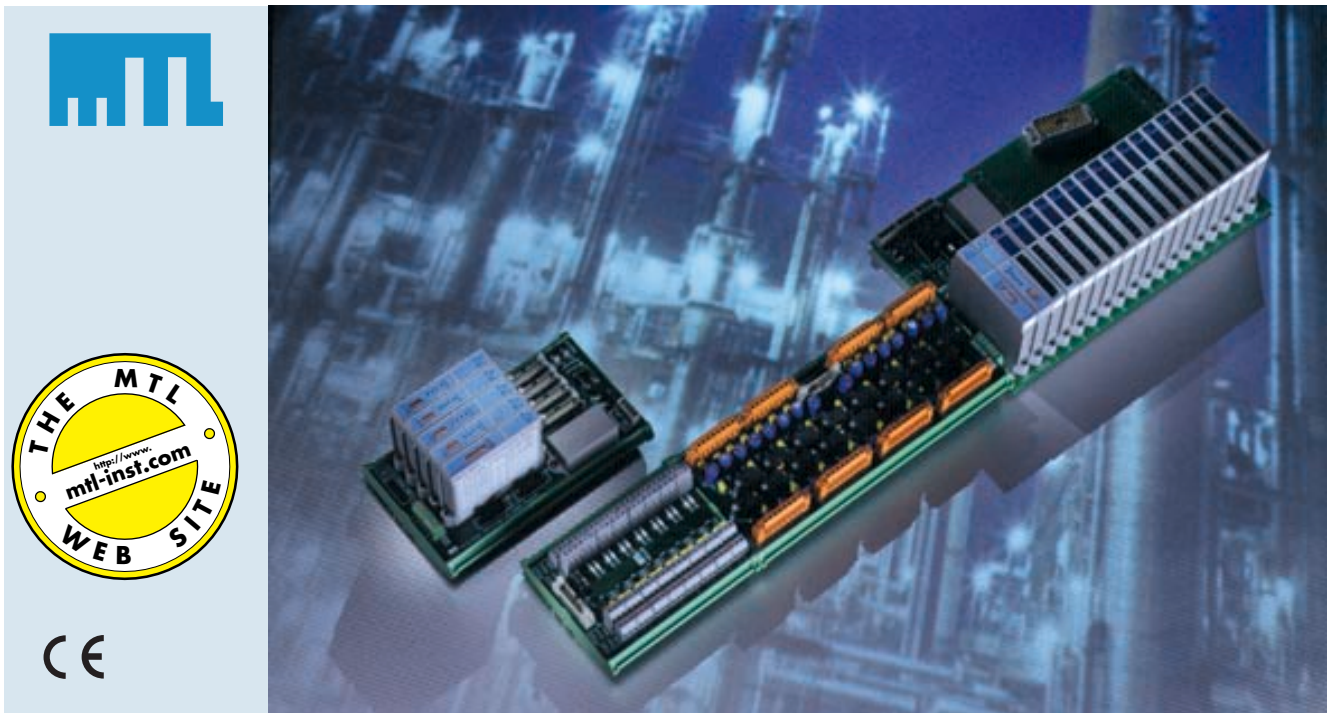


Communicate with, configure
and monitor HART smart devices
in safe and hazardous areas

MTL4840 SERIES

HART® connection system



- ◆ Connect up to 7936 loops to a single PC
- ◆ Easily configured scan list
- ◆ LED indication of loop being scanned
- ◆ Easily scalable modular system
- ◆ 16-channel modularity matches I/O cards
- ◆ Compact, ideal for new projects and upgrades
- ◆ Option with direct connection to I/O cables
- ◆ Class 1 Division 2 non-incendive field loop option
- ◆ Channel to channel isolation option
- ◆ HART signal conditioning
- ◆ HART filters <0.1V drop

The MTL4840 HART connection system provides simple connection to field instrument loops using MTL's backplanes and connection units with the following benefits:

- ◆ Connect up to 7936 loops to a single PC communications port
- ◆ Easily configured scan list
- ◆ LED indication of the loop being scanned

The MTL4841 communications module and MTL4842 interface module provide the HART data interface between smart devices in the field and HART instrument management software run on a PC.

Backplanes and connection units

Between one and sixteen, 16-channel field connection units or IS backplanes are

connected to a single MTL4841 HART communication module node. The 16-channel modularity provides a compact, easily configurable and expandable HART system.

Using a standard RS485 serial link, up to 31 MTL4841 modules and associated backplanes can be connected to a single workstation—providing the potential to communicate with up to 7936 individual HART devices; 16 loops x 16 MTL4842 modules x 31 MTL4841 modules.

Additionally, the MTL4840 system supports the multidrop connection of HART devices on a single loop, expanding the possible maximum capacity of a system even more. Where safety parameters for individual loops may affect intrinsically safe applications, MTL will provide further information.

A versatile range of general purpose and IS termination boards is available so that the optimum solution can be selected for an application. For maximum flexibility the BPHM64 HART backplane locates up to one MTL4841 communications module and up to four MTL4842 interface modules. A wide choice of general purpose HART connection units and IS backplanes is also available, each fitted with an interface cable for connection to the BPHM64 HART backplane. Alternatively, the MTL4841 and MTL4842 modules can be located on HMU16 termination boards for general purpose applications or on BPMH16/BPMH16U/BPSH16/BPSH16-32 backplanes for IS isolator requirements.

The DIN-rail mounting HCU16 HART connection unit connects to 16 general

purpose field instruments, and maintains channel to channel isolation. Its resistor conditioning options are compatible with all I/O cards. It allows pass-through connections for transmitter power supply, input signal and common.

The HCU16AO HART connection unit is also a DIN-rail mounting unit which connects to 16 general purpose field instruments. This unit includes HART filters for I/O cards which are incompatible with HART signals and channel-to-channel isolation is also provided.

BPMH16/BPMH16U/BPSH16/BPSH16-32 backplanes connect either 16 or 32 IS field instruments, with the MTL4840 HART modules plugged into the backplane. A wide range of adapter cards is available for the BPMH16U for easy integration to I/O cards and users have a choice of a DIN-rail mounting option.

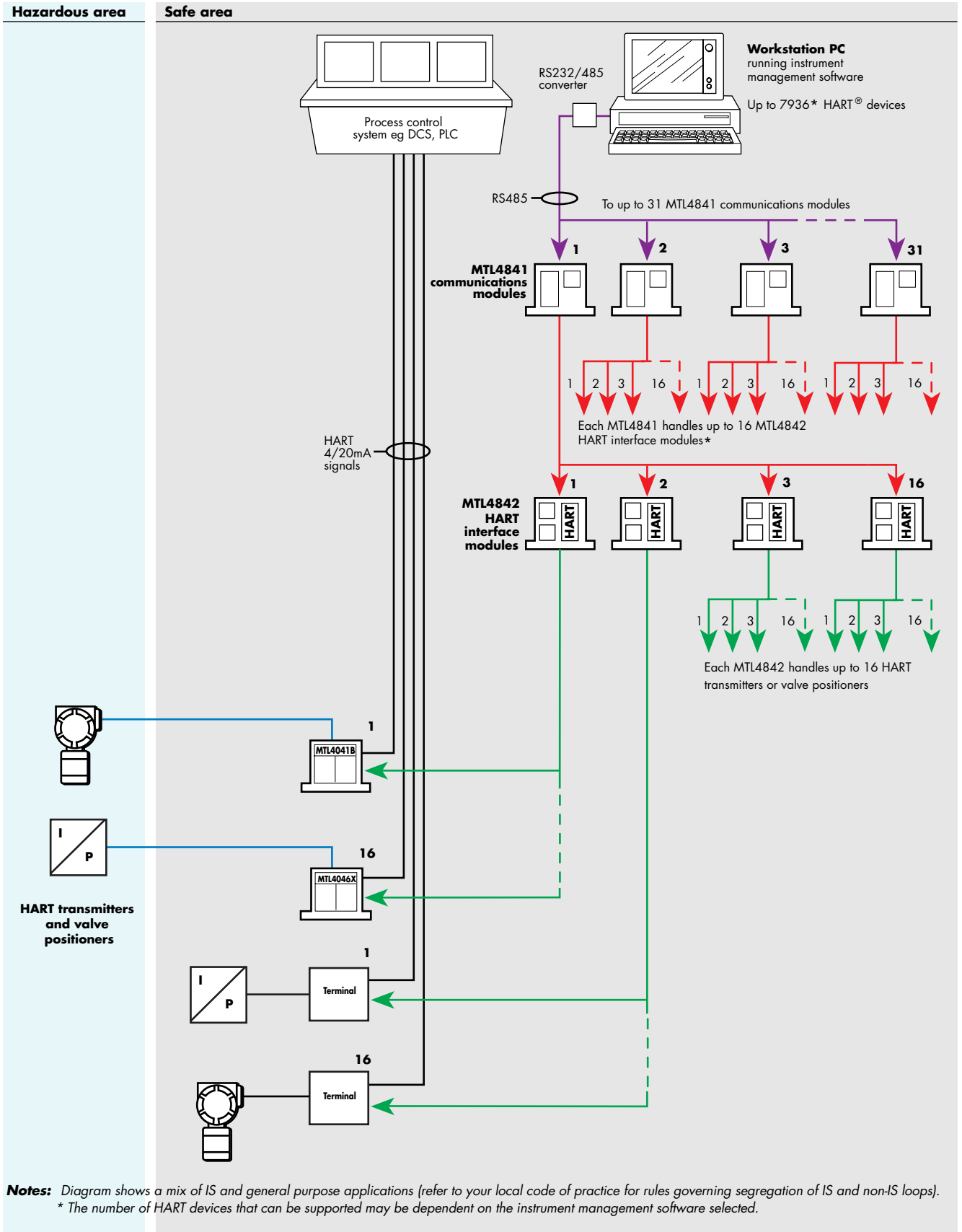
A number of other features may be included in the connection units and backplanes, as required. These are: channel to channel isolation; resistors where required for HART signal conditioning; and HART filters for use in systems where the analogue output signal either interferes with HART data or may become unstable with the presence of the HART signal.

Customised backplanes and connection units

A wide range of customised backplanes and connection units is available to provide direct connection from DCS I/O cables, replacing the standard termination board.

HART® is a registered trademark of the HART Communication Foundation

MTL4840 SERIES SYSTEM DIAGRAM



MTL4840 SERIES MODULES SPECIFICATIONS

MTL4841 COMMUNICATIONS MODULE

Host system interface

RS485 2-wire multidrop
Up to 31 MTL4841 modules can be connected to one host station
Unit address: switch-selectable on top of module

Isolation

RS485 output isolated from backplane power supply

Serial communication parameters

RS485
Baud rate: 1.2, 9.6, 19.2, 38.4kbaud, switch-selectable on top of module

RS485 highway length: up to 1km

MTL system interface

Links with up to 16 MTL4842 HART® interface modules via interface bus on backplane/ribbon cable

LED indicators

Green: one provided for power and status indication

Power requirements

Powered from backplane

Power consumption

<1.0W

Instrument management software supported

See 'Instrument management software'

MTL4842 HART INTERFACE MODULE

MTL systems interface

Links up to 16 loops via backplanes
Receives multiplexer control signals via interface bus from MTL4841 and selects one channel for communication

Unit address

Switch selectable on top of module

Interface bus

Total length of interface bus between module 1 and module 16 must not exceed 4m

LED indicators

Green: one provided for power
Amber: one to indicate unit is selected by MTL4841
Red: four to identify loop address

Power requirements

Powered from backplane

Power consumption

<0.1W

MTL4000 SERIES MODULES

(See 'MTL4000 Series' for detailed specifications and circuit diagrams)

MTL4041A: Current repeater, 4/20mA, passive input for smart transmitters

MTL4041B: Repeater power supply, 4/20mA, for 2- or 3-wire transmitters

MTL4041P: High power repeater power supply, 4/20mA, for 2- or 3-wire transmitters

MTL4044: Repeater power supply, 4/20mA, two channel, for 2 wire transmitters

MTL4046/C: Isolating driver, for HART valve positioners

MTL4046P: High power isolating driver for HART valve positioners

COMMON SPECIFICATION

(applies to all MTL4840 and 4000 Series modules)

Location of units

Safe area

Long-term drift

No recalibration necessary

Ambient temperature limits

-20 to +60°C continuous working
-40 to +80°C storage

Humidity

5 to 95% RH (non-condensing)

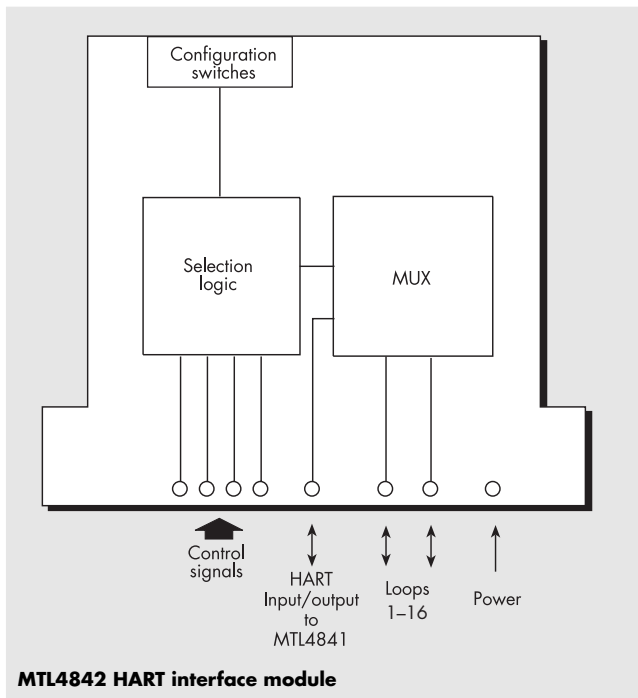
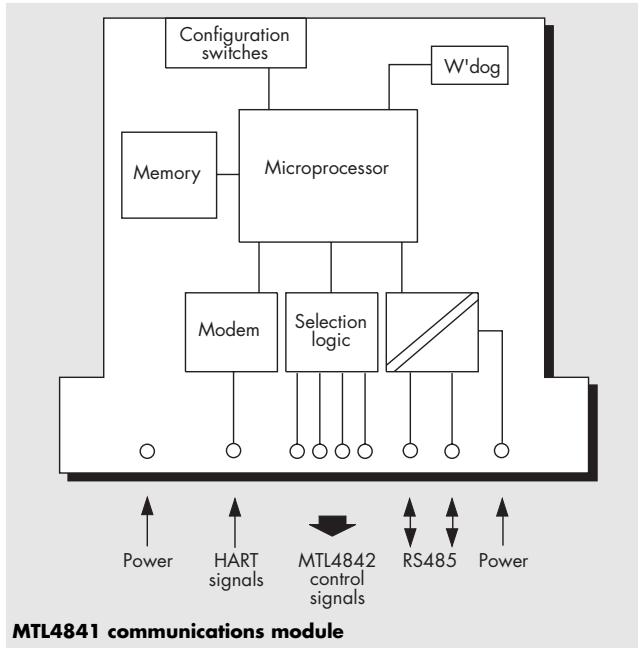
Mounting

On MTL or custom backplanes which, in turn, can be surface or DIN-rail mounted.

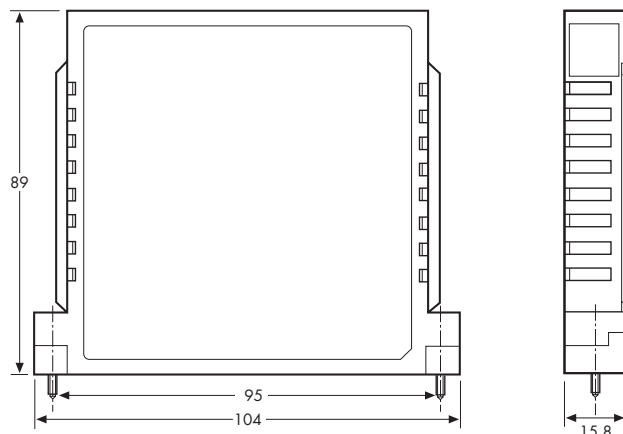
Mounting pitch 16mm

Weight

100g approximately



DIMENSIONS (mm)



MTL4840 SERIES BACKPLANES

SPECIFICATIONS

GENERAL PURPOSE VERSIONS

BPHM64 BACKPLANE

Capacity

- 1 x MTL4841 communications module
- 4 x MTL4842 HART® interface modules
- NB: An MTL4841 module is needed for only one in every sixteen MTL4842 modules

Power requirements, Vs

- 21 to 35V dc through plug-in connectors

Maximum power requirements

- 1.35W when equipped with:-
- 1 x MTL4841 communications module
- 4 x MTL4842 HART interface modules

HART interface connectors

- 4 x DIN41651 20-way ribbon cables
- (16 HART signal connections + 4 common returns on each cable. Connections to HART signals via screw terminal interface or custom backplane. Contact MTL for details.)

Mounting

- Supplied fitted with DIN-rail (T- or G- section) carrier

Interface bus connector

- 10-way ribbon socket

RS485 port

- 2.5mm² screw terminals

Weight (excl. modules and accessories)

- 296g approx.

HCU16 HART CONNECTION UNIT

Capacity

- 16 channels

Accuracy (HCU16-P250 only)

- 250Ω ±0.05%

Connectors

- 2.5mm² screw clamp terminals
- 3 terminals per channel
- 20-way flat cable (to BPHM64)

Weight

- 383g

Isolation

- Channel to channel 50V dc

HCU16AO HART CONNECTION UNIT WITH FILTERS

Capacity

- 16 channels

Series impedance

- dc < 2Ω
- HART signal > 240Ω

Connectors

- 2.5mm² removable screw clamp terminals
- 2 terminals per channel in groups of 4 channels
- 20-way flat cable (to BPHM64)

Weight

- 768g

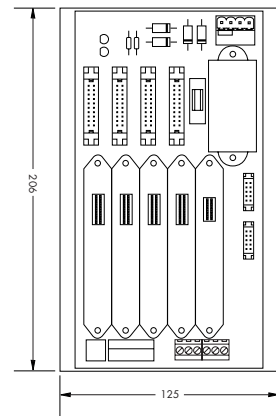
Isolation

- Channel to channel 50V dc

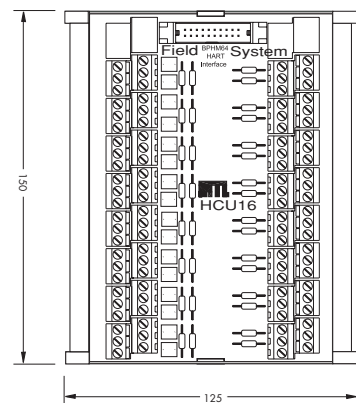
CUSTOMISED CONNECTION UNITS

MTL offers a range of general purpose and IS interfaces providing direct connection with control system I/O cables as well as HART connectivity. For IS applications, MTL's universal backplanes, with a customised adapter card, give the user a compatible system connector complete with HART interface. BPMH16U (see overleaf), BPM16U and BPM32 (see 'System Integration' section) backplanes may be used for IS signals. For general purpose signals, a range of custom HART interface termination units are available for most DCS and PLC I/O cards. These replace the existing DCS termination units, saving space and allowing easy upgrading. Please contact MTL for details.

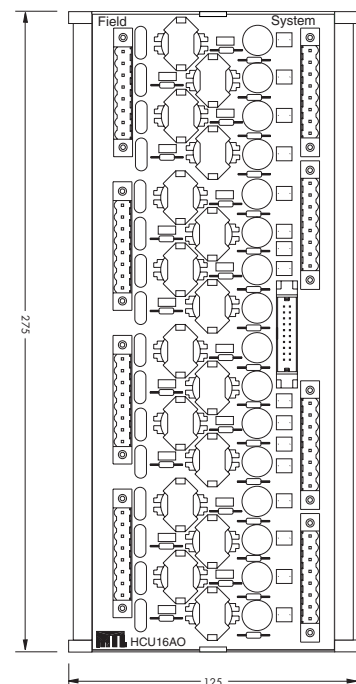
DIMENSIONS (mm)



BPHM64 backplane



HCU16 connection unit



HCU16AO connection unit

See also 'System integration' section

MTL4840 SERIES BACKPLANES

SPECIFICATIONS

INTRINSIC SAFETY VERSIONS

BPMH16/BPMH16U/BPSH16/BPSH16-32 BACKPLANES

Capacity

16 x MTL4041A, MTL4041B, MTL4041P, MTL4046, MTL4046C, MTL4046P isolators (except BPSH16-32)

16 x MTL4044 (BPSH16-32 only)

1 x MTL4841 communications module

1 x MTL4842 HART® interface module (2 x MTL4842 on BPSH16-32)

NB: An MTL4841 module is needed for only one in every sixteen MTL4842 modules

Power requirements, Vs

21 to 35V dc through plug-in connectors

Maximum power requirements

1.35A (1.55A BPSH16-32)

Safe-area connectors

BPMH16: Elco 8016 38-pin male connector

BPMH16U: To customer's requirements

BPSH16: 2.5mm² screw terminals (2 terminals/module)

BPSH16-32: 2.5mm² screw terminals (4 terminals/module)

RS485 port

2.5mm² screw terminals

Accuracy

BPSH16-32R: 250Ω ±0.05% conditioning resistor

Weight (excl. modules and accessories)

350g approx.

ACCESSORIES

(for BPMH16/BPMH16U/BPSH16/BPSH16-32 backplanes)

ERK18 Earth rail kit

TSK18 Tagging strip kit

VMPH16 Vertical mounting plate

SMS01 Surface mounting kit for backplanes, pack of 40

DMK01 DIN-rail mounting kit (T- or G-section) for VMPH16 mounting plate, pack of 40

ELC38 Elco 8016, 38-way cable plug kit

FUS02 Fuse kit, protects MTL4841/4842, pack of 10

FUS16 Fuse kit, protects module positions 1 to 16, pack of 10

(for MTL4000)

CCH01 Hazardous-area crimp connector

SCC01 Hazardous-area screw-clamp connector

CRC01 Large crimps, pack of 100

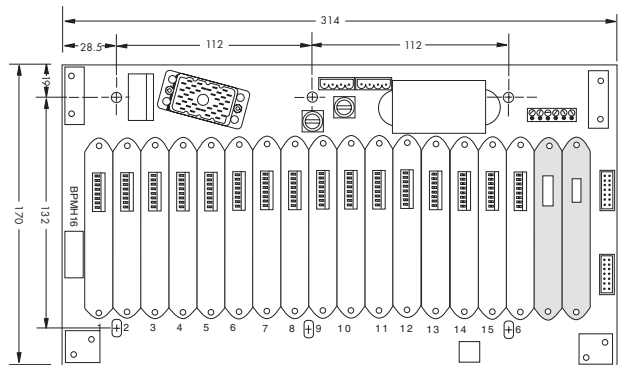
CRC02 Small crimps, pack of 100

CRT01 Crimp tool for CRC01

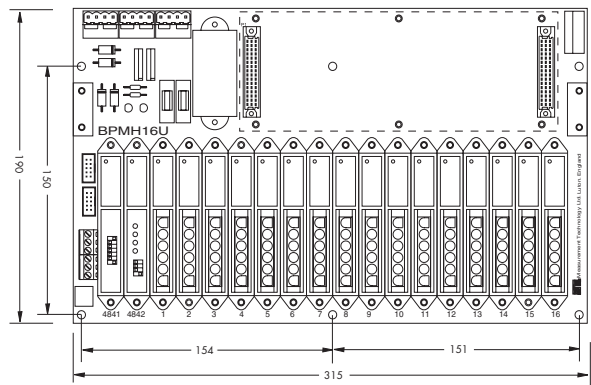
CRT02 Crimp tool for CRC02

CRR01 Crimp removal tool for CRC01 and CRC02

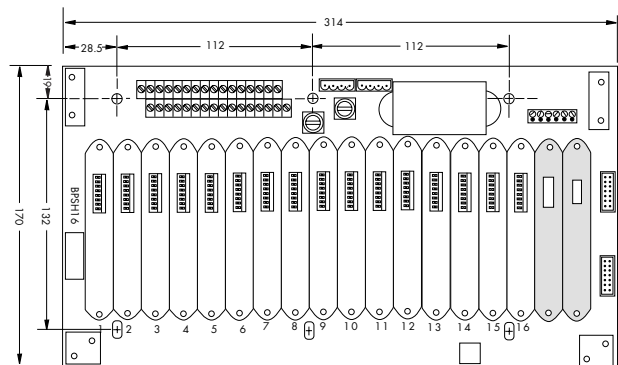
DIMENSIONS (mm)



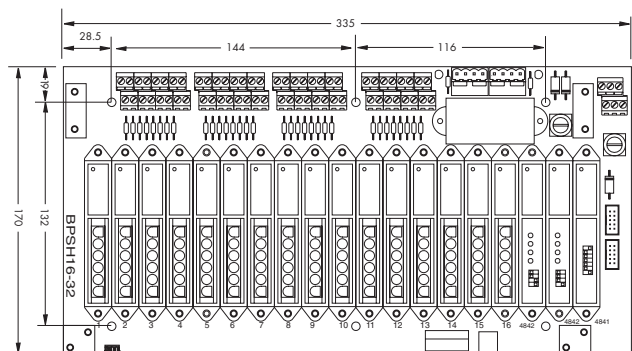
BPMH16 backplane



BPMH16U backplane



BPSH16 backplane



BPSH16-32 backplane