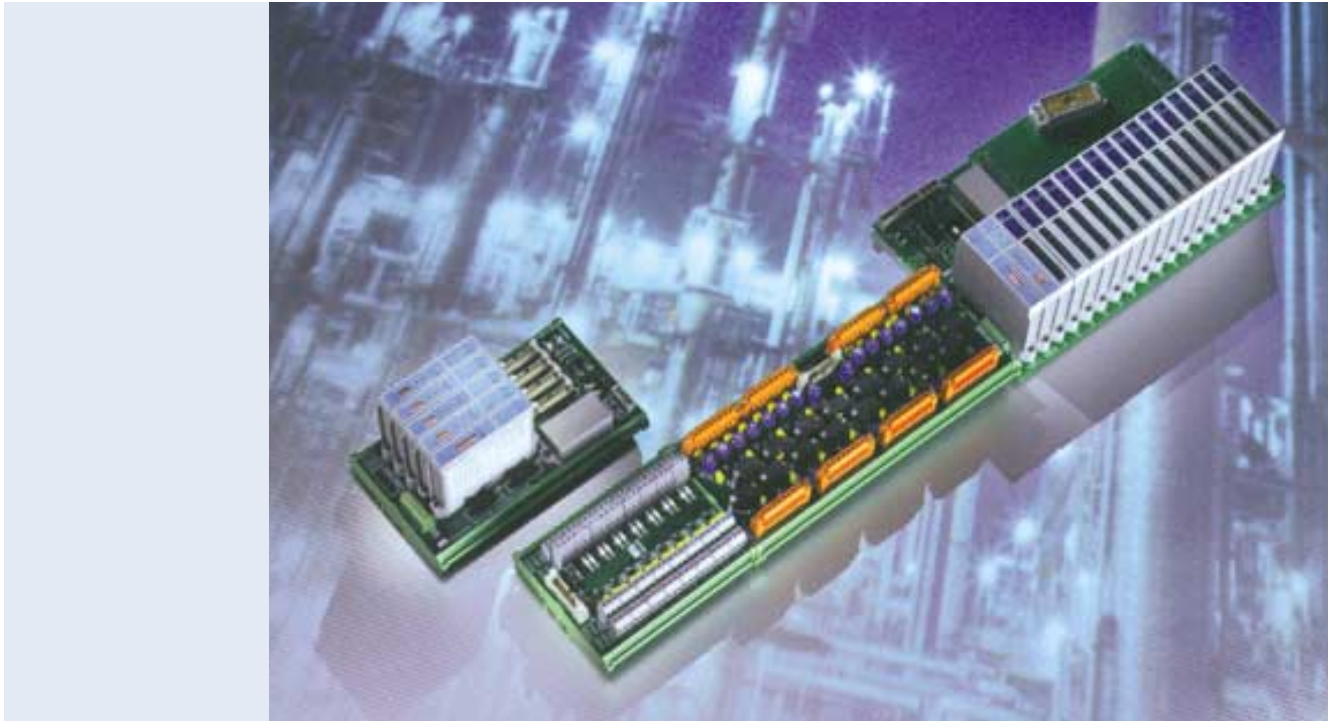


Communicate with, configure
monitor HART® smart devices in
safe and hazardous areas

MTL4840 SERIES

HART® connection system



- ◆ **SIL3 rating**
- ◆ **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 and HCU16AOHART® connection units connect to 16 general purpose field instruments while

maintaining 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 unit includes HART® filters for I/O cards which are incompatible with HART® signals.

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.

MTL HART multiplexers have been assessed by BASEEFA as a safety related sub-system and certified to IEC61508. See the SR Series Interfaces section of this catalogue.

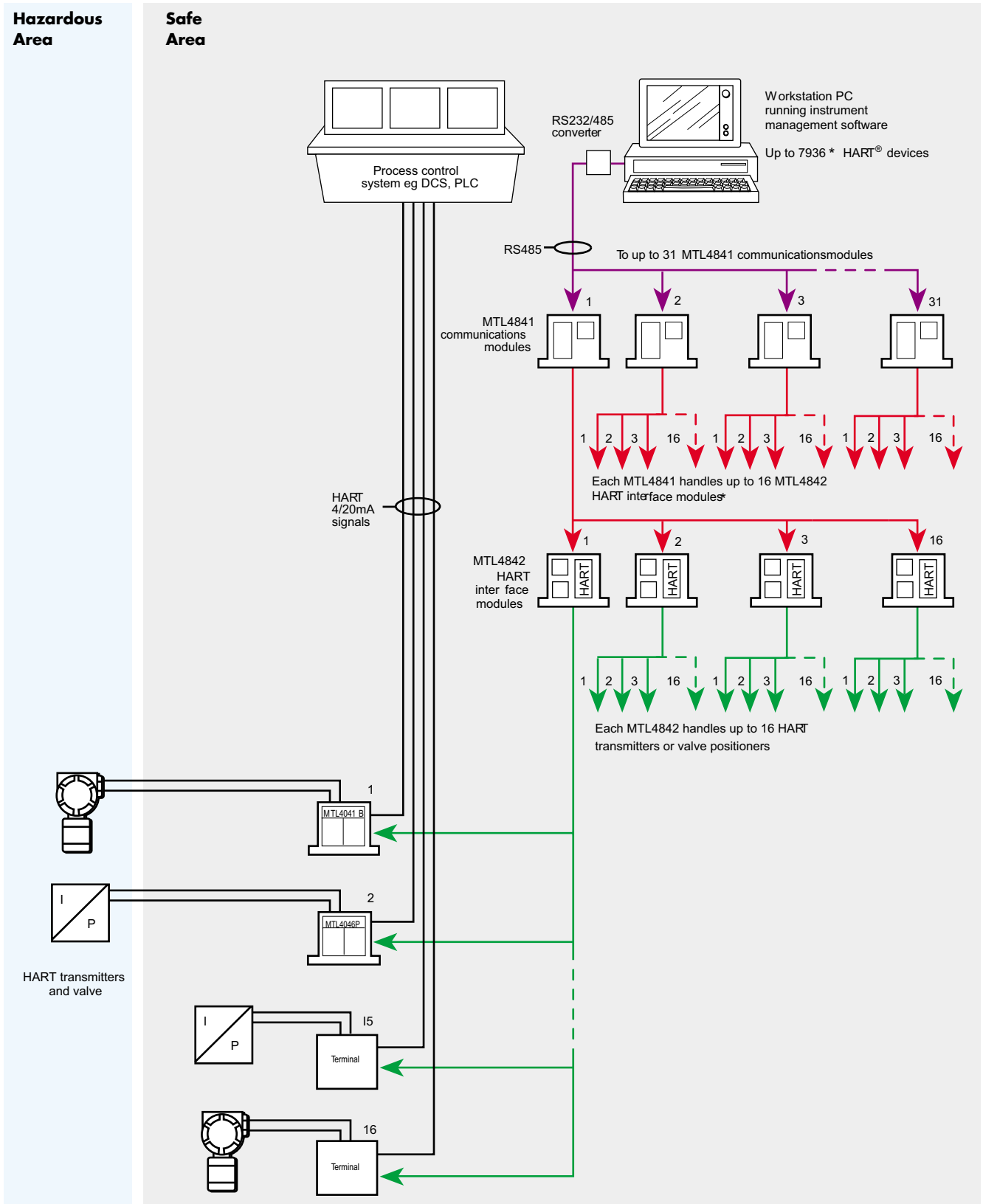


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MTL4840 SERIES SYSTEM DIAGRAM



MTL4840 SERIES MODULE 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 (MTL4840 can be located in Div2)

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)

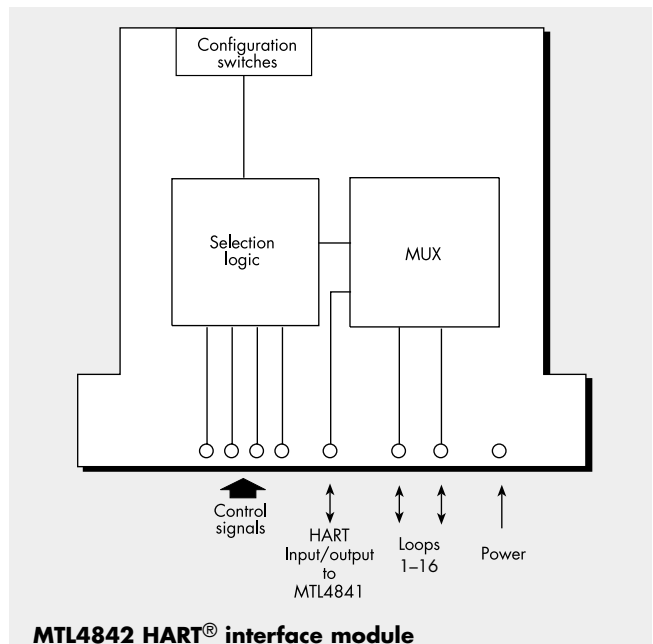
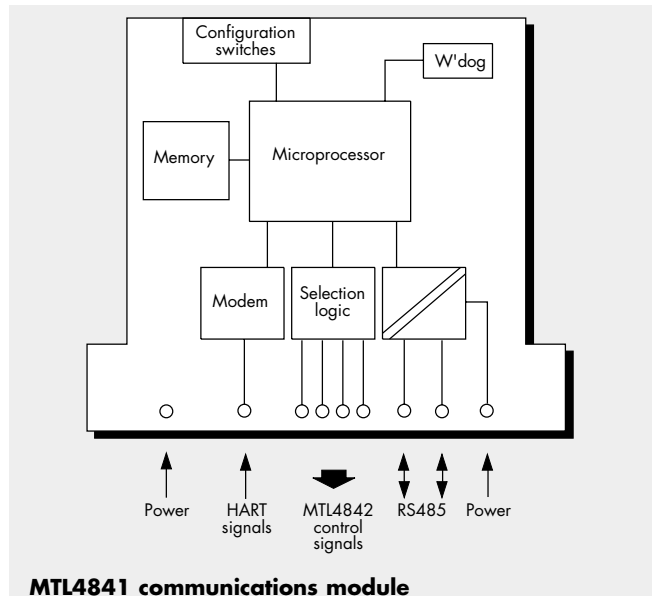
Mounting

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

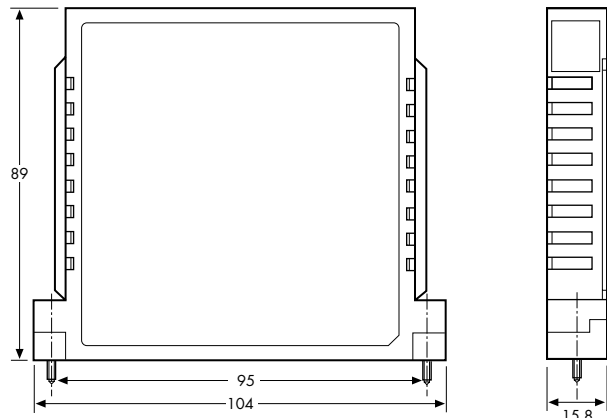
Mounting pitch 16mm

Weight

100g approximately



DIMENSIONS (mm)



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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

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.)

Weight (excl. modules and accessories)

296g approx.

HMU16/32

Capacity

- 1 x MTL4841 communications module
- 2 x MTL4842 interface modules

Power requirements, Vs

- 21 to 35V dc through plug in connectors

Maximum power requirements

- 1.2W when fully populated

Interface bus connectors

- 10-way ribbon socket

RS485 port

- 2.5mm² screw terminals

Mounting

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

Weight (excl. modules and accessories)

330g

COMMON SPECIFICATION BPHM64 & HMU16

Power requirements, Vs

- 21 to 35V dc through plug-in connectors

Mounting

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

Interface bus connector

- 10-way ribbon socket

RS485 port

- 2.5mm² screw terminals

HCU16 HART® CONNECTION UNIT

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

HCU16AO HART® CONNECTION UNIT WITH FILTERS

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

COMMON SPECIFICATION BPHM64 & HMU16

Capacity

- 16 channels

Mounting

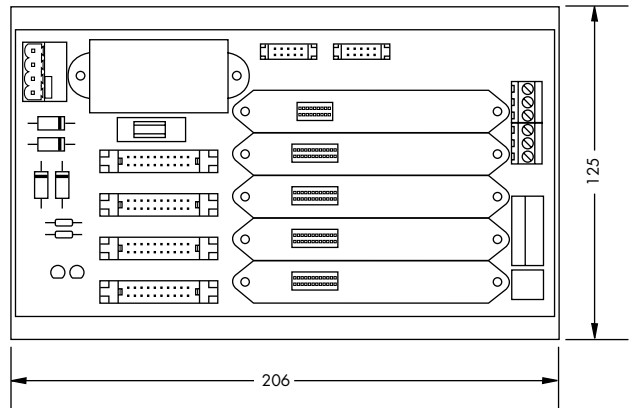
- Supplied fitted with DIN-rail (T-or G-section)

Isolation

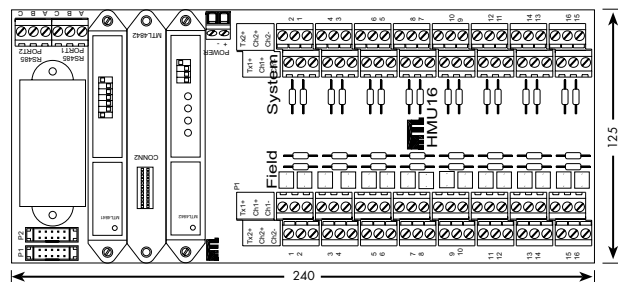
- Channel to channel 50V dc

See also 'System integration'
section

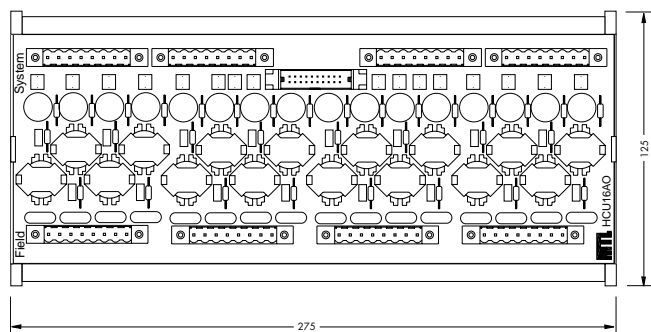
DIMENSIONS (mm)



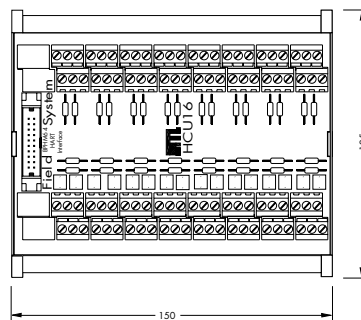
BPHM64



HMU16AI



HCU16AO



HCU16



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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

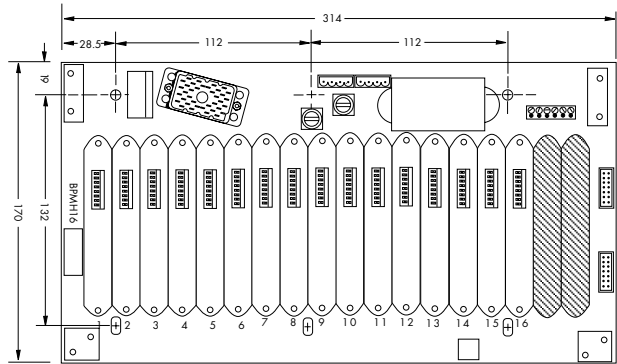
(for MTL4000)

- 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

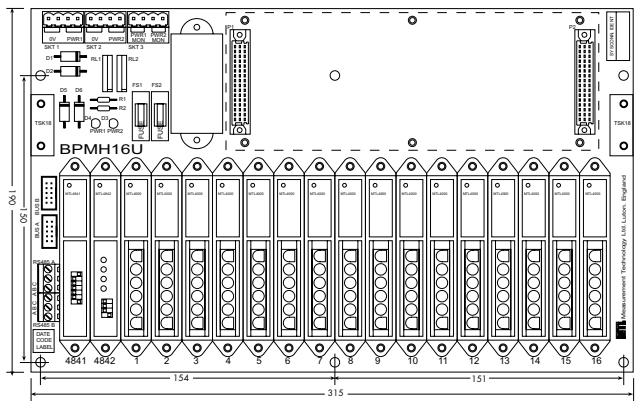
CUSTOMISED CONNECTION UNITS

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.

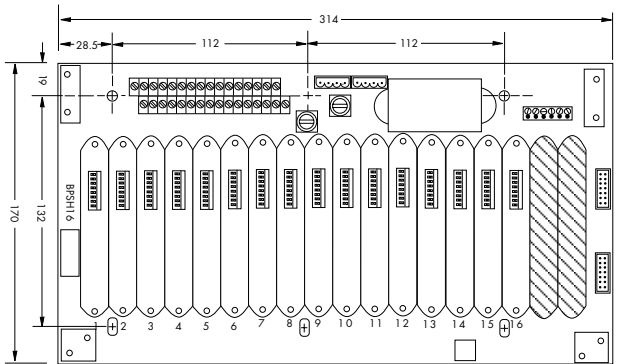
DIMENSIONS (mm)



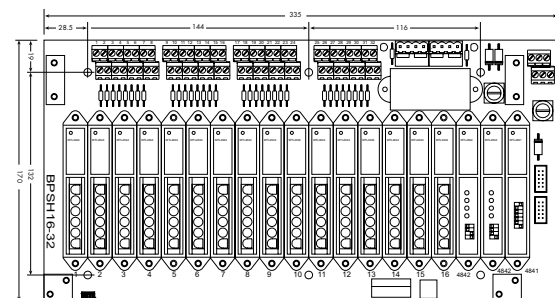
BPMH16 backplane



BPMH16U backplane



BPSH16 backplane



BPSH16-32 backplane

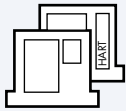


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MTL4840 SERIES ORDERING INFORMATION



MTL4840 Series modules

MTL4841	HART communications module pre-configured for Cornerstone™ protocol
MTL4841-AMS	HART communications module pre-configured for Asset Management Solutions software
MTL4842	HART interface module communicates with up to 16 loops

THE COMPLETE SYSTEM

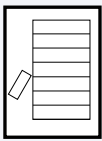
The following components form a complete system:

MTL4840 HART® connection system – provides simple connection to field instruments, using general purpose and IS termination boards.

Personal computer – running instrument management software and linked to MTL4841 HART communications modules by:

Converter – connecting the computer's RS232 port to the MTL4840 Series' backplane RS485 connector.

Instrument management software



General purpose connection units

BPHM64	64 ch HART backplane
HCU16	HART connection unit
HCU16-P250	HART connection unit
HCU16-S200	HART connection unit
HCU16-S150	HART connection unit
HCU16AO	16 ch HART connection unit
HMU16	16 ch HART communication unit

HART interface connector
 No parallel resistor, 0Ω link fitted in series
 250Ω parallel resistor, 0Ω link fitted in series
 No parallel resistor, 200Ω resistor fitted in series
 No parallel resistor, 150Ω resistor fitted in series
 With HART filters

MTL4000 backplanes

BPMH16	16 ch backplane
BPSH16	16 ch backplane
BPSH16-32	32 ch HART backplane
BPMH16U	16 ch HART backplane

Safe-area multiway connector
 Safe-area screw-clamp connector

Requires backplane adapter card (call MTL for options)

Backplane accessories

ERK18	Earth rail kit
TSK18	Tagging strip kit
ELC38	38-way Elco connector
FUS02	Fuse kit, pack of 10
FUS16	Fuse kit, pack of 10
VMPH16	Backplane mounting plate
DMK01	DIN-rail mounting kit
SMS01	Surface mounting kit

For BPMH16 and BPSH16 backplanes
 For BPMH16 and BPSH16 backplanes
 For BPMH16 safe-area connection
 Protects MTL4841/4842
 Protects backplane module positions 1 to 16
 For DIN-rail and non-metallic surface mounting (BPMH16 and BPSH16 only)
 Pack of 40 - 4 required for each backplane
 Pack of 40 - 4 required for each backplane

Isolating interface modules and accessories

MTL4041A	Current repeater
MTL4041B	Repeater power supply
MTL4041P	High power repeater power supply
MTL4044	Repeater power supply
MTL4046	Isolating driver
MTL4046C	Isolating driver
MTL4046P	High power isolating driver
CCH01	Crimp connector header
CRC01	Large crimps
CRC02	Small crimps
SCC01	Screw-clamp connector
MPL01	Module position label, blank

4/20mA, passive input, for smart transmitters
 4/20mA, for 2- or 3-wire transmitters
 4/20mA, for 2- or 3-wire transmitters
 2ch, 4/20mA, smart, for 2-wire transmitters
 For HART valve positioners
 For HART valve positioners
 For HART valve positioners

Pack of 100

Pack of 100

Pack of 50

Literature

INM4840	MTL4840 instruction manual
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APPROVALS

Country	US
Authority	FM
Standard	Class 3600, 3611, 3810 Class 1, Div 2, Gps ABCD
Product No.	Certificate No.
MTL4841	3009149
MTL4842	3009149
HCU16	3009149
BPMH64	3009149



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