Ha-VIS FE SFP Transceiver SM L15

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Fast Ethernet
for Duplex LC connector, Singlemode Cable, 15 km

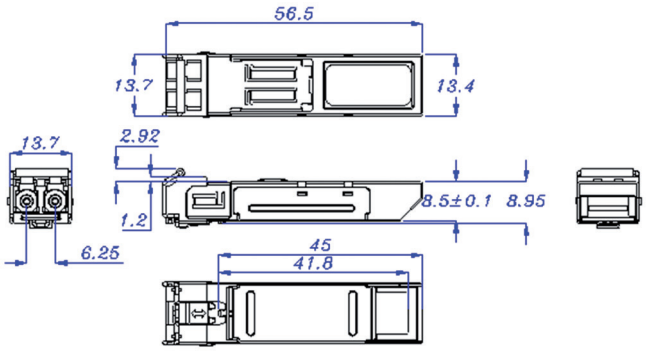
Features

- 1310 nm FP 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 SM L15 is the high performance and cost-effective module for serial optical data communication applications specified for single mode of 155 Mbit/s. It operates with +3.3 V power supply. The module is intended for Singlemode fiber, operates at a nominal wavelength of 1310 nm and complies with Multi-Source Agreement (MSA) Small Form Factor Pluggable (SFP).

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 intermediate 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 SM L15	20760200300		

Ha-VIS FE SFP Transceiver SM L15

Technical characteristics

Applications

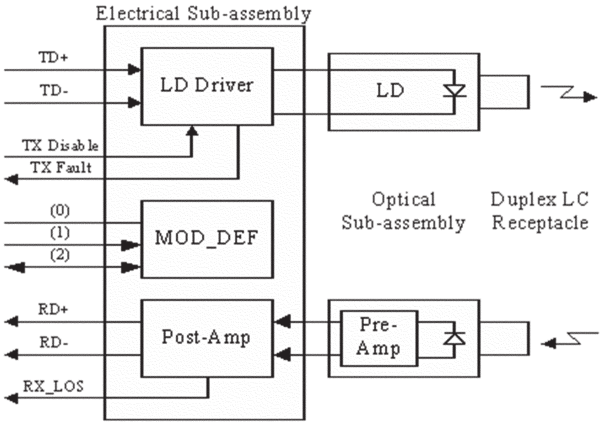
- Fast Ethernet
- FDDI
- ATM/SONET OC-3/SDH STM-1
- Singlemode fibre links
- Optical-Electrical Interface Conversion

Ethernet Interface - Fibre Optic

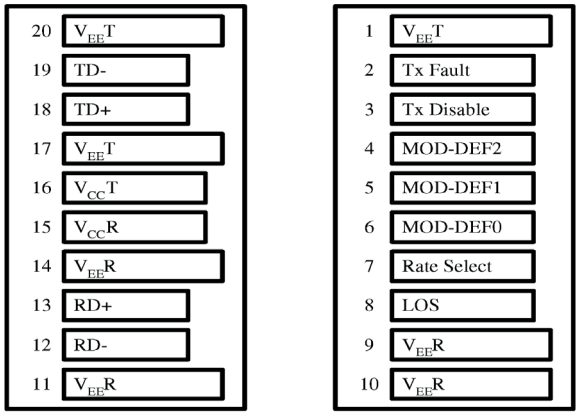
Cable types acc. to IEEE 802.3	Singlemode fibre, 1310 nm; 9 / 125 µm
Data rate	155 Mbit/s
Maximum cable length	15 km
Sensitivity	≤ -34 dBm
Wave length	1310 nm FP
Transmitter	
Output power	-15 ... -8 dBm
Extinction Ratio (min)	8.2 dB
Center wave length	1263 ... 1360 nm
Center wave length (typ.)	1310 nm
Spectral width (FWHM) (max)	3 nm
Optical rise time (10 % ... 90 %) (max)	2.0 ns
Optical fall time (10 % ... 90 %) (max)	2.0 ns
Output eye	compliant with ITU recommendation G.957
Receiver	
Maximum input optical power (min)	-3 dBm
Receiver sensitivity (max)	≤ -34 dBm
Operating wave length	1100 ... 1600 nm
Loss of Signal - asserted (P_A) (min)	-45 dBm
Loss of Signal - deasserted	0,5 + P_A ... -33 dBm
Loss of Signal - hysterisis	0.5 ... 4 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	VeeT	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	VeeR	Receiver ground
10	VeeR	Receiver ground

Pin	Symbol	Functional description
11	VeeR	Receiver ground
12	RD-	Inverse received data out
13	RD+	Received data out
14	VeeR	Receiver ground
15	VccR	Receiver Power
16	VccT	Transmitter Power
17	VeeT	Transmitter ground
18	TD+	Transmitter data in
19	TD-	Inverse transmitter data in
20	VeeT	Transmitter ground

Technical characteristics

Power Supply

Power supply (Vcc)	0...6 V DC
Operating voltage and SD output	3.3 V TTL AC/AC
Permissible range	3.1 V to 3.5 V
Data input voltage swing	400 ... 1600 mV
Transmitter	
Transmitter supply current (max)	200 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.

HARTING Electric GmbH & Co. KG | Wilhelm-Harting-Straße 1 | D-32339 Espelkamp
Tel.: +49 5772 47-97100 | Fax: +49 5772 47-495

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