10GBASE-T to 10GBASE-X SFP+ Media Converter

XT-715A

User's Manual

Trademarks

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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 the Instruction manual, 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 will be required to correct the interference at his own expense.

CE Mark Warning

This device is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.

WEEE Warning

To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

Revision

PLANET 10GBASE-T to 10GBASE-X SFP+ Media Converter User's Manual

Model: XT-715A

Revision: 1.0 (November, 2023)

Part No: EM-XT-715A_v1.0 (2351-AA5430-000)

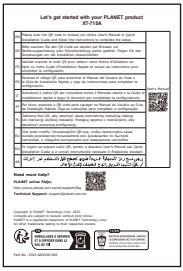
Table of Contents

1. Introduction

1.1 Package Contents

Thank you for purchasing PLANET XT-715A 10GBASE-T to 10GBASE-X SFP+ Media Converter. In the following sections, unless specified, the term **"Media Converter"** mentioned in this manual refers to the XT-715A.

Open the box of the Media Converter and carefully unpack it. The box should contain the following items:

XT-715A Media Converter x 1	QR Code Sheet x 1	Power Adapter (5V, 2A) x 1
		

If any of these are missing or damaged, please contact your dealer immediately; if possible, retain the carton including the original packing material, and use them again to repack the product in case there is a need to return it to us for repair.

Note	The XT-715A comes with one vacant SFP module slot. The mini GBIC SFP module is not included in the package.

1.2 Product Features

- Physical Port
  - Media conversion between 2.5G/5G/10GBASE-T and 10GBASE-X SFP+ fiber optic
  - Copper RJ45 port supports 2.5G/5G/10GBASE-T auto-negotiation and auto-MDI/MDI-X
  - 10GBASE-X SFP+ Fiber Optic allows
    - Multi-mode fiber using LC connector
    - Single-mode fiber using LC connector
- Layer 2 Features
  - IEEE 802.3bz/an/ae Ethernet standard compliant
  - Non-blocking full wire-speed forwarding rate
  - IEEE 802.1Q tag-based VLAN transparency, multicast passthrough
  - 16K jumbo frame
  - IEEE 802.3x full-duplex and half-duplex back pressure flow control to eliminate the loss of packets
- Mechanical
  - Metal case
  - LED indicators for easy network diagnostics
  - 100 meters over Cat 6A/Cat 7 at 10Gbps RJ45 port
  - External 5V DC, 2A power input socket
  - Wall mounting or DIN-rail installation (optional)
  - 0 to 50 degrees C operating temperature
  - Compact in size, Plug and Play installation
  - Best with PLANET's 10"/19" Media Converter Chassis (MC-700/MC-1500/MC-1500R/MC-1500R48)

1.3 Product Specifications

Model	XT-715A
Interface	
Copper Port	2.5G/5G/10GBASE-T Ethernet RJ45 interface Auto-negotiation, auto MDI/MDI-X
SFP Interface	10GBASE-X SFP+ interface
Fiber Mode	May vary on SFP Module
Fiber Port Type (connector)	SFP, LC type
Fiber Maximum Distance	May vary on SFP Module
Network Cables	**2.5G/5G/10GBASE-T:** 2.5G--Cat 5e/Cat 6/Cat 6A/Cat 7 5G--Cat 6/Cat 6A/Cat 7 10G--Cat 6A/Cat 7 Cat 5e/6/6A/7 UTP cable (100 meters, max.) EIA/TIA-568 100-ohm STP (100 meters.) **10GBASE-X:** 50/125μm or 62.5/125μm multi-mode fiber optic cable, up to 300m 9/125μm single-mode fiber optic cable, up to 80km
Hardware Specifications	
Enclosure	Metal case
Dimensions (W x D x H)	93.5 x 70 x 26 mm
Weight	216g
LED	System: PWR (Green) **10GBASE-X SFP+ Interface:** Fiber LNK/ACT (Green) **10GBASE-T Ethernet Port:** TP LNK/ACT (Green)
Power Supply	DC 5V, 2A Power Socket, external AC-to-DC adapter
Installation	Wall-mount or DIN-rail installation (Optional)

Layer 2 Features	
Forwarding Rate	Non-blocking full wire-speed forwarding rate
Flow Control	Back pressure for half duplex mode IEEE 802.3x pause frame for full duplex mode
Maximum Frame Size	16K
Standards Conformance	
Regulatory Compliance	FCC Part 15 Class A, CE
Protocols and Standards Compliance	IEEE 802.3bz 2.5G/5GBASE-T IEEE 802.3an 10GBASE-T IEEE 802.3ae 10Gbps Ethernet IEEE 802.3x Flow Control
Environment	
Temperature	Operating: 0 ~ 50 degrees C Storage: -10 ~ 70 degrees C
Humidity	5% ~ 95% non-condensing

2. Hardware Description

2.1 Physical Dimensions

- XT-715A dimensions (W x D x H): 93.5 x 70 x 26 mm

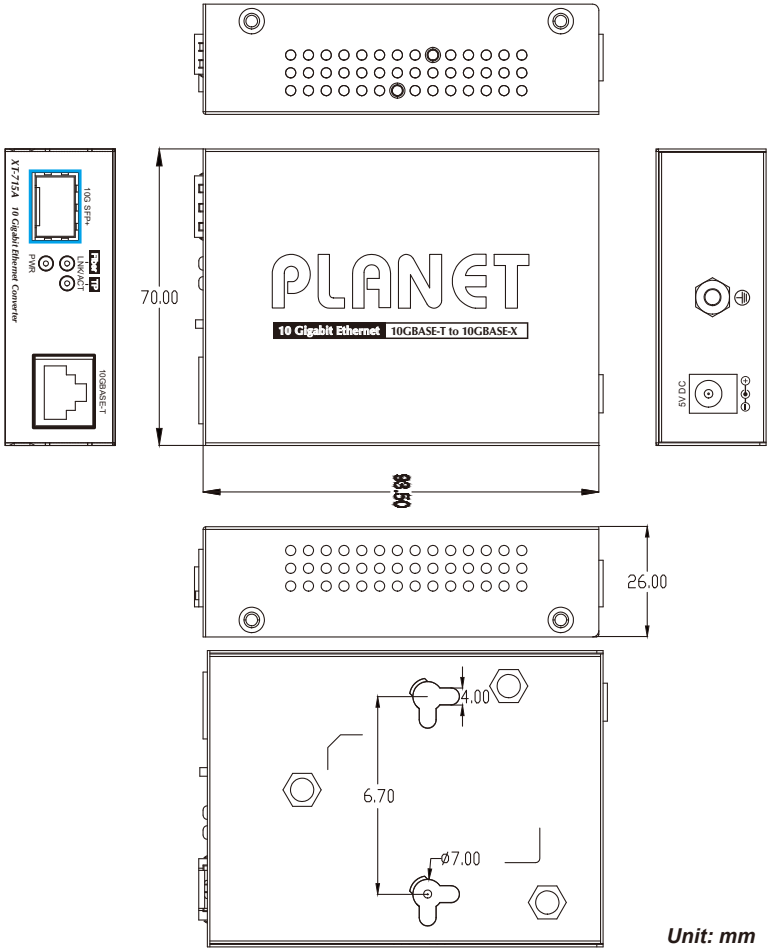


Figure 2-1: XT-715A Physical Dimensions

2.2 Converter Front Panel and LED Indicators

Figure 2-2 shows the front panel of the Media Converter.

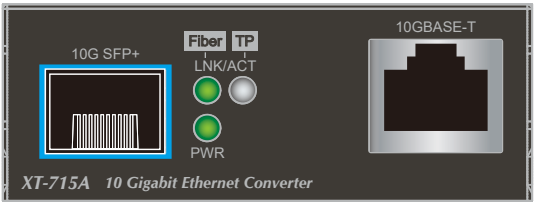


Figure 2-2: XT-715A Front Panel

System

LED	Color	Function
PWR	Green	**Lights** to indicate the 10G Media Converter has power.

■ 10GBASE-X SFP+ Interface

LED	Color	Function
Fiber	Green	**Lights** to indicate the link through that port is operating at 10Gbps.

■ 10GBASE-T Ethernet Port

LED	Color	Function
TP	Green	**Lights** to indicate the link through that port is successfully established at 10Gbps. **Blinks** to indicate that the 10G Media Converter is actively sending or receiving data over that port.

2.3 Rear Panel

The rear panel of the XT-715A consists of one DC jack, which accepts input power with 5V DC, 2A.

Figure 2-3: One DC jack for DC power input

2.4 Power Information:

The central pole of the Media Converter's power jacks measures 2.5mm wide that requires +5VDC power input. It conforms to the bundled AC-DC adapter and PLANET's media chassis. Should you have the issue of power connection, please contact your local sales representative.

Please keep the AC-DC adapter as a spare part when the XT-715A is installed in a media chassis.

Note

Before installing the media converter into the converter slot of PLANET media converter chassis, please remove the earth grounding screw first.

2.5mm
Width of DC Receptacle: **2.5mm**
+5V for each slot

DC receptacle is 2.5mm wide that matches the central pole; the width of the Media Converter DC jack also measures 2.5mm.
Warning: Do not install any improper unit.

The device is a power-required device, meaning it will not work till it is powered. If your networks should be active all the time, please consider using UPS (Uninterrupted Power Supply) for your device. It will prevent you from network data loss or network downtime.

In some areas, installing a surge suppression device may also help to protect your Media Converter from being damaged by unregulated surge or current to the converter or the power adapter.

3. Installation

This section describes the functionalities of the Media Converter's components and guides you to how to install it on the desktop. Basic knowledge of networking is assumed. Please read this chapter completely before continuing.

3.1 Stand-alone Installation

Step 1: Unpack the Media Converter.

Step 2: Connect the 5V DC power adapter to the XT-715A and verify that the Power LED lights up.

(Please refer to the **2.4 Power Information** section for power input.)

Step 3: **3-1:** Prepare a twisted-pair, straight-through **Category 5e/6/7 UTP cable** for Ethernet connection.

3-2: Prepare a fiber cable for connection to the 10GBASE-X SFP+ slot, and make sure both sides of the SFP transceiver are with the same media type.

(Please refer to the **3.5 Cable Connection** section for the type of connection.)

Note

After RJ45 port is connected, install 10G SFP+ transceiver; the RJ45 port LNK/ACT LED will light off and on upon the re-negotiation.

Step 4: **4-1:** Insert one side of **Category 5e/6/7 cable** into the Media Converter Ethernet port (RJ45) while the other side of Category 5e/6/7 cable into the network devices' Ethernet port (RJ45), e.g., switch, PC or server.

The UTP port (RJ45) LED on the Media Converter will light up when the cable is connected with the network device. (Please refer to the **2.2 LED Indicators** section for the functions of LED lights.)

4-2: Connect the **fiber cable**. Attach the duplex LC connector on the network cable to the SFP+ transceiver. Attach the fiber cable from the XT-715A to the fiber network. TX, RX must be paired at both ends.

Step 5: When all the connections are all set and the LED lights all show normal, the installation is completed.

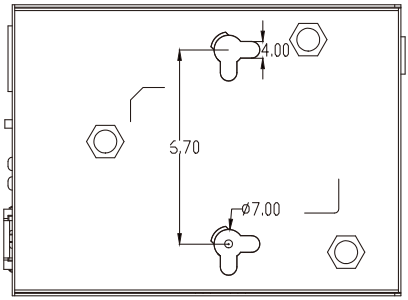
Note

1. Install the 10G SFP+ transceiver into the media converter 10G SFP+ slot; the 10G SFP+ slot LNK/ACT LED will light on (Chipset restriction).
2. The media converter 10G SFP+ slot will work after the 10G RJ45 port has been successfully connected.

3.2 Wall-mount Installation

Step 1: Please find the wall that can mount the Media Converter.

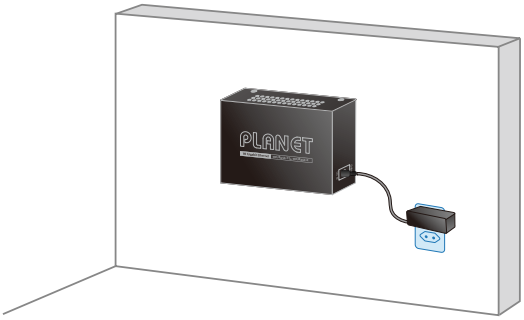
Step 2: Screw two screws on the wall.



Unit: mm

Step 3: Hang the Media Converter on the screws from the wall.

Step 4: Refer to Chapter **2.4 Power Information** on power supply to the Media Converter.



Note

Before mounting the device to the wall, please check the location of the electrical outlet and the length of the Ethernet cable.

3.3 Media Chassis Installation

To install the Media Converter in a **10-inch** or **19-inch** standard rack, follow the instructions described below.

Step 1: Place your Media Converter on a hard flat surface, with the front panel positioned towards your front side.

Step 2: Carefully slide in the module until it is fully and firmly fitted into the slot of the chassis; the Power LED of the Media Converter will turn ON.

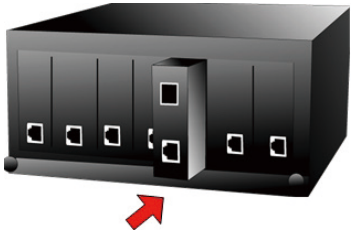


Figure 3-1: Insert Gigabit Media Converter into an available slot

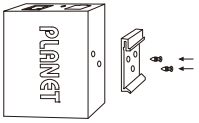
Caution

1. Before installing the media converter into the converter slot of PLANET media converter chassis, please remove the earth grounding screw first.
2. Never push the converter into the slot with force; it could damage the chassis.
3. The Media Converter Chassis supports hot-swap; there is no need to turn off the whole chassis before sliding in the new converter.

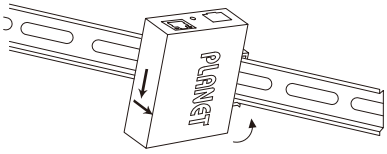
3.4 Optional DIN-rail Installation

There are two DIN-rail holes on the left side of the XT-715A that allows to be easily installed by DIN-rail mounting. PLANET optional DIN-rail mounting kit – RKE-DIN -- can be ordered separately. Refer to the following steps for the DIN-rail mounting of the XT-715A:

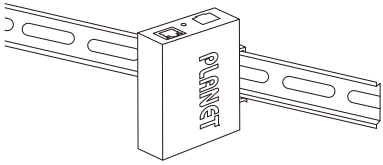
Step 1: Screw the DIN rail on the XT-715A.



Step 2: Now slide the DIN rail into the track.



Step 3: Check whether the DIN rail is tightly on the track.



Caution

You must use the screws supplied with the mounting brackets. Damage caused to the parts by using incorrect screws would invalidate your warranty.

3.5 Cable Connection

■ Installing the SFP+ Transceiver

The sections describe how to insert an SFP+ transceiver into an SFP+ slot.

The SFP+ transceivers are hot-pluggable and hot-swappable. You can plug in and out the transceiver to/from any SFP+ port without having to power down the Media Converter

Figure 3-2: Plug in the SFP+ Transceiver

Note

It is recommended to use PLANET SFP+ transceiver on the Media Converter. If you insert an SFP+ transceiver that is not supported, the Media Converter will not recognize it.

■ 10GBASE-X SR/LR:

Before connecting the other switches, workstation or Media Converter, please do the following:

1. Make sure both sides of the SFP+ transceiver are with the same media type; for example, 10GBASE-SR to 10GBASE-SR, 10GBASE-LR to 10GBASE-LR.

2. Check whether the fiber-optic cable type matches the SFP+ transceiver model.

   - To connect to 10GBASE-SR SFP+ transceiver, use the **multi-mode** fiber cable with one side being the male duplex LC connector type.
   - To connect to 10GBASE-LR SFP+ transceiver, use the **single-mode** fiber cable with one side being the male duplex LC connector type.

■ Connecting the fiber cable

1. Attach the duplex LC connector of the network cable to the SFP+ transceiver.
2. Connect the other end of the cable to a device like a switch with SFP+ installed, fiber NIC on a workstation or a Media Converter.

■ Removing the Transceiver Module

1. Make sure there is no network activity by consulting or checking with the network administrator. Or through the management interface of the switch/converter (if available), disable the port in advance.
2. Remove the fiber optic cable gently.
3. Turn the lever of the MTB module to a horizontal position.
4. Pull out the module gently through the lever.

Figure 3-3: Pulling Out from the SFP+ Transceiver

Note

Never pull out the module without pulling the lever or the push bolts on the module. Directly pulling out the module with effort could damage the module and SFP+ module slot of the Media Converter.

■ 2.5G/5G/10GBASE-T

The 2.5G/5G/10GBASE-T port comes with auto-negotiation capability. It automatically supports 2.5GBASE-T, 5GBASE-T and 10GBASE-T networks. Users only need to plug a working network device into the 2.5G/5G/10GBASE-T port, and then turn on the Media Converter. The port will automatically run at 2500Mbps,5000Mbps and 10000Mbps after the negotiation with the connected device.

Connecting the UTP Cable

The 2.5G/5G/10GBASE-T port uses RJ45 socket -- similar to phone jack -- for connection of unshielded twisted-pair cable (UTP). The IEEE 802.3bz/802.3an Ethernet standard requires Category 5e UTP while 2.5G/5G/10GBASE-T uses Cat5e/6/6A/7 UTP **(see table below)**. Maximum distance is 100 meters (328 feet).

Standard	Transfer Speed	Cable Requirement (100M)
10GBASE-T	10000Mbit/s	Cat 6A/7
5GBASE-T	5000Mbit/s	Cat 6/6A/7
2.5GBASE-T	2500Mbit/s	Cat 5e/6/6A/7

Note

Be sure the connected network devices support MDI/MDI-X. If it does not support, then use the crossover Category 5e/6/6A/7 cable.

APPENDIX A: Approved PLANET SFP+ Transceivers

PLANET Media Converter supports 10GBASE-X with both multi-mode and single mode SFP+ transceivers. The following list of approved PLANET SFP+ transceivers are correct at the time of publication:

Available 10Gbps SFP+ Transceivers

MTB-RJ	1-Port 10GBASE-T SFP+ Copper Fiber Optic Module - 30m
MTB-SR	1-Port 10GBASE-SR SFP+ Fiber Optic Module - 300m
MTB-SR2	1-Port 10GBASE-SR SFP+ Fiber Optic Module – 2km
MTB-LR	1-Port 10GBASE-LR SFP+ Fiber Optic Module - 10km
MTB-LR20	1-Port 10GBASE-LR SFP+ Fiber Optic Module - 20km
MTB-LR40	1-Port 10GBASE-LR SFP+ Fiber Optic Module - 40km
MTB-LR60	1-Port 10GBASE-LR SFP+ Fiber Optic Module - 60km
MTB-LR80	1-Port 10GBASE-LR SFP+ Fiber Optic Module - 80km
MTB-LA10	1-Port 10GBASE-BX SFP+ Fiber Optic Module - 10km (TX:1270nm RX:1330nm)
MTB-LB10	1-Port 10GBASE-BX SFP+ Fiber Optic Module - 10km (TX:1330nm RX:1270nm)
MTB-LA20	1-Port 10GBASE-BX SFP+ Fiber Optic Module - 20km (TX:1270nm RX:1330nm)
MTB-LB20	1-Port 10GBASE-BX SFP+ Fiber Optic Module - 20km (TX:1330nm RX:1270nm)
MTB-LA40	1-Port 10GBASE-BX SFP+ Fiber Optic Module - 40km (TX:1270nm RX:1330nm)
MTB-LB40	1-Port 10GBASE-BX SFP+ Fiber Optic Module - 40km (TX:1330nm RX:1270nm)

MTB-LA60	1-Port 10GBASE-BX SFP+ Fiber Optic Module - 60km (TX:1270nm RX:1330nm)
MTB-LB60	1-Port 10GBASE-BX SFP+ Fiber Optic Module - 60km (TX:1330nm RX:1270nm)
MTB-LA70	1-Port 10GBASE-BX SFP+ Fiber Optic Module - 70km (TX:1270nm RX:1330nm)
MTB-LB70	1-Port 10GBASE-BX SFP+ Fiber Optic Module - 70km (TX:1330nm RX:1270nm)

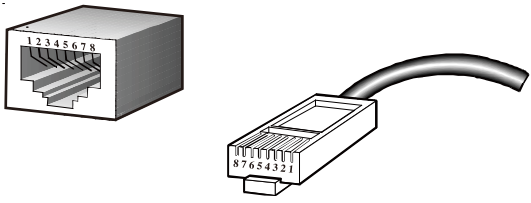
APPENDIX B: Networking Connection

B.1 Media Converter's RJ45 Pin Assignments

2.5G, 5G and 10GBASE-T

Contact	MDI	MDI-X
1	BI_DA+	BI_DB+
2	BI_DA-	BI_DB-
3	BI_DB+	BI_DA+
4	BI_DC+	BI_DD+
5	BI_DC-	BI_DD-
6	BI_DB-	BI_DA-
7	BI_DD+	BI_DC+
8	BI_DD-	BI_DC-

B.2 RJ45 Cable Pin Assignments



The standard RJ45 receptacle/connector

There are 8 wires on a standard UTP/STP cable and each wire is color-coded. The following shows the pin allocation and color of straight cable and crossover cable connection:

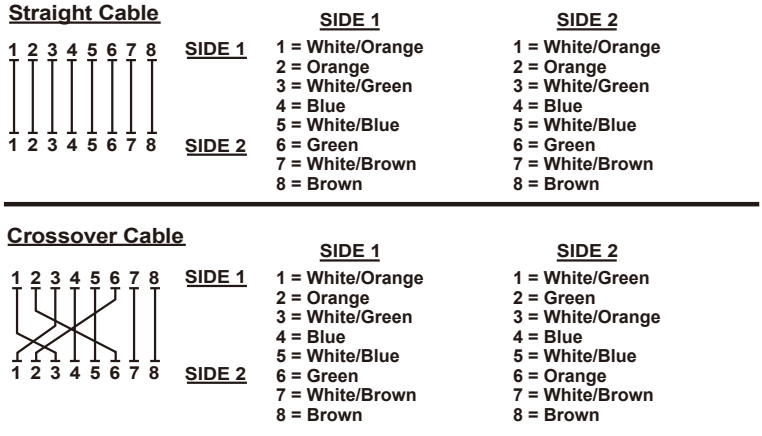


Figure B-1: Straight-through and Crossover Cables

Please make sure your connected cables are with the same pin assignment and color as the above diagram before deploying the cables into your network.