

T225X
T225X ELIN/ALIN
Bridge Unit



Handbook

HA029931

November 2012 (Issue 2)

© 2012

All rights are strictly reserved. No part of this document may be reproduced, modified, or transmitted in any form by any means, nor may it be stored in a retrieval system other than for the purpose to act as an aid in operating the equipment to which the document relates, without prior written permission of the manufacturer.

The manufacturer pursues a policy of continuous development and product improvement. The specifications in this document may therefore be changed without notice. The information in this document is given in good faith, but is intended for guidance only. The manufacturer will not accept responsibility for any losses arising from errors in this document.

部件名称 Part Name	有毒有害物 或元素 / Toxic and hazardous substances and elements					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷· 电路板 /PCB	X	O	O	O	O	O
附文 /Enclosure	O	O	O	O	O	O
电缆 /Cables	O	O	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/T 11363-2006 规定的限量要求以下.

O: Indicates that this is a toxic or hazardous substance contained in all of the homogenous materials for this part is below the limit requirement in SJ/T11363-2006

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/T 11363-2006 规定的限量要求.

(企业可在此处,根据实际情况对上表中打"x"的技术原因进行进一步说明.)

X: Indicates that this is 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 (Enterprises may further provide in this box technical explanation for marking "X" based on their actual conditions.)



Intentionally left blank

Contents

CHAPTER 1	INTRODUCTION	1-1
1.1	MANUAL CONTENTS	1-1
1.2	OTHER INFORMATION SOURCES	1-1
1.3	THE T225X INSTRUMENT	1-2
1.3.1	Typical applications	1-2
1.3.2	Features	1-3
CHAPTER 2	INSTALLATION	2-1
2.1	SAFETY AND ELECTRO-MAGNETIC COMPATIBILITY (EMC) INFORMATION	2-1
2.1.1	Installation requirements for EMC	2-1
2.1.2	Installation safety requirements	2-2
2.1.3	Keeping the product safe	2-2
2.2	UNPACKING	2-3
2.2.1	Handling precautions	2-3
2.3	MECHANICAL LAYOUT	2-4
2.3.1	Layout drawings	2-4
2.3.2	Mount a Unit	2-4
2.4	CONNECTIONS AND WIRING	2-5
2.4.1	Communications	2-6
2.5	POWER SUPPLY CONNECTION	2-8
2.6	RELAY CONNECTIONS	2-8
2.7	NODE SETUP	2-9
2.7.1	Setting the IP Address	2-9
2.7.2	LIN Node Numbering	2-11
CHAPTER 3	USER INTERFACE	3-1
3.1	STATUS LEDS	3-1
CHAPTER 4	CONFIGURATION	4-1
4.1	TOOLS: THE CONFIGURATION TOOL	4-1
4.2	TERMINAL CONFIGURATOR	4-2
4.2.1	Running The Configurator	4-2
4.3	ADVANCED CONFIGURATION	4-4
4.3.1	Cold Start Parameter File	4-4
4.3.2	Event Log File	4-5

APPENDIX A	SPECIFICATIONS	A-1
A.1	INSTALLATION CATEGORY AND POLLUTION DEGREE	A-1
A.1.1	Installation category II	A-1
A.1.2	Pollution degree 2	A-1
A.2	SPECIFICATION	A-2
A.2.1	General specification	A-2
A.2.2	Hardware specification	A-3
A.2.3	Software specification	A-3
APPENDIX B	TERMINAL CONFIGURATOR	B-1
B.1	THE CONFIGURATOR	B-1
B.1.1	Configurable items	B-1
B.2	RUNNING THE CONFIGURATOR	B-2
B.2.1	Main menu access	B-2
B.2.1	The Main menu	B-3
B.2.2	Quitting the Terminal Configurator	B-3
B.3	DATABASE CONFIGURATION	B-4
B.3.1	INSPECT command	B-4
B.3.2	UTILITIES command	B-4
B.3.3	ALARMS command	B-7
Index		Index-I

CHAPTER 1 INTRODUCTION

The T225X is an ELIN/ALIN Bridge Unit. It provides ELIN/ALIN connectivity, and requires initial setup, but thereafter provides transparent LIN communications between nodes on both LIN communications protocols.

1.1 MANUAL CONTENTS

This manual is divided into the following chapters:

- Chapter 1. Introduction
- Chapter 2. Installation
- Chapter 3. User Interface (explaining the LEDs and switches)
- Chapter 4. Configuration (basic overview of using the Terminal Configurator to modify the communications protocols on site, usually to match changes in the plant being controlled and additional features concerning advanced features, i.e. Cold Start Parameters and Event Log).
- Appendix A. Technical Specification (Hardware and software unit details.)
- Appendix B. Terminal Configurator (overview of the instructions for connecting and using the Terminal Configurator)

1.2 OTHER INFORMATION SOURCES

For details of Local Instrument Network (LIN) based Function Blocks, their parameters and input/output connections refer to the *LIN Blocks Reference Manual* (Part no. HA 082 375 U003) which explains how control strategy function blocks are selected and interconnected etc.

Note This unit should not require any form of configuration.

The creation, monitoring and On-line Reconfiguration of LIN Databases and LIN Sequential Function Charts (SFCs) is described in the *LINtools Help* (Part no. RM 263 001 U055). The *ELIN User Guide* (Part no. HA 082 429) gives full details of installation, and how to configure an ELIN network, including setting the IP address using the instruments internal configurator.

Note If you do not possess any documents stated in this document please contact your distributor.

1.3 THE T225X INSTRUMENT

The T225X comprises a single unit used to connect ELIN and ALIN networks.

1.3.1 Typical applications

The instrument is designed to exchange LIN communication messages between nodes on an ELIN (Ethernet) and an ALIN (Arcnet) network.



Figure 1-1: T225X ELIN/ALIN Bridge Unit

1.3.2 Features

The main features of this instrument are as follows:

LIN

The Local Instrument Network (LIN) is a collection of LIN instruments, and LIN communications, etc. that together form the control system.

LIN COMMUNICATION

The Local Instrument Network (LIN) communications is a proprietary communications system used to connect each LIN instrument in the network.

ELIN COMMUNICATION

ELIN communication is the LIN communications system transported via Ethernet. It allows peer-to-peer communications between nodes on an ELIN and an ALIN logical network, [see section 2.4](#).

ALIN COMMUNICATION

ALIN communication is the LIN communications system transported between Arcnet cards in the instrument. It allows peer-to-peer communications between nodes on an ELIN and an ALIN logical networks, [see section 2.4](#).

REDUNDANT INSTRUMENT

The instrument can be wired for redundant or non-redundant operation, [see section 2.4](#).

HEALTH MONITORING

Automatic health checks, self-testing, and initialisation on power-up, with continuous checking of external communications.

FRONT PANEL ANNUNCIATION

Instrument LEDs are provided for communications status.

WATCHDOG RELAY

Watchdog relay connection.

FORWARDING RELAY

Forwarding relay connection.

EVENT LOGGING

Automatic event logging, providing an ASCII text file to record and store individually time stamped events are generated in the instrument, and provide a means of indicating the impact of an event on the system, [see section 4.3.2](#).

CONFIGURATION

Continuous strategies can be monitored with the Terminal Configurator, as permitted by a .txt file, [see section 4.2.1](#), or LINtools. However, the strategy in this instrument will only contain Diagnostic blocks for the purpose of diagnosing LIN communication faults.

FTP (FILE TRANSFER PROTOCOL)

A commonly used Server/Client transfer mechanism. The unit operates as an FTP Client for the purpose of transferring files to a remote computer as permitted by a .txt file, [see section 4.2.1](#).

ENCLOSURES

These instruments can be supplied in a range of enclosures, both wall-mounted and floor-standing enclosures. Power supplies, standard terminations, and transmitter power supplies can all be fitted within these enclosures.

Intentionally left blank

CHAPTER 2 INSTALLATION

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

- Safety and Electro-Magnetic Compatibility (EMC) information (*see section 2.1*)
- Unpacking (*see section 2.2*)
- Mechanical Layout (*see section 2.3*)
- Connections and wiring (*see section 2.4*)
- Power Supply (*see section 2.5*)
- Relay Connections (*see section 2.6*)
- Node Setup (*see section 2.7*)

2.1 SAFETY AND ELECTRO-MAGNETIC COMPATIBILITY (EMC) INFORMATION

Please read this section before installing the instrument.

This instrument is designed to meet the requirements of the European Directives on Safety and Electro-Magnetic Compatibility (EMC). It is, however, the responsibility of the installer to ensure the safety and EMC compliance of any particular installation.

2.1.1 Installation requirements for EMC

This instrument conforms with the essential protection requirements of the EMC Directive 2004/108/EC, and also with the Low Voltage Directive 2006/95/EC. It also satisfies the emissions and immunity standards for industrial environments.

To ensure compliance with the European EMC directive certain installation precautions are necessary as follows:

- General guidance. For general guidance refer to the *EMC Installation Guide* (Part no. HA 025 464).
- Routing of wires. To minimise the pick-up of electrical noise, low voltage DC connections and sensor input wiring should be routed away from high-current power cables. Where it is impractical to do this, shielded cables should be used, with the shield grounded at one end.
- Communications wires. If the communications wires cover a distance greater than 30metres or leave the building make sure they are screened and connected to the connector shell at one or both ends to ensure immunity to surge events.

2.1.2 Installation safety requirements

PERSONNEL

Installation must ONLY be carried out by qualified personnel.

POWER ISOLATION

The installation must include a power isolating switch or circuit breaker. This device should be in close proximity (1 metre) to the unit, within easy reach of the operator and marked as the disconnecting device for the instrument.

CONDUCTIVE POLLUTION

Electrically conductive pollution (e.g. carbon dust, water condensation) must be excluded from the cabinet in which the unit is mounted. To secure a suitable atmosphere in conditions of conductive pollution, fit an air filter to the air intake of the cabinet. Where condensation is likely, include a thermostatically controlled heater in the cabinet.

VENTILATION

Ensure that the enclosure or cabinet housing the instrument provides adequate ventilation/heating to maintain the operating temperature of the instrument.

PRECAUTIONS AGAINST ELECTROSTATIC DISCHARGE

Caution

Circuit boards inside the unit contain components which can be damaged by static electrical discharge. Before any circuit board is removed or handled, all electrostatic precautions must be observed, by ensuring that the handler, the instrument and the circuit board are all at the same potential.

2.1.3 Keeping the product safe

To maintain the unit in a safe condition, observe the following instructions.

MISUSE OF EQUIPMENT

If the equipment is used in a manner not specified in this handbook or by the distributor, the protection provided by the equipment may be impaired.

SERVICE AND REPAIRS

Not applicable.

2.2 UNPACKING

The unit should be carefully unpacked and inspected for damage. The original packing materials should be retained in case re-shipment is required. If there is evidence of shipping damage, the supplier or the carrier should be notified within 72 hours and the packaging retained for inspection by the manufacturer's and/or carrier's representative.

2.2.1 Handling precautions

Caution

Circuit boards inside the unit contain components which can be damaged by static electrical discharge. Before any circuit board is removed or handled, all electrostatic precautions must be observed, by ensuring that the handler, the instrument and the circuit board are all at the same potential.

PACKAGE CONTENTS

This instrument may form part of a larger assembly, and/or may be housed in a floor or wall-mounted enclosure. If so, the documentation that accompanied those items should be referred to.

The package contents should be checked against the order codes, using the labels on the components.

PRODUCT LABELLING

Product labelling includes:

- Sleeve label. On the outside of the unit, showing the model number, serial number, and hardware build level.
- Software labels showing version and issue numbers.
- Compact Flash memory card label showing firmware version, issue number and Ethernet-Mac Address.
- Safety earth symbol adjacent to safety earth stud.

SYMBOLS USED IN THE LABELLING

One or more of the symbols in the table below, may appear on the labelling of the unit:






Label	Function
	Caution, refer to the accompanying documents
	Functional (Ground/Safety) earth
	Protective earth terminal
	Risk of electric shock
	40 Year Environmentally Friendly Usage Period

Table 2-1: Product Labelling

2.3 MECHANICAL LAYOUT

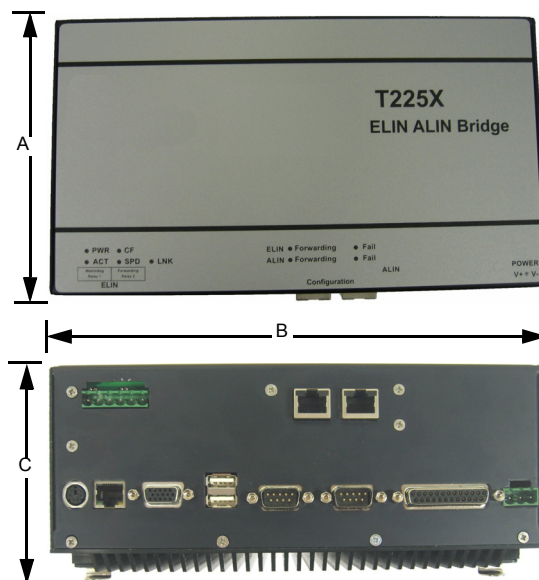
Dimensions of the front and side views of the unit are shown below, *see Table 2-2:*

It can operate either independently, or ‘redundantly’ in which case one unit will act as a primary, backed up by the other (the secondary). If two units are wired for redundant operation a parallel path is created to the computer that is used to display alarms.

2.3.1 Layout drawings

Dimension	(mm)
A	130
B	231
C	100

Table 2-2: Dimensions (mm)



2.3.2 Mount a Unit

The T225X is intended to be mounted within an enclosure, or in an environment suitable for IP20 rated equipment. It can only be mounted on a DIN rail.

For DIN rail mounting, use symmetrical DIN rail to EN50022-35 X 7.5 or 35 X 15 mounted horizontally.

Caution

Do not operate the equipment without a protective earth conductor connected to the unit .
The earth cable should have at least the current rating of the largest power cable used to connect to the unit.
Connect a protective earth tightened to a torque of 1.2Nm (10.5lbin).
This connection also provides a ground for EMC purposes.

DIN RAIL MOUNTING

To mount on a DIN rail:

1. Mount the DIN rail, using suitable bolts and ensure that the DIN rail makes good electrical contact with the metal base of the enclosure.
2. On the back of the unit fit the top edges of the DIN rail clip onto the top edge of the DIN rail, and push until the unit is securely into place indicated by a ‘click’.

To remove the unit from a DIN rail:

Simply ease the lower half of the unit away from the DIN rail until the unit is released indicated by a ‘click’, and lift away from the DIN rail.

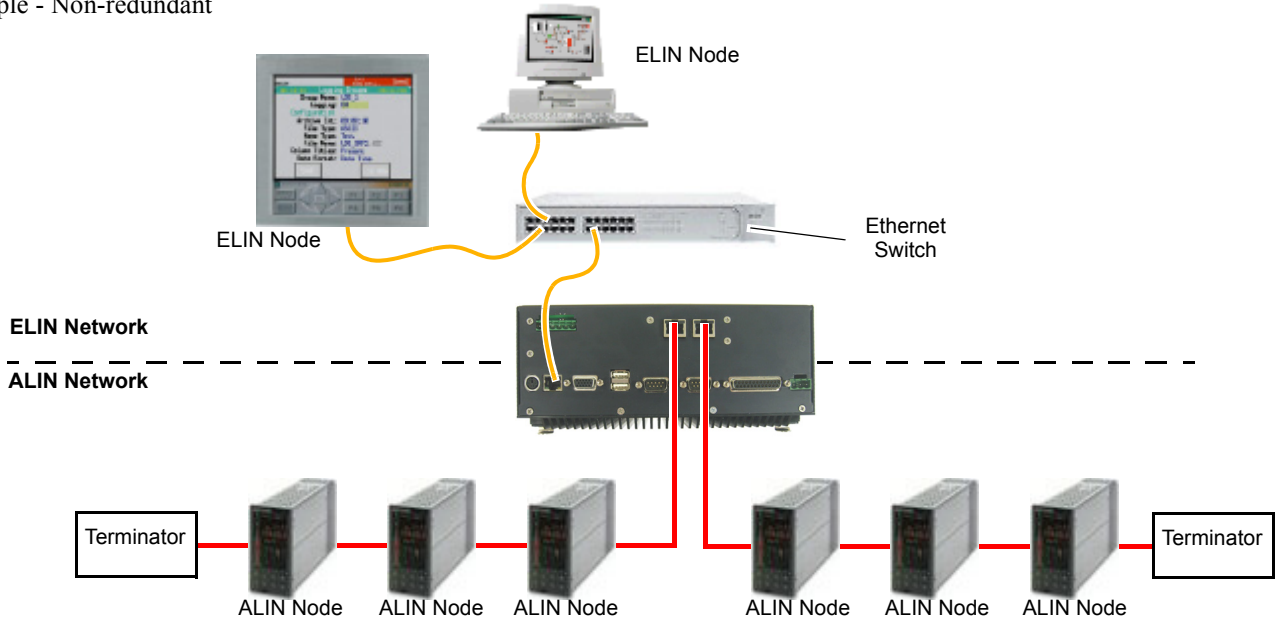
2.4 CONNECTIONS AND WIRING

The T225X may be supplied mounted in an enclosure, together with the appropriate termination assemblies, either fitted in the enclosure or supplied in kit form. Please refer to the documentation that was supplied with the enclosure for details of the connections and wiring.

If you are assembling the system yourself, refer to the *Installation and Wiring Sheet* (Part no. HA 029 926) supplied with the instrument, the *LIN/ALIN Installation & User Guide* (Part no. HA 082 429 U005), and the *ELIN User Guide* (Part no. HA 082 429) for advice on connections and wiring.

The figure below shows a simplified overall connection diagram for a Non-redundant or Redundant control system using appropriate cables for individual line lengths of up to 100 metres.

Example - Non-redundant



Example - Redundant

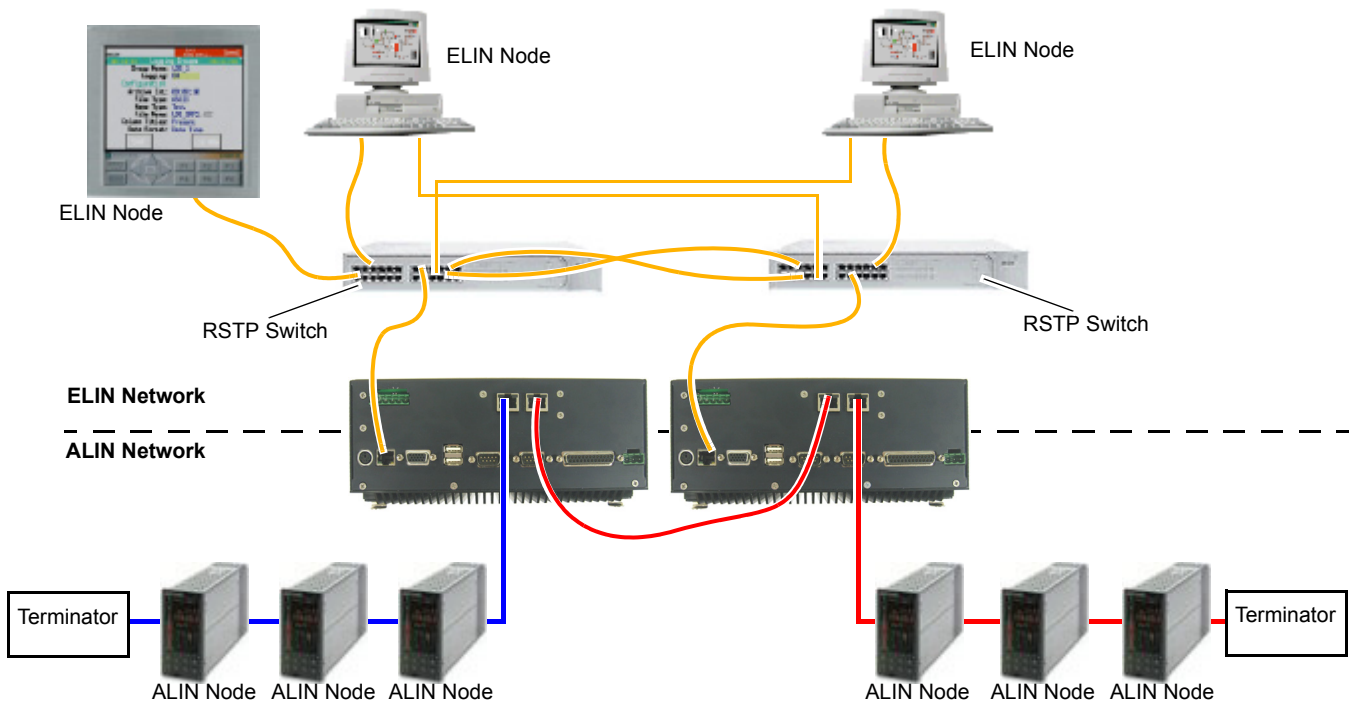


Figure 2-1: Wiring examples

2.4.1 Communications

In normal running mode the following connections will be made to the instrument.

- ELIN RJ45 Ethernet connection
- 2 ALIN RJ45 connections or 1 cable and a Terminator
- Serial port

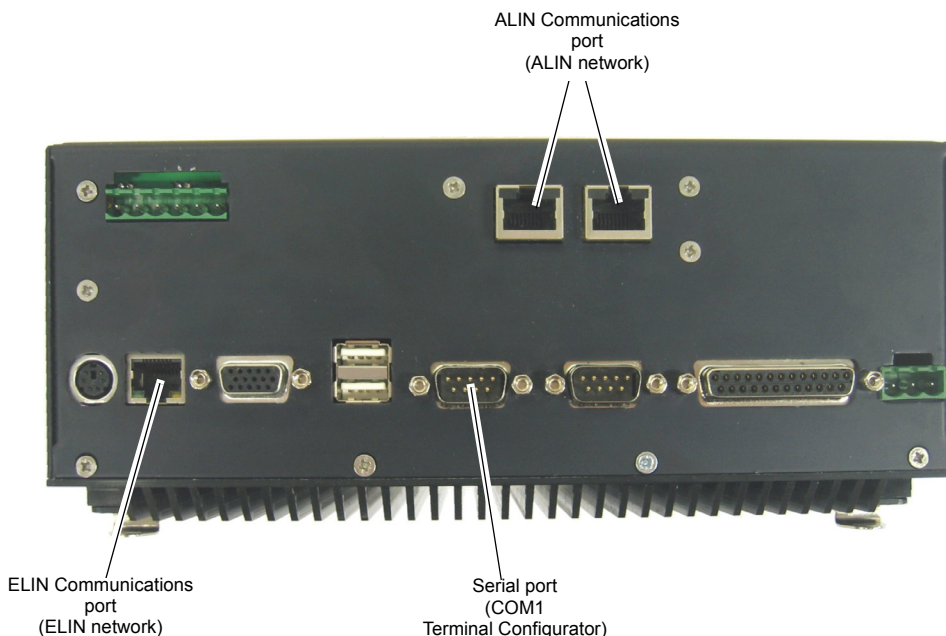


Figure 2-2: Panel Overview

ELIN CONNECTION

The instrument contains one 10/100base T ports for Ethernet communications via a standard RJ45 type connector.

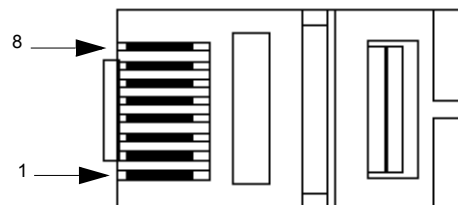
Connection with an Ethernet hub/switch is made using a Category 5 RJ45-to-RJ45 cable assembly. When connecting to the Ethernet hub/switch, a ‘straight-through’ cable is used. When connecting directly to another device supporting 10/100base T Ethernet, a ‘cross-over’ cable is required. *see Table 2-3:* for the RJ45 pinout connections.

ETHERNET LIN COMMUNICATIONS

The table below shows the connector pinouts for the Ethernet communications.

Pin	Signal
8	Not used
7	Not used
6	RX-
5	Not used
4	Not used
3	RX+
2	TX-
1	TX+
Plug shroud to Cable screen	

Table 2-3: Connections to RJ45 Socket



Communications (Cont.)

ALIN CONNECTION

The instrument contains two parallel ALIN RJ45 connectors. One connector is used to connect this instrument from a node on the ALIN logical network. The other connector is used to connect to another node on the ALIN logical network or for a line terminator.

Nodes communicating via the ALIN logical network are made using screened twisted pair cable in a single non-branching network. ALIN A (pin 4) should be bussed to other ALIN A signals, likewise ALIN B (pin 5), and the cable screen should be connected to ALIN Gnd.

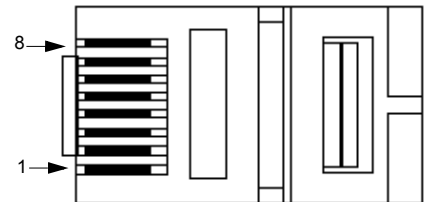
ALIN logical networks must be correctly terminated at the end of the communication line.

ARCNET LIN COMMUNICATIONS

The table below shows the connector pinouts for the Arcnet LIN communications.

Pin no.	Signal
8	Not used
7	Not used
6	Not used
5	ALIN B
4	ALIN A
3	Not used
2	Not used
1	Not used
Plug shroud to Cable screen	

Table 2-4: Connections to RJ45 Socket



Note Contact supplier for correct terminators.

SERIAL CONNECTION

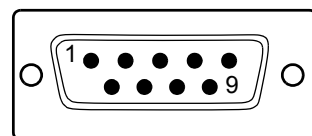
The instrument contains one 9-way 'D'-type connector for RS232 Serial communications. It is used to connect this unit to the computer for initial IP address configuration.

SERIAL COMMUNICATIONS

The table below shows the connector pinouts for the Serial communications

Pin no.	Signal
9	RI
8	CTS
7	RTS
6	DSR
5	Cmn
4	DTR
3	TxD
2	RxD
1	DCD
Plug shroud to Cable screen	

Table 2-5: Connections to Serial



2.5 POWER SUPPLY CONNECTION

The instrument requires 24Vdc Power Supply. Contact your supplier, quoting Part no. 2500P2A5, to obtain the recommended power supply.

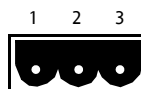
CAUTION

This equipment is designed to permit the connection of the earthed conductor of the d.c. supply circuit to the earthing conductor at the equipment.

Pin no.	Signal
3	Voltage supply -
2	Chassis Gnd
1	Voltage supply +

Table 2-6: Power Supply Connections

Screw terminals can accept wire sizes 0.2 - 2.5mm (24 - 12 awg)



2.6 RELAY CONNECTIONS

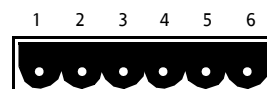
These relays have contact ratings (Resistive loads) of 0.4A at 125 VAC, 2A at 30 VDC and (Inductive loads) of 0.2A at 125 VAC, 1A at 30 VDC.

The signals of this connector are shown in the table below.

Pin no.	Signal	Function
6	N/C	Forwarding messages
5	N/O	
4	Common	
3	N/C	Running - Relay closed when unit Watchdogs.
2	N/O	
1	Common	

Table 2-7: Relay Connections

Screw terminals can accept wire sizes 0.2 - 2.5mm (24 - 12 awg)



Watchdog Relay (pins 1 - 3)
Forwarding Relay (pins 4 - 6)

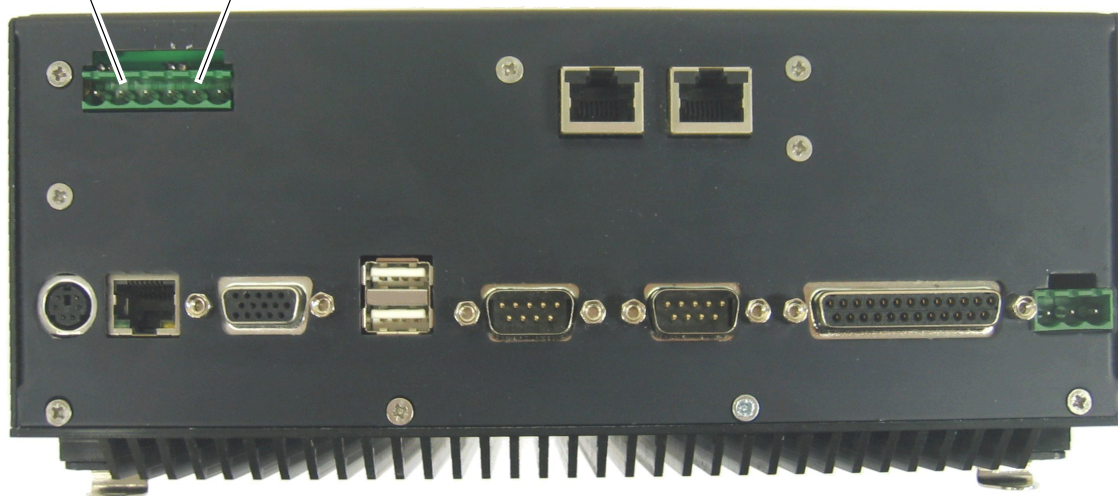


Table 2-8: Relay Connections

2.7 NODE SETUP

2.7.1 Setting the IP Address

Note For a more comprehensive description of IP Addresses, refer to the ELIN User Guide (Part no. HA 082 429) for details.

An instrument (IP host) will always need an IP Address. This can be allocated either automatically or manually. Which method (and the allocated IP Address used) will depend on any existing (or planned) networks.

Each instrument uses a one-to-one mapping of LIN Node Number to a single IP Address defined in the 'network.unh' file.

IP ADDRESS

ELIN runs over Ethernet using IP (Internet Protocol). Instruments (IP hosts) are identified by an 'IP Address', expressed in 'dotted decimal' notation, e.g. 192.168.111.222

PORT NUMBER

By default, all ELIN instruments automatically use Port Number 49152.

Note For a more comprehensive description of Port Numbers, refer to the ELIN User Guide (Part no. HA 082 429) for details.

ALLOCATION OF IP ADDRESS

Link-Local

Link-Local is used to always assign an IP Address in the range 169.254.X.Y. This IP Address range is reserved for use by Link-Local and is explicitly defined as private and non-routable.

The Link-Local algorithm ensures that an instrument (IP host) on a network will chose a unique IP Address from the Link-Local range.

This is supported by Windows 98 and onwards.

Manual

The IP Address is explicitly defined in the 'network.unh' file.

EDITING THE NETWORK SETTINGS

Each unit uses a one-to-one mapping of LIN Node Number to a single IP Address defined in the 'network.unh' file. This file can be edited using the Terminal Configurator, *see Appendix B*.

Note All files on the Compact Flash card can be accessed using a standard Compact Flash card reader. The 'network.unh' file can also be edited using a text editor program, e.g. 'notepad.exe', but this is not recommended.

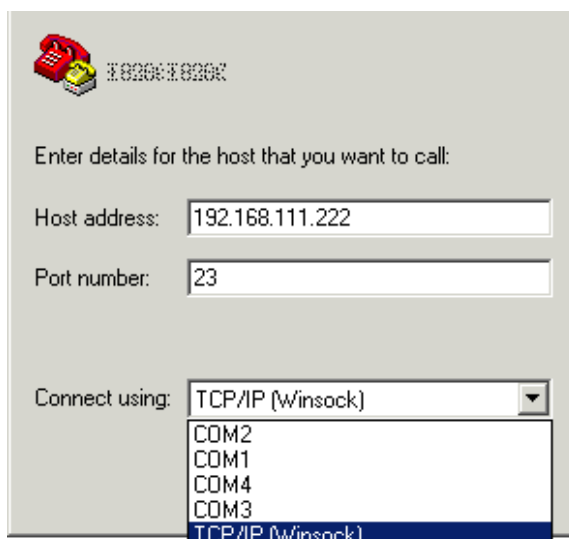
When despatched from the factory, the instrument is configured using Link-Local, and a default LIN Protocol Name, 'NET'. However, if the instrument is to have a fixed IP Address, i.e. 192.168.111.222, and use the LIN Protocol Name, 'PLANT', the relevant parameters must be edit using the Terminal Configurator.

Note The IP Address must correspond to the local company Network Policy.

To edit the Network Settings

1. Connect the computer to this unit via the Configuration port.
2. Launch a 'Telnet' session using the Windows™ Hyperterminal application. Enter the IP address for this unit at 'Host Address', and set 'Connect using' to TCP/IP (Winsock). The 'Port' should already be set to 23.

The 'Main menu' screen appears.



3. Use the keyboard cursor arrows to select Utilities, then select the ELIN option. This will display the ELIN Setup page used to configure the ELIN logical network details.

UTILITIES	Select option
START	- Start runtime system
STOP	- Stop runtime system
SAVE	- Save database
LOAD	- Load database
FILE	- File page
ELIN	- Elin Setup

4. Change the LIN Protocol Name to define the ELIN logical network. This is the network name that this unit is connected to. If necessary, edit the Node number, *see section 2.7.2*, the IP address and Subnet parameters.

For further details *see Appendix B*.

5. Save the database, .dbf.

No further configuration is required, but LINtools can be used to monitor the unit.

Elin Setup (network.unh file)	

LIN PROTOCOL SETUP	REMOTE SUBNET NODE LIST
Protocol Name NET	149.121.173.1
All Subnet Enable OFF	
Elin ON	
Node number (Hex) 01	
LOCAL IP SETUP	
Get Address Method Fixed	
IP Address 192.168.111.22	
Subnet 255.255.255.0	
Default Gateway 0.0.0.0.	
ELIN PARAMETERS	
Unack Timeout 250 msec	
Rmt Unack Timeout 250 msec	
No of retries 24	
Fwd No of retries 100	
UnThrottled Tx Lim 20	
Busy Throttle Time 10 msec	
EDB Connect Used 5 sec	
EDB Connect Unused 20 sec	
EDB Timeout Used 20 sec	TELNET
EDB Timeout Unused 30 sec	Login Id
EDB Timeout TX conf 30 sec	Password *****
	Timeout 1440 Secs

2.7.2 LIN Node Numbering

This section describes the node numbering issues of instruments connected to a single unit working in the most common setup, e.g. <ALIN Nodes network> - T225X - <ELIN Nodes network>.

Note If trying to configure a more complex system, first read this section. Only read the *Detailed LIN Node Configuration section* when this section is fully understood.

LIN messages use the concept of **segment numbers** for routing messages between **logical networks**. If the LIN Node number is, for example 43 hex, the 4 denotes the segment number and is used for routing across the Unit. So 40, 41, ..., 4E, 4F all live on segment 4.

The T225X works with **logical networks**, not physical networks. This distinction must be clearly understood before assigning node numbers to LIN nodes either side of this device.

IMPORTANT *An existing LIN node numbering scheme may require changing if replacing an existing bridge unit with the T225X.*

UNDERSTANDING LOGICAL NETWORKS AND PHYSICAL NETWORKS

A LIN node can exist on an Arcnet LIN (ALIN), an Ethernet LIN (ELIN) or an Original coax LIN (OLIN) network.

- ALIN nodes will be on the same physical network when daisy-chained together using copper cable connections. However two or more physical ALIN networks can be linked using a passive or one or more active Arcnet hubs via copper or fibre optic connections. They are then considered to be on the same **logical** network. Thus two ALIN nodes could be many hundreds of metres apart but still be on the same logical network. Conversely two ALIN networks could be within metres of each other and be on different logical networks because there is no linking hub.
- ELIN nodes are typically on different physical networks because RJ45 connections are point to point. Two ELIN nodes are considered to be on the same **logical** ELIN network if they are on the same *subnet* and have the same *ELIN protocol name*. There may be any number of Ethernet switches between two nodes but they can still be on the same ELIN logical network. Conversely two ELIN networks may share the same switches and hubs and be on different ELIN logical networks if they have different *ELIN protocol names*, refer to the *ELIN User Guide* (Part no. HA 082 429) for advice.

Note Two ELIN nodes can be on the same logical network but be on different subnets if remote IP configuration is used, *see section B.3.2*.

- OLIN hubs and switches do not exist and hence OLIN nodes daisy-chained on the same cable are always on the same **logical** OLIN network.

LIN Node Numbering (Cont.)

All the following diagrams refer to **logical** ALIN, ELIN and OLIN networks and any switches or hubs are not represented in the diagrams.

Node numbers should be assigned using the following simple rules.

Rule 1 It is considered an ALIN node, i.e. it behave as an ELIN node on the logical ALIN to which it is connected.

Rule 2 Segment numbers on one logical network must not be duplicated on any other logical network. Specifically in the simple example below segment numbers on the logical ALIN network side of this unit must NOT be duplicated on the logical ELIN network and vice-versa.

SIMPLE LIN NETWORK

The information below shows a simple system where there are potentially LIN nodes numbered in the range 30 - 3F, 40 - 4F and 50 - 5F.

Example

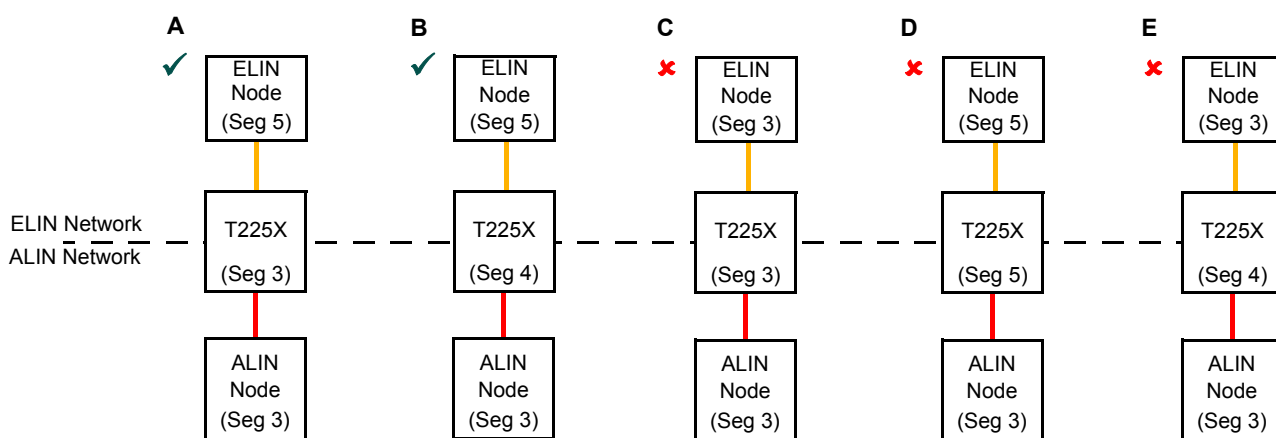


Figure 2-3: ALIN/ELIN Node Segment variations

Example	Segments			Valid LIN Node	See Rule	Description
	ALIN Node	T225X	ELIN Node			
A	3x (e.g. 31)	3x (e.g. 32)	5x (e.g. 55)	✓		T225X segment is the same as the ALIN node.
B	3x (e.g. 31)	4x (e.g. 42)	5x (e.g. 55)	✓		All segments are unique.
C	3x (e.g. 31)	3x (e.g. 32)	3x (e.g. 35)	✗	2	All segments are the same. The segment number is duplicated on another logical network.
D	3x (e.g. 31)	5x (e.g. 52)	5x (e.g. 55)	✗	1	T225X segment is the same as the ELIN logical network. The T225X node number applies to the ALIN network.
E	3x (e.g. 31)	4x (e.g. 42)	3x (e.g. 35)	✗	2	Segment number exists as both the ALIN logical network and the ELIN logical network.
Note An ALIN Node could be a computer, or a T640. An ELIN Node could be a computer, T2550, Eycon, T940(X). x denotes 0-F so 4x denotes node numbers 40-4F.						

Table 2-9: ALIN/ELIN Node Segment variations

LIN Node Numbering (Cont.)

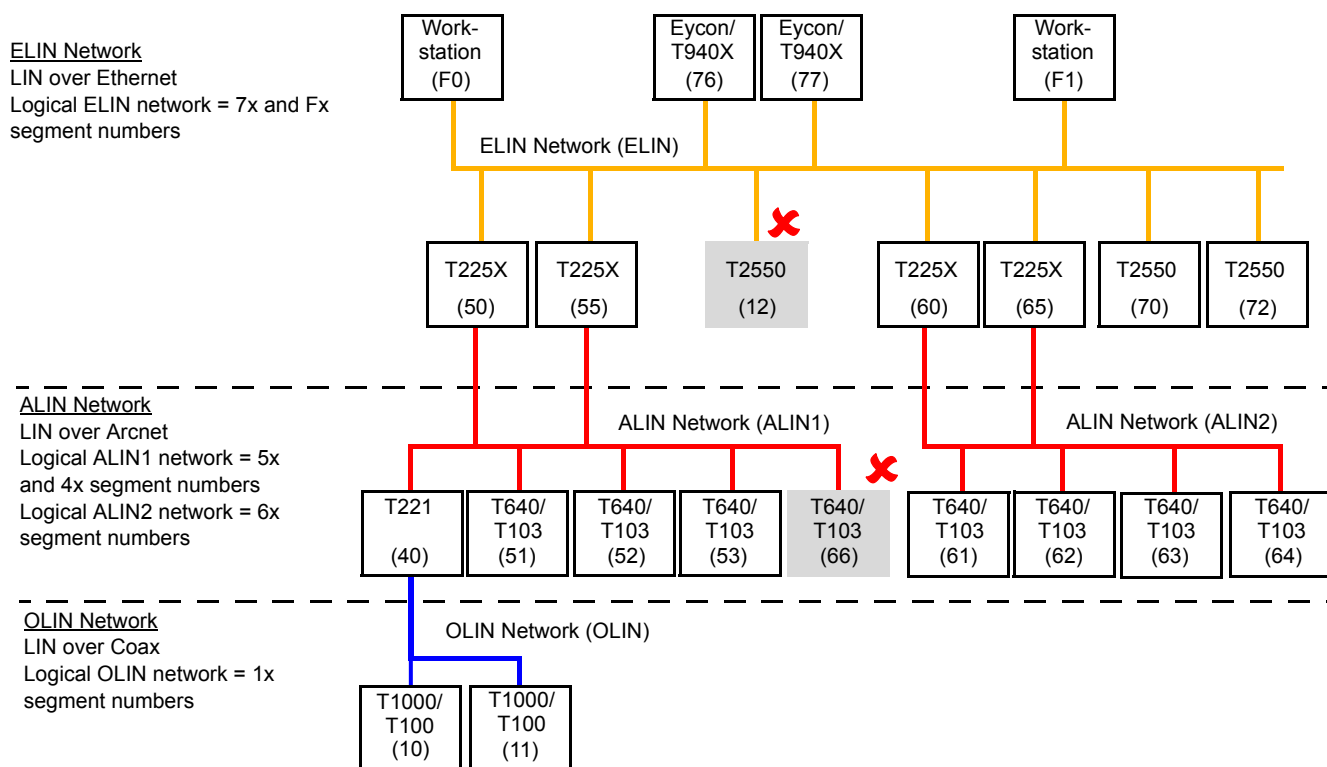
DETAILED LIN NODE CONFIGURATION

The T225X operates by transparently passing the database and filing connections between LIN nodes on ELIN and ALIN networks. If a unit fails, the connection between the end LIN nodes will also fail, resulting in alarms or file transfer failures. By connecting two units in parallel, redundant operation can be achieved. This provides an alternative path to the computer, *see section 2.4*, and allows the LIN Software to re-establish the connection to the computer using the alternative path.

Note This unit can be connected in series with T221 units to create logical LIN networks from a mixture of ALIN, ELIN and OLIN nodes.

The information below shows logical ELIN, ALIN1, ALIN2 and OLIN networks, including 2 invalid node number configurations indicated by the **X**. The invalid node number configurations apply to

- ELIN node 12 on logical network ELIN and would be an invalid configuration caused by the use of the same segment number on the logical OLIN network (Rule 2)
- ALIN Node 66 on logical network ALIN1 and would be an invalid configuration caused by the use of the same segment number on the logical network ALIN2 (Rule 2)



Note The rules previously described apply to all Bridge units, including the T225X, T225, T221 and the NTSE when configured as a Bridge unit.

Figure 2-4: ALIN/ELIN/OLIN Node Segment - example

Intentionally left blank

CHAPTER 3 USER INTERFACE

3.1 STATUS LEDS

The LEDs on the front panel display the current status of this instrument.



Figure 3-1: Status LEDs

LED	Colour	Function
CF	Red	Activity LED of Compact Flash
PWR	Green	Power supplied to unit
ALIN Fail	Red	Error with ALIN communications detected
ALIN Forwarding	Green	Data forwarded on ALIN logical network
ELIN Fail	Red	Error with ELIN communications detected
ELIN Forwarding	Green	Data forwarded on ELIN logical network
LNK	Yellow	Ethernet network link valid
SPD	Red	Ethernet bus speed. On = 100 mbs, Off = 10 mbs
ACT	Green	Activity of Ethernet interface

Table 3-1: Status LEDs

Intentionally left blank

CHAPTER 4 CONFIGURATION

This chapter presents and describes the Configuration Tool and issues concerning the instrument communication protocol.

The main topics of this chapter are:

- Tools: The Configuration Tool (*see section 4.1*)
- Terminal Configurator (*see section 4.2*)
- Advanced Configuration (*see section 4.3*)

4.1 TOOLS: THE CONFIGURATION TOOL

The database configuration for this unit is automatically created. However, a basic Terminal Configurator, *see Appendix B*, is also resident within the unit and must be used to configure the IP address and Subnet mask, ELIN protocol name and Node address. The instrument employs the standard function block structured approach to diagnose problems that can occur when transferring messages between ELIN and ALIN networks.

This configurator can be used in the creation of new databases, including new function blocks, and the editing of existing configurations on-site and on-line, usually to accompany modifications to the processing plant.

Note	Refer to LIN Blocks Reference Manual (Part no. HA 082 375 U003) for full details of the function blocks available for a strategy, and how to configure their parameters. Refer to the <i>LINtools Help</i> (Part no. RM 263 001 U055) for details of the monitoring the strategy of this unit.
------	--

4.2 TERMINAL CONFIGURATOR

The Terminal Configurator, *see section B.1*, provides the user with a basic program which can be used to configure and monitor a strategy. It can provide online instrument inspection

IMPORTANT *The T225X only uses Diagnostic block, so on-line reconfiguration is not applicable.*

Note HyperTerminal® is the recommended method of accessing the Configurator. Other methods of accessing the Configurator may result in unforeseen consequences.

To use some of the enhanced features a full understanding will be required. Before configuring the unit, the IP address, subnet mask, LIN node and ELIN protocol name that are to be used, must be known. The LIN node number cannot be chosen arbitrarily because it must be compatible with both ALIN and ELIN logical network node numbering methods, *see section 2.7.2*. The ELIN protocol name must be the same as for all other instruments and computers that you wish to communicate with over ELIN.

Note See the advanced configuration section in the ELIN User Guide (Part no. HA 082 429) for more information.

4.2.1 Running The Configurator

This section describes accessing and quitting the Configurator using a ‘Telnet’ session with HyperTerminal®. If a different terminal program is used, its user documentation should be consulted (if necessary) for the equivalent procedures.

Note HyperTerminal® is the only recommended method of accessing the Configurator. Other methods of accessing the Configurator may result in unforeseen consequences.

TERMINAL CONFIGURATOR RESTRICTIONS

The use of this configurator is controlled by a text file (access.txt), stored in the S:\ drive of the Compact Flash card. If the access.txt file is not present, the Terminal Configurator and FTP (File Transfer Protocol) features are disabled.

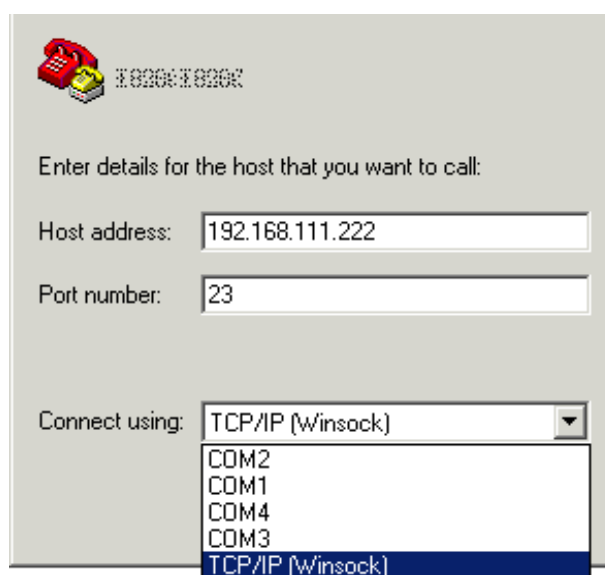
Note These features (default enabled) can also be disabled by editing the relevant parameters as necessary, i.e. TermCfg-On - enabled, TermCfg-Off - disabled, FTP-On - enabled, and FTP-Off - disabled.

MAIN MENU ACCESS

Using Windows™ XP as an example,

1. Power up the computer and start HyperTerminal® (Programs > Accessories > ... > HyperTerminal®). A ‘new connection’ sign-on screen appears.
2. Enter a name for the link and accept using the OK button. This will now reveal a Connect to dialog.
3. In the Connect using drop-down, select the TCP/IP (Winsock) option. After selection the fields above this drop-down now displays a Host and Port number field.

Note The emulator will only operate correctly if the VT100 is defined in the Emulation field, **File > Properties > Settings page**.



RUNNING THE CONFIGURATOR (Cont.)

4. After entering appropriate values to each of the required fields and confirming the changes, the sign-on screen will appear.

```
Telnet 149.121.165.188

EPA T225X ELIN/ALIN Bridge 21-X at 600 MHz
Ethernet (MAC) address = 00:E0:4B:00:45:DA
IP address = 192.168.111.222
Subnet mask = 255.255.255.0
Default gateway = 0.0.0.0
POST result (0000) = SUCCESS
Last shutdown because: Successful Power Down

1  ANSI-CRT
>>>
```

Figure 4-1: Typical sign-on screen

Ethernet (MAC) address	Shows the address of the Ethernet interface. This value is unique and is permanently fixed for an individual instrument.
IP address	Gives the IP address currently assigned to this instrument.
Subnet Mask	Gives the subnet mask currently assigned to this instrument. An IP host uses the subnet mask, in conjunction with its own IP address, to determine if a remote IP address is on the same subnet (in which case it can talk directly to it), or a different subnet (in which case it must talk to it via the Default Gateway).
Default Gateway	Gives the IP address of the Default Gateway. It is the address via which this unit must talk in order to communicate with IP addresses on other subnets. If undefined (0.0.0.0 or blank) then this instrument can only talk to other IP hosts on this same subnet.

Note Refer to the ELIN User Guide (Part no. HA 082 429) for full details.

5. Press 1 to display the 'Main menu', *see Figure 4-2*, then using the keyboard cursor arrows and the <CR> navigate and select the required option as necessary.

```
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
```

Figure 4-2: Main menu

4.3 ADVANCED CONFIGURATION

This section describes the start-up of the unit.

- Cold Start Parameter File (*see section 4.3.1*)
- Event Log File (*see section 4.3.2*)

4.3.1 Cold Start Parameter File

On power up, the T225X is capable of automatically creating, loading and running a LIN database with all the blocks necessary for operation and monitoring of the unit.

In the event of a cold start, the instrument searches for a file with the same name as the .dbf file just loaded, but with the extension .cpf. If such a file is found it is executed. The .cpf file, created using any text editor, consists of Structured Text (ST) style assignment statements (one complete statement per line of text) that allocate the current cold start parameter values to database block fields.

Note A .cpf file is a parameter overlay file storing values that are initialised when a Cold Start is requested. Interrogation of this file determines the Cold Start parameters.

If the default values in the automatically created database are not appropriate, a cold start parameter file, T225.CPF, may be created. When the automatically created database is loaded, the assignments defined in T225.CPF will be applied to the database.

Fields that are normally 'read only' can be written to from the .cpf file by adding the '>' character to the beginning of the assignment statement. A .cpf file can also include ST comment lines, e.g. (* Comment *). The instrument header block includes *Status.CPFfile*, which indicates if a .cpf file was found, and *Alarm.CPFfail*, to indicate if any problems were encountered whilst executing the .cpf file.

Sample .CPF file:

```
(*ST FORMAT TEST FILE for COLDSTART PARAMETER FILE TESTS*)
(*HEADER BLOCK*)
T225_01.Options.EnaLog := "True";
(*DIAGNOSTIC BLOCKS*)
LDEXT_01.Mode := "HOLD";
CENT_01.Index :=1;
TDIAG_01.Mode := "MASTER";
```

SAVED DATABASE

Alternatively, the automatically created database may be modified e.g. alarm priorities, saved, and a .run file created with the matching name. On power up, the .dbf matching the .run file will be loaded. If a .cpf with matching exists, the assignments defined therein will be applied to the database.

4.3.2 Event Log File

This section describes the Event Log facility supported by the T225X.

The purpose of the Event Log is to record and store individually time stamped events generated in the instrument, and provide a means of indicating the impact of an event on the system.

Note This file is used to assist with diagnosing problems in the system.

THE EVENT LOG

The Event Log is controlled using an option field in the instrument Header block of the database, .dbf. When *Options.EnaLog* is TRUE the Event Log will record individually time stamped events.

Each event record is stored in a ASCII text file, using a single line for each event record. Eventually, as more event records are automatically added, the oldest event records are removed from the file. The file indicates the impact of the event on the system using the ‘!’ character. Status, Warning, Error, and Major Error, are represented by 0, 1, 2 or 3 ‘!’ characters respectively.

The following example shows a typical file resulting from the power-up and start-up of a database.

Event Impact Level	Real-Time Clock time stamp	Instrument Internal time stamp	Event Record Message Number	Event Record Message
	08/01/00 11:13:17	(0x0000027E)	81FF	Power On / Reset
!	08/01/00 11:13:25	(0x00000834)	8350	Warmstart switch is disabled
!	08/01/00 11:13:25	(0x00000834)	8342	.RUN file not found
	08/03/00 12:13:50	(0x0000028A)	81FF	Power On / Reset
	08/10/00 12:13:50	(0x0000028A)	81FF	Power On / Reset

Figure 4-3: Typical EventLog file, .udz, - example

The Event Log file, supports the recording of the following events,

- Status

Status records, no ‘!’ characters, indicate normal operation events, e.g. power up and database start.
- Warning

Warning records, one ‘!’ character, indicate minor abnormalities.
- Error

Error records, two ‘!’ characters, indicate real faults on the system. If any Error is written to the Event Log file, the *Alarms.EventLog* and *Status.EventLog* fields of the database instrument header block are set TRUE. This offers an output that can be linked a display to provide immediate identification of a problem that can have an effect on the system.
- Major Error

Major Error records, three ‘!’ characters, indicate real faults in the execution of the instrument that must be investigated before continuing. If any Major Error is written to the Event Log file, the *Alarms.EventLog* and *Status.EventLog* fields of the database header block are set TRUE. This offers an output that can be linked a display to provide immediate identification of a problem that can have a serious effect on the system.

Intentionally left blank

APPENDIX A SPECIFICATIONS

A.1 INSTALLATION CATEGORY AND POLLUTION DEGREE

This product has been designed to conform to BS EN61010 installation category II and pollution degree 2. These are defined as follows:

A.1.1 Installation category II

The rated impulse voltage is 2500V.

A.1.2 Pollution degree 2

Normally, only non-conductive pollution occurs. Occasionally however, a temporary conductivity caused by condensation shall be expected.

A.2 SPECIFICATION

This specification defines the instrument components:

- General specification (*see section A.2.1*)
- Hardware specification (*see section A.2.2*)
- Software specification (*see section A.2.3*)

A.2.1 General specification

Physical

Dimensions:	130 mm high x 235 mm wide x 100 mm depth
Weight:	1580g max

Environmental

Temperature:	Storage:	0°C to +70°C
	Operation:	0 to +50°C
Shock:	Storage:	±10°C/min
	Operating:	±5°C/min
Humidity:	Storage:	Up to 95% RH (non-condensing)
	Operation:	Up to 90% RH (non-condensing)
RFI:	EMC emissions:	BS EN61326-1:1997 Class A (including amendments A1, A2 and A3)
	EMC immunity:	BS EN61326-1:1997 Industrial locations (including amendments A1, A2 and A3)
Safety Specification		BS EN61010-1: 2001
Vibration:	Spectrum:	5 to 100Hz
	Acceleration:	2g
Protection:		IP20

Power Requirements

Main supply:	Voltage Range:	8 to 30 Vdc.
	Supply Current:	0.5A max. InRush 30A
Relay Outputs:		30 V max., 2A max Resistive load, 1A max Inductive load. No overcurrent protection.
Isolation:	Ethernet:	100 BaseT - Galvanic, 500 ac rms, Digital outputs - opto-galvanic 500 ac rms
	Arcnet:	60V dc/30V ac 5.6Ω to 0V

A.2.2 Hardware specification

General

Compact Flash Card:

Memory Card: 32 MByte removable

Communications port(s)

LIN Communications:

Connectors: RJ45 x 3, 1 x ELIN (ETH1) and 2 x ALIN
 Network medium: ELIN - Ethernet Category 5 cables
 ALIN - Screened twisted pair
 Protocols: LIN over Ethernet / IP (ELIN), ALIN, FTP
 Speed: 10/100Hz
 Network Topology: ELIN - Star or mesh connection to a hub
 ALIN - Single non-branching
 Line length (max): 100 metres, extendable by repeater
 Allocation of IP address: Manual and Link-Local
 Ethernet: 100 BaseT - Galvanic, 500 ac rms, Digital outputs - Opto-galvanic 500 ac rms
 Arcnet: 60V dc/30V ac 5.6Ω to 0V

Serial Port (Terminal Configurator ONLY):

Connector: 9-Way D-Type
 Network Topology: Point to Point or Multidrop
 Line length (max): 100 metres

Other connections

Relay Connector: Watchdog Relay
 Forwarding Relay
 Printer Terminal Connector: NOT SUPPORTED. 9-Way D-Type.
 Keyboard/Mouse Connector: NOT SUPPORTED. 6-pin Mini DIN.
 Universal Serial Bus (USB) Connector: NOT SUPPORTED. USB ports x 2. Plug and Play peripherals connection
 VGA Connector: NOT SUPPORTED. 9-Way 'D'-Type.

A.2.3 Software specification

LIN Block libraries (continuous LIN Database Function Block categories)

Function Block categories:

Diagnostic: Diagnostics

LIN Block software license categories

Category					
Block Type	Foundation	Control	Standard	Advanced	Description
Diagnostic All blocks	✓				Fault control and management

Intentionally left blank

APPENDIX B TERMINAL CONFIGURATOR

This explains the complexities of using the Terminal Configurator program resident on the instrument.

The main topics of this chapter are:

- The Configurator (*see section B.1*)
- Running the Configurator (*see section B.2*)
- Database configuration (*see section B.3*)

Note Not all commands shown in the Terminal Configurator are supported.

B.1 THE CONFIGURATOR

Most configuration will be done before despatch. This chapter explains how databases and communications parameters are configured for the instrument using the Configurator program resident within the instrument.

The Configurator program is mainly for adjusting existing configurations on-site, usually to accompany modifications to the processing plant and can also be used to 'Load', 'Start', 'Stop', 'Save' and 'Monitor' databases, to perform various filing operations.

It employs the standard LIN function block structured approach. The *LIN Blocks Reference Manual* (Part no. HA 082 375 U003) gives full details of the function blocks available for the strategy, and how to configure the parameters.

Note Instruments operating in redundant configuration will not allow function blocks to be added or deleted unless Primary and Secondary are synchronised.

B.1.1 Configurable items

The configurable items are configured using a menu/item selection procedure. Configuration of the database consists of carrying out one or more of the following:

- Inspecting and updating function blocks (INSPECT)
- Accessing the Utilities menu (UTILITIES), from which the user can START and STOP programs, SAVE and LOAD databases, and access the ELIN setup page

B.2 RUNNING THE CONFIGURATOR

This section describes accessing and quitting the Configurator using a 'Telnet' session with HyperTerminal®. If a different terminal program is used, its user documentation should be consulted (if necessary) for the equivalent procedures.

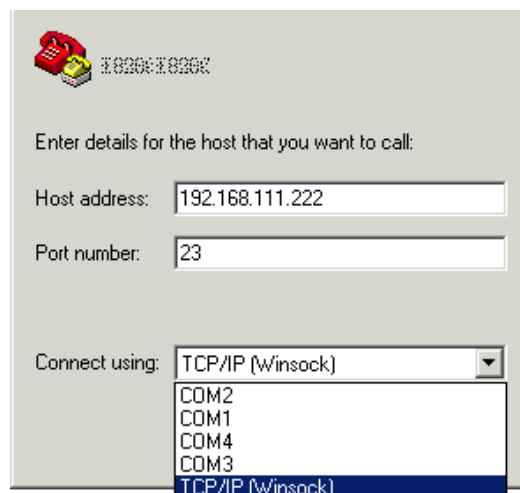
Note HyperTerminal® is the only recommended method of accessing the Configurator. Other methods of accessing the Configurator may result in unforeseen consequences.

B.2.1 Main menu access

Using Windows™ XP as an example,

1. Power up the computer and start HyperTerminal® (Programs > Accessories > ... > HyperTerminal®). A 'new connection' sign-on screen appears.
2. Enter a name for the link and accept using the OK button. This will now reveal a Connect to dialog.
3. In the Connect using drop-down, select the TCP/IP (Winsock) option. After selection the fields above this drop-down now displays a Host and Port number field.

Note The Configurator will only operate correctly if the VT100 is defined in the Emulation field, **File > Properties > Settings** page.



4. After entering appropriate values to each of the required fields and confirming the changes, the sign-on screen will appear..

```
Telnet 149.121.165.188

EPA T225X ELIN/ALIN Bridge 11C at 266 MHz
Ethernet (MAC) address = 00:E0:4B:00:45:DA
IP address = 192.168.111.222
Subnet mask = 255.255.255.0
Default gateway = 0.0.0.0
POST result (0000) = SUCCESS
Last shutdown because: Successful Power Down

1  ANSI-CRT
>>>
```

Figure B-1: Typical sign-on screen

Ethernet (MAC) address	Shows the address of the Ethernet interface. This value is unique and is permanently fixed for an individual instrument.
IP address	Gives the IP address currently assigned to this instrument.
Subnet Mask	Gives the subnet mask currently assigned to this instrument. An IP host uses the subnet mask, in conjunction with its own IP address, to determine if a remote IP address is on the same subnet (in which case it can talk directly to it), or a different subnet (in which case it must talk to it via the Default Gateway).
Default Gateway	Gives the IP address of the Default Gateway. It is the address via which this instrument must talk in order to communicate with IP addresses on other subnets. If undefined (0.0.0.0 or blank) then this instrument can only talk to other IP hosts on this same subnet.

Note Refer to the ELIN User Guide (Part no. HA 082 429) for full details.

5. Press 1 to display the 'Main menu', *see Figure B-2:*

® Hyperterminal is a trademark of Hilgraeve Inc.

MAIN MENU ACCESS (Cont.)

The Configurator 'Main menu' appears.

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

Figure B-2: Main menu

Note If the 'Main menu' appears, this indicates that the instrument 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 called *selecting* an item. In general, to access the next lower level of the menu hierarchy <Enter> is pressed. To return to the next higher level menu or close a 'pop-up' options menu the <Escape> key is pressed. <PageUp> and <PageDown> allow hidden pages in long tables to be accessed.

Note The next lower level of menu hierarchy can be accessed directly by simply pressing the initial letter of the menu item, e.g. on the Configurator Main menu above, pressing 'I' will select the Inspect command.

Function	Key combination
Redraw screen	<Ctrl> + W
Cursor Up	<Ctrl> + U
Cursor Down	<Ctrl> + D
Cursor Left	<Ctrl> + L
Cursor Right	<Ctrl> + R
Page Up	<Ctrl> + P
Page Down	<Ctrl> + N
Stop automatic update	<Ctrl> + V

Table B-1: Cursor-control - equivalent key combinations

For keyboards without cursor-control keys, equivalent 'control' character combinations may be used, [see Table B-1](#). To use these, the <Ctrl> key is held down and the specified character typed.

Some tables allow a value to be entered directly, or via a called-up menu. For direct entry, the first character(s) of the chosen option is (are) typed, followed by <Enter>. Alternatively, the menu can be accessed with <Enter> or <Tab> as the first character after the field is selected.

B.2.1 The Main menu

The Main menu, [see Figure B-2](#), provides options used to configure a LIN database, [see section B.3](#).

B.2.2 Quitting the Terminal Configurator

The instrument automatically exits configuration mode when the 'Telnet' session is closed.

Note If the Configurator is left running but unused, the user will eventually be locked out of the Download, Start and Stop operations.

B.3 DATABASE CONFIGURATION

The database configuration for this unit is automatically created. However, this basic configurator is resident within the unit and allows configuration of a database from an appropriately configured computer.

START USING THE TERMINAL CONFIGURATOR

Following the successful start of a 'Telnet' session, and access from the sign-on screen, the Main menu appears.

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

Figure B-3: Main menu

B.3.1 INSPECT command

Allows function blocks in the strategy to be inspected and updated. Select INSPECT from the Main menu to display all the function blocks in the strategy. Select a function block and press <Enter> to display its overview page, ready for monitoring or editing.

Pressing <Escape> returns the INSPECT display, where other function blocks can be selected for inspection. Press <Escape> again to return to the top level menu.

Note All function blocks can be inspected while the strategy is running, online using LINtools.

B.3.2 UTILITIES command

Allows program control and filing. Select UTILITIES from the Main menu to display the Utilities Options page, *see Figure B-4*.

UTILITIES		Select option
>START	-	Start runtime system
STOP	-	Stop runtime system
SAVE	-	Save database
LOAD	-	Load database
FILE	-	File page
ELIN	-	Elin Setup

Figure B-4: Utilities Options page (example)

UTILITIES command (Cont.)**START, STOP COMMAND**

Select START or STOP from the UTILITIES options menu and press <Enter> to start or stop the control program running in the instrument. If the strategy program is in progress, 'Running' appears below the first line in the configurator, but will change to 'Stopped' if the strategy is halted.

Note When you START a database in RAM it is automatically saved to the file in E: drive called **filename.dbf**, where **filename** is indicated in the **filename.run** file. It is then reloaded and started.

SAVE COMMAND

Names and saves a control program to a specified memory area. Select SAVE from the UTILITIES options menu - the default filename specification, **E:<filename>.DBF** is displayed. (The prefix **E:** directs the save to the local E: drive area of the instrument; 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:<filename>.DBF**).

Type in a new specification if needed, then press <Enter> to execute the save. After a short pause the instrument 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 an error message is sent, e.g. '**Save failed - Invalid device**'.

Notes. 1. When you START a database in RAM it is automatically saved to the file in E: drive called filename.dbf, where filename is indicated in the filename.RUN file. It is then reloaded and started.
 2. Modifications to a database are carried out on the RAM image only, not directly to the filename.dbf file in E: drive. They are copied to E: drive (overwriting the existing filename.dbf file) automatically as you restart the database, or when you do a SAVE operation.

LOAD COMMAND

Retrieves a control program from a specified memory area and loads it to the instrument RAM.

Note A LOAD operation can be performed using the 'Load' option during online reconfiguration.

Select LOAD from the UTILITIES options menu - the default filename specification, **E:<filename>.DBF** is displayed. Edit the specification if needed (to alter the filename or its source, as described in 'SAVE utility' above), then press <Enter>. After a short pause the instrument signals completion as described for the SAVE option. Typing any key returns the UTILITIES menu.

An invalid filename specification aborts the load, and an error message is sent, e.g. '**Load failed - File not found**'.

FILE COMMAND

Permits access to the instrument 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). Press <Escape> to return to the UTILITIES menu.

Move the cursor up and down the file list and tag files with an asterisk (*) using <Enter>. 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 only - *Format*. Finally, select a function and press <Enter> to carry it out.

Note The Find function has wild-card characters (?) to help you locate filenames containing known character strings).

UTILITIES command (Cont.)

ELIN SETUP PAGE COMMAND

The ELIN Setup page allows the instrument's 'network.unh' file to be configured.

Note The network configuration can be edited using the Instrument Properties dialog via the Project Environment or the instrument folder. The 'network.unh' file can also be edited using an appropriate text editor, e.g. 'notepad.exe'.

```

Elin Setup (network.unh file)
-----
LIN PROTOCOL SETUP
Protocol Name      NET
All Subnet Enable OFF
Elin              ON
Node number (Hex) 01
LOCAL IP SETUP
Get Address Method Fixed
IP Address         192.168.111.22
Subnet            255.255.255.0
Default Gateway   0.0.0.0.
ELIN PARAMETERS
Unack Timeout     250 msec
Rmt Unack Timeout 250 msec
No of retries     24
Fwd No of retries 100
UnThrottled Tx Lim 20
Busy Throttle Time 10 msec
EDB Connect Used  5 sec
EDB Connect Unused 20 sec
EDB Timeout Used  20 sec
EDB Timeout Unused 30 sec
EDB Timeout TX conf 30 sec
REMOTE SUBNET NODE LIST
149.121.173.1
TELNET
Login Id
Password *****
Timeout 1440 Secs
    
```

Figure B-5: EIN Setup page (example)

- LIN PROTOCOL SETUP This area of the screen allows specification of the items in the '[LIN]' section of the 'network.unh' file.
- LOCAL IP SETUP Allows the specification of those items in the '[IP]' section of the 'network.unh' file. The IP address etc. is entered using data obtained from the network administrator.
- ELIN PARAMETERS Timeout and retries configuration associated with slower communication links when standard ELIN encounters errors due to the short timeouts etc.. Problems normally manifest as communications alarms, because repeated errors force a disconnection between the end nodes. If this is the case then increasing the timeouts or retries may solve the problem.

Note Contact the support desk for details.

REMOTE SUBNET NODE LIST Allows the user to enter the IP addresses of all the nodes with which it is required to communicate. (The '[PR]' section of the 'network.unh' file.)

Once all the required entries have been made, the ESC key should be operated. A confirmation message asks if the 'network.unh' file is to be updated. If 'Y', the file is updated and a power cycle is requested.

CROSS SUBNET WORKING With 'All Subnet Enable' set 'OFF' (default), the instrument will not communicate ELIN cross subnet. This can be overridden in the network.unh file by setting 'All Subnet Enable' to 'ON'. This defines the behavior when the unit is powered on. The ability to communicate cross subnet can be modified at run time by using the 'Options.AllSubnt' bit in the unit's header block. Set to TRUE, this bit enables cross-subnet working. When set to FALSE, cross-subnet working is disabled.

Note This bit may be set FALSE, remotely, from a cross-subnet connection. If this is done, communications will be lost, and it will thus not be possible to reset it to TRUE from the cross-subnet connection.

B.3.3 ALARMS command

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 function block containing the alarm.

Intentionally left blank

Index

Symbols

.cpf file	4-4
.dbf file	2-10, 4-4, 4-5, B-5
.run file	4-4, B-5
.sdb file	1-1
.txt file	1-3, 4-2
.udz file	4-5
.unh file	2-9, B-6

A

Address	
Internet Protocol, IP	2-9
LIN Node Number	2-10
All Subnet Enable	B-6
Arcnet	
Communications	1-3
Connector Pinout	2-7

B

Base Unit	
Layout	2-4

C

Cables	
Category 5	2-5, 2-6
Cross-over	2-6
Straight-through	2-6
Twisted pair	2-7
Cold Start	
Parameter file	4-4
Communications	1-3
ALIN	1-3, 2-7, 3-1
ELIN	1-3, 2-6, 3-1
LIN	1-3
Peer-to-Peer	1-3
Serial	2-7
Configuration	1-1, 1-3, 4-1
Advanced	4-4
Configuration Tool	4-1, B-1
Terminal Configurator	B-1
Telnet	4-2, B-2
Connection	2-6
9-way 'D'-Type	2-7
Forwarding Relay	2-8, A-3
Power supply	2-8
RJ45	2-6
Watchdog Relay	2-8, A-3

D

DIN Rail	2-4
Mounting	2-4

E

ELIN Setup page	B-6
Ethernet	1-3
Communications	1-3
Connector Pinout	2-6
LIN network	1-1
Event Log	1-3, 4-5
Error	4-5
Records	4-5

F

Features	1-3
FILE	B-5
Forwarding Relay	2-8
Function block	1-1, 4-4, B-4
Configuration (Header) block	4-5
Diagnostic block	1-3

H

Handling precautions	2-3
Health Monitoring	1-3

I

Installation	1-1
Category II	A-1
Safety requirements	2-2
Instrument	1-2
Instrument Properties dialog	B-6
IP Address	2-9, B-6
Editing the Network settings	2-10
Link-Local	2-9
Manual	2-9
network.unh	B-6
Terminal Configurator	B-6

L

Label symbols	2-3
LIN	1-3
Communications	1-3
Instrument	1-3
Local Instrument Network	1-3
Node Number	2-9

M			
Mounting Unit			
DIN Rail	2-4		
N			
Network.unh file	2-9		
Non-redundant	1-3, 2-4, 2-5		
O			
On-line Reconfiguration	1-1		
Options.AllSubnt	B-6		
Other Information Sources	1-1		
P			
Peer-to-Peer	1-3		
Pollution	2-2		
Conductive Pollution	2-2		
Pollution degree 2	A-1		
Port Number	2-9		
Power cycle	B-6		
Power Supply	2-8		
Product safety	2-2		
R			
Redundant	1-3, 2-4, 2-5		
Relay			
Forwarding	1-3, A-3		
Watchdog	1-3, A-3		
S			
Safety & EMC Information	2-1		
Sequential Function Chart	1-1		
Serial			
Connector Pinout	2-7		
Specification	1-1, A-1, A-2		
Status	1-3, 3-1		
LED	1-3, 3-1		
Strategy	1-1, 1-3, 4-2, B-4		
Structured Text (ST)	4-4		
Symbols used in labelling	2-3		
T			
Telnet	4-2, B-2		
Configurator	4-2, B-2, B-4		
Terminal Configurator	1-1, B-1		
Configurable items	B-1		
LIN Database configuration	B-4		
ELIN SETUP page	B-6		
INSPECT command	B-4		
MAKE command	B-4		
UTILITIES OPTIONS menu	B-4		
Main Menu Access	B-2		
Quitting	B-3		
Running	B-2		
Telnet	B-4		
The Main menu	B-3		
Terminator	2-6		
Typical applications	1-2		
U			
User Interface	1-1, 3-1		
UTILITIES OPTIONS menu	B-4		
FILE command	B-5		
LOAD command	B-5		
SAVE command	B-5		
START command	B-5		
STOP command	B-5		
W			
Watchdog Relay	2-8		