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Mini8 Loop Controller

Module Changing Guide

HA033632ENG Issue 1
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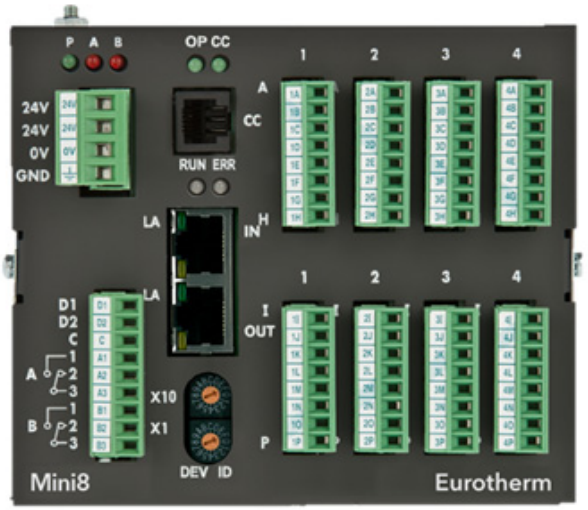

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All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use Eurotherm Limited software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.

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Safety Information

Important Information

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this manual or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury. The safety alert symbol shall not be used with this signal word.

Note: Electrical equipment must be installed, operated, serviced and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

Note: A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment, and has received safety training to recognize and avoid the hazards involved.

Introduction

This document explains the procedures and precautions to be taken while changing Input/Output (I/O) modules in the Mini8 Loop controllers.

Only appropriately trained persons who are familiar with and understand the contents of this manual and all other relevant product documentation are authorized to work on and with this product.

The qualified person must be able to detect possible hazards that may arise when changing parameter values manually and generally from mechanical, electrical, or electronic equipment.

Use this document together with those listed below.

Related Documents

Mini8 Controller User Guide (Part Number: HA028581),

Mini8 Controller Installation Guide (Part Number: HA028497),

iTools Help Manual (Part Number: HA028838).

These manuals are available from www.eurotherm.com.

Order Codes

Depending on the order requests, I/O modules are supplied along with their corresponding terminal blocks/connectors and self-adhesive labels. The position of each module type is indicated in the table below:

Module	Order Codes	Permitted I/O Slot Positions
4 Channel Thermocouple/mV Input	TC4	Slots 1, 2, 3, or 4
8 Channel Thermocouple/mV Input	TC8	Slots 1, 2, 3, or 4
8 Channel Enhanced Thermocouple/mV Input. **Note**: If needed, an Input cover (Protective cover) can be ordered separately for ET8 and CJC connectors. For more information, refer to Mini8 User Guide, Protective Cover section.	ET8	Slots 1, 2, 3, or 4
4 Channel RTD Input	RT4	Slots 1, 2, 3, 4
4 Channel 4 to 20mA Output	A04	Slot 4 only (Unless ET8 option/application used)
8 Channel 4 to 20mA Output	A08	Slot 4 only
8 Channel Logic Output	D08	Slots 1, 2, 3, or 4
3 Channel CT Input	CT3	One card only per instrument (Slots 1, 2, 3 or 4)
8 Channel Relay Output	RL8	Slots 2 or 3 only
8 Channel Logic Input	DI8	Slots 1, 2, 3, or 4
Self-adhesive labels	Not Applicable	Labels are required for traceability purposes.

Safety Precautions

In addition to the Safety and Warning information listed below, please observe all safety instructions given in the Related Documents section listed above.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

Power down all equipment before starting the installation, removal, wiring, maintenance or inspection of the product.
Always use a correctly rated voltage sensing device to confirm the power is off.
Power line and output circuits must be wired and fused in compliance with local and national regulatory requirements for the rated current and voltage of the particular equipment. i.e. UK, the latest IEE wiring regulations, (BS7671), and USA, NEC Class 1 wiring methods.
Charged capacitors
Before removing an instrument from its case, disconnect the supply and wait at least two minutes to allow capacitors to discharge. Avoid touching the exposed electronics of the instrument when withdrawing it from the case.
Failure to follow these instructions will result in death or serious injury.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Electrostatic discharge precautions.
Always observe all electrostatic precautions before handling the unit.
Service and repair.
This instrument has no user serviceable parts.
Hazard of Incorrect Configuration.
Incorrect configuration can result in damage to the process and/or personal injury and must be carried out by a competent person authorised to do so. It is the responsibility of the person commissioning the controller to ensure the configuration is correct

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

⚠ CAUTION

REASONABLE USE AND RESPONSIBILITY

The safety of any system incorporating this product is the responsibility of the assembler/installer of the system.
The information contained in this guide is subject to change without notice. While every effort has been made to ensure the accuracy of the information, Eurotherm shall not be held liable for errors contained herein.
The controller is intended for industrial temperature and process control applications to meet the requirements of the European Directives on Safety and EMC.
Use in other applications, or failure to observe the installation instructions of this and other Mini8 Loop Controller manuals, may impair safety or EMC. The installer must ensure the safety and EMC of any particular installation.

Failure to use approved software/hardware with our hardware products can result in injury, harm, or improper operating results.

Symbols

Various symbols may be used on the controller. They have the following meaning:

 Refer to manual.

 Risk of electric shock.

 Take precautions against static electricity.

 Regulatory compliance mark for Australia (ACA) and New Zealand (RSM).

 Complies with the 40 year Environment Friendly Usage Period.

Suitable Modules

Only use modules which are new and have not previously been in service.

Suitable Controllers

Modules may only be changed in Mini8 Loop Controllers with the product status level (PSL) equal to '**S9**' and above.

The status level is specified on the serial number which can be found on the label fitted to the side of the controller - Serial No: PL2107001772-072- S9 ('**S**' denotes the software status and changes alphabetically and '**9**' denotes hardware status and increments).

Changing IO Modules

⚠ CAUTION

STATIC-SENSITIVE DEVICES

Modules contain static sensitive electronic devices. Take full antistatic precautions when replacing modules by working on a grounded mat with a grounded wrist strap. Avoid touching components, keep fingers on the green connectors or the edge of the printed circuit boards.

Failure to follow these instructions can result in equipment damage.

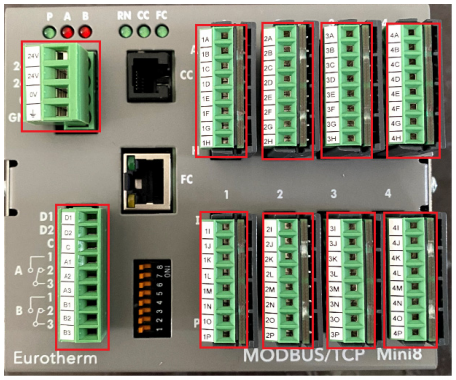
Step 1. Remove the Controller from the DIN Rail

1. Make sure that the controller is disconnected from the supply and wait at least two minutes to allow capacitors to discharge. Then disconnect the protective earth ground wire.
2. Use a screwdriver to lever down the lower DIN rail clip and lift forward when the clip has released. The controller can now be removed taking note of the safety precautions detailed above.

Step 2. Open the Front Panel

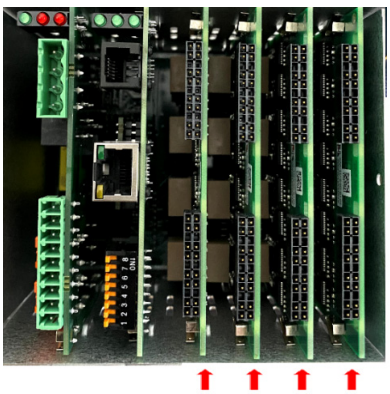
To open the front panel,

1. Remove ET8 protective cover (if fitted).
2. Remove all the terminal blocks by gently pulling them outwards.



Note: If upgrading an instrument, make sure to remove the terminal blocks before removing the unit from the cabinet.

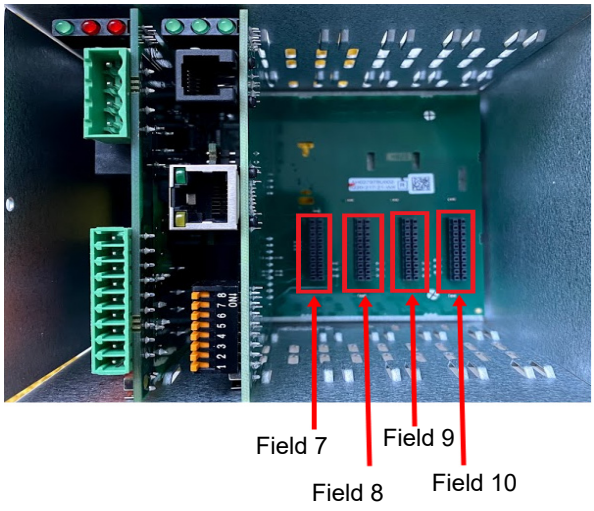
3. Remove each of the screws located on the side of the Mini8 unit.
4. Open the front panel by pulling it outwards. The image below displays the inside of the controller.



Four I/O modules placed in position

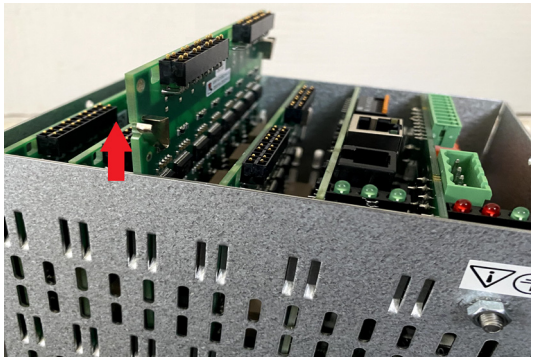
Step 3. Change I/O Modules

I/O modules are mounted on the micro controller PCB. There are four locations where modules can be fitted as shown below. The type of module fitted is specified in fields 7, 8, 9 and 10 of the respective order codes. Alternatively, see the label on the side of the unit.

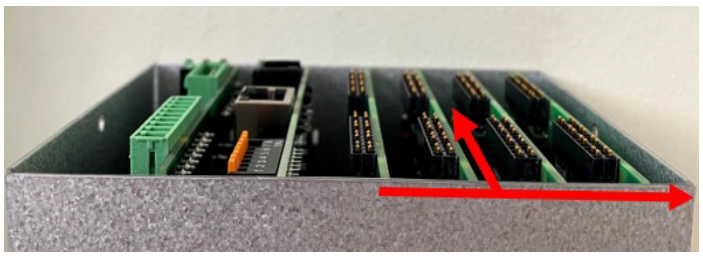


If modules are already fitted it will be necessary to remove them. This may be done as described below:

1. If you are replacing an I/O module, then hold the module to be removed and pull outwards gently.



2. Insert the new module into the appropriate empty slot by gently pressing it until the module slips fully into the slot without damaging the connectors.



NOTICE

- Make sure to use the guide slots on the internal case walls whilst fitting the modules/cards.
- Make sure the outer edge of the module is level with the outer edge of the controller.
- Make sure that the module boards connectors face towards the communication board.

3. Carefully replace the front panel whilst ensuring that the connectors are aligned with their slots, then secure in place with the screws.

Step 4. Fit the Terminal Blocks

Fit the terminal blocks into their respective slots. Fit the new labels, as described in section Fitting Labels.

Step 5. Re-mount the Protective Cover (only for ET8 Modules)

Mount the protective cover back on the controller with the slot at the bottom or at the top depending on the cabling requirements. Refer on to Mini8 User Guide (Part Number: HA028581), Protective Cover section.

Step 6. Re-mount the Controller on to its DIN Rail

You can now re-mount the controller on to its DIN rail. Ensure you re-attached the Protective Earth. Refer on to Mini8 Controller User Guide (Part Number: HA028581) and Mini8 Controller Installation Guide (Part Number: HA028497) for more details.

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Fitting Labels

After changing IO modules, labels which include the new order code must be affixed to the side of the controller and to the terminal blocks for traceability purposes. Make sure that this order code corresponds to the modules now affixed by peeling off the individual labels and placing them into the correct slots as shown in the following code example:

MINI8	Control Loops	Programs	PSU	Communications	IO Slot1	IO Slot2	IO Slot3	IO Slot4	Wires (etc.)
MINI8	4LP	1PRG	24Vdc	MODBUS	TC8	TC8	RL8	DO8	30

In the example, there are 2 Thermocouple 8 TC8 channel cards in slots 1 and 2, one Relay 8 RL8 in slot 3 and one Digital 8 Output DO8 card in slot 4. Therefore, the side label required is:

MINI8/ 4LP/ 1PRG/ 24Vdc/ MODBUS/ TC8/ TC8/ RL8/ DO8/ 30///

Note: The complete order code is described in the User Guide. Only the part relevant to these instructions is reproduced above.

Labels available for A04, D08, ET8 and RL8 are as follows:

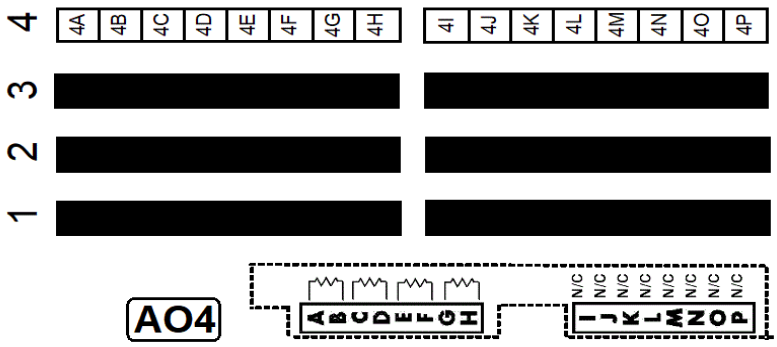


Figure 1 A04 Label

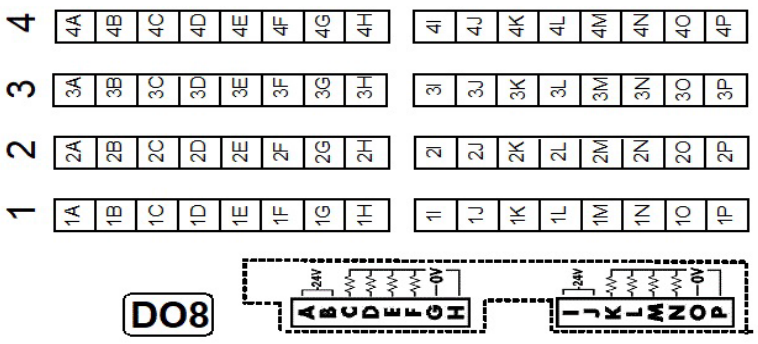


Figure 2 D08 Label

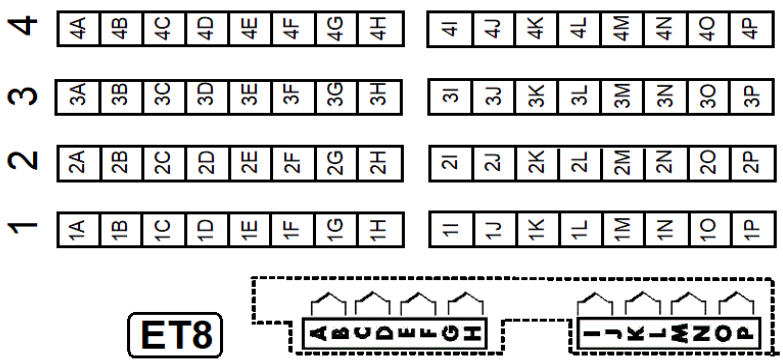


Figure 3 ET8 Label

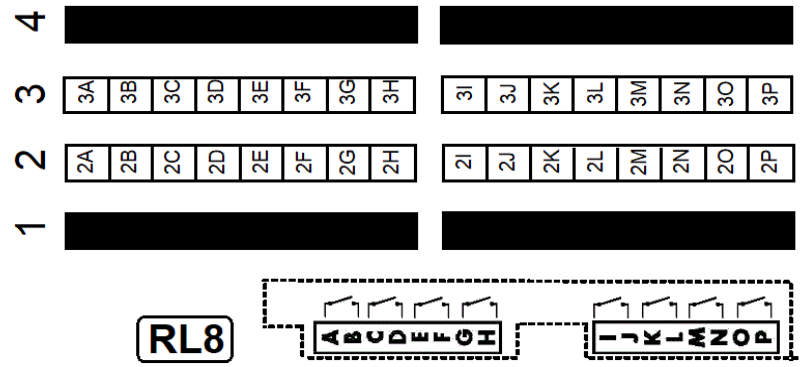


Figure 4 RL8 Label

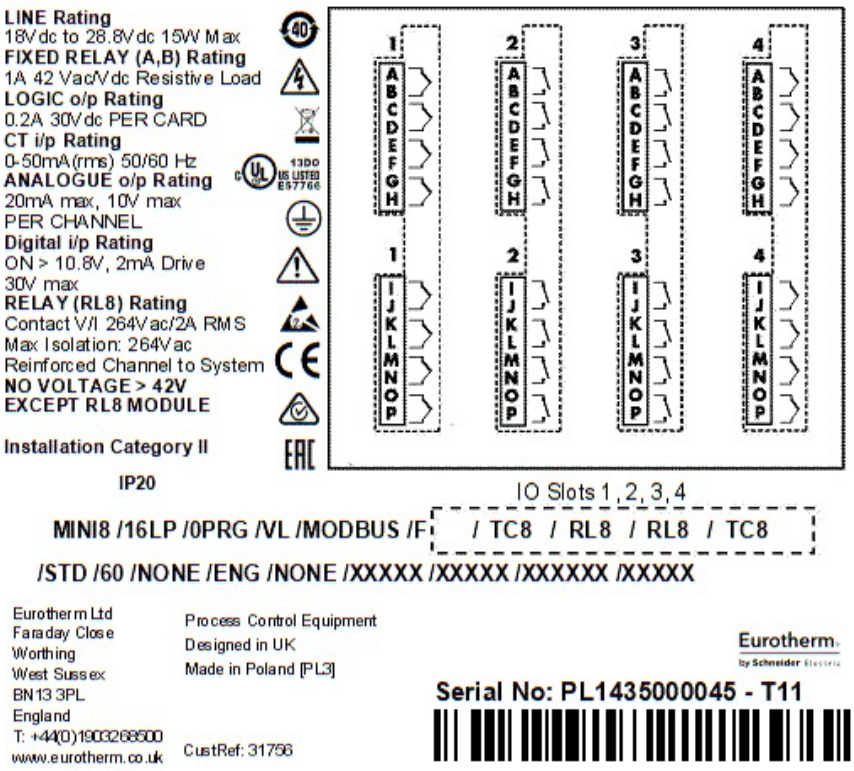


Figure 5 Wiring Diagram

Example: Locations to fit labels if a RL8 module is inserted into slot 2.

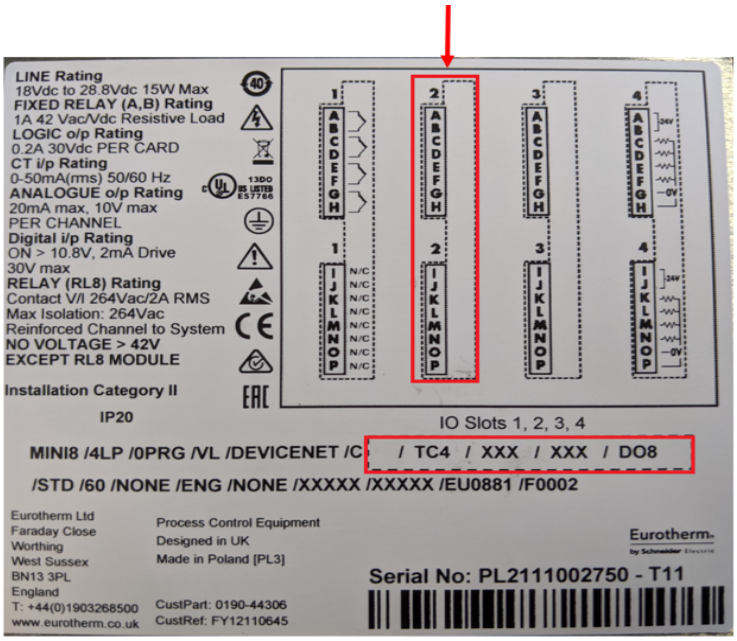
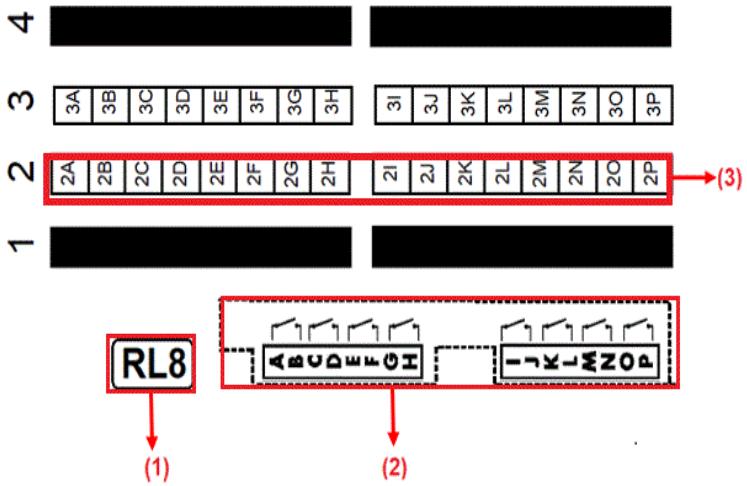


Figure 6 Side label before fitting RL8 labels

After inserting the RL8 module into slot 2 (by following the steps in section Changing IO Modules), affix the labels supplied for RL8 as shown below:



Peel off (1) and (2) labels to place over slot 2 of the side label and peel off (3) to place over slot 2 of the terminal blocks as shown in Figure 7 below.

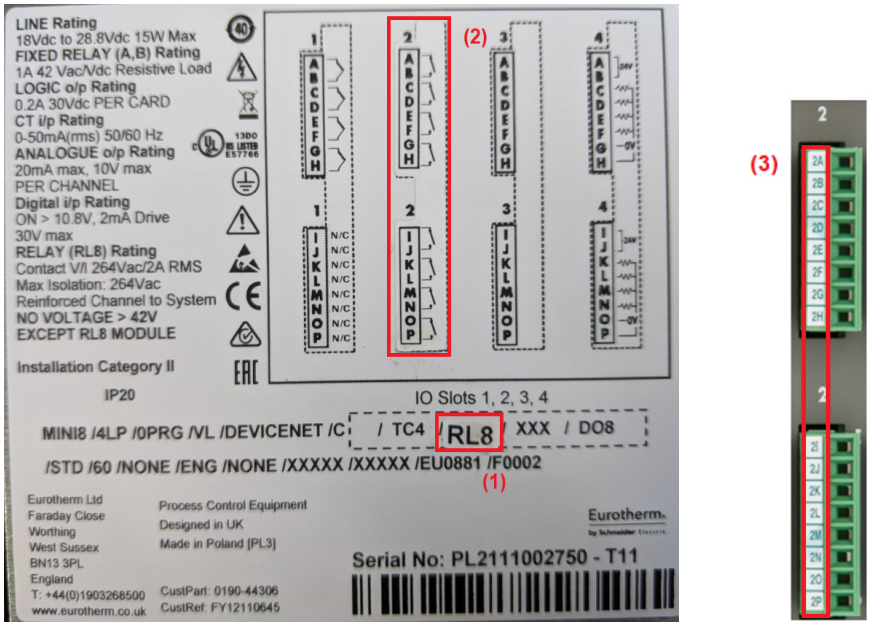


Figure 7 Side label and terminal blocks after fitting RL8 labels

Configuring IO Using iTools

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

It is the responsibility of the person commissioning the controller to ensure the configuration is correct.

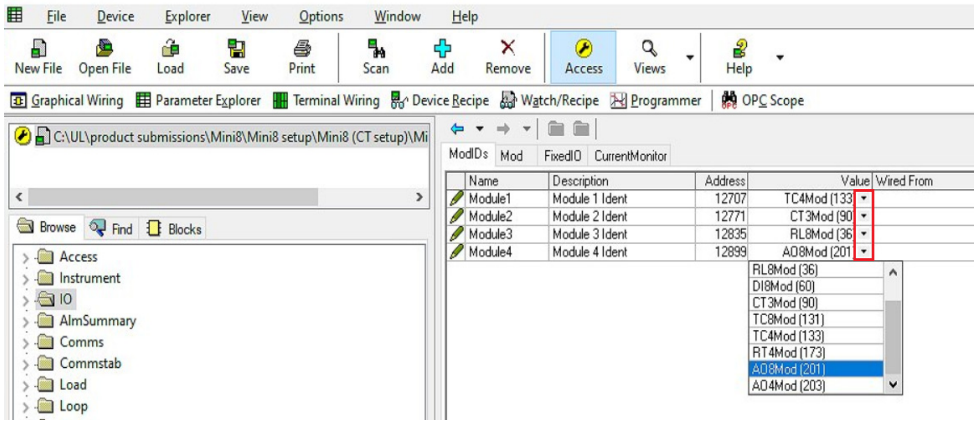
The controller must not be configured while it is connected to a live process as entering Configuration Mode pauses all outputs. The controller remains in Standby until Configuration Mode is exited.

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

Any controller which has had a module changed must be re-configured. This may involve simply setting up the module itself or re-wiring the 'soft' interconnections between modules. This is done using the iTools configuration package which may be downloaded free of charge from Eurotherm-iTools (or go to www.eurotherm.com and search for iTools).

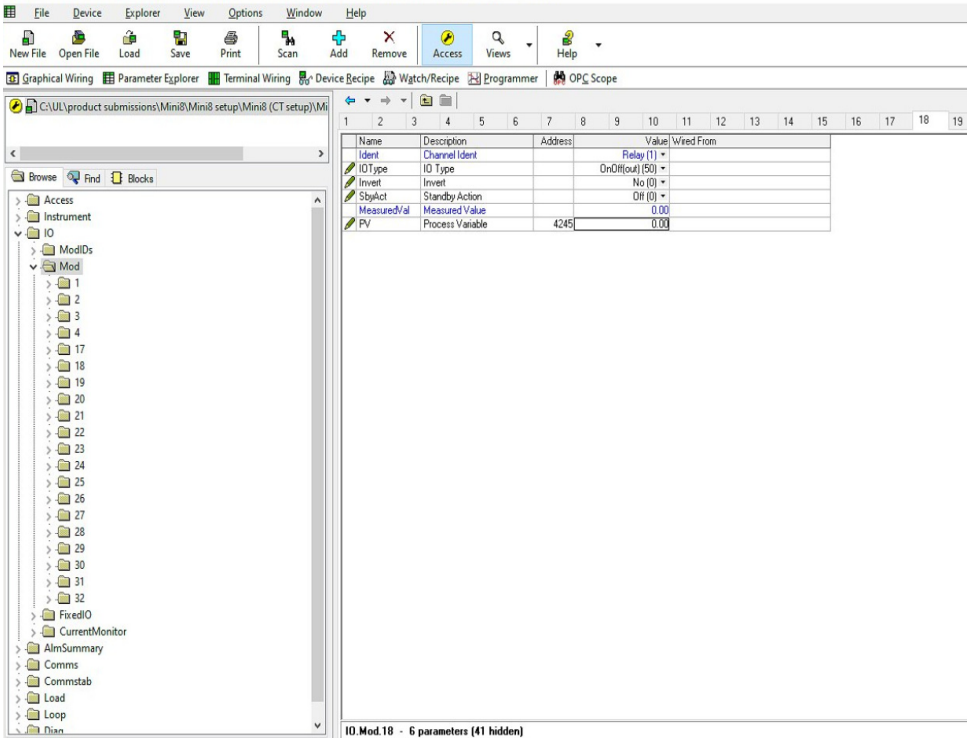
Connect the controller to a PC running iTools. The configuration port is on an RJ11 socket, just to the right of the power supply connections. This will normally be connected to a PC running iTools. When connecting to iTools the instrument on this port will be found at address 255. Eurotherm supplies a standard cable to connect a serial COM port on a computer to the RJ11 socket, part no. **SubMini8/cable/config**.

The fitted module will be recognised by the controller and displayed in the IO folder. If this is different from the new IO module that has been inserted, then using the drop down for the Value field, select the correct module type.



The IO folder also lists the corresponding IO channels, fixed IO, and the current monitoring.

Note: The current transformer input, CT3, is not included in this arrangement. There is a separate folder for current monitoring under IO.*CurrentMonitor* (Hence the reason for RL8 channels in this example starting on channel 17).



As a minimum the IO must be bench tested to make sure that it operates correctly. One way to do this is to load ’no application’ into the controller. This means that none of the IO is soft wired and can be set using the IO browser list.

In the IO folder (whilst also in Access mode), for each IO, set the "PV" Parameter and observe the “output” parameter to confirm that its state has changed accordingly.

Note: Observe all Safety notices and Wiring recommendations given in the section Related Documents.

Disposal of the Replaced IO Modules

Make sure that the replaced IO modules are disposed of responsibly and in accordance with your local Electrical and Electronic Equipment (EEE) waste guidelines. If available, ensure to use a EEE waste recycling centre.

For more information, see Mini8 Product End of Life Instructions (ENVEOLI1709012_V1) available on the Eurotherm website.

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