Mini-size Gigabit Ethernet Fiber Converter for Industry

DS201

Industrial 1-port Gigabit Ethernet to Fiber Media Converter

The industrial-grade fiber optic media converter DS201 can operate in either low latency converter mode or store & forward switching mode. The fiber interface supports 100Mbps/1000Mbps SFP by dip switch configuration. It detects and changes to store-and-forward mode if the link speed or duplex of RJ-45 and fiber ports are different. In converter mode, the Link Fault Pass-Through (Link Loss Forwarding) reaches low latency with bi-directional alert and auto-recovery. The 16Kbytes jumbo frame forwarding capability guarantees high-speed Giga communications. Wide operation temperature -40~75 C and heavy industrial EMC design brings DS201 suitable for any industrial application.

-40~75°C RoHS HF Halogen FREE CE EN50121-4 IEC61000-6-2 IEC61000-6-4

Features & Benefit

Ethernet Media Converter

- Converts Optical Signal and Gigabit Ethernet Electrical Signal
- SFP Socket Supports IEEE 802.3u 100Base-FX, IEEE 802.3az 1000Base-FX
- RJ-45 supports IEEE802.3u 100Bas-TX, IEEE802.3ab 1000Base-TX

Link Fault Pass Through / Link Loss Forward

- Bi-Directional Link Loss Forwarding for Real Time Far-End Fault Link Alert
- Bi-Directional Auto Recovery for Ethernet Optical Fiber and Ethernet RJ-45 Communication

Dual Forwarding Modes

Pure Converter:

- RJ-45 and Fiber working in balanced Speed and Duplex mode
- Minimum Forwarding Latency – $8.2x10^{-9}$ Sec.

Ethernet Switching Store-and-Forward:

- RJ-45 and Fiber working in un-balanced speed and duplex mode
- TX 100/1000Mbps Auto-Negotiation, Auto MDI/MDI-X
- IEEE 802.3x Flow-Control & Back-Pressure
- CRC Error Packet Filtering

High Speed Gigabit Communication

- 16KBytes Jumbo frame for Gigabit Speed
- Multi-Media, Video/Voice Stream Applications

Industrial Compliance

- IEC 61000-6-2/ IEC 61000-6-4 Heavy Industrial EMC
- EN 50121-4 Railway Track Side EMC
- High Level Electro Magnetic Susceptibility – Level 3

Easy DIP switch Configuration

- Forced RJ-45 100Mbps Half Duplex for legacy device
- Forced Fiber 100Mbps - Connects Lower Speed Fiber Network
- Link Fault Pass Through / Link Loss Forward

Hardened System Design

- Operates Under -40 ~75°C Environment
- Wide Range Redundant Power Input, 10~60Vdc or AC18~30V and Negative Power System for Telecom
- Ingress Protection – IP31

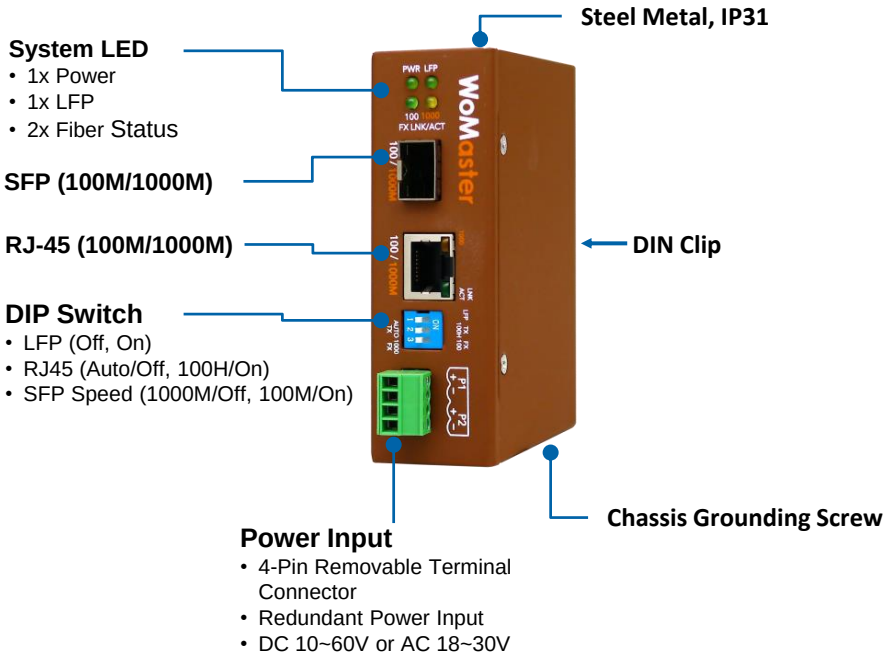
Compact Size Design

- Minimal Install Space Requirement
- Easy Cable Reorganization

Special Vertical Market Application

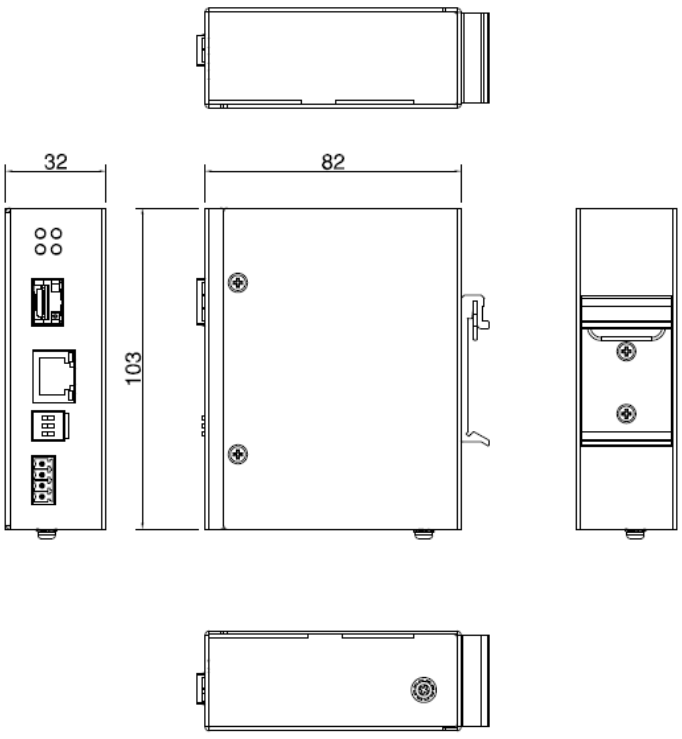
- Factory Automation – Real Time Machine Communication
- Railway Track Side – PLC Communication
- Low AC Voltage application – AC18~30V Building Automation
- Telecom System for Battery Negative Power Application

Interfaces



Dimensions

Dimension: 32mm(w) x 103mm(H)x 82mm(D)



Specifications

Technology

Standard	IEEE 802.3 10Base-T Ethernet
	IEEE 802.3u 100Base-TX/ 100Base-FX Fast Ethernet
	IEEE 802.3ab 1000Base-T / IEEE 802.3z Gigabit Fiber
	IEEE 802.3x Flow Control and back-pressure

Performance

Forwarding Mode	Switching Mode: Store-and-Forward technology with CRC Check Pure Converter: Direct Forward packet with lower latency **Note: If the link speed and duplex mode of RJ-45 and Fiber port are not same, DS201 will auto change forwarding mode to store-and-forward**
Packet Buffer Memory	128K bits
Transfer performance	1488100pps, supports 16KBytes Jumbo frame size

Interface

Ethernet Port	1 x Ethernet RJ45, 10/100/1000Mbs Auto Negotiation,Auto MDI/MDI-X 1 x 100Base-FX / 1000Base-FX (Manual Configured, Transceiver Hot-Swappable)
System LED (To Be Update)	1 x Power: Green On (Power is supplying) / Off (Power off) 1 x LFP: LFP Enable (Green On) / LLF Event Occurred (Green Blinking) (LFP: Link Fault Pass-Through)
Ethernet Port LED (RJ-45)	1000Mbps Speed (Yellow On) 10/100/1000Mbps Link (Green On), 10/100/1000Mbps Activity (Green Blinking)
Fiber Port LED	1 x 1000Mbps Fiber: Link (Yellow on)/ Activity (Yellow Blinking) 1 x 100Mbps Fiber: Link (Green on)/ Activity (Green Blinking)
DIP Switch	See table below
Power input	4-Pin Removable Terminal Connector with Power Redundancy, Polarity Auto Reverse • V1(+), V2(+) : Redundant Power Input (V+) or L1/L2 (Low AC Voltage) • V1(-) , V2(-): Common (V-) for Redundant Power Input V1 and V2, or N1/N2 (Low AC Voltage)

DIP No.#	Status	Description
DIP 1	On Off	Enable Link Fault Pass Through/ Far End Fault Alert function Disable Link Fault Pass Through (Default Off)
DIP 2	On Off	RJ-45 Forced at 100Mbps Half Duplex mode RJ-45 Auto Negotiation (Default Off - Auto Negotiation)
DIP 3	On Off	SFP Port Forced at 100Mbps Speed SFP Port 1000Mbps (Default Off – 1000Mbps)

Note: It is necessary to perform power reset to activate the new configuration when DIP switch or SFP Transceiver change.

Power Requirement

Input Voltage	DC 24V, Rating 10~60Vdc, Redundant Power Input with Auto Polarity Reverse function Negative Power Supported Low AC Voltage 18~30Vac for the Building Automation Control
Auto Polarity Reverse	Yes
Power Consumption	Max. 3W@24VDC

Mechanical

Installation	35mm DIN Rail
Enclosure Material	Steel Metal
Dimension	32mm (W) x 103mm (H) x 82mm (D) / without DIN Rail Clip and SFP Transceiver
Ingress Protection	IP31
Weight	300g without package and SFP Transceiver

Environmental	
Operating Temperature & Humidity	-40°C~75°C, 0%~95% Non-Condensing
Storage Temperature	-40°C~85°C
MTBF	>200,000 hours
Hi-Pot Insulation	AC1.0KV for Power/Ethernet port to Chassis Ground
Warranty	5 years without human and natural damage
Standard	
Safety *	IEC 60950-1, UL
EMC	IEC/ EN61000-6-2, IEC/EN61000-6-4
EMI	CISPR 16-1-1/-2, CISPR 16-2-1/-2, FCC part 15B Class A
EMS	IEC61000-4-2 ESD 6KV Contact , 8KV Air, Criteria A EN61000-4-3 RS 20V/m 80M~1Ghz, 10V/m 1.4~2Ghz, 5V/m 2~2.7Ghz, 3V/m 5.1~6Ghz EN61000-4-4 EFT 2KV EN61000-4-5 Surge 1KV/ 2KV EN61000-4-6 CS 10V 0.15~80Mhz EN61000-4-8 Power Frequency Magnetic Field 100A/m, 300A/m
Environment *	IEC 60068-2-27 Shock / IEC 60068-2-31 /IEC 60068-2-6 vibration
Railway Track Side	EN50121-4

*** By Request**

Ordering Information

Model Name	Description
DS201	Industrial Gigabit Ethernet Fiber Media Converter, 1 RJ-45, 1 SFP Socket, Redundant Power, DC 10~60V, AC18~30V
	Package List
	1 x Product Unit
	1 x 4-pin Removable Terminal Connector, attached on the device
	1 x DIN Rail Clip , attached on the device
	1 x Quick Installation Guide