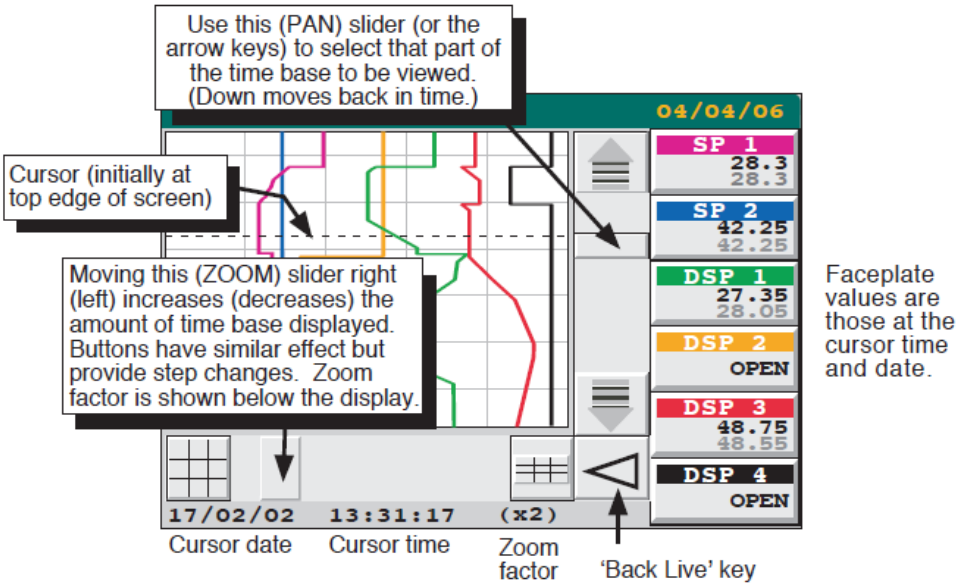


Figure 50 Trend Review Controls

Vertical Trend - Full Width

This view fills the width of the screen, with no faceplates displayed. Review mode is as described above.

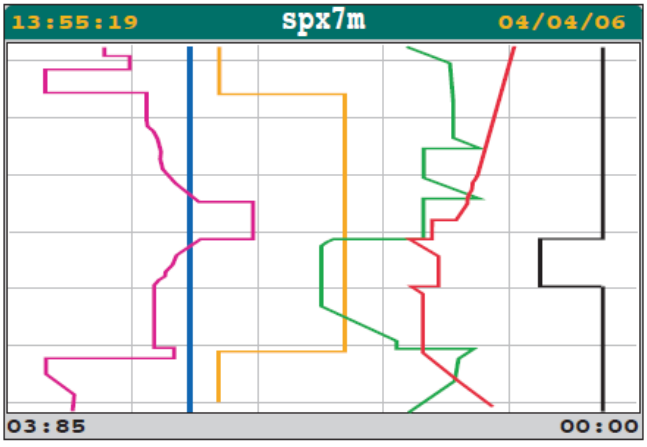


Figure 51 Vertical Full width Display Mode

Horizontal Trend with Faceplate

The horizontal trend displays are similar to the vertical trend displays. The main difference (apart from the length of data displayed and that the traces move from right to left) is the swapping of the Pan and Zoom control locations in Trend review mode.

Latest data is the right hand edge of the screen

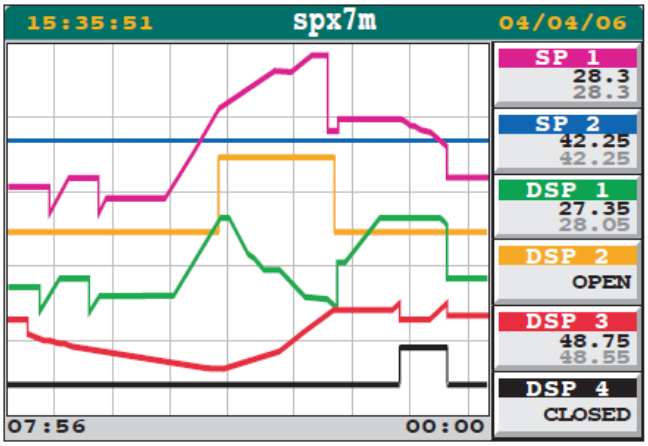


Figure 52 Horizontal Trend with Faceplates

Review Mode

The section describing 'Vertical Trend with Faceplate', above, gives full details of Review Mode.

The Cursor appears at the right hand edge of the screen for horizontal traces.

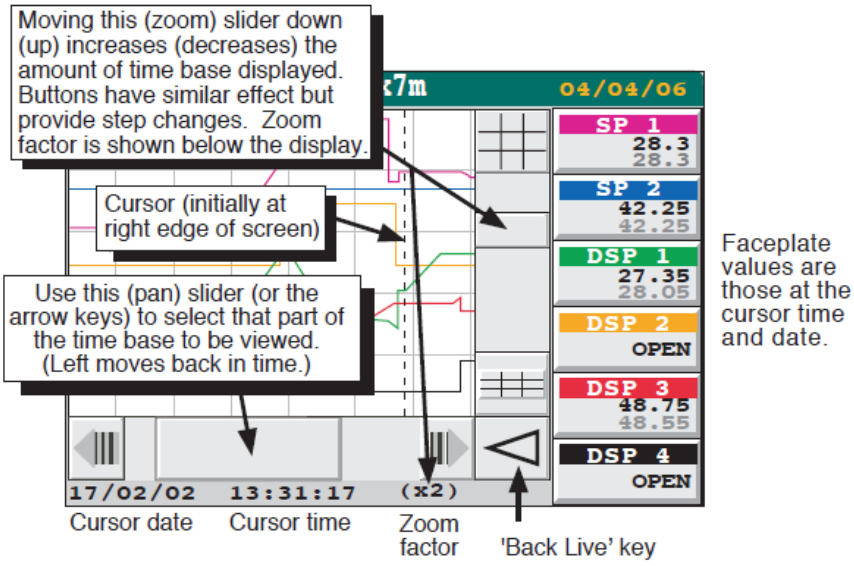


Figure 53 Trend Review Controls

Horizontal Trend - Full Width

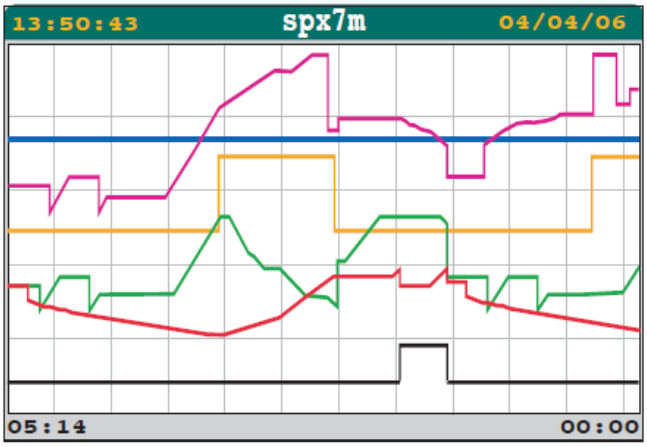


Figure 54 Horizontal Full Width

Downloading Recipes

A recipe set consists of sets of instructions (recipes) for controlling between one and eight identical production facilities. The examples below use paint mixers as an illustration of the four types of recipe available.

1. The simple recipe. This file contains references to a single set of equipment and a single set of values to be applied to the equipment (e.g. orange paint)
2. The multi-recipe. This file contains references to a single set of equipment and multiple sets of values to be applied to that equipment (e.g. orange, purple and brown paint.)
3. A multi-line recipe. This file contains a single set of values that may be applied, simultaneously, to up to four sets of equipment (e.g. orange paint to line 1, orange paint to line 2, orange paint to line 3.)
4. A multi-line, multi-recipe. This file contains multiple values that may be applied, simultaneously, to up to four sets of equipment. (e.g. orange paint to line 1, purple paint to line 2, brown paint to line 3, green paint to line 4.)

Figure 55 shows a simplistic view of example 4, and Figure 56, a sample recipe page.

Notes:

1. In cases 1 and 2 above, there is only a single line, so references to ‘lines’ do not appear in the user interface.
2. The number of recipe files that can be loaded simultaneously depends on the application. The number of files that can be loaded is defined by the number of sets (each with a separate ID). If only one set or ID is configured, then references to set IDs do not appear at the user interface.

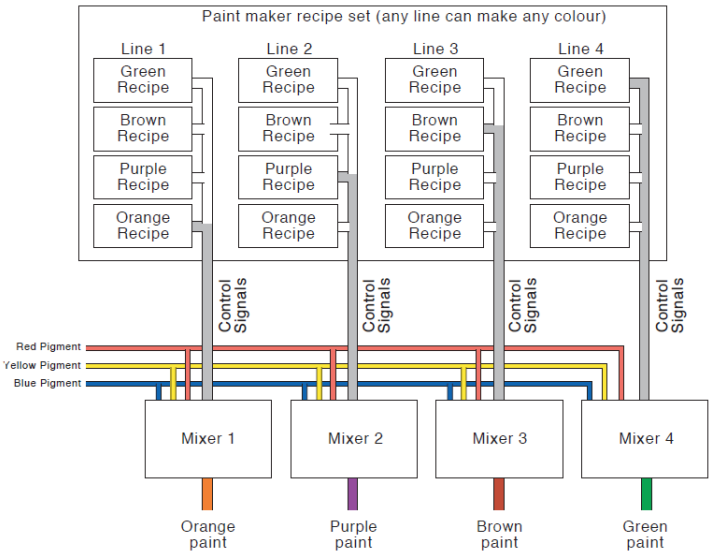


Figure 55 Four Paint-Mixer Set

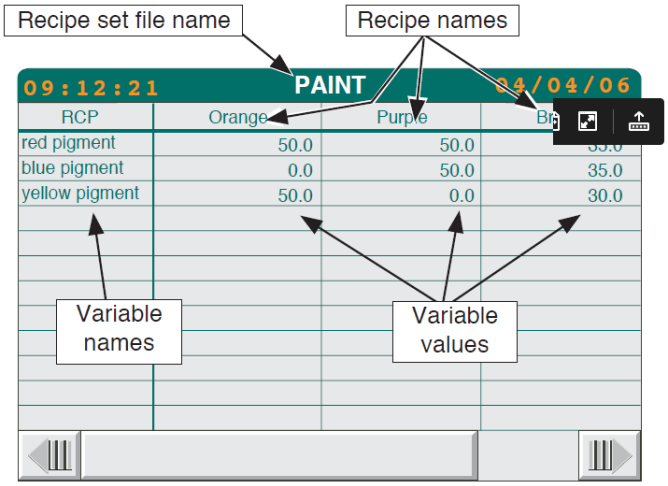


Figure 56 Sample Recipe Edit Page

Download Procedure

1. Select a recipe set ID (only if multiple recipe sets are supported).
2. Load a recipe file
3. Select a recipe line (only if multiple lines are supported)
4. Select a recipe (only if the file contains multiple recipes)
5. Download the recipe.

Recipe Set Selection

1. From the main menu, select RECIPE

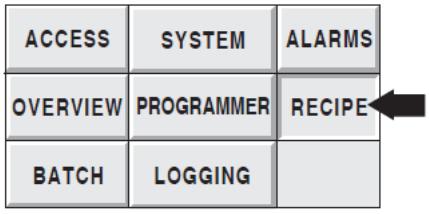


Figure 57 Main Menu

2. From the resulting pop-up menu, select RECIPES

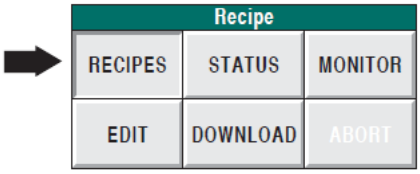
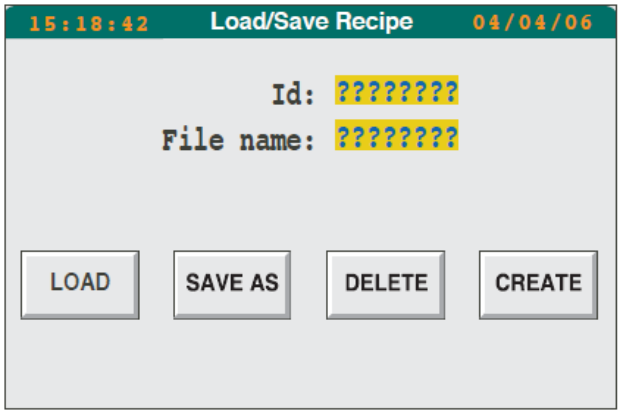


Figure 58 Recipe Menu

3. The Recipe Load/Save page appears with the recipe set ID and name of any currently loaded recipe file, or, if none, lines of question marks.

   To select a new set or recipe file, touch the ID or Filename area and select the required item from the picklist which then appears. Alternatively, the various available selections can be scrolled through, using the left/right arrow keys at the bottom of the display.



Loading the Recipe

Once the required file has been selected, operation of the load button will call the recipe menu (Figure 58). The recipe can now be loaded by operation of the DOWNLOAD key. If, however, it is necessary to select a particular recipe line, or if it is necessary to select one recipe from a number in the file, the STATUS button should be operated to display the Recipe Status page.

Note: The contents of the status page is context dependent, so it is unlikely that it will contain exactly the same fields as shown in the figures below.

Selecting a Recipe Line

If more than one line is present in a recipe set, it is possible to select which is to be the current line to which the recipe is to be down loaded. With the Recipe Status page displayed, (Figure 59), touch the yellowed Line field and select a new line from the resulting pick list. Alternatively, the down-arrow key at the bottom of the screen can be used to scroll through the available items. The file can now be downloaded by pressing the DOWNLOAD key.

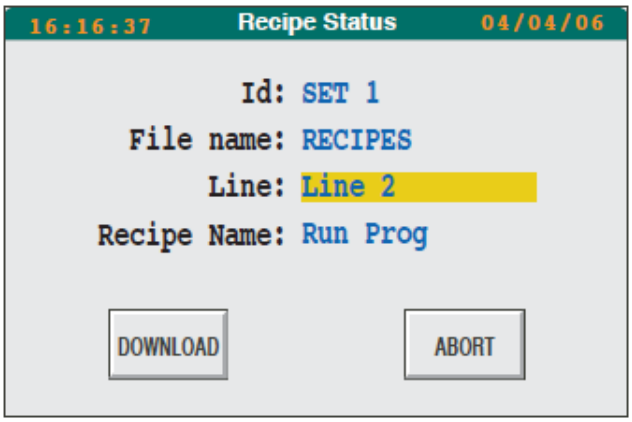


Figure 59 Status Page for Multi-line Recipes

Selecting a Recipe

If more than one recipe is present in a file, then it is possible to select which recipe is to be the current one. With the Recipe Status page selected (Figure 60), a touch on the recipe field will call a pick list from which the required item can be selected. The recipe can now be downloaded using the DOWNLOAD key.

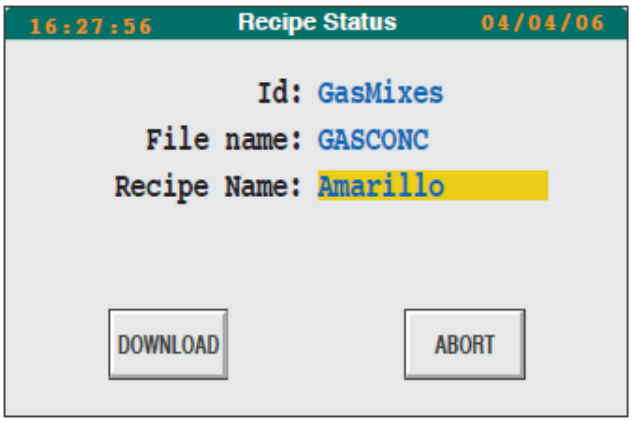


Figure 60 Status page for Recipe Selection

Monitoring the Recipe

A recipe can be monitored from the Recipe Status screen, and from the Recipe Monitor screen.

Recipe Status Page

The recipe status screen contains the File name and the Recipe name, and any one or more of the following fields:

Set ID

Line

Status (if downloaded)*

Time/date of last download

* Status can be any one of the following:

DOWNLOADING - if a download is in progress

COMPLETE - if the latest download was completed successfully

FAILED - if the previous download was unsuccessful or aborted.

Recipe Monitor Page

This page is called from the Recipe menu (Figure 58) by touching the MONITOR key. The monitor page gives recipe values in tabular form as shown below.

As can be seen, the following columns are displayed:

RCP	The recipe variables
SP	The value held in the recipe file for each variable.
SP (Live)	The current live database values for each variable. Where the SP and SP(Live) values differ, the value is highlighted in red, providing a useful diagnostic should a recipe download fail.
PV	Optional values monitored in conjunction with the recipe. Might not be present on any recipe file.
Capture	Optional values that would be captured if a recipe CAPTURE is performed. Might not be present on any recipe file.

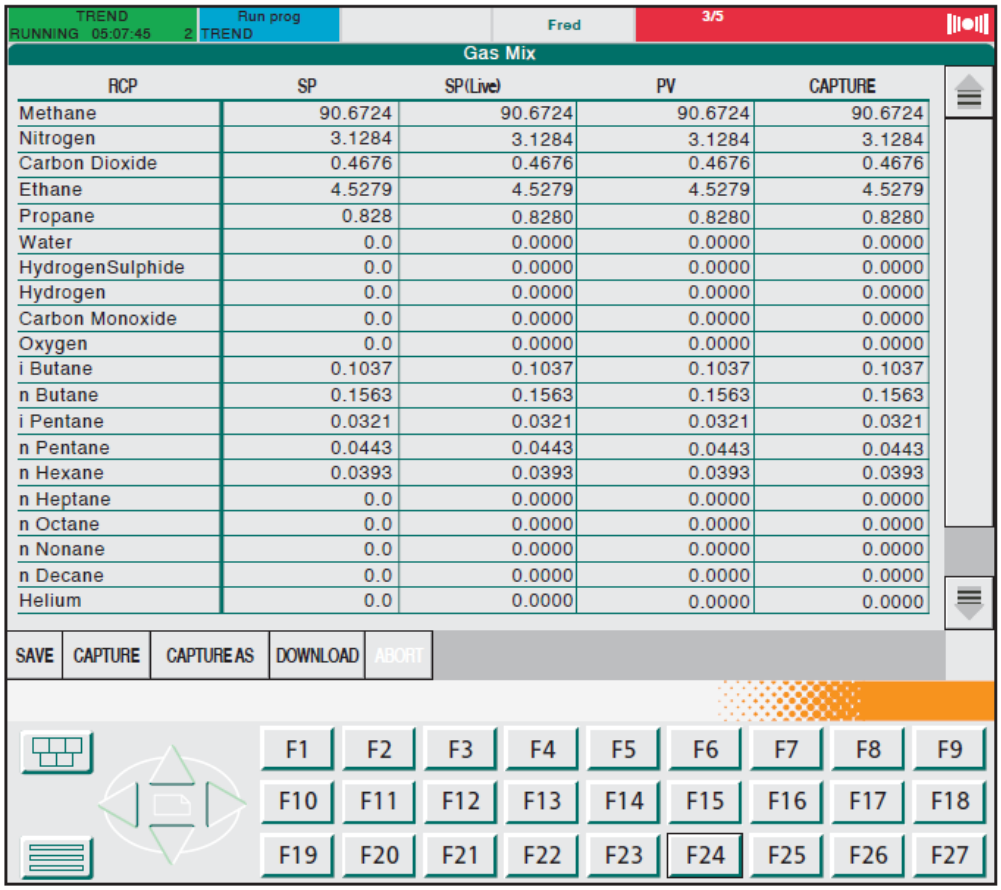


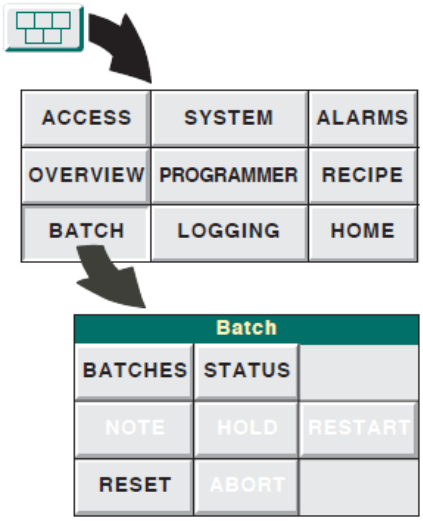
Figure 61 Recipe Monitor Page (XGA Version)

Note: For 1/4VGA units, the capture column is initially hidden, the scroll bar below the table allowing it to be viewed. This scroll bar and the SAVE/CAPTURE keys (shown above) are toggled between by means of the options key.

Batches

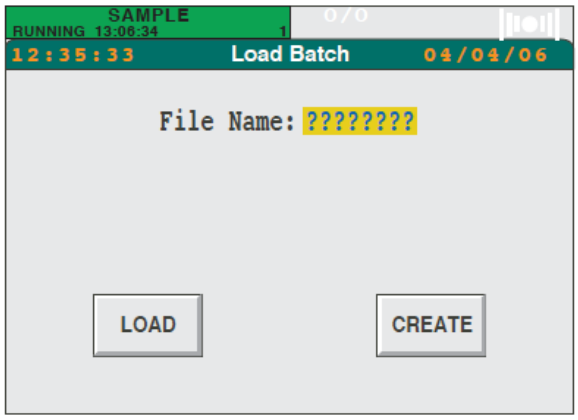
Batch Loading

1. From the main menu, select BATCH, then select Batches



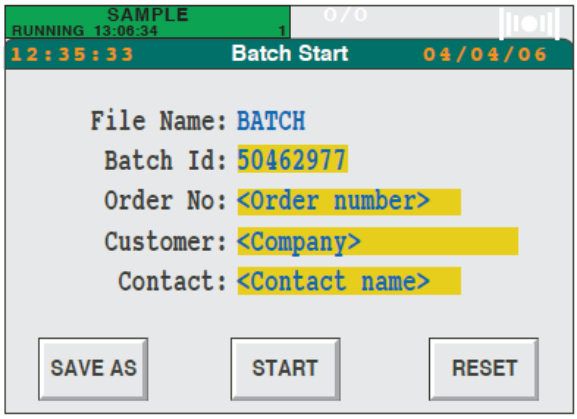
2. Touch the ID or filename area

3. Select the required item from the picklist which appears.



4. Operate the LOAD button.

Note: For the ‘Create’ function, see "Batch Create" on page 92, below.



Recipe Selection

If applicable, a specific recipe can be selected for loading, from a pick list which appears if the Recipe field area is touched.

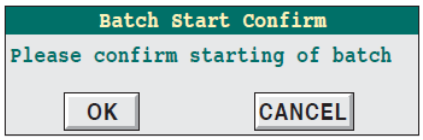
Batch Customising

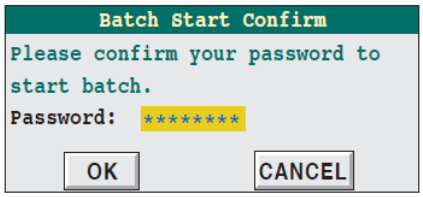
The Batch ID is initially chosen as unique by the instrument. The name can be edited in the normal way. In addition to the batch ID there can be up to six custom items (in the example shown there are three, viz: Order No, Customer and Contact). Again, these items are editable in the normal way. The titles of these custom items (e.g. Order No.) are set up using the customising techniques described in Chapter 5, below.

Batch Initiation

Once all the batch data has been entered, operation of the START key causes one of the following to occur, depending on the way in which the batch has been configured:

1. The batch starts immediately
2. A dialogue box appears asking for confirmation of Batch Start. Operation of the OK button starts the batch.
3. A dialogue box appears asking for the current user's password. Entry of the password followed by operation of the OK button starts the batch.





Batch Monitoring

The batch may be monitored from the Batch Status screen which is accessed from the main menu using the BATCH key, then the STATUS key.

The batch status screen contains all the information present on the Batch Start screen, but also includes the State of the batch, its 'Started at' and (if appropriate) 'Ended at' time and date, and phase information. If a batch message is active, an annunciator bar appears near the top of the page flashing orange/black and a question mark with orange/black flashing background appears at the left side of the alarm pane. Touching the alarm pane allows review and acknowledgement of the message.

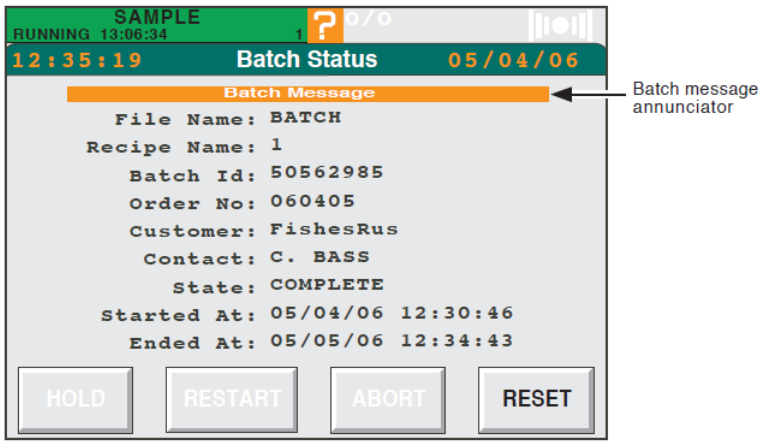


Figure 62 Batch status page

Batch Hold

With a batch running, operating the HOLD key from either the BATCH menu or the Batch Status screen, places the batch into hold mode. The batch may be restarted as required, by pressing 'RESTART'.

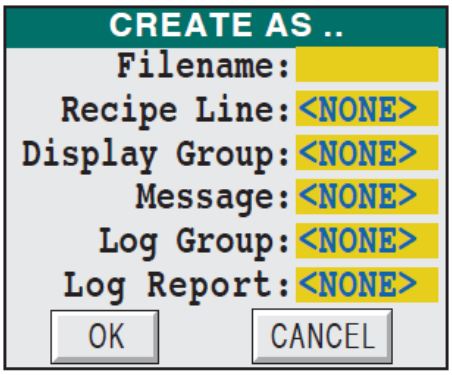
Batch Abort

With a batch running or held, operating the ABORT key from either the BATCH menu or the Batch Status screen, immediately terminates the batch.

Batch Create

A new batch can be created by operating the CREATE key from the ‘Load batch’ page described in "Batch Loading" on page 89, above.

Operation of the CREATE key causes a pick list to appear allowing the user to define batch parameters, as shown in the figure.



Filename*	Allows a filename (eight characters max.) to be entered for the Batch file.
Recipe line	Allows a recipe line to be chosen for batch action.
Display Group	Allows one of the display groups to be selected for batch action - see "Area and Group Displays" on page 74 for further details
Message	Allows a message (set up in LIN blocks configuration) to be selected for display as appropriate.
Log Group	Allows a log group to be selected for Batch action ("Logging Groups of Data" on page 104).
Log Report	A logging group may have been configured to have “reports”. In such a case, one of the log group’s report files may be selected to drive batch reports. A batch report is generated for start, stop and abort. The create facility generates an elementary report file (.UYF) which may be customised by being exported and edited (see "Report Forms" on page 217 for further details of .UYF files).

* Entry of a Filename is mandatory. Other field entries are optional.

Management

This chapter is for those responsible for setting up the instrument, for managing applications, for editing programs, and for supervising the day-to-day operation and monitoring of the instrument. ‘Engineer’ level of access to the instrument is required (see "Gaining Access" on page 45). This chapter consists of the following sections:

Editing a Program (Spreadsheet)

The editing process is carried out in one of two ways, according to the Visual Supervisor configuration. Editing a Program (Spreadsheet) describes the ‘spreadsheet’ method where the program segments and their parameters are arranged in a grid. "Editing a Program (Application Editor Version)" on page 154 describes the ‘Application editor’ method, where programs can be created and edited using a fixed set of segment types, these types being created using the ‘Programmer Application Editor’ software.

Jog Buttons

Panel customisation (see "Panel Customisation Using the Dictionary" on page 193) includes six entries (2280 to 2285) which, if included in the _USER.UYL file, cause ‘jog’ buttons to appear on the screen. Operation of these buttons moves the user forward through a segment in steps of 1 minute (entry 2281), 10 minutes (2283) or 1 hour (2285) or backwards 1 minute (entry 2280), 10 minutes (2282) or 1 hour (2284).

For example, if the items below are included in the file, then three buttons will appear with legends ‘>’, ‘<<’ and ‘>>>’. Operation of these buttons cause the segment to jump forward one minute, backward 10 minutes or forward one hour respectively.

S2281,>

S2282,<<

S2285,>>>

Note: The >, << and >>> characters are suggested as an example - any keyboard characters can be used. To ensure manageable button sizes (defined automatically), each string should be limited to 12 characters.

Introduction

Creating a Program

The PC based Setpoint program editor (supplied on CD as one of the components of the Eurotherm Project Studio) is used to create programs. For details, see the Program Editor Handbook.

Program Edit

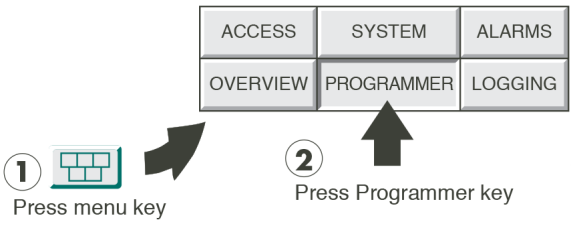
Notes:

1. The following tasks (changing setpoint value, segment duration, holdback value, rate, user value and event value) can be performed while a program is running (but on Hold). Whilst the current segment is in Hold mode, its values are displayed in green, instead of blue. It is possible to edit the duration of a non-ramping segment using 'Jog' buttons (see below), if enabled. Durations of ramping segments cannot be edited using Jog buttons.
2. The PREVIEW facility on the PROGRAMMER menu displays a profile of the loaded program over its full duration, and target values can be displayed at any point in time. This allows the user to check that any edits have produced the intended profile.
3. For systems with the Auditor option fitted, an edited program must be saved before it is run.

Program Edit Page Access

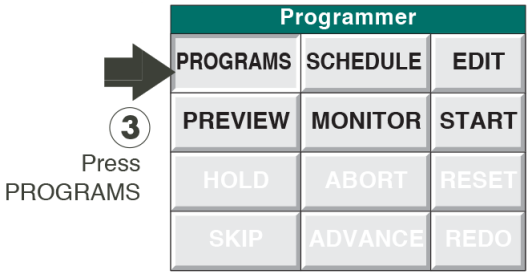
1. Press the Menu key
2. Press PROGRAMMER

The Programmer menu appears.



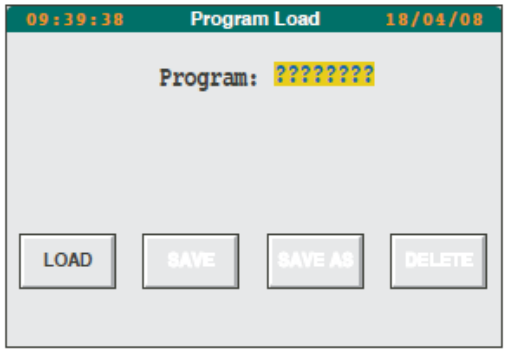
3. Press PROGRAMS

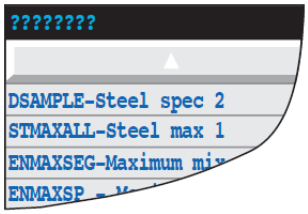
   The Load/Save Program page appears, prompting you for the name of a file to Load or Save. (To edit a program, it must first be loaded.)

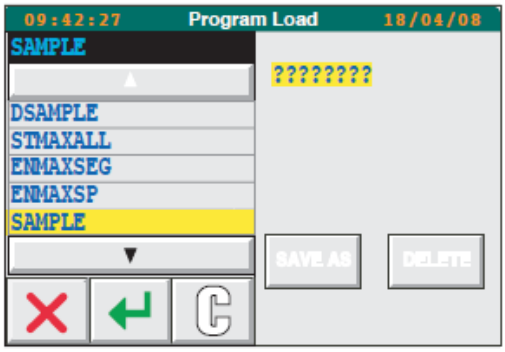


4. Press the File Name (????????) field.

   A pick-list of the available programs appears in the left-hand side of the screen. The small-frame display is shown to the right of this description. The large-frame product is similar but also includes the File Name and the Program Name, separated by a hyphen, as shown below.

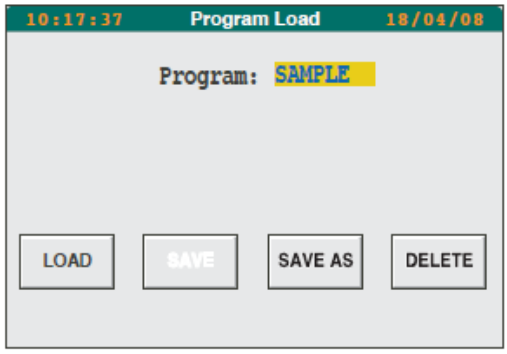






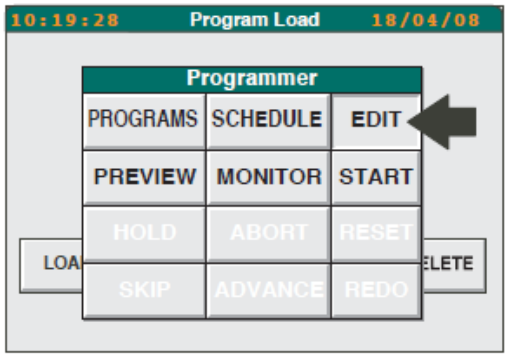
5. Press the name of the program to be edited
6. Press the green Return key

   The Load/Save program page displays the name of the selected program.
7. Press LOAD.



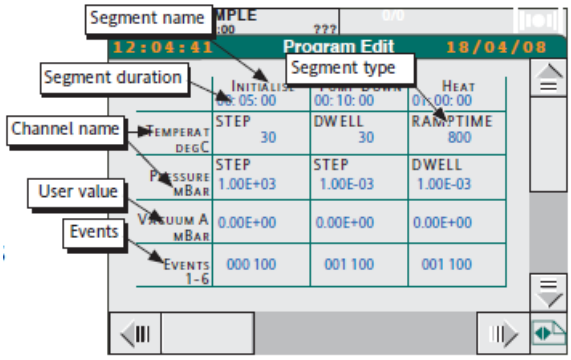
   If the program has components (parameters) which are not in the LIN database then an error message will appear and the program will not load.

   After a successful load, the Programmer menu reappears.



8. Press EDIT

   The Program Editor page appears showing various values in tabular form, starting with channels, followed by any user values and finally events.



In the default display, each column represents a segment, and each segment is identified by a name or number shown at the top of the column. Under the segment identifier is the time duration of the segment. For each channel, the type of segment is given together with its setpoint. User values show the current value of the parameter. Events are displayed as a six*-character string (large frame = 12 characters), which can be decoded by touching the relevant cell to display the event status.

The default screen can be edited as described in "Option Keys" on page 101, below. This allows, amongst other things, segment start and end times to be added and events to be listed individually.

Segment Name

Touching on a segment name cell produces a ‘Segment details’ pop-up. Figure 63, below shows the default view.

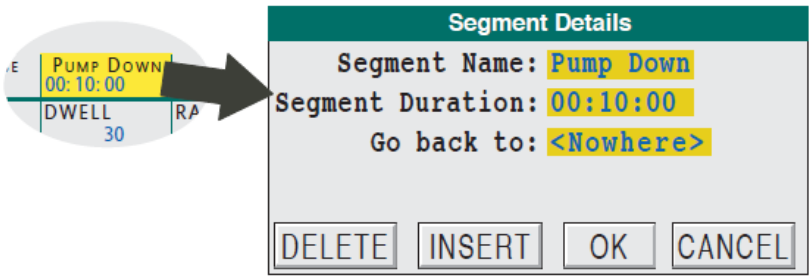


Figure 63 Segment Details Default

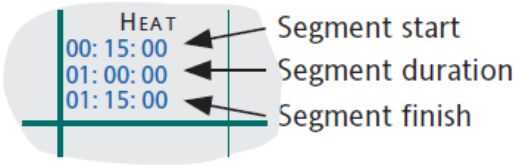


Figure 64 Segment Time Display Options

Segment Name	Allows the segment name to be edited if required.
Segment Start	If selected for view (using the Editor ‘Layout’ key described below) this shows the segment start time relative to the start of the program. Not shown in Figure 63 above.
Segment Duration	Allows the segment duration to be edited.
Segment Finish	If selected for view (using the Editor ‘Layout’ key described below) this displays the segment end time relative to the start of the program. Not shown in Figure 63 above.
Go back to	This allows a specific segment to be selected (from a picklist) to be returned to, once the segment has completed. In our example, ‘Pump Down’ is the second segment, so only ‘Initialise’ and ‘<Nowhere>’ appear in the picklist.
DELETE	This key allows the user to delete the segment from the program. The segment is deleted without confirmation.
INSERT	Allows the user to insert a new segment, which appears immediately before the current segment. The segment is named ‘n’, where ‘n’ is the number of the segment. For example, if the new segment is the fourth segment it is named ‘4’. By default the segment type is ‘Dwell’ and the default value is the target value of the previous segment.

OK, CANCEL	OK accepts the new edits and closes the window; CANCEL ignores any edits and closes the window.

Channel Name

Touching a Channel Name cell causes a pop-up window to appear, with the same title as the channel. As shown in Figure 65 below, this window gives access to a number of parameters, depending on whether this is a one channel application or multi-channel.

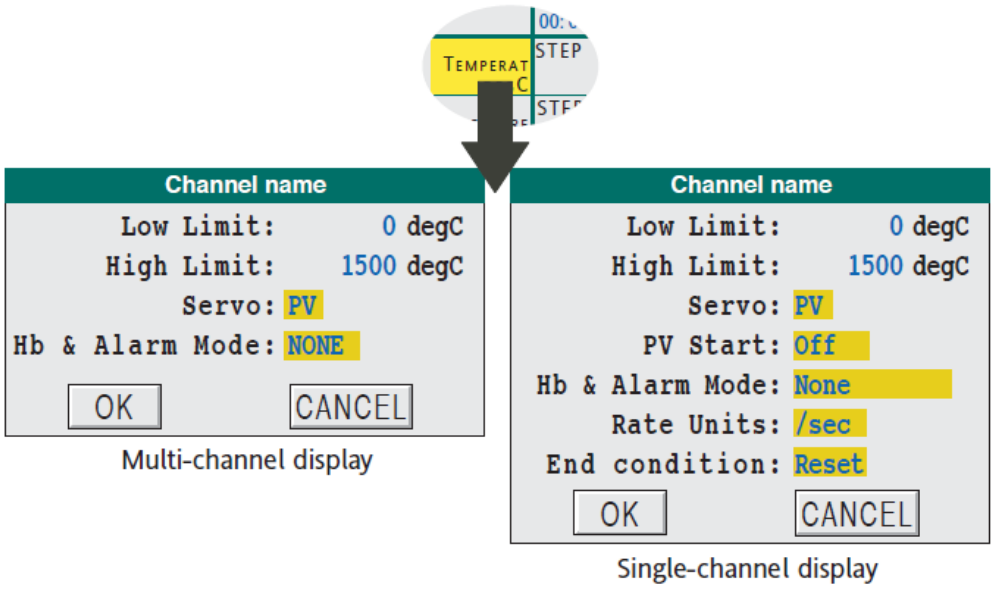


Figure 65 Channel Name display

Low limit	The low limit for the channel.
High Limit	The high limit for the channel.
Servo	Off: No servo applied at start up.
	PV: The unit reads the current setpoint value, and sets the setpoint to that value (that is, it does not change it). Similar to 'Dwell' except that the instrument carries out the instruction automatically (without operator intervention). As there is no change, power output remains constant. Used only at the beginning of the program.
	SP: The instrument reads the current process value and sets the setpoint to that value. Because the current process value normally differs from the current setpoint value, this option usually results in a change in the power consumption of the process. Used only at the beginning of the program.
PV Start	Appears here for single channel applications only. See 'Properties' in "Option Keys" on page 101, below for multi-channel applications.
	Off: the program starts at the beginning of the first segment.
	Rising: the program advances to the first rising segment that contains the current PV.
	Falling: the program advances to the first falling segment that contains the current PV.
Hb & Alarm Mode:	None: No holdback or alarms used on this channel throughout the program.

PerProg: The holdback value used in segment one is used throughout the program on this channel.

PerSeg: Each segment uses its own holdback value.

Rate Units — Choose '/sec', '/min', '/hour' or '/day' as units for Ramp Rate segments (does not appear for multi-channel applications, because 'Ramp Rate' is not allowed as a segment type).

End condition — Appears here for single channel applications only. See 'Properties' in "Option Keys" on page 101, below for multi-channel applications.

Reset: returns the setpoint value to the first segment start value

Dwell: the program remains at its end value(s) until restarted.

Segment Type

Touching a Channel Segment Type cell causes a pop-up window to appear, with the same title as the channel. As shown in Figure 66, this window gives the segment name (view only) and two configuration items: 'Segment Type' (Step, dwell, ramp rate, ramp time) and 'Target'.

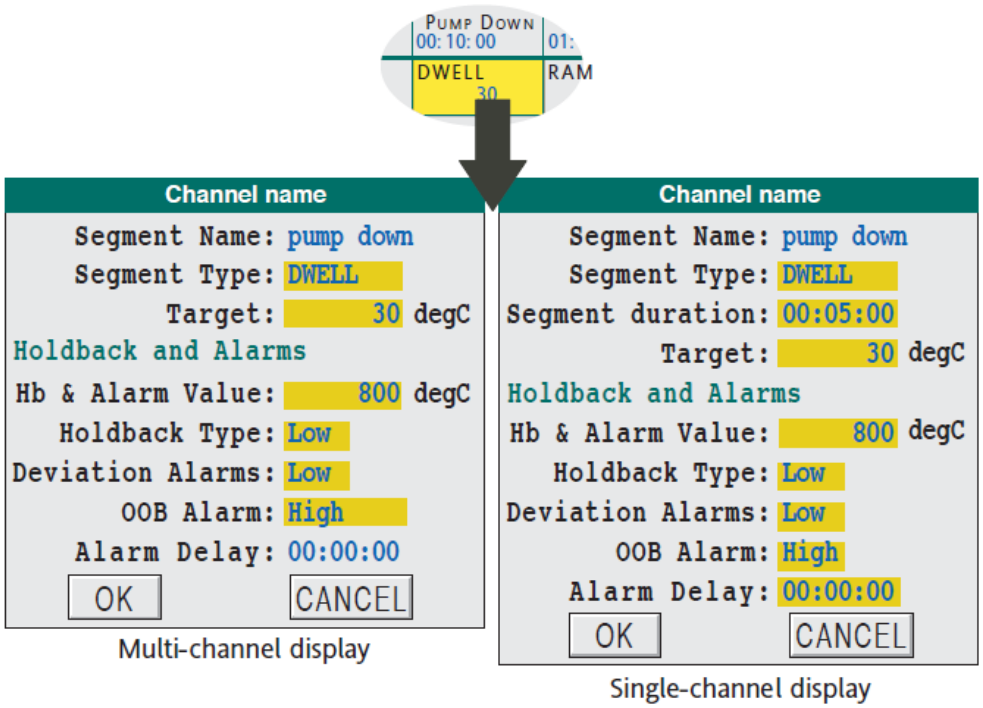


Figure 66 Segment Type Displays

Segment Name — The name of the segment - not editable in this window.

Segment Type — Allows the user to select from:

STEP: Setpoint is set to the Target value immediately, and remains there for the remaining segment duration.

DWELL: Segment value remains constant at the finish value of the previous segment.

RAMPTIME: The setpoint value ramps linearly from the current value to the Target value over the segment duration time.

	RAMPRATE: The setpoint value ramps from the current value to the Target value at the specified rate. Segment duration is set to (New Target - Old Target)/Rate.
Target	Allows the user to enter target setpoints, ramp rates etc. Not editable for Dwell segments.

Notes:

1. A segment may not ramp at less than 0.001 or greater than 9999.0 whether expressed explicitly in a ‘Ramprate’ command, or implicitly in a ‘Ramptime’ command. Values outside this range cause the segment to execute a ‘step’ function.
2. It is possible to make changes to any target setpoint, thus affecting the program ‘time remaining’ value. Where changes have been made to segments that have already been executed, the trend shape and the cursor position in the Monitor display may be incorrect; the Monitor ‘time remaining’ and faceplate setpoint values will, however, be accurate for the current program cycle. The situation is self correcting in that the cursor position and graph shape will be accurate next cycle or program run.

Holdback and Alarms

This section appears only if ‘Hb & Alarm Mode’ is set to a value other than ‘NONE’ in ‘Channel name’ ("Channel Name" on page 97).

Hb & Alarm Value	Appears only if ‘Hb & Alarm Mode’ is set to ‘per Segment’ in ‘Channel name’. Allows a Holdback value to be set for this segment.
Holdback Type	Appears if ‘Hb & Alarm Mode’ is set to ‘per Segment’ or ‘per Channel’ in ‘Channel name’. Allows the user to select ‘None’, ‘Low’, ‘High’ or ‘Band’.
Deviation Alarms	Appears if ‘Hb & Alarm Mode’ is set to ‘per Segment’ or ‘per Channel’ in ‘Channel name’. Allows the user to select ‘None’, ‘Low’, ‘High’ or ‘Band’.
OOB alarm	Appears if ‘Hb & Alarm Mode’ is set to ‘per Segment’ or ‘per Channel’ in ‘Channel name’ ("Channel Name" on page 97). Allows the user to select ‘None’, ‘Low’, ‘High’ or ‘Band’. Alarm is set (latched) if any channel PV has been out of bounds during program execution and clears only when the program is reset.
Alarm delay	Appears only if ‘Hb & Alarm Mode’ is set to ‘per Segment’ or ‘per Channel’ in ‘Channel name’ ("Channel Name" on page 97). Allows the user to enter a delay such that if a value returns to a non-alarm state from an alarm state within this time, then the alarm is ignored.

User Values

Touching a User Value title cell (to the left of the thick vertical bar), causes a pop-up window to appear, with the same title as the channel. The pop-up contains non-editable values for High and Low limits.

Touching a user value segment cell causes a pop-up window to appear, with the same title as the channel. As shown in Figure 67, this window gives the segment name (view only) and a one editable item: ‘Value’.

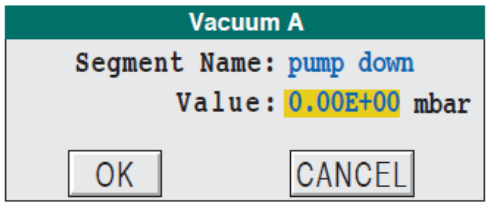


Figure 67 User Value Segment Display

Event Displays

Compressed Events

By default, event status is coded in groups of six (e.g. Events 1 to 6, Events 7 to 12) for the small-frame unit or in groups of 12 for the large-frame unit. An example of such a code is: 100 100, indicating that Events one and four of the group are active and events two, three, five and six are not active. Touching the relevant cell produces a display showing what the actual events are, and allowing their status to be set:

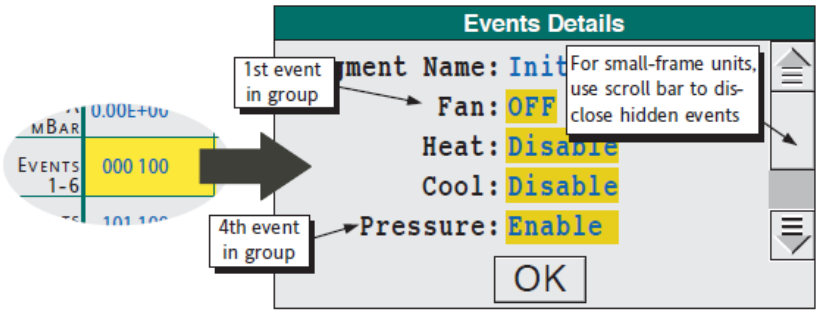


Figure 68 Compressed Events

Uncompressed Events

The Editor ‘Layout’ display (described in "Option Keys" on page 101 below) can be used to disable ‘Compressed events’, in which case, each event appears as a separate row. Touching the relevant segment cell produces a display allowing the status of the individual event to which the cell relates, to be edited.

Wait and Exit Conditions

Each segment can have a a number of wait conditions (Open*, Closed*, NoWait) applied. These conditions are displayed as described for compressed events, above.

‘Open’ means that the segment will wait until the relevant input is open; ‘Closed’ means that the segment will wait until the relevant input is closed; No wait means that the condition is ignored. If any of the wait conditions is true, then the segment waits.

‘Exit’ is similar to ‘Wait’ except that the segment terminates immediately on any of the conditions becoming true. Exit is not applicable to Ramp segments.

Note: The actual text which appears is defined in programmer configuration. ‘Open’ and ‘Closed’ are used here only as examples.

Option Keys

A number of keys (Figure 69) can appear at the lower edge of the screen, when the Option key is operated. On the small frame unit, the Option key must be operated a number of times to ‘scroll through’ the complete set of keys. On the large frame unit, all the keys are displayed simultaneously.

Figure 69 Option keys

Load

Produces a picklist allowing the user to select a different program

Save

Saves (without confirmation) the current program, including any edits.

Save As

Allows the current program to be saved with a different Program name and/or File Name.

New

Allows the user to create a new program - initially containing just an ‘End’ segment. Further segments are added by touching the End’ segment cell and Inserting a segment as described in "Segment Name" on page 96, above.

Properties

Calls the program ‘properties’ window shown in Figure 70 below.

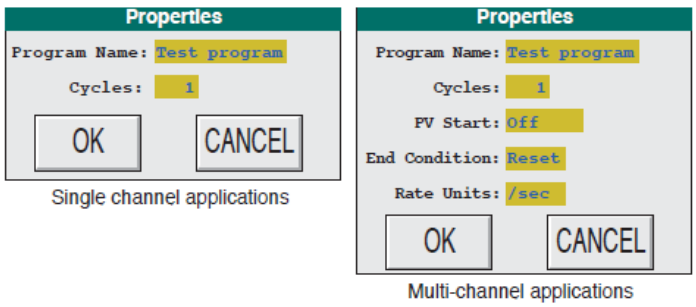


Figure 70 Properties Page

Program Name	Allows the program name to be edited.
Cycles	Allows the user to specify the number of program cycles (up to 999) to be performed. A value of 0 causes the program to execute continuously for a maximum of 65535 cycles or until stopped.
PV Start	Appears here for Multi-channel applications only; located in ‘Channel’ ("Channel Name" on page 97) for single channel applications.

	Off: the program starts at the beginning of the first segment.
	Rising: the program advances to the first rising segment that contains the current PV.
	Falling: the program advances to the first falling segment that contains the current PV.
End condition	Appears here for Multi-channel applications only; located in ‘Channel’ ("Channel Name" on page 97) for single channel applications.
	Reset: returns the setpoint value to the first segment start value
	Dwell: the program remains at its the end value(s) until restarted.
Rate Units	Choose ‘/sec’, ‘/min’, ‘/hour’ or ‘/day’ as units for Ramp Rate segments.

Layout

Allows to enable/disable a number of display layout features.

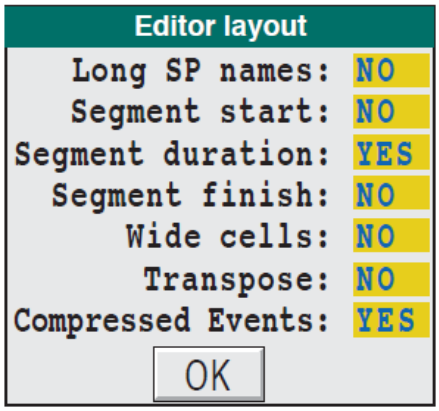


Figure 71 Layout Page

Long SP names:	YES’ Allows non-truncated parameter / channel names to appear.
	‘NO’ truncates segment and parameter names to eight characters.
Segment Start	‘YES’ causes the segment start time (relative to program start time) to appear under each segment name.
Segment duration	‘YES’causes the duration of the segment to appear under each segment name. If ‘Segment Start’ is enabled, Segment duration appears after Segment start.
Wide Cells	Increases the width of the cells.
Transpose	This field appears only for the large frame unit an allows the display to appear with the sements arranged vertically and the channels/user vaues etc. to appear across the top (Figure 72).
Compressed events	If ‘YES’, the event fields appear as a string of ‘1’s and ‘0’s according as the event is active or not. See "Event Displays" on page 100, above, for details.

Views

Allows the user to add different views of the process to the Edit display. These are all described in "Running a Program" on page 53 to "Monitoring a Program" on page 62 for the small-frame version of the instrument. Figure 72 and Figure 73, below show the large-frame instrument.

Preview	adds a graphical representation of the program.
Monitor	adds a graphical representation of the process, but includes the various monitor keys.
Schedule	adds details of scheduled start and stop times.

Revision

Shows how many times the program has been changed since ‘New’; also shows the date and time of the latest edit.

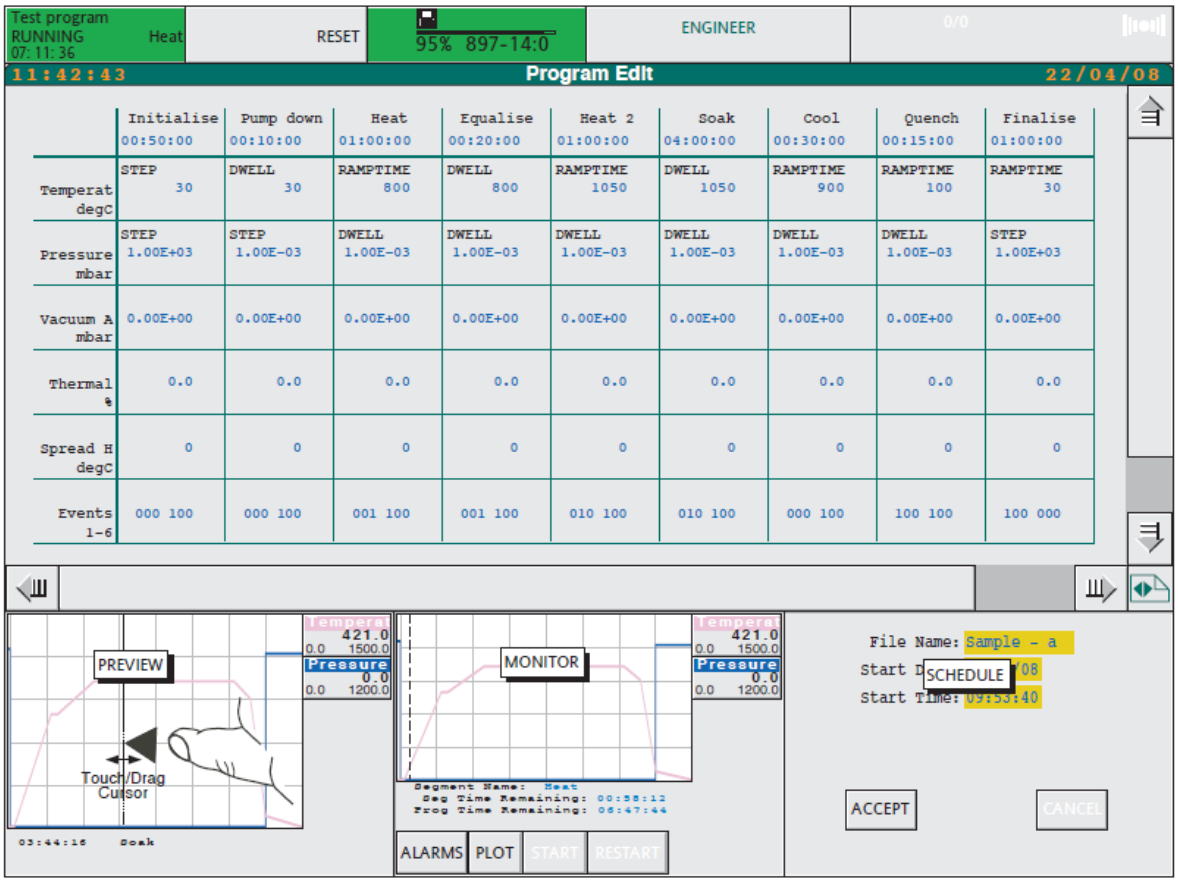


Figure 72 Edit Page - Large Frame Unit with Preview, Monitor and Schedule Displayed

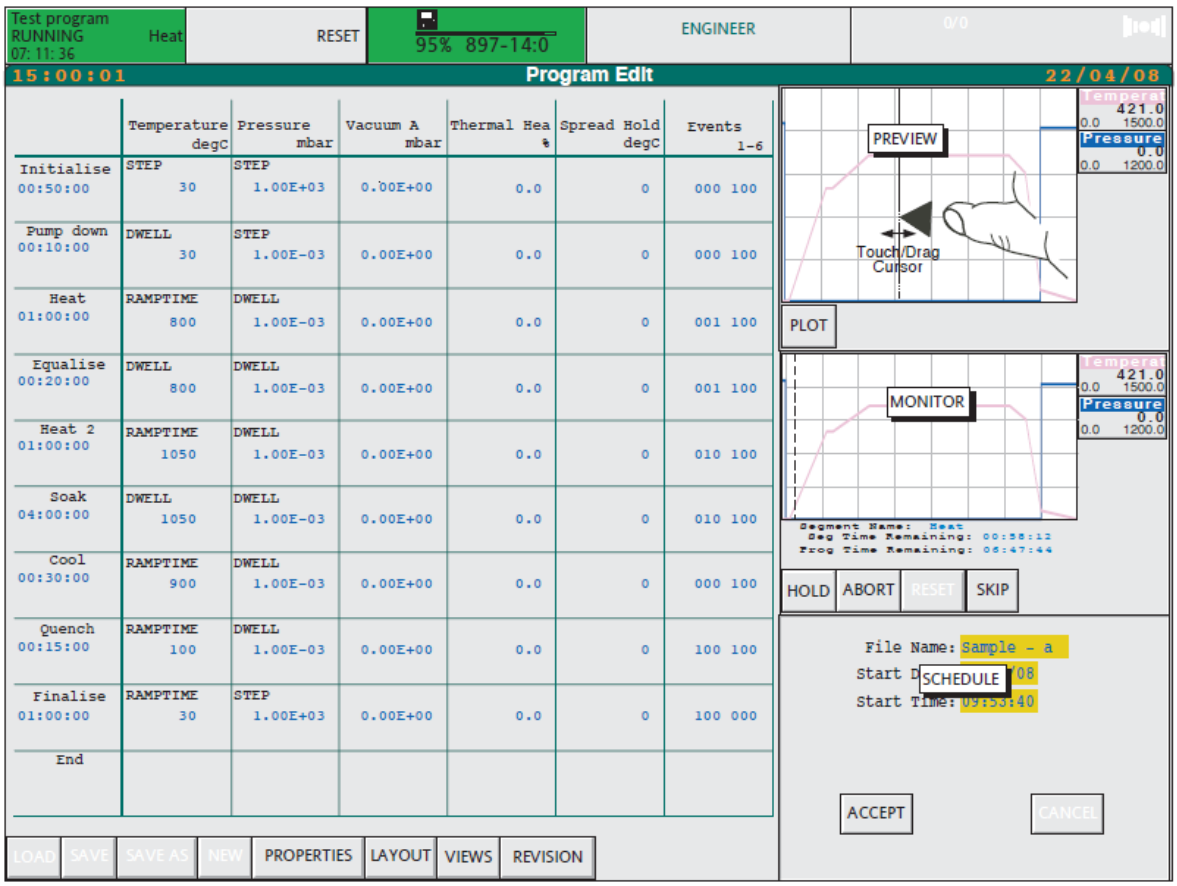


Figure 73 Edit Page - as Figure 72 but with Transpose = YES (In LAYOUT) and Option Key Operated

Logging Groups of Data

A ‘group’ is a set of up to 16 data values that are recorded to one file. The data can be drawn from the same source or from different sources. If from the same source, the data can be recorded at different data rates, with each data rate assigned to a different group.

It is possible to record just one group, or several groups simultaneously. If several groups are to be recorded simultaneously, the groups can be saved to one file or to separate files. Archiving to one or more remote computers using FTP is described in "FTP Transfer" on page 107, below.

Typically, logging groups of data is used for:

1. General audit records (for subsequent analysis with MS Excel, for instance)
2. Quality control of product and plant
3. Monitoring staff performance.

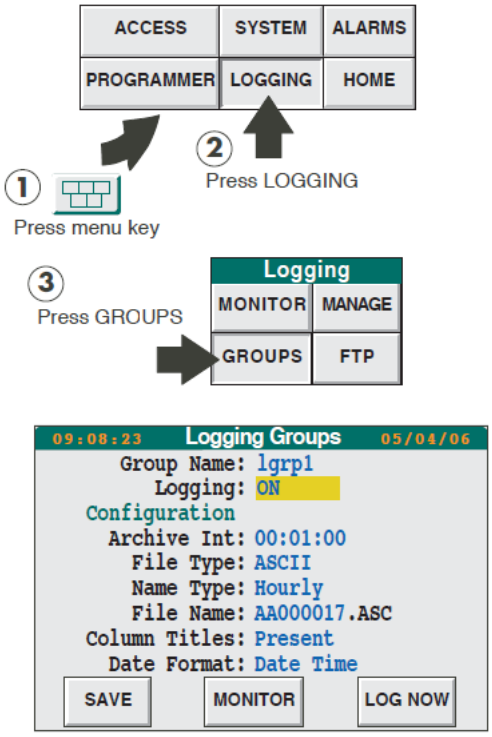
Log Initiation

1. Press the Menu key then LOGGING, then GROUPS

   The Logging Groups page appears, showing data for a single group.

   To scroll between groups, press either the < or > keys can be used.

   For any group, the fields are as follows:



GROUP NAME — This is an identifier given to each group of data. To name a file or to change a file name, first turn 'Logging' to 'OFF' (see next paragraph), then re-enter the name.

LOGGING — This shows 'ON', 'OFF', or 'TRIGGER'. What is shown depends upon whether logging is currently on, off, or set to start when an event is triggered. (The event is specified by the customer and is configured at the factory or by the OEM.)

To change the current setting, press the yellowed Logging field and select ON, OFF or TRIGGER as required, then press ENTER. The Logging Groups page now shows the new setting against 'Logging'.

Log Configuration

The remaining fields concern the configuration of the files to be logged. To change any of these fields, Logging must be selected OFF as described above.

Archive Int — This is the interval at which data is archived during the logging process. The maximum rate is 1 file per sec: for example, 1 file @ 1 sec, 3 files @ 3 secs. If a 'faster' rate than this is entered (for example, 4 files each @ 2 secs) then the specified rate may not be reached, in which case data samples will be lost.

The default format for this field is hh:mm:ss, but this can be changed (see "Setting Up and Re-Setting the Instrument" on page 125).

Values are entered using the numeric keyboard that appears on the left of the screen when the field is touched.

File Type — ASCII

This human-readable file type is for importing into standard, commercial spreadsheets. Files of this type have extensions of the following type: .ASC, .AS1 to .AS9 or .A01 to .A99. Any file name type may be used.

Uhh

UHH files can be interpreted only by Review software. UHH files can have only Sequence file names. If ‘Hourly’ or ‘Daily’ is selected, then new Uhh sequence files are created at hour or day boundaries respectively. The file extension is .Uhh.

Name Type	Text This results in a continuous file that starts when logging is initiated and stops when logging is stopped. Hourly Logs data in hourly blocks starting on the hour. Each log is written to a different file name. Daily Logs data in 24 hour blocks starting at midnight. Sequence Logs data in sequentially-numbered continuous files.
File Name	The operator specifies the first two letters and the remaining six are assigned automatically by the instrument, starting at 000001, and incrementing each time a new file is started.
Column Titles	This field appears only if ‘ASCII’ is selected as File Type. Pressing the currently-displayed option causes a picklist to appear allowing the user to select ‘Present’ (column titles included in log) or ‘Absent’, (column titles are not logged).
Date Format	This field appears only if ‘ASCII’ is selected as the file type, and is used to select the format for the date/time or duration stamp recorded in the file, by means of a picklist containing the formats described in Table 5.
Compr Ratio	Not supported by this release of software. If ‘Binary’ is selected as File Type, then Compr[ession] Ratio replaces Column Titles and Date Format. Compression ration can be selected, from a pick list, to be either Normal or High. Normal provides an exact copy whilst High compresses the data more than ‘Normal’ but with a slight loss of accuracy.

Once configuration is complete, SAVE should be operated:

SAVE	Saves the specifications for future logging.
MONITOR	Calls the Logging Monitor page.
LOG NOW	For ASCII files only, LOG NOW logs a sample immediately it has been selected. This manual initiation can be used to take samples as and when required, in addition to samples taken under timed logging.

FORMAT	ABS/REL	EXAMPLE	DESCRIPTION
Date Time	Absolute	25/09/98,10/30/00	Choose this format to set up the program to accept the date and time as dd/mm/yy,hh:mm:ss. The first example in the pre¬vious column means 25 September 1998 at 10.30 am.
		09/25/98,10/30/00	The date format can be set to be mm/dd/yy, as described in "Changing Language and Date/Time Formats" on page 136 below. The second example expresses the date and time in the new format.

FORMAT	ABS/REL	EXAMPLE	DESCRIPTION
Spreadsheet	Absolute	36068.51	Choose this format for data to be exported to a spreadsheet. The format is a single floating point value, the integer part of which is the number of days since 31 Dec 1899 at 0 hours and the decimal part is the proportion of the day since midnight. For example, a value of 1.5 would represent 1 Jan 1900 at noon. The example in the previous column represents 30 September 1998 at 10 mins and 5 secs past midday (that is, 30/09/98 at 12:10:05).
Integer	Absolute	980930121005	An integer count of seconds since 31 Dec 1899 at 0 hours.
Duration	Relative	00:04:30:00	A text format for expressing the time since start of logging. The example represents 4hrs 30mins since start of logging.
Days	Relative	0.1875	Choose this format for data to be exported to a spreadsheet. A single floating point value. The example represents 4hrs 30mins since start of logging.
DHMS	Relative	00032000	Days Hours Minutes Seconds since start of logging. The example represents 3hrs 20mins since start of logging.

Table 5: Date Formats for Logs

FTP Transfer

The FTP transfer mechanism allows the instrument to act as a FTP client to up to three FTP servers for the purpose of transferring the internal archive files to a remote computer. If more than one FTP server is configured then the transfer may be configured to operate in either multiple copy or single copy mode.

Notes:

1. The FTP Ethernet port must be correctly configured in the Comms set up page ("Editing Communications Parameters" on page 125)
2. The host computer must be set up as an FTP server (this procedure depends on the FTP server software being used).
3. Transfer frequency (daily, hourly etc.) is as configured in the LOGDEV LINTools block.

Multiple Copy Mode

Every file is transferred to every configured FTP server so that every relevant remote computer receives every file.

Single Copy Mode

In this mode only one copy is made of each internal archive file. The instrument attempts to send this file to the first configured server but if the transfer fails then it will attempt the second and if that fails then the third (if configured).

Configuration

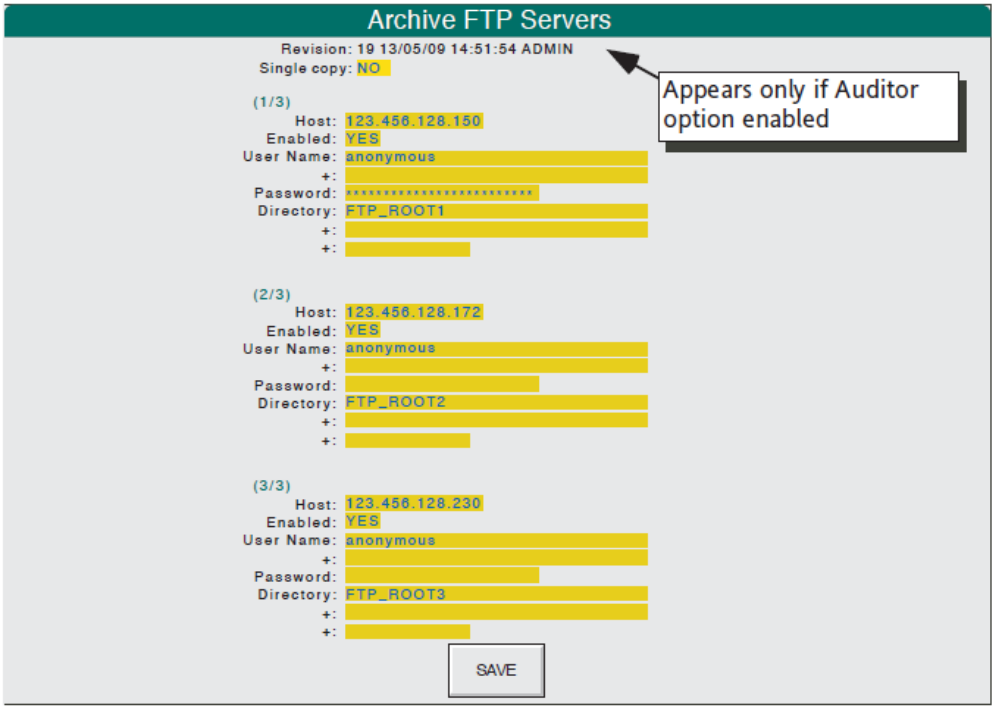


Figure 74 Archive FTP Servers Configuration Page

Revision	Information appears only if the Auditor Option is enabled.
Single Copy	If TRUE then single copy mode is used, otherwise multiple copy mode is used.
For each remote computer server:	
Host	The IP Address of the remote computer which is running the FTP server.
Enabled	If set FALSE then this server is not in use.
User Name	The user name to be used when logging in to the remote computer. If more than 40 characters are required, both fields must be used.
Password	The password (max. 24 characters) to be used when logging in to the remote computer (this value is not displayed for security reasons).
Directory:	Known as an' FTP virtual directory', this is the directory (folder) on the remote computer where the files are to be stored. For security reasons FTP servers normally permit access only to a limited area of the host computer by re-mapping the directories. It is the re-mapped name that must be entered here. If more than 40 characters are required, two or three fields must be used.

The instrument must be power cycled to effect the changes.

Managing an Application

This section describes the stopping, saving, starting, unloading, loading, running and deleting of applications, using the STOP, SAVE, START, UNLOAD, LOAD, LD+RUN and DELETE keys that appear at the foot of the Application Manager page.

UNLOAD and DELETE: For many processes, the Visual Supervisor will control one application all the time. This will be loaded and run at commissioning, or soon after, and thereafter will never be unloaded and will never be deleted. For many processes, therefore, UNLOAD and DELETE will not be used.

STOP, SAVE and START: All processes will use STOP, SAVE and START because an application has to be stopped to save application data (to preserve cold-start values if they need changing). This is true even if the process runs only one application. START simply restarts an application after a SAVE.

LOAD and LD+RUN: All processes require a LOAD or LD+RUN at least once.

These tasks are described under the following headings:

Displaying the Application Summary page (page 109)

Displaying the Application Manager page (page 110)

Stopping an application (page 111)

Saving application data (page 112)

Unloading an application (page 113)

Loading an application, or Loading and running (page 113)

Deleting an application (page 114)

Function Block Manager (page 114)

If the very first application is being loaded and run on an instrument, LOAD and then START, or just LD+RUN will be used. If an application is already running and it is to be replaced by another, the sequence from Displaying the Application Manager page to Loading an application (or Loading and running) should be referred to.

Application Summary and Function Block Manager provide useful summaries and overviews at any time.

Application Summary Page

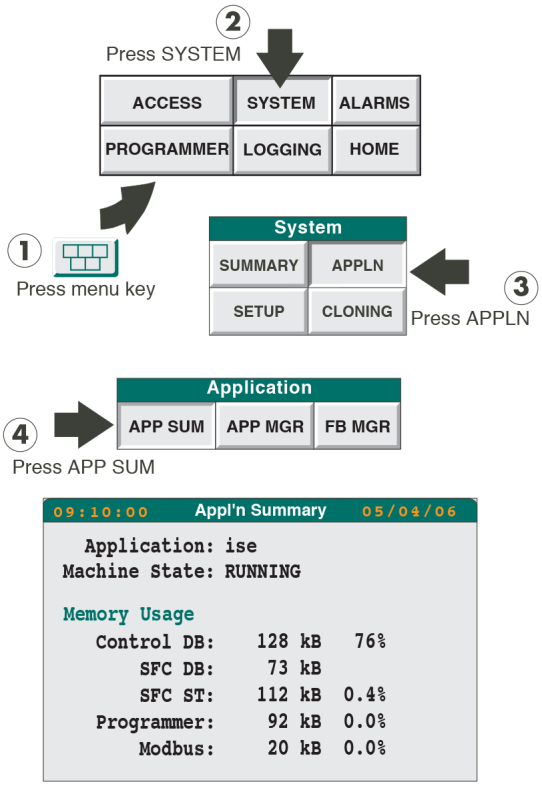
This page displays the percentage of the instrument's various memory resources that are currently in use.

Press the Menu key and select SYSTEM from the pop-up menu.

Select APPLN then APP SUM.

The Application Summary page appears, showing:

1. the name of the loaded application,
2. its state (RUNNING, IDLE, or STOPPED),
3. data about memory usage.



Application Manager Page

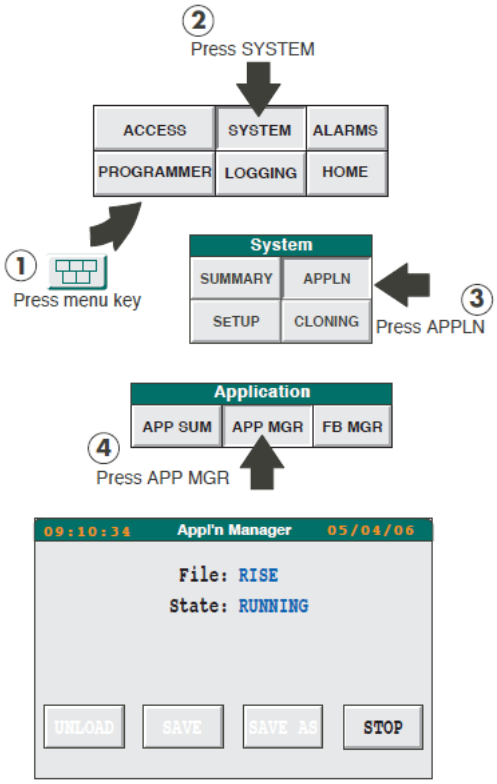
Note: If the Terminal Configurator is being used, the Application Manager page will not be accessible. Conversely, if the Application Manager page is being used, the Terminal Configurator will not be usable.

Press the Menu key and select SYSTEM from the pop-up menu.

Select APPLN from the SYSTEM window to display the Application window.

Select APP MGR.

The Appl'n Manager page appears, displaying the name of the current application and its state (i.e. RUNNING, IDLE or STOPPED.

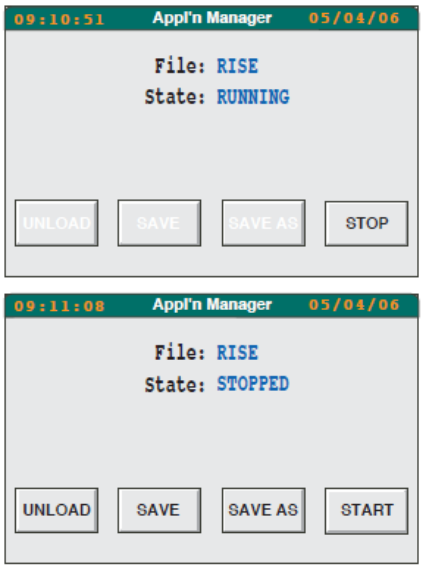


Stopping an Application

With an application running the Appl'n Manager page appears (except for the actual file name) as shown in the figure.

To stop the application, press STOP

The display confirms that the application has STOPPED,



Note: While an application is STOPPED, the Logging and Programmer facilities will be suspended. The duration of the current segment will be extended by the length of time the application stays STOPPED. Stopping an application during a critical operation is not recommended.

The keys at the bottom of the display offer four options:

Unload the application, without first saving the application data, typically prior to selecting a new application, or cloning a new one.

SAVE the application data, typically because the Cold Start values have changed (usually from the Terminal Configurator).

SAVE the data as a different file (SAVE AS).

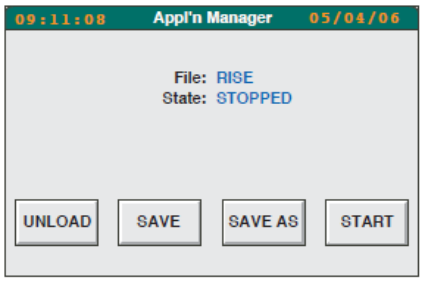
START the application again.

SAVE, SAVE AS and START are covered in the next section.

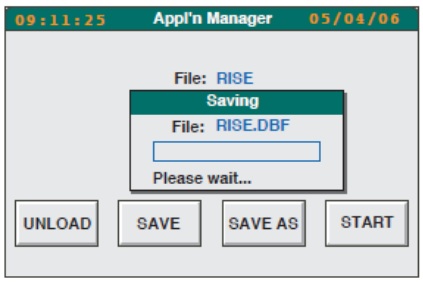
Note: Any application data saved will not include the current setpoint program.

Saving Application Data

The application must be stopped before application data can be saved.

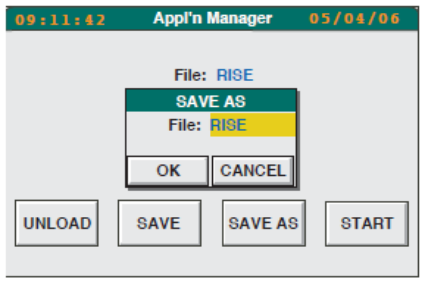


Select SAVE



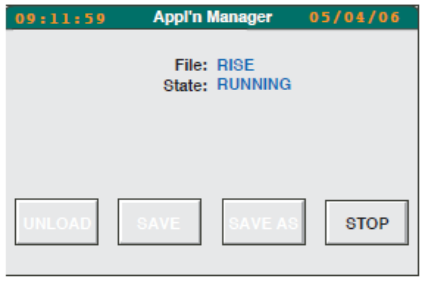
Saving starts, confirmed by a ‘Saving’ window.

To save the current application data under a different name, select SAVE AS.



A ‘SAVE AS’ window appears, with a yellowed field into which another file name can be entered if required (not shown).

To re-start the application, select START



The Appl’n Manager page reverts to its opening display, reporting the current application running.

You can also use START to start another application that you might have loaded.

Unloading an Application

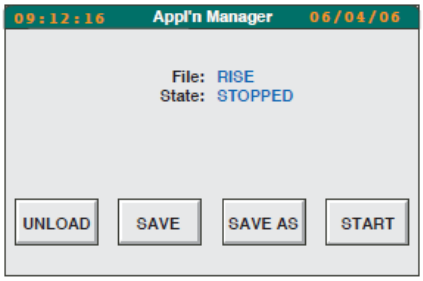
The application must be stopped before it can be unloaded.

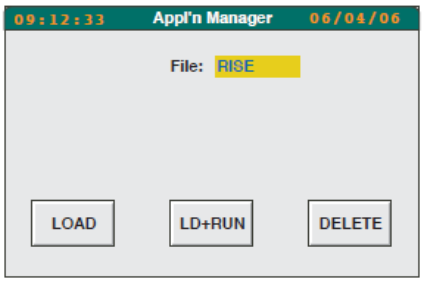
Select UNLOAD

The screen might go blank for a few seconds while the application unloads.

When the unloading is complete, the Appl'n Manager page should look like this, with three keys offering LOAD, LD+RUN, and DELETE. This is referred to as the 'bare' panel. A new LIN database can be cloned only when in this state.

At this point the choice must be made to load or load-and-run another application, or to delete an application.





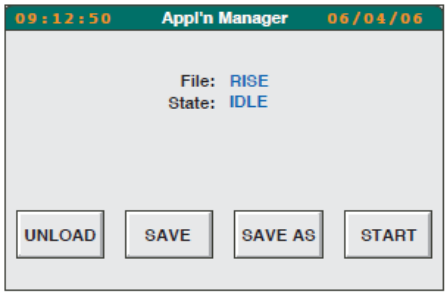
Loading or Loading and Running an Application

Before an application can be loaded, any previously-loaded application must have been stopped and unloaded.

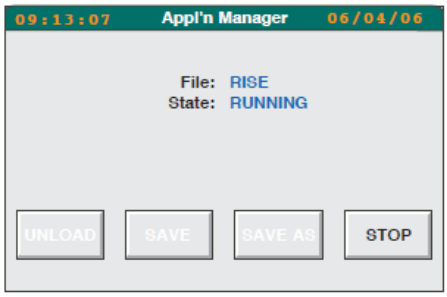
Application Selection

Press the File field

Select the required application from the pick list and press the Return key.



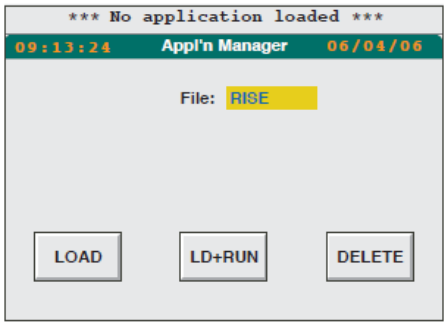
The name is displayed in the File field.

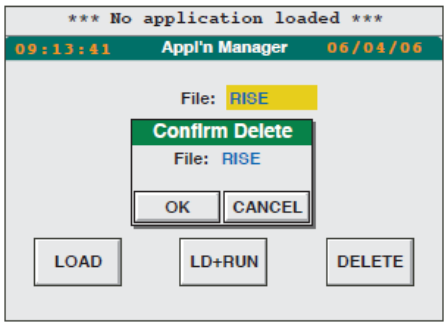


Application Loading

If you select LOAD, there is a short delay before the page shows the name of the application and its state, IDLE.

If LD+RUN is selected, there is a short delay before the page shows the name of the application and its state, RUNNING. The same state can be achieved using LOAD, then START.





Deleting an application

The application must be stopped and unloaded before it is deleted.

Press DELETE

The Confirm Delete window appears.

Press OK

Function Block Manager

Note: If IPRP is enabled, the function block manager is not available.

The function blocks set up in LinTools for this application can be viewed as a group, by touching the FB MGR button of the Application pop-up. Touching a particular function Block calls its details to the display. Reference to the LinTools manual will normally have to be made to understand the entries completely. Highlighted items in the Function Block list can be edited.

Figure 75 shows how to access the Function Block Manager, and Figure 76 shows the initial Function Block Manager display pages.

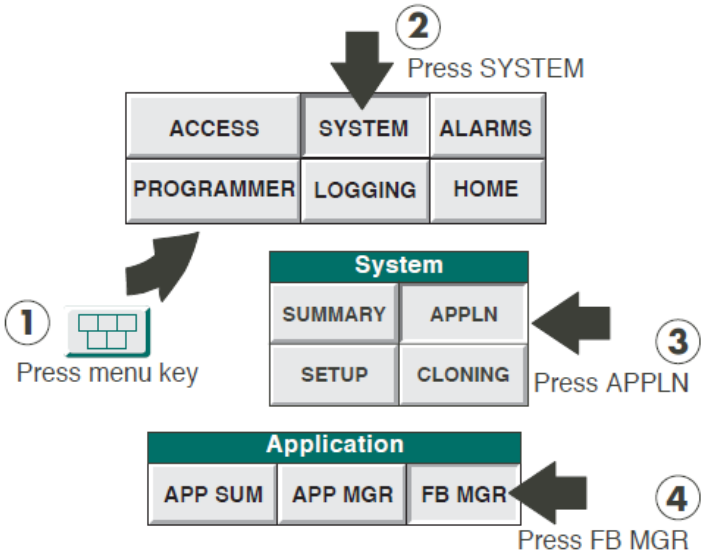


Figure 75 Access to the Function Block Manager

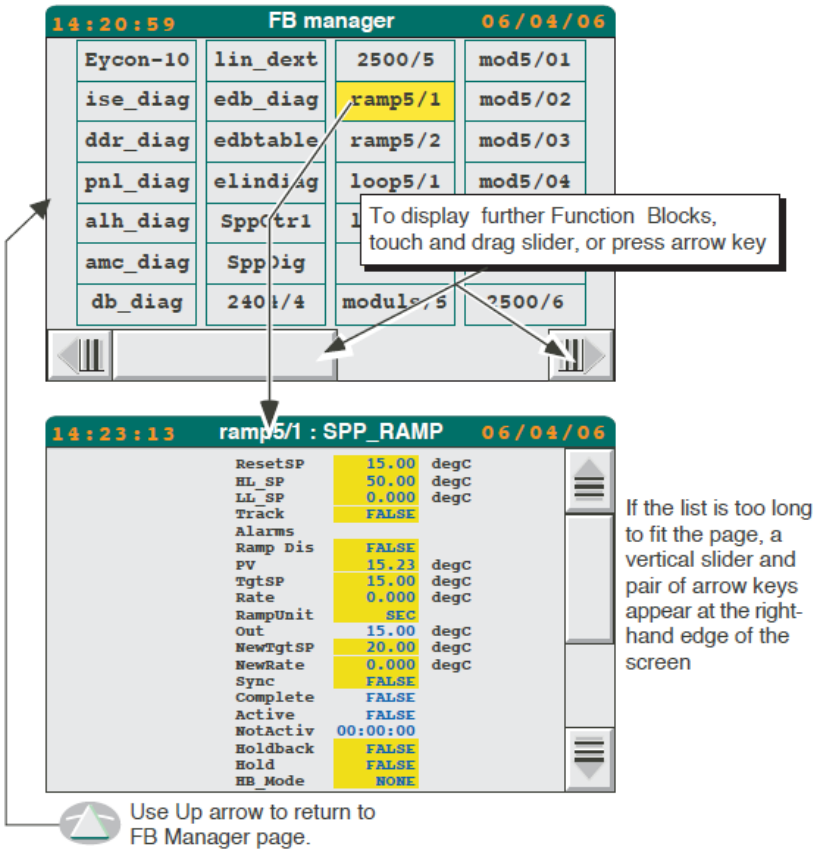
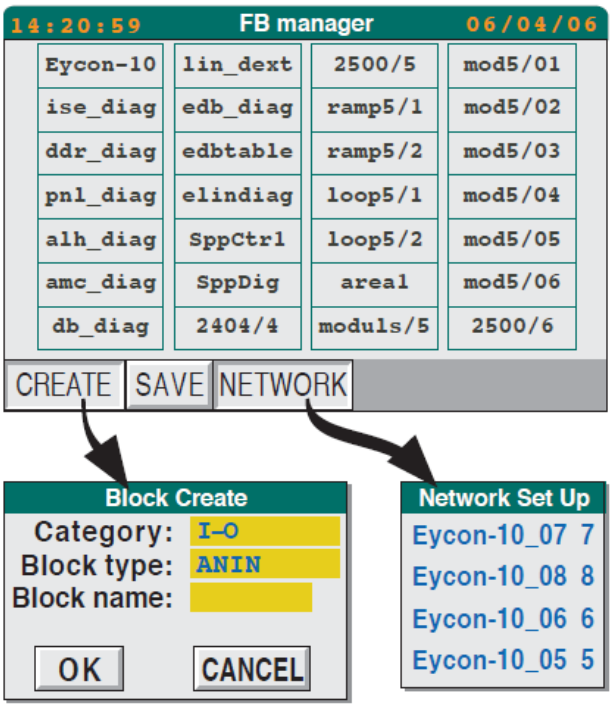


Figure 76 Function Block Manager Pages

With the data base stopped, the options bar at the bottom of the display contains the keys ‘CREATE’, ‘SAVE’ and ‘NETWORK’.

Note: For small frame units, the option key toggles the option bar and the scroll bar at the bottom of the screen.



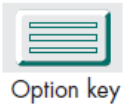


Figure 77 Create, Save and Network keys

CREATE	This key allows a new block to be created. Once the block category, block type and block name have been entered, operation of the OK key causes the new block to be created. Category and Type are selected from pop-up pick lists. The block name must be ‘typed in’.
SAVE	Operating this key saves the database in the same way as the SAVE key in the Application Manager ("Saving Application Data" on page 112).
NETWORK	Operation of this key displays a list of all the external databases defined within the application.

Alpha-Numeric Block Display

Initially, the FB Manager page lists the blocks in ‘database order’. Touching the down arrow key re-orders the list in alpha-numeric order, with numeric entries first (Figure 78). Further operations of the key toggle between the two display orders.

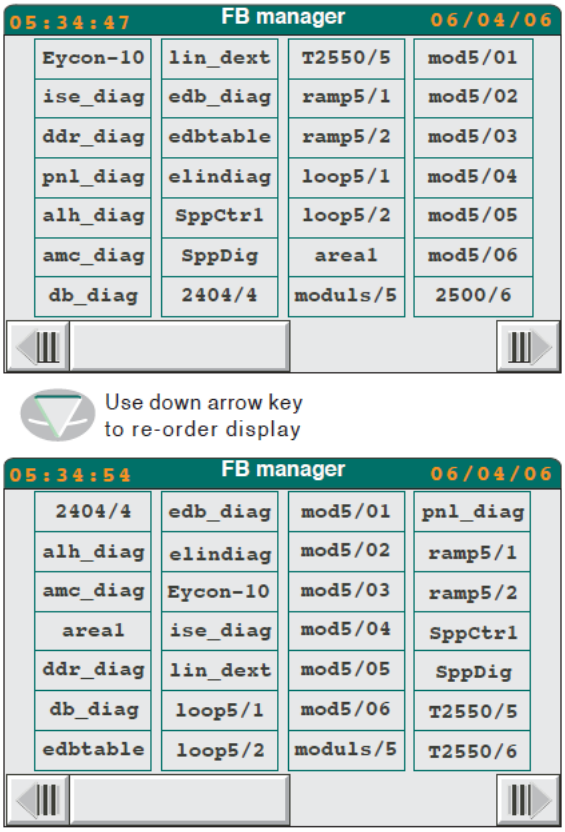


Figure 78 Alpha-Numeric Function Block Ordering.

Note: For the sake of simplicity, only those function blocks shown in Figure 76 have been included in the above figure. In reality, function blocks hidden (off screen) in Figure 76 would replace some of those shown above.

Function Block Details

Once a function block has been highlighted, touching the down arrow key displays block details - Block name, Block type and update rate (Figure 79).

Note: Displayed units are not updated dynamically. Changes in units are therefore not reflected until the page is quit and then re-entered.

With the data base stopped, the Delete key allows function blocks to be deleted from the database.

A further operation of the down arrow or cycle screens key calls the function block ‘Connections’ page. If the data base is stopped, this page allows the adding/deleting/modifying of the function block.

In the case of subfields, a number is displayed, which is the number of connections when the database is running, or the number of connectable bits when stopped. Touching the field displays the details of all relevant bits.

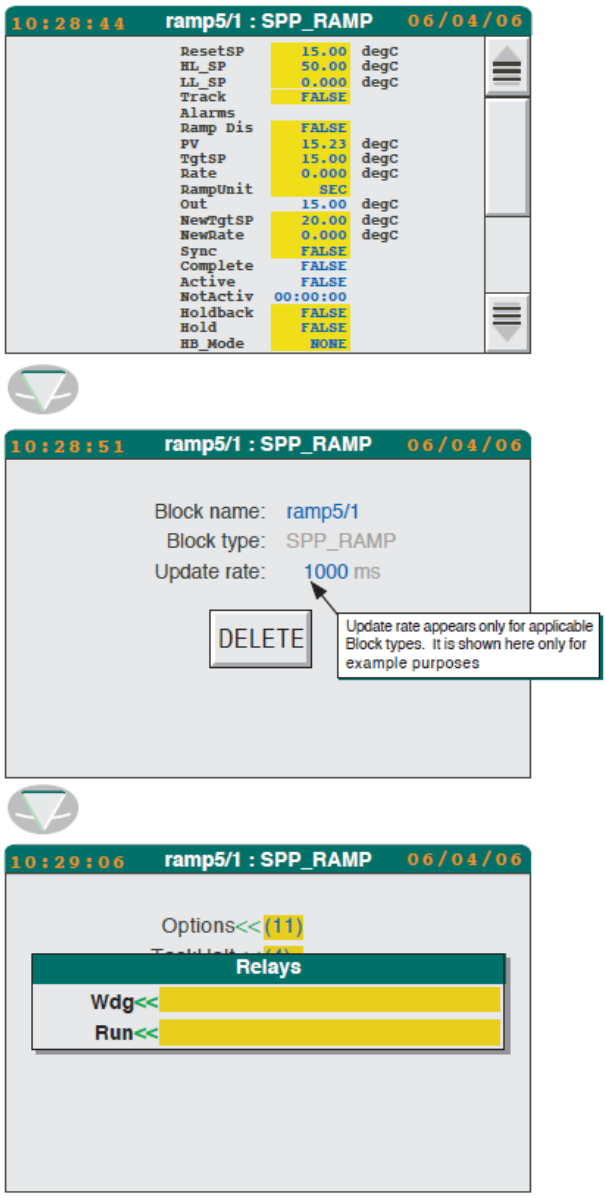


Figure 79 Function Block Details

Controlling Access

Note: for instruments fitted with the ‘Auditor’ option, see also "The Control Configurator" on page 255.

Access control consists of setting up (and changing, if necessary) the passwords for each of the three types of users: Operators, Commissioning Engineers, and Engineers. Alternatively, a ‘User ID’ access system can be used, as described in "User ID System" on page 120, below.

"Access Pane" on page 45, above, contains details of how the passwords/User ID is used to gain access to various parts of the instrument configuration.

As described in "Setting up the Panel Display" on page 140, it is possible to set a time period (time-out) after which the access level returns to ‘Locked’.

First-time Access

The first-time access is as follows:

LOCKED level:	For access to the LOCKED level at first-time or at any other time, no password is required.
OPERATOR, COMMISSION (Commissioning Engineer), and ENGINEER levels:	From V7/0, at first time access the passwords for operator, commission and engineer are not defined. A blocking popup will appear on the panel - press OK to gain access to the password entry page (see Editing the Passwords, page 119, step 4.) The OK button will be greyed (not selectable) until an ENGINEER password has been defined. The OPERATOR and COMMISSION passwords may be set at the same time or left undefined (no password required). Press OK to set the entered passwords - the display will then return to the Home page.

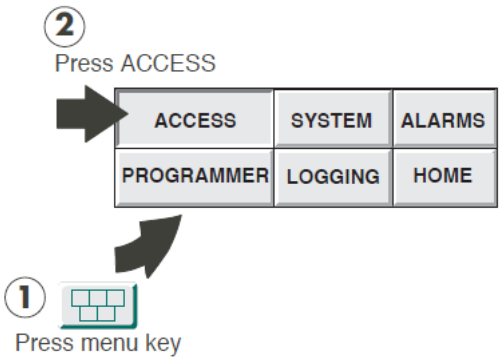
Editing the Passwords

To change the passwords, carry out the following procedure:

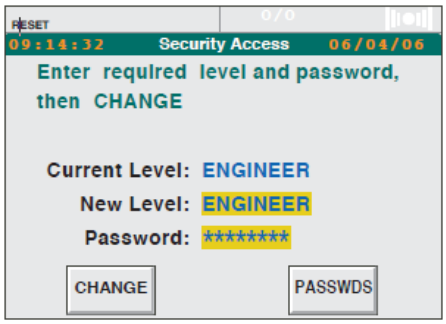
1. Press the Menu key.

   The Pop-up menu appears.

2. Press ACCESS.

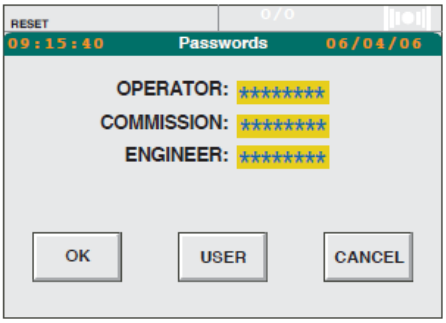


The Security Access page appears, displaying the current access level (ENGINEER) and two keys: CHANGE and PASSWDS.



3. Press PASSWDS

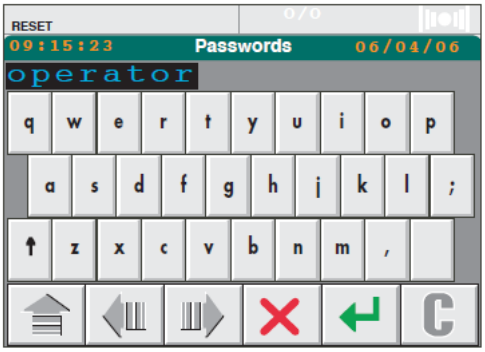
   The Passwords page appears.



4. Press the password field you want to change - e.g. Operator

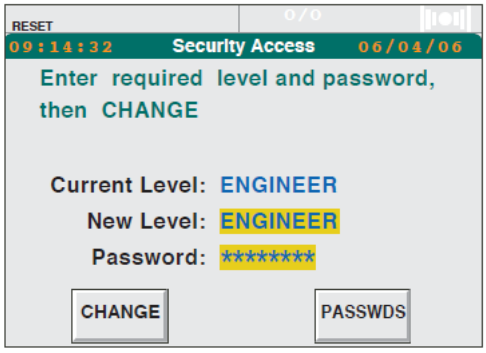
A ‘qwerty’ keyboard display appears.

5. Key in the new password.



6. Press the Return key

   The Security Access page reappears



7. Press CHANGE

For Commissioning Engineer and Operator passwords, the Security Access page reappears with either COMMISSION or OPERATOR displayed against both Current Level and New Level (depending upon the access level for which you were setting the password).

For Engineer-level passwords only, a Confirm Password window appears, prompting a repeat of the password-entry procedure, as follows in steps 8, 9 and 10.

8. Press the password field (still asterisked).
9. Key in the new password again, and press the Return key. The Confirm Password window pops up again.
10. Press OK. After a short delay, the Security Access page appears with ENGINEER displayed at both Current Level and New Level.

User ID System

The standard system of access described in "Editing the Passwords" on page 119 above, can be replaced by a system in which each individual user has a password and ident to allow access to the instrument configuration. The access levels Engineer, Commission and Operator are retained, but with an additional level: Admin.

Changing to the User ID System

Note: Changing from the standard access-level system to the user id system is not a reversible process i.e. it is not possible to return to the access-level system from the user id system.

To change the Access mode:

1. Press the Menu key and select ACCESS from the pop-up menu.

   If necessary, change the access level to Engineer

2. Press PASSWDS, then USERS.

3. Confirm that the change is to be made.

   From V7/0 there is a new page which requires entry of a password for (at least) the ADMIN user. For an auditor option unit there is also an ADMIN2 user, and this also requires entry of a password when switching to user id system.

4. You define the passwords for the roles as follows:

5. The ADMIN account password must be defined hence ADMIN is red until a password is entered – the password is entered twice, the entries must match. Once these conditions are met ADMIN changes from red to black.
6. The other passwords may optionally be entered. Initially they are blank, and the name is black. If a password is entered, an additional second entry field is displayed & the name turns red until the two entries match.
7. The “OK” button is greyed until all four names are black.
8. Login at Admin level, by

   a) touching the Identity field and entering ADMIN (must be in capitals) followed by Return, then,

   b) touching the Password field and entering the password for ADMIN (defined above) followed by Return, then,

   c) pressing LOG ON.

It is now necessary to create IDs and passwords for other users, and assign access levels to them, as described in USER ID MANAGEMENT, below.

Notes:

1. For security reasons, it is recommended that you choose secure passwords at the point you switch to multi-user mode (for those account names you want to keep) OR create/modify accounts (with secure passwords) as soon as possible after switching to multi-user mode.
2. When logging on, it is recommended that the Identity field be cleared completely of any characters before entry of the new Identity. This is be done by positioning the cursor under the first character and operating the ‘C’ key.

User ID Management

Operation of the USERS key calls up a page which allows user identities, passwords and access levels to be assigned. The USERS key appears only for users logged in at ADMIN level. Figure 80 below, depicts the page. Hidden columns are accessed by a scroll bar which hides the SAVE, CANCEL, NEW etc. keys. When required, these keys are called to the display by operating the Option key one or more times.

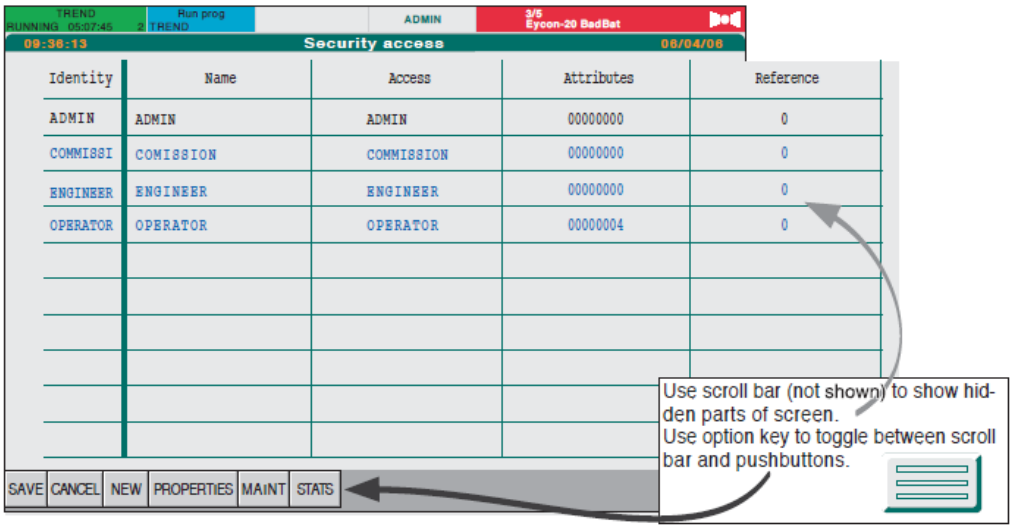


Figure 80 User ID Management Page

As is depicted above, the opening display shows one user per access level. In order to edit the Identity (including password), Name, Access level etc. it is necessary only to touch the relevant field (highlights yellow), and edit the entry as required.

Identity Change Example

Note: This procedure is not possible if the unit is fitted with the Auditor option.

To change the Identity 'ENGINEER' to 'Roger" and assign Roger a password of 13.

1. Touch the word ENGINEER in the Identity column.
2. Touch the word ENGINEER in the Identity field of the resulting dialogue box (Figure 81).

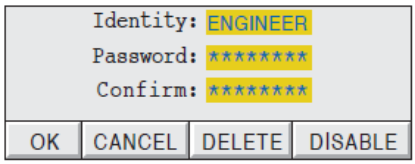


Figure 81 ID Edit Page

3. Enter 'Roger' using the POP-UP keyboard, followed by Return.
4. Touch the yellow Password field, and enter the number 13 using the keyboard.
5. Touch the yellow Confirm field and enter the number 13 using the keyboard and press OK. If this entry differs from the first, OK has no effect, and the Confirm field remains highlighted.

To write the changes to the data base, press the SAVE key (first using the Option key to display it, if necessary). Otherwise press CANCEL.

Editing other Fields

The editing of remaining fields is carried out in a similar manner, except for the access level field which is selected from a pick list rather than being typed in as a keyboard entry.

Attributes Column

Touching this column allows the ADMIN level user to enable or disable the following functions for all other users:

View only, Admin only, FTP, Remote, User button, User screen. All functions are set to ‘No’ by default. The display column reflects the features set to ‘Yes’, as shown in the table below. The numbers are cumulative, so, for example, if ‘View only’ and ‘FTP’ were both selected ‘Yes’ and all other items ‘No’, the attribute display would be 00001004

View only	Admin only	FTP	Remote	Display
No	No	No	No	00000000
Yes	No	No	No	00000004
No	Yes	No	No	00000010
No	No	Yes	No	00001000
No	No	No	Yes	00002000

Table 6: Attribute coding

View only	Users with this attribute set, have Read Only permission
Admin only	This attribute appears only for users with Admin Access level, and means that they can modify only ADMIN pages. If View only is also set, such users are denied all write permissions.
FTP	Users with this permission may log in via FTP. FTP users who are View only, are prevented from file system modification, and their logins are not recorded.
Remote	If set, this allows the user to log into terminal configurator via telnet (if enabled). The View Only attribute may be used to determine if the user has write/modify permission. If the Auditor option is enabled, write permission for the terminal configurator is always disabled regardless of the View Only setting.

Reference Column

For use with user screens, set up in Lin Blocks, this allows individual users, or groups of users allocated the same reference number, to be identified as being logged on.

Deleting (Retiring) Users

To delete a user, touch the required name in the Identity column, and press DELETE in the resulting dialogue box. To complete the process, press OK in the confirmation dialogue box.

Notes:

1. For units fitted with the Auditor option, the DELETE key is named ‘RETIRE’. See Chapter 6 for more details.
2. It is not possible to delete the current user.

Disabling User IDs

To disable a user, touch the required name in the Identity column, and press DISABLE in the resulting dialogue box. The Identity and name of the disabled user appear in red, and the user will not be able to log on, until the login has been re-enabled. To re-enable the login, touch the required name in the Identity column, then re-enter the password and confirm it. The Identity and Name return to their previous blue colour.

It is not possible to disable the current user.

New Users

New users are entered using the 'NEW' key at the bottom of the page (first using the Option key to display it, if necessary). The new identity and the password are entered as described in the example above.

The new information appears in green, until the SAVE key is operated. (If necessary, use the Option key to display the SAVE key.)

Notes:

1. For instruments fitted with the Auditor option, it is not possible to create a new user with a previously 'retired' ID. See Chapter 6 for more details.
2. For instruments fitted with the Auditor option, it is not possible to edit any aspect of an account once the SAVE key has been operated. It is therefore essential to ensure that all entries are correct before saving.

Account Properties

Figure 82 below, shows a typical properties page, called by operating the 'PROPERTIES' key at the bottom of the screen.

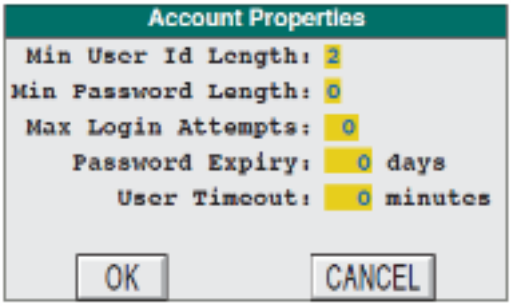


Figure 82 Properties Page (Typical)

Note: Please also refer to Chapter 6 if the Auditor Option is fitted.

Min User ID Length	2 to 8
Min Password Length	0 to 8
Max Login attempts	0 to 99(0 = no limit; Values greater than 0 show the number of attempts at logging in that may be made before the account is disabled.
Password Expiry	0 to 1800 = password never expires. For values greater than 0, the password will expire after the specified number of days have elapsed since the last time the value was edited.
User Timeout	0 to 7200 = no timeout. For values greater than 0 the user will be logged out after the specified number of minutes has elapsed since the previous screen activity.

Maintenance

Operating the ‘MAINT’ key at the bottom of the Security Access screen calls the ‘Account Maintenance’ screen to the display, as depicted in Figure 83, below.

If recovery account is set to YES, this enables a recovery in the event of all ADMIN accounts becoming unusable. This requires a maintenance contract with the manufacturer.

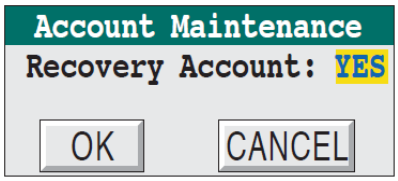


Figure 83 Maintenance Screen

Note: See also Chapter 6 if the Auditor Option is fitted.

Statistics

Operating the STATS key at the bottom of the Security Access screen calls the ‘Statistics’ screen, showing how many users have been configured out of the total available. For example, Users: 6/100 means that six of the 100 possible users have been configured.

Note: For small frame instruments, a second operation of the Option key is necessary to reveal the STATS key.

Setting Up and Re-Setting the Instrument

This section describes the following items

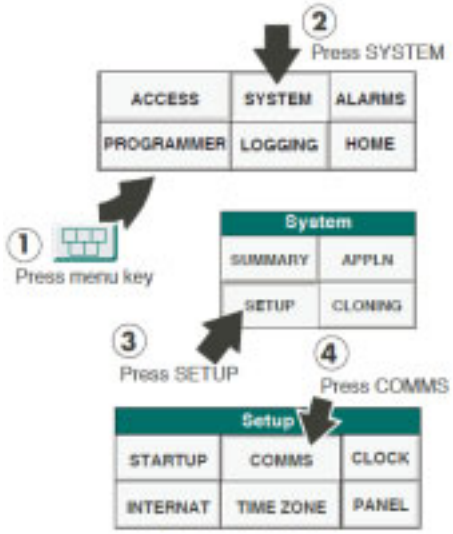
1. Editing Comms parameters including time synchronisation (page 125).
2. Setting the Start-up strategy (page 131).
3. Re-setting the clock (page 134).
4. Changing the language and the data entry formats (page 136)
5. Setting up time zone information for unambiguous date and time (page 137).
6. Setting up the panel display (page 140).

Editing Communications Parameters

The editing procedure for Communications Parameters consists of displaying the Comms Setup page and setting up or editing the parameters for each port fitted to the unit. The SAVE button is used to save the changes, or, to cancel the changes before saving them, the CANCEL button is used.

Before any saved changes can take effect, the application must be stopped and then restarted, or the instrument must be powered off and on again. Generally, ‘parameter’ changes (such as baud rate) require only a stop and restart of the application, whereas ‘hardware’ changes (such as changing a Modbus master port to a slave port) require a power down and up.

1. Press the Menu key and select SYSTEM from the Pop-up menu.
2. Press SETUP
3. Press COMMS.



The Comms Setup page appears.

For each port (COM1, COM2, ENET1, ENET2…) there is a column of parameters (Hardware, Protocol, Mode No…). If necessary, the vertical slidebar can be used to display more parameters hidden further down the page. The full list is:

Hardware Standard (for example, RS485)

Protocol (for example, Modbus Slave)

Node Number (decimal)

Baud (rate)

Parity

Data bits (number of)

Stop bits (number of)

Timeout (Modbus Master only, in milliseconds)

Talk-Thru (Modbus slave only)

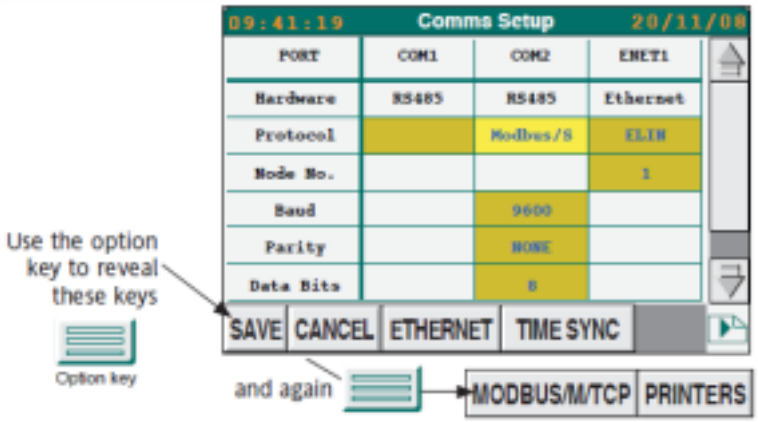


Figure 84 Comms Setup Page

Note: Some of the keys at the bottom of the display appear only if the relevant option is enabled.

Cells with a yellow background are edited by pressing them. Others with a white background are fixed (not editable). A blank cell shows that the parameter does not apply for the protocol selected for that port.

On 1/4VGA instruments a horizontal slide bar can be used to reveal the other ports. The Option key must be used (one or more times) to display the SAVE, CANCEL, ETHERNET etc. keys, temporarily, in place of the slidebar. XGA instruments always display these keys.

Software Parameter Editing

1. Select the required parameter
2. Select or enter the new value from a pop-up list or keyboard
3. Press the green Return key at the bottom of the pop-up. The new value is displayed.
4. Either press the SAVE button to save the change, or press the CANCEL key to abort the change.

Protocols Available

Notes:

1. Ports in parentheses ( ) are not recommended for the associated protocol.
2. COM1/COM2 ports are always EIA485.
3. All protocols use 8 data bits
4. The Node Number (where presented) must be non-zero to enable the port.

PROTOCOL	PORT	NOTES
ELIN	ENET1	Used to connect a Local instrument network (LIN) across Ethernet.
FTP	ENET2	Used to provide an FTP server.
MODBUS/M	COM1 (COM2) ENET4	The full name of the protocol is 'Modbus RTU master'.
MODBUS/S	COM2 (COM1) ENET3	The full name of the protocol is 'Modbus RTU slave. Used for the 'Talk-thru' facility, and for direct connection with a Modbus master. ENET3 port is for Modbus/TCP.
Printer	COM1, COM2	Used to send reports to a maximum of two serial printers.
Printer	USB1,2, 3	Used to send reports to a maximum of two USB printers.
Printer	ENET6	Used to send reports to an Ethernet printer
Profibus	PBUS1	Provides Profibus communications (if Profibus option fitted).
Reader	USB1, 2, 3 COM1, COM2	Barcode reader input
USB1 is fitted as standard; USB2 and USB3 are supplied as a single USB option		

Table 7: Available Protocols

Changes to Protocol selection become effective at different times, as follows:

COM1/COM2	On application start
ENET1,2,3	On power up
ENET4	On application start
ENET5	On power-up
ENET6	On power up

PBUS1	On power up
USB1, 2, 3	On power up

Talk-Thru

Talk-Thru, (or transparent Modbus access) is a facility provided to enable use of the Eurotherm iTools package to configure Model 2500 controllers without having to disconnect them from the Visual Supervisor. The 2500s are connected to the Instruments's Modbus Master port as shown in "Wiring the Visual Supervisor to I/O Units" on page 24.

The PC is connected to the Modbus Slave port on the front panel via an EIA232 link. With the iTools package running on the PC, the Model 2500 units can then be configured by 'talking through' the Visual Supervisor.

Notes:

1. In order for TalkThru to work, the database must contain a Gateway file (.GWF) for Modbus slave and for Modbus master, both of which are referenced in GW_CON blocks.
2. PC/iTools can be connected to the Modbus COM1/2 port, but needs an EIA422/485 converter.
3. For more information refer to the iTools Help system.
4. The PC may be connected across Ethernet using Modbus/TCP instead of one of EIA422/485.

Ethernet

The following applies only if the Ethernet option is fitted.

Notes:

1. Before operating the 'ETHERNET' button, operate the 'SAVE' button, or all changes made so far will be lost.
2. Before operating the COMMS button to return to the Comms setup page, operate the SAVE button, or all changes made in the Ethernet setup page will be lost.

Option key

3.On the small frame (1/4 VGA) version of the instrument, 'SAVE', 'CANCEL', 'ETHERNET' etc. buttons are hidden. The Option key is used one or more times to display these buttons (overlaid on the scroll bar).

4. The user must have suitable access permission in order to edit the Ethernet setup.

Ethernet setup is accessed by operating the 'Ethernet' key at the bottom of the comms set-up page. Figure 85 shows the relevant fields. To return to Comms setup, operate the Comms button.

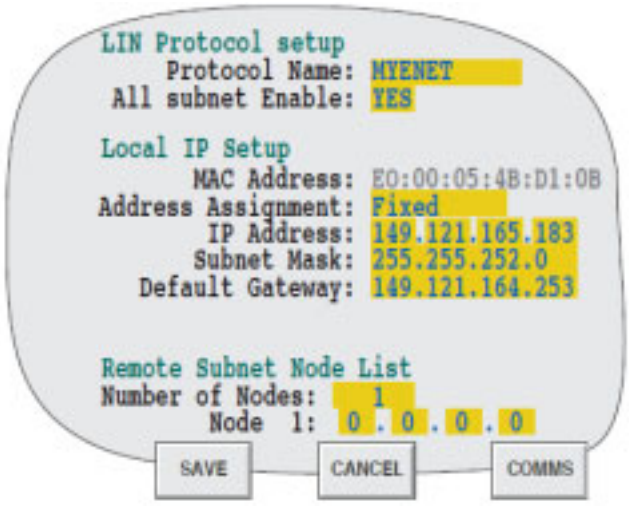


Figure 85 Ethernet setup items

Protocol name	Allows the user to enter a protocol name of up to 12 characters.
All Subnet enable	Select Yes or no.
MAC ADDRESS	This factory-set address is unique to the instrument and is non-editable.
Address Assignment	Select one of: Fixed, DHCP, BootP, DHCP+LL, BootP+LL, Link Local.
IP Address	May be edited only if ‘Fixed’ selected as Address assignment.
Subnet Mask	May be edited only if ‘Fixed’ selected as Address assignment.
Default Gateway	May be edited only if ‘Fixed’ selected as Address assignment.
Number of nodes	Enter 0 to 50. This is the number of nodes in the remote subnet.
Node N:	Allows the IP address of each remote node to be entered.

Modbus/TCP

For each relevant slave node, an entry must be made in the Modbus/TCP mapping table (Figure 86) which is accessed by touching the MODBUS/TCP key at the bottom of the Comms setup page (Figure 84).

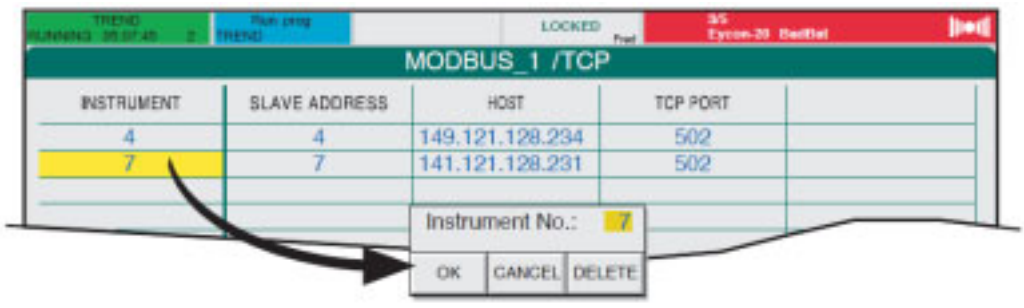


Figure 86 Modbus Mapping Table

To edit the values for an existing slave, touch the relevant field (as shown above for ‘Instrument’), and then touch the current value. This causes a pop-up keyboard to appear, allowing the user to enter a new value. Changes take place only after the SAVE key at the bottom left of the screen has been operated.

New slaves can be added by touching the ‘NEW’ key, and editing the values which appear in the resulting dialogue box.

Instrument	This entry is the number which appears in the InstNo column in the GWF Modbus table.
Slave Address	This value (sometimes called the Modbus address) is what the slave expects to see in any message sent to it.
Host	The IP address of the relevant Slave Node.
TCP Port	This is the port used for the connection. The default (502) should be used unless the slave documentation advises otherwise.

Time SYNC

Operation of this key causes the ‘Time Synchronisation’ page to appear (Figure 87). ‘Server operation’ allows a user with suitable access permission to configure the unit to act as an SNTP server if required. ‘Client operation’ allows the unit to act as an SNTP client (receiving time data from an external source), or as a time-of-day (TOD) master or slave, in which case time synchronisation with other units is carried out using the TOD_DIAG block in LINtools.

Note: If the unit is successfully synchronising, then the time and date setting fields do not appear in the clock setup page ("Resetting the Clock" on page 134) and a message (e.g. ‘Clock configured as SNTP client’) is displayed in green text. If the unit is configured to synchronise, but it is not successfully communicating with the synchronisation source, the same message appears, this time in red, and the time and date fields appear and can be edited as normal.

Note: The unit can act as both SNTP server and SNTP client if required.

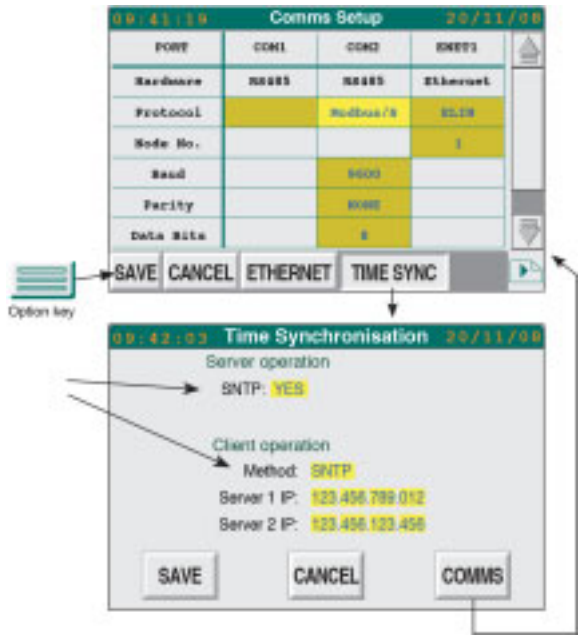


Figure 87 Time Synchronisation Configuration

SNTP	If ‘YES’ is selected, the Unit will act as a time server.
Method	SNTP. If SNTP is selected, then the unit will synchronise with Server 1, if possible, or with Server 2 if Server 1 is not available. For successful operation, the unit and the time

servers must be on the same network as one another - see 'Ethernet', above, for details of the unit's IP address setting.

Server 1 IP The IP address of a suitable primary SNTP server.

Server 2 IP The IP address of a suitable secondary SNTP server.

NONE/TOD

If None/TOD is selected, then the unit will synchronise with other units according to the setting of the TOD_DIAG block. If the unit is set up as a TOD master or slave, then the clock setting is inhibited. Otherwise, the unit is not set up to synchronise and clock setting can be carried out as described in "Resetting the Clock" on page 134.

Events

SNTP Svr 1 fail	Indicates a failure to obtain a time from Server 1 after three consecutive attempts.
SNTP Svr 2 fail	Indicates a failure to obtain a time from Server 2 after three consecutive attempts.
SNTP time jumps	SNTP updates caused more than 5 time jumps within 24 hours. A time jump is made if the unit time if found to differ from Server time by more than two seconds. For time differences of up to two seconds, the unit time is corrected gradually, to avoid inconvenient time jumps.

Setting the Start-up Strategy

Hot and Cold starts are ways of starting the instrument automatically, after a power failure or after a power variation large enough to trigger an alarm (a 'brown out'). The strategy is set by choosing Hot Start, Cold Start or both, and by choosing time-out intervals for Hot Start and Brown Out.

Note: Hot and Cold start are prohibited if the Instrument Password is not set.

Hot/Cold Start Criteria

The type of start selected depends upon the process, and upon the operational policy of the user. For example, some processes are so sensitive that a power-loss of any duration will always mean that the process plant or the load, or both, will need manual attention before re-starting. In this case automatic restart (either hot or cold) would be inappropriate.

Hot Start and Cold Start Selected

The most common strategy is to set both the Hot Start and the Cold Start to YES so that, should power return before the end of the time-out, the instrument will attempt a Hot Start. If the time-out has expired the instrument makes a Cold Start.

Hot Start Only

A power loss, or a 'brown-out' lasting long enough to trigger an automatic restart, which returns to normal before the Hot Start time-out, causes the instrument to attempt a Hot Start. If the power does not return to normal within the time-out period, a manual restart will be required, as described in "Running a Program Now" on page 53.

Cold Start Only

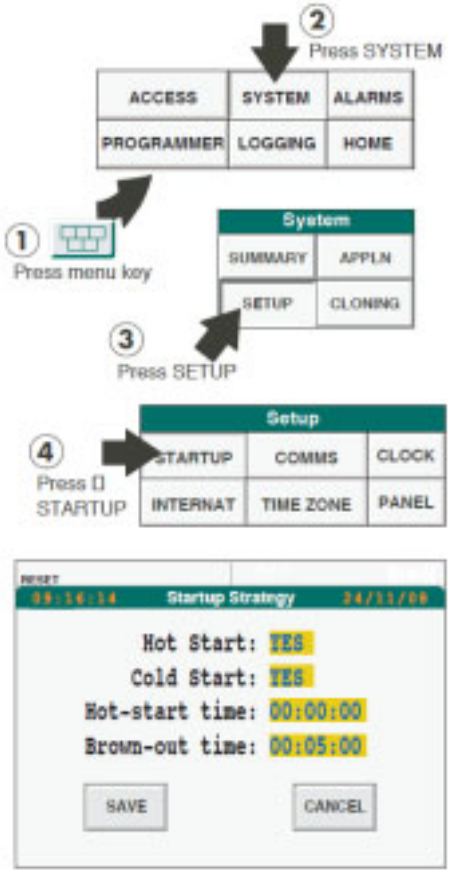
If a power loss, or a 'brown-out' lasting long enough to trigger an automatic restart occurs, then, provided that power returns before the Hot-start time-out interval, the instrument will do a Cold Start on power-up.

Neither Hot Start nor Cold Start

If both Hot start and Cold start are set to 'No' the instrument will not restart automatically under any circumstances.

Start-Up Strategy Page

1. Press the Menu key
2. SYSTEM from the pop-up menu.
3. Select SETUP
4. Select STARTUP



The Start-up Strategy page appears

Hot start	A Hot start uses data about the current application that the instrument automatically saves in case of power variation or failure. Using this information, which is preserved through any power loss, the instrument can automatically restart the process at any time after normal power returns. In the fields on the Start-up Strategy page, the following items need to be configured: 1. Whether the process is to start automatically after a power loss

2. A maximum time period (time-out), after the expiry of which, a hot start is inappropriate.

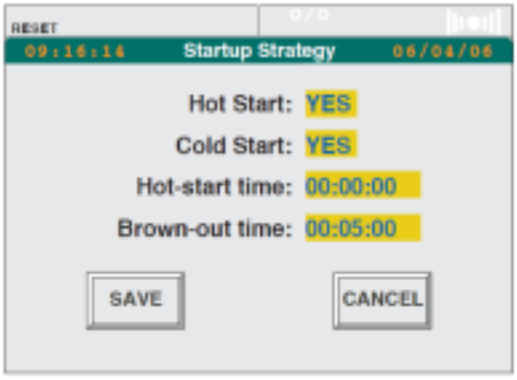
Cold-Start	Cold Start data is application data, not just program data, so its scope is much wider.
Hot start time:	This depends upon the process under control. If the process can tolerate only a short time without normal power before either the plant or the load requires manual attention, then a short time-out needs to be set. If, however, the process is robust enough to regain normal processing conditions even after a lengthy power-outage, then a longer Hot Start time-out may be set. Actual times are process-dependent, but the general rule is that the process must not restart automatically beyond the time when it requires manual attention.
Brown-out time	This sets an alarm when a power-variation has persisted for longer than a preset time. Unless the alarm is set up to take some action, the Brown-out time acts only as a warning, in case some special strategies exist that might need implementing in those circumstances, or that have been set up to run automatically. If power totally fails but returns within the interval specified as Brown-out time, then the instrument treats it as a brown-out. If it returns after the Brown-out time, then a restart is either possible or certain, depending on how soon after the time limit it returns.

The type of restart attempted depends on the programmed strategy.

Changing Start-Up Values

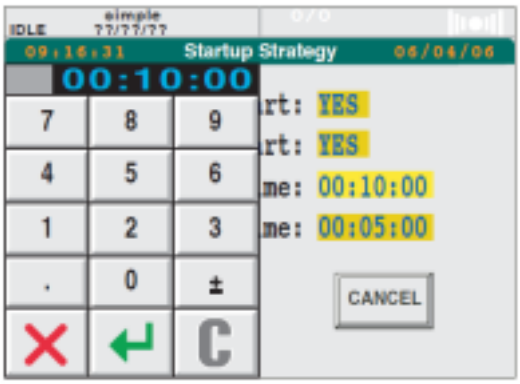
Changing Hot/Cold Start Settings

In the Startup Strategy page, press the Startup setting to be changed. Edit the entry using the pick-list which appears, then press Return. The pick-list disappears and the Startup Strategy page displays the new value.



Changing Time-out Values

In the Startup Strategy page, press the time-out value to be changed. Key-in the new value using the pop-up keyboard, then press Return. The field shows the new value.

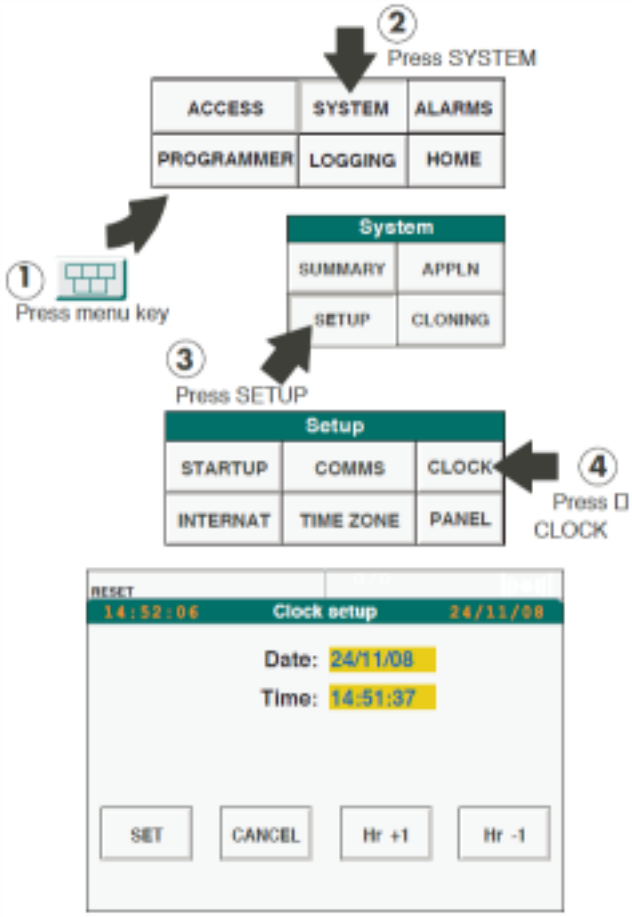


Resetting the Clock

Clock Setup Page Access

1. Press the Menu key
2. Select SYSTEM from the pop-up menu
3. Select SETUP.
4. Select CLOCK.

The date/time setting page appears



Changing Date and Time

To increment or decrement the hours value, press the Hr+1 or the Hr-1 key respectively. The change takes place immediately, and changes the date if appropriate.

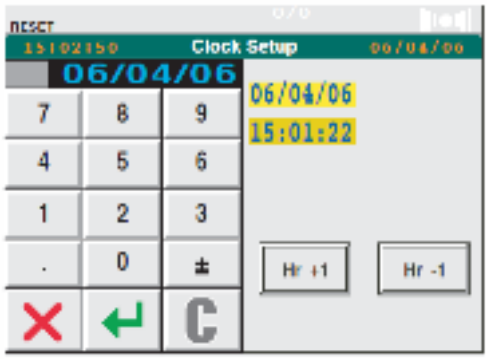
Notes:

1. The clock re-starts when the SET key is pressed. This happens after the time has been keyed in and after the Return key has been pressed. It is therefore recommended that the keyed-in time is at least 20 seconds ahead of real time, so that the SET key can subsequently be operated (to start the clock) when real-time equals the keyed-in time.
2. For time-synchronised systems, if communications with the time server are successfully established, it is not possible to edit the time or date in the clock setup page. See "Time SYNC" on page 130 for more details.
3. If Daylight saving is set to ‘Yes’ in Time zone configuration ("Time Zone Configuration" on page 137), then the ‘Hr+1’ and ‘Hr-1’ keys are not displayed.

Date Changing

From the Clock Setup page, touch the date field.

A numeric keyboard is displayed, allowing the correct date to be entered. The cursor moves to the next digit after each character has been entered.



To cancel all the digits (the ones at the top of the keyboard display, but not the ones in the Clock Setup page in the background, or in memory), press the ‘C’ key - the digits change to question marks.

To cancel the whole time-change operation and return to the Clock Setup page, press the red cross key.

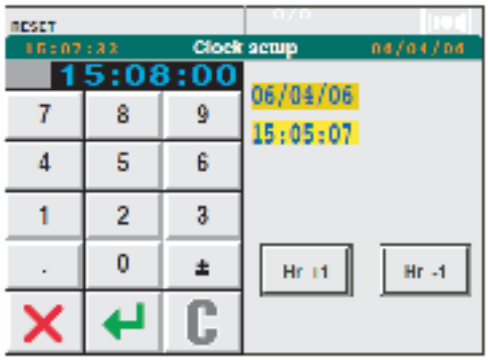
Once the correct date has been entered, operate the Return key. To save the entry and re-set the date press the SET key.

Time Changing

Before starting, please see note 3 on the previous page.

From the Clock Setup page, press the time field.

A keyboard is displayed, with the current time displayed in green at the top with a cursor flashing under the first hours digit.



Type-in the required time (the cursor moves to the next character after each number is keyed-in)

To cancel all the digits (the ones at the top of the keyboard display, but not the ones in the Clock Setup page in the background, or in memory), press the ‘C’ key - the digits change to question marks.

To cancel the whole time-change operation and return to the Clock Setup page, press the red cross key.

When new time has been entered, press the green Return key.

When the actual time is the same as the time just entered, press the SET key to re-start the clock.

Changing Language and Date/Time Formats

A different language can be selected only if the instrument holds the appropriate language dictionary file. See "The System Text Dictionary" on page 162, The System text dictionary.

1. Press the menu key.

   The Pop-up menu appears.

2. Select SYSTEM.

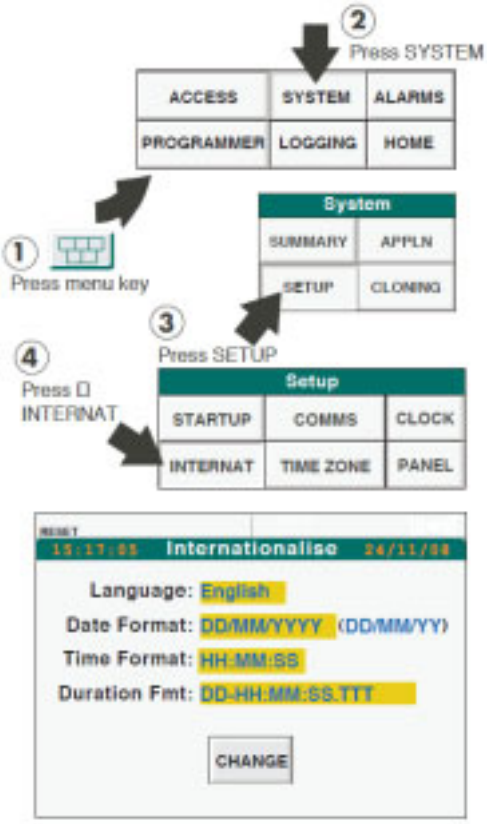
   The System Pages window appears.

3. Select SETUP.

   The Setup window appears

4. Select INTERNAT.

The Internationalise page appears.



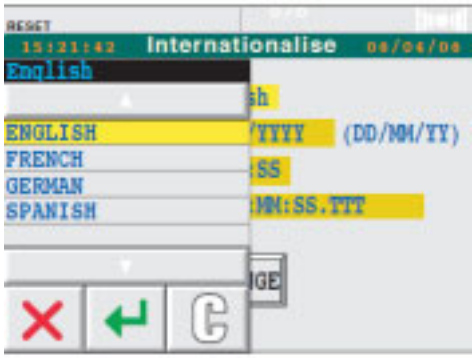
The following subsections describe each of the four yellowed fields displayed on the Internationalise page.

Language

If the Language field is touched, a pick-list appears, showing which languages are available. Select the required language and press Return.

The pick-list disappears.

Press CHANGE. The Language field shows the selected language

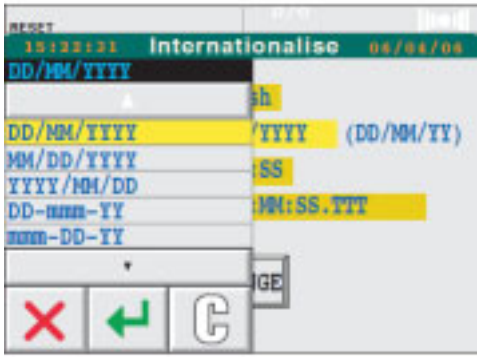


Date Format

If the Date Format field is touched, a pick-list of the available Date Formats appears. Select the required format and press Return.

The pick-list disappears.

Press CHANGE. The Date Format field shows the selected format.

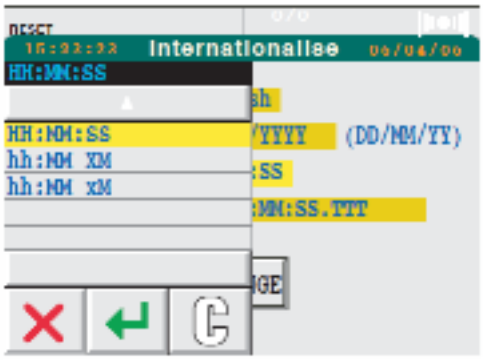


Time Format

If the Time Format field is touched, a pick-list of the available time formats appears. Select the required format and press Return.

The pick-list disappears.

Press CHANGE. The Time Format field shows the selected time format.

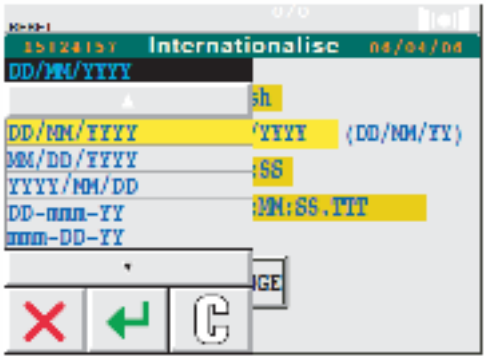


If the Duration Format field is touched, a pick-list of the available time duration formats appears.

Select the required format and press Return.

The pick-list disappears.

Press CHANGE. The Duration Format field shows the selected format.



Time Zone Configuration

This allows the user to set up an offset to the instrument time display, to display the time zone either as just a name, or as a name + offset from UTC (GMT), or, if daylight saving is active, as name +DST. The way in which these offsets are displayed depends on the instrument model, and on the currently displayed page.

Configuration

1. Press the menu key.
2. Select SYSTEM.
3. Select SETUP.
4. Select TIME ZONE.

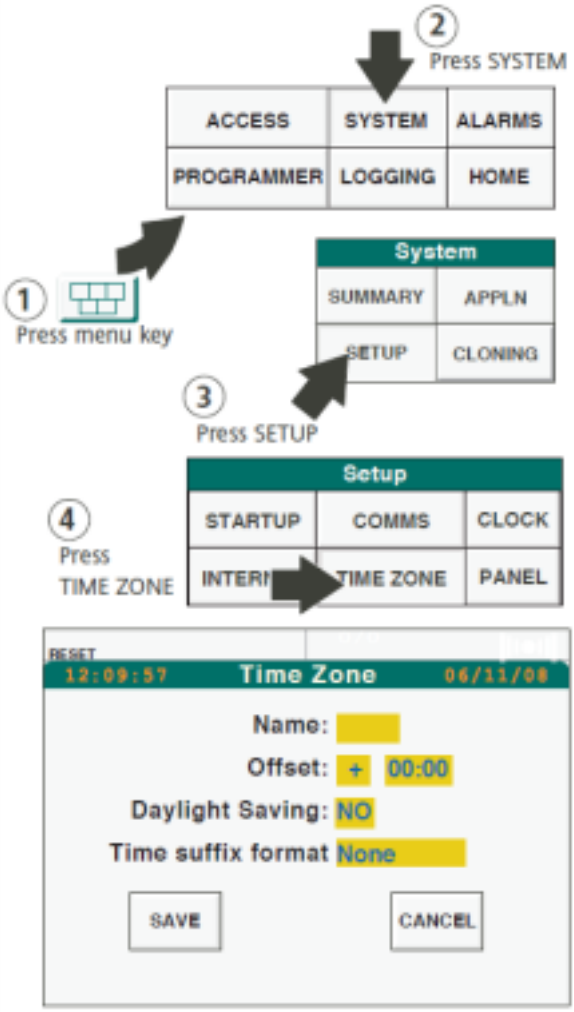


Figure 88 Access to Time Zone Configuration

The default setup page appears

Touch the yellow Name field and use the normal text/numeric entry techniques to enter a name.

Select an offset direction from a drop down picklist (‘+’ = ahead of GMT; ‘-’ = behind GMT).

Enter an offset period, by typing in, for example, <0><8><Enter> for eight hours.

Select ‘Yes’ from the drop down menu if daylight savings time (DST) is to be applied. If ‘Yes’ is selected, the configuration changes to include start and end dates for DST as shown in Figure 89. Values are entered using the normal text/numeric entry techniques, and selection from drop down pick lists.

Time suffix format. This allows the user to select ‘None’ (default), ‘Name’, ‘Name+DST’ or ‘GMT offset’ to appear in association with the time/date display of subsequent displays.

Press SAVE to confirm the changes.

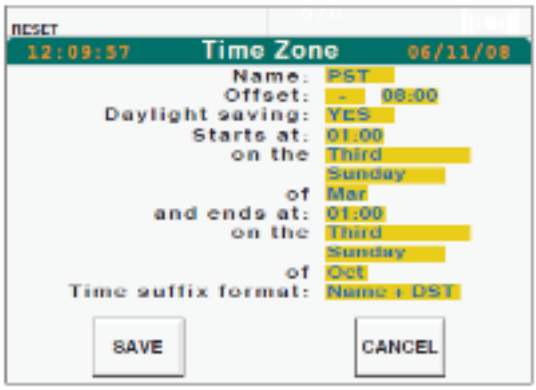


Figure 89 Configuration Page (Daylight Saving = 'YES')

Notes:

1. The time and date in the status panes for small frame units do not include any time suffix format, as there is insufficient space. Alarm and Event pages do include the information, as described below.
2. If daylight saving is set to 'Yes', then the Hr+1 and Hr-1 buttons are not displayed in Clock setup ("Resetting the Clock" on page 134).
3. If daylight saving start and end months are the same, then daylight saving is ignored.

Time Suffix Displays

Status Pane

As previously stated the small frame version of the instrument does not include Time Zone suffix information. The large frame version displays are as shown below. For 'Name + DST', the acronym 'DST' appears only whilst daylight saving time is active.

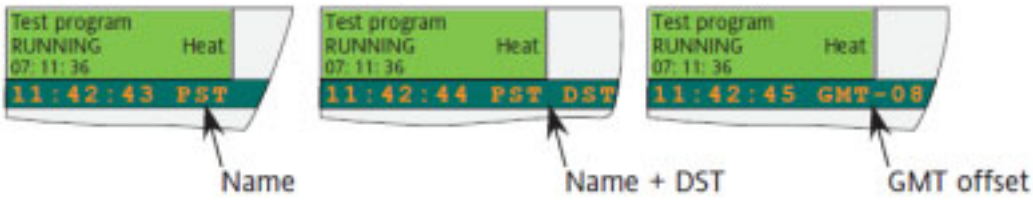


Figure 90 Large Frame Time Zone: Status Pane Suffix Displays

Alarm History

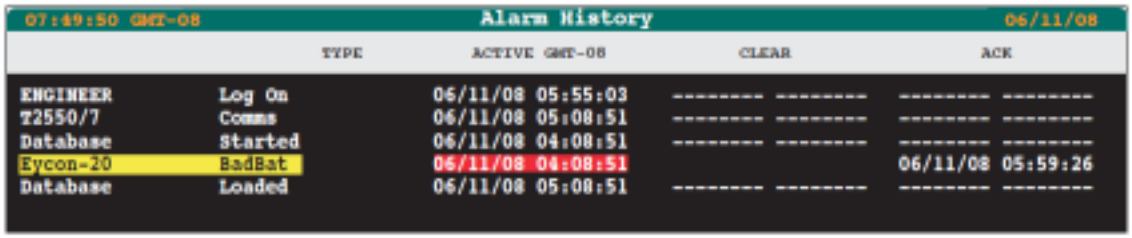


Figure 91 Alarm History (Large Frame)

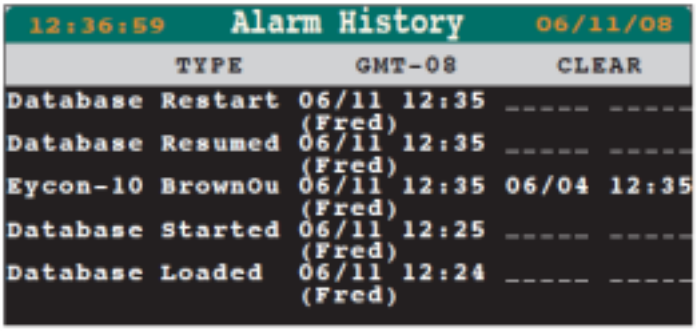


Figure 92 Alarm History: Small Frame - Two Line

Event Log

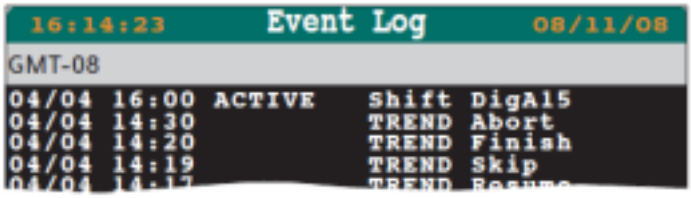


Figure 93 Event Log (Small Frame Shown; Large Frame Similar)

Trend Review

In small frame, the time zone suffix normally replaces the zoom factor. When the zoom factor is changed, the zoom factor is displayed instead of the time zone suffix until the first cursor operation.

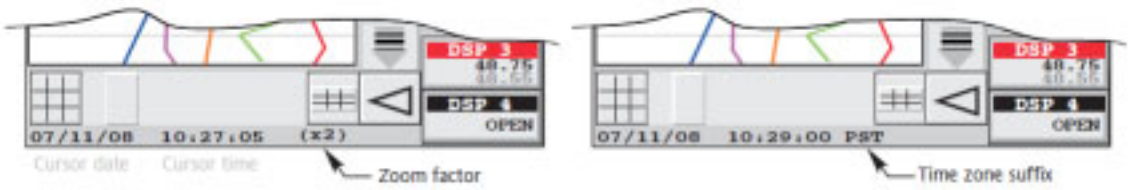


Figure 94 Trend Review Display (Small Frame)

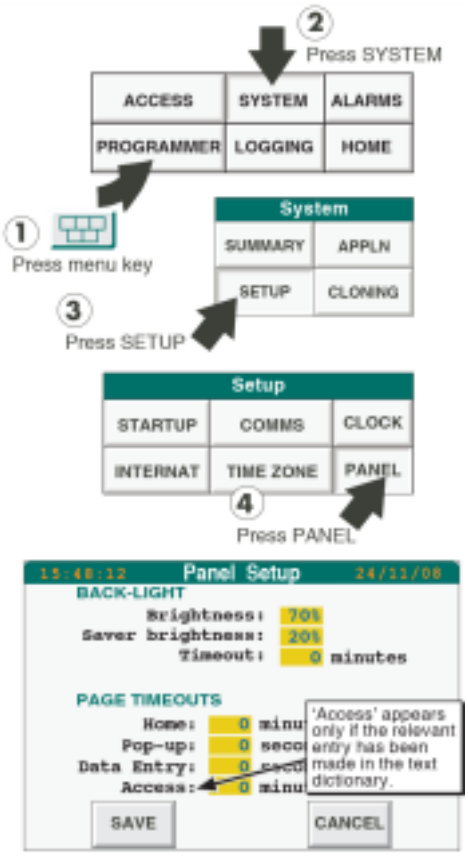
Setting up the Panel Display

The following items can be edited from the Panel Setup page:

1. Backlight properties
   Display Normal and Saver brightness
   Saver Time-out (a value of 0 means no time-out)
   Saver brightness is the screen brightness when the screen saver timeout expires.

2. Page time-out values (a value of 0 means no time-out)
   Home (for any Home pages)
   Pop-up (for the Pop-up menu)
   Data Entry (for the pick-lists and keypads)

3. Time-out to return to Access Level ‘Locked’ (a value of 0 means no time-out).
   If this is enabled (by adding an entry into the text dictionary ("The Dictionary" on page 164, No. 331)) then a time-out period can be set. If the screen is not touched during this period, the instrument access level returns to ‘Locked’.



Access to the Panel Setup Page

1. Press the menu key.
2. Select SYSTEM.
3. Select SETUP.
4. Select PANEL.

The Panel setup page appears

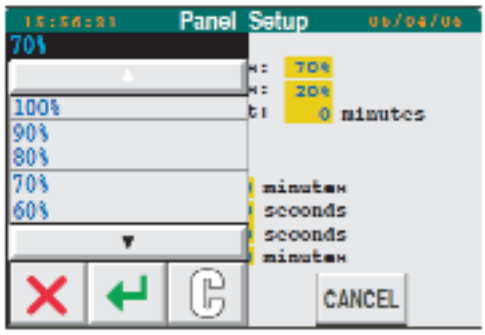
Display Brightness Settings

To prolong backlight life, it is recommended that the normal brightness be set to 70% or lower and that the screen saver be used if the instrument is on but not continuously manned. Pressing either the Brightness or Saver Brightness fields brings up a pick-list of alternative percentage values, staged at 10% intervals.

Choose the required value(s), then Press Return

The pick-list disappears.

To save the selection, press SAVE.



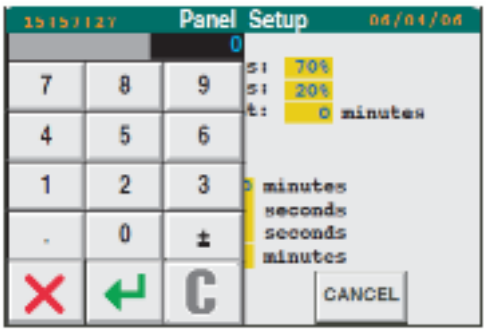
Time-Outs

Pressing any of the other fields brings up a numeric keyboard, from which new values for the various time-outs can be entered.

After each entry, press Return.

The keyboard disappears.

To save the value, press SAVE.



Data Entry

Note: The following adjustment applies only to XGA (large screen) units.

The size of the Data Entry pop-up can be reduced by selecting ‘Small’ for the item ‘Data entry’

Cloning An Instrument

Cloning an instrument consists of copying data between instruments via a USB Bulk storage device, in order to replicate either the characteristics of the instrument or of the application, or of both.

It can also be used to backup data (for example, programs).

Notes:

1. If "Intellectual Property Right Protection (IPRP)" on page 151) is enabled, then data may be cloned only to the original instrument, or to another with the same IPRP settings.
2. From Eycon V7/0 (with Instrument Password support) data may be cloned only to instruments with the same Instrument Password unless the source instrument for the cloning is configured for legacy mode. See "Secure Mode" on page 50 for details.
3. Pre V7/0 Eycon can be cloned to V7/0 and above.
4. Eycon V7/0 and above cannot be cloned to pre V7/0 unless configured for legacy mode.

This section consists of the following subsections:

Accessing the Cloning page (page 143)

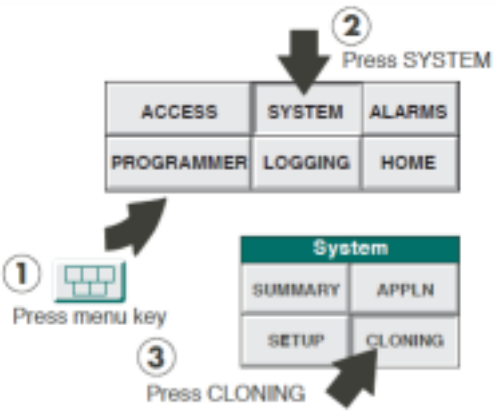
Cloning application data (page 143)

Cloning system (instrument) data (page 145)

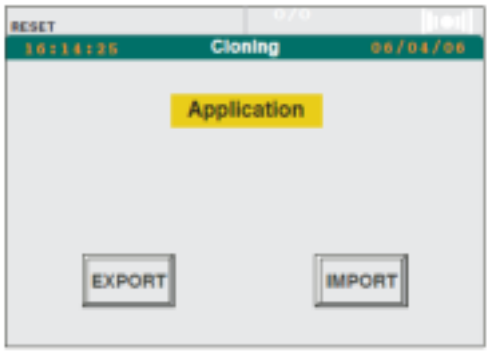
Cloning both application and system data (cloning ALL) (page 146).

Accessing the Cloning Page

1. Press the Menu key
2. Select SYSTEM.
3. Select CLONING



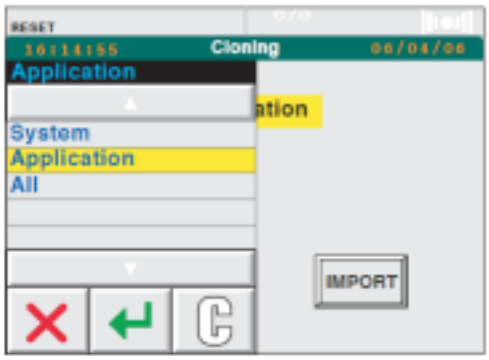
The Cloning page appears.



4. Press the Application field (yellowed)

A pick-list appears, allowing ‘System’, ‘Application’ or ‘ALL‘ to be selected

The highlighted field (‘Application’ in this example) indicates which type of data was last selected for cloning.



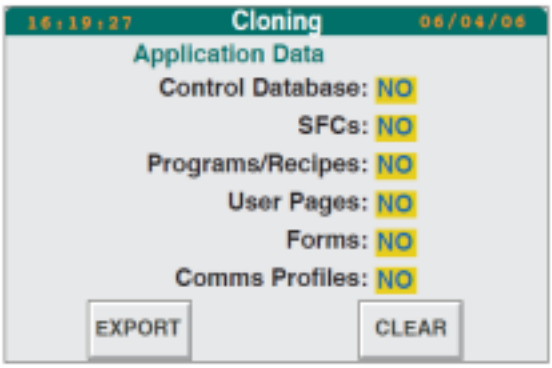
Cloning Application Data

This consists of:

1. Exporting application data
2. Importing application data

Exporting Application Data

From the Cloning page, select Application.



The Application Data Cloning page appears displaying the following fields, described below

1. Control Database
2. SFCs (Sequential Function Charts)
3. Programs/Recipes
4. User pages
5. Forms
6. Comms Profiles

Control Database	This is the instrument's LIN database, consisting of file types .cpf, .dbf, .gwf, .run, .uya, and .uyn.
SFCs	Sequential Function Charts are part of any special strategies in software that may have written to support particular events, circumstances or requirements. They consist of .sdb files.
Programs/Recipes	Setpoint programs and/or recipes that have typically been created on this instrument and which the user now wishes to copy to another instrument. Recipes and Programs consist of .uyy, .uys and .uyr files, and if Batch files are present, .uyb files.
User pages	Written by users to satisfy the control requirements of their particular process. User pages may consist of a single Home page, or a hierarchy of user pages with a Home page at its root. They consist of .ofl and .pnl files.
Forms	Text files that determine how reports are generated. Consist of .uyt and .uyf files.
Comms Profiles	Parameters that determine how the instrument communicates with other instruments. Consist of .uxm file.

Once the required fields have been set to YES the data is exported by touching the EXPORT key at the bottom of the page.

Importing Application Data

From the Cloning page, select IMPORT. The same page as for exporting (shown above) appears with the same fields.

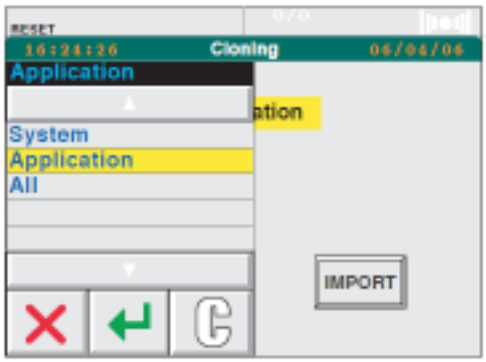
Notes:

1. Imported user pages take immediate effect.
2. .pnl files need the application to be unloaded and reloaded to take effect.
3. Imported Comms profiles need the application to be restarted to take effect.

Cloning System (Instrument) Data

Selecting System Data

From the Cloning page, showing the pick-list of System, Application and All, select System

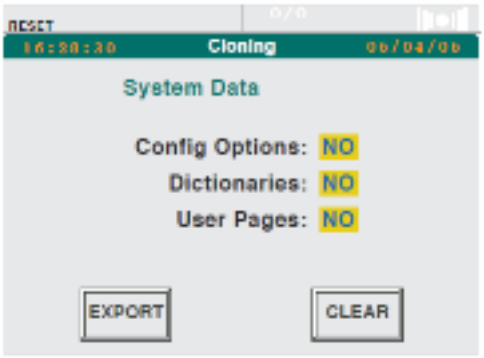


Press Return

The Cloning page confirms the selection.

Exporting System Data

Select EXPORT.



The System Data Cloning page appears with three fields as described below:

1. Config Options
2. Dictionaries
3. User Pages

Config Options	These are: startup strategy, panel settings, comms settings, and current language. Basically they are instrument operation preferences. If the Auditor pack option is enabled, Security Access (if the unit is an Access System Master), Network Audit Trail Setup and Signature Setup are also presented.
Dictionaries	Dictionaries are items within Customisation (see Chapter 5 of this manual).
User pages	User pages also form part of Customisation.

Note: If Access is selected, the exported data must be imported into the destination unit within 60 minutes of export time.

Importing System Data

Imported config options apply on next power-up; dictionaries apply on next power-up or on next change of preferences.

From the Cloning page, select IMPORT. The same page appears as for exporting (shown above) and the same explanations apply.

Note: An instrument may import access data only if it has been exported by the source unit within the previous 60 minutes.

Cloning Both Application and System Data (ALL)

From the Cloning page, select ALL.

Thereafter the procedures are similar to those in "Cloning Application Data" on page 143. and "Cloning System (Instrument) Data" on page 145.

File Manager

The File Manager allows the copying of files between the internal Flash memory and a USB drive, or another, networked instrument. It also allows files to be deleted from the internal memory (except from the ‘H’ drive - the internal archive). As shown in the figures below, any application must be stopped and unloaded before File Manager can be accessed.

Stopping the Application

Figure 95 shows the keystrokes necessary to stop the application.

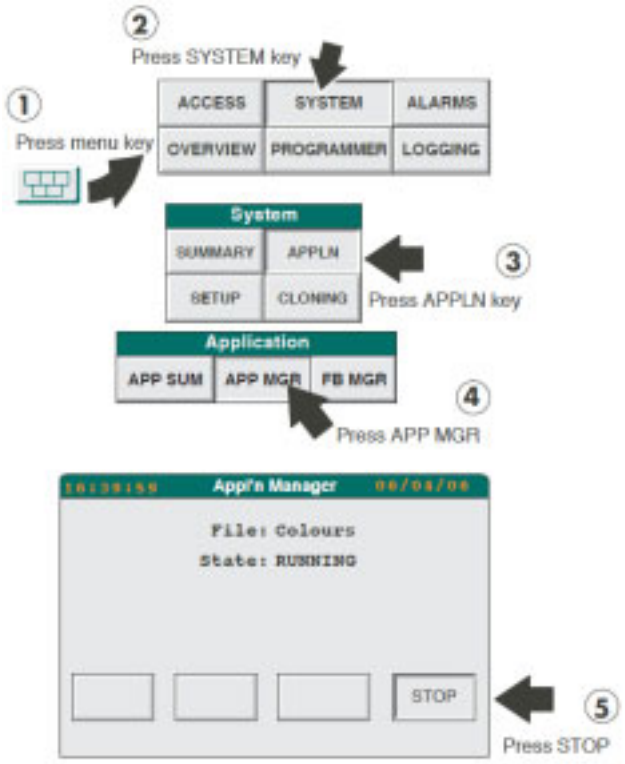


Figure 95 Application Stop

Calling the File Manager

Once the application has been stopped, it can be unloaded and the File Manager called from the ‘Maintenance’ pop-up as shown in Figure 96.

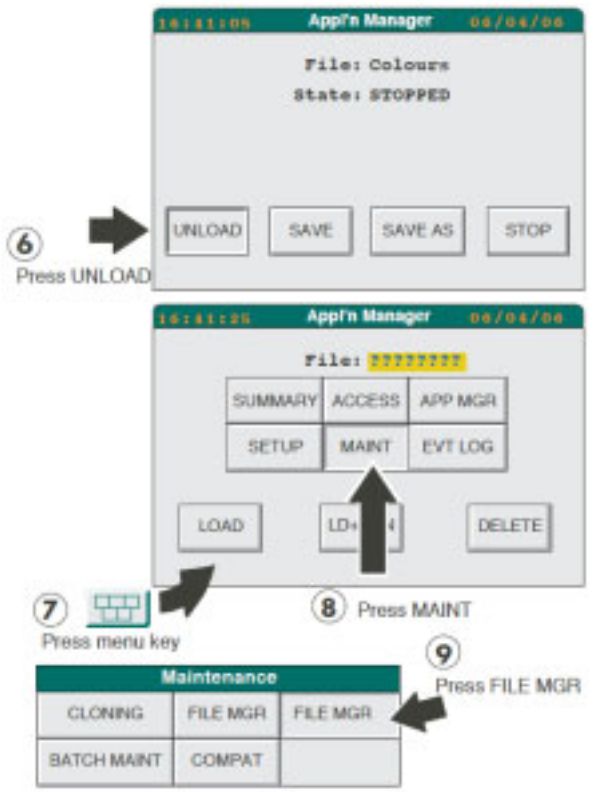


Figure 96 Calling the File Manager

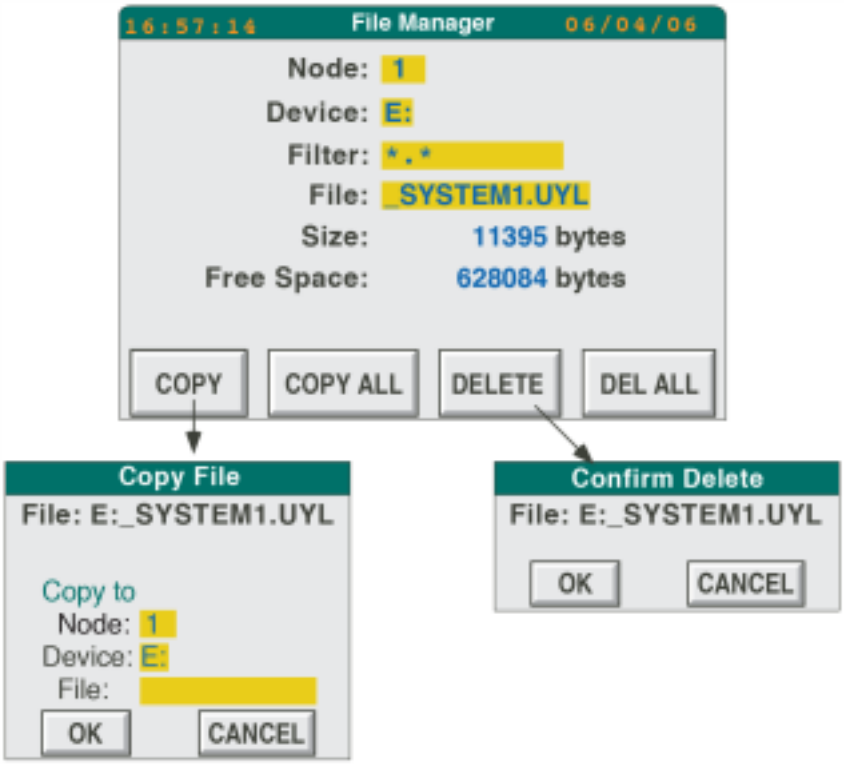
File Copy and Delete

Operation of the ‘FILE MGR’ button in the ‘Maintenance’ pop-up calls the File Manager page. Once this page is on display, either an individual file name can be selected from the relevant drive and the copy or delete key operated, or the COPY ALL/DEL ALL keys can be used to copy or delete all the files, within the selected filter, on that drive.

⚠ CAUTION

1. Files of the form _SYSTEM.XYZ* must not be deleted or the instrument will not operate correctly and revert to a factory configuration
2. The file _DEFAULT.OFL must not be deleted or the faceplates in the overview page will fail to operate correctly,

*XYZ is any three character extension..



⚠ CAUTION

Files must not be deleted from the 'E' drive unless it is certain that the control system will not be impaired by so doing. See the cautionary notes above.

Figure 97 Copy and Delete

Node	For ELIN systems only, the (decimal) number of the LIN node to be accessed
Device	Selectable as E (internal flash memory) or if any of the following are fitted: B (USB Bulk storage device) or H (internal archive).
Filter	Allows file display to be limited to certain types of files. For example, *.* shows all files, whereas, an entry of *.DBF allows only files with .DBF suffix to appear. See 'File' immediately below.
File	Touching this area causes a scroll list of files to be displayed and to be selected (one at a time) for copying or deleting. The range of files displayed can be limited by entering a display 'filter' to limit the scroll list to certain file names or file types.
Size	Shows the size of the selected file.
Free space	Shows the remaining capacity of the drive selected.

Reloading the Application

Operation of the menu key, followed by the APP MGR button in the pop-up menu, returns to the Application Manager page, which allows a file to be selected to be the application. Once a file name has been selected, operation of the LOAD key and then the START key or the LD+RUN key, returns the unit to normal operation.

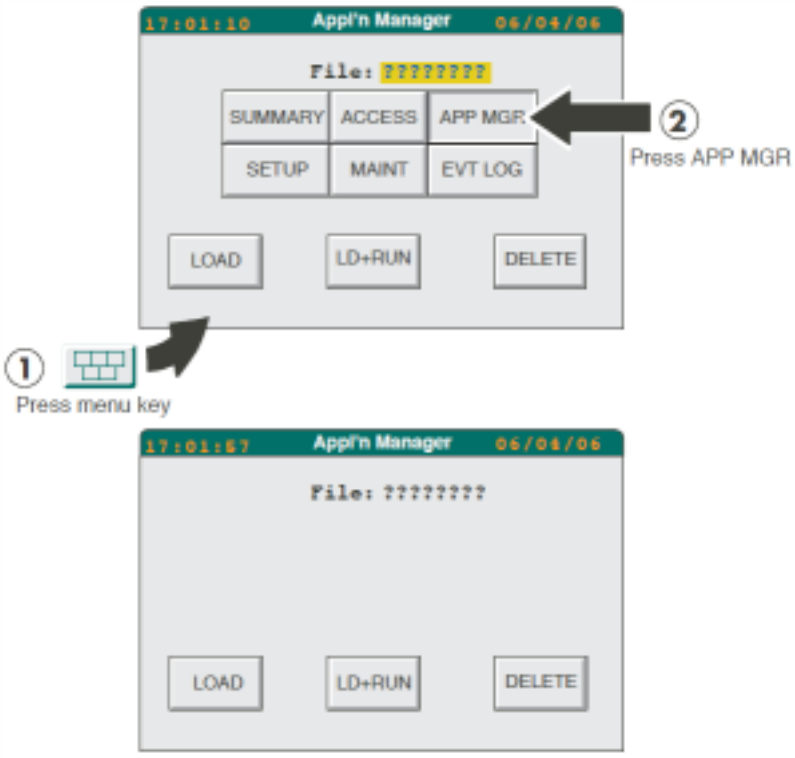


Figure 98 Regaining the Application Manager Page

Recipe Management

Creating Recipe Files

A ‘blank’ recipe file (i.e. a recipe file with no values) can be created from the recipe file page. The recipe editor can then be used to add values.

Recipe Editing

The recipe editor is called by pressing ‘EDIT’ from the recipe menu.

Note: For units fitted with the Auditor Option, an edited recipe must be Saved before it can be downloaded.

ADD Recipe Line

If a spare line is available, a new line can be added by pressing the ‘ADD LINE’ button. (The Option key may need pressing one or more times in order to display this key.) Once added, the RCP (Recipe) cell at the top left of the display can be pressed to change the name of the selected line.

ADD a Variable

A new variable can be added by touching that cell in the left-most (RCP) column, which is immediately above the cell where the new variable is to appear. A Properties Menu appears, which allows the variable name and tag references to be entered.

Note: variables are executed in ‘top-down’ order, so the order in which variables appear can be important.

To add the first variable, press the RCP cell, then the INSERT key on the pop-up menu. The name and tag references of the variable can now be entered. If applicable, Capture and Monitor values can also be edited. The verify field allows the user to define 'Verify' as 'Yes' or 'No'. If set to No, the variable is not checked, during download, to ensure that the value is correctly written. 'No' is used, for example, where a variable may reset itself or change.

Figure 99 shows a typical properties dialogue box.

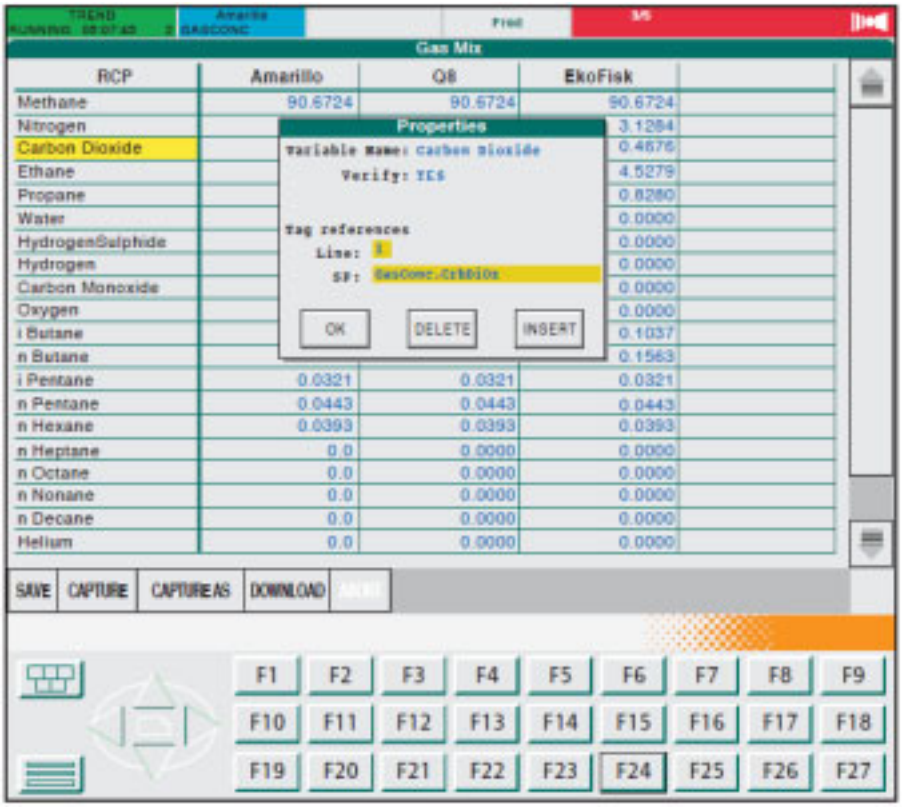


Figure 99 Properties Dialogue Box

TAG References

Touching a variable in the RCP column, calls the Properties menu. This menu allows the variable name, tag references and verification setting to be edited.

Recipe Value

Touching a value in a recipe column, allows a new value to be entered.

Adding a Recipe

To add a new recipe, select an existing recipe to act as a model, and touch that recipe's name. Select NEW from the dialogue box which appears. The new recipe takes the values of the model, and can be edited as required.

Deleting Recipes

Touch the recipe name (at the top of the column), then select DELETE from the pop-up dialogue box.

Saving Recipes

To save changes to the current file name, operate the SAVE button. To make a copy of the file, press SAVE AS.

Recipe File Properties

Touching the RCP cell calls the Recipe File properties dialogue box to the display. This gives the name of the recipe file and the line currently selected, as well as details of the previous file edit. The version field is incremented each time the file is saved.

Further to this there is an editable timeout field allowing a value to be entered to timeout a successful download of a recipe.

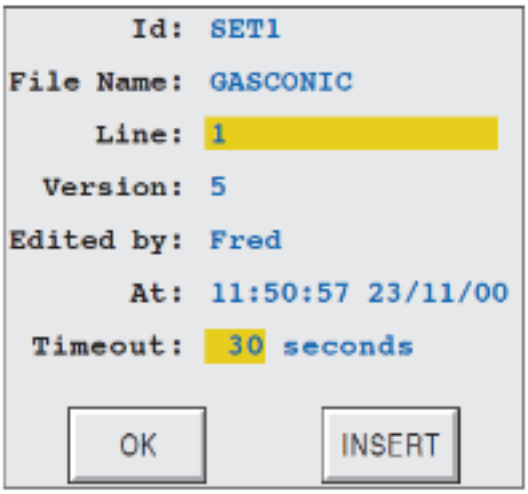


Figure 100 Recipe File Properties Box

Capturing a Recipe

With a recipe file loaded and a recipe selected it is possible to ‘capture’ live values from the running application, for display in the Recipe Monitor page (either in the ‘Capture’ column if available, or in the SP (Live) column if not).

Operation of the CAPTURE button in the monitor page overwrites the existing values in the selected recipe. CAPTURE AS, creates a new recipe with the captured values.

Once values have been captured, they can be modified as required in the Recipe edit page.

OEM Features

Intellectual Property Right Protection (IPRP)

IPRP (also known as IP protection or OEM protection) is configured using LINtools software. For further details see the LINtools help system (normally viewed on screen, but also available as a printable manual HA236001U055.pdf).

IPRP allows individual files to be encrypted with a password. This means:

1. access to an encrypted file can be gained only by a user who is in possession of its password

2. an encrypted file can be used only on instruments authorised to use the file's password.

A Visual Supervisor can be authorised with up to seven different passwords at any one time.

Encryptable file types are database files, sequences, actions and recipes.

Notes:

1. Each file can have the same password as one or more other files, it can have a unique password or it can have no password at all.
2. Files with different passwords can run together provided that the Visual Supervisor on which they are running is authorised to use all the relevant passwords.
3. The Flash memory cannot be cloned
4. If IPRP is configured, the Function Block manager ("Function Block Manager" on page 114) is not available, and the Control Configurator ("The Control Configurator" on page 255) cannot view or edit data.
5. If a recipe is encrypted, it is not possible to view or edit its values at the instrument.

Batch Maintenance

Whenever a batch is loaded, the instrument seeds the batch id with a sequence number (starting from 00000001) to provide a unique batch ID. This number increases throughout the life of the instrument to ensure the batch ID is unique within this instrument. If it is ever required to modify this sequence number the BAT MAINT utility may be used to do this. Possible reasons are replacement of existing instrument or to reset after a commissioning phase. This utility is accessed as shown in Figure 101, below.

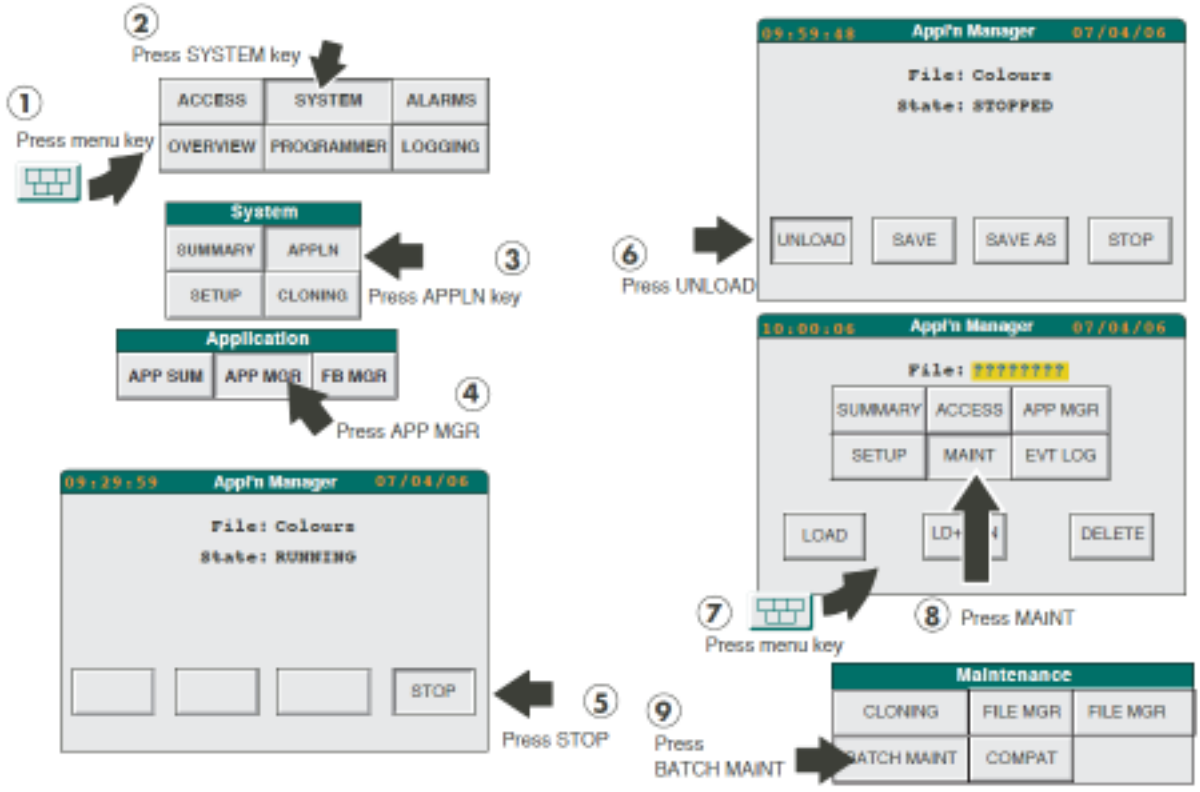


Figure 101 Batch Maintenance Access

The batch sequence number (ID) that was last used is displayed. This may be modified to a new value (the next batch run will take this new value +1). The ID is edited by touching the current Id value, then keying in the required value using the pop-up keyboard which appears.

This facility must be used with caution as, if multiple log files with the same batch ID are imported into Review software, it will view them as the same batch. Unless this is the intention, any records of previous batches with the same ID should be removed from Review before the ID is reset.

Compatibility

This allows the user to set the instrument to operate with the previous programmer version (now called the 'Legacy Programmer') as described in Annex D to this manual. The feature also allows the user to to select one of three different ratios of Function Block memory: SFC memory, as appropriate to the way in which the instrument is to be used.

These settings are accessed via the Maintenance menu, which is itself accessed as described in "Batch Maintenance" on page 152, above.

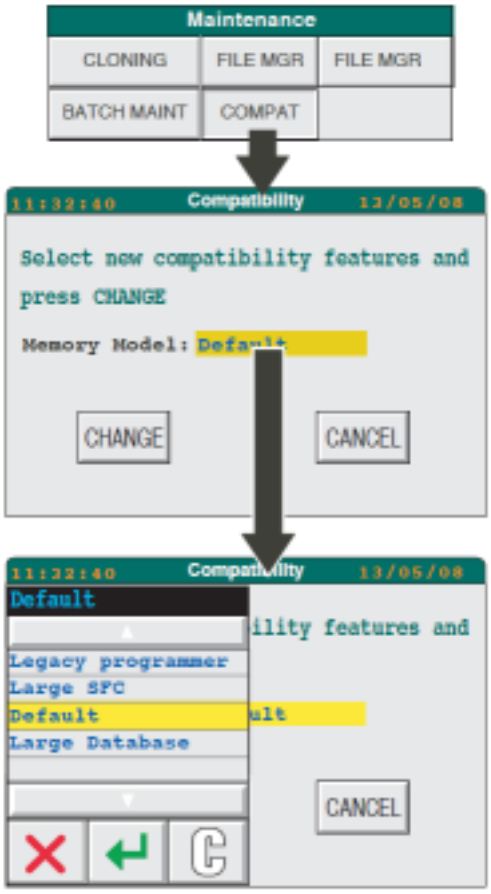


Figure 102 Compatibility Menu

Legacy programmer	Sets the instrument programmer to the type used in previous instrument versions, and as described in Annex D to this manual. 128 kB of database.
Large SFC	SFC = 73 + 112 kB; database memory = 160 kB
Default	SFC = 38 + 56 kB; database memory = 224 kB
Large DB	SFC = 19 + 28 kB; database memory = 288 kB

Editing a Program (Application Editor Version)

The editing process is carried out in one of two ways, according to the Visual Supervisor configuration. "Editing a Program (Spreadsheet)" on page 93 describes the ‘spreadsheet’ method where the program segments and their parameters are arranged in a grid. "Editing a Program (Application Editor Version)" on page 154 describes the ‘Application editor’ method, where programs can be created and edited using a fixed set of segment types (segment classes), these types being created using the ‘Programmer Application Editor’ software included with LINTools.

Introduction

As described in the preceding paragraph, this method of creating or editing programs involves the use of a library of up to 20 segment classes which can be assembled, in any appropriate order, to create or edit a program. Segments might range from those with no operator input (for example a dwell segment for a fixed period) to more complex segments where, for example, the operator may have to choose between two or more fixed values, or even to fill in a full set of parameters (e.g. ramp rate, set point, fall back value etc.).

The Visual Supervisor operator cannot create a segment type; this being done at a pc running LINTools and the ‘Programmer Application editor’ software. The Help systems for these programs describe how to create segment types and download them to the Visual Supervisor, but for completeness, some examples are given in Appendix E to this manual.

As shown in the various illustrations in "New Program Creation" on page 155, segments are represented by push buttons which contain the ‘Short Name’ for the segment class against a background filled with the colour selected for that segment class when it was created. The text is black for all segments except for the current segment (parameters displayed on the screen) the text of which is white. Text colours should be taken into account when selecting background colour. See Appendix E for details of short names and background colour selection.

Default Edit Page

As shown in Figure 103, to display the default edit page, press the menu key, then ‘PROGRAMMER’ and finally ‘EDIT’.

The default edit page appears.

If there are previous programs, one of these can be selected for edit from the ‘Programs’ area (in the top right hand ‘quarter’ of the screen) and ‘LOAD’ pressed, followed by a further operation of the ‘EDIT’ key.

To create a new program, press ‘NEW’ near the bottom left-hand corner of the screen and enter an appropriate file name and program name as requested.

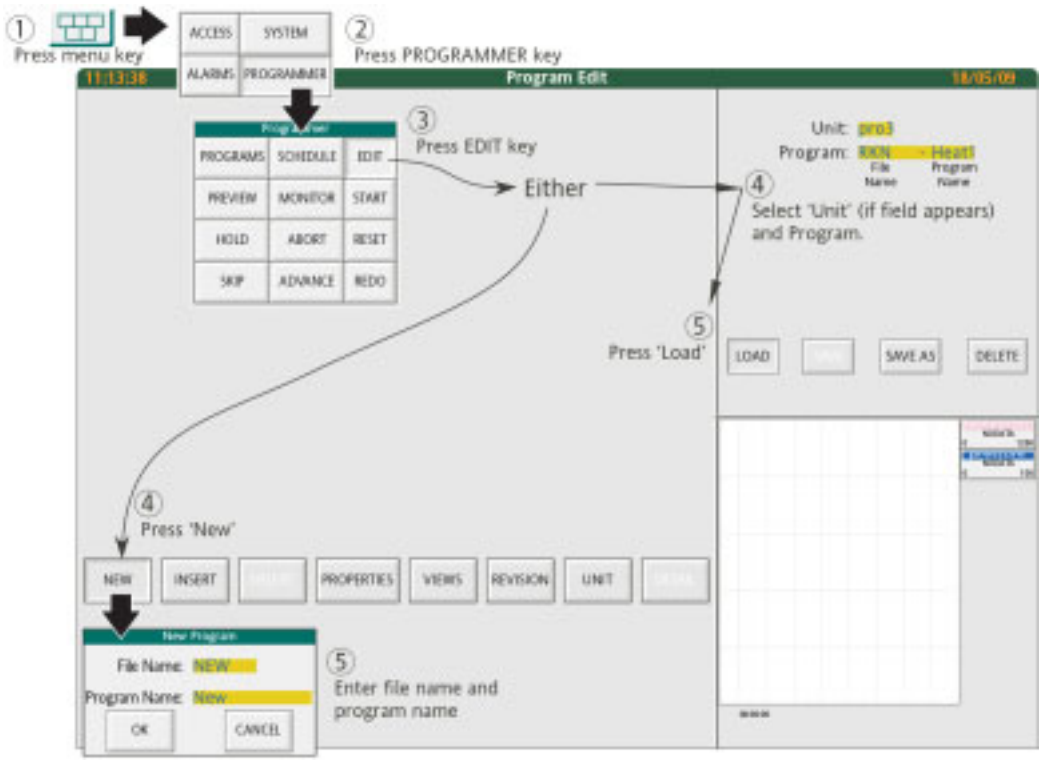
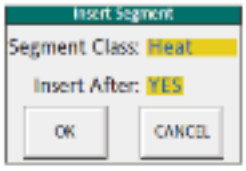


Figure 103 Default Edit Page Access

New Program Creation

The following example creates a new program with six segments whose parameters are predefined in the Program Application editor. The segments used are called (short names): Heat, Soak, Cool and End:

Note: This is not intended to be a realistic program - the example is intended only to show the editing technique. The user will be able to carry out this procedure only if segment classes have been created and downloaded to the Visual supervisor.



1. Press the ‘NEW’ key near the bottom left-hand corner of the screen, and enter a suitable file name and program name, as shown in Figure 103, above.
2. Press the ‘INSERT’ key. - the ‘Insert Segment’ dialogue box appears.
3. The default segment class that appears is the next segment class in the template, starting with the first - in this example, ‘Heat’. Press OK.
4. The Heat segment pushbutton appears, together with its editable parameters and a preview (Figure 104). The Segment duration is displayed here even though it is not editable except by changing the ‘Chan1 Target’ value and the selected Ramp speed.

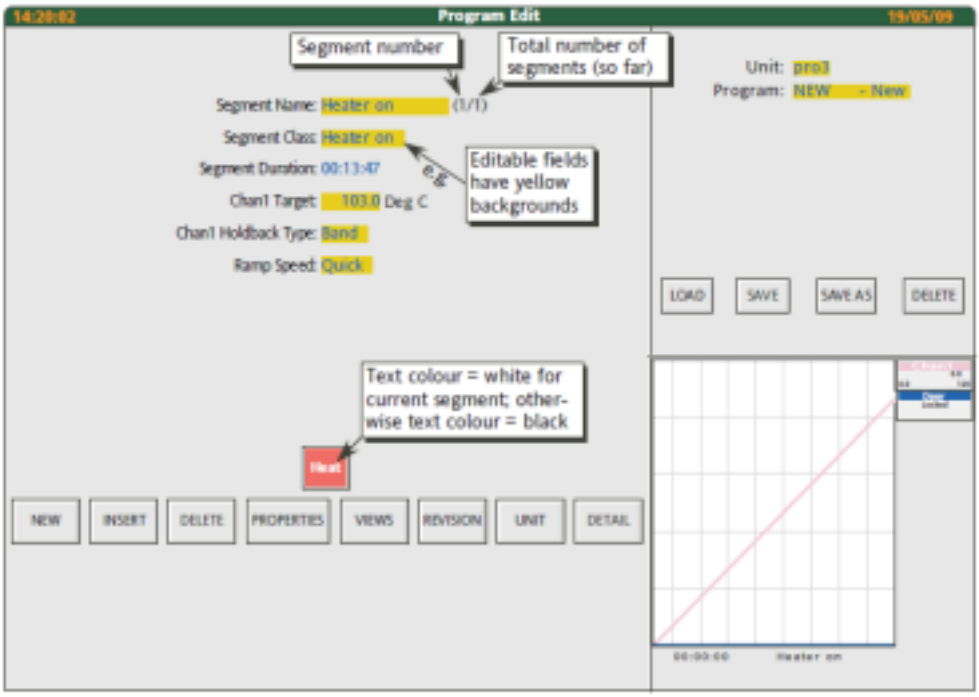


Figure 104 First Segment.

5. Operate ‘Insert’ again. The ‘Insert Segment’ pop-appears again, with the default next segment (Maintain) (Figure 105.
6. Continue to insert segments in the order ‘Cool’, ‘Heater on’, ‘Cool’, ‘End’. to end up with the display shown in Figure 106.
7. The program can now be Saved (SAVE) and Run (LOAD/START) if required.

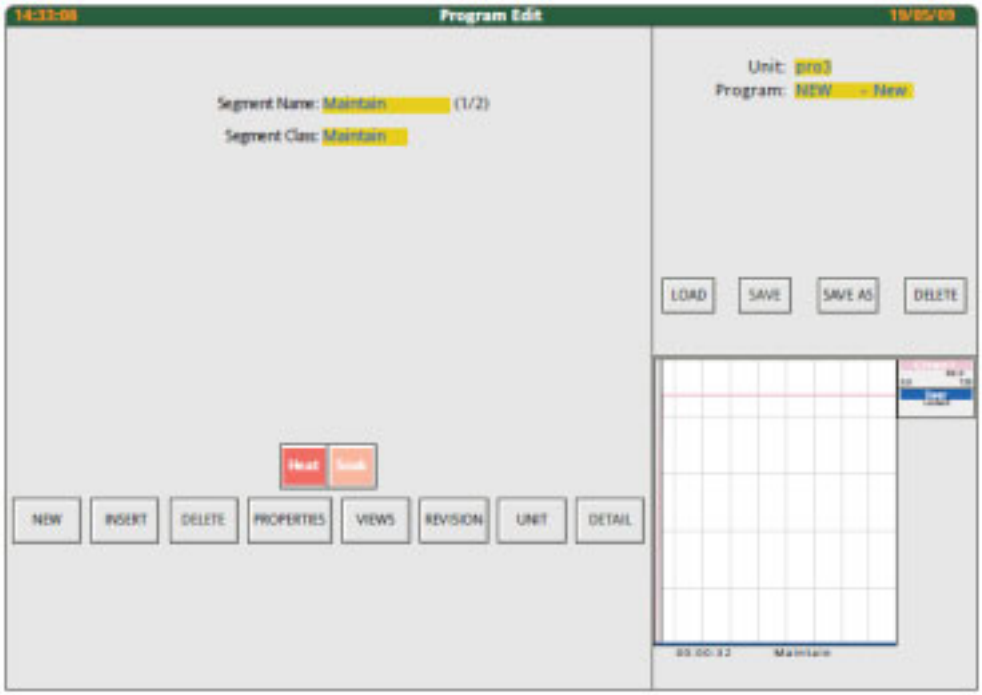


Figure 105 Adding a Second Segment

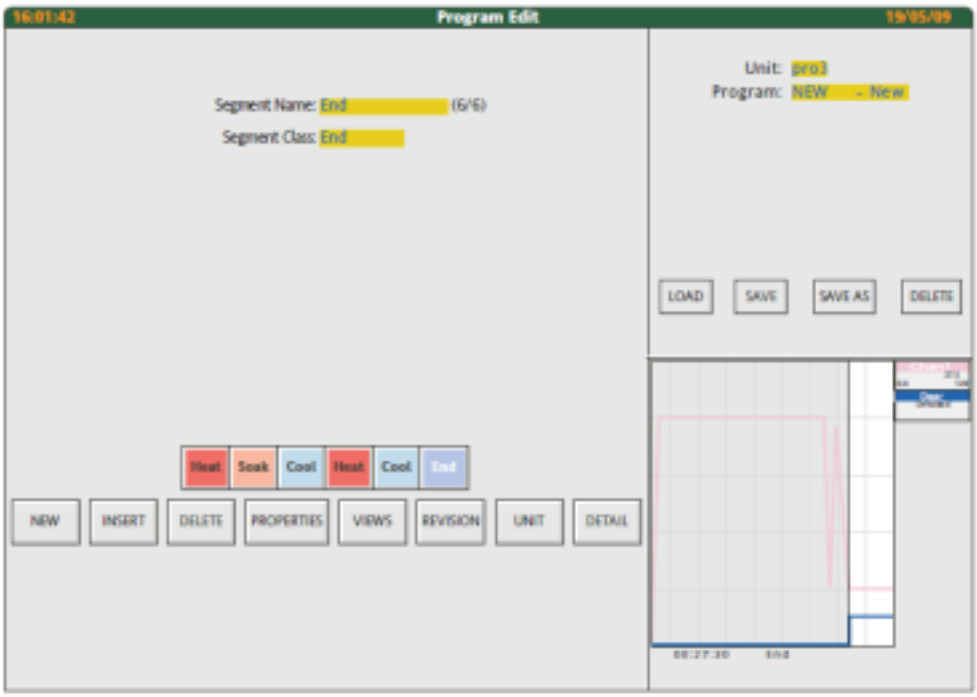


Figure 106 After Adding the Final Segment

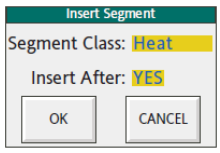
Fixed Function Keys

NEW

Allows the user to start creating a new program.

INSERT

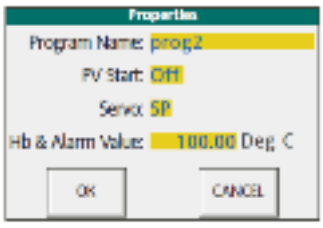
Allows the user to append or to insert a new segment. Clicking on 'Segment Class' calls a picklist of segment classes from which to choose, these classes having previously been defined in the Programmer Application editor. By default, Insert always produces the next segment class, in the order created in the Programmer Application Editor.



Insert after = Yes, causes the new segment to be added after the current segment. Insert after = No, causes the new segment to appear before the current segment.

DELETE

Deletes the currently selected segment (without confirmation being required).



PROPERTIES

Displays editable information about the Program

VIEWS

Allows the user to include or to hide 'Preview', 'Programs' and 'Schedule' views. These three views are located in the right-hand third of the screen, with 'Programs' at the top, 'Preview' in the middle and 'Schedule' at the bottom. If any one or more of these views is not present, the other views share the space equally.

See 'Views', below, for more details.

REVISION	Gives update details showing when the program was last saved.
UNIT	Allows the user to select a unit, if more than one is configured.
DETAIL	Shows full details of the configuration of the current segment.

Views

By default, the screen is split vertically between the edit area (2/3rds the width of the screen) and the supplementary views area (the right-most third of the screen) which itself is split in half horizontally, with the ‘Programs’ pane at the top and the ‘Preview’ pane at the bottom.

The ‘Views’ key allows the user to change the appearance of the display, to allow any or none of the supplementary views (Programs, preview and Schedule) to be included. If one or more of the views is enabled for viewing, they share the height of the screen equally. If none of these views is enabled for viewing, the edit area expands to fill the full width of the screen.

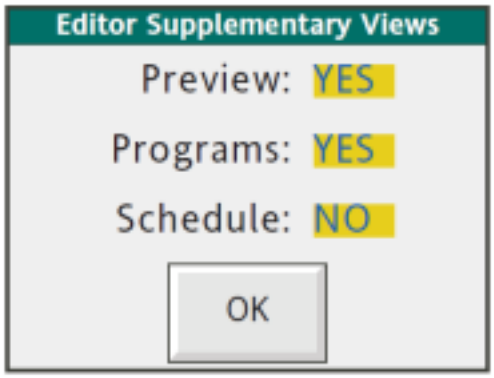


Figure 107 Views Key Pop-up Menu

Programs

This appears in the upper right hand corner of the display screen, and allows the user to select a program for editing, or to save a new or edited program and so on.

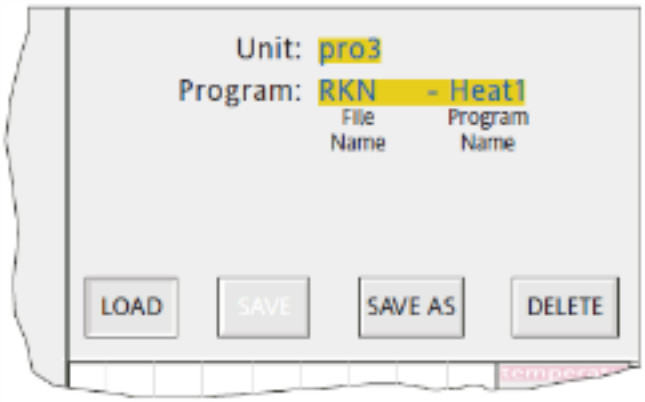


Figure 108 Programs View

Preview

This appears (by default) in the lower right hand corner of the display, but the illustration below shows it in the vertical centre illustrating the case where all three supplementary views are enabled.

Preview shows a profile of the entire program, with the current segment against a white background - the non current segments being shown against a grey background.

A cursor (a vertical dotted line), initially located at the beginning of the segment, can be dragged horizontally to any position within the current segment, and the values of the traced parameters at the cursor position can be read using the faceplates. Cursor time and the segment name normally appear below the ‘chart’, but the figure below shows the case where the option key has been operated in order to display the ‘Plot’ and ‘Unit’ keys. Plot allows the trace colours to be selected. Unit allows a different Unit (if any) to be selected.

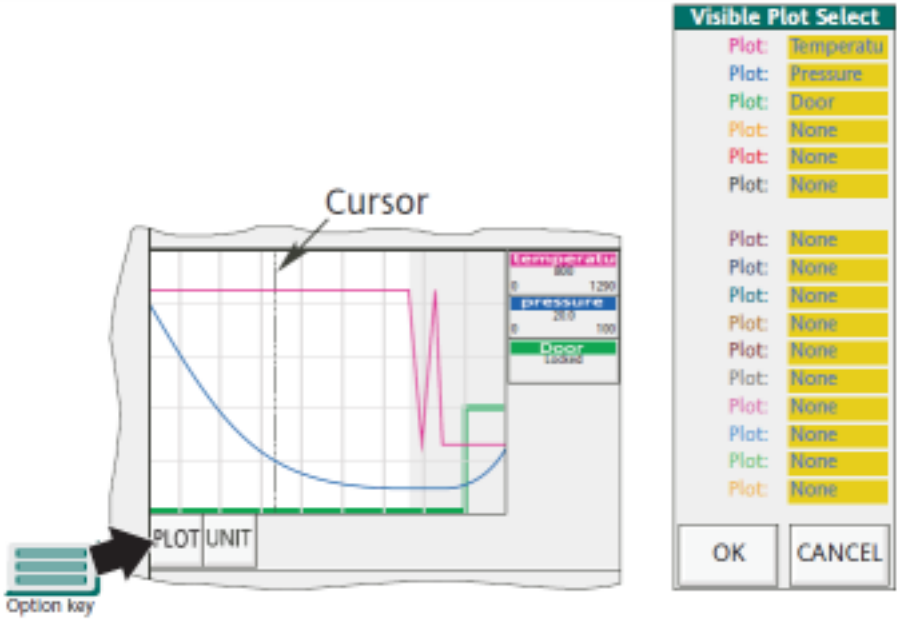


Figure 109 Preview View

Schedule

This allows the user to configure a selected program to run, starting at a defined date and time. If a program is so scheduled a circular orange beacon appears in the top left corner of the program pane.

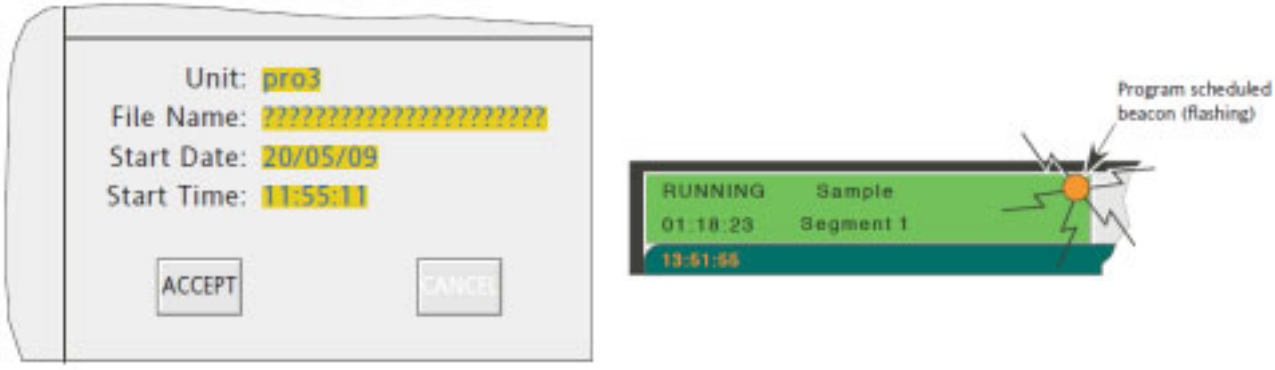


Figure 110 Schedule View

Program Editing

Program editing uses the same processes as described above for new program creation, except that the user selects an existing program for editing, instead of using the New Key. Once a program has been edited, it must be Saved before the edits become active.

Small Frame Exceptions

The above description shows the large frame Supervisor. The small frame unit is similar, except that fewer items can be shown on the screen simultaneously. For example, if there are more segments than can be fitted across the width of the screen, scroll keys appear allowing access to ‘hidden’ segments.

When being used with CJK style languages, Multi-pane viewing (supplementary views) is not available for the small frame unit.

Other Notes

1. If the program is edited without using the application editor (e.g. by direct block edits) then the program might not subsequently display correctly.
2. If the segment ID has been modified, it will not display correctly. If a segment or question or answer is deleted, the program will no display correctly.
3. Once programs have been created using an Application Manager template, only the following edits may be made to the template:
    a. New classes may be added to the end of the list
    b. New ‘Answers’ may be added to the end of the list
    c. Limits may be changed
    d. Preset lists may be edited
    e. New items may be added to the User list.
4. When programs are being visualised from more than one node, both nodes must use the same template file (i.e. not two copies of the file). Otherwise the program might not display correctly.
5. No changes may be made to a running program, unless it has first been put into Hold mode. When in Hold mode, only Target Setpoints, User Values and Events may be changed, (if these items have been configured to be user editable).

Customising

This chapter describes how to customise the Standard Interface; it consists of the following sections:

Introduction

"Introduction" on page 161 to "Database Names" on page 215, show how to replace the supplied screen-displayed texts with ones more suited to a particular process, in a different language and so on.

Each of these can involve either:

1. replacing text items displayed by the instrument’s Standard Interface; and/or
2. writing new text, either for any other national language versions of the Standard Interface that might be required, or for any so-called User-screens being developed.

"Form Files" on page 217 describes how to format reports. "Recipe Files" on page 223 to "Bar Code Reader Files" on page 231 contain details of how to create or edit recipe, batch and card-reader files and "Database Change Audit Trailing" on page 236 describes audit trailing of application values.

The Dictionaries

Displayed texts are held in files called dictionaries, covered in "The System Text Dictionary" on page 162 to "The Programmer Text Dictionary" on page 204 and "Writable Dictionary" on page 227 to "The Batch Dictionary" on page 228. There are specific customisable dictionary files for each of the following types of texts:

1. Standard Interface, excluding the Error and Event messages
2. Error messages
3. Event messages
4. The texts of any User pages (the ‘User screens’)
5. Programmer texts.
6. Writeable (modifiable) texts for use with the batch system and in reports.
7. Recipe texts
8. Batch texts

The texts of the Standard Interface are held in the System text dictionary, Error messages are held in the Error Text dictionary, and Event messages are held in the Event Text dictionary. These three dictionaries make up the _system.uyl file.

User screen and Programmer text dictionaries are initially empty, for users to fill as required. These two dictionaries make up the _user.uyl file.

DICTIONARY NAME	FILE NAME	RECORD SYNTAX
System text	_system.uyl	S<N>,<text>
Error text	_system.uyl	E<N>,<text>
Event text	_system.uyl	V<N>,<text>
User text	_user.uyl	U<N>,<text>
Programmer text	_user.uyl	P<N>,<text>
Writeable text	_user.uyl	W<N>,<initial text>
Recipe texts	Not applicable	Not applicable
Batch texts	Not applicable	Not applicable

where <N> is the index number of the record ("File Structure" on page 163).

Customising an existing .uyl file or building a new one is done by editing the files on a PC using a standard text editor (for example, Windows Notepad) and then cloning them into the Visual Supervisor by USB device.

Panel Navigation and Database Names

Panel navigation ("Panel Navigation" on page 204) describes how to change the layout (the architecture) of the Standard Interface. A completely new architecture can be created if required.

Database names ("Database Names" on page 215) describes how to change the names of function blocks, alarms, and of items called enumerations which are usually two-state Boolean variables such as ON/OFF and TRUE/FALSE.

The System Text Dictionary

The System text dictionary holds all the text displayed by the instrument’s Standard Interface, except for the following:

1. Error messages
2. Event messages

3. Segment type names, and text in menus and column headers.

Of these, Error messages and Event messages are held in their own dictionaries and can be customised through those.

Commands, segment type names, and text in menus and column heads are held elsewhere and cannot be customised.

In customising the System dictionary, it is possible to:

1. replace any text item with text for a particular industry or application, and/or
2. the text can be internationalised by creating new dictionaries for each of up to ten languages

File Structure

In the listing of the System text dictionary in "The Dictionary" on page 164, the column header running throughout is:

No. Context Class Max Text

No.	Stands for REFERENCE NUMBER
CONTEXT	Describes the application to which the text relates. For example, STARTUP, COMMS, or CLOCK.
CLASS	Describes the type of text. For example, title of a dialogue box, button text, or error message.
MAX	The maximum permissible length of the replacement text, in number of characters.
TEXT	The default text that the instrument is supplied with for this item.

Editing System Text

The System text dictionary is held in the _system.uyl file. In the print-out of this file in "The Dictionary" on page 164:

1. Find the text to be replaced (first find its Context, then its Class, then the Text itself)
2. Note its reference number
3. Key in the reference number, and then the new text, related by the following syntax: S<N>, <text>

where:

<N> is the reference number of the record you want to change

<text> is the replacement text.

For example, S12,Display error.

For any text item not replaced in the .uyl file, the version in the ROM file will be used.

New Language Versions

For each language a file called a _system<n>.uyl file must be built, using the same syntax as above. The variable <n> in each file name specifies the particular national language by taking integer values from 0 up to a maximum of 9, one value for each language which is to be available. The correspondence (mapping) between language and integer is decided by the user.

For example, the file holding terms in English might be the file named _system0.uyl

with a typical record S2,FILE UPDATE.

Simplified Chinese characters are supported and this may allow up to five Chinese/Japanese/Korean (CJK) languages to be supported in files _SYST<n>.uyl, where n is 10 to 14.

Note: The appearance of the instrument pages may be altered when operating in CJK languages

The Dictionary

On delivery of the Visual Supervisor, the contents of the System text dictionary (abridged) are as set out below.

Notes:

1. Items where ‘ : ’ is the final character always have a space after the ‘ : ’ for formatting purposes
2. Leading space characters are significant
3. Any printable character of the Unicode Latin-1 set may be used.

No.	Context	Class	Max	Text
1	GLOBAL	BUTTON_TEXT	12	OK
2	OIFL	DIALOG_TITLE	28	FILE UPDATE
3	OIFL	DIALOG_TEXT	80	The User Page file has changed. The panel system will now reload.
4	GLOBAL	HIDE_CHAR	1	
5	GLOBAL	UPDATE_ERROR	1	
6	GLOBAL	DISP_ERROR	1	
12	OIFL	OIFL_ERROR	20	OIFL ERROR
13	OIFL	OIFL_ERROR	20	BAD FILE
14	OIFL	OIFL_ERROR	20	BAD LINE
15	OIFL	OIFL_ERROR	20	BAD EOF
16	OIFL	OIFL_ERROR	20	MEMORY
17	OIFL	OIFL_ERROR	20	SYNTAX
18	OIFL	OIFL_ERROR	20	RANGE
19	OIFL	OIFL_ERROR	20	NAME
20	OIFL	OIFL_ERROR	20	DICTIONARY
21	OIFL	OIFL_ERROR	20	TYPE
22	OIFL	OIFL_ERROR	20	ACTION
31	ALMMENU	MENU_TITLE	16	Alarms
32	ALMMENU	LEGEND	11	ALARMS
33	ALMMENU	LEGEND	11	ACK
34	ALMMENU	LEGEND	11	ACK ALL
35	ALMMENU	LEGEND	11	HISTORY
36	ALMMENU	LEGEND	11	SUMMARY
37	ALMMENU	DIALOG_TEXT	80	This will acknowledge every alarm.
38	ALMMENU	BUTTON_TEXT	12	OK
39	ALMMENU	BUTTON_TEXT	12	CANCEL

No.	Context	Class	Max	Text
40	ALMMENU	LEGEND	11	ABORT
41	ALH	PAGE_TITLE	20	Alarm History
42	ALH	LEGEND	11	ALM HIST
43	ALH	ALH_TITLE	8	TYPE
44	ALH	ALH_TITLE	8	ACTIVE
45	ALH	ALH_TITLE	8	CLEAR
46	ALH	LEGEND	11	FILTER
47	ALH	ALH_FILTER	8	= ALL
48	ALH	ALH_FILTER	8	= ALARMS
49	ALH	ALH_FILTER	8	= AREA
50	ALH	ALH_FILTER	8	= GROUP
51	ALH	ALH_FILTER	8	= BLOCK
52	ALH	ALH_FILTER	8	= EVENTS
53	ALH	ALH_FILTER	8	= SYSTEM
54	ALH	DIALOG_TEXT	80	This will acknowledge every alarm under the selected filter.
56	ALH	ALH_TITLE	8	ACK
57	ALH	PAGE_TITLE	20	Alarm summary
59	ALH	ALH_FILTER	8	=MSGS
60	FB_MGR	BUTTON TEXT	12	SUPPRESSION
61	ALMMENU	PAGE_TITLE	20	Add Note
62	ALMMENU	LEGEND	11	NOTE
63	ALMMENU	INTRO	64	Adds a Note to the Alarm History list.
64	ALMMENU	ITEM_TITLE	16	Your note:
65	FB_MGR	PAGE_TITLE	20	Alarm suppression times
66	ALMMENU	LEGEND	11	LOG
67	ALH	PAGE_TITLE	20	Event Log
68	ALMMENU	LEGEND	11	EVT LOG
69	FB_MGR	BUTTON TEXT	8	ALARMS
70	ALMMENU	PAGE_TITLE	20	Suppressed Alarms
71	ALMMENU	PAGE_TITLE	20	Alarm Archive
72	ALMMENU	LEGEND	11	ARCHIVE
73	ALMMENU	INTRO	64	Archive to disk the alarm history
74	ALMMENU	DIALOGUE_TITLE	28	Acknowledging All Cached Block Alarms
75	ALMMENU	ITEM_TITLE	16	Remaining:
76	ALMMENU	ITEM_TITLE	16	Block:
77	PRINTER	ALM_TYPE	3	ACK
78	PRINTER	ALM_TYPE	3	ACT
79	PRINTER	ALM_TYPE	3	CLR
90	APPMGR	DIALOG_TITLE	28	Load Error
91	FATAL	FATAL_ERROR	20	No cold/hot start
92	FATAL	FATAL_ERROR	20	No hot start
93	FATAL	FATAL_ERROR	20	No cold start
94	SYSTEM	DIALOG_TITLE	28	Missing template libraries
98	ALMMENU	LEGEND	11	SUPPRESSED
100	ALMMENU	ALM SUP ITEM	11	CLEAR DUE

No.	Context	Class	Max	Text
101	MONTH	MONTH	3	Jan
102	MONTH	MONTH	3	Feb
103	MONTH	MONTH	3	Mar
104	MONTH	MONTH	3	Apr
105	MONTH	MONTH	3	May
106	MONTH	MONTH	3	Jun
107	MONTH	MONTH	3	Jul
108	MONTH	MONTH	3	Aug
109	MONTH	MONTH	3	Sep
110	MONTH	MONTH	3	Oct
111	MONTH	MONTH	3	Nov
112	MONTH	MONTH	3	Dec
113	ALH	DATE POOR CHAR	1	*
114	ALH	TIME POOR CHAR	1	*
115	ALMMENU	ALM SUP ITEM	11	– – – – – – – – – –
116	ALMMENU	ALM SUP ITEM	17	– – – – – – – – – – – – – – – –
120	GLOBAL	BUTTON_TEXT	12	OK
121	GLOBAL	BUTTON_TEXT	12	OK ALL
122	GLOBAL	BUTTON_TEXT	12	CANCEL
123	GLOBAL	BUTTON_TEXT	12	ABORT
124	GLOBAL	BUTTON_TEXT	12	SKIP
125	GLOBAL	BUTTON_TEXT	12	SAVE
126	GLOBAL	BUTTON_TEXT	12	ERROR
127	GLOBAL	SYSSUM_ITEM	8	<NONE>
128	GLOBAL	BUTTON_TEXT	12	NO
129	GLOBAL	BUTTON_TEXT	12	YES
130	SYSMENU	MENU_TITLE	16	System
131	SYSMENU	LEGEND	11	SYSTEM
132	SYSSUM	PAGE_TITLE	20	System Summary
133	SYSSUM	LEGEND	11	SUMMARY
134	SYSSUM	ITEM_TITLE	18	Instrument type:
136	SYSSUM	ITEM_TITLE	18	Touch/keypad:
137	SYSSUM	ITEM_TITLE	18	Firmware:
138	SYSSUM	ITEM_TITLE	18	Media:
139	SYSSUM	ITEM_TITLE	18	Option cards:
140	SYSSUM	SYSSUM_ITEM	8	Eycon-10, or Eycon-20 according to model
141	SYSSUM	SYSSUM_ITEM	8	Standard
145	SYSSUM	SYSSUM_ITEM	8	kBytes
146	SYSSUM	ITEM_TITLE	18	DRAM:
147	SYSSUM	ITEM_TITLE	18	SRAM:
150	SYSSUM	SYSSUM_ITEM	8	TOUCH
151	SYSSUM	SYSSUM_ITEM	8	KEYPAD
154	SYSSUM	SYSSUM_ITEM	8	MBytes
157	SYSSUM	ITEM_TITLE	8	Internal Archive:
158	SYSSUM	SYSSUM_ITEM	8	IDE
159	SYSSUM	ITEM_TITLE	18	USB(Bulk)

No.	Context	Class	Max	Text
160	SYSSUM	PARA	20	Software options
163	SYSSUM	SYSSUM_ITEM	8	ETHERNET
166	SYSSUM	SYSSUM_ITEM	8	Report
167	SYSSUM	SYSSUM_ITEM	8	Recipe
168	SYSSUM	ITEM_TITLE	18	Reader:
169	SYSSUM	ITEM_TITLE	18	Batch:
170	APPSUM	PAGE_TITLE	20	Appl'n Summary
171	APPSUM	LEGEND	11	APP SUM
172	APPSUM	ITEM_TITLE	16	Application:
173	APPSUM	ITEM_TITLE	16	Machine State:
174	APPSUM	PARA	24	Memory Usage
180	APPSUM	APPSUM_STATE	10	OFF
181	APPSUM	APPSUM_STATE	10	RESET
182	APPSUM	APPSUM_STATE	10	IDLE
183	APPSUM	APPSUM_STATE	10	RUNNING
184	APPSUM	APPSUM_STATE	10	STOPPED
185	APPSUM	APPSUM_STATE	10	ERROR
189	APPSUM	ITEM_TITLE	16	Ctrl VolDB:
190	APPSUM	ITEM_UNITS	9	kB
191	APPSUM	ITEM_TITLE	16	Control DB:
192	APPSUM	ITEM_TITLE	16	Programmer:
193	APPSUM	ITEM_TITLE	16	SFC DB:
194	APPSUM	ITEM_TITLE	16	SFC ST:
195	APPSUM	ITEM_TITLE	16	Modbus slave:
196	APPSUM	ITEM_TITLE	16	Modbus master:
197	APPSUM	ITEM_TITLE	16	transient:
198	APPSUM	ITEM_TITLE	16	Profibus Master:
200	STARTUP	PAGE_TITLE	20	Startup Strategy
201	STARTUP	LEGEND	11	STARTUP
202	STARTUP	ITEM_TITLE	18	Hot Start:
203	STARTUP	ITEM_TITLE	18	Warm Start:
204	STARTUP	ITEM_TITLE	18	Cold Start:
205	STARTUP	ITEM_TITLE	18	Startup State:
206	STARTUP	ITEM_TITLE	18	Hot-start time:
207	STARTUP	ITEM_TITLE	18	Brown-out time:
220	COMMS	PAGE_TITLE	20	Comms Setup
221	COMMS	LEGEND	18	COMMS
222	COMMS	DIALOG_TEXT	80	The settings specified are invalid.
223	COMMS	DIALOG_TITLE	28	Hardware check
224	COMMS	DIALOG_TEXT	80	IMPORTANT: Ensure comms cables are unplugged before pressing 'OK' to continue.
228	COMMS	COMMS_ITEM	8	Ethernet
240	COMMS	COMMS_ATTR	9	PORT
241	COMMS	COMMS_ATTR	9	Hardware
242	COMMS	COMMS_ATTR	9	Protocol
243	COMMS	COMMS_ATTR	9	Node No.

No.	Context	Class	Max	Text
244	COMMS	COMMS_ATTR	9	Baud
245	COMMS	COMMS_ATTR	9	Parity
246	COMMS	COMMS_ATTR	9	Data Bits
247	COMMS	COMMS_ATTR	9	Stop Bits
248	COMMS	COMMS_ATTR	9	Timeout
249	COMMS	COMMS_ATTR	9	Talk Thru
251	COMMS	COMMS_ITEM	8	None
253	COMMS	COMMS_ITEM	8	TermCfg
254	COMMS	COMMS_ITEM	8	Modbus/S
255	COMMS	COMMS_ITEM	8	Modbus/M
261	COMMS	COMMS_ITEM	8	NONE
262	COMMS	COMMS_ITEM	8	EVEN
263	COMMS	COMMS_ITEM	8	ODD
266	COMMS	COMMS_ITEM	8	RS422
267	COMMS	COMMS_ITEM	8	RS485
270	CLOCK	PAGE_TITLE	20	Clock Setup
271	CLOCK	LEGEND	11	CLOCK
272	CLOCK	ITEM_TITLE	16	Date:
273	CLOCK	ITEM_TITLE	16	Time:
274	CLOCK	BUTTON_TEXT	12	SET
275	CLOCK	BUTTON_TEXT	12	Hr +1
276	CLOCK	BUTTON_TEXT	12	Hr -1
277	CLOCK	INTRO	64	Clock configured as master
278	CLOCK	INTRO	64	Clock configured as slave
279	CLOCK	INTRO	64	Clock configured as SNTP client
280	SYSSUM	ITEM_TITLE	18	SPP/SFC
281	SYSSUM	ITEM	8	SPP
282	SYSSUM	ITEM	8	SFC
283	SYSSUM	ITEM	8	DB
288	SYSSUM	ITEM_TITLE	21	IPR Protection:
289	SYSSUM	SYSSUM_ITEM	8	Auditor:
290	INTERNAT	PAGE_TITLE	20	Internationalise
291	INTERNAT	LEGEND	11	INTERNAT
292	INTERNAT	ITEM_TITLE	14	Language:
293	INTERNAT	ITEM_TITLE	14	Date Format:
294	INTERNAT	ITEM_TITLE	14	Time Format:
295	INTERNAT	ITEM_TITLE	14	Duration Fmt:
296	INTERNAT	BUTTON_TEXT	12	CHANGE
300	INTERNAT	LANGUAGE	12	English
301	INTERNAT	LANGUAGE	12	French
302	INTERNAT	LANGUAGE	12	German
303	INTERNAT	LANGUAGE	12	Italian
304	INTERNAT	LANGUAGE	12	Spanish
305	INTERNAT	LANGUAGE	12	Lang_5
306	INTERNAT	LANGUAGE	12	Lang_6
307	INTERNAT	LANGUAGE	12	Lang_7

No.	Context	Class	Max	Text
308	INTERNAT	LANGUAGE	12	Lang_8
309	INTERNAT	LANGUAGE	16	Portuguese
310	PANEL	PAGE_TITLE	20	Panel Setup
311	PANEL	LEGEND	11	PANEL
312	PANEL	PARA	24	BACK-LIGHT
313	PANEL	ITEM_TITLE	32	Brightness:
314	PANEL	ITEM_TITLE	32	Saver brightness:
315	PANEL	ITEM_TITLE	32	Timeout:
316	PANEL	PARA	24	PAGE TIMEOUTS
317	PANEL	ITEM_TITLE	32	Home:
318	PANEL	ITEM_TITLE	32	Pop-up:
319	PANEL	ITEM_TITLE	32	Data Entry:
320	PANEL	ITEM_UNITS	9	minutes
321	PANEL	ITEM_UNITS	9	seconds
322	PANEL	ITEM	16	100%
323	PANEL	ITEM	16	90%
324	PANEL	ITEM	16	80%
325	PANEL	ITEM	16	70%
326	PANEL	ITEM	16	60%
327	PANEL	ITEM	16	50%
328	PANEL	ITEM	16	40%
329	PANEL	ITEM	16	30%
330	PANEL	ITEM	16	20%
331	PANEL	ITEM_TITLE	20	This item allows an access level timeout to be entered ("Time-Outs" on page 142). If a non-zero value is entered, then the Access level will return to ‘Locked’ whenever the time between screen presses is greater than the timeout period.
332	PANEL	ITEM_TITLE	16	SIZES
333	PANEL	ITEM	16	Standard
334	PANEL	ITEM	26	Small
339	PANEL	ITEM_UNITS	9	days
340	FILEMGR	BUTTON_TEXT	12	COPY ALL
341	FILEMGR	PAGE_TITLE	20	Copy Files
342	FILEMGR	BUTTON_TEXT	16	DEL ALL
343	FILEMGR	PAGE_TITLE	20	Confirm Delete All
344	FILEMGR	ITEM_FILE	16	Files:
360	ACCESS	PAGE_TITLE	20	Security Access
361	ACCESS	LEGEND	11	ACCESS
362	ACCESS	INTRO	64	Enter required level and password, then CHANGE
363	ACCESS	ITEM_TITLE	18	Current Level:
364	ACCESS	ITEM_TITLE	18	New Level:
365	ACCESS	ITEM_TITLE	18	Password:
366	ACCESS	BUTTON_TEXT	12	CHANGE
367	ACCESS	BUTTON_TEXT	12	PASSWDS

No.	Context	Class	Max	Text
368	ACCESS	PAGE_TITLE	20	Passwords
369	ACCESS	PAGE_TITLE	28	Confirm Password
370	ACCESS	INTRO	64	Please re-enter top-level password:
371	ACCESS	ACCESS_LEVEL	10	LOCKED
372	ACCESS	ACCESS_LEVEL	10	OPERATOR
373	ACCESS	ACCESS_LEVEL	10	COMMISSION
374	ACCESS	ACCESS_LEVEL	10	ENGINEER
375	ACCESS	ACCESS_LEVEL	10	ADMIN
380	APPMGR	PAGE_TITLE	20	Appl'n Manager
381	APPMGR	LEGEND	11	APP MGR
382	APPMGR	ITEM_TITLE	16	File:
383	APPMGR	ITEM_TITLE	16	State:
384	APPMGR	BUTTON_TEXT	12	LOAD
385	APPMGR	BUTTON_TEXT	12	LD+RUN
386	APPMGR	BUTTON_TEXT	12	UNLOAD
387	APPMGR	BUTTON_TEXT	12	SAVE
388	APPMGR	BUTTON_TEXT	12	SAVE AS
389	APPMGR	BUTTON_TEXT	12	DELETE
390	APPMGR	BUTTON_TEXT	12	STOP
391	APPMGR	BUTTON_TEXT	12	START
392	APPMGR	DIALOG_TITLE	28	Confirm Delete
393	APPMGR	MESSAGE	128	Application management is already in progress elsewhere
394	APPMGR	DIALOG_TITLE	28	Saving
396	APPMENU	MENU_TITLE	16	Application
397	APPMENU	LEGEND	11	APPLN
398	SETMENU	MENU_TITLE	16	Setup
399	SETMENU	LEGEND	11	SETUP
400	SPP	SPP_STATUS	8	RESET
401	SPP	SPP_STATUS	8	LOADING
402	SPP	SPP_STATUS	8	PRE_RUN
403	SPP	SPP_STATUS	8	RUNNING
404	SPP	SPP_STATUS	8	HELD
405	SPP	SPP_STATUS	8	HELDBACK
406	SPP	SPP_STATUS	8	COMPLETE
407	SPP	SPP_STATUS	8	IDLE
408	SPP	SPP_STATUS	8	POST_RUN
409	SPP	SPP_STATUS	8	ERROR
410	SPP	SPP_FP_VALUE	8	CLOSED
411	SPP	SPP_FP_VALUE	8	OPEN
412	SPP	ITEM_TITLE	16	Segment:
413	SPP	ITEM_TITLE	16	Setpoint:
414	SPP	ITEM_TITLE	16	Ramp at:
415	SPP	ITEM_TITLE	16	to:
416	SPP	BUTTON_TEXT	12	DONE
417	SPP	PAGE_TITLE	18	Current Program

No.	Context	Class	Max	Text
418	SPP	PARA	20	Program
419	SPP	ITEM_TITLE	16	Name:
420	SPP	ITEM_TITLE	16	Status:
421	SPP	ITEM_TITLE	16	Duration:
422	SPP	ITEM_TITLE	16	Completion:
423	SPP	ITEM_TITLE	16	Iteration:
424	SPP	Special	1	/
425	SPP	PARA	24	Segment
426	SPP	ITEM_TITLE	16	Name:
427	SPP	ITEM_TITLE	16	Time Remaining:
428	SPP	BUTTON_TEXT	12	RUN
429	SPP	BUTTON_TEXT	12	HOLD
430	SPP	BUTTON_TEXT	12	ABORT
431	SPP	PAGE_TITLE	20	Load/Save Program
432	SPP	ITEM_TITLE	16	File Name:
433	SPP	BUTTON_TEXT	12	LOAD
434	SPP	BUTTON_TEXT	12	SAVE
435	SPP	BUTTON_TEXT	12	SAVE AS
436	SPP	BUTTON_TEXT	12	DELETE
437	SPP	PAGE_TITLE	20	Schedule Program
438	SPP	ITEM_TITLE	17	File Name:
439	SPP	ITEM_TITLE	17	Start Date:
440	SPP	ITEM_TITLE	17	Start Time:
441	SPP	ITEM_TITLE	16	Iterations:
442	SPP	BUTTON_TEXT	12	CLEAR
443	SPP	BUTTON_TEXT	12	ACCEPT
444	SPP	SPP_CELL	18	SP
445	SPP	SPP_CELL_ABBR	8	D
446	SPP	SPP_CELL_ABBR	8	S
447	SPP	Special	2	to
448	SPP	SPP_CELL_ABBR	8	R
449	SPP	Special	2	R@
450	SPP	SPP_CELL_ABBR	8	Servo SP
451	SPP	SPP_CELL_ABBR	8	Servo PV
452	SPP	PAGE_TITLE	20	Save As...
453	SPP	ITEM_TITLE	16	File Name:
455	SPP	DIALOG_TEXT	80	Overwriting
456	SPP	DIALOG_TITLE	28	PROGRAM SAVE
457	SPP	BUTTON_TEXT	12	OK
458	SPP	BUTTON_TEXT	12	CANCEL
459	SPP	DIALOG_TEXT	80	Deleting
460	SPP	DIALOG_TITLE	28	PROGRAM DELETE
461	SPP	BUTTON_TEXT	12	OK
462	SPP	BUTTON_TEXT	12	CANCEL
463	SPP	DIALOG_TEXT	80	File Saved
464	SPP	DIALOG_TITLE	28	PROGRAM SAVE

No.	Context	Class	Max	Text
465	SPP	BUTTON_TEXT	12	OK
466	SPP	DIALOG_TEXT	80	Program File not found
467	SPP	DIALOG_TEXT	80	Program File too large
468	SPP	DIALOG_TEXT	80	File read error
469	SPP	DIALOG_TEXT	80	File write error
470	SPP	DIALOG_TEXT	80	Unresolved block references
471	SPP	DIALOG_TEXT	80	Program Already Running
472	SPP	DIALOG_TEXT	80	Insufficient file space
473	SPP	DIALOG_TEXT	80	Unrecognised file format
474	SPP	DIALOG_TEXT	80	Schedule already loaded
475	SPP	DIALOG_TEXT	80	Max nested subprograms limit exceeded
476	SPP	DIALOG_TITLE	28	PROGRAM LOAD/SAVE ERROR
477	SPP	BUTTON_TEXT	12	OK
478	SPP	MENU_TITLE	11	Programmer
479	SPP	LEGEND	11	MONITOR
480	SPP	LEGEND	11	PROGRAMS
481	SPP	LEGEND	11	SCHEDULE
482	SPP	LEGEND	11	PREVIEW
483	SPP	LEGEND	11	PRE-PLOT
484	SPP	LEGEND	11	EDIT
485	SPP	LEGEND	11	PROGRAMMER
486	SPP	SPP_FP_VALUE	8	NODATA
487	SPP	ITEM_TITLE	16	Run From:
488	SPP	ITEM_TITLE	16	Name:
489	SPP	BUTTON_TEXT	12	CANCEL
490	SPP	LEGEND	11	RUN FROM
491	SPP	BUTTON_TEXT	12	RUN
492	SPP	ITEM_TITLE	16	Duration:
493	SPP	ITEM_TITLE	16	Time Through:
494	SPP	DIALOG_TEXT	80	A program is scheduled. Continue with LOAD?
495	SPP	DIALOG_TITLE	28	LOAD PROGRAM
496	SPP	PARA	24	Current Schedule:
497	SPP	DIALOG_TITLE	28	UNSAVED EDITS
498	SPP	DIALOG_TEXT	80	This operation will result in the loss of edits which have not yet been saved.
499	SPP	DIALOG_TITLE	28	RAMP TYPE CHANGE
500	SPP	DIALOG_TEXT	80	This will require other ramp types in this segment to be changed.
501	SPP	BUTTON_TEXT	12	NEW
502	SPP	PAGE_TITLE	20	New Program
503	SPP	PAGE_TITLE	20	Load Program
504	SPP	PAGE_TITLE	20	Properties
505	SPP	SPP_HOLDBACK	8	Holdback
506	SPP	ITEM_TITLE	16	Mode:
507	SPP	ITEM_TITLE	16	Value:

No.	Context	Class	Max	Text
508	SPP	SPP_HOLDBACK	8	NONE
509	SPP	SPP_HOLDBACK	8	LOW
510	SPP	SPP_HOLDBACK	8	HIGH
511	SPP	SPP_HOLDBACK	8	HIGH&LOW
512	SPP	ITEM_TITLE	16	Duration:
513	SPP	BUTTON_TEXT	12	INS SEG
514	SPP	BUTTON_TEXT	12	DEL SEG
515	SPP	PAGE_TITLE	20	New Segment
516	SPP	PAGE_TITLE	20	Confirm Delete
517	SPP	ITEM	16	(Continuous)
518	SPP	MESSAGE	128	Building Display, please wait
519	SPP	ITEM_TITLE	16	Type:
520	SPP	SPP_CELL	8	Dwell
521	SPP	SPP_CELL	18	Step
522	SPP	SPP_CELL	18	Ramp
523	SPP	SPP_CELL	18	Ramp@
524	SPP	SPP_CELL	18	Expressn
525	SPP	SPP_CELL	18	Servo SP
526	SPP	SPP_CELL	18	Servo PV
528	SPP	SPP_CELL	18	Dwell
529	SPP	SPP_CELL	18	Step
532	SPP	SPP_CELL	18	Expressn
536	SPP	ITEM_TITLE	20	At End:
537	SPP	SPP_AT_END	24	Indefinite Dwell
538	SPP	SPP_AT_END	24	Starting Values
539	SPP	ITEM_TITLE	16	Ref:
540	SPP	DIALOG_TEXT	80	Program Limits Exceeded
550	SPP	ITEM_TITLE	20	Rate Units:
551	SPP	SPP_RATE_UNITS	16	Seconds
552	SPP	SPP_RATE_UNITS	16	Minutes
553	SPP	SPP_RATE_UNITS	16	Hours
554	SPP	SPP_RATE_UNITS	16	days
555	SPP	DIALOG_TEXT	80	No program loaded
561	SPP	ITEM_TITLE	16	Id:
562	SPP	DIALOG_TEXT	80	Common Block Refs
563	SPP	ITEM_TITLE	16	Iterations:
570	SPP	BUTTON_TEXT	12	SKIP
571	SPP	BUTTON_TEXT	12	LAYOUT
572	SPP	PAGE_TITLE	20	Editor layout
573	SPP	ITEM_TITLE	16	Long SP names:
574	SPP	ITEM_TITLE	16	Segment start:
575	SPP	ITEM_TITLE	16	Segment duration:
576	SPP	ITEM_TITLE	16	Segment finish:
577	SPP	ITEM_TITLE	16	Start Time:
578	SPP	ITEM_TITLE	16	Finish Time:
590	Audit	ITEM	16	DYNAMIC

No.	Context	Class	Max	Text
591	Audit	ITEM	16	BURST
592	Audit	ITEM	16	INITIAL
598	SIGN	BUTTON_TEXT	12	OK
599	SIGN	BUTTON_TEXT	12	CANCEL
600	SIGN	PAGE_TITLE	20	Signature
601	SIGN	PAGE_TITLE	20	Confirmation
602	SIGN	PARA	24	Authorised by
603	SIGN	ITEM_TITLE	16	Reason:
604	SIGN	PARA	24	Signed by
605	SIGN	ITEM_TITLE	16	Old Value:
606	SIGN	ITEM_TITLE	16	New Value:
607	SIGN	ITEM_TITLE	16	Confirm Action:
608	SIGN	PAGE_TITLE	20	Signature Rejected
609	SIGN	ITEM_TITLE	16	Action Result:
700	LOGGING	MENU_TITLE	16	Logging
701	LOGGING	LEGEND	11	LOGGING
702	LOGGING	LEGEND	11	MONITOR
704	LOGGING	LEGEND	11	MANAGE
705	LOGGING	LEGEND	11	GROUPS
706	LOGGING	PAGE_TITLE	20	Logging Monitor
707	LOGGING	PAGE_TITLE	20	Logging Groups
709	LOGGING	PAGE_TITLE	20	Archive Manage
711	LOGGING	ITEM_TITLE	17	File Name:
712	LOGGING	ITEM_TITLE	17	File Type:
715	LOGGING	BUTTON_TEXT	12	MONITOR
717	LOGGING	BUTTON_TEXT	12	MANAGE
718	LOGGING	BUTTON_TEXT	12	GROUPS
720	LOGGRP	MESSAGE	128	No logging groups configured
721	LOGGRP	ITEM_TITLE	17	Group Name:
722	LOGGRP	ITEM_TITLE	17	Logging:
723	LOGGRP	ITEM_TITLE	17	Archive Int:
725	LOGGRP	ITEM_TITLE	17	Name Type:
726	LOGGRP	PARA	24	Configuration
727	LOGGRP	ITEM_TITLE	17	Column Titles:
728	LOGGRP	ITEM_TITLE	17	Date Format:
731	LOGGRP	BUTTON_TEXT	12	SAVE
732	LOGGRP	BUTTON_TEXT	12	LOG NOW
741	LOGGING	ITEM	13	ASCII
743	LOGGING	ITEM	13	UHH
745	LOGGRP	ITEM	13	Normal
746	LOGGRP	ITEM	13	High
751	LOGGRP	ITEM	13	ON
752	LOGGRP	ITEM	13	OFF
753	LOGGRP	ITEM	13	TRIGGER
755	LOGGRP	ITEM	13	Text
758	LOGGRP	ITEM	13	Sequence

No.	Context	Class	Max	Text
756	LOGGRP	ITEM	13	Hourly
757	LOGGRP	ITEM	13	Daily
761	LOGGRP	ITEM	13	Date Time
762	LOGGRP	ITEM	13	Spreadsheet
763	LOGGRP	ITEM	13	Integer
764	LOGGRP	ITEM	13	Duration
765	LOGGRP	ITEM	13	Days
766	LOGGRP	ITEM	13	DHMS
767	LOGGRP	ITEM	13	Present
768	LOGGRP	ITEM	13	Absent
770	LOGAMAN	ITEM	16	Files Exported:
771	LOGAMAN	ITEM	16	Files Skipped:
772	LOGAMAN	ITEM	16	Page Locked:
773	LOGAMAN	DIALOGUE_TITLE	28	Archive Manager Export
774	LOGAMAN	DIALOG_TEXT	80	Complete. Device may now be removed.
775	LOGAMAN	DIALOG_TEXT	90	Do you wish to skip ALL duplicate files, i.e. never overwrite files on the export device?
776	LOGAMAN	DIALOG_TEXT	80	Export device is full. Replace device and press OK to continue.
777	LOGAMAN	BUTTON_TEXT	12	EXPORT ALL
778	LOGAMAN	ITEM	16	Export device:
779	LOGGING	ITEM_UNITS	9	Bytes
780	LOGGING	ITEM_UNITS	9	KBytes
781	LOGMON	ITEM_TITLE	16	Media Size:
782	LOGMON	ITEM_TITLE	16	Free Space:
783	LOGMON	ITEM_TITLE	16	Logging:
784	LOGMON	ITEM_TITLE	16	Free Time:
785	LOGMON	ITEM	8	ON
786	LOGMON	ITEM	8	OFF
787	LOGMON	ITEM	8	On Event
789	LOGAMAN	ITEM	16	Files
796	LOGAMAN	BUTTON_TEXT	12	EXPORT
797	LOGAMAN	MESSAGE	128	Please wait…
798	LOGAMAN	ITEM_TITLE	16	File Size:
799	LOGAMAN	BUTTON_TEXT	12	DELETE
800	CLONE	PAGE_TITLE	20	Cloning
801	CLONE	LEGEND	11	CLONING
802	CLONE	ITEM	16	System
803	CLONE	ITEM	16	Application
804	CLONE	ITEM	16	ALL
805	CLONE	BUTTON_TEXT	12	EXPORT
806	CLONE	BUTTON_TEXT	12	IMPORT
807	CLONE	INTRO	64	System Data
808	CLONE	ITEM_TITLE	22	Config Options:
809	CLONE	ITEM_TITLE	22	Config Resources:
810	CLONE	ITEM_TITLE	22	Dictionaries:

No.	Context	Class	Max	Text
811	CLONE	ITEM_TITLE	18	User Pages:
812	CLONE	INTRO	64	Application Data
813	CLONE	ITEM_TITLE	22	Control Database:
814	CLONE	ITEM_TITLE	22	SFCs:
815	CLONE	ITEM_TITLE	22	Programs/Recipes:
816	CLONE	ITEM_TITLE	22	User Pages:
817	CLONE	ITEM_TITLE	22	Comms Profiles:
818	CLONE	BUTTON_TEXT	12	CLEAR
819	CLONE	BUTTON_TEXT	12	DELETE
820	CLONE	ITEM_TITLE	22	Exporting:
821	CLONE	ITEM_TITLE	22	Importing:
822	CLONE	MESSAGE	128	Aborting...
823	CLONE	DIALOG_TEXT	80	Storage device not present. Insert, then select OK to continue.
824	CLONE	DIALOG_TEXT	80	This file already exists. Do you wish to overwrite it?
825	CLONE	DIALOG_TEXT	80	Destination device is full!
826	CLONE	DIALOG_TEXT	80	Error encountered when copying file
827	CLONE	DIALOG_TEXT	80	Destination file exists but source file does not. Remove it?
828	CLONE	DIALOG_TEXT	80	No .RUN file found
829	CLONE	DIALOG_TEXT	80	Multiple .RUN files found
839	CLONE	DIALOG_TEXT	80	Storage device corrupted. Replace then select OK to continue.
840	AGP	PAGE_TITLE	20	Overview
841	AGP	LEGEND	11	OVERVIEW
842	AGP	BUTTON_TEXT	12	AUTO
843	AGP	BUTTON_TEXT	12	MANUAL
845	AGP	BUTTON_TEXT	8	VIEW
846	AGP	BUTTON_TEXT	8	LIVE
930	MAINTMEN	MENU_TITLE	16	Maintenance
931	MAINTMEN	LEGEND	11	MAINT
932	FILEMGR	PAGE_TITLE	20	File Manager
933	FILEMGR	LEGEND	11	FILE MGR
934	FILEMGR	ITEM_TITLE	16	Device:
935	FILEMGR	ITEM_TITLE	16	Filter:
936	FILEMGR	ITEM_TITLE	16	File:
937	FILEMGR	ITEM_TITLE	16	Size:
938	FILEMGR	ITEM_TITLE	16	Free Space:
939	FILEMGR	ITEM_UNITS	9	Bytes
940	FILEMGR	BUTTON_TEXT	12	COPY
941	FILEMGR	BUTTON_TEXT	12	DELETE
942	FILEMGR	PAGE_TITLE	20	Copy File
943	FILEMGR	PARA	24	Copy To
944	FILEMGR	PAGE_TITLE	20	Confirm Delete
945	FILEMGR	ITEM_TITLE	16	Segment:
946	FILEMGR	ITEM_TITLE	16	Node:

No.	Context	Class	Max	Text
947	FILEMGR	ITEM-UNITS	9	(Local)
948	FILEMGR	MESSAGE	128	Remote file access. Please wait...
951	AGP	ITEM_TITLE	12	Missing
952	AGP	ITEM_TITLE	12	Wrong
953	AGP	ITEM_TITLE	12	Unknown
954	AGP	ITEM_TITLE	12	Comm Err
961	AGP	ITEM_TITLE	12	Sensor Break
962	AGP	ITEM_TITLE	12	CJC Fail
963	AGP	ITEM_TITLE	12	Not Used
964	AGP	ITEM_TITLE	12	OP Sat
965	AGP	ITEM_TITLE	12	Init
966	AGP	ITEM_TITLE	12	Inv Cal
968	AGP	ITEM_TITLE	12	Mod Fail
970	AGP	ITEM_TITLE	3	AI2
971	AGP	ITEM_TITLE	3	DI4
972	AGP	ITEM_TITLE	3	DO4
973	AGP	ITEM_TITLE	3	AO2
974	AGP	ITEM_TITLE	3	AI3
975	AGP	ITEM_TITLE	3	DI8
976	AGP	ITEM_TITLE	3	AI4
977	AGP	ITEM_TITLE	3	AO4
978	AGP	ITEM_TITLE	3	DO8
979	AGP	ITEM_TITLE	3	AI4
980	AGP	ITEM_TITLE	3	DI6
990	AGP	ITEM_TITLE	16	XP
991	AGP	ITEM_TITLE	16	TI
992	AGP	ITEM_TITLE	16	TD
993	AGP	ITEM_TITLE	16	RCG
994	AGP	ITEM_TITLE	16	CBH
995	AGP	ITEM_TITLE	16	CBL
996	AGP	ITEM_TITLE	16	MR
997	AGP	ITEM_TITLE	16	Act
1000	AGP	PAGE_TITLE	20	FB Manager
1001	AGP	LEGEND	11	FB MGR
1002	FB_MGR	ITEM_TITLE	16	Block name:
1003	FB_MGR	ITEM_TITLE	16	Block type:
1004	FB_MGR	ITEM_TITLE	16	Cached from:
1005	FB_MGR	ITEM_TITLE	4	ms
1006	FB_MGR	ITEM_TITLE	16	Update rate:
1007	FB_MGR	ITEM_TITLE	16	Update rate:
1008	FB_MGR	ITEM_TITLE	16	Update rate:
1009	FB_MGR	ITEM	16	No connections
1010	ACCESS	INTRO	64	User ID and password, then LOG ON
1011	ACCESS	ITEM_TITLE	18	Ident:
1012	ACCESS	ITEM_TITLE	18	Name:
1013	ACCESS	BUTTON_TEXT	12	LOG ON

No.	Context	Class	Max	Text
1014	ACCESS	ITEM_TITLE	18	Access:
1015	ACCESS	PAGE_TITLE	20	User Password
1016	ACCESS	INTRO	64	please re-enter User password:
1017	ACCESS	BUTTON_TEXT	12	PASSWD
1018	ACCESS	BUTTON_TEXT	12	USERS
1020	ACCESS	BUTTON_TEXT	12	LOG OFF
1021	ACCESS	INTRO	64	To change to Multi-User mode, select OK. See documentation for password information
1023	ACCESS	PAGE_TITLE	20	Multi-User select
1024	ACCESS	MESSAGE	128	Changing to multi_user mode will be irreversible! Enter passwords and select OK to continue.
1025	ACCESS	PAGE_TITLE	20	Confirm Multi-User
1026	ACCESS	COL_TITLE	10	Identity
1027	ACCESS	COL_TITLE	10	Reference
1028	ACCESS	COL_TITLE	10	Name
1029	ACCESS	COL_TITLE	10	Access
1030	ACCESS	ITEM_TITLE	18	Identity:
1031	ACCESS	ITEM_TITLE	18	Password:
1032	ACCESS	ITEM_TITLE	18	Confirm:
1033	ACCESS	BUTTON_TEXT	12	NEW
1034	ACCESS	BUTTON_TEXT	12	DELETE
1035	ACCESS	DIALOGUE_TITLE	28	Delete User
1036	ACCESS	DIALOGUE_TITLE	28	New User
1037	ACCESS	MESSAGE	128	Sorting entries, please wait
1038	ACCESS	BUTTON_TEXT	12	DISABLE
1039	ACCESS	MESSAGE	128	Your password has expired. You must change it now.
1060	CLONE	ITEM_TITLE	22	Forms:
1063	CLONE	ITEM_TITLE	16	Security Access:
1064	CLONE	ITEM_TITLE	16	Net Audit setup:
1065	CLONE	ITEM_TITLE	16	Signature setup:
1066	CLONE	ITEM_TITLE	16	Include Source Files:
1067	CLONE	ITEM_TITLE	22	Category:
1068	CLONE	DIALOG_TITLE	28	WARNING
1069	CLONE	DIALOG_TEXT	80	No files have been transferred.
1071	FB_MGR	BUTTON TEXT	12	CREATE
1072	FB_MGR	BUTTON_TEXT	12	DELETE
1073	FB_MGR	BUTTON TEXT	12	SAVE
1074	FB_MGR	ITEM	16	(Unused)
1080	FB_MGR	DIALOGUE TITLE	28	Block Create
1081	FB_MGR	ITEM_TITLE	16	Category:
1082	FB_MGR	ITEM_TITLE	16	Block Type:
1083	FB_MGR	DIALOG_TITLE	28	Confirm Block Delete
1084	FB_MGR	BUTTON_TEXT	12	NETWORK
1085	FB_MGR	PAGE_TITLE	20	Network Set Up
1086	FB_MGR	LEGEND	11	ADD EDB

No.	Context	Class	Max	Text
1087	FB_MGR	PAGE _TITLE	20	Add External Database
1088	FB_MGR	ITEM	16	Page:
1089	FB_MGR	ITEM	16	<local>
1090	MSG	PAGE_TITLE	20	Messages
1091	MSG	LEGEND	11	MSG LIST
1092	ALMMENU	LEGEND	11	MESSAGES
1093	MSG	MESSAGE	16	<None>
1100	RECIPE	LEGEND	11	RECIPE
1101	RECIPE	MENU_TITLE	16	Recipe
1102	RECIPE	BUTTON_TEXT	12	DOWNLOAD
1103	RECIPE	BUTTON_TEXT	12	ABORT
1104	RECIPE	BUTTON_TEXT	12	LOAD
1105	RECIPE	BUTTON_TEXT	12	SAVE
1106	RECIPE	BUTTON_TEXT	12	SAVE AS
1107	RECIPE	BUTTON_TEXT	12	CAPTURE
1108	RECIPE	BUTTON_TEXT	12	CAPTURE AS
1109	RECIPE	BUTTON_TEXT	12	NEW
1110	RECIPE	BUTTON_TEXT	12	DELETE
1111	RECIPE	BUTTON_TEXT	12	ADD LINE
1112	RECIPE	BUTTON_TEXT	12	DELETE
1113	RECIPE	BUTTON_TEXT	12	INSERT
1114	RECIPE	BUTTON_TEXT	12	CREATE
1115	RECIPE	BUTTON_TEXT	12	LINES
1120	RECIPE	LEGEND	11	RECIPES
1121	RECIPE	PAGE_TITLE	20	Load/Save Recipe
1122	RECIPE	LEGEND	11	STATUS
1123	RECIPE	PAGE_TITLE	20	Recipe Status
1124	RECIPE	ITEM_TITLE	16	Downloaded at:
1125	RECIPE	ITEM_TITLE	16	Version:
1126	RECIPE	ITEM_TITLE	16	Edited by:
1127	RECIPE	ITEM_TITLE	16	At:
1128	RECIPE	ITEM_TITLE	16	Timeout:
1130	RECIPE	ITEM_TITLE	16	Status:
1131	RECIPE	ITEM	12	RESET
1132	RECIPE	ITEM	12	DOWNLOADING
1133	RECIPE	ITEM	12	COMPLETE
1134	RECIPE	ITEM	12	FAILURE
1140	RECIPE	DIALOG_TITLE	28	RECIPE ERROR
1141	RECIPE	MESSAGE	128	Recipe File not found
1142	RECIPE	MESSAGE	128	Recipe File limits exceeded
1143	RECIPE	MESSAGE	128	Invalid block reference(s)
1144	RECIPE	MESSAGE	128	Recipe download in progress
1145	RECIPE	MESSAGE	128	Unrecognised file format
1146	RECIPE	MESSAGE	128	File write error
1150	RECIPE	LEGEND	11	MONITOR
1151	RECIPE	PAGE_TITLE	20	Recipe Monitor

No.	Context	Class	Max	Text
1152	RECIPE	PAGE_TITLE	20	SP
1153	RECIPE	PAGE_TITLE	20	SP(Live)
1154	RECIPE	PAGE_TITLE	20	PV
1155	RECIPE	PAGE_TITLE	20	Capture
1160	RECIPE	PAGE_TITLE	20	RCP
1161	RECIPE	ITEM_TITLE	16	Id:
1162	RECIPE	ITEM_TITLE	16	File Name:
1163	RECIPE	ITEM_TITLE	16	Line:
1164	RECIPE	ITEM_TITLE	16	Recipe Name:
1165	RECIPE	ITEM_TITLE	16	Variable Name:
1168	RECIPE	ITEM	8	FALSE
1169	RECIPE	ITEM	8	TRUE
1170	RECIPE	LEGEND	11	EDIT
1171	RECIPE	PAGE_TITLE	20	Recipe Editor
1172	RECIPE	ITEM_TITLE	16	Verify:
1173	RECIPE	PARA	24	Tag References
1174	RECIPE	ITEM_TITLE	16	SP:
1175	RECIPE	ITEM_TITLE	16	Monitor:
1176	RECIPE	ITEM_TITLE	16	Capture:
1180	RECIPE	DIALOG_TITLE	28	New Recipe
1181	RECIPE	DIALOG_TITLE	28	Capture New Recipe
1182	RECIPE	DIALOG_TITLE	28	Delete Recipe
1183	RECIPE	DIALOG_TEXT	80	Deleting
1184	RECIPE	DIALOG_TITLE	28	SAVE
1185	RECIPE	DIALOG_TITLE	28	SAVE AS...
1186	RECIPE	ITEM_TITLE	16	File Name:
1187	RECIPE	DIALOG_TITLE	28	Load Recipe File
1188	RECIPE	DIALOG_TEXT	80	Recipe already loaded.
1189	RECIPE	DIALOG_TITLE	28	UNSAVED EDITS
1190	RECIPE	DIALOG_TEXT	80	This operation will result in the loss of recipe edits which have not yet been saved.
1191	RECIPE	DIALOG_TEXT	80	Overwriting
1192	RECIPE	DIALOG_TITLE	28	Delete Variable
1193	RECIPE	DIALOG_TITLE	28	Properties
1194	RECIPE	DIALOG_TITLE	28	Insert Variable
1195	RECIPE	DIALOG_TITLE	28	RECIPE FILE DELETE
1196	RECIPE	DIALOG_TITLE	28	CREATE AS...
1197	RECIPE	DIALOG_TITLE	28	SELECT LINE
1198	RECIPE	DIALOG_TITLE	28	Capture Recipe
1199	RECIPE	DIALOG_TEXT	80	Capturing
1200	BATCH	LEGEND	11	BATCH
1201	BATCH	MENU_TITLE	16	Batch
1202	BATCH	BATCH_STATE	12	RESET
1203	BATCH	BATCH_STATE	12	IDLE
1204	BATCH	BATCH_STATE	12	STARTING
1205	BATCH	BATCH_STATE	12	RUNNING

No.	Context	Class	Max	Text
1206	BATCH	BATCH_STATE	12	COMPLETE
1207	BATCH	BATCH_STATE	12	HOLDING
1208	BATCH	BATCH_STATE	12	HELD
1209	BATCH	BATCH_STATE	12	RESTARTING
1210	BATCH	BATCH_STATE	12	PAUSING
1211	BATCH	BATCH_STATE	12	PAUSED
1212	BATCH	BATCH_STATE	12	RESUMING
1213	BATCH	BATCH_STATE	12	STOPPING
1214	BATCH	BATCH_STATE	12	STOPPED
1215	BATCH	BATCH_STATE	12	ABORTING
1216	BATCH	BATCH_STATE	12	ABORTED
1217	BATCH	BATCH_STATE	12	FAILED
1220	BATCH	LEGEND	11	BATCHES
1221	BATCH	PAGE_TITLE	20	Load Batch
1222	BATCH	ITEM_TITLE	16	File Name:
1223	BATCH	ITEM_TITLE	16	Recipe Name:
1224	BATCH	ITEM_TITLE	16	Id:
1225	BATCH	ITEM_TITLE	16	State:
1226	BATCH	ITEM_TITLE	16	Started At:
1227	BATCH	ITEM_TITLE	16	Phase:
1228	BATCH	ITEM_TITLE	16	Batch Id:
1229	BATCH	ITEM_TITLE	16	Ended At:
1230	BATCH	BUTTON_TEXT	12	LOAD
1231	BATCH	BUTTON_TEXT	12	START
1232	BATCH	BUTTON_TEXT	12	HOLD
1233	BATCH	BUTTON_TEXT	12	RESTART
1234	BATCH	BUTTON_TEXT	12	ABORT
1235	BATCH	BUTTON_TEXT	12	RESET
1236	BATCH	BUTTON_TEXT	12	NOTE
1237	BATCH	BUTTON_TEXT	12	SAVE AS
1238	BATCH	BUTTON_TEXT	12	CREATE
1240	BATCH	LEGEND	11	STATUS
1241	BATCH	PAGE_TITLE	20	Batch Status
1245	BATCH	PAGE_TITLE	20	Batch Start
1250	BATCH	DIALOG_TITLE	28	BATCH ERROR
1251	BATCH	MESSAGE	128	Batch File not found
1252	BATCH	MESSAGE	128	Batch File limits exceeded
1253	BATCH	MESSAGE	128	Invalid block reference(s)
1254	BATCH	MESSAGE	128	Incorrect batch state
1255	BATCH	MESSAGE	128	Unrecognised file format
1256	BATCH	MESSAGE	128	File write error
1257	BATCH	MESSAGE	128	Bad block
1258	BATCH	MESSAGE	128	Invalid dictionary reference
1259	BATCH	MESSAGE	128	Incorrect password
1260	BATCH	MESSAGE	128	Shared block reference(s)
1270	BATCH	DIALOG_TITLE	28	Batch Start Confirm

No.	Context	Class	Max	Text
1271	BATCH	DIALOG_TEXT	80	Please confirm starting of batch.
1272	BATCH	DIALOG_TEXT	80	Please confirm your password to start batch.
1273	BATCH	ITEM_TITLE	16	Password:
1280	BATCH	DIALOG_TITLE	28	BATCH NOTE
1281	BATCH	DIALOG_TEXT	80	Add a batch note.
1282	BATCH	ITEM_TITLE	16	Note:
1285	BATCH	DIALOG_TITLE	28	SAVE AS ..
1286	BATCH	DIALOG_TEXT	80	Save batch file
1287	BATCH	ITEM_TITLE	16	Filename:
1288	BATCH	DIALOG_TITLE	28	SAVE
1289	BATCH	DIALOG_TEXT	80	Overwriting
1290	BATCH	DIALOG_TITLE	28	CREATE AS ..
1292	BATCH	ITEM_TITLE	16	Recipe Line:
1293	BATCH	ITEM_TITLE	16	Display Group:
1294	BATCH	ITEM_TITLE	16	Message:
1295	BATCH	ITEM_TITLE	16	Log Group:
1296	BATCH	ITEM_TITLE	16	Log Report:
1300	ACCESS	BUTTON TEXT	12	PROPERTIES
1301	ACCESS	PAGE TITLE	20	Account properties
1302	ACCESS	ITEM_TITLE	18	Min User Id Length:
1303	ACCESS	ITEM_TITLE	18	Min Password Length:
1304	ACCESS	ITEM_TITLE	18	Max Login Attempts:
1305	ACCESS	ITEM_TITLE	18	Password Expiry:
1306	ACCESS	ITEM_TITLE	18	User Timeout:
1307	ACCESS	MESSAGE	128	Reducing password expiry period may result in immediate account expiry.
1308	ACCESS	BUTTON_TEXT	12	REINSTATE
1309	ACCESS	ITEM_TITLE	18	Password Expires In:
1310	ACCESS	MESSAGE	128	Your password is due to expire. Please change it
1311	ACCESS	ITEM_TITLE	18	Expires
1312	ACCESS	ITEM_TITLE	18	Attributes
1313	ACCESS	BUTTON_TEXT	12	ENABLE
1314	ACCESS	PAGE _TITLE	20	Security Access - Retired
1315	ACCESS	DIALOG_TITLE	28	Retire User
1316	ACCESS	BUTTON_TEXT	12	RETIRE
1317	ACCESS	DIALOG_TITLE	28	ACCESS ERROR
1318	ACCESS	DIALOG_TEXT	80	Illegal Password
1319	ACCESS	DIALOG_TEXT	80	Illegal User ID and/or Name
1320	ACCESS	DIALOG_TEXT	80	User ID and/or Name Already In Use
1321	ACCESS	ITEM_TITLE	18	Sign:
1322	ACCESS	ITEM_TITLE	18	Authorise:
1323	ACCESS	ITEM TITLE	18	View Only:
1325	ACCESS	ITEM_TITLE	18	Admin Only:
1333	ACCESS	ITEM_TITLE	18	FTP:
1334	ACCESS	ITEM_TITLE	18	Remote:

No.	Context	Class	Max	Text
1353	ACCESS	BUTTON TEXT	12	STATS
1354	ACCESS	PAGE_TITLE	20	Statistics
1355	ACCESS	ITEM_TITLE	18	Users:
1356	ACCESS	ITEM_TITLE	18	Retired Users:
1357	ACCESS	ITEM_TITLE	18	New Users:
1359	ACCESS	BUTTON_TEXT	12	MAINT
1360	ACCESS	PAGE_TITLE	20	Account Maintenance
1361	ACCESS	ITEM_TITLE	18	Recovery Account:
1362	ACCESS	ITEM_TITLE	18	Master Access:
1363	ACCESS	ITEM_TITLE	18	Edit Own Expired Password:
1393	ACCESS	MESSAGE	128	Insuffcient Administrator Accounts
1394	ACCESS	BUTTON_TEXT	12	RECOVER
1395	ACCESS	PAGE_TITLE	20	Administration Recovery
1396	ACCESS	INTRO	64	Please report the key, date and time below to the support desk who will issue you with the recovery password
1397	ACCESS	ITEM_TITLE	18	Recovery Key:
1398	ACCESS	ITEM_TITLE	18	Date/Time:
1399	ACCESS	ITEM_TITLE	18	Minutes Left:
1400	ADMIN	MENU_TITLE	16	Administration
1401	ADMIN	LEGEND	11	ADMIN
1410	NET_AUDIT	PAGE_TITLE	20	Network Audit Trail
1411	NET_AUDIT	LEGEND	11	NET AUDIT
1412	NET_AUDIT	PARA	24	Destination node
1413	NET_AUDIT	ITEM_TITLE	18	LIN Node:
1414	NET_AUDIT	ITEM_TITLE	18	LIN Segment:
1415	NET_AUDIT	NAT_STATE	12	(Disabled)
1416	NET_AUDIT	NAT_STATE	12	UNINIT
1417	NET_AUDIT	NAT_STATE	12	INIT
1418	NET_AUDIT	NAT_STATE	12	CONNECTED
1419	NET_AUDIT	NAT_STATE	12	ACTIVE
1420	NET_AUDIT	ITEM_TITLE	18	Alarm active:
1421	NET_AUDIT	ITEM_TITLE	18	Alarm cleared:
1422	NET_AUDIT	ITEM_TITLE	18	Alarm ack’ed:
1423	NET_AUDIT	ITEM_TITLE	18	Cached alarms:
1424	NET_AUDIT	ITEM_TITLE	18	System event:
1425	NET_AUDIT	ITEM_TITLE	18	Block event:
1426	NET_AUDIT	ITEM_TITLE	18	Operator note:
1427	NET_AUDIT	ITEM_TITLE	18	Block value change:
1428	NET_AUDIT	ITEM_TITLE	18	Message active:
1429	NET_AUDIT	ITEM_TITLE	18	Message cleared:
1430	NET_AUDIT	ITEM_TITLE	18	Message ack’ed:
1436	NET_AUDIT	ITEM_TITLE	18	Min alarm priority:
1437	NET_AUDIT	ITEM_TITLE	18	Min event priority:
1450	NET_AUDIT	ITEM_TITLE	18	Mode:
1451	NET_AUDIT	NAT_STATE	12	ISOLATED

No.	Context	Class	Max	Text
1452	NET_AUDIT	NAT_STATE	12	PROVIDER
1453	NET_AUDIT	NAT_STATE	12	CONSUMER
1459	NET_AUDIT	ITEM_TITLE	18	Revision:
1460	ACCESS	BUTTON_TEXT	12	DEPLOY
1461	ACCESS	PAGE_TITLE	20	Deploy Access
1462	ACCESS	ITEM_TITLE	18	Number of Slave Nodes:
1463	ACCESS	ITEM_TITLE	18	Slave Nodes:
1464	ACCESS	BUTTON_TEXT	12	CONFIG
1465	ACCESS	PAGE_TITLE	20	Deploy Access – Config
1466	ACCESS	BUTTON_TEXT	12	CLEAR
1467	ACCESS	BUTTON_TEXT	12	FILL
1468	ACCESS	BUTTON_TEXT	12	SORT
1469	ACCESS	MESSAGE	128	Deploying...
1470	ACCESS	ITEM_TITLE	18	Node:
1471	ACCESS	MESSAGE	128	Aborting...
1480	ACCESS	BUTTON_TEXT	12	REVISION
1481	ACCESS	PAGE_TITLE	20	Revision Information
1482	ACCESS	ITEM_TITLE	18	Revision:
1483	ACCESS	ITEM_TITLE	18	Revised On:
1484	ACCESS	ITEM_TITLE	18	Revised By:
1485	ACCESS	ITEM_TITLE	18	Authorised By:
1486	ACCESS	ITEM_TITLE	18	Reason:
1487	ACCESS	ITEM_TITLE	18	Bound to:
1488	ACCESS	ITEM_TITLE	18	Operational Changes:
1500	SIGN	PAGE_TITLE	20	Signature Configuration
1501	SIGN	LEGEND	11	SIG CONFIG
1502	SIGN	ITEM_TITLE	18	Function:
1503	SIGN	BUTTON_TEXT	12	SAVE
1504	SIGN	BUTTON_TEXT	12	DEFAULTS
1505	SIGN	MESSAGE	128	The ‘ENABLE’ button may be used to turn on electronic signatures. Once signatures have been turned on and saved, they cannot be turned off again.
1506	SIGN	ITEM_TITLE	15	Revision:
1510	SIGN	SIG_LEVEL	16	No Confirmation
1511	SIGN	SIG_LEVEL	16	Confirm Only
1512	SIGN	SIG_LEVEL	16	Password
1513	SIGN	SIG_LEVEL	16	Signature
1514	SIGN	SIG_LEVEL	16	Sign & Authorise
1515	SIGN	SIG_LEVEL	16	Action Disabled
1520	SIGN	ITEM_TITLE	18	Field Changes:
1521	SIGN	ITEM_TITLE	18	Alarm priority Changes:
1522	SIGN	ITEM_TITLE	18	Units Changes:
1523	SIGN	ITEM_TITLE	16	Wiring Changes:
1524	SIGN	ITEM_TITLE	16	Field Changes:
1525	SIGN	ITEM_TITLE	16	Segment Change:

No.	Context	Class	Max	Text
1526	SIGN	ITEM_TITLE	16	Segment Change (held):
1527	SIGN	ITEM_TITLE	16	Current Segment Change:
1528	SIGN	ITEM_TITLE	16	RUN (edited)
1529	SIGN	ITEM_TITLE	16	ACK (6-10)
1530	SIGN	ITEM_TITLE	16	ACH (11-15)
1531	SIGN	ITEM_TITLE	16	User Password Change:
1532	SIGN	ITEM_TITLE	16	ModbusM/TCP SAVE:
1540	COMMS	COMMS_PORT	5	ENET1
1541	COMMS	COMMS_PORT	5	ENET2
1542	COMMS	COMMS_PORT	5	ENET3
1543	COMMS	COMMS_PORT	5	ENET4
1544	COMMS	COMMS_PORT	5	ENET5
1550	COMMS	COMMS_ITEM	8	ELIN
1551	COMMS	COMMS_ITEM	8	FTP
1560	COMMS	BUTTON TEXT	12	ETHERNET
1561	COMMS	PAGE_TITLE	20	Comms - Ethernet
1562	COMMS	PARA	24	LIN Protocol Setup
1563	COMMS	PARA	24	Local IP Setup
1564	COMMS	PARA	24	Remote Subnet Node List
1565	COMMS	SEPARATOR	1	.
1566	COMMS	ITEM_TITLE	16	Protocol Name:
1567	COMMS	ITEM_TITLE	16	All Subnet Enable:
1569	COMMS	ITEM_TITLE	16	Address Assignment:
1570	COMMS	ITEM	16	Undefined
1571	COMMS	ITEM	16	Fixed
1572	COMMS	ITEM	16	DHCP
1573	COMMS	ITEM	16	BootP
1574	COMMS	ITEM	16	DHCP+LL
1575	COMMS	ITEM	16	BootP+LL
1576	COMMS	ITEM	16	Link Local
1580	COMMS	ITEM_TITLE	16	IP Address:
1581	COMMS	ITEM_TITLE	16	Subnet Mask:
1582	COMMS	ITEM_TITLE	16	Default Gateway:
1583	COMMS	ITEM_TITLE	16	Number of Nodes:
1584	COMMS	ITEM_TITLE	16	Node:
1585	COMMS	SEPARATOR	2	:
1586	COMMS	ITEM_TITLE	16	MAC Address:
1587	COMMS	DIALOG_TITLE	28	WARNING
1588	COMMS	DIALOG_TEXT	80	The specified IP address/mask combination may be invalid.
1590	COMMS	ITEM	16	None
1591	COMMS	ITEM	16	RO
1592	COMMS	ITEM	16	RW
1593	COMMS	ITEM	16	All
1600	COMMS	LEGEND	8	MODBUS_
1601	COMMS	LEGEND	8	/TCP

No.	Context	Class	Max	Text
1602	COMMS	PAGE TITLE	20	MODBUS_
1603	COMMS	PAGE TITLE	20	/TCP
1604	COMMS	ITEM TITLE	16	INSTRUMENT
1605	COMMS	ITEM TITLE	16	SLAVE ADDRESS
1606	COMMS	ITEM TITLE	16	HOST
1607	COMMS	ITEM TITLE	16	TCP PORT
1608	COMMS	LEGEND	11	NEW
1609	COMMS	PAGE TITLE	20	New Slave
1610	COMMS	ITEM TITLE	16	Instrument No:
1611	COMMS	ITEM TITLE	16	Slave Address
1612	COMMS	ITEM TITLE	16	Host IP:
1613	COMMS	ITEM TITLE	16	TCP Port No:
1614	COMMS	LEGEND	11	ADD
1615	COMMS	LEGEND	11	TUNING
1616	COMMS	PAGE TITLE	20	Tuning Parameters
1617	COMMS	LEGEND	11	DEFAULTS
1618	COMMS	LEGEND	11	DELETE
1619	COMMS	LEGEND	11	DEL ALL
1620	COMMS	DIALOG TITLE	20	Confirm Delete All
1621	COMMS	ITEM TITLE	16	Host re. Retry delay:
1622	COMMS	ITEM TITLE	16	Connect initial delay:
1623	COMMS	ITEM TITLE	16	Connect retry 1 delay:
1624	COMMS	ITEM TITLE	16	Connect retry 2 delay:
1625	COMMS	ITEM TITLE	16	Connect retry 3 delay:
1626	COMMS	ITEM TITLE	16	Reconnect retry delay:
1627	COMMS	ITEM TITLE	16	Reconnect num retries:
1628	COMMS	ITEM TITLE	16	Asy conn Poll tmeout:
1629	COMMS	ITEM TITLE	16	Async connect timeout:
1680	SYSSUM	ITEM TITLE	16	MiniPCI Card:
1681	SYSSUM	ITEM	16	None
1682	SYSSUM	ITEM	16	Profibus
1683	SYSSUM	ITEM	16	Spare
1691	SYSSUM	ITEM	16	L11:CARB_DIFFx1
1692	SYSSUM	ITEM	16	L12:CARB_DIFFx2
1693	SYSSUM	ITEM	16	L13:CARB_DIFFx3
1694	SYSSUM	ITEM	16	L14:CARB_DIFFx4
1800	COMPAT	LEGEND	11	COMPAT
1801	COMPAT	PAGE TITLE	20	Compatibility
1802	COMPAT	INTRO	64	Select new compatibility features and press CHANGE
1803	COMPAT	MESSAGE	128	Compatibility changes have been applied. Power cycle to take effect
1804	COMPAT	BUTTON TEXT	12	CHANGE
1805	COMPAT	ITEM TITLE	16	Memory Model:
1806	COMPAT	PROG MON STATE	12	Legacy programmer
1807	COMPAT	PROG MON STATE	11	Large SFC

No.	Context	Class	Max	Text
1808	COMPAT	PROG MON STATE	16	Default
1809	COMPAT	PROG MON STATE	12	Large Database
1900	PROG	BUTTON TEXT	12	VIEWS
1901	PROG	BUTTON TEXT	12	VIEWS
1902	PROG	PAGE TITLE	20	Insert segment
1903	PROG	ITEM TITLE	16	Insert after:
1904	PROG	ITEM TITLE	16	Segment Class:
1905	PROG	ITEM TITLE	16	Segment Details:
1906	PROG	ITEM TITLE	16	Programs:
1940	TIMEZONE	LEGEND	11	TIME ZONE
1941	TIMEZONE	PAGE TITLE	20	Time Zone
1942	TIMEZONE	ITEM TITLE	20	Name:
1943	TIMEZONE	ITEM TITLE	20	Offset:
1944	TIMEZONE	ITEM TITLE	20	Daylight saving:
1945	TIMEZONE	ITEM TITLE	20	Starts at:
1946	TIMEZONE	ITEM TITLE	20	and ends at:
1947	TIMEZONE	ITEM TITLE	20	on the
1948	TIMEZONE	ITEM TITLE	20	
1949	TIMEZONE	ITEM TITLE	20	of
1950	TIMEZONE	ITEM	16	Sunday
1951	TIMEZONE	ITEM	16	Monday
1952	TIMEZONE	ITEM	16	Tuesday
1953	TIMEZONE	ITEM	16	Wednesday
1954	TIMEZONE	ITEM	16	Thursday
1955	TIMEZONE	ITEM	16	Friday
1956	TIMEZONE	ITEM	16	Saturday
1957	TIMEZONE	ITEM	16	First
1958	TIMEZONE	ITEM	16	Second
1959	TIMEZONE	ITEM	16	Third
1960	TIMEZONE	ITEM	16	Fourth
1961	TIMEZONE	ITEM	16	Second last
1962	TIMEZONE	ITEM	16	Last
1965	TIMEZONE	ITEM TITLE	20	Time suffix format:
1966	TIMEZONE	Special	3	GMT [Set to empty for ISO8601]
1967	TIMEZONE	FORMAT CHAR	1	:
1968	TIMEZONE	FORMAT CHAR	1	[Set to ‘Z’ for ISO8601]
1969	TIMEZONE	Special	3	DST
1970	TIMEZONE	ITEM	16	None
1971	TIMEZONE	ITEM	16	Name
1972	TIMEZONE	ITEM	16	Name+DST
1973	TIMEZONE	ITEM	16	GMT offset
1978	TIMEZONE	ITEM	16	+
1979	TIMEZONE	ITEM	16	-
1980	COMMS	LEGEND	11	TIME SYNC
1981	COMMS	PAGE TITLE	20	Time Synchronisation
1982	COMMS	PARA	24	Server operation

No.	Context	Class	Max	Text
1983	COMMS	ITEM TITLE	20	SNTP:
1988	COMMS	PARA	24	Client operation
1989	COMMS	ITEM TITLE	20	Server 1 IP:
1990	COMMS	ITEM TITLE	20	Server 2 IP:
1992	COMMS	ITEM TITLE	16	Method:
1993	COMMS	ITEM	16	None/TOD
1994	COMMS	ITEM	16	SNTP
2000	PROG	LEGEND	11	PROGRAMMER
2001	PROG	MENU TITLE	16	Programmer
2011	PROG	LEGEND	11	PROGRAMS
2012	PROG	LEGEND	11	SCHEDULE
2013	PROG	LEGEND	11	EDIT
2014	PROG	LEGEND	11	PREVIEW
2015	PROG	LEGEND	11	MONITOR
2016	PROG	LEGEND	11	ANALYSIS
2021	PROG	PAGE TITLE	20	Program Load
2022	PROG	PAGE TITLE	20	Program Schedule
2023	PROG	PAGE TITLE	20	Program Edit
2024	PROG	PAGE TITLE	20	Program Preview
2025	PROG	PAGE TITLE	20	Program Monitor
2026	PROG	PAGE TITLE	20	Program Analysis
2031	PROG	BUTTON TEXT	12	START
2032	PROG	BUTTON TEXT	12	RESTART
2033	PROG	BUTTON TEXT	12	HOLD
2034	PROG	BUTTON TEXT	12	ABORT
2035	PROG	BUTTON TEXT	12	SKIP
2036	PROG	BUTTON TEXT	12	ADVANCE
2037	PROG	BUTTON TEXT	12	REDO
2038	PROG	BUTTON TEXT	12	RESET
2039	PROG	BUTTON TEXT	12	PLOT
2040	PROG	BUTTON TEXT	12	LOAD
2041	PROG	BUTTON TEXT	12	SAVE
2042	PROG	BUTTON TEXT	12	SAVE AS
2043	PROG	BUTTON TEXT	12	VIEWS
2044	PROG	BUTTON TEXT	12	LAYOUT
2045	PROG	BUTTON TEXT	12	PROPERTIES
2046	PROG	BUTTON TEXT	12	DELETE
2047	PROG	BUTTON TEXT	12	INSERT
2048	PROG	BUTTON TEXT	12	UNIT
2049	PROG	BUTTON TEXT	12	REVISION
2050	PROG	BUTTON TEXT	12	DELETE
2051	PROG	BUTTON TEXT	12	NEW
2052	PROG	BUTTON TEXT	12	BATCH
2053	PROG	BUTTON TEXT	12	ALARMS
2060	PROG	ITEM TITLE	16	File Name:
2061	PROG	ITEM TITLE	16	Program Name:

No.	Context	Class	Max	Text
2062	PROG	ITEM TITLE	16	Program:
2069	PROG	MESSAGE	128	Program Information Unavailable
2070	PROG	PAGE TITLE	20	Program Loading
2071	PROG	PAGE TITLE	20	Program Saving
2072	PROG	DIALOG TITLE	28	SAVE
2075	PROG	DIALOG TEXT	80	Overwrite file?
2080	PROG	DIALOG TITLE	28	Program Load Failed
2081	PROG	DIALOG TITLE	28	Program Save Failed
2082	PROG	PROG LOAD FAIL	24	Bad file format
2083	PROG	PROG LOAD FAIL	24	Too big
2084	PROG	PROG LOAD FAIL	24	Illegal go back sequence
2085	PROG	PROG LOAD FAIL	24	Invalid algorithm block
2086	PROG	PROG LOAD FAIL	24	Invalid template file
2087	PROG	PROG LOAD FAIL	24	File not found
2088	PROG	PROG LOAD FAIL	24	File is read only
2089	PROG	PROG LOAD FAIL	24	Other file error
2090	PROG	PROG LOAD FAIL	24	Error9
2091	PROG	DIALOG TITLE	28	UNSAVED EDITS
2092	PROG	DIALOG TEXT	80	This operation will result in the loss of edits which have not yet been saved
2093	PROG	DIALOG TITLE	28	Program Delete Failed
2094	PROG	DIALOG TITLE	28	PROGRAM SCHEDULED
2095	PROG	DIALOG TEXT	80	A program is scheduled, continue with load?
2100	PROG	ITEM TITLE	16	Segment Type:
2101	PROG	ITEM	16	STEP
2102	PROG	ITEM	16	DWELL
2103	PROG	ITEM	16	RAMPTIME
2104	PROG	ITEM	16	RAMPRATE
2105	PROG	ITEM	16	END
2107	PROG	ITEM	16	Live edit
2108	PROG	ITEM	16	NO WAIT
2109	PROG	ITEM	16	NO EXIT
2110	PROG	ITEM TITLE	16	Hb & Alarm Mode:
2111	PROG	ITEM	16	NONE
2112	PROG	ITEM	16	Per Channel
2113	PROG	ITEM	16	Per Segment
2115	PROG	ITEM TITLE	16	Hb & Alarm Value:
2116	PROG	ITEM TITLE	16	Alarm Delay:
2117	PROG	ITEM TITLE	16	Holdback Type:
2118	PROG	ITEM TITLE	16	Deviation Alarms:
2119	PROG	ITEM TITLE	16	OOB Alarm:
2120	PROG	ITEM	16	None
2121	PROG	ITEM	16	low
2122	PROG	ITEM	16	High
2123	PROG	ITEM	16	Band
2124	PROG	ITEM TITLE	16	Target:

No.	Context	Class	Max	Text
2125	PROG	ITEM TITLE	16	Rate:
2126	PROG	ITEM TITLE	16	Value:
2127	PROG	ITEM TITLE	16	Low Limit:
2128	PROG	ITEM TITLE	16	High Limit:
2129	PROG	ITEM TITLE	16	End condition:
2130	PROG	ITEM	16	Reset
2131	PROG	ITEM	16	Dwell
2132	PROG	ITEM TITLE	16	Event Name:
2133	PROG	ITEM TITLE	16	Exit name:
2134	PROG	ITEM TITLE	16	Wait Name:
2135	PROG	ITEM TITLE	16	Segment name:
2136	PROG	ITEM TITLE	16	Segment Start:
2137	PROG	ITEM TITLE	16	Segment duration:
2138	PROG	ITEM TITLE	16	Segment Finish:
2140	PROG	ITEM	16	Events
2141	PROG	ITEM	16	Exit
2142	PROG	ITEM	16	Wait
2143	PROG	ITEM TITLE	16	Go Back To:
2144	PROG	ITEM TITLE	16	Go Back Cycles:
2145	PROG	ITEM	16	<Nowhere>
2146	PROG	ITEM TITLE	16	Servo:
2148	PROG	ITEM TITLE	16	SP
2149	PROG	ITEM	16	PV
2150	PROG	ITEM TITLE	16	Rate Units:
2151	PROG	ITEM	16	Seconds
2152	PROG	ITEM	16	Minutes
2153	PROG	ITEM	16	Hours
2154	PROG	ITEM	16	Days
2155	PROG	ITEM	16	/sec
2156	PROG	ITEM	16	/min
2157	PROG	ITEM	16	/hour
2158	PROG	ITEM	16	/day
2159	PROG	PARA	24	Holdback and Alarms
2160	PROG	PAGE TITLE	20	Revision Information
2161	PROG	ITEM TITLE	16	Version:
2162	PROG	ITEM TITLE	16	Edited At:
2165	PROG	ITEM TITLE	16	PV Start:
2166	PROG	ITEM	16	Off
2167	PROG	ITEM	16	Rising
2168	PROG	ITEM	16	Falling
2170	PROG	PAGE TITLE	20	Unit Selection
2171	PROG	ITEM TITLE	16	Unit:
2175	PROG	PAGE TITLE	20	Program Load
2176	PROG	PAGE TITLE	20	Program Save
2177	PROG	PAGE TITLE	20	Program Delete
2180	PROG	PAGE TITLE	20	Properties

No.	Context	Class	Max	Text
2181	PROG	ITEM TITLE	16	Rate Units:
2184	PROG	ITEM TITLE	16	Algorithm File:
2185	PROG	ITEM	16	(Continuous)
2190	PROG	PAGE TITLE	20	Editor Layout
2191	PROG	ITEM TITLE	16	Long SP names:
2192	PROG	ITEM TITLE	16	Segment start:
2193	PROG	ITEM TITLE	16	Segment duration:
2194	PROG	ITEM TITLE	16	Segment finish:
2195	PROG	ITEM TITLE	16	Wide cells:
2196	PROG	ITEM TITLE	16	Transpose:
2197	PROG	ITEM TITLE	16	Compressed Events:
2200	PROG	FORMAT CHAR	1	0 (Comment: Event false)
2201	PROG	FORMAT CHAR	1	1 (Comment: Event True)
2202	PROG	FORMAT CHAR	1	- (Comment: Wait/Exit condition = None)
2203	PROG	FORMAT CHAR	1	0 (Comment:Wait/Exit condition = Open)
2204	PROG	FORMAT CHAR	1	1 (Comment: Wait/Exit condition = Closed)
2210	PROG	PAGE TITLE	20	Editor Supplementary Views
2211	PROG	ITEM TITLE	16	Preview:
2212	PROG	ITEM TITLE	16	Monitor:
2213	PROG	ITEM TITLE	16	Schedule:
2220	PROG	PAGE TITLE	20	Segment Details
2221	PROG	PAGE TITLE	20	Events Details
2222	PROG	PAGE TITLE	20	Wait Condition Details
2223	PROG	PAGE TITLE	20	Exit Condition Details
2224	PROG	MESSAGE	128	Exit conditions are ignored in ramping segments
2240	PROG	ITEM TITLE	16	Start Date:
2241	PROG	ITEM TITLE	16	Start Time:
2242	PROG	ITEM TITLE	16	File Name:
2248	PROG	BUTTON TEXT	12	ACCEPT
2249	PROG	BUTTON TEXT	12	CANCEL
2250	PROG	ITEM TITLE	16	State:
2251	PROG	ITEM TITLE	16	Segment Name:
2253	PROG	ITEM TITLE	16	Seg Time Remaining:
2254	PROG	ITEM TITLE	16	Prog Time Remaining:
2255	PROG	ITEM TITLE	16	Cycle No:
2260	PROG	PROG MON STATE	12	UNLOADED
2261	PROG	PROG MON STATE	12	LOADING
2262	PROG	PROG MON STATE	12	IDLE
2263	PROG	PROG MON STATE	12	STARTING
2264	PROG	PROG MON STATE	12	RUNNING
2265	PROG	PROG MON STATE	12	COMPLETE
2266	PROG	PROG MON STATE	12	HOLDING
2267	PROG	PROG MON STATE	12	HELD
2268	PROG	PROG MON STATE	12	RESTARTING
2269	PROG	PROG MON STATE	12	ABORTING

No.	Context	Class	Max	Text
2270	PROG	PROG MON STATE	12	ABORTED
2271	PROG	PROG MON STATE	12	RESETTING
2272	PROG	PROG MON STATE	12	INHIBIT
2273	PROG	MESSAGE	128	Maximum Program Time Exceeded
2274	PROB	BUTTON TEXT	12	VIEWS
2275	PROG	PAGE TITLE	20	Monitor Supplementary Views
2276	PROG	ITEM TITLE	16	Segment:
2277	PROG	ITEM TITLE	16	Programs:
2278	PROG	ITEM TITLE	16	Schedule:
2279	PROG	MESSAGE	128	PROGRAM NOT RUNNING
2286	PROG	PAGE TITLE	20	Jog Disabled
2287	PROG	MESSAGE	128	Jog operation not available
2290	PROG	ITEM TITLE	16	Plot:
2291	PROG	ITEM	16	None
2292	PROG	PAGE TITLE	20	Visible Plot Select
2295	PROG	MESSAGE	128	Missing program template file (.UYW).
2297	PROG	MESSAGE	128	Caution: This node’s clock is not synchronised.
2298	PROG	MESSAGE	128	Invalid program configuration.
2299	PROG	MESSAGE	128	Unable to view program due to communication error.
2320	COMMS	BUTTON TEXT	12	PRINTERS
2321	COMMS	TITLE	16	Printer1 Setup
2322	COMMS	TITLE	16	Printer2 Setup
2323	COMMS	TITLE	16	Printer3 Setup
2324	COMMS	PAGE TITLE	20	Printers
2325	COMMS	TITLE	16	Protocol:
2326	COMMS	TITLE	16	Palette:
2327	COMMS	TITLE	16	Page Format:
2328	COMMS	TITLE	16	Host:
2329	COMMS	TITLE	16	Port:
2330	COMMS	TITLE	16	Print Columns:
2331	COMMS	ITEM	16	Text Only
2332	COMMS	ITEM	16	Graphics-PCL3
2333	COMMS	ITEM	16	Graphics-ESC/P
2337	COMMS	ITEM	16	Monochrome
2338	COMMS	ITEM	16	Colour CMY
2339	COMMS	ITEM	16	Colour CMYK
2340	COMMS	ITEM	16	Colour KCMY
2343	COMMS	ITEM	16	A4
2344	COMMS	ITEM	16	Letter
2345	COMMS	TITLE	16	Line Feed Space:
2346	COMMS	BUTTON TEXT	12	Plot (P1)
2347	COMMS	BUTTON TEXT	12	Plot (P2)
2353	COMMS	TITLE	16	Plot Colour Select
2354	COMMS	ITEM	16	Black

No.	Context	Class	Max	Text
2355	COMMS	ITEM	16	Cyan
2356	COMMS	ITEM	16	Magenta
2357	COMMS	ITEM	16	Blue
2358	COMMS	ITEM	16	Yellow
2359	COMMS	ITEM	16	Green
2360	COMMS	ITEM	16	Red
2361	COMMS	ITEM	16	Grey
2371	COMMS	TITLE	16	Channel
2372	COMMS	MESSAGE	128	NO DATA AVAILABLE
2373	COMMS	TITLE	16	Extended Text:
2391	COMMS	COMMS PORT	5	USB1
2392	COMMS	COMMS PORT	5	USB2
2393	COMMS	COMMS PORT	5	USB3

Panel Customisation Using the Dictionary

It is possible to customise the standard panel interface by defining certain dictionary entries to be “empty”. An empty dictionary entry takes the form “S<N>,” in the .uyl file. Note: the “,” is the last character on the line, it must not be followed by any other (even a space character). If any of the dictionary entries listed below is set to be “empty” then the corresponding function is removed from the standard interface.

Note: do not define dictionary entries other than those listed below to be empty.

No.	Context	TEXT	FUNCTION
62	ALMMENU	NOTE	Entering of notes into alarm history
340	FILE MGR	COPY ALL	Copy all selected files
342	FILE MGR	DEL_ALL	Delete all selected files
384	APP MGR	LOAD	Load a new application
385	APP MGR	LD+RUN	Load and run a new application
386	APP MGR	UNLOAD	Unload current application
387	APP MGR	SAVE	Save application files
388	APP MGR	SAVE AS	Save application files to a new name
389	APP MGR	DELETE	Delete an application
390	APP MGR	STOP	Stop a running application
391	APP MGR	START	Start a loaded application
428	SPP	RUN	Running the currently loaded program
429	SPP	HOLD	Hold the currently running program
430	SPP	ABORT	Aborting programs
433	SPP	LOAD	Load a program
434	SPP	SAVE	Save a program
435	SPP	SAVE AS	Save program to a new name
436	SPP	DELETE	Delete a program
479	SPP	MONITOR	Menu button to call Monitor page
480	SPP	PROGRAMS	Menu button to call Programs page
481	SPP	SCHEDULE	Scheduling programs

No.	Context	TEXT	FUNCTION
482	SPP	PREVIEW	Preview of program
483	SPP	PRE-PLOT	Live/preview combined display of program
484	SPP	EDIT	Editing of programs
490	SPP	RUN FROM	Starting a program part way through
501	SPP	NEW	Create a new program
513	SPP	INS SEG	Insert a new segment
514	SPP	DEL SEG	Delete a segment
517	SPP	LAYOUT	Modify editor page layout
570	SPP	SKIP	Skipping the currently executing segment
712	LOGGRP	File Type:	File type ASCII
725	LOGGRP	Name Type:	Type of log file name
727	LOGGRP	Column Titles:	Enable/disable column titles in ASCII files
728	LOGGRP	Date Format:	Format of date/time in ASCII files
732	LOGGRP	LOG NOW	Log an ASCII sample now
777	LOGAMAN	EXPORT ALL	Export from internal archive to removable medium
796	LOGAMAN	EXPORT	Export from internal archive to removable medium
805	CLONING	EXPORT	Export files from instrument
806	CLONING	IMPORT	Import files into instrument
940	FILE MGR	COPY	Copy a file
941	FILE MGR	DELETE	Delete a file
1018	ACCESS	USERS	Change to multi-user access
1108	RCP	CAPTURE AS	Capture live value to a new recipe
1102	RECIPE	DOWNLOAD	Download the recipe
1103	RECIPE	ABORT	Abort recipe download
1104	RECIPE	LOAD	Load a recipe file
1105	RECIPE	SAVE	Save as recipe file
1106	RECIPE	SAVE AS	Save recipe to new file
1107	RECIPE	CAPTURE	Capture live values to current recipe
1109	RECIPE	NEW	Create a new recipe
1110	RECIPE	DELETE	Delete a recipe or recipe file
1111	RCP	ADD LINE	Add a production line to a recipe file
1112	RECIPE	DELETE	Delete a recipe variable
1113	RECIPE	INSERT	Insert a recipe variable
1114	RCP	CREATE	Create a new recipe file
1115	RCP	LINES	Display list of production lines
1120	RECIPE	RECIPES	Menu button to call Recipes page
1122	RECIPE	STATUS	Menu button to call Status page
1150	RECIPE	MONITOR	Menu button to call Monitor page
1166	RECIPE	ITEM TITLE	File name filter
1170	RECIPE	EDIT	Menu button to call Editor
1220	BATCH	LOAD	Menu button to call Load page
1230	BATCH	LOAD	Load a new batch (batch can be loaded from strategy in blocks only if this is removed)
1231	BATCH	START	Start a batch
1232	BATCH	HOLD	Put batch into hold
1233	BATCH	RESTART	Restart batch after putting into Hold

No.	Context	TEXT	FUNCTION
1234	BATCH	ABORT	Abort a running batch
1235	BATCH	RESET	Reset a batch
1236	BATCH	NOTE	Enter a batch note
1237	BATCH	SAVE AS	Save a batch that has been created
1238	BATCH	CREATE	Create a new batch file
1240	BATCH	STATUS	Menu button to call Status page
2031	PROG	START	Start a program
2032	PROG	RESTART	Restart a program
2033	PROG	HOLD	Hold a program
2034	PROG	ABORT	Abort a program
2035	PROG	SKIP	Skip a segment
2036	PROG	ADVANCE	Advance to end of segment
2037	PROG	REDO	Re-do a dwell segment
2038	PROG	RESET	Reset a program
2039	PROG	PLOT	Display plot selection
2040	PROG	LOAD	Load a program
2041	PROG	SAVE	Save a program
2042	PROG	SAVEAS	Save a program under a new name
2043	PROG	VIEWS	Display editor view selection
2044	PROG	LAYOUT	Display editor layout selection
2046	PROG	DELETE	Delete a segment
2047	PROG	INSERT	Insert a segment
2048	PROG	UNIT	Display programmer unit selection
2049	PROG	REVISION	Display program revision information
2050	PROG	DELETE	Delete a program
2051	PROG	NEW	Creat a new program
2052	PROG	BATCH	Display batch information
2053	PROG	ALARMS	Display alarm information
2248	PROG	ACCEPT	Accept a program schedule
2249	PROG	CANCEL	Cancel a program schedule

The following items are empty by default. If set, they enable the additional features as described.

No.	Context	FUNCTION
788	LOGGRP	Display the number of groups active out of total
1166	RECIPE	File name filter
2063	PROG	Program file name filter to restrict the pick list of programs
2064	PROG	Program name filter to restrict the pick list of programs
2280	PROG	Jog back 1 minute
2281	PROG	Jog forward 1 minute
2282	PROG	Jog back 10 minutes
2283	PROG	Jog forward 10 minutes
2284	PROG	Jog back 60 minutes

No.	Context	FUNCTION
2285	PROG	Jog forward 60 minutes

Alarm/Event Customisation Using the Dictionary

The following dictionary entries may be defined to add additional information into the alarm text. In all cases the text (if defined) prefixes the another item. If a space is required between the prefix and the item this must be included in the dictionary item when defined. The text is used in the following contexts:

1. Panel Event Log (See "Event Log" on page 74)
2. Alarms and events recorded on trends (See "Overview" on page 74)
3. Alarms and events recorded in log files
4. Printer (if configured)

No	Prefixes	Notes
580	Original value in a block field change event.	
581	New value in a block field change event.	
582	Message acknowledge reason	
583	Signature reason	Auditor Option Only
584	Logged in user's name	
585	Signature	Auditor Option Only
586	Authorisation	Auditor Option Only

The Error Text Dictionary

The contents of the Error text dictionary on delivery are as follows:

No.	CODE	TEXT
E1	8301	Bad template
E2	8302	Bad block number
E3	8303	No free blocks
E4	8304	No free database memory
E5	8305	Not allowed by block create
E6	8306	In use
E7	8307	Max length =
E8	8308	No spare databases
E9	8309	Not enough memory
E10	8320	Bad library file
E11	8321	Bad template in library
E12	8322	Bad server
E13	8323	Cannot create EDB entry
E14	8324	Bad file version
E15	8325	Bad template spec
E16	8326	Unable to make block remote
E17	8327	Bad parent

No.	CODE	TEXT
E18	8328	Corrupt data in .DBF file
E19	8329	Corrupt block spec
E20	832A	Corrupt block data
E21	832B	Corrupt pool data
E22	832C	No free resources
E23	832D	Template not found
E24	832E	Template resource fault
E25	8330	Cannot start
E26	8331	Cannot stop
E27	8332	Empty database
E28	8333	Configurator in use
E29	8340	.DBF file write failed
E30	8341	More than one .RUN file found
E31	8342	.RUN file not found
E32	834A	Connection source is not an O/P
E33	834B	Multiple connection to same I/P
E34	834C	Connection destination not I/P
E35	834D	No free connection resources
E36	834E	Bad conn. Src/dest block/field
E37	834F	Invalid connection destination
E38	8350	Hot start switch is disabled
E39	8351	No database was running
E40	8352	Real-time clock is not running
E41	8353	Root block clock is not running
E42	8354	Hotstart time was exceeded
E43	8355	Root block is invalid
E44	8356	Too many control loops
E45	8357	Coldstart switch is disabled

As with the System text dictionary, it is possible to:

1. Replace any text item (Error message) in the Error text dictionary with messages customised for a particular industry or application and/or
2. Internationalise the messages by creating a new dictionary for each of up to ten languages

Editing Error Messages

The Error dictionary supplied, is a part of the _system.uyl file. To customise it, the principle is the same as for the System text dictionary:

1. In the Error text dictionary, find the text to be replaced
2. Note its reference number
3. Key in the reference number, and then the text you want to replace it with, related by the following syntax:

E<N>,<text>

where:

<N> is the reference number of the record you want to change

<text> is the replacement text.

For example: E7,File not found.

Creating New Language Error Text

Any additional language dictionaries that are created must be named _system0.uyl, _system1.uyl, _system2.uyl, and so on up to _system9.uyl, (one dictionary for each language to be implemented)

Procedure

In Excel or any similar spreadsheet program:

1. Write a first column of reference numbers, from E1 to at least E45
2. In the second column, assign code numbers
3. In the third column, write the error message in the required language.

The Event Text Dictionary

On delivery, the Event text dictionary is as listed below. As with the System and Error dictionaries, it is possible to:

1. Replace any text item (Event message) in the Event dictionary with messages customised for a particular industry or application, and/or
2. Internationalise the messages by creating a new dictionary for each of up to ten languages.

V11 to V13 take the User ID, V110 to 116 take the recipe file name or the recipe name.

No.	EVENT NAME	MAX LENGTH 1/4 VGA	MAX LENGTH XGA	
V1	Clock set	16 characters	16 characters	
V3	Started	N/A	16 characters	Note 1
V4	Ack all	16 characters	16 characters	
V5	Access Save	N/A	16 characters	
V6	Access Updated	N/A	16 characters	Note 1
V7	Timeout	8 characters	16 characters	
V8	Retired User	N/A	16 characters	Note 1
V9	Disqualified	8 characters	16 characters	
V10	Access change	16 characters	16 characters	
V11	Log on	8 characters	16 characters	
V12	Log off	8 characters	16 characters	
V13	Log fail	8 characters	16 characters	
V14	Password change	8 characters	16 characters	
V15	Expired user	8 characters	16 characters	
V16	Disable user	8 characters	16 characters	

No.	EVENT NAME	MAX LENGTH 1/4 VGA	MAX LENGTH XGA	
V17	Enabled user	8 characters	16 characters	
V18	Deleted user	8 characters	16 characters	Note 2
V19	Created user	8 characters	16 characters	
V20	Purged user	N/A	16 characters	Note 1
V31	ITD mem full	16 characters	16 characters	
V33	Database Running	N/A	16 characters	
V34	Deleted file	8 characters	16 characters	
V35	Imported file	8 characters	16 characters	
V36	Deleted Database	8 characters	16 characters	
V37	Created Database	8 characters	16 characters	
V38	Renamed Block	8 characters	16 characters	Note 2
V39	Created Block	8 characters	16 characters	Note 2
V40	Deleted Block	8 characters	16 characters	Note 2
V41	Database Loaded	16 characters	16 characters	
V42	Database Started	16 characters	16 characters	
V44	Database Resumed	16 characters	16 characters	
V45	Database Restart	16 characters	16 characters	
V46	Database Stopped	16 characters	16 characters	
V47	Database Saved	16 characters	16 characters	
V48	Database Unload	16 characters	16 characters	
V49	Database Stop	16 characters	16 characters	
V50	Late	8 characters	16 characters	
V51	Loaded	8 characters	16 characters	
V52	No File	8 characters	16 characters	
V53	Too big	8 characters	16 characters	

Notes:

1. Applies only to units fitted with the Auditor Option
2. Not applicable to units fitted with the Auditor Option

No.	EVENT NAME	MAX LENGTH 1/4 VGA	MAX LENGTH XGA
V54	Bad refs	8 characters	16 characters
V55	Sch load	8 characters	16 characters
V56	Run	8 characters	16 characters
V57	Held	8 characters	16 characters
V58	Resume	8 characters	16 characters
V59	Abort	8 characters	16 characters
V60	Finish	8 characters	16 characters
V62	Heldback	8 characters	16 characters
V63	Restart	8 characters	16 characters
V64	Overnest	8 characters	16 characters
V65	Bad Prog	8 characters	16 characters
V66	Sch Abrt	8 characters	16 characters
V67	OverLims	8 characters	16 characters

No.	EVENT NAME	MAX LENGTH 1/4 VGA	MAX LENGTH XGA	
V68	Early	8 characters	16 characters	
V69	Ramp Dis	8 characters	16 characters	
V70	DBN Mem Full	16 characters	16 characters	
V72	Bad _SYSTEM.OPT	16 characters	16 characters	
V74	Comms Changed	16 characters	16 characters	
V75	Startup Changed	16 characters	16 characters	
V76	Instrument Reset	16 characters	16 characters	
V77	Health Relay	16 characters	16 characters	See Note
V78	Run Relay	16 characters	16 characters	See Note
V79	Panel Save	16 characters	16 characters	
V80	No .GWF Found	16 characters	16 characters	
V82	Created .GWF	16 characters	16 characters	
V83	Extra Modbus/S	16 characters	16 characters	
V85	Language	16 characters	16 characters	
V86	Date Format	16 characters	16 characters	
V87	Time Format	16 characters	16 characters	
V88	Duration Format	16 characters	16 character	
V89	Program Edit	16 characters	16 characters	
V90	Lost Ed	8 characters	16 characters	
V91	Skip	8 characters	16 characters	
V92	No Goto	8 characters	16 characters	
V93	Common	8 characters	16 characters	
V94	Save	8 characters	16 characters	
V95	Deleted program	8 characters	16 characters	
V96	Run From	8 characters	16 characters	
V97	Skip Request	N/A	16 characters	See Note
V98	Segment Edit	16 characters	16 characters	
V99	Segment Edit	16 characters	16 characters	
V102	Gap	8 characters	16 characters	
V103	Deleted Log File	8 characters	16 characters	
V104	Too Big Log File	8 characters	16 characters	
V108	Schedule	8 characters	16 characters	
V109	Sch Clr	8 characters	16 characters	
V110	Load	8 characters	16 characters	

Note: Applies only to units fitted with the Auditor Option

No.	EVENT NAME	MAX LENGTH 1/4 VGA	MAX LENGTH XGA
V111	Download	8 characters	16 characters
V112	Complete	8 characters	16 characters
V113	Failed	8 characters	16 characters
V114	Abort	8 characters	16 characters
V115	Capture	8 characters	16 characters
V116	Save	8 characters	16 characters

No.	EVENT NAME	MAX LENGTH 1/4 VGA	MAX LENGTH XGA	
V117	Deleted Recipe	8 characters	16 characters	
V120	Load	8 characters	16 characters	
V121	Start	8 characters	16 characters	
V122	Hold	8 characters	16 characters	
V123	Abort	8 characters	16 characters	
V124	Reset	8 characters	16 characters	
V125	Restart	8 characters	16 characters	
V126	Complete	8 characters	16 characters	
V127	Save	8 characters	16 characters	
V128	Pause	8 characters	16 characters	
V129	Resume	8 characters	16 characters	
V130	Stop	8 characters	16 characters	
V131	Phase	8 characters	16 characters	
V132	Create	8 characters	16 characters	
V138	Ethernet Save	16 characters	16 characters	
V139	Modbus/TCP Save	16 characters	16 characters	
V140	Net Audit save	N/A	16 characters	See Note
V141	Lost Messages	N/A	16 characters	See Note
V142	Power Cycle	N/A	16 characters	See Note
V143	Net Audit Update	16 characters	16 characters	See Note
V150	Sig Conf Save	16 characters	16 characters	See Note
V151	Sig Conf Update	16 characters	16 characters	See Note
V152	New Level (Sign)	16 characters	16 characters	See Note
V153	Old Level (Sign)	16 characters	16 characters	See Note
V154	Item (Sign)	16 characters	16 characters	See Note
V155	Page (Sign)	16 characters	16 characters	See Note
V156	Function (Sign)	16 characters	16 characters	See Note
V157	Unused Signature	16 characters	16 characters	See Note
V158	Sign Fail	16 characters	16 characters	See Note
V159	Authorise Fail	16 characters	16 characters	See Note
V160	Min ID	8 characters	16 characters	
V161	Min Password	8 characters	16 characters	
V162	Max Login Attemp	8 characters	16 characters	
V163	Expire Pasword	8 characters	16 characters	
V164	Logout Timeout	8 characters	16 characters	
V168	Access Upd Fail	16 Characters	16 Characters	See Note
V169	Reinstated	16 characters	16 characters	See Note
V170	Recover Enable	16 characters	16 characters	
V171	Recover Disable	16 characters	16 characters	
V172	Master Access	16 characters	16 characters	See Note
V173	Slave Access	16 characters	16 characters	See Note
V174	Bind Access	16 characters	16 characters	See Note

Note: Applies only to units fitted with the Auditor Option

No.	EVENT NAME	MAX LENGTH 1/4 VGA	MAX LENGTH XGA	
V175	Unbind Acces	16 characters	16 characters	See Note
V176	Access Bind Fail	16 characters	16 characters	See Note
V177	ForcNew on PwdEx	16 characters	16 characters	See Note
V178	Disable on PwdEx	16 characters	16 characters	See Note
V179	Deploy Access	16 characters	16 characters	See Note
V180	Clock sync	16 characters	16 characters	
V181	Clock master	16 characters	16 characters	
V182	Clock slave	16 characters	16 characters	
V183	Clock isolated	16 characters	16 characters	
V185	Expired	16 characters	16 characters	See Note
V186	Invalid	8 characters	16 characters	See Note
V190	Log On Remote	8 characters	16 characters	
V191	Log Off remote	8 characters	16 characters	
V192	Log Fail Remote	8 characters	16 characters	
V193	Timeout Remote	8 characters	16 characters	
V195	Log On FTP	8 characters	16 characters	
V196	Log Off FTP	8 characters	16 characters	
V197	LogFail FTP	8 characters	16 characters	
V198	Timeout FTP	8 characters	16 characters	
V200	Delete	8 characters	16 characters	
V201	Save	8 characters	16 characters	
V202	Load	8 characters	16 characters	
V203	Start	8 characters	16 characters	
V204	Hold	8 characters	16 characters	
V205	Restart	8 characters	16 characters	
V206	Skip	8 characters	16 characters	
V207	Redo	8 characters	16 characters	
V208	Advance	8 characters	16 characters	
V209	Abort	8 characters	16 characters	
V210	Reset	8 characters	16 characters	
V211	Jog	8 characters	16 characters	
V212	Schedule	8 characters	16 characters	
V213	Cancel	8 characters	16 characters	
V214	New	8 characters	16 characters	
V215	Segment Edit	16 characters	16 characters	
V216	Segment Edit	16 characters	16 characters	
V217	Program Edit	16 characters	16 characters	
V218	Load schedule	8 characters	16 characters	
V219	Late schedule	8 characters	16 characters	
V220	Load fail	8 characters	16 characters	
V221	Complete	8 characters	16 characters	
V222	Idle	8 characters	16 characters	

Note: Applies only to units fitted with the Auditor Option

Editing Event Messages

The Event dictionary supplied, forms a part of the _system.uyl file. To customise it, the principle is the same as for the System and Error text dictionaries:

1. In the Event text dictionary, find the text to be replaced
2. Note its reference number
3. Key in the reference number, and then the replacement text related by V<N>,<text>

where: <N> is the reference number of the record to be changed

<text> is the replacement text.

For example: V41,Appn loaded.

Creating New Language Event Text

Any additional language dictionaries that are created must be named _system1.uyl, _system2.uyl, and so on up to _system9.uyl (one dictionary for each language to be implemented).

Procedure

Using a standard text or spreadsheet editor,

1. Write a first column of reference numbers, from V1 to at least V116
2. In the second column, write the message in the required language.

Files should be saved as CSV files.

Event Priorities

All events are initially, priority 1. It is possible to assign other priorities in order, for example, to filter events for printing, logging or trending (using the DR_ALARM blocks). As with alarms, each event may be assigned a priority of 0 to 15, inclusive, where priority 0 disables the event.

If such customisation is required, the optional file _SYSTEM.UYE may be added to the system. This is a text file, containing a single line for each event requiring customisation. The syntax is : <Event number>,<Priority>, where the event number is obtained from the table above, and Priority is 0 to 15.

For example: 41,0

42,0

would cause the events ‘Database loaded’ and ‘Database started’ to be disabled

The User Text Dictionary

This dictionary (initially empty) is available for users who wish to enter their own texts for display on their Home page and User screens, with additional files to hold versions in other languages, if required. The User text dictionary is used in conjunction with the User Screen Editor. For more details refer to The User Screen Editor Handbook (part no. HA260749 U005).

For every System file there may be an optional User file to go with it.

Filenames and record syntaxes follow the pattern of those for the _system.uyl files. Filenames are:

_user.uyl for the file holding terms customised in English (or other home language).

_user<n>.uyl for files holding other-language (international) versions,

with n taking integer values from 0 up to 9, one value for each language to be made available.

The syntax of each record is: U<N>,<text>

where:

<N> is the index number of the record

<text> is the text.

The dictionary can hold a maximum of 2000 records, each consisting of up to 128 characters.

The Programmer Text Dictionary

The Programmer text dictionary holds user-generated text items for display by the Setpoint Program Editor. For more details refer to The Setpoint Program Editor Handbook (part no. HA261134U005). Entries are user text, so the items - when written - are held in the User text dictionary, _user.uyl.

The syntax of each record is: P<N>,<text>

where:

<N> is the index number of the record

<text> is the text.

The dictionary can hold 200 records, each up to 16 characters long.

Panel Navigation

This describes how to access the menu system in order to perform a task and achieve an objective.

This section consists of:

1. The Panel Navigation file ("The Panel Navigation File" on page 205)

   The versions

   Coding - The Bare Panel version, _system.pnl

   Coding - The Application Panel version, _default.pnl
2. Editing the _default.pnl file ("Editing the _default.pnl File" on page 211)
3. Line types ("Line Types" on page 211)

   Panel Agent Declaration

   Panel Driver Declaration

   Home Page Declaration

   Root Page Declaration

   Initial Page Declaration
4. Agent types ("Agent types" on page 214)

The architecture of the Standard Interface is coded in the Panel Navigation file, more usually called the .pnl file. This section of the manual describes the Panel Navigation file and how to edit it in order to customise the architecture of the Standard Interface to your own requirements.

The architecture of the User Screen Interface is assembled using the User Screen Editor and is held in other files. To customise the architecture of the User Screen Interface, see the User Screen Editor Handbook (part no. HA260749U005).

The Panel Navigation File

The Versions

For any instrument there can be three versions of the Panel Navigation file held in software, with copies of two of them in ROM. The file names are <appname>.pnl, _default.pnl, and _system.pnl, with ROM copies of _default.pnl and _system.pnl.

Each of these versions is mostly a list of agents, with various parameters determining behaviour. Some of these parameters are agent-specific, others are generic.

Codings for _system.pnl (the Bare Panel version) and _default.pnl (called the Application Panel version here) follow.

Note: For units fitted with the Audit option, please see Auditor Option Versions (below) , for codings.

With an application (say, <appname>) loaded, the system looks for <appname>.pnl. This is a version that has been customised for that application and which will generate an interface architecture specifically for it. For an instrument that periodically runs different applications, there could be an <appname>.pnl for each application.

If <appname>.pnl cannot be found, the instrument searches for _default.pnl. This is a generic version that works for all applications.

If _default.pnl cannot be found, the instrument loads a firmware copy that can always be found in ROM. (The instrument is shipped with these files, and they are loss-proof.)

With no application loaded the system looks for a file called _system.pnl, known as the ‘bare’ panel version (see also "Managing an Application" on page 108, Managing an Application). If this file cannot be found, the corresponding version in ROM is used.

Coding - The Bare Panel version (_system.pnl)

```
==============================

  SAMPLE BARE PANEL SYSTEM

==============================
```

(Quarter-) VGA Driver:

```
D1,QVGA
```

Home Agent (set up for user page 1; if this does not exist then it will default to the System Summary, which has the lowest Id in the main pane)

```
H1
```

Initial page (first page after power-up) is the same

```
I1
```

Root Agent:

```
R1000
A1000,MENU,,,3,,,2010,4000,2210,2300,2130,2400,9012,1
A2010,SYS_SUM
A2210,APP_MGR,4,,,0
```

SETUP submenu

```
A2300,MENU,,,3,#S398,#S399,2030,2040,2050,2060,2090,2070
A2030,STARTUP,,3
A2040,COMMS,,4
A2050,CLOCK,3
A2060,INTERNAT,,4
A2070,PANEL,,2
A2090,TIMEZONE,,4
```

MAINTENANCE submenu

```
A2400,MENU,4,,3,#S930,#S931,2080,2140,2150,2160,2170,4500
A2080,CLONE,4
A2140,FILE_MGR,4
A2150,SOFT_OPT,4
A2160,BATCH_MAINT_4
A2170,COMPAT,4
```

Alarm history (for event log only)

```
A9010,ALM_HIST,2,,2


A4000,ACCESS
A4500,INS_PASSWD
```

Dialogue Agent

```
A100000,DIALOG,,,4
```

==== END OF FILE ====

Coding - Sample Application Panel version (_default.pnl)

==========

SAMPLE APPLICATION PANEL SYSTEM

==========

(Quarter-) VGA Driver

```
D1,QVGA
```

Home page is first User Page (or will default to Overview else System Summary, as this has the lowest Id in the main pane)

```
H1
```

Initial page (first page after power-up) is the user screen 100 (if present)

```
I100
```

Root Menu

```
R1000
```

```
A1000,MENU,,,3,,,4000,2000,9000,1500,6000,7000,5000,1
```

System Submenu

```
A2000,MENU,,,3,#S130,#S131,2010,2200,2300,2080
```

```
A2010,SYS_SUM
```

```
A2080,CLONE,4
```

Application sub-submenu

```
A2200,MENU,,,3,#S396,#S397,2020,2210,2230
```

```
A2020,APP_SUM
```

```
A2210,APP_MGR,4,,,0
```

```
A2230,FB_MGR,3,4,,0
```

Setup sub-submenu

```
A2300,MENU,,,3,#S398,#S399,2030,2040,2050,2060,2090,2070
```

```
A2030,STARTUP,,3
```

```
A2040,COMMS,,4
```

```
A2050,CLOCK,3
```

```
A2060,INTERNAT,,4
```

```
A2070,PANEL,,2
```

```
A2090,TIMEZONE,,4
```

Security Access

```
A4000,ACCESS
```

```
A4500,INS_PASSWD
```

Logging Submenu

```
A5000,LOG_MENU,2,,3,5010
```

```
A5010,LOG,2,3,2
```

Area/Group/Point displays

```
A1500,AGP,1,2,2
```

Programmer

```
A6000,PROG_MENU,2,3,3,6010
```

```
A6010,PROG,2,3,2,6000,8020,9030
```

```
A8020,BATCH,2,3,3,0,1
```

```
A9030,ALM_HIST,2,,3
```

Recipe

```
A7000,RCP_MENU,2,3,3,7010
A7010,RECIPE,2,3,2,7000
```

Batch

```
A8000,BATCH_MENU,2,,3,8010
A8010,BATCH,2,3,2,8011
```

Alarms

```
A9000,ALM_MENU,2,,3,9010,9011,9021
A9010,ALM_HIST,2,,2
A9020,MESSAGE,2,,3
```

Dialog Agent

```
A100000,DIALOG,,,4
```

==== END OF FILE ====

Auditor Option Versions

This sub section contains listing similar to those above, but for instruments with the Auditor option fitted.

Coding - The Bare Panel version (_system.pnl)

==========

SAMPLE BARE PANEL SYSTEM

(Auditor Option fitted)

==========

(Quarter-) VGA Driver:

```
D1,QVGA
```

Home Agent (set up for user page 1; if this does not exist then it will default to the System Summary, which has the lowest Id in the main pane)

```
H1
```

Initial page (first page after power-up) is the same

```
I1
```

Root Agent:

```
R1000
A1000,MENU,,,3,,,2010,4000,2210,2300,2130,2400,2500,9012,1
A2010,SYS_SUM
A2210,APP_MGR,4,,,0
```

SETUP submenu

```
A2300,MENU,,,3,#S398,#S399,2030,2040,2050,2060,2090,2070
A2030,STARTUP,,3
A2040,COMMS,,4
```

```
A2050,CLOCK,3

A2060,INTERNAT,,4

A2070,PANEL,,2

A2090,TIMEZONE,,4
```

MAINTENANCE submenu

```
A2400,MENU,4,,3,#S930,#S931,2080,2140,2150,2160,2170,4500

A2080,CLONE,4

A2140,FILE_MGR,4

A2150,SOFT_OPT,4

A2160,BATCH_MAINT,4

A2170,COMPAT,4
```

Admin submenu

```
A2500,MENU,5,,3,#S1400,#S1401,2510,2520

A2510,NET_AUDIT,5

A2520,SIGN_CFG,5

A4000,ACCESS

A4500,INS_PASSWD
```

Alarm History (for event log only)

```
A9010,ALM_HIST,2,,2
```

Dialogue Agent

```
A100000,DIALOG,,,4
```

Signature Agent

```
A200000,SIGN,,,5
```

==== END OF FILE ====

Coding - Sample Application Panel version (_default.pnl)

==========

SAMPLE APPLICATION PANEL SYSTEM

(Auditor Option fitted)

==========

(Quarter-) VGA Driver

```
D1,QVGA
```

Home page is first User Page (or will default to Overview else System Summary, as this has the lowest Id in the main pane)

```
H1
```

Initial page (first page after power-up) is the user screen 100 (if present)

```
I100
```

Root Menu

```
R1000
```

```
A1000,MENU,,,3,,,4000,2000,9000,1500,6000,7000,8000,5000,1
```

System Submenu

```
A2000,MENU,,,3,#S130,#S131,2010,2200,2300,2080,2500
A2010,SYS_SUM
A2080,CLONE,4
```

Application sub-submenu

```
A2200,MENU,,,3,#S396,#S397,2020,2210,2230
A2020,APP_SUM
A2210,APP_MGR,4,,,0
A2230,FB_MGR,3,4,,0
```

Setup sub-submenu

```
A2300,MENU,,,3,#S398,#S399,2030,2040,2050,2060,2090,2070
A2030,STARTUP,,3
A2040,COMMS,,4
A2050,CLOCK,3
A2060,INTERNAT,,4
A2070,PANEL,,2
A2090,TIMEZONE,,4
```

Admin

```
A2500,MENU,5,,3,#S1400,#S1401,2510,2520
A2510,NET_AUDIT,5
A2520,SIGN_CFG,5
```

Security Access

```
A4000,ACCESS
A4500,INS_PASSWD
```

Logging Submenu

```
A5000,LOG_MENU,2,3,5010
A5010,LOG,2,3,2
```

Area/Group/Point displays

```
A1500,AGP,1,2,2
```

Programmer

```
A6000,PROG_MENU,2,3,3,6010
A6010,PROG,2,3,2,6000,8020,9030
A8020,BATCH,2,3,3,0,1
A9030,ALM_HIST,2,,3
```

Recipe

```
A7000,RCP_MENU,2,3,3,7010
```

```
A7010,RECIPE,2,3,2,7000
```

Batch

```
A8000,BATCH_MENU,2,,3,8010
A8010,BATCH,2,3,2,8011
```

Alarms

```
A9000,ALM_MENU,2,,3,9010,9011,9021,9012
A9010,ALM_HIST,2,,2
A9020,MESSAGE,2,,3
```

Dialog Agent

```
A100000,DIALOG,,,4
```

Signature Agent

```
A200000,SIGN,,,5
```

==== END OF FILE ====

Editing the _default.pnl File

In order to change the architecture (layout) of the menu system the _default.pnl file is edited.

For instance, for any one menu, it is possible to change:

1. its title and any other legends
2. which screen area it occupies (E.G. status area, Main pane, or pop-up menu)
3. which sub-menus it generates.

Note: It is possible to create a system that is un-navigable and unworkable. For instance, it is possible, inadvertently, to create a system which generates no panel display, and which therefore offers no means of recovery.

Line Types

Please read the following in conjunction with the foregoing listings.

There are several distinct line types, each identified by its first character:

1. Panel Agent declaration, beginning with ‘A’
2. Panel Driver declaration, beginning with ‘D’
3. Home and Root page definitions, beginning with ‘H’ and ‘R’ respectively.
4. Initial page definition, beginning with ‘I’
5. Comment lines, beginning with a ‘space’ character.

Notes:

1. The system will ignore anything it cannot interpret, rather than crash or hang up.
2. The _default.pnl file is a CSV file with lines terminated by either LF or CR-LF.
3. The character ‘\’ placed at the end of a line combines two lines into one ‘logical line’. Repeated use will combine several displayed or printed lines into one logical line. If logical lines are more than 255 characters long, the 255th character is overwritten by subsequent characters.

4. Line types may appear in any order.
5. Lines beginning with any other character other than A, D, H or R are ignored, effectively making them comments.
6. The Comment line type is self-explanatory; explanations of the other line types follow.

Panel Agent Declaration

Syntax: A<Id>,<Type>,<Access>,<WrAccess>,<Pane>,<Specifics>

where all parameters beyond <Type> are optional.

PARAMETER	MEANING
<Id>	is the Agent Id, specified as a decimal number from 1000 to 2^{32} - 1. (or hex, if preceded by 'X'). Ids 1-999 are reserved for user pages defined in the user screen (OFL) file.
<Type>	is a mnemonic for the panel agent type. For example, MENU, ALM_HIST, and so on. These are listed later.
<Access>	gives the security level required for entry to this agent, and is a digit from 1 to 4. The default is 1.
<WrAccess>	gives the security level for 'Write access' within this agent. The precise interpretation of this is agent-specific. The default is <Access>.
<Pane>	is the pane in which the agent is to operate, specified as a digit from 1 to 4 as follows: 1 = Status Pane 2 = Main Pane 3 = Popup Pane 4 = Dialogue Pane. If this parameter is omitted, then the Main Pane is selected by default. Only the Dialog agent operates in the Dialogue pane.

Example: A9010,ALM_HIST,2, ,2

Any further parameters are agent-specific in meaning. They must be comma separated, and each must be one of the following types:

1. Positive decimal number from 0 to 232 - 1
2. Hex number, preceded by 'X', with up to 8 digits
3. String, within double-quotes
4. Dictionary string, using the format #S123, where S (for example) is the dictionary identifier and 123 (for example) is the index number. See the User Screen Editor Handbook for more information.

For example, for a Menu agent, the first two specific arguments are the title and legend respectively, which may be specified as either strings or dictionary strings. Most other panel agents supply their own title and legend, which may be customised if necessary by modifying the system dictionary.

Parameter specifics are:

PANEL AGENT	**PARAMETERS**
MENU	Ids for the agents accessed in this menu
SPP	Id for the associated SPP_MENU
SPP_MENU	Id for the associated SPP

ALM_MENU	Id for the associated ALM_HIST
APP_MGR:	Bit-encoding* for displayed keys (buttons)
(A) Application system	
	1 UNLOAD
	2 SAVE
	4 SAVE AS
	8 STOP/START
(B) Bare system	1 LOAD
	2 LOAD AND RUN
	4 DELETE

Example of a Menu Agent, using parameters to specify the agents to be accessed from the menu:

A1000,MENU, , ,3, , ,4000,2000,9000,3000,5000,1

* The bit-encoding in the table above for the Application panel version, refers to the last parameter in the line A2210,APP_MGR,4, , ,0 in the corresponding listing.

Panel Driver Declaration

Syntax: D<Id>,<Type>[,<Specifics>]

where

<Id>	is the driver identity. In a single driver system, this has no real significance.
<Type>	is the mnemonic for the panel driver type. Currently the only type supported is QVGA.

Example: D1,QVGA

where the ‘1’ in D1 is just an identifier for the driver, even if there is only one installed.

Currently there are no parameters for driver declarations.

Home Page Declaration

Syntax:	H<Id>
Example:	H1

This defines the Home agent (the one active after power-up, or after a HOME timeout, which generates the Home page) If there is no Home declaration, it will default to the agent of numerically-lowest Id in the Main pane.

Root Page Declaration

The Root page is displayed when the Pop-up menu key is pressed, and it usually consists of a menu.

Syntax:	R<Id>
Example:	R1000

This defines the Root agent.

With no Root declaration, it will default to the lowest Id in the Pop-up pane. If there are no pop-up agents then it will be set equal to the Home agent.

Initial Page Declaration

The Initial page is displayed on start-up only. It offers the opportunity to have an introductory page that’s different from the Home page.

Syntax	I<Id>
Example:	I1000

This defines the Initial agent.

Agent types

Table 8 sets out the types of agents used.

The Entry points column gives the number of entry points to each of the listed agents, and the number of IDs allocated will be the number in this column, starting at the specified ID. This should be born in mind when assigning Ids to agents, in order to avoid conflicts. Table 9 give details of those parameters with multiple entry points.

For each agent, the third column (headed ‘Invalid’) indicates under what circumstances, if any, the agent is not available. ‘A’ indicates that the agent is not available within an Application panel, and ‘B’ indicates that it is not available within a Bare panel.

Mnemonic	Entry points	Invalid	Description
ACCESS	1		Security access
AGP	1	B	Overview displays
ALM_HIST	2	B	Alarm History/Summary
ALM_MENU	1	B	Alarm Menu
APP_SUM	1	B	Application summary
BAT_MENU	1	B	Batch menu
BATCH	2	B	See"The Batch Dictionary" on page 228
CLOCK	1		Real time clock maintenance
CLONE	1		ISE cloning utilities
COMMS	1		Communications setup
COMPAT	1	A	Compatibility selection
DIALOG	1		Dialogue box manager
FB_MGR	1	B	Function Block Manager
FILE_MGR	1	A	File Manager
INS_PASSWD	1		Instrument Password Management
INTERNAT	1		Internationalisation
LOGGING	4	B	Logging control and monitoring
MENU	1		General purpose menu
MESSAGE	2	B	See "The Batch Dictionary" on page 228
NET_AUDIT	1		Network Audit Trail Configuration
PANEL	1		Panel parameters, e.g. brightness
PROG	7	B	Programmer
PROG_MENU	1	B	Programmer menu
RCP_MENU	1	B	Recipe menu
RECIPE	4	B	See "The Batch Dictionary" on page 228
RESOURCES	1	A	System resources allocation
SIGN	1		Electronic Signatures manager
SOFT_OPT	1	A	Software options
SPP	7	B	Legacy Setpoint Programmer
SPP_MENU	1	B	Legacy Setpoint Programmer Menu
STARTUP	1		Startup strategy definition
SYS_SUM	1		System summary
TIMEZONE	1		Time zone configuration

Table 8: Agent types

The second column in Table 8, on the previous page, shows that some agents have more than one entry point. The parameter values to invoke the respective sub-menus are as follows:

AGENT	VALUE	FACILITY
ALM_HIST	0	Alarm history
	1	Alarm summary
	2	Event Log
BATCH	0	Batch load/start
	1	Batch status
LOGGING	0	Monitor
	2	Archive Management
	3	Groups
	4	FTP
MESSAGE	0	All messages on view
	1	Single message on view.
PROG	0	Programs
	1	Schedule
	2	Edit
	3	Preview
	4	Monitor
	5	Spreadsheet editor*
	6	Application editor*
RECIPE	0	Recipe selection
	1	Recipe status
	2	Recipe Monitor
	3	Recipe editor
SPP	0	Monitor
	1	Programs
	2	Schedule
	3	Preplot
	4	Edit
	5	Preview
	6	Run From

Table 9: Agent Sub Menus (for entry points >1)

*It is recommended that value ‘2’ be used to obtain the correct editor: a value of 5 may be used to call a spreadsheet editor when an application editor has been configured; ‘6’ is for factory use only.

Database Names

The LIN database within any Visual Supervisor consists of a number of function blocks, some of which are set by Instrument manufacturer and are common to all Visual Supervisors, and some of which (function block names, alarm names and Enumerations) are specified by the user for the process to be controlled.

Function block names are open to change using LINtools, either by customers or by OEMs.

Enumerations are also editable, but not via LinTools (see "Enumerations" on page 216).

These three types of names/text items are held in Database Names files, called .uyn files. These files are optional, but where they exist there will be one per database (application). They take the name <appname>.uyn.

Function Block Names

Function block names are displayed in two facilities - Alarm History and Logging Groups - and in addition are used in logging files, where they are stored as ASCII.

The syntax for replacing an existing function block name is:

<Block Alias>,<Block Name>

where ‘Block Alias’ is the replacement text and ‘Block Name’ is the original LIN database name for the block.

For example: First Loop,Lp1 replaces the LIN database name ‘ Lp1’ with the new name ‘First Loop’ .

Note: The maximum number of characters for block aliases is eight for the small frame (1/4 VGA) unit and 16 for the large frame (XGA) unit.

Alarm Names

These are displayed in the Alarm History page.

Syntax:

<Alarm Alias>,<Block Name>.Alarms.<Alarm Name> where ‘Alarm Alias’ is the replacement text and ‘Alarm Name’ is the original LIN database name for the block.

For example: Battery,Root.Alarms.BadBat replaces the current name (text) ‘BadBat’ with the new name (text) ‘Battery’.

Note: The maximum number of characters for alarm aliases is seven for the small frame (1/4 VGA) unit and 16 for the large frame (XGA) unit (although only the first eight characters appear in the alarm pane - see "The Alarm Pane" on page 41 for alarm pane details).

Enumerations

Enumerations are nearly always Boolean two-state variables, such as TRUE/FALSE and OPEN/CLOSED. They are displayed as part of the Programmer graphical facilities (PREVIEW, PREPLOT, and EDIT), and are also used in logging files.

There are two types:

1. Syntax:

   ,<Block Name>.<Block Field>, “<Alias>,<Alias>”

   For example: ,digital.Out,“OPEN,CLOSED”

   This replaces the existing enumerations in block.field ‘digital.out’ with the new enumerations OPEN,CLOSED.

2. Syntax:

   ,<Block Name>.<Block Field>.<Block SubField>, “<Alias>,<Alias>”

   For example: ,digital.Out.Bit1,“OPEN,CLOSED”

   This replaces the existing enumerations in block.field.subfield ‘digital.out.bit1’ with the new enumerations OPEN,CLOSED.

Tags

Individual function block fields may be tagged, so that whenever a modification to the block is made from the touch screen, the modification is recorded in Event History.

Syntax:

<Field Tag>,<Block Name>.<Field Name>.<Bit number>

where field tag is the name that is used to identify the value when changed.

For example: LowTemp,PID.SL.Bit0

Note: the maximum number of characters that may be used for a for a field tag is eight for small frame (1/4VGA) units and sixteen for large frame (XGA) units.

Form Files

The instrument uses two types of form file to configure output to printers, one for the generation of reports, the other for custom formatting of alarms (e.g. text colour change).

Report Forms

An application containing DR_REPRT blocks will reference report (.UYF) files which feature:

Customised layout of information

Detailed control of the formatting of data items

Text (optionally internationalised)

LIN database variables

System variables – e.g. current date and time.

An example of a .UYF file is given in Figure 111. The various highlighted items are discussed below.

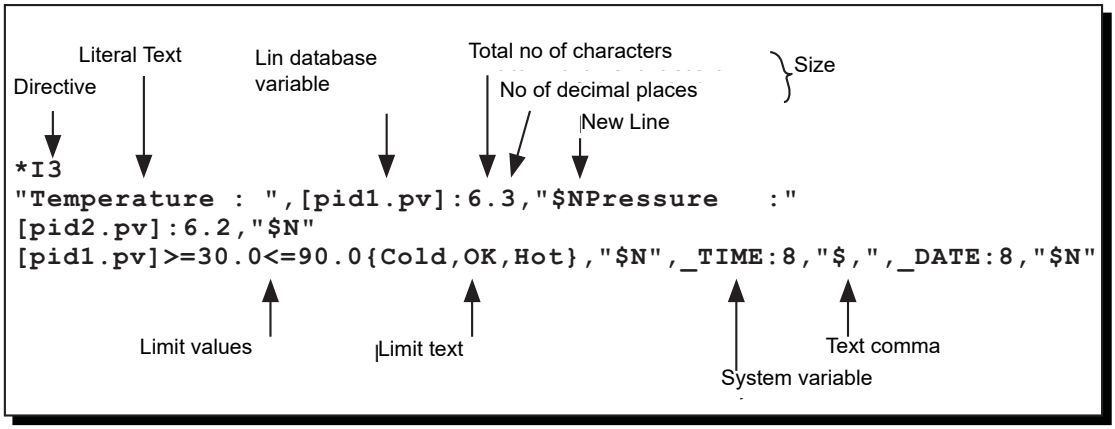


Figure 111 Sample .UYF File

If the Printer/reader option is fitted, graphical trends can be printed to a suitable printer (as described in Printer/Reader Option of this manual). The additional commands are shown in figure Figure 112, below.

Note: The page feed command “SP” works with many printers, for others “S1B&l0H” may be necessary instead, where the character after the ampersand (&) is a lower case ‘l’, not the number ‘1’.

Figure 111 Sample .UYF file including trace print commands

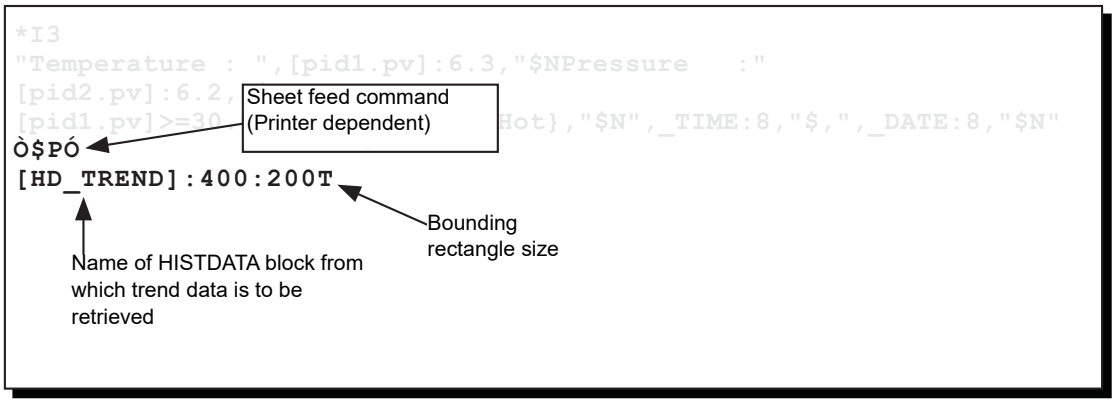


Figure 112 Sample .UYF File with Trend Printing Commands

UYF File Entries

The UYF file contains identification information (directive), followed by a list of those items (text and variables) which are to be included in the report. These items must be separated by commas, OR by New Line, Line feed or Carriage return instructions.

Rules

1. No line is to include more than 255 characters (not counting commas, linefeeds etc.)
2. No spaces or tabs may be included between items (although they may be included in text strings for formatting purposes.

Directive	The form identifier used to attach a number to the report for reference via function blocks. Different reports can be included in one .UYF file by preceding them with different Directives. The directive must precede the list of displayed items, and must occupy a line of its own. The syntax is *I<number>, where <number> is an integer between 1 and 999 inclusive. No spaces are allowed.
Literal Text	Enclosed within double quotes, literal text is printed out as typed in. Special characters may be included as shown in Table 111, below. Any ASCII character can be included by typing $nn, where nn is the hex code for the required character. If a colon followed by a number is included immediately after the text, then this will define the width of the field. E.G. “temperature =”:20 would produce the text ‘temperature =’ followed by seven spaces. Text is left justified, unless otherwise specified, as described below in ‘Formatting attributes’.

Entry	Definition	Hex
$L or $N	Line feed/new line	0A
$P	Form feed	0C
$R	Carriage Return	0D
$T	Horizontal tab	09
$" or ""	Double quotes	22
$$	Dollar symbol	24
$,	Comma	2C
${	Open curly bracket	7B
$}	Close curly bracket	7D
$nn	ASCII character nn	nn
Note: See Appendix C for ASCII Unicode Latin-1 character set codes		

Table 10: Special Characters

Dictionary text — Any item from any of the dictionaries described in Customising can be included in the report. The syntax is #<dictionary ID><entry number>, where the dictionary ID is as follows:

Error Text dictionary ID = E

Event Text dictionary ID = V

Programmer Text dictionary ID = P

System dictionary ID = S

User Text dictionary ID = U

Thus, an entry of #U13 would cause item 13 of the User dictionary to be included in the report.

Lin database variables — These variables consist of the block name, the field name and (if appropriate, the sub-field name. When included in the UYF file, these variables must be enclosed within square brackets e.g. [pid2.PV], and must be followed by a colon, then size information, giving the number of characters to be displayed.

Total number of characters — This gives the total number of characters (including any decimal point) to be displayed, with leading zeros suppressed. Values are right justified unless otherwise specified as described below in ‘Formatting attributes’.

Number of decimal places. — If the total number of characters figure is followed by a full stop and a second number, then this second number will be the number of decimal places. For example, and entry of 6.1 means that the number format is xxxx.x, or an entry of 6.5 results in a format of .xxxxx

New Line — “$N” Causes the following items to appear on a new line. For some types of printer, a carriage return ($R) may also be needed.

Limit values/Limit text — As shown in Figure 111, it is possible for a status line to be printed out according to the value of the variable. In the example given, the entry :

[PID1.pv]>=30.0<=90.0 {Cold,OK,Hot}

means that if the value of PID1 is 30.0 or more, but less than or equal to 90.0, the word ‘OK’ is printed. If the value is below 30.0 the word ‘Cold’ is printed, and if the value is above 90.0, the word ‘Hot’ is printed.

It is possible to use alarm limits as the limit values, and also to use dictionary entries for the limit text e.g. [PID1.PV]>=[PID.LL_SP]<=[PID1.HL_SP]#{U10,U11,U14} would print the text string held in item 11 of the User dictionary if the value of PID1 lies between the limits. If the value lies below the lower limit, the message held in U10 is printed, and if the value lies above the upper limit, the text held in U14 is printed.

For Boolean variables, which are either false or true, the format is: [Variable]{false text,true text}. For example, [Pid7.SelMode.Track]{,TrackOn} would cause ‘TrackOn’ to be printed when [Pid7.SelMode.Track] becomes ‘True’, but nothing would be printed when the value becomes ‘False’.

This same syntax can be used to apply enumerations to integers, booleans, subfields and enumerations.

System variables

System variables (some of which are listed in Table 11) can be used to include system information in the report. In the example of Figure 111, the items _TIME and _DATE are included to cause the system time and date to be included in the report. As with other variables, a suitable size must be allocated to the items, for formatting purposes. See the User Screen Editor handbook (HA260749U005) for a complete list.

_ALM_ACT	Number of currently active alarms (integer)
_DATE	Current date, in appropriately internationalised format (string)
_RCP_NAME	Name of current recipe (string)
_SPP_NAME	Name of current program (string)
_TIME	Current time (string)
_USER_NAME	Name of user curently logged on (string)

Table 11: System variables

Formatting Attributes

Any one letter from each of the following groups of formatting codes that are applicable to a particular variable can be appended:

1. Enter C, L or R to format the associated value as centred, left justified or right justified respectively.
   (Text defaults to Left justified (L); Numeric values default to right justified (R).)
2. Enter Z to include leading or trailing zeros
3. For REAL variables: enter S to display the value in scientific notation (e.g. 1.23E-3)
4. For INTEGER variables, one of the following may be chosen:

   X = Display values in hexadecimal format using capital A to F

   x = Display values in hexadecimal format using lower case a to f

   Y = Display values in binary format

For examples: If the value of the block ‘PID1.options’ is 42, then:

[Pid1.options]:8YZ prints 42 as an 8-bit binary value with leading zeros: 00101010,

[Pid1.options]:8XZ prints 42 as 0000002A, and

[Pid1.options]:4xL prints 42 as 2a?? (where ? represents a space).

If the value of the block ‘PID1.options’ is 42.0 then:

[Pid1.options]:8S prints 42 as ???4.2E1 (where ? represents a space).

Bargraphs

Simple bargraphs, consisting of a horizontal line of asterisks, can be included in the report, by the entry of scale low and high values and the adding of the letter B after the width character, For example, if the (user entered) scale is 0 to 50, and the width is 20, then a value of 0 is represented by zero asterisks, and a value of 50 is represented by 20 asterisks. Thus, for this example, each asterisk represents 20/50 or 0.4 of the scale. If the value is not a whole number of asterisks, then ‘rounding’ is applied.

Thus, a value of 42 would be represented by 42 x 0.4 = 16.8 = 17 asterisks, but a value of 41, (41 x 0.4 = 16.4) would be represented by 16 asterisks. The 17th asterisk would ‘turn on’ when the process value reached 41.5

The following entry, includes literal text entries to show the low and high scale values:

“0 [“,[Loop1.PV]>=0<=50:20B,”] 50” . For a value of 42, this produces the following printout:

0 [**********] 50

Further Information

1. Variables of type ENUM are printed textually even in the absence of an enumeration list, using the text defined within LIN. If an enumeration list is included, then all the desired strings must be included. Empty or Over range valued do not default to the LIN strings.
2. Alarm subfields (e.g. [PID1.ALARMS.HIGHABS] behave as integers taking values 0 to 3:

   0 = Alarm not active, Alarm not unacknowledged

   1 = Alarm active and acknowledged

   2 = Alarm no longer active, but remains unacknowledged

   3 = Alarm active but not acknowledged.

   If the entire field is specified (e.g. [PID1.ALARMS], a bitwise OR of all alarms is performed.

Note: The subfield ‘Combined’ ‘is also accessible. This is derived from the individual alarms using a different algorithm.

3. It is mandatory to supply size information for all variables except when an enumeration list has been given, in which case, the width defaults to that of the longest string.

Alarm Forms

Note: Ensure correct operation of each customised IDs, as any error in the ID will not be reported as an alarm in the LPTDEV block.

For any application with printer support, there can be an optional alarm message formatting form (.UYT) file. The file syntax is similar to the .UYF file described in "Report Forms" on page 217 above, to which reference should be made if necessary.

.UYT files are used to customise the way in which alarm and Event messages are printed in reports. These messages are invoked, when certain actions occur within the instrument. Each alarm or event has an identifier assigned to it so that the correct type of message can be selected.

The various identifiers are listed in Table 12, along with their applicability to various system variables which can be included in the report. These system variables are listed in Table 13 In the case where a system variable is inapplicable, a blank is displayed.

ID	Invoked on	Applicable to					
		_A_BLOCK	_A_DATE	_A_NAME	_A_PRI	_A_TIME	_A_TYPE
1001	Alarm active	Y	Y	N	Y	Y	Y
1002	Alarm cleared	Y	Y	N	Y	Y	Y
1003	Alarm acknowledged	Y	Y	N	Y	Y	Y
1004	Block event	Y	Y	N	Y	Y	Y
1005	Block event with name	Y	Y	Y	Y	Y	Y
1006	System event	N	Y	N	Y	Y	Y
1007	System event with name	N	Y	Y	Y	Y	Y
1008	Operator note	N	Y	Y	Y	Y	N

Table 12: Alarm Type Identifiers

System variable	Definition
_A_BLOCK	The name of the associated function block
_A_DATE	The date associated with the queue entry
_A_NAME	A name associated with an event (e.g. SPP program name)
_A_PRI	The priority asigned to the alarm or event
_A_TIME	The time associated with the queue entry
_A_TYPE	The alarm or event type

Table 13: Alarm System Variables

Example

The figures below show an example of a .UYT file and a typical resulting appearance in the report, respectively.

```
*I1001
_A_DATE:8," ",_A_TIME:8," "
_A_BLOCK:8R,"/",_A_TYPE:8L,"ACTIVE  (",_A_PRI:1,")$R$L"
*I1002
_A_DATE:8," ",_A_TIME:8," "
_A_BLOCK:8R,"/",_A_TYPE:8L,"Cleared$R$L"
```

Sample UYT file

```
23/01/07  10:07:08   Loop1/HighAbs  ACTIVE  (7)
23/01/07  10:13:22   Loop1/HighAbs  Cleared
```

Typical .UYT file printout

Recipe Files

For instruments supporting Recipes, it is possible to create Recipe files (.UYR) on a PC, using a text editor or spreadsheet that supports Comma separated variable (CSV) format files.

Each .UYR file consists of three parts. The first part is a 3-line header which describes, in a fixed format, the general information contained in the file. The second part consists of a single 'Title Line'. The final part consists of a number of lines, each describing a single variable

Notes:

1. No line may exceed 512 characters, including line feed/carriage return instructions.
2. Spaces are counted as characters
3. String titles do not have to be unique
4. Trailing commas will be treated as illegal unless otherwise stated.
5. If a string length is exceeded, any 'extra' characters are lost when saving the file.
6. Commas, double quotes ("), single quotes (') and equals signs are all illegal in fields.
7. Non-printing characters (excluding <CR> and <LF>) are not permitted anywhere within the file

Basic Recipe File

File Header

Line 1

Line 1 must contain UYR,1 only

Line 2

Line two contains comma separated information about the current revision of the file e.g.

2,10/04/08,01:37:08,Fred Bloggs,09/04/08,23:37:08

Where

‘2’ is the revision level of the file

‘10/04/08’ is the day/month/year that revision was carried out (local time).

‘01:37:08’ is the hours:minutes:seconds that the revision was carried out (local time).

‘Fred Bloggs’ is the name of the person who last modified the file.

‘09/04/08’ is the day/month/year that revision was carried out (UTC *).

‘23:37:08’ is the hours:minutes:seconds that the revision was carried out (UTC *).

Line 3

Line three defines the recipe set block to be used and recipe download timeout value, in seconds (max. 60).

<Recipe Set Block>,<Timeout>

e.g. SET1,30

The recipe Set Block is the name of the RCP_SET block to be used. If left blank, this field implies any RCP_SET block.

If the download timeout is exceeded, the recipe download is assumed to have been unsuccessful, and the recipe goes into a failed state.

Note: This UTC (GMT) time and date is accurate only if the instrument’s clock ("Resetting the Clock" on page 134) and time zone ("Time Zone Configuration" on page 137) are set correctly

Title Line

This line defines how many recipes there are in the file, (minimum = one):

,Setpoint:<Line Name>,<Recipe 1 Name>,-,-,-,<Recipe N name>

where:

<Line name> defines the name of the recipe line (not required for single line files)

<Recipe N name> is the name of the Nth recipe.

Variable Lines

For each variable in the recipe, a line is required of the form:

<Name>,<Tag>,<Value 1>,-,-,<Value N>

where:

<Name> is the name of the variable

<Tag> is the tag name in the database. If the tag name is enclosed within braces ({}), the variable is considered to be non-verifiable

<Value N> is the value of the Nth recipe. The number of values must correspond with the number of recipes.

Basic File Example

Figure 113 is an example of a basic UYR file with three recipes.

```
UYR,1
6,07/11/08,08:45:54,Richard,07/11/08,09:45:54
,30
,Setpoint 1,Amarillo,Gulf Coast,Ekofisk
Methane,GasConc.Methane,90.67241,96.52220,85.90631
Nitrogen,CasConc.Nitrogen,3.128400,0.2595000,1.006800
Carbon dioxide,GasConc.CrbDiOx,0.4676001,0.5956001,1.495400
Ethane,GasConc.Ethane,4.527901,1.818600,8.491899
Propane,GasConc.Propane,0.8280000,0.4596000,2.301500
Water,GasConc.Water,0.000000,0.000000,0.000000
Hydrogen Sulphid,GasConc.Hsulphid,0.000000,0.000000,0.000000
Hydrogen,GasConc.Hydrogen,0.000000,0.000000,0.000000
Carbon Monoxide,GasConc.CrbMonOx,0.000000,0.000000,0.000000
Oxygen,GasConc.Oxygen,0.000000,0.000000,0.000000
i Butane,GasConc.iButane,0.1037000,0.09770000,0.3846000
n Butane,GasConc.nButane,0.1563000,0.1007000,0.3506000
i Pentane,GasConc.iPentane,0.032100,0.0473000,0.0509000
n Pentane,GasConc.nPentane,0.0443000,0.0324000,0.0480000
n Hexane,GasConc.nHexane,0.393000,0.0664000,0.0000000
```

Figure 113 Basic File Example

More Complex Files

Multi-Line Files

Figure 114, below shows a 2-line version of the basic file described above. The differences are:

In the Title line, field number 2 is included and the lines have been named.

In each variable line, a second field (GasConc2) is included. For the sake of consistency, GasConc has been changed to GasConc1.

```
UYR,1
7,07/11/08,08:56:13,Richard,07/11/08,09:56:13
,30
,Setpoint:Line 1,Setpoint:Line 2,Amarillo,Gulf Coast,Ekofisk
Methane,GasConc1.Methane,GasConc2.Methane,90.67241,96.52220,85.90631
Nitrogen,GasConc1.Nitrogen,GasConc2.Nitrogen,3.128400,0.2595000,1.006800
Carbon dioxide,GasConc1.CrbDiOx,GasConc2.CrbDiOx,0.4676001,0.5956001,1.495400
Ethane,GasConc1.Ethane,GasConc2.Ethane,4.527901,1.818600,8.491899
Propane,GasConc1.Propane,GasConc2.Propane,0.8280000,0.4596000,2.301500
Water,GasConc1.Water,GasConc2.Water,0.000000,0.000000,0.000000
Hydrogen Sulphid,GasConc1.Hsulphid,GasConc2.Hsulphid,0.000000,0.000000,0.000000
Hydrogen,GasConc1.Hydrogen,GasConc2.Hydrogen,0.000000,0.000000,0.000000
Carbon Monoxide,GasConc1.CrbMonOx,GasConc2.CrbMonOx,0.000000,0.000000,0.000000
Oxygen,GasConc1.Oxygen,GasConc2.Oxygen,0.000000,0.000000,0.000000
i Butane,GasConc1.iButane,GasConc2.iButane,0.1037000,0.09770000,0.3846000
n Butane,GasConc1.nButane,GasConc2.nButane,0.1563000,0.1007000,0.3506000
i Pentane,GasConc1.iPentane,GasConc2.iPentane,0.032100,0.0473000,0.0509000
n Pentane,GasConc1.nPentane,GasConc2.nPentane,0.0443000,0.0324000,0.0480000
n Hexane,GasConc1.nHexane,GasConc2.nHexane,0.393000,0.0664000,0.0000000
```

Figure 114 Multi-line File Example

Files with Optional Capture Variables

To generate a recipe file with separate capture points, then for each recipe line there must be an additional field after each column in the title line and for each variable. The title line entry should be an item called “Capture”, and the field for the variable is the tag of the field to be captured. This field may be left blank if no capture value is to be specified.

Figure 115 Shows the 2-Line File of Figure 114, with Capture Variable on the First Two Variables.

```
UYR,1
7,07/11/08,09:13:07,Richard,07/11/08,10:13:07
,30
,Setpoint:Line 1,Capture,Setpoint:Line 2,Capture,Amarillo,Gulf Coast,Ekofisk
Methane,GasConc1.Methane,loop11.pv,GasConc2.Methane,loop21.pv,90.67241,96.52220,85.90631
Nitrogen,GasConc1.Nitrogen,loop12.pv,GasConc2.Nitrogen,loop22.pv,3.128400,0.2595000,1.006800
Carbon dioxide,GasConc1.CrbDiOx,GasConc2.CrbDiOx,0.4676001,0.5956001,1.495400
Ethane,GasConc1.Ethane,GasConc2.Ethane,4.527901,1.818600,8.491899
Propane,GasConc1.Propane,GasConc2.Propane,0.8280000,0.4596000,2.301500
Water,GasConc1.Water,GasConc2.Water,0.000000,0.000000,0.000000
Hydrogen Sulphid,GasConc1.Hsulphid,GasConc2.Hsulphid,0.000000,0.000000,0.000000
Hydrogen,GasConc1.Hydrogen,GasConc2.Hydrogen,0.000000,0.000000,0.000000
Carbon Monoxide,GasConc1.CrbMonOx,GasConc2.CrbMonOx,0.000000,0.000000,0.000000
Oxygen,GasConc1.Oxygen,GasConc2.Oxygen,0.000000,0.000000,0.000000
i Butane,GasConc1.iButane,GasConc2.iButane,0.1037000,0.09770000,0.3846000
n Butane,GasConc1.nButane,GasConc2.nButane,0.1563000,0.1007000,0.3506000
i Pentane,GasConc1.iPentane,GasConc2.iPentane,0.032100,0.0473000,0.0509000
n Pentane,GasConc1.nPentane,GasConc2.nPentane,0.0443000,0.0324000,0.0480000
n Hexane,GasConc1.nHexane,GasConc2.nHexane,0.393000,0.0664000,0.0000000
```

Figure 115 UYR File Example with Capture Variables

Files with Optional Monitor Variables

To generate a recipe file with monitor points for each recipe line, an additional field must be included after each column in the title line, and for each variable. The title line entry should be an item called “Monitor”. The field for the variable is the tag of the field to be monitored. Monitor fields must be placed after capture fields (if any).

Figure 116 Shows a Single-Line File with Monitor and Capture Points. See "Monitoring the Recipe" on page 87 for Details of Capture and Monitor

```
UYR,1
9,07/11/08,09:18:09,Richard,07/11/08,10:18:09
,30
,Setpoint:1,Capture,Monitor,Amarillo,Gulf Coast,Ekofisk
Methane,GasConc.Methane,GasConc.Methane,GasConc.Methane,90.67241,96.52220,85.90631
Nitrogen,CasConc.Nitrogen,CasConc.Nitrogen,CasConc.Nitrogen,3.128400,0.2595000,1.006800
Carbon dioxide,GasConc.CrbDiOx,GasConc.CrbDiOx,GasConc.CrbDiOx,0.4676001,0.5956001,1.495400
Ethane,GasConc.Ethane,GasConc.Ethane,GasConc.Ethane,4.527901,1.818600,8.491899
Propane,GasConc.Propane,GasConc.Propane,GasConc.Propane,0.8280000,0.4596000,2.301500
Water,GasConc.Water,GasConc.Water,GasConc.Water,0.000000,0.000000,0.000000
Hydrogen
Sulphid,GasConc.Hsulphid,GasConc.Hsulphid,GasConc.Hsulphid,0.000000,0.000000,0.000000
Hydrogen,GasConc.Hydrogen,GasConc.Hydrogen,GasConc.Hydrogen,0.000000,0.000000,0.000000
Carbon Monoxide,GasConc.CrbMonOx,GasConc.CrbMonOx,GasConc.CrbMonOx,0.000000,0.000000,0.000000
Oxygen,GasConc.Oxygen,GasConc.Oxygen,GasConc.Oxygen,0.000000,0.000000,0.000000
i Butane,GasConc.iButane,GasConc.iButane,GasConc.iButane,0.1037000,0.09770000,0.3846000
n Butane,GasConc.nButane,GasConc.nButane,GasConc.nButane,0.1563000,0.1007000,0.3506000
i Pentane,GasConc.iPentane,GasConc.iPentane,GasConc.iPentane,0.032100,0.0473000,0.0509000
n Pentane,GasConc.nPentane,GasConc.nPentane,GasConc.nPentane,0.0443000,0.0324000,0.0480000
n Hexane,GasConc.nHexane,GasConc.nHexane,GasConc.nHexane,0.393000,0.0664000,0.0000000
```

Figure 116 Single-line file with Monitor and Capture.

Writable Dictionary

The writable dictionary holds text that may be used for the batch system or in reports. This dictionary is different from all other dictionaries in that it can be modified from the Batch screen or from a user screen. The values of these texts may optionally be initialised from the _USER.UYL file described in "The User Text Dictionary" on page 203, above.

All values are preserved across power failure, but any values in the .UYL file will over-write those on power up. The dictionary holds up to 120 records, each of up to 40 characters in length.

The Recipe Dictionary

The recipe dictionary holds text that originates from the recipe files (.uyr). It may not be initialised from a .uyl file. The text held by this dictionary changes whenever .uyr files are loaded or modified from the front panel.

The dictionary is divided up into sections, one for each recipe set, each spanning a range of up to 1000 records.

The sections are allocated as follows :-

1001-1999, Recipe set number 1

2001-2999, Recipe set number 2

3001-3999, Recipe set number 3

4001-4999, Recipe set number 4

5001-5999, Recipe set number 5

6001-6999, Recipe set number 6

7001-7999, Recipe set number 7

8001-8999, Recipe set number 8

Also the section 1-999 represents the recipe set currently on view and is thus a duplicate of one of the other sections.

The following table indicates how the records are allocated in each recipe set. To get the actual record, from recipe set number n, simply add 1000*n. For example, to get the record of the user who last edited the recipe 3 .uyr file, use record number 3014

Record	Value
1	File name (excluding .uyr)
11	Revisions number of .uyr file
14	Name of user who last edited the .uyr file
15	Returns “YES” if the file has been edited but not saved or “NO” if not edited.
111	Name of line number 1
112	Name of recipe selected on line 1
113	Name of recipe active on line 1
114	State of recipe on line 1
121 to 124	As 111 to 114 but for line 2.
131 to 134	As 111 to 114 but for line 3.

Record	Value
141 to 144	As 111 to 114 but for line 4.
151 to 154	As 111 to 114 but for line 5.
161 to 164	As 111 to 114 but for line 6.
171 to 174	As 111 to 114 but for line 7.
181 to 184	As 111 to 114 but for line 8.
301 to 316	Names of recipes 1 to 16 respectively
401 to 699	Names of variable numbers 1 to 299 respectively

The Batch Dictionary

The batch dictionary holds text that originates from the batch files (.uyb) and any corresponding recipe files (.uyr). It may not be initialised from a .uyl file. The text held by this dictionary changes whenever the .uyb and/or .uyr files are loaded or modified from the front panel.

The dictionary is divided up into sections, one for each batch controller, each spanning a range of up to 1000 records.

The sections are allocated as follows :-

1001-1999, Batch number 1
2001-2999, Batch number 2
3001-3999, Batch number 3
4001-4999, Batch number 4
5001-5999, Batch number 5
6001-6999, Batch number 6
7001-7999, Batch number 7
8001-8999, Batch number 8

Also the section 1-999 represents the batch currently on view and is thus a duplicate of one of the other sections.

The following table indicates how the records are allocated for each batch. To get the record from batch n, add 1000*n. For example, to get the record of the user who last edited the batch 3 .uyb file, use record number 3014

Record	Value
1	File name (excluding .ubr)
11	Revisions number of .uyb file
14	Name of user who last edited the .uyb file
41	Custom title number 1
42	Custom title number 2
43	Custom title number 3
44	Custom title number 4
45	Custom title number 5
46	Custom title number 6
51	Custom variable number 1
52	Custom variable number 2
53	Custom variable number 3
54	Custom variable number 4
55	Custom variable number 5
56	Custom variable number 6
91	State of the batch
92	Name of recipe selected for batch
93	Name of current phase

Record	Value
101 to 120	Names of phase numbers 1 to 20
301 to 316	Names of recipes 1 to 16
401 to 699	Names of recipe variable numbers 1 to 299

Example

If ‘#B1001’ is included in a form file ("Form Files" on page 217) then the .uyb file name is included in the report.

Batch Files

For instruments supporting Batch, it is possible to create Batch files (.UYB) on a PC using a text editor or spreadsheet that supports Comma separated variable (CSV) format files. Each .UYB file consists of 2 parts. The first part is a 6-line header, which describes, in a fixed format, the general information contained in the file. The second part consists of a number of phases of the batch.

Notes:

1. No line may exceed 512 characters, including line feed/carriage return instructions.
2. Spaces are counted as characters.
3. Trailing commas will be treated as illegal unless otherwise stated.
4. Commas, double quotes (“), single quotes (‘) and equals signs are all illegal in fields.
5. Non-printing characters (excluding <CR> and <LF>) are not permitted anywhere in the file.

File Header

The format of the 6-line header is:

Line 1

Line 1 must contain UYB,1 only

Line 2

Line 2 contains comma-separated information about the current revision of the file e.g. 2,10/04/08,01:51:16,Fred Bloggs,09/04/08,23:51:16

Where: ‘2’ is the revision level of the file

‘10/04/08’ is the day/month/year that the revision was carried out (local time)

’01:51:16’ is the hours:minutes:seconds that revision was carried out (local time)

‘Fred Bloggs’ is the name of the person who last modified the file.

09/04/08 is the day/month/year that the revision was carried out (UTC*)

’23:51:16’ is the hours:minutes:seconds that revision was carried out (UTC*)

Line 3

Line 3 defines the batch engine interface as

<BAT_CTRL>,<End Action>,<Timeout>,<Confirm level>,<BatchID Prefix>

e.g. BATCH1,0,60,2,ABC:R

Where

'BATCH1'	is the name of the BAT_CTRL block to run the batch.
'0'	defines the action on RESET, 0 Requires a reload, 1 Can be re-started without a reload.
'60'	defines the timeout, in seconds for state transitions (maximum 3600 seconds).
'2'	defines the level of confirmation required when starting from the front panel. 0 No confirmation required, 1 OK/CANCEL dialogue box, 2 Required re-entry of password.
ABC:R	is an optional batch id prefix of the form <Prefix>:R, where Prefix overwrites the batch ID, from the left, with the characters of the prefix. For example, a prefix of RKN, would result in batch IDs such as RKN00014. :R, if added, makes the batch ID read only (i.e. it cannot be changed from the front panel.)

Note: This UTC (GMT) time and date is accurate only if the instrument's clock ("Resetting the Clock" on page 134) and time zone ("Time Zone Configuration" on page 137) are set correctly

Line 4

Line 4 defines the display interface as

<User Screen>,<Display Group>,<Message Filter>,<User Item1>…<User Item6>

Where:

<User Screen>	is the number of a user screen page associated with the batch or 0 is none.
<Display Group>	is the (optional) name of a GROUP block to be associated with the batch (or blank if none).
<Message Filter>	is the (optional) name of block to be used to give the context for message to be associated with this batch, this may the name of the BAT_CTRL block itself or a GROUP block containing the BAT_CTRL plus other blocks of interest.
<User Item>	specifies a title and value to be displayed on the BATCH start screen. The value may be edited prior to starting the batch. Each user item is of the form <Title>:<Value>:<Width>=<Initial value>:<Attributes> where
<Title>	is a dictionary reference of the #<Dict><Index> e.g. #U12
<Value>	is either a writeable dictionary value e.g. #W12 or else a LIN dB value e.g. [PID.SL]
<Width>	is the number of characters wide to display the value.
<Initial value>	(optional) is the text value to be used to initialise a writeable dictionary entry value. For example #U13 = user dictionary entry 13. The value may only be

another dictionary reference, and must be applied at load.

<Attributes> (optional). Can have one of the following:

W = Value must be written. This implies that data entry must occur after load. If the batch is not unloaded, it may be run without re-writing this value.

M = Value must be modified from its initial value (for 'W' dictionary items only) after load. If the batch is not unloaded, it may be run without re-writing this value.

Line 5

Line 5 defines the batch log interface as: <LOGROUP>,<Filename>,<Report>

e.g.	BAT_LOG,[BATCH1.Id],BAT_REPT
Where:	
'BAT_LOG'	is the (optional) name of a LGROUP block for the batch log
'[BATCH1.Id]'	is an (optional) LIN database field whose text value is used as the first two characters of the filename.
'BAT_REPT'	is the (optional) name of a DR_REPRT block to be used to generate batch reports. If a batch report is to be generated then 3 reports are required in the .UYF file (1: start, 2: stop, 3: abort). The .UYF must be the same name as the .UYB, e.g. if using SAMPLE.UYB then the corresponding .UYF is SAMPLE.UYF.

Line 6

Line 6 defines the recipe interface e.g.

LINE1

Where 'LINE1' is the name of BAT_LINE block used to parameterise the batch. If SAMPLE.UYB is used then the corresponding recipe file will be SAMPLE.UYR.

Batch Phases

For each phase of the batch a line is required of the form:

<Name>

where: <Name> is the name of the phase.

Bar Code Reader Files

An application containing a READER block will reference a reader file (.UYD) file. These files allow for the matching of bar codes and performing the corresponding actions required by those bar codes.

Example

```
@r,"h",%{GOTO:1}

@r,"a",_ALM_LVL,%{ACK_ALL,GOTO:9010}

@r,"temp",[PID1.SL]:4W2,"deg",""

@r,"$09",[Prog.RqNxtPrg]:8W,%{ST:"[Prog.NxtRdy]:=TRUE;"}
```

Notes:

1. The first line will match if the input is "h" (plus any trailing characters). It will cause the panel to jump to the home page (user page with Id 1).

2. The second line will match if the input is “a” (plus any trailing characters) and there are some active or unacknowledged alarms. It will cause acknowledgement of all alarms and jump to the Alarm History page (access level permitting, or overridden).
3. The third line will accept input such as “temp98.4deg” (no trailing characters permitted) and will assign the value 98.4 to PID1.SL, provided the current access level is 2 or higher and not overridden.
4. The fourth line will accept a TAB character followed by e.g. “MyProg99”, and will load and run the program via the ProgCtrl function block “Prog”.

Overview

A .UYD file contains an ordered set of potential patterns to be matched. When a bar code is read each of these is checked in turn (in the order they appear in the file) until a match is found (i.e. if there is the potential to match more than one line in the file the first one will be matched).

Each test line (or pattern) comprises a number of items. These items must be separated by commas.

Rules

1. No line is to include more than 255 characters
2. No spaces or tabs may be included between items

Pattern Delimiter

Each line must commence “@r”

Literal Text

A text item simply causes that piece of text to be matched with the input. The match fails unless every character in the string appears in the input at the correct position. Certain characters may have been deemed to be ‘wildcards’, in which case they will match any character in the input, but this is specified elsewhere (e.g. in the READER function block).

Constant literal text is represented by a string in double quotes, optionally followed by size and format specifications; the details of these are defined later, but the general syntax is:

<double-quoted string> [‘:’ <size info> <format>]

Examples:

“PV = “

“ABC123“:8C (Uses 8 character positions and centre-justifies)

Where a width wider than the specified text is given, as in the second example, padding uses the ‘space’ character (which may or may not be a wildcard - see above). Non-printable ASCII characters are defined using IEEE1131 ‘ST’ format; in particular, the following are supported:

Representation	Character generated
$L or $N	Linefeed or newline (hex 0A)
$P	Form feed (hex 0C)
$R	Carriage return (hex 0D)
$T	Horizontal tab (hex 09)
$$	Dollar character: ‘$’ (hex 24)
$” or “”	Double quotes character (hex 22)
$nn	Arbitrary ASCII character in hex, e.g. $7F is ‘DEL’.

If any other character follows ‘$’, then the ‘$’ is ignored.

Example: “Cost $”5$$$”” would match Cost “5$”

Empty Strings

The empty literal string (“”). This matches the end of the input and therefore may be used to reject input that includes trailing characters.

Note: Any suffix/terminating characters specified in the READER block do not count as part of the input, for these purposes.

Example: @r,”temp”,[PID1.SL]:4W2,”deg”,”” will not allow trailing temperature characters.

Dictionary Text

References to text in dictionaries are made using the format:

<dictionary type id.> <entry number>

For example #U12 will match item 12 in the user dictionary.

Note: The “W” dictionary is writeable and may be written in a similar manner to LIN database variable. E.G. #W10:8 will write 8 characters into the dictionary entry 10

Each dictionary also has the “special” entry number “*” which is the “current” indexed value. This is used in conjunction with the user actions to modify the entry number written to.

LIN Database Variables

Variables may be used in three different ways.

1. A variable not specified to be writeable, and with a non-zero width, is formatted using the current value of the variable and then matched against the input in exactly the same way as for constant strings (including the possible use of wildcards).
2. A variable specified to be writeable (‘W’ attribute, defined later) will be matched, but only in the limited sense that the required number of characters are present in the input, as specified by the width. If the whole pattern matches then the variable will be assigned a value, just as if the characters had been entered via a touch keypad. No assignment will be carried out if the characters are invalid, e.g. letters for a decimal integer variable. Enumerations (defined later) are not currently supported in this context.
3. A variable specified to have zero width will be deemed to have matched if it is a boolean type and true, or if it is a numeric type (integer, real, enum, subfield16, etc.) and is greater than zero, or if it is a string type and is a non-empty string.

The syntax of variables is:

<name> [<enumerations>] [':' <time flags>] [':' <size info> <format>]

Enumerations, time flags, size and format information are defined later.

For most data types the nature of the printed text is obvious. For booleans, the digits 0 and 1 are used by default, but typically an enumeration would be supplied to override this.

Variable names refer to objects in a database. Different databases may be available, and the one required is specified by the structure of the name. The name is of the form

<FB instance>.<field> [.<subfield>], with the whole string enclosed in square brackets (this is mandatory), e.g. [pid1.sp] or [pid2.SelMode.SelAuto].

System Variables

The following system variables, identified by a leading underscore, are available :

_ACC_I	Current access level (integer)
_ACC_S	Current access level (string)
_ALM_ACT	Number of active alarms (integer)
_ALM_NAK	Number of unacknowledged alarms (integer)
_ALM_LVL	Overall alarm level, bit encoded: 1 = Active, 2 = Unacknowledged
_ALM_URG	Most urgent unacknowledged alarm (string)
_APP_NAME	Name of currently loaded application, if any (string)
_DATE	Current date, in appropriately internationalised format (string)
_TIME	Current time (string)
_TITLE	Title of currently active page in GUI main pane (string)
_USER_ID	ID of currently logged on user (string)
_USER_NAME	Name of currently logged on user (string)
_USER_REF	Reference number of the user currently logged on (integer)

Enumerations

These apply to boolean, integer, and enumerated variables. They may be used for matching, but cannot (currently) be used in connection with data input.

Enumerations take the form of a comma-separated list of literal strings to be displayed, between curly braces, immediately following the variable name.

Examples:

[door.In.Bit3]{closed,open}

[counter2.op]{Zero,One,Two,Three,Four}

[i.op]{Lo,Lo,Lo,,,,,,Hi,Hi,Hi}

For booleans the enumerations always refer to FALSE and TRUE respectively, whereas for integers they correspond to values 0, 1, 2, etc. As with literal text, ST format may be used for non-ASCII characters; this will also be necessary to obtain the characters '}' (using "$}" or "$7D") and ',' (using "$," or "$2C") as well as '$' itself (using "$$" or "$24").

In the case of 'enum' type variables, an explicit list may be given, as above; if omitted, then the value will still be displayed as an enumeration, but using strings extracted from the database.

Where the enumeration text is not literal, but is to be obtained from a dictionary, the bracketed list is preceded with the dictionary character, “#”.

For example: door.In.Bit3#{U22,U23}

Number of Characters

A width may be given for text and variables. For example,

[i.Count]:6

would allocate 6 characters to this variable.

If the width is omitted for variables, it will default to zero unless an enumeration has been specified, in which case the width will default to that of the longest enumeration string.

Number of Decimal Places

For REAL variables, the width may be qualified by the number of decimal places, e.g.

[Loop1.PV]:7.3

This will condition the way the variable is formatted for matching, but in the case of a writeable variables the input is not constrained to have the decimal point in the correct place.

Formatting Attributes

These are specified for each individual pattern item, modifying the way it is formatted. Some are applicable only to variables, others to constant text too. Some are specific to the data type. Those which apply generally are:

C Centre justify

L Left justify

R Right justify

Centre justification normally tends to the left when the item width and the spaces available are neither both even nor both odd. Adding ‘R’ to ‘C’ changes this to a tendency to the right.

Attributes which apply to any variable are:

Z Use the character ‘0’ instead of ‘ ’ for left padding

The following apply to REAL variables only:

S Scientific notation, e.g. 1.23E7

Note: that this will condition the way the variable is formatted for matching, but in the case of a writeable variable the input is not constrained; the ‘E’ (or ‘e’) format will always be acceptable as input regardless of whether ‘S’ was specified.

The following may be applied to integer, boolean, subfield and ENUM variables only:

X Hex format, using upper case A-F

x Hex format, using lower case a-f

Y Binary format

If a hex integer is writeable, then either upper or lower case a-f will be accepted as input, regardless of whether ‘x’ or ‘X’ was specified.

Note: Binary format is not currently available for writeable variables.

User Actions

A pattern match may also cause the execution of a number of user actions. An action list may be included as:

%{<action>} for a single action

%{<action1>,<action2>} for 2 or more actions

The list of possible actions are shown in Table 14, below.

Description	Syntax	Example
Acknowledge all alarms	ACK_ALL	
Go to a specified display page	GOTO:<Page>	GOTO:9010
Descend to a specified display (i.e. Go Back works)	DESC:<Page>	DESC:9010
General ST	ST:"<ST>"	"ST:"[PID1.SL]:=40.0;"
Set index into a dictionary	DICT_SET: "<dict>":<entry>	DICT_SET:"W":1
Increment or decrement a dictionary index	DICT_ADD:"<dict>:<increment>s <limit>	DICT_ADD:"W":1:14

Table 14: Action List

Example

The following examples show how the input string “RESET” will reset the writeable dictionary index to 11. Then each successive item beginning “ITEM:” will write its next 8 characters into the writeable dictionary and increment the index. In this way a list of strings are scanned into dictionary entries 11 to 14.

```
@r,”RESET”,%{DICT_SET:”W”:11}
```

```
@r,”ITEM:”,#W*:8W,%{DICT_ADD:”W”:1:14}
```

This construct may particularly useful in scanning a list of text items into the “W” dictionary, which may then be used as input to a report.

Database Change Audit Trailing

This facility allows for audit trailing of changes of values in the application. This is independent of the other facilities which audit trail values in response to user interaction. This facility is aimed at values that change without user interaction. In order to configure this facility a file of <database name>.UYA must be created. This is a simple text file in 2 parts, a header line and then a single line for each value of interest.

Note: Only the first eight characters of a string are monitored for changes.

Header Line

The header line is of the form:

```
UYA,1[,[<burst_threshold>][,[<back_off_period>][,[<dynamic_threshold]]]
```

The three optional numeric fields are as follows

Burst threshold	The number of consecutive database cycles that a value has changed before a “burst” condition is seen to have occurred. Once the burst condition occurs audit trailing will stop to prevent over-filling the log until the value stabilises gain. Default value = 10
Back off period	The number of consecutive database cycles that a value must remain unchanged before a burst condition is considered to have cleared and normal audit trailing resumes. Default value = 10
Dynamic threshold	The percentage (in integer multiples) of database cycles that a value must have changed before a “dynamic” condition is seen to have occurred. Once the dynamic condition occurs audit trailing will stop to prevent over-filling the log until the value stabilises gain. Default = 10

Item Lines

Item lines are of the form depicted below. Each line identifies a field name to be monitored.

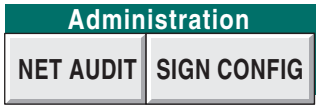
```
<BlockName>.<FieldName>
```

Administrative Functions

Notes:

1. Access to all functions described in his chapter require ADMIN privileges.
2. The functions described in this chapter apply only to instruments fitted with the 'Auditor' option.

The Administration menu is accessed by operating the menu key at the bottom right of the screen, followed by operations of SYSTEM and ADMIN keys



Network Audit Trail

This function allows the Audit trail (i.e. alarm and event logs) to be transmitted from the instrument (the 'Provider') to up to three E suite systems (the 'Consumers'). Network Audit Trail is accessed from the Administration menu by operation of the NET AUDIT key, as depicted in Figure 117, below.

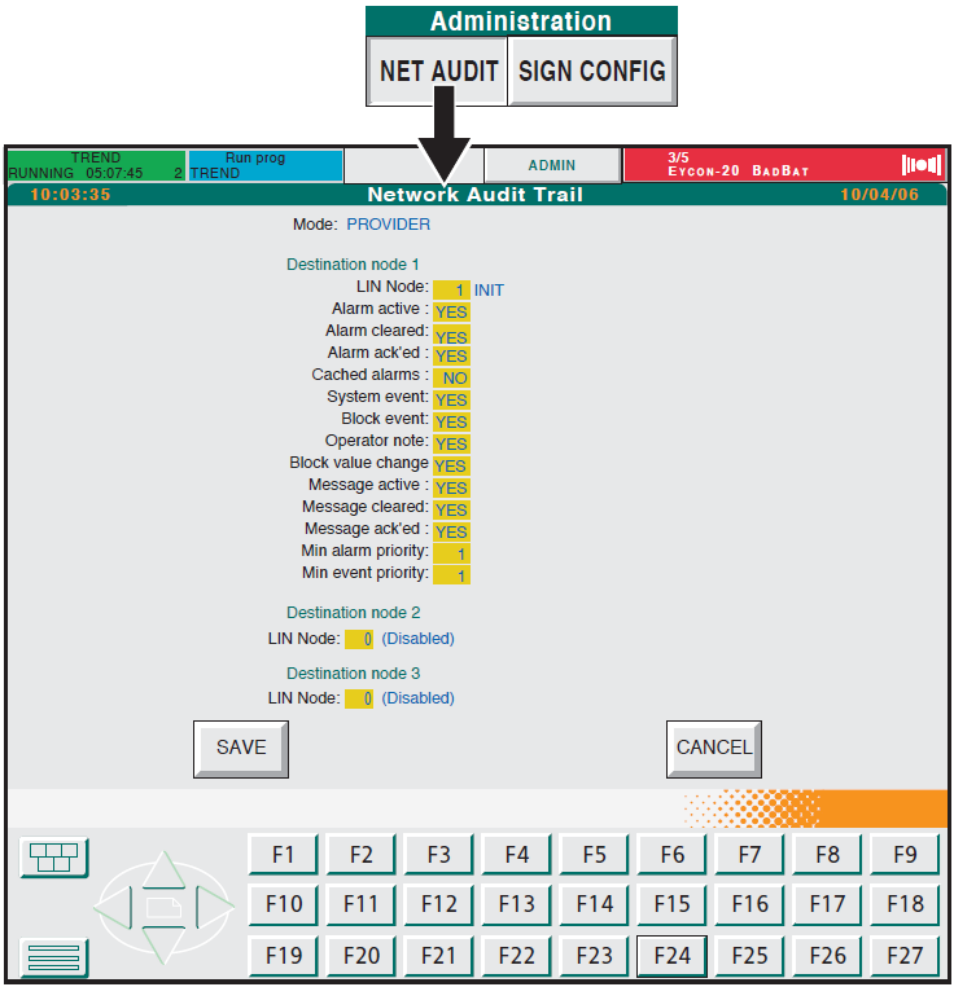


Figure 117 Network Audit trail access.

Modes

The function can be programmed in the following ways:

1. Isolated. The instrument displays only its own alarms and events. Alarms and events are not transmitted to any other node.
2. Provider. As ‘Isolated’, except that the unit can also transmit its alarms and events to up to three other Audit Trail consumers.
3. Consumer. The instrument displays its own alarms and events, plus those of up to eight other Visual Supervisors. Alarms and events are not transmitted to any other node. The node number of the provider is prefixed to the relevant line(s) in Alarm and Event Logs ("Event Log" on page 74) - local Alarms and Events are prefixed with space characters.

Configuration (Provider)

Configuration is in two parts - selecting the E suite systems (the Consumers) to which the Audit Trail is to be transmitted, and (if required) disabling one or more alarm or event types, so that only those items of interest are transmitted.

Consumer Selection

From ‘Provider’ mode, enter the (decimal) node addresses of the E suite systems to which the Audit Trail is to be sent. Once this has been done the SAVE key should be operated, and power removed from the instrument for a few seconds, then reapplied.

Audit Trail Filtering

Again, from ‘Provider’ mode, the various parameters associated with each node’s Audit trail can be enabled (set to ‘Yes’) or disabled (set to ‘No’).

Parameters

Lin Mode	UNINIT	No attempt is currently being made to establish communications with the Consumer.
	INIT	Initialised, but no communications have taken place as yet
	CONNECTED	Initial communications have been established, but no Audit Trail files are being transmitted.
	ACTIVE	The Audit Trail is being transferred to the Consumer.
Alarm active	YES = include active alarms	
Alarm Cleared	YES = include cleared alarms	
Alarm Ack’ed	YES = include acknowledged alarms	
Cached Alarms	No = do not include cached alarms (see note below)	
System Event	YES = include system events	
Block events	YES = include block events	
Operator note	YES = include operator notes	
Block Value Change	YES = include events recording changes to block field values	
Message active	YES = include active messages	
Message Cleared	YES = include cleared messages	
Message Ack’ed	YES = include acknowledged messages	
Min. alarm priority	1 to 15: Specifies minimum alarm priority for inclusion	
Min. event priority	1 to 15: Specifies minimum event priority for inclusion	

Note: ‘Cached alarms’ is normally set to ‘No’ to prevent cached blocks being sent to the consumer. (It is usual for the Consumer to have cached these blocks itself.)

User ID Control

The use of passwords and user IDs is more strictly controlled in an instrument fitted with the Auditor option, than in instrument not so fitted ("Controlling Access" on page 118, above). Access to User IDs and passwords etc. requires ADMIN permissions.

The major points to note are as follows:

1. It is not possible to edit a user’s Identity, Name, Access Level or ‘Attributes’ once the SAVE key has been pressed.
2. Once a password has been allocated, it can not be used again either by the original user or by a new user.
3. A Password expiry period, amongst other things, can be set in the ‘Properties’ menu. Once this period has expired, the relevant passwords will no longer be usable.
4. A new user’s initial password has a 24 hour expiry period. Within this time the user must log in and enter a new password. Once this is done, the new password will be allocated the expiry period set up in the Properties menu (default 90 days).
5. A Password must include one non-alpha character (i.e. it must have at least one character which is not one of A to Z or a to z.)
6. The password may not be the same as the User identity.
7. The ‘Delete’ key in the non audit-pack instrument is replaced by a ‘Retire’ key. When the Retire key is operated, with a user selected, that user’s name is removed (after confirmation) from the security access page. The details are, however, stored within the instrument to ensure that the same ID/password etc. cannot be used more than once.

Security Access Page

This page is called by touching the ACCESS key from the root menu, and entering the ADMIN Identity and Password (from V7/0 there are no hard-coded passwords, the initial passwords are defined by the user when first enabling user ID control.) Once logged in as ADMIN, operation of the USERS key calls the Security Access Display page, shown in Figure 118, below.

Note: For a more detailed description of how to access the ADMIN login, see "User ID System" on page 120

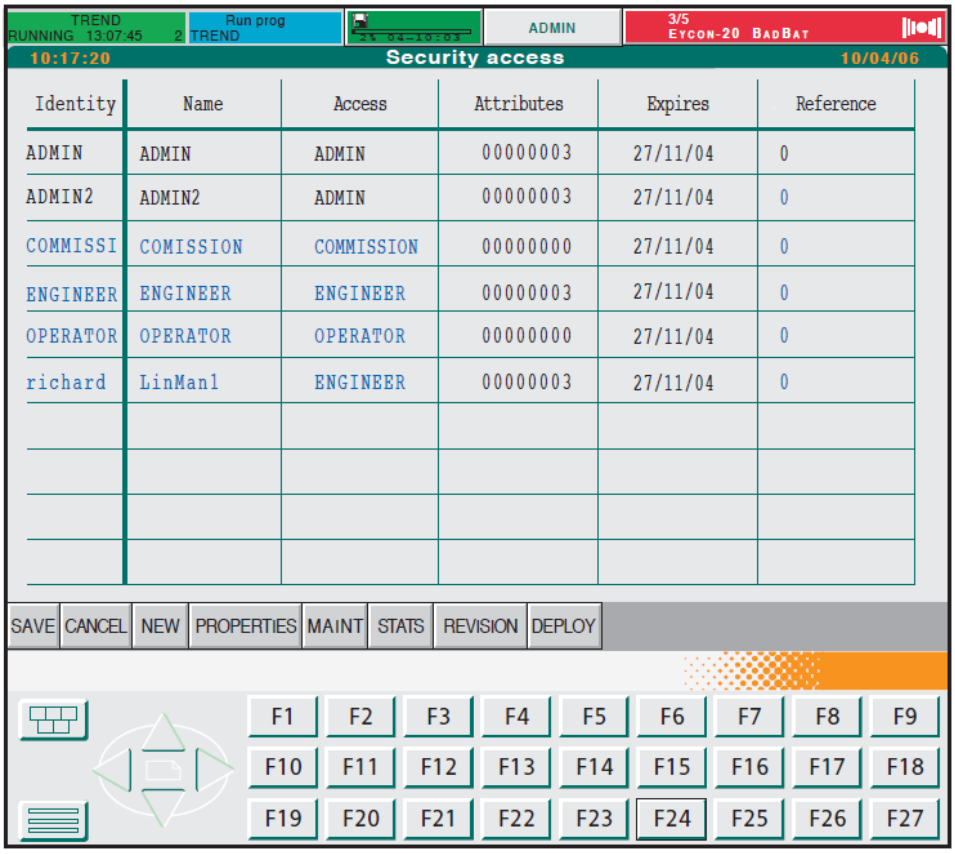


Figure 118 Security Access Page

As can be seen from the figure, the page is divided into a number of columns. Name, Access and Reference columns are all as described in "User ID System" on page 120 above. Other columns are used as follows:

Identity

Touching a users Identity ‘cell’ calls the ‘Identity’ pop-up to appear (Figure 119). This allows a new password to be entered for the ID in the normal way. The new password has a 24 hour expiry, so the user has to login and provide a further new password within this time period. The pop-up also allows IDs to be ‘Retired’ or ‘Disabled’.

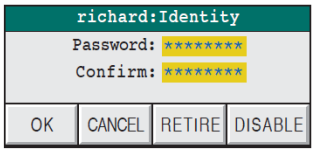


Figure 119 Identity Pop-up

Retire

A ‘retired’ user is permanently removed from the Security Access page, and all access privileges are terminated. Retired users’ Identities, Names and passwords may not be reused. It is therefore recommended that a note is kept of all Retired users’ details.

Disable

Users who are disabled (Identity and Name in Red) lose their access privileges in a non-permanent way. To reinstate a Disabled user, the Identity cell is touched, the User’s password entered and confirmed, and ‘OK’ touched. If the password is correct, the User is ‘re-enabled’, and is shown in the normal blue colour on the screen. The expiry date remains as first set up for the user.

Notes:

1. If a user fails to log in within the number of times specified (see Max login attempts in "Properties" on page 244), then the user is ‘disqualified’. The effects are similar to being ‘Disabled’, but the ‘DISABLE’ key in the pop-up is replaced by a ‘REINSTATE’ key allowing the user’s login to be re-enabled.
2. In the situation where there is a Visual Supervisor security master and one or more associated Visual Supervisor security slaves:
   a. the identity pop-up (Figure 119, above) appears only at the master so it is not possible to reinstate a user from a slave.
   b. If a user is disabled on a slave unit, then this user can be reinstated only using Security Manager software - reinstatement cannot be achieved just by redeploying the master unit security.
   c. If a user is disabled on a particular slave unit, deploying the master unit security does not disqualify the user at the master or at any other slave. In order to disqualify a user at the master, the login should be attempted using an incorrect password more times than the ‘Max login attempts’ setting for that login (see "Properties" on page 244). Once disqualified at the master, the user cannot log in at the master or at any of the slaves.

Name

Operating this button calls the Name pop-up to the screen. For new users whose details have not yet been Saved, the name can be edited. Otherwise, as shown in Figure 120, this is a View only function.

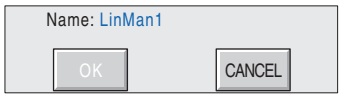
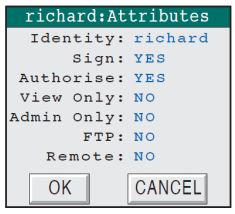


Figure 120 Name Pop-up

Attributes



Touching a particular user’s Attributes ‘cell’, calls the Attributes page. This is used to define the users ability to ‘sign’ and ‘authorise’ changes, and to define whether the user can modify the instruments operation.

The numbers which appear in the attributes column can be decoded as shown in Table 15. The values are additive, so if, for example, ‘Sign’ and ‘Authorise’ are both selected ‘Yes’, and all other fields are selected ‘No’, then the attributes value would be 00000003.

Sign	Authorise	View only	Admin only	FTP	Remote	Display
No	No	No	No	No	No	00000000
Yes	No	No	No	No	No	00000001
No	*Yes*	No	No	No	No	00000002
No	No	*Yes*	No	No	No	00000004
No	No	No	*Yes*	No	No	00000010
No	No	No	No	*Yes*	No	00001000
No	No	No	No	No	*Yes*	00002000

Table 15: Attribute coding

Expires

This column shows the expiry date for each Password, For each new user, the expiry date is 24 hours after the new user details are Saved. The user must log on and change the password within 24 hours, or the Password will lapse. The new password will have the Expiry period set in the Properties menu (described below) of the Security Access Page.

Screen Keys

These keys are located near the bottom of the screen. The SAVE and CANCEL keys operate in the same way as described in "User ID System" on page 120, above.

New

Operating the NEW key calls the New User pop-up menu to the display. Once the details have been entered, and 'OK' pressed, the new user appears in Green, on the screen.

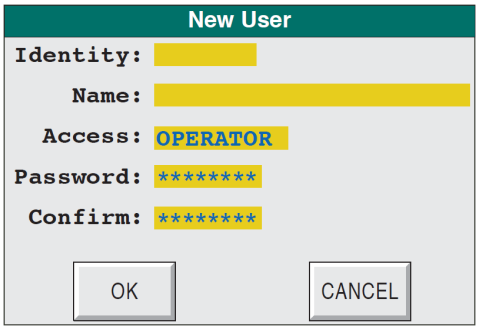


Figure 121 New User Screen

Note: Do not press SAVE until all other parameters (e.g. attributes) have been configured for this user,. Once SAVED, only the password can be changed.

Configure the users Attributes, as described above, then press SAVE. The user Identity and Name change to Blue, and the Password expiry date appears as next day. If the user Password is to expire at any period other than that set in the PROPERTIES menu (described below), this should now be set.

ADMIN should now be logged out of, and the new user logged in and a new password entered.

Properties

Similar to the Properties page described in c, this page, depicted with default values in Figure 122, allows the login parameters to be set, as described below.

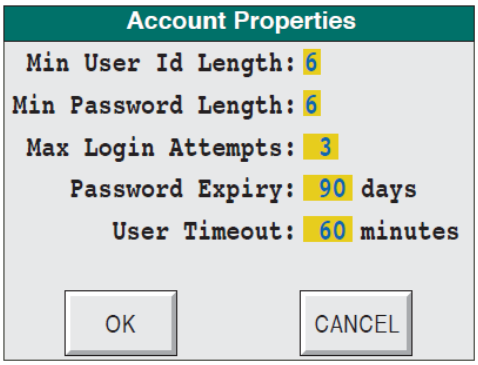


Figure 122 Properties Default Values

Min User ID Length	3 to 8	
Min Password Length	3 to 8	Pass-words must have at least one non-alpha character.
Max Login attempts	1 to 99	The number of attempts at logging-in that may be made before the account is disabled.
Password Expiry	1 to 180	The password expires after the specified number of days have elapsed since the last time the value was edited.
User Timeout	1 to 720	The user is logged out after the specified number of minutes has elapsed since previous screen activity.

Maintenance

Operating the 'MAINT' key at the bottom of the Security Access screen calls the 'Account Maintenance' screen to the display, as depicted in Figure 123, below.

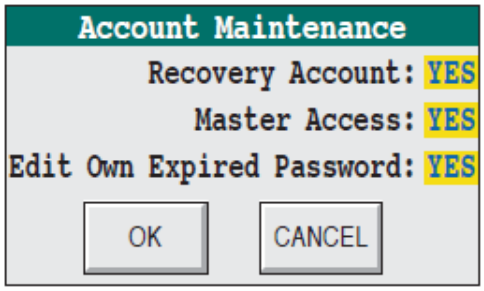


Figure 123 Maintenance Screen

Recovery Account — If recovery account is set to YES, this enables a recovery in the event of all ADMIN accounts becoming unusable. This requires a maintenance contract with the manufacturer.

Master Access — Setting Master Access to 'NO', means that the editing of Account systems is not possible.

Edit Own Expired Password

If set to Yes, the user will be forced to change password when attempting to log in. If set to 'No', only a user with ADMIN permissions may enable a new pasword for a user whose password has expired.

Statistics

Operating the STATS key at the bottom of the Security Access screen calls the 'Statistics' screen, as depicted in Figure 124, below.

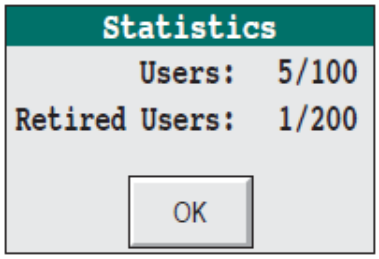


Figure 124 STATS Window

This window shows:

1. How many users have been configured out of the total available. For example, Users: 6/100 means that six of the 100 possible users have been configured.
2. How many users have been retired. For example, 1/200 means that 1 user has been retired, and that 199 further users may be retired.

Note: Retiring the 201st user causes the 1st Retired user (by time/date) to be removed from the list. This results in Event 20 (Purged user) being set. This user's data can now be re-used.

Revision

Touching this key, calls the configuration revision page, as depicted in Figure 125, below.

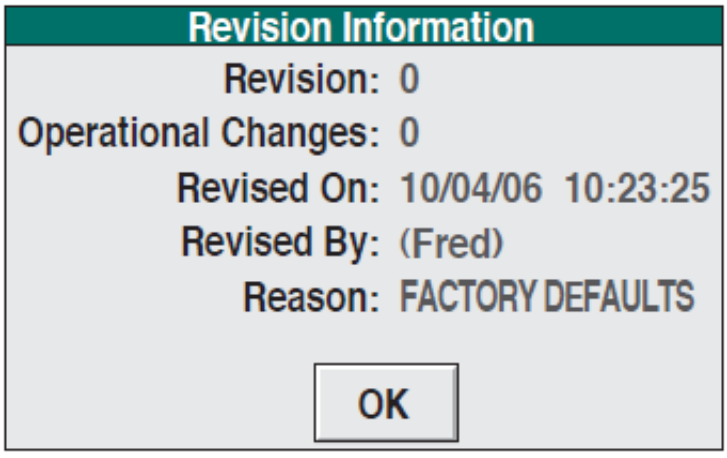


Figure 125 Revision Page

Deploy

A master access system can ‘deploy’ its own access system to other Visual Supervisors across its ELIN network. This ‘Deployment’ is in three stages:

1. Select the number of nodes (initially 0)
2. Enter the node numbers to be deployed to.
3. Initiate the deployment.

The initial display page appears when the ‘DEPLOY’ key is first pressed (Figure 126), and shows that the number of nodes is zero.

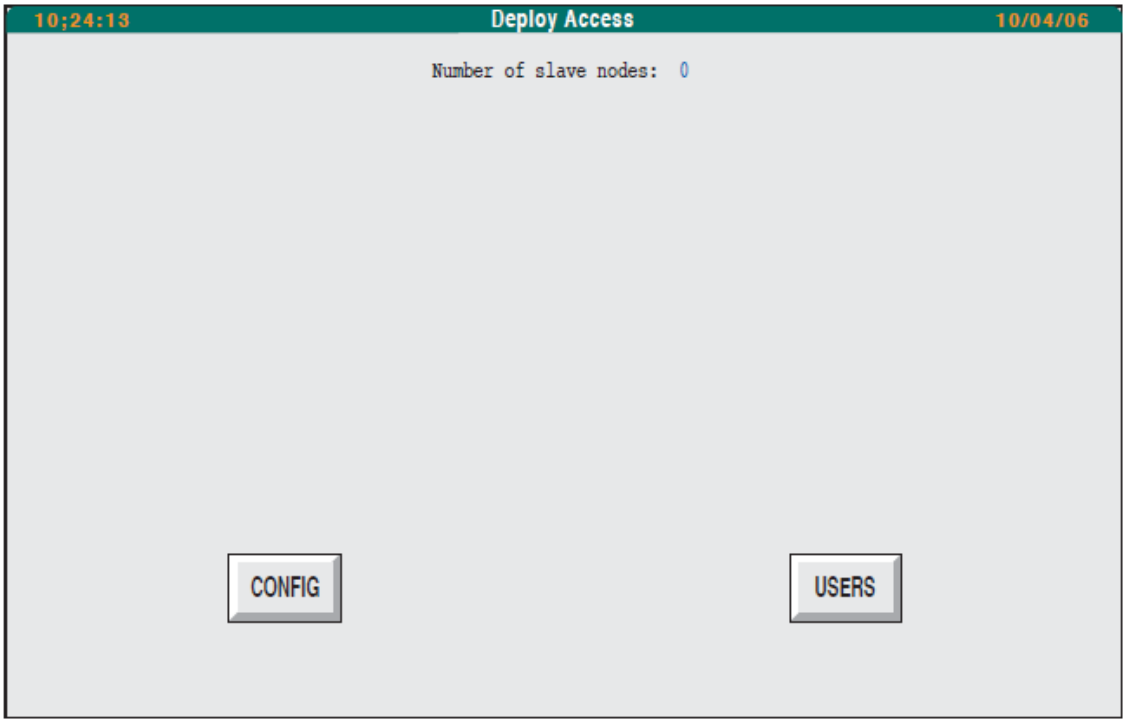


Figure 126 Initial Deploy Configuration Page

Touching the CONFIG key, allows the number of nodes to be deployed-to, to be entered. The display shows one configuration box each, for the number of nodes selected, to allow the required node numbers to be entered. Initially, all these contain ‘0’, although this value cannot be used. (Figure 128)

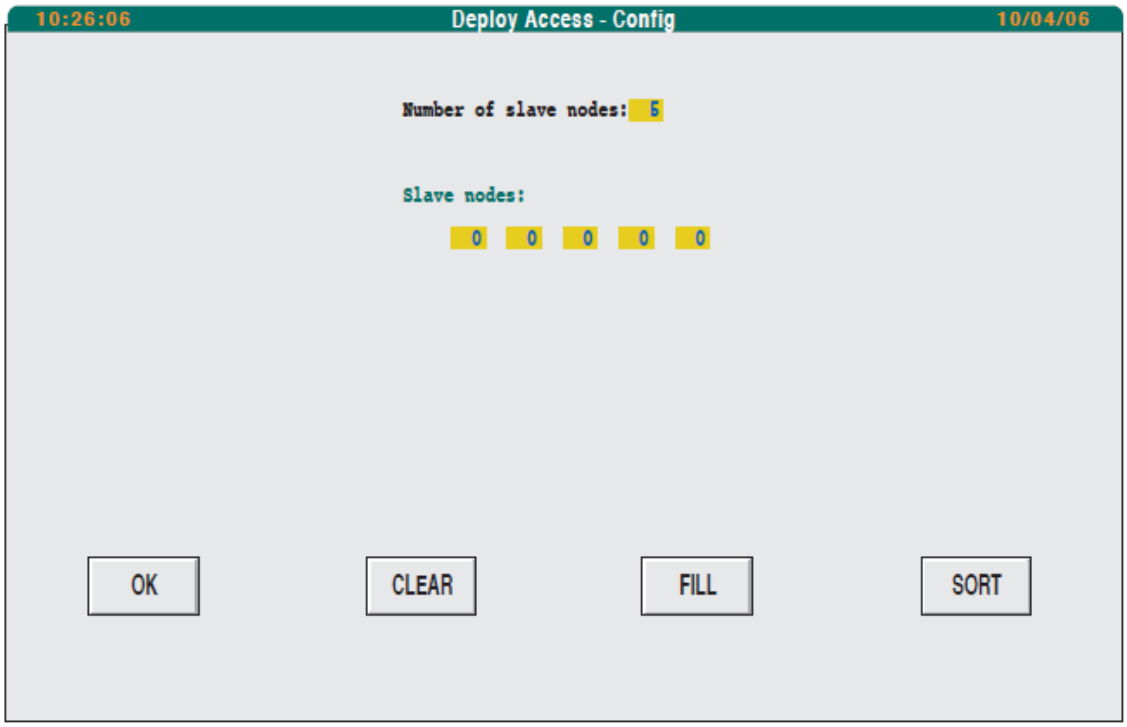


Figure 127 Node Number Configuration.

Operation of the FILL key at this point will fill the node number configuration boxes with nodes 1 to n, where n is the number of nodes selected.

If, instead, the first node is entered by the user (say node 10), the FILL operation will automatically fill in the remaining node numbers, (starting at 11 in this example).

If non-consecutive node numbers are entered, say nodes 17, 3, 9, 103 and 14, then the SORT button can be used to reorder the nodes in ascending order (3, 9, 14, 17, 103).

The CLEAR key is used to reset all the mode numbers to ‘0’.

Operation of the OK key, returns to the previous page, only this time, the newly configured items appear.

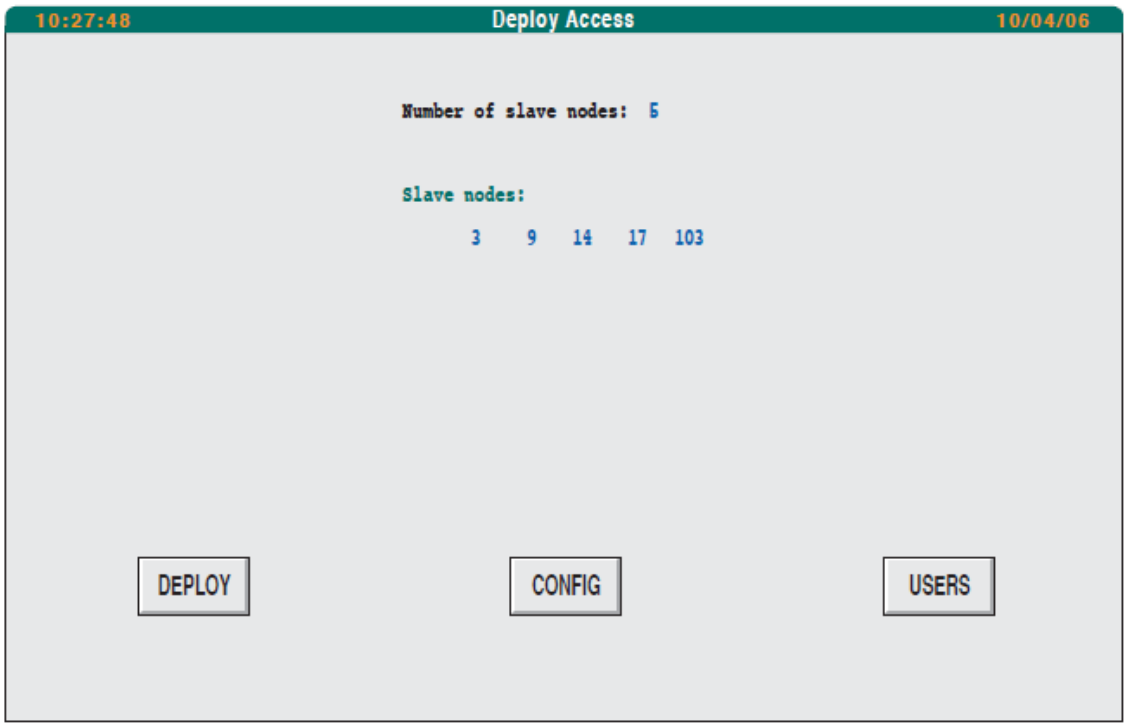


Figure 128 Completed Configuration

Operation of the DEPLOY key causes the deploy to be initiated, once signed and authorized if necessary. Figure 129 shows the confirmation page.

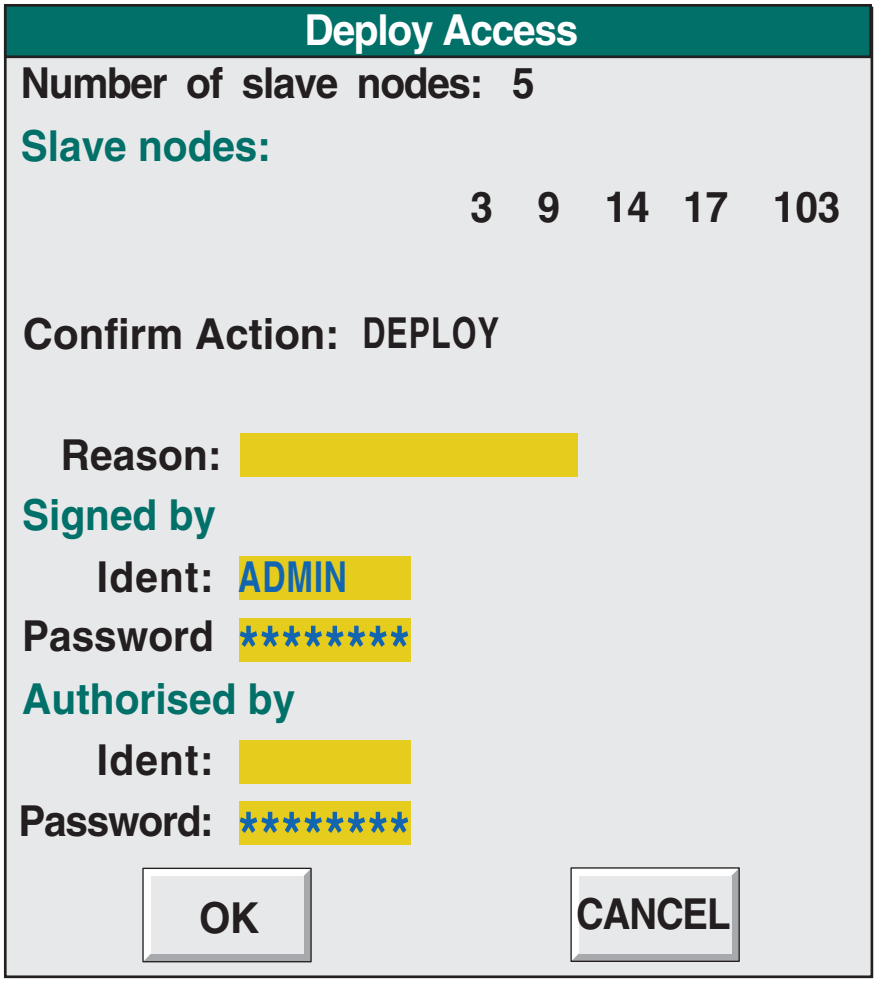


Figure 129 Deploy Confirmation Page

Electronic Signatures

Enabling Electronic Signatures

Note: Once Electronic signatures have been enabled, they can not subsequently be disabled.

As shipped, electronic signatures are disabled. The 'Enable signatures' Signature Configuration page (Figure 130) appears on the first operation of the SIGN CONFIG key in the Administration menu.

The only choices are to quit the page (by selecting another page using the menu key) or Enable electronic signatures.

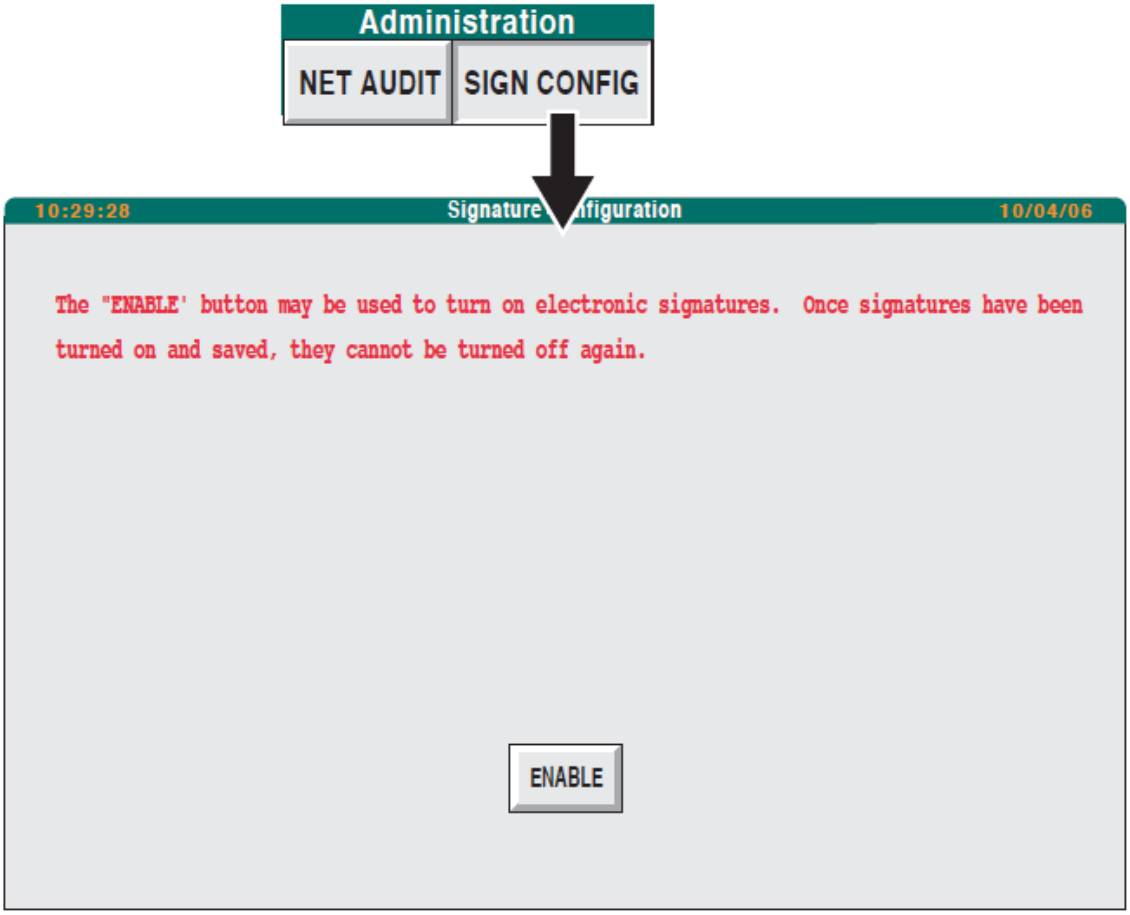


Figure 130 Enable Signatures Page

When 'Enable' is operated, a dialogue box appears requiring two separate ADMIN passwords before the Signature Configuration page (Figure 131) appears.

Signature Configuration

Figure 131 shows the Signature Configuration page. The administrator IDs in 'Revision Level' are, initially the IDs of the administrators who enabled the Electronic Signature feature. Subsequently the IDs are those of the administrators who signed/authorized the previous Configuration Save.

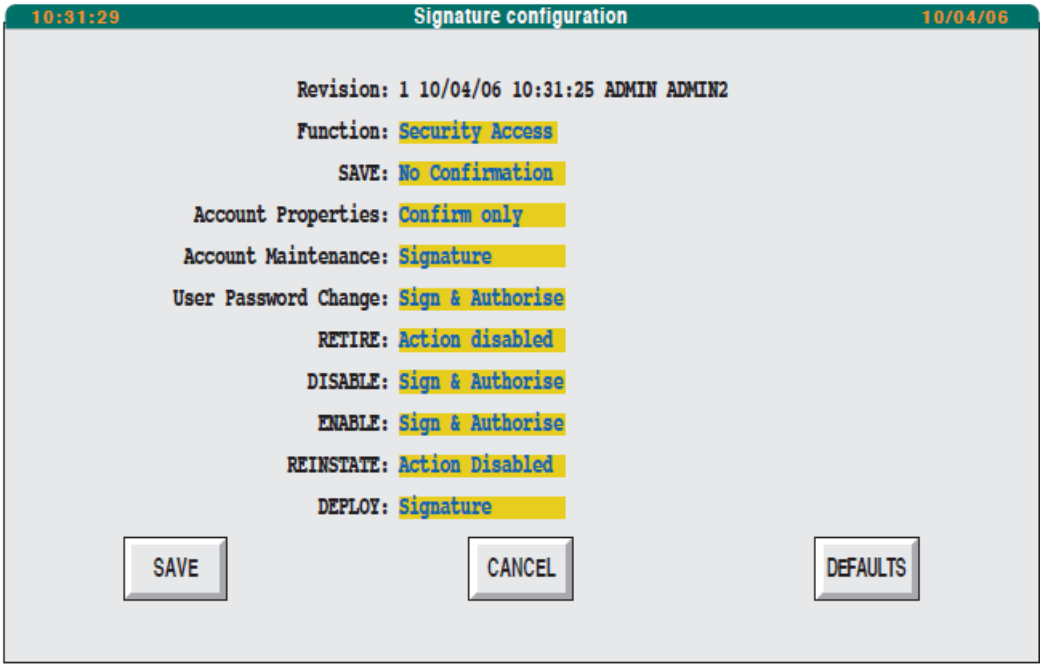


Figure 131 Signature Configuration Page

Access Levels

As can be seen from Figure 131, above, a number of instrument features can have an access level assigned to them. The possible access level definitions are as follows:

No Confirmation	The instrument behaves as if electronic signatures are turned off.
Confirm only	A dialogue box with OK and CANCEL buttons appears, before the action is undertaken.
Signature	A password entry by a user with Signature Permissions is required before the action is performed.
Sign & Authorise	A password entry by a user with Signature Permission and a further entry by a user with authorization permission are required before the instrument will respond to the requested action.
Action Disabled	This causes the relevant button caption to be 'greyed out' thus becoming inaccessible to the user. Thus the action may not be undertaken at all.

Note: Some functions cannot be allocated some access levels. Administrative functions, for example, always require a minimum level of 'Signature', and some functions cannot be assigned 'Action Disabled'.

The available functions are in a number of categories, a picklist of categories being displayed when the 'Function' field is touched. Figure 132 shows this picklist.

The button functions at the bottom of the page are as follows:

SAVE	Saves all changes to all functions.
CANCEL	Cancels all changes made since last SAVE or DEFAULT operation.
DEFAULT	Returns the access levels to those when initially enabled.

Figure 132 Function Picklist

Remote Access

The instrument provides a limited set of facilities which allow remote users to access the instruments.

FTP

FTP Logon

FTP access always requires the user to log on. Anonymous FTP logons are not permitted. To configure the instrument for FTP logon, the user-based access system ("User ID System" on page 120) must be used, and the relevant user's attributes configured to include FTP = 'Yes'.

The instrument allows up to four users to be logged in at any one time, but only one of these may have write permission (attribute View Only = 'No'). This user's log on/log off activity is recorded in the Event Log. Users with View Only = 'Yes' do not have their log on/log off activity recorded.

Notes:

1. Any attempt to log into a non FTP account, or into a nonexistent account will be recorded in the Event log.
2. The mis-typing of FTP passwords is included in the count of 'failed attempts to log in', and therefore may result in the account being disqualified.
3. Attempts to login to non FTP accounts are not included in the count of 'failed attempts to log in'.

Timeout

FTP users are automatically logged out after 2 minutes of inactivity. This happens regardless of any values for user timeout which have been set at the instrument user interface.

File System

The file system, as viewed via FTP, is seen as a simple set of folders, with the characteristics shown in Table 16.

Notes:

1. It is not possible to access the USB bulk storage device via FTP.
2. It is not possible to create new folders via FTP.

FTP Name	LIN device	Description	Write Permission	Visibility
/app	E:	Internal flash memory for application files	Yes	If PRP not enabled
/history	H:	Internal archive (if fitted)	No	If archive fitted

Table 16: File System

Archive File Transfer

If Review software or any other FTP client is used to transfer files from the internal archive to a PC, then it is recommended

a. That the user account attribute configuration includes FTP = ‘Yes’ and View Only = ‘Yes’ and

b. The access level for this account be set to ‘Operator’

c. The account is used only for this purpose.

The Control Configurator

Note: If IPRP is enabled, the control configurator cannot be used to view or modify block data.

This chapter describes the control configurator resident in the unit. The main topics covered are:

1. Overview of the configurator
2. Getting ready to run the configurator
3. Running The Configurator
4. Database Configuration
5. Modbus Configuration

Overview

The resident control configurator allows a control strategy to be set up directly within a CPU, as an alternative to downloading a configuration created in the LINtools package. The configurator can also be used to load, start, stop, and monitor databases, and to perform various filing operations. Note that with heavily-loaded running databases the configurator may be significantly slowed down.

Configurations employ the standard LIN block-structured approach. The LIN Product Manual (Part number HA082375U999) gives full details of the software function blocks available for strategies, and how to configure their parameters.

The configurator program itself resides in the instrument's CPU and is accessed via any telnet client program. The choice of serial or telnet communications must first be made in the comms setup page ("Setting Up and Re-Setting the Instrument" on page 125), and the user ID access system must be enabled and a user set up with 'Remote' attribute enabled ("User ID System" on page 120).

Preparation

Configurator Mode Selection

Set the ENET5 port protocol to TERMCFG as described in "Editing Communications Parameters" on page 125

Control Efficiency Selection

The configurator can be run at the same time that the database is running. However, this affects the control efficiency, in a way that depends on how the Options.CONFspd bit in the control strategy's header block has been set.

With CONFspd TRUE, the CPU is allowed to spend up to 30% of its time updating blocks in the control strategy, and the rest is available for serving the front panel and configurator task if running. Thus, if CONFspd is set TRUE, the control strategy will not respond at full speed but the configurator can be run as often as needed without affecting performance.

With CONFspd FALSE (the default state), and the configurator not in use, the CPU can spend up to 40% of its time updating blocks.

Running The Configurator

Initial Menu Access

1. Power up all components and run Hyperterminal®. The starting screen appears, offering a selection of options numbered 0 to J.
2. Type <2> to select the Enter Terminal Mode option. The Terminal Emulator screen appears.
3. Press <Ctrl> + <K> to select Enter VT100 mode for T100 Configurator. ('T100' is the generic name of the configurator).

Note: If the screen goes blank, press <Enter> once or twice to continue.

4. Type <1> for the ANSI-CRT option. A log-in screen appears. Once a valid user ID and password have been entered for a user with Remote attribute enabled, the configurator Initial menu appears as depicted in Figure 133.

```
INIT    Choose option

            >DATABASE - General configuration
             GATEWAY  - MODBUS configuration
```

Figure 133 Configurator Initial Menu

Note: The appearance of the Initial or Main menus indicates that the CPU has entered configuration mode.

Locate the cursor (>) at a menu item using the cursor keys, then press <Enter> to display the next level in the menu hierarchy. This is selecting an item. In general, to access the next lower level of the menu hierarchy, press <Enter>. To return to the next higher level menu or close a 'pop-up' options menu press the <Escape> key. <PageUp> and <PageDown> access hidden pages in long tables.

For keyboards without cursor-control keys, equivalent 'control' character combinations may be used, as indicated in Table 17. To use these, hold down the <Ctrl> key and type the specified character.

Function	Key combination
Cursor Up	<Ctrl> + U
Cursor Down	<Ctrl> + D
Cursor Left	<Ctrl> + L
Cursor Right	<Ctrl> + R
Page Up	<Ctrl> + P
Page Down	<Ctrl> + N

Table 17: Cursor-Control — Equivalent Key Combinations

Some tables allow values to be entered directly, or to be called-up by a menu.

For direct entry, type the first character(s) of the chosen option, followed by <Enter>.

Alternatively, access the menu with <Enter> or <Tab> as the first character after the field is selected.

The Initial Menu

The Initial menu (Figure 133) lists two options — Database and Gateway. Select Database to access the Main menu for configuring a LIN database. This is described in "Database Configuration" on page 257. Select Gateway to access the Gateway menu, for setting up a Modbus configuration, described in "Modbus Configuration" on page 266.

Quitting the VDU Package & CPU Configuration Mode

The starting screen can be returned-to at any time while running the VDU package, by operation of <Ctrl>+<E>. Typing <A> in the starting screen quits the VDU program.

Note: this action does not quit configuration mode in the CPU itself.

Getting a CPU out of configuration mode must be done from the terminal. Press <Escape> repeatedly until the main menu screen appears, then press <Escape> once more to clear the screen. The CPU is now out of configuration mode.

Notes:

1. <Ctrl>+<O> ('Exit VT100 mode…') does not quit CPU configuration mode and must not be pressed.
2. Stop/start/download/upload files cannot be stopped via LINfiler (in the LINtools package) in a CPU if it still in configuration mode. If any attempt is made to do so, Error 8333 ('Configurator in use') is reported. It is necessary to quit CPU configuration mode before such operations are attempted.

⚠ CAUTION

Always quit the primary CPU from configurator mode after use. Otherwise, an operator, unaware that the CPU is still in configurator mode, might subsequently plug in a terminal and type <Enter> <Enter> — hoping to see the version and power-up/shutdown messages. The result could be totally unexpected because the configurator would continue from its last operation. For example, if if the configurator were last used to start a database it would execute the start sequence (twice).

Database Configuration

Figure 134 shows the Main menu, and "Make" on page 258 to "Alarms" on page 266 describe its items.

```
MAIN MENU  Select option
            >MAKE       - Create block
             COPY       - Copy Block
             DELETE     - Delete block
             INSPECT    - Inspect block
             NETWORK    - Network setup
             UTILITIES  - Engineering utilities
             ALARMS     - Current Alarms
             ALARM LOG  - Alarm History Log
             EVENT LOG  - Event Log
```

Figure 134 Configurator Main Menu

Make

Installs function blocks in the control strategy. Note that a running database must be stopped before any blocks can be added to it. (Stopping and starting the database is described in "Utilities" on page 264.) Select MAKE to display the SET MENU — the controller's resident library of block categories, detailed in the LIN Product Manual (Part number HA082375U003). Note that every strategy must contain a 'header' block (Eycon-10 or Eycon-20) the only block initially available for a new strategy. Select a category to list its blocks. Figure 135 shows part of the screen display when LOGIC is selected, as an example.

```
LOGIC        Select type
              >PULSE
               AND4
               OR4
               XOR4
```

Figure 135 Logic category menu (upper part)

Select the block to be installed. The block Overview appears listing the block parameters, default values and units in a double 3-column format. Figure 136 shows the (default) overview for the PID block as an example.

Block Overview

Refer to Figure 136 which shows the main features of a typical block overview, used to monitor and update block parameters. (Overviews can also be accessed via the COPY and INSPECT main menu options.) The overview is equivalent to a LINtools Specification menu and its fields have the same meanings, although data entry is different.

Note: Parameters being updated by incoming connections from other blocks are not specially indicated in a block overview.

```
 OVERVIEW Block: "NoName"  Type: PID   Compound:
- - - - - - - - - - - - - - - - - - - - - - - - - - - -
                          |
Mode       AUTO           |     Alarms
FallBack   AUTO           |
                          |     HAA       100.0    Eng
PV          0.0      Eng  |     LAA       0.0      Eng
SP          0.0      Eng  |     HDA       100.0    Eng
OP          0.0      %    |     LDA       100.0    Eng
SL          0.0      Eng  |
TrimSP      0.0      Eng  |     Timebase  Secs
RemoteSP    0.0      Eng  |     XP        100.0    %
Track       0.0      %    |     TI        0.000
                          |     TD        0.000
HR_SP     100.0      Eng  |
LR_SP       0.0      Eng  |     Options   00001100
HL_SP     100.0      Eng  |     SelMode   00000000
LL_SP       0.0      Eng  |
                          |     ModeSel   00000000
HR_OP     100.0      %    |     ModeAct   00000000
LR_OP       0.0      %    |
HL_OP     100.0      %    |     FF_PID    50.0     %
LL_OP       0.0      %    |     FB_OP     0.0      %
                          |
```

Figure 136 Overview —PID Block

Title bar. Contains fields common to all overviews: Block, Type, and Compound. Block and Type have their usual LIN meanings; Compound is equivalent to Dbase. Please refer to the LIN Blocks Reference Manual (in the LIN Product Manual) for details of these fields. A blank Compound field denotes that the block database is local.

Note that the block is not installed into the control strategy until (at the minimum) its Block field has been assigned a value — i.e. tagname — and the database has been restarted.

Overview data field entry.

To update a parameter field, locate the flashing 'underline' cursor (_) at the field using the arrow keys, then proceed as described below for the different data field types. Some data fields display further nested levels of data when entered. In such cases, press <Enter> to access a deeper level; press <Escape> to return to a higher level.

Note that editing a database during runtime is possible but is not recommended. (Stopping the database is described in "Utilities" on page 264, below)

User-defined names.

Type in a name (8 characters max.) and press <Enter> to overwrite existing data. To insert characters, locate the cursor at the character to follow and type the insertions. A 'beep' warns that excess characters have been typed. To abort the current entry and leave the database unchanged, move the cursor to a field above or below the current field before pressing <Enter>, or press the <Escape> key.

Note that, remote database names entered in the Compound field must be prefixed by an 'equals' sign (=) which is included in the character count.

Pressing <Enter> with the cursor on the first character of the Block or Compound fields (before starting to type) accesses a Full Description page (Figure 137 shows an example). This page gives general information about the block and has a common format.

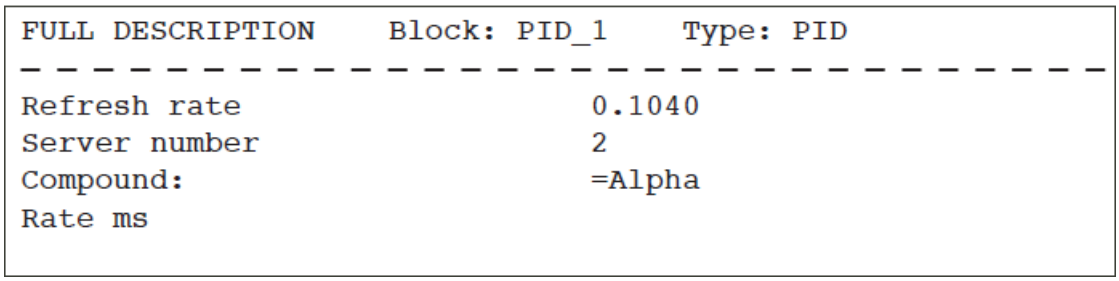


Figure 137 Full Description page for block (example)

Block. (Read/write). Block tagname.

Type (Read-only). Block type.

Refresh rate. (Read-only). Time (secs) since the block was last scheduled to run. Note that for a control block the PID algorithm is not necessarily recalculated every time the block is scheduled.

Server number (Read-only).

Compound. (Read/write). Name of the block's parameter database. A blank field means the block database is local, i.e. in the current Controller/Supervisor. (Database names and their LIN addresses are specified via the main menu NETWORK option, described in "Network" on page 263.)

Rate ms.	Rate is the minimum update period (i.e. maximum rate) at which an individual cached block is transmitted across the Local Instrument Network (LIN). The default is 10ms minimum, i.e. 100Hz maximum. Rate can be set between 10ms and 64s. Note that rate values are minimum update times only, and heavily loaded networks may not be able to reach the faster update rates.
Parameter values.	Type in a value and press <Enter> to update the database. (Read-only parameters do not accept new values.) The CPU automatically adds a following decimal point and padding zeros if needed, but before a decimal point a zero must always be typed, e.g. 0.5, not .5. Pressing <Enter> with the field selected, before starting to type, accesses a Full Description page for the parameter (Figure 138 shows an example).

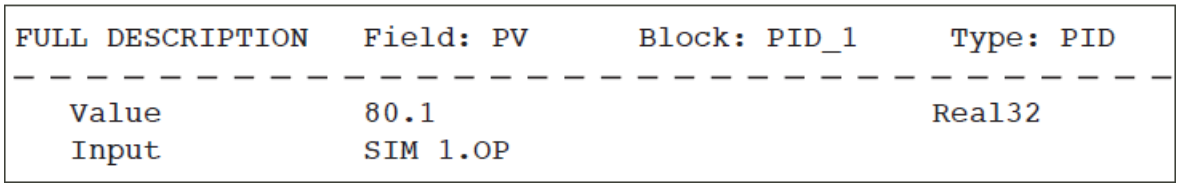


Figure 138 FULL DESCRIPTION Page for Parameter (example)

Field, Block, Type	Read-only fields.
Value	(Read/write) Parameter value, editable as for the Overview.
Real32	(Read-only) Value type (Real32 = floating point number)
Input	(Read/write) Defines the source of any connection to the parameter from another block, as Block Tagname.Output Mnemonic. A blank field means no connection. To make or edit a connection, type in the source block tagname and output mnemonic (e.g. SIM 1.OP, or SEQ.DIGOUT.BIT3), then press <Enter>. Invalid data is 'beeped' and is not accepted. The field is not case sensitive. To delete a connection, type <space> then press <Enter>.

Note: See below for information and advice on types of database connections.

Parameter units.	Type in a value and press <Enter>. All other related units in the database automatically copy the edited unit. Pressing <Enter> with the field selected, before starting to type, accesses the parameter Full Description page (as for the value field).
Options menu fields.	Press <Enter> to display a pop-up menu of options for the field. Figure 139 shows an example (PID Mode) in part of an overview page.

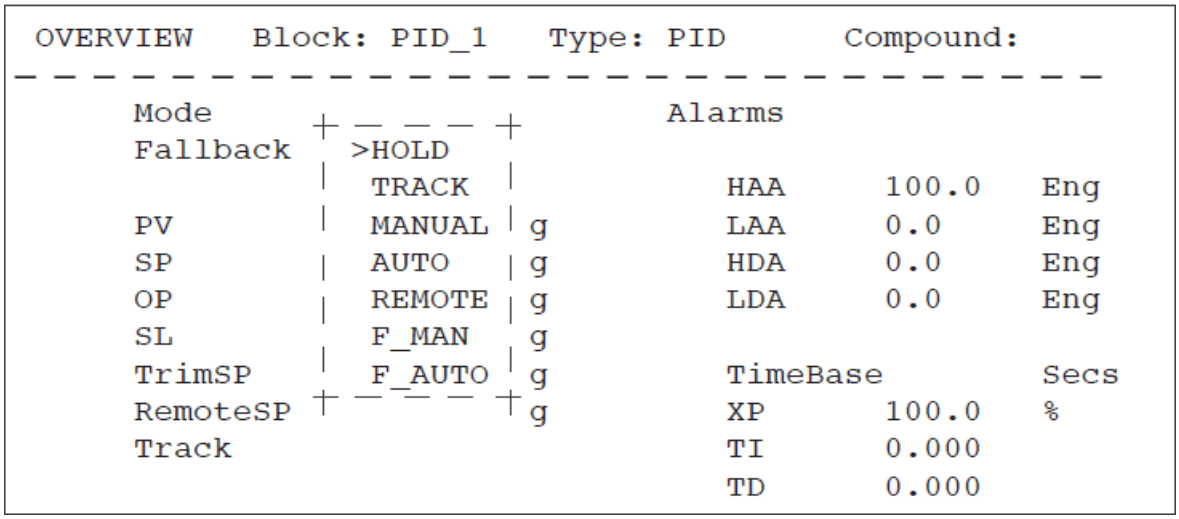


Figure 139 Pop-up Options Menu (example)

Using the 'arrow' keys, move the cursor (>) to a menu option and select it by pressing <Enter>. (Disabled options may not respond to selection.)

A quicker alternative to accessing the pop-up options menu is to type the required option, or enough of its initial letters to uniquely specify it, directly into the selected field and then press <Enter>. E.g. entering just H selects HOLD; entering F_M selects F_MAN (Forced Manual).

Alarms field

Press <Enter> to display a 4-column Alarms page listing alarm name (e.g. HighAbs), acknowledgement (e.g. Unackd), status (e.g. Active), and priority (0 to 15). Update the acknowledgement or priority fields (the only editable ones) by typing in a value and pressing <Enter>. (Any single letter can be used for the acknowledgement field.) Figure 140, below, shows an example Alarms page.

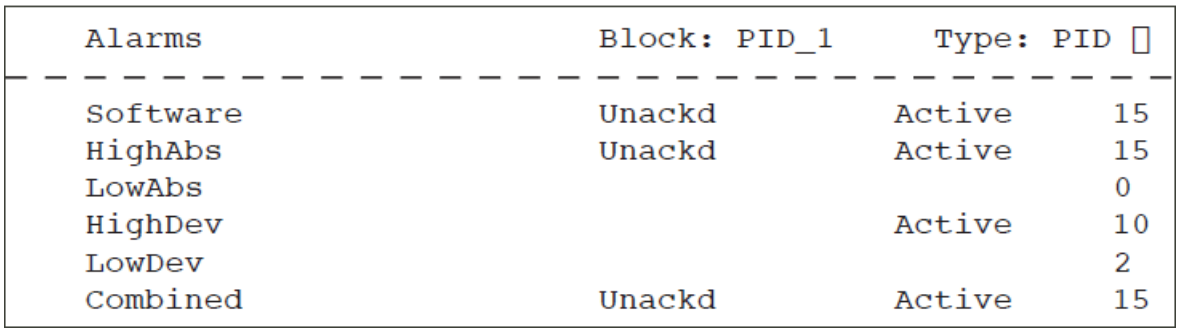


Figure 140 Alarms Page (example)

Bitfields

Contain eight (or sixteen) binary digits showing the logic states of a corresponding set of up to eight (or sixteen) parameters. To edit the bitfield directly, type in a bit-pattern then <Enter> it. Alternatively, press <Enter> to display a Full Description page listing the parameter TRUE/FALSE or HIGH/LOW states (in the same format used for LINtools Specification Menu bitfields). Figure 141 shows an example. Alter a logic state by locating the cursor on the state, typing in T(rue) or F(alse), and pressing <Enter>. (A bit may be read-only.)

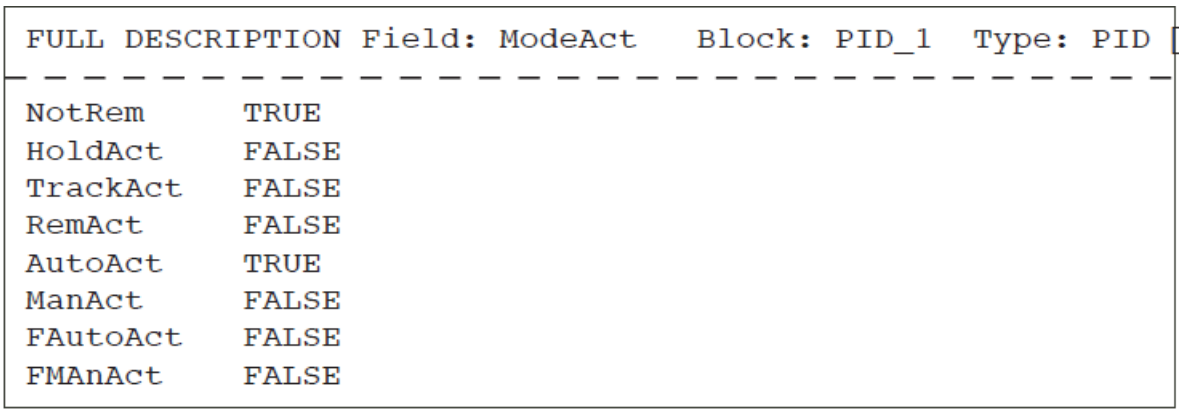


Figure 141 Full Description page for bitfield (example)

To connect an input to a bitfield, press the Æ key and type in the block name/field name from which the connection is to be made.

Note: See below for information and advice on types of database connections.

Two- and four-digit 'combined' hexadecimal status fields.

Hex fields are marked with a '>' sign and have the same format and significance as those found in LINtools specification menus. The digits show the logic states of a corresponding set of parameters, up to four per hex digit. To edit the field directly, type in new values then press <Enter>. Alternatively, press <Enter> to display a Full Description page listing the parameter TRUE/FALSE states and edit this list (as described for Bitfields, above).

Connection Types in a CPU Database

There are three types of connection used in a CPU database: local connections, connections writing to a cached block, and connections from a cached block to a local block. The following explains how and when they are evaluated.

1. Local connections. These are connections between two blocks that are both local to the CPU database. The connection is always evaluated immediately prior to the execution of the destination block's update procedure, regardless of whether the source data has changed between iterations. With this sort of connection, any attempt to write to the connection destination is immediately 'corrected' by the next connection evaluation.

2. Connections writing to cached block. These are connections whose destination block is a cached copy of a block in another instrument. The source of the connection can be either a local database block or another cached block. Such connections are evaluated only if the source and destination data do not match. All cached blocks in the database are processed at regular intervals, and whenever a change is detected a single field write is performed over the communications link.

3. Connections from cached block to local block. These are connections where the source block is a cached copy of a block in another instrument, and the destination block is local to the CPU database. All cached blocks in the database are tested at regular intervals, and if a change in the block data is detected, then all such connections out of the cached block into local blocks are evaluated. The connections are not evaluated if the source data has not changed.

Copy

Creates duplicates of existing blocks. Select COPY from the main menu to display all the blocks in the control strategy, in semi-graphical format as shown in Figure 142. The blocks are displayed from left to right in order of creation. Move the cursor (>) to a block and press <Enter>. The block is duplicated and added to the strategy, and its Overview page automatically appears ready for parameterising. The duplicate retains all the original parameter values except for the Block field, which has the default tagname “NoName”. Input connections are not copied; nor are I/O block site numbers.

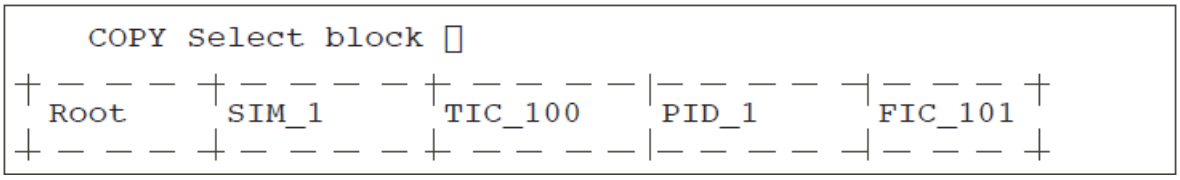


Figure 142 Copy Display (example)

Pressing <Escape> returns the COPY display, where the copied block can be seen added to the list. Press <Escape> again to return to the top level menu.

Delete

Deletes blocks from the control strategy. (Note that the control database must be halted, otherwise selecting DELETE results in a warning ‘beep’ and no action. Stopping the database is described in the UTILITIES option described in "Utilities" on page 264. Also, a block cannot be deleted unless its input connections have been cleared.) Select DELETE from the main menu to display all the blocks in the control strategy, in the same format as for the COPY option described in "Copy" on page 263. Select a block and press <Enter>. The block and any connections from it are deleted, and the main menu returns to the screen.

Inspect

Allows blocks in the control strategy to be inspected and updated. Select INSPECT from the main menu to display all the blocks in the control strategy, in the same format as for the COPY and DELETE options already described. Select a block and press <Enter> to display its overview page, ready for monitoring/updating.

Pressing <Escape> returns the INSPECT display, where other blocks can be selected for inspection. Press <Escape> again to return to the top level menu.

Network

Allows block databases to be assigned names and node addresses on the LIN (Local Instrument Network) so that they can be configured as ‘cached’ blocks and run in a remote instrument. (The cached block’s Compound field, in its overview page, specifies the remote database name.)

Note: It is good practice when using cached blocks, always to cache at least one block in each direction. This enables the status of the comms link between the nodes to be monitored from both ends — via the cached blocks’ software alarms.

Select NETWORK from the main menu to display the Network setup page (initially blank). Figure 143 shows the top part of an example page with several databases already assigned.

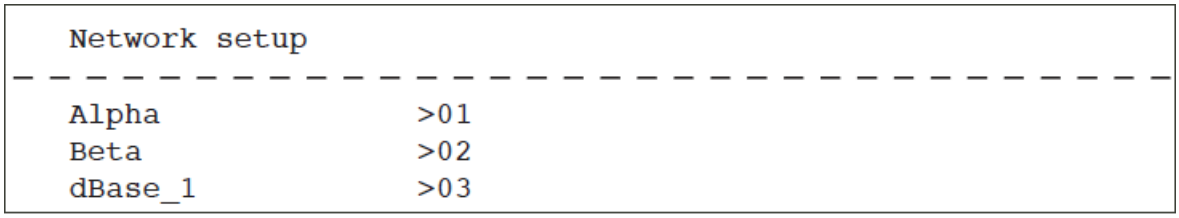


Figure 143 Network Setup Page (example)

To assign a new database name and address, locate the underline cursor at the left hand column of a blank row, type in a unique name (7 characters max.) and press <Enter>. The name appears added to the list together with a default node address >ØØ. (Non-unique or invalid names are 'beeped' and not accepted. Do not use ØØ or FF as node addresses). Move the cursor to the default address and type in the required node address (two hex digits). Press <Enter> to complete the assignation.

To edit an existing name or address, locate the cursor at a field, type in the new value, and press <Enter>. Invalid entries are not accepted.

To delete a complete name and address entry, edit its name field to a space character. Configurations downloaded from LINtools (or Eurotherm Network) will have a Network page set up automatically.

Utilities

Allows program control, I/O calibration, and filing. Select UTILITIES from the main menu to display the Utilities options, shown in Figure 144.

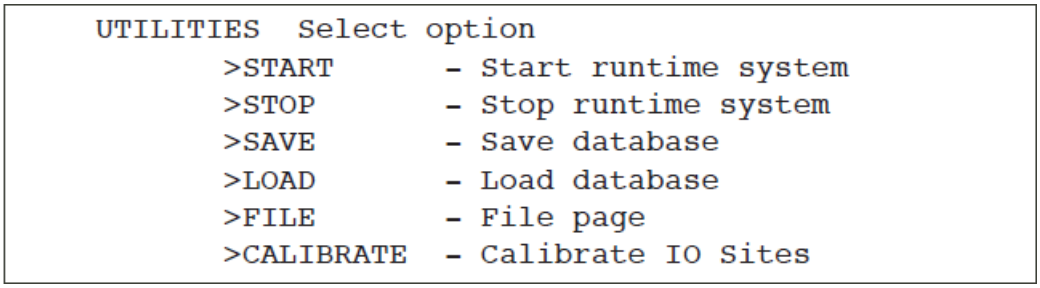


Figure 144 Utilities options menu

Start, Stop Utilities

Select START or STOP from the UTILITIES options menu and press <Enter> to start or stop the control program running in the local Controller/Supervisor.

Note: When a database is started in RAM it is automatically saved to the file in FLASH called filename.DBF, where filename is indicated in the filename.RUN file. It is then reloaded from FLASH to RAM and started.

Save Utility

Names and saves a control program to a specified memory area. Select SAVE from the UTILITIES options menu — the default filename specification, E:Eycon_10.DBF* is displayed. (The prefix E: directs the save to the CPU's FLASH area; this is the only available memory area. To save a database to a remote instrument, prefix the filename specification by the node address of the instrument separated by a double colon, e.g. FC::E:Eycon_10.DBF*).

Type in a new specification if needed, then press <Enter> to execute the save. After a short pause the CPU signals completion with the message: 'Type a key to continue'. Typing any key returns the UTILITIES menu.

An invalid filename specification aborts the save, and the CPU sends an error message, e.g. 'Save failed — Invalid device'.

Notes:

1. Please refer to the note above regarding automatic saves.
2. Modifications to a control database are carried out on the RAM image only, not directly to the .DBF file in FLASH. They are copied to FLASH (overwriting the existing .DBF file) automatically when the database is restarted, or when a SAVE operation is carried out .

Load Utility

Retrieves a control program from a specified memory area and loads it to the CPU RAM area. Note that LOAD cannot be performed during runtime. Select LOAD from the UTILITIES options menu — the default filename specification, E:Eycon_10.DBF* is displayed. Edit the specification if needed (to alter the filename or its source, as described for the SAVE utility above), then press <Enter> to execute the load. After a short pause the CPU signals completion as described for the SAVE option. Typing any key returns the UTILITIES menu.

An invalid filename specification aborts the load, and the CPU sends an error message, e.g. 'Load failed — File not found'. To load a file from a remote node, prefix the filename by the address of the remote node e.g. FC::M:FRED.DBF.

* or Eycon_20.DBF, according to model.

File Utility

Permits access to the CPU file page, allowing files to be deleted or copied, and the E: device to be formatted. The file page displays files in the E-device and also in a configurable remote ??::?: device. To access a remote device, move the cursor to the ??::?: field and type in the required node and device letter, e.g. FA::M:. Press <Enter> to display its files (up to a maximum of 20).

Move the cursor up and down the file list and tag files with an asterisk (*) using the <Enter> key. Then move the cursor to the top column-head field and press <Enter> to display the function menu: Copy, Delete, Find, and — for E-device and A-device only — Format. Finally, select a function and press <Enter> to carry it out. (Note that the Find function has wild-card characters (?) which help in the locating of filenames containing known character strings.) Press <Escape> to return to the UTILITIES menu.

Alarms

Select ALARMS to view the currently active alarms in the instrument. Move the cursor up and down the list; press <Enter> to acknowledge an individual alarm. Press I to inspect the block containing the alarm.

Alarm Log

Select ALARM LOG to view a reduced-functionality version of the front panel alarm history.

Event Log

Select EVENT LOG to view a reduced-functionality version of the front panel event history.

Modbus Configuration

Note: The resident Modbus configurator is similar in operation to the Modbus configurator in the T500 LINtools package. See the T500 LINtools Product Manual (Part No. HA082377U999) for more information.

```
  GATEWAY    MODBUS Configuration
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
                >GWindex   - Select GW index
                 MODE      - Operating mode
                 INTERFACE - Select interface
                 SETUP     - Serial line
                 TABLES    - Register & bit configuration
```

Figure 145 Gateway Menu

GW Index

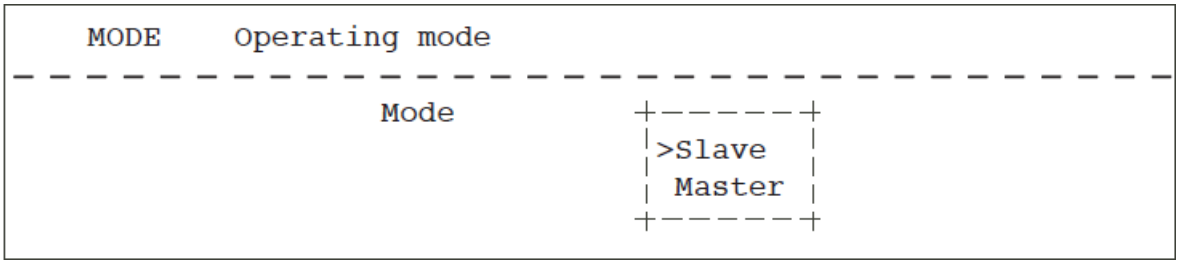
This command appears only for products which support multiple GW indices.

Select the GW index number (1 to 3 inclusive) that is to be viewed by the configurator. The filename (where the GW index number was loaded) appears in the filename field.

```
    GWindex Select GW index
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
            GWindex     1
            Filename    Filename
```

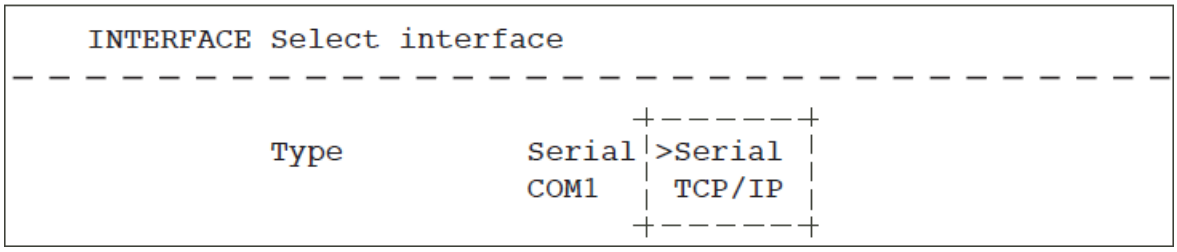
Mode

Selecting MODE causes a pop-up menu to appear, allowing the user to select Master or Slave mode. The selected mode is arrowed.



Interface

Allows the interface type and instance of the instrument to be selected. The Interface type should be selected as Serial or TCP/Ip, then the port number to which the Modbus instrument is to be connected should be entered.



Setup

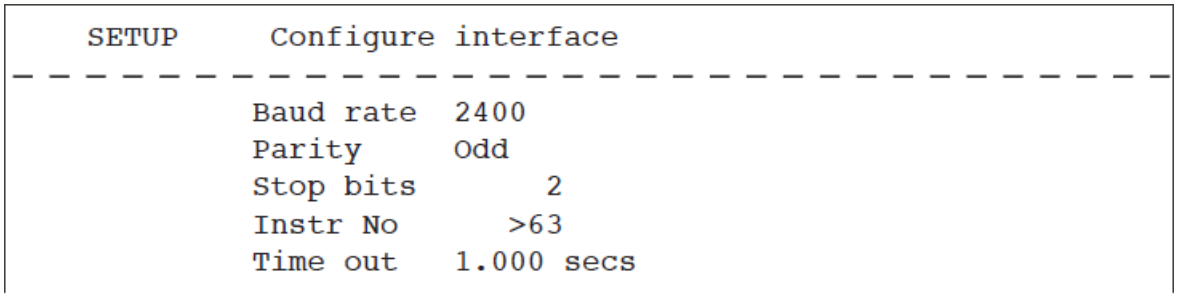
Configures the selected Interface Type and Interface Instance of the instrument defined in the INTERFACE menu. Selecting SETUP displays a menu that is dependent on the INTERFACE and MODE configurations.

Serial Master

If Serial is selected in the INTERFACE menu and Master is specified in the MODE menu the SETUP menu shows Baud rate, Parity, Stop bits, and Time out fields.

Serial Slave

If Serial is selected in the INTERFACE menu and Slave is specified in the MODE menu the SETUP menu shows Baud rate, Parity, Stop bits, Time out, and Slave No. fields.



TCP Master

If TCP/IP is selected in the INTERFACE menu and Master is specified in the MODE menu the SETUP menu shows only the Time out field.

TCP Slave

If TCP/IP is selected in the INTERFACE menu and Slave is specified in the MODE menu the SETUP menu will show the Port no, Instr No, Time out, and CNOMO fields.

Note: If the instrument supports CNOMO registers, this field indicates that Register Offset values 121, to 124 will display specific Manufacturer and Product details.

This page gives general information about the Interface configuration.

Port no	TCP/IP Interface and Slave Operating Mode only. It shows the TCP port via which this modbus-TCP-slave instance communicates. 0 = default = 502.
Baud rate	Highlight and enter this item to see a menu of the available baud rates, 110, 150, 300, 600, 1200, 2400, 4800, 9600, and 19200. Select and enter the required baud rate.
Parity	Entering this item displays a menu of options, None, Odd, and Even. Select and enter the required parity.
Stop bits	Enter this item, type in the required number of stop bits, and press <Enter> to update the SETUP menu, Only 1 or 2 stop bits are permitted.
Line type	Shown only if both Serial Interface is selected and the instrument supports software selection of 3--wire/5-wire operation.

Note: This is not currently supported.

Time out	Enter a Time out value, in the range 0 to 65.5 seconds. In slave mode, this parameter specifies a watchdog period for all tables. That is, if a table has not been accessed for Time out seconds, the Online bit in the slave mode diagnostic register for that particular table resets to zero. In master mode, Time out specifies a maximum period between the end of a master's request for data to the start of the slave's response. If this time is exceeded, the Online bit in the master mode diagnostic register for the particular table concerned resets to zero.
Instr No	Slave Operating Mode only. Input an 'instrument number', i.e. the address on the Modbus Serial link of the slave device being configured. Slave addresses are in the range 01 to FF hexadecimal, but note that for some equipment FF is invalid.

Tables

Shows the Tables List dependant on the MODE configuration. To view the tables list, highlight TABLES and press <Enter>. Individual menus can be displayed by selecting the required Table number, see Table Menus.

Tables List

The Tables List provides an overview of all the tables in the Modbus configuration. Each instrument supports a maximum number of Tables as defined by the MAX_TABLES field in the instrument Configuration (Header) block. The Tables List offers sixteen tables, so four pages are used to cover the 64 tables.

This menu allows tables to be created and the types, offsets, sizes, and for master mode, function codes, scan counts, instrument numbers and tick rate to be specified. The Tables List also accesses individual Table Menus for detailed configuration, i.e. LIN Database mapping, see Table Menus section.

The Tables List menu below shows an example Tables List with Table 1 configured as a Register Table. The first four columns, Table, Type, Offset, and Count, are common to both the Master and Slave Operating Modes. The remaining, Functions, Scan count, Instr No, and TickRate appear only when Master Operating Mode is configured.

Table	Type	Offset	Count	Functions	Scan count	Instr No	TickRate
1	Register	0	16	3 4 6 16	16	>00	100
2	Unused	0	0	- - - -	0	>00	0
3	Unused	0	0	- - - -	0	>00	0
4	Unused	0	0	- - - -	0	>00	0
5	Unused	0	0	- - - -	0	>00	0
6	Unused	0	0	- - - -	0	>00	0
7	Unused	0	0	- - - -	0	>00	0
8	Unused	0	0	- - - -	0	>00	0
9	Unused	0	0	- - - -	0	>00	0
10	Unused	0	0	- - - -	0	>00	0
11	Unused	0	0	- - - -	0	>00	0
12	Unused	0	0	- - - -	0	>00	0
13	Unused	0	0	- - - -	0	>00	0
14	Unused	0	0	- - - -	0	>00	0
15	Unused	0	0	- - - -	0	>00	0
16	Unused	0	0	- - - -	0	>00	0

This page gives general information about the Modbus Table configuration.

Table	This is the Table number, which is not editable. Highlight and <Enter> a Table number field to display the information related to the selected Table number. For a table with a Type other than Unused, the table menu for that table is displayed, see Table Menu.
Type	This field, defaults to Unused, allows the Table Type to be created or edited. Enter a Type field to see a menu of four options. Select one and press <Enter> to create a new table or convert an existing one to a new type.

Note: Other fields in the Tables List associated with the selection automatically adopt default values.

	The Type options are:
Unused	The table does not exist.
Register	This type of table maps LIN Database parameters to standard 16-bit Modbus registers.
Digital	This type of table maps LIN digital, boolean or alarm values to bits in the Modbus address space.
Diagnostic	This is a special table, similar to a Register Table, but the values in the table have pre-defined values that are used to control the Modbus operation, or present diagnostic information to the LIN Database.

Offset	This field selects the start address of the table on the Modbus network. These values are the actual values used in the address field of the Modbus messages, i.e. the 'protocol addresses'.

Note: PLCs differ in the correspondence between their register or bit addresses and the protocol addresses.

Count	This field shows the number of registers or bits in a table. It allows the size of register and digital tables to be changed from their default values of 64 registers or bits, respectively, to optimise the use of memory. Diagnostic tables are fixed at 32 registers.
Functions	Master mode only. This field allows the default Modbus function codes that can be used with a particular Modbus table type to be enabled or disabled. Modbus function codes define the type of data exchange permitted between Master and Slave instruments via a particular table. To disable a default function code, highlight it with the mouse and press <Enter> to see a menu of '-' and the default code number. Selecting and entering '-' disables that code for the table concerned. Select the code number again to re-enable it if required.
Scan count	Master mode only. This sets the maximum number of registers (register table) or bits (digital table) that can be read or written in a single Modbus transmission. Scan count defaults to the same value as Count, i.e. as the table size, which results in the whole table being updated each polling cycle. If Scan count is made less than Count for a particular table, it takes more than one cycle to be updated but the overall polling cycle speeds up. This may be required for Modbus devices with limited buffer sizes.
Instr No	Master mode only. This specifies the hexadecimal Slave number value of the instrument on the Modbus network in which the data registers or bits associated with this master table are located.
Tick Rate	Each table of registers is assigned a Tick Rate, a value between 0 and 65535 ms, to define the frequency at which it is scanned. The Tick Rate associated with each table can be configured. If the LIN instrument does not support Tick Rates, and/or if the instrument is configured to operate in Slave mode, the Tick Rate fields are disabled.

Table Menus

Individual table menus are accessed from the tables list by highlighting of its table number (in the first column headed Table) followed by <Enter>. To highlight fields, the arrow cursor is moved around the table menu using the mouse, or the PC's <Home>, <End>, and cursor keys can be used.

Table menus allow the mapping between the LIN database fields and the Modbus addresses to be configured. Table 18 shows a typical default table menu for a register table.

Note: that table headings differ for register and digital tables, but that some fields are common to both — Field, DB Write, and MOD Write.

Register Field	DP	Format	DB Write	MOD Write	Value
0	0	Normal	Enable	Enable	>0000
1	0	Normal	Enable	Enable	>0000
2	0	Normal	Enable	Enable	>0000
3	0	Normal	Enable	Enable	>0000
4	0	Normal	Enable	Enable	>0000
5	0	Normal	Enable	Enable	>0000
6	0	Normal	Enable	Enable	>0000
7	0	Normal	Enable	Enable	>0000
8	0	Normal	Enable	Enable	>0000
9	0	Normal	Enable	Enable	>0000
10	0	Normal	Enable	Enable	>0000
11	0	Normal	Enable	Enable	>0000
12	0	Normal	Enable	Enable	>0000
13	0	Normal	Enable	Enable	>0000
14	0	Normal	Enable	Enable	>0000
15	0	Normal	Enable	Enable	>0000

Table 18: Register table menu —default

Register — (Register and diagnostic tables only) This column shows the Modbus address of the particular register. The first register in the table takes its address from the Offset value given to the table via the table list (described above). The remaining (read-only) addresses follow on consecutively.

Digital — (Digital tables only) This column shows the Modbus address of the digital bit on the selected line of the table. If the line contains a bitfield rather than a single bit, the address shown is that of the first bit in the bitfield. Mappings may be made for a single bit, or for an 8- or 16-bit field, according to the value defined in the Width parameter (see later). The first bit address in the table takes its value from the Offset given to the table via the table list. The remaining (read-only) addresses follow on, according to the numbers of bits on each successive line of the table (1, 8, or 16).

Field. — This is the LIN database field to which the Modbus address is mapped, or it can be left blank. Select a field with the cursor and type in and enter a LIN function block name plus parameter (and subfield if needed), separated by full stops (periods), e.g. PV1.Alarms.Software.

Notes:

1. If an attempt is made to enter an analogue parameter into a digital table Field, the entry is ignored. Any type of parameter can, however, be typed into a register (or diagnostic) table.
2. In a digital table, LIN database parameters cannot be entered or overwritten if to do so would force an entry lower down the table to change its address.

DP — (Register and diagnostic tables only) This column can be used either to specify a decimal point position, or to create a 32-bit register.

1. Decimal point position. DP can store a decimal point scaling factor that is used when converting floating point numbers to 16-bit Modbus registers. For this purpose, enter an integer from 0 to 4; the DP-value represents the number of decimal places in the converted number.
2. 32-bit register. (Register tables only) A 32-bit register is created by ‘joining’ a consecutive pair of

16-bit registers, as described below. The following restrictions are applied to ensure that the 32-bit value created is transferred indivisibly:

a The multiread function (3) and multiwrite function (16) must both be enabled.

b The scan count must be even.

c The first register of the pair must be at an even offset within the table.

d The first register of the pair must not be the last register in the table.

e The second register of the pair must not already be assigned to a LIN database field.

f The field type of the 32-bit register pair must be a 32-bit long signed or unsigned, a 32-bit real or a string. For a string, only the first four characters are transferred.

To create a 32-bit register pair, enter ‘d’ (or ‘D’) in the DP field of the first register of the pair. This causes the register’s DP to adopt the value ‘D’, and the following register the value ‘d’. If any of the above restrictions are violated, the entry will be rejected.

When the first register of the 32-bit pair is assigned to a LIN database field, the second register automatically copies the same field name; assigning the name and the DP can be done in either order. A 32-bit register pair can be restored to individual 16-bit registers by changing the DP of the first register to zero to four.

Format (Register and diagnostic tables only) This column specifies the format of the data in the register — normal or binary coded decimal (BCD). Normal format means that the data is a simple 16-bit integer. In BCD format the value is first limited to the range 0 to 9999, and then stored as four 4-bit nibbles in the register. The units are stored in the low order nibble, the tens in the second nibble, the hundreds in the third, and the thousands in the high-order nibble. BCD format allows the data to be used with certain devices such as displays.

Note: Format is ignored in 32-bit registers.

Width (Digital tables only) This column indicates the number of bits contained in the associated field. The default Width is 16, but it automatically updates when a parameter is allocated to the field. Allocated field ‘widths’ are read-only, but the width of an unallocated field can be specified by highlighting its Width value and entering a valid number in the range 1 to 16, (normally 1, 8, or 16).

Note: Width values cannot be edited, if to do so would force an entry lower down the table to change its address (Digital value).

DB Write This column allows selected values in the LIN database to be protected against being overwritten by values received across the serial link. Highlight the required DB Write field and press <Enter> to see a menu of options — Enable and Protect. Select ‘Protect’ to write-protect the LIN database parameter, or ‘Enable’ to allow overwriting.

Note: For a 32-bit register pair, DB Write applies only to the first register. The DB Write-value of the second register is ignored.

MOD Write This column allows selected values in the LIN database to be prevented from being written to their associated Mod-

bus registers or bits. Highlight the required MOD Write field and press <Enter> to see a menu of options — Enable and Protect. Select 'Protect' to write-protect the Modbus register/bit(s), or 'Enable' to allow overwriting.

Notes:

1. To protect an entire table (for a Modbus Gateway facility operating in Master mode), the write function codes 5 and 15, or 6 and 16 can be disabled in the tables list.
2. For a 32-bit register pair, MOD Write applies only to the first register. The MOD Write-value of the second register is ignored.

Value — This column shows the current 16-bit value of the field in 4-digit hexadecimal representation. 'Value' is read-only.

Preventive Maintenance

This section shows how to replace the battery and how to calibrate the touch screen.

Battery Replacement

The battery replacement period depends on the cumulative length of time over which the instrument is left without supply power. The battery maintains the real-time clock and SRAM data (e.g. hot start database). A flag (BadBatt) can be set in the “Eycon-10 or Eycon-20” block. This flag will result in an instrument alarm should the battery voltage falls below the minimum necessary for it to function properly. It is recommended that the battery be replaced as soon as possible after the appearance of this warning.

⚠ CAUTION

The user must be at the same electrical potential as the instrument housing when accessing the battery.

Notes:

1. All battery backed RAM data is lost during battery change unless power to the unit is maintained during the change.
2. Battery type is BR2330 Poly-carbonmonofluoride/lithium. Available from the Visual Supervisor manufacturer under part number PA261095.
3. Dispose of exhausted batteries in accordance with local regulations regarding this battery type.

Replacement Procedure

1. For non-Profibus units, remove the screw securing the access cover. Remove the cover. Replace the battery and refit the cover.
2. For units fitted with the Profibus option, remove the screw securing the Profibus enclosure. Carefully separate the enclosure from the instrument, taking care not to damage the wire harness which connects the option board to the main board. Replace the battery and refit the enclosure.

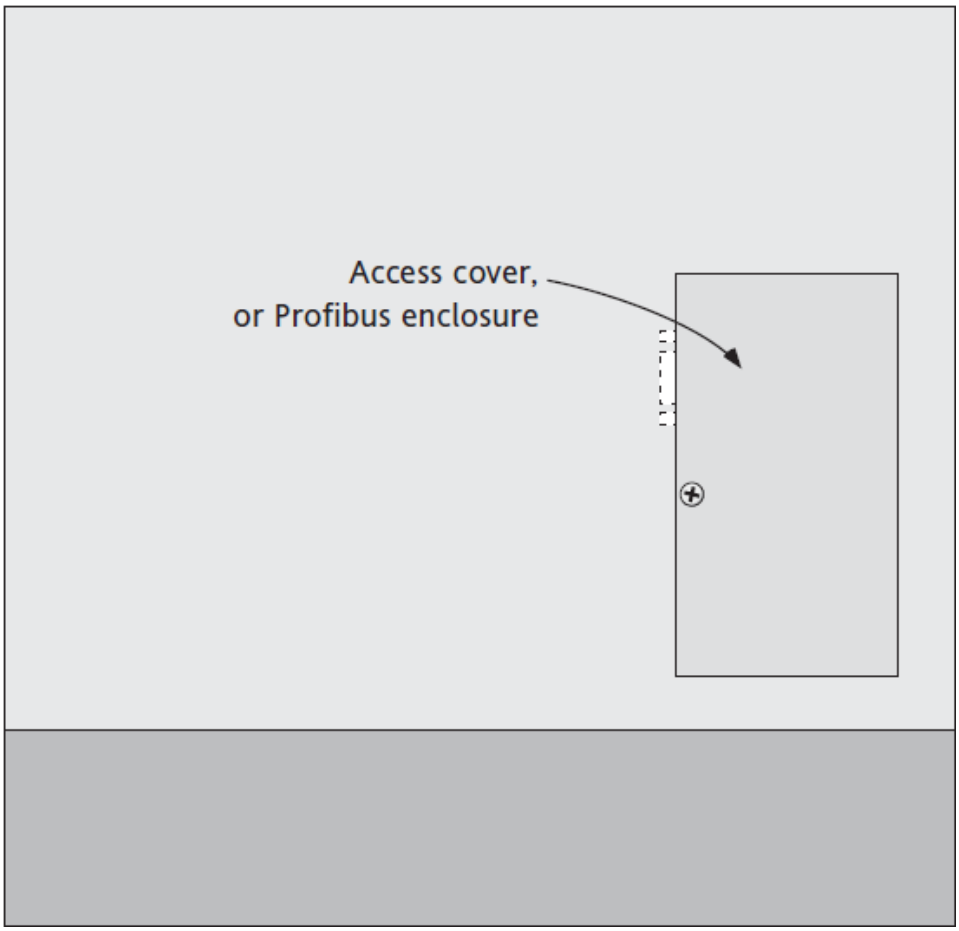


Figure 146 Access Cover/Profibus Enclosure Location - Large Frame Unit

Note: Drawings not to the same scale

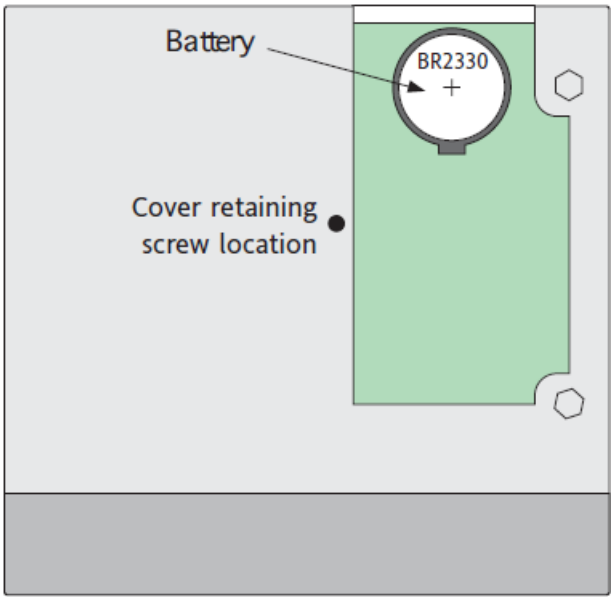


Figure 147 Battery Location - Small Frame Unit (Access Cover/Profibus Option Removed)

Touch Screen Calibration

This procedure ensures that the instrument responds to the exact point that has been touched by the user.

At switch-on, continuously hold a finger in contact with the display screen until the ‘calibration display’ appears (approximately 60 seconds after switch on) as depicted in Figure 148.

Using a soft, small diameter item (e.g. a pencil point) which will not damage the touch screen, touch the intersection of the upper set of crosshairs, as requested by the display.

Once the top left target has been accepted, continue as requested by the display. Once all the targets have been accepted, initialisation continues as normal.

Figure 148 Initial Calibration Display Screen

Profibus Master Option

Introduction

This option provides GW Profibus Master functionality. The option circuit board and associated 9-way D-type connector are housed in a rectangular enclosure located at the rear of the instrument. This chapter provides electrical and mechanical details for the option and also describes how to access the Profibus Master Configuration page in LINtools.

Details of recommended Profibus network wiring are to be found in the Modbus/Profibus communications handbook (HA028014).

Configuration of the Profibus network is carried out using the Profibus editor within LINtools. To display the configuration page (Figure 149):

1. Click on 'Add...'
2. In the pop-up dialogue box that appears, click on 'New LIN Profibus Master'. This adds the GWProfM_CON block ("Function Blocks" on page 283) to the database, and creates a Profibus Network.
3. Click on the Profibus master symbol in the Contents Pane to display the Profibus Master Editor page.

Once configuration is complete, it should be saved. The Save operation automatically generates .gwf and .upb files which are added to the 'download list'. The next Download operation transfers the download list contents to the Profibus Master instrument. See the on-line help file included with LINtools for further details.

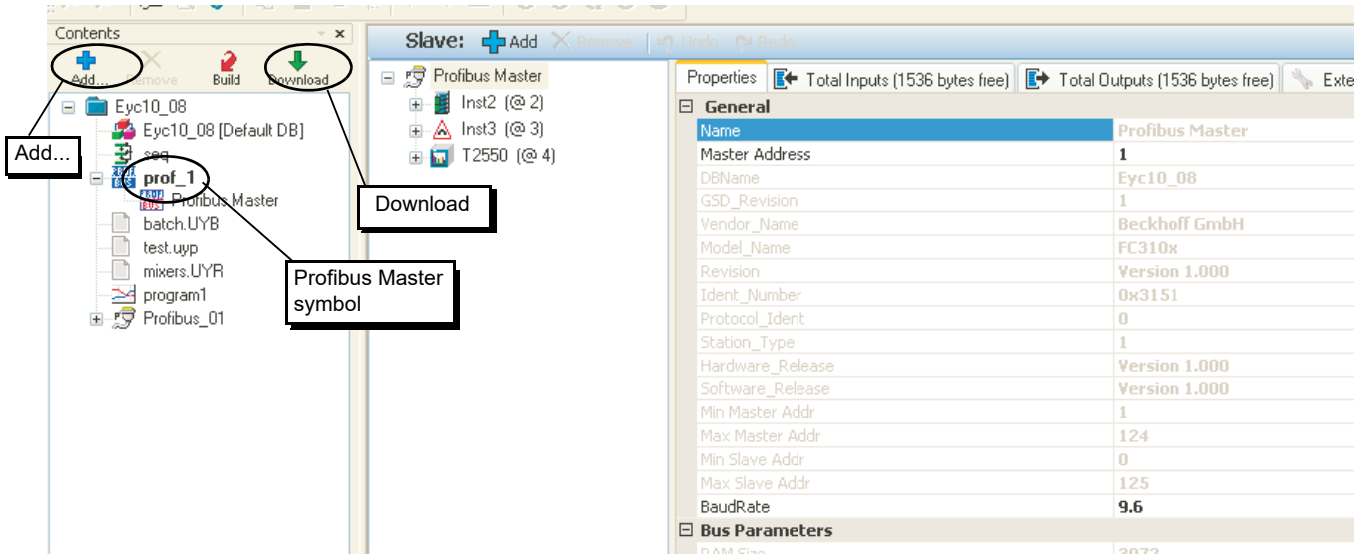


Figure 149 Profibus Editor Master Configuration Page Example

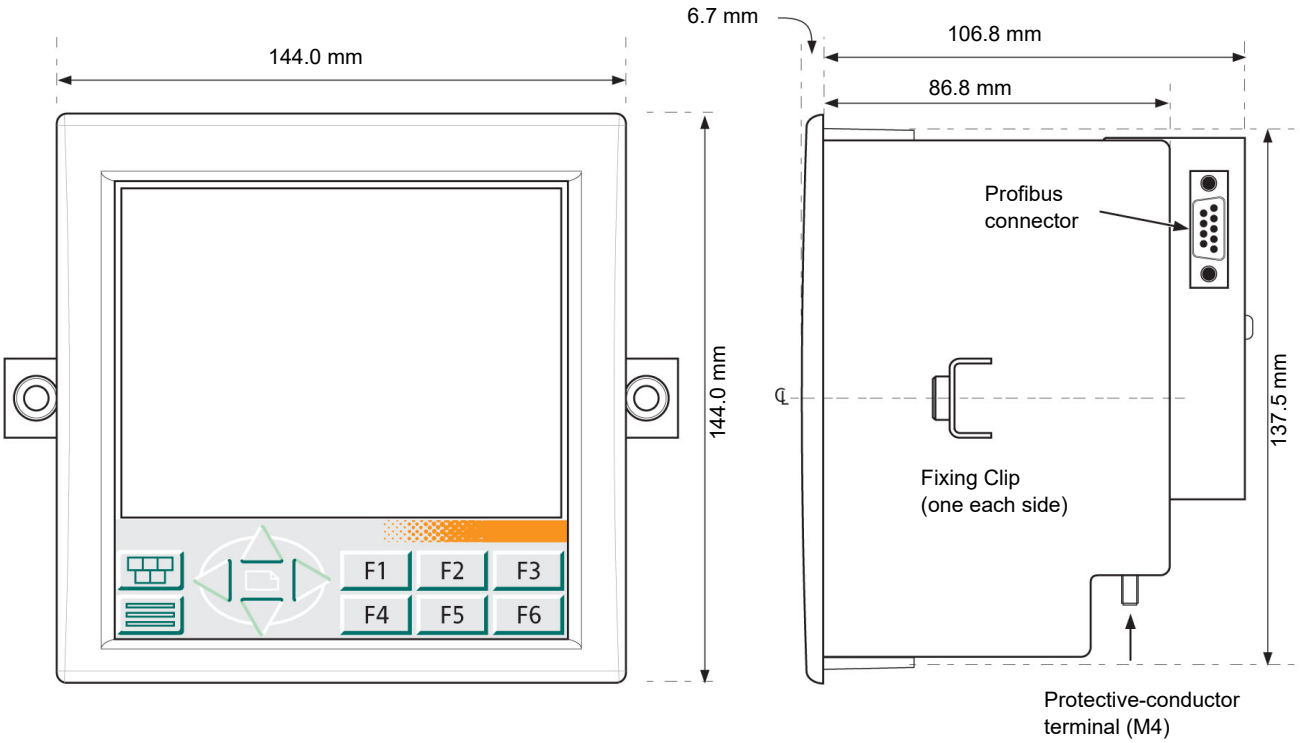
Installation

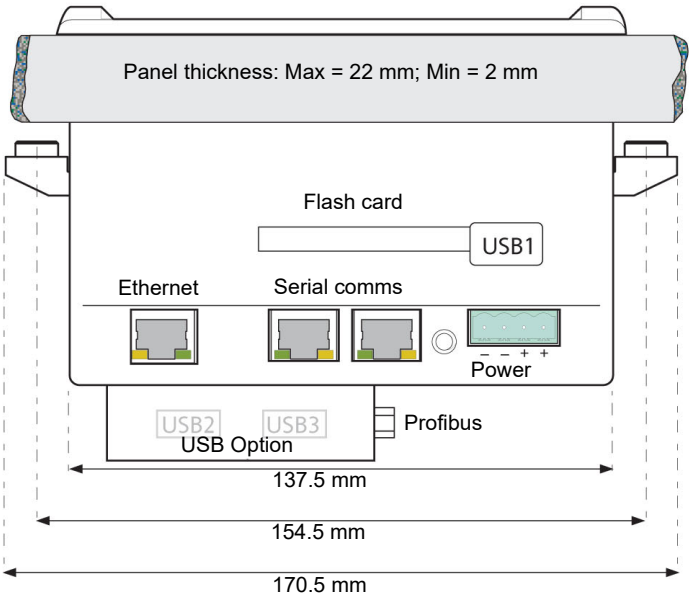
Mechanical Installation

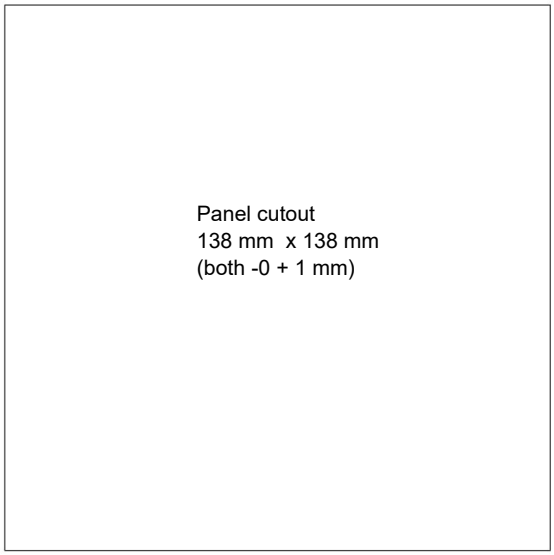
Figure 150 and Figure 151 show the mechanical installation details for the small frame and large frame units respectively. See also "Flush Mounting Option Installation" on page 287 for details of the ‘Flush-mounting’ option.

Pinout Details

Figure 152 Shows Pinout Details for the Profibus 9-Way D-Type Connector.





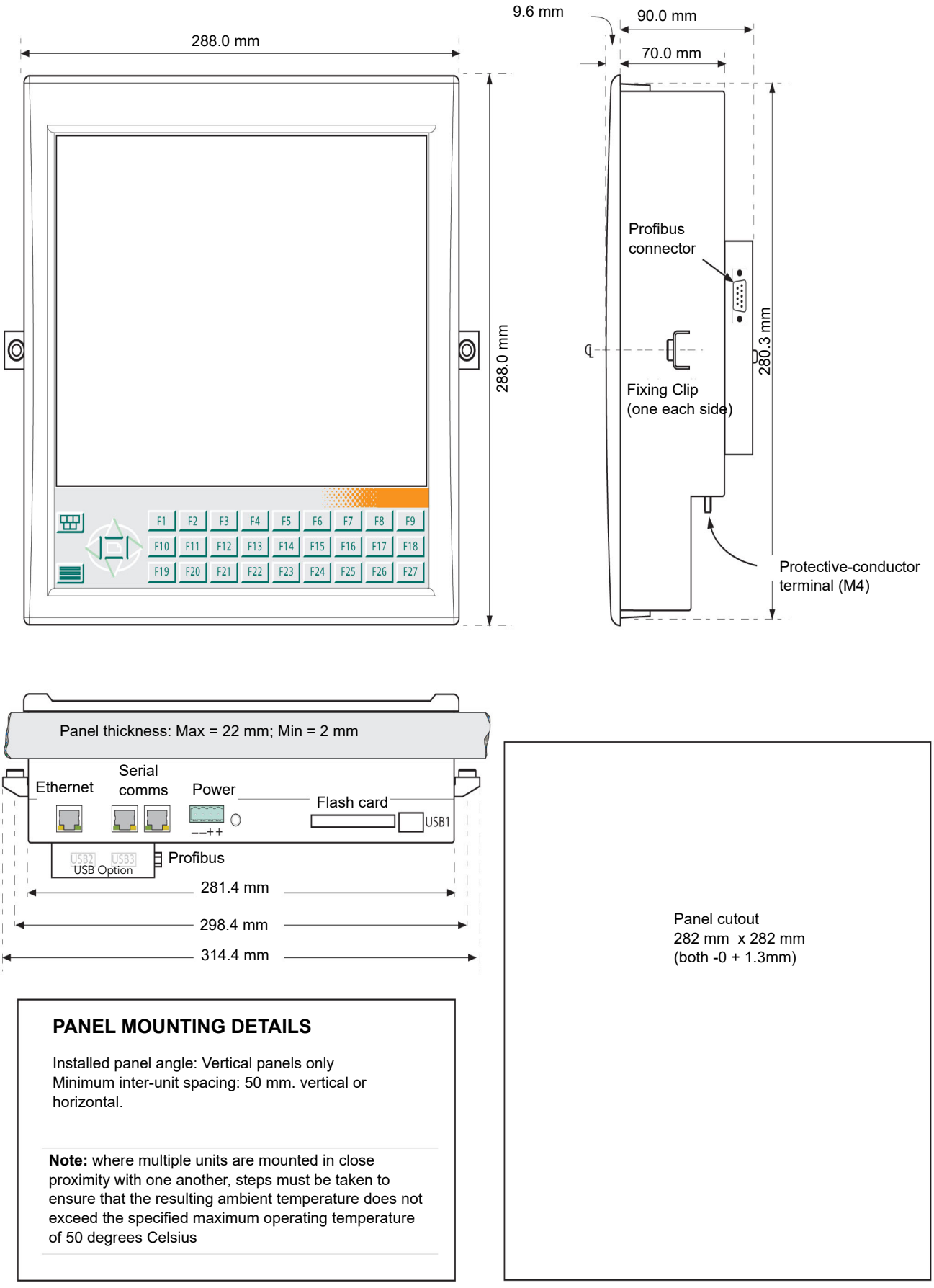


PANEL MOUNTING DETAILS

Installed panel angle: Vertical panels only
Minimum inter-unit spacing: 50 mm. vertical or horizontal.

Note: where multiple units are mounted in close proximity with one another, steps must be taken to ensure that the resulting ambient temperature does not exceed the specified maximum operating temperature of 50 degrees Celsius

Figure 150 Mechanical Installation - Small Frame Unit

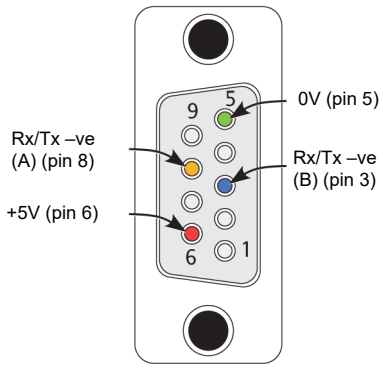


PANEL MOUNTING DETAILS

Installed panel angle: Vertical panels only
Minimum inter-unit spacing: 50 mm. vertical or horizontal.

Note: where multiple units are mounted in close proximity with one another, steps must be taken to ensure that the resulting ambient temperature does not exceed the specified maximum operating temperature of 50 degrees Celsius

Figure 151 Mechanical Installation - Large Frame Unit



9	Not connected	5	0 Volts
8	Rx/Tx –ve (A)	4	Not connected
7	Not connected	3	Rx/Tx +ve (B)
6	+5V for pull-up	2	Not connected
		1	Not connected

Figure 152 Profibus Option Pinout

Function Blocks

GWProfM CON

Notes:

1. All field names except ‘File Name’ and ‘Alarms’ are unavailable in Configuration mode.
2. More information is to be found in the Lin Blocks reference manual HA082375U003

File Name — An eight-character string field containing the base file name of the GWF file to be loaded by this block. The following rules must be adhered to or an alarm will be generated:

1. The GWF file referenced by this field must have been created using the Comms configuration tool.
2. The GWF file must contain a reference to the currently loaded database file.
3. No path is specified as it is assumed that the file exists on the default ‘E’ drive.

Reload — A writable field that, when set true, forces the GW instance to be suspended whilst it is reloaded from the specified FileName. The field auto resets to False once the reload is complete. This can be used to effect a crude form of reconfiguration by replacing an entire GW instance.

GWIndex — A read-only 8-bit unsigned integer field that shows the current GW instance number, between 1 and 3.

MaxIndex — A read-only 8-bit field showing the maximum instance number for this instrument type (1 for Profibus Master).

TableCnt — The number of GW tables being used by this block.

Port — A representation of the port being used by this instance.

Address — The node address of the Profibus Master

BaudRate — The current Baud Rate.

MaxDev — The maximum number of slaves which the master is cabable of communicating with.

ConfDev — The number of configured slave devices.

ActvDev — The number of active (communicating) slave devices.

IpMemUse — The amount of cyclic input space currently in use.

OpMemUse — The amount of cyclic output space currently in use.

ScanRate	The time (in µs) currently being taken to perform a single update cycle.
Tblrate	The time (in µs) currently being taken to update all the input and output tables of all the active slaves.
DiagRate	The time (in µs) currently being taken to update all extended diagnostics tables.
AcycRate	The time (in µs) currently being taken to update all the acyclic read/write tables.
HWState	The current status of the Profibus Master:
Inactive	The Master is in the Stop state (the default at power-up).
Loading	The Master is loading the binary configuration file.
Validating	The Master is validating the loaded configuration file.
Searching	The Master is searching the Profibus network for the devices defined in the configuration file.
Starting	The Master is starting communications channels with the devices detected during the search.
Active	The Master is actively communicating with all active configured slaves on the network.
Stopping	The Master is closing communications channels with all active slaves on the network.
Stopped	All communications (including network maintenance) have stopped.
Error	The Master has experienced a ‘fatal’ error and is no longer able to communicate with any slave(s).
ResetCnt	Resets the following error counters.
CIpFail	The number of failed attempts to read cyclic process input data. This failure is caused by the Profibus Master denying a slave’s access to the ‘process input data’ area. Incremented each time access is denied to any slave.
COpFail	The number of failed attempts to write cyclic process output data. This failure is caused by the Profibus Master denying access to the ‘process output data’ area. Incremented each time access is denied to any slave.
AIpFail	The number of failed attempts to read acyclic data. The failure might be caused by the Master Profibus board, or by rejection by a slave.
AOpFail	The number of failed attempts to write acyclic data. The failure might be caused by the Master Profibus board, or by rejection by a slave.
SlaveAdd	This user-enterd value is the address of the slave for which Profibus diagnostics are to be displayed.
stdDiag1	Byte 1 of the standard Profibus diagnostics for the slave defned in ‘SlaveAdd’, above.
NonExist	Slave did not respond last time.
NotReady	Slave not ready for data transfer.
CfgFault	Slave is reporting a configuration error.
ExtDiag	Extended diagnostics data available and valid.
NotSupp	Slave does not support a feature requested by the Master.
InSlvRes	The slave’s response was not DP compatible.
ParamFlt	The slave reported a parameter error.
MstLock	The slave is already communicating with another master.
stdDiag2	Byte 2 of the standard Profibus diagnostics for the slave defned in ‘SlaveAdd’, above.

	ParamReq	Slave requires configuration.
	StatDiag	Slave is signalling that the static diagnosis/DPV1 slave application is not ready for data exchange.
	DPSlave	Profibus DP slave
	WdogOn	Watchdog on.
	FrzeMode	DP slave is in Freeze mode.
	SyncMode	DP slave is Synchronising.
	Reserve6	Not used at this release.
	Deactive	DP slave has been deactivated.
stdDiag3	Byte 3 of the standard Profibus diagnostics for the slave defned in ‘SlaveAdd’, above.	
	Reserve0 to Reserve6	Not used at this release.
	ExDiagOv	Too much extended diagnostic data.
MastAddr	Byte 4 of the standard Profibus diagnostics for the slave defned in ‘SlaveAdd’, above.	
IdentNum	Bytes 5 and 6 of the standard Profibus diagnostics for the slave defned in ‘SlaveAdd’, above giving the Slave identification number.	

Note: In the following Slave Comms Error subfields if a bit is set (true) then the Slave is off-line in an error condition. When false, a bit indicates that the relevant slave is on-line and communicating.

ComsErr1	Slave comms error bits for slave addresses 0 to 15.	
ComsErr2	Slave comms error bits for slave addresses 16 to 31.	
ComsErr3	Slave comms error bits for slave addresses 32 to 47.	
ComsErr4	Slave comms error bits for slave addresses 48 to 63.	
ComsErr5	Slave comms error bits for slave addresses 64 to 79.	
ComsErr6	Slave comms error bits for slave addresses 80 to 95.	
ComsErr7	Slave comms error bits for slave addresses 96 to 111.	
ComsErr8	Slave comms error bits for slave addresses 112 to 125.	
Alarms	Software	A software error has occurred.
	BadFile	The GWF is corrupt or missing.
	BadDBF	The GWF is not associated with the current database file (dbf).
	BadCfg	Profibus configuration error.
	ImgSize	The process image size for one or more slaves is too big.
	HWError	Profibus hardware error
	ComsErr	An ‘OR’ of all ComsErr values from all configured slaves.
	TooMany	No more GW instances available.
	TableFlt	One or more tables in this GW instance has an internal fault
	BadPort	A mismatch in the port configuration, between the GW configuration and the system opt file in the target.
	PendSave	The memory image of this GW instance has been modified (probably by the removal of invalid block references) since it was loaded from the GWF. A save of the GWF must be

	performed in order to synchronise the file with the memory image.
Spare	
Spare	
Spare	
Spare	
Combined	Gives the priority level of the highest priority active alarm in the block

Flush Mounting Option Installation

Notes:

1. This chapter gives details of the mechanical installation of the ‘Flush-mounting’ option. Wiring details are as given in "Installation" on page 17 and (for the Profibus option) "Profibus Master Option" on page 279.
2. For this option, the keyboard (below the screen) is fitted at the factory and cannot be changed by the user

Unpacking

The unit is despatched in a special pack designed to protect it during transit. If the outer box of the pack shows signs of damage, please open it immediately and examine the instrument. If there is evidence of damage, contact the manufacturer’s local representative for instructions. Do not operate the instrument in the meantime.

If the outer box is not damaged, remove the instrument from its packing with all accessories and documentation.

Once the unit has been installed, store any internal packing with the external packing in case of future despatch.

Mechanical Installation

The clamping plates can be mounted either at the top and bottom of the Visual Supervisor. or at left and right sides. Figure 155 shows details of how to remove the clamping plates. The plates are fixed to the rear of the panel (see Figure 156/Figure 157 for fixing centres) either by suitable screws into the rear of the panel or by means of studs, or machine screws passing through the panel from the front (‘A’ and ‘B’ in Figure 153). M5 studs or screws are recommended; the clamping plate fixing holes are 6mm in diameter.

1. Check that the mounting panel is no thicker than 13mm and no thinner than 1mm.
2. Cut an aperture 144mm x 144mm (small frame) or 290mm x 290mm (large frame) in the panel. If more than one instrument is to be mounted in the panel, the recommended minimum spacings are as shown in Figure 156/Figure 157.
3. From the rear of the panel, offer the front of the instrument to the aperture and secure the clamping plates to the panel using fixings appropriate to the panel type (fixings ‘A’ and ‘B’).
4. Use the jacking screws to adjust the position of each corner of the Visual Supervisor such that the touch screen surface is flush with the front surface of the panel. Adjustments may need to be made more than once for each screw. When the adjustment process is complete, use the 6 mm locking nuts (10 mm across flats) to secure the jacking screws.
5. Complete installation by fitting an overlay (see Figure 156/Figure 157 for overlay window dimensions and "Overlay Recommendations" on page 290 for overlay fitting recommendations).

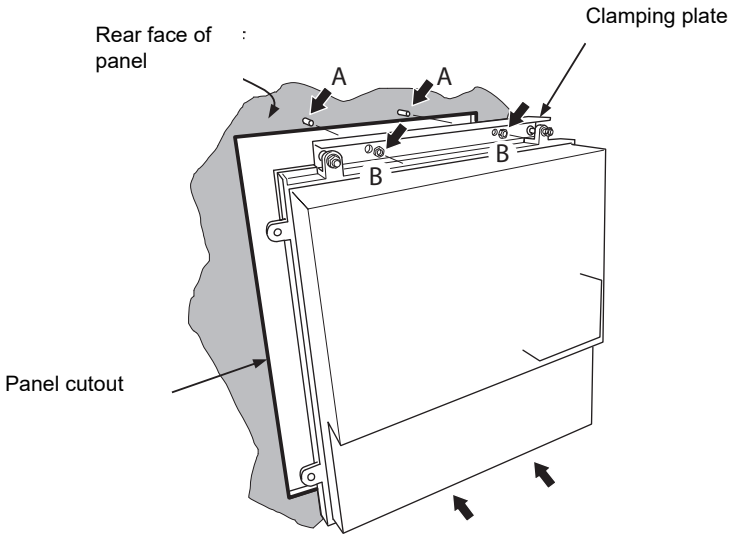


Figure 153 Fixing the Instrument to the Panel
(Large frame unit shown - small frame unit similar)

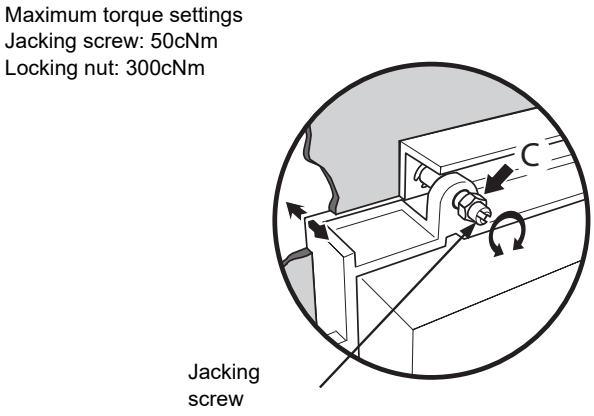


Figure 154 Adjust Each Corner
(Large frame unit shown - small frame unit similar)

To remove a clamping plate (usually to change from top/bottom fixing to left/right fixing):

1. Remove the jacking screw locking nuts and retain them for later re-assembly.
2. Use a screwdriver to rotate the jacking screws clockwise, a few turns on each screw at a time, until they are free of the lugs and the clamp can be removed. Note that a narrow screwdriver (4.5 mm max) is required for the last few turns, when the blade must fit within the diameter of the M6 lug hole.

Re-fitting is the reverse of the above process.

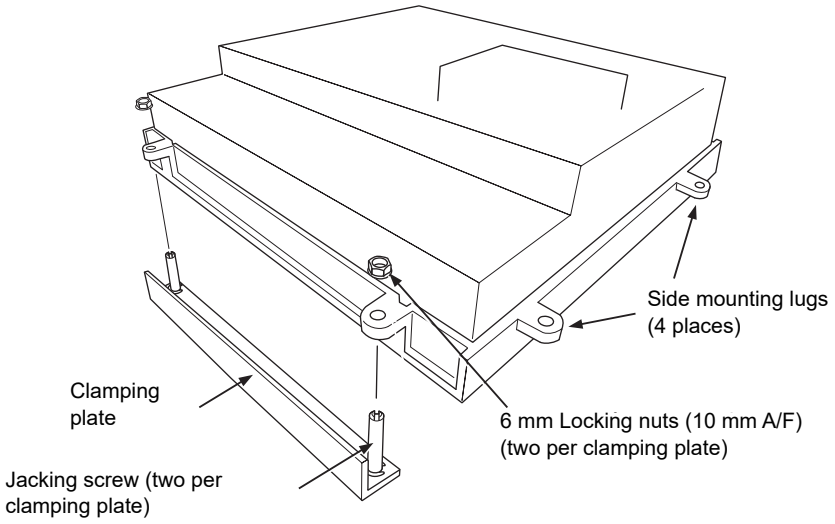
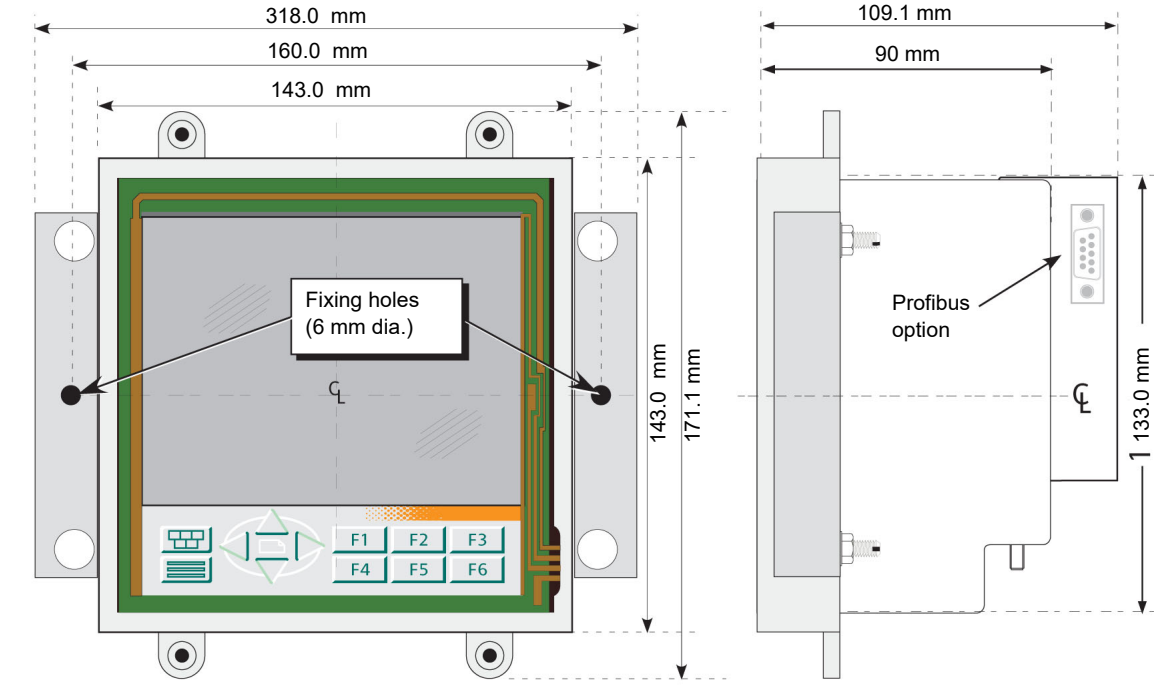
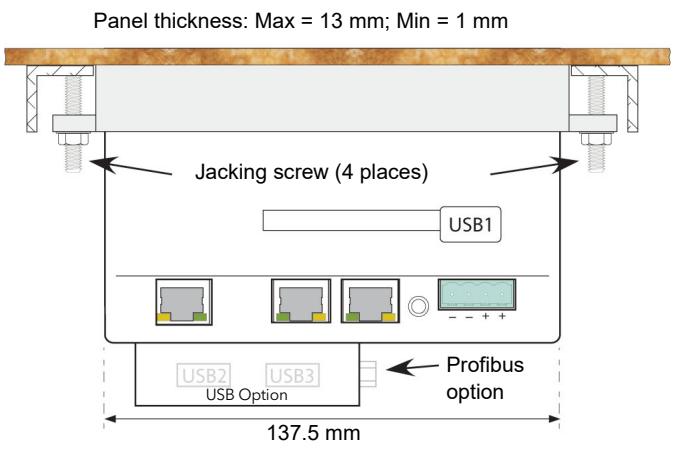
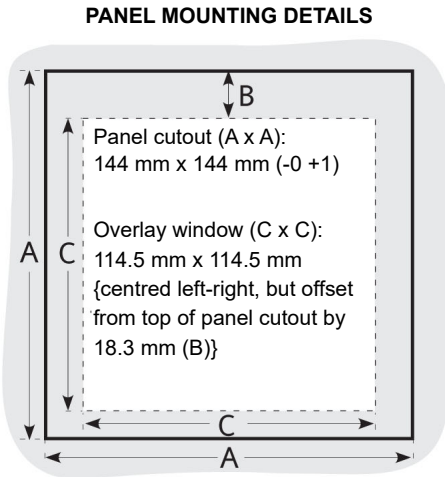


Figure 155 Clamping plate fixing details



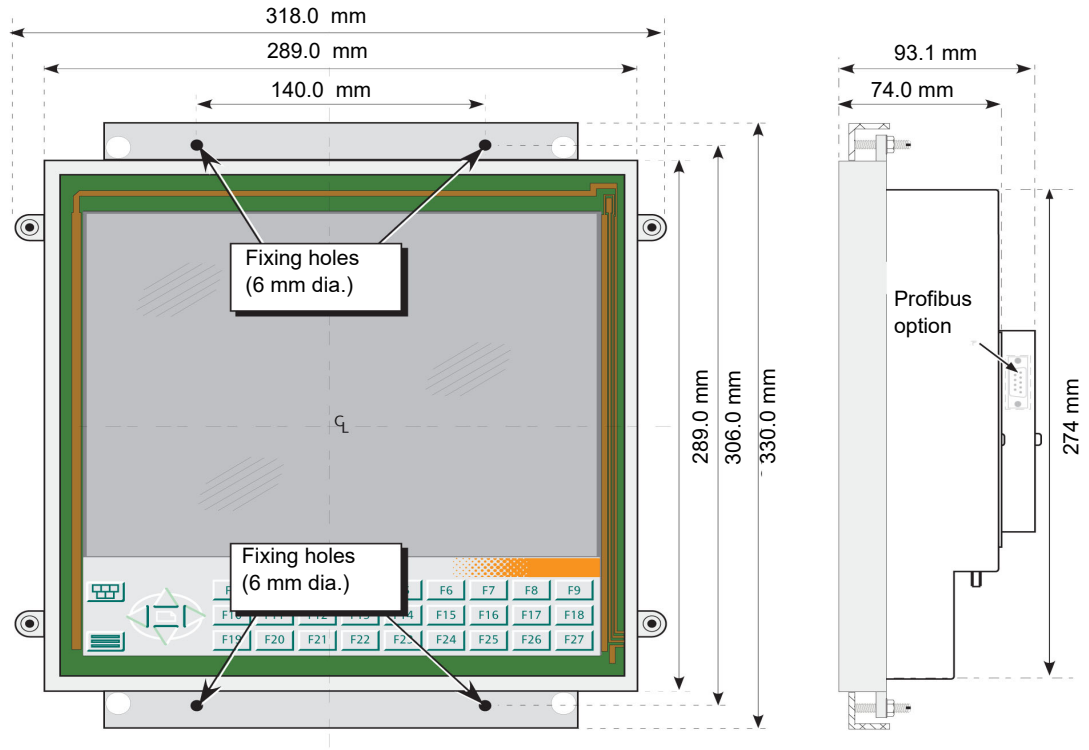


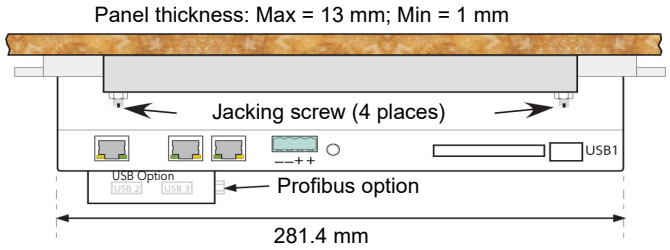


Notes:
1. Ensure that the ambient temperature does not exceed 50˚C.
2. The flush mounting option keyboard is not user interchangeable

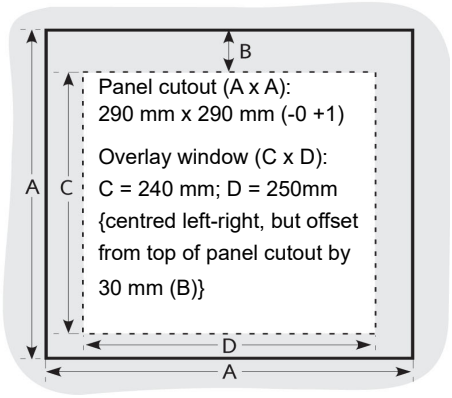
Vertical panels only.
Min. inter-unit spacing (vertical): 50 mm.
Min. inter-unit spacing (horizontal): 50 mm.

Figure 156 Small Frame Unit Mechanical Dimensions





PANEL MOUNTING DETAILS



Notes:
1. Ensure that the ambient temperature does not exceed 50˚C.
2. The flush mounting option keyboard is not user interchangeable

Vertical panels only.
Min. inter-unit spacing (vertical): 50 mm.
Min. inter-unit spacing (horizontal): 50 mm.

Figure 157 Large Frame Unit Mechanical Dimenssions.

Overlay Recommendations

1. For service considerations, the overlay panel should not be bonded to the instrument. For the same reasons, it should not be bonded to the panel in such a way as to prevent service access.
2. For ‘open’ windows, it is recommended that a foam gasket or similar is positioned between the overlay and the front face of the instrument such that this gasket is compressed when the overlay is secured. The gasket must avoid the touch-screen area, as shown in Figure 158, below.
3. For obtain the best IP rating, the overlay should incorporate a clear, flexible membrane covering the surface of the instrument touch screen. In such cases, the following should be considered:

a. Where the membrane and the touch screen come into close proximity, it is possible that optical interference patterns such as Newton's rings may appear. In order to prevent this, it is recommended that an 'anti-Newton' spray be applied to the inner face of the membrane before the membrane is installed.

b. A low tack adhesive (e.g. double-sided adhesive tape) should be used to provide a seal between the membrane and the non-touch-sensitive areas of the display (in a similar way to that shown for open window gasket sealing, in Figure 158, below). The presence of dust, or other foreign matter, is not only unsightly, but it can also lead to unreliable operation of the touch screen. Ensure that both the touch screen and the membrane are clean before sealing.

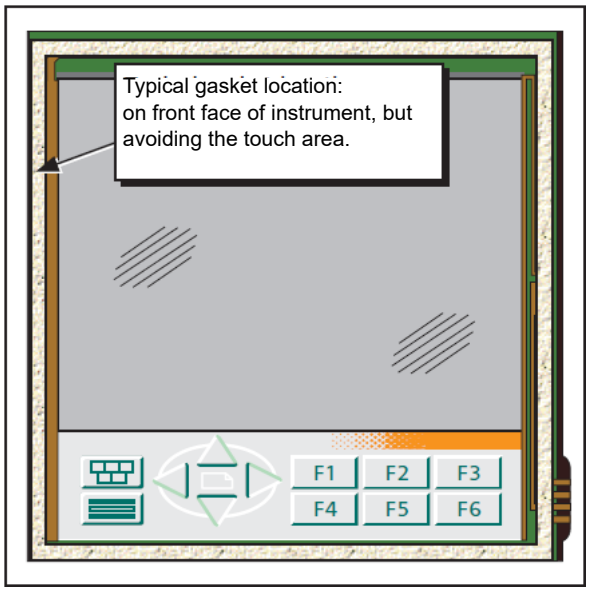


Figure 158 Typical Gasket Location for 'Open' Windows
(small-fame unit shown; large-frame unit similar)

Specification

The specification for the flush-mounting option differs from the specification given in Annex A in the mechanical dimensions (given in Figure 156 and Figure 157), and in the following items:

IP rating without overlay	IP40
IP rating with overlay	Depends on the design of the overlay panel.

Printer/Reader Option

Introduction

Provided software option L2 or higher is fitted, then this option allows the connection of up to two printers and up to two readers using USB and/or EIA485, and/or (for printers only) Ethernet connections. The location of the connectors is as shown in Figure 1 and Figure 2; the assignment of printer to port, and the editing of printer parameters is carried out in the Communications setup page and is described below. Any application must be stopped and unloaded before these parameters may be edited, as described in "Unloading an Application" on page 113.

Note: USB1 is always fitted. USB2 and USB3 are fitted if the '2USB' option is fitted. This is a separate option from the Printer/Reader option.

Printer Set-Up

Figure 159 shows the communications set-up page.

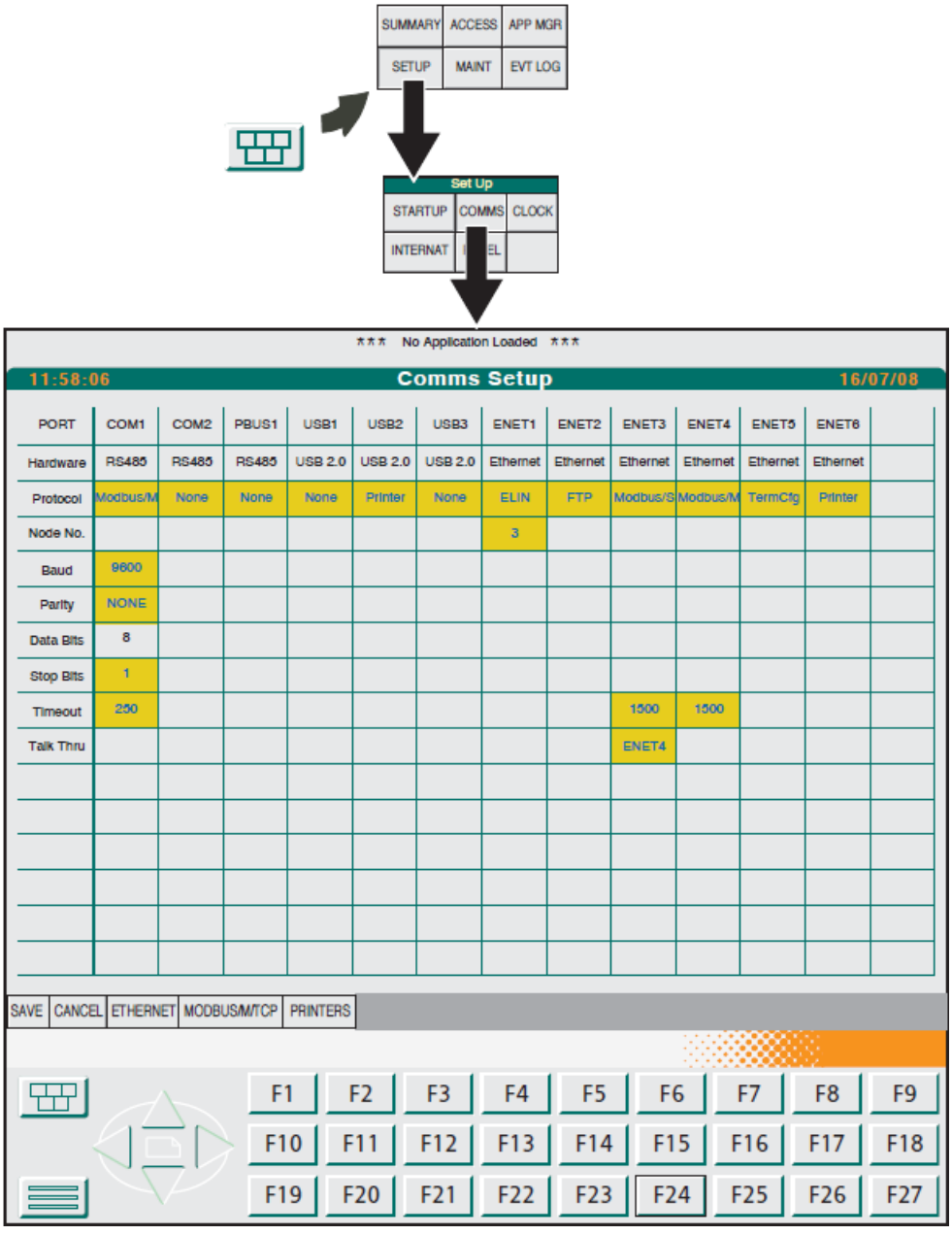


Figure 159 Communications Setup Page.

Notes:

1. The items which appear on the screen are option dependent. E.G. if the Profibus option is not fitted, the PBUS1 port does not appear on the screen. Similarly, if the Printer/Reader option is not fitted, the 'PRINTERS' soft key does not appear.
2. The communications set up page is more fully described in "Editing Communications Parameters" on page 125

Assigning Printers to Ports

Touching the 'protocol' cell for any suitable port calls a pick-list to the display (see examples below) allowing 'Printer' to be selected. Once two printers have been assigned to ports, then 'Printer' does not appear as a picklist item for any other port.

Ports which can have printers assigned to them are 'prioritised' such that the printer port with the highest priority is deemed to have printer 1 assigned to it; printer 2 being assigned to the lower priority port.

The priority is 'ENET6' (highest), 'USB1', 'USB2', 'USB3', 'COM2', 'COM1' (lowest).

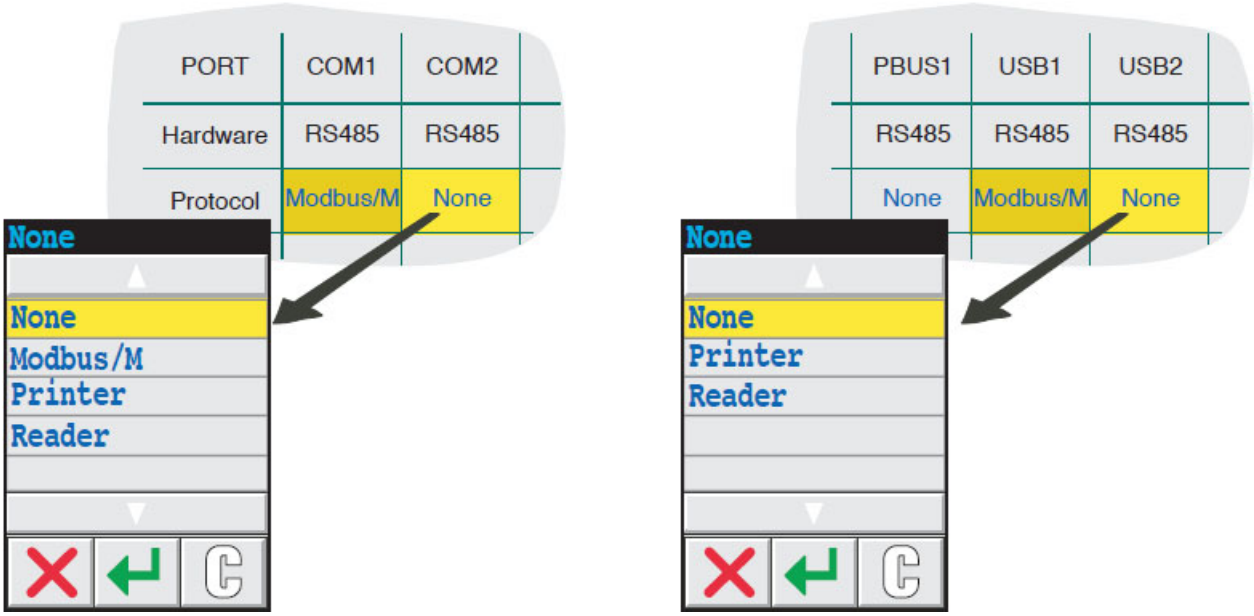


Figure 160 Printer/Port Assignment Examples

Note: When port assignation is complete, operate the 'SAVE' key, or the changes will be lost when the next display page is called.

Printer Parameters

After saving any changes to the port configuration, clicking on the 'Printers' Key in the comms setup page calls the top level Printer configuration page to the screen. This shows the current configuration for Printers 1 and 2. This page always appears, and always with two printers, even if fewer have been assigned. Touching any of the yellow- highlighted fields causes a pick-list menu to appear allowing the user to select the required value

Figure 161 shows the relevant part of a typical top-level printer configuration page.

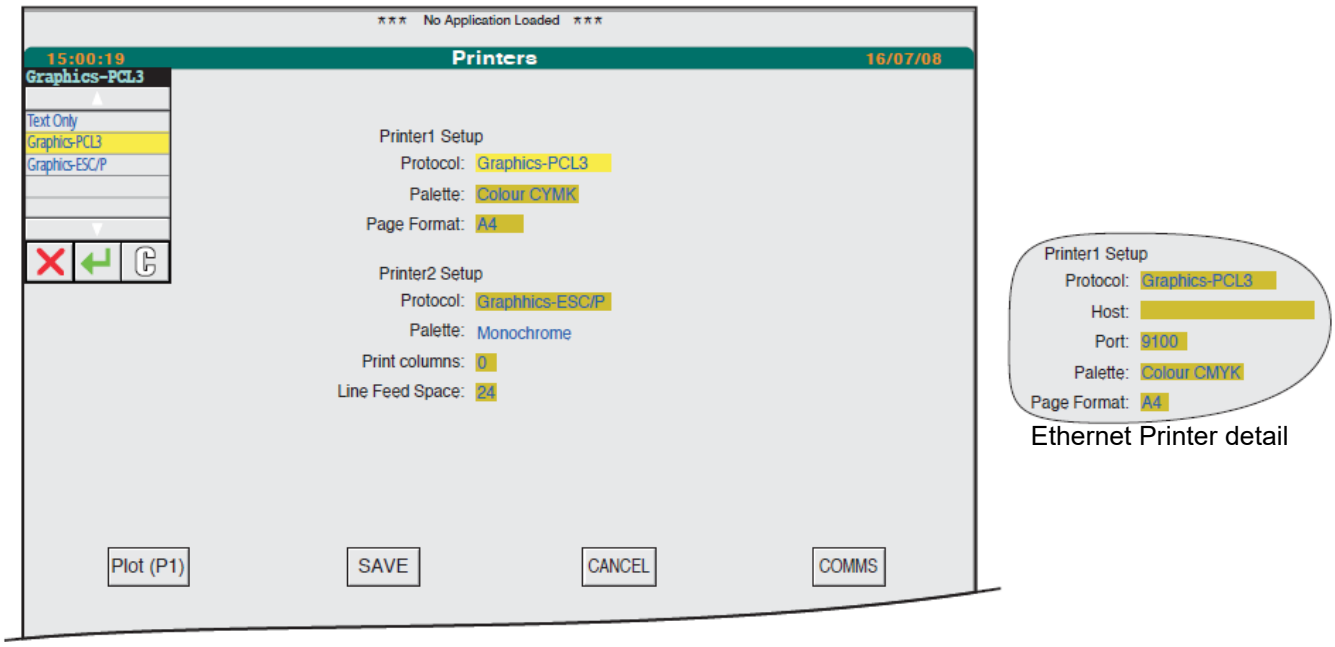


Figure 161 Printer Configuration Page

Parameters

Protocol	Allows 'Text only' or one of two common graphical printer protocols (Graphics-PCL3 and Graphics-ESC/P) to be selected*. The required protocol should be determined from the printer documentation.
Host	This field appears only for Ethernet printers and allows the IP address of the required printer to be entered. This information can usually be found as an entry in the printer test page, or for a large network, from the network administrator.
Port	Usually set to 9100 for printers (Ethernet only).
Palette:	For ESC/P printers this is a non-editable field: 'Monochrome' (i.e. black and white printing only). For PCL3 printers, 'Monochrome', 'Colour CMY', 'Colour CMYK' or 'Colour KCMY' can be selected, as specified in the printer documentation. This is related to the type of ink cartridges fitted, so if an incorrect selection is made, incorrect colours result.
Page Format	For PCL3 printers only, this allows A4 (297 x 210mm) or Letter size (11 x 8½ inch) paper to be selected as printing stock.
Print Columns	For ESC/P printers only, this specifies the number of columns to be printed across the paper. The information should be found in the printer documentation.
Line feed Space	For ESC/P printers only, this is a measure of the number of lines per unit height of printer paper. Refer to Printer documentation for setting details.

* For the sake of brevity, these are referred to as PCL3 and ESC/P in the remainder of this description

Push Buttons

A number of buttons appear, equally spaced across the width of the lower part of the screen. The functions of ‘SAVE” and ‘CANCEL’ are self evident. ‘COMMS’ returns the user to the Comms Setup page (unsaved changes are lost without warning).

Plot P1/Plot P2 Push Buttons

‘PLOT P1’ appears if printer 1 is setup as a colour printer, otherwise it is missing from the screen. ‘PLOT P2’ appears if printer 2 is setup as a colour printer, otherwise it is missing from the screen. Operating either button causes a ‘Plot Colour Select’ pop-up menu to appear, allowing the user to change the plot colour for each channel . The pop-up, and its associated colour pick-list, is shown in Figure 162, below.

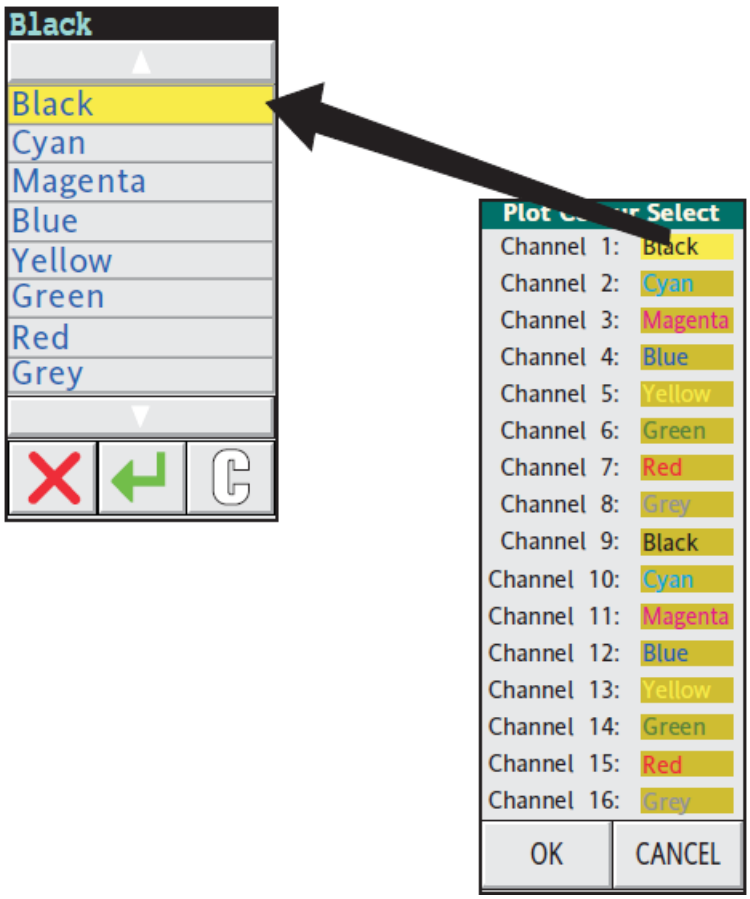


Figure 162 Plot Colour Select Display

Printout

Reports

The printing of reports using .UYF files, edited using a standard text editor is as described in "Form Files" on page 217, above.

Trends

If a HISTDATA block is referenced within a .UYF file, together with a trend qualifier (‘T’ or ‘D’), then it will be considered to be trend data provided that the DATA field refers to a GROUP block. Otherwise an empty rectangle is drawn.

Syntax example 1:

[HISTDATA]:400:200T{1,3}

causes a black, rectangle to be drawn 400 dots high by 200 dots wide, containing horizontal trends for channels 1 and 3, in the colours specified (colour printers only).

Syntax example 2 (note 2):

[HISTDATA]:400:200D

causes a black, rectangle to be drawn 400 dots high by 200 dots wide, containing vertical trends for all channels, in the colours specified (colour printers only).

Notes:

1. The lines making up the rectangle are 1 dot thick.
2. Vertical trending is not supported for ESC/P printers
3. Instrument and group tag, if available, are printed above the rectangle.
4. Point tags, units and span low and high values are printed below the rectangle. For PCL3 colour printers, this information is presented in the relevant trace's colour.
5. The sample start and end date/time from the HISTDATA block are also included.

Figure 163 (below) Shows a Sample Colour Printout for Four Channels.

Alarm and Event Objects

If a HISTDATA block is referenced within a .UYF file, without a trend qualifier, then it will be considered to be alarm and event text data provided that the DATA field refers to a DR_ALARM block. If the DR_ALARM block is not referenced, no output is generated.

All alarm and events which comply with the DR_ALARM block, and which have a start date and time later than the sample start time and date are included, including any alarms or events that occur at the sample end date and time. Alarms are filtered according to the filtering configuration in the DR_ALARM block.

Reprint

A new input to the DR_REPRT block 'Reprint' causes the latest report to be regenerated. This feature is included, in case the printer cartridge was exhausted or the printer was out of paper at the first attempt.

Note: The Report reprint facility is lost at power down.

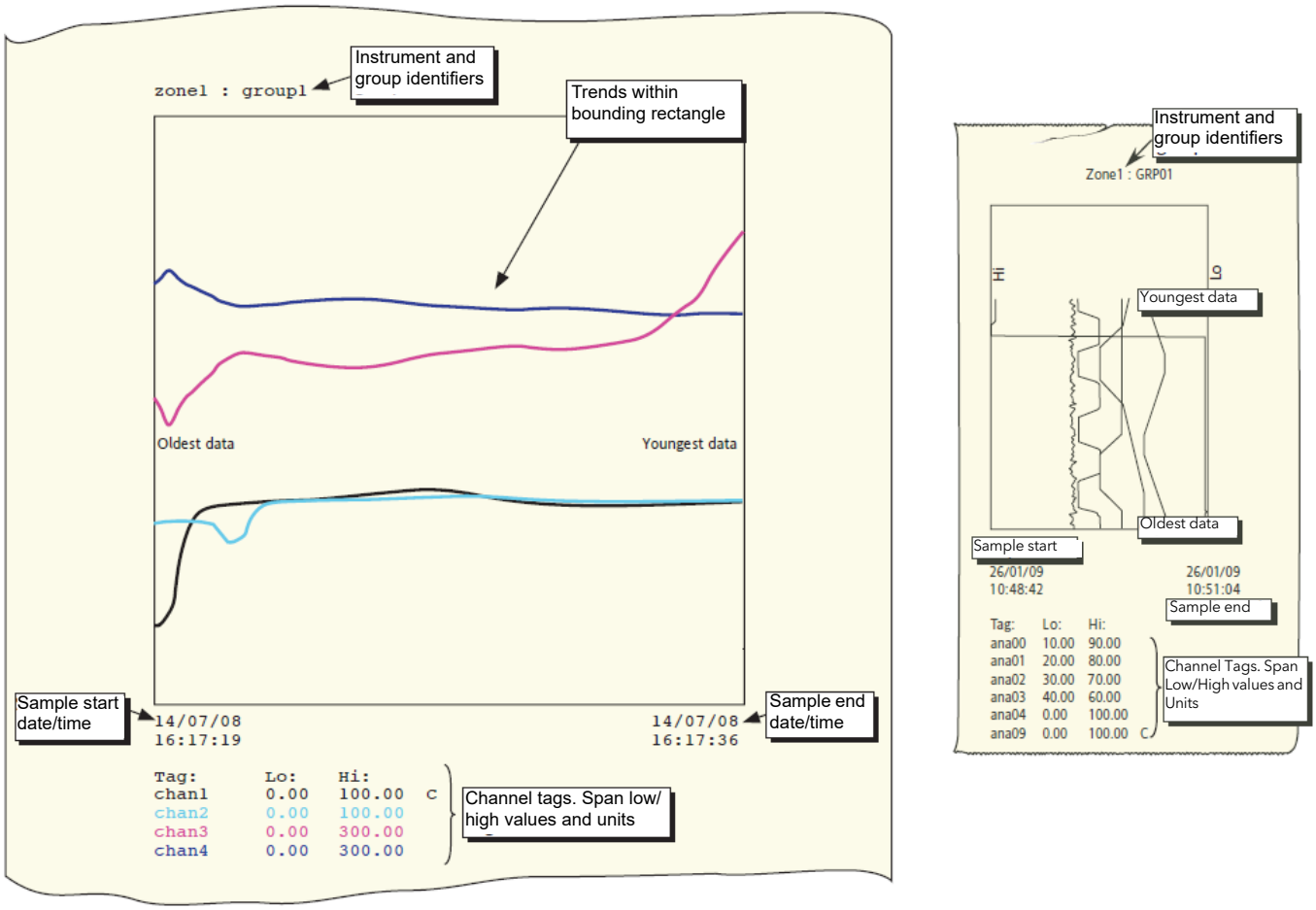


Figure 163 Typical Printouts

Application Notes

1. For the ESC/P protocol, only Mode 0 (8bit) and Mode 32 (24 bit) are supported
2. As there is no feedback facility from the printer to the LPTDEV block, the printout is sent even if the cartridge is exhausted or the paper tray is empty.

Reader Input

Touching the ‘Protocol’ cell for any suitable port calls a pick-list to the display (see examples in Figure 160 above) allowing ‘Reader’ to be selected. Once two readers have been assigned to ports, then ‘Reader’ does not appear as a picklist item for any other port.

Ports which can have readers assigned to them are ‘prioritised’ such that the reader port with the highest priority is deemed to have reader 1 assigned to it; reader 2 being assigned to the lower priority port.

The priority is ‘USB1’ (highest), ‘USB2’, ‘USB3’, ‘COM2’, ‘COM1’ (lowest).

Appendix A: Technical Specification

General Specification

In order to comply fully with BS EN61010, all I/O and hardware alarms must be enabled

Physical (1/4 VGA)		
Dimensions		
	Bezel:	144 x 144 mm
	Cut-out:	138 x 138 mm
	Depth:	87.7 mm (106.8 with Profibus option)
Weight		1.5 kg
Screen	Type:	1/4 VGA TFT colour
	Display area:	111 x 84 mm
	Touch panel:	Resistive analogue
	Character set:	Unicode Latin-1
Physical (XGA)		
Dimensions		
	Bezel:	288 x 288 mm
	Cut-out:	282 x 282 mm
	Depth:	70.4 mm (90 mm with Profibus option)
Weight		3.7 kg
Screen	Type:	XGA TFT colour
	Display area:	245 x 188 mm
	Touch panel:	Resistive analogue
	Character set:	Unicode Latin-1
Environmental		
Temperature	Storage:	-20 to +60°C
	Operation:	0 to + 50°C
Humidity	Storage:	5 to 95% RH (non-condensing)
	Operation:	5 to 85% RH (non condensing)
RFI	Emissions:	BS EN50081-1
	Susceptibility:	BS EN50082-2
Electrical Safety		BS EN61010-1:2001 Installation category II, Pollution degree 2.
Vibration		BS EN60873, Section 9.18
Shock		BS EN60068-2-31; BS EN60873, Section 9.12
Protection	Front panel:	IP65
Power requirements		
	Voltage range:	19.2 to 28.8V dc. (24V dc ± 20%)
	Ripple:	1 V max.
	Max. power requirement (at 24V):	Small frame = 20 W; Large frame 24 W
	Operating current (at 24V):	Small frame = 0.8 A; Large frame = 1Amp
	Inrush current:	10 A max.
	User termination:	4-way connector
	Internal fusing:	No user replaceable fuses.

Battery

Battery	BR2330 Poly-carbonmonofluoride/lithium. Part number PA261095. See also "Battery Replacement" on page 275.

Data Logging Storage

Disk	Internal Flash memory
Data format	ASCII (.asc) or compressed data
Data compression	Proprietary
Log frequency	1 Hz

Clock (RTC) data

Temperature stability	0 to 50°C:	± 20 ppm
Ageing		±5 ppm per year

Programmer

Maximum number of	concurrent programs:	8
	segments per program:	32
	channels:	8
	digital setpoints:	128
	exit conditions:	64
	user values:	32
	wait conditions:	64

Alarms and events

Number of records in history	500 lines maximum
History line format	Name - Type - Date - Time
Acknowledgment	Colour coded.
No. of records in event log	1000

Recipes

Max. no. of concurrent recipe sets (files)	8
Max. no. of production lines per set	8
Max. no. of recipes per set (file)	16
Max. no. variables per set	1000

Batch

Max. no. of concurrent batches (files)	8
Max. no. of phases per batch	40

Trends

Max. no. of groups (trends)	16
Max. no. of points per group	16
Maximum frequency	1 sample per second
Maximum samples	15,000 for 1 group of 16 points

Continuous database resources

Notes:

1. The maxima given here are defaults and are the recommended limits. Subject to note 2, it is possible to exceed some of these values, but if a database with more resources than the default maximum is loaded, the maximum is set to the new value and there may then be insufficient memory to load the entire database or to allow on-line reconfiguration. In such a case ‘connections’ disappear first. FEATTs are not subject to this problem as, when a database is saved, there are not normally any FEATTs present, so the maximum cannot be exceeded.
2. If the EDB maximum is exceeded some EDBs will malfunction, affecting LINtools functionality.

Continuous database resource	Legacy Programmer	Large SFC	Default	Large Database
Database size (kBytes)	145	181	255	319
Number of function blocks (max)	512	512	512	512
Number of templates (max.)	100	100	100	100
Number of libraries (max.)	50	50	50	50
Number of EDBs (max.)	32	32	32	32
Number of FEATTs (max.)	512	512	512	512
Number of TEATTs	128	128	128	128
Number of servers (max.)	2	2	2	2
Number of connections	1024	1024	1024	1024

Sequence control resources

Sequence control resource	Legacy Programmer	Large SFC	Default	Large Database
Sequence memory program data (kBytes)	112	112	56	28
Sequence memory SFC resources (kBytes)	73	73	38	19
Simultaneously active independent sequence tasks	20	20	10	5
SFC actions (including root SFCs)	100	100	50	25
Steps	320	320	160	80
Action associations	1200	1200	600	300
Actions	600	600	300	150
Transitions	450	450	225	1 15

Legacy programmer resources

No. of simultaneously running programs	8 max. (See table for resource distribution)
Profiled analogues	16 max.
Profiled digitals	32 max.
Segments per program	250 max.

No. of programs	Max. no. of analogues	Max. no. of digitals	Max. no. of segments
1	16	32	250
2	16	32	125
4	16	16	80
8	8	8	40

.uyn file size limits

The figures given below are typical figures.	The actual maximum number of lines depends on the length of aliases, and on the language(s) being used.
Small frame unit:	250 to 400 lines
Large frame units:	600 to 950 lines

Communications Specification

Ethernet Communications

Type		10/100 base T (IEEE802.3)
Protocols		TCP/IP, FTP, DHCP, BootP, ICMP.
Cable	Type:	CAT5
	Maximum length:	100 metres
	Termination:	RJ45
Isolation		IEEE802.3
RJ45 LED indicators	Green:	Indicates a 100MB link
	Yellow:	Indicates Ethernet activity

Modbus/Jbus (EIA422/485)

Connectors	Shielded RJ45 connectors.
Protocol	MODBUS/JBUS RTU master and slave
Data rate	Selectable between 1200 and 38,400 Baud
Data format	8-bits, 1 or 2 stop bits, selectable parity
MODBUS data tables	64, configurable as registers or bits
Table length (max.)	200 registers or 999 bits
Memory allocated to tables	2000 bytes
Isolation	Functional

Universal Serial Bus (USB)

Version	1.1 (2.0 devices are compatible)
Devices supported	USB Bulk storage devices (‘Memory Stick’), PCL3 printers, ESC/P printers, Bar-code readers
Isolation	No signal isolation

Profibus

Safety Isolation (BS EN61010)	Installation category II; Pollution degree 2 Any terminal to earth: 50 Vdc or RMS
Number of slave devices	124 Max. (83 with extended diagnostics)
Number of tables supported	Maximum 250 (see table for maximum number per type).
Baud rates supported	9.6kBaud; 19.2kBaud; 93.75kBaud, 187.5kBaud, 500kBaud, 1.5MBaud, 3.0MBaud, 6.0MBaud, 12.0MBaud.

Table	No. required per slave	Max. per master	Max. no. of data items
Cyclic input	1	124	Unlimited
Cyclic output	1	124	Unlimited
Extended diagnostics	1	124	Unlimited
Acyclic	N/A	1	256

Function Blocks Supported

Category	Block	Function
BATCH	BAT_CTRL	Batch controller / interface
	DISCREP	Transmitted/received digital signal-match to diagnose plant faults
	RCP_SET	Recipe set
	RCP_LINE	Recipe Line
	RECORD	Storage/retrieval of analogue/digital values for runtime use
	SFC_CON	Sequence (SFC) control, selection and running
	SFC_DISP	Display/monitoring/control of remotely-running sequence (SFC)
	SFC_MON	Sequence (SFC) runtime monitoring
COMMS	GW_CON	To be issued later
	GW_TBL	To be issued later
	GWProfM_CON	Profibus DPV1 comms master
CONDITN	AGA8DATA	AGA8 calculation block for compressibility of gas mixtures
	AN_ALARM	Alarm, with absolute/deviation/rate alarms
	CARB_DIFF	On-line carbon diffusion modelling
	CHAR	16-point analogue characteriser
	DIGALARM	Digital alarm
	FILTER	First-order filter
	FLOWCOMP	Computes flow-rate, corrected for pressure, temperature and density
	GASCONC	Contains gas concentration units in Mole% units
	INVERT	Analogue inversion block
	LEAD_LAG	Lead-lag
	RANGE	Re-ranges an analogue input
	STEEL_SPEC	Steel specification
	TC_LIFE	Thermocouple life expectancy block (AMS2750)
	TC_SEL	Thermocouple selector block. manages multiple thermocouples for furnace applications
	UCHAR	16-point characteriser for analogue input blocks
CONFIG	T800	System block
	T2900	System block
	Eycon-10	System block
	Eycon-20	System block
CONTROL	3_TERM	Incremental form of the PID block
	AN_CONN	Analogue connections
	ANMS	Analogue manual station
	DG_CONN	Digital connections
	DGMS	Digital manual stations
	MAN_STAT	Manual station, with connections to front panel displays
	MODE	Control mode selection, with push-button masking
	PID	PID control function
	PID_LINK	‘Faceplate’ for SETPOINT/3_TERM/MAN_STAT/MODE combination
	SETPOINT	Generates a setpoint with bias, limits and alarms
	SIM	Simulates two first-order lags or capacity, with noise

Category	Block	Function
	TP_CONN	Specifies up to nine fields as EEPROM ‘tepid data’ at power-down
CONVERT	ENUMENUM	Converts between enumerated number types
	ENUMUINT	Converts from enumerated type to integer type
	REALTIME	Converts real numbers to/from TIMEs
	UINTENUM	Converts from integer to enumerated type
DIAG	AGA8DIAG	AGA8 block diagnostics
	ALH_DIAG	Alarm history statistics
	ALINDIAG	ALIN MAC/LLC diagnostics
	AMC_DIAG	Comms statistics on application master
	DB_DIAG	Database diagnostics
	DDR_DIAG	T800 data recording statistics
	EDB_DIAG	External database diagnostics block
	EDB_TBL	External database table
	ELINDIAG	ELIN Diagnostics
	EMAPDIAG	Ethernet mapping diagnostic
	FDDADIAG	FTP transfer from logging
	IDENTITY	Check list
	ISE_DIAG	Options and features
	NATCDIAG	Audit Trail Consumer diagnostics
	NATPDIAG	Audit Trail Provider diagnostics
	PBUSDIAG	Profibus diagnostics
	PMC_DIAG	Profibus diagnostics
	PNL_DIAG	Front panel information
	PRPDIAG	Port Resolution Protocol diagnostics
	ROUTETBL	Routing table block
	RSRCDIAG	Database and system resource diagnostics
	RTB_DIAG	Routing table diagnostic block
	SFC_DIAG	Sequence diagnostics
	XEC_DIAG	Task diagnostics
I/O	AN_DATA	Analogue data (e.g. for carbon diffusion)
LOGIC	AND4	4-input AND Boolean function
	COMPARE	Indicates greater/less than/equal of two inputs
	COUNT	UP/DOWN pulse counter with START/END count target
	LATCH	D-type flip-flop function
	NOT	NOT Boolean function
	OR4	4-input OR Boolean function
	PULSE	Pulse output (monostable) function
	XOR4	4-input exclusive-OR Boolean function
MATHS	ACTION	Action control, with use of stored variables and elapsed time
	ACT_2A2WT3	Action block with timers
	ADD2	Adds two inputs
	DIGACT	Action control with use of stored digital variables and elapsed time
	DIV2	Divides two inputs
	EXPR	Free-format maths expression with up to four inputs
	MUL2	Multiplies two inputs
	SUB2	Subtracts two inputs

Category	Block	Function
OPERATOR	EVENT	Act upon as audit trail event
	PNL_ACC	Access to panel system
	PNL_CMD	Panel Command
	PNL_DICT	Panel dictionary block. Interface between panel and dictionary files.
	PNL_DLG	Panel dialogue generation
	PNL_MSG	Panel message generation
	READER	Bar code reader
ORGANISE	AREA	Associates GROUP blocks into an AREA
	GROUP	Associates display and recorder channels into a GROUP
	LOGDEV	Specifies and controls access to an archive medium
	LGROUP	Collects data from point blocks for archiving
	LOGGRPEX	LGROUP extension block
	LPTDEV	Printer device block
	PGROUP	Printer Group
PROGRAMMER	PROGCTRL	Controls the overall execution of setpoint programs
	PROGCHAN	Data and options for a single profile channel
	SEGMENT	Shows up to four segments of the profiled program
RECORDER	DR_ALARM	Filters alarms and events
	DR_ANCHP	Data recording analog channel point block
	DR_DGCHP	Data recording digital channel point block
	DR_REPRT	Report generator
	HISTDATA	Allows the inclusion of trend and event/alarm data into a printed report. Refers to a period in history as defined by start/end date/time markers.
SELECTOR	2OF3VOTE	Selects ‘best’ input from three (averaging only the inputs in tolerance)
	ALC	Alarm collection producing a common logic O/P
	SELECT	Outputs the highest, middle and lowest inputs, or median of 2, 3 or 4
	SWITCH	Single-pole double-throw switch for analogue signals
	TAG	Specifies a user task (loop) tagname, selected from list of eight tags
SPP	SPP_CTRL	Monitors, schedules and controls program running
	SPP_DIG	Wires out digital setpoints from the setpoint program
	SPP_EXT	Programmer extended functions
	SPP_RAMP	Local Ramp
TIMING	DELAY	Delay for dead-time applications
	RATE_ALM	Up/down-rate alarm applied to PV (OP held at last non-alarm value)
	RATE_LMT	Rate-limiter and ramp generator
	SEQ	Multi-segment slope/level/time, 15 O/P digitals
	SEQE	SEQ extender
	TIMEDATE	Clock and calendar event
	TIMER	Timer
	TOTAL	Totaliser (integrator) for analogue variable
	TOT_CON	Totalisation connector block
	TPO	Time proportioning o/p block. Produces a pulse stream with mark/space ratio proportional to its (analogue) input value.

Appendix B: Options Update

Introduction

The Software Options Utility allows the software options fitted in the instrument to be changed as follows:

1. The utility provides a ‘Change code’.
2. The user contacts the supplier with the Change Code.
3. The supplier provides a further ‘Validation’ code which is used to enable the relevant options.

Software Options Utility Access

1. If necessary stop and unload any application currently running, and operate the SOFT OPS key in the MAINT menu.

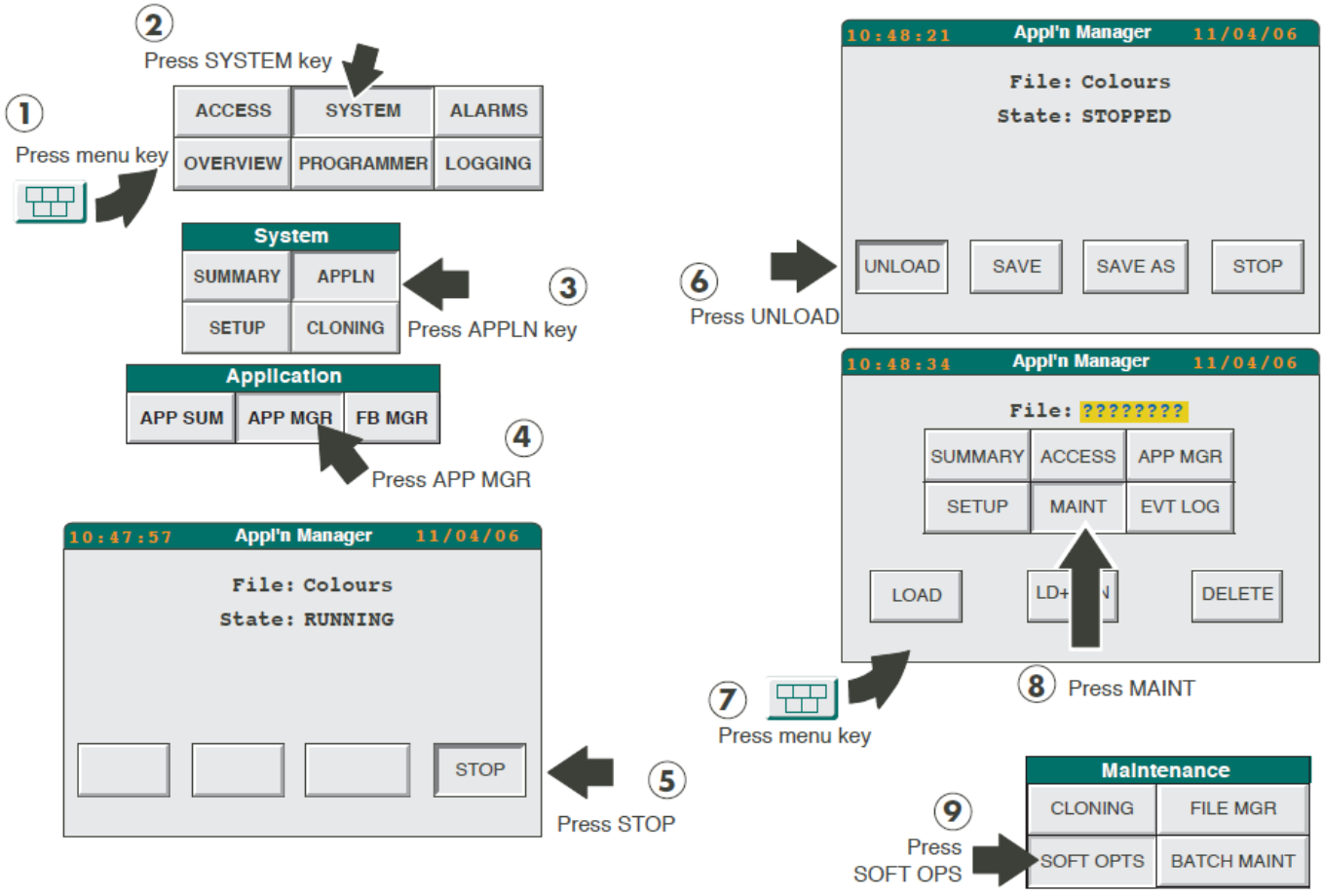


Figure 164 Access to the SOFT OPS key.

The first Software Option Change page appears.

2. Modify the displayed options as required, and press the ‘Change’ key. The second Software Option Change page appears.
3. Contact the supplier of the instrument with the MAC address and Change Code as presented on the screen.
4. The supplier will provide a Validation Code, which must be entered and the ‘Validate’ key pressed.

5. The unit will have to be power cycled before the changes are effective.

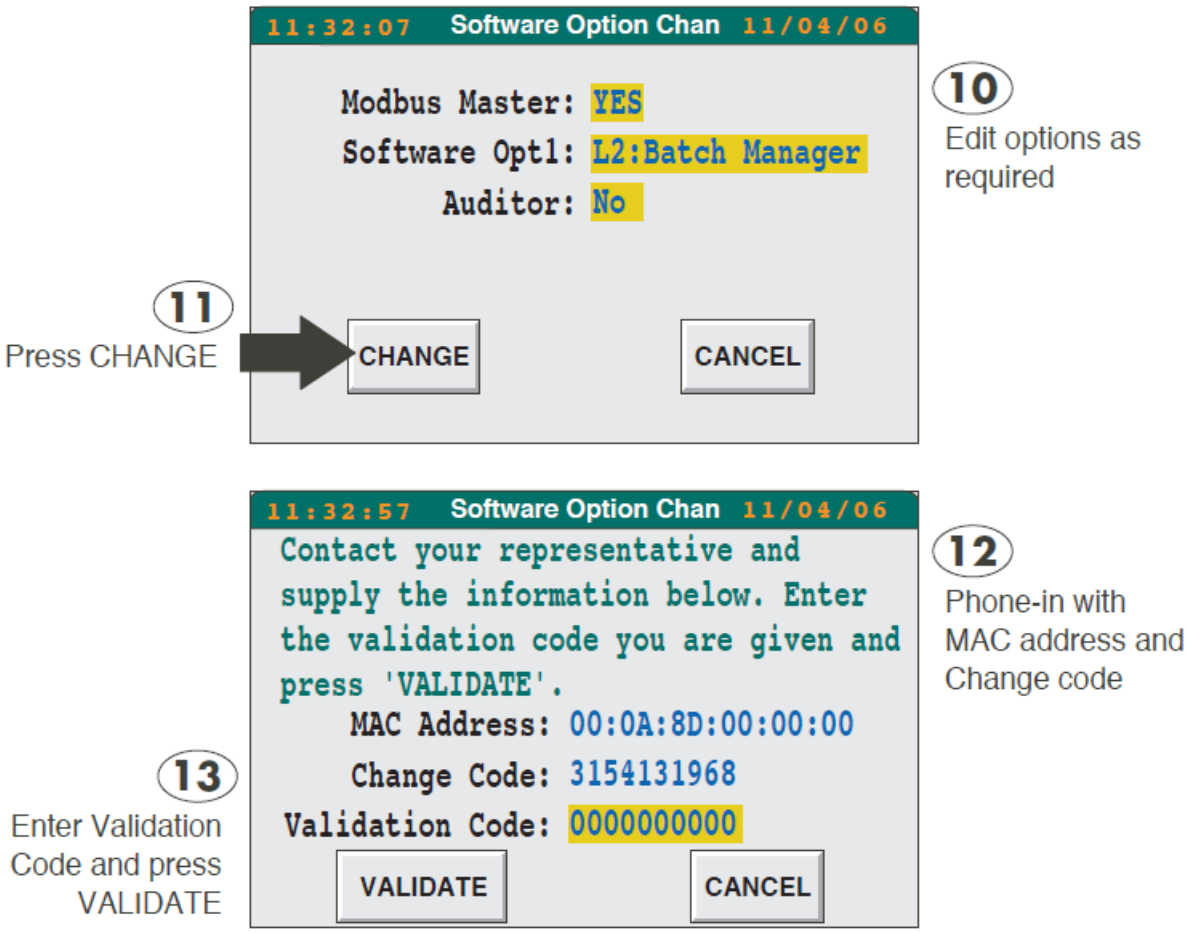


Figure 165 Software Options Change pages

Appendix C: Reference

ASCII Codes

The following table contains representations of the characters set (UNICODE Latin-1) available on the unit.

Character	Code	Character	Code	Character	Code	Character	Code
Space	20	R	52	¥	A5	Ö	D6
!	21	S	53		A6	×	D7
“	22	T	54	§	A7	Ø	D8
#	23	U	55	¨	A8	Ù	D9
$	24	V	56	©	A9	Ú	DA
%	25	W	57	ª	AA	Û	DB
&	26	X	58	«	AB	Ü	DC
‘	27	Y	59	¬	AC	Ý	DD
(	28	Z	5A	–	AD	Þ	DE
)	29	[	5B	®	AE	ß	DF
*	2A	\	5C	¯	AF		
+	2B	]	5D			À	E0
,	2C	^	5E	º	B0	Á	E1
-	2D	_	5F	±	B1	Â	E2
.	2E			²	B2	Ã	E3
/	2F	`	60	³	B3	Ä	E4
		A	61	´	B4	Å	E5
0	30	B	62	µ	B5	Æ	E6
1	31	C	63	¶	B6	Ç	E7
2	32	D	64	·	B7	È	E8
3	33	E	65	¸	B8	É	E9
4	34	F	66	1	B9	Ê	EA
5	35	G	67	0	BA	Ë	EB
6	36	H	68	»	BB	Ì	EC
7	37	I	69	1/4	BC	Í	ED
8	38	J	6A	1/2	BD	Î	EE
9	39	K	6B	3/4	BE	Ï	EF
:	3A	L	6C	¿	BF		
;	3B	M	6D			Ð	F0
<	3C	N	6E	À	C0	Ñ	F1
=	3D	O	6F	Á	C1	Ò	F2
>	3E			Â	C2	Ó	F3
?	3F	P	70	Ã	C3	Ô	F4
		Q	71	Ä	C4	Õ	F5
@	40	R	72	Å	C5	Ö	F6
A	41	S	73	Æ	C6	÷	F7
B	42	T	74	Ç	C7	Ø	F8
C	43	U	75	È	C8	Ù	F9
D	44	V	76	É	C9	Ú	FA

Character	Code	Character	Code	Character	Code	Character	Code
E	45	W	77	Ê	CA	Û	FB
F	46	X	78	Ë	CB	Ü	FC
G	47	Y	79	Ì	CC	Ý	FD
H	48	Z	7A	Í	CD	þ	FE
I	49	{	7B	Î	CE	Ÿ	FF
J	4A	|	7C	Ï	CF		
K	4B	}	7D				
L	4C	~	7E	Ð	D0		
M	4D			Ñ	D1		
N	4E	¡	A1	Ò	D2		
O	4F	¢	A2	Ó	D3		
P	50	£	A3	Ô	D4		
Q	51	¤	A4	Õ	D5		

Table 19: ASCII Codes

Glossary

Application	An application consists of a LIN database, a User Screen page set, possibly some Setpoint Programs, Sequences and Dictionary files, plus actions, profile files and sometimes GSD files for third party devices. The application embodies the instrument's control strategy, and also determines the behaviour of its user interface.
Archiving	Archiving is the process of recording the history of a set of data values onto a removable floppy disk. The data can only be 'replayed' with an off-line tool. In this context, archiving is the same as 'logging'. See also 'Logging' and 'Log group'.
Brown-out	A brown-out is a transient power variation or partial power failure severe enough to provoke an automatic re-set in the Visual Supervisor.
CJK	Refers to Chinese/Japanese/Korean type languages.
Configuration	Configuration is the process of specifying the components of an application in order to determine the performance and behaviour of an instrument. Configuration is usually carried out by the manufacturer or by an OEM. See also 'Application' and 'LIN database'.
Configurator	A configurator is a user interface or software tool that provides the editing capability to configure the instrument.
Configurer	A configurer is any person who configures, or who is responsible for configuring, the instrument.
COSHH	Control of Substances Hazardous to Health
Customisation	This is the procedure by which a user can construct a Home page and sometimes other user screens.
Database	See 'LIN database'.
Dictionary files	Dictionary files hold items of text for display on the screen. Users can edit, replace or delete many of the items.
EMC	Electromagnetic compliance
ESC/P	Epson™ Standard Code for printers - The Epson standard open printer protocol.
Home page	The Home page is that which is displayed on power-up, and to which the display returns when no data has been entered during a specified time-out period. It can also be called up at any time. The Home page will either stand on

	its own or be the root page of a hierarchy of user-written pages.
LIN database	LIN database stands for Local Instrument Network database, a Eurotherm proprietary facility. For any Eurotherm instrument the LIN database is a set of software function blocks that constitutes its control strategy. The manufacturer and/or OEMs select particular function blocks from a library of LIN database function blocks to build a particular control strategy for that instrument. The LIN database of an instrument forms part of its 'application'. See 'Application'.
Log group	A log group is a set of points that are logged (archived) together onto removable media for review off-line.
Logging	Same as 'Archiving'
OEM	Original Equipment Manufacturer. I.E. any organisation that buys Visual Supervisors, incorporates them into its own products, and sells these products onto other customers under its own name.
PCL3	Printer Command Language. The Hewlett Packard standard printer open protocol.
Power outage	A total power failure for a short time
Process variable (PV)	Process Variable. Examples are temperature, pressure or valve aperture.
Ramp	A ramp is 1 a generic term for all types of programmed change in a setpoint value. Can be a 'dwell' (no change at all), a 'step' (an instantaneous change), a 'ramp at', a 'ramp to', a 'servo to setpoint' or a 'servo to PV' (all linear changes). 2 two of the types mentioned above ('ramp at' and 'ramp to').
Recording	Recording is the process of saving the history of a set of data values in the instrument's non-volatile memory. The data can survive a power outage, and can be replayed on the instrument.
RFI	Radio frequency interference
SCADA	Supervisory Control and Data Acquisition
Sequences	Sequences are programs that users may have written to deal with any particular events, circumstances or requirements in the process under control.
Setpoint program (SP)	A setpoint program is a strategy to control a number of process variables such as temperature, pressure and valve apertures, over a period that can range, with the Visual Supervisor, from less than a minute to more than seven weeks.
Standard Interface	The Visual Supervisor Standard Interface is the name for the non-customised version of the user interface for the instrument. It's the default, factory-set interface, with no customised features.
Start-up strategy	This defines the way in which the process under control recovers from a partial or total power loss. The Engineer may select one of several start-up strategies.
USB	Universal Serial Bus. High speed serial communications bus.
User screen	A user screen is a page or a set of linked pages for display on the Visual Supervisor, created by a user.

Appendix D: Legacy Programmer Details

This Annex contains details of the Programmer used in previous versions of the Visual Supervisor. Details are not included here for the araes where the previous version operation is the same as that of the current version.

The appendix consists of the following sections:

Running a program

Holding a Program

Aborting a Program

Monitoring a Program

Editing a Program

Running a Program to Monitoring a Program require Operator level access; Editing a Program requires Engineer level access.

The Menu key at the bottom of the screen can be operated to re-call the Pop-up menu and the beginning of the task if required.

Running a Program

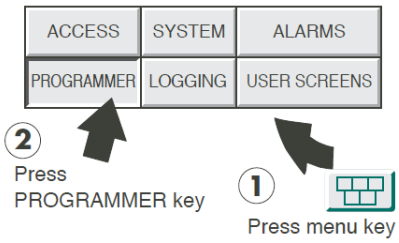
There are three ways to run a program, depending upon requirements:

1. RUN. Runs the entire program now
2. RUN FROM. Runs the program now, but from a specified point, after its start.
3. SCHEDULE. Runs the entire program at a specified time.

Running a Program Now

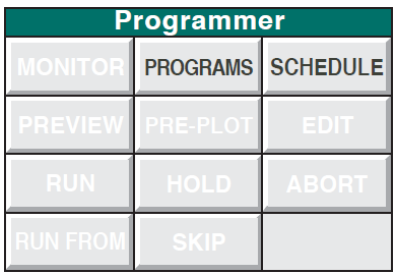
1. In the row of navigation keys at the bottom of the screen, press the Menu key to call the Pop-up menu.

   The Program pane displays RESET if there is no program loaded at the moment, or IDLE if a program has already been selected.



2. Select PROGRAMMER.

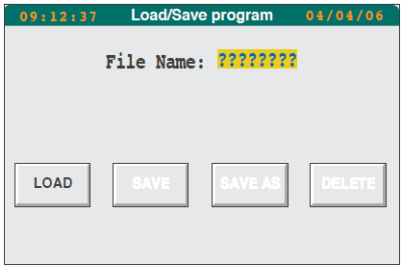
   The Programmer window appears, offering two choices: PROGRAMS and SCHEDULE.



3. Select PROGRAMS.

The Load/Save Program page* appears, prompting for a file name. To the left of the page title is the current time, and to the right is the current date.

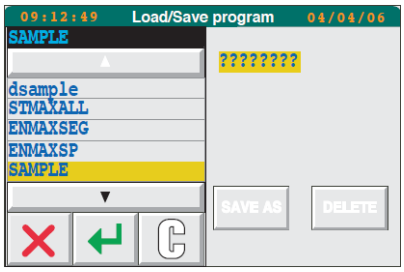
Note: Up to eight setpoint programs can be supported simultaneously. Where more than one such program is running, the load/save screen (shown at the top of this page) has an additional field 'Id'. This field can take the value 1 to 8 to identify which programmer is to run this program.



All display pages refer to the program associated with the currently selected 'Id'.
For any particular programmer display page, the identical page for other valid Ids can be scrolled-through, using the right and left arrow keys.

4. Press the yellowed field of question marks.

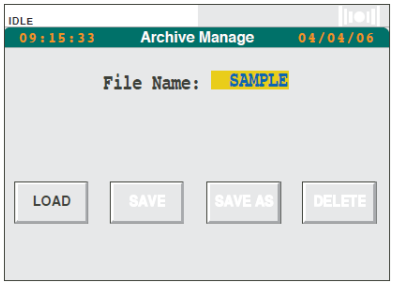
   On the left side of the screen a pick-list (vertical menu) appears, showing the programs that the instrument currently holds. If necessary, the scroll bar at the bottom of list can be used to reveal more.



5. Press the name of the required program. The background of the selected program's name changes to yellow.

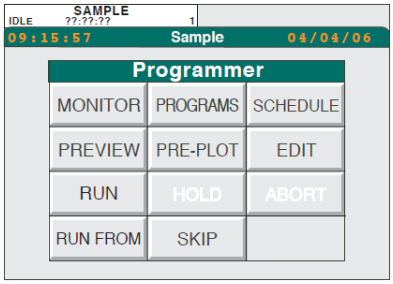
6. Press the Return key (the green arrow)

   The pick-list disappears and the Load/Save Program page now shows the name of the selected program on a yellow background.



7. Press the LOAD key

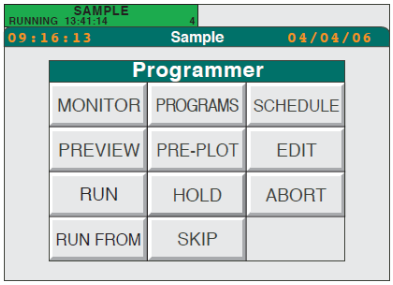
   The full Programmer menu appears. With no program running, HOLD and ABORT are greyed out. The Program pane reads IDLE on a white background, showing the program is loaded but idling, not running.



8. Press RUN

   The Program pane changes to green, with status RUNNING. The expected time of completion and the number of the segment currently executing are also displayed.

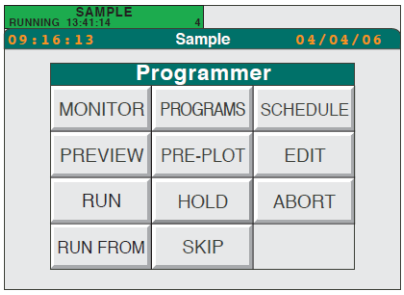
   The program is now running.



Running From a Point

Running a program from a point means running a new program from a user-specified point after its start point.

The first seven steps are the same as in "Running a Program Now" on page 313, above.



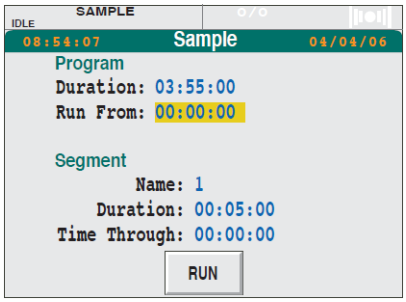
1. Press the RUN FROM key at bottom left.

   The ‘Run From’ page appears, headed with the name of the program just loaded.

   The ‘Duration’ field shows how long the program will take to complete.

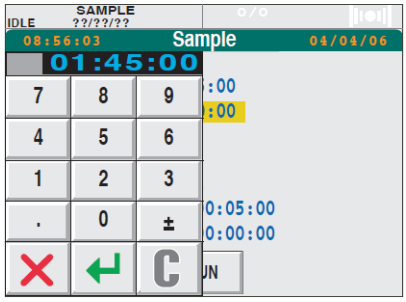
   The ‘Run From’ field is waiting for a time-into-program value to be entered, from which the program run is to be started. Initially, the Run From field is set at the default of 00:00:00 (the start) so, under the Segment header below it, the segment name is 1, the first.

   The ‘Time Through’ field shows at what time through the segment the program will start.



2. Press the yellowed ‘Run From’ field.

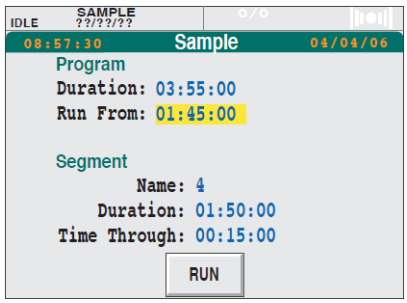
   In the left part of the display a numeric keyboard appears. At the top a confirmation bar shows the current ‘Run From’ time as 00:00:00 (hh:mm:ss), with a cursor blinking under the first ‘0’.



3. From the keyboard, key in the required ‘Run From’ time (in this example 01:45:00.

4. Press the green Return arrow

   The keyboard disappears to reveal the full Run From page. If the selected time starts running the program from beyond the first segment, the ‘Name’ and ‘Time Through’ fields will show different values.

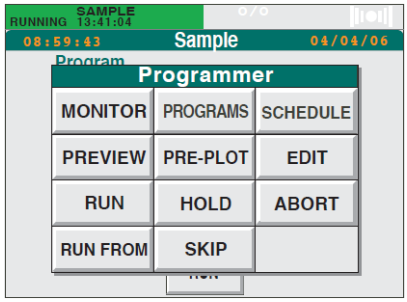


5. To run the program now, press the RUN key

   The main display reverts to the Programmer menu.

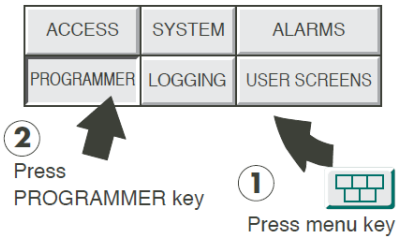
   The Program pane changes to green, showing RUNNING, the time of completion, and the segment number.

   The program is now running, from the specified point.

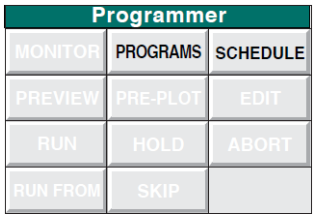


Scheduling a Program

Scheduling a program means setting a time at which it will start to run automatically.

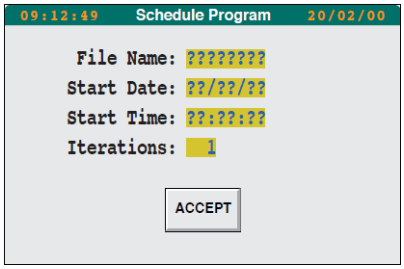


If another program is running at the scheduled start time, the scheduled program will be delayed and started later. The late start is recorded in the Alarm History.



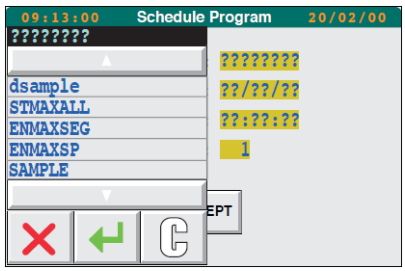
1. In the row of navigation keys at the bottom of the screen, press the Menu key.
2. Select PROGRAMMER from the pop-up menu that appears

   With no program running, the Programmer menu which appears, has just two options: PROGRAMS and SCHEDULE.



3. Select SCHEDULE.

   The Schedule Program page appears, prompting for information about the program to be scheduled.



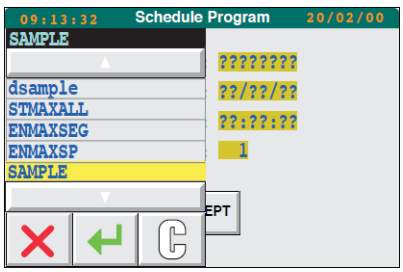
4. Press the File Name field.

   The left side of the screen shows a pick-list of the programs that the instrument holds.

5. Select the required program.

   The background of the program name changes to yellow.

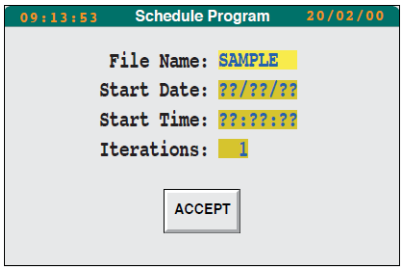
6. Press the Return key (the green arrow)



   The pick-list disappears, and the File Name field shows the name of the selected program.

   The program is now ready for scheduling.

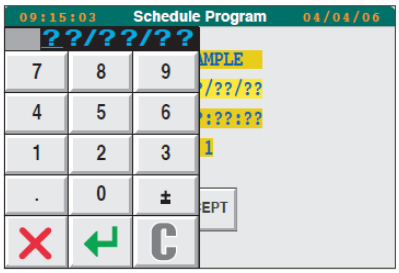
Note: If the program is to run immediately after the currently-running program ends, the Start Date and Start Time can be left undefined, as shown here.



Specifying the Program Start Date

7. Press the Start Date field.

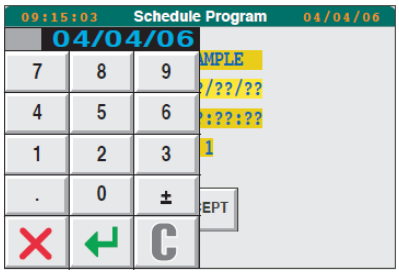
   The left side of the screen shows a numeric keyboard, with a cursor flashing under the first number-space in the black confirmation bar at the top.



8. Key in the required date, in the format set for your instrument.

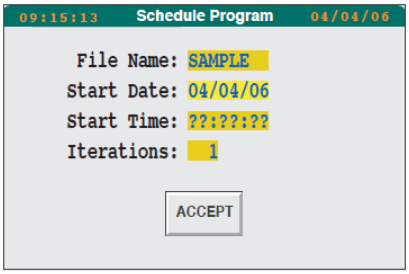
   After the first digit has been keyed-in, the cursor moves under the space for the next one, and so on.

   The last-entered character can be deleted, by pressing the ‘C’ key. To abort the whole date-entry process and return to the full Schedule Program page, press the red cross key.



9. When the process is complete, and the confirmation bar shows the date in the correct format, press the Return key.

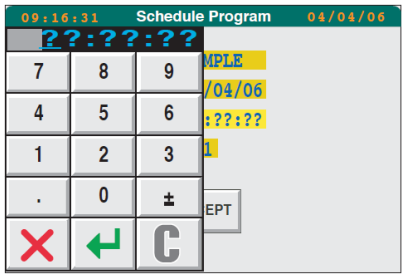
   The keyboard disappears and the Schedule Program page now shows the specified date in the Start Date field.



Specifying the Program Start Time

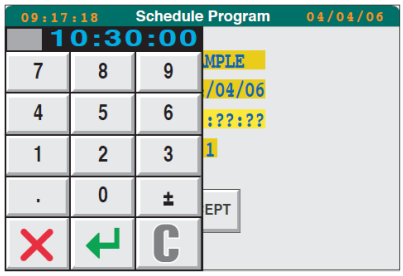
10. Press the Start Time field.

    The numeric keyboard reappears

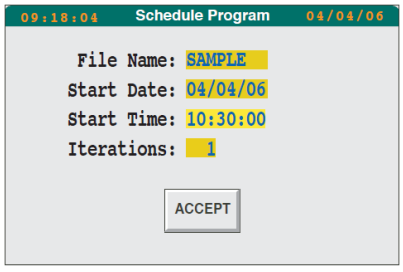


11. Key in the time in the format hh:mm:ss.

12. When time entry is complete and the confirmation bar shows the time in the correct format, press the Return key.



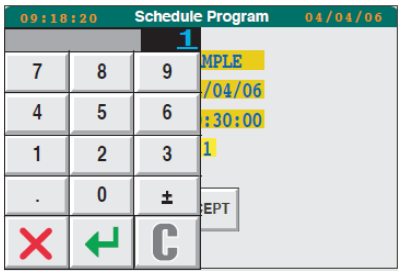
    The keyboard disappears and the Schedule Program page shows the specified time in the Start Time field.



Changing the Number of Iterations (runs)

13. In the Iterations field, press the ‘1’

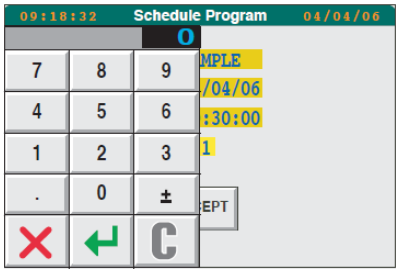
    The numeric keyboard reappears.



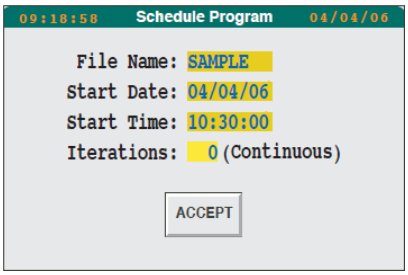
14. Key in the required number of runs, and press the Return key.

    To change the entered value, the ‘C’ key and red cross key operate as described in step 8 in "Specifying the Program Start Date" on page 317.

    If the program is to repeat continuously until further notice, press ‘0’.



15. The Schedule Program page displays the specified number of iterations.

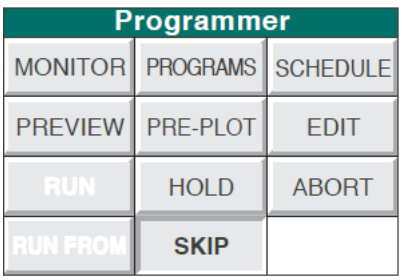


The program is now scheduled.

Segment Skip

Skipping a program segment causes the program to stop running its current segment and start running the next segment immediately.

Skip is initiated from the Programmer menu.



Press
SKIP key

Segment Transition Consequences

From DWELL, Set or Servo to any other Type

These transitions are ‘safe’ and provide a bumpless transition of SP from one segment to the next. The program finishes early.

From RAMP to Set

Not Bumpless. The ramp is terminated early. The resulting bump is larger or smaller than that programmed depending on the direction of the ramp compared with the SET.

From RAMP to DWELL

Almost bumpless, with the SP being servoed to the current working SP at time of Skip. Usually results in a slight bump in the opposite sense to that of the preceding ramp.

From ramp to ramp

1. Same direction; Same Rate

   The ramp continues to the new target SP at the same rate. Combined duration is the same as if unskipped.

2. Same direction; Second Rate higher than the first

   At Skip, the SP starts ramping at the new rate. Overall duration is less.

3. Same direction; Second Rate lower than the first

   At Skip, the SP starts ramping at the new rate. Overall duration might be greater.

4. Opposite directions.

   At Skip, the SP immediately changes ramp direction and it is likely that the previously programmed peak or trough will not be reached. It is also likely that the SP will reach the new target sooner than expected and in such a case, unless a further Skip is performed, the SP will dwell until the next segment starts.

From RAMP to end (Starting Values)

Not bumpless. Same effect as if the Program is aborted.

From RAMP to Complete (Indefinite DWELL)

Not bumpless. Terminates the ramp and steps to the final target setpoint.

To RAMP from any other Type

1. Ramp-at-rate. Rate is maintained.
2. Time-to-target. Duration is maintained,

Holding a Program

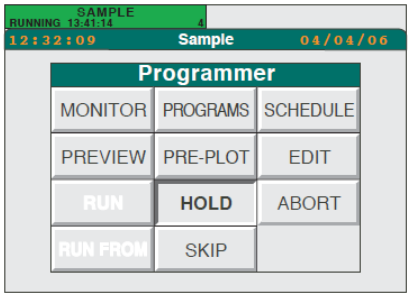
The Hold facility has two uses:

1. for Operators to halt a program when a problem arises in the process under control, and to hold the program at that point while attempts are made to fix the problem

2. for Engineers to make on-line changes to a running program.

This section is for Operators, and so the following deals with the first situation.

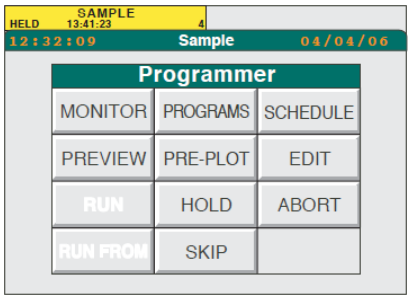
1. With a program running, and the full Programmer menu displayed (as at step 8 in "Running a Program Now" on page 313), press HOLD.



The Program pane changes to yellow and reports HELD.

The estimated time of completion starts incrementing in seconds.

Left of the page title is the current time. To view the time-into-program you should use the MONITOR facility ("Aborting a Program" on page 320, below).



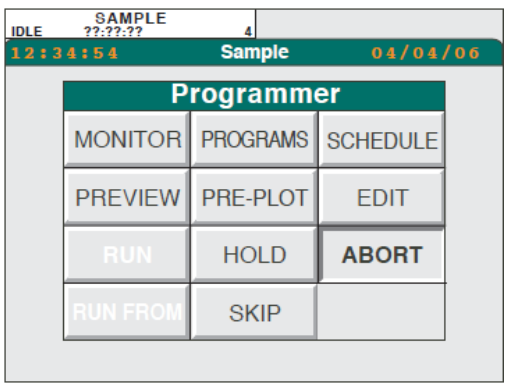
For most processes there will now be time available for solving the problem, before the pause itself starts causing new problems. The time available will depend upon the process. If the attempts to fix the problem are successful, the program is usually continued from that point using RUN (see "Running a Program Now" on page 313). If the attempts are unsuccessful, the program is usually aborted, as described in "Aborting a Program" on page 320 below.

Aborting a Program

Starting from the end of "Holding a Program" on page 319, press ABORT.

The Program pane changes to white and reports IDLE.

The program is now idling, which means that it is still loaded in short-term memory but not being run. At this point the same program can be run again from the start, or a new program run (see "Running a Program Now" on page 313).



Monitoring a Program

There are two ways of monitoring a program as it's running:

1. Viewing a textual/numeric display, generated by the Monitor facility
2. Viewing a graphical display, generated by the Pre-plot facility.

MONITOR displays text and numeric information about the program, as a list.

PREPLOT displays a graphic profile of the target and actual process variables (PVs).

Generally, MONITOR is used when precise values are needed; PREPLOT is used to provide an overview.

The Monitor Facility

With a program running and the Programmer menu displayed (step 8 in "Running a Program Now" on page 313), press MONITOR.

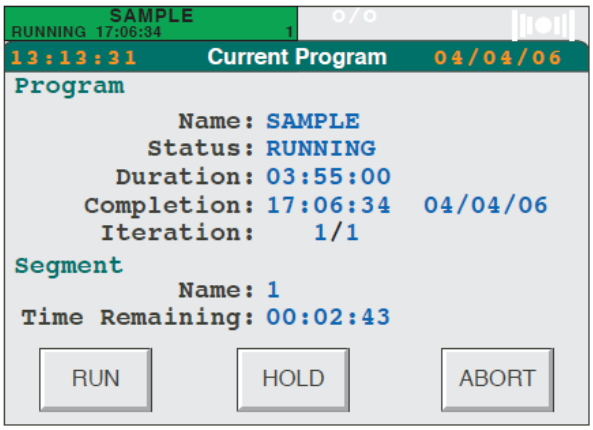
The Current Program page appears, displaying the following information about the program as it is running (most of the fields are self-explanatory):

Program

Name:	Program name
Status:	Run, Hold, Held Back, Idle, Error, Complete.
Duration:	Running time, start to finish
Completion:	Time of completion of current run (assuming no interruptions)
Iteration:	Number of current run / number of runs requested.

Segment

Name:	Segment name (usually a number)
Time Remaining:	Time remaining to completion of the current segment (decrementing second by second).



The Preplot Facility

Standard Display Mode

With the Programmer menu displayed and a program running (see step 8 in "Running a Program Now" on page 313. Running a program now), press PREPLOT.

A display appears, showing a profile of the target and the actual PVs moving slowly (perhaps imperceptibly) from right to left past a vertical cursor at the centre of the screen.

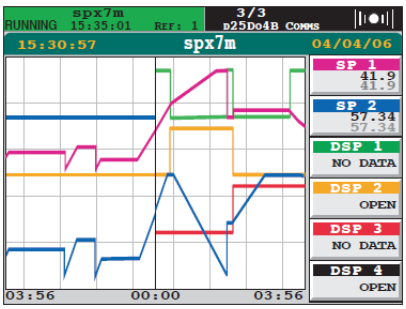


Figure 166 Preplot display - program running.

Note: The trend resolution is such, that short duration events (in particular zero duration spikes), will not be visible.

The cursor marks the current time.

The actual PVs, SPs and digital outputs are to the left of the cursor and the target SPs are to the right.

With the same program loaded but not running (Idle), the display shown opposite appears, showing the profiles programmed for the four variables.

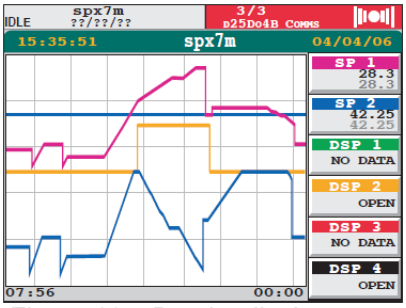


Figure 167 Preplot display - program idle

Review Mode

Operation of the option key calls the Option bar, which contains two keys - VIEW and LIVE. Operation of the VIEW key, causes the page to re-draw, with zoom and pan controls as shown in Figure 168. This screen contains only the program traces, not the target profile.

To enter Review Mode, allowing the history of the program to be traced, the pan/zoom controls are adjusted, or the trace is touched. Once in Review Mode, the traces on the screen are no longer updated. (This is purely a display function; the program continues to run as normal.)

To leave review mode, and return to the 'live' zoom/pan display, the LIVE key beneath the zoom slider, or the LIVE key in the option bar should be operated.

To return to the normal pre-plot display, the option bar 'VIEW' key should be operated.

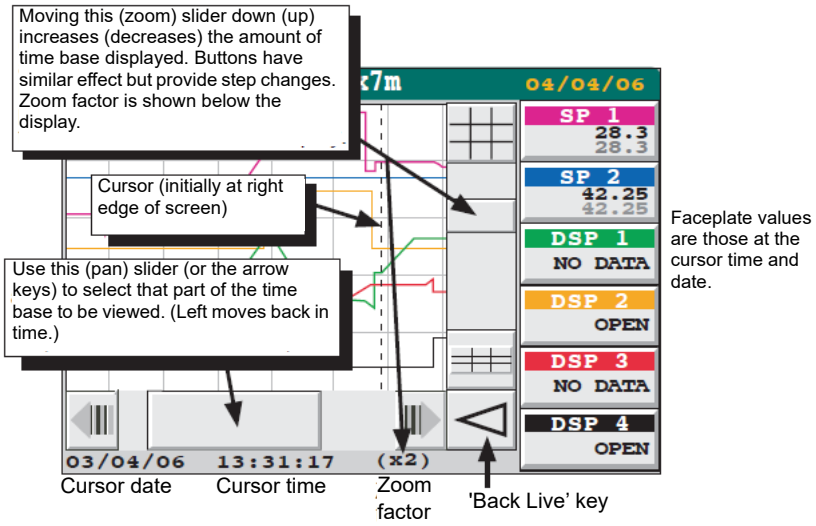


Figure 168 Review Mode Controls

Editing a Program

Introduction

Note: If more than one programmer has been configured then the right (left) arrow keys do not scroll through the program, but to the next (previous) programmer ID. ("Running a Program Now" on page 313).

Creating a Program

The PC based Setpoint program editor (supplied on CD as one of the components of the Eurotherm Project Studio) is used to create programs. For details, see the Setpoint Program Editor Handbook (part no. HA261134U005).

Editing a Program

Notes:

1. Only two tasks (changing setpoint value and changing segment duration) can be performed while a program is running (but on Hold for the duration of the task). Whilst the current segment is in Hold mode, its values are displayed in green, instead of blue. It is possible to edit this segment's duration only to times longer than the period of time already elapsed in that segment; other parameters can be edited as normal.
2. The PREVIEW facility on the PROGRAMMER menu displays a profile of the loaded program over its full duration, and target values can be displayed at any point in time. It is recommended that frequent use be made of PREVIEW, when editing a program, in order to check that the edits have produced the intended profile.
3. For systems with the Auditor option fitted, an edited program must be saved before it is run.

Before editing can start, the Program Editor page must be accessed as described in "Program Editor Page Access" on page 324. Once the editor page has been accessed, the program can be edited in the following ways:

Changing a setpoint ("Changing a Setpoint" on page 325)

- By changing the type of ramp to it
- By changing its value

Changing a segment ("Changing a Segment" on page 329)

- By changing its identifier
- By changing its duration

Inserting or deleting a segment ("Inserting/Deleting a Segment" on page 330)

- Inserting a segment
- Deleting a segment

Changing the Hold Back properties for any analogue setpoint ("Changing Hold Back Properties" on page 331)

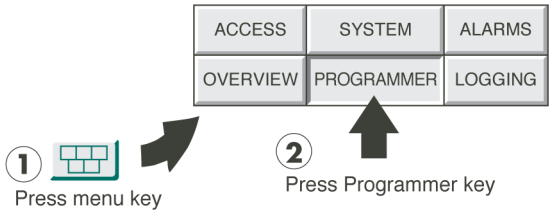
- Choosing the setpoint
- Changing the Holdback mode
- Changing the Holdback value

Changing program properties ("Changing Program Properties" on page 333)

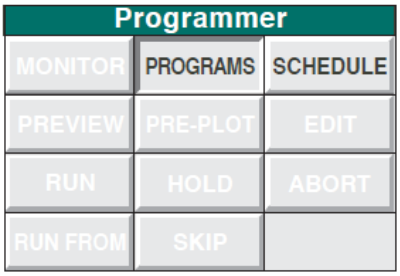
- Changing the name of a program
- Changing the rate units for a program
- Choosing an action to be taken at the end of each run

Program Editor Page Access

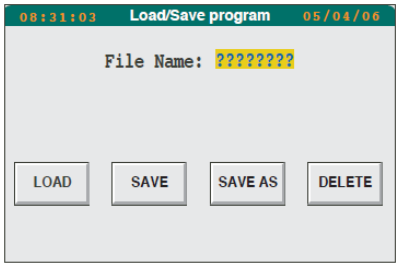
1. Press the Menu key, then PROGRAMMER



The Programmer menu appears.

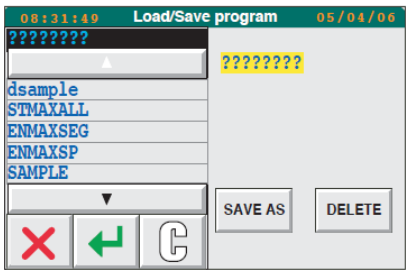


2. Press PROGRAMS



The Load/Save Program page appears, prompting you for the name of a file to Load or Save. (To edit a program, it must first be loaded.)

3. Press the File Name field (the question marks).

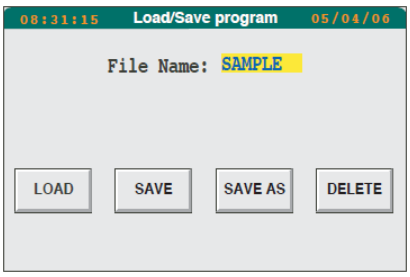


On the left of the screen, a pick-list appears, containing the programs held by the instrument.

4. Press the name of the program to be edited
5. Press the green Return key

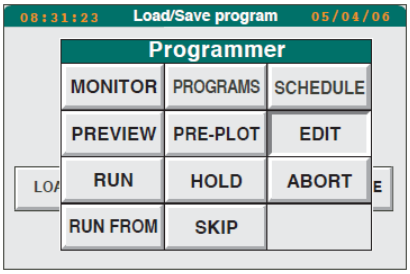
The Load/Save program page displays the name of the selected program.

6. Press LOAD.



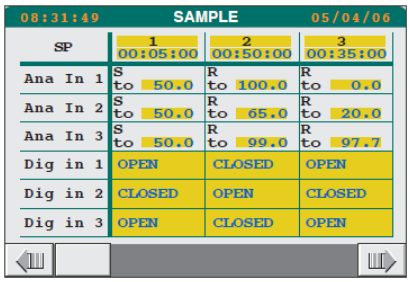
If the program has components (parameters) which are not in the LIN database then an error message appears and the program does not load.

After a successful load, the Programmer menu reappears.



7. Press EDIT

The Program Editor page appears showing the values of the setpoints in tabular form.



Each row represents one setpoint along a horizontal timebase marked in segments. Some of the rows are for analog setpoints and some are for digital ones.

Each column represents a segment, and each segment is identified by a name or number shown at the top of the column. Under the segment identifier is the time duration of the segment.

All the yellowed fields yield further information when pressed.

Changing a Setpoint

Changing Ramp Type

Generally there are up to six ways in which you can program the Visual Supervisor to control the value of a setpoint (some may not be available on your instrument). These methods are called ‘Step’ (sometimes called ‘Set’), ‘Dwell’, ‘Ramp at’. Ramp to’, ‘Servo to setpoint’ and ‘Servo to process variable’.

STEP

Value changes instantaneously. Can be used in any segment. Also called ‘Set’.

DWELL

Value remains constant. May be used in all segments except the first.

RAMP AT

Value increases at a constant specified rate. May be used in all segments except the first.

RAMP TO

Value increases linearly to a specified value

Notes:

1. ‘Ramp at’ and ‘Ramp to’ cannot be mixed within the same segment. If an attempt is made to change one of the SPs from one type to the other, a message appears warning that all the other similar types in that segment will be changed to conform.
2. A segment may not ramp at less than 0.001 or greater than 9999.0 whether expressed explicitly in a ‘Ramp At’ command, or implicitly in a ‘Ramp to’ command. Values outside this range cause the segment to execute a ‘step’ function.

Servo to Setpoint (SP)

The unit reads the current setpoint value, and sets the setpoint to that value (that is, it does not change it). Similar to ‘Dwell’ except that the instrument carries out the instruction automatically (without operator intervention). As there is no change, power output remains constant. May be used only in the first segment.

Servo to Procss Variable (PV)

The instrument reads the current process value and sets the setpoint to that value. Because the current process value normally differs from the current setpoint value, this option usually results in a change in the power consumption of the process.

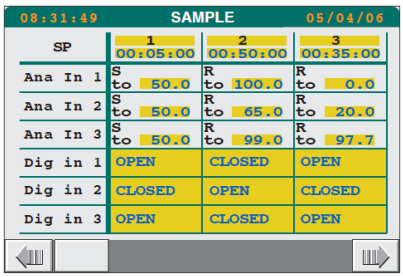
Note: If the first segment is a Servo to PV or SP, the instrument assumes that it starts from an SP of 0.0. This is unlikely to be the actual SP or PV. Therefore the Preview profile displayed for the first segment will differ from the actual programmed profile. For the same reason, if the second segment is a ramp-at-rate, the segment duration in Preview will differ from the actual duration; and if the second segment is ramp-to-target then the slope in Preview will differ from the actual slope.

Teminology

In this document any change in the value of the setpoint is referred to as a ‘ramp’, even when the result of that change is zero. This means that the six methods of controlling the value of the setpoint, described above, all result in types of ramp.

Changing Ramp Type (Cont.)

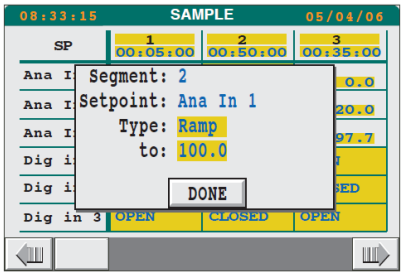
Example for Analog Input 1: The following example describes how to change the ramp in Segment 2 from a ‘time-to-target’ to a ‘ramp-to-target’.



In the Program Editor page, the cell for Analog Input 1, Segment 2 shows R for ‘Ramp’ and ‘to 100.0’ for the value, indicating that it is currently a ramp to a specified value.

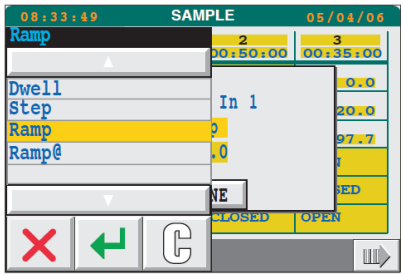
Press the cell.

A dialogue box appears displaying data about that cell.



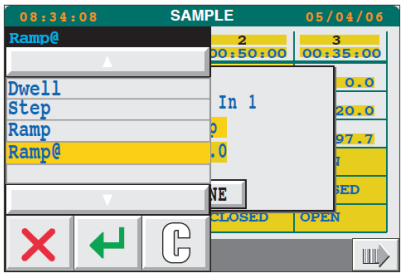
Press the yellowed ‘Ramp’ field.

A pick-list of ramp types appears, with ‘Ramp’ highlighted



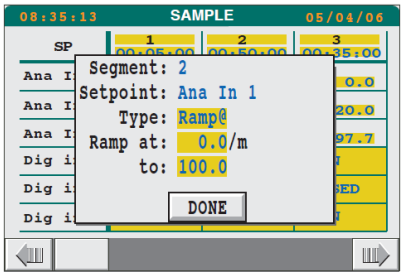
Press the required type (in this case, ‘Ramp@’).

‘Ramp@’ highlights yellow.



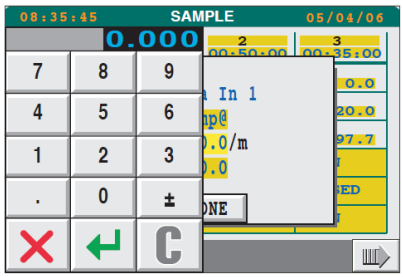
Press the green ‘Return’ key.

The dialogue box reappears, now showing ‘Ramp@’ in the ‘Type’ field, followed by an extra field ‘Ramp at’. (This field appears only when changing to a ‘Ramp@’).



Press the yellowed ‘Ramp at’ field, currently showing 0.0/m (standing for zero units per minute).

A numeric keyboard is displayed, showing the current value of the ramp in a black confirmation bar at the top.



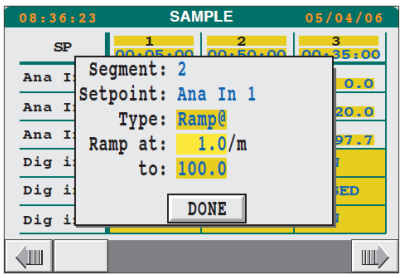
Key in the required ramp rate. As soon as the first digit is entered, the rest of the bar clears.

When the new entry is complete, press Return.

The dialogue box reappears, displaying the new value for the ramp rate.

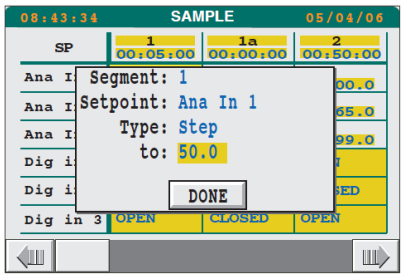
Press DONE.

A new ‘Ramp to’ value is shown in the cell. To save the new ramp type, press the Option key at the bottom of the screen, then press the SAVE button that appears on a bar at the bottom of the screen.



Changing Setpoint Value

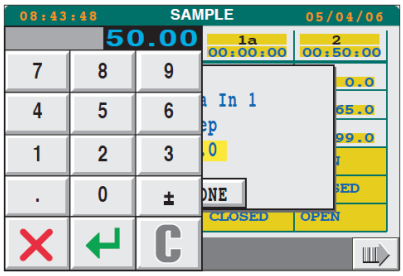
In the Program Editor page, select the analogue cell holding the value to be changed.



A dialogue box appears, showing:

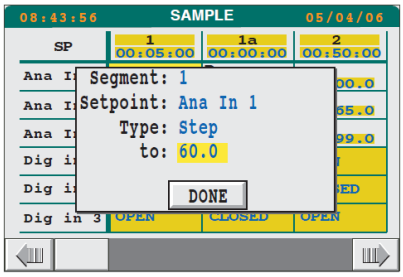
1. the segment name or number
2. the setpoint name for that row
3. the setpoint type
4. the current target value for the setpoint in that cell.

To change the target value, touch the value and enter the new value using the keyboard display which appears.



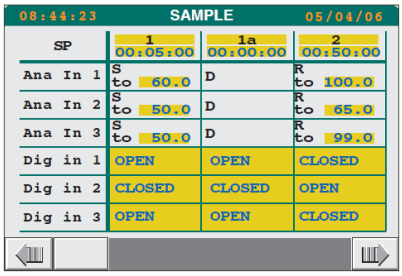
Press the Return key

The dialogue box reappears, this time showing the new value.

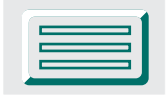


Press DONE

The Program Editor page returns, with the new value shown in the selected cell.



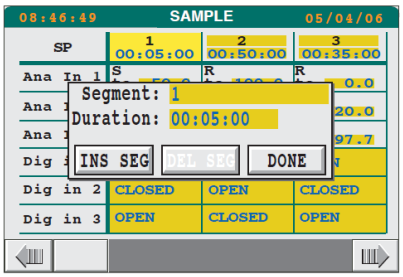
To save the setting, press the Option key (below the screen), and then the SAVE button.



Option key

Changing a Segment

In the Program Editor page, press the identifier at the top of the column of the segment to be modified. For example, segment 1.



A dialogue box appears with two fields: Segment and Duration, and three buttons: INS SEG, DEL SEG and DONE.

The following subsections show how to change a segment's identifier and duration respectively. Inserting and deleting segments is described in "Inserting/Deleting a Segment" on page 330.

Once the segment changes are complete, the SAVE button is used to save the changes. If necessary, the SAVE button is called to the display by pressing the 'option' key located below the screen.

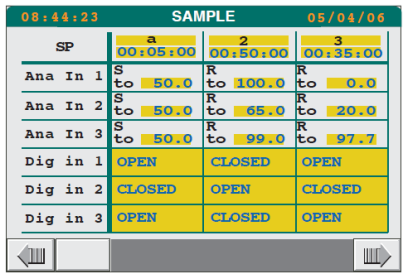
Changing Segment Identifier

In the dialogue box, press the Segment field.

A 'qwerty' keyboard appears.

A numeric/symbol keyboard can be called by pressing the 'up arrow' key at bottom left. A further operation of the arrow key calls a keyboard of accented lower-case letters. Pressing the up arrow key again re-displays the original 'qwerty' keyboard.

The segment identifier can be a name, a number, a character or a digit, but DOS file name rules apply.



The required segment identifier (for example, 'a') is keyed-in using one or more of these keyboards.

To clear the entry so far (but retaining the keyboard display), press the 'C' key.

To cancel the entry and return to the setpoint display, press the red cross key.

Once the segment identifier has been keyed in, the Return key is operated to save it.

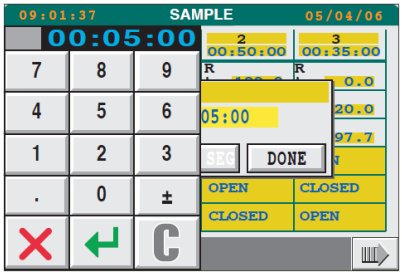
The Program Editor page reappears, showing the new identifier for the segment.

Changing Segment Duration

⚠ CAUTION

1. Changing the duration of ‘ramp-at-rate’ segments is not permitted.
2. Changing the duration of ‘ramp-to’ segments changes the rate of ramp. Therefore, before making any such change, you should consider the possible effect of this upon the operation of the process plant.

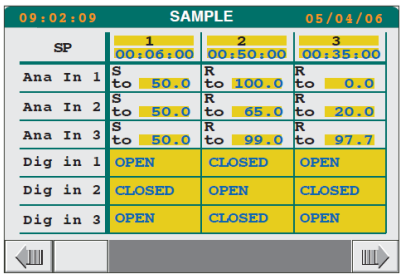
In the dialogue box, press the Duration field.



A numeric keyboard appears, with the current duration displayed at the top in hh:mm:ss format. The format can be changed, as described in "Changing Language and Date/Time Formats" on page 136 Changing the language and date formats.

Key-in the required duration.

Once the correct duration is keyed-in, the Return key is used to save it.



The Program Editor page appears, showing the new duration for the segment.

Note: Neither an individual segment duration nor the total program duration may exceed 49 days.

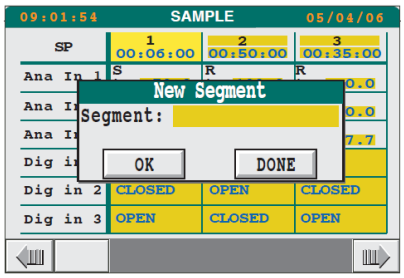
Inserting/Deleting a Segment

Inserting a Null Segment

Notes:

1. A ‘null’ segment consists of a dwell of zero duration.
2. Inserting or deleting segments can have a knock-on effect on subsequent ‘ramp-to’ or ‘ramp-at-rate’ segments, because the setpoint value at the point when these segments ‘start’ could change. This could affect the duration of ‘ramp-at–rate’ segments.

In the segment preceding the new segment’s location, press the segment-name cell at the top of the column.



In the dialogue box in "Changing a Segment" on page 329, press the INS SEG key.

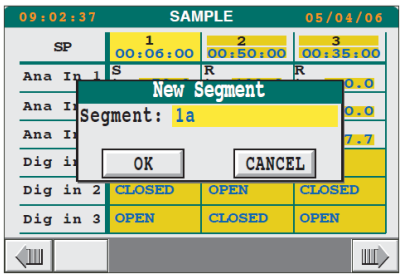
The ‘New Segment’ window appears, requesting an identifier for the new segment.

Press the Segment field (yellowed)

A ‘qwerty’ keyboard appears. The procedure for entering the identifier for a new segment is the same as that described in "Changing a Segment" on page 329.

When the required segment name (for example, 1a) has been entered, the Return key is operated.

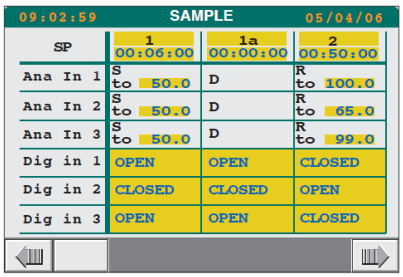
The New Segment window reappears, displaying the name of the new segment.



This inserted segment will be a ‘null’ operation, until it has been modified. A null operation consists of a dwell of zero duration.

Press OK.

The Program Editor page returns with a new, but empty, segment inserted after the one which was being modified.



In order to view the whole setpoint sequence, it might be necessary to scroll right or left using the scroll bar/arrows at the bottom of the display.

The SAVE button is used to save the changes when completed. If necessary, the SAVE button is called to the display by pressing the ‘option’ key located below the screen.

Option key

Deleting a Segment

The procedure for deleting a segment is the same as that for inserting a segment except that:

1. the DEL SEG key is used
2. the first segment of a program cannot be deleted - the DEL SEG key is greyed out (deactivated).

The setting is saved in the same way.

Changing Hold Back Properties

‘Hold Back’ is a state that is automatically induced when the SP ramp rate is too fast for the process to be able to follow it. When the process has fallen behind the SP by an amount equal to a pre-set ‘holdback value’, then the SP ramp is stopped (‘held’) until the PV catches up. The Holdback value is set by the Engineer.

For example, if the setpoint is ramping up but the PV has fallen behind and is now falling below the pre-set lower bound, the program will automatically switch the setpoint profile to a dwell to give the PV a chance to catch up. The dwell will continue until the PV climbs above the lower bound (whose profile of course could now also be a dwell). At this point the setpoint profile will switch back to a ‘ramp up’.

The result of this is that the overall process time extends by the length of time during which the PV was ‘out-of-bounds’, which is the same as the length of the dwell.

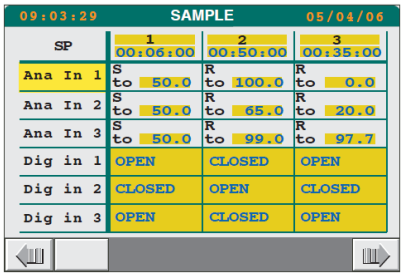
The remainder of this section explains which type of limit or limits can be set, and how to set the values.

After setting the new values, they are saved by pressing the option key below the screen. On the Option bar that appears at the bottom of the screen, press the SAVE button.

Option key

Choosing the Setpoint

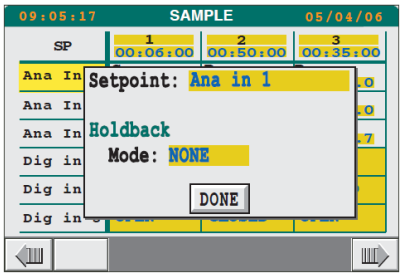
In the Program Editor, choose the analog input for which the Hold Back properties are to be edited.



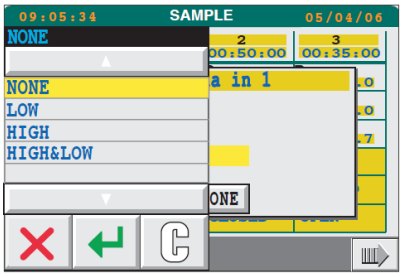
The cell highlights, and a dialogue box appears

Changing Holdback Mode

Press the Mode field (yellowed)



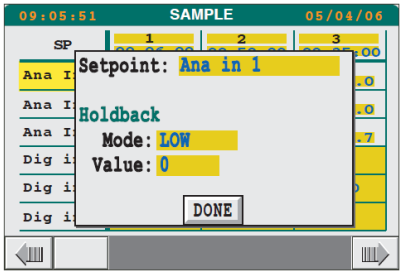
A pick-list appears with None, Low, High, High & Low shown as modes.



‘None’ means no limits, which means no Hold Back.

‘Low’ specifies a limit below the current setpoint value. If the PV falls below this limit, then the program will compensate by holding the setpoint steady until the PV has recovered to exceed the limit.

‘High’ specifies a limit above the current setpoint value. If the PV exceeds this limit, then the program will compensate by holding the setpoint steady until the PV has fallen below the limit.



‘High & Low’ sets both limits.

Choose the required limit (e.g. LOW).

It highlights.

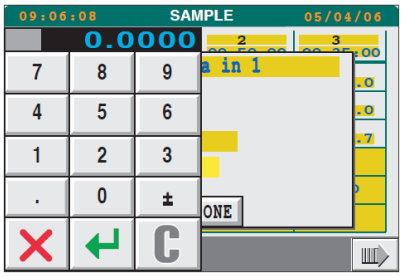
Press the Return key.

The picklist disappears.

Press DONE.

The dialogue box disappears.

Changing Holdback value



Press the Value field (yellowed).

A numeric keyboard appears, showing the current value in a black confirmation bar at the top.

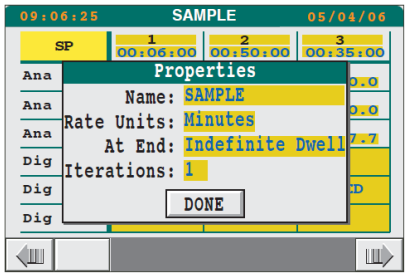
Key in the required value and press the Return key.

The keyboard disappears.

Press DONE.

The dialogue box disappears.

Changing Program Properties



In the Program Editor page, press the SP (Setpoint) cell at top left. The Properties window appears, prompting for:

Name:

Rate Units:

At End:

Iterations:

From this screen, the possible tasks are:

To change the name of a program

To change the rate units

To choose an action to be taken at the end of each run

To change the default number of iterations

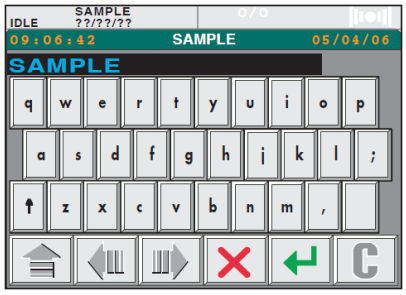
To save any new settings, press the Option key at the bottom of the screen and then the SAVE button.

Changing Program Names

Note: A program name should be changed only if 'non-file name' characters are to be included. If this is the case, it should be remembered that the file name of the program takes the name of the program by default. In other words, the program name overrides the file name. Therefore, if a program is saved to a new file, two programs of the same name will exist, embedded within different files.

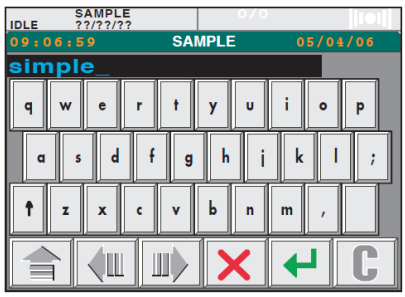
In the Properties window, press the current name displayed in the yellowed ‘Name’ field.

A ‘qwerty’ keyboard display, with a cursor flashing under the first character of the current name, shown in a black confirmation bar above the keyboard.



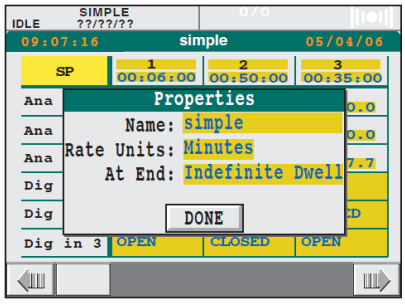
Key in the new name.

When the confirmation bar shows the correct new name (for example, ‘simple’), Press the Return key



The keyboard disappears, revealing the Properties window showing the new name.

Press DONE



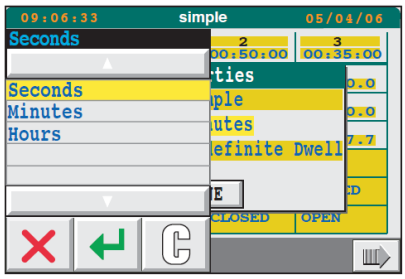
Changing Rate Units

In the Properties window, press the ‘Rate Units’ field.

A pick-list appears with Seconds, Minutes, Hours as selectable options.

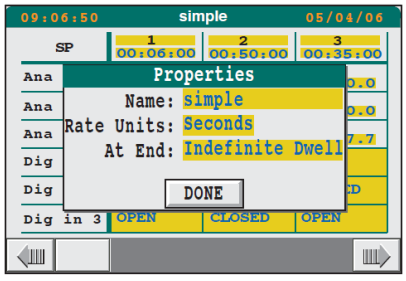
Select, say, Seconds

Press Return

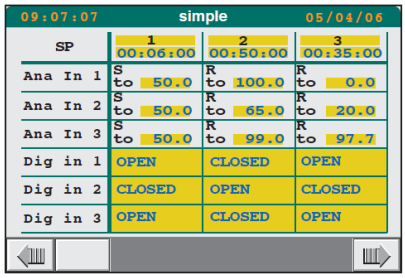


The Properties window reappears, with the ‘Rate Units’ field showing ‘Seconds’

Press DONE



The Program Editor page reappears (rate units are not shown).

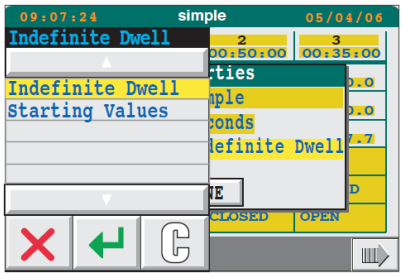


Choosing End-of-Run Action

In the Properties window, press the yellowed ‘At End’ field.

A pick-list appears containing ‘Indefinite Dwell’ and ‘Starting Values’.

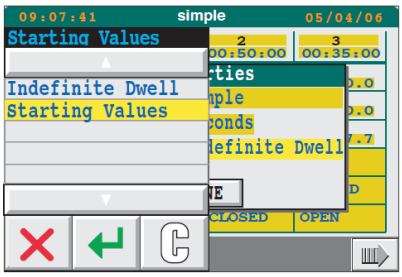
Indefinite dwell



This leaves all values as they are at the end of the program, until new action is taken to change them. A program with an end condition of ‘Indefinite Dwell’ does not terminate but adopts the COMPLETE state until ABORTED.

Ending on an indefinite dwell is the only circumstance that puts a program into the ‘Complete’ state and the status panel will show ‘COMPLETE’.

Starting values



This ends the program by restoring its starting values. In this case, the program adopts the ‘Idle’ state upon finishing.

Select the required action and press the Return key

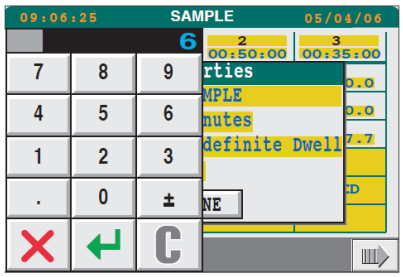
The Properties window reappears showing the selected action and, below that, the message ‘DONE’.

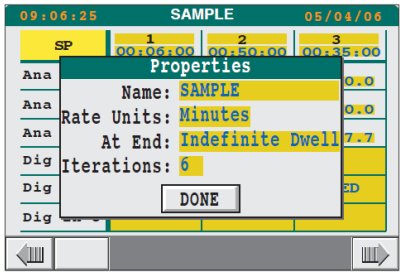
Press DONE.

The Program Editor page re-appears.

Changing Default Iterations

In the Properties window, press the current value for iterations displayed in the ‘Iterations’ field. A numeric keyboard pop-up menu appears allowing the default number of iterations to be set between 0 and 999, where ‘0’ results in continuous running.

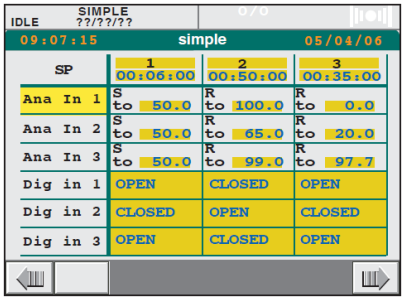




Changing Setpoint Names

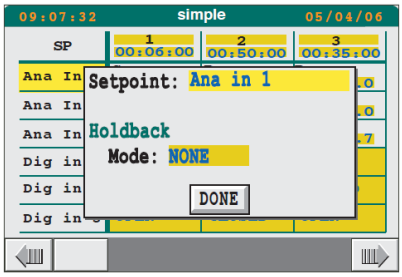
Analogue and digital setpoint names can be changed, but not while the program is running. For analogue setpoints the holdback values can also be amended (see "Changing Hold Back Properties" on page 331, above).

With the program stopped, press the setpoint whose name is to be edited - in this example, ‘Ana In 1’

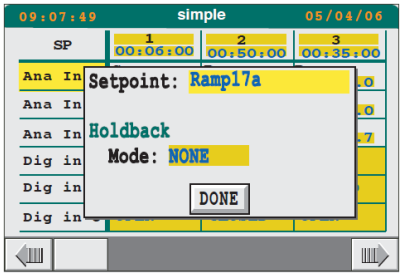


For an analogue setpoint a window is displayed, offering the option to change Setpoint name and Mode (shown opposite). For a digital setpoint the only editable field is ‘Setpoint name’.

Press the yellowed field.



Key in the new name, up to a maximum of 16 characters, FOLLOWED BY ENTER.



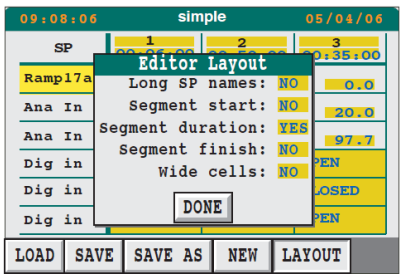
Press DONE.

Segment Timing Display

Normally segment timing is shown and edited in terms of the duration of each segment. It is possible to change this to show the start time and/or the end time of the segment in addition to the duration, or it can be changed to show start time only.

If ‘start time only’ is selected, the segment is edited by specifying how far into the program the segment is due to start, not in terms of the segment duration. In this case, the time displayed for each segment must be greater than the preceding segment and less than the following segment.

To change these options, press the LAYOUT button at the bottom of the Program Editor screen.



The Editor Layout window appears.

Press any field to alternate between YES and NO.

The ‘Long SP Names’ field re-formats the display to permit names up to 16 characters long, but this will reduce the number of cells visible.

The ‘Wide Cells’ field widens each cell (reducing the number of segments on display) to allow eight-character values, and values in ‘scientific’ notation (configured in the application) to be displayed.

Notes:

1. The settings for segment timing are preserved across power failure.
2. It is possible to switch between settings at any time, as this has no effect on the actual program, merely on how the data is presented.

The Panel Navigation File

The Versions

For any instrument there can be three versions of the Panel Navigation file held in software, with copies of two of them in ROM. The file names are <appname>.pnl, _default.pnl, and _system.pnl, with ROM copies of _default.pnl and _system.pnl.

Each of these versions is mostly a list of agents, with various parameters determining behaviour. Some of these parameters are agent-specific, others are generic.

Codings for _system.pnl (the Bare Panel version) and _default.pnl (called the Application Panel version here) follow.

Note: For units fitted with the Audit option, please see"Auditor Option Versions" on page 339 (below) , for codings.

With an application (say, <appname>) loaded, the system looks for <appname>.pnl. This is a version that has been customised for that application and which will generate an interface architecture specifically for it. For an instrument that periodically runs different applications, there could be an <appname>.pnl for each application.

If <appname>.pnl cannot be found, the instrument searches for _default.pnl. This is a generic version that works for all applications.

If _default.pnl cannot be found, the instrument loads a firmware copy that can always be found in ROM. (The instrument is shipped with these files, and they are loss-proof.)

With no application loaded the system looks for a file called _system.pnl, known as the ‘bare’ panel version (see also "Management" on page 93, "Managing an Application" on page 108, Managing an Application). If this file cannot be found, the corresponding version in ROM is used.

Coding - Sample Application Panel version (_default.pnl)

```
==================================

   SAMPLE APPLICATION PANEL SYSTEM

==================================

(Quarter-) VGA Driver
```

D1,QVGA

Home page is first User Page (or will default to Overview else System Summary, as this has the lowest Id in the main pane)

H1

Initial page (first page after power-up) is the user screen 100 (if present)

```
I100
    Root Menu
R1000
A1000,MENU,,,3,,,4000,2000,9000,1500,3000,7000,5000,1
    System Submenu
A2000,MENU,,,3,#S130,#S131,2010,2200,2300,2080
A2010,SYS_SUM
A2080,CLONE,4
    Application sub-submenu
A2200,MENU,,,3,#S396,#S397,2020,2210,2230
A2020,APP_SUM
A2210,APP_MGR,4,,,0
A2230,FB_MGR,3,4,,0
    Setup sub-submenu
A2300,MENU,,,3,#S398,#S399,2030,2040,2050,2060,2090,2070
A2030,STARTUP,,3
A2040,COMMS,,4
A2050,CLOCK,3
A2060,INTERNAT,,4
A2070,PANEL,,2
A2090.TIMEZONE,,4

    Programmer
A3000,SPP_MENU,2,3,3,3010
A3010,SPP,2,3,2,3000,1500

    Security Access
A4000,ACCESS
    Logging Submenu
A5000,LOG_MENU,2,,3,5010
A5010,LOG,2,3,2
    Area/Group/Point displays
A1500,AGP,1,2,2
    Recipe
A7000,RCP_MENU,2,3,3,7010
A7010,RECIPE,2,3,2,7000
    Batch
A8000,BATCH_MENU,2,,3,8010
```

A8010,BATCH,2,3,2,8011

Alarms

A9000,ALM_MENU,2,,3,9010,9011,9021

A9010,ALM_HIST,2,,2

A9020,MESSAGE,2,,3

Dialog Agent

A100000,DIALOG,,,4

==== END OF FILE ====

Auditor Option Versions

Coding - Sample Application Panel version (_default.pnl)

==========

SAMPLE APPLICATION PANEL SYSTEM

(Auditor Option fitted)

==========

(Quarter-) VGA Driver

D1,QVGA

Home page is first User Page (or will default to Overview else System Summary, as this has the lowest Id in the main pane)

H1

Initial page (first page after power-up) is the user screen 100 (if present)

I100

Root Menu

R1000

A1000,MENU,,,3,,,4000,2000,9000,1500,3000,7000,8000,5000,1

System Submenu

A2000,MENU,,,3,#S130,#S131,2010,2200,2300,2080,2500

A2010,SYS_SUM

A2080,CLONE,4

Application sub-submenu

A2200,MENU,,,3,#S396,#S397,2020,2210,2230

A2020,APP_SUM

A2210,APP_MGR,4,,,0

A2230,FB_MGR,3,4,,0

Setup sub-submenu

A2300,MENU,,,3,#S398,#S399,2030,2040,2050,2060,2090,2070

A2030,STARTUP,,3

A2040,COMMS,,4

A2050,CLOCK,3

A2060,INTERNAT,,4

A2070,PANEL,,2

A2090,TIMEZONE,,4

Admin

A2500,MENU,5,,3,#S1400,#S1401,2510,2520

A2510,NET_AUDIT,5

A2520,SIGN_CFG,5

Programmer

A3000,SPP_MENU,2,3,3,3010

A3010,SPP,2,3,2,3000,1500

Security Access

A4000,ACCESS

Logging Submenu

A5000,LOG_MENU,2,3,5010

A5010,LOG,2,3,2

Area/Group/Point displays

A1500,AGP,1,2,2

Recipe

A7000,RCP_MENU,2,3,3,7010

A7010,RECIPE,2,3,2,7000

Batch

A8000,BATCH_MENU,2,,3,8010

A8010,BATCH,2,3,2,8011

Alarms

A9000,ALM_MENU,2,,3,9010,9011,9021,9012

A9010,ALM_HIST,2,,2

A9020,MESSAGE,2,,3

Dialog Agent

A100000,DIALOG,,,4

Signature Agent

A200000,SIGN,,,5

==== END OF FILE ====

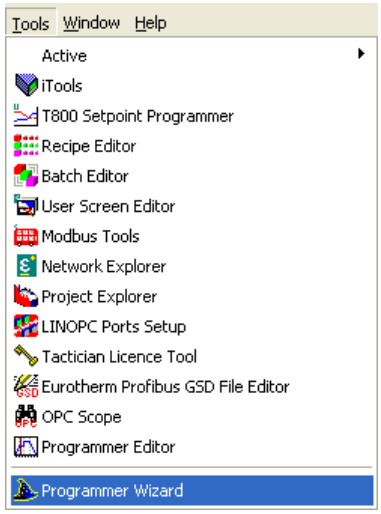
Appendix E: Program Application Editor

Introduction

This section describes how to use the LINTools Program Wizard and the Application Editor, both running on a pc, to create ‘segment classes’, the use of which is described in "Editing a Program (Application Editor Version)" on page 154. It is assumed that an up-to-date version (4.8 onwards) of LINTools is running on the pc and that a communications link has been successfully established between the pc and the relevant Visual Supervisor allowing program data to be downloaded. It is also assumed that an instrument folder has been created (in this example, ‘Eycon41’). Further operational details are to be found in the Programmer Wizard User Guide and the LIN Programmer Editor User Guide.

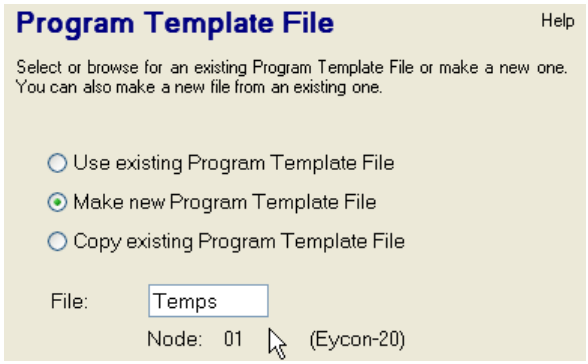
Block Creation

1. In the LINTools ‘Tools’ menu, select ‘Programmer Wizard’.

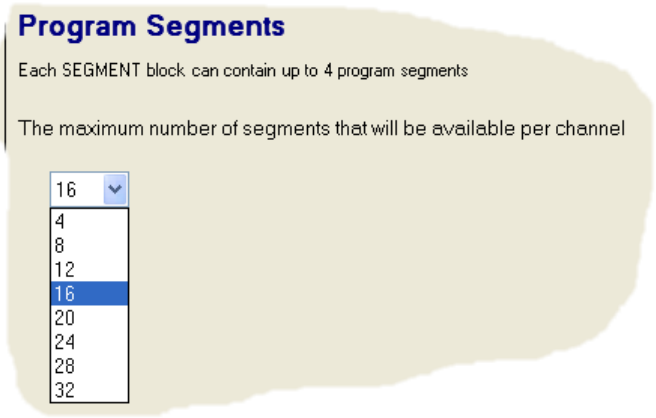


2. The ‘PROGCTRL Name’ window opens. If there are existing blocks, the user can elect to use one of these. For this example, click on the ‘Make new PROGCNTRL Block’ radio button, and enter (four characters max.) ‘Temp’ as its name. Click on ‘Next’.

3. In a similar way, select 'Make new program Template File' and enter a name for it (max eight characters) - in this example 'Temps'. Click on 'Next'.

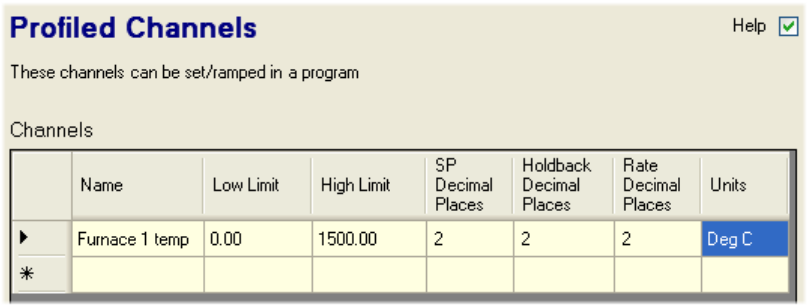


4. Calculate the maximum number of segments required based on the number of segments and the number of channels required. For this example, the value is left at '16'.

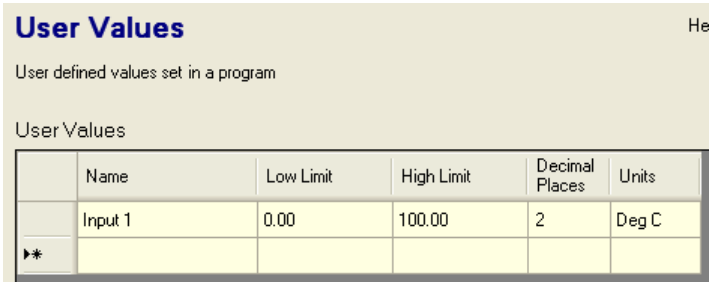


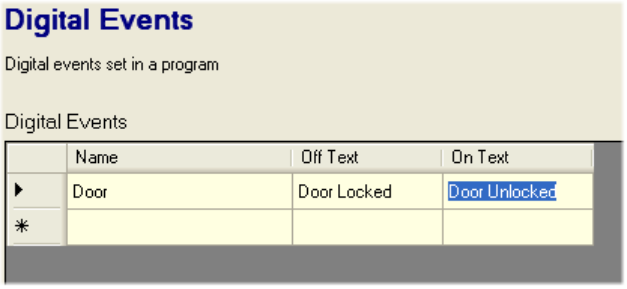
5. Add the details for all the channels that are to be 'profiled' (drawn on the 'chart'). For the sake of simplicity, this example uses just one.

   Click on 'Next?>'.

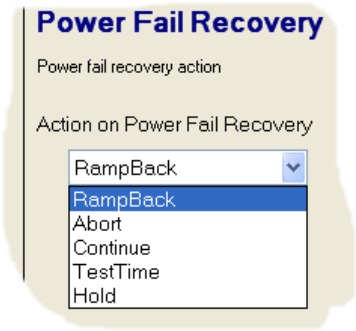


6. In a similar way, add User Values, Digital Events, and Wait Conditions (ignored for this example). Click on 'Next?>'



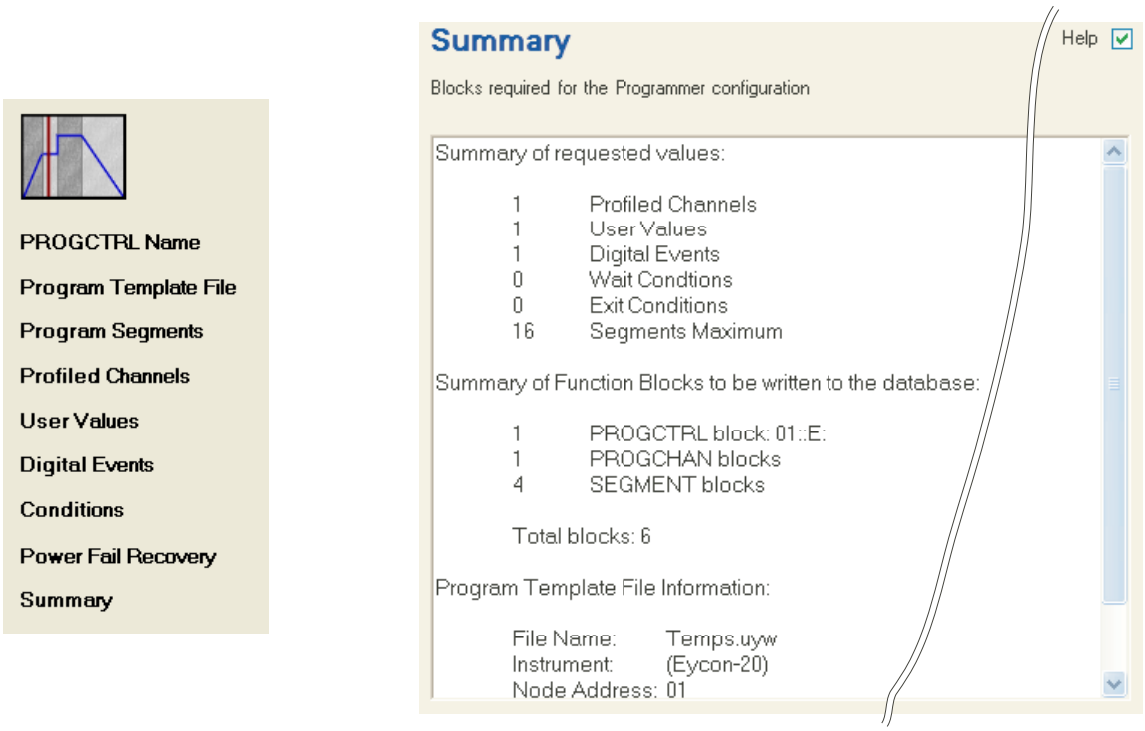


7. Select the response to power failure. In this case the default 'Ramp back' is used. Click 'Next?>'.



8. The Summary Page appears, allowing the user to view the file contents. The '< Back' key can be used to return to previous pages to edit the entries, if required. Otherwise, the 'Finish' key is used to complete the block creation process for this application.

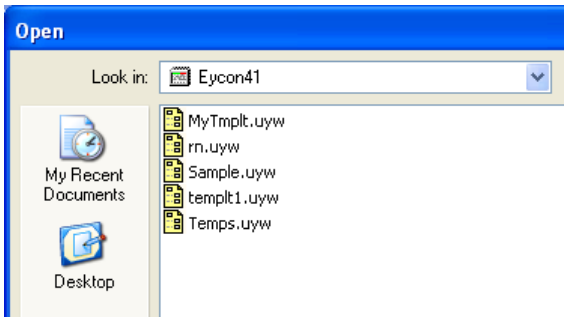
Note: Any of the Wizard pages can be accesses at any point in the procedure by clicking on the shortcuts in the left hand column.



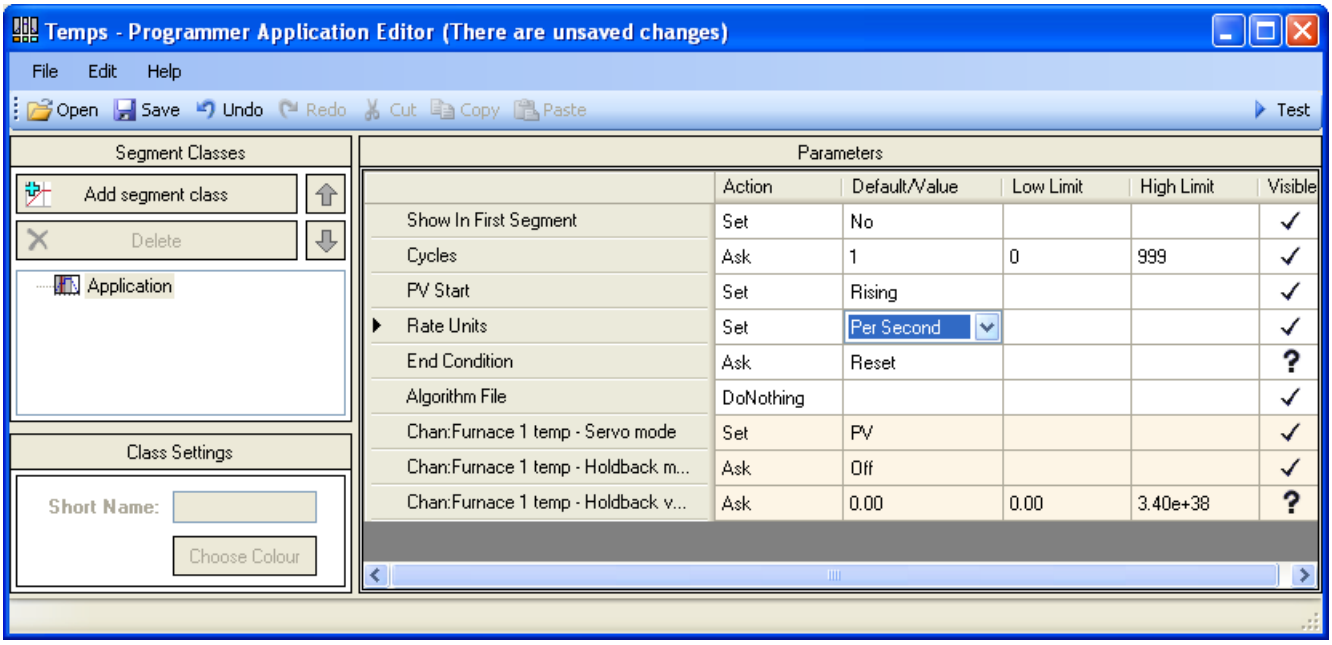
Segment Class Creation

1. At the pc, click on ‘Start’, ‘All Programs’, ‘Eurotherm’, ‘Programmer Editor’, ‘Program Application Editor’. When the application starts, click on the ‘Open a program template file’ icon in the tool bar (or use the ‘Open template’ item in the ‘File’ menu, or use the shortcut <ctrl> + <o>).

2. The ‘Open’ browse window appears allowing the user to select the required template file.



3. Clicking on the required template file (‘Temps’ for this example) causes the first of the configuration pages to appear. This allows items which are to apply to the whole program to be set up. It is recommended that as few ‘Do Nothings’ remain as possible.

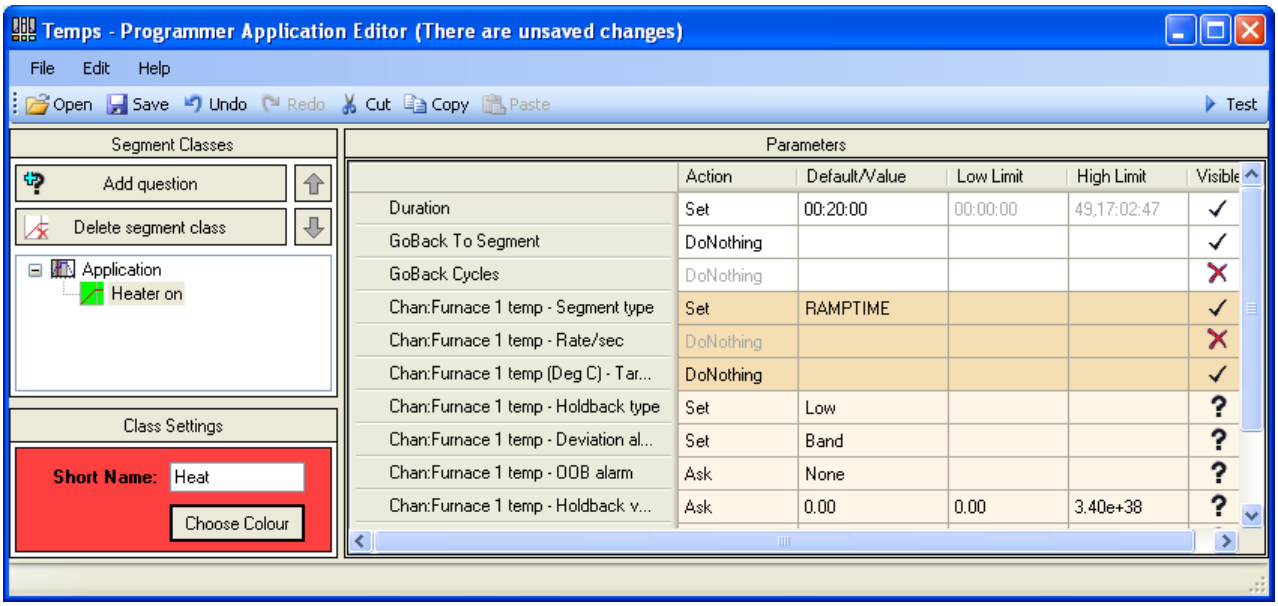


Notes:

1. If ‘Show in First Segment’ is set to ‘Yes’, then the contents of this page appear in the edit screen for the first segment.
2. Some blocks, known collectively as ‘Algorithm blocks’ require preset data (e.g. a recipe) or a sequence to be loaded at startup. This data is saved in an ‘Algorithm’ file. For such blocks, this page allows a suitable Algorithm file name to be entered.
3. For all configuration pages, the ‘Visible’ column shows whether each item is always visible (tick), never visible (cross) or that its visibility depends on the status of other items (?)

4. Click on ‘Application’ in the tree view, then click on ‘Add segment class’. The ‘New Segment Class’ window opens, allowing the user to set up the configuration for the first segment. The segment Class name may contain up to 24 characters. The figure below shows the first segment after it has been configured.

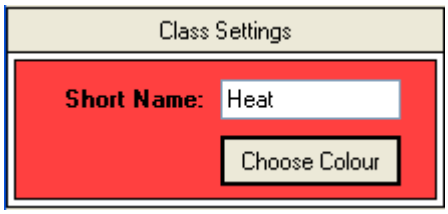
   Items which are ‘SET’ are not configurable at the visual supervisor. Items which are ‘Ask’ mean that the user may edit the default value from the Visual Supervisor screen.



Class Settings

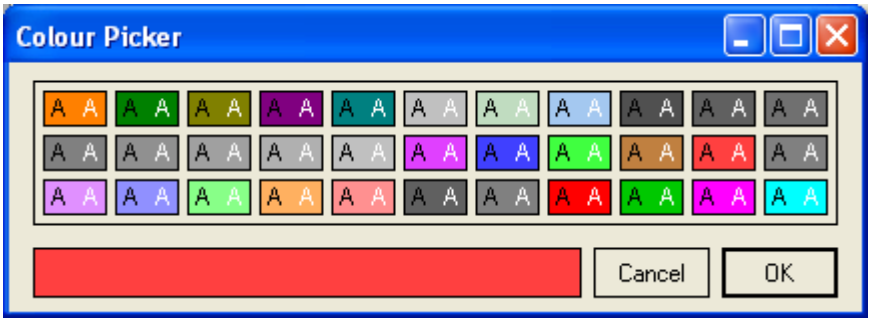
Short Name

Initially, the short name is the first eight characters of the segment name. The ‘Short Name:’ field allows the user to edit this name, (which is the text that will appear on the segment pushbutton icon in the Visual Supervisor Edit page).



Choose Colour

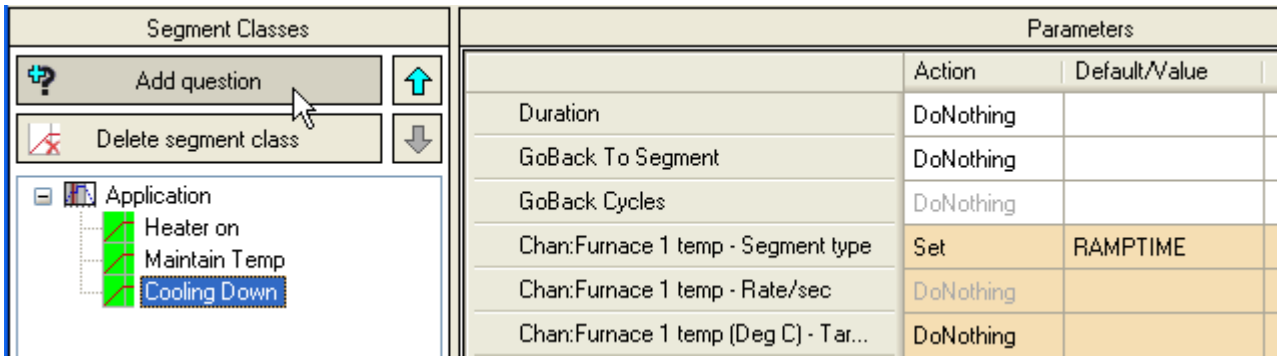
Allows the user to select a colour for the segment icon in the edit page. Clicking within this area calls a palette to the display, showing which colours can be selected. As shown below, the various colours are overprinted with the letter 'A' in both black text and white, in order to demonstrate the appearance on the Visual Supervisor screen. RGB colour definitions are given in the accompanying table.



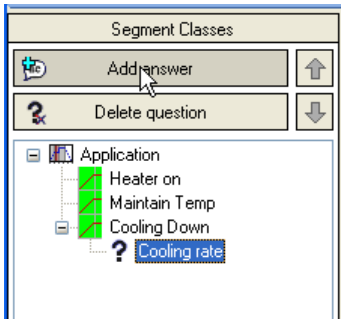
R = 255 G = 128 B = 0	R = 0 G = 128 B = 0	R = 128 G = 128 B = 0	R = 128 G = 0 B = 128	R = 0 G = 128 B = 128	R = 192 G = 192 B = 192	R = 192 G = 220 B = 192	R = 164 G = 200 B = 240	R = 80 G = 80 B = 80	R = 96 G = 96 B = 96	R = 112 G = 112 B = 112
R = 128 G = 128 B = 128	R = 144 G = 144 B = 144	R = 160 G = 160 B = 160	R = 176 G = 176 B = 176	R = 192 G = 192 B = 192	R = 224 G = 64 B = 255	R = 64 G = 64 B = 255	R = 64 G = 255 B = 64	R = 192 G = 128 B = 64	R = 255 G = 64 B = 64	R = 128 G = 128 B = 128
R = 224 G = 144 B = 255	R = 144 G = 144 B = 255	R = 136 G = 255 B = 136	R = 255 G = 176 B = 96	R = 255 G = 144 B = 144	R = 96 G = 96 B = 96	R = 128 G = 128 B = 128	R = 255 G = 0 B = 0	R = 0 G = 200 B = 0	R = 255 G = 0 B = 255	R = 0 G = 255 B = 255

5. Once the various configurable items have been set up for the first segment, click on the 'Application' item again and then on 'Add Segment Class' again. A second Segment definition page appears. For this segment. the segment name is to be 'Maintain Temp', with a Short Name of 'Soak'. The segment type should be sett to 'Dwell'.

6. The above should be repeated for a third segment, this time with the name 'Cooling Down' (Short name = 'Cool'). Set the Duration to 'Do Nothing' and the type to 'RAMP TIME'.

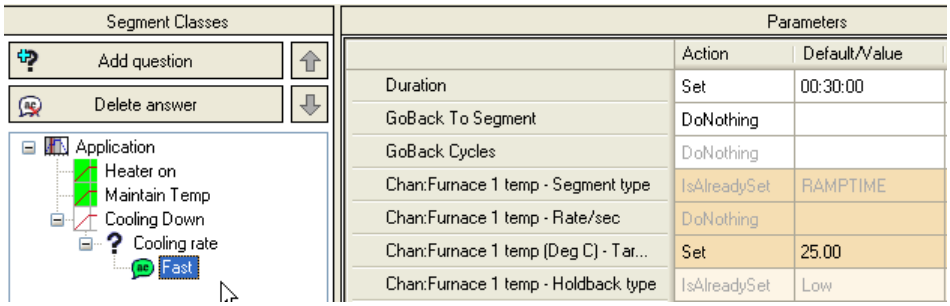


7. With the 'Cooling Down' Segment class highlighted, click on 'Add question.



Enter the text "Cooling Rate?' as the Question title, then click on 'Add Answer'

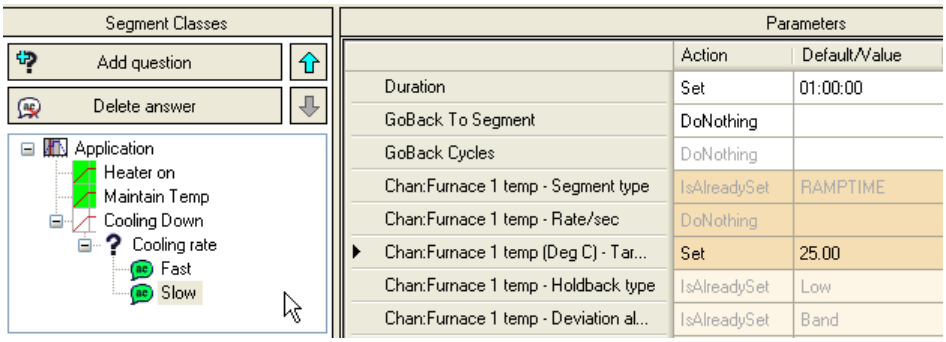
The Answer configuration page appears

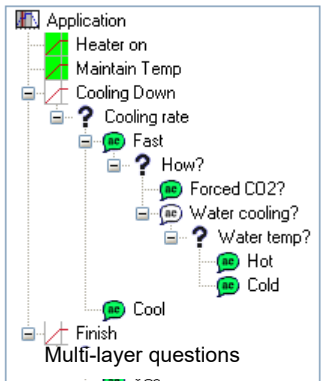


8. Type ‘Fast’ as the title of the answer. In the configuration area, all the items that were left as ‘Do nothing’ in the Cooling segment type can be edited here. For this example a duration of 30 minutes is entered and the target setpoint is set to 25 degrees.

9. Click on the question (Cooling Rate?), then on ‘Add Answer’ again.
   A similar Answer configuration page to that described above appears, but this time the duration should be set to 1 hour, and the setpoint again set to 25 deg C. This second answer should be entitled ‘Slow’.

   When this segment type is selected for use at the Visual Supervisor, an extra field (Cooling rate?) will appear as a field in the edit area with the first entered answer on display. Touching the field will cause a menu to appear containing ‘Fast’ and ‘Slow’.





Multi-layer questions

Note: As shown above, up to three levels of questions can be asked in any one segment, each with up to 20 answers. Legends for questions and answers can be up to 20 characters in length, but it is recommended that, for a neat appearance, a maximum of 10 characters be used on the small-frame unit.

10. A further segment class should be created which should be called ‘Finished’, with short name ‘End’. Segment type should be selected as ‘Dwell’.

Figure 169, overleaf, shows the complete example.

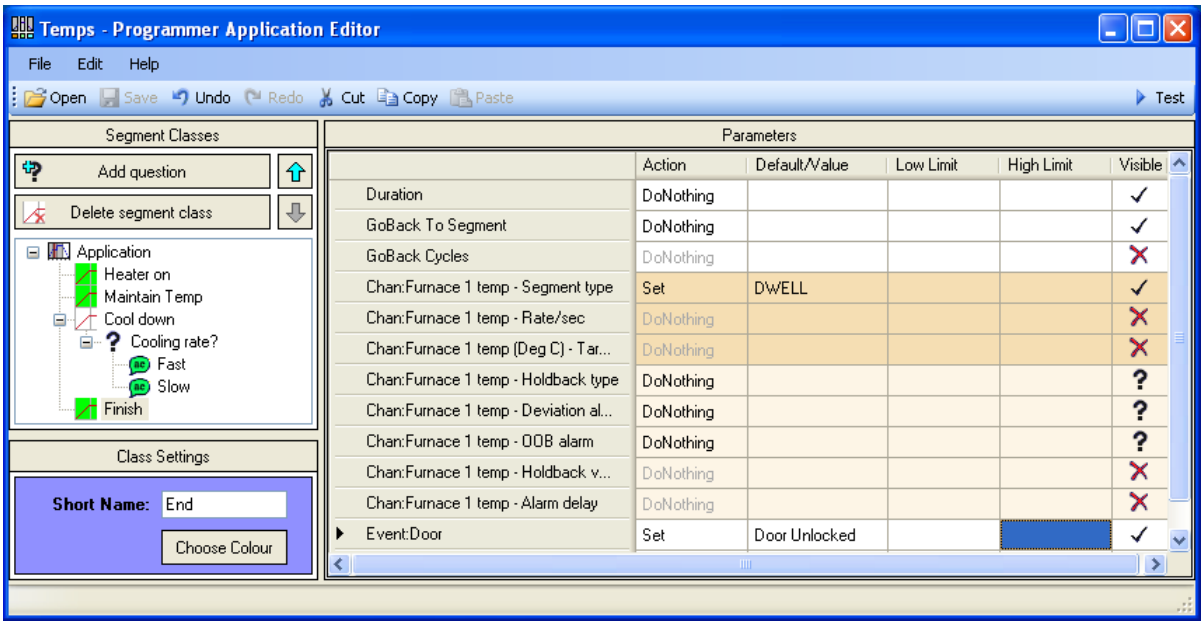


Figure 169 Completed Configuration

Application Test

Once all the required segments with any questions and answers have been configured the segments can be ‘tested’ by clicking on the ‘Test’ menu bar item, and appending segments to check that they have been correctly set up. Clicking on the button at the left edge of the screen allows segment data to be displayed in tabular form. Figure 170 shows the default display with three segments added. Figure E4b shows the display with tabular data enabled.

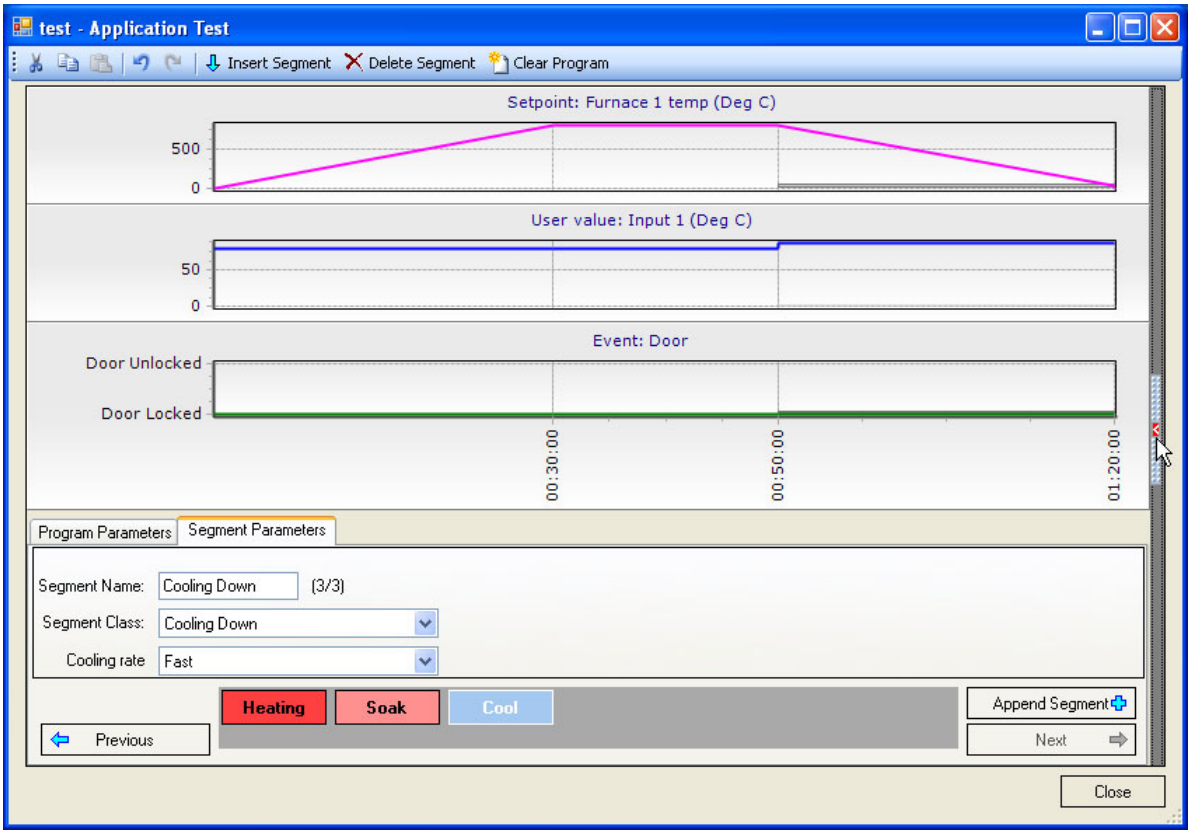


Figure 170 Application Test Default Screen

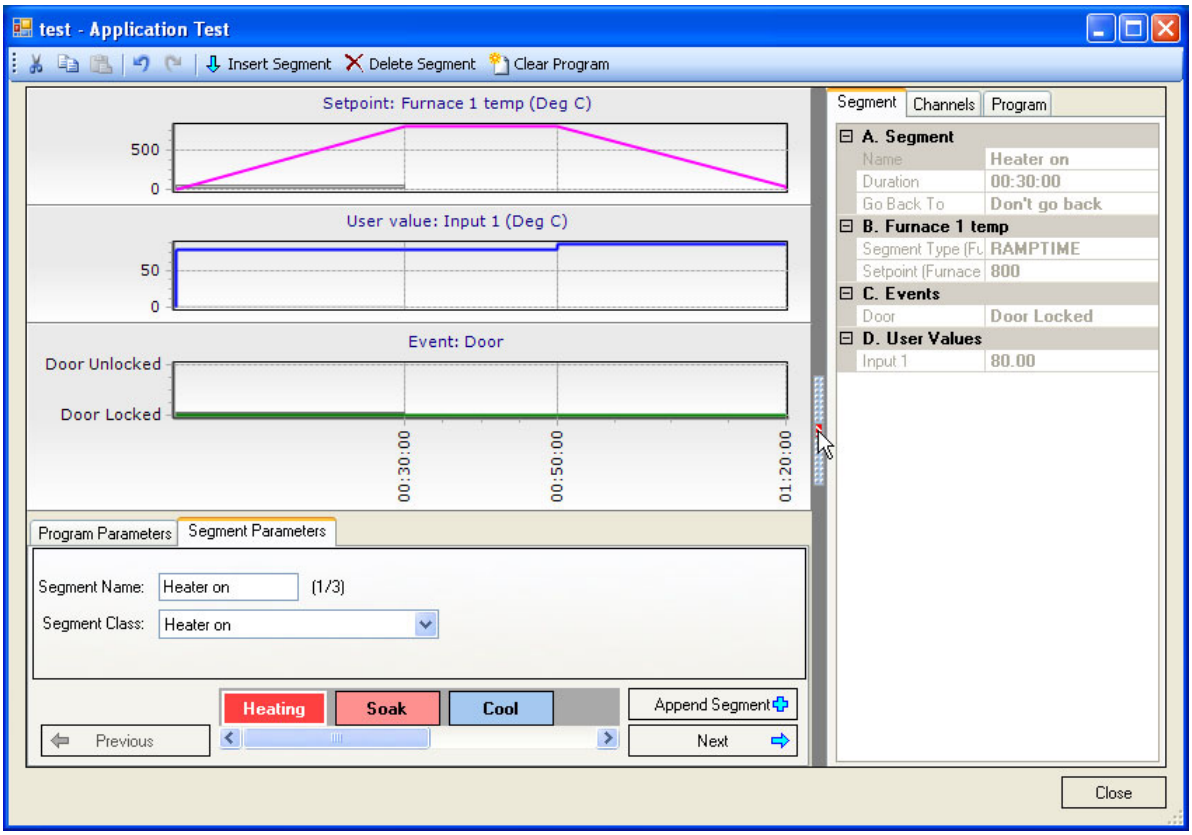


Figure 171 Application Test Display with Tabular Detail

Appendix F: Recovering Lost Instrument Password

Note: A lost password does not affect a running controller even if power fails.

If the instrument password is not known or has been forgotten, then it can be recovered by the following procedure:

1. This procedure requires physical access to the instrument, it must be powered down, the CompactFlash device removed, and inserted to a card reader on a PC.
2. Edit the file IDENTITY.USA (use a simple text editor – e.g. notepad).

   Sample IDENTITY.USA contents:

   ```
   SerialNumber=115112

   ResetToFactoryDefault=NO
   ```

⚠ CAUTION

DO NOT touch or edit any other file otherwise normal operation may be adversely affected.
This file is specific to an instrument and must only be edited for that instrument. Do not attempt to copy this file from one instrument to another.

3. Replace the string “ResetToFactoryDefault=NO” with “ResetToFactoryDefault=YES”.
4. Replace the CompactFlash device into the instrument and power it up. The instrument will revert to ‘no instrument password set’. The ‘ResetToFactoryDefault’ line is reset to ‘No’ so does not need to be copied and edited again.
5. All user configuration files remain intact – a new Instrument Password must be set before any runtime operation or configuration is possible. See "Instrument Password" on page 29 for details.
6. Normal instrument functioning is restored.

Scan for local contacts

Eurotherm Ltd
Faraday Close
Durrington
Worthing
West Sussex
BN13 3PL
Phone: +44 (0) 1903 268500
www.eurotherm.com

As standards, specifications, and designs change from time to time, please ask for confirmation of the information given in this publication.

HA029280 Issue 13 CN38771

HA029280ENG