

Gigabit Ethernet (GbE) Multiplexer

907-GEM

Focal Technologies Corporation, a Moog Inc. company, has over 30 years of expertise in supplying standard and custom marine products for harsh environment applications and is a leading manufacturer of high performance and high quality multiplexers. Contact Focal for any assistance in selecting the best solution for your requirements.



The 907-GEM is an expandable Gigabit Ethernet (GbE) multiplexer that enables modular fiber optic telemetry solutions, particularly for Ethernet intensive applications. As a motherboard, the 907-GEM provides four completely independent and “switchless” 10/100/1000 Mbps Ethernet links and can be stacked with standard 907 expansion cards to add other signal types, such as serial channels (RS-232/485/422), hydrophones, responder triggers, CAN Bus and various analog and digital sonars. Given the growing adoption of real-time Ethernet for critical control systems and digital video (e.g. GigE Vision), the low latency 907-GEM is an exceptional core solution for current and future applications.

As a standalone card, 907-GEM replaces four separate Ethernet media converters with a single board and a single fiber link. This significantly reduces size and cost compared to standard media converter solutions, which typically require 2-4 stacked cards plus four transceivers, eight fibers and an optical coupler for the same Ethernet capability.

A wide range of optical options are available for the 907-GEM, including CWDM wavelengths for optical multiplexing with other media converters and multiplexers. Optical power budgets of 20-30 dB over 10 km of singlemode fiber, and multimode links of up to 2 km are also supported. In addition to on-board LEDs, the 907-GEM includes integrated diagnostics accessible via the diagnostics card (907-DIAG-E) and graphical user interface (GUI) software.

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Features

- Four independent (switchless) and low latency 10/100/1000 Mbps Ethernet links
- Compatible with non-standard Ethernet frames, e.g. multi-beam sonars, and jumbo frames
- Interchangeable SFP optical transceiver
- Rugged design for harsh environments, including pressure tolerant version
- Compatible with 907-DIAG-E diagnostic card and Graphical User Interface (GUI) software
- Supports up to six 907 expansion cards

Benefits

- Reduces cost and size for systems with multiple Ethernet media converters
- Provides low latency for real-time systems
- Simplifies troubleshooting with advanced diagnostics
- Enables expandable and reconfigurable multiplexer solutions
- Replaces many fiber links and transceivers with a single fiber link
- Supports a wide range of optical options, including CWDM wavelengths and multimode configurations

Applications

- Remotely Operated Vehicles (ROV) and Tether Management Systems
- Ethernet Based Video Systems
- Advanced Sonar Systems
- Tactical Networks and Defense Systems
- Industrial Process Control

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Specifications

Data	
No. Copper Ports	4 (non-switched, independent)
Data Rules	10/100/1000 Base-T(X)
Total Throughput	500 - 2500 Mbps, via switch setting (0.01% used for embedded diagnostics)
Latency	< 15 μ s (1000 M) < 150 μ s (100 M) Less than 2 frame times Does not include fiber delay
Optical	
Optical Fiber	1 or 2 singlemode (9/125 μ m)
Baud Rate	625-3125 Mbaud
Format	AME-EP (Moog proprietary)
Wavelength	1310/1550 nm standard (CWDM optional, 1471-1611 nm)
Flux Budget	> 20 dB (24 dB typical)
Options	Bidi (bidirectional) transceivers; higher/lower budget transceivers, CWDM, multimode
Electrical	
Power Voltage	+5 VDC \pm 10%, regulated
Power Current Draw	1.5 A typical (2 A max.)
Power Used	7.5 W typical (10 W max.)
Voltage Protection	Overvoltage, reverse polarity, 3 A time-delay fuse

Diagnostics	
LEDs	Power (electrical), Optical Link, Optical Fault, PHY Tx/Rx Activity, Port Rate, Port Error
Ethernet to PC	Diagnostics from remote and console through 907-DIAG-E at console
Mechanical	
Dimensions	PC/104 (form-factor only)
Weight	125 g (0.27 lb), including SFP
Options	Custom enclosures
Connectors	
Optical	Dual LC (SFP)
Data (Ethernet)	4 x RJ45
Power	2-pin Molex, 0.156 inch pin spacing
Stacking	PC/104 (for stacking 907 cards only)
Environmental	
Temperature	-10°C to +60°C (operational) -40°C to +85°C (storage)
Humidity	85% RH, non-condensing
Vibration	5 g, 25 - 1000 Hz, 3 axes
Shock	30 g, 11 ms half sine, 3 axes
Options	6000 psi pressure tolerant; extended temperature; stress screened or qualified

All specifications and information are subject to change without notice. Please contact Focal for the latest updates.

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