

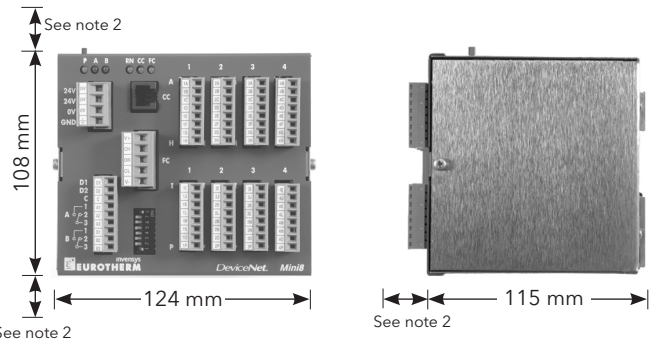
INSTALLING THE MINI8 CONTROLLER

MOUNTING THE UNIT

This unit is intended to be mounted horizontally on a symmetrical DIN rail, 35 x 7.5 or 35 x 15, to the requirements of EN50022.

Notes:

- 1. The controller is for interior use only, and must be mounted in a suitable enclosure.
- 2. A gap of at least 25mm should be left above and below the unit, for ventilation, and in front of it, for cable clearance.



DIN RAIL MOUNTING

- 1. Mount the DIN rail horizontally, using suitable bolts.

Note The unit is NOT designed to be mounted in any other orientation.

- 2. Ensure that the DIN rail makes good electrical contact with the metal base of the panel.
- 3. Guide the unit to the DIN rail, allowing the upper teeth of the DIN rail Mounting Bracket to rest behind the DIN rail itself.
- 4. Slowly and firmly, push the top of the unit back until the DIN rail Locking Mechanism springs back into place. This is confirmed by an audible 'Click'.
The unit is now mounted to the DIN rail.

Note To remove the unit, a screwdriver should be used carefully to lever down the DIN rail locking mechanism and the unit lifted forward when released from the DIN rail.

Environmental Requirements	Minimum	Maximum
Temperature	0°C	55°C
Humidity (Relative - RH)	5% RH	95% RH
Altitude		2000m

COMMUNICATIONS INTERFACE

Various operational functions are indicated through the LED's across the top of the unit.
All controllers have a configuration port and a field communication port on the communications module.

Note If the Run mode (RN) red LED is permanently ON, the unit is operating normally.

CONFIGURATION PORT

The EIA232 configuration port (RJ-11 socket) is located to the right of the Power connector. The Mini8 Controller is configured using iTools configuration software running on a PC.

Note The unit will NOT control during configuration.

9 Pin DF to PC Com port	RJ11 Pin	Function
-	6	(N/C)
3 (TX)	5	RX
2 (RX)	4	TX
5 (0V)	3	0V (Gnd)
	2	(N/C)
	1	Reserved

Appropriate cable is available from the supplier, order code SubMin8/ cable/config.

Note The unit can also be configured to communicate via Modbus™ and Modbus/TCP using the field network, dependent on the hardware fitted.

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COMMUNICATIONS - MODBUS

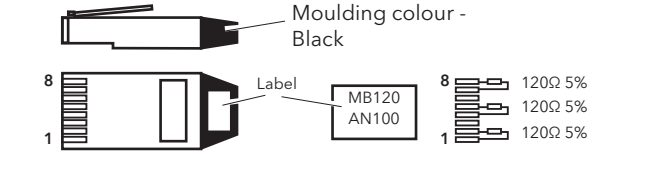
Protocol is Modbus RTU, EIA422, EIA485 3-wire or 5-wire.
The Modbus network connection is two RJ45 sockets connected in parallel. This allows category 5 patch cables to be used, the first socket into the unit and the second one out to daisy-chain on to the next slave, or for a line terminator.
The connectors includes 2 LEDs, a Yellow LED showing communication activity and a Green LED showing transmitted data.

RJ45 Pin	Colour	3-wire	5-wire
8	Brown	N/A	RXA
7	Brown/White	N/A	RXB
6	Green	N/A	Gnd
5	Blue/White	N/A	N/A
4	Blue	N/A	N/A
3	Green/White	Gnd	Gnd
2	Orange	A	TXA
1	Orange/White	B	TXB

Plug shroud to Cable screen

RJ45 COMMUNICATION TERMINATORS

The communication line must daisy-chained from unit to unit with the unit at each end of the chain correctly terminated. A black Modbus terminator containing the correct termination resistors is available from the supplier, order code SubMin8/TERM/MODBUS/RJ45.



Note The Baud rate is default to 19200, but can be set during configuration using the iTools configuration software.

THE ADDRESS SWITCH

This switch is situated below the the Comms connector.
Each unit must have a unique address on the Modbus network.

Note If address 0 is set the unit will take the address and Parity settings from the configuration of the instrument.

SW	OFF	ON
8	3-wire	5-wire
7	No Parity	Parity
6	Even	Odd
5	N/A	Address 16
4	N/A	Address 8
3	N/A	Address 4
2	N/A	Address 2
1	N/A	Address 1

Supports address 1 to 31

COMMUNICATIONS - DEVICENET®/CANOPEN

This instrument supports DeviceNet CAN interface, CANopen V4.02 CANopen interface and Enhanced DeviceNet Protocol.

CANopen and DeviceNet use a 5-way screw terminal connector with 5.08mm pitch. The mating connector is supplied to aid user wiring.

Enhanced DeviceNet uses an M12, five-pin 'Micro-Connect' connector.

Screened DeviceNet specified cable should be used for field wiring.

TERMINATORS

DeviceNet®/Enhanced DeviceNet®

The DeviceNet® specification states that the bus terminators (121Ω) must not be included as any part of a master or slave.

CANopen

The CANopen Cabling and Connector Pin Assignment specification shows the minimum termination resistance is 118Ω with these guidelines.

Pin	Legend	Function
5	V+	V+
4	CH	CAN HIGH
3	DR	DRAIN
2	CL	CAN LOW
1	V-	V-

Pin	Legend	Function
5	CAN_L	CAN LOW
4	CAN_H	CAN HIGH
3	V-	V-
2	V+	V+
1	DR	DRAIN

Note Terminators are not supplied, but must be used where required.

POWER

The CAN bus is powered by the network at approximately 100mA.

ADDRESS CONFIGURATION

Each unit must have a unique network address, configured as shown below. The comms. module automatically restarts after the address has been edited.

Note iTools can be used to configure the address when the switches are set to 'off'.

SW	OFF	DeviceNet®	CANopen
8	Baud rate	Baud rate	Baud rate
7	Baud rate	Baud rate	Baud rate
6	-	Address 32	Reserved
5	-	Address 16	Address 16
4	-	Address 8	Address 8
3	-	Address 4	Address 4
2	-	Address 2	Address 2
1	-	Address 1	Address 1

Supports address 0 to 63

Supports address 0 to 31

The Enhanced DeviceNet® version uses 2 BCD rotary switches.

SW	Enhanced DeviceNet®
0 to 9 MSD	First digit of address
0 to 9 LSD	Second digit of address

For example, an address of 13 would be configured by setting the MSD to 1 and LSD to 3.

Note Any address between 64 and 99 is ignored. The address must be configured using iTools.

COMMUNICATIONS - MODBUS/TCP

Protocol is Modbus/TCP, 10 Base T on an Ethernet network.

The connector includes 2 LEDs, a Yellow LED showing communication activity and a Green LED showing transmitted data.

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

THE ADDRESS SWITCH

This switch is situated at the bottom of the Comms slot. Switches 1 to 7 are used to configure the instrument unit ident parameter. Switch 8 is used for DHCP (Dynamic Address) enabling.

SW	OFF	ON
8	DHCP disabled	DHCP enabled
7	N/A	Address 64
6	N/A	Address 32
5	N/A	Address 16
4	N/A	Address 8
3	N/A	Address 4
2	N/A	Address 2
1	N/A	Address 1

Note Use iTools to configure the address when the switches are set 0 and the unit identifier parameter is set to 'Instr'.

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.

BAUD RATE

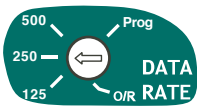
All units must be set to the same Baud rate and must be restarted after the Baud rate is edited. This is configured using the DIP switch (as left) on the DeviceNet® and CANopen versions.

For the Enhanced DeviceNet version a BCD rotary switch is used, as below. Only the indicated positions should be used.

Note The Baud rate can be configured using iTools when in the O/R position.

Switch	125k	250k	500k	1M (CANopen)
8	Off	Off	On	On
7	Off	On	Off	On

Note The Prog position must be selected when the instrument is started to enable firmware upgrades.



COMMUNICATIONS - PROFIBUS™

Protocol is Profibus DP. There are two Profibus communications board options are available.

■ 3-wire RS485 connection via a 9 Pin D-type connector. Intended for installations using standard Profibus cables.

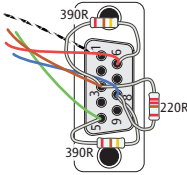
Note Profibus cabling must make provision for line terminators.

■ 3-wire RS485 connection via 2 RJ45 sockets.

RJ45 Pin	9 PIN D-Type	Signal	Function
-	1	Shield	Shield (Gnd)
-	2	N/A	N/A
1	3	RxD/TxD-P	Receive/Transmit Data 'P'
-	4	N/A	N/A
3	5	DGnd	Data Ground
6	6	VP	Voltage Plus
7	7	N/A	N/A
2	8	RxD/TxD-P	Receive/Transmit Data 'N'
8	9	N/A	N/A

RJ45 COMMUNICATION TERMINATORS

The communication line must daisy-chained from unit to unit with the device at each end of the chain correctly terminated. For RJ45 units a (grey) Profibus terminator containing the correct termination resistors is available from the supplier, order code SubMin8/TERM/PROFIBUS/RJ45.



For D-type termination, 390 Ohm resistors should be wired across pins 3 and 6 and pins 4 and 8 and a 220 Ohm resistor between pins 5 and 8.

BAUD RATE

Note The Baud rate is set by the Profibus master via the network.

ADDRESS

Set at a switch located below the Comms connector. Each unit must have a unique address on the Profibus network.

Notes:

- 1. Switch 8 is not used, and Address 0 is invalid.
- 2. If all switch elements are set 'Off', the Profibus address will be as set in iTools. Otherwise, the address set at the switch overrides any address set in iTools

SW	OFF	ON
8	N/A	N/A
7	N/A	Address 64
6	N/A	Address 32
5	N/A	Address 16
4	N/A	Address 8
3	N/A	Address 4
2	N/A	Address 2
1	N/A	Address 1

Supports address 1 to 127