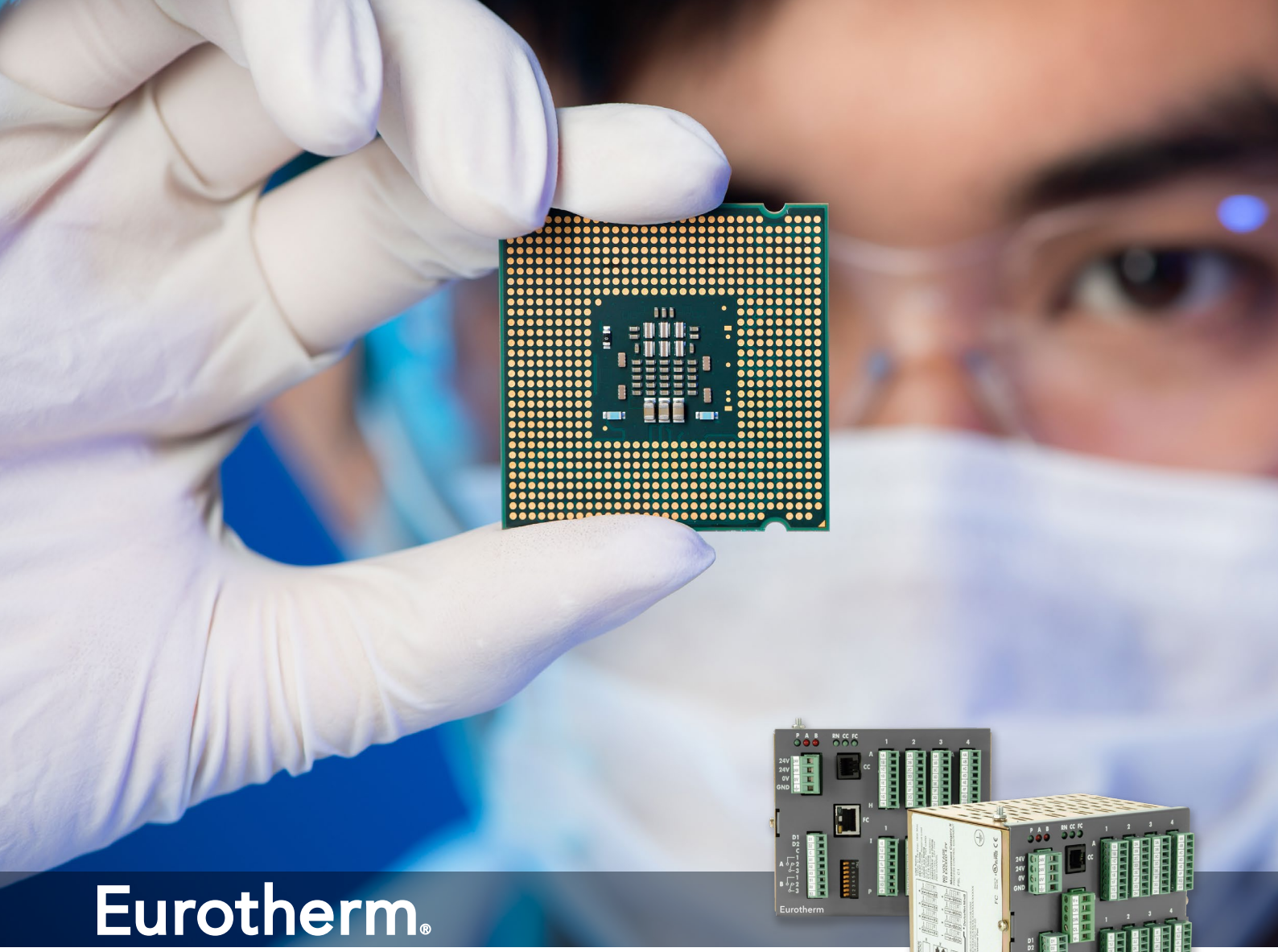


Mini8® Controller

Control, Optimize, Simplify

Unique Features

The key features of the Mini8 Controller include:

- 16 control loops
- 32 analog inputs
- Modular & compact
- Setpoint programming
- Math and logic
- Communications protocols
  - Modbus RTU
  - DeviceNet®
  - Profibus DP
  - Modbus TCP
  - EtherNet/IP
  - EtherCAT
- Help defend OEM knowledge and IP with OEM security

Benefits

- Complements your PLC
- World-class control algorithm
- Accurate analog measurement
- Flexible communication options
- Compact modular design
- Reduction in panel real estate
- Can reduce total system costs

eurotherm.com/mini8

WATLOW®
Powered by Possibility

Mini8 controller

The Mini8® loop controller offers high performance control usually only found in Eurotherm® panel-mount PID controllers. It is also a very competitive and compact data acquisition device. Its modular design enables its I/O and feature set to be selected to cater for a wide range of applications from simple to complex.

The Mini8 controller is an ideal partner to a PLC. Able to multi-drop on either serial, DeviceNet or Ethernet communications, it offers a cost-effective alternative to performing analog measurement or loop control in a PLC. Implementing these functions in the Mini8 controller helps reduce the cost of a PLC system, relieving it of the burden of performing analog functions, often allowing a lower specification processor to be used.

The Mini8 controller's feature set is comparable with the Eurotherm EPC3000 programmable controllers including its high performance PID control together with a range of features such as Math, Logic, and Timing blocks. Cascade control function and the ability to use remote I/O with Eurotherm PID blocks extends the control capability.

When used in a data acquisition installation, the controller's high density analog I/O can be combined with the Eurotherm 6000 series paperless graphic recorder.

Recipes

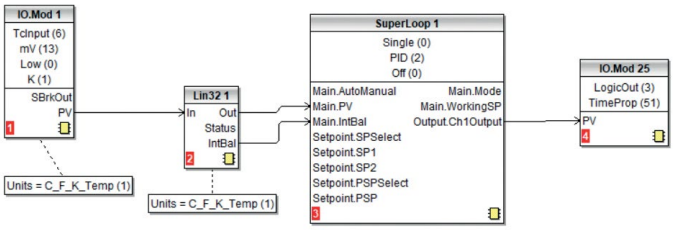
Using a PC tool, recipes can be created that can be used to change the operating parameters of the Mini8 controller simply by selecting a new recipe via a remote HMI. This is very useful where multiple processes use the same controller but require different control parameters.

Heater Failure Detection

The Mini8 controller with a 3-input current transformer (CT3) card fitted has the capability of detecting failures in heater loads connected to its time proportioned outputs. By measuring the current flowing through the heaters via 3 current transformer inputs the Mini8 controller can, for up to 8 loops, detect Partial Load failure, Over Current, as well as solid state relay (SSR) short or open circuit. Individual load current parameters indicate the measurement for each heater. The current monitor block utilizes a cyclic algorithm to measure the current flowing through one heater per measurement interval.

Eurotherm iTools Graphical Wiring Editor (GWE)

The GWE is an extremely easy way to create applications. It allows users to select the function blocks they wish to use in their application, then connect them together using 'Soft Wiring'. The GWE gives users a pictorial view of exactly what has been configured and can also be used to monitor runtime conditions.



Toolkit Blocks

A range of toolkit functions, including Math, Logic, and Timing blocks can be used to create custom solutions and small machine controllers. Additional toolkit blocks are made available as standard for the 360 wire option of Mini8.

Configuration Lock

The configuration lock function helps protect applications from unauthorized inspection, copying, or tampering. This may be used for example by Original Equipment Manufacturers (OEMs) to protect intellectual property.

Specification

General

Environmental Performance

Power supply voltage:	17.8 V dc min to 28.8 V dc max.
Supply ripple:	2 Vp-p max.
Power consumption:	15 W max.
Operation temperature:	0 to 55°C (32°F to 131°F)
Storage temperature:	–10 to 70°C (14°F to 158°F)
Operating humidity:	5% to 95% RH non-condensing
Applied voltage any terminal:	42 V pk max.

The Mini8 controller must be mounted in a protective enclosure.

Electromagnetic Compatibility (EMC)

EMC:	EN 61326-1 for Industrial Environments

This controller conforms with the essential protection requirements of the EMC Directive 2014/30/EU, by the application of EMC standard EN 61326-1. This instrument satisfies the general requirements of the industrial environment defined in EN 61326-1.

Electrical Safety

Safety:	Meets EN 61010-1, installation category II, pollution degree 2

INSTALLATION CATEGORY II
This controller complies with the European Low Voltage Directive 2014/35/EU, by the application of the safety standard EN 61010-1.

POLLUTION DEGREE 2
Normally, only non-conductive pollution occurs. Occasionally, however, a temporary conductivity caused by condensation shall be expected.

Physical

Dimensions:	W 124mm (4.8") x N 108mm (4.2") x D 115mm (4.5")
Weight:	1Kg (2.2lbs) typical
Mounting:	DIN rail to EN 50022 35mm x 7.5mm or 35mm x 15mm horizontally

Approvals

Approvals	CE, UKCA, EAC, UL/cUL Listed (File E57766)
Environmental approvals	KC. RoHS REACH, environmental and sustainability lifecycle information

Communications

Network Communications Support

Modbus RTU:		EIA422, EIA485 3-wire or 5-wire, user selectable
	Baud rates:	4800, 9600, 19200
DeviceNet:		CAN, 5-pin standard "open connector" with screw terminals
	Baud rates:	125k, 250k, 500k
Modbus/TCP:		Standard Ethernet RJ45 connector
	Data rates:	10Base-T 100Base-T

Modbus, DeviceNet, and Modbus/TCP are mutually exclusive options. Refer to the Mini8 controller order code.

Configuration Communications Support

Modbus RTU:	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.

Fixed I/ O Resources

The PSU card supports 2 independent and isolated relay contacts.

Relay output types:	On/Off (C/O contacts, "On" closing the N/O pair)
Contact current:	<1 A (resistive loads)
Terminal voltage:	<42 V pk.
Contact material:	Gold
Snubbers:	Snubber networks are NOT fitted
Contact isolation:	42 V pk max.

The PSU card supports 2 independent and isolated logic inputs

Input types:	Logic (24 V dc)
Input logic 0 (off):	–28.8 V to +5 V dc
Input logic 1 (on):	+10.8 V to +28.8 V dc
Input current:	2.5 mA (approx.) at 10.8 V; 10 mA max at 28.8 V supply
Detectable pulse width:	110 ms min.
Isolation to system:	Isolation to system: 42 V pk max.

Input/Output Cards

TC8 8-Channel, ET8 8-Channel and TC4 4-Channel TC Input Card

The TC8 and ET8 support 8 independently programmable and electrically isolated channels, supporting all standard and custom thermocouple types. The TC4 supports 4 channels to the same specification.

When subject to the necessary field calibration, Mini8 controllers manufactured by Eurotherm using the ET8 option are suitable for use in Nadcap applications in all furnace classes, as defined in AMS2750F clause clause 3.3.1.

Channel types:	TC, mV
Input Range:	–77 mV to +77 mV
Resolution:	20 bit (∑Δ converter), 1.6 µV with 1.6 s filter time
Temperature coefficient:	< ±50ppm (0.005%) of reading/ °C (TC4/TC8) <±1µV/C ±25ppm/C of measurement, from 25°C ambient (ET8)
Cold junction range:	-10°C to +70°C (14°F to 158°F)
CJ rejection:	> 30:1 (TC4/TC8) 100:1 (ET8)
CJ accuracy:	±1°C (TC4/TC8) ±0.25°C (ET8)
Linearization types:	C, J, K, L, R, B, N, T, S, LINEAR mV, custom
Total accuracy:	±1° C ±0.1% of reading (using internal CJC) (TC4/TC8) ±0.25°C ±0.05% of reading at 25°C ambient (ET8)
Channel PV filter:	0.0 seconds (off) to 999.9 seconds, 1st order low-pass
Sensor Break:	AC Detector Off, Low or High resistance. Trip levels
Input resistance:	>100Mohms
Input leakage current:	<100 nA (1 nA typical)
Common mode rejection:	>120 dB, 47 – 63 Hz
Series mode rejection:	>60 dB, 47 – 63 Hz
Isolation (channel-channel):	42 V pk max
Isolation to system:	42 V pk max

DO8 8-Channel Digital Output Card

The DO8 supports 8 independently programmable channels, the output switches requiring external power supply. Each channel is current and temperature protected, foldback limiting occurring at about 100 mA.

The supply line is protected to limit total card current to 200 mA.

The 8 channels are isolated from the system (but not from each other). To maintain isolation it is essential to use an independent and isolated PSU.

Channel types:	On/Off, Time Proportioned
Channel supply (V cs):	15 V dc to 30 V dc
Logic 1 voltage output:	> (V cs – 3 V) (not in power limiting)
Logic 0 voltage output:	< 1.2 V dc no-load, 0.9 V typical
Logic 1 current output:	100 mA max. (not in power limiting)
Min. pulse time:	20 ms
Channel power limiting:	Current limiting capable of driving shortcircuit load
Terminal supply protection:	Card supply is protected by 200 mA selfhealing fuse
Isolation (channel-channel):	N/A (Channels share common connections)
Isolation to system:	42 V pk max.

RL8 8-Channel Relay Output Card

The RL8 supports 8 independently programmable channels. This module may only be fitted in slot 2 or 3, giving a maximum of 16 relays in a Mini8 Controller.

The Mini8 controller chassis must be earthed (grounded) using the Protective Earth stud.

Channel types:	On/Off, Time Proportioned
Maximum contact voltage:	264 V ac
Maximum contact current:	2 A ac
Contact snubber:	Fitted on module
Minimum contact wetting:	5 V dc, 10 mA
Min. pulse time:	220 ms
Isolation (channel-channel):	264 V max, 230 V nominal
Isolation to system:	264 V max, 230 V nominal

CT3 3-Channel Current-Transformer Input Card

The CT3 supports 3 independent channels designed for heater current monitoring. A scan block allows periodic testing of nominated outputs to detect load changes (failure).

Channel types:	A (current)
Factory set accuracy:	Better than ±2% of range
Current input range:	0 mA to 50 mA rms, 50/60 Hz nominal
Transformer ratio:	10/0.05 to 1000/0.05
Input load burden:	1 W
Isolation:	None (provided by CT)

Load Failure Detection

Requires CT3 module.	
Max number of loads:	16 Time Proportioned Outputs
Max loads per CT:	6 loads per CT input
Alarms:	1 in 8 Partial load failure, Over current, SSR short circuit, SSR open circuit
Commissioning:	Automatic or manual
Measurement interval:	1 sec – 60 sec

DI8 8-Channel Logic Input Card

The DI8 supports 8 independent input channels.

Input types:	Logic (24 V dc)
Input logic 0 (off):	–28.8 V to +5 V dc
Input logic 1 (on):	+10.8 V to +28.8 V dc
Input current:	2.5 mA (approx.) at 10.8 V; 10 mA max at 28.8 V supply
Detectable pulse width:	110 ms min.
Isolation (channel-channel):	42 V pk max.
Isolation to system:	42 V pk max.

RT4 Resistance Thermometer Input Card (Pt100)

The RT4 supports 4 independently programmable and electrically isolated resistance input channels. Each channel may be connected as 2 wire, 3 wire, or 4 wire.

Channel types:	Resistance/Pt100
Input range:	0 to 420 ohms, –242.02° C to +850° C for Pt100 (403.6°F to 1562°F)
Calibration error:	±0.1 ohms ±0.1% of reading, 22 to 420 ohms ±0.3° C ±0.1% of reading, -200° C to +850° C (-328°F to 1562°F)
Resolution:	0.008 ohms, 0.02° C (32.036°F)
Measurement noise:	0.016 ohms, 0.04° C (32.072°F) peak to peak, 1.6 s channel filter0.06 ohms, 0.15° C peak to peak, no filter
Linearity error:	±0.02 ohms, ±0.05° C (32.09°F)
Temp coefficient:	±0.002% of ohms reading per °C ambient change relative to normal ambient 25° C (77°F)
Lead resistance:	22 ohms max in each leg. Total resistance including leads is restricted to the 420 ohm maximum limit. 3 wire connection assumed matched leads.
Bulb current:	300 µA
Isolation (channel-channel):	42 V pk max
Isolation to system:	42 V pk max

RT4 Resistance Thermometer Input Card (Pt1000)

The RT4 supports 4 independently programmable and electrically isolated resistance input channels. Each channel may connected as 2 wire, 3 wire or 4 wire.

Channel types:	Resistance/Pt1000
Input range:	0 to 4200 ohms, –242.02° C to +850° C for Pt1000 (403.6°F to 1562°F)
Calibration error:	±0.6 ohms ±0.1% of reading, 220 to 4200 ohms ±0.2° C ±0.1% of reading, -200° C to +850° C (-328°F to 1562°F)
Resolution:	0.6 ohms, 0.15° C (32.27°F)
Measurement noise:	0.2 ohms, 0.05° C (32.09°F) peak to peak, 1.6 s channel filter 0.6 ohms, 0.15° C (32.27°F) peak to peak, no filter
Linearity error:	±0.2 ohms, ±0.05° C (32.09°F)
Temp coefficient:	±0.002% of ohms reading per °C ambient change relative to normal ambient 25° C (77°F)
Lead resistance:	22 ohms max in each leg. Total resistance including leads is restricted to the 4200 ohm maximum limit. 3 wire connection assumed matched leads.
Bulb current:	300 µA
Isolation (channel-channel):	42 V pk max
Isolation to system:	42 V pk max

AO8 8-Channel and AO4 4-Channel 4-20 mA Analog Output Card

The AO8 supports 8 independently programmable and electrically isolated mA output channels for 4-20 mA current-loop applications. The AO4 supports 4 channels to the same specification. The AO4 and AO8 modules may only be fitted in slot 4.

Channel types:	mA (current) Output
Output range:	0-20 mA, 360 ohms load max.
Setting accuracy:	±0.5% of reading
Resolution:	1 part in 10000 (1 uA typical)
Isolation (channel-channel):	42 V pk max.
Isolation to system:	42 V pk max.

Software Features

Toolkit Blocks

User wires:		Orderable options of 30, 50, 120, 250 or 360 32/40* real values
User values:		Add, subtract, multiply, divide, absolute
2 input math:	24/32* blocks	difference, maximum, minimum, hot swap, sample and hold, power, square root, Log, Ln, exponential, switch
2 input logic:	24/40* blocks	AND, OR, XOR, latch, equal, not equal, greater than, less than, greater than or equal to, less than or equal to
8 input logic:	4 blocks	AND, OR, XOR
8 input multiple operator:	4 blocks	Maximum, Minimum, Average. Input/Outputs to allow cascading of blocks
8 input multiplexer:	4/8* blocks	8 sets of 8 values selected by input parameter
BCD input:	2 blocks	2 decades (8 inputs giving 0 to 99)
Input monitor:	2 blocks	Max, min, time above threshold
32 point linearization:	2/8* blocks	32-point linearization fit Characterization by poly fit table
Polynomial fit:	2 blocks	Smooth transition between two
Switchover:	1 block	input values
Timer blocks:	8 blocks	OnPulse, OnDelay, OneShot, MinOn Time
Counter blocks:	2 blocks	Up or down, Directional flag
Totalizer blocks:	2 blocks	Alarm at Threshold value
Transducer scaling:	2 blocks	Transducer Auto-tare, calibration & comparison cal

* available with 360 wires

PID Control Loop Blocks

Number of Loops:	0, 4, 8, 16 or 24 Loops (order options). 24 loop option for SuperLoop only
Control modes:	On/Off, single PID, Dual channel OP Cascade (SuperLoop only)
Control outputs:	Analog 4-20 mA, Time proportioned logic
Cooling algorithms:	Linear, water, fan, or oil
Tuning:	3 sets PID, One-shot auto-tune
Auto manual control:	Bumpless transfer or forced manual output available
Setpoint rate limit:	Ramp in units per sec, per min or per hour
Output rate limit:	Ramp in % change per second
Other features:	Feedforward, Input track, Sensor break OP, Loop break alarm, remote SP, 2 internal loop setpoints

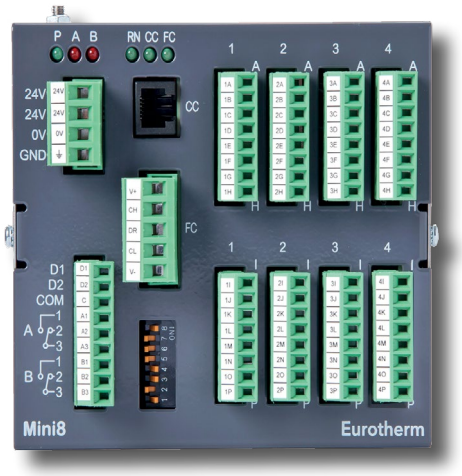
Process Alarms

Number of alarms:	64 General purpose alarms (analog, digital, rate of change), 32 Sensor break
Alarm types:	Absolute high, absolute low, deviation high, deviation low, deviation band, sensor break, logic high, logic low, rising edge, falling edge, edge
Alarm modes:	Latching or non-latching, blocking, time delay

Recipes

Recipes are a software orderable option.

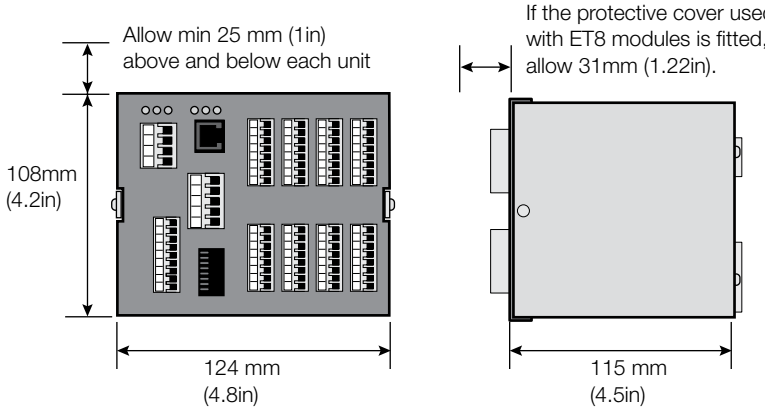
Number of recipes:	5
Tags:	40 tags in total



Mechanical Details

Allow a minimum of 25mm (1in) for terminals and cables in front of the unit.

If the protective cover used with ET8 modules is fitted, allow 31mm (1.22in).



Mounting Information

The Mini8 controller is intended to be horizontally mounted on symmetrical DIN Rail to EN 55022-35 or 35mm x 35mm x 15mm

Protective Cover

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

Communications Interface LEDs

Legend	Color	Function	Action	
RN	Green	Run mode	On - Running Blinking - Standby/Config Off - Not Running	
CC	Green	Configuration activity	On - N/A Blinking - Config Traffic Off - No Traffic	
FC	Green	Field comms activity	Off - No traffic or offline Blinking - Comms Traffic	Modbus, EtherNet
NET	Bi-Col	Network status Enhanced DeviceNet	Off – Offline Blinking Green - Online but no connections On Green - Online with connections Blinking Red - Connection timed out On Red - Total connection loss Blinking Red/Green – Issue with Comms detected	
MOD	Bi-Col	Module status Enhanced DeviceNet	Off - Power not supplied to network On Green - DeviceNet interface operational On Red - Power not supplied to controller or incorrect Checksum Blinking Red/Off - Recoverable fault detected. Comms. loss between network and DeviceNet interface. Blinking Red/Green - Power-up tests, unable to enter cyclic states or invalid Baud rate	

LEDs

Legend	Color	Function	Action
P	Green	Indicates Power status	On — Power On Off – Power Off
A	Red	Indicates Relay A state	On – Energized Off – De-Energized
B	Red	Indicates Relay B state	On – Energized Off – De-Energized

RL8 Relay Output

(slots 2 and/or 3 only)

Contact voltage/current — 264 V ac/ 2 A RMS max.

ISOLATION (264 V ac Basic)
- Channel to Channel: 264 V ac Basic
- Channel to system: Reinforced

Note:
Protective earth conductor MUST be used if RL8 module is fitted.

Legend	Function
A	RLY1 A
B	RLY1 B
C	RLY2 A
D	RLY2 B
E	RLY3 A
F	RLY3 B
G	RLY4 A
H	RLY4 B
I	RLY5 A
J	RLY5 B
K	RLY6 A
L	RLY6 B
M	RLY7 A
N	RLY7 B
O	RLY8 A
P	RLY8 B

AO8/AO4 Analog Output

(slot 4 only)

Output current — 0 to 20 mA 360 ohm max. load.

ISOLATION
- Channel to Channel: 42 V pk.
- Channel to system: 42 V pk.

Note:
AO4 supports Channels 1 to 4 only.

Legend	Function
A	OP1+
B	OP1–
C	OP2+
D	OP2–
E	OP3+
F	OP3–
G	OP4+
H	OP4–
I	OP5+
J	OP5–
K	OP6+
L	OP6–
M	OP7+
N	OP7–
O	OP8+
P	OP8–

Power Supply

Legend	Supply	
24 V	24 V dc	} Linked
24 V	24 V dc	
0 V	0 V	
GND	Ground	

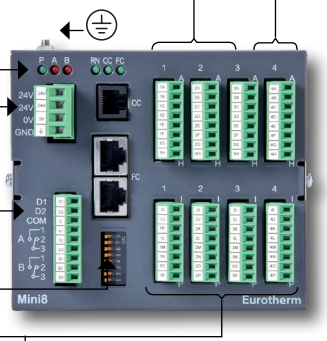
This terminal can accept wire sizes 0.2 – 2.5 mm (24 – 12 AWG).

Power Supply Specification
Power supply voltage: 17.8 V dc min. to 28.8 V dc max.
Power comsumption: 15 W max.

Standard I/O Connections

Legend	Function
D1	Digital Input 1
D2	Digital Input 2
C	Digital Input Common
A1	Relay A n/open
A2	Relay A n/closed
A3	Relay A Common
B1	Relay B n/open
B2	Relay B n/closed
B3	Relay B Common

Note:
Digital Inputs: ON requires greater than 10.8 V with 2 mA drive, 30 V max.
Relay Contacts: 1 A max., 42 V dc max.



Communications
Communications connection terminals are version dependant.

ET8/TC8/TC4 Thermocouple Input

Isolation
- Channel to Channel: 42 V pk.
- Channel to system: 42 V pk.

Note :
TC4 supports Channels 1 to 4 only.

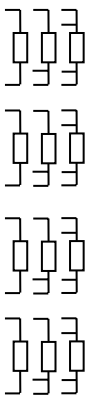
Legend	Function
A	TC1+
B	TC1–
C	TC2+
D	TC2–
E	TC3+
F	TC3–
G	TC4+
H	TC4–
I	TC5+
J	TC5–
K	TC6+
L	TC6–
M	TC7+
N	TC7–
O	TC8+
P	TC8–

RT4 2, 3, 4 Wire RTD Input

Isolation
- Channel to Channel: 42 V pk.
- Channel to system: 42 V pk.

Legend	Function
A	CH1 I+
B	CH1 S+
C	CH1 S–
D	CH1 I–
E	CH2 I+
F	CH2 S+
G	CH2 S–
H	CH2 I–
I	CH3 I+
J	CH3 S+
K	CH3 S–
L	CH3 I–
M	CH4 I+
N	CH4 S+
O	CH4 S–
P	CH4 I–

Wire Connections 2 3 4



DI8 Logic Input

Isolation
- Channel to Channel: 42 V pk.
- Channel to system: 42 V pk.

Note :
Input specification as for Standard I/O above.

Legend	Function
A	D1+
B	D1–
C	D2+
D	D2–
E	D3+
F	D3–
G	D4+
H	D4–
I	D5+
J	D5–
K	D6+
L	D6–
M	D7+
N	D7–
O	D8+
P	D8–

CT3 Transformer Input

Isolation
- Channel to Channel: N/A
- Channel to system: N/A

Note :
Isolation provided by current transformers.

Legend	Function
A	NA
B	NA
C	NA
D	NA
E	NA
F	NA
G	NA
H	NA
I	In1 A
J	In1 B
K	No connection
L	In2 A
M	In2 B
N	No connection
O	In3 A
P	In3 b

DO8 Logic Output

Isolation
- Channel to Channel: N/A
- Channel to system: 42 V peak with independant supply

Note:
Requires 24 V dc supply.
* Linked internally.

Legend	Function
A	Supply in +
B	Supply in +
C	OP1+
D	OP2+
E	OP3+
F	OP4+
G	Supply & OP
H	Supply & OP –
I	Supply in +
J	Supply in +
K	No connection
L	In2 A
M	In2 B
N	No connection
O	Supply & OP
P	Supply & OP –

Order Codes

MINI8	1	2	3	4	5	6	7	8	9	10	11	12	13

14	15	16	17	18	19

Basic Product	
MINI8	Mini8 Controller

1 Control Loops	
ACQE	IO Acquisition only
4LPE	4 Control SuperLoops
8LPE	8 Control SuperLoops
16LPE	16 Control SuperLoops
24LPE	24 Control SuperLoops

2 Programs	
OPRG	No programs

3 PSU	
VL	24 Vdc

4 Communications	
ISOLMBUS	Isolated Modbus RTU Server
DEVICENET	DeviceNet Server
ENETMBUS	Ethernet Modbus TCP/IP Server
DNETM12	DeviceNet M12 Connector Server
MBCLIENT	Ethernet Modbus TCP/IP Client + Server

5 Temperature Units	
C	Centigrade
F	Fahrenheit

6-9 IO Slots 1, 2, 3, 4	
XXX	No module fitted
TC4	4 Ch TC input
TC8	8 Ch TC input
ET8	Enhanced 8 Ch TC Input
RT4	4 Ch RTD Pt100/Pt1000 input
AO4	4 Ch 4-20 mA O/P (AO4 only permitted in slot 4)
AO8	8 Ch 4-20mA O/P (AO8 only permitted in slot 4)
DO8	8 Ch Logic O/P
CT3	3 Ch CT input (Only 1 CT3 permitted per Mini8) 3 Ch CT input (Only 1 CT3 permitted per Mini8; DO8 must be fitted to use CT3 permitted in slots 2 or 3)
RL8	8 Ch Relay O/P (RL8 only permitted in slots 2 or 3)
DI8	8 Ch Logic input

10 Applications	
STD	SuperLoop only
CAS	SuperLoop only with Cascade enabled
LEG	Mini8 Legacy Loop Type supplied. Cascade disabled

11 Wires	
30	30 User Wires
60	60 User Wires
120	120 User Wires
250	250 User Wires
360	360 User Wires (includes additional toolkit blocks)

12 Recipes	
NONE	No recipes
RCP	Recipes enabled

13 Manual Language	
ENG	English
FRA	French

14 Configuration Software	
NONE	No iTools DVD
iTOOLS	iTools supplied on DVD

15 Warranty	
XXXXX	Standard
WL005	Extended

16 Calibration Certificates	
XXXXX	None
CERT2	Factory input calibration per input (5 point calibration)

17 Specials	
XXXXX	Standard

18 Label	
XXXXX	No Custom Label
YNNNN	Custom Label

19 Configuration Lock Function	
XXX	None
LOCK	Soft wiring & parameter values may be restricted using lock function

Accessories

SUBMINI8/SHUNT/249R.1	2.49 ohm Precision resistor
RES250	250 ohm resistor for 0-5 V dc OP
RES500	500 ohm resistor for 0-10 V dc OP
CTR100000/000	10 A Current transformer
CTR200000/000	25 A Current transformer
CTR400000/000	50 A Current transformer
CTR500000/000	100 A Current transformer

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Document Number HA033675 Issue 4

Published April 2023

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