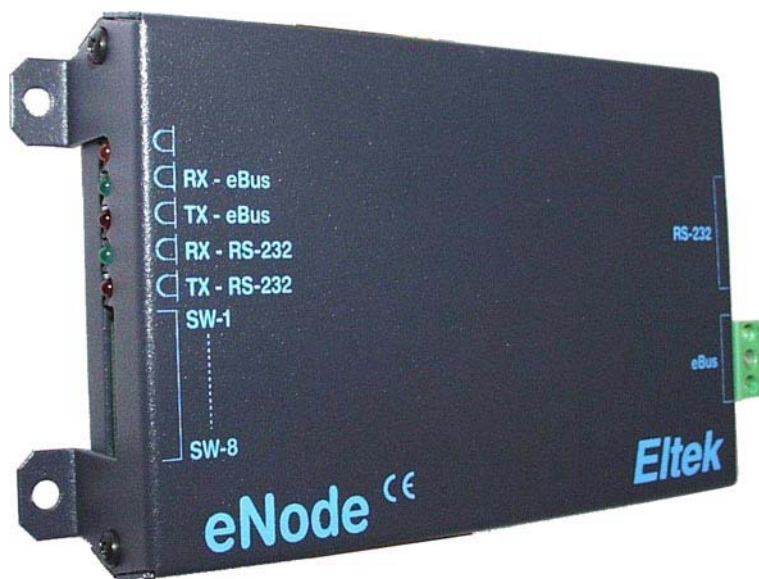**eNode**

Installation Guide

Eltek's Node for eBus Network

1. Installation

The *eNode* is used to interconnect *Eltek's* fire alarm panels or related equipment (optical-fibre modems, computers, etc.) in an *eBus* multi-master network.
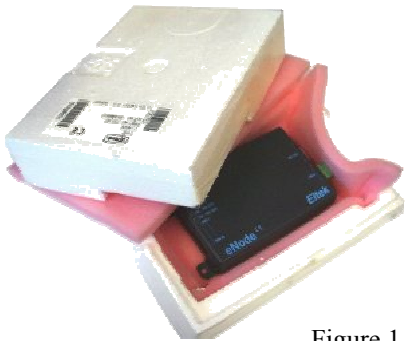

Figure 1

Eltek's equipment is shipped so as to withstand the normal strains of transport and storage. However, the equipment must not be exposed to shock, extreme humidity or excessive temperature changes.

It is important that the equipment is kept in the original packaging in an adequate storage room, until installation starts.

Installation cables and tools are not included in the delivery.

This product is CE marked and complies with all current requirements for relevant standards and directives.

☑ It is the installer's responsibility to ensure that the EMC properties of this product / system are in no way reduced during installation.

Mechanical Installation

The mechanical installation of the *eNode* consists mainly of unpacking and fastening the equipment in one of the following manners.

Surface Mounting

You can surface-mount the *eNode* fastening the cabinet with four M4 screws, one in every corner of the housing. Fixing center distance: W=130mm, H=61mm .
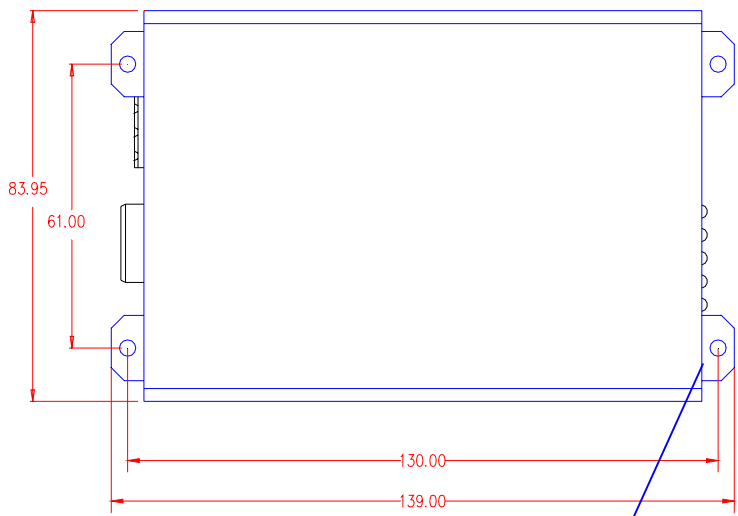
Figure 2

The node's external dimensions are W=139mm, H=84mm, D=28.5mm

or

DIN Rail Mounting

You can fix the *eNode* by clipping the enclosure to standard 35mm DIN rails.
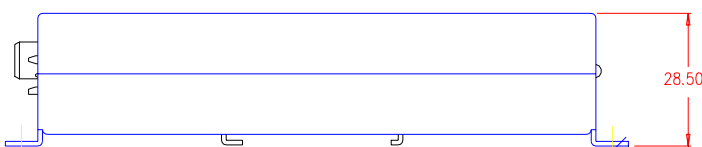

Fastening hole. Use M4 screws

Figure 3

Insert the top of the DIN rail here (↑ Up), and

…snap the DIN rail into position here

Clips on the bottom of the *eNode* for rail mounting.

35 mm DIN rails

Figure 4

Electrical Installation

Terminate the serial RS232 cable from the fire alarm panel or PC and the communication cable to other nodes in the *eBus* network. Find wiring details in Figure 5, and Figure 8. Carry out the following:

1. Check that the 8 segments of the DIL switch are in the OFF position (factory setting, see Figure 5), unless connecting to redundancy networks. Use a small screwdriver or similar tool, if you have to change them.
2. Terminate the *eBus* cable
3. Plug the serial RS232 cable on the node's D-Sub plug
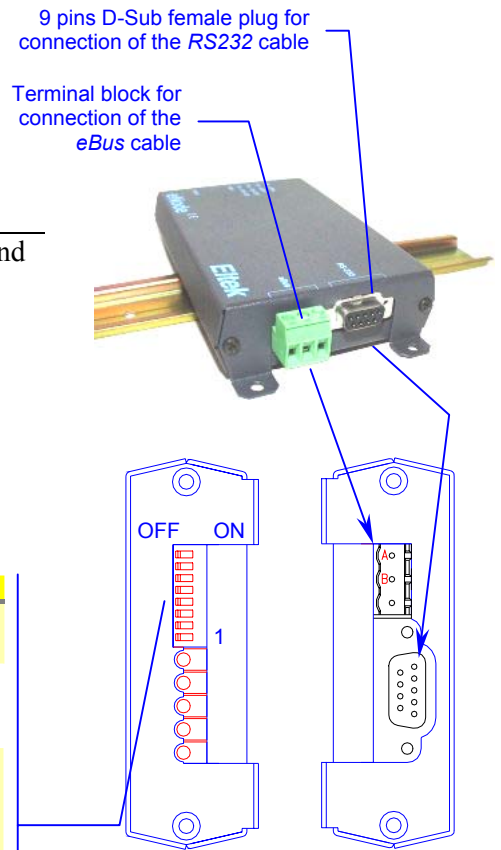
DIL switch	Function
8	**OFF, default:** Ignore CTS signal
	ON: Use CTS signaling on the serial line
7	**OFF, default**: Baud rate setting allowed on DIL switches 1—3
	ON: Node in a data transmission redundancy *eBus* network
	Baud rate forced to 9600bps. DIL switches 1—6 used for node addressing.
6	**OFF, default**: System # check on RS232
	ON: No system # check on RS232 incoming messages. Notice that this switch always must be ON in repeater nodes.
	Node addressing (switch 1—6 ON/OFF): Redundancy network (switch 7 ON)
4—5	**OFF, default**
	Node addressing (switch 1—6 ON/OFF): Redundancy network (switch 7 ON)
1 — 3	**OFF, default** (9600bps-2sb)
	Baud rate setting (binary 1=19200bps-2sb; 2=9600bps-1sb; 3=14400bps-1sb; 4=19200bps-1sb; 5=38400bps-1sb; 6=57600bps-1sb; 7=115200bps-1sb
	Node addressing (switch 1—6 ON/OFF): Redundancy network (switch 7 ON)

bps= bit per second; sb= stop bit;

OFF   ON

Figure 5

Connections and Cable Selection

The *eNode* is usually supplied with power directly from the fire alarm panel — via the RS232 communication cable. Note that when the *eNode* is instead connected to a computer, modem, etc. you have to use an external power supply device (e.g. 15-30VDC, 300mA) to supply the *eNode*.

eBus Cable

eBus Multi-master Network (FTT-10), Protocol: *eComm*

Cable Selection:
Select the pair cables below, or cables with similar transmission specifications.

Cable Type	Wire diam./ AWG	R_{loop} Ω/km	C nF/km	Max. Bus Length (Bus Topology), m	Max. Wire Length (Free Topology), m
Belden 85102	1.3mm/16	28	56	2700	500
Belden 8471	1.3mm/16	28	72	2700	500
Level IV 22AWG	0.65mm/22	106	49	1400	500
JY (St) Y 2x2x0.8	0.8mm/20.4	73	98	900	500
YFSK 2x0.5 mm^2	0.8mm	75	95	900	500

Note that YFSK types are shielded cables and Belden types are unshielded. Connect the shield, if used, to ground earth via a resistor (470kΩ, 0.25W, $\leq$10%) to prevent static charge build-up.
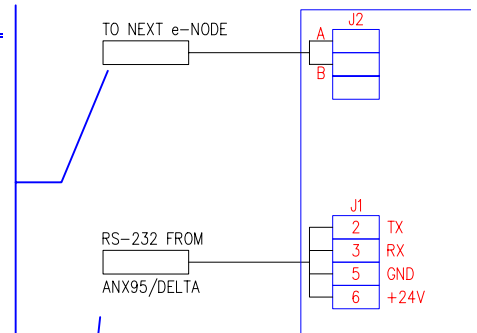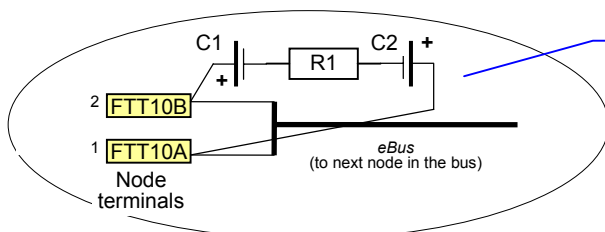
RS232 Cable

RS232C Point-to-Point Serial Bus, Protocol: RS232 driver
Cable Selection:
RS232 shielded serial cable; max. wire length 15m
For connection to fire alarm panels, use the standard cable Art. No. 235750.004

TO NEXT e-NODE

RS-232 FROM

ANX95/DELTA

| | A | J2 |
| | B | |

J1		
2	TX	
3	RX	
5	GND	
6	+24V	

Figure 6 The *eNode* terminals

Figure 7 RC cable termination for *eBus* networks

C1   R1   C2 +

2 FTT10B

1 FTT10A

eBus (to next node in the bus)

Node terminals

Total cable termination impedance of 52Ω approx. is required.
The use of C1 & C2 is optional. C1=C2=100μF, $\geq$50V
The value of resistor R1 (1/8W, 1%) is:
◊ In Star & Loop Topologies,
  RC termination placed anywhere in the bus,
  (**R1=52.3Ω**)
◊ In Bus Topology,
  RC termination placed at both ends of the bus,
  (**R1=105Ω**)

2. Commissioning

After installation, the eNode has to be fully tested together with the fire alarm panel or PC to ensure that it functions properly in the *eBus* network.

☑ The *eNode* requires no set-up or configuration by onboard DIL switches, as it incorporates a software auto configuration function.
Configuration of fire alarm panels is considered as *Access Level 3*. Only authorised and qualified personnel may have access. Please, contact *Novar's* system engineer. For related information see the "*Configuration Guide, eBus Multi Master Network*"

Note that if the *eNode* is connected to an *eBus* designed and wired with data transmission redundancy, you must configure the *eNode*'s address by setting the 8-segment DIL switch shown in Figure 5, page 3. Contact your system designer for more information.
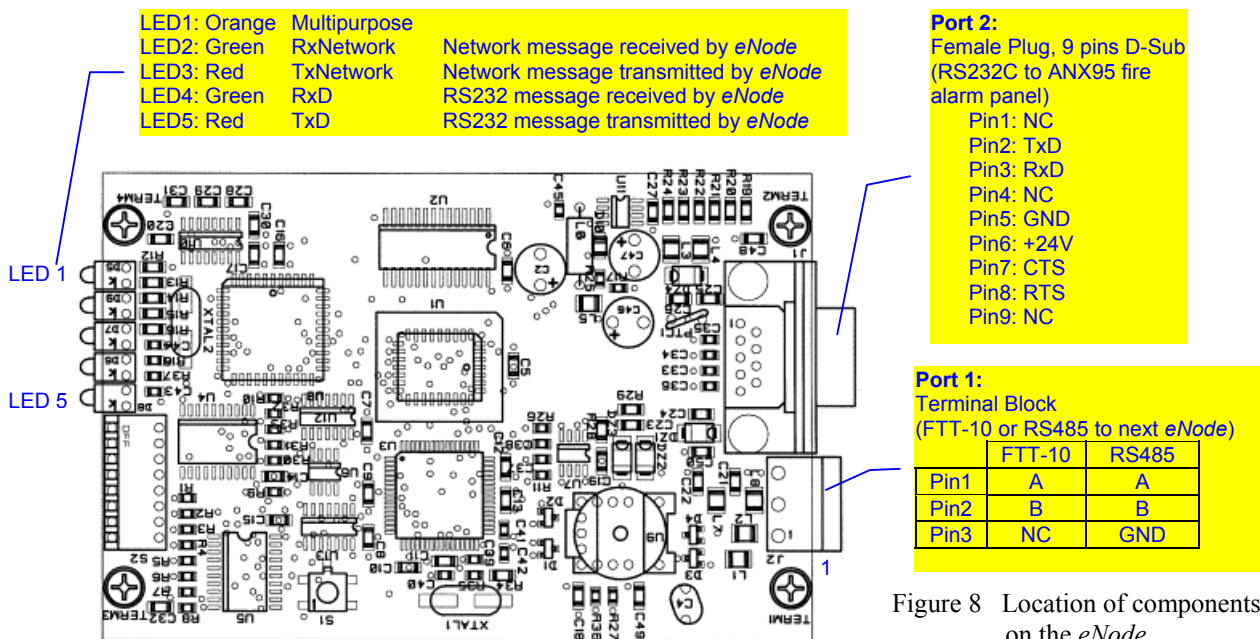
Location of Components

LED1: Orange   Multipurpose
LED2: Green   RxNetwork   Network message received by *eNode*
LED3: Red   TxNetwork   Network message transmitted by *eNode*
LED4: Green   RxD   RS232 message received by *eNode*
LED5: Red   TxD   RS232 message transmitted by *eNode*

Port 2:
Female Plug, 9 pins D-Sub
(RS232C to ANX95 fire alarm panel)
    Pin1: NC
    Pin2: TxD
    Pin3: RxD
    Pin4: NC
    Pin5: GND
    Pin6: +24V
    Pin7: CTS
    Pin8: RTS
    Pin9: NC

Port 1:
Terminal Block
(FTT-10 or RS485 to next *eNode*)

	FTT-10	RS485
Pin1	A	A
Pin2	B	B
Pin3	NC	GND

Figure 8   Location of components on the *eNode*

3. Technical Specification

Port 1: *eBus*	Non polarised, galvanic isolation, 78000bps	**Power Supply**	15-30VDC / max. 300mA (via RS232)
Flexible topology	Max. 500m total cable length and 128 *eNodes*		
Star topology:	Max. 500m total cable length and 128 *eNodes*	Current	14mA typical
Loop topology:	Max. 500m total cable length and 128 *eNodes*	**Dimensions**	139x84x28.5 mm (WxHxD)
Bus topology:	Max. 2700m total cable length and 64 *eNodes*	Weight	0.290 kg
	Max. 500m cable length between nodes	IP Rating	20 (indoors mounting)
Cable type:	See Figure 6	Cabinet	1mm Aluzink, colour Grey RAL7024
Port 2: RS232	Max. 15m cable length, 9600bps default	**Article No.**	235762