MTL 9465-ET

Copper to Fibre Intrinsically Safe Converter

- **Copper to Fibre Optic Converter**
- **10/100Mbps wire speed**
- **Extend up to 5km (10Mbs)**
- **Zone 1, Division 1 mountable in suitable enclosure**
- **Transparent operation**
- **Choice of fibre optic connection styles**
- **ATEX / IECEx certified**
- **FM / FMC approved**
- **Wide temp. range –40°C to +70°C**
- **PoEx™ Power over IS Ethernet option**

The 9465-ET 10/100Mbps Copper to Fibre Optic Media Converter allows an Ethernet network to be extended over a greater distance. A multi-mode fibre optic link may be up to 2km in length when running at 100Mbps and due to the use of 1300nm optics an extended distance of 5km is achievable at 10Mbps. Longer distances are achievable with single mode fibre.

Longer distances are obtained by simply connecting a 9466 (10/100Mbps Ethernet Switch) between two 9465 media converters, effectively giving a 'repeater' function (This also provides 3 x UTP ports available for local network connectivity), this can be repeated as required.

The use of fibre optics gives exceptional immunity to noise and electrical interference, it is also used when connecting a Hazardous Area network to a Zone 2 / Safe Area network or device.

The 9465-ET is designed for hazardous-area mounting inside a suitable enclosure with intrinsically safe Zone 1, ATEX and IECEx certification and Division 1 FM USA and Canada approvals. The ATEX and IECEx approvals cover both surface industry and mining applications.

Fibre Optic connection options:

- ST style 62.5/125µm Multimode (9465-ET-M-ST)
- SC style 62.5/125µm Multimode (9465-ET-M-SC)
- SC style 9µm Single-mode (9465-ET-S-SC)

When installed in a Zone 1 or Division 1 hazardous area the converter may be powered by an intrinsically safe power supply or by Power over IS Ethernet (PoEx) providing intrinsically safe power and Ethernet communications over a single Cat5e cable.

When mounted in a safe area the converter may be powered by a 12V dc general-purpose power supply and the 'IS op' approval allows connection of the fibre optic cable into the hazardous area.

Status LEDs are provided on the front panel to indicate:

- 'Power On'
- Fibre Optic 'Link 10Mb or 100Mb' established
- Fibre Optic 'Tx/Rx Activity'
- Copper UTP 'Link 10Mb or 100Mb' established
- Copper UTP 'Tx/Rx Activity'

10/100Mb Ethernet twisted pair (Cat5e) RJ45 connection (100metres length max.).

Transparent operation - 10/100Mbps, Full/Half Duplex with Auto-Negotiation. Supports IEEE 802.3: 10Base-T, 10Base-FL, 100Base-TX and 100Base-FX/SX.

The module is supplied as a DIN-rail mounting device.

Powering Business Worldwide

Eaton Electric Limited,
Great Marlings, Butterfield, Luton
Beds, LU2 8DL, UK.
Tel: + 44 (0)1582 723633 Fax: + 44 (0)1582 422283
E-mail: mtlenquiry@eaton.com
www.mtl-inst.com

Publication No. EPS9465 rev 7
September 2016

MTL 9465-ET

September 2016

SPECIFICATION

See also System Specification

POWER INPUT

PoEx or separately powered

Input voltage
12V DC (10–15.4V)

Input current
160mA

Input protection
Fuse + supply reversal diode

ETHERNET

Intrinsically Safe 10/100 base T

Connector
RJ45

PoEx
Powered Device

FIBRE PORT

10/100 base FX

Connector
SC or ST (multi-mode), SC (single-mode)
OPTICAL FIBRE

Multi mode distance
2km @100Mbps / 5km@10Mbps typ. (62.5/125)

Single mode distance
T.B.A.

TX Output (1300nm)
Multi mode -19dBm (min), -14dBm (max.) *note 1
Single mode -15dBm (min), -8dBm (max.) *note 2

RX Sensitivity
Multi mode -33.9dBm (ave), -31dBm (min)
Single mode -25dBm (min)

*note 1 – transmit power coupled into 62.5/125um fibre, NA=0.275
*note 2 – transmit power coupled into single-mode fibre

SAFETY

Eye Safety
Class 1 Laser/LED product

Location of module
Zone 1, IIC T4 hazardous area
or Class 1, Div 1, Groups A, B, C, D T4 hazardous location

Location of field wiring
Zone 0, IIC T4 hazardous area
or Class 1, Div 1, Groups A, B, C, D T4 hazardous location

Ethernet protection
intrinsically safe

Fibre optic protection
inherently safe

Certification Code
See approvals

Safety description
See certificate

MECHANICAL

Mounting
DIN rail

Dimensions (mm)
Length 75
Width 55
Height (off rail) 116

Weight
700 g

LED INDICATORS

	OFF	FLASH	ON
PWR (green)	Power fail	N/A	Power OK
ACT (red)	Idle	Ethernet link activity	Ethernet link activity
10 (yellow)	No Ethernet link at 10Mbps	Poor link	Ethernet connected at 10Mbps
100 (green)	No Ethernet link at 100Mbps	Poor link	Ethernet connected at 100Mbps

ENVIRONMENTAL

Ambient temp
Operating –40°C to +70°C
Storage –40°C to +70°C

Relative Humidity
5 to 95% RH (non-condensing)

Ingress Protection
Select enclosure to suit application, see certificate for information

DATA & POWER TERMINALS

LAN (RJ45)
10/100 BASE-T Ethernet
(TX/RX crossed MDI-X)

Pin	Function
1	Rx +
2	Rx –
3	Tx +
4	Supply 12V - PoEx †
5	Supply 12V - PoEx †
6	Tx –
7	Supply 0V - PoEx †
8	Supply 0V - PoEx †

10/100 BASE-FL Ethernet
ST(or SC) - Fibre Optic
Top Port TX
Bottom Port RX

Screw Terminals †

PWR	Function
1	+12V DC in
2	+12V DC in
3	0V
4	0V
5-8	No connections

Terminals 1+2 and 3+4 are linked internally.

† When using PoEx, no supply is required on screw terminals 1 to 4

Powering Business Worldwide

Eaton Electric Limited,
Great Marlings, Butterfield, Luton
Beds, LU2 8DL, UK.
Tel: + 44 (0)1582 723633 Fax: + 44 (0)1582 422283
E-mail: mtlenquiry@eaton.com
www.mtl-inst.com

Publication No. EPS9465 rev 7 230916
September 2016

EUROPE (EMEA):
+44 (0)1582 723633
mtlenquiry@eaton.com

THE AMERICAS:
+1 800 835 7075
mtl-us-info@eaton.com

ASIA-PACIFIC:
+65 6 645 9888
sales.mtlsing@eaton.com