# Ranged to Suit Simple Multi-loop and Data Acquisition Applications

## Mini8® Controller
## Control Optimize Simplify

## Product at a Glance

The Mini8® 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 programmable logic controller. Able to multi-drop on either Serial, Fieldbus 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 reduces the hardware cost of the PLC, relieving it of the burden of performing analogue functions, often allowing a lower specification processor to be used.

The feature set is comparable with the Eurotherm 3000 series panel controllers including its high performance PID control and SP programming functions together with a range of features such as Math, Logic, and Timing blocks.

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

- 16 control loops
- 32 analog inputs
- Modular & compact
- SP programming
- Math and logic
- Remote HMI
- Modbus RTU
- DeviceNet® network
- Profibus DP network
- Modbus TCP
- EtherNet/IP
- EtherCAT
- Defend OEM knowledge and IP (OEM security)

## Setpoint Programming

The Mini8 controller can run up to 8 programmer function blocks, to follow a user-defined series of ramp and dwell segments. Each programmer is capable of running a program of up to 16 segments with 8 event outputs. The event outputs can be used internally within the configuration soft wiring or to external digital or relay outputs. (Note: this depends on the type and number of the hardware outputs fitted).

## 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 the HMI. This is very useful where multiple products are processed using the same controller but require different parameters to be set.

## Heater Failure Detection

The Mini8 controller with a CT3 input 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 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.

## Toolkit Blocks

A range of toolkit functions, including Math, Logic, and Timing blocks can be used to create custom solutions and small machine controllers.

## Eurotherm iTools Graphical Wiring Editor

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 the user a pictorial view of exactly what he has configured and can also be used to monitor runtime conditions.
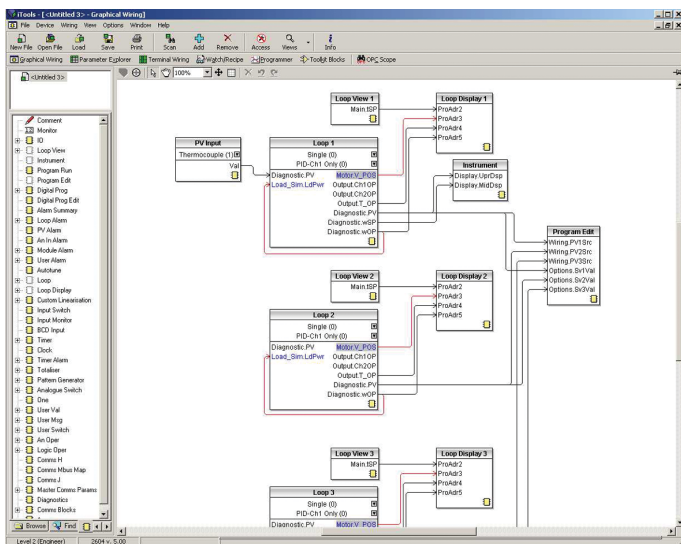


## OEM Security

An OEM or reseller can help protect their intellectual property from unauthorized cloning of the configuration.

# 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 |
| Storage temperature: | –10 to 70° C |
| 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: | EN61326 for Industrial Environments |

This controller conforms with the essential protection requirements of the EMC Directive 2004/108/EC, by the application of EMC standard EN61326. This instrument satisfies the general requirements of the industrial environment defined in EN 61326.

### Electrical Safety

| | |
|---|---|
| Safety: | Meets EN61010, installation category II, pollution degree 2 |

**INSTALLATION CATEGORY II**
This controller complies with the European Low Voltage Directive 73/23/EEC, by the application of the safety standard EN 61010.

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

### Physical

| | |
|---|---|
| Dimensions: | W 124 x H 108 x D 115mm |
| Weight: | 1 Kg typical |
| Mounting: | DIN rail to EN50022 35 x 7.5 or 35 x 15 horizontally |

### Approvals

| | |
|---|---|
| | CE, cUL listed (file E57766) |

| Communications | |
|---|---|

### Network Communications Support

| | | |
|---|---|---|
| Modbus RTU: | | RS485, 2 x RJ45, user select switch for 3-wire or 5-wire |
| | Baud rates: | 4800, 9600, 19200 |
| DeviceNet: | | CAN, 5-pin standard "open connector" withscrew terminals |
| | Baud rates: | 125k, 250k, 500k |
| Profibus DP: | | RS485 via standard 9 pin D connector or 2 RJ45 connectors |
| | Baud rates: | Up to 12 M set by the Master |
| Ethernet: | | Standard Ethernet RJ45 connector |
| | Baud rates: | 10baseT |
| EtherNet/IP: | | Standard Ethernet RJ45 connector |
| | Baud rates: | 10baseT |
| | | 100baseT |
| EtherCAT: | | Standard Ethernet RJ45 connector |
| | Baud rates: | 10baseT |
| | | 100baseT |

Modbus/DeviceNet /Profibus /Ethernet/EtherNet/IP /EtherCAT are mutually exclusive options; refer to the Mini8 controller Order Code.

### Configuration Communications Support

| | |
|---|---|
| Modbus RTU: | RS485, 2 x RJ45, user select switch for 3-wire or 5-wire |

| 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 and TC4 4-Channel TC Input Card

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

| | |
|---|---|
| Channel types: | TC, mV |
| Input Range: | –77 mV to +77 mV |
| Resolution: | 20 bit ($\Sigma\Delta$ converter), 1.6 µV with 1.6 s filter time |
| Temperature coefficient: | < ±50 ppm (0.005%) of reading/° C |
| Cold junction range: | –10° C to +70° C |
| CJ rejection: | > 30:1 |
| CJ accuracy: | ±1° C |
| 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) |
| 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: | >100 M |
| 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: | Isol42 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 temperatureprotected, 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 amps AC |
| Contact snubber: | Fitted on module |
| Minimum contact wetting: | 5 V DC, 10 mA |
| Min. pulse time: | 220 ms |
| Isolation (channel-channel): | 264 V 230 V nominal |
| Isolation to system: | 264 V 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 test of nominated outputs to detect load(failure) changes.

| | |
|---|---|
| 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 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 |
| 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 |
| Resolution: | 0.008 ohms, 0.02° C |
| Measurement noise: | 0.016 ohms, 0.04° C peak to peak, 1.6 s channel filter |
| | 0.06 ohms, 0.15° C peak to peak, no filter |
| Linearity error: | ±0.02 ohms, ±0.05° C |
| Temp coefficient: | ±0.002% of ohms reading per °C ambient change relative to normal ambient 25° C |
| 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 |
| 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 |
| Resolution: | 0.6 ohms, 0.15° C |
| Measurement noise: | 0.2 ohms, 0.05° C peak to peak, 1.6 s channel filter |
| | 0.6 ohms, 0.15° C peak to peak, no filter |
| Linearity error: | ±0.2 ohms, ±0.05° C |
| Temp coefficient: | ±0.002% of ohms reading per °C ambient change relative to normal ambient 25° C |
| 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 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 Ω 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, 60, 120 or 250 |
| User values: | | 32 real values |
| 2 input math: | 24 blocks | Add, subtract, multiply, divide, absolute difference, maximum, minimum, hot swap, sample and hold, power, square root, Log, Ln, exponential, switch |
| 2 input logic: | 24 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 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 |
| 16 point linearization: | 2 blocks | 16-point linearization fit |
| Polynomial fit: | 2 blocks | Characterization by poly fit table |
| Switchover: | 1 block | Smooth transition between two 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 |
| Real time clock: | 1 block | Day & time, 2 time based alarms |
| Transducer scaling: | 2 blocks | Transducer Auto-tare, calibration & comparison cal |

### PID Control Loop Blocks

| | |
|---|---|
| Number of Loops: | 0, 4, 8 or 16 Loops (order options) |
| Control modes: | On/Off, single PID, Dual channel OP |
| 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: | 32 analog, 32 digital, 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 |

## Setpoint Programmer

The Setpoint Programmer is a software orderable option.

| | |
|---|---|
| Number of programs: | 8 |
| Number of segments: | 128 |
| Number of event outputs: | 8 per program (64 total) |
| Digital inputs: | Run, Hold, Reset, Run/Hold, Run/Reset, Program Advance, Skip, Segment, Sync |
| Power failure action: | Ramp, Reset, Continue |
| Servo start: | PV, SP |

## Recipes

Recipes are a software orderable option.

| | |
|---|---|
| Number of recipes: | 8 |
| Tags: | 24 tags in total |



## Mechanical Details



Allow min 25 mm above and below each unit

Allow min 25 mm for terminals and cables

108 mm

124 mm

115 mm
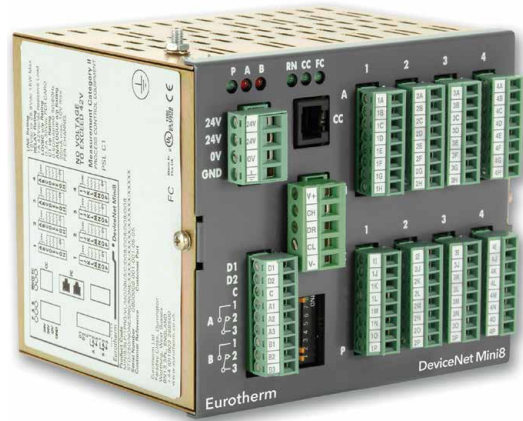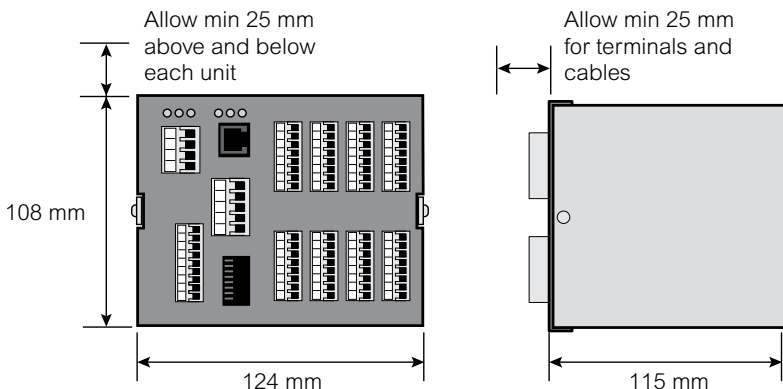
### Mounting Information

The Mini8 controller is intended to be horizontally mounted on symmetrical DIN Rail to EN50022-35 or 35 x 35 x 15

## Communications Interface LEDs

| Legend | Color | Function | Action |
|--------|-------|----------|--------|
| RN/RUN | Green | Run mode | On — Running<br>Blinking — Standby/Config<br>Off — Not Running |
| | | RUN (EtherCAT only) | Off — the device is in Initialization, INIT state<br>Blinking — the device is in the Pre-Operational state<br>Single Flash — the device is in the Safe Operational state<br>On — the device is in the operational state<br>Flickering — the device is booting, but has not entered INIT state |
| CC | Green | Configuration activity | On — N/A<br>Blinking — Config Traffic<br>Off — N/A |
| FC | Green | Field Comms activity | On — Connected<br>Blinking — Ready } Non-enhanced DeviceNet®<br>Off — Offline<br>Off — No traffic or offline<br>Blinking — Comms Traffic } Modbus, Profibus, and Ethernet |
| NET | Bi-Col | Network Status (enhanced DeviceNet only) | Off — Offline<br>Blinking Green — Online but no connections<br>On Green — Online with connections<br>Blinking Red — Connection timed out<br>On Red — Total connection failure<br>Blinking Red/Green — Comms fault |
| | | Network Satus (EtherNet/IP only) | Off — Not online<br>Flashing Green — Online but no connection<br>Steady Green — Online and operating correctly<br>Flashing Red — Connection timeout<br>Steady Red — Duplication of IP address<br>Flashing Green and red — Initialization |
| MOD | Bi-Col | Module Status (enhanced DeviceNet only) | Off — Power not supplied to network<br>On Green — DeviceNet interface operational<br>On Red — Power not supplied to controller or Checksum failure<br>Blinking Red/Off — Recoverable fault. Comms. error between network and DeviceNet interface<br>Blinking Red/Green — Power-up tests, failure to enter cyclic states or invalid baud rate |
| | | Module Status (EtherNet/IP only) | Off — Not online<br>Flashing Green — Online but no connection<br>Steady Green — Online and operating correctly<br>Flashing Red — Connection timeout<br>Steady Red — Duplication of IP address<br>Flashing Green and Red — Initialization |
| ERR | RED | Error Status Indication (EtherCAT only) | Off — No error<br>On — Application Failure, no communications with Mini8 |

## LEDs

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

## RL8 Relay Output

**(slots 2 and/or 3 only)**

Contact voltage/current — 264 V AC/2A 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/A04 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 D max.

**Communications**
Communications connection terminals are version dependant.
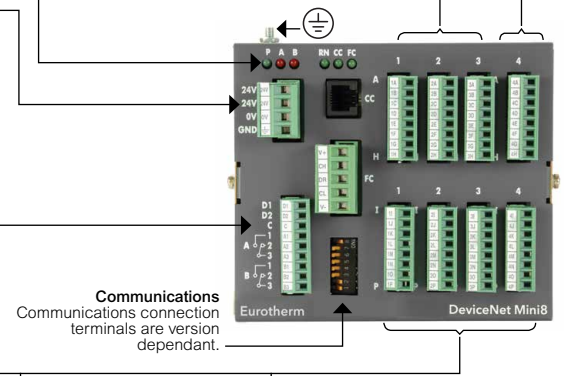
## TC8/TC4 Thermocouple Input

**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 |
|---|---|---|---|

### Basic Product
| MINI8 | Mini8 Controller |
|---|---|

### 1 Control Loops
| ACQ | IO Acquisition only |
|---|---|
| 4LP | 4 Control loops |
| 8LP | 8 Control loops |
| 16LP | 16 Control loops |

### 2 Programs
| OPRG | No programs |
|---|---|
| 1PRG | 1 profile — 50 programs |
| XPRG | Multi-profiles — 50 programs (Note 1) |

### 3 PSU
| VL | 24 V DC |
|---|---|

### 4 Communications
| MODBUS | Non isolated Modbus Slave |
|---|---|
| ISOLMBUS | Isolated Modbus RTU Slave |
| DEVICENET | DeviceNet Slave |
| PBUSRJ45 | Profibus Slave RJ45 (Note 2) |
| PBUS9PIN | Profibus Slave 9 Pin D type (Note 2) |
| ENETMBUS | Ethernet Modbus TCP/IP Slave |
| DNETM12 | DeviceNet M12 Connector Slave |
| ENETIP | EtherNet/IP |
| ETHERCAT | EtherCAT |

### 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 |
| RT4 | 4 Ch RTD PT100/PT1000 input |
| AO4 | 4 Ch 4-20 mA O/P (Note 3) |
| AO8 | 8 Ch 4-20mA O/P (Note 3) |
| DO8 | 8 Ch logic O/P |
| CT3 | 3 Ch CT input (Note 4) |
| RL8 | 8 Ch relay O/P (Note 5) |
| DI8 | 8 Ch logic input |

### 10 Applications
| STD | No configuration |
|---|---|
| EC8 | 8 Loop extrusion controller (Note 6) Requires 8LP or 250 wires and modules placed in the following slots Slot 1 = TC8 Slot 2 = CT3 or XXX Slot 3 = DO8 Slot 4 = DO8 |
| FC8 | 8 Loop furnace controller Requires 8LP or 250 wires and modules placed in the following slots Slot 1 = TC8 Slot 4 = AO8 |

### 11 Wires
| 30 | 30 30 User Wires |
|---|---|
| 60 | 60 User Wires |
| 120 | 120 User Wires |
| 250 | 250 User Wires |

### 12 Recipes
| NONE | No recipes |
|---|---|
| RCP | 8 recipes |

### 13 Manual Language
| ENG | English |
|---|---|
| FRA | French |
| GER | German |
| SPA | Spanish |
| ITA | Italian |

### 14 Configuration Software
| ENG | English |
|---|---|
| NONE | No DVD |
| ITOOLS | Eurotherm iTools DVD & Mini8 Controller documentation |

### 15 Warranty
| XXXXX | Standard |
|---|---|
| WL005 | Extended |

### 16 Calibration Certificates
| XXXXX | None |
|---|---|
| CERT1 | Certificate of Conformity |
| CERT2 | Factory input calibration per input (Note 7) |

### 17 Specials
| XXXXX | Standard |
|---|---|
| EU0725 | OEM Security |

### Notes
1. If 4 loops ordered 4 programmers are supplied; 8 or 16 loops ordered 8 programmers are supplied.
2. Profibus motherboard fitted.
3. AO4/AO8 in slot 4 only.
4. Only 1 CT3 per Mini8.
5. RL8 in slots 2/3 only.
6. EC8 is a preconfigured version of Mini8 offering 8 control loops with Heat/Cool logic outputs.
7. CERT2 is 5 point calibration.

## Accessories

| HA031260 | Engeering/DVD manual |
|---|---|
| SUBMINI8/SHUNT/249R.1 | 2.49 R Precision resistor |
| RES250 | 250 R resistor for 0-5 V DC OP |
| RES500 | 500 R 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 |
| iTools/None/3000CK | Configuration clip |
| SUB21/IV10 | 0-10 V input adaptor |

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