

# TREND IQ422, IQ4NC/00, IQ4NC/12 Controllers

## 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>

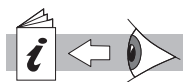


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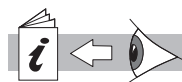
## 1 BEFORE STARTING CONFIGURATION

### Install the IQ422, IQ4NC/00, IQ4NC/12



IQ422, IQ4NC/00, IQ4NC/12 Installation Instructions - Mounting (TG201264)

### Install SET on PC / Laptop



SET Manual (TE200147)

### Prepare Ethernet Network (if using Ethernet)

#### Install DHCP Server

If the IP address settings (IP address, subnet mask, default router, WINS and DNS servers' addresses) are to be supplied by a DHCP server, ensure one is installed on the Ethernet segment to which the IQ422, IQ4NC/00, IQ4NC/12 is connected.

#### Install WINS Server

If host names are being used for IP addressing across a router, a WINS server must be installed.

#### Install DNS Server

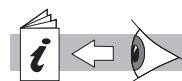
If email alarms are being sent, and the email server address is identified by internet domain name, a DNS server must be installed.

### Additional Documentation Required

- SET Manual (TE200147)
- IP Tool Manual (TE200638)
- IQTool Monitor Applet Manual (TE201298)
- IQTool Addresser Applet Manual (TE201299)
- IQ4 Configuration Manual (TE201263)

*Note: PDF copies are included with SET installation in the following folder: C:\...\Trend Control Systems\Documentation*

### Read & Agree to End User Licence Agreement



IQ422, IQ4NC/00, IQ4NC/12 Installation Instructions - Mounting (TG201264)

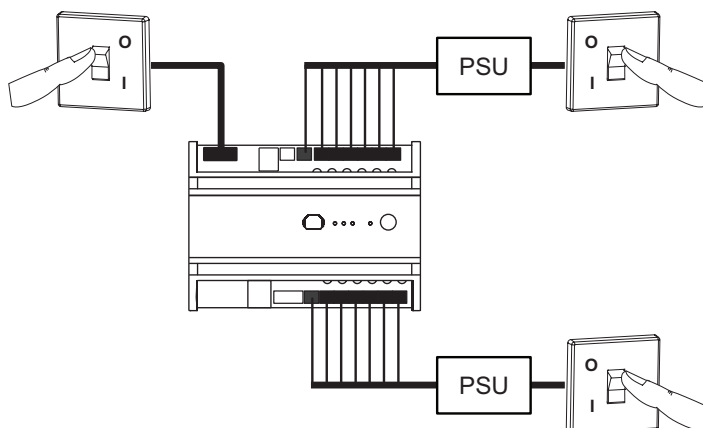
## 2 CONFIGURATION

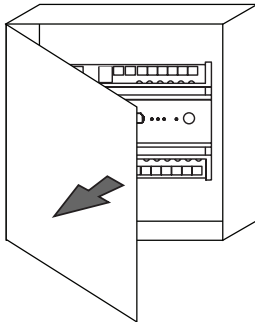
1

### Isolate All Power (including any I/O supplies)

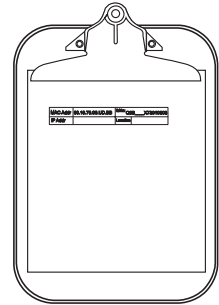
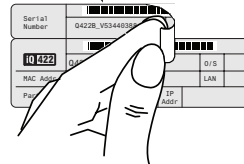
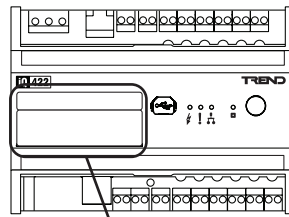
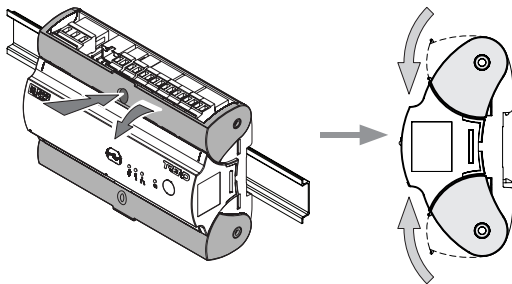
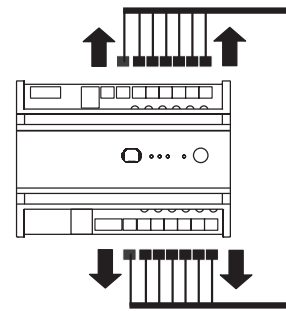


**WARNING** Connecting leads may be connected to power supplies. Isolate before touching.

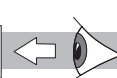
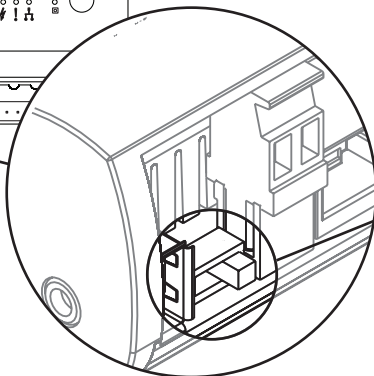
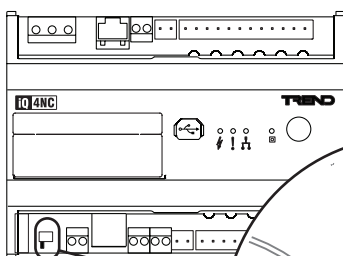


**2 CONFIGURATION** (continued)**2****Open Panel / Enclosure**

**WARNING** Opening the panel may expose dangerous voltages.

**3****Peel Off Top Serial Label & Retain****4****Open Rotating Covers****5****Disconnect All I/O**

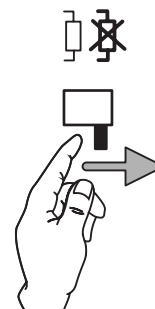
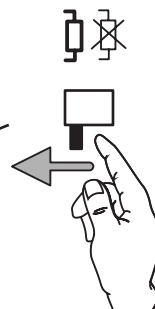
Leave Power, Ethernet, Current loop LAN, USB, RS232, and MS/TP connected (where appropriate).

**6****Select Terminator Switch Position** (IQ4NC using MS/TP network only)

IQ422, IQ4NC/00, IQ4NC/12 Installation Instructions - Mounting (TG201264) for details of terminator use.

Terminator in circuit

Terminator out of circuit

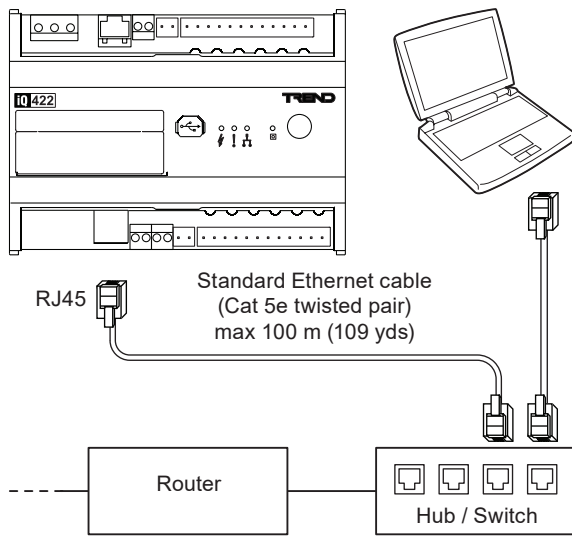


## 2 CONFIGURATION (continued)

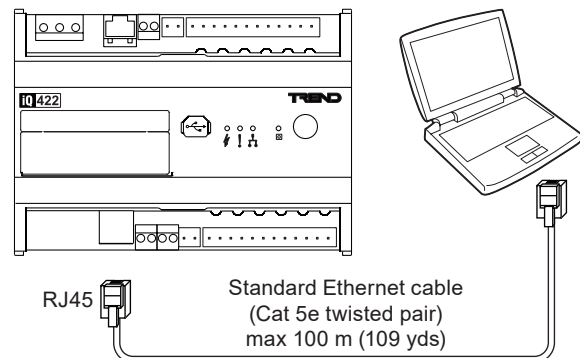
7

### Connect PC / Laptop

Either: via Ethernet Hub/Switch



Or: using direct connection

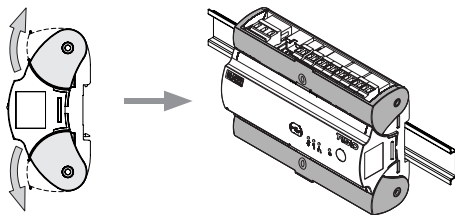


Note: To connect with SET a vCNC is required (see step 14).  
SET can connect when on a different subnet.

Note: Other methods of connection are available see 'Connect to IQ4xx' on page 10.

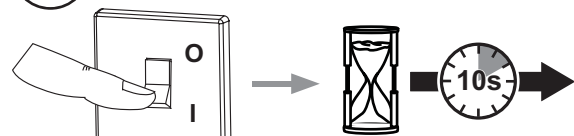
8

### Close Rotating Covers



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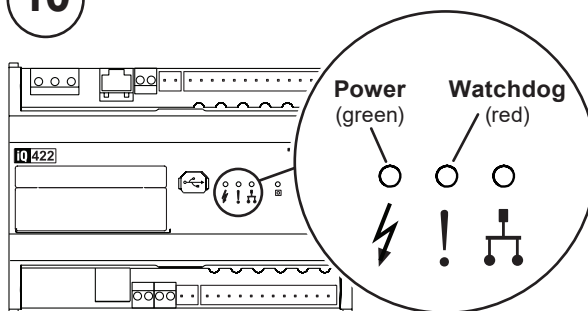
### Switch On Power to IQ4xx



Note: All LEDs illuminate for several seconds after switch on.

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### Check Power & Watchdog Indicators



#### Normal operation indication

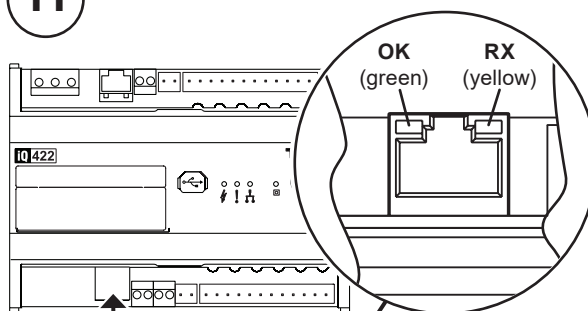
⚡ Power	☀
! Watchdog	●

#### Fault indications

⚡ Power	●	Check input power supply
! Watchdog	☀	Device fault. Try resetting the IQ4xx to default settings (see page 12).

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### Check Ethernet Indicators (if Ethernet is connected)



#### Normal operation indication

OK	☀
RX	☀ or ☀ ● ☀

#### Fault indications

OK	●	Check Ethernet
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## 2 CONFIGURATION (continued)

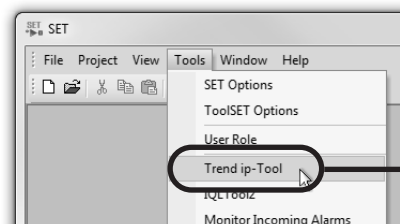
12

### Connect to the IQ4xx

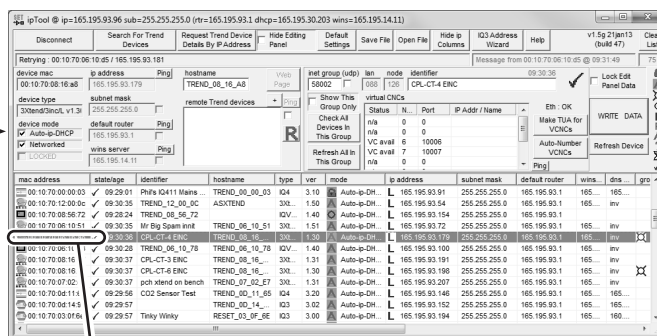
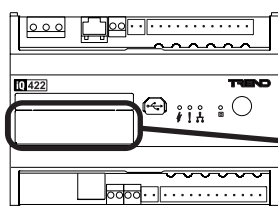
Using the PC/laptop (see step 7) run SET / IP Tool



SET Manual (TE200147)  
IP Tool Manual (TE200638)



Then find the IQ4NC, IQ422 by its MAC address as shown on serial label



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### Set up IP Addressing Details (if using Ethernet)

Use IP Tool – see step 12 – to choose either static (fixed) or dynamic (DHCP) addressing:



IP Tool Manual (TE200638)

#### Dynamic (DHCP) Addressing (default)

Parameter	Value
Device Mode	device mode <input checked="" type="checkbox"/> Auto-ip-DHCP

When set to dynamic (DHCP) addressing the unit automatically obtains its IP addressing details (IP address, subnet mask, default router, WINS server and DNS server) from the network's DHCP (Dynamic Host Configuration Protocol) server. If no DHCP server is found, the unit defaults to link/local mode where it autonegotiates its IP address with other devices on its Ethernet segment,

#### Static (Fixed) Addressing

Parameter	Value
Device Mode	device mode <input type="checkbox"/> Auto-ip-switch
IP Address	
Subnet Mask	Enter required value in format: xxx.xxx.xxx.xxx
Default Router	
WINS Server	

*Note: It is recommended that link/local only be used on a single segment system.*

When set to static (fixed) addressing the IP addressing details must be configured manually.

*Note: If email alarms are being sent, and the email server address is identified by internet domain name, then a DNS server must also be specified using Text Comms.*

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### Set up Virtual CNCs (if required)



SET Manual (TE200147)  
IP Tool Manual (TE200638)

By default, IQ4NCs have 4 enabled vCNCs (4, 5, 6, 7) and 4 disabled vCNCs. IQ422s have 3 disabled vCNCs. A vCNC must be enabled if connection to a supervisor, tool or display is required. If necessary disable/configure them to avoid address conflicts.

Use IP Tool – see step 12 – to set up the address and port number of each vCNC.

Parameter	Range
Address	0 (disabled), 1, 4 to 9, 11 to 119
Port Number	1 to 32767 Default = 10000 plus the address (e.g. address 23 sets port to 10023)

Once the vCNC set up in IP Tool is complete, use IQSET to configure the vCNCs.

- Using IQSET connect to one of the controller's vCNCs.
- You will be prompted to press the service button on the controller. Once pressed the **Secure Site Configuration** dialogue box is displayed.
- Configure the vCNCs as required, and enter the credentials for the CNC User module.

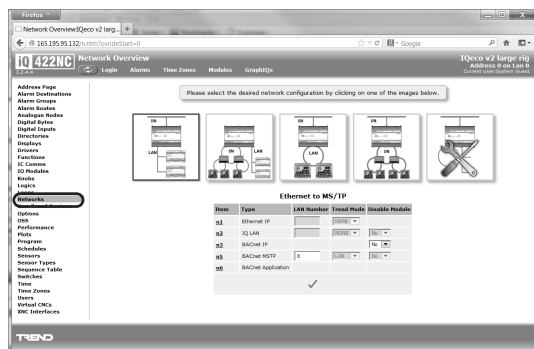
**Note: configuring the vCNCs require physical access to the controller ensure this is done before leaving site.**

## 2 CONFIGURATION (continued)

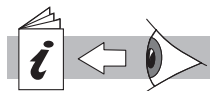
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## Set up IQ4NC Communication Mode (if using IQ4NC)

- Connect a PC directly to the IQ4 using an Ethernet cable, see 'Connect to IQ4' on page 10.
- Using a web browser, e.g. Internet Explorer, access the controller's web pages and select **Modules>Networks** to display the **NC Configuration Wizard**.

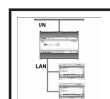


- Click required mode, and if necessary specify any parameters e.g. LAN number.
- Click ✓; the controller will restart.



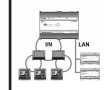
IQ4 Web User Guide (TC201256).

Note: The IQ4NC always has a LAN to connect to the internetwork so cannot join another LAN on the internetwork.



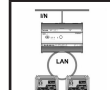
Ethernet Internetwork to MS/TP LAN (default)

Parameter	Notes
LAN number	1, 4 to 9, 11 to 119
BACnet IP	Can be disabled



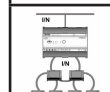
Current Loop Internetwork to MS/TP LAN

Parameter	Notes
LAN number	1, 4 to 9, 11 to 119
BACnet IP	Can be disabled



Ethernet Internetwork to Current Loop LAN

Parameter	Notes
LAN number	1, 4 to 9, 11 to 119
BACnet IP	Can be disabled
BACnet MSTP	Can be enabled e.g. for connection of PEHA devices



Ethernet Internetwork to Current loop Internetwork

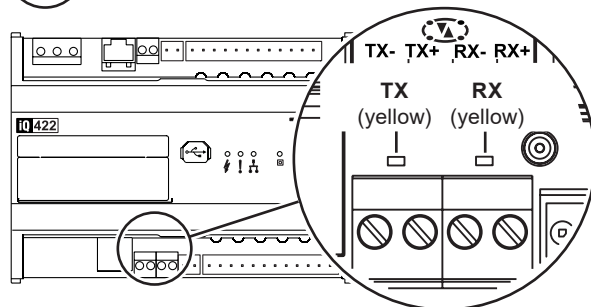
Note: Address no longer needs to be &gt; 100.

Parameter	Notes
LAN number	1, 4 to 9, 11 to 119
BACnet IP	Can be disabled
BACnet MSTP	Can be enabled e.g. for connection of PEHA devices.

Manual configuration  
E.g. Ethernet Internetwork to Current loop Internetwork plus MS/TP Lan

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## Check Trend Current Loop Network Indicators (if current loop network being used)



## Normal operation indication

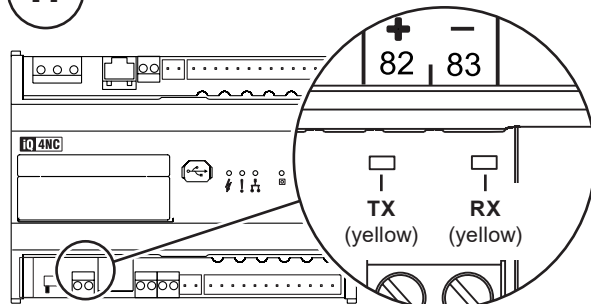
TX	☀
RX	☀

## Fault indications

TX	●	Check connection to downstream device
RX	●	Check connection to upstream device

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## Check MS/TP Network Indicators (If IQ4NC using MS/TP network)



## Normal operation indication

RX	☀
TX	☀

## Fault indications

RX	●	Signal not reaching RX on downstream device on network – check device/wiring
TX	●	No TX signal from upstream device on network – check device/wiring

## 2 CONFIGURATION (continued)

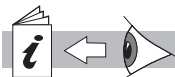
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### Set up Ethernet Access Across Routers (if required)

If the LAN is to be built across a router(s) details of devices (on each subnet) must be specified to enable cross-router communications.

Use IP Tool – see step 12 – to specify IP settings for up to 20 devices in the Remote Trend Devices list:

Parameter	Value
IP Address	<i>If using dynamic (DHCP) addressing:</i> Enter the host name of the remote device.  <i>If using static (fixed) addressing:</i> Enter the IP Address of the remote device, in the format: xxx.xxx.xxx.xxx
Subnet Mask	The subnet mask for the remote device, in the format: xxx.xxx.xxx.xxx



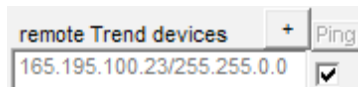
IP Tool Manual (TE200638)

It is recommended that at least two devices from each subnet are specified. For increased reliability details of additional devices should be specified.

If static IP addressing is being used the list should contain the devices with the lowest IP addresses.

The same list must be copied to other EINC type devices on the network.

*Hint: Ticking the check box next to the Remote Trend Devices list retains the list in IP Tool, allowing it to be easily copied to other devices:*



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### Set up Trend Addressing

IQ4xx controllers are given a default device address and LAN number in the factory. The device address is set in the range 11 to 119 on a rolling basis with the LAN number set to 20. Therefore it may be necessary to set the address/LAN number as required.

Parameter	Value
Local Address	1, 4 to 9, 11 to 119 (must be unique on LAN)
Local LAN	1, 4 to 9, 11 to 119 (must be the same for all devices required to form a LAN).

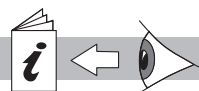
*Note: Changing the LAN number and/or device address will cause the controller to reboot.*

#### If connecting to a LAN on Ethernet (or standalone mode):

- Use IP Tool – see step 12 – to set the device address and LAN number.

#### If connecting to a LAN on current loop (with pre IQ4 controllers):

- Use SET's IQTool Addresser Applet to manually add the IQ4 to the grid using the serial number and address.
- Use SET's System View to set the LAN number.

IP Tool Manual (TE200638)  
IQTool Addresser Applet Manual (TE201299)

#### If connecting to a LAN on current loop (with only IQ4 type controllers):

- Use SET's IQTool Addresser Applet, and run the Discovery Wizard.
- Select either 'Automatic Discovery' (recommended) or 'Manual Discovery'. If 'Automatic Discovery' is chosen you should then select 'Duplicate Address Resolution'.

**Automatic Discovery:** The tool will discover the devices, and attempt to resolve any duplicate addresses.

**Manual Discovery:** Either scan the bar code, or press the Service Button for each controller.

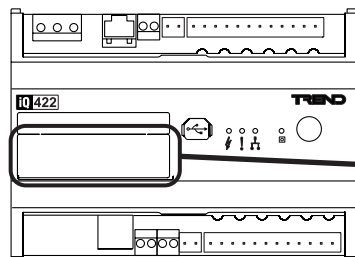


**WARNING** For /230 variants hazardous voltages exist when the unit is powered. Take suitable precautions if pressing service button.

*Note: If the LAN is not as expected after discovery it could be because of installation related reasons, e.g. wiring faults, power failure, etc. Check the devices are operating correctly and repeat discovery. If there are duplicate addresses add the devices to the grid manually, using network address and serial number. If necessary use SET's System View to set the LAN number, and IQTool to set the address.*

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### Write Address Details on Label



IQ 422	Q422B_V53440388	O/S	
MAC Addr	08:10:70:0D:1E:92	LAN	
Part No:	IQ422-1010U5000	IP Addr	

Device address (O/S)  
LAN number  
Fixed IP Address  
or Hostname (if DHCP)

## 2 CONFIGURATION (continued)

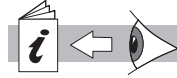
### 21

#### Set Current Loop Baud Rate (IQ4NC or ../LAN variants only, if current loop network being used)

By default the IQ4xx will auto detect the baud rate in use on the current loop. If all devices are set to auto detect the baud rate chosen cannot be guaranteed, in which case it may be necessary to manually set one device to a known rate.

Use SET's IQTool Monitor Applet to disable autobaud and specify the baud rate.

Module	Parameter	Range
IQ Lan network	Autobaud	0 (disabled) or 1 (enabled)
	Baud Rate	1k2, 4k8, 9k6, 19k2, 38k4



IQTool Monitor Applet Manual (TE201298)  
SET Manual (TE200147)  
IQ4 Configuration Manual (TE201263)

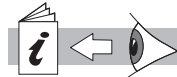
### 22

#### Set up RS232 / USB Port Addressing (if required)

If the IQ4xx is to provide connection to the network for supervisors and tools it is necessary to setup the RS232 Supervisor Port or USB Engineering Port as required.

Use SET's IQTool Monitor Applet to set the Supervisor Port or USB Engineering Port as required.

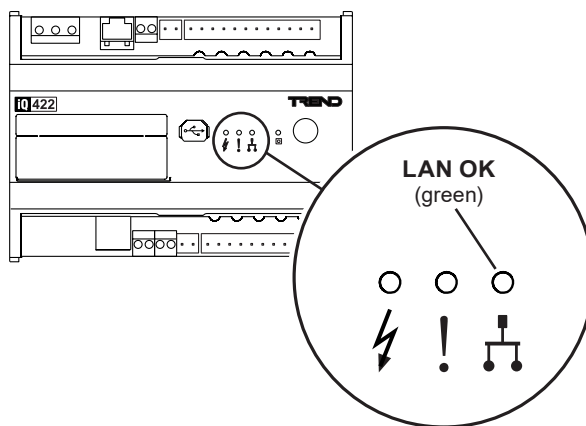
Parameter	Range
Supervisor port	0, 4 to 9, 11 to 119 Default=0 local access only
USB Engineering port	0, 4 to 9, 11 to 119 Default=0 temporarily takes address 125



IQTool Monitor Applet Manual (TE201298)  
SET Manual (TE200147)  
IQ4 Configuration Manual (TE201263)

### 23

#### Check LAN OK Indicator (not IQ4NC)



##### Normal operation indication

	LAN built OK
	Attempting to build LAN

*Note: It is normal behaviour for LAN OK indicator to extinguish for up to 1 min after detecting baud rate, then illuminate.*

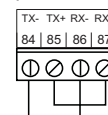
##### Fault indication (Ethernet LAN)

	Unable to communicate on LAN. <i>Note: Only applies if current loop is disabled or is not fitted.</i>
--	--

##### Fault indication (Current Loop LAN)

every 15s	Longer than 2 minutes indicates LAN/internet cannot be built.
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- Check baud settings of all devices on current loop – see step 21, and check all device connections.
- If still flashing, fit loop back:



If indicator turns OFF, device is faulty. If ON, reconnect network and switch off all other devices on the network.

- If still OFF, check network cabling for short circuits with a multimeter (NOT Megger).
- If ON switch on other devices in turn until faulty device found (i.e. LAN OK goes OFF), inspect that device to determine and correct the fault.



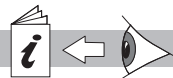
## 2 CONFIGURATION (continued)

### 24

#### Download Strategy

Configure the IQ4xx strategy using SET, and test using SET's simulation mode.

Use SET to download the strategy and backdrop file (if required).



SET Manual (TE200147)  
IQ4 Configuration Manual (TE201263)

*Note: An Ethernet connection is required to download both strategy and backdrop files. Other connection types only allow download of strategy files.*

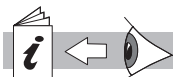
*Note: strategy download is not recommended over current loop with baud rate <9k6.*

*Note: SET will set up the controller's date and time to that of the PC during download. However, they may be set up from a controller configured as timemaster.*

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#### Check IQ422 or IQ4NC on BACnet (If /BAC or IQ4NC and BACnet protocol communications required)

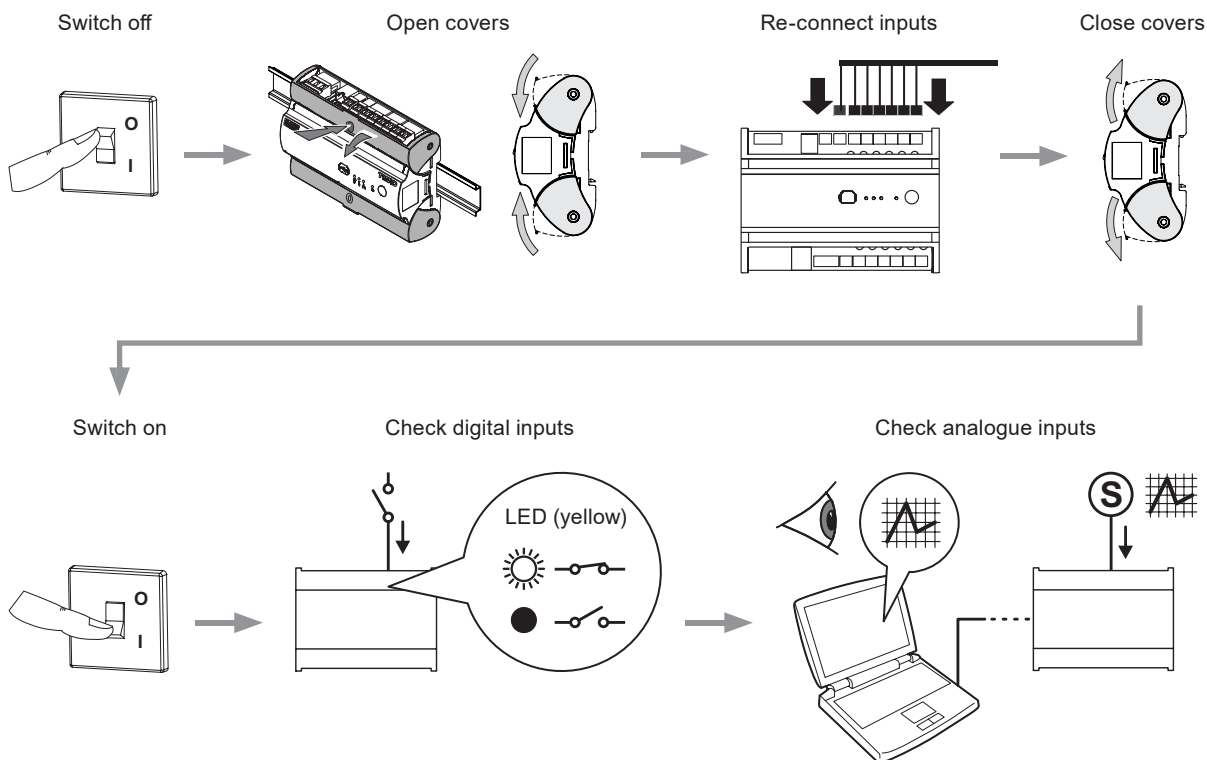
Use SET to check that the IQ4 BACnet functionality is operating by checking it appears correctly in the System View on its BACnet network.



SET Manual (TE200147)

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#### Test Inputs (Not IQ4NC/.../00)



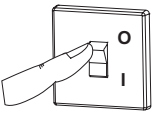


## 2 CONFIGURATION (continued)

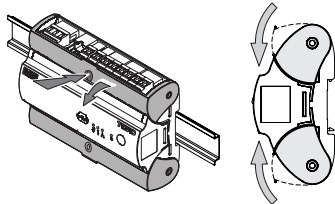
**28**

**Test Outputs** (Not IQ4NC/.../00)

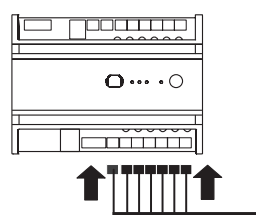
Switch off



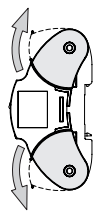
Open covers



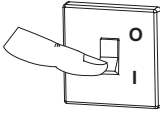
Re-connect outputs



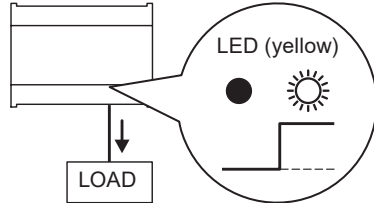
Close covers



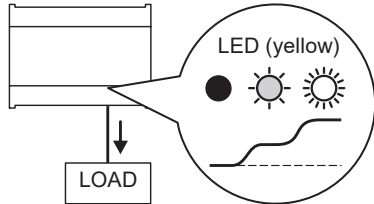
Switch on



Check digital outputs



Check analogue outputs



**29**

**Connect Supervisors/Tools/Display Panels** (if required)

Connect PCs (e.g. for supervisors/tools) and displays as described in 'Connect to IQ4xx' on page 10.


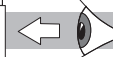
Connection of supervisors, tools, display panels etc can be made directly to controller via the RS232 Local supervisor Port, USB Local Engineering Port, Wallbus Port, or Ethernet port. Connection can also be made over the Trend network over Ethernet or the current loop.

**30**

**Configure Web Server**

Connection to the IQ4 web server can be made via HTTP and/or HTTPS protocol. Where HTTPS is used it will be necessary to configure SSL certificates.

If web access is not required it is recommended that the web server is disabled for security.



IQ4 Configuration Manual (TE201263)

SET Manual (TE200147)

**31**

**Backup Strategy**

Use SET to upload the strategy and compare it with the strategy held by SET.

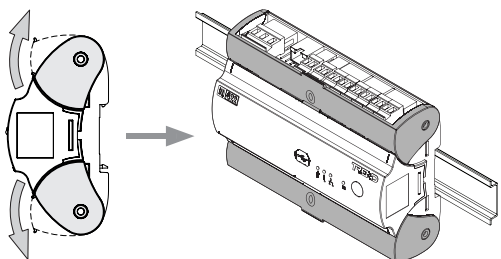



SET Manual (TE200147)

*Note: An Ethernet connection is required to upload strategy and backdrop files. Other connection types only allow upload of strategy files.*

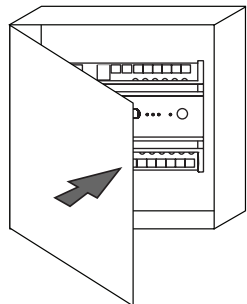
**32**

**Close Rotating Covers**



**33**

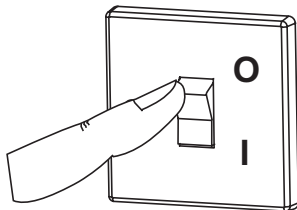
**Close Panel / Enclosure**



### 3 CONNECT TO IQ4XX

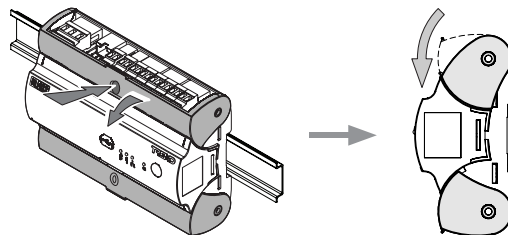
1

**Switch Off Power to IQ4xx**



2

**Open Top Cover** (if required)



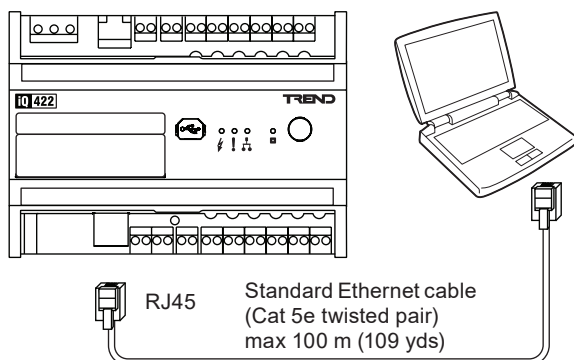
3

**Make Connection**

Connection to the IQ4xx can be made directly via the RS232 Local Supervisor Port, USB Local Engineering Port, or Ethernet Port. Connection can also be made over a network (Ethernet).

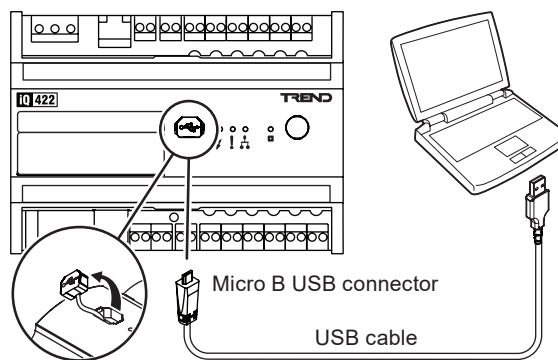
#### Connect Directly to Controller

PC via Ethernet Port



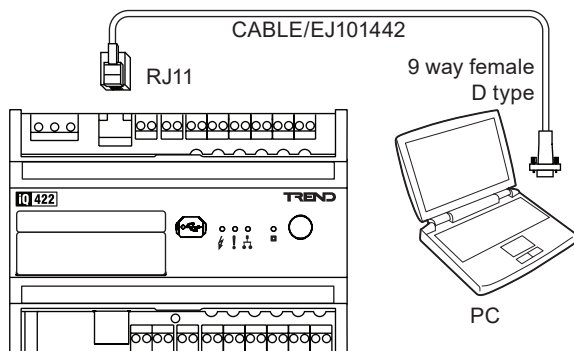
Connection use		Notes
IPTool	✓	
SET	✓	Requires vCNC
Web Browser	✓	
Supervisor	✓	Requires vCNC

PC via Local Engineering Port (USB)



Connection use		Notes
IPTool	×	
SET	✓	
Web Browser	×	
Supervisor	×	

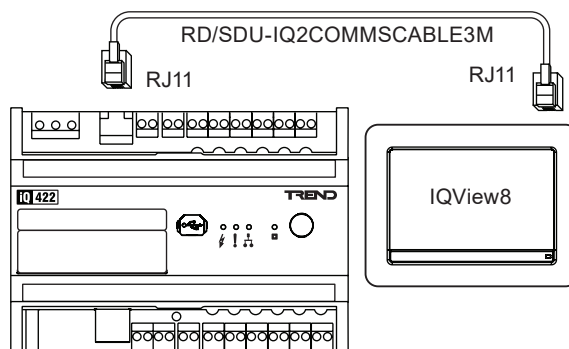
PC via Local Supervisor Port (RS232)



Connection use		Notes
IPTool	×	
SET	✓	
Web Browser	×	
Supervisor	✓	

IQView8 via Local Supervisor Port (RS232)

*IQView8 requires its own power supply.*



*Note: If local supervisor port address is '0' (default) communication is limited to the IQ4xx. If non-zero, communication is possible over the entire network.*

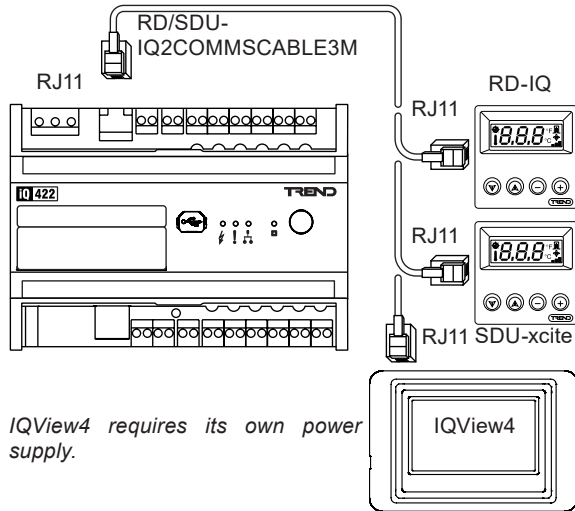
### 3 CONNECT TO IQ4XX (continued)

# 3

## Make Connection (continued)

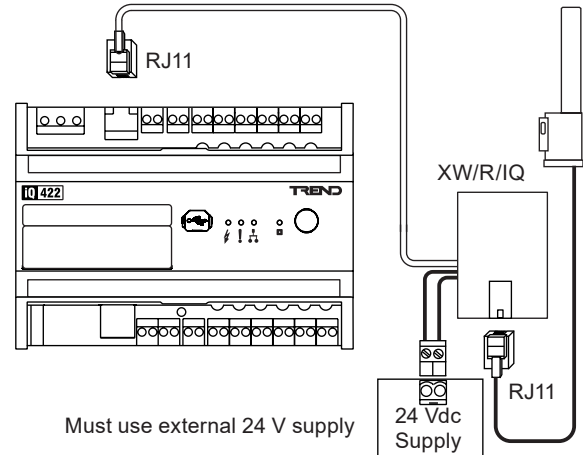
### Connect Directly to Controller

RD-IQ, SDU-xcite, IQView4 via Local Supervisor Port (RS232)

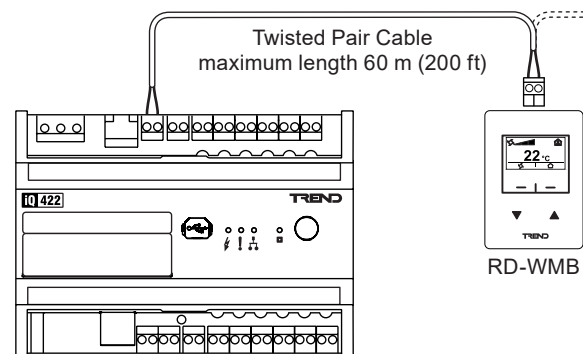


*Note: Set local supervisor port address to '0' (default) as communication is limited to the IQ422, IQ4NC/00, IQ4NC/12.*

XW/R/IQ wireless sensor receiver via Local Supervisor Port (RS232)

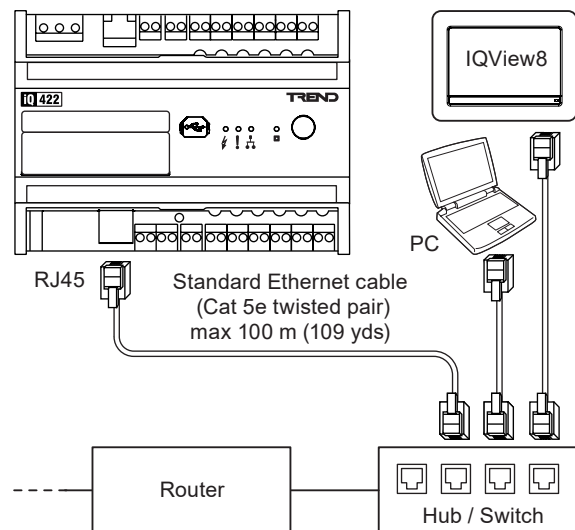


RD-WMB via Wallbus Port



### Connect via Ethernet Network

- Ensure the IQ4xx is connected to the Ethernet network.



- Connect the other device (e.g. network display or PC) to same Ethernet network and ensure an IP connection is available between it and the IQ4xx.
- To make a connection with SET, a supervisor or display ensure a vCNC is available in a Trend device on the same Ethernet Trend network and connect to the vCNC as described in the supplied documentation.

*Note: If connecting with IP Tool, the PC should be on the same Ethernet segment as the IQ4xx.*

- To make a connection with a web browser run a web browser on the PC and access the IQ4xx IP address or host name.

PC Connection use		Notes
IPTool	✓	
SET	✓	Requires vCNC
Web Browser	✓	
Supervisor	✓	Requires vCNC

## 4 RESET TO DEFAULTS

1

### Isolate Power and Disconnect All I/O

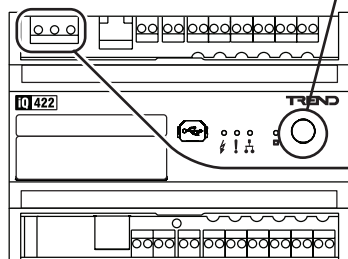
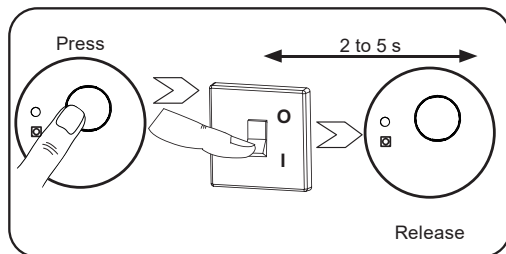
Follow steps 1, 2, 4, 5 and 8 (on pages 1 to 3) to:

- Isolate Power,
- Open Panel,
- Open Rotating Covers,
- Disconnect All I/O,
- Close Rotating Covers.

2

### Reset Controller

Unplug the Ethernet cable and press and hold down the service button. While continuing to hold down the button, switch on the controller. Ensure the button remains pressed for 2 to 5 s after power is switched on.



The strategy, user modules (passwords, PINs etc), alarm logs, and plots are cleared down and the following parameters set to defaults:

LAN number  
outstation address  
IP addressing mode  
IP address  
subnet mask  
UDP port  
identifier  
Router 1  
remote Trend devices  
Virtual vCNCs.

Time and date are left at their current settings.



**WARNING FOR /230 versions:** Hazardous voltages exist in this area when the unit is powered. This operation should only be performed after taking suitable precautions

The factory reset will erase the strategy and reboot the controller into its original configuration. While the controller is erasing the strategy, the Watchdog and LAN OK indicators will flash alternately. During the reboot all indicators will be ON. Once this process has completed the Watchdog and LAN OK indicators will go OFF, leaving the Power indicator ON. This process may take up to 10 minutes depending on controller type.

**Do not switch off the controller until the process has completed.**

3

### Re-configure Controller

Go to step 1 on page 1.

Please send any comments about this or any other Trend technical publication to [techpubs@trendcontrols.com](mailto:techpubs@trendcontrols.com)

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