

# 4-Port Ethernet to Fiber Industrial Media Converters







MC-4TX1FXMM-2Km MC250-4T/1FM (wide-temp)

MC-4TX1FXSM-15Km MC250-4T/1FS (wide-temp)

MC-4TX2FX

### **OVERVIEW**

IFS Ethernet to Fiber Industrial Media Converters offer four 10/100Mbps Ethernet ports and 100Base-FX transmission on either multi-mode or single mode optical fiber for optimum bandwidth usage. Specifically designed for stable and reliable operation in electrically harsh and climatically demanding environments, the module's slim, IP-30 standard metal case accommodates DIN-rail or wall mounting for efficient installation in multiple applications.

These converters are engineered with a high-performance switch architecture capable of providing a non-blocking switch fabric and wire-speed throughput as high as 1Gbps or 1.2Gbps. With its 2K MAC address table, these media converters offer wire-speed packet transfer performance without the risk of packet loss. The Flow Control function allows these modules to deliver fast and reliable data transfer.

Available in multi-mode or single-mode configurations, the converters deliver distances of up to 2km or 15km respectively. Providing extended distance Ethernet transmission, these units are well suited for remotely deployed edge devices such as IP cameras, access control, VoIP and wireless access points. IFS also provides a multi-mode dual-fiber version for drop and repeat network topologies.

### STANDARD FEATURES

### **RJ-45 Ports**

- 4-Port 10/100Base-TX
- Auto MDI/MDI-X
- Auto-negotiation

#### **Fiber Ports**

- 1-Port 100Base-FX MM or SM Fiber
- 2-Port 100Base-FX MM Fiber (MC-4TX2FX only)

### **High Performance Architecture**

- Complies with the IEEE 802.3, IEEE 802.3u, Fast Ethernet standard
- Store-and-Forward switching architecture with wire-speed filtering and forwarding rates
- Prevents packet loss with back pressure (half-duplex) and IEEE 802.3x PAUSE frame-flow control (full-duplex)
- Integrated address-lookup engine supports 2K absolute MAC addresses
- CSMA/CD Protocol
- Automatic source-address learning and aging
- Support to handle up to 1522 bytes packet size

### **Robust Hardened Design**

- Slim IP-30 metal enclosure for protection
- Provides either DIN-rail or wall-mounting
- 12 ~ 48VDC, redundant power with reverse-polarity protection
- Removable terminal block for master and slave power
- Alarm relay output for power-failure alert
- Voltage/surge-suppression
  - EFT 6000VDC protection for power lines
- ESD 6000VDC protection for Ethernet
- Complies with IEC60068-2-xx standards for free-fall, shock and vibration
- Wide operating temperature range of up to -40°C ~ +75°C

### Warranty

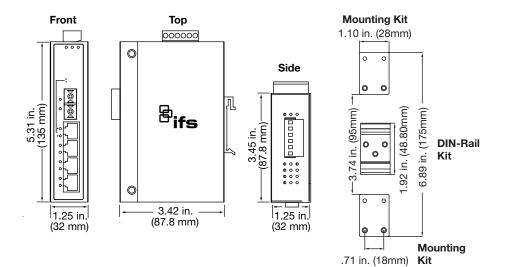
• 3-year limited warranty

### Specifications

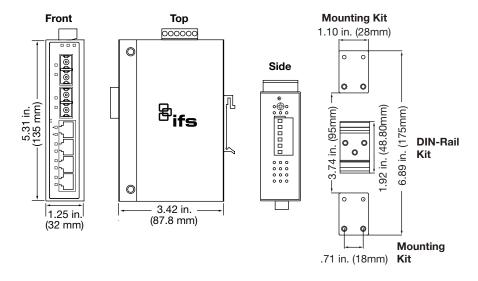
| Optical Distance         2/km         2/km         15km         15km         2/km         0 co. 760/125µm)         or 50/125µm)         or 60/125µm)         or 50/125µm)         or 50/125µm)         or 50/125µm)         or 50/125µm)         or 50/125µm)         or 50/125µm) <th>RJ45 Ports</th> <th>MC-4TX1FXMM-2Km</th> <th>MC250-4T/1FM</th> <th>MC-4TX1FXSM-15Km</th> <th>MC250-4T/1FS</th> <th>MC-4TX2FX</th>   | RJ45 Ports                     | MC-4TX1FXMM-2Km   | MC250-4T/1FM                     | MC-4TX1FXSM-15Km   | MC250-4T/1FS          | MC-4TX2FX                              |  |
|--|--------------------------------|---|----------------------------------|--|-----------------------|--|--|
| Sente Antimication   Store and Formation   Service Antimication    | 10/100Base-TX Connectors       | RJ-45 (4); Auto-negotiate ar  | nd Auto MDI/MDI-X support        |  |                       |  |  |
| March Review Size   Review S | Throughput (packet per second) | 148,800pps  |                                  |  |                       |  |  |
| Pentra SIAC Networking   ESSP   Protection   | Switch Architecture            | Store-and-forward   |                                  |  |                       |  |  |
|  | Max Packet Size                | 1522 Bytes  |                                  |  |                       |  |  |
| Molth-mode R2.5/12/9/m   Molth-mode R2.5/12/ |                                | ·   |                                  |  |                       |  |  |
| Cyclical Floer Type  | Fiber Ports                    |   |                                  |  |                       |  |  |
| Capical Patients    Capi | 100Base-FX SC Connectors       | 1   | 1                                | 1  | 1                     | 2                                      |  |
| Optical         Optical Wakestergth         1300rm         1300rm         1310rm         1310rm         1310rm         1300rm           Cybian Wakestergth         1300rm         1300rm         1310rm         1310rm         1300rm         1300rm           Tyburnah Power (Ellim)         -34.5         32         -28         32         32         34.5           Receiver Serreitivity (Ellim)         -34.5         32         -28         32         32         34.5           Switch Performance         Store-and-Forward   | Optical Fiber Type             |   |                                  | Single-mode (9/125µm)  | Single-mode (9/125µm) | Multi-mode (62.5/125μm<br>or 50/125μm) |  |
| Sprice   Mareinardy   Mase - 14, Min - 19.0   Mase - 14, Min - 14, Min - 19.0   Mase - 14, Min - 19. | Optical Distance               | 2km   | 2km                              | 15km   | 15km                  | 2km                                    |  |
| Sprice   Mareinardy   Mase - 14, Min - 19.0   Mase - 14, Min - 14, Min - 19.0   Mase - 14, Min - 19. | Ontical                        |   |                                  |  |                       |  |  |
| Mac. 14, Mirc. 19.0   Mac. 19.0   Mac. 14, Mirc. 19.0   Mac. 19.0   Mac. 19.0   Mac. 19.0   Mac. 19.0   Mac  |                                | 1300nm  | 1300nm                           | 1310nm   | 1310nm                | 1300nm                                 |  |
| Receiver (aBmith) (aBm)   44.5   42   28   32   44.5   |                                |   |                                  |  |                       |  |  |
| Maximum Inquit Power (IdEm)   -144   |                                | · ·   |                                  | · · · · · · · · · · · · · · · · · · ·  | ,                     |  |  |
| Switch Performance   |                                |   |                                  |  |                       |  |  |
| Sutto-Architecture   | Waximum input Fower (dbin)     | -14   | 0                                | -0   | U                     | -14                                    |  |
| System Fabric   15tpps / non-blocking   15tpps / non-blocking   15tpps / non-blocking   125tpps / non-blocking   125tpp | Switch Performance             |   |                                  |  |                       |  |  |
| Throughput (Packet per second)   0.744Mpps@64bytes   0.744Mpps@64bytes   0.744Mpps@64bytes   0.892Mpps@64bytes   Address Table   2K entries   1822 Bytes packet   1  | Switch Architecture            | Store-and-Forward   |                                  |  |                       |  |  |
| Address Table   2K entries   1Mbit on-chip frame buffer   1  | Switch Fabric                  | 1Gbps / non-blocking  | 1Gbps / non-blocking             | 1Gbps / non-blocking   | 1Gbps / non-blocking  | 1.2Gbps / non-blocking                 |  |
| Shared Data Buffer   15/22 Pytes packet   15/22   | Throughput (Packet per second) | 0.744Mpps@64bytes   | 0.744Mpps@64bytes                | 0.744Mpps@64bytes  | 0.744Mpps@64bytes     | 0.892Mpps@64bytes                      |  |
| Maximum Frame Size   1522 Bytes packet   1610 Control   1620 Back pressure for Half-Duplex   IEEE 802.3x PAUSE Frame For Fulf-Duplex   1610 Control   1620 Back pressure for Half-Buplex   IEEE 802.3x PAUSE Frame For Fulf-Duplex   1610 Control   1610 Control   1620 Back pressure for Half-Buplex   IEEE 802.3x PAUSE Frame For Fulf-Duplex   1610 Control   1610 Contr  | Address Table                  | 2K entries  |                                  |  |                       |  |  |
| Flow Control   Back pressure for Half-Duplex,   IEEE 802.3x PAUSE Frame for Full-Duplex  | Shared Data Buffer             | 1Mbit on-chip frame buffer  |                                  |  |                       |  |  |
| Power  | Maximum Frame Size             | 1522 Bytes packet   |                                  |  |                       |  |  |
| Power Fault   Power input 1 - Green; Power input 2 - Green   | Flow Control                   | Back pressure for Half-Dupl   |                                  |  |                       |  |  |
| Power Fault   Power input 1 - Green; Power input 2 - Green   | I ED Indicators                |   |                                  |  |                       |  |  |
| Proper Operation — Off; Fault — Green  |                                | Douger input 1 Organi Day   | var innut 0. Organ               |  |                       |  |  |
| RJ-45 (10/100Mbps)   100Mbps Activity - Green; 10Mbps Activity - Off   |                                |   |                                  |  |                       |  |  |
| Fiber (100Base-PX)   |                                |   |                                  |  |                       |  |  |
| Electrical & Mechanical  |                                |   |                                  |  |                       |  |  |
| Supply Voltage   |                                |   |                                  |  |                       |  |  |
| Supply Voltage   | Optical Link                   | Link established – Steady G   | ireen; TX/RX Activity – Blinking | g green  |                       |  |  |
| Power Consumption   9.1Watts / 31BTU max.   9.1Watts / 31BTU max.   9.1Watts / 31BTU max.   9.1Watts / 31BTU max.   11.6Watts / 40BTU max.   | Electrical & Mechanical        |   |                                  |  |                       |  |  |
| Electrical Fast Transient (EFT) Protection   | Supply Voltage                 | 12~48VDC, Redundant power with polarity-reverse protection function       |                                  |  |                       |  |  |
| EFT   Protection   6-Pin removable screw terminal   6-Pin remov  | Power Consumption              | 9.1Watts / 31BTU max.   | 9.1Watts / 31BTU max.            | 9.1Watts / 31BTU max.  | 9.1Watts / 31BTU max. | 11.6Watts / 40BTU max.                 |  |
| Connector         6-pin removable screw terminal           Alarm Fault Relay         Provides one relay output for power failure notification; 24VDC − 1A max.           Enclosure         IIP-30 slim-type metal enclosure           Mounting         DIN-rail kit and wall-mount ears           Dimensions (in/cm) (W x D x H)         5.31 x 3.42 x 1.26 in. (13.5 x 8.7 x 3.2cm)           Weight (lbs./kg)         0.965 lbs./.437kg         0.965 lbs./.437kg         0.965 lbs./.437kg         0.977 lbs./.437kg           Environmental           MTBF         > 100,000 Hrs @ 25°C         -10°C ~ 60°C         -40°C ~ 75°C         -10°C ~ 60°C         -10°C ~ 60°C           Storage Temperature         -40°C ~ 85°C         -40°C ~ 80°C         -40°C ~ 75°C         -10°C ~ 60°C           Relative Humidity         0% ~ 90% (non-condensing)         -40°C ~ 80°C         -40°C ~ 75°C         -10°C ~ 60°C           Standards         IEEE 802.3 10Base-T   IEEE 802.3 10Base-TX   IEEE 802.3   |                                | 6KVDC   |                                  |  |                       |  |  |
| Enclosure  |                                | 6-pin removable screw terminal  |                                  |  |                       |  |  |
| Enclosure  |                                | Provides one relay output for power failure notification: 24VDC – 1A max. |                                  |  |                       |  |  |
| Mounting         DIN-rail kit and wall-mount ears           Dimensions (in/cm) (W x D x H)         5.31 x 3.42 x 1.26 in. (13.5 x 8.7 x 3.2cm)           Weight (lbs./kg)         0.965 lbs./.437kg         0.965 lbs./.437kg         0.965 lbs./.437kg         0.977 lbs./.437kg           Environmental           MTBF         > 100,000 Hrs @ 25°C         -<   | Enclosure                      |   |                                  |  |                       |  |  |
| Dimensions (in/cm) (W x D x H)         5.31 x 3.42 x 1.26 in. (13.5 x 8.7 x 3.2cm)           Weight (lbs./kg)         0.965 lbs./.437kg         0.965 lbs./.437kg         0.965 lbs./.437kg         0.977 lbs./.437kg           Environmental           MTBF         > 100,000 Hrs @ 25°C         -40°C ~ 75°C         -10°C ~ 60°C         -40°C ~ 75°C         -10°C ~ 60°C           Storage Temperature         -40°C ~ 85°C         -40°C ~ 75°C         -10°C ~ 60°C         -40°C ~ 75°C         -10°C ~ 60°C           Standards Compliance         IEEE 802.3 10Base-T [IEEE 802.3 10Base-TX / 100Base-TX / 100Base-TX / 100Base-TX / 100Base-TX / 100Base-TX [IEEE 802.3 x Flow Control and Back pressure         IEC60068-2-32(Free fall) [IEC60068-2-32(Free fall) [IEC60068-2-27(Shock) [IEC60068-2-27(Shock) [IEC60068-2-6(Vibration)]           EIA/TIA-568 Standards         2-Pair UTP Cat. 3, 4, 5 (100meters, max.) EIA/TIA-568 100-ohm STP (100meters, max.)   |                                | **  |                                  |  |                       |  |  |
| Weight (lbs./kg)         0.965 lbs./.437kg         0.965 lbs./.437kg         0.965 lbs./.437kg         0.965 lbs./.437kg         0.977 lbs./.437kg           Environmental           MTBF         > 100,000 Hrs @ 25°C         -40°C ~ 60°C         -40°C ~ 75°C         -10°C ~ 60°C         -40°C ~ 75°C         -10°C ~ 60°C           Storage Temperature         -40°C ~ 85°C         -40°C ~ 75°C         -10°C ~ 60°C         -40°C ~ 75°C         -10°C ~ 60°C           Standards Compliance           IEEE 802.3 10Base-T IEEE 802.3 10Base-T IEEE 802.3 100Base-FX IEEE 802.3 triow Control and Back pressure           IEC Standards         IEC60068-2-32(Free fall) IEC60068-2-23(Free fall) IEC60068-2-27(Shock) IEC60068-2-27(Shock) IEC60068-2-6(Vibration)           EIA/TIA-568 Standards         2-Pair UTP Cat. 3, 4, 5 (100meters, max.) EIA/TIA-568 100-ohm STP (100meters, max.)   |                                |   |                                  |  |                       |  |  |
| Environmental  |                                | ,   |                                  | 0.965 lbs./.437ka  | 0.965 lbs./.437ka     | 0.977 lbs./.437ka                      |  |
| MTBF         > 100,000 Hrs @ 25°C           Operating Temperature         -10°C ~ 60°C         -40°C ~ 75°C         -10°C ~ 60°C         -40°C ~ 75°C         -10°C ~ 60°C           Storage Temperature         -40°C ~ 85°C         -40°C ~ 60°C         -40°C ~ 75°C         -10°C ~ 60°C  |                                |   | 1                                | one of the state |                       | overviewed.reg                         |  |
| Operating Temperature         -10°C ~ 60°C         -40°C ~ 75°C         -10°C ~ 60°C         -40°C ~ 75°C         -10°C ~ 60°C           Storage Temperature         -40°C ~ 85°C         -40°C ~ 60°C         -40°C ~ 60°C         -40°C ~ 60°C         -40°C ~ 60°C         -40°C ~ 75°C         -10°C ~ 60°C         -10°C ~ 60°C         -40°C ~ 75°C         -10°C ~ 60°C         -10°C ~  |                                |   |                                  |  |                       |  |  |
| Storage Temperature         -40°C ~ 85°C           Relative Humidity         0% ~ 90% (non-condensing)           Standards Compliance           IEEE Standards         IEEE 802.3 10Base-T (IEEE 802.3u 100Base-TX /100Base-FX (IEEE 802.3x Flow Control and Back pressure)           IEC Standards         IEC60068-2-32(Free fall) (IEC60068-2-27(Shock) (IEC60068-2-6(Vibration))           EIA/TIA-568 Standards         2-Pair UTP Cat. 3, 4, 5 (100meters, max.) EIA/TIA-568 100-ohm STP (100meters, max.)   |                                |   |                                  |  |                       |  |  |
| Relative Humidity         0% ~ 90% (non-condensing)           Standards Compliance           IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX /100Base-FX IEEE 802.3x Flow Control and Back pressure           IEC Standards         IEC60068-2-32(Free fall) IEC60068-2-27(Shock) IEC60068-2-6(Vibration)           EIA/TIA-568 Standards         2-Pair UTP Cat. 3, 4, 5 (100meters, max.) EIA/TIA-568 100-ohm STP (100meters, max.)   | 1 0 1                          |   | -40°C ~ 75°C                     | -10°C ~ 60°C   | -40°C ~ 75°C          | -10°C ~ 60°C                           |  |
| IEEE 802.3 10Base-T   IEEE 802.3 10Base-TX   IEEE 802.3 u 100Base-TX   IEEE 802.3 u 100Base-TX   IEEE 802.3 x Flow Control and Back pressure   IEC60068-2-32(Free fall)   IEC60068-2-27(Shock)   IEC60068-2-6(Vibration)   IEC60 | Storage Temperature            | -40°C ~ 85°C  |                                  |  |                       |  |  |
| IEEE 802.3 10Base-T   IEEE 802.3 10DBase-TX /100Base-FX   IEEE 802.3 10DBase-TX /100Base-FX   IEEE 802.3 Flow Control and Back pressure   IEC60068-2-32(Free fall)   IEC60068-2-27(Shock)   IEC60068-2-6(Vibration)   IEC60068-2 | Relative Humidity              | 0% ~ 90% (non-condensing  | a)                               |  |                       |  |  |
| IEEE Standards   | Standards Compliance           |   |                                  |  |                       |  |  |
| IEC Standards         IEC60068-2-27(Shock) / IEC60068-2-6(Vibration)           EIA/TIA-568 Standards         2-Pair UTP Cat. 3, 4, 5 (100meters, max.) EIA/TIA-568 100-ohm STP (100meters, max.)   | IEEE Standards                 | IEEE 802.3u 100Base-TX /100Base-FX  |                                  |  |                       |  |  |
|  | IEC Standards                  | IEC60068-2-27(Shock)  |                                  |  |                       |  |  |
| Regulation FCC Part 15 Class A, CE   | EIA/TIA-568 Standards          | 2-Pair UTP Cat. 3, 4, 5 (100  | meters, max.) EIA/TIA-568 10     | 00-ohm STP (100meters, max   | <b>c.</b> )           |  |  |
|  | Regulation                     | FCC Part 15 Class A, CE   |                                  |  |                       |  |  |

### **Dimensional Diagrams**

MC-4TX1FXMM-2KM MC-4TX1FXSM-15KM MC-250-4T/1FM MC-250-4T/1FS



### MC250-4TX2FX



## 4-Port Ethernet to Fiber Industrial Media Converters

North America T 855-286-8889 Asia T 852-2907-8108

Australia T 61-3-9239-1200

Europe

Latin America

T 561-998-6114 T 32-2-725-11-20

### **Ordering Information**

| MC-4TX1FXMM-2KM      | 4-Port Fast Ethernet to 1 MM Fiber Port               |
|----------------------|---|
| MC250-4T/1FM         | 4-Port Fast Ethernet to 1 MM Fiber Port (wide-temp)   |
| MC-4TX1FXSM-15KM     | 4-Port Fast Ethernet to 1 SM Fiber Port               |
| MC250-4T/1FS         | 4-Port Fast Ethernet to 1 SM Fiber Port (wide-temp)   |
| MC-4TX2FX            | 4-Port Fast Ethernet Drop-and-Repeat 2 MM Fiber Ports |
| Included Accessories | User's Manual, DIN Rail Kit, Wall Mount Kit           |

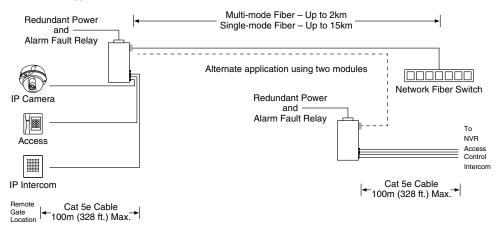
Note: External power supply must be ordered separately.

### Accessories

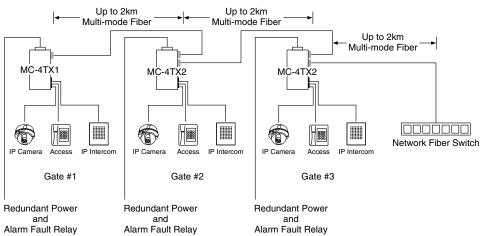
| PS12VDC1.5A-U   | 12VDC@1.5A External Power Supply                                  |  |  |
|-----------------|---|--|--|
| HLG-240-48      | 48VDC High Temperature Industrial Power Supply                    |  |  |
| PS48VDC100W-DIN | 48VDC@2A (100W) DIN-Rail Mount Hardened Power Supply (100~240VAC) |  |  |

### Typical Applications

Point-to-Point Application



### **Drop-and-Repeat Application**





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Specifications subject to change without notice.