

## The T820 TO MOUNT THE UNIT

This unit is intended to be mounted in a panel or on a DIN rail.

*Note. Remember to set RS485 Link positions (LK1 and LK2), and if required, remove the wire link to enable the connection of a Redundant Power Supply before installing.*

### DIN RAIL MOUNTING

- Mount the DIN rail, using suitable bolts.
- Ensure that the DIN rail makes good electrical contact with the metal base of the panel.
- Guide the T820 to the DIN rail, allowing the lower teeth of the DIN rail Mounting Bracket to rest behind the DIN rail itself.
- Slowly and firmly, push the top of the T820 back until the DIN rail Locking Mechanism springs back into place. This is confirmed by an audible 'click'.

The T820 is now mounted to the DIN rail.

The T820 is rated IP20.

*Note. To remove the unit simply lever the DIN Rail Locking Mechanism to release it from the DIN Rail.*

### DIRECT PANEL MOUNTING

- Check that the mounting panel is no thicker than 25mm (typically for wood or plastic) and no thinner than 2mm (for steel).
- In the mounting panel, cut an aperture 99mm x 138mm (± 1mm).
- From the front side of the mounting panel, insert the instrument (rear end first) through the aperture.
- Support the rear of the T820 so that the seal is flat against the front of the mounting panel.
- Insert two panel clamps into the opposing pair of rectangular apertures at the sides of the case.
- Tighten the screws of the clamps sufficiently to hold the T820 firmly in position.

The T820 is rated IP66 front of panel and IP20 for the rear of the panel.

*Note. Clamps can be easily removed from the unit. Then remove it from the mounting panel.*

## T820 HUMAN MACHINE INTERFACE

### INSTALLATION AND WIRING INSTRUCTIONS

#### What is the T820?

The T820 Human Machine Interface (HMI) is a monochrome (black and white) graphical 128 x 64 pixel LCD module. It can be supplied as either a,

- Control unit
- Display unit

As a Control unit it will hold a control strategy, and all other required files on the Compact Flash Memory Card. It can then operate as a controller, interacting with I/O subsystems and other instruments in the control system. It can also display information from the control system using customer generated User Screens. It is capable of communicating via Ethernet using LIN protocol, Modbus-TCP or RS485/422 Modbus.

As a Display unit it will connect to a T2550. This will allow the T2550 to be configured from the T820 panel interface and display information from the control system in the same manner as a Control unit.

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## Connecting the 24Vdc Power Supply

**Caution**

Before proceeding with any wiring on this unit, please read section on Wiring, and Safety and EMC information. It is the responsibility of the installer to ensure the safety and EMC compliance of any particular installation.

A suitable power supply is the 250P. This is a DIN rail mounted unit, which may be mounted adjacent to the instrument or remotely. Alternatively, an existing power supply may be used provided it meets the specification below.

Connection of a reversed polarity supply will not damage the unit. The fuse is not user replaceable, therefore the unit must be returned to the factory for replacement.

This unit can be connected as part of a power ring or be serviced by a redundant 24Vdc power supply.

### POWER RING CONNECTION

- Connect the input supply to the + and - terminals, ensuring the correct polarity.
- Connect the output from the remaining + and - terminals.

The unit can be connected as part of a Power Ring to a maximum of 16A.

### REDUNDANT POWER CONNECTION

Redundant Power can be supplied via two independent sources.

*Note. Remove the Redundant Power Supply wire link to enable Redundant Power Supply facility.*

- Connect the first input supply to the + and - terminals. Ensure the correct polarity.
- Connect the second input supply to the + and - terminals. Ensure the correct polarity.

Power supply voltage: 18.0Vdc min to 28Vdc max  
Supply ripple: 2Vp-p max  
Power consumption: 3.5W max

### POWER SUPPLY SPECIFICATION

## Configuring the T820 Controller

When the Rear cover is removed, the Links can be set to define the communication options, the Redundant Power supply wire link can be removed, the internal battery and Compact Flash memory card can be changed.

### REMOVING THE REAR COVER

**Caution**

Always ensure the power is isolated prior to removing the rear cover and before configuring the hardware

- Remove and retain the screws that secure the rear cover in place.
- Carefully withdraw the rear cover to expose the internal PCB and Compact Flash memory card.

#### Illustration Key

- Rear cover screws
- Compact Flash card
- Termination Option link
- Communication Option link
- Redundant Power Supply wire link
- 24V Power Supply
- Ethernet port
- Serial port
- Internal Battery

## Changing RJ45 Port Parameters

Port parameters can only be changed by a user with sufficient Access privileges. These menus allow the configuration of both Ethernet and Serial Protocols.

*Note. Using the on-screen menus to change the Port parameters is only applicable if the unit is manufactured and operating as a Control unit.*

- At the Comms Setup page, press the left and right Navigation keys to select the Port and the up and down Navigation keys to select the field.
- Then, press the Return key to change the selected parameter, enter a numeric value or select a value from the popup menu.
- Finally, save the changes using the Option and Return key.

*Note. Each Port has a unique set of available options.*

Displays network parameter menu

Displays list of connected instruments

MODEM/M/TCP  
ETHERNET  
CANCEL  
SAVE

Comms Setup

*Note. The Node number is displayed in Hex.*

Node No. 322222  
Protocol RS485  
Hardware COM1  
PORT

Comms Setup

TermCfg  
Modbus/S  
Modbus/M

None

Comms Setup

*Note. Band Rate, Parity, Stop Bits, Data Bits and Timeout values can be configured from these menus, as well as each Port Protocol.*

## RESTRICTION OF HAZARDOUS SUBSTANCES

### Restriction of Hazardous Substances (RoHS)

Product group T820

Table listing restricted substances

Chinese

限制使用材料一览表

| 产品      | 铅 | 汞 | 镉 | 六价铬 | 多溴联苯 | 多溴二苯醚 |
|---------|---|---|---|-----|------|-------|
| 产品 T820 | 0 | 0 | 0 | 0   | 0    | 0     |
| 印刷线路板零件 | X | 0 | X | 0   | 0    | 0     |
| 附属物     | 0 | 0 | 0 | X   | 0    | 0     |
| 显示器     | 0 | 0 | 0 | 0   | 0    | 0     |

0 表示该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   | Pb | Hg | Cd | Cr(VI) | PBB | PBDE |
|-----------|----|----|----|--------|-----|------|
| T820      | 0  | 0  | 0  | 0      | 0   | 0    |
| PCBA      | X  | 0  | X  | 0      | 0   | 0    |
| Enclosure | 0  | 0  | 0  | X      | 0   | 0    |
| Display   | 0  | 0  | 0  | 0      | 0   | 0    |

0 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 | <i>Martin Greenhalgh</i> | 22 <sup>nd</sup> March 2007. |

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### MANUFACTURING ADDRESS

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We pursue a policy of continuous development and product improvement. The specification in this document may therefore change without notice. The information in this document is given in good faith, but is intended for guidance only. We will accept no responsibility for any losses arising from errors in this document.

## Installation Safety Requirements

Various symbols used on the instrument are described below:

Caution (refer to the accompanying documents) Functional (ground) earth Protective earth terminal

### 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:

- Installation category II.** The rated impulse voltage for equipment on nominal 230V ac mains is 2500V.
- Pollution degree 2.** Normally, only non-conductive pollution occurs. However, occasionally a temporary conductivity caused by condensation shall be expected.

### PERSONNEL

Installation must only be carried out by qualified personnel.

### WIRING

It is important to connect the unit in accordance with the wiring data given in this instruction sheet. Only use copper conductors for connections. The wiring of installations must comply with all local wiring regulations. For example in the UK use the latest version of the IEE wiring regulations (BS7671). In the USA use NEC Class 1 wiring methods.

### POWER ISOLATION

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

### OVERCURRENT PROTECTION

It is recommended that the DC power supply to the system is fused appropriately to protect the cabling to the unit. The unit has internal fault protection with no user serviceable parts.

### VOLTAGE

**Caution**

Voltages of greater than 40V (peak), relative to the safety earth potential, must never be applied to any of the dc input terminals (positive or negative), as under such circumstances, the unit may become hazardous to the touch.

### CONDUCTIVE POLLUTION

Electrically conductive pollution must be excluded from the enclosure 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 enclosure. Where condensation is likely, include a thermostatically controlled heater in the enclosure.

### INSTALLATION REQUIREMENTS FOR EMC

To ensure compliance with the European EMC directive certain installation precautions are necessary: For general guidance refer to *EMC Installation Guide*, Part no. HA025464.

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## Ethernet Communication

The T820 has provision for both Serial and Ethernet connections. The communications and instrument parameters are configured via the on-screen menus. Press the Options button from the Communications Setup page to show the Instrument parameters.

*Note. Ethernet communication is only available on Controller units.*

This RJ45 connector is a 10/100base T port and can be connected to a hub or switch with Cat5 cable via the standard RJ45 connector. Alternatively, connect direct to a device supporting 10/100base T Ethernet.

*Note. A crossover cable is not required. The unit can automatically configure transmit and receive signals.*

The connector includes 2 LEDs, a Yellow LED showing communication activity and a Green LED showing speed (On indicates 100Mbps, Off indicates 10Mbps).

It can be used to create a network of Tactician instruments, including a range of I/O modules and to interface with devices supporting Modbus-TCP either as a Modbus Master or a Modbus Slave.

### CONNECTIONS TO RJ45 CONNECTOR

| RJ45 Pin | Colour       | Signal |
|----------|--------------|--------|
| 8        | Brown        | N/A    |
| 7        | Brown/White  | N/A    |
| 6        | Green        | Rx-    |
| 5        | Blue/White   | N/A    |
| 4        | Blue         | N/A    |
| 3        | Green/White  | Rx+    |
| 2        | Orange       | Tx-    |
| 1        | Orange/White | Tx+    |

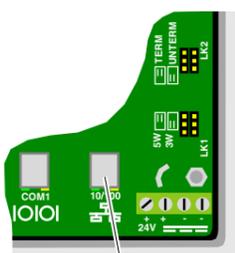
Plug shroud to Cable screen

### Warning

CABLE COLOURS MAY VARY!



**Caution**  
Always ensure the power is isolated prior to removing the rear cover and before configuring the hardware.



Ethernet port

## Serial Communication

The T820 has provision for both Serial and Ethernet connections. The Serial RJ45 port allows communications with a T2550, or a variety of third-party serial devices via a Modbus network.

This RJ45 connector includes 2 LEDs, a Yellow LED showing communication activity and an inactive Green LED. This port must be configured in conjunction with the Links, LK1 and LK2.

*Note. The Display unit variant supports the 5-wire pinout only, LK1 pins 1-3 and 2-4. It is also recommended that the unit is configured as an unterminated unit, LK2, pins 3-5 and 4-6. This allows direct connection to a T2550.*

### SERIAL RJ45 PIN CONNECTIONS TO NETWORK

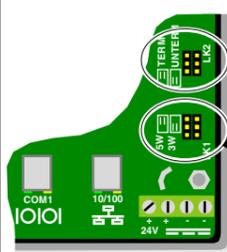
| RJ45 Pin | Colour       | 3-wire | 5-wire    |
|----------|--------------|--------|-----------|
| 8        | Brown        | N/A    | TX+ (TxA) |
| 7        | Brown/White  | N/A    | TX- (TxB) |
| 6        | Green        | Gnd    | Gnd       |
| 5        | Blue/White   | N/A    | N/A       |
| 4        | Blue         | N/A    | N/A       |
| 3        | Green/White  | Gnd    | Gnd       |
| 2        | Orange       | A      | RX+ (RxA) |
| 1        | Orange/White | B      | RX- (RxB) |

Plug shroud to Cable screen

### CONNECTORS

#### Warning

CABLE COLOURS MAY VARY!



**LK2**  
Fit both links:  
3-5 and 4-6 Unterminated device (default)  
1-3 and 2-4 Terminated device

*Note. Configure termination on the last device in the chain ONLY.*

**LK1**  
Fit both links:  
3-5 and 4-6 RS485 3-wire  
1-3 and 2-4 RS485 5-wire (default)

*Note. Remember when the instrument is operating as a Display unit, LK1 pins 1-3 and 2-4 must be configured for the required 5-wire communications.*

### Caution

Always ensure the power is isolated prior to removing the rear cover and before configuring the hardware.



## Setting the IP Address

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

*Note. The Compact Flash card is accessed using a standard Compact Flash card reader. The 'network.unh' file MUST be edited using the Instrument Properties dialog. It can be edited using a text editor program, e.g. 'notepad.exe', but this is not recommended.*

### ALLOCATION OF IP ADDRESS

DHCP is where the instrument (IP host) will ask a DHCP server to provide it with an IP Address. Typically this happens at start-up, but can be repeated during operation. DHCP includes the concept of assigned values that will 'expire'.

A DHCP server is required that can respond to the request. The DHCP server will need to be configured to correctly respond to the request. This configuration depends on the local company network policy.

BOOTP or Bootstrap Protocol (Internet (TCP/IP protocol)) is used by a network computer to obtain an IP Address and other network information such as server address and Default Gateway. Upon startup, the client station sends out a BOOTP request to the BOOTP server, which returns the required information. A BootPTimeout period can be configured. If this period elapses before the IP Address, Subnet mask, and Default Gateway address are obtained, the values will display 0.0.0.0.

Link-Local is used as a fallback to either DHCP or BootP, or can be used on its own as the only IP Address configuration method. Link-Local will 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, and was originally specified as a fallback from DHCP.

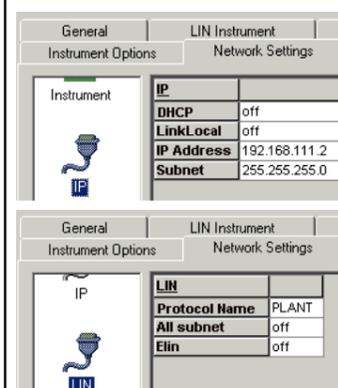
Fixed requires the IP Address to be explicitly defined in the 'network.unh' file.

### CHANGE ADDRESSES USING ON-SCREEN MENUS

To change the IP Address configuration if a Compact Flash memory card reader is unavailable, a user with appropriate Access privileges can simply edit the fields displayed on-screen after the Options button is pressed from the selected Communications Setup page.

*Note. This also applies to Modbus-TCP parameters, which are also available by pressing the Options button from the Communications Setup page.*

### EDITING THE NETWORK SETTINGS



Each instrument uses a one-to-one mapping of, LIN Node Number to a single IP Address, defined in the Instrument Properties dialog.

When despatched from the factory, the instrument is configured using DHCP with Link-Local Fallback, and a default LIN Network name, 'NET'.

However, if the instrument is to have a fixed IP Address, i.e. 192.168.111.2, and use the LIN Protocol Name, 'PLANT', the Instrument Properties dialog must be used to modify these parameters.

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

To display the Instrument Properties dialog, select the **Properties** command after selecting the Instrument Folder in an appropriate Explorer view.