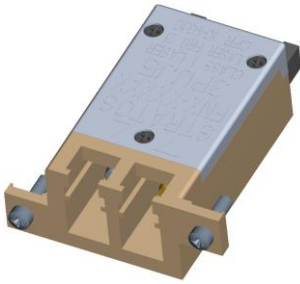


FNK-ST11x

Front Load Pluggable Optical Transceiver



The FNK-ST11 multimode optical fiber transceivers provide low profile, cost effective solutions for Gigabit Ethernet and 1x Fiber Channel optical fiber data links with a duplex LC connector interface. These transceivers are fully compliant with the IEEE Gigabit Ethernet and ANSI 1x Fiber Channel standards but can be used for any other data communications purpose within their operating parameters.

This transceiver consist of transmitter and receiver functions combined in a Low Profile module. The optical transmitter is a high output 850nm VCSEL. The transmitter input lines are driven with differential LVPECL signals applied to the Transmit (TX+ and TX-) pins. These signals are internally converted to a suitable modulation current by a CMOS integrated circuit. A Transmit Disable (TDIS) function is provided to enable control of the VCSEL optical output.

The optical receivers consist of PIN and Preamplifier assemblies and CMOS limiting post-amplifier integrated circuits. Outputs from the receivers consist of differential CML data signals on the Receive (RX+ and RX-) pins and a single ended LVTTTL loss of signal function on the loss of signal (LOS) pin. The RX data is squelched (JAM) upon loss of signal assert to prevent garbage data output when no optical signal is present.

Key Features & Benefits

- Gigabit Ethernet and 1x FC Applications, up to 550 m
- 3.3 V, 850 nm, VCSEL, Multimode
- Front load pluggable miniature transceiver
- MSA height, but half the footprint
- MSA compliant Digital Diagnostics
- Surface Mount I/O pins for high speed signal integrity
- Industrial Temp Range, Vibration tolerant design
- Individual (separate) +3.3 V power supply per port
- Industry standard duplex multimode LC receptacle
- Full compliance to IEEE and ANSI requirements
- EN-60825 / IEC-825 / CDRH Class 1 Compliant

1. ORDERING INFORMATION

F	N	K	-ST11	H
F = Front Load Low Rider	N = No GND tabs	K = Gigabit Ethernet 1x Fibre Channel	ST11 = MM 850 nm	H = No conf coat M = Conf coat

2. ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN	TYPICAL	MAX	UNIT
Storage Temperature	T _S	-55		+100	°C
Lead Hand Soldering Temperature ¹	T _{SOLD}			+260	°C
Lead Soldering Time ¹	t _{SOLD}			10	Second
Supply Voltage	V _{CC}	-0.5		+4.5	V
Data Input Voltage	V _I	-0.5		V _{CC}	V
Differential Input Voltage (p-p)	V _D			2.0	V
Output Current	I _O			50	mA

¹ The Front Load Pluggable Optical Transceiver is not soldered, rather it is the Cage and Connector that are soldered to the application card. Therefore, these Solder specifications apply only for the Cage and Connector

3. RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN	TYPICAL	MAX	UNIT
Operating Temperature Limit	T _A	-40		+85	°C
Supply Voltage	V _{CC}	+3.135		+3.465	V
Tx Common Mode Voltage	V _{CM}		2.0		V
Tx Differential Input Voltage (p-p)	V _D	0.35		1.25	V
Rx Data Output Load	R _L		50		W

4. TRANSMITTER

PARAMETER ²	SYMBOL	MIN	TYPICAL	MAX	UNIT
Optical Output Power ¹	P _O	-9.5		-4.0	dBm
Optical Output Wavelength	λ _{OUT}	830	850	860	nm
Spectral Width (RMS)	Δλ _{RMS}			0.85	nm
Extinction Ratio	ER		10		dB
Supply Current	I _{CC}		120	160	mA
Optical Rise/Fall Time (20% - 80%)	t _{R,F}			0.26	ns
Relative Intensity Noise	RIN			-117	dB/Hz
Total Jitter	T _J		80	153	ps
Coupled Power Ratio	CPR	9			dB

¹ BER = 10⁻¹² @ 1.25 Gbps, PRBS 2⁷-1, NRZ, Compliant with IEEE-802.3z and ANSI X3.297 / FC-PH-2

² V_{CC} Tx = 3.15 – 3.45 V, T_A = Operating temperature range

5. RECEIVER

PARAMETER ³	SYMBOL	MIN	TYPICAL	MAX	UNIT
Optical Sensitivity ¹	P _I	-21.0		0.0	dBm
Optical Input Wavelength	λ_{IN}	770		860	nm
Optical Return Loss	ORL	12			dB
Supply Current	I _{CC}		70	120	mA
Loss of Signal Assert Time	T _{LOSAS}		<10	100	μs
Loss of Signal Deassert Time	T _{LOSAS}		<10	350	μs
Loss of Signal Deassert Level ²	LOS _{OFF}	-31			dBm
Loss of Signal Assert Level	LOS _{ON}			-21	dBm
Loss of Signal Hysteresis	HYS	1.5	2.25	3.5	dB
RX Data Output – Low	V _{OL} -V _{CC}	-1.810		-1.475	V
RX Data Output – High	V _{OH} -V _{CC}	-1.165		-0.880	V

¹ BER = 10⁻¹² @ 1.25 Gbps, PRBS 27-1, NRZ, Compliant with IEEE-802.3z and ANSI X3.297 / FC-PH-2

² Rx Data output are squelched when Loss of Signal is asserted to prevent garbage data output when no optical signal is present

³ V_{CC}TX = 3.135 V to 3.465 V, T_A = Operating Temperature Range

6. CONFORMAL COATING OPTION

PARAMETER	VALUE
Specification	MIL-I-46058C, Type XY
Coating	Parylene type C
Deposition	Vacuum deposited
Film Thickness	1 MIL +/- 0.0002"

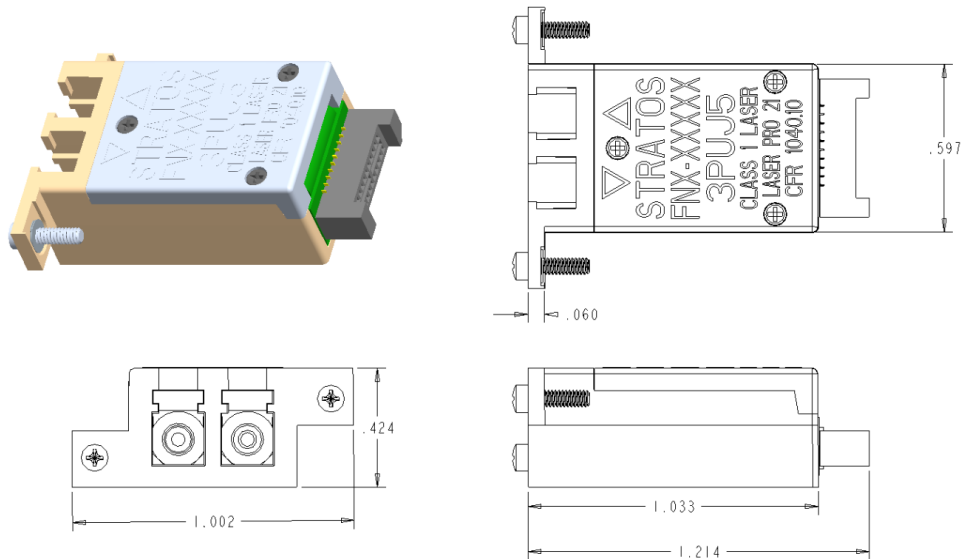
7. LINK DISTANCES

APPLICATION	FIBER SPECIFICATION	DISTANCE
Gigabit Ethernet, IEEE 802.3z	62.5/125 – 160 MHz*km	220 m
	62.5/125 – 2000 MHz*km	275 m
	50/125 – 400 MHz*km	500 m
	50/125 – 500 MHz*km	550 m
Fibre Channel, ANSI X3.297	62.5/125 – 160 MHz*km	300 m
	50/125 – 500 MHz*km	500 m

8. REGULATORY COMPLIANCE

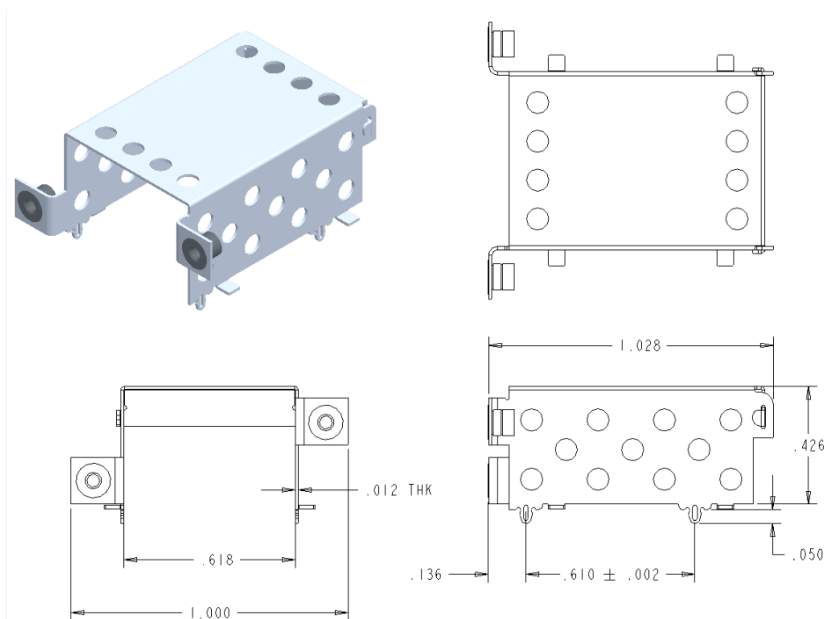
REQUIREMENT	FEATURE	CONDITION	NOTES
MIL-STD-883-3015.7	ESD	Class II	2200 V
IEC-801-2	ESD	Human Body Model	25 kV
IEC-801-3	EMI	Immunity	10 V/m
FCC	EMI	Class B	>20 dB
EN 55022 (CISPR 22A)	EMI	Class B	10 V/m
IEC-825 issue 1993-11	Eye Safety	Class 1	TUV Certificate Number on File
FDA CDRH 21-CFR 1040	Eye Safety	Class 1	CDRH Accession Number on File

9. MECHANICAL DETAILS – FRONT LOADER



All dimensions in inches.
 All dimensions ± 0.005 ", unless noted
 Screw torque 0.50 +/- 0.10 in-lbs

10. MECHANICAL DETAILS – FRONT LOADER CAGE



All dimensions in inches.
 All dimensions ± 0.005 ", unless noted
 Screw torque 0.50 +/- 0.10 in-lbs

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