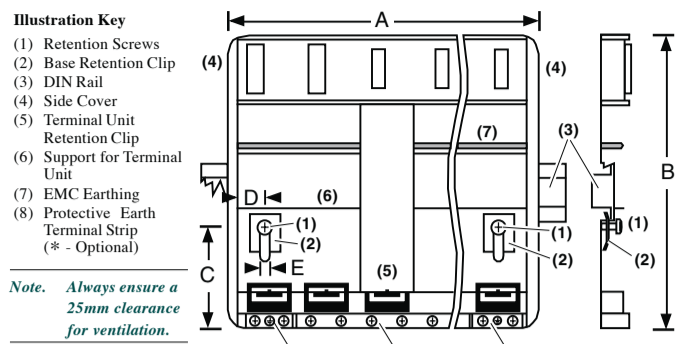


The Base Unit

TO MOUNT THE BASE

This unit is intended to be mounted within an enclosure, or in an environment suitable for IP20 rated equipment. It can be DIN rail or bulkhead mounted.



Module	Dimensions					Weight (kg)	
	A	B	C	D	E	No Modules	All Modules
Base Unit	36	180	68	15	5	0.6	1.0
T2550B - 00S	164	180	68	15	5	0.7	1.1
T2550B - 04R	214	180	68	15	5	0.9	1.3
T2550B - 06R	264	180	68	15	5	1.2	1.8
T2550B - 08R	467	180	68	15	5	2.5	3.0

DIN RAIL MOUNTING (HORIZONTAL)

- Mount the DIN rail horizontally, using suitable bolts.
- Ensure that the DIN rail makes good electrical contact with the metal base of the enclosure.
- Loosen screws (1) in the base, and allow them, and the associated base retention clips (2) to drop to the bottom of the screw slot.
- In the back of the base is an extruded slot which locates with the DIN rail (3).
- Fit the top edges of this into the top edge of the DIN rail (3). Slide the screws (1) with the associated clips (2) upwards as far as they will go towards the top of the screw slots. The angled edge of the base retaining clip (2) must locate behind the bottom edge of the DIN rail.
- Tighten the screws (1).

DIN RAIL MOUNTING (VERTICAL)

Caution

It is acceptable to mount the base vertically. If it is mounted vertically, however, it is advisable to fit a fan in the cubicle to ensure a free flow of air around the modules.

- Mount the DIN rail vertically, using suitable bolts.
- Ensure that the DIN rail makes good electrical contact with the metal base of the enclosure.
- Loosen screws (1) in the base, and move them and the associated base retention clips (2) to the bottom of the screw slot.
- In the back of the base is an extruded slot which locates with the DIN rail (3).
- Fit the top edge of this into the top edge of the DIN rail (3).
- Slide the screws (1) with the associated clips (2) upwards as far as they will go towards the top of the screw slots. The angled edge of the base retaining clip (2) must locate behind the bottom edge of the DIN rail.
- Tighten the screws.

DIRECT PANEL MOUNTING

- Remove the screws (1) and base retention clips (2).
- Hold the base horizontally or vertically on the panel and mark the position of the two holes on the panel.
- Drill two 5.2mm holes in the panel.
- Using M5 bolts supplied, secure the base to the metal panel.



Caution



Do not operate the equipment without a protective earth conductor connected to one of the earth terminals on the base unit. The earth cable should have at least the current rating of the largest power cable used to connect to the unit.

Connect the protective earth with a suitable tinned copper eyelet, and use the screw and washer supplied with the base unit, tightened to a torque of 1.2Nm (910.51bm).

This connection also provides a ground for EMC purposes.

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

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.

The power supply is the 2500P. This is a DIN rail mounted unit, which may be mounted adjacent to the base or remotely. Alternatively, an existing power supply may be used provided it meets the specification below.

The IOC terminal unit is not fused, but is diode protected against connection of a reversed polarity supply. Connection of a reversed polarity supply will not damage the unit. All modules are individually fused. The fuse is not user replaceable, therefore the unit must be returned to the factory for replacement.

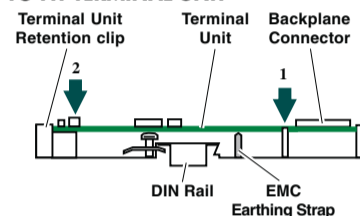
POWER SUPPLY SPECIFICATION

Power supply voltage:	18.0Vdc min to 28Vdc max
Supply ripple:	2Vp-p max
Power consumption:	90W max per base

Note. The current taken by each module is 100mA on average. 18V is the absolute lower limit. The use of an 18V Power Supply with any appreciable voltage drop may cause unpredictable or out of specification operation. Damage may occur when a supply voltage >30Vdc is used.

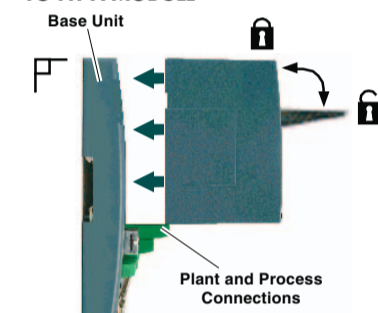
Assembling I/O Modules & Terminal Units

TO FIT TERMINAL UNIT



- Locate tag on the Terminal Unit PCB with the slot in the Base.
- Press the lower end of the Terminal Unit until secured in place by the Retention clip. This is indicated by a 'click' as the clip locks into place. To remove simply press the Retention clip to release the Terminal Unit and withdraw it from the slot in the Base Unit.

TO FIT A MODULE



Modules are locked into position using the Retaining lever on the face of the module. The module must be fitted and removed with the Retaining lever in the open (up) position, as shown in this side view. Once fitted the lever is closed to securely lock the module in place.

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 BootP timeout 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.

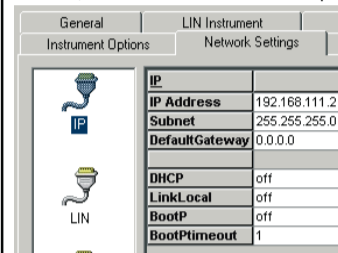
The Link-Local algorithm ensures that an instrument (IP host) on a network will choose a unique IP Address from the Link-Local range.

This is supported by Windows 98 and onwards, and was originally specified as a fallback from DHCP.

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

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.

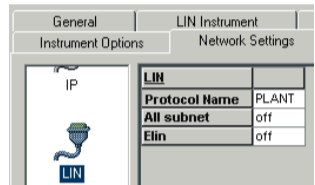


When despatched from the factory, the instrument is configured using DHCP with Link-Local Fallback, and a default LIN Network name, 'NET'.

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.



RECOVERY FROM UNKNOWN IP ADDRESS CONFIGURATION

To reset the IP Address, and Subnet Mask (255.255.255.0) of an Instrument with an unknown IP Address when a Compact Flash card reader is not available, set the LIN Address switches as denoted below.

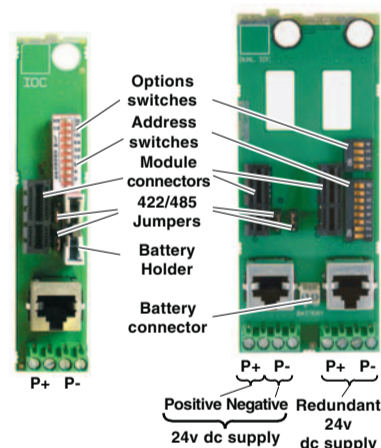
IO Unit	LIN Address Switches	In Position	For IP Address
Simplex Unit	ALL (SW1:S1 to SW1:S8)	OFF	192.168.111.222
Duplex Unit	ALL (SW1:S1 to SW1:S8)	ON	Left - 192.168.111.222 Right - 192.168.111.223

A Computer with a fixed IP Address on this Subnet can then be connected directly to the instrument and used to inspect and edit the IP Address of the T2550 IOC module.

Note. Use the Instrument Properties dialog to edit the IP Address. The Terminal Configurator may also be used, but this is not recommended.

Terminal Unit (Simplex and Duplex Unit)

The Terminal Units have links and switches for configuring the Mode, LIN address and instrument Restart options. The Simplex Unit uses one set of 10 switches to set these configurations. The Duplex Unit has one set of 8 switches, SW1, to configure the Duplex operation and instrument LIN address, and one set of 4 switches, SW2, to set the instrument restart configuration.



Note. The power supply connections also apply to the Profibus Terminal Unit

The Ethernet Port

This is a 10/100base T port. It can be connected to a hub or switch with Cat5 cable via the RJ45 connector to create a network of Tacician instruments, including a range of operator interface units, and to interface with devices supporting Modbus-TCP as a master or a slave.

The Terminal Unit will autonegotiate if connected directly to a device supporting 10/100base T Ethernet, so RJ45 cross-over cables not required.

BATTERY SUPPORT

The Simplex Unit supports Battery backup via the Lithium Manganese Dioxide battery, maintaining the Real-Time Clock for 1.5 years continuous use.

Warning

If batteries are abused, a caustic solution may leak that can result in the corrosion of aluminium and copper. The caustic solution must be neutralised using a weak acidic solution, i.e. vinegar, or washed away with copious amounts of water. Batteries must be disposed of according to current local regulations, and not discarded with normal refuse.

The Duplex Unit supports external Battery backup only.

CONNECTIONS TO RJ45 SOCKET

RJ45 Pin	Colour	Signal
8	Brown	Not Used
7	Brown/White	Not Used
6	Green	RX-
5	Blue/White	Not Used
4	Blue	Not Used
3	Green/White	RX+
2	Orange	TX-
1	Orange/White	TX+

Warning
CABLE COLOURS MAY CHANGE!

SW1: LIN ADDRESS CONFIGURATIONS

In Duplex mode, the primary is initially in the left-hand (even address) first slot and the secondary, the right-hand (odd address) second slot. If the secondary must take over, and become the primary, it will also take over the even address. In Simplex mode, it always adopts the even address. It is strongly recommended that the odd address remains unallocated on this LIN segment to avoid address clashes if a second module is subsequently added. A Simplex Unit always adopts the even address. It is strongly recommended that the odd address remains unallocated on this LIN segment.

Simplex Terminal Unit

SW1: Function

10	Simplex Only (See SW2 Note below).
9	Addr. Bit 6
8	Addr. Bit 7 (MSB, value 128)
7	Addr. Bit 6
6	Addr. Bit 5
5	Addr. Bit 4
4	Addr. Bit 3
3	Addr. Bit 2
2	Addr. Bit 1 (LSB, value 2)
1	Not Used

Duplex Terminal Unit

SW1: Function

8	Addr. Bit 7 (MSB, value 128)
7	Addr. Bit 6
6	Addr. Bit 5
5	Addr. Bit 4
4	Addr. Bit 3
3	Addr. Bit 2
2	Addr. Bit 1 (LSB, value 2)
1	On = Duplex, Off = Simplex

SW2: OPTION CONFIGURATIONS

4	Not Used
3	Duplex Only (See Note below).
2	
1	On = Restart after Watchdog Off = Remain in Reset

Note. 'Hot/Cold' start-up.

Bit 2(9) Bit 3(10) Function

Off	Off	Automatic database generation.
On	Off	Attempt cold start. Halt if fails.
Off	On	Attempt hot start. Halt if fails.
On	On	Attempt hot start, if failed attempt cold start. Halt if fails.

Serial Communications (Modbus & Profibus)

The Serial network supports Modbus and Profibus communications protocols. Modbus communications are via the RJ45 connector on the Terminal Unit, but Profibus communications are via a standard 9-way D-Type connector on a dedicated Profibus Terminal Unit.

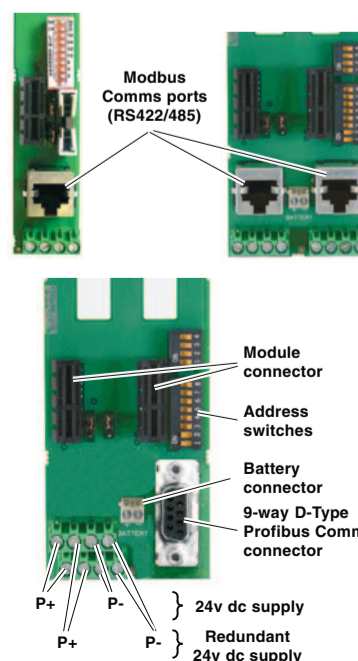
The system power connections (standard screw terminals) are provided by the Terminal Unit.

The Serial connection may be used to connect to an operator interface unit, create a Modbus or Profibus network or communicate with a variety of third-party serial devices.

BAUD RATE

In Modbus networks, each instrument baud rate is configured via the Instrument Properties dialog, and MUST be set the same for both the instrument transmitting and the instrument receiving data.

In Profibus networks, the Baud Rate is defined by the Profibus Master, by detecting the fastest Baud Rate that all devices can operate. The Profibus Terminal Unit operates at 12M Baud.



SERIAL NETWORK CONNECTOR (EIA 485)

Pin	Colour	Modbus		Profibus		
		3-wire signal	5-wire signal	Pin	Signal	Description
-	-	-	-	9	Not Used	N/A
8	Brown	N/A	RxA	8	A	Receive/Transmit A
7	Brown/White	N/A	RxB	7	Not Used	N/A
6	Green	Cmn	Cmn	6	VP	5V
5	Blue/White	N/A	N/A	5	Cmn	Signal Common
4	Blue	N/A	N/A	4	Not Used	N/A
3	Green/White	Cmn	Cmn	3	B	Receive/Transmit B
2	Orange	A	TxA	2	Not Used	N/A
1	Orange/White	B	TxB	1	Shield	Shield (ground)

Warning

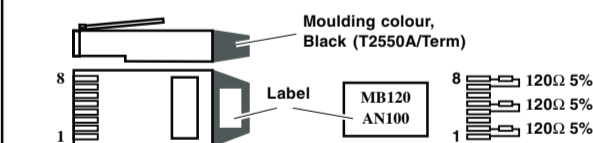
CABLE COLOURS MAY CHANGE!

COMMUNICATIONS LINE TERMINATOR

The communications line MUST be terminated ONLY on the last device in the chain using the appropriate load resistors. To minimise on site wiring and to provide the correct resistor values, 'Terminators' are available from your distributor.

RJ45 LINE TERMINATION

The Modbus TCP/IP RJ45 line terminator, T2550A/Term, is plugged into the last RJ45 socket in the chain. If the operating interface is a PC or PLC this should be terminated in accordance using the appropriate load resistors.



LINK CONFIGURATION

DUPLEX UNIT

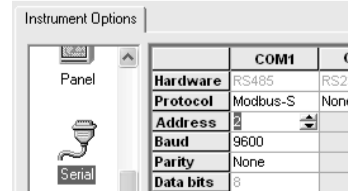
Fit applicable links as shown:
Link LK1 and LK2 1-2 2 (3) wire (default)
Link LK1 and LK2 2-3 4 (5) wire

SIMPLEX UNIT

Fit applicable links as shown:
Link LK1 and LK2 1-2 2 (3) wire (default)
Link LK1 and LK2 2-3 4 (5) wire

ADDRESS CONFIGURATIONS

Profibus Address configurations from 1 to 127 must be set in the Instrument Properties dialog via the Instrument Folder or Modbus Tools. 0 is an invalid address, and when configuring a duplex Profibus system the last permitted Address configuration is 125, to allow an even address, e.g. 126, for the second IOC in the redundant pair.



Note. Explicit Modbus Registers, in Modbus Tools MUST be configured to permit Profibus Slave communications, see Instrument Handbook.