MTL4850 and MTL4854 HART® Multiplexers

- **MTL4850 designed for use with SIL3 loops (non interfering)**
- **MTL4854 designed for use in partial-stroke test valve positioner applications**
- **Connect over 2000 loops on one RS485 network**
- **Auto baud rate detection**
- **LED indication for fault diagnosis**
- **Isolated Power Supply**
- **Firmware upgradeable**
- **Mount directly to a range of customised connection units**

The MTL4850 HART multiplexer provides a simple interface between smart devices in the field, control/safety systems and HART® instrument management software running on a PC.

The system is based on 32-channel modularity to provide a compact, easily configurable and expandable system. Using a standard RS485 serial link, up to 2016 individual HART devices can be connected to a single network.

For the optimum solution, the modules mount directly to either a range of generic or customised connection units/backplanes.

The MTL4850 is certified for the use with safety related sub-systems to IEC 61508, and is the first choice of HART multiplexer for these applications. It can be connected to signal loops that are part of safety instrumented functions up to SIL3.

With the fixed modularity of 32 channels, the speed of scanning field devices and responsiveness to PC software requests is optimised when compared to master/slave configurations.

The MTL4854 mounts on the same range of backplane as the MTL4850 but includes four HART modems that enable simultaneous communications with connected field devices to be carried out.
The primary application for this is to enable monitoring of other channels to continue while one channel is being used for valve positioner diagnostics.

Connectivity to HART Configuration and Instrument Management Software

The online access to the information contained within HART devices allows users to diagnose field device troubles before they lead to costly problems. Software can capture and use diagnostic data from HART field instruments via the MTL HART connection hardware. This allows users to realise the full potential of their field devices to optimise plant assets, which results in significant operations improvement and direct maintenance savings.

IMS products provide essential configuration, calibration, monitoring and maintenance history functions for conventional analogue (4-20 mA) and HART protocol compatible smart process instruments and field devices. They deliver powerful tools to meet the need for standardised instrument maintenance procedures and record keeping mandated by some quality standards and regulatory bodies.

The benefits of utilising these powerful software packages online include:

- Reduced commissioning time and costs
- Reduced maintenance costs
- Reduced documentation
- Reduced process downtime

The MTL4850/54 offers connectivity to a comprehensive range of FDT based software packages via the comms Device Type Manager (DTM). The DTM can be downloaded from www.mtl-inst.com. Other software packages work with the MTL4850/54 through custom software drivers or by the inclusion of the device description (DD) file for the MTL multiplexers.

HART® is a registered trademark of the HART Communication Foundation

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The given data is only intended as a product description and should not be regarded as a legal warranty of properties or guarantee. In the interest of further technical developments, we reserve the right to make design changes.

SPECIFICATION

Number of channels
32
Channel transmitter type
HART rev 5 – 7
Channel interface
2 connections to each channel field loop (64 total)
Host system interface
RS485 2-wire multidrop
(up to 63 MTL4850 modules can be connected to one host
RS485 baud rate
38400, 19200, 9600, 1200 baud - (auto-detected)
Address selection
8-bit interface, up to 64 addresses
Alarm output (Open Collector - Referenced to 0V)
V_{max} = 35V, I_{max} = 5mA, P_{max} = 100mW

ISOLATION

Channel-to-channel isolation
50V dc
Field loop isolation
50V dc
Module is coupled to loops via capacitor in each connection leg (i.e. 2 capacitors per channel)
RS485 interface isolation (Between module and interface)
25V dc
Alarm output isolation (Between module and output)
50V dc
PSU isolation (Between module and PSU input)
50V dc

POWER

Supply voltage
19V to 35V dc
Currrent consumption

MTL4850	MTL4854
60mA at 24V ±10%	42mA at 24V ±10%

Power dissipation

MTL4850	MTL4854
<1.6W at 24V ±10%	<1.1W at 24V ±10%

PSU protection
Reversed polarity protected

ENVIRONMENTAL

Temperature range
Operating: –40°C to +70°C
Non-operating: –40°C to +85°C
Relative humidity
5% to 95% - non-condensing

MECHANICAL

Dimensions
See drawing
Weight

MTL4850	MTL4854
125 gm	100 gm

Compatible FDT Frames include:-

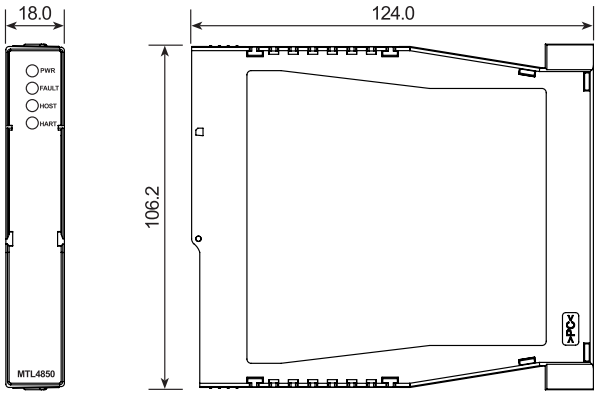
FDT Frame	Manufacturer
FieldCare	Endress & Hauser/Metso Automation
PACTware	PACTware Consortium
FieldMate	Yokogawa
FDT Container	M&M Software

Approvals
For the latest certificate information, see www.mtl-inst.com/certificates

LED INDICATORS

LED	Colour	State	Description
PWR	green	Off	Multiplexer is not receiving power
		On	Multiplexer is receiving power
FAULT	red	Off	Multiplexer is in the running state
		Steady flash	Multiplexer rebuild is in progress
		Short/long flash	No HART loops found
		On (steady)	A fault was detected and multiplexer operation has halted
HOST	yellow	Off	No communication on the channel
		Short flash (0.25 sec)	Correctly framed message received by the multiplexer
		Long flash (1 sec)	Response transmitted—this is re-triggerable so repeated transmissions will leave the indicator permanently on
HART	yellow	Off	No communication on the channel
		Short flash (0.25 sec)	Message transmitted
		Long flash (1 sec)	Response received- this is re-triggerable so repeated transmissions will leave the indicator permanently on

DIMENSIONS (mm)



MTL4850/MTL4854 BACKPLANE SPECIFICATIONS GENERAL PURPOSE VERSIONS

HMP-HM64 BACKPLANE

Capacity
2 x MTL4850 or MTL4854 HART multiplexer modules

Maximum power requirements
2.9W when equipped with –
2 x MTL4850 or MTL4854 HART multiplexer modules

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

Weight (excl. modules and accessories)
220g approx.

HTP-SC32 BACKPLANE *

Capacity
1 x MTL4850 or MTL4854 HART multiplexer module

Maximum power requirements
1.4W

Weight (excl. modules and accessories)
330g approx.

COMMON SPECIFICATION HMP-HM64 & HTP-SC32

Power requirements, Vs
21 to 35V dc through plug-in connectors

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

RS485 port
2.5mm² screw terminals

Operating temperature
–40°C to +70°C

HCU16 HART CONNECTION UNIT*

Accuracy (HCU16-P250 only)
250Ω ±0.05%

Connectors
2.5mm² screw clamp terminals
3 terminals per channel
20-way HART signal cable (to HMP-HM64)

Weight
383g approx.

HCU16AO 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 HART signal cable (to HMP-HM64)

Weight
768g approx.

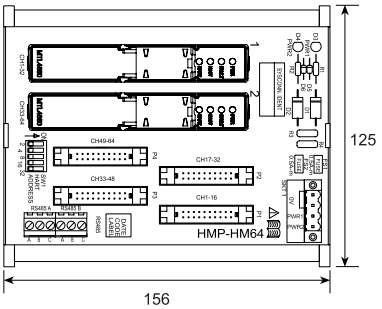
COMMON SPECIFICATION HCU16 & HCU16AO

Capacity
16 channels

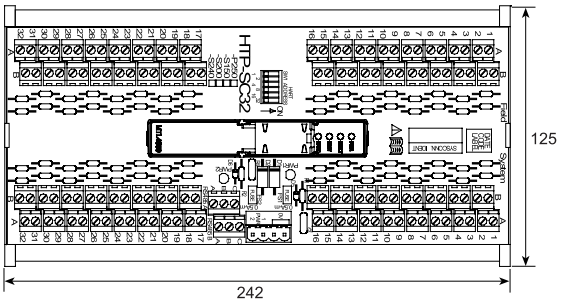
Isolation
Channel-to-channel 50V dc

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

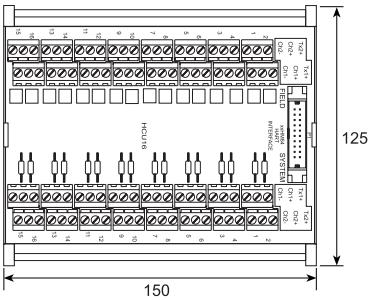
**For further details of the model options refer to the Instruction Manual INM4850 - available from the Eaton website.*



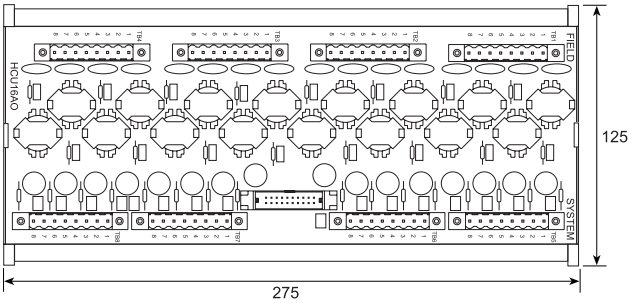
HMP-HM64



HTP-SC32



HCU16



HCU16AO

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 general purpose signals, a number 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 product line for details.

MTL4850/54 BACKPLANE SPECIFICATIONS INTRINSIC SAFETY VERSIONS

CPH-SC16/CPH-SC32 BACKPLANES

Capacity
16 x MTL4541/A, MTL4546/Y isolators
16 x MTL4544/A, MTL4549/Y (CPH-SC32 only)
1 x MTL4850 or MTL4854 HART multiplexer

Power requirements, Vs
21 to 35V dc through plug-in connectors

Maximum power requirements
CPH-SC16 0.65A
CPH-SC32 1.2A

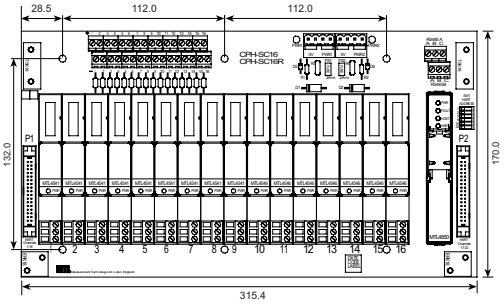
Safe-area connectors
2.5mm² screw terminals (2 terminals/module)

RS485 port
2.5mm² screw terminals

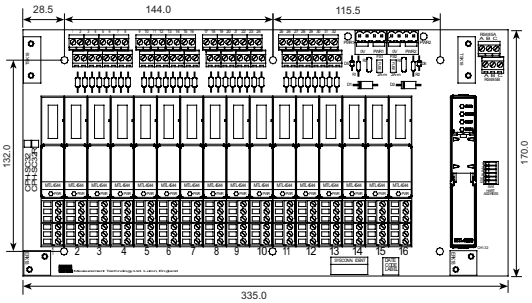
Accuracy
CPH-SCxxR: 250Ω ±0.05% conditioning resistor

Weight (excl. modules and accessories)
CPH-SC16 410g approx.
CPH-SC32 470g approx.

DIMENSIONS (mm)



CPH-SC16(R)



CPH-SC32(R)

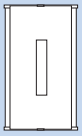
ORDERING INFORMATION

HART multiplexer

MTL4850	HART multiplexer module (connects with up to 32 loops)
MTL4854	Multi-modem HART multiplexer module (connects with up to 32 loops)

General purpose connection units

HMP-HM64	64ch HART backplane (Link to connection units via signal cable)
HCU16 †	HART connection unit, 16ch i/p
HCU16-P250 †	HART connection unit, 16ch i/p
HCU16-S150 †	HART connection unit, 16ch i/p
HCU16-S200 †	HART connection unit, 16ch i/p
HCU16AO	HART connection unit, 16ch o/p (With HART filters)
HM64RIB20-xx	20-way HART signal cable xx = 0.5, 1.0, 1.5, 2.0, 3.0, 4.0, 4.5, 6.0 (metres)



Integrated connection units

HTP-SC32 †	Integrated HART connection unit, 32ch
HTP-SC32-P250 †	Integrated HART connection unit, 32ch
HTP-SC32-S150 †	Integrated HART connection unit, 32ch
HTP-SC32-S200 †	Integrated HART connection unit, 32ch
HTP-SC32-S240 †	Integrated HART connection unit, 32ch

† See Notes

MTL4500 range of backplanes

CPH-SC16	16ch backplane
CPH-SC16R	16ch backplane (250Ω conditioning resistor)
CPH-SC32	32ch backplane
CPH-SC32R	32ch backplane (250Ω conditioning resistor)

Literature

INM4850/54	MTL4850/54 Instruction manual
INA485x	ATEX safety instructions

Notes:

no suffix	No parallel resistor, 0Ω link in series - for use with current inputs with 250Ω input impedance or HART compatible outputs
- P250	250Ω parallel resistor, 0Ω link in series - for use with 1-5V system inputs
- S150	150Ω series link, no parallel resistor - for use with current inputs with 100Ω input conditioning
- S200	200Ω series link, no parallel resistor - for use with current inputs with 50Ω or 63.5Ω input conditioning
- S240	240Ω series link, no parallel resistor - for use with isolators connected to field terminals.

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