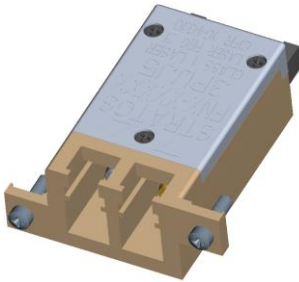


# FNF-LT11x

## Front Load Pluggable Optical Transceiver

The FNF-LT11 multimode glass optical fiber transceivers provide low profile, cost effective solutions for Fast Ethernet multimode (up to 2.0 km) optical fiber data links with a duplex LC connector interface. These transceivers are fully compliant with the IEEE 802.3u Fast Ethernet standard 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 1310 nm LED. 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.

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 Loss of Signal (LOS) pin. The RX data is squelched (JAM) upon LOS Assert to prevent garbage data output when no optical signal is present

### Key Features & Benefits

- Fast Ethernet Applications, up to 2.0 km
- 3.3 V, 1310 nm, LED, 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 802.3u Fast Ethernet
- EN-60825 / IEC-825 / CDRH Class 1 Compliant

## 1. ORDERING INFORMATION

| F                           | N               | F                 | -LT11                | H                                 |
|-----------------------------|-----------------|-------------------|----------------------|-----------------------------------|
| F = Front Load<br>Low Rider | N = No GND tabs | F = Fast Ethernet | LT11 = MM<br>1310 nm | H = No conf coat<br>M = Conf coat |

## 2. ABSOLUTE MAXIMUM RATINGS

Absolute maximum limits mean that no catastrophic damage will occur if the product is subjected to these ratings for short periods, provided each limiting parameter is in isolation and all other parameters have values within the performance specification. It should not be assumed that limiting values of more than one parameter can be applied to the product at the same time.

| PARAMETER                                    | SYMBOL     | MIN  | TYPICAL | MAX      | UNIT   |
|--|------------|------|---------|----------|--------|
| Storage Temperature                          | $T_s$      | -55  |         | +100     | °C     |
| Lead Hand Soldering Temperature <sup>1</sup> | $T_{SOLD}$ |      |         | +260     | °C     |
| Lead Soldering Time <sup>1</sup>             | $t_{SOLD}$ |      |         | 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     |

<sup>1</sup> 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 <sup>2</sup>             | SYMBOL                 | MIN   | TYPICAL | MAX   | UNIT |
|------------------------------------|------------------------|-------|---------|-------|------|
| Optical Output Power <sup>1</sup>  | $P_O$                  | -20.0 |         | -14.0 | dBm  |
| Optical Output Wavelength          | $\lambda_{OUT}$        | 1285  | 1310    | 1360  | nm   |
| Spectral Width (RMS)               | $\Delta\lambda_{RMS}$  |       |         | 63    | nm   |
| Spectral Width (FWHM)              | $\Delta\lambda_{FWHM}$ |       |         | 175   | nm   |
| Extinction Ratio                   | ER                     | 12    |         |       | dB   |
| Supply Current                     | $I_{CC}$               |       | 120     | 160   | mA   |
| Optical Rise/Fall Time (20% - 80%) | $t_{R,F}$              |       |         | 3.0   | ns   |

<sup>1</sup> BER =  $10^{-10}$  @ 125 Mbps, PRBS 2<sup>7</sup>-1, NRZ, Compliant with FDDI PMD ISO / IEC 9314-3 and IEEE 802.3u testing with 62.5 MM fiber

<sup>2</sup>  $V_{CC}$  Tx = 3.15 – 3.45 V,  $T_A$  = Operating temperature range

**5. RECEIVER**

| PARAMETER                             | SYMBOL              | MIN    | TYPICAL | MAX    | UNIT |
|---------------------------------------|---------------------|--------|---------|--------|------|
| Optical Sensitivity <sup>1</sup>      | P <sub>I</sub>      | -32.0  |         | -8.0   | dBm  |
| Optical Wavelength                    | λ <sub>IN</sub>     | 1260   |         | 1380   | nm   |
| Supply Current                        | I <sub>CC</sub>     |        | 70      | 120    | mA   |
| Loss of Signal Assert Time            | T <sub>LOSAS</sub>  |        | <10     | 100    | μs   |
| Loss of Signal Deassert Time          | T <sub>LOSBS</sub>  |        | <10     | 350    | μs   |
| Loss of Signal Threshold <sup>2</sup> |                     |        |         |        |      |
| Decreasing Light                      | LSTD                | -45.0  |         | -32.5  | dBm  |
| Increasing Light                      | LSTI                | -45.0  |         | -32.0  | dBm  |
| Loss of Signal Hysteresis             | HYS                 | 0.5    | 2.25    | 3.5    | dB   |
| Rx Data Output – Low                  | V <sub>OL-VCC</sub> | -1.810 |         | -1.475 | V    |
| Rx Data Output – High                 | V <sub>OH-VCC</sub> | -1.165 |         | -0.880 | V    |

<sup>1</sup> BER = 10<sup>-10</sup> @ 125 Mbps, PRBS 2<sup>7</sup>-1, NRZ, Compliant with FDDI PMD ISO / IEC 9314-3 and IEEE 802.3u testing with 62.5 MM fiber  
<sup>2</sup> Rx Data output are squelched when Loss of Signal is asserted to prevent garbage data output when no optical signal is present

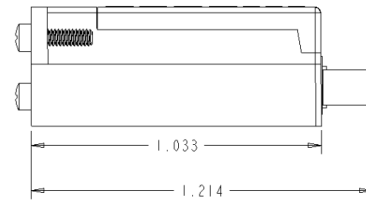
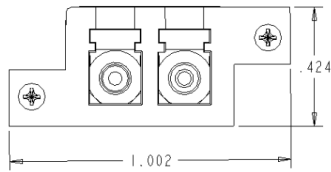
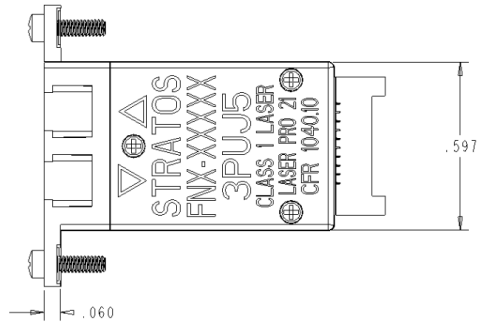
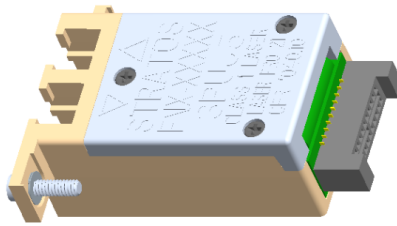
**6. CONFORMAL COATING OPTION**

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

**7. LINK DISTANCES**

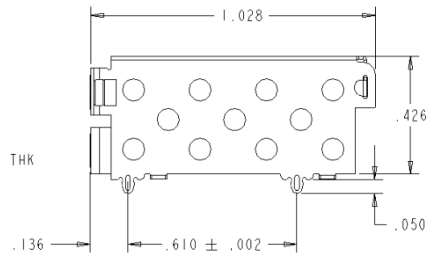
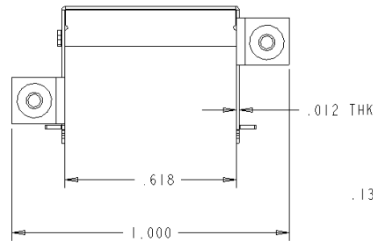
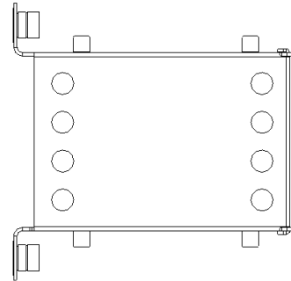
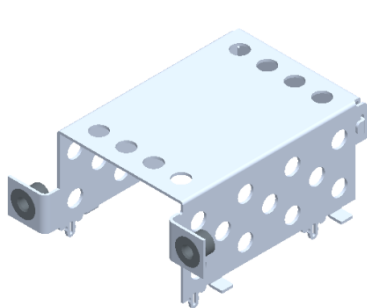
| APPLICATION                           | FIBER SPECIFICATION   | DISTANCE |
|---------------------------------------|-----------------------|----------|
| Fast Ethernet                         | 62.5/125 – 500 MHz*km | 2.0 km   |
| IEEE 802.3u FDDI PMD ISO / IEC 9314-3 | 50/125 – 500 MHz*km   | 2.0 km   |

**8. MECHANICAL DETAILS – FRONT LOADER**



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

**9. 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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- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



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