

# 1000Base LX SFP Module Multimode 1310 nm 2 km

**Description**

Wirewerks™ small form factor pluggable (SFP) multimode supports Gigabit Ethernet over multimode cables at distances up to 2 km. It is fully compliant to IEEE 802.3z standard for Gigabit Ethernet. It is a cost effective method of providing changeable interfaces to switches and media converters with universal SFP socket.

Digital diagnostics monitoring (DDM) functions, also known as digital optical monitoring (DOM), specified in industry standard SFF-8472, is also available as an option. This feature gives the end user the ability to monitor real time parameters of the SFP such as optical output power, optical input power, temperature, laser bias current, and transceiver supply voltage.

**Features and Benefits**

- |                                      |   |
|--------------------------------------|---|
| Cisco Compatible                     | Extended EMI and excellent ESD protection   |
| LC Duplex Connector                  | Class 1 laser safety product                |
| 1310 FP laser and PIN photo detector | Digital Diagnostics Monitoring (DDM) option |
| 3.3 V power supply                   | Instruction manual                          |
| Hot pluggable capability             |   |

**Applications**

- |                            |                            |
|----------------------------|----------------------------|
| Fiber channel applications | Switch to switch interface |
| Gigabit Ethernet           | Router/server interface    |

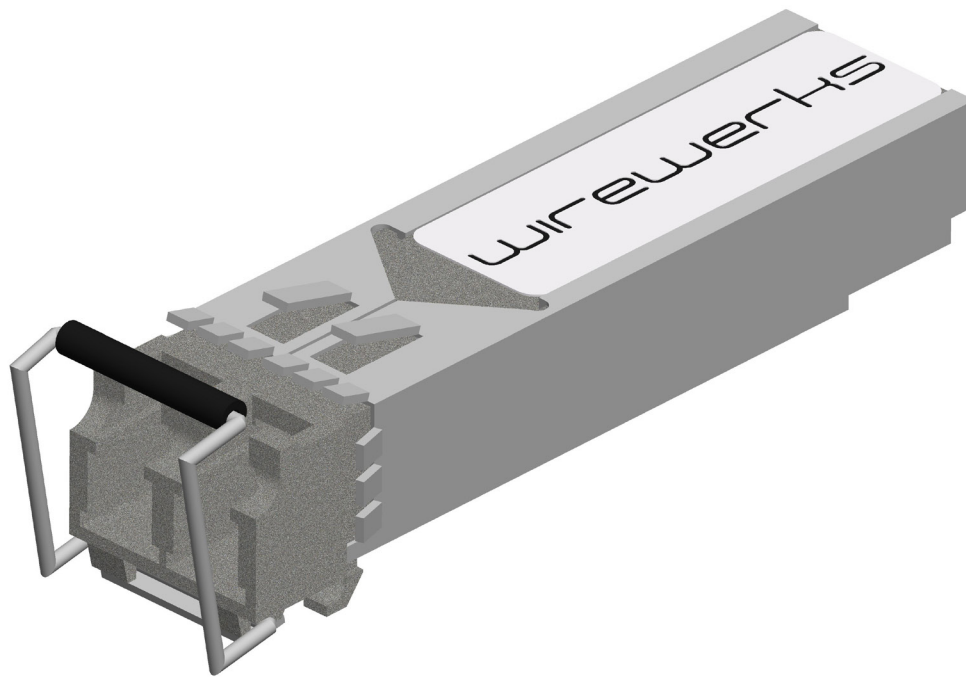
**Certification and Compliance**

- |                      |   |
|----------------------|---|
| SFP MSA and SFF-8472 | Compliant with SFP Multi-Source Agreement.        |
| IEEE 802.3z          | 1000Base Gigabit Ethernet Standard.               |
| EN 60825-1           | Class 1 Laser Safety Product.                     |
| FCC part 15, Class A | Emissions and Immunity Standard.                  |
| CE                   | European Conformity Standard.                     |
| RoHS                 | Directive on Restriction of Hazardous Substances. |



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Ordering Information	Description		Part Number
		1000Base LX SFP Multimode 1310 nm 2 km Duplex LC 0° C to +70° C	
	1000Base LX SFP Multimode 1310 nm 2km Duplex LC -40° C to +85° C.		WSFP2-32M02Z-3Y

Packaging	Description	
		Cardboard box, 1 unit per box.

Inclusion	Description	
		Instruction manual.

Physical Characteristics	Parameter	Value
	Interface	LC duplex
	Overall dimensions	55.4 mm (2.18 in) x 13.7 mm (0.54 in) x 8.6 mm (0.338 in)

Optical Characteristics	Parameter		Value
	Transmitter	Output optical power $P_{out}$ (dBm)	-8/-4 (min./max.)
		Extinction ratio ER (dB)	9
		Center wavelength $\lambda_c$ (nm)	1310/1270/1350 (nom./min./max.)
		Spectral width $\Delta\lambda$ 20 dB (nm)	4
		Rise/Fall time 20-80% $T_r, f$ max. (ns)	0.26
		Total Jitter $T_j$ max. (UI)	0.43
	Receiver	Input optical power $P_{in,m}$ (dBm)	-3 (max.)
		Optical input power $P_{in}$ sensitivity (dBm)	-24 (min.)
		Operating center wavelength $\lambda_c$ (nm)	1310/1270/1610 (nom./min./max.)
		Loss of signal – Asserted $P_A$ (dBm)	-30 (min.)
		Loss of signal – Deasserted $P_D$ (dBm)	-26 (max.)

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**Electrical Characteristics**

Parameter		Value
Transmitter	Differential data input swing $V_{in}$ (mV)	500/2400 (min. /max.)
	Transmit fault output-low TX_FAULT (V)	0.0/0.8 (min. /max.)
	Transmit fault output-High TX_FAULT (V)	$2.0/V_{CC}$ (min. /max.) $V_{CC} = 3.1\text{ V} \sim 3.5\text{ V}$
Receiver	Differential data output swing $V_{out}$ (mV)	370/2000 (min. /max.)
	Receiver loss of signal output RX_LOS (V)	0/0.8 (min. /max.)
	Receiver loss of signal output RX_LOS (V)	$2.0/V_{CC}$ (min. /max.) $V_{CC} = 3.1\text{ V} \sim 3.5\text{ V}$

**Absolute Maximum Ratings**

Parameter	Value
Supply voltage $V_{CC}$ (V)	-0.5/4.5 (min. /max.)
Storage temperature	-40° C (-40° F) ~85° C (185° F)
Operating humidity (%)	5~95

**Recommended Operating Conditions**

Parameter	Value
Ambient operating temperature $T_c$	0° C (32° F) ~70° C (158° F) for WSFP2-32M02Z-1Y -40° C (-40° F) ~85° C (185° F) for WSFP2-32M02Z-3Y
Supply voltage $V_{CC}$ (V)	3.15 ~3.45 (min. /max.)
Power dissipation (W)	1

**Timing Requirements**

Parameter	Value
Tx disable negate time $t_{on}$ (ms)	1 (max.)
Tx disable assert time $t_{off}$ ( $\mu$ s)	10 (max.)
Time to initialize, including reset of Tx fault (ms)	300 (max.)
Tx fault assert time $t_{fault}$ ( $\mu$ s)	100 (max.)
Tx disable to reset $t_{reset}$ ( $\mu$ s)	10 (min.)
LOS assert time $t_{loss\_on}$ ( $\mu$ s)	100 (max.)
LOS de-assert time $t_{loss\_off}$ ( $\mu$ s)	100 (max.)