FVT-6001 / FVT-6301

Copper to Fiber
Smart Media Converter

User Manual

Part No.	Model No.	Description
532602	FVT-6001	10/100Base-TX to 100Base-FX SC, Multi-mode 2km (TS-1000)
532630	FVT-6301	10/100Base-TX to 100Base-FX SC, Single-mode 30km (TS-1000)

Ver. 1.00 - 0611

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 in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
Reorient or relocate the receiving antenna.
Increase the separation between the equipment and receiver.
Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
Consult the dealer or an experienced radio/TV technician for help.

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.

Table of Contents

1. Introduction

The LevelOne 10/100 TX to 100FX Media Converter is a cost-effective solution for the converting between 10/100Base-TX and 100Base-FX cabling, it allows you to extend the cabling distance of your 100Base-FX network. The 10/100 TX to 100FX Media Converter provides cabling connectors: SC multi- mode fiber connector and SC single-mode fiber connector. There are 4 DIP-switches to set the operation mode for UTP, Fiber ports and link loss forwarding function. With TS1000 compliant, it supports alarm output, display and loop-back test functions simplify maintenance and fault isolation tasks

The 10/100 TX to 100FX Media Converter can be slotted in FVT-4000 Multi-Converter Chassis, which allows your network connectivity to be more flexible. It also can be use as stand-alone without slot in Multi-Converter Chassis. The package has included the AC power adaptor for stand-alone using.

1.1. Features

- Comply with IEEE 802.3, 802.3u, and 802.3x standards
- Convert between UTP cabling and Fiber-optic
- Support 10/100 Mbps Auto-negotiation for UTP port
- SC Fiber cabling connectivity up to 30Km
- Store-and-forward switching to separate two collision domains
- Link- Lost-Forwarding function
- 4DIP-switches to set the operation mode
- Standalone and Chassis design
- Support TS-1000 for CPE side

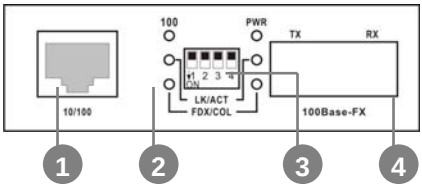
1.2. Package Contents

- FVT-6001 / FVT-6301 Media Converter
- Power Adaptor DC 9V, 0.7A
- User manual

Compare the contents of your converter module with the checklist above. If any item is damaged or missing, please contact your local dealer for service.

2. Hardware Description

2.1. Front Panel



(1) RJ-45 Port
(2) LED
(3) DIP-Switch
(4) SC Fiber Connector

2.2. Rear Panel

Power Adapter: DC 9V, 0.7A

The rear panel contains a power socket. This power socket accepts DC9V voltage and minimum 0.7A supplied current.

2.3. LED Indicators

LED	Status	Meaning
PWR	Green	Power on
100	Green	100Mbps UTP Speed
	OFF	10 Mbps UTP Speed
LK/ACT (UTP)	Green	The unit is linking with it's link partner.
	Blinks	The unit is transmitting or receiving packets
	Off	No device attached
LK/ACT (Fiber)	Green	The unit is linking with it's link partner.
	Blinks	The unit is transmitting or receiving packets
	Off	No device attached
FDX/COL (UTP)	Orange	The UTP port is operating in full-duplex mode.
	Blinks	Collision of Packets occurs in the port.
	Off	Half-duplex mode or no device attached
FDX/COL (Fiber)	Orange	The fiber port is operating in full-duplex mode.
	Blinks	Collision of Packets occurs in the port.
	Off	Half-duplex mode or no device attached

2.4. DIP-switch

The DIP-switch is used to configure operation mode for LLF (Link Lost Forwarding) and operation mode for UTP/Fiber port. The default value of DIPswitch is OFF.

No	Status	Description
1	ON	UTP 100Mbps Full Duplex mode
	OFF	UTP Auto-Nego
2	ON	Fiber in Half Duplex
	OFF	Fiber in Full Duplex
3	ON	LLF Enable
	OFF	LLF Disable
4	ON	Pure converter mode
	OFF	Switch Converter mode

Link Lost Forwarding:
When LLF is enable, allow UTP link failures to be reported to the fiber side and also allow Fiber link failure to be reported to the UTP side. Therefore, A link loss forward feature is provided in both UTP and Fiber side.

Pure Converter mode (Fast Ethernet Module):
When pure converter mode is enabling (on), it operates with the minimum latency. The transmission flow does not wait until entire frame is ready, but instead it forwards the received data immediately after the data being received. And TP port should be forced at 100M in this application. When DIP-Switch is in Switch Converter mode (off), the converter function is same as Switch Hub.

Note:
Please don't change the DIP-switch setting when UTP or fiber port is transmitting or receiving data. It may cause some data error.

3. Connection

3.1. Cabling

- Twisted-pair segment can be use unshielded twisted pair (UTP) or shielded twisted pair (STP) cabling. The cable must comply with the IEEE 802.3u 100Base TX standard for Category 5. The cable between the converter and the link partner (switch, hub, workstation, etc.) must be less than 100 meters (328 ft.) long.
- Fiber segment using multi-mode connector type must use 50 or 62.5/125 um multi-mode fiber cable. You can connect two devices up to a 2-kilometer (6,562 ft.) distance.
- Fiber segment using single-mode connector type must use 8/125 or 9/125 um single-mode fiber cable. You can connect two devices in the distance of 30 Kilometers in full duplex operation. For half-duplex operation, the recommended maximum distance is 412 meters (1,352 ft.)

3.2. RJ-45 Port

RJ-45 Port (Auto MDI/MDIX): the Ethernet RJ-45 will auto-sense for 10Base-T or 100Base-TX connections. Auto MDI/MDIX means that you can connect to another Switch or workstation without changing non-crossover or crossover cabling. See the below figures for straight through and crossover cable schematic.

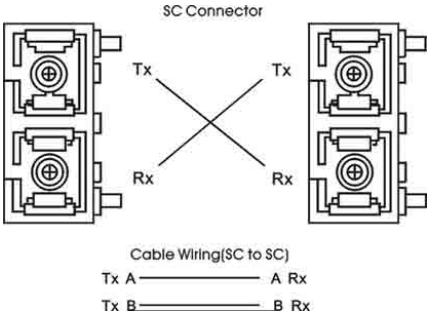
Pin Number	Assignment
1	Tx+
2	Tx-
3	Rx+
6	Rx-

RJ-45 Pin Assignments

[Note] "+" and "-" signs represent the polarity of the wires that make up each wire pair.

3.3. Fiber

Fiber Port: It is a 100 Base-FX connection. We provide SC connectors (multi/single mode). Please follow the below figure to connect it. Wrong connection will cause the port cannot work properly.



ATTENTION

This is a Class 1 Laser/LED product
Do not stare into the Laser/LED beam

4. Specification

4.1. Optical Fiber

Model No.	Wavelength (nm)	Avg. Launch Power (dB)	Avg. Sensitivity (dB)
FVT-6001 SC, Multi-mode	1310 (nm)	-18 (dB)	-30 (dB)
FVT-6301 SC, Single-mode	1310 (nm)	-6 (dB)	-34 (dB)

Model No.	Avg. Power Loss Budget (dBm)	Max. FDX Fiber Distance (Km)	Fiber Size (um)
FVT-6001 SC, Multi-mode	12 (dBm)	2 (Km)	62.5/125 50/125
FVT-6301 SC, Single-mode	28 (dBm)	30(Km)	10/125 8/125

4.2. Technical Specification

Standard	IEEE802.3 10BASE-T IEEE802.3u 100BASE-TX/100BASE-FX IEEE802.3x Flow Control and Back pressure
Connector	Fiber: Duplex SC RJ-45 Socket: CAT-3/5 (10/100Mbps) Twisted Pair cable Auto MDI/MDI-X and Auto-Negotiation
Switch architecture	Store and Forward
Fiber parameters	Fiber Core: Multi-Mode (62.5/125um, 50/125um) Single-Mode (8/125um, 10/125um) Wavelength: 1310nm(Multi-mode) 1310nm(Single-mode) Fiber Distance: Multi-Mode Fiber 2KM Single-Mode Fiber 30KM
Transparent packet	64 to 1536 packet size (Maximum) 64 to 1518Bytes for Non-VLAN Ethernet packet 68 to 1522Bytes for Tag-VLAN packet.
Link Lost Forward	UTP➔Fiber: If UTP port link down, then converter will forced fiber to link down. Fiber ➔ UTP: If Fiber port link down, the media converter will force UTP port to link down.
DIP Switch	DIP Switch 1: UTP Auto-Nego/100Mbps Full Duplex mode DIP Switch 2: Fiber Full/Half Duplex DIP Switch 3: LLF (Link Lose Forwarding) Disable/Enable DIP Switch 4: Switch Converter / Pure converter mode
LED	Power, UTP (100Mbps, LK/ACT, FDX/COL) Fiber (LK/ACT, FDX/COL)
Power	DC9V / 0.7A
Dimension	119mm x 85mm x 26mm
Operation Temp.	0℃ to 45℃ (32℉ to 113℉)
Storage Temp.	-10℃ to 70℃
Operation Humidity	10% to 90% (Non-condensing)
EMI & safety	CE, FCC Class A