Data Sheet

IQ5-LAN-ADPT
Current Loop LAN Adapter

IQ5-LAN-ADPT
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Description

The IQ5-LAN-ADPT allows an IQ5 controller (configured for compatibility mode) to communicate in Trend current loop LAN or internetwork.

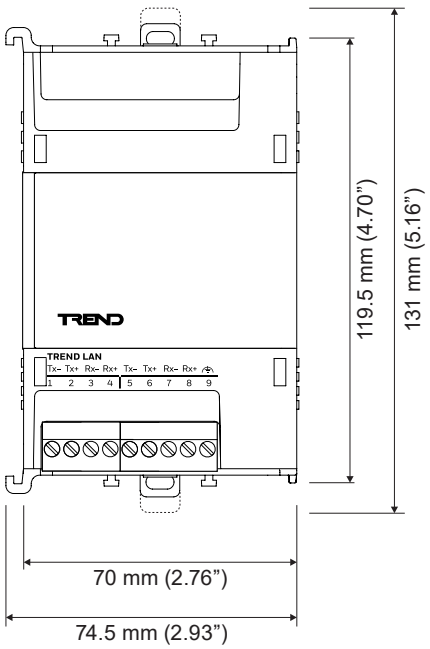
The adapter connects to the controller via the T1L bus, enabling it to be conveniently installed alongside or remote from the controller or other T1L devices such as IQ5-IO modules.

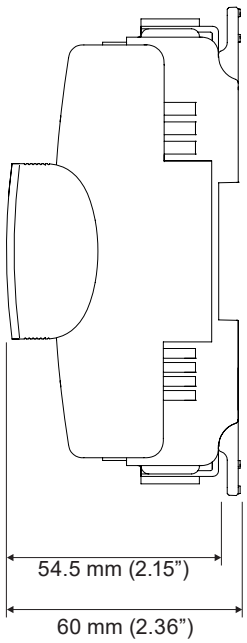
Pluggable screw terminal connectors are provided to suit either 2-wire or 4-wire current loop wiring configurations.

Features

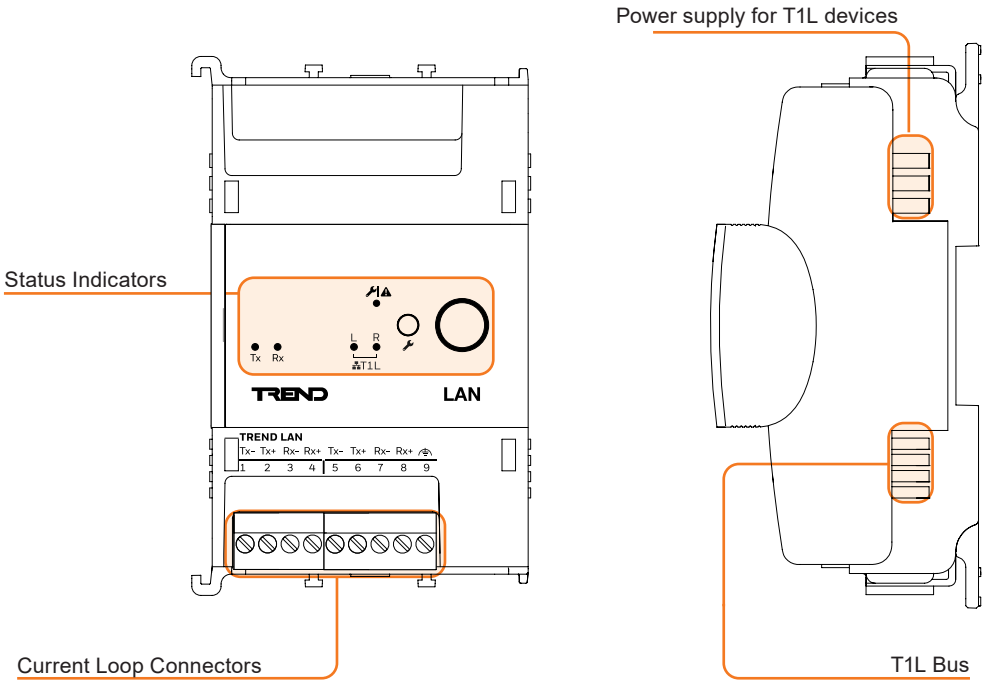
- Compatible with 2-wire or 4-wire current loop wiring
- Secure T1L high-speed bus connection to controller
- DIN rail mounting, DIN 19 size 2 standard enclosure
- Powered from the controller's T1L bus separate PSU

Physical





Physical (continued)



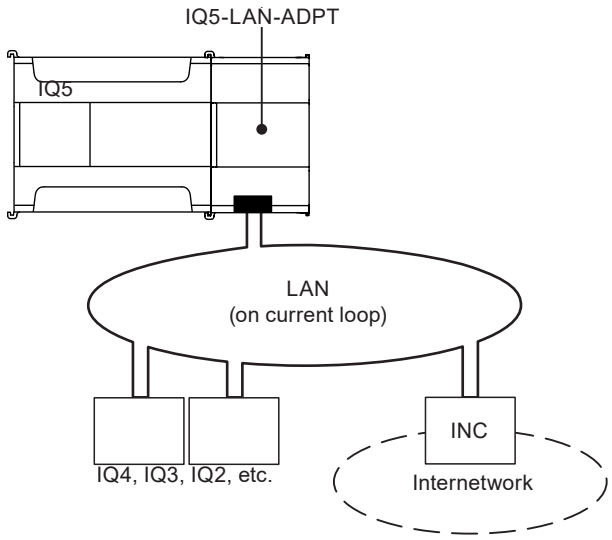
FUNCTIONALITY

The IQ5-LAN-ADPT enables an IQ5 controller (configured for compatibility mode) to connect to a Trend current loop network in one of the following configurations:

Trend LAN on Trend current loop
Join an internetwork on a Trend current loop
Extend an Ethernet internetwork to a Trend current loop

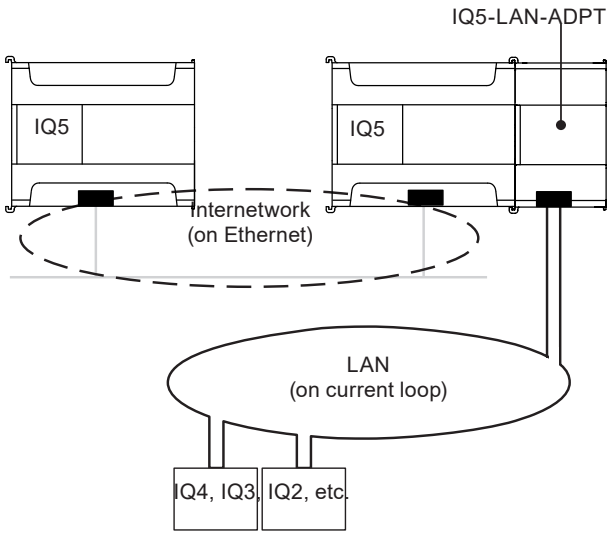
Note: Only 1 IQ5-LAN-ADPT can be connected to an IQ5 controller.

Trend LAN on Trend Current Loop
In this configuration the IQ5-LAN-ADPT allows an IQ5 to connect directly to a LAN of IQ controllers on a Trend current loop network. The IQ5 must be configured for compatibility mode.

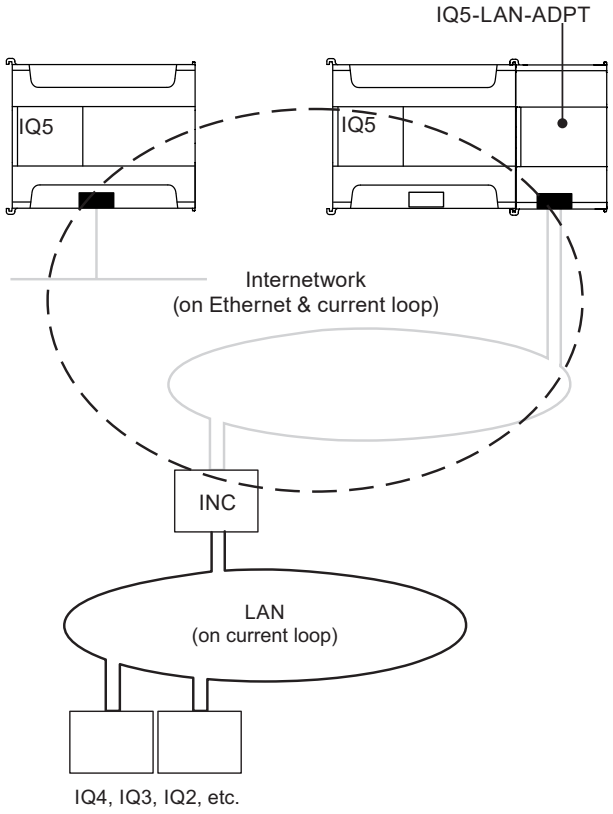


Note: In order to join an internetwork, an INC type device will be required elsewhere on the current loop LAN.

Ethernet Internetwork to Trend LAN on Trend Current Loop
In this mode the IQ5 acts as an interface between an internetwork on Ethernet and a LAN on the Trend current loop. The IQ5 must have an NC license and be configured for compatibility mode.



Ethernet to Trend Internetwork
In this mode the IQ5 acts as an interface between an internetwork on Ethernet, and an internetwork on the Trend current loop network. The IQ5 must have an NC license and be configured for compatibility mode.



HARDWARE

Enclosure

The IQ5-LAN-ADPT is housed in a polycarbonate enclosure compatible with the DIN43880 and DIN 19 size 2 standard and with a complimentary styling to the IQ5 controller and IQ5-IO range of modules.

Integral clips on the back of the case enable the unit to be clipped on to (and released from) a standard TS35 DIN rail.

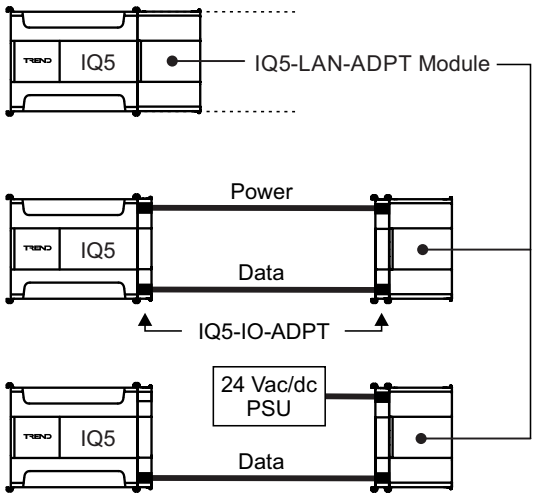
The IQ5-LAN-ADPT must be installed in a secondary enclosure with a minimum protective rating of IP20 (or equivalent) or mounted outside normal reach (e.g. in a plenum).

The adapter can be mounted horizontally or vertically but not upside down or on its back.

A removable clip-on cover provides access to the current loop onboard terminal connections.

Power and Data Connection

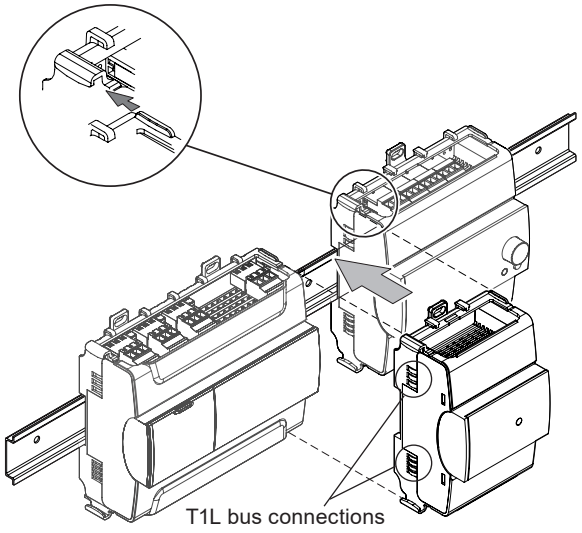
The IQ5-LAN-ADPT requires a 24 Vac/dc power supply. This can be derived from the IQ5 with the adapter connected directly to the controller or another device on the T1L bus. Alternatively, it can be connected and powered using IQ5-IO-ADPT wiring adapters. If insufficient power is available from the controller, the IQ5-LAN-ADPT can be powered using a separate power supply:



T1L Bus

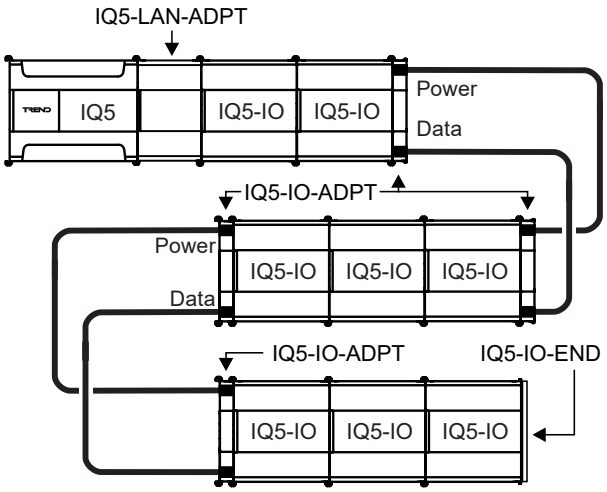
IQ5-LAN-ADPT connects with other T1L devices (IQ5-IO modules), and the IQ5 controller via the T1L bus.

T1L devices can be slotted together, adjacent to the controller (or other T1L devices) with inter-device connections being made via integral spring connectors.



Note: T1L devices can easily be removed without disturbing adjacent devices.

Alternatively, IQ5-LAN-ADPT and other T1L devices can also be mounted remotely from the controller (or from neighbouring T1L devices) and connected to the T1L bus by using IQ5-IO-ADPT wiring adapters and suitable cable.



Note: The IQ5-IO-ADPT wiring adapter includes a self-resetting fuse and transient voltage suppression that protects the T1L bus from over-current and over-voltage conditions caused by electrical transients or incorrect wiring. No protection is provided against accidental connection of mains voltages.

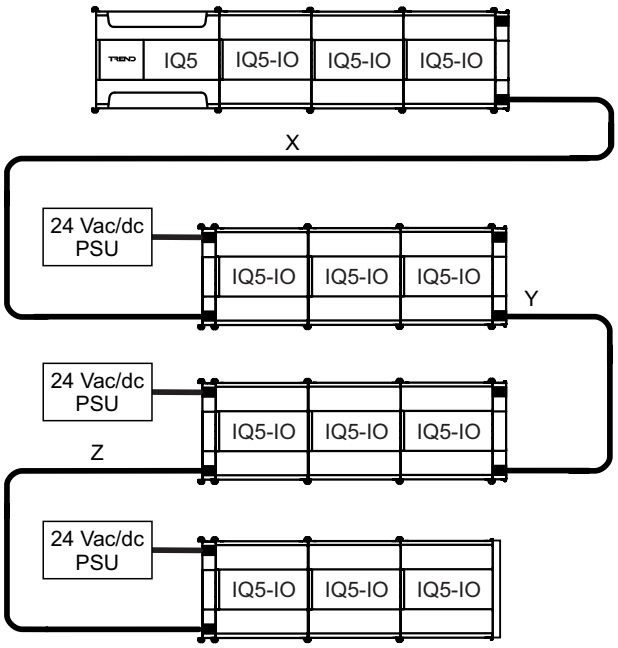
Cabling between devices on the T1L bus may be wired from right to left side, right to right or left to left, as long as correct bus polarity is maintained. Spurs are not permitted.

A cover plate (IQ5-IO-END) must be fitted to the last T1L device on the bus, to protect the exposed bus connectors.

Note: A cover is supplied with each IQ5 controller which can be used for this purpose. A pack of spare covers is also available.

Maximum T1L Bus Length

When designing a system with remote IO you need to be aware that separately powered panels with T1L devices may be switched off and hence the distance between T1L devices may now be X + Y or even X + Y + Z. For this reason, we recommend the distance between panels of IO be no more than the $^{1}/_{3}$ of the distance (10 devices off) shown in the table.



The table below identifies cables that have been tested and the distances which can be achieved between active devices assuming up to 10 offline devices are between them.

Cable	Typical Uses	Cable Characteristics	Max Distance (between working nodes)	Max Distance (10 devices off)	Recommended $^{1}/_{3}$ Distance (10 devices off)
74040NH – Belden	T1L- Long distance harsh environments	2 core solid 18AWG,SF/ UTP Shielded and foil, unshielded twisted pair.	1000m	900m	300m
8471 – Belden	LON	2 core stranded/tinned 16AWG, unshielded cable.	560m	504m	168m
9841 – Belden *TP/1/1/24/200/HF-600V*	MSTP (Serial)	2 core stranded/tinned 24AWG, Foil shield & drain wire, twisted pair.	400m	360m	200m
8723NH – Belden *TP/2/2/22/200/HF-600V*	Trend 4 wire LAN	4 core, 2 pairs, stranded/ tinned, 22AWG, Foil shield & drain wire, twisted pairs.	160m	144m	48m
8761NH – Belden *TP/1/1/22/200/HF-600V*	Trend 2 wire LAN	2 core stranded/tinned, 22 AWG, Foil shield & drain wire, twisted pairs.	320m	288m	96m
5501UE 0081000 – Belden/BAV	Security, speaker, PA, & telephone systems	3 core stranded bare copper, 22 AWG, no shield or twist.	600m	540m	180m
82836 – Helukabel	Profibus - Industrial Ethernet	2 core solid, 18AWG Foil + braided screen twisted pair.	800m	720m	240m
3076F – Belden	Harsh environment digital and serial two way communication	2 core solid 18AWG, Shielded and foil, unshielded twisted pairs.	428m	385m	128m
Helukabel J-Y(ST)YLG	Telecommunications & Fire Alam Cable (Fire Warning Cable)	Multicore solid bare copper, 20AWG (0.8mm), foil wrapped.	320m	288m	96m
Cat5/Cat6	Standard wired IT network cable	8 core, 4 pairs, solid bare copper, 23AWG, twisted pairs.	720m	648m	217m

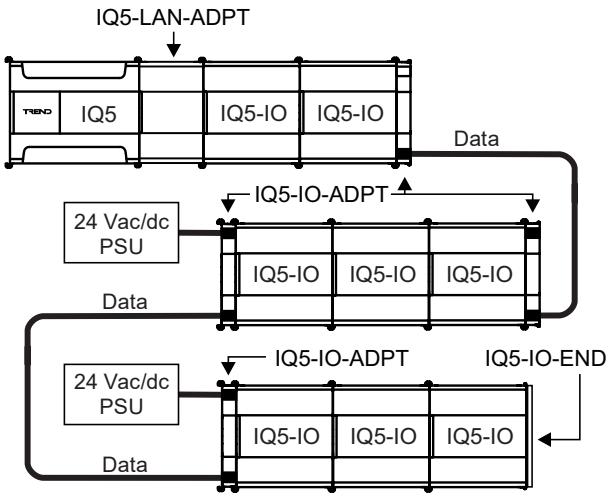
Maximum Number of T1L Devices
Up to 64 T1L devices can be connected to the T1L bus. However only one IQ5-LAN-ADPT can be connected to the controller (T1L bus).

Module Power
The IQ5-LAN-ADPT and other T1L devices can typically be powered from the controller via the T1L bus supply. This supply is derived from the controller's 24 Vac/dc supply and, therefore, the maximum current available to the T1L bus depends upon other current demands placed on the controller.

The maximum current required by each T1L device is specified in the appropriate data sheet and can be used to estimate the total current required by the T1L bus.

Where the total current requirement of the T1L bus exceeds the maximum available from the controller, one or more additional 24 Vac/dc power supplies may be installed. Additional supplies may also be required in the following circumstances:

- at the end of a long T1L bus cable run, to prevent voltage drop on the bus supply (minimum 19V supply required),
- where the current flow through the power line of any one T1L device would exceed the maximum of 2 A, thus requiring the T1L bus power line to be split or segmented.

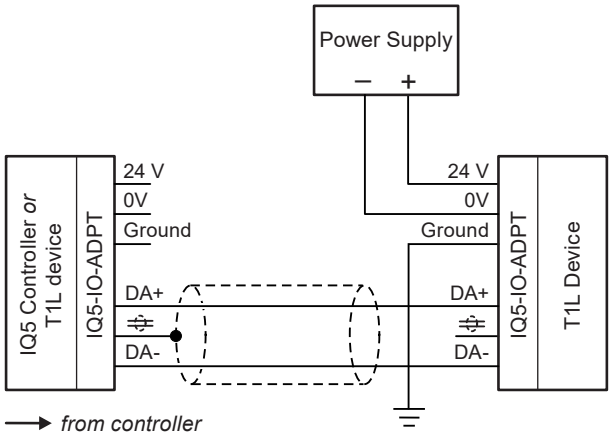


Additional Power Supplies
Important: *Not permitted for UL compliant installations.*

Where it is necessary to install an additional power supply along the T1L bus, the supply output must be isolated from earth (ground). The supply unit must also comply with the relevant EMC and safety standards.

Note: Trend offer a range of DIN rail mounted auxiliary power supplies that are suitable for this purpose.

The I/O wiring adapter (IQ5-IO-ADPT) is used to make the connection of external power supply units to the T1L bus as shown below:



Important: *The 24 Vdc connection from the previous T1L device must not be made. The 0 V connection must be made when an external supply is used and the 0 V line must be continuous for the entire length of the T1L bus.*

Earthing/Grounding Arrangements
It is important that correct earthing/grounding is provided for the controller and devices on the T1L bus.

The T1L bus ground is connected to earth/ground via the IQ5. T1L devices located within the same secondary enclosure are earthed/grounded via the T1L bus ground connection.

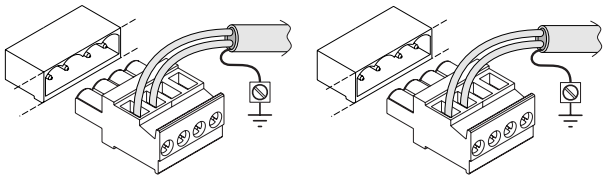
Where T1L devices are located in different secondary enclosures or where T1L bus cables exceed 1 m (39"), a local earth/ground connection must be provided.

All DIN rails must be earthed/grounded.

Current Loop Wiring

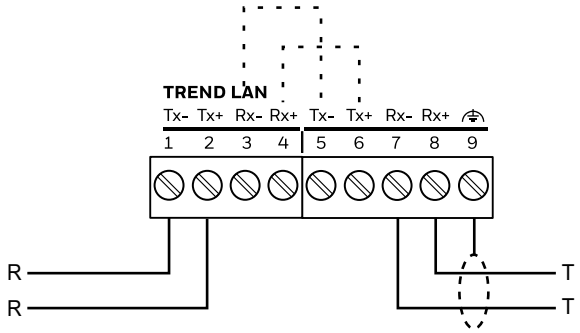
Connectors for the current loop network are located along the bottom edge of the adapter. These are two-part plugable screw terminal connectors which are supplied as standard with the adapter and available in packs for spares. Optional connectors with push-fit terminals are also available

Screw terminal plug Push-fit terminal plug



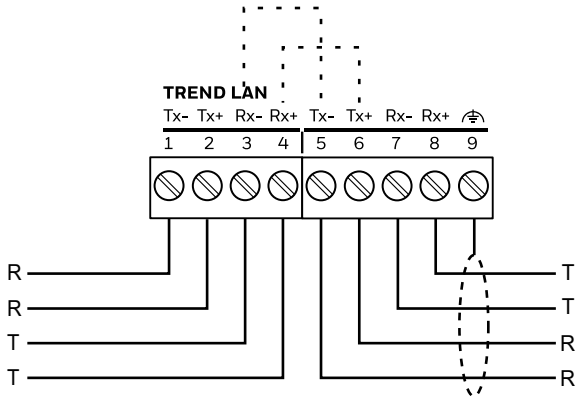
The IQ5-LAN-ADPT adapter may be used with either 2-wire or 4-wire current loop configurations.

2-wire Wiring Example



Note: When using a 2-wire network the current loop MUST wired in a loop.

4-wire Wiring Example



Network Bypass Relay: If the IQ5-LAN-ADPT loses power or connection to the IQ5 a set of bypass relays will close to maintain the integrity of the current loop network. If the relays close it will be recognised by a downstream device, and reported as a LAN Changed alarm.

Baud Rate: By default the IQ5-LAN-ADPT auto-detects the baud rate to use on the current loop. Where required, the rate can be set manually (1K2, 4K8, 9K6,19K2,38K4)..

Addressing

Each T1L device must be assigned a unique address between 1 and 284.

Note: If a mix of IQ5-LAN-ADPT (or other T1L devices) and IQ3/4 I/O modules is used, it is recommended that the IQ5-LAN-ADPT and T1L devices use address range 31 to 284, with 1 to 30 being reserved for IQ3/4 I/O modules.

The controller will automatically attempt to match each physical I/O module or T1L device with its corresponding strategy I/O module and set its address accordingly.

Addresses can be configured within the controller strategy, or manually changed using IQ®SET or the controller's web page interface. Refer to the IQ5 Configuration Manual (TE201486) for further details on addressing.

Indicators

Various indicators are provided to give user feedback on the operational status of the adapter:

Indicator	Colour	Function
	Green Yellow Red	Device status. Green indicates normal operation. Flashing green indicates firmware is downloading. Yellow indicates communication lost with controller. Red indicates address error. Flashing Green/Red/Yellow indicates factory default status.
	Green Yellow	Service status. Normally OFF.
L R T1L	Green Red	Status of the T1L bus connected to the left (L) or right (R) side of the adapter
Tx Rx	Yellow Red	Current loop network status.

Service Button

This is a multi-function button located on the front of the IQ5-LAN-ADPT and can be used to:

- assign an unaddressed IQ5-LAN-ADPT to a strategy module (or next available bus address if a strategy module does not exist),
- Identify the IQ5-LAN-ADPT' by flashing the T1L bus indicator, or
- perform a reset.

FIELD MAINTENANCE

The IQ5-LAN-ADPT 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.

DISPOSAL

COSHH (Control of Substances Hazardous to Health - UK Government Regulations 2002) ASSESSMENT FOR DISPOSAL OF IQ5-LAN-ADPT.

RECYCLING ♻.
All plastic and metal parts are recyclable. The printed circuit board may be sent to any PCB recovery contractor to recover some of the components for any metals such as gold and silver.

WEEE Directive:

At the end of their useful life the packaging, and product , and battery (if fitted) should be disposed of by a suitable recycling centre.

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

COMPATIBILITY

Controllers: IQ5 with V1.3 firmware or greater configured for compatibility mode.

INSTALLATION

The IQ5-LAN-ADPT is designed to be clipped on to a standard TS35 DIN rail or be screwed directly to a flat surface. It must be installed inside an enclosure rated to at least IP20 (or equivalent) or mounted outside normal reach (e.g. in a plenum). It is UL rated as ‘UL60730 listed open energy management equipment’. The installation procedure involves:

- Mounting the adapter in position
- Connecting to the T1L bus
- Connecting additional PSU (if required)
- Connecting current loop cables as required
- Downloading strategy to controller
- Checking operation

A full description of installing the IQ5-LAN-ADPT is given in the IQ5-LAN-ADPT Installation Instructions - Mounting (TG201511) and IQ5, IQ5-IO Installation Instructions - Configuring (TG201483).

ORDER CODES

IQ5-LAN-ADPT

IQ5-LAN-ADPT	IQ5 LAN adapter

ACCESSORIES

SCRW-TB-5-GRY-50	Spare 5-way Screw Terminal Plug Grey (pack of 50)
PUSH-TB-5-GRY-50	Spare 5-way Push-fit Terminal Plug Grey (pack of 50)
SCRW-TB-4-GRY-50	Spare 4-way Screw Terminal Plug Grey (pack of 50)
PUSH-TB-4-GRY-50	Spare 4-way Push-fit Terminal Plug Grey (pack of 50)

SPECIFICATION

ELECTRICAL

Supply Voltage	24 Vac/dc ±20%, derived from T1L bus on IQ5 controller or optional external isolated output power source.
Supply Current	300mA@ 24Vac 108mA@24Vdc Maximum current flow through IQ5-LAN-ADPT on T1L bus = 2 A.

T1L Bus

Transmission	10BASE-T1L (IEE802.3cg).
Compatibility	IQ5-IO modules, IQ5 Controller, IQ5-LAN-ADPT
Protocol	MQTT compatible.
Maximum T1L devices	64 - only 1 can be IQ5-LAN-ADPT
Bus Supply	As per main power input.
Data Cable	Screened twisted pair). (requires IQ5-10-ADPT wiring adapters)
Cable Length	See - 'Maximum T1L Bus Length' on page 5.

Current Loop LAN

Terminal Type	Conductor Size	Stripping Length	Maximum Torque
Screw	IEC: 0.2 to 2.5 mm^2 UL: 26 to 12 AWG	6-7 mm	0.5 Nm (4.5 lbf-in)
Push-fit	IEC: 0.2 to 2.5 mm^2 UL: 26 to 14 AWG	9 mm	n/a

Cable type / maximum cable length / baud rate:

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)	1000 m (1090 yds)			700 m (765 yds)	350 m (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 the current loop.

INDICATORS

General Status	
Device 'ring'	Multicolor LED
Service	Multicolor LED
TX	Multicolor LED
RX	Multicolor LED
T1L IO	Multicolor LED

MECHANICAL

Dimensions	74.5 x 131 x 60 mm (2.93 x 5.16 x 2.36").
Material (enclosure)	Flame Retardant Polycarbonate.
Weight	0.205 kg (0.45 lb).
Mounting (DIN Rail)	IEC/EN 60715 TH35x7.5 or TH35x15 (1.5 mm maximum thickness).

Connectors

T1L Bus	Integral spring contacts for connection between T1L devices. IQ5-IO-ADPT wiring adapter required for cable connection.
Current Loop	2 part connectors (5 mm pitch) with rising cage clamp screw terminals.
Cable size	0.2 to 2.5 mm^2 (24 to 12 AWG).

For UL compliance, cabled input power connections must be made using 18 AWG or larger wire rated at least 90°C (194°F).

ENVIRONMENTAL

This device is suitable for indoor use only.

Approvals and Certifications

- UL 60730-1, Standard for Automatic Electric Controls for Household and Similar Use, Part 1: General Requirements;
- UL 60730-2-9;
- CAN/CSA-E60730-1:13, Standard for Automatic Electrical Controls for Household and Similar Use, Part 1: General Requirements;
- CAN/CSA-E60730-2-9;
- CAN ICES-3 (B)/NMB-3(B);
- Complementary listing for UL916, CSA C22.2 No. 205;
- SASO-approved;
- CE-approved;
- FCC part 15B;

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Important: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Classification According to EN60730-1 and UL60730-1

Environmental conditions	Equipment intended for use in industrial environments.
Construction	Independently mounted electronic control unit with fixed wiring; panel-mounted on DIN rail.
Action	type 1.B.
Rated impulse voltage	330 V. Relay outputs (DO): 2500 Vac.
Pollution degree	2.
Protection against shock	Class 0 (without terminal covers); Class II (with terminal covers).
Software class	A.

Ambient Environmental Limits

Humidity	5 to 95%RH non-condensing.
Temperature	
Storage	-28.9 to +70°C (-20 to +158°F).
Operating	-25 to +60°C (-13 to +140°F).

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

Altitude	≤4000 m (13124 ft).
Pollution Degree	2 (only non-conducting pollution occurs).
Protection	IP20 if mounted in an enclosure rated at IP20 or equivalent.

Please send any comments about this or any other Trend technical publication to techpubs@trendcontrols.com

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