



# User Manual

## FCR200xx Fast Ethernet Fibre Optic Media Converter with Advanced LFP



Version 1.1  
January 2010

## Caution

Electronic Circuit devices are sensitive to static electricity. Dry weather conditions or walking across a carpeted floor may cause you to acquire a static electric charge.

To protect your switch, always:

- Touch the metal chassis of your computer to ground the static electrical charge before you handle the switch.
- Pick up the switch by holding it on the left and right edges only.

## Electronic Emission Notices

### Federal Communications Commission (FCC) Statement

This equipment has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

### European Community (CE) Electromagnetic Compatibility Directive

This equipment has been tested and found to comply with the protection requirements of European Emission Standard EN55022/EN60555-2 and the Generic European Immunity Standard EN50082-1.

|      |                              |   |
|------|------------------------------|---|
| EMC: | EN55022(1988)/CISPR-22(1985) | class A                                   |
|      | EN60555-2(1995)              | class A                                   |
|      | EN60555-3                    |   |
|      | IEC1000-4-2(1995)            | 4K V CD, 8KV, AD                          |
|      | IEC1000-4-3(1995)            | 3V/m                                      |
|      | IEC1000-4-4(1995)            | 1KV – (power line), 0.5KV – (signal line) |

### Australian C-Tick Compliance.

This equipment is compliant with the required Australian C-Tick standards

## 1. Introduction

The FCR200xx series of Fast Ethernet media converters is IEEE802.3u compliant and supports 100Base-TX 100Mb Copper to 100Base-FX 100Mb Fibre. The FCR200xx can be used as a standalone unit or as a slide-in module for the DCR12xx 19" converter rack (up to 12 units) for use at a central wiring closet.

## 2. Model Description

| Model              | Power Description           |
|--------------------|-----------------------------|
| TP↔ST/SC AC-DC +5V | By AC-DC Adapter            |
| TP↔ST/SC USB +5V   | By Self Powering Cable(USB) |

| The 100Mbps Fibre Transceiver       | Wavelength |
|-------------------------------------|------------|
| ST/SC/LC multi-mode 2Km             | 1310nm     |
| SC/LC.S05/S20/S40/S60Km single-mode | 1310nm     |
| SC/LC.S80/S100Km single-mode        | 1550nm     |

\*: MT-RJ, VF-45, etc. is available upon request.

| Single Fibre Model  | TX, RX Wavelength |        |
|---|-------------------|--------|
| 1310nm Single-Mode 20Km<br>* 40/60/80/100Km models are avail. | TX (Transmit)     | 1310nm |
|   | RX (Receive)      | 1550nm |
| 1550nm Single-Mode 20Km<br>* 40/60/80/100Km models are avail. | TX (Transmit)     | 1550nm |
|   | RX (Receive)      | 1310nm |

Note: The single fibre models must be used in pairs one 1310 and one 1550nm.

## 3. Checklist

Before you start installing your equipment, verify that the package contains the following:

- The FCR200xx Fast Ethernet Media Converter
- DC Power Supply
- This Users Manual CD-ROM

Please notify your supplier immediately if any of the aforementioned items are missing or damaged.

### 4. Installation

Note: When used in the DCR12xx Chassis the Media Converter is hot-swappable.

Wear a grounding device for electrostatic discharge.

As a standalone unit:

- ⇒ Verify the AC-DC adapter conforms to your country AC power requirement and insert the power plug

For use in the DCR12xx:

- ⇒ Slide the media converter into one of the spare slots on the DCR12xx chassis.

|                   |   |
|-------------------|---|
| <b>TP Port</b>    | <b>Default:</b> AUTO<br>AUTO or FORCE setting, see Fig. 13 S1—Bit 1   |
|                   | Attach TP Cat. 5 or higher grade cable to TP port, max. distance of 100m. 10/100 TP port supports AUTO MDI-X sensing. |
| <b>Fibre Port</b> | <b>Default:</b> 100FDX<br>"100FDX"/"100HDX" setting, see Fig. 13 S1—Bit 5   |

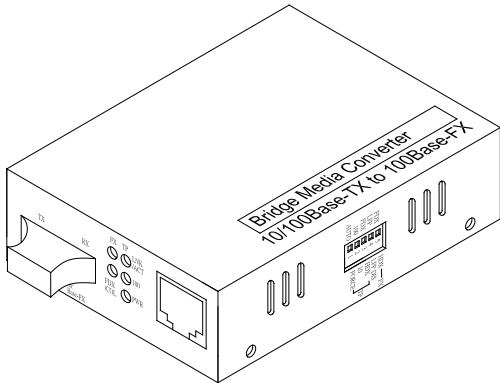


Fig. 1 View of the LFP Bridge Media Converter

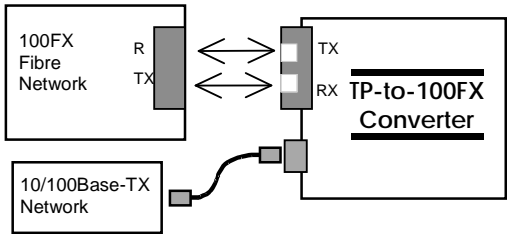


Fig. 2 Basic Network Connection

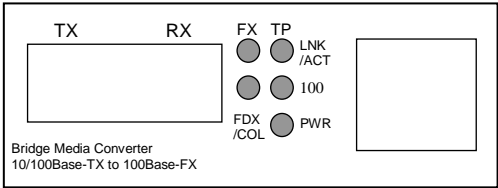


Fig. 3 Bridge Media Converter Front Panel

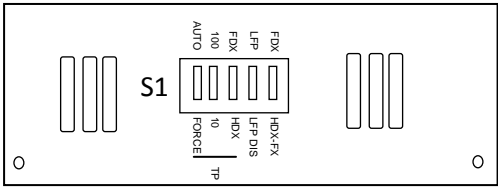


Fig. 4 Bridge Media Converter Side Panel

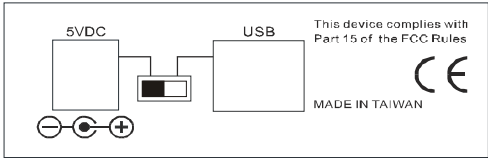


Fig. 5 Bridge Media Converter Rear Panel and Power Select Button

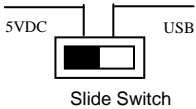


Fig. 6-1

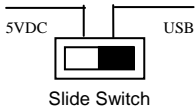


Fig. 6-2

### 5. WDM Single Fibre Models

The WDM converters are specially designed with an optic Wavelength Division Multiplexing (WDM) model that can transport bi-directional full duplex signals over a single fibre.

| Single Fibre Model                                     | TX, RX Wavelength |        |
|--|-------------------|--------|
| 1310nm Single-Mode 20Km<br>* 40/60Km models are option | TX (Transmit)     | 1310nm |
|  | RX (Receive)      | 1550nm |
| 1550nm Single-Mode 20Km<br>* 40/60Km models are option | TX (Transmit)     | 1550nm |
|  | RX (Receive)      | 1310nm |

**Note:**

The 1310nm and 1550nm models must be installed in pairs, i.e., install 1310nm model at one end and 1550nm model at the other one.

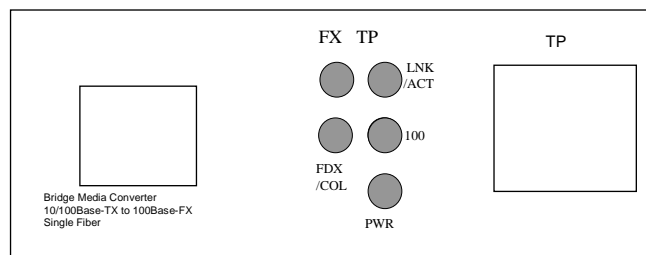


Fig. 7 WDM Single Fibre Converter Front Panel

## 6. Link Failure Propagation

Link Failure Propagation (LFP) is a function that propagates the failure of link to the connecting media converter. If link is lost on either the copper or the fibre ports on media converter A, both copper and fibre link will then be lost on media converter B. LFP uses the Far End Fault (FEF) feature of the fibre interface to perform this function.

Unlike the LFP - Far End Fault method the new Advanced LFP feature allows the media converter to propagate the link failure to active fibre devices, such as switches. With FEF, the LFP functionality would only work when connected to another device that supported FEF, such as another media converter. Know the same functionality can be used when connecting to Fibre Optic switches. When the copper port of the media converter loses link the Fibre port also loses link forcing the link on the switch to also fail. Both LFP features can be enabled or disabled using the DIP switches on the side of the media converter. When disabled the media converter will act as normal, e.g. if the fibre port loses link the copper port will still have an active link and vice versa.

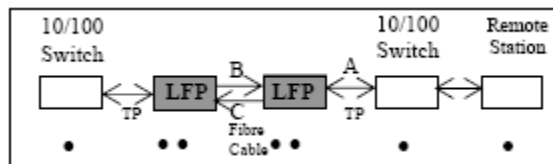


Fig. 8 Normal status via a pair of LFPs

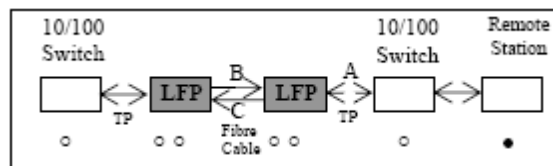


Fig. 9 The status if TP Cable A is broken

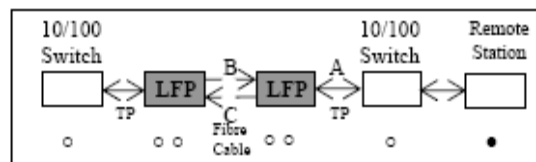


Fig. 10 The status if Fibre Cable B or C is broken

Note: LFP will only function if both devices support this feature. LFP will not function on this media converter if it is connected to a network switch that does not support the LFP Function. In most cases these will need to be used in pairs.

## 7. LED Description

| LED           | Colour | Function  |
|---------------|--------|---|
| FX LNK/ACT    | Green  | Lit when fibre connection is good<br>Blinks when fibre data is present                                    |
| FX<br>FDX/COL | Amber  | Lit when full-duplex mode is active<br>Off when half-duplex is active<br>Blinks when collision is present |
| TP LNK/ACT    | Green  | Lit when TP connection is good<br>Blinks when TP data is present  |
| TP 100        | Green  | Lit when TP speed is 100Mbps<br>Off when TP speed is 10Mbps   |
| PWR           | Green  | Lit when +5V power is coming up   |

## 8. DC Jack and AC-DC Power Adapter

The DC jack's central post is 2.5mm wide, it conforms to the DC receptacle (2.5mm) on the 19-inch Converter Rack slot.

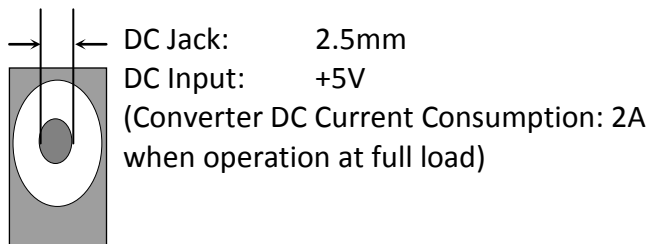


Fig. 11 DC+5V Input Jack and Dimension

Keep the AC-DC adapter as spare parts when Media Converter is installed in a 19-inch Media Converter Rack.



## 9. Dip Switches

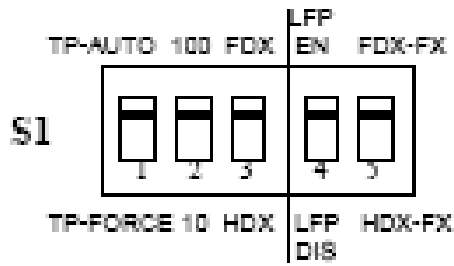


Fig. 12 Dip Switches on side of converter

- S1-1 TP port mode : AUTO(default) or FORCE
- S1-2 TP port speed : 100 or 10 when TP at Force
- S1-3 TP port duplex : FDX or HDX when TP at Force
- S1-4 LFP : LFP enabled(default) or disabled
- S1-5 Fibre port duplex: 100FDX(default) or 100HDX

Note:

1. S1-2 and S1-3 will take effect only when S1-1 is set at TP-FORCE.

## 10. Technical Specifications

- **Standards:** IEEE802.3u 10/100Base-TX, 100Base-FX
- **UTP Cable:** Cat. 5 cable and up to 100m
- **Fibre Cable:** 50/125, 62.5/125 or 100/140 $\mu$ m multi-mode  
8.3/125, 8.7/125, 9/125 or 10/125 $\mu$ m single-mode

- **LED Indicators:** POWER, TP LNK/ACT, 100, FX LNK/ACT, FDX/COL

- **Data Transfer Rate:**

| Speed   | Forwarding Rate |
|---------|-----------------|
| 100Mbps | 148,800 PPS     |
| 10Mbps  | 14,880 PPS      |

- **Flow Control:** IEEE802.3x compliant for full-duplex  
Backpressure flow control for half-duplex
- **Power Requirement:** 1A@+5VDC from AC-DC Adapter  
0.5A@+5VDC from USB port
- **Ambient Temperature:** 0° to 50°C
- **Humidity:** 5% to 90%
- **Dimensions:** 26.2(H) × 70.3(W) × 94(D) mm