YOUXIN

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10M/100M Auto Negotiable Media Converter

(Fiber Optical Converter)

USER MANUAL

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Contents

Safety Precautions

Please read the following precautions carefully before installation and operation. Manufacture Inc is not responsible for any losses or damages due to any violation of the safety precautions.

The output of the media converter is invisible laser radiation. During the installation, operation and maintenance of this product, never aim the optical fiber connector connecting to the converter output port or optical fiber end at one's body to avoid burning the eyes or skin.

Avoid any damage from severe vibration or collision since precision photo devices are built-in. Shut down the power of the converter before connecting the output port of the media converter to the optical fiber connector.

No disassembly or maintenance is allowed because there are static sensitive components in the media converter. Disassembly or maintenance approved or guided by Ours Inc technicians should be carried out according to the static protection procedures.

Please contact us when there is anything wrong, and do not dismantle media converter without permission; otherwise it may cause irreversible damage. The company holds that anyone who dismantles it without permission gives up the rights of warranty automatically.

Thank you for purchasing our media converters. This manual introduces how to install and operate 10M/100M auto negotiable media converters. Please read this instruction carefully before installation and operation.

1. Introduction

With the rapid growing up of the network economy and the swift development of Internet networking, the demand of multimedia communication of data, voice and video is increasing day by day. Ethernet broadband access is becoming important. But the limit of transmission distance of twisted-pairs is only about 100 meters, which restricts the network development. It is easy to be interfered electromagnetically, resulting in quality drop of the data communication. At the same time, optical fiber communication is widely used due to its large information traffic, high security, light weight, small size, no relay and long transmission distance. Media converter solves the transmission problem of Ethernet with the optical fiber of high-speed transmission media.

The design of Ethernet media converter is mainly used in urban area network. This product is designed for the application in access layer of the broadband with thought of high quality, high reliability, wide

broadband, and low price. It supplies the users with sufficient band width, stable performance, strong power and low price in communication service.

Ordering information of media converter series by our company:

FTXX--XX--XX

Type

0=Chassis module card;

1=Standalone, external Power supply;

2=Standalone, internal power supply;

Optical Interface Mode

0=Dual fiber;2=Bidi,TX1550; 3=Bidi, Tx1310;

Fiber Port

1=SC; 2=ST; 3=FC; 4=LC;

Transmission Distance

0=550M; 1=2KM; 2=25KM; 3=40KM; 4=100KM;

5=60KM; 6=80KM; 7=120KM; 8=10KM;

Rate

1=10/100M; 2=100M; 3=10M; 4=1000M;

Mode

0=Unmanageable;

1=Manageable;

2=SM/MM conversion;

3=1*fiber port/ 2*RJ45 ports, unmanageable;

4=1*fiber port/ 2*RJ45 ports, manageable;

5=1*fiber port/ 4*RJ45 ports, unmanageable;

6=1*fiber port/ 4*RJ45 ports, manageable;

7=Manageable, OAM function;

There are two power supplies of 220V/AC and -48V/DC for the standalone media converter.

Matching with the installation of the media converting card, a standard 19" 2U high chassis and power supply are equipped:

FT00-17C 17-slot chassis, main/spare supply slots are available.

FT00-AC-00 special power supply for 17-slot chassis, 220V/AC.

FT00-DC-00 special power supply for 17-slot chassis, -48V/DC.

1.1 10M/100M auto negotiable media converter

10M/100M auto negotiable media converter is an Ethernet transmission media converter in accordance with the Ethernet standard IEEE802.3 and high-speed Ethernet standard IEEE802.3u. It functions to realize inter conversion between Ethernet signal for twister media (10BASE-TX, 100BASE-TX) transmission and Ethernet signal for proper optical fiber media (100BASE-FX) transmission; and the Ethernet long distance transmission with the advanced transmission property inherent in optical fiber.

10M/100M auto negotiable media converter has two kinds of structures: standalone compact products with built-in power supply /

external power supply and compact card-insert products with collective power supply for 17-slot chassis installation.

10M/100M auto negotiable media converter has two types: dual optical fibers and single optical fiber bidirectional. The type of single optical fiber bidirectional needs only one piece of optical fiber to transmit Ethernet data in two directions to save the valuable optical fiber resources for the users.

10M/100M auto negotiable media converter supports different transmission distances, such as: 2km (multi-mode), 25km, 40km, 60km, and 100km.

1.2 Product functions and features

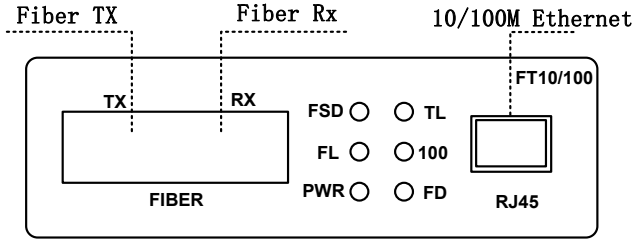
- Support 10M/100M auto-negotiable, half-duplex /full-duplex;
- Support store-and-forward mode and pass-through mode. The store-and-forward mode supports long packets transmission, while the pass-through mode has no limitation on packets length.
- Support bandwidth control.
- Support LFP (Link Fault Pass-Through) function. Force other port to stop transmitting automatically when any port of the link is detected to be disconnected.

- Support remote network management and remote reset. Enable or disable the Ethernet interface through remote network management system.
- The Ethernet interface has the function of MDI-II and MDI-X automatic negotiation, automatic detecting and learning, with perfect compatibility.
- Have store-and-forward buffer, which can improve equipments transmission efficiency, with the function of flow control, broadcast isolation, error detection.
- Being compatible with IEEE802.1q network characteristic can guarantee most of the main products' main feature, for example, the function of VLAN and TRUNK crossing the switch.
- Support cascade function of the network management cards.
- Trouble-free working hours are more than 50,000 hours, in line with telecommunication- grade operating standards.
- Powerful switch chip is adopted.
- High quality integrated transmit-receive optical module to provide nice optical and electronic properties to guarantee reliable data transmission and long life.
- Multi layer wiring to provide the module with reliable work, stable data transmission, and strong interference resistance.
- Media converter cards support hot swapper maintenance and uninterrupted upgrading.

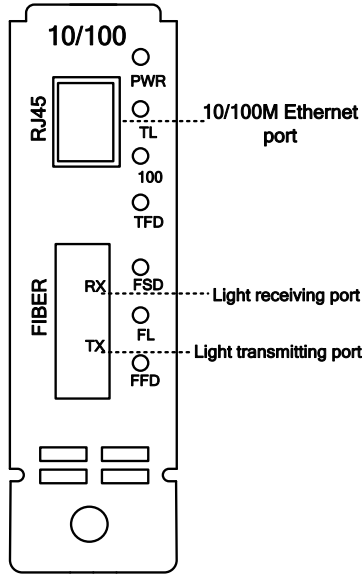
- Complete operation indication LEDs providing glance check of operation status.
- Factory inspection adopting American comprehensive network tester IXIA1600 to carry out 100% test.

2. Sketch of media converter

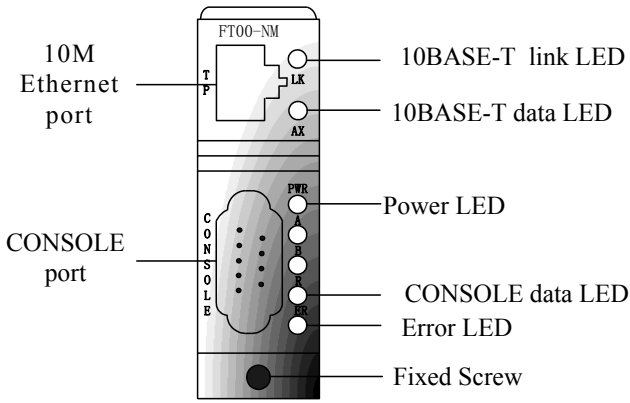
2.1 Panel sketch of media converter, standalone



2.2 Panel sketch of media converter, chassis card type


10/100
PWR
RJ45
TL
10/100M Ethernet port
100
TFD
FIBER
RX
FSD
Light receiving port
FL
TX
Light transmitting port
FFD

2.3 Panel sketch of the network management card

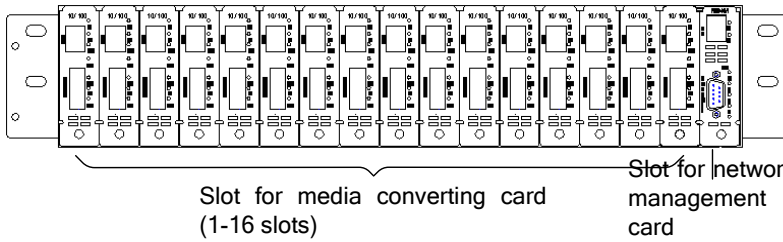


For detailed operation of the network management card and configuration of network management, Please see:

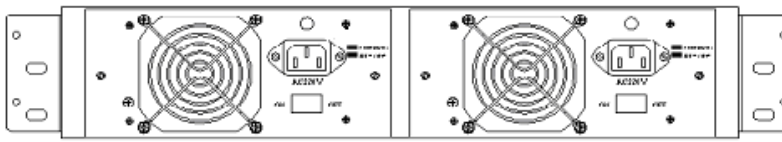
"**Network Management Configuration and Operation Manual"**

2.4 Sketch of 17-slot chassis

Front view of chassis (fully loaded)



Back view of chassis (dual power supply for 1+1 protection)



In the 17-slot chassis, 1 management card and 16 media conversion cards can be installed. The network management card could only be inserted into the 17th slot. When no management function is necessary, other media conversion cards can be inserted into the network management card slot, i.e. 17 media conversion cards can be inserted. There is a main/spare power supply slot at the back of the chassis with two options of 220V/AC and -48V/DC.

2.5 Instruction of LEDs of media converter (card)

LEDs	Functions
PWR	Indicating if the power is.
TL	Connection/activity indicating led for the twister port of the media converter and the opposite end of the equipment twister port. Normal on means Ethernet port is connected; blink means the Ethernet port is connected and is transmitting or receiving data; off, when function LFP is used, means abnormal connection of an Ethernet port or fiber optic port at local or remote end in the link, whereas off, when the function of LFP is shut down, means abnormal connection of the local Ethernet port.
100	Ethernet port rate indicating light. Normal on is 100Mbps, while off is 10Mbps.
TFD/ FD	Half-duplex/full-duplex mode of Ethernet port indicating light. Normal on means full-duplex; off means half-duplex; blink means link interface.
FSD	Fiber optic port signal indicating light. Normal on

	means signal is available; while off means no signal available.
FL	Indicating light of connection/activity of optical fiber port of the media converter and the opposite end equipment optical fiber port. Normal on means fiber optic port is connected; blink means fiber optic port is connected and transmitting or receiving data. When function of LFP is used, off means abnormal connection of an Ethernet port or fiber optic port at local or remote end in the link, whereas off, when the function of LFP is shut down, means abnormal connection of the local fiber optic port.
FFD	Half-duplex/full-duplex mode of fiber optic port indicating light. Normal on means full-duplex; while off means half-duplex. (No such light in the standalone type).

2.6 DIP switch setting

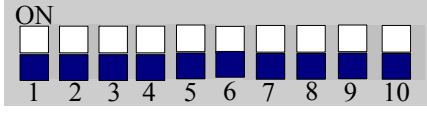
Functions of all types of DIP switch of the media converter are the same, whose settings are described in detail in the following table:

Switch description		Switch mode	Indication
SW1	AUTO	OFF	Auto negotiable
		ON	Non-auto negotiable
SW2	100M	OFF	Ethernet port rate: 100M
		ON	Forced Ethernet port rate: 10M
SW3	TFD	OFF	Full-duplex of Ethernet port
		ON	Forced half-duplex of Ethernet port
SW4	FFD	OFF	Full-duplex of fiber optic port
		ON	Forced half-duplex of fiber optic port
SW5	MODE	OFF	Storage and forward
		ON	Converter
SW6	LFP	OFF	LFP function enabled
		ON	LFP function disabled
SW7 SW8	Rx Rate	OFF OFF	Full speed
		ON OFF	1/4 speed
		OFF ON	1/2 speed
		ON ON	3/4 speed
SW9 SW10	Tx Rate	OFF OFF	Full speed
		ON OFF	1/4 speed

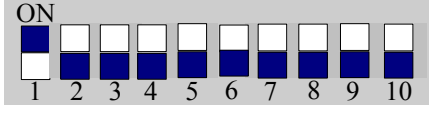
		OFF ON	1/2 speed
		ON ON	3/4 speed

Example:

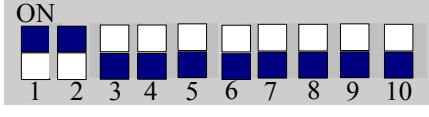
Auto negotiable (This mode is default.)



Full-duplex 100M



Full-duplex 10M



Remarks:

1. Black in the figure means the location of the DIP switch
2. Default setting: auto-negotiable; storage and forward; LFP

function not available;

3. When the media converter is in auto negotiable mode, the actual working mode is related to the opposite equipment.

4. After the DIP switch is set, it should be reset to have the enable the setting.

3. Technical index

✧ Products Dimension

FT00-17 chassis	432mm（W）×89mm（H）×320mm（D）
Built-in power supply, standalone	110 mm（W）×30 mm（H）×140 mm（D）
Built-in power supply, standalone with DIP switch	154mm（W）×35mm（H）×126mm（D）
External power supply, standalone	70 mm（W）×26 mm（H）×94 mm（D）

✧ Environment properties

Input power supply	220V/AC；-48V/DC
Operating temperature	-10℃ ～ 60℃
Storage temperature	-40℃ ～ 80℃
Relative humidity	5% ～ 95%, no condensation
Power consumption	Standalone type,3W

	Card type, 3W
	17-slots chassis, 2W

✧ optical properties

Single mode

Fiber optic connector	SC/PC, ST/PC or FC/PC		
Transmitting distance	Receiving sensitivity	Transmitting power	centre wavelength
25km	≤-36 dBm	≥-12dBm	1310nm
40km	≤-36 dBm	≥-10dBm	1310nm
60km	≤-36 dBm	≥-4dBm	1310nm
100km	≤-39 dBm	≥-5dBm	1550nm

Multi mode

Fiber optic connector	SC/PC, ST/PC or FC/PC
Transmitting power	≥-18.5dBm
Receiving sensitivity	≤-31dBm
Transmitting distance	≤2km

✧ Complying with the following network standard and protocol

IEEE 802.3 Ethernet (Ethernet standard 802.3)
IEEE 802.3u Fast Ethernet (high speed Ethernet standard)
IEEE 802.1d Spanning Tree (Ethernet Spanning Tree Protocol)
IEEE 802.1p Qos (Ethernet Qos standard)

✧ Complying with the following electromagnet compatibility

standard

CE Certification class B
CISPRB, SMA Certification
FCC class B, VCCI class B

✧ Application situation

MAN fiber network	ISP, such as telecom, CATV, etc.
Broadband specified network	specified network for finance, government, petroleum, railway, electric power, police, communication, and education, etc.
Multimedia transmission	Comprehensive transmission of image, sound, data for application of remote education, meeting TV, and visible telephone, etc.
Realtime monitoring	Simultaneous transmission of realtime control signal, image and data.

4. Installation and operation procedure

4.1 Installation procedure

The media converting cards should be installed together with the

17-slot chassis or 1-slot chassis. Install the 17-slot chassis on the standard 19" cabinet before inserting the media converting cards into the chassis in order. Pay attention to fixing screw caps on the media converting cards tightly.

The standalone media converter can be set directly on a desk.

Notes: Indoor installation is recommended to avoid weather exposure.

4.2 Operation procedure

4.2.1 Ensure that optical fiber used matches the media converter. When single mode optical fiber is used, select a media converter with a port for single mode optical fiber; while multi mode optical fiber is used, select a media converter with a port for multi mode optical fiber.

4.2.2 Ensure that the power supply meets the requirement of the media converter and the wire is connected correctly .Make sure that the power is off before connection .The device offer AC 220V power or DC -48V.When choosing DC -48V, the cable connection in NOC (Network Operation

Center) .should connect (+), -48 V. The protection cable connect to the ground of the device.

4.2.3 To ensure operating to the best, the configuration of the media converter should match the Ethernet port connected to it. The 10M/100M media converter supports the auto negotiable function. This working mode should be selected when it is connected with Ethernet equipment that also supports auto negotiable functions. When different working mode is necessary during operation, ensure that the working modes of the corresponding ports of both media converter and Ethernet equipment are the same. (Please refer to 4.3 mode matching table)

4.2.4 Connect the twister and fiber to the corresponding ports of the media converter. The connectors of the twister and fiber should comply with related standards. Arrange the fiber as straightly as possible. When bending is necessary, the bending diameter should not be less than 50cm. The twister should not be too short or bundled too tight. After tied up, a length of 5 – 10cm should be left.

4.3 Mode matching

To make your Ethernet networking equipments function well such as hub, switch, and media converter, etc, you should ensure modes between the interfaces matching each other during operation. If incorrect setting, not only the full loaded operation is impossible, but also it may lead to connection blockage.

When connecting with Ethernet equipment under different mode, set the DIP switch of the media converter as shown in the following table. Due to new technology emerging continuously, different equipment need different configurations. Please contact a network engineer or the corresponding manufacturers whatever is unclear.

Port configuration of switch/HUB	Corresponding DIP setting
Auto negotiation	Auto negotiation
100M, full-duplex	Auto negotiation disable, 100M, full-duplex
100M, half-duplex	Auto negotiation disable, 100M, half-duplex
10M, full-duplex	Auto negotiation disable, 10M, full-duplex
10M, half-duplex	Auto negotiation disable, 10M, half-duplex

Notes: For setting of DIP see 2.6 Table of DIP switch setting.

4.4 Attentions for WDM media converter

Because the media converter of single optical fiber bidirectional transmits two different wavelength signals in the single fiber, the center wavelength of the transmitting at the fiber optic port of the local equipment is 1550nm, the center wavelength of the receiving center is 1310nm (defined as FTX1-XX-2X single fiber Bidi A); the wavelength of the transmitting center at the fiber optic port of the media converter of single optical fiber dual directions at the remote end is 1310nm; the wavelength of the receiving center is 1550nm (defined as FTX1-XX-3X single fiber Bidi B), the media converter of single optical fiber dual directions must be used in pairs, i.e., One side should be single fiber Bidi A, and the other should be B.

5. Simple troubleshooting

After the media converter is powered on, check if it works normally according to the LED description of the media converter (card). Follow the simple troubleshooting if running is abnormal:

Malfunction	Countermeasures
No LED is on.	In standalone media converter and 17-slot chassis there are LED to indicate if the

	power supply operates in normal way. Check if the power supply cable connected correctly when the power supply indicating light is not on, and if the power supply meets the requirement of the media converter used.
TL LED is off.	Check if the connection (are firm) between RJ45 and the Ethernet port is reliable; if the twisters are made correctly; if the speed matches that of the network equipment; if the Ethernet equipment connected works normally.
TFD/FD LED blinks.	Carefully check if the Ethernet port of the media converter matches that of the equipment connected according to 4.3 Mode matching table. It is recommended to set both electric interfaces under same working mode of 100M full-duplex.
FSD LED is off.	Check if the fiber connector matches the type of the port of the fiber; if the ends are clean; if the fiber connector is plugged properly; if transmission of one end (TX) is connected with the receiving of the other end (RX); if the fiber is wrong.

LFP is enabled, the fiber is connected, physical connection of Both Ethernet port are correct, but only PWR and FSD LED is on.	The connection of an Ethernet port or fiber optic port at local or remote end in the link is broken. Check if the connection of the network cable is reliable; if the connection of the optical fiber is reliable.
LED is in normal mode; but it can't be pinged.	Check if the corresponding Ethernet equipment works normally; if the configuration of the equipment at both ends is correct.
All links are correct and Ping is through, but the speed is too slow.	Carefully check modes between electric interfaces of the media converter and equipment connected match each other according to 4.3 Mode matching table.
The power can not be on or LEDs are abnormal after media converters plugged in; or the managed statuses are not normal in NMS system.	Check if the media converter cards plugging correctly in the 17-slots chassis; or short circuit resulted by askew of pins between media converters and chassis black board.

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