Installation Instructions - Mounting

XCITE/IO/..
I/O Expansion Modules

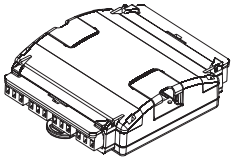
Important: Retain these instructions

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.

https://partners.trendcontrols.com

CONTENTS

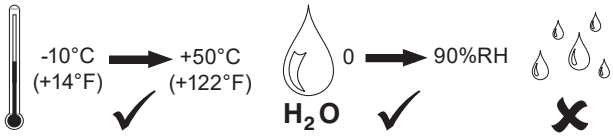
1 BOX CONTENTS



XCITE/IO/.. Standard I/O Module Installation Instructions - Mounting (TG200627)

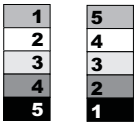
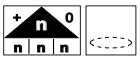
XCITE/IC Interconnector

2 STORING



3 INSTALLATION

Labels used on XCITE/IO/..

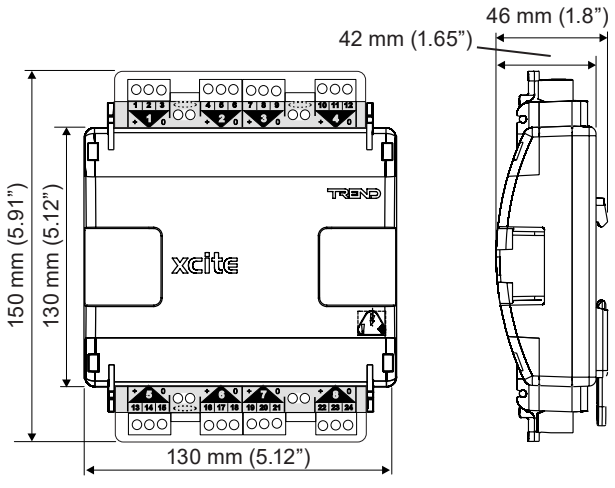
	Connectors for I/O Bus
	Connector for Universal Input & Screen (**UI** modules only)
	Connector for Digital Input (**DI** modules only)
	Connector for Thermistor Input (**TI** modules only)

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).

	Connector for Analogue Output (**AO** modules only)
	Connector for Analogue Power (**AO** modules only)
	Connector for Relay Output (**DO** modules only)

3.1 Installation - Mounting

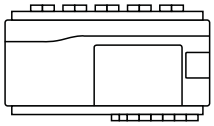
1 **Dimensions**



3.1 Installation - Mounting (continued)

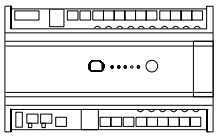
2 Requirements

IQ Controller



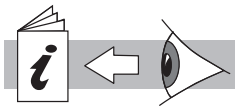
✓ IQ3XCITE/96/..
IQ3XCITE/128/..

✗ IQ3XCITE/00/..
IQ3XCITE/16/..

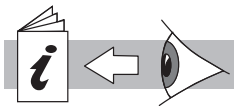


✓ IQ4E/32/..
IQ4E/64/..
IQ4E/92/..
IQ4E/128/..
IQ4E/160/..
IQ4E/192/..
IQ4NC/XNC

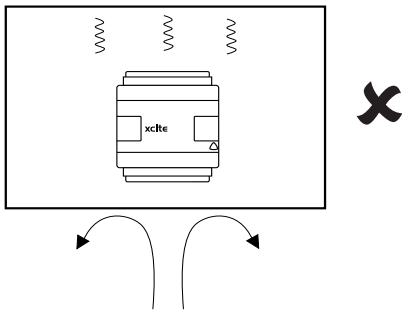
✗ IQ4E/16/..

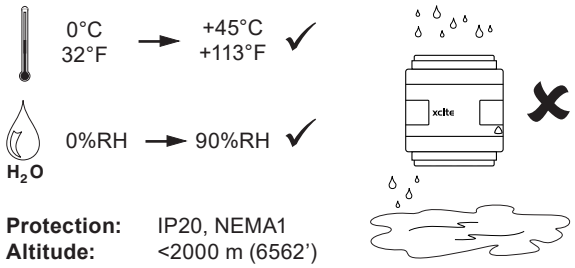


IQ3xcite Installation Instructions - Mounting (TG200626)



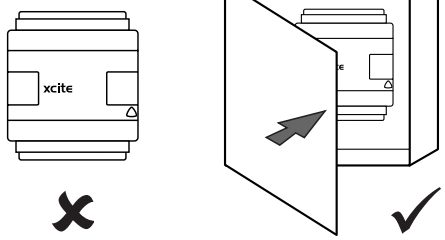
IQ4E/.., IQ4NC/16/.., IQ4NC/32/.. Installation Instructions - Mounting (TG201338)



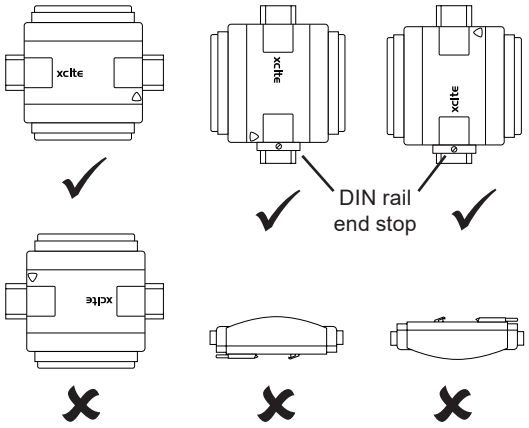


Protection: IP20, NEMA1
Altitude: <2000 m (6562')

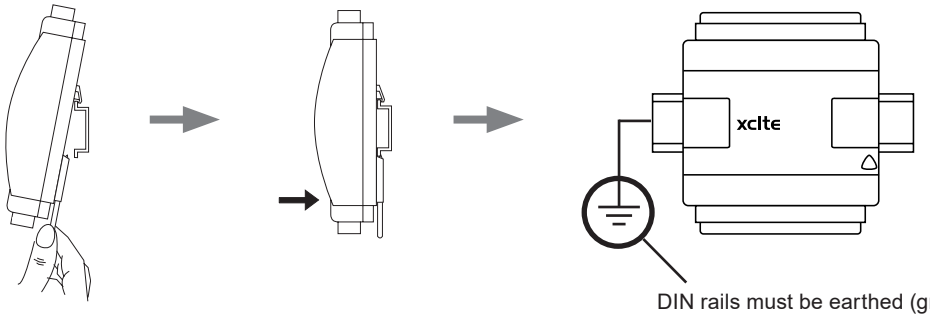
Must be installed in an enclosure rated to at least IP20 (or equivalent) or mounted outside normal reach (e.g. in a plenum).



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

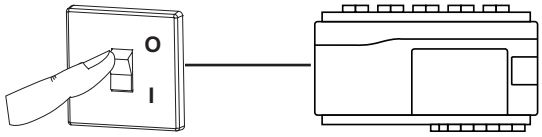


3 Mount on DIN Rail



3.1 Installation - Mounting (continued)

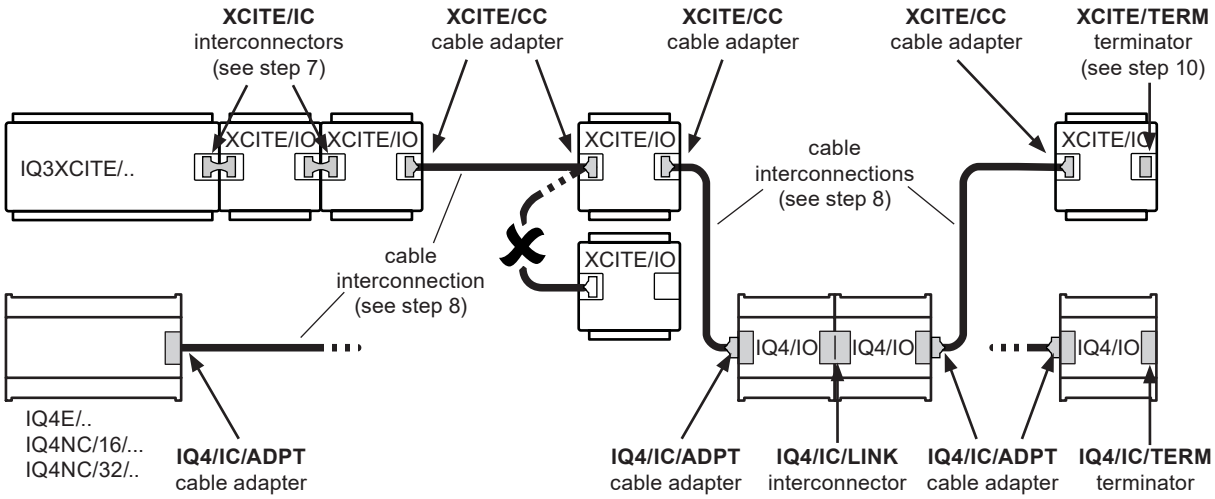
4 Switch Off Controller



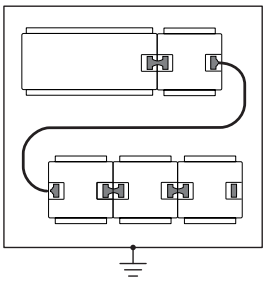
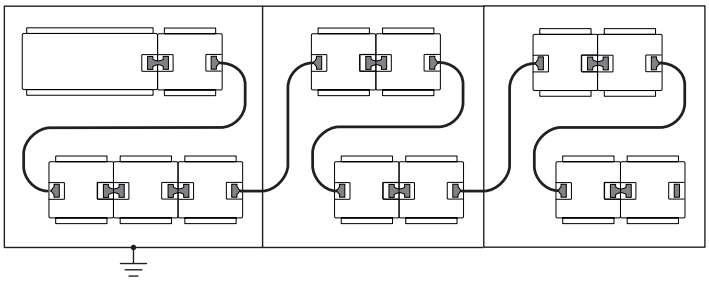
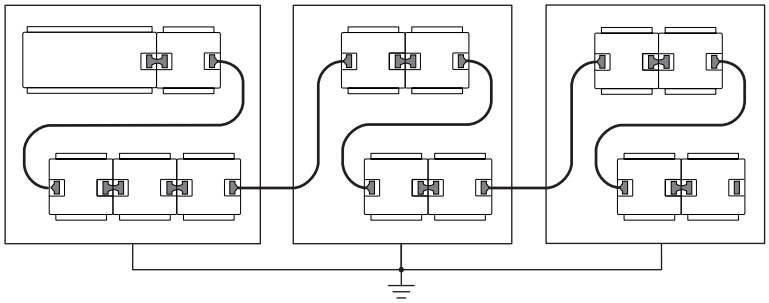
5 Connect I/O Bus - Overview

Depending on the controller variant, up to 128 I/O channels are supported (including the controller's onboard channels).or up to 15 modules.

XCITE/IO/.. Data Sheet (TA201340)

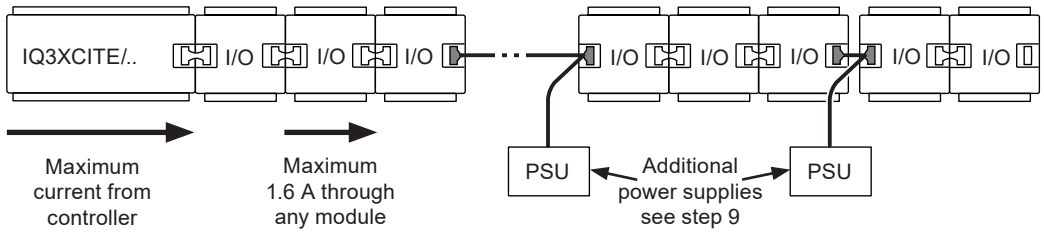


Maximum I/O Bus length (excluding rigid interconnectors)

I/O Bus total length	Configuration
30 metres (32 yards)	**Single enclosure:** screened and bonded contiguous metal enclosure with single earth (ground) point:  **Multi-panel enclosure:** screened and bonded contiguous metal enclosure with single earth (ground) point. (e.g. Form 4 enclosures): 
10 metres (11 yards)	**Multiple enclosures:** separate screened enclosures earthed (grounded) to a common earth (ground) point: 

3.1 Installation - Mounting (continued)

6 I/O Bus - Check Power Requirements



IQ3XCITE, IQ4E and IQ4NC/XNC can supply 24 Vdc to the I/O modules through the I/O bus. Check that the available current from the controller's combined 24 Vdc supply is sufficient to drive the required number and type of XCITE I/O modules.

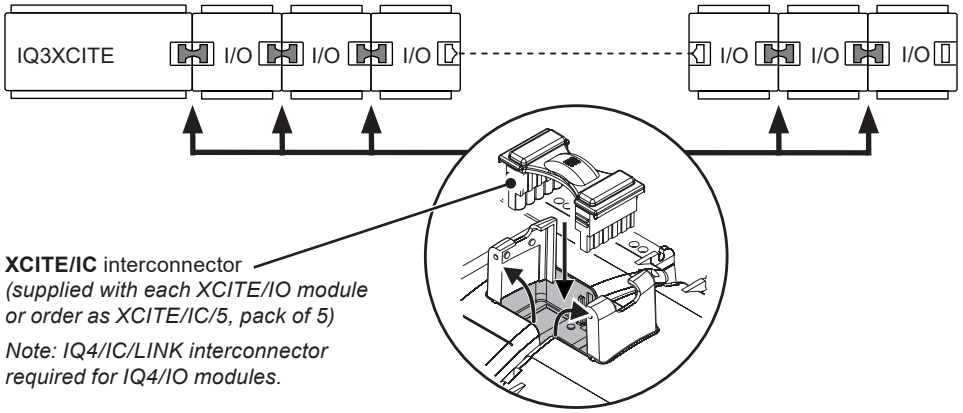
IQ3 Configuration Reference Manual (TE200768)
IQ4 Configuration Manual (TE201263)

If more power is required than can be provided by the controller, one or more additional external power supply units must be installed on the I/O bus - see step 9.

Note: It may also be necessary to split the I/O bus supply to avoid exceeding the maximum 1.6A flowing through any XCITE I/O module.

Module Type	Maximum Current Consumption
XCITE/IO/**16DI**	36 mA
XCITE/IO/**8DI**	28 mA
XCITE/IO/**8DI/8TI**	30 mA
XCITE/IO/**8UI**	180 mA
XCITE/IO/**4UI**	100 mA
XCITE/IO/**8DO,** XCITE/IO/**8DO/HOA**	100 mA
XCITE/IO/**4DO,** XCITE/IO/**4DO/HOA**	60 mA
XCITE/IO/**8AO**	180 mA + aux supply (max 200 mA)
XCITE/IO/**4AO**	100 mA + aux supply (max 100 mA)
XCITE/IO/**4UI/4AO**	180 mA + aux supply (max 100 mA)
XCITE/IO/**2UI/2AO**	100 mA + aux supply (max 100 mA)

7 I/O Bus - Fit XCITE/IC Interconnectors (if required)



XCITE/IC interconnector
(supplied with each XCITE/IO module or order as XCITE/IC/5, pack of 5)

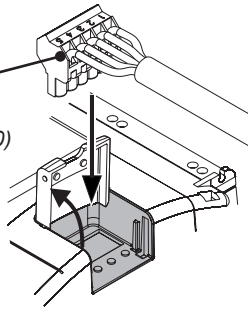
Note: IQ4/IC/LINK interconnector required for IQ4/IO modules.

8 I/O Bus - Fit Interconnecting Cables (if required)

Select the appropriate cable adapters.

For **XCITE/IO** modules and **IQ3/XCITE** controllers:

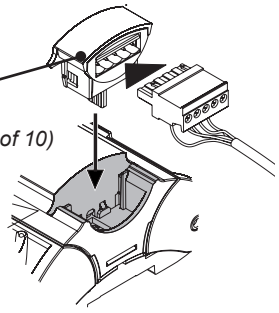
Use **XCITE/CC**
(order as XCITE/CC/10, pack of 10)



Terminal size: 0.5 to 2.5 mm² (20 to 14 AWG).
Terminal torque: 4 to 5.5 lb-in.

For **IQ4/IO** modules and **IQ4E**, **IQ4NC/XNC**:

Use **IQ4/IC/ADPT**
(order as IQ4/IC/ADPT/10, pack of 10)



Terminal size: 0.5 to 2.5 mm² (20 to 14 AWG).
Terminal torque: 4 to 5.5 lb-in.

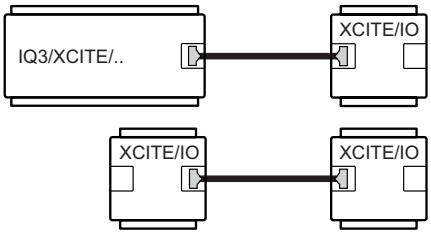
Continued on next page

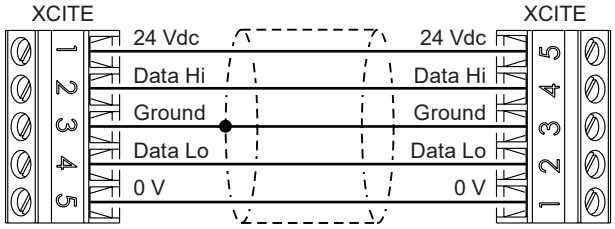
3.1 Installation - Mounting (continued)

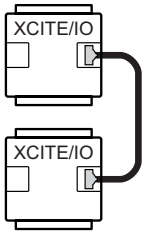
8 **I/O Bus - Fit Interconnecting Cables** (continued)

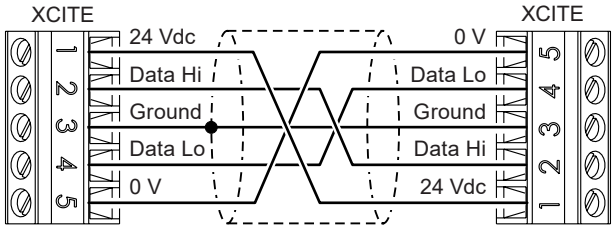
Using the example interconnections below, wire up the cable adapters as shown.

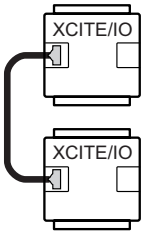
Recommend Wire Colours (for Belden cable)	
24 Vdc	Red
Data Hi	White
Ground	(screen)
Data Lo	Blue
0 V	Black

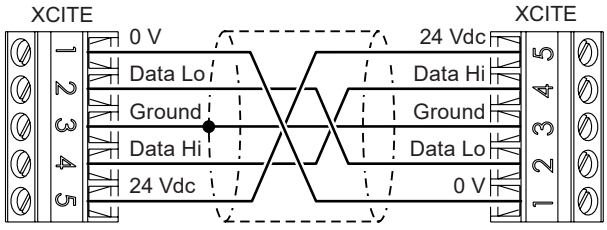


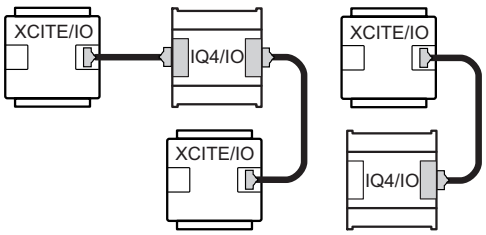


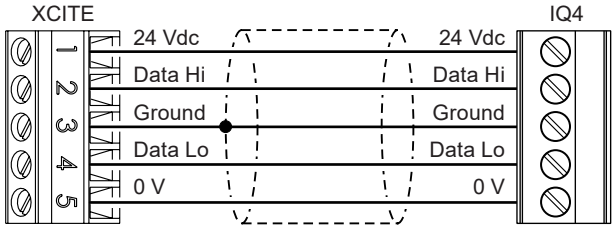




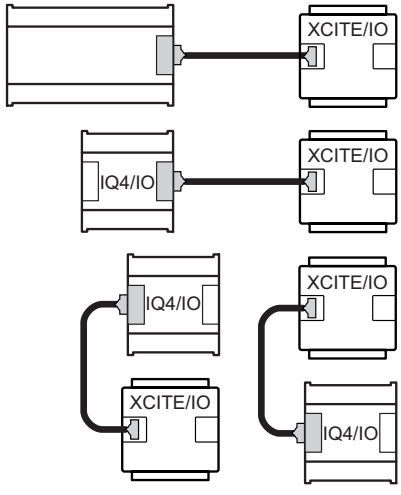


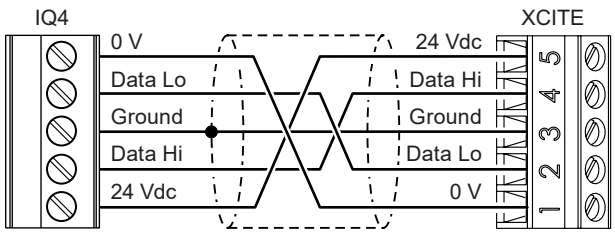






IQ4E/.., IQ4NC/16/..., IQ4NC/32/..

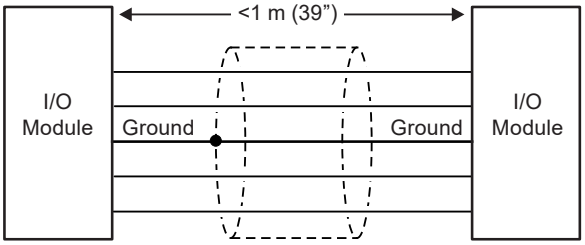




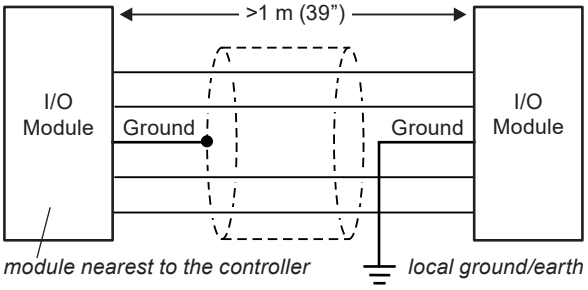
3.1 Installation - Mounting (continued)

8 I/O Bus - Fit Interconnecting Cables (continued)

For cables **<1 m (39")** and where modules are in the same secondary enclosure, ground terminals are linked:



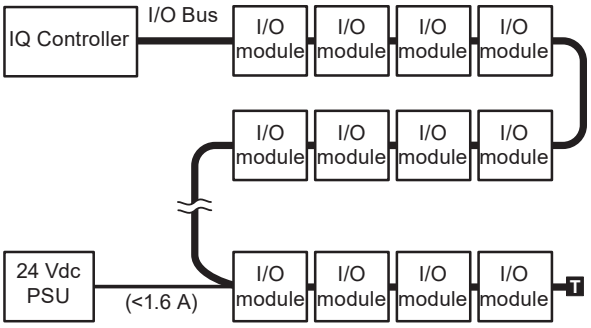
For cables **>1 m (39")** or where modules are in different secondary enclosures, ground terminals **must be** separated:



CAUTION: The 0V terminal AND ground (earth) terminal MUST be connected as shown. Failure to observe correct wiring of I/O modules may result in damage to devices on the I/O bus in the event of a transient high voltage occurring at one of the I/O ports.

9 I/O Bus - Connect Additional PSUs (if required)

Example: Group of eight modules powered from the controller and group of four modules powered from an external PSU:

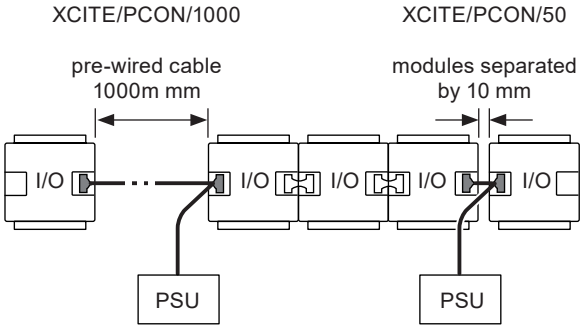


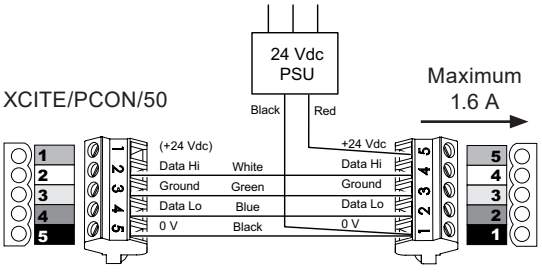
IMPORTANT: Not permitted for UL compliant installations.

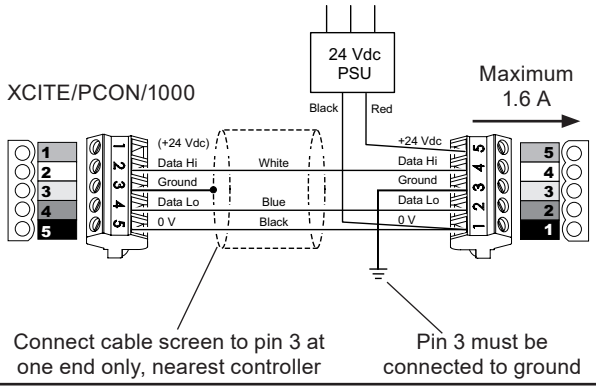
WARNING: External PSU must have isolated output and comply with relevant EMC and safety standards.

CAUTION: The maximum current passing through the 24 Vdc terminals of any XCITE/IO module must not exceed **1.6 A**.

Using XCITE/PCON/1000 or XCITE/PCON/50 (order separately)



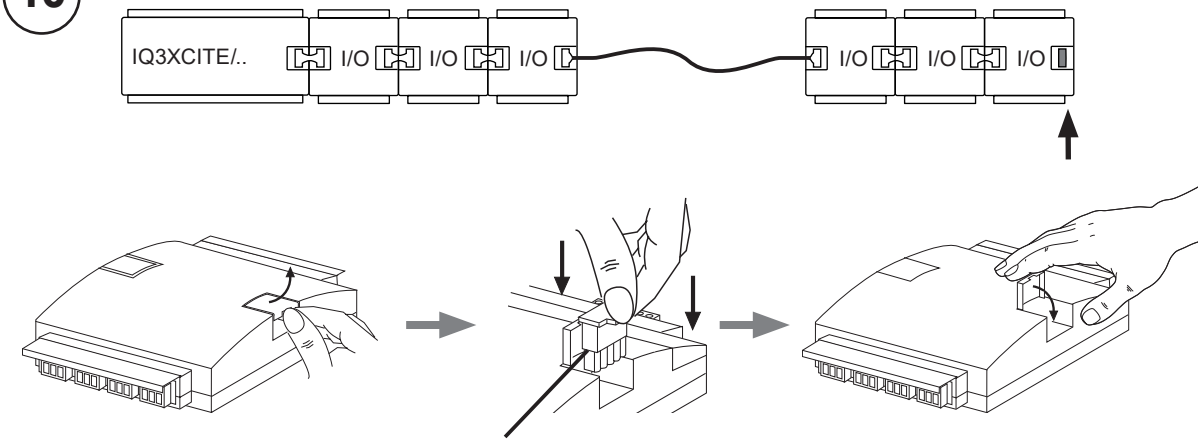




CAUTION: The 0V terminal AND ground (earth) terminal MUST be connected as shown. Failure to observe correct wiring of XCITE I/O modules may result in damage to devices on the I/O bus in the event of a transient high voltage occurring at one of the I/O ports. No connection must be made between the 24 Vdc terminals.

3.1 Installation - Mounting (continued)

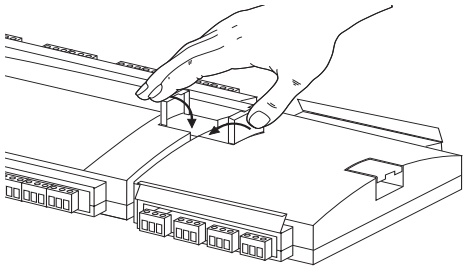
10 I/O Bus - Fit Terminator to Last Module



XCITE/TERM terminator
(supplied with IQ3XCITE controller or order as XCITE/TERM/5, pack of 5)

Note: IQ4/IC/TERM terminator required for IQ4/IO modules.

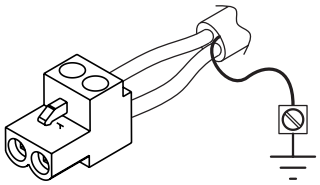
11 Close All Flaps



12 Connect Inputs/Outputs - Overview

Plug-in connectors with screw terminals

Recommended cable: Trend TP/1/1/22/HF/200 (Belden 8761).
Terminal size: 0.5 to 2.5 mm^2 (20 to 14 AWG) - Cu only.
Terminal torque: 4 to 5.5 lb-in.

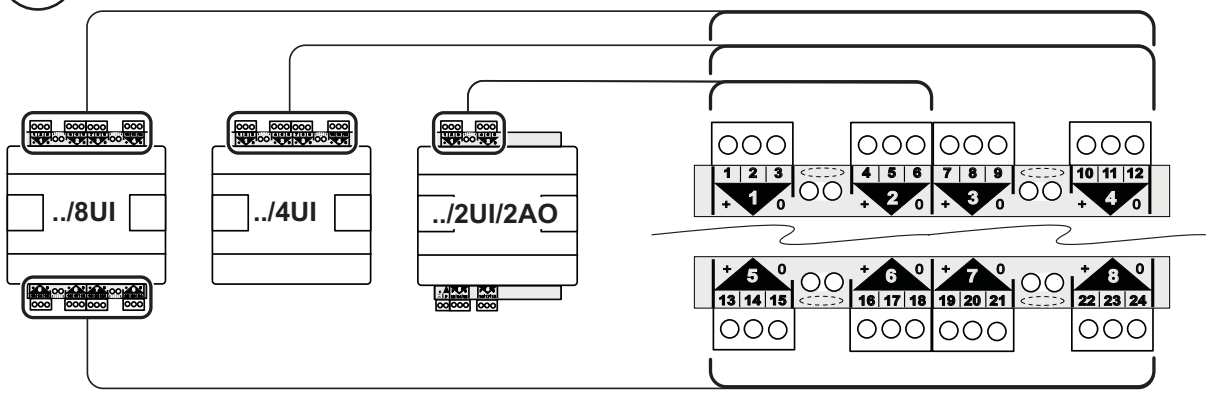


Screened cable is advised for all universal and thermistor type inputs. Where used the screen must be connected either to the module ground terminals (where provided) or to the local panel/enclosure ground and left unterminated at the far end.

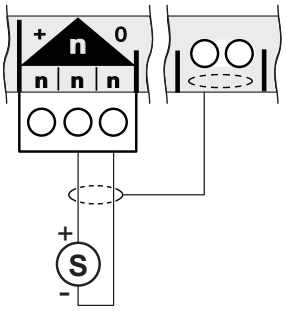
Module	Type	Go to step...
XCITE/IO/**8UI**	Universal Input	13, 14
XCITE/IO/**4UI**	Universal Input	13, 14
XCITE/IO/**4UI/4AO**	Universal Input/ Analogue Output	13, 14, 17, 18
XCITE/IO/**2UI/2AO**	Universal Input/ Analogue Output	13, 14, 17, 18
XCITE/IO/**8AO**	Analogue Output	17, 18
XCITE/IO/**4AO**	Analogue Output	17, 18
XCITE/IO/**16DI**	Digital Input	15
XCITE/IO/**8DI**	Digital Input	15
XCITE/IO/**8DI/8TI**	Digital Input/ Thermistor Input	15, 16
XCITE/IO/**8DO**	Digital Output	19
XCITE/IO/**4DO**	Digital Output	19
XCITE/IO/**8DO/HOA**	Digital Output	19
XCITE/IO/**4DO/HOA**	Digital Output	19

3.1 Installation - Mounting (continued)

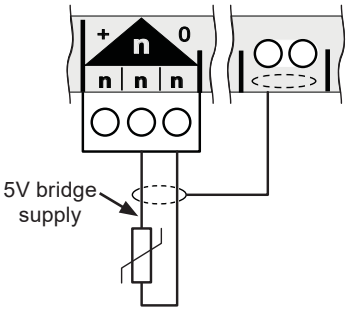
13 **Connect Universal Inputs** (UI modules only)



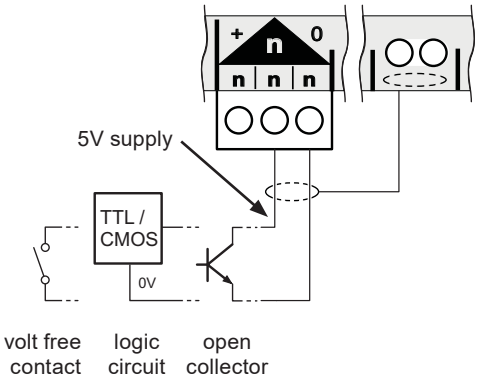
Voltage input V



Thermistor input T

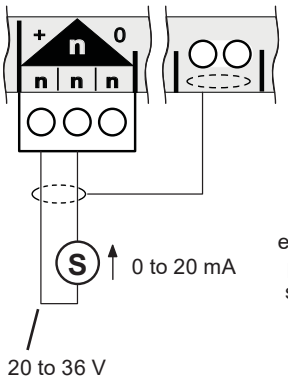


Digital input D

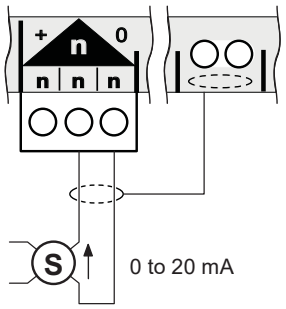


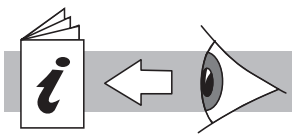
Current input I

Loop powered



Externally powered





D I T V

Setting input type links is described in XCITE I/O Installation Instructions – Configuration (TG201161)

3.1 Installation - Mounting (continued)

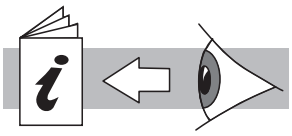
14 Segregate Screen Earths (Grounds) (UI modules only)

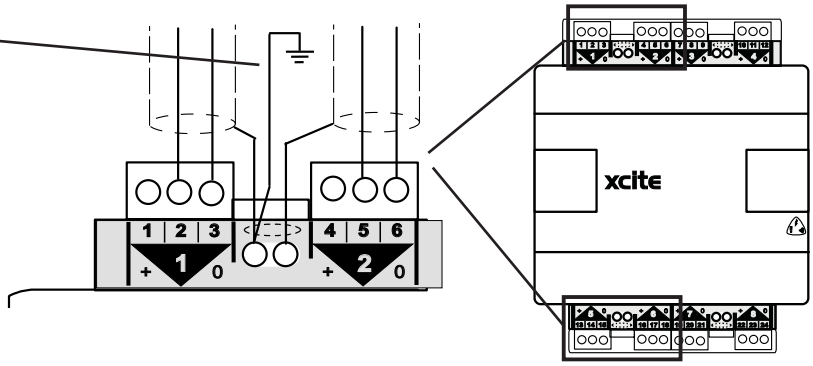
if required to segregate screen earths (grounds) from I/O module earth (ground)

Terminal size: 0.5 to 2.5 mm² (20 to 14 AWG).
Terminal torque: 7 lb-in.

Separate earth (ground) connection

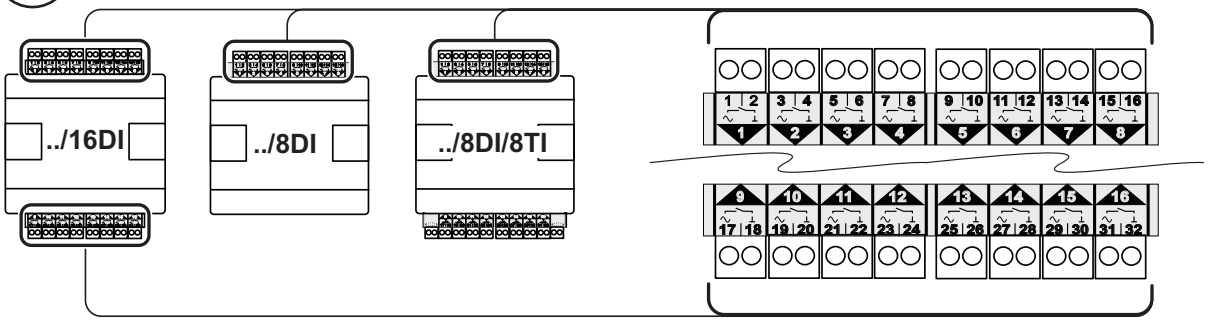
Screen earth (ground) link(s) **must** be cut



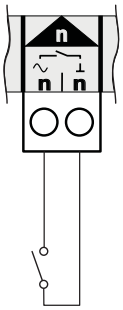


XCITE I/O Installation Instructions – Configuration TG201161

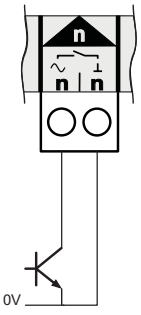
15 Connect Digital Inputs (DI modules only)



Volt free contact

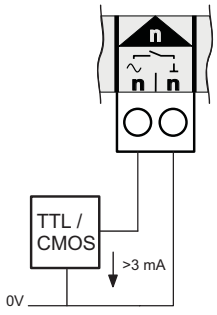


Open collector



I_C >3 mA

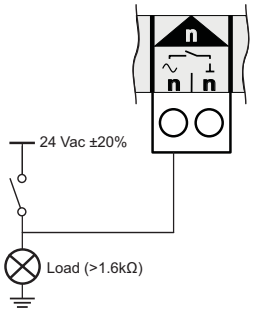
Logic circuit



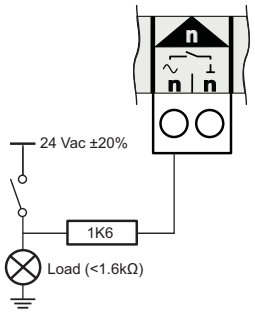
logic high = 5 to 50 V
logic low = sink >3 mA

low on input gives ON state in controller

24 Vac circuit



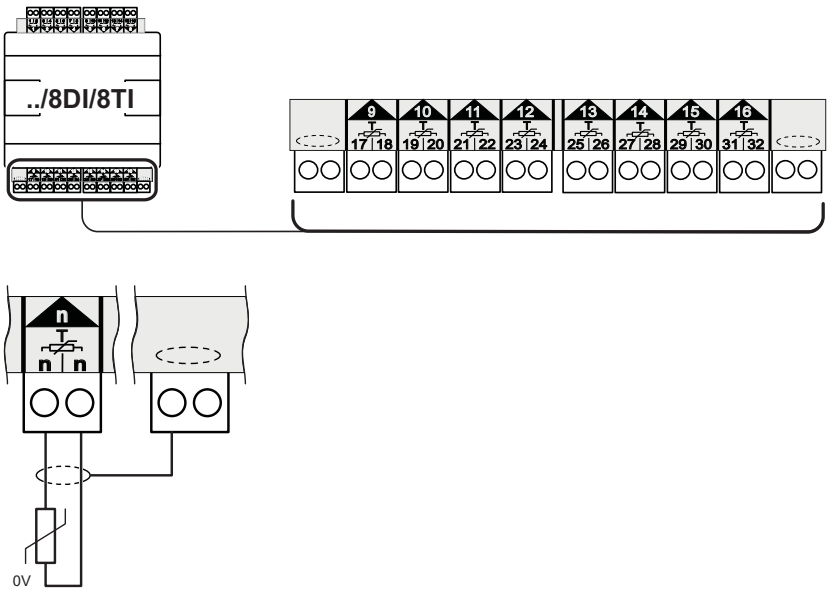
Where load impedance is greater that 1.6 kohms (e.g. an LED).



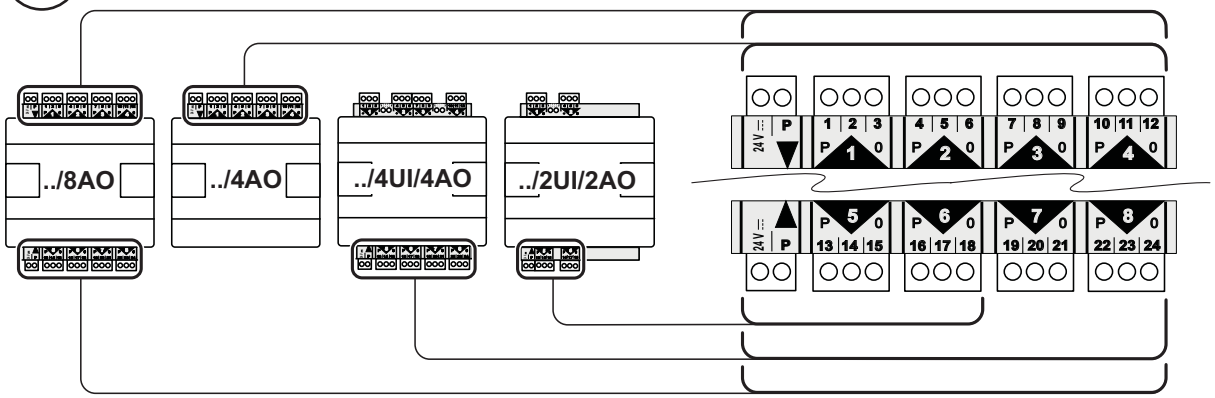
Where load impedance is less than 1.6 kohms (e.g. filament lamp or relay coil) then a 1.6 kohm resistor should be fitted in series with the input as shown above.

3.1 Installation - Mounting (continued)

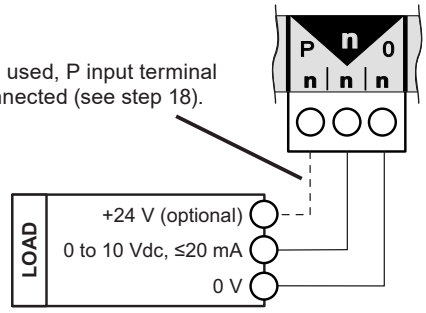
16 Connect Thermistor Inputs (TI modules only)



17 Connect Analogue Outputs (AO modules only)



If P terminal used, P input terminal must be connected (see step 18).



WARNING If external supply is used to supply P input terminal, note whether P bus is 24 Vac or 24 Vdc and only connect appropriate devices to P output terminals.

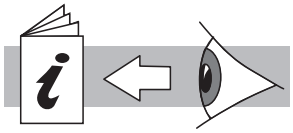
CAUTION Analogue outputs are not suitable for ac relays.

3.1 Installation - Mounting (continued)

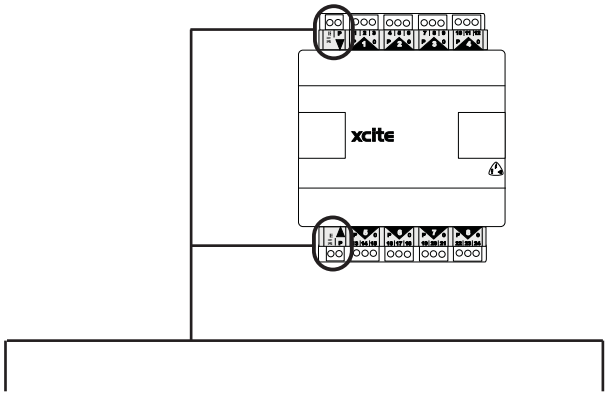
18 **Connect Power for 'P' Terminals** (AO modules only, if required)

If **P** terminals are used (see step 17)

Check current availability from controller I/O bus supply and from module 24 Vdc auxiliary supply:

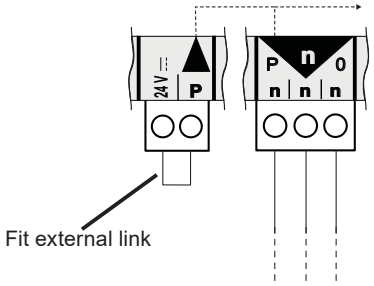


IQ3 Data Sheet (TA200505)
IQ4E Data Sheet (TA201340)



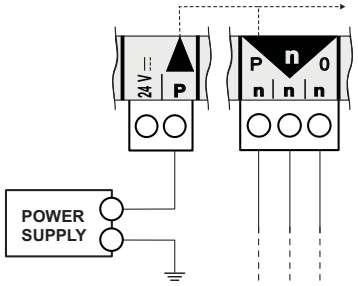
either use I/O module 24 Vdc auxiliary supply

current ≤ 100 mA



Note: The 24 Vdc auxiliary supply is normally about 19.8 V and drops to about 18.4 V at full load.

or use 24 Vdc or 24Vac external supply

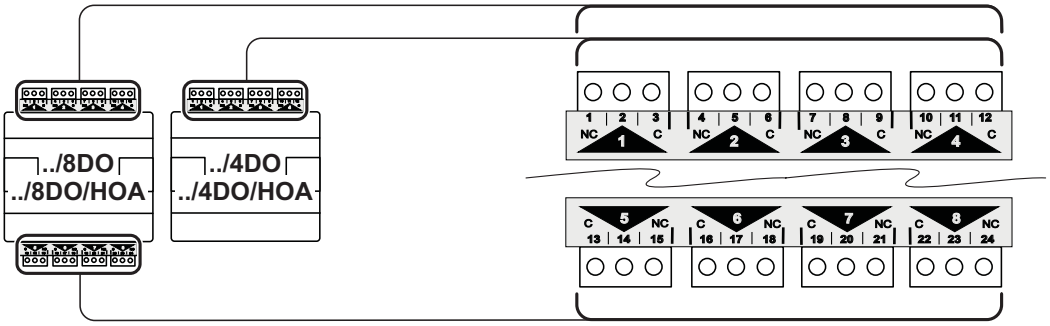


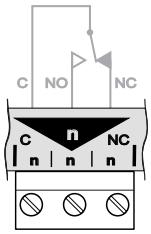
WARNING: External power supply must be dedicated to I/O channel use, and comply with relevant EMC and safety standards.

Note: Always check if P bus is 24 Vdc or 24 Vac, and only connect appropriate devices to P output terminals in step 17.

3.1 Installation - Mounting (continued)

19 Connect Relay Outputs (DO modules only)





5 A maximum at 240 Vac (resistive).
5 A at 30 Vdc (resistive), 2 A at 24 Vdc.

⚠ *To meet safety requirements each bank of four relay outputs must all be switching either low voltage or mains voltage but never both. If switching mains voltage they must be the same phase and polarity.*

Note: The UL rating applies up to 240 V 120 VA maximum.

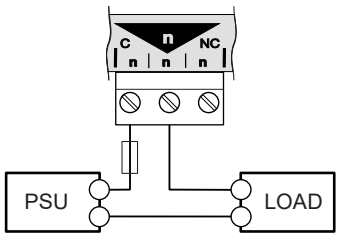
WARNING: The wires may be connected to hazardous voltages. Disconnect power before attempting any wiring.

Note: To meet safety requirements, relays being used must all be switching either low voltage or mains and not a mixture of voltages. If switching mains, they must all switch the same phase and polarity. Arc suppression circuit (RC) recommended for inductive loads, see TG200208.

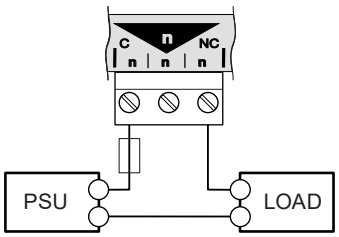
Ensure that external circuits are suitably protected against fault currents that would exceed the ratings for the switching circuits provided in this product.

Example wiring

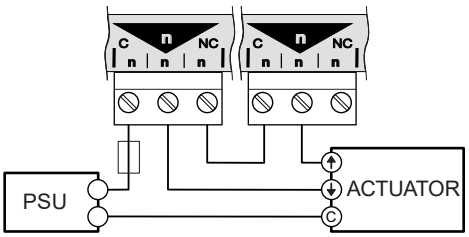
Driver on = Load on



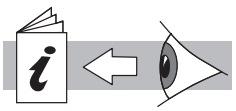
Driver off = Load on



Raise/Lower using 2 outputs



20 Configure IQ Controller and I/O Module(s)



IQ3 Installation Instructions - Configuring (TG201160)
IQ4E/.. IQ4NC/16/..., IQ4NC/32/... Installation Instructions - Configuring (TG201339)

4 FIELD MAINTENANCE

The XCITE I/O modules 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.

5 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.

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TR CU Certification

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