

### Important: Retain these instructions

These instructions shall be used by trained service personnel only. If the equipment is used in a manner not specified by these instructions, the protection provided by the equipment may be impaired.

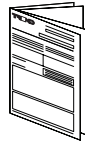
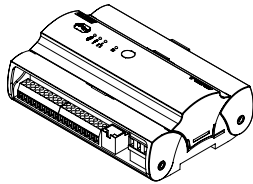


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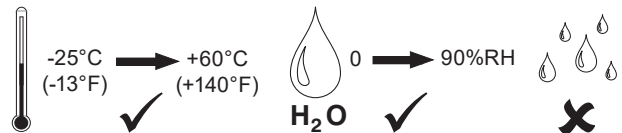
1	Box Contents.....	1	5	Field Maintenance.....	12
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## 1 BOX CONTENTS



IQ41x Installation  
Instructions  
- Mounting  
(TG201250)

## 2 STORING



Note: For temperatures below 0°C (32°F) special care must be taken that there is no condensation on or within the unit.

## 3 INSTALLATION

### Labels used on IQ41x

	Caution, consult documentation
	Caution, possibility of electric shock
	Trend current loop connector
	Wallbus connector
	Ethernet connector/indicators
	Universal input connector
	Digital input connector
	Auxiliary supply output connector
	Analogue output connector (IQ412 only)
	Digital output connector
	RS232 local supervisor port <i>Note: This port provides power to connected RD or SDU product that is within the limits described by EN60950-1 (table 2B).</i>
	230 Vac input power connector (.../230 only)
	24 Vac input power connector (.../24VAC only)
	USB local engineering port
	Power on indicator
	Watchdog indicator
	LAN OK indicator
	Service button/indicator

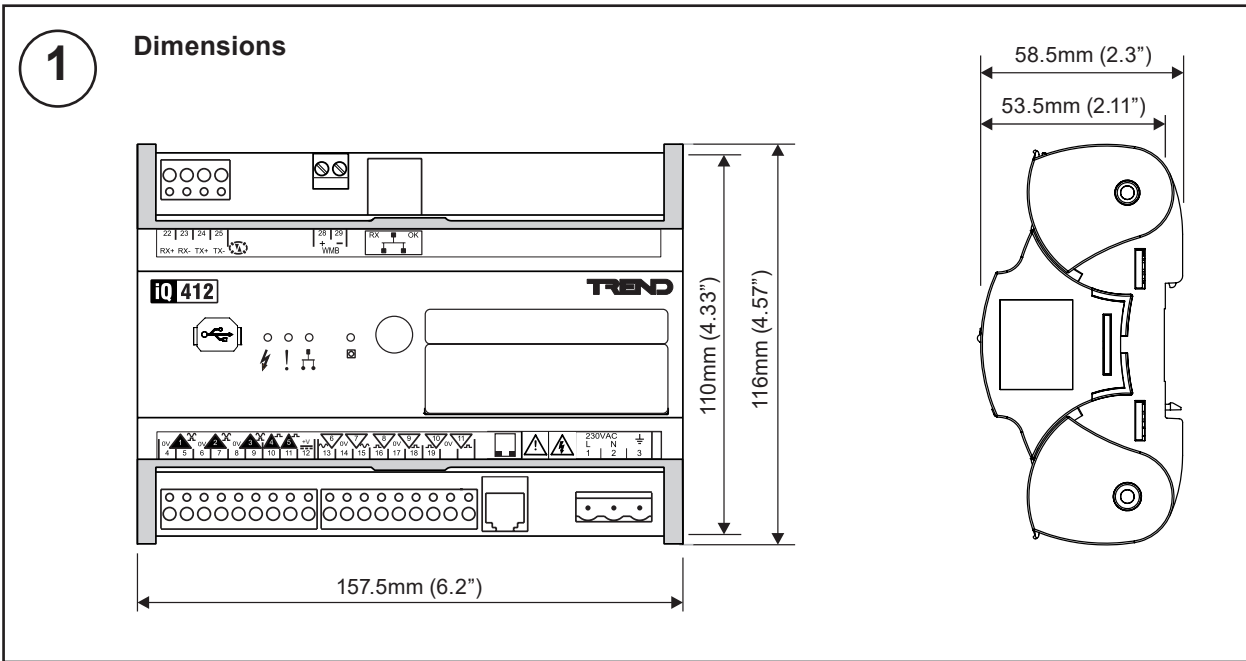
It is recommended that the installation should comply with the local electrical safety installation practices (e.g. HSE Memorandum of Guidance on Electricity at Work Regulations 1989, USA National Electric Code).

Any connected devices must be insulated from mains by reinforced insulation.

**WARNING** Removal of cover exposes dangerous voltages.

**WARNING:** To reduce the risk of electrical shock or fire do not interconnect the output of different Class 2 circuits.

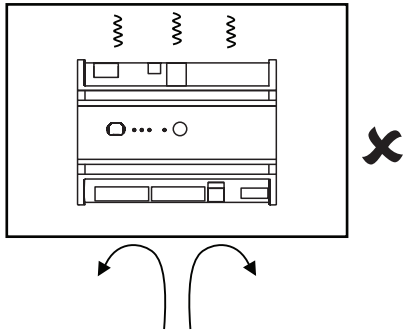
3 INSTALLATION (continued)



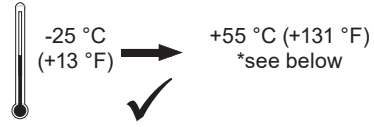
3 INSTALLATION (continued)

2

Mounting Requirements



Protection IP20, NEMA1  
 Altitude <4000 m (13124')  
 Pollution degree 2 (Only non-conducting pollution occurs)



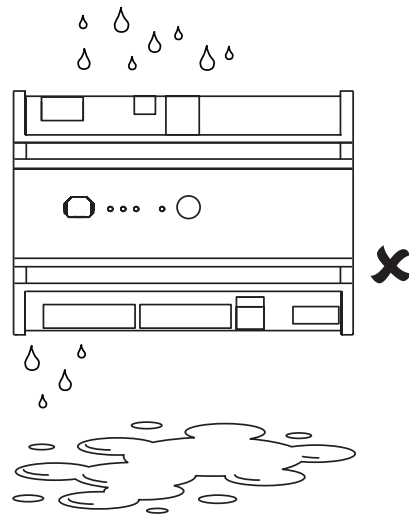
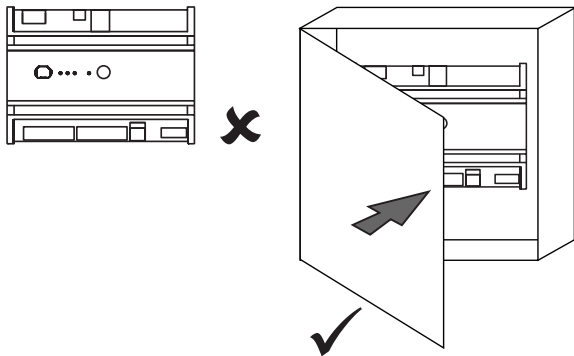
Note: For temperatures below 0°C (32°F) special care must be taken that there is no condensation on or within the unit.



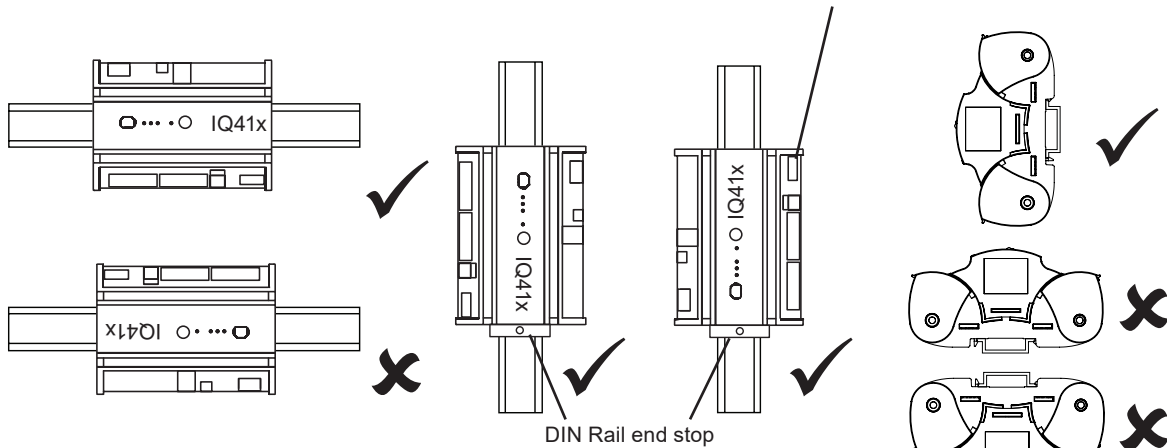
/24VAC: Should be installed in an enclosure or outside normal reach (e.g. in a plenum).

The unit is UL rated as 'UL916 listed open energy management equipment'.

/230: **Must** be installed in an enclosure rated to at least IP20 or equivalent



\*For IQ41x/230, if mounted on side with power connector at top, derate max ambient temperature to +40 °C (+134 °F).

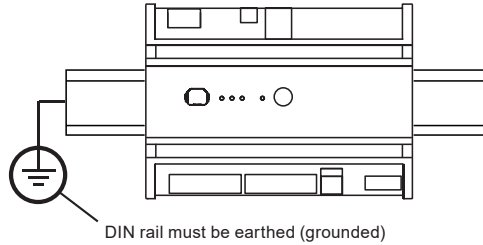
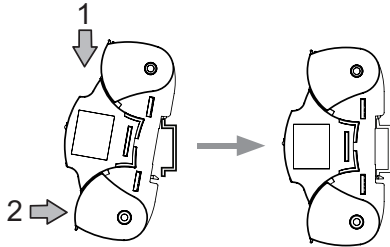


3 INSTALLATION (continued)

**3** Mount Unit

**Either DIN rail mounting**

*Note: To remove from DIN rail see section 4, page 11*

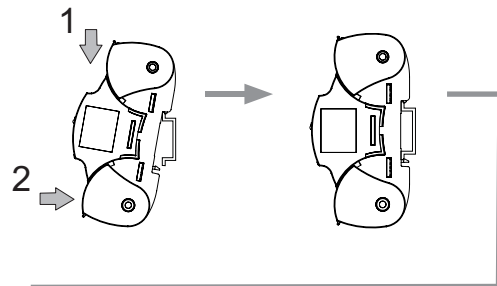
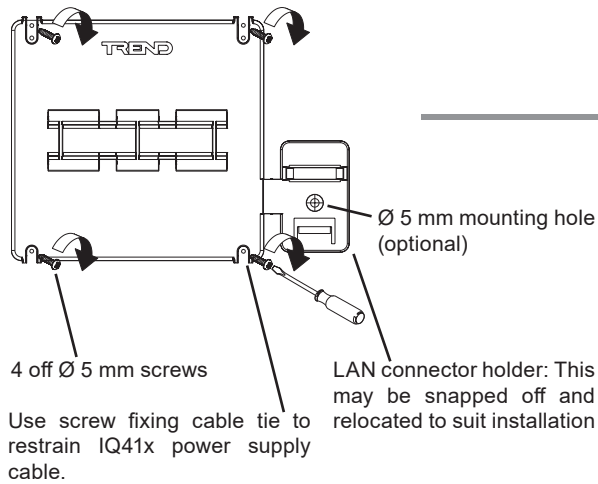


**or if replacing IQ21x or IQ7x use IQ41x Adaptor Plate**

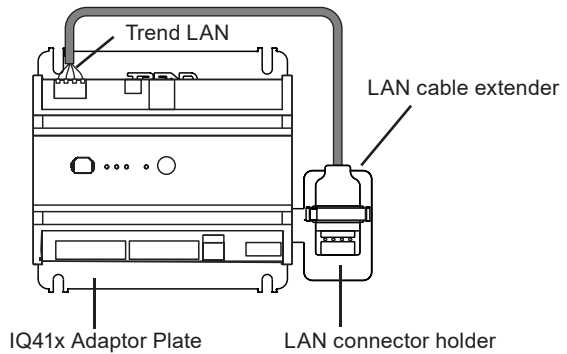
See step (6) below for re-connecting input power cable.

**Mount plate using existing holes**

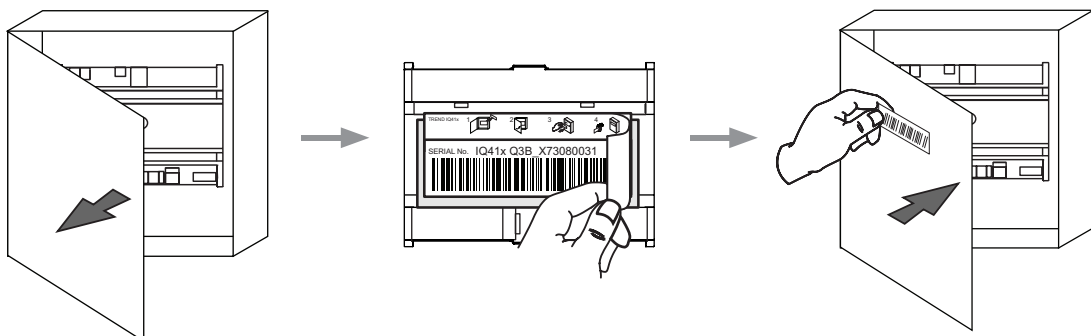
**Mount IQ41x on DIN rail clips**



**Fit LAN cable extender if using current loop LAN**

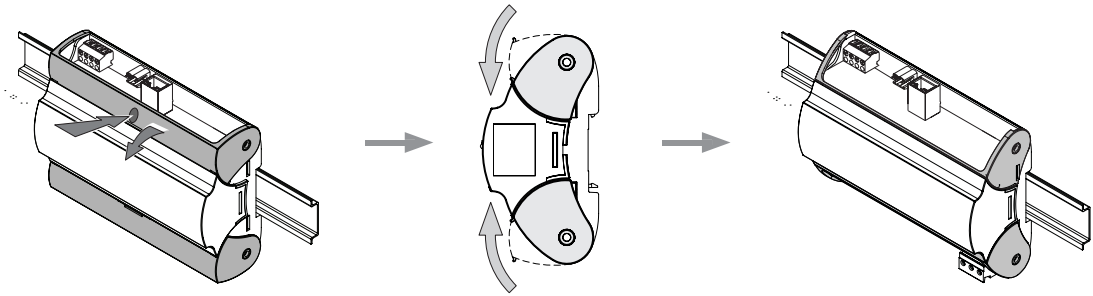


**4** Attach Large Barcode Label to Panel

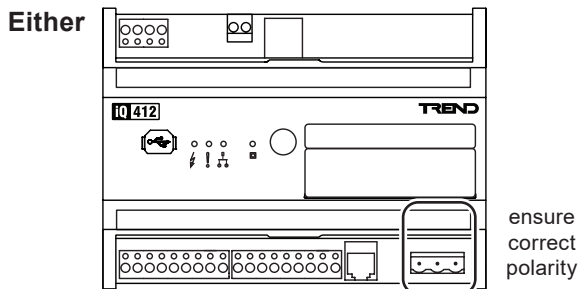


3 INSTALLATION (continued)

5 Open Rotating Covers



6 Connect Power



Terminal size: 0.14 to 2.5 mm<sup>2</sup> (22 to 12 AWG).  
Terminal screw torque: 0.45 to 0.62 Nm (4 to 5.5 lb.in).

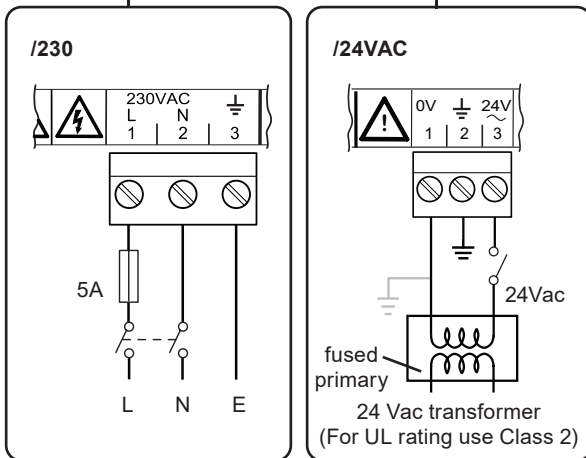
Power supply cable must have maximum operating temperature of at least 80°C (176°F). For UL rating the input power connections must be made using 18 AWG or larger wire rated at least 90°C (194°F).

This equipment must be earthed (grounded).

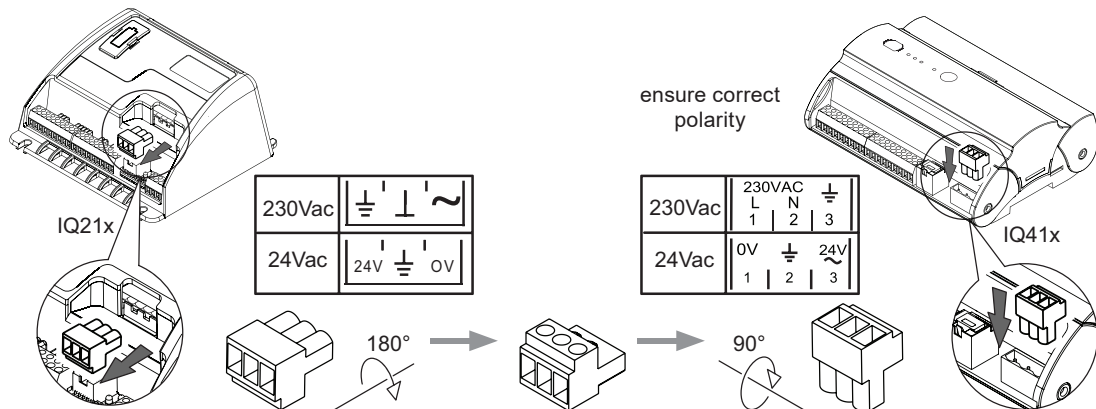
**/230** 230 Vac ±10% 50/60 Hz at 40 VA max  
The 230 V supply must include a dedicated 5 A fuse complying with IEC60269 (BS1362) and a suitably rated switch in close proximity and be clearly marked as the disconnecting device for the unit. A 5 A circuit breaker with high breaking capacity may be used as an alternative.

**/24VAC** 24 Vac ±10% 50/60 Hz, at 30 VA max  
The 24 V supply must include a suitably rated switch in close proximity and be clearly marked as the disconnecting device for the unit. If one side of the supply transformer's secondary is earthed (grounded), it **MUST** be connected to the controller's 0V terminal (terminal 1).

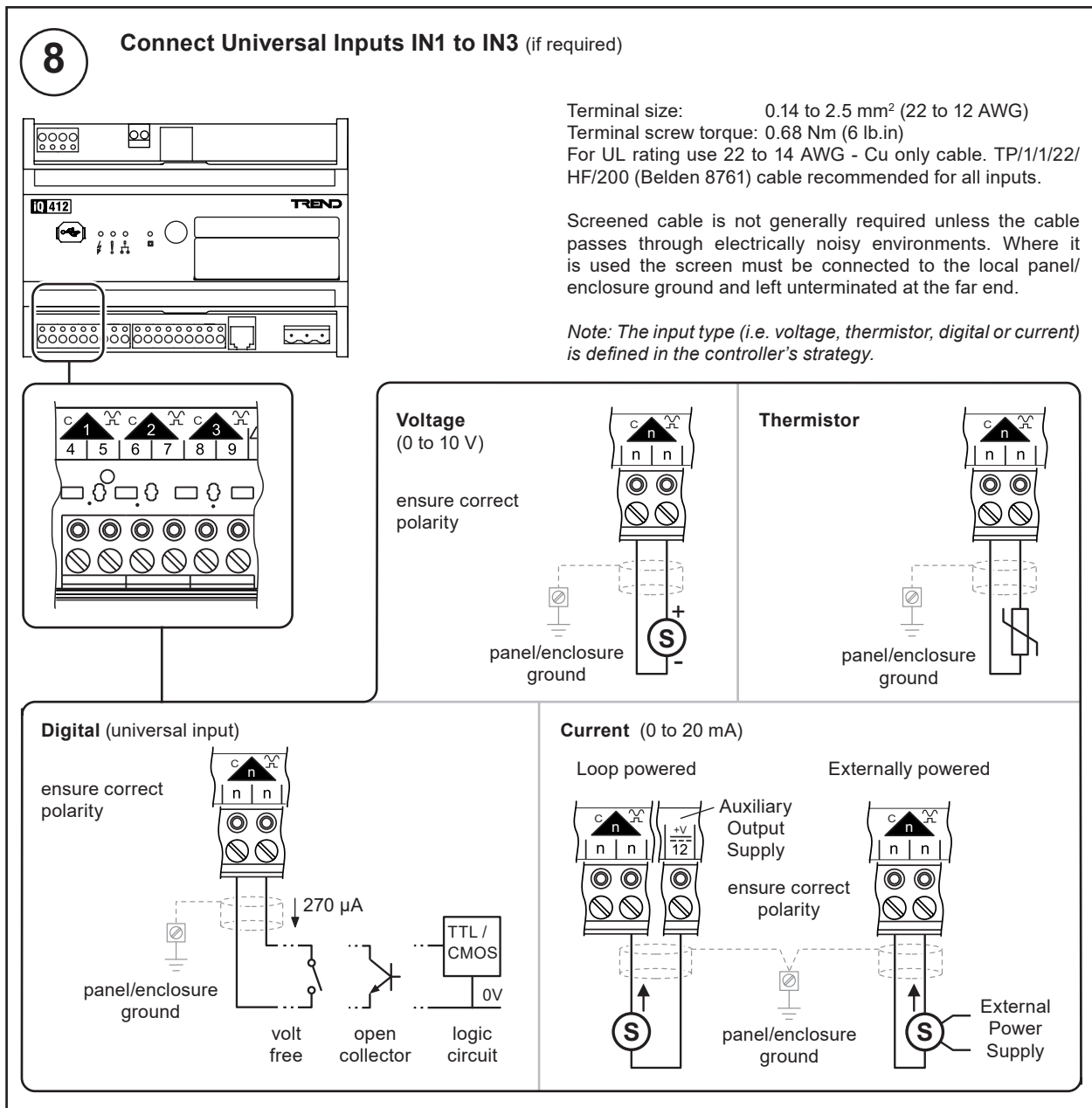
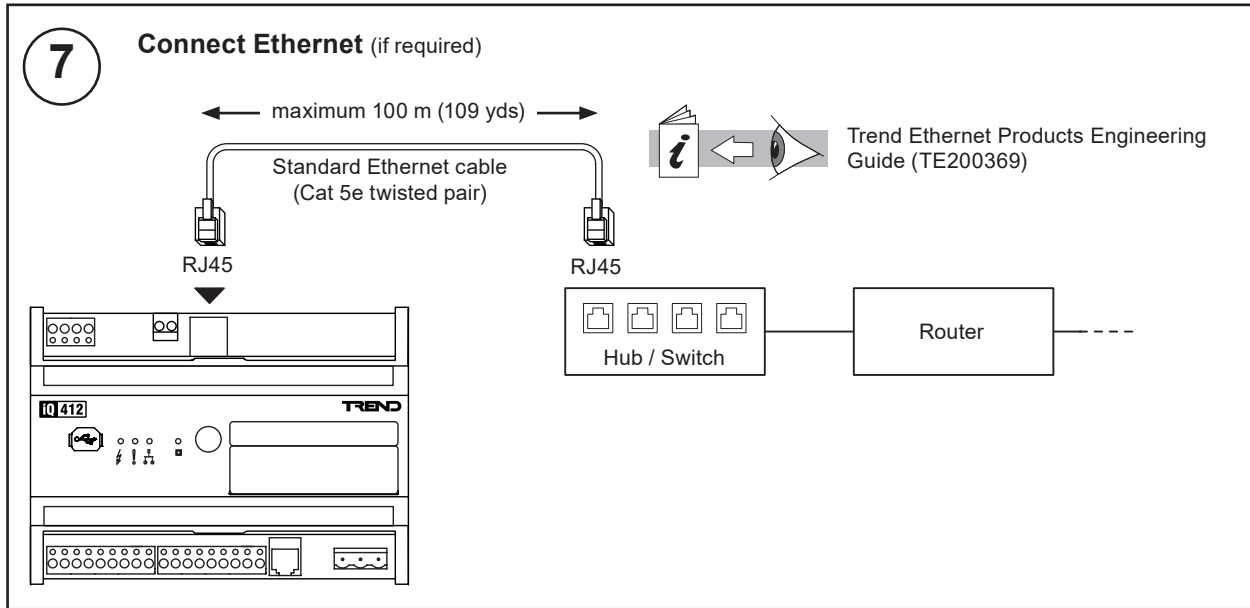
Do not position the equipment so that the disconnecting device is difficult to operate.



or if replacing IQ21x with IQ41x, connect existing power input cable as shown below:

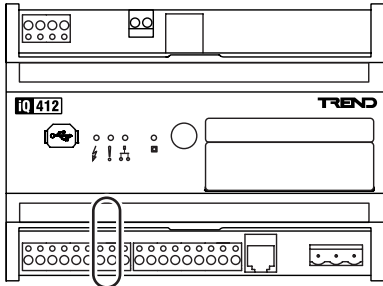


3 INSTALLATION (continued)



3 INSTALLATION (continued)

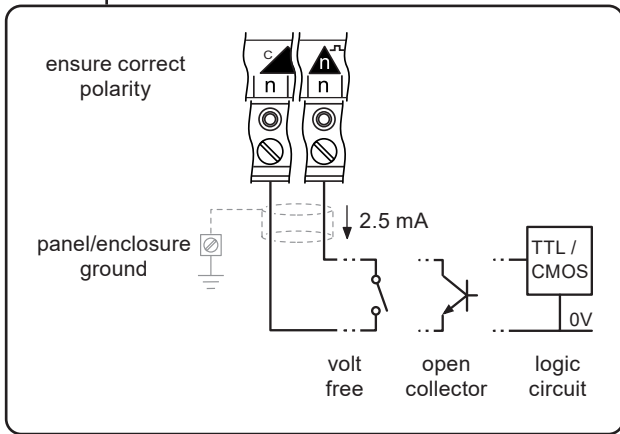
9 Connect Digital Inputs IN4 & IN5 (if required)



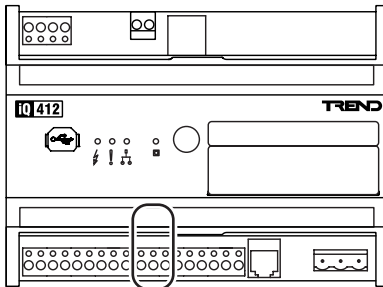
Terminal size: 0.14 to 2.5 mm<sup>2</sup> (22 to 12 AWG)  
Terminal screw torque: 0.68 Nm (6 lb.in).

For UL rating use 22 to 14 AWG - Cu only cable. TP/1/1/22/HF/200 (Belden 8761) cable recommended for all inputs.

Screened cable is not generally required unless the cable passes through electrically noisy environments. Where it is used the screen must be connected to the local panel/ enclosure ground and left unterminated at the far end.



10 Connect Analogue Outputs OUT6 & OUT7 (IQ412 only, if required)

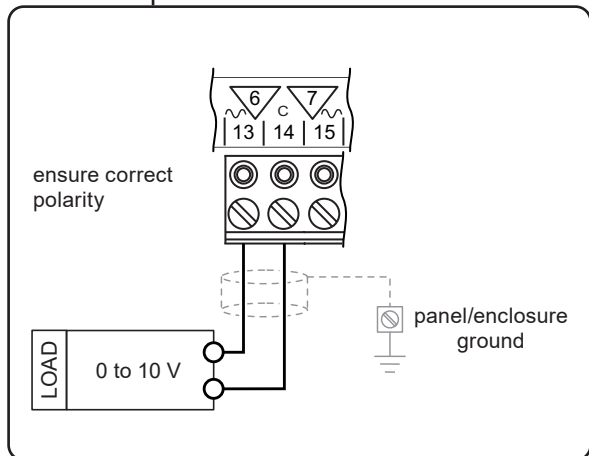


0 to 10 Vdc at up to 20 mA (max. 18 mA above 40°C (104°F))

Terminal size: 0.14 to 2.5 mm<sup>2</sup> (22 to 12 AWG)  
Terminal screw torque: 0.68 Nm (6 lb.in).

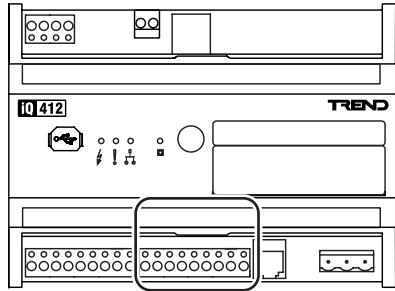
For UL rating use 22 to 14 AWG - Cu only cable. TP/1/1/22/HF/200 (Belden 8761) cable recommended for all outputs.

Screened cable is not generally required unless the cable passes through electrically noisy environments. Where it is used the screen must be connected to the local panel/ enclosure ground and left unterminated at the far end.



3 INSTALLATION (continued)

**11** Connect Solid State Digital Outputs  
 IQ411, OUT6 to OUT11 (6 channels)  
 IQ412, OUT8 to OUT11 (4 channels)

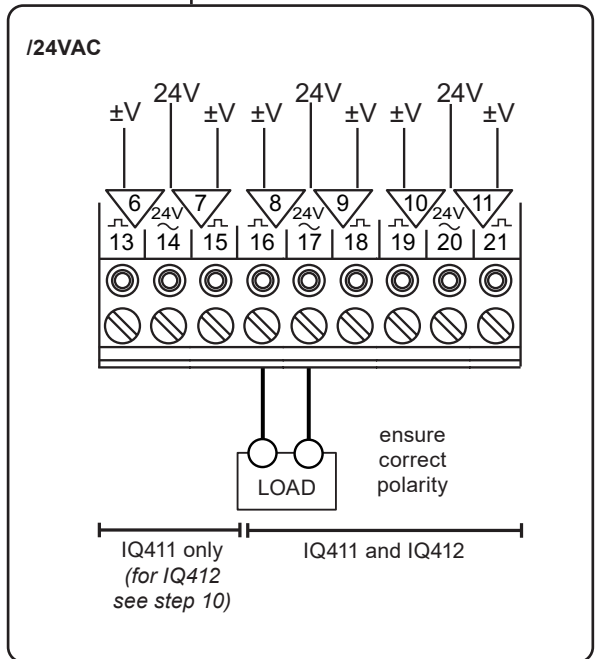
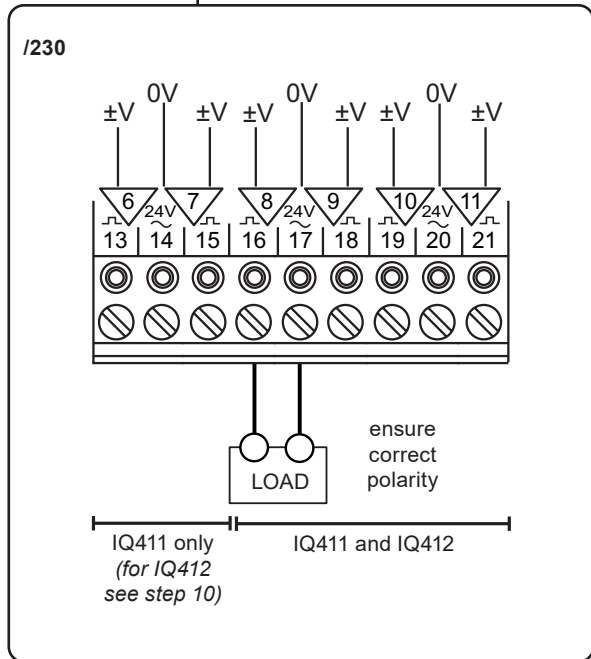


IQ41x version	Output Type	Maximum Current*
../230	24 Vac synthesised	300 mA
../24VAC	24 Vac	500 mA

\*per single channel and shared between all 4 or 6 channels.

Terminal size: 0.14 to 2.5 mm<sup>2</sup> (22 to 12 AWG)  
 Terminal screw torque: 0.68 Nm (6 lb.in)

For UL rating use 22 to 14 AWG - Cu only cable. TP/1/1/22/  
 HF/200 (Belden 8761) cable recommended for all outputs.

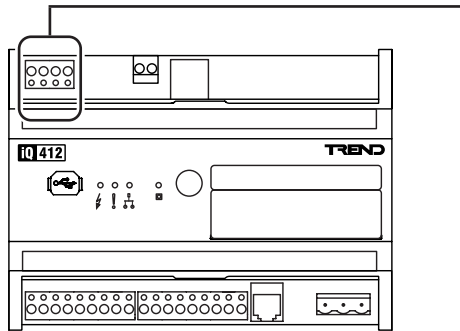




3 INSTALLATION (continued)

**12** Connect Trend Current Loop Network (IQ41x/LAN only)

**Either normal connection**



Terminal size: 0.14 to 2.5 mm<sup>2</sup> (22 to 12 AWG)  
Terminal screw torque: 0.68 Nm (6 lb.in)

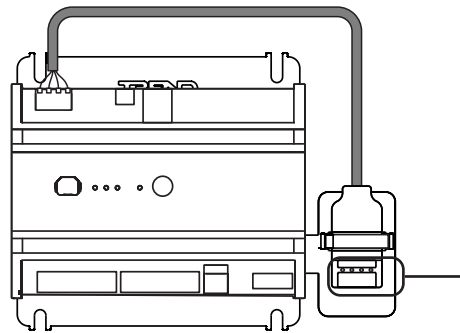
Maximum cable length depends on cable type, see table below:

Cable	Type	Baud Rate				
		1k2	4k8	9k6	19k2	38k4
Trend TP/2/2/22/ HF/200 Belden 8723	Shielded twisted pair 2 pairs (4 conductors)	1000m (1090 yds)		700m (765 yds)	350m (380 yds)	
Trend TP/1/1/22/ HF/200 Belden 8761	Shielded twisted pair 1 pair (2 conductors)					
Belden 9182 Belden 9207	Twinaxial (2 conductors)					

*Note: Adjacent devices may specify different maximum cable lengths and baud rates. The shortest cable length (for the chosen baud rate) applies when connecting to the IQ41x current loop.*

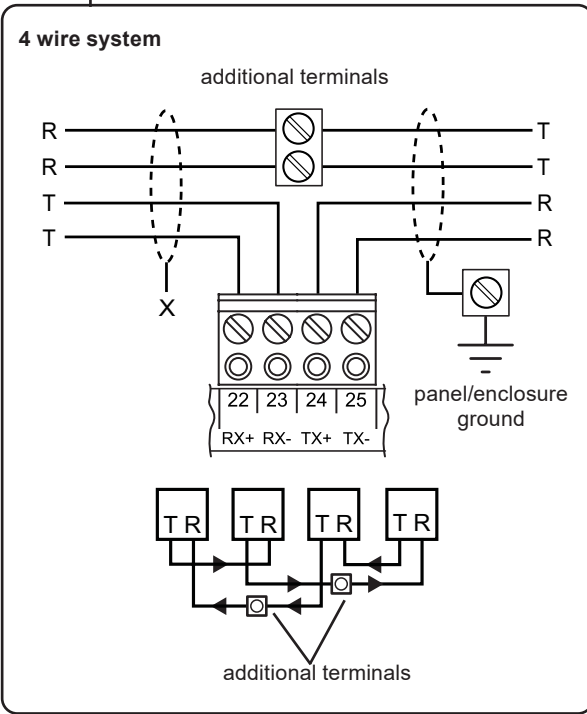
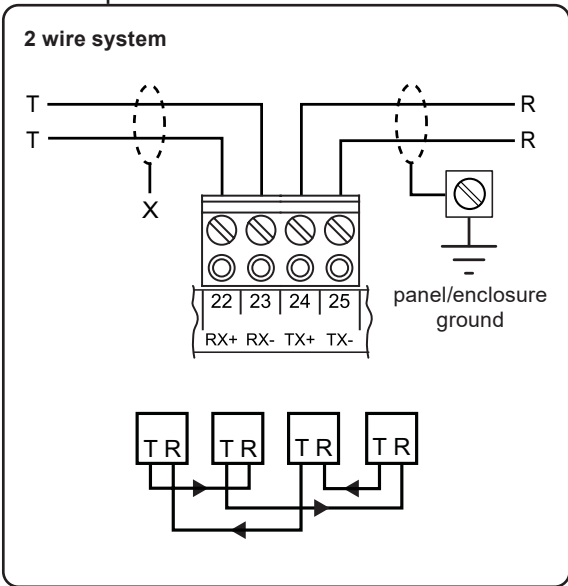
**Or replacing an IQ21x or IQ7x**

Connect to LAN connector on LAN cable extender with existing current loop LAN cable



**Not connected**

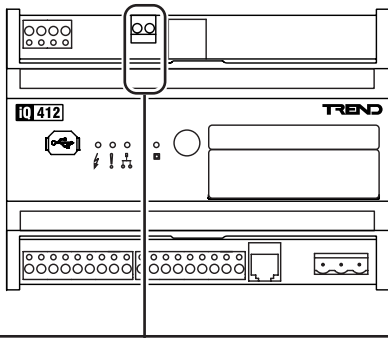
If the current loop LAN is enabled (default), the LAN communications will not operate without an intact network. If a network is not fitted a loop back must be fitted as shown.



3 INSTALLATION (continued)

13

Connect Wallbus (if required)



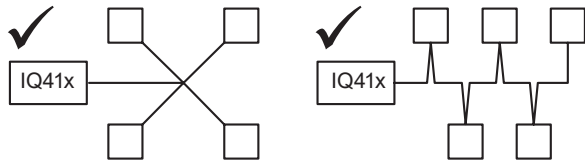
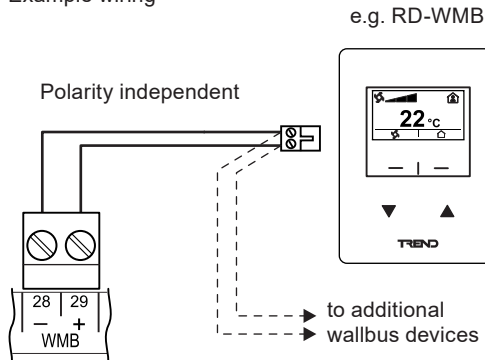
Terminal size: 0.14 to 2.5 mm<sup>2</sup> (22 to 12 AWG).  
Terminal screw torque: 0.45 to 0.62 Nm (4 to 5.5 lb.in).

Cable type: Unscreened twisted pair.  
Maximum cable length: 60 m (200 ft), used to connect all wallbus devices.

Number of devices: up to 14 (subject to power loading - refer to device documentation)

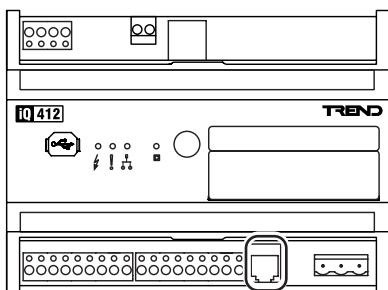


Example wiring

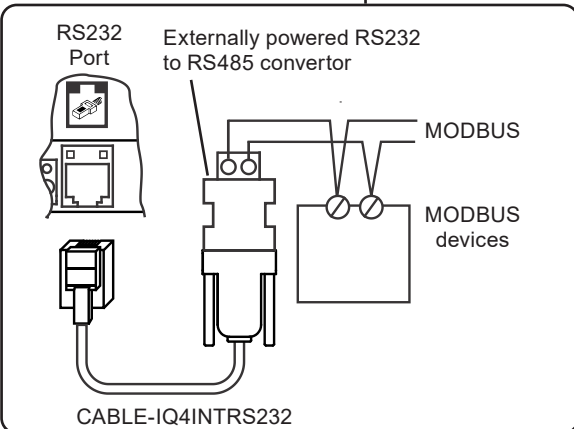


14

Connect Serial MODBUS (/INT only if required)



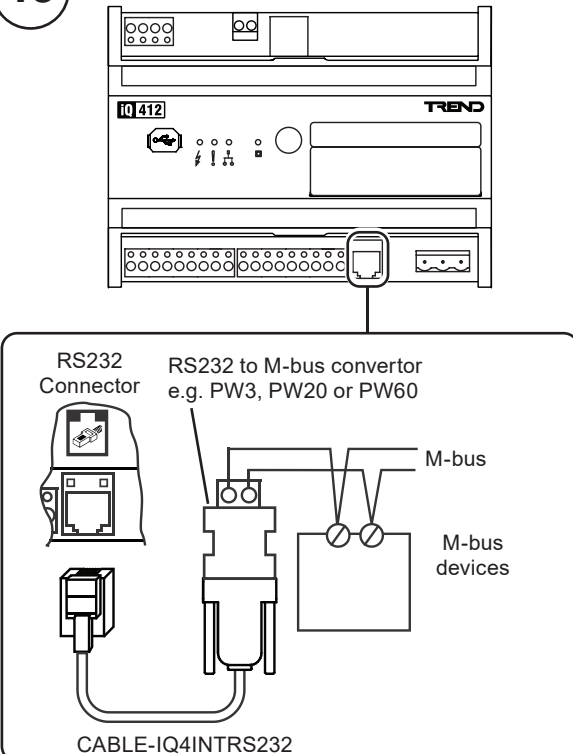
Maximum cable length: 60 m (200 ft).  
Address range: up to 254  
Number of devices: Dependant on 'unit' load. A MODBUS segment supports up to 32 'unit' loads. Each MODBUS device has a different unit load (1, 0.5, or 0.25) - refer to device documentation for the electrical load. IQ4 = 1 electrical load. If more than 32 'unit' loads are required a MODBUS repeater can be used.



Terminal size: RJ11 (FCC68)  
Cables: RJ11 to 9 way male D type (CABLE-IQ4INTRS232)  
Externally powered RS232 to RS485 converter  
Unscreened twisted pair for main MODBUS  
RS232 Port PIN outs See step 15 RS232 connector PIN outs.

3 INSTALLATION (continued)

**15** **Connect M-bus** (/INT only if required)



RS232 Connector



RS232 to M-bus converter e.g. PW3, PW20 or PW60

M-bus

M-bus devices

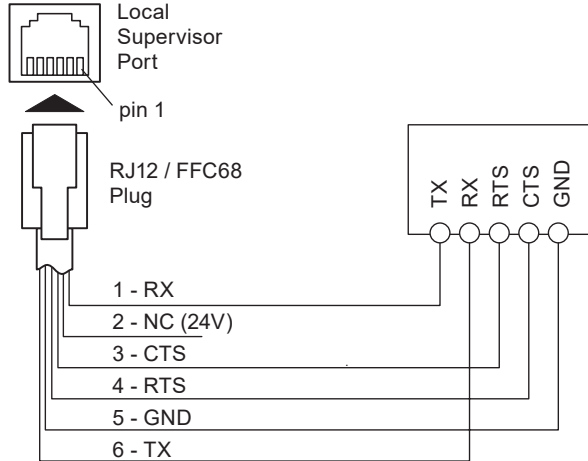
CABLE-IQ4INTRS232

Maximum cable length: Dependant on M-Bus converter used.  
 Number of devices: Max 250 (including IQ4) dependant on converter used.

  IQ4 Configuration Manual (TE201263)

Terminal size: RJ11 (FCC68)  
 Cables: RJ11 to 9 way male D type (CABLE-IQ4INTRS232) to RS232 to M-bus converter  
 Unscreened twisted pair for main M-bus

RS232 connector PIN outs



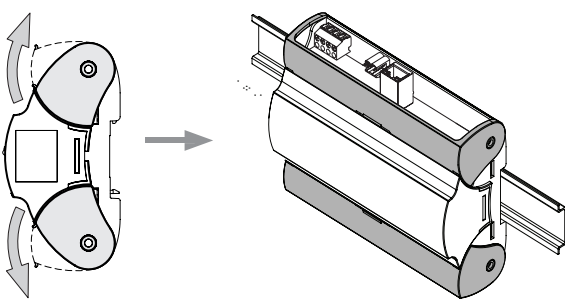
Local Supervisor Port

pin 1

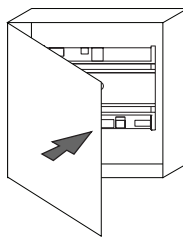
RJ12 / FCC68 Plug

1 - RX  
 2 - NC (24V)  
 3 - CTS  
 4 - RTS  
 5 - GND  
 6 - TX



**16** **Close Rotating Covers**



**17** **Close Panel / Enclosure**

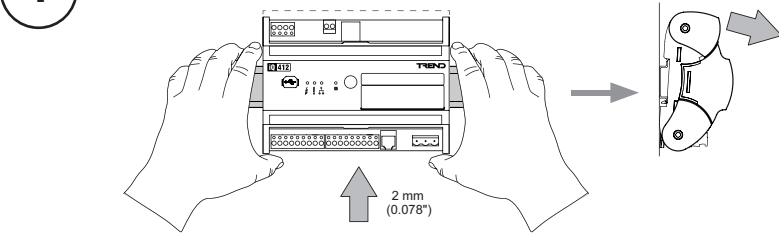


**18** **Configure IQ41x**

  IQ41x Installation Instructions - Configuration (TG201251)

4 REMOVING FROM DIN RAIL

**1** **Removal from DIN rail**



2 mm (0.078")

## 5 FIELD MAINTENANCE

The IQ41x series controllers require no routine maintenance.



**WARNING:** Contains no serviceable parts. Do not attempt to open the unit. Failure to comply may cause damage to the unit.

## 6 DISPOSAL



**WEEE Directive:**

At the end of their useful life the packaging and product should be disposed of by a suitable recycling centre.

Do not dispose of with normal household waste.  
Do not burn.

## 7 END USER LICENCE AGREEMENT

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**EAC**

TR CU Certification

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### Trend Control Systems Limited

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