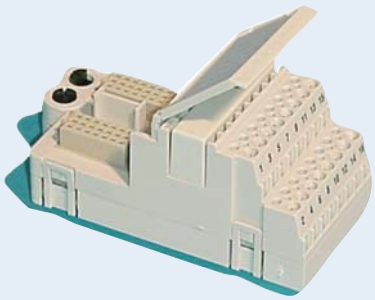
Field terminals - Screw clamp



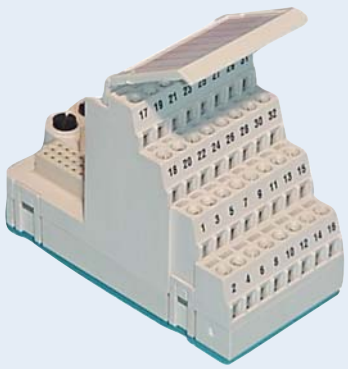


General

A field terminal is a replaceable unit for terminating the wiring from the field devices. Each I/O module requires its own field terminal and the correct type is recommended on the individual I/O module data sheet.

The field wiring is terminated on screw terminals that can take up to 2.5mm² wire. By wiring virtually directly to the I/O module there is no need for additional patching or terminations.

The field terminal attaches to the module carrier first; the I/O module is then mounted on it. A pair of multipin connectors link the field terminal to the I/O module.



Fusing & loop-disconnect

Field terminals are available that contain a replaceable fuse or a "loop-disconnect" link for each channel. Fuses have a 2A rating and, like the links, have a mechanical feature that allows them to be partially withdrawn. This provides a break in the field wiring loop which assists servicing and fault finding in the field.

Thermocouple modules

Thermocouple modules require specific field terminals. The thermocouple modules – 8105-TI-TC (4-channel) and 8205-TI-IS (8-channel IS) – each have their own specific field terminal containing a cold junction compensation sensor. The 8205-TI-IS can also accommodate a remote cold junction – if used, it occupies one of the eight available channels.

RTD modules

The RTD modules, 8106-TI-RT (4-channel) and 8206-TI-IS (8-channel) use field terminals that are specifically designed to accommodate 2, 3 and 4-wire connections. The field terminals incorporate diodes that become forward biased if a channel becomes open circuited - ensuring that other channels are not affected by this situation. Similarly, an RTD can be removed from, or not fitted to, a channel without affecting the operation. The points where the energisation current enters and leaves the field terminals are shown by the symbols I+ and I–, respectively, on the appropriate diagrams.

IS field terminals

Particular field terminals are required for modules with built-in IS interfaces, and field terminals are coloured blue to mark this difference.

Tagging strip

A tagging strip is supplied with each terminal (with the exception of the mass termination assemblies). A card is provided for the user to mark the channel assignments for the field wiring and this is protected by a clear plastic panel.

Mechanical key coding

Field terminals are an important link in the field connection process and a mechanical keying technique is used to prevent incompatible modules from being connected accidentally to a field circuit. This avoids inadvertent damage to I/O modules and field wiring, and maintains safety in hazardous area applications. It is implemented in two complementary ways.

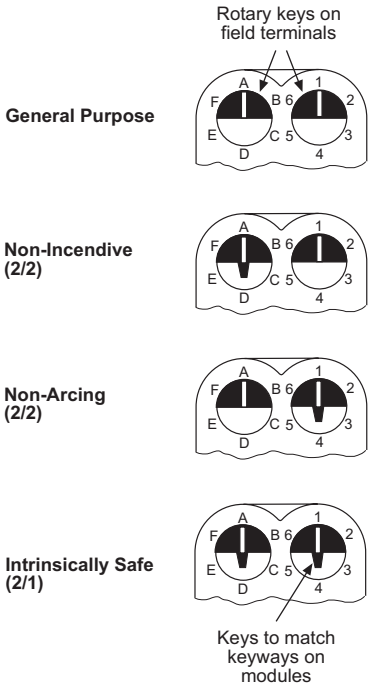
Rotatable keys

A pair of mechanically rotatable keys form part of the field terminal (see diagram below) and these are set by the user during installation to match the fixed key-code (e.g. A 1) of the I/O module that will be fitted onto it. A module with a different key-code cannot then accidentally be fitted on that field terminal.

Keyways

The four types of field terminal: general purpose, non-incendive, non-arcing and intrinsically safe, have a further pattern of keys that make each type unique; modules of a corresponding type have a matching keyway. It is therefore impossible to implement a potentially hazardous combination of module and field terminal.

The four types of field terminal can be identified from the diagram below.



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Field terminals - Mass Termination Assemblies



- **IDC connectors - save wiring time**
- **Link to high-current output relays**
- **Quick-connect cable adapters**

Mass Termination Assembly

Mass Termination Assemblies (MTAs) offer the user a number of different ways to terminate field wiring. Two versions are available, 16-pin (8618-FT-MT) and 44-pin (8619-FT-MT), both of which provide IDC multi-pin connectors instead of screw terminals.

Some standard 1, 2 and 3 metre cables, are available from MTL to assist the user; others can be made to order; or users can put together their own custom cables to suit their specific wiring termination requirements.

The Mass Termination Assemblies are particularly useful when legacy systems are being replaced and connections must be made to existing field wiring, junction boxes and marshalling cabinets.

Mass Termination Assemblies can also be used to interface to signal conditioning units. For example, with devices that require a drive current above the 1A capability of the 8115-DO-DC discrete output module, the 8618-FT-MT can be used to connect to high-current relays*.

Switch/Proximity Detector Wiring Panel

The 8650-FT-PX provides a simple method to terminate up to 32 two-wire field devices. It is DIN-rail mountable and links to the 8619-FT-MT field terminal using a pair of ready terminated, IDC connector cables. For maximum convenience, there is also provision for cable screens to be terminated and grounded.

Mechanical key coding

This feature is available on these terminals. See the previous page for details.

*See Technical Support Note **TSN112**: *"Using the 8115-DO-DC with high-current loads"*.

Available from: *www.mtl-inst.com*



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Field terminals



- *range of field terminals*
- *standard, fused, loop-disconnect & MTAs*
- *blue moulding for IS field wiring*
- *THC and RTD versions available*
- *tag strip on all screw-clamp field terminals*

SPECIFICATION

See also System Specification

HAZARDOUS AREA APPROVALS

Location of field terminal...Zone 2, IIC, T4 hazardous area or Class 1, Div 2, Groups A–D, T4 hazardous location

Location of I/O field wiring

For 860x-FT-xx and 861x-FT-xx...Zone 2, IIC, T4 hazardous .....area or Class 1, Div 2, Groups A–D, T4 hazardous location

For 862x-FT-IS .....Zone 0, IIC hazardous area or Div 1, Groups A–D hazardous location

ELECTRICAL

Rated voltage .....250V ac

Maximum current per I/O channel.....3A

Fuse rating (where fitted).....2A

Conductor size .....0.14–2.5mm^2

MECHANICAL

Material.....Modified Poly-Phenylene Oxide

Dimensions - approx (including tagging strip)

8617-FT-NI and 8623-FT-IS.....42 (w) x 88 (d) x 61 (h) mm

Others.....42(w) x 88 (d) x 39.5 (h) mm

Weights (typical - including tagging strip)

Unfused type (except THC & RTD) 78g

Fused type (including fuses) 86g

THC type.....70g

RTD type 106g

8617-FT-NI and 8623-FT-IS (16-channel) 106g

See also datasheets for 8618-FT-MT and 8619-FT-MT

PART NUMBERS

GENERAL PURPOSE FIELD WIRING

Field terminal description	Part number
Standard	8602-FT-ST
Fused	8604-FT-FU
THC	8605-FT-TC
RTD	8606-FT-RT
4-wire transmitter	8615-FT-4W
16/30-channel DI	8617-FT-NI
16-pin Mass Termination Assembly	8618-FT-MT
44-pin Mass Termination Assembly	8619-FT-MT

ZONE 2/DIV2 FIELD WIRING APPLICATIONS

Field terminal description	Part number
THC	8605-FT-TC
RTD	8606-FT-RT
Non-incendive*	8601-FT-NI
Non-incendive, fused*	8603-FT-FU
Non-arcing, standard*	8610-FT-NA
Non-arcing, fused*	8611-FT-FU
4-wire transmitter	8615-FT-4W
16/30-channel DI	8617-FT-NI
16-pin Mass Termination Assembly	8618-FT-MT
44-pin Mass Termination Assembly	8619-FT-MT

ZONE 1, 0/DIV 1 (IS) FIELD WIRING APPLICATIONS

Field terminal description	Part number
IS, standard	8621-FT-IS
IS, loop-disconnect	8622-FT-IS
IS, 16-channel DI	8623-FT-IS
IS, 8-channel DI, loop-disconnect	8624-FT-IS
IS, THC	8625-FT-IS
IS, RTD	8626-FT-IS

ADDITIONAL COMPONENTS

Description	Part Number
Switch/Prox. detector wiring panel	8650-FT-PX
2A Fuse pack (10 in pack)	8401-FU-2A
Loop-disconnect links (10 in pack)	8405-LK-ZE

**Refer to 2/2 I/O module data sheets for recommended non-incendive or non-arcing field terminal type in Zone 2 and Division 2 applications.*

Connection diagrams

Identify terminal type in the table below, then see named diagram for connections.

Terminal type	Diagram No.
8601-FT-NI	1
8602-FT-ST	1
8603-FT-FU	1
8604-FT-FU	1
8605-FT-TC	2
8606-FT-RT (2-wire)	3
8606-FT-RT (3-wire)	4
8606-FT-RT (4-wire)	5
8610-FT-NA	1
8611-FT-FU	1
8615-FT-4W	1
8617-FT-NI	6 or 6a†
8618-FT-MT	see datasheet
8619-FT-MT	see datasheet
8621-FT-IS	1 or 7*
8622-FT-IS	1 or 7*
8623-FT-IS	6
8624-FT-IS	1
8625-FT-IS	8
8626-FT-IS (2 wire)	9
8626-FT-IS (3 wire)	10
8626-FT-IS (4 wire)	11
8650-FT-PX	see datasheet

† Wire as per diagram 6a only when used with 8125-DI-DC or 8127-DI-SE modules.

* Wire as per diagram 7 only when used with 8215-DO-IS module.

Diagram 1

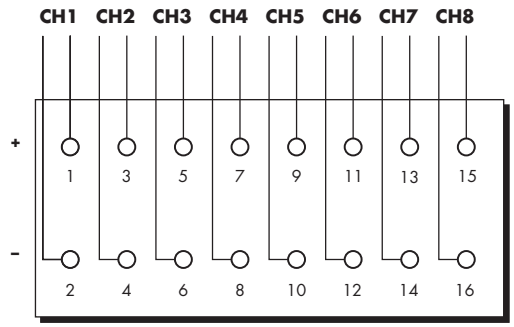


Diagram 2

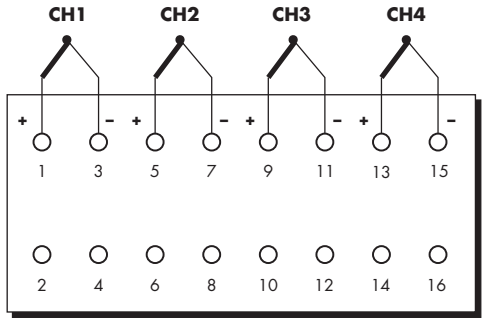


Diagram 3

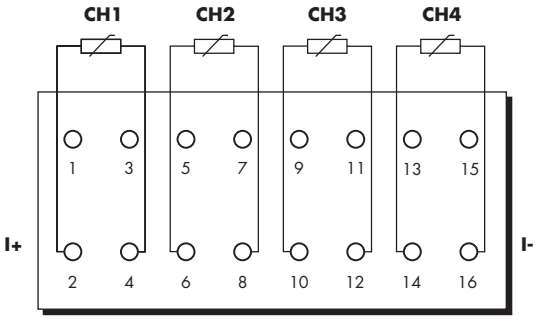


Diagram 4

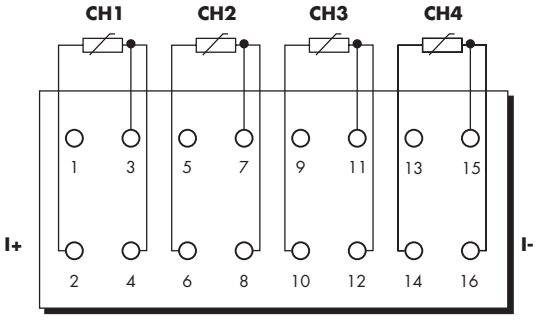
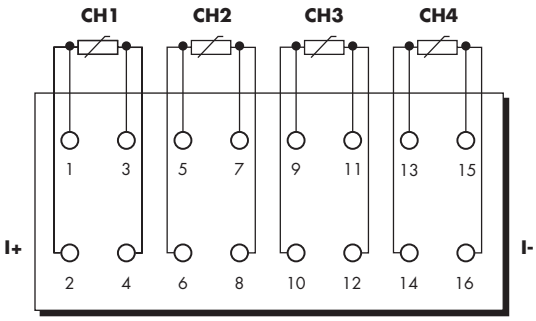


Diagram 5



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Connection diagrams

Diagram 6

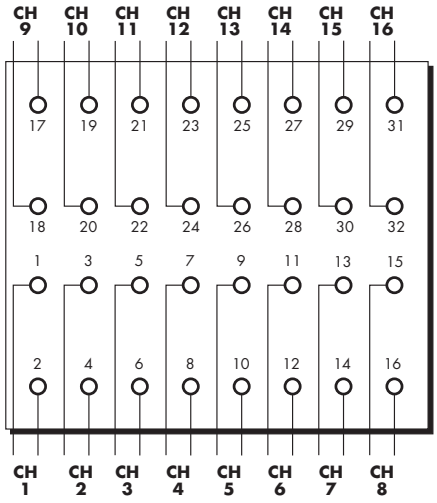


Diagram 6a

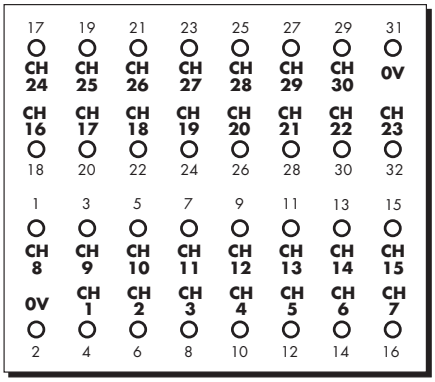


Diagram 7

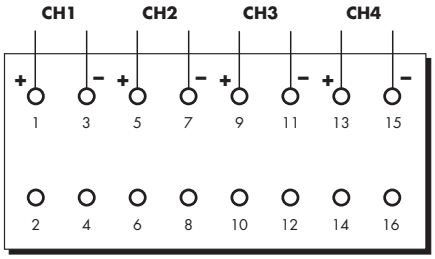


Diagram 8

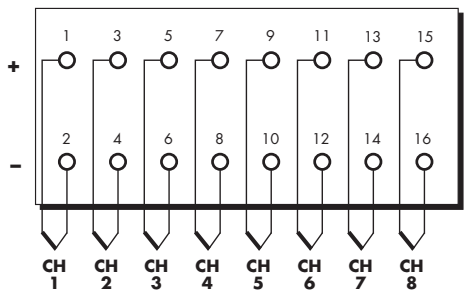


Diagram 9

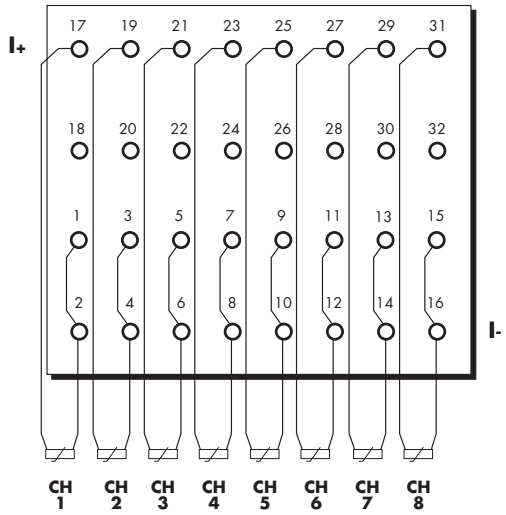


Diagram 10

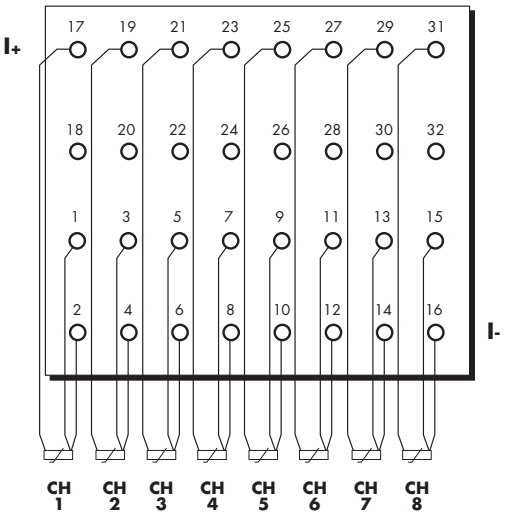
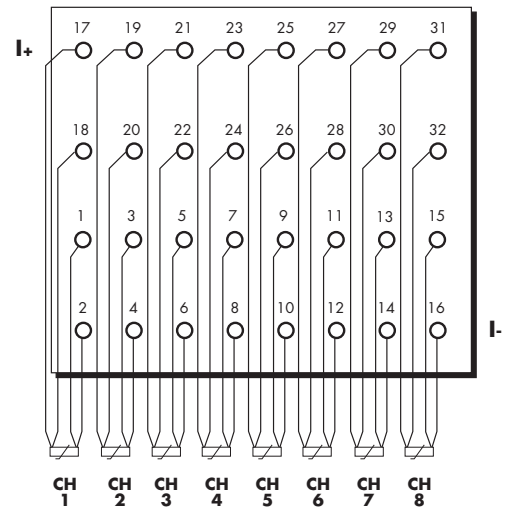


Diagram 11

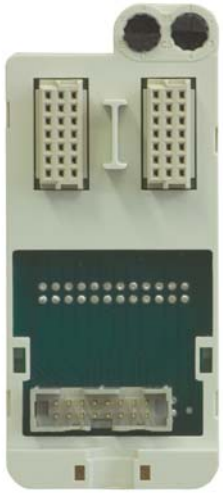


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16-pin mass termination assembly

8618-FT-MT

- *16-pin IDC connector termination*
- *IDC alternative for most screw terminal types*
- *use with 8115-DO-DC for high-current relay adapters*
- *provides a choice of field wiring terminations*
- *clip-on protective cover*



SPECIFICATION

See also System Specification

HAZARDOUS AREA APPROVALS

Field terminal location .....Zone 2, IIC, T4 hazardous area or Class 1, Div 2, Groups A–D, T4 hazardous location

I/O field wiring location....Zone 2, IIC, T4 hazardous area or Class 1, Div 2, Groups A–D, T4 hazardous location

ELECTRICAL

Rated voltage .....50V AC

Maximum current per I/O channel.....0.75A

MECHANICAL

Material.....Modified Poly-Phenylene Oxide

Dimensions - approx.....42(w) x 95(d) x 42*(h) mm

Weight.....44g

* with protective cover fitted

CABLE OPTIONS

16-way cables, terminated with 16-pin IDC connectors at each end, are available for the 8618-FT-MT.

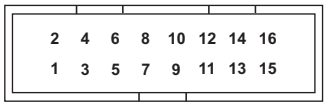
Description	Part number
1 metre cable	8081-FC-10
2 metre cable	8082-FC-20
3 metre cable	8083-FC-30

*See also Technical Support Note **TSN112** for details of using this product with high-current relays.*

Notes

1. *This field terminal cannot be used with the following I/O module types:*
   8105-TI-TC, 8106-TI-RT — *Special functionality required e.g. CJC*
   8121-DI-DC, 8122-DI-DC, 8125-DI-DC, 8127-DI-SE — *Insufficient terminals - use 8619-FT-MT*
2. *AC modules cannot be used with this field terminal because of the 50V AC voltage rating.*

IDC CONNECTOR PINOUTS



When used with the following I/O module types:

8101-HI-TX 8102-HO-IP 8103-AI-TX 8104-AO-IP
8109-DI-DC 8110-DI-DC *8115-DO-DC* 8117-DO-DC
8119-VI-05 **use this pinout:**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
–	+	–	+	–	+	–	+	–	+	–	+	–	+	–	+
Ch1		**Ch2**		**Ch3**		**Ch4**		**Ch5**		**Ch6**		**Ch7**		**Ch8**	

When used with I/O module type: 8123-PI-QU

Pin	Function
1	Voltage i/p - Ch 1
2	Current i/p - Ch 1
3	Common - Ch 1
4	NAMUR i/p - Ch 1
5	Power supply +ve - Ch 2
6	Power supply +ve - Ch 1
7	Voltage i/p - Ch 2
8	Current i/p - Ch 2
9	Common - Ch 2
10	NAMUR i/p - Ch 2
11	Common - Ch 1
12	NAMUR gate control - Ch 1
13	o/p –ve - Ch 1
14	o/p +ve - Ch 1
15	o/p –ve - Ch 2
16	o/p +ve - Ch 2

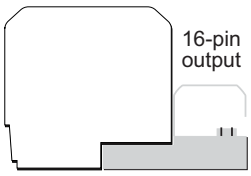
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16-pin mass termination assembly

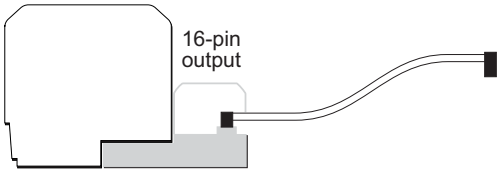
8618-FT-MT

USAGE OPTIONS

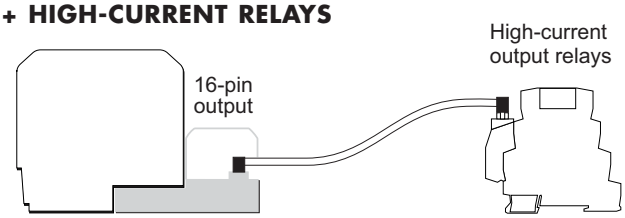
PIN OUT



+ CABLE



+ 16- TO 14-WAY CABLE
+ HIGH-CURRENT RELAYS



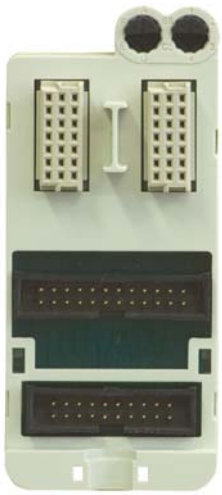
For further details on choosing and using output relays see MTL Technical Support Note TSN112 *"Using the 8115-DO-DC with high-current loads"*

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44-pin mass termination assembly

8619-FT-MT

- *32 channel connection*
- *use with 8121/8122 and 8125/8127*
- *use with 8650-FT-PX field terminal*
- *provides a choice of field wiring terminations*
- *clip-on protective cover*



SPECIFICATION

See also System Specification

HAZARDOUS AREA APPROVALS

Field terminal location .....Zone 2, IIC, T4 hazardous area or Class 1, Div 2, Groups A–D, T4 hazardous location

I/O field wiring location....Zone 2, IIC, T4 hazardous area or Class 1, Div 2, Groups A–D, T4 hazardous location

ELECTRICAL

Rated voltage .....50V AC

Maximum current per I/O channel.....0.75A

MECHANICAL

Material.....Modified Poly-Phenylene Oxide

Dimensions - approx.....42(w) x 95(d) x 42*(h) mm

Weight.....48g

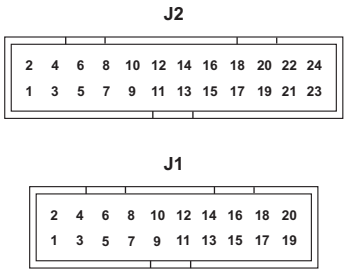
* with protective cover fitted

CABLE OPTIONS

20- + 24-way cable sets, terminated with IDC connectors at each end, are available for the 8619-FT-MT. These could be used, for example, to connect the 8619-FT-MT to the 8650-FT-PX wiring panel.

Description	Part number
1 metre length set	8085-FC-10
2 metre length set	8086-FC-20
3 metre length set	8087-FC-30

IDC CONNECTOR PINOUTS



J1 Pin	8125/ 8127	8121/ 8122
1	Ch 1	Ch 2–
2	0V	Ch 1–
3	Ch 3	Ch 4–
4	Ch 2	Ch 3–
5	Ch 5	Ch 6–
6	Ch 4	Ch 5–
7	Ch 7	Ch 8–
8	Ch 6	Ch 7–
9	Ch 17	Ch 10–
10	Ch 16	Ch 9–
11	Ch 19	Ch 12–
12	Ch 18	Ch 11–
13	Ch 21	Ch 14–
14	Ch 20	Ch 13–
15	Ch 23	Ch 16–
16	Ch 22	Ch 15–
17	0V	n/c
18	Ch 27	n/c
19	Ch 28	n/c
20	Ch 32	n/c

J2 Pin	8125/ 8127	8121/ 8122
1	Ch 8	Ch 1+
2	Ch 9	Ch 2+
3	Ch 10	Ch 3+
4	Ch 11	Ch 4+
5	Ch 12	Ch 5+
6	Ch 13	Ch 6+
7	Ch 14	Ch 7+
8	Ch 15	Ch 8+
9	0V	n/c
10	Ch 26	Ch 9+
11	Ch 24	Ch 10+
12	Ch 25	Ch 11+
13	Ch 27	Ch 12+
14	Ch 28	Ch 13+
15	Ch 29	Ch 14+
16	Ch 30	Ch 15+
17	Ch 31	n/c
18	Ch 32	n/c
19	0V	n/c
20	0V	n/c
21	0V	n/c
22	0V	Ch 16+
23	0V	n/c
24	n/c	n/c

Notes:

1. *0V pins are all linked only when the module is fitted.*
2. *Channels 27, 28 and 32 are common to both J1 and J2*

n/c = no connection

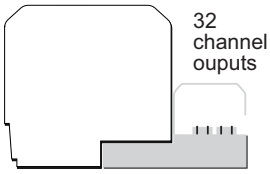
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E-mail: enquiry@mtl-inst.com **Web site: www.mtl-inst.com**

44-pin mass termination assembly

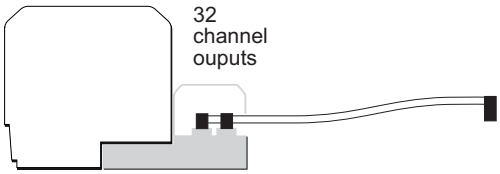
8619-FT-MT

USAGE OPTIONS

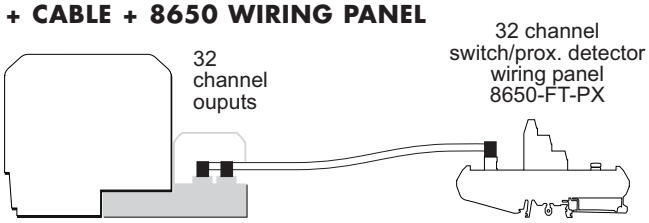
PIN OUT



+ CABLE



+ CABLE + 8650 WIRING PANEL



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Switch/proximity detector wiring panel

8650-FT-PX

- simplified 32-channel field wiring connection
- multipin connectors to 8619-FT-MT field terminal
- screw terminals for field wiring
- DIN-rail mounting



SPECIFICATION

See also System Specification

HAZARDOUS AREA APPROVALS

Location .....Zone 2, IIC, T4 hazardous area or Class 1, Div 2, Groups A–D, T4 hazardous location

ELECTRICAL

System connectors .....20–pin & 24-pin
Field terminals .....rising cage-clamp screw terminals
Conductor size .....0.14–2.5 mm²
Rated voltage .....50V AC
Maximum current per I/O channel 0.75A
Ground terminals .....2 x M4

MECHANICAL

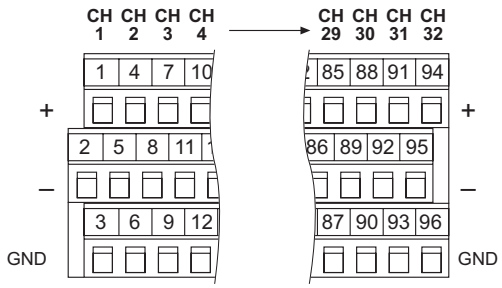
DIN rail mounting .....'T' section to EN 50022
.....'G' section to EN 50035
Weight 390g

CABLE OPTIONS

20- + 24-way cable sets to connect with the 8619-FT-MT

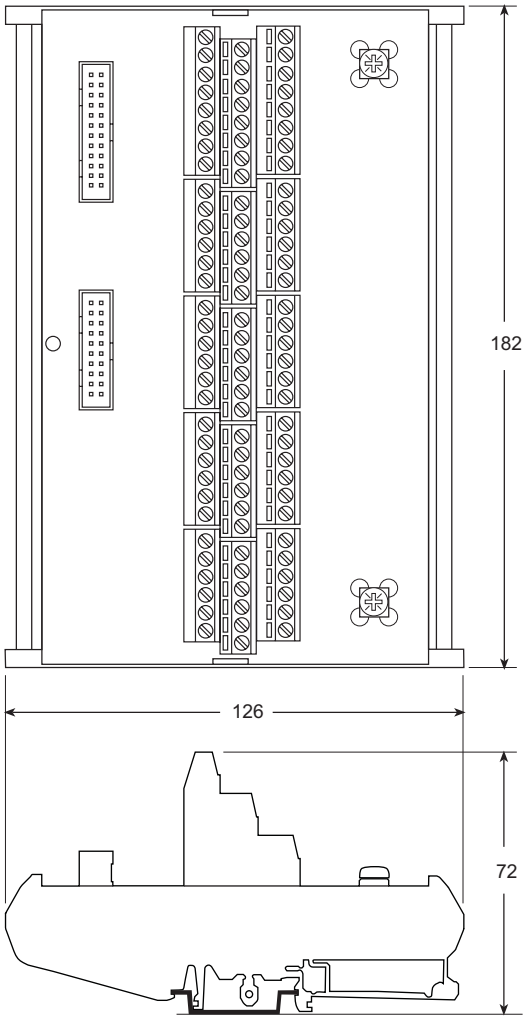
1 metre length set 8085-FC-10
2 metre length set 8086-FC-20
3 metre length set 8087-FC-30

TERMINAL ASSIGNMENTS



DIMENSIONS

in mm



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Send the full part number, quantity, module marking and destination.

About this document

Pages 1-10 are the original MTL field-terminal technical publication.
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Verify the mating I/O module, wiring diagram and site requirements before use.

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