10/100/1000BASE-T to Dual 1000BASE-X SFP

Media Converter

GT-1205A

User's Manual

FCC Warning

This equipment has been tested and found to comply with the regulations for a Class B 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 will be required to correct the interference at his own expense.

CE Mark Warning

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

Energy Saving Note of the Device

This power required device does not support Standby mode operation.

For energy saving, please remove the DC-plug or push the hardware Power Switch to OFF position to disconnect the device from the power circuit.

Without remove the DC-plug or switch off the device, the device will still consume power from the power source. In the view of Saving the Energy and reduce the unnecessary power consuming, it is strongly suggested to power off or remove the DC-plug for the device if this device is not intended to be active.

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

User's Manual of PLANET Gigabit Ethernet Redundant Media Converter

For Model: GT-1205A

Rev 3.0 (March, 2017)

Part No: 2350-AA4530-002

Table of Contents

1. Introduction

1.1 Checklist

■ **Check the contents of your package for the following parts:**

- GT-1205A x 1
- User's Manual x 1
- 5V / 2.5A AC-DC Power Adapter x 1

If any of these pieces 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 GT-1205A has two vacant SFP module slots. The 1000BASE-X SFP module is not bundled in the package

1.2 Product Description

PLANET GT-1205A is a 3-port Gigabit, one TP and dual SFP Media Converter which supports conversion between 10/100/1000BASE-T and 1000BASE-SX/LX network, which comes with an SFP connector with single-mode or multi-mode media as required. The Ethernet signal allows different types of SFP transceiver to connect easily, efficiently and inexpensively.

The GT-1205A Gigabit Media Converter can be used as a stand-alone unit or as a slide-in module to the PLANET Media Converter Chassis (**MC-700** and **MC-1500** series chassis). These media chassis can assist in providing DC power for the GT-1205A Gigabit Media Converter to maintain the fiber-optic network at one centralized location. In the 3-port switch mode, they work in high performance Store and Forward mechanism, and can prevent packet loss with IEEE 802.3x Flow Control

(Full-Duplex) and Back Pressure (Half-Duplex).

Via the built-in DIP-switch, the GT-1205A can be configured as the 3-port Ethernet switch or 2-port redundant media converter. In the 3-port switch mode, it can operate Store-and-Forward mechanism with high performance; in the 2-port redundant mode, it provides redundancy of link for highly critical Ethernet applications. The redundant mode supports auto-recover function. If the destination port of a packet is link down, it forwards the packet to the other port of the backup pair.

As the GT-1205A Media Converter fully complies with IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX, IEEE 802.3ab 1000BASE-T and IEEE 802.3z 1000BASE-LX/SX, the Gigabit media conversion installation is quite quick and easy by simple plugging and playing feature.

With 1000BASE-SX/LX SFP ports, the GT-1205A is highly reliable and flexible to extend the distance up to 550m, 10km, or longer. It depends on the 1000BASE-SX/LX SFP transceiver modules.

1.3 Product Features

■ Standard

- Complies with IEEE 802.3 10BASE-T
- Complies with IEEE 802.3u 100BASE-TX
- Complies with IEEE 802.3ab 1000BASE-T
- Complies with IEEE 802.3z 1000BASE-SX/LX
- IEEE 802.3x Full-Duplex Flow-Control, Back-Pressure in Half-Duplex eliminate packets loss

■ Interface

- Dual 1000BASE-SX/LX SFP Fiber-Optic Slots
- One 10/100/1000BASE-T Copper, auto MDI/MDIX function

- Auto-Negotiation for 10/100/1000BASE-T; Half-duplex or Full-duplex for 10Mbps and 100Mbps, full-duplex for 1000Mbps
- Supports maximum frame size up to 10K jumbo packet size
- IEEE 802.1Q Tag VLAN Transparent, Multicast pass through

■ Redundancy
  - Link status auto-detecting and redundant on Dual ports with same connector type
  - Allows only the Primary Port or the Backup Port to activate at a time.
    ♦ When Primary Port link failure occurs, the traffic swaps to Backup-Port automatically
    ♦ Once the Primary Port status backs to link up, the traffic swaps from Backup-Port to Primary-Port
  - Redundant hardware fiber port

■ Mechanical
  - External 5V DC, 2.5A power supply
  - LED indicators for easy network diagnose
  - DIP Switch for 3-Port operation with Gigabit Switch mode or Redundant mode
  - Compact in size, easy installation
  - Can be installed on PLANET's 10"/19" Media Converter Chassis **(MC-700/1500/1500R/1500R48)**
  - Wall mounting and DIN-rail Supported

1.4 Product Specifications

Model		GT-1205A
Hardware Specifications		
Hardware Version		3
Ports	Copper	1 x 10/100/1000BASE-T port
	Fiber	2 x 1000BASE-X SFP slots
Cable	Twisted-pair	10BASE-T: 2-pair UTP Cat3,4,5, up to 100 meters 100BASE-TX: 2-pair UTP Cat 5, 5e up to 100 meters 1000BASE-T: 4-pair UTP Cat 5e,6 up to 100 meters
	Fiber-Optic Cable	50/125μm or 62.5/125μm multi-mode fiber cable, up to 220 and 550 meters 9/125μm single-mode cable with distance of 10/15/20/30/40/50/60/70/120km or longer (may vary on SFP module)
LED Display		**System:** One Power LED (Green) **Fiber Port:** Two LNK/ACT LED (Green) **TP Port:** One Speed LED (Green), One LNK/ACT LED (Orange)
Switch Processing Scheme		Store and Forward
Fabric		6Gbps
Throughput (packet per second)		4.4Mpps

Maximum Packet Size	10K bytes
Flow Control	Back pressure for Half-Duplex. IEEE 802.3x Pause Frame for Full-Duplex
Power Requirement	5V DC, 2A max.
Power Consumption	4 watts/13.6 BTU per hour max.
Dimensions (W x D x H)	94 x 70 x 26mm
Weight	180g (device only)
Standard Conformance	
EMI Safety	FCC Class B, CE
Operating environment	0 ~ 50 degrees C
Storage environment	-10 ~ 70 degrees C
Operating Humidity	5 ~ 95%, Relative Humidity (non-condensing)
Storage Humidity	5 ~ 95%, Relative Humidity (non-condensing)
Standard Compliance	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX IEEE 802.3ab 1000BASE-T IEEE 802.3z 1000BASE-SX/LX IEEE 802.3x Flow Control

2. Hardware Description

This product provides three different running speeds – 10Mbps, 100Mbps and 1000Mbps in the same Gigabit Media Converter and automatically distinguishes the speed of incoming connection.

This section describes the functionalities of GT-1205A's components and guides how to install it on the desktop or shelf. Basic knowledge of networking is assumed. Please read this chapter completely before continuing.

2.1 Product Outlook

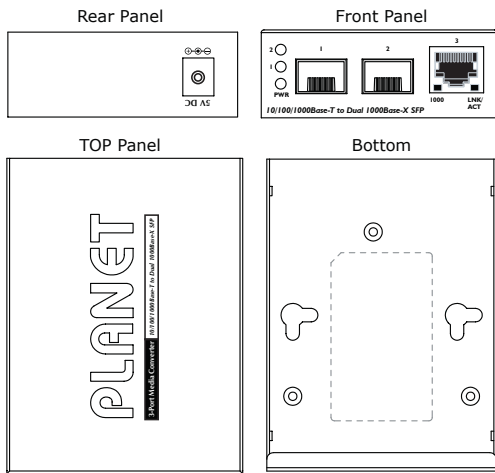**The GT-1205A overview shown below:**

Figure 2-1-1: GT-1205A Overview

2.2 Front Panel

The Front Panel of the Gigabit Media Converter consists of two 1000BASE-X SFP slots and one Auto-Sensing 10/100/1000Mbps Ethernet RJ45 port. Figure 2 shows the front panel of Gigabit Media Converter.
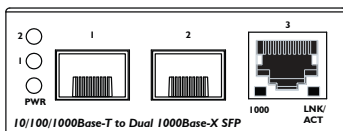

Figure 2-2-1: GT-1205A Front Panel

2.2.1 LED Indicators

System

LED	Color	Function
PWR	Green	Lit: Power on.

1000BASE-SX/LX SFP Slots

LED	Color		Function
1	Green	**Lit**	Indicates that the fiber optical port is link up.
		Blink	Indicates that the converter is actively sending or receiving data over that port.
		Off	Indicates that the fiber optical port is link down.
2	Green	**Lit**	Indicates that the fiber optical port is link up.
		Blink	Indicates that the converter is actively sending or receiving data over that port.
		Off	Indicates that the fiber optical port is link down.

10/100/1000BASE-T Port

LED	Color		Function
LNK/ACT	Orange	**Lit**	Indicates that the copper port is link up.
		Blink	Indicates that the converter is actively sending or receiving data over that port.
		Off	Indicates that the copper port is link down.
1000	Green	**Lit**	Indicates that the copper port is operating at **1000Mbps**.
		Off	Indicates that the copper port is **link down** or **10/100Mbps**.

2.3 Rear Panel

The rear panel of the Gigabit Media Converter indicates one DC jack, which accepts input power with 5V DC 2A.


Figure 2-3-1: One DC jack for DC power input

Power Notice:

Power Information: The power jack of GT-1205A is 2.5mm in the central post and it requires +5VDC power input. It conforms to the bundled AC-DC adapter and Planet's Media Chassis. Should you have the issue to make the power connection, please contact your local sales representative.

Please keep the AC-DC adapter as spare parts when your GT-1205A is installed to a Media Chassis.

→| |← 2.5mm
DC Receptacle 2.5mm
+5V for each slot
⊖-⊙-⊕
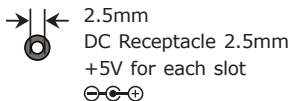
DC receptacle is 2.5mm wide that conforms to and matches the Gigabit Media Converter 2.5mm DC jack's central post. Do not install any improper unit, model of the Gigabit Media Converter.

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 Gigabit Media Converter from being damaged by unregulated surge or current to the converter or the power adapter.

2.4 Side View

The side panel of the Gigabit Media Converter indicates One DIP switch for setting 3-port switch mode or 2-port redundant mode. When **"ON"**, it is in the 2-port redundant mode. And when **"OFF"**, it is in the 3-port switch mode.
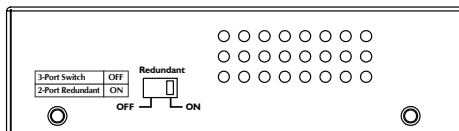

Figure 2-4-1: GT-1205A Side Panel

Redundancy Overview

The GT-1205A provides rapid fiber redundancy of link for highly critical Ethernet applications. The redundant-mode supports auto-recover function. If the destination port of a packet is link down, it forwards the packet to the other port of the backup pair. The following figure shows the redundant function.
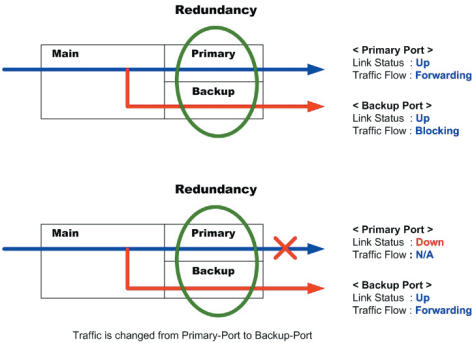

Figure 2-4-2: Redundancy Behavior Topology

- Link status auto detect and redundant on Dual ports with same connector type.
- Only Primary Port is active at a time, the Backup Port is blocked.
- When Primary Port link failure occurs, the traffic swap to Backup Port automatically.
- Once the Primary Port status back to link up, the traffic swap from Backup Port to Primary Port.

2.5 Install the Media Converter

This section describes how to install your Gigabit Media Converter and make connections to the Gigabit Media Converter. Please read the following topics and perform the procedures in the order being presented. The hardware installation of Gigabit Media Converter does not need software configuration. To install your Gigabit Media Converter on a desktop or shelf, simply complete the following steps.

2.5.1 Stand-alone Installation

The GT-1205A is highly reliable and flexible to extend the distance up to 550m and 10/15/20/30/40/50/60/70/120km. It depends on the 1000BASE-SX/LX SFP transceiver modules. The SFP transceiver is hot-pluggable and hot-swappable. You can plug in and out the transceiver to and from any SFP port without having to power down the Gigabit Media Converter.

To install the GT-1205A stand-alone, on a desktop or shelf, simply complete the following steps:

Step 1: Turn off the power of the device/station in a network to which the GT-1205A will be attached.

Step 2: Ensure that there is no activity in the network.

Step 3: Slot in the 1000BASE-X SFP module. Make sure both sides of the SFP transceiver are with the same media type, for example, 1000BASE-SX / 550m multi-mode to 1000BASE-SX / 550m multi-mode, 1000BASE-LX / 10km single mode to 1000BASE-LX / 10km single mode.
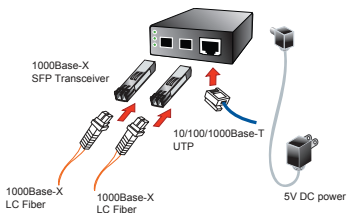
Figure 2-5-1: GT-1205A Gigabit Media Converter Standalone Installation

Step 4: Connect the fiber cable. Attach the duplex LC connector on the network cable to the SFP transceiver.

Step 5: Attach fiber cable from the GT-1205A to the fiber network. TX, RX must be paired at both ends.

Step 6: Connect the 5V DC power adapter to the GT-1205A and verify that the Power LED lights up.

Step 7: Turn on the power of the device/station; the LINK LED should light up when all cables are well attached.

Note	1. It is recommended to use PLANET **MGB** series SFP modules for the Gigabit Media Converter. If you insert an SFP transceiver that is not supported, the Gigabit Media Converter will not recognize it. Please check appendix or go visit our Web site for detailed specification. 2. To prevent from optic acceptor malfunction, check the both wires / transmitter before powering on the converter. 3. To remove the SFP module, please remove the fiber connectors in advance and push the belt or latch of the module. Pull out the module with force may damage the module and the Gigabit Media Converter.

■ Approved PLANET SFP Transceivers

The GT-1205A Gigabit Media Converter supports both Single mode and Multi-mode SFP transceiver. The following list of approved PLANET SFP transceivers is correct at the time of publication:

Gigabit SFP Transceiver Modules

- MGB-GT   SFP-Port 1000BASE-T module
- MGB-SX   SFP-Port 1000BASE-SX mini-GBIC module
- MGB-LX   SFP-Port 1000BASE-LX mini-GBIC module
- MGB-L30   SFP-Port 1000BASE-LX mini-GBIC module -30KM
- MGB-L50   SFP-Port 1000BASE-LX mini-GBIC module -50KM
- MGB-L70   SFP-Port 1000BASE-LX mini-GBIC module -70KM
- MGB-L120 SFP-Port 1000BASE-LX mini-GBIC module -120KM
- MGB-LA10 SFP-Port 1000BASE-LX (WDM, TX:1310nm) -10KM
- MGB-LB10 SFP-Port 1000BASE-LX (WDM, TX:1550nm) -10KM
- MGB-LA20 SFP-Port 1000BASE-LX (WDM, TX:1310nm) -20KM
- MGB-LB20 SFP-Port 1000BASE-LX (WDM, TX:1550nm) -20KM
- MGB-LA40 SFP-Port 1000BASE-LX (WDM, TX:1310nm) -40KM
- MGB-LB40 SFP-Port 1000BASE-LX (WDM, TX:1550nm) -40KM

2.5.2 Media Chassis Installation

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

Step 1: Place your Gigabit 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 Gigabit Media Converter will turn ON.
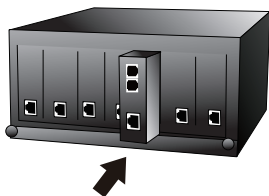
**Figure 2-5-2:** Insert a Gigabit Media Converter into an available slot

| ⚠ Caution	1. Never push the converter into the slot with force; it could damage the chassis.
	2. The Media Converter Chassis supports hot-swap; there is no need to turn off the whole chassis before sliding in the new converter.

2.5.3 Optional DIN-Rail Installation

There are two DIN-Rail holes on the left side of the GT-1205A that allows to be easily installed with DIN-rail mounting. PLANET optional DIN-rail mounting Kit – RKE-DIN -- can be ordered separately. When it needs to replace the wall mount application with DIN-rail application for the GT-1205A, please refer to the following figures to screw the DIN-rail on the GT-1205A. To hang the GT-1205A, follow the steps below:
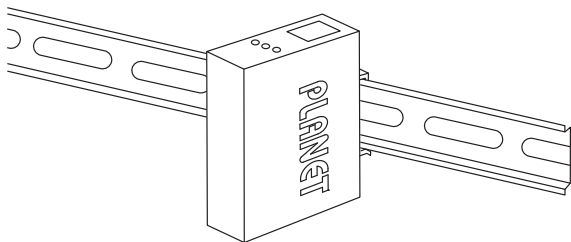
Step 1: Screw the DIN rail on the GT-1205A.
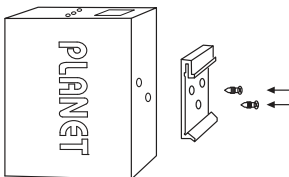
Step 2: Lightly push the DIN-Rail into the track.
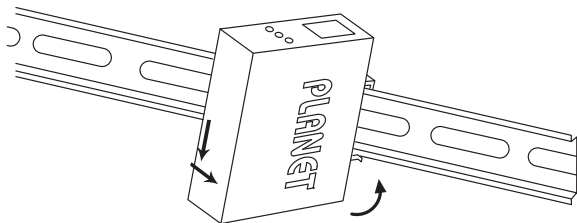
Step 3: Check whether the DIN rail is tightly on the track.

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

Appendix A Networking Connection

### A.1 Data RJ45 Pin Assignments -- 1000Mbps, 1000BASE-T

PIN NO	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-

Implicit implementation of the crossover function within a twisted-pair cable, or at a wiring panel, while not expressly forbidden, is beyond the scope of this standard.

A.2 10/100Mbps, 10/100BASE-TX

RJ45 Connector pin assignment		
PIN NO	MDI Media Dependent Interface	MDI-X Media Dependent Interface-Cross
1	Tx + (transmit)	Rx + (receive)
2	Tx - (transmit)	Rx - (receive)
3	Rx + (receive)	Tx + (transmit)
4, 5	Not used	
6	Rx - (receive)	Tx - (transmit)
7, 8	Not used	

The standard cable, RJ45 pin assignment
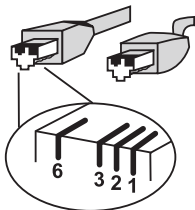
The standard RJ45 receptacle/connector

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:

Straight Cable		**SIDE 1**	**SIDE 2**
1 2 3 4 5 6 7 8	**SIDE 1**	1 = White/Orange	1 = White/Orange
		2 = Orange	2 = Orange
		3 = White/Green	3 = White/Green
		4 = Blue	4 = Blue
1 2 3 4 5 6 7 8	**SIDE 2**	5 = White/Blue	5 = White/Blue
		6 = Green	6 = Green
		7 = White/Brown	7 = White/Brown
		8 = Brown	8 = Brown
Crossover Cable		**SIDE 1**	**SIDE 2**
1 2 3 4 5 6 7 8	**SIDE 1**	1 = White/Orange	1 = White/Green
		2 = Orange	2 = Orange
		3 = White/Green	3 = White/Orange
		4 = Blue	4 = Blue
1 2 3 4 5 6 7 8	**SIDE 2**	5 = White/Blue	5 = White/Blue
		6 = Green	6 = Orange
		7 = White/Brown	7 = White/Brown
		8 = Brown	8 = Brown

Figure A-1: Straight-through and Crossover Cable

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

A.3 Fiber-Optic Cable Connection Parameter

The wiring details are shown below:

Cables:

Standard	Fiber Type	Cable Specifications
1000BASE-SX (850nm)	Multi-mode	50/125μm or 62.5/125μm
1000BASE-LX (1300nm)	Multi-mode	50/125μm or 62.5/125μm
	Single-mode	9/125μm

Wiring Distances:

Standard	Fiber	Diameter (micron)	Modal Bandwidth (MHz * km)	Max. Distance (meters)
1000BASE-SX	MM	62.5	100	220
		62.5	200	275
		50	400	500
		50	500	550
1000BASE-LX	MM	62.5	5	550
		50	4	
		50	5	
	SM	9	N/A	5000*

![PLANET Networking & Communication]

EC Declaration of Conformity

For the following equipment:

*Type of Product   :   10/100/1000Base-T to Dual 1000Base-X SFP Media Converter
*Model Number   :   GT-1205A

* Produced by:
Manufacturer's Name   :   **Planet Technology Corp.**
Manufacturer's Address   :   10F., No.96, Minquan Rd., Xindian Dist.,
                                   New Taipei City 231, Taiwan (R.O.C.).

is herewith confirmed to comply with the requirements set out in the Council Directive on the
Approximation of the Laws of the Member States relating to Electromagnetic Compatibility
Directive on 2014/30/EU.
For the evaluation regarding the EMC, the following standards were applied:

EN 55032	(2015+AC:2016)
EN 61000-3-2	(2014)
EN 61000-3-3	(2013)
EN 55024	(2010 + A1: 2015)
IEC 61000-4-2	(2008)
IEC 61000-4-3	(2006+A1:2007+A2:2010)
IEC 61000-4-4	(2012)
IEC 61000-4-5	(2014)
IEC 61000-4-6	(2013)
IEC 61000-4-8	(2009)
IEC 61000-4-11	(2004)

Responsible for marking this declaration if the:

☒ **Manufacturer**   ☐ **Authorized representative established within the EU**

Authorized representative established within the EU (if applicable):

Company Name: Planet Technology Corp.

Company Address: 10F., No.96, Minquan Rd., Xindian Dist., New Taipei City 231, Taiwan (R.O.C.)

Person responsible for making this declaration

Name, Surname   <u>Kent Kang</u>

Position / Title :   <u>Director</u>

<u> Taiwan </u>   <u> May 31, 2017 </u>   *Kent Kang*
Place   *Date*   *Legal Signature*

PLANET TECHNOLOGY CORPORATION