PLANET Fiber Transceiver

MFB-Series/MGB-Series/MTB-Series

User's Manual

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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 SFP/SFP+/XFP Mini-GBIC Transceiver

For Models: MFB-SERIES/MGB-SERIES/MTB-SERIES

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1. Overview

Thank you for purchasing PLANET SFP/SFP+/XFP Mini-GBIC Transceiver which includes the Ethernet module of the MFB/MGB and MTB families.

The MFB family's Fast Ethernet SFP module can be installed into PLANET Switch products with 100BASE-FX SFP interface. The distance can be extended from 2km (Multi-mode, LC) to up to 120km (Single-mode, LC).

The MGB family's Gigabit Ethernet SFP module can be installed into PLANET Switch products with 1000BASE-SX/LX SFP interface. The distance can be extended from 100m (TP) and 550m (Multi-mode, LC) to up to 120km (Single-mode, LC).

The MTB family's 10G Ethernet SFP+/XFP module can be installed into PLANET products with 10G SFP+/XFP interface. The XFP transceivers can be extended from a distance of 300m (Multi-mode, LC) to up to 60km (Single-mode, LC). The SFP+ transceivers can be extended from a distance of 300m (Multi-mode, LC) to up to 60km (Single-mode, LC)

2. Checklist

Your SFP/SFP+/XFP Package should contain the following items:

- The SFP/SFP+/XFP Transceiver Module x 1
- The User's Manual x 1

If any item is missing or damaged, please consult the dealer from whom you purchased your SFP/SFP+/XFP Mini-GBIC Ethernet transceiver module.

3. Introduction and Model List

3-1 The MFB-Series Mini-GBIC Transceiver Module List

Fast Ethernet Transceiver (100BASE-X SFP)

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (nm)	Operating Temp.
MFB-FX	100	LC	Multi-Mode	2km	1310nm	0 ~ 60 ºC
MFB-F20	100	LC	Single Mode	20km	1310nm	0 ~ 60 ºC
MFB-F40	100	LC	Single Mode	40km	1310nm	0 ~ 60 ºC
MFB-F60	100	LC	Single Mode	60km	1310nm	0 ~ 60 ºC
MFB-F120	100	LC	Single Mode	120km	1550nm	0 ~ 60 ºC
MFB-TFX	100	LC	Multi-Mode	2km	1310nm	-40 ~ 75 ºC
MFB-TF20	100	LC	Single Mode	20km	1550nm	-40 ~ 75 ºC

Fast Ethernet Transceiver (100BASE-BX, Single Fiber Bi-directional SFP)

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (TX)	Wavelength (RX)	Operating Temp.
MFB-FA20	100	WDM (LC)	Single Mode	20km	1310nm	1550nm	0 ~ 60 ºC
MFB-FB20	100	WDM (LC)	Single Mode	20km	1550nm	1310nm	0 ~ 60 ºC
MFB-TFA20	100	WDM (LC)	Single Mode	20km	1310nm	1550nm	-40~75 ºC
MFB-TFB20	100	WDM (LC)	Single Mode	20km	1550nm	1310nm	-40~75 ºC
MFB-TFA40	100	WDM (LC)	Single Mode	40km	1310nm	1550nm	-40~75 ºC
MFB-TFB40	100	WDM (LC)	Single Mode	40km	1550nm	1310nm	-40~75 ºC



1. When shorter-distance single mode fiber cables are used, you might need to insert an in-line optical attenuator in the link to avoid overloading the receiver. Follow the I-TUT G652 document to imitate the fiber cable length.
2. The attenuation coefficient mentioned in the following chapters is for reference only.

	Wavelength region	Typical link value
Attenuation coefficient	1260nm-1360nm	0.5 dB/km
	1530nm-1565nm	0.4 dB/km

SFP Model / Physical Fiber Cable Length "n" km	MFB-F20 MFB-TF20	MFB-F40	MFB-F60	MFB-F120
10 < n < 20	2 dB	4-6 dB	8-10 dB	25-27 dB
20 < n < 40	--	2-4 dB	6-8 dB	23-25 dB
40 < n < 60	--	--	2-4 dB	18-20 dB

SFP Model / Physical Fiber Cable Length "n" km	MFB-TFA10 MFB-TFB10	MFB-FA20 / MFB-FB20 MFB-TFA20 / MFB-TFB20	MFB-TFA40 MFB-TFB40
10 < n < 20	--	2 dB	4-6 dB
20 < n < 40	--	--	2-4 dB
40 < n < 60	--	--	--

3-2 The MGB-Series Mini-GBIC Transceiver Module List

Gigabit Ethernet Transceiver (1000BASE-X SFP)

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (nm)	Operating Temp.
MGB-GT	1000	Copper	--	100m	--	0 ~ 60 ºC
MGB-SX	1000	LC	Multi-Mode	550m	850nm	0 ~ 60 ºC
MGB-SX2	1000	LC	Multi-Mode	2km	1310nm	0 ~ 60 ºC
MGB-LX	1000	LC	Single Mode	10km	1310nm	0 ~ 60 ºC
MGB-L30	1000	LC	Single Mode	30km	1310nm	0 ~ 60 ºC
MGB-L40	1000	LC	Single Mode	40km	1550nm	0 ~ 60 ºC
MGB-L50	1000	LC	Single Mode	50km	1550nm	0 ~ 60 ºC

MGB-L70	1000	LC	Single Mode	70km	1550nm	0 ~ 60 ºC
MGB-L120	1000	LC	Single Mode	120km	1550nm	0 ~ 60 ºC
MGB-TSX	1000	LC	Multi-Mode	550m	850nm	-40 ~ 75 ºC
MGB-TLX	1000	LC	Single Mode	10km	1310nm	-40 ~ 75 ºC
MGB-TL30	1000	LC	Single Mode	30km	1310nm	-40 ~ 75 ºC
MGB-TL70	1000	LC	Single Mode	70km	1550nm	-40 ~ 75 ºC

Gigabit Ethernet Transceiver (1000BASE-BX, Single Fiber Bi-directional SFP)

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (TX)	Wavelength (RX)	Operating Temp.
MGB-LA10	1000	WDM (LC)	Single Mode	10km	1310nm	1550nm	0 ~ 60 ºC

MGB-LB10	1000	WDM (LC)	Single Mode	10km	1550nm	1310nm	0 ~ 60 ºC
MGB-LA20	1000	WDM (LC)	Single Mode	20km	1310nm	1550nm	0 ~ 60 ºC
MGB-LB20	1000	WDM (LC)	Single Mode	20km	1550nm	1310nm	0 ~ 60 ºC
MGB-LA40	1000	WDM (LC)	Single Mode	40km	1310nm	1550nm	0 ~ 60 ºC
MGB-LB40	1000	WDM (LC)	Single Mode	40km	1550nm	1310nm	0 ~ 60 ºC
MGB-LA60	1000	WDM (LC)	Single Mode	60km	1310nm	1550nm	0 ~ 60 ºC
MGB-LB60	1000	WDM (LC)	Single Mode	60km	1550nm	1310nm	0 ~ 60 ºC
MGB-TLA10	1000	WDM (LC)	Single Mode	10km	1310nm	1550nm	-40 ~ 75 ºC
MGB-TLB10	1000	WDM (LC)	Single Mode	10km	1550nm	1310nm	-40 ~ 75 ºC
MGB-TLA20	1000	WDM (LC)	Single Mode	20km	1310nm	1550nm	-40 ~ 75 ºC
MGB-TLB20	1000	WDM (LC)	Single Mode	20km	1550nm	1310nm	-40 ~ 75 ºC

MGB-TLA40	1000	WDM (LC)	Single Mode	40km	1310nm	1550nm	-40 ~ 75 ºC
MGB-TLB40	1000	WDM (LC)	Single Mode	40km	1550nm	1310nm	-40 ~ 75 ºC
MGB-TLA60	1000	WDM (LC)	Single Mode	60km	1310nm	1550nm	-40 ~ 75 ºC
MGB-TLB60	1000	WDM (LC)	Single Mode	60km	1550nm	1310nm	-40 ~ 75 ºC

SFP Model / **Physical Fiber Cable Length "n" km**	**MGB-LX**	**MGB-L30**	**MGB-L40**	**MGB-L70**	**MGB-L120**
10 < n < 20	--	2-4 dB	5-7 dB	13-15 dB	25-27 dB
20 < n < 40	--	2 dB	3-5 dB	10-12 dB	23-25 dB
40 < n < 60	--		--	5-7 dB	18-20 dB

SFP Model / Physical Fiber Cable Length "n" km	MGB-TLX	MGB-TL30	MGB-TL70
10 < n < 20	--	2-4 dB	13-15 dB
20 < n < 40	--	2 dB	10-12 dB
40 < n < 60	--	--	5-7 dB

SFP Model / Physical Fiber Cable Length "n" km	MGB-LA10 MGB-LB10 MGB-TLA10 MGB-TLB10	MGB-LA20 MGB-LB20 MGB-TLA20 MGB-TLB20	MGB-LA40 MGB-LB40 MGB-TLA40 MGB-TLB40	MGB-LA60 MGB-LB60 MGB-TLA60 MGB-TLB60
10 < n < 20	--	2 dB	4-6 dB	8-10 dB
20 < n < 40	--	--	2-4 dB	6-8 dB
40 < n < 60	--	--	--	2-4 dB

3-3 The MTB-Series Mini-GBIC Transceiver Module List

10Gbps XFP (10G Ethernet/10GBASE)

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (nm)	Operating Temp.
MTB-XSR	10G	LC	Multi-Mode	Up to 300m	850nm	0 ~ 60 ºC
MTB-XLR	10G	LC	Single Mode	10km	1310nm	0 ~ 60 ºC

10Gbps SFP+ (10G Ethernet/10GBASE)

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (nm)	Operating Temp.
MTB-SR	10G	LC	Multi-Mode	Up to 300m	850nm	0 ~ 60 ºC
MTB-LR	10G	LC	Single Mode	10km	1310nm	0 ~ 60 ºC

MTB-TSR	10G	LC	Multi-Mode	Up to 300m	850nm	-40 ~ 75 ºC
MTB-TLR	10G	LC	Single Mode	10km	1310nm	-40 ~ 75 ºC

10Gigabit Ethernet Transceiver (10GBASE-BX, Single Fiber Bi-directional SFP)

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (TX)	Wavelength (RX)	Operating Temp.
MTB-LA20 MTB-LB20	10G	WDM (LC)	Single Mode	20km	1270nm	1330nm	0 ~ 60 ºC
	10G	WDM (LC)	Single Mode	20km	1330nm	1270nm	0 ~ 60 ºC
MTB-LA40 MTB-LB40	10G	WDM (LC)	Single Mode	40km	1270nm	1330nm	0 ~ 60 ºC
	10G	WDM (LC)	Single Mode	40km	1330nm	1270nm	0 ~ 60 ºC

MTB-LA60 MTB-LB60	10G	WDM (LC)	Single Mode	60km	1270nm	1330nm	0 ~ 60 ºC
	10G	WDM (LC)	Single Mode	60km	1330nm	1270nm	0 ~ 60 ºC

SFP Model **Physical Fiber Cable Length "n" km**	**MTB-LA20 MTB-LB20**	**MTB-LA40 MTB-LB40**	**MTB-LA60 MTB-LB60**
10 < n < 20	2 dB	4-6 dB	8-10 dB
20 < n < 40	--	2-4 dB	6-8 dB
40 < n < 60	--	--	2-4 dB

4. Installing SFP/SFP+/XFP Transceiver Module

4-1 Install the SFP/SFP+ Mini-GBIC Transceiver Module

Please follow these steps to install the SFP/SFP+ Mini-GBIC module:

1. Power on the Switch and place the Switch on a flat surface. Install the new SFP/SFP+ Mini-GBIC module by inserting it into the slot and sliding it in until it stops (See **Figure 1**). Press it firmly until you hear the module snap into place. Never force, twist or bend the SFP/SFP+ Mini-GBIC module. The SFP/SFP+ Mini-GBIC module slides in smoothly and the Switch will automatically detect the new module.

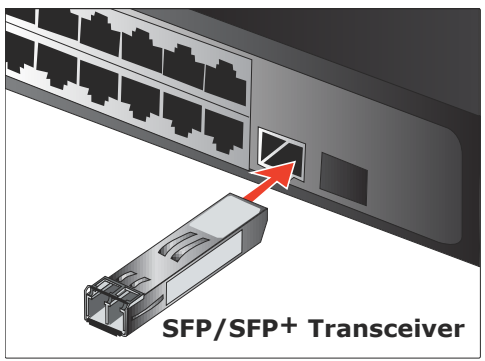


Figure 1: Insert the SFP/SFP+ Mini-GBIC Module

2. After the TP/Fiber connection is made successfully, check the LEDs to verify that if there is a link and a proper connection at the port.

Please refer to the user's manual for more about the Switch or module's management.

4-2 Install the 10GBASE-LR/SR XFP Fiber Optic Module MTB-XSR/MTB-XLR

The 10GBASE-LR/SR Fiber Optic module can be installed into Planet products with 10G XFP interface. Please refer to the following steps to install the 10GBASE-LR/SR Fiber Optic module:

1. Install the XGS3-M24GX or XGS3-S4XG module into the XGS3-42000R; its 10G XFP slot supports hot swappable feature.
2. Power on the XGS3-42000R L3 Switch and place the Switch on a flat surface. Install the new 10GBASE-LR/SR Fiber Optic module by inserting it into the slot and sliding it in until it stops (See **Figure 2**). Press it firmly until you hear the module snap into place. Never force, twist or bend the 10GBASE-LR/SR Fiber Optic module. The 10GBASE-LR/SR Fiber Optic module slides in smoothly and the XGS3-42000R L3 Switch will automatically detect the new module.

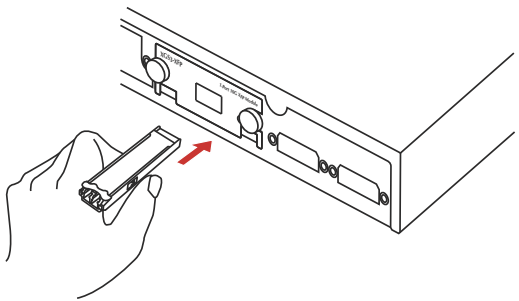


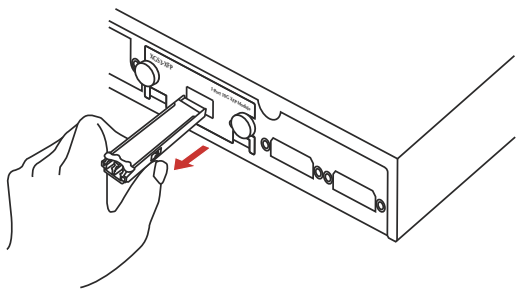
Figure 2: Insert the 10GBASE-LR/SR Fiber Optic Module

3. After the 10GBASE-LR/SR Fiber connection is made successfully, check the LNK/ACT LED to verify that if there is a link and a proper connection at the port.

Please refer to the Switch's user's manual for more about Switch or module's management.

4-3 Remove the SFP/SFP+/XFP Transceiver Module

1. Make sure there is no network activity by consulting or checking with the network administrator.
2. Remove the Fiber Optic Cable gently.
3. Turn the handle of the SFP/SFP+/XFP Transceiver module to the horizontal level.
4. Pull out the SFP/SFP+/XFP Transceiver module gently through the handle.



Warning

Never pull out the SFP/SFP+/XFP Transceiver module without pulling the handle or the push bolts on the module. Directly pulling out the SFP/SFP+/XFP Transceiver module would damage the SFP/SFP+/XFP Transceiver module of the device.

Appendix A

A.1 Fiber Optic Cable Connection Parameters

The wiring details are shown below:

■ **Fiber Optic Patch Cables:**

Standard	Fiber Type	Cable Specifications
100BASE-FX	Multi-mode	50/125μm or 62.5/125μm
100BASE-FX	Single mode	9/125μm
1000BASE-SX	Multi-mode	50/125μm or 62.5/125μm
1000BASE-LX	Single mode	9/125μm
1000BASE-BX	Single mode	9/125μm
10GBASE-SR	Multi-mode	50/125μm or 62.5/125μm
10GBASE-LR	Single mode	9/125μm
10GBASE-BX	Single mode	9/125μm

Safety Notice

Fiber-optic SFP modules are equipped with a Class 1 laser, which emits invisible radiation. Read the following safety warning carefully.

 Note	Class 1 Laser Product Complies with FDA Regulation 21 CFR 1040.10 and 1040.11
 Warning	Class 1 radiation is present when the device or system is powered up.
 Warning	Only trained and qualified personnel should be allowed to install or replace these modules.