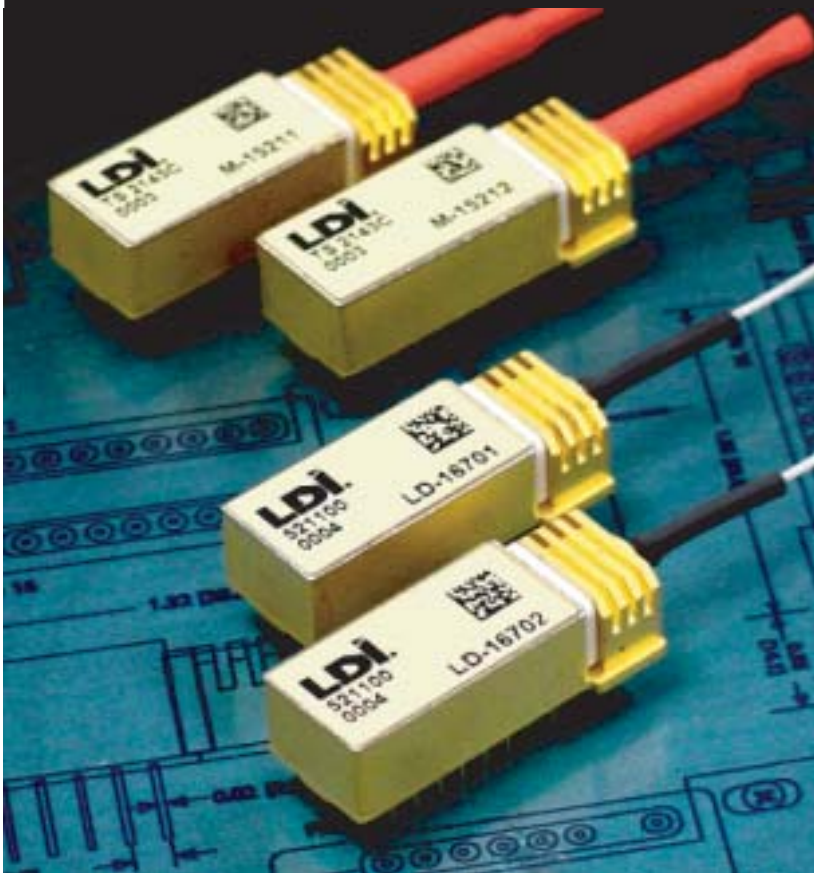


Ruggedized transmitter and receiver modules



Rugged MIL-qualifiable
data links

Data rates to 125 Mb/s

1.3 μ m LED operation

16-pin package

ECL, PECL data compatible

FDDI, ARINC, SAFENET

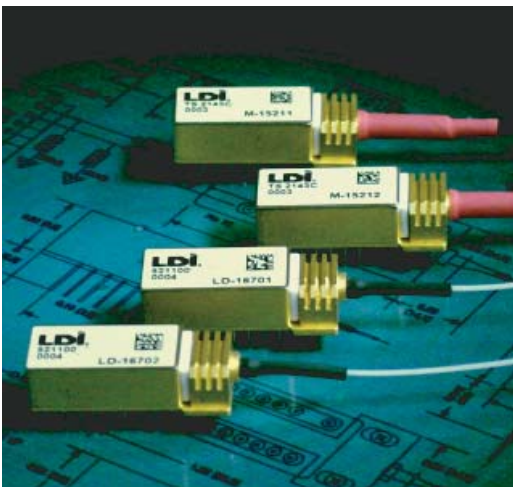
Laser Diode Incorporated's series of ruggedized transmitters and receivers are extended performance devices designed for implementation in extremely demanding environments. These modules are intended for use in commercial and military avionics systems, tactical military data communications, shipboard communications, or any fiber optic communication environment in which a normally less rugged device would be at risk. LDI's transmitters and receivers use advanced hybrid technology to integrate a full-function device that delivers the demanding performance normally required of high-end data communications applications.

TS 2143 Transmitter Specifications and Limits

The TS 2143 transmitter incorporates a high reliability, surface emitting, light emitting diode (LED) packaged in a fiber pigtailed subassembly. This approach permits pre-screening of the packaged LED component which ensures maximum reliability of a crucial element. Interface circuitry provides a 10 KH compatible differential PECL data input format along with a single +5 volt power supply for simple design integration.

The RT 2714 receiver incorporates a high reliability planar InGaAs PIN photodiode integrated into a fiber pigtailed subassembly with a low noise GaAs transimpedance preamplifier. This approach provides optimal sensitivity and wide dynamic range. The preamplifier is followed by gain stages and a comparator that provides a 10 KH PECL compatible output. The receiver operates on a single +5 volt power supply for ease of use. A low optical power alarm is provided that triggers a PECL output when the optical input drops below the minimum sensitivity.

The transmitter and receiver units are packaged in hermetically sealed 16-pin Kovar packages with pinouts compatible with multi-source FDDI modules. The optical output is coupled into a 62.5/125/900 um fiber pigtail terminated with a choice of optical connectors. A 100/140/900 um fiber pigtail is also available by special order.



Optical Characteristics		Min.	Max.
Optical output power ¹	dBm	-16	-
Rise/fall time	ns	-	2.5/2.5
Extinction ratio	dBm	-	10
Center wavelength	nm	1270	1380
Spectral width	nm	-	180
Electrical Characteristics			
NRZ data rate ²	Mb/s	1	125
Data input voltage, low ³	V	-1.81	-1.47
Data input voltage, high ³	V	-1.16	-0.88
Power supply current (+5V)	mA	-	200
Operating case temperature	°C	-40	+85
Storage temperature	°C	-40	+85
Optical interface	1 meter 62.5/125/900 um fiber pigtail.		

Notes:

Performance is specified for a temperature range of -40°C to +85°C.

1. Average output power is based on a 50% duty cycle.
2. Consult with the Laser Diode Incorporated Sales Department for operation below 1 Mb/s.
3. Measured from V_{CC} with a 50 ohm load to -2 volts.

RT 2714 Receiver Specifications and Limits

Optical Characteristics		Min.	Typ.	Max.
Sensitivity (at 125 Mb/s) ¹	dBm	-34	-36	-
Overload power ²	dBm	-6	-3	-
Alarm Assert	dBm	-43	-	-34
Alarm deassert	dBm	-44	-	-35
Rise/fall time	ns	-	-	3.0
Electrical Characteristics				
NRZ data rate	Mb/s	10	-	125
Data output voltage, low ³	V	-1.81	-	-1.47
Data output voltage, high ³	V	-1.16	-	-0.88
Power supply current (+5V)	mA	-	150	200
Operating case temperature	°C	-40	-	+85
Storage temperature	°C	-40	-	+85
Optical interface	1 meter 62.5/125/900 um fiber pigtail.			

Notes:

Performance is specified for a temperature range of -40°C to +85°C.

1. Minimum average optical power required to maintain a BER = 10^{-9} . Part number RT 2714-052 will support data rates up to 52 Mb/s. Part number RT 2714-125 will support data rates up to 125 Mb/s or to *160 Mb/s with screening.
 2. Maximum average optical input to maintain a BER = 10^{-9} .
 3. Measured from V_{CC} with a 50 ohm load to -2 volts.
- * Contact the Laser Diode Incorporated Sales Department.

Extended performance devices designed for extremely demanding environments.

Ruggedized transmitter and receiver modules

Product Changes

Laser Diode Incorporated reserves the right to make changes to the product(s) or information contained herein without notice. No liability is assumed as a result of their use or application.

Handling Precautions

Handle optical fiber with normal care, avoiding stretch, tension, twist, kink, or bend abuse. Products are subject to the risk normally associated with sensitive electronic devices including static discharge, transients, and overload.

Special Orders

Some products are supplied with performance characteristics to meet unique customer requirements and differ from those indicated herein. Contact the Laser Diode Incorporated Sales Department or your local representative to discuss your individual requirements. For a complete listing of representatives, visit our website at www.laserdiode.com.

Ordering

Products can be ordered directly from Laser Diode Incorporated or its representatives. For a complete listing of representatives, visit our website at www.laserdiode.com. Refer to the following part numbers:

Ordering Information

Part Number	Description
TS 2143-016	Transmitter, 1300nm, PECL, 125 Mb/s, -16 dBm, 62.5/125/900 um pigtail
RT 2714-052	Receiver, PECL, 52 Mb/s, 62.5/125/900 um pigtail
RT 2714-125	Receiver, PECL, 125 Mb/s, 62.5/125 /900 um pigtail

The ruggedized devices presented in this document are designed for use in extreme environmental conditions too demanding for a standard commercial-grade device. Extensive individual qualification has been conducted for specific programs to ensure the long-term integrity and performance of these products. A typical qualification plan is presented below:

Qualification Capabilities to MIL-STD-883 (to date)

Solderability	Method 2003
Lead integrity	Method 2004-B2
Resistance to solvents	Method 2015
Internal visual inspection	Method 2014
Wirebond strength	Method 2011-D
Die shear strength	Method 2019
Physical dimensions	Method 2016
Hermeticity, gross	Method 1014-C1
Hermeticity, fine	Method 1014-A1
Thermal shock	Method 1010-A
Steady-state life	Method 1005-B
Mechanical shock	Method 2002
Constant acceleration	Method 2001

