T225 Bridge

User Manual

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About

Title	T225 Bridge Unit User Manual
Part Number	HA 028 822
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Initially Supplied With	

Declaration of Conformity

Manufacturer's name:	**Eurotherm Limited**
Manufacturer's address:	**Faraday Close, Worthing, West Sussex BN13 3PL, United Kingdom**
Product type:	**ELIN/ALIN BRIDGE**
Model(s):	**T225**
Safety specification:	**BS EN60950: 1999**
EMC emissions specification:	**BS EN55011: 1999 (Class A)**
EMC immunity specification:	**BS EN61000-6-2: 1999**

Eurotherm Limited hereby declares that the above products conform to the safety and EMC specifications listed. Eurotherm Limited further declares that the above products comply with the EMC Directive 89 / 336 / EEC amended by 93 / 68 / EEC, and also with the Low Voltage Directive 73 / 23 / EEC.

Signed: WR Davis **Dated:** 20th July 2005

Signed for and on behalf of Eurotherm Limited
William Davis
(Technical Director)

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T255 User Manual

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CHAPTER 1 INTRODUCTION

The T225 ELIN/ALIN Bridge Unit (Part no. LA028824) is based on the Invensys Intelligent Integrator hardware. Consult the *Installation and Wiring Sheet* (Part no. HA028821) for detailed information on installing the unit.

The T225 provides ELIN/ALIN connectivity. This Unit requires configuring for ALIN and ELIN communications, but thereafter provides transparent LIN communications between ELIN and ALIN nodes.

1.1 LOGICAL NETWORKS

A LIN node can exist on either an Arcnet LIN (*ALIN*), an Ethernet LIN (*ELIN*) and an Original coax LIN (*logical OLIN*) network.

- ALIN nodes on the same logical ALIN network will be daisy chained together or will be connected via passive hubs or active AI hubs, i.e if two ALIN nodes are connected by a passive or active hub they are still on the same logical ALIN network.
- ELIN nodes are on the same logical ELIN network if they are on the same subnet and have the same ELIN protocol name.
- OLIN nodes on the same logical OLIN network will always be connected to the same physical cable.

1.2 PROTOCOL

Details on the ELIN protocol can be found in the *ELIN User Guide* (Part no. HA082429U999).

CHAPTER 2 INSTALLATION

2.1 CONNECTIONS AND WIRING

In normal runing mode the following connections will be made to the T225.

- ELIN RJ45 Ethernet connection in ETH1, (ETH2 is not operational)
- 2 ALIN RJ45 cables or 1 cable and a Terminator
- Power Supply 24V @ 0.4A
- Optional digitals for ELIN, ALIN and Watchdog status

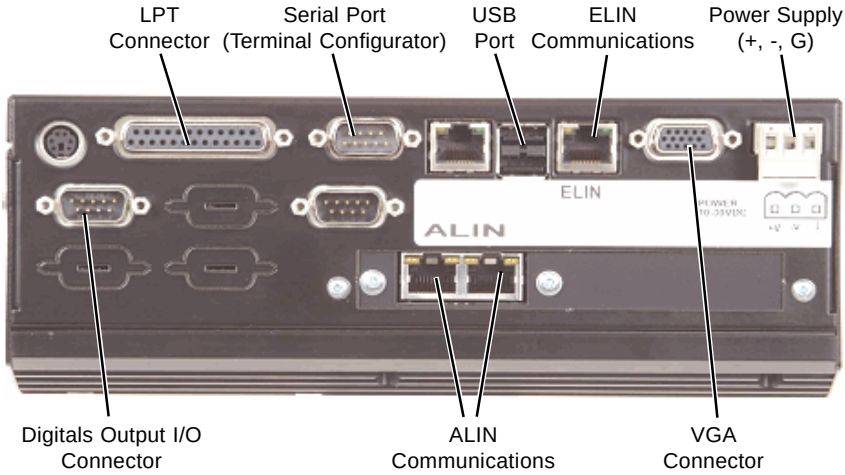

Figure 2.1 Panel Overview

2.2 POWER SUPPLY

The T225 Bridge Unit requires 24Vdc Power Supply. Contact your distributor , 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.

2.3 WATCHDOG, IN/OUT CONNECTOR (P3400)

The signals of the Connector P3400 are shown in the table below.

Name	Function	Front Panel D-Sub
WatchdogOut+	Unit is running	2
WatchdogOut-	Unit is running	1
OUT1+	Forwarding messages	7
OUT2+	ALIN good	8
OUT3+	ELIN good	9
OUT1,2,3-	Common negative for OUT1-3	6

Table 2.3 Watchdog (IN/OUT) Connections

All signals from this connector are fully opto-isolated against all other signals and frameground of the Invensys Intelligent Integrator. The outputs are open collector outputs with up to 30V and up to 40 mA load current.

Note. The digital I/O output lines are battery powered and their status remains unchanged even after RESET or PowerDown.

Figure 2.3 Watchdog Connections

CHAPTER 3 USER INTERFACE

3.1 STATUS LED'S

The LED's on the front panel display the curent status of the T225 Bridge Unit.

LED	Colour	Function
IDE	Green	Activity LED for Compact Flash usage
ERR	Red	Error with ALIN or ELIN ports communications
STAT	Red	Forwarding data
PWR	Green	Power supplied to Unit

Table 3-1 Status LED's

CHAPTER 4 CONFIGURATION

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

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 fuller understanding will be required. Before configuring the T225 you will need to know the IP address, subnet mask, LIN node and ELIN protocol name that you wish to assign. The LIN node number cannot be chosen arbitarily, see the section on Bridge operation for details of how to choose a LIN node number. 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. HA082429U999) for more information.

4.1 RUN THE CONFIGURATOR

The T225 is configured via a serial port using a standard 9-way crossover cable. Any terminal emulator such as Hyperterminal will suffice.

1. Power up the PC and start HyperTerminal® (Programs > Accessories > HyperTerminal®).
   After entering a name for the link (if necessary) enter the ‘Properties’ menu and select ‘VT100’.
   In Properties > Connect-to > Configure Connection, set the communications parameters as follows:
   Baud rate = 9600, Data bits = 7, Stop bits = 1, Parity = ‘Even’.
2. When the HyperTerminal® starts, power up the instrument.

4.1 Run the Configurator (Cont.)

3. Within 60 seconds the prompt 'PRESS 'T' TO START TERMINAL CONFIGURATOR:' should appear. Type 'T' on the keyboard to start the Terminal Configurator. You should then see text on the screen similar to:

```
Telnet 149.121.165.188

EPA T225 ELIN-ALIN Bridge 11C at  266 MHz
Ethernet (MAC) address = 00:20:CE:C7:86:96
IP address = 169.254.4.36
Subnet mask = 255.255.0.0
Default gateway = 0.0.0.0
POST result (0000) = SUCCESS
Last shutdown because: Power Failure
```

Figure 4.1a 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) then this instrument can only talk to other IP hosts on this same subnet.

Note. Refer to the ELIN User Guide (Part no. HA082429U999) for full details.

® Hyperterminal is a trademark of Hilgraeve Inc.

4.1 Run the Configurator (Cont.)

4. Type 1, 'U' for Utilities, <return key>, 'E' for ELIN, <return key> to enter the ELIN setup page.

```
Elin Setup (network.unh file)
-------------------------------------------------------------------
                                   |
LIN PROTOCOL SETUP                 | REMOTE SUBNET NODE LIST
  Protocol Name        NET         |   149.121.173.1
  All Subnet Enable    OFF         |
  Elin Only Enable     OFF         |
  Node number (Hex)    01          |
                                   |
LOCAL IP SETUP                     |
  Get Address Method Fixed         |
                                   |
Unack Timeout          250 msec    |
  Rmt Unack Timeout    250 msec    |
  No of retries        24          |
  Fwd No of retries    100         |
  UnThrottled Tx Lim   0           |
  Busy Throttle Time   50 msec     |
  EDB Connect Used     30 sec      | TELNET
  EDB Connect Unused   30 sec      |   Login Id
  EDB Timeout Used     30 sec      |   Password        ********
  EDB Timeout Unused   30 sec      |   Timeout          1440 min
                                   |
```

Figure 4-1b Elin Setup (network.unh file) page - example

In the 'LIN PROTOCOL SETUP' set the protocol name and the LIN Node number. In the 'LOCAL IP SECTION' it is recommended that you use a fixed IP address. To set up a fixed IP address, cursor to the field Get Address Method DHCP+LL, type <return> and select Fixed from the menu. Extra options will appear. Fill in the IP address, Subnet; Default Gateway can be left at zero.

```
IP Address         0.0.0.0
Subnet             0.0.0.0
Default Gateway    0.0.0.0
```

4.1 Run the Configurator (Cont.)

At this point you may enable Telnet operation, it can also be enabled later, as required. Telnet access allows configuration and examination of the diagnostic blocks via a standard Telnet session. By default Telnet access is disabled, as it is a potential security risk.

To enable Telnet:

a. Select the TELNET section and type in Login Id and Password.

b. Enter a timeout to terminate a unused Telnet session.

c. Telnet login session can also be set.

Note. This is useful because only one of serial and Telnet access to the Terminal Configurator can be active at anyone time.

```
TELNET
  Login Id
  Password     ********
  Timeout       1440       min
```

The ELIN 'PARAMETERS' section is only used if the Ethernet is unreliable or slow.

Note. See the advanced configuration section in the ELIN User Guide *(Part no. HA082429U999) for more information.*

5. Press <esc> to exit the menu, Y to confirm the changes and then reboot.

CHAPTER 5 OPERATION

The Bridge Unit operates by transparently passing the Database and Filing connections between LIN nodes on ELIN and ALIN networks on either side of the T225. If a T225 fails then the connection between the end LIN nodes will fail and there will be alarms or file transfer failures as a result. If there are alternative paths then the LIN Software will try an alternative path to re-establish the connection. By having two T225s in parallel redundant operation can be achieved. T225s can be put in series with other T225s or T221. So it is possible to create logical LIN networks from a mixture of ALIN, ELIN and OLIN nodes. T225 functionality is virtually identical to that of the T221.

Care must be taken in choosing LIN node numbers.

> *Note. This does not apply to the special case of T221s with older T1000, T100, T231 and PCLIN cards that do not support the LIN routing protocol.*

A LIN node can exist on either a *logical ALIN, ELIN and OLIN network.*

- ALIN nodes on the same logical ALIN network will be daisy chained together or will be connected via passive hubs or active AI hubs or active AI hubs. I.e if two ALIN nodes are connected by a passive or active hub they are still on the same logical ALIN network.
- ELIN nodes are on the same logical ELIN network if they are on the same subnet and have the same ELIN protocol name.
- OLIN nodes on the same logical OLIN network will always be connected to the same physical cable.

The *complete network* is then a set of ALIN, ELIN and OLIN networks linked by T225s and T221s.

The LIN node number is a value between 01h and FEh in hex, (decimal 1-254). The most significant hex digit is termed the LIN segment number, hence there are a maximum of 16 segments supported, 0-F, e.g. a node with number 43 is a member of LIN Segment 4. The segment numbers are used for routing LIN messages through T225s and T221s.

5 Operation (Cont.)

Having identified the ALIN, ELIN and OLIN logical networks and the LIN Segment numbers the rules for assigning Segment numbers are as follows.

- Connecting a LIN node to a logical network gives that logical network the segment number of the LIN node. A logical network may have more than one segment assigned to it.
- A given segment MUST only appear ONCE on the complete LIN network. Multiple segments may appear on the same logical network.
- The node number and hence the Segment number of a T225 (and T221) is applied to the ALIN network.

APPENDIX A EXTENDED LIN SUPPORT

All ALIN and ELIN nodes support the Extended LIN for routing (XLIN). OLIN instruments that support this function are listed below.

Instrument	Revision
T100/T1000	From 5/1
PCLIN	From 5/1
T221	From 1/1

Table AppA-1 Extended LIN for routing (XLIN)

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