Datasheet

Copper Ethernet SFPs

SFP-SW10/100-R

SFP-GA-R

SFP-GC-R

Features

○ SFP-GC-R - 1000Base-T for Layer 1 devices (no MAC)

○ SFP-GA-R - 1000Base-T for Layer 2 and above devices (with MAC)

○ SFP-SW10/100-R
- 10/100Base-TX to 100-FX (system)
- Auto-negotiation
- Speed and duplex matching

○ MDI/MDI-X automatic detection

○ Plug-and-play functionality

○ Hot-swap support

○ Transmitter always on – does not support LIN function

○ MSA compliance

○ Complete MRV SFP compatibility

Overview

MRV offers three models of Ethernet SFPs for copper media applications. Two of the models support Gigabit Ethernet functionality, and the third one provides unique 10/100 Fast Ethernet solutions.

The SFP-GC-R model supports Gigabit Ethernet with a 1000Base-T interface, and it is designed for Layer 1 network devices that do not incorporate an Ethernet MAC. The SFP-GA-R is designed for use in Layer 2 and above devices such as switches and routers that do incorporate an Ethernet MAC. It supports Gigabit Ethernet with an auto-negotiating 1000Base-T interface. SFP-GC-R and SFP-GA-R models each support MDI/MDI-X auto-detection and jumbo packet sizes over 9,600 bytes.

Installed into MRV products with an available SFP port, the SFP-GC-R plug-ins provide a simple and cost-effective way to merge copper and fiber network segments.

The SFP-GA-R gives network administrators greater flexibility in configuring their SFP-enabled switches and routers, allowing them to use less expensive copper cabling and interfaces for links of 100 meters or less.

The SFP-GC-R and SFP-GA-R do not convert between edge devices of different speeds or duplex mode. Connected edge devices must operate at the same speed and duplex mode to communicate. An edge device that supports auto-negotiation may require specific interface settings for fixed Gigabit Ethernet speed and duplex mode operation.

The SFP-SW10/100R is a unique Fast Ethernet 10/100 Base-TX to 100-FX (system side). It offers auto-negotiation with speed and duplex matching as well as MDI/MDI-X auto-detection. It supports transport of jumbo packets up to 1,600 bytes.

The SFP-SW10/100R can translate between edge devices of different speeds or duplex mode. Connected edge devices may operate at different speeds and duplex modes.
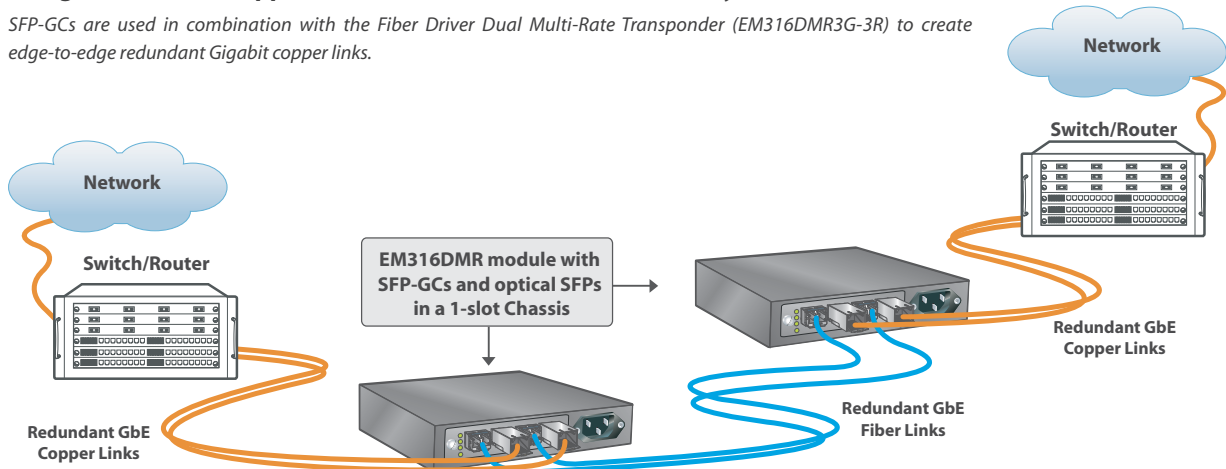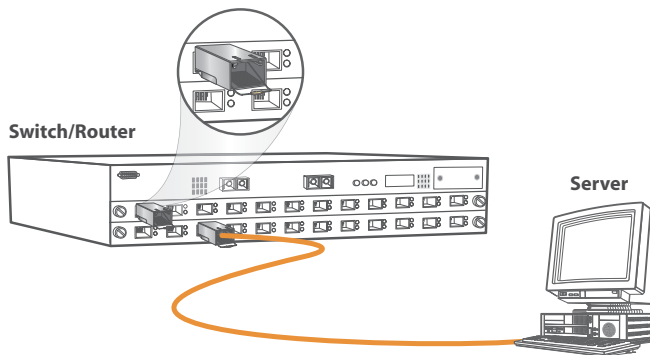
sales@mrv.com

A. Gigabit Ethernet Copper-to-Fiber Conversion with Redundancy

SFP-GCs are used in combination with the Fiber Driver Dual Multi-Rate Transponder (EM316DMR3G-3R) to create edge-to-edge redundant Gigabit copper links.
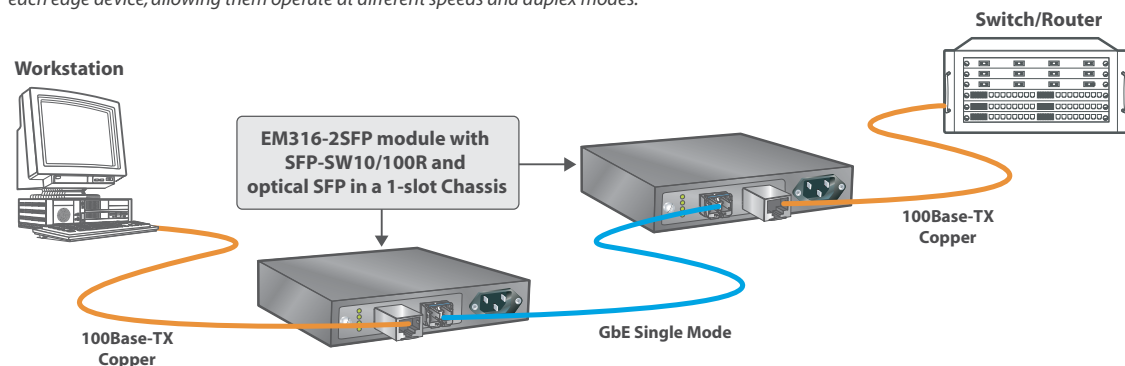
Network

Switch/Router

Network

Switch/Router

EM316DMR module with SFP-GCs and optical SFPs in a 1-slot Chassis

Redundant GbE Copper Links

Redundant GbE Copper Links

Redundant GbE Fiber Links

B. SFP-Enabled GbE Switch/Router

The SFP-GA-R is used in an SFP-enabled GbE switch or router to link to a server configured with a copper GbE NIC.

Switch/Router

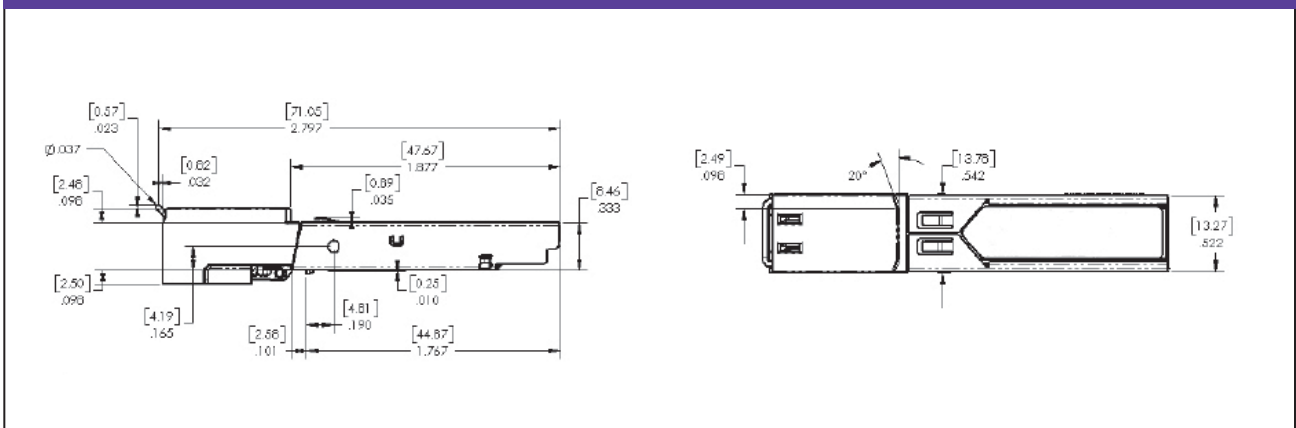Server

C. Fast Ethernet Copper-to-Fiber Conversion

Converting from copper to fiber and back again, SFP-SW10/100R and optical SFPs are used as interfaces in data rate independent Fiber Driver SFP-to-SFP pluggable media modules (EM316-2SFP). The fiber link operates at Fast Ethernet speed. The SFP-SW10/100 matches the speed and duplex mode of each edge device, allowing them operate at different speeds and duplex modes.
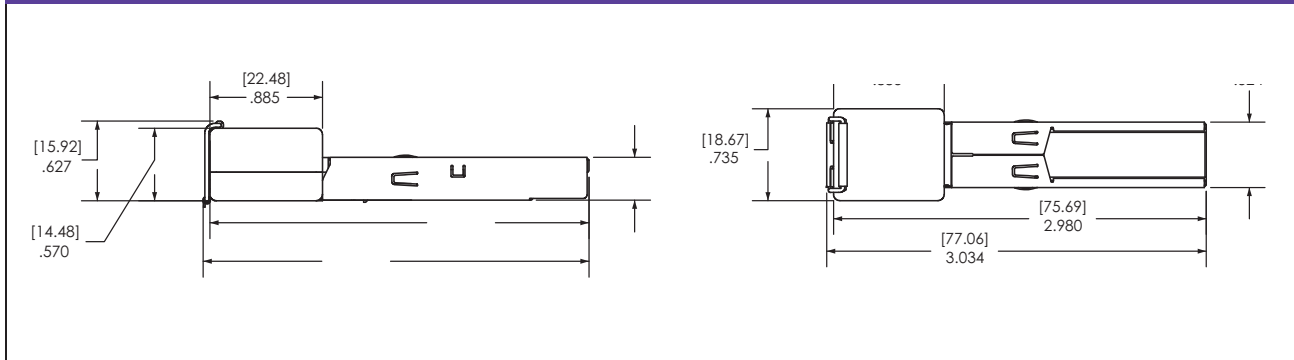
Switch/Router

Workstation

EM316-2SFP module with SFP-SW10/100R and optical SFP in a 1-slot Chassis

100Base-TX Copper

100Base-TX Copper

GbE Single Mode

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Physical Specifications

Operating Temperature Range	$0°C$ to $70°C$ ($32°F$ to $158°F$)
Storage Temperature	$-40°C$ to $85°C$ ($-40°F$ to $185°F$)
Relative Humidity	85% maximum, non-condensing
Power	1.5 W
Regulatory Compliance	FCC Part 15 (Class A); IC (Class A); EMC Directive: Emission (Class A) and Immunity; RoHS Directive;
	China RoHS; WEEE Directive: Wheelie Bin Mark

Comparison Table	SFP-GC-R	SFP-GA-R	SFP-SW10/100-R
RJ-45 connector	Yes	Yes	Yes
Cable type	CAT-5	CAT-5	CAT-5
Maximum cable length (m)	100	100	100
Ethernet Standard	1000 Base-T	1000 Base-T	10/100 Base-TX
Supports speed auto-negotiation	N/A	Yes	Yes
Supports duplex auto-negotiation	N/A	Yes	Yes
Supports auto MDI/MDI-X detect	Yes	Yes	Yes
Match translates between edge devices	No. Both edge devices must operate in the same duplex mode.	No. Both edge devices must operate in the same duplex mode.	Yes
Used with Layer 0/1 devices (e.g. repeaters converters and WDM transponders)	Yes	No	Yes
Used with Layer 2 devices, e.g. switches and routers	No	Yes	Yes
Packet Size (bytes)	9600 +	9600 +	1600

Outline Drawing for SFP-GC-R and SFP-GA-R

MRV

Outline Drawing for SFP-SW10/100-R

[22.48]
.885

[15.92]
.627

[14.48]
.570

[18.67]
.735

[75.69]
2.980

[77.06]
3.034

Ordering Information

Model	Function	Voltage (V)	Protocol	Max. Data Rate (Mbps)	Connectors	Distance Range (m)
SFP-GC-R	SFP supporting 1000Base-T for Layer 0/1 devices. RoHS compliant.	3.3	Gigabit Ethernet	1250	RJ-45	1-100
SFP-GA-R	SFP supporting 1000Base-T for Layer 2 and higher devices. RoHS compliant.	3.3	Gigabit Ethernet	1250	RJ-45	1-100
SFP-SW10/100-R	SFP supporting 10/100Base-TX to 100-FX with autonegotiation and speed/duplex matching. RoHs Compliant.	3.3	Ethernet, Fast Ethernet	125	RJ-45	1-100

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