TLI800EN

Network Interface Module and FOM800 Fibre Optic Module

ZETTLER

Inter-controller Network
The use of the MZX Technology Network allows the fragmentation of a number of fire controllers to be drawn into a network system. Because every installation is different, the MZX Technology Network has been designed to be highly flexible, allowing for a wide range of different systems applications. With a large network system the amount of data and information passing between fire controllers can become high during an emergency condition. The MZX Technology Network communication protocol has been specifically designed with this in mind and ensures that each event message passed around the network is acknowledged by the receiving controller in the fastest possible time.

Operation
The network is totally flexible and enables from 2 to 99 fire controllers to be seamlessly linked together, providing a system capability of up to 23,760 fire zones with 99,000 detection addresses, and over 100,000 digital I/O points.

System Overview
The MX Net communications network comprises a collection of network interface modules and peripheral equipment that together form a fault resistant, and flexible peer-to-peer network for the MX Digital addressable fire systems controllers.
With the MZX Technology Network, each MZX Fire Controller on the network permits an operator to interrogate and control any other MZX Fire Controller on the network for extended interrogation and control, the MZX Technology Network allows for up to a maximum of five nodes on the network to be configured either as Master operating stations or TXG graphical user interfaces (refer to datasheet PSF206).

Master operating stations use the standard MZX Fire Controller hardware. In this application, the controller changes its personality; and enables additional information from each controller on the network to be displayed.
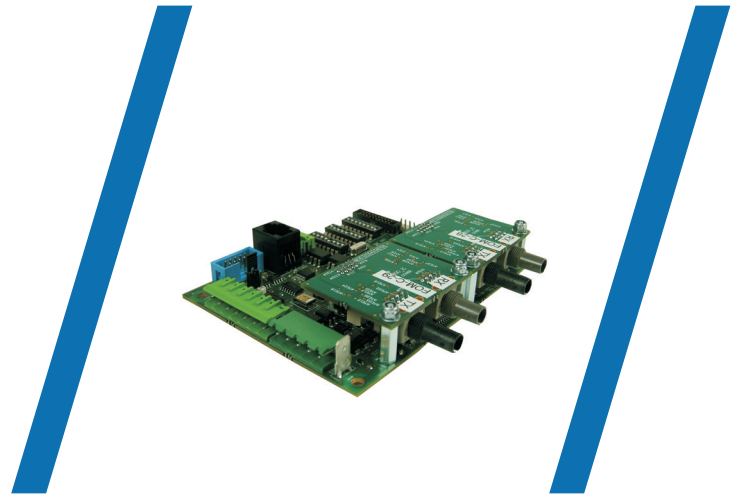
Features

// Allows MZX Technology Fire Controllers to be "seamlessly" networked together
// Dual ARM 7 RISC processors
// Support for Emergency Mode Indication
// True peer-to-peer communications; no host or master controller required
// Highly resilient, node failure open and short circuit does not affect remaining network
// Approved to EN54-13 and EN54-2
// Up to 99 controllers may be used on the network
// Wide range of cable topography supported
// Network can use a variety of cable types with up to 2500m between nodes (cable dependant), 1200m using standard 1.5mm MICC cable
// FOM800 Plug on fibre optic module provides up to 5000m between nodes using 62.5/125 multimode fibres
// Easy to install and programme
// Simple to operate

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Mode of Operation

The MZX Technology Network employs a token passing communications protocol that treats each node on the network equally. Loss of one or more nodes does not affect the operation of the remainder of the network.

Data is regenerated at each node in the network enabling maximum distance between nodes. In the event of a short/open circuit on the network between any two nodes, isolation will automatically occur and the network will re-configure communications and continue to allow communication between all nodes physically connected.

The MZX Technology Network offers a high level of system integrity, allowing safety critical actions to be passed across the network from one MZX Fire Controller to another. This very high level of system integrity enables the MZX Technology Network to meet the requirements of EN54-13 and EN54-2.

In the event of loss of communication with the host controller, the TLI800EN will use its secondary processor to monitor the controllers fire outputs and if necessary can activate the controllers emergency fire input. In addition it can support a LED annunicator for network panel fire indication, this is wired to a MPM800 via the TLI800EN's integral RBus RS485 port.

Information Exchange

When a MZX Technology fire controller is connected to the MZX Technology Network, each controller maintains full stand-alone capability, whilst also operating as part of a larger system. Once the MZX Technology Fire Controller is connected to the network, the following capabilities are provided.

> Peer Event Exchange:- MZX controllers send and receive chang of-state (event) information via the network to distribute and co-ordinate system control.
> Event/Action:- MZX Controllers support a unique programming capability known as "Event action". This facility is used extensively for the stand-alone fire controller as well as network applications.
> Peer Event display:- MZX fire controllers on the MZX Technology Network can optionally display events received from other MZX Fire Controllers. If required, the network can be configured so that only certain events/actions are passed between certain controllers setting up in effect sub-networks.

Shields/Twisted Pair

The maximum distance between nodes of a circuit is 3000 metres using shielded twisted pair cable. Examples are Belden 9460 or 9574 or using cables with the parameters shown in the table opposite.

The following information is provided on each MZX Controllers LCD screen programmed to display peer events.
> Identification of controller originating the event.
> Event type ie ("Fire alarm, Fault, Clear" etc.).
> Identification of the zone to which the point is assigned.
> Identification of the point that changed state.
> Network Zone Links:- As part of peer to peer exchange, a feature called "Network Zone Links" is available to link a fire zone of one controller to a zone of a second controller. Once linked in this manner, devices assigned to both zones operate as though the were all assigned to the same zone.
> Sectors:- This feature is available for creating groups of related fire zones. The MZX Technology Network will support up to 240 sectors into which any one, any set or all Zones can be assigned. With this facility, Group Actions can be defined to operate on sections instead of zones, enabling one action to control outputs of multiple selected zones. A typical application for sectors, would be to turn on evacuate sounders, shut all fire doors etc.

MZX Technology Network Wiring Topologies

The MZX Technology Network supports a wide variety of communications media and wiring typologies. This system's flexibility means that the MZX Technology Network can be applied to most existing site layouts and wiring schemes.

Bus/Spur

MX Net may be wired as a Bus/Spur circuit, using any of the wiring type listed over, or using a mixture of wiring type. Using the bus circuit will reduce the level of system integrity a cable open or short circuit between network nodes could not be automatically re-configured.

MX Net Wiring

Mineral insulated copper clad (MICC)
RS 485 electrical signalling around the network using standard MICC cable enables up to 1200 metre distance to be achieved between each node on the network. Use of MICC cable that complies with BS6207 allows the network to be used to signal events such as "FIRE EVACUATE" over the network in accordance with BS5839: Pt. 1: 1988.

Cable Parameters		
Maximum wire to wire capacitance		Resistance
Baud rate	Capacitance	Maximum resistance = 40 Ohm for EN54-13 compliant installation. Maximum resistance = 65 Ohm for proper function without compliance.(all baud rates)
38400	0.3 uF	
19200	0.6 uF	
9600	1.2 uF	
2400	1.2 uF	
1200	1.2 uF	

Fibre Optics

Fibre optics can also be supported on the MZX Technology Network system by fitting one or two FOM800 modules to the TLI800EN network card, this uses either type 62.5/125 or 50/125 multi-mode fibres between nodes on the network. Use of fibre permits a maximum distance between nodes of up to 5000 metres in either bus or ring topology.

Distributed Systems Network

MX Net provides the gateway to allow a number of the MZX fire controllers to be "seamlessly" networked together, from a simple two controller configuration to the most complex multi user distributed installation. The MZX Technology Network has been designed for use in high rise commercial and residential buildings, and is equally suitable for campus style environments such as universities, hospitals and industrial parks.

Unlike other Fire Companies that use off the shelf computer type networks for networking fire controllers, MZX Technology Network has been specifically designed with high system integrity in mind allowing the network to be installed in accordance with EN54-13 and EN54-2.

Why Choose MZX Technology Network?

> Network, Fire Controller and detection devices all designed an manufactured by Tyco Fire Protection Products, eliminating split responsibility for compatibility.
> Uniquely powerful "CONSYS" event action software programming extended from a single MZX Fire Controller, acro the MZX Technology Network.
> Highly resilient to short/open circuit faults.
> Peer to peer event exchange.
> Data regenerated at each node.

Ring

The MZX Technology Network wired as a ring, enables the network to be fully operational even with an open or short circuit fault between two network nodes. Any of the wiring types can be used in the network ring topography, however if the network is to be installed to BS5839 with the requirement for prolonged operation during a fire it is recommended that mineral-insulated copper-clad (MICC) or other suitable cable to BS6207 is used.

Typical Applications for MX Net Include:-

>Hotels
>University Campus
>Shopping Centres
>Hospitals
>Sports Centre Complexes
>Office Blocks
>Department Stores
>Museums
>Historic Houses
>Industrial Parks
>Airports
>Cruise Liners

TLI 800EN Network Card
Mechanical

Dimensions:	116 x 90 x 20 mm
Weight:	0.10 Kg
Housing:	The TLI800 Network P.C.B. is mounted directly onto the MZX CPU800 within the panel enclosure

Electrical

Power Consumption:	74mA @ 24VDC & 20mA @ 5VDC
Network Connections:	2 x RS 485
Network diagnostic:	9 x on board LED's / RS232 port for system analysis and fault finding
Cable Type:	2 Core MICC, Shielded or Twisted pair
Network Connections:	Screw terminals, will accept 2.5 mm^2 cable

Network Parameters

Number of nodes:	99 (max)
Distance between nodes:	1000 to 5000 metres (dependent upon cable type)
Communications type:	RS485
Baud Rates:	9.6K to 115.2K
Transport Type:	Token passing, non-collision protocol

Environmental

Operating Temp:	-10°C to + 55°C
Storage Temp:	-10°C to + 70°C
Relative Humidity:	95% (100% intermittent)

FOM800 Fibre Optic Network Interface
Mechanical

Dimension:	50 x 58 x 12 mm
Weight:	0.015 Kg
Housing:	The FOM800 is mounted directly onto the TLI800EN Network card

Electrical

Supply Voltage:	Powered from TLI800EN
Network Connections:	2 x ST Fibre optic connections
Cable Type:	62.5/125 or 50/125 multi-mode fibre optic cables

Environmental

Operating Temp:	-10°C to + 55°C
Storage Temp:	-10°C to + 70°C
Relative Humidity:	95% (100% intermittent

TLI800EN-G Housed Network Card with PSU
Mechanical

Dimension:	300 x 200 x 85 mm
Weight:	3.85 Kg

Environmental

Operating Temperature:	0°C to +55°C
Relative Humidity:	95% max

Electrical

Supply Voltage:	220 to 250 VAC
Power consumption:	160mA

Ordering Information

557.202.080	TLI800EN Network Card and cable
557.202.081	FOM800 Fibre Optic Module
557.200.039	TLI800EN Network Interface in Housing c/w PSU

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