



9465-ET



- ◆ **Copper to Fibre Optic Converter**
- ◆ **10/100Mbps wire speed**
- ◆ **Extend up to 5km (10Mbps)**
- ◆ **Zone 1 mountable in IP6x enclosure**
- ◆ **Transparent operation**
- ◆ **Choice of fibre optic connection styles**
- ◆ **ATEX / IECEx certified**
- ◆ **FM / CSA approvals (pending)**
- ◆ **Wide temp. range -20°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. The 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 obtained by simply connecting a 9466 (10/100Mbps Ethernet Switch) between two 9465 media converters, effectively giving a 'repeater' function (This also provides 3x 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 Zone 1 hazardous-area mounting inside a suitable IP6x enclosure and has intrinsically safe ATEX and IECEx approvals with FM and CSA approvals pending. The 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)

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.

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.

PoEx is a trademark of Controlled Systems Limited



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) *note1

Single mode -15dBm (min), -8dBm (max) *note2

RX Sensitivity

Multi mode -33.9dBm (ave), -31dBm (min)

Single mode -25dBm (min)

*note1 – transmit power coupled into 62.5/125um fibre, NA=0.275

*note2 – transmit power coupled into single-mode fibre

SAFETY

Eye Safety

Class1 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

* Certification pending

Ethernet protection

intrinsically safe

Certification Code

Ex II 1 G D

Ex I M1

Ga Ex ia IIC T4

Ex iaD 20 T1 35°C

Ma Ex ia I

(Ta = -40°C to +70°C)

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 -20°C to +70°C

Storage -20°C to +70°C

Relative Humidity

5 to 95% RH (non-condensing)

Ingress Protection

IP20 to BS EN 60529

(Additional protection by means of enclosure)

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



EUROPE (EMEA)
AMERICAS
ASIA PACIFIC
E-mail: enquiry@mtl-inst.com

Tel: +44 (0)1582 723633
Tel: +1 603 926 0090
Tel: +65 6 487 7887

Fax: +44 (0)1582 422283
Fax: +1 603 926 1899
Fax: +65 6 487 7997

Web site: www.mtl-inst.com

Jun 2008