

Introduction

The FRM220 Family are slide-in-line cards for placement in the FRM220 Platform Media Converter Chassis and available in a number of different models that also act as a stand-alone converter for placement in one-slot chassis. The FRM220-10/100I is a media converter for 10Base-T or 100Base-TX, data transmission over optical fiber media depending on your specific network needs. All media converters are available with either multi-mode or single-mode optical transceivers and with connectors for SC, ST or FC. In single mode, WDM (Wave Division Multiplexing with SC connector) is also available in 20, 40, 60, or 80Km reach, which will provide the ability to transmit and receive data using only a single optical fiber. When the FRM220-10/100I card is placed in the FRM220 rack, the In band management, can monitor, configure and control the activity of each port for both local or remote sides. For the UTP side, auto-negotiation is default. You may set data rate to 10Mbps or 100Mbps and duplex mode to full or half duplex. The Fiber Transceiver Converters give you the freedom to extend your 10/100Mbps cabling distance by allowing connectivity up to 120 kilometers. Six LED indicators signal the power status of the converter, UTP port speed, duplex status and Link/Act and FX port Link/Act and FEF (Far End Fault).

Features

- Auto Negotiation or Manual mode in TP port
- Link fault pass through (LFP) function
- Forward 2046 bytes packets in switch mode
- Forward 9K jumbo packets in Pass through mode
- Compatible with FRM220 Chassis In Band Management :
- Bandwidth control (32K or 512Kbps x N)
- Supports local or remote Monitor (Link/Speed/Duplex/Power)
- Supports local or remote Configure (Speed/Duplex/port disable/Operating mode/bandwidth)
- Supports remote CPE power fail detect (dying gasp)
- Provides Auto Laser Shutdown (ALS) function
- Supports On-Line F/W upgrade (local or remote)

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User Guide

In-band Managed Fiber Media Converter

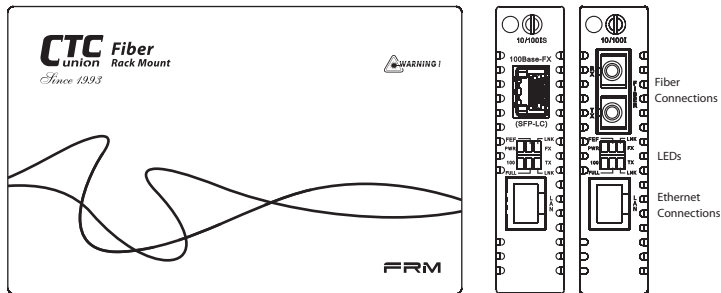
10/100Base-TX / 100Base-FX – FRM220-10/100I



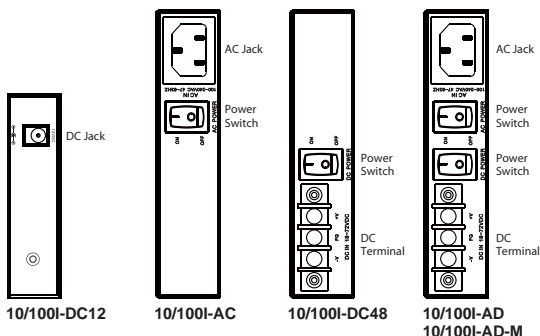
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Panel

- Figure #1. Front Panel of FRM220-10/100I(S)



- Figure #2. Rear Panel of Stand-alone FRM220-10/100I(S)-DC12, FRM220-10/100I(S)-AC/DC48/AD/AD-M



Specifications

Standards

IEEE802.3 10BASE-T, IEEE802.3u 100BASE-TX, 100BASE-FX (Fast Fiber, 100Mbps)
Supports Full Duplex Ethernet mode (200Mbps)
FRM220-10/100 family supports transmission of Ethernet packet up to 2046Bytes in size.

10/100BASE-TX RJ-45 Connectors

One RJ-45 connector is provided for connection to MDI-X (To PC) or MDI (To HUB) equipment. Auto MDI-X allows all UTP connections to be made using only a common straight-through UTP cable.

RJ-45 Pin	MDI-X type	MDI type
1	Rx+	Tx+
2	Rx-	Tx-
3	Tx+	Rx+
6	Tx-	Rx-

100BASE-TX UTP Cable

Cable type: 100Base-Tx; Category 5 or better
Maximum cable distance: 100 meters (328 feet)

Fiber Optic Connectors

FRM220-10/100I : SC connectors are provided for optic cable connection.
FRM220-10/100IS : one SFP slot with LC connectors is provided for optic cable connection

Environment

Operating -- 0°C – 50°C, Storage -- 0°C – 70°C,
Humidity -- 10 – 90%, (non-condensing)

Power

Adapter: 12V DC 1A, Built-in AC Power 100~240 V, Built-in DC Power 18~72VDC

Dimensions: (W x D x H) mm

10/100I(S)-DC12 : 88 x 160 x 24 10/100I(S)-AC: 135 x 201 x 35
10/100I(S)-DC48 : 135 x 201 x 35 10/100I(S)-AD: 135 x 201 x 35
10/100I(S)-AD-M : 135 x 201 x 35

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Link-Fault-Pass through (LFP) Application Note

When 'link fault pass through' function is enabled, link status on TX port will inform the FX port of the same device and vice versa. From the link fault pass through explanation in the figure below, if link fail occurs on TX port (1), the local FX port sends non-idle pattern to notify the remote FX port (2). The remote FX port then forces its TX port to link failed after receiving the non-idle pattern (4). This mechanism will alert the link fault status of local TX port to the remote converter's TX port, and the link status of the remote TX port will become down. Link status LED will also be off for both. Link Fault Pass through is enabled by setting DIP switch 4 (ON).

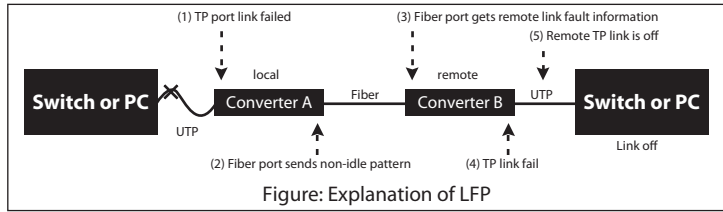


Figure: Explanation of LFP



LED Indicators

LED	Function	State	Status
PWR	Power indicator	On	Converter has power.
		Off	Converter has no power.
FX link/Act	Fiber link & activity	On	The fiber link is ok.
		Off	No link or the link is faulty.
		Blinking	Receiving data on the fiber.
FEF	Far End Fault	On	Far end is experiencing link fault.
		Off	No fault.
100	Mode display	On	Ethernet operates in 100Mbps
		Off	Ethernet operates in 10Mbps
			Or no devices attached.
Full	Mode display	On	Full duplex mode (200mbps)
		Off	Half duplex mode (100mbps)
		On	The UTP link is ok.
TX link/Act	Ethernet link & activity	Off	No link or the link is faulty.
		Blinking	Receiving data on Ethernet.

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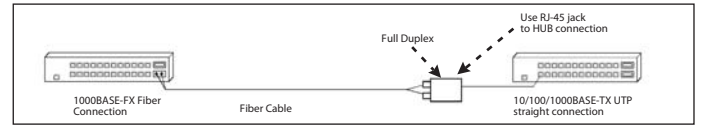
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Installation

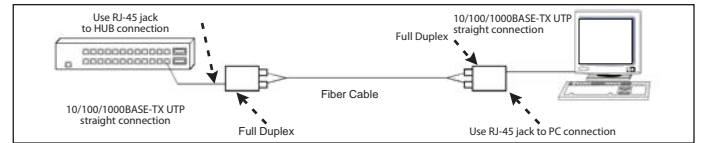
Connect the Ethernet cable to the E1000/E4000 Series. The converter will sense whether to operate in Full or Half mode and will be indicated on the LED. Follow the connection examples below. Install the fiber converter with the DC power adapter provided (+12VDC, 1A) and connect the adapter to an AC outlet.

Connections

The following example illustrates the connection scheme when connecting from a 10/100/1000BASE-TX port of one HUB to a 1000BASE-FX port of another HUB through the fiber converter.



The following example illustrates the connection scheme when connecting from a 10/100/1000BASE-TX port of one HUB to a 10/100/1000BASE-TX Network Interface Card (NIC) in a computer through the fiber converter.



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FRM220-10/100I-M-AD Console Terminal Operation

Connect serial console with Hyperterminal or PuTTY with settings:

```
38400 baud
8 bits
N no parity
1 Stop bit
no flow control
```

```
*****
*** CTC UNION TECHNOLOGIES CO.,LTD ***
*** FRM220 10-100I Manager Ver:1.68 ***
*****
```

```
<1>: Port Active [Enable] [Local] [Ver:1.100-1.688-0.000-0.000]
      UTP Link:[Up] Rx Active:[Off]
<2>: Negotiation:[Auto ]
<3>: Speed: [ 100 ]
<4>: Duplex: [ Full ]
      FX Link:[Up] Rx Active:[Off] FEF:[Off] Remot PWR:[non]
<5>: Loop Back Test:[Off] Status:[----]
<6>: Operation Mode: [Switch]
<7>: Ingress Rate Limit<IRL> Mode: [No Limit][100.0M]
<8>: Egress Rate Limit<ERL> Mode: [No Limit][100.0M]
<9>: Link Fault Pass Through<LFP>:[Disable]
<A>: Auto Laser ShutDown<ALS>: [Disable]
<B>: Send Remote Hardware Reset <M>: In Band Management:[Enable]
<C>: Port Reset
      Small Form Pluggable:[No] Digital Diagnostic<D/D>:[No]
<D>: Go to Line Card Status menu <N>: Go to the Remote menu.
<ESC>: Go to Prvious menu. Plese Select an item
<S>: Store Parameter for Local
```

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Functional Descriptions:

1. Port Active: Use this to enable or disable this device
2. Negotiation: Switch between Auto and Manual (forced) mode
3. Speed: Set the Ethernet speed for forced mode at 10M or 100M
4. Duplex: Set the duplex Full or Half for forced mode
5. Loop Back Test: Perform the non-intrusive OAM loop back test
6. Operation Mode: Sets between Switch (store&forward) and Converter (jumbo frame) modes
7. Ingress RL: Set the electrical to optical speed in granules of 32K or 512K
8. Egress RL: Set the optical to electrical speed in granules of 32K or 512K
9. LFP: Enable or disable the Link Fault Pass Through function
- A. Auto Laser Shutdown: Enable or disable the ALS safety function
- B. Remote Reset: Send reset code to remote unit (remote must be set to accept remote reset)
- C. Port Reset: Resets the Ethernet chip
- D. Local card menu: If this card has SFP, then this menu item can view the SFP info
- M. In Band Mgmt: Use this to enable or disable the OAM in-band management function
- N. Go to remote card menu: Using OAM, enter the configuration screen for the remote card
- S. Store parameters: Selecting enable will save the settings to the card

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