ClearCube®
F6151
Media Converter Chassis System
with
10/100BaseTX to 100BaseFX Converter

ClearCube Connectivity Systems

F6151
Media Converter Chassis System with 10/100BaseTX to 100BaseFX Converter

User's Guide

Table of Contents

FCC Warning

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

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this user's guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user must correct the interference.

CE Mark Warning

This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

Trademarks

Product names mentioned in this manual may be trademarks or registered trademarks of those products and are hereby acknowledged.

- Ethernet is a trademark of Xerox Corporation.
- Microsoft Windows is a trademark of Microsoft Corporation.

Preface

This manual describes how to install and use the ClearCube F6151 Media Converter and Chassis System. The system introduced here is capable of housing up to sixteen media converters, each of which offers one channel media conversion solution:

- 10/100BaseTX ↔ 100BaseFX
- 100BaseTX ↔ 100BaseFX

The ClearCube Ethernet Media Converter fully complies with IEEE802.3 10BaseT and IEEE802.3u 100BaseTX/FX standards.

In this manual, you will find:

- Introduction on the Chassis System
- Product features
- Illustrative LEDs functions
- Installation instructions
- Specifications

Package Contents

When you unpack the product package, you shall find these items listed below.

- ClearCube F6151 Media Converter Chassis System, consisting of one chassis with 16 media converters
- Two power supplies installed on the chassis
- AC power cord
- User's Manual
- Accessories: rackmount screws, brackets, & bracket screws
- Media converter carriers, fitted to each bay

Please inspect the contents, and report any apparent damage or missing items immediately to your authorized reseller.

Chassis Overview

ClearCube F6151 Media Converter Chassis System

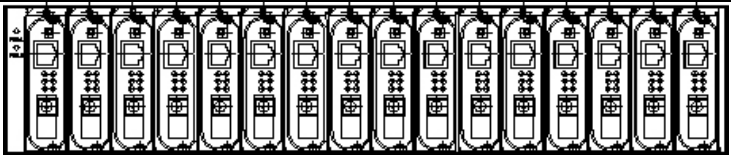


Figure 1: Chassis and converters equipped with two power supplies

Product Features

- ***HOUSES SIXTEEN MEDIA CONVERTERS***
- ***FRONT PANEL LEDS FOR POWER STATUS***
- ***STANDARD 19" RACKMOUNTABLE SIZE, 2U***
- ***NON-STOP OPERATION & MINIMAL DOWNTIME***
- ***HOT-SWAPPABLE***

  The following items are designed to be hot swappable to allow easy and quick replacement:

  - Media converters

  - Power supplies with fans

- ***ADEQUATE VENTILATION***

  - Provides one cooling fans on the left and right side

  - Ventilation holes on each side

- ***POWER REDUNDANCY & POWER ISOLATION***

Two high quality internal power supplies provided for load-sharing purpose.

- Load sharing mechanism: If one power supply should fail, the redundant power supply is capable of taking over immediately
- Converter bay power isolation ensures each bay is electrically isolated from each other

♦ ***OVER CURRENT PROTECTION***

- Fuses on PCB for each converter bay
- Fuse on each power supply

Front Panel Display

FRONT PANEL

The front panel of this ClearCube F6151 Media Converter Chassis System shows it with sixteen media converters in bay 1~16.

There are two LED indicators on the left side of the front of the chassis that indicate the status of each power supply.

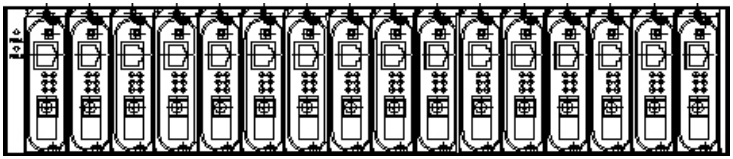


Figure 2: Front panel of ClearCube F6151 Media Converter Chassis System

UNDERSTANDING LEDS

Power Supply's Switch LED	Green	Power switched on
	Off	Power switched off
		Blown fuse
		Power supply failed

ⓘ Before you use this table for troubleshooting, make sure the chassis system is properly connected to power and switched on.

Installation

Selecting a Site for the Equipment

As with any electric device, you should place the equipment where it will not be subjected to extreme temperatures, humidity, or electromagnetic interference. Specifically, the site you select should meet the following requirements:

- The ambient temperature should be between 32 and 104 degrees Fahrenheit (0 to 40 degrees Celsius).
- The relative humidity should be less than 90 percent, non-condensing.
- Surrounding electrical devices should not exceed the electromagnetic field (RFC) standards for IEC 801-3, Level 2 (3V/M) field strength.
- Make sure that the equipment receives adequate ventilation. Do not block the ventilation holes on each side of the switch or the fan exhaust port on the side or rear of the equipment.
- The power outlet should be within 1.8 meters of the switch.

Deciding How to Install the System

The accessories supplied in the product package include: rackmount screws, rackmount brackets, and bracket screws.

This well-built chassis can be installed in the following ways:

MOUNTED TO 19-INCH STANDARD RACK

Use the rackmount brackets and screws to install the chassis into any EIA 19" standard rack.

Step 1: Attach the brackets to each side of the chassis. Apply screws to each side and secure them tightly.

Step 2: Carefully position the chassis into the rack. Align the brackets to the side holes on the rack and use rack screws to secure the chassis with the rack.

Step 3: Proceed to the "Connecting to Power" section.

DESKTOP OR ANY FLAT SURFACE

The chassis can sit on desktop or any flat surface with adequate space and ventilation. If you want to place it onto a shelf, make sure the shelf can withstand a minimum weight of 10kg.

Step 1: Simply put the chassis on the desired place.

Step 2: Ensure the chassis receives good ventilation.

Step 3: Proceed to the "Connecting to Power" section.

Replacing Media Converters in a Chassis

The chassis is shipped containing 16 media converters. Each media converter is attached to a media converter carrier, which is already fitted into bays of the chassis.

The following steps describe how to attach a media converter carrier to a media converter if you need to replace a media converter.

Step 1: To install a media converter onto any of the carriers, you have to unscrew the carrier from the desired bay first.

Step 2: Fit the media converter onto the carrier.

Step 3: When the media converter is completely seated onto the carrier, insert the carrier to the guide rails of the bay slot.

Step 4: Carefully slide in the carrier until it is fully and firmly fitted to the power socket. Fasten the screws on the carrier.

ⓘ

i. The chassis is designed to house only the proprietary media converters.
ii. Never insert any media converter into the chassis directly without using the supplied carriers. These carriers allow secure and consistent placement of the media converters into the chassis' backplane without causing any damage.
iii. For details, please refer to the User's Manual for media converters.

For more information about media converters, see "Media Converter Overview" on page 9.

Connecting to Power

POWER SUPPLY

The chassis ships with two power supplies. When the chassis is equipped with two power supplies, you can have the following advanced performance.

- **Hot Swappable –**
  The design of the power system is based on an idea of providing maximum flexibility and redundancy. In this way, you may remove any of the two power supplies without turning off the system.
- **Redundancy –**
  During operation, both power supplies are switched on and share the current load. In case that one of them should fail, the other will instantaneously take 100% of the load without any loss. Similarly, if one power supply is removed from servicing, it can be switched off and removed while the chassis continues functioning.
- **Protection System –**
  The power of each converter bay comes from the two shared power supplies. Each bay is isolated from each other under a certain protection mechanism, so that it is free from any problem that might occur to the power supplies or faulty converter bay. This is the best solution to protect your investment in media converters.

CONNECTING TO POWER

The chassis system is equipped with two power supplies.

Step 1: Connect the supplied AC power cord to the receptacle on the front panel of each power supply.

Step 2: Attach the plug into a standard AC outlet with a voltage range from 100~240Vac.

Step 3: Turn on the chassis system by flipping the ON/OFF switch beside the receptacle to ON position. The LEDs on the front panel of the media converter chassis system will come on then.

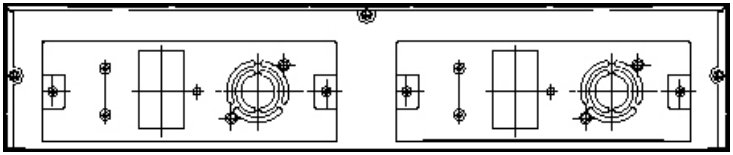


Figure 3: The rear of the ClearCube F6151 Media Converter Chassis System

Cooling System

The chassis system can hold two power supplies and up to sixteen media converters, and therefore, it is necessary to provide a good cooling system to obtain adequate ventilation.

The chassis is equipped with two hot-swappable power supplies with fans at the rear. The chassis is also equipped with one fan on the left and right side of the chassis.

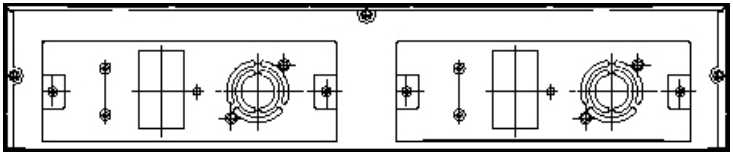
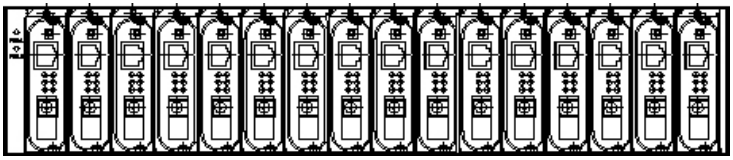


Figure 4: The rear side of the ClearCube F6151 Media Converter Chassis System

Media Converter Overview

The media converter provides one channel for media conversion between 10/100BaseTX and 100BaseFX. Media converters are installed in a standard 19" chassis as shown below.

Product Overview



Product Features

- One-channel media conversion between 10/100BaseTX and 100BaseFX
- Fiber media allows multi-mode fiber using SC connector
- Auto negotiation of speed and duplex mode on TX port
- Auto MDIX on TX port
- One DIP switch for configuring link-fault-pass-through, fixed speed and half/full duplex
- Store-and-forward mechanism
- Non-blocking full wire-speed forwarding rate
- Support broadcast storm filtering
- Back-pressure & IEEE802.3x compliant flow control
- Front panel status LEDs
- External AC to DC power adapter
- Hot-swappable when used with a chassis

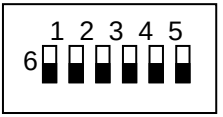
One-Channel Media Converter

Ports

The Converter provides one TX port and one FX port. For the FX port, it provides options of multi-mode fiber using an SC connector. For the TX port, it uses RJ-45 connector, auto-MDIX, and auto senses the speed of 10/100Mbps and full/half duplex.

Port Settings

Port settings are made very simple by means of a DIP (Dual Inline Package) switch at the rear panel of the module.



DIP SWITCH

There are six pins on the DIP switch for port settings. Refer to the table below for more details.

DIP switch No.	Down (Default Setting)	Up
1	Enable link-fault-pass-through	Disable link-fault-pass-through
2	Enable auto negotiation for TX port	Enable forced mode for TX port
3	TX port forced to 100Mbps	TX port forced to 10Mbps
4	TX port forced to full duplex mode	TX port forced to half duplex mode
5	FX port forced to full duplex mode	FX port forced to half duplex mode
6		

- First, disconnect the converter from the power. Then toggle Pin 2 of the DIP switch to the up position to enable the forced mode for TX port.

NOTE Pin 2 must be toggled up prior to speed and duplex mode settings manually.

- Toggle down Pin 3 to force the TX port at the speed of 100Mbps. Or toggle up Pin 3 for 10Mbps speed.
- Toggle down Pin 4 to force the TX port at full duplex mode. Or toggle up Pin 4 for half duplex mode.
- Toggle down Pin 5 to force the FX port at full duplex mode. Or toggle up Pin 5 for half duplex mode.
- Connect the converter to the power again. The new setting will come into effect then.

Front Panel & LEDs

LED INDICATORS

The LED indicators give you instant feedback on status of the converter:

LEDs	State	Indication
PWR	Steady	Power on PWR stands for POWER
	Off	Power off
100 (Mbps)	Steady	Connection at the speed of 100Mbps
	Off	Connection at the speed of 10Mbps
LNK/ACT	Steady	A valid network connection established LNK stands for LINK
	Flashing	Transmitting or receiving data ACT stands for ACTIVITY

	Off	Neither valid network connection established nor transmitting/receiving data.
FDX/COL	Steady	Connection in full duplex mode FDX stands for FULL-DUPLEX
	Flashing	Collision occurred COL stands for COLLISION
	Off	Connection in half-duplex mode

Specifications

CHASSIS SYSTEM

Capacity	Sixteen bays for housing up to sixteen media converters
Power	Tow power supplies provided, hot-swappable
Cooling	Two power supplies with fans One fan on the left and right side of the chassis
LED Indicators	2 LEDs (1 LED for each power supply's power status)
Dimensions	W440 mm × D276 mm × H90 mm Standard 19" size, 2 U
Net Weight	8.5kg approx. (Fully fitted with sixteen media converters)

POWER SUPPLY

Power Input	110~240Vac, 50~60Hz
Power Output	12Vdc, 84W (x2) max.
Load	7A (x2) max.
Operating Temperature	0°C to 40° C (32°F to 104°F)
Storage Temperature	-25°C to 70°C (-13°F to 158°F)
Emissions	CE Class A, FCC part 15 Class A

MEDIA CONVERTER

Applicable Standards	IEEE 802.3 10BaseT IEEE 802.3u 100BaseTX & 100BaseFX
Fixed Ports	1 TX port, 1 FX port
Speed	10/20Mbps for half/full-duplex
10BaseT 100BaseTX/FX	100/200Mbps for half/full-duplex
Switching Method	Store-and-Forward

Forwarding rate	14,880/148,800pps for 10/100Mbps
LED Indicators	Per Unit- (2 LEDs): Power; 100(Mbps) Per Port- (2 LEDs): LNK/ACT; FDX/COL
Dimensions	L110 × W81 (max.) × H23 mm
Weight	190 g
Power	External power adaptor 12VDC, 0.8A
Power Consumption	7W Max.
Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)
Storage Temperature	-25°C ~ 70°C (-13°F ~ 158°F)
Humidity	10 ~ 90%, non-condensing
Emissions	FCC part 15 Class A, CE Mark

Support

Email:	support@clearcube.com
Web site:	support.clearcube.com
Toll-free:	(866) 652-3400
Phone:	(512) 652-3400

ClearCube Technology, Inc.

8834 Capital of Texas Highway North Austin, Texas 78759 (512) 652-3500

www.clearcube.com

P/N G0400031 Rev A