

Faraday Close Durrington

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UNINTENDED EQUIPMENT OPERATION

Do not use the product for critical control or protection applications where human or equipment safety relies on the operation of the control circuit or the triggering of an alarm.

Failure to follow these instructions will result in death or serious injury.

Ensure electrically conductive pollution is be excluded from the cabinet in which the controller is mounted.

Ensure appropriate safety interlocks are used where personnel and/or equipment hazards exist.

Ensure wires are routed to minimize the pick-up of EMI (Electromagnetic interference) keeping cable lengths to a minimum.

Modifying, disassembling or repairing the product beyond what is stated in the User Manual is strictly forbidden. Contact your supplier for repair.

Ensure all cables and wiring harness are secured using a relevant strain relief mechanism.

Only connect wires to identified terminals shown on the product wiring label, the wiring section of the product User guide or Installation sheet.

Only use copper cables (except for the thermocouple wiring).

Ensure only persons with expertise in the design and programming of control systems are allowed to program, install, alter and commission this product.

Do not use, or implement a controller configuration (control strategy) into service without ensuring the configuration has completed all operational tests, been commissioned and approved for service.

Electrostatic discharge precautions.

Ensure all electrostatic discharge precautions are taken before handling the unit.

Failure to follow these instructions can result in death, serious injury or equipment damage.

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unit, offering a choice of I/O and field communications and designed for mounting on a 35mm 'Top Hat' DIN Rail.

The Mini8 Controller is a compact multi-loop PID controller and data acquisition

Pre-assembled in the factory, the controller is fitted with all the I/O required for the application, as specified at time of order. The Mini8 Controller can be supplied as a configured instrument, or it can be configured using iTools configuration software running on a personal computer.

⚠ WARNING: This product can expose you to chemicals including lead and lead compounds which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to: https://www.P65Warnings.ca.gov

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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.



DIN RAIL MOUNTING

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

Note: The unit is NOT intended 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. Hook the upper edge of the DIN rail clip on the instrument onto the top of the DIN rail 4. Slowly and firmly, rock the unit downwards until the DIN rail Locking Mechanism springs into

place. This is confirmed by an audible 'Click'.

The unit is now mounted to the DIN rail.

Note: To remove the unit, carefully use a screwdriver to lever down the DIN rail locking mechanism and lift the unit 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	

PROTECTIVE COVER

When ET8 modules are fitted, also fit the clear protective cover to enhance thermal stability. he figure below shows the cover in place. The cover can be mounted either way up



COMMUNICATIONS - DEVICENET® This instrument supports DeviceNet[®], and Enhanced DeviceNet[®] Protocols Pin Legend Function DeviceNet[®] uses a 5-way screw terminal connector with 5.08mm pitch. The СН CAN HIGH mating connector is supplied to aid user 3 DR DRAIN wiring 2 CAN LOW CL 1 V-V-Pin Legend Function Enhanced DeviceNet[®] uses an M12, five-5 CAN_L CAN LOW pin 'Micro-Connect' connector. 4 CAN_H CAN HIGH Screened DeviceNet specified cable should be used for field wiring. 3 V-V-2 V+ V+ DR 1 DRAIN Terminators DeviceNet[®]/Enhanced DeviceNet[®] The DeviceNet[®] specification states that the bus terminators (121 Ω) must not be included as any part of a master or slave. Note: Terminators are not supplied but must be used where required. POWER The bus is powered by the network at approximately 100 mA. 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	Baud R	Baud Rate		
			125K	250K	500K	
8	Baud rate	Baud rate	OFF	OFF	ON	
7	Baud rate	Baud rate	OFF	ON	OFF	
6	-	Address 32				
5	-	Address 16				
4	-	Address 8				
3	-	Address 4				
2	-	Address 2				
1	-	Address 1				

COMMUNICATIONS INTERFACE

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

Note: If the Run mode green LED (RN) 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 whilst in configuration mode.

RJ11 Pin	Function	
6	(N/C)	Appropriate cable is
5	RX	available from the supplie order code SubMin8/cable/config.
4	ТХ	
3	0V (Gnd)	
2	(N/C)	
1	Reserved	
	RJ11 Pin 6 5 4 3 2 1	RJ11 Pin Function 6 (N/C) 5 RX 4 TX 3 OV (Gnd) 2 (N/C) 1 Reserved

Note: The unit can also be configured to communicate via other protocols, as listed below, using the field network, dependent on the hardware fitted.

Product Tools Updates



https://www.eurotherm.com/products/temperature-controllers/software-ww/eurotherm-itools/

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 connections to be daisy-chained from one unit to the next using category 5 patch cables. The line terminator is required on the last unit in the chain

RJ45 Pin	Colour	3-wire	5-wire		
8	Brown	N/A	RxA		
7	Brown/White	N/A	RxB		
6	Green	N/A	Gnd	Pin 8	
5	Blue/White	N/A	N/A	1 11 0	
4	Blue	N/A	N/A		
3	Green/White	Gnd	Gnd	Din 1	
2	Orange	А	TxA	PINI	
1	Orange/White	В	TxB		

RJ45 COMMUNICATIONS TERMINATIONS

The communication line must be 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 your supplier, order code SubMin8/TERM/MODBUS/RJ45.



COMMUNICATIONS – ETHERNET

Protocol is EtherNet/IP and / or Modbus/TCP, 10BASE-T/100BASE-TX on an Ethernet network.

RUN LED	Run Status	CC LED	Configuration Port Status
Steady green	Run mode	Flashing	EIA232 configuration port
Off	Not running	green	activity
Flashing green	Standby	Off On	Not applicable

FC LED	Run Status	AS LED	Run Status
Flashing green	Ethernet traffic received	On	DHCP enabled and IP address obtained
Off	No Ethernet traffic	Flashing	DHCP enabled but using
On	Not applicable	green	link-local address
		Off	Using static IP address

RJ45 PIN FUNCTIONS

The connector includes two LEDs:

Green = Link/Activity: Off=No Link, On=Link, Blink= activity Yellow = Speed: Off=No Link or 10Mbps, On=100Mbps

R145

Color



8 Brown N/A Brown/White N/A 6 Green Rx-Blue/White N/A 5 Blue N/A Green/White Rx+ Orange Tx-Orange/White Tx+ 1 Plug shroud to cable screen

Signa

THE ADDRESS SWITCH

This switch is situated at the bottom of the Comms slot. The switches are set as follows: 00 = DHCP (Dynamic Address) enabled 01 to FE = Static IP (use most recently obtained/configured address) FF = Reserved



ALLOCATION OF ADDRESSES

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 loca company network policy.

If a DHCP server is not available on the network, the instrument will assign itself a link-local IP address in the region 169.254.0.0 to 169.254.255.255.

NOTE: This will overwrite the default IP address, so connection to iTools via configuration port is required to obtain or change the IP address in this case.

COMMUNICATIONS - ETHERCAT® OP LED Run Status CC LED Configuration Port

ΟN

The Enhanced DeviceNet® version uses two 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

BAUD RATE

All units must be set to the same Baud rate and must be restarted after the Baud rate is edited. For DeviceNet this is configured using the rotary switch as shown below.



Note: Select the 'Prog' position to enable firmware upgrades. The instrument may need a restart.

Note:

The Baud rate defaults to 19200 but can be set during configuration using the iTools configuration software.

THE ADDRESS SWITCH

This switch is situated below 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 -	si l
5	N/A	Address 16	
4	N/A	Address 8	≻∄ a
3	N/A	Address 4	0 d T
2	N/A	Address 2	- s
1	N/A	Address 1	j l



OFF ↔ ON

EtherCAT[®] compatible