

Confidential

Product Specifications

Industrial 4-Port 10/100/1000BASE-T + 2-Port 100/1G/2.5GBASE-X SFP Ethernet Switch

IGS-620TF

Version 2.0

This document contains confidential proprietary information and is property of PLANET. The contents of this document should not be disclosed to unauthorized persons without the written consent of PLANET.

Change History:

Revision	Date	Author	Change List
Version 2.0	2020/12/28	Angeline	HW 2.0
Version 1.0	2013/05/16	Kent Kang	Add fiber redundant feature
Version 0.9	2013/02/26	Marc Liao	Draft version

Author	Angeline	Editor:	Kent Kang
Reviewed by:	Kent Kang	Approved by:	Kent Kang

1. PRODUCT DESCRIPTION

Flexible, Reliable and Industrial-grade Network Distance Extension Solution

PLANET IGS-620TF is an **Industrial 6-port full Gigabit Ethernet Switch** providing non-blocking wire-speed performance and great flexibility for Gigabit Ethernet extension in harsh industrial environment. It provides **4-port 10/100/1000BASE-T** RJ-45 copper and **2 extra 100/1000/2500BASE-X SFP** fiber optic interfaces delivered in an IP30 rugged strong case with redundant power system. The IGS-620TF is well suited for applications like deploying surveillance system, and securing control and wireless service in climatically demanding environments with wide temperature range from **-40 to 75 degrees C**.

Fiber Optic Link Capability Enables Extension of Network Deployment

The two SFP ports are compatible with **100BASE-FX, 1000BASE-X and 2500BASE-X** SFP (small form factor pluggable) fiber-optic transceivers. The fiber optic uplink capability guarantees the throughput to all nodes hooked into the network and the Gigabit Ethernet distance can be extended from 300 meters (Multi-mode fiber cable) to 10/20/30/40/50/70/120 kilometers (Single-mode fiber cable). The Fast Ethernet distance can also be extended from 2km (Multi-mode fiber cable) to 20/40/60 kilometers (Single-mode fiber cable). They are well suited for applications within the factory data centers and distributions.

Adjustable 6-Port Switch Mode or 4 + 2 Fiber Redundant Mode

The two SFP ports allow to change the operation mode with its built-in DIP switch. Via the built-in DIP switch, the IGS-620TF can be configured as **6-port Ethernet switch** or **4+2 fiber redundant mode**. With the 6-port switch mode, the IGS-620TF can operate in Store-and-Forward mechanism with high performance; on the other hand, when in the 4+2 fiber redundant mode, it provides rapid fiber redundancy of link for highly critical Ethernet applications. The redundant mode also supports auto-recovering function. If the destination port of a packet is link-down, it will forward the packet to the other port of the backup pair.

Environmentally Hardened Design

The IGS-620TF is equipped with the slim-type IP30 metal case for easy deployment in heavy Industrial demanding environments. With IP30 industrial case protection, the IGS-620TF provides a high level of immunity against electromagnetic interference and heavy electrical surges which are usually found on plant floors or in curb side traffic control cabinets. Being able to operate under the temperature range from -40 to 75 degrees C, the IGS-620TF can be placed in almost any difficult environment. The IGS-620TF also allows either DIN-rail or wall mounting for efficient use of cabinet space.

Convenient and Reliable Power System

To enhance the operating reliability and flexibility, the IGS-620TF is equipped with two DC power input connectors for redundant power supply installation. It also possesses an integrated power supply source with wide-ranging voltages (12 to 48V DC or 24V AC) for worldwide high availability applications requiring dual or backup power inputs.

Flexible and Easy Installation with Limited Space

The compact-sized IGS-620TF is specially designed to be installed in a narrow environment, such as wall enclosure. It can be installed by fixed wall mounting or DIN rail, thereby making its usability more flexibly and easily in any space-limited location.

2. PRODUCT FEATURES

Physical Port

- Four 10/100/1000BASE-T RJ-45 ports with auto MDI / MDI-X function
- Two SFP interfaces, supporting 100/1000/2500BASE-X transceiver type auto detection

Fiber Port Redundancy

- Automatically detects link status and redundancy on dual ports with the same connector type.
- Only primary port is active at a time, while the backup port is blocked.
- When primary port link failure occurs, the traffic will swap to backup port automatically.
- Once the primary port status is back to link-up, the traffic will swap from backup port to primary port.

Layer 2 Features

- Supports auto-negotiation and 10/100Mbps half / full duplex and 1000Mbps full duplex mode
- High performance Store and Forward architecture, runt/CRC filtering eliminates erroneous packets to optimize the network bandwidth
- IEEE 802.3x flow control for full duplex operation and back pressure for half duplex operation
- 9K Jumbo Frame Size support
- Backplane (Switching Fabric): 18Gbps
- Integrated address look-up engine, support 4K absolute MAC addresses
- Automatic address learning and address aging
- IEEE 802.1Q VLAN transparency
- CSMA/CD Protocol

Industrial Case and Installation

- Slim IP30 metal case protection
- DIN-rail, wall-mount or side wall-mount design
 - 12 to 48V DC, redundant power with reverse polarity protection
 - AC 24V power adapter acceptable
- Supports 6000 VDC Ethernet ESD protection
- -40 to 75 degrees C operating temperature

3. PRODUCT SPECIFICATIONS

3.1 MAIN COMPONENT

Switch ASIC:	VSC7512	x 1
--------------	---------	-----

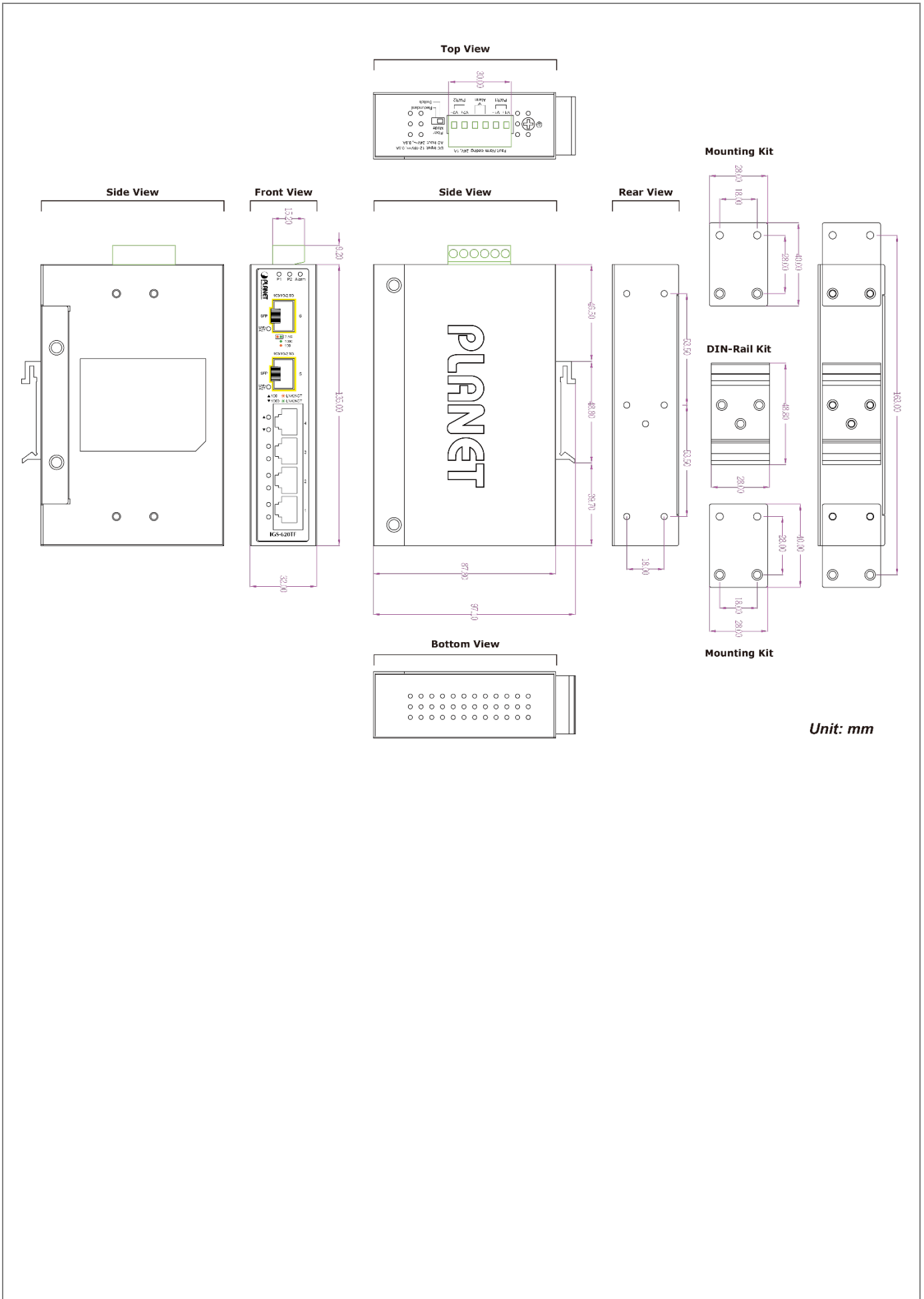
3.2 Functional Specifications

Model	IGS-620TF
Hardware Specifications	
Copper Ports	4 x 10/100/1000BASE-T RJ45 TP Auto-MDI/MDI-X, auto-negotiation
SFP Slots	2 x 100/1G/2.5GBASE-X SFP interfaces Supports auto detection
DIP Switch	<ul style="list-style-type: none"> ■ Switch mode (default) ■ Fiber Redundant mode
Connector	Removable 6-pin terminal block Pin 1/2 for Power 1; Pin 3/4 for fault alarm; Pin 5/6 for Power 2
Alarm	Provides one relay output for power failure Alarm Relay current carry ability: 1A @ DC 24V
ESD Protection	6KV DC
Enclosure	IP30 type metal case
Installation	DIN-rail kit and wall mount ear
Dimensions (W x D x H)	32 x 87 x 135mm
Weight	425g
Power Requirements	DC 12~48V or AC 24V Redundant power with reverse polarity protection
Power Consumption / Dissipation	7.5watts / 26BTU
LED	3 x LED for System and Power: <ul style="list-style-type: none"> ■ Green: DC Power 1 ■ Green: DC Power 2 ■ Red: Alarm 2 x LED for Per Copper Port (Port-1~Port-4): <ul style="list-style-type: none"> ■ Green: 1G LNK/ACT ■ Amber:100 LNK/ACT 1 x LED for Per SFP interface (Port-5 and Port-6) <ul style="list-style-type: none"> ■ Green + Amber: 2.5G LNK/ACT ■ Green: 1G LNK/ACT ■ Amber:100 LNK/ACT
Switch Specification	
Switch Processing Scheme	Store-and-Forward
Switch fabric	18Gbps
Throughput (packet per second)	13.39Mpps@64bytes
Address Table	4K entries
Jumbo Frame	9216 bytes
Flow Control	Back pressure for half duplex

	IEEE 802.3x pause frame for full duplex
Standards Conformance	
Standards Compliance	IEEE 802.3 Ethernet IEEE 802.3u Fast Ethernet IEEE 802.3ab Gigabit Ethernet IEEE 802.3z Gigabit Ethernet 1000BASE-SX/LX IEEE 802.3x Full-Duplex Flow Control IEEE 802.1p Class of Service
Regulatory Compliance	FCC Part 15 Class A, CE
Stability Testing	IEC60068-2-32 (Free fall) IEC60068-2-27 (Shock) IEC60068-2-6 (Vibration)
Environment	
Temperature	Operating: -40~75 degrees C Storage: -40~75 degrees C
Humidity	Operating: 5~95% (Non-condensing) Storage: 5~95% (Non-condensing)

3.3 Physical Specifications

- **Dimensions:**
32 x 87 x 135mm (W x D x H)
- **Weight:**
425g
- **Diagram:**



Confidential

■ **Front Panel**

The Front Panel of the IGS-620TF Industrial Switch is shown below:



■ **LED Definition**

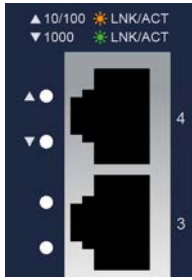
➤ **System**

LED	Color	Function
P1	Green	Light: Indicates power 1 has power.
P2	Green	Light: Indicates power 2 has power.
Alarm	Red	Light: Indicates either power 1 or power 2 has no power.

*Alarm LED definition:

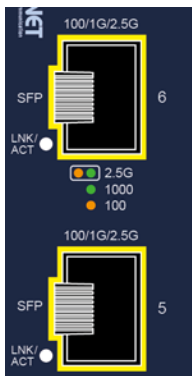
P1	P2	DIP	LINK STATUS	FAULT Alarm OUTPUT	FAULT LED
NO	NO	-	-	NO	
YES	YES	Switch	ND or ON	Normal Close	Off
YES	NO	Switch	ND or ON	Fault Open	On
NO	YES	Switch	ND or ON	Fault Open	On
YES	YES	Redundant	Primary ON	Normal Close	Off
YES	YES	Redundant	Primary DOWN	Fault Open	Slow blink for 2 seconds
YES	NO	Redundant	Primary DOWN	Fault Open	Blink rapidly
NO	YES	Redundant	Primary DOWN	Fault Open	Blink rapidly
YES	NO	Redundant	Primary ON	Fault Open	On
NO	YES	Redundant	Primary ON	Fault Open	On

➤ Per 10/100/1000T Port



LED	Color	Function
10/100 LNK/ACT	Amber	Lit: Indicates the link through that port is successfully established at 10Mbps or 100Mbps.
		Blinking: Indicates that the Switch is actively sending or receiving data over that port.
1000 LNK/ACT	Green	Lit: Indicates the link through that port is successfully established at 1000Mbps.
		Blinking: Indicates that the Switch is actively sending or receiving data over that port.

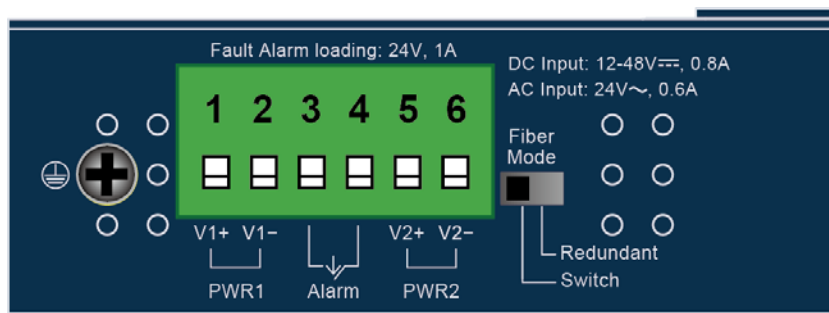
➤ Per 100/1000/2500X SFP Port



LED	Color	Function
100 LNK/ACT	Amber	Lit: Indicates the link through that port is successfully established at 100Mbps.
		Blinking: Indicates that the Switch is actively sending or receiving data over that port.
1000 LNK/ACT	Green	Lit: Indicates the link through that port is successfully established at 1000Mbps.
		Blinking: Indicates that the Switch is actively sending or receiving data over that port.
2500 LNK/ACT	Amber + Green	Lit: Indicates the link through that port is successfully established at 2500Mbps.
		Blinking: Indicates that the Switch is actively sending or receiving data over that port.

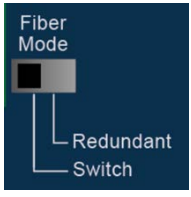
■ Top View

The upper panel of the IGS-620TF consists of one terminal block connector within two DC power inputs, and also provides 2 DIP Switches for 100/1000/2500X fiber support on two SFP ports and fiber redundant function.



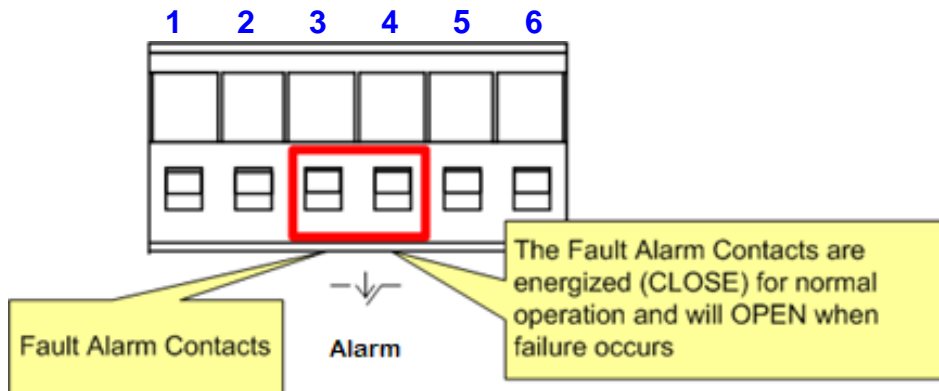
■ **DIP Switch**

The 2 DIP switch settings and descriptions:

	DIP	Position	Function
	DIP-1	ON	Fiber Redundancy
		OFF (default)	Switch Mode

The fiber redundancy function explains in APPENDIX A: Fiber Redundancy

■ **Fault Alarm Contact**



3.4 Environmental Specifications

Operating

Temperature: -40~75 degrees C
Relative Humidity: 5~90% RH (non-condensing)

Storage

Temperature: -40~75 degrees C
Relative Humidity: 5~90% RH (non-condensing)

3.5 Electrical Specification

Power Requirement: 12~48V DC or 24V AC, redundant power with reverse polarity protection function

■ **Power Consumption:**

Operation Mode	Input Voltage	Power Consumption
System on	12V DC	2.28 watts / 7.8 BTU
	24V DC	2.16 watts / 7.4 BTU
	48V DC	2.88 watts / 9.8 BTU

	AC 24V (adapter included)	6 watts / 20.5 BTU
Full Loading	12V DC	7.44 watts / 25.4 BTU
	24V DC	6.72 watts / 23 BTU
	48V DC	7.2 watts / 24.6 BTU
	AC 24V (adapter included)	11 watts / 37.5 BTU

3.6 Regulatory Compliance

FCC Part 15 Class A, CE

3.7 Reliability

MTBF > 100,000 hrs @ 25 degrees C

3.8 Basic Packaging

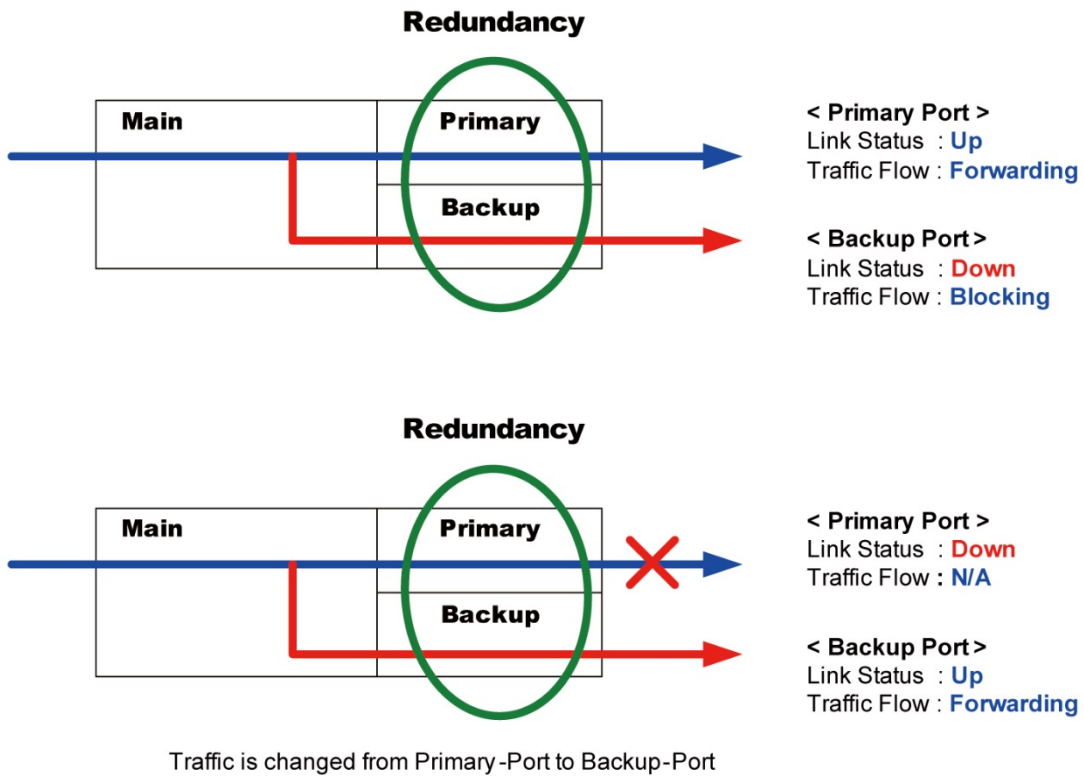
- The Industrial Gigabit Ethernet Switch x 1
- User's Manual x 1
- DIN-rail Kit x 1
- Wall Mount Kit x 1
- RJ45 Dust Cap x 4
- SFP Dust Cap x 2

3.9 PACKING INFORMATION

Box Dimensions (W x D x H)	205 x 144 x 46mm
Weight (gross weight)	0.59 kg
Carton Dimensions (W x D x H)	435 x 325 x 280mm
Carton Weight (total)	12.5 kg
Quantity	20pcs in one carton

APPENDIX A: FIBER REDUNDANCY

The Industrial Gigabit Ethernet Switch provides rapid fiber redundancy of link for highly critical Ethernet applications. The redundancy 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 redundancy function.



- Automatically detects link status and redundancy on dual ports with the same connector type.
- Only primary port is active at a time, while the backup port is blocked.
- When primary port link failure occurs, the traffic swaps to backup port automatically.
- Once the primary port status is back to link up, the traffic swaps from backup port to primary port.

APPENDIX B: CABLE CONNECTION PARAMETERS

The wiring details are shown below:

■ 100FX Fiber Optic Cables:

Standard	Fiber Type	Cable Specification
100BASE-FX (1300nm)	Multi-mode	50/125µm or 62.5/125µm
100BASE-FX (1310nm)	Multi-mode	50/125µm or 62.5/125µm
	Single-mode	9/125µm
100BASE-BX-U (TX :1310/RX :1550) 100BASE-BX-D (TX :1550/RX :1310)	Single-mode	9/125µm

■ 1000/2500X Fiber Optic Cables:

Standard	Fiber Type	Cable Specification
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
2500BASE-X (850nm)	Multi-mode	50/125µm or 62.5/125µm
2500BASE-X(1310nm)	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*

The single-mode port (1000BASE-LX port) of the IGT-620TF complies with LX 5 kilometers and provides additional margin allowing for a 10/20/30/40/50/70/120 kilometers Gigabit Ethernet link on single mode fiber.



Note:

kilometers and provides additional margin allowing for a 10/20/30/40/50/70/120 kilometers Gigabit Ethernet link on single mode fiber.

APPENDIX C: RELATED SFP TRANSCEIVERS

■ 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 °C
MFB-F20	100	LC	Single Mode	20km	1310nm	0 ~ 60 °C
MFB-F40	100	LC	Single Mode	40km	1310nm	0 ~ 60 °C
MFB-F60	100	LC	Single Mode	60km	1310nm	0 ~ 60 °C
MFB-F120	100	LC	Single Mode	120km	1550nm	0 ~ 60 °C
MFB-TFX	100	LC	Multi Mode	2km	1310nm	-40 ~ 75 °C
MFB-TF20	100	LC	Single Mode	20km	1550nm	-40 ~ 75 °C

■ 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 °C
MFB-FB20	100	WDM(LC)	Single Mode	20km	1550nm	1310nm	0 ~ 60 °C
MFB-TFA20	100	WDM(LC)	Single Mode	20km	1310nm	1550nm	-40 ~ 75 °C
MFB-TFB20	100	WDM(LC)	Single Mode	20km	1550nm	1310nm	-40 ~ 75 °C
MFB-TFA40	100	WDM(LC)	Single Mode	40km	1310nm	1550nm	-40 ~ 75 °C
MFB-TFB40	100	WDM(LC)	Single Mode	40km	1550nm	1310nm	-40 ~ 75 °C

■ 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 °C
MGB-SX	1000	LC	Multi Mode	550m	850nm	0 ~ 60 °C
MGB-SX2	1000	LC	Multi Mode	2km	1310nm	0 ~ 60 °C
MGB-LX	1000	LC	Single Mode	20km	1310nm	0 ~ 60 °C
MGB-L40	1000	LC	Single Mode	40km	1550nm	0 ~ 60 °C
MGB-L80	1000	LC	Single Mode	80km	1550nm	0 ~ 60 °C
MGB-L120	1000	LC	Single Mode	120km	1550nm	0 ~ 60 °C
MGB-TSX	1000	LC	Multi Mode	550m	850nm	-40 ~ 75 °C
MGB-TLX	1000	LC	Single Mode	10km	1310nm	-40 ~ 75 °C
MGB-TL40	1000	LC	Single Mode	40km	1310nm	-40 ~ 75 °C
MGB-TL80	1000	LC	Single Mode	80km	1550nm	-40 ~ 75 °C

■ **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 °C
MGB-LB10	1000	WDM(LC)	Single Mode	10km	1550nm	1310nm	0 ~ 60 °C
MGB-LA20	1000	WDM(LC)	Single Mode	20km	1310nm	1550nm	0 ~ 60 °C
MGB-LB20	1000	WDM(LC)	Single Mode	20km	1550nm	1310nm	0 ~ 60 °C
MGB-LA40	1000	WDM(LC)	Single Mode	40km	1310nm	1550nm	0 ~ 60 °C
MGB-LB40	1000	WDM(LC)	Single Mode	40km	1550nm	1310nm	0 ~ 60 °C
MGB-LA60	1000	WDM(LC)	Single Mode	60km	1310nm	1550nm	0 ~ 60 °C
MGB-LB60	1000	WDM(LC)	Single Mode	60km	1550nm	1310nm	0 ~ 60 °C
MGB-TLA10	1000	WDM(LC)	Single Mode	10km	1310nm	1550nm	-40 ~ 75 °C
MGB-TLB10	1000	WDM(LC)	Single Mode	10km	1550nm	1310nm	-40 ~ 75 °C
MGB-TLA20	1000	WDM(LC)	Single Mode	20km	1310nm	1550nm	-40 ~ 75 °C
MGB-TLB20	1000	WDM(LC)	Single Mode	20km	1550nm	1310nm	-40 ~ 75 °C
MGB-TLA40	1000	WDM(LC)	Single Mode	40km	1310nm	1550nm	-40 ~ 75 °C
MGB-TLB40	1000	WDM(LC)	Single Mode	40km	1550nm	1310nm	-40 ~ 75 °C
MGB-TLA60	1000	WDM(LC)	Single Mode	60km	1310nm	1550nm	-40 ~ 75 °C
MGB-TLB60	1000	WDM(LC)	Single Mode	60km	1550nm	1310nm	-40 ~ 75 °C

■ **Gigabit Ethernet Transceiver (2500BASE-X SFP)**

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (TX) (RX)	Wavelength (nm)	Operating Temp.
MGB-2GTSR	2500	Dual LC/UPC	Multi-mode	300m	--	850nm	-40~75°C
MGB-2GTLA20	2500	Simplex LC/UPC	Single mode	20km	TX: 1310nm RX: 1550nm	--	-40~75°C
MGB-2GTLB20	2500	Simplex LC/UPC	Single mode	20km	TX: 1550nm RX: 1310nm	--	-40~75°C
MGB-2GSR	2500	Dual LC/UPC	Multi-mode,	300m	--	850nm	0~70°C
MGB-2GLA20	2500	Simplex LC/UPC	Single mode	20km	TX: 1310nm RX: 1550nm	--	0~70°C
MGB-2GLB20	2500	Simplex LC/UPC	Single mode	20km	TX: 1550nm RX: 1310nm	--	0~70°C
MGB-2GLR20	2500	Duplex LC/UPC	Single mode	20km	--	1310nm	0~70°C
MGB-2GLR2	2500	Duplex LC/UPC	Single mode	2km	--	1310nm	0~70°C
MGB-2GTLR20	2500	Duplex LC/UPC	Single mode	20km	--	1310nm	-40~75°C