

Ha-VIS FE SFP Transceiver MM L2

Fast Ethernet
for Duplex LC connector Multimode Cable, 2 km

Features

- 1310 nm LED
- Data Rate: 155 Mbit/s, NRZ
- Single +3.3 V Power Supply
- RoHS Compliant and Lead-free
- AC/AC Differential Electrical Interface
- Compliant with Multi-Source Agreement (MSA) Small Form Factor Pluggable (SFP)
- Duplex LC Connector
- Compliance with 100Base-FX of IEEE 802.3u Standard
- Compliance with FDDI PMD Standard
- Compliance with ATM Standard

General description

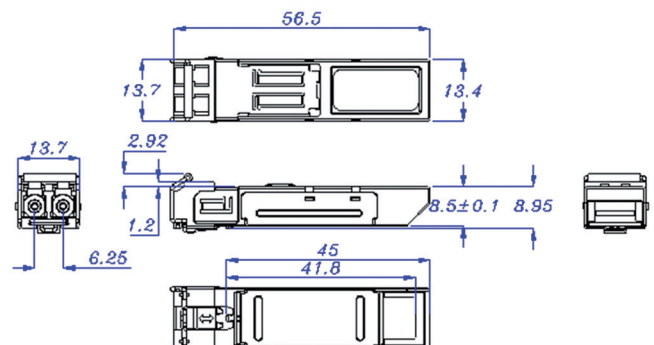
The Ha-VIS FE SFP Transceiver MM L2 is the high performance and cost-effective module for serial optical data communication applications specified for multimode of 155 Mbit/s. It operates with +3.3 V power supply. The module is intended for multimode fiber, operates at a nominal wavelength of 1310 nm and complies with Multi-Source Agreement (MSA) Small Form Factor Pluggable (SFP). Each module consists of a transmitter optical subassembly, a receiver optical subassembly and an electrical subassembly. All of them are housed in a plastic package and the combination produces a reliable component.

The module is a duplex LC connector transceiver designed to provide an ATM/SONET OC-3/SDH STM-1 compliant link for 155 Mbit/s short reach applications. The characteristics are performed in accordance with Telcordia Specification GR-468-CORE.

Identification	Part-Number	Drawing	Dimensions in mm
----------------	-------------	---------	------------------

Ha-VIS FE SFP Transceiver MM L2

20760000300



Technical characteristics

Applications

- Fast Ethernet
- FDDI
- ATM/SONET OC-3/SDH STM-1
- Multimode fibre links
- Optical-Electrical Interface Conversion

Ethernet Interface - Fibre Optic

Cable types acc. to IEEE 802.3
125 µm Multimode fibre, 1310 nm; 50 / 125 µm or 62.5 /

Data rate 155 Mbit/s

Maximum cable length 2 km

Sensitivity ≤ -32 dBm

Wave length 1310 nm

Transmitter

Output power -19 ... -14 dBm

Output power (typ.) -17 dBm

Extinction Ratio (min) 8.2 dB

Center wave length 1270 ... 1360 nm

Spectral width (FWHM) (max) 200 nm

Optical rise time (10 % ... 90 %) (max) 3.0 ns p-p

Optical fall time (10 % ... 90 %) (max) 3.0 ns p-p

Output eye compliant with ITU recommendation G.957

Receiver

Maximum input optical power (min) -14 dBm

Receiver sensitivity -34 ... -32 dBm

Operating wave length 1100 ... 1600 nm

Loss of Signal - asserted (P_A) (min) -45 dBm

Loss of Signal - deasserted (max) -31 dBm

Loss of Signal - hysteresis (min) 0.5 dB

Timing characteristics

TX_DISABLE Assert Time (max) 10 µs

TX_DISABLE Negate Time (max) 1 ms

Time to initialize, include reset of TX_FAULT (max) 300 ms

TX_FAULT from fault to assertion (max) 100 µs

TX_DISABLE time to start reset (min) 10 µs

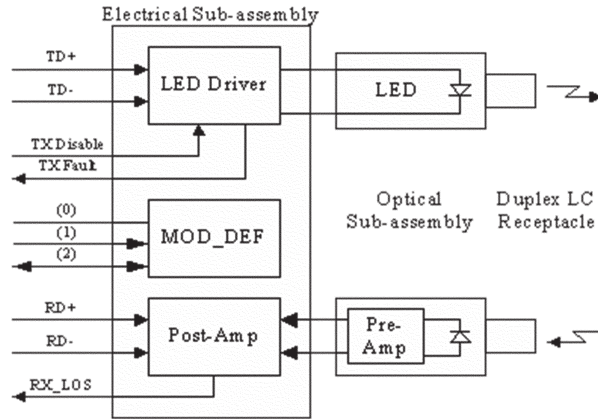
Receiver Loss of Signal Assert Time (max)

off to on 100 µs

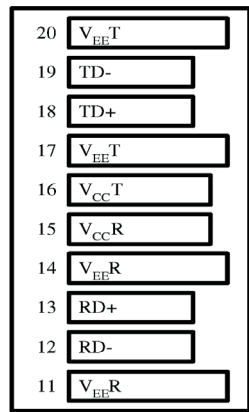
on to off 100 µs

Technical characteristics

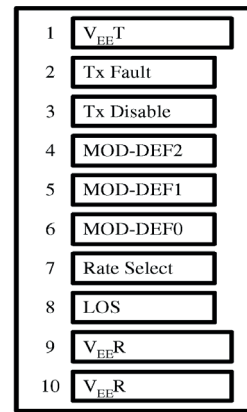
Block diagram of transceiver



Pin assignment diagram of transceiver



Top of board



Bottom of board
(as viewed through top of board)

Pin	Symbol	Functional description
1	V _{EE} T	Transmitter ground
2	TX Fault	Transmitter Fault Indication (not connected)
3	TX Disable	Transmitter Disable - module disables on high or open
4	MOD-DEF(2)	Module Definition 2 - two wire serial ID interface
5	MOD-DEF(1)	Module Definition 1 - two wire serial ID interface
6	MOD-DEF(0)	Module Definition 0 - grounded in module
7	Rate Select	Not connected
8	LOS	Loss of signal
9	V _{EE} R	Receiver ground
10	V _{EE} R	Receiver ground

Pin	Symbol	Functional description
11	V _{EE} R	Receiver ground
12	RD-	Inverse received data out
13	RD+	Received data out
14	V _{EE} R	Receiver ground
15	V _{CC} R	Receiver Power
16	V _{CC} T	Transmitter Power
17	V _{EE} T	Transmitter ground
18	TD+	Transmitter data in
19	TD-	Inverse transmitter data in
20	V _{EE} T	Transmitter ground

Technical characteristics

Power Supply

Power supply (Vcc)	0...6 V DC
Operating voltage and SD output	3.3 V TTLAC/AC
Permissible range	3.1 V to 3.5 V
Data input voltage swing	400 ... 1600 mV

Transmitter

Transmitter supply current (max)	140 mA
Tx Transmitter Disable Input voltage - low	0 ... 0.8 V
Tx Transmitter Disable Input voltage - high	2.0 V ... Vcc
Tx Transmitter Fault Output voltage - low	0 ... 0.8 V
Tx Transmitter Fault Output voltage - high	2.0 V ... Vcc

Receiver

Receiver supply current (max)	100 mA
Receiver Data Output differential voltage	0.4 ... 1.3 V
Rx LOS Output voltage - low	0 ... 0.8 V
Rx LOS Output voltage - high	2.0 V ... Vcc
MOD_DEF (1), MOD_DEF (2) - low	-0.6 V ... Vcc x 0.3
MOD_DEF (1), MOD_DEF (2) - high	Vcc x 0.7 ... Vcc + 0.5

Design features

Housing type	metal housing
Dimensions (W x H x D)	13.7 mm x 8.95 mm x 56.5 mm

Environmental conditions

Operating temperature	-40 °C to +85 °C
Storage temperature	-40 °C to +85 °C

EMC

Most equipment utilizing high-speed transceivers will be required to meet the following requirements:

- 1) FCC in the United States
- 2) CENELEC EN 55 022 (CISPR 22) in Europe

To assist the customer in managing the overall equipment EMC performance, the transceivers have been designed to satisfy FCC class B limits and provide good immunity to radio-frequency electromagnetic fields.

Eye safety

The transceivers have been designed to meet Class 1 eye safety and comply with EN 60 825-1.