



T2F-1RJ-28Vx

Stratos Media Converter, for use with TFOCA-II® Connector

Fast Ethernet (100Mbps), RJ45 Interface, 28VDC Power, 1310nm LED Multimode, Up to 2km Link Distance

© TFOCA-II is a registered trademark of Fiber Systems International

PRELIMINARY

FEATURES

- Fast Ethernet Converter for Tactical Environments
- Compatible to TFOCA-II® Optical Connector Interface
- RJ45 Electrical Interface (100BT)
- Widemouth 28VDC Bus Power, 2W max
- Backshell LEDs for Power and Link status
- Industrial Temp Range, Vibration tolerant design
- Compliant with IEEE 802.3 100BT and 100BFX
- EN-60825/ IEC-825 / CDRH Class 1 Compliant
- Optional Parylene C Conformal Coating

APPLICATIONS

The T2F-1RJ-28Vx multimode optical media converter provide ruggedized stand alone conversion solutions for Fast Ethernet multimode links. The device accepts IEEE 802.3u electrical 100BT signals using standard RJ45 connection, and converts to 100BFX optical signals. The optical interface allows direct connection to any TFOCA-II® fiber cable.

DESCRIPTION

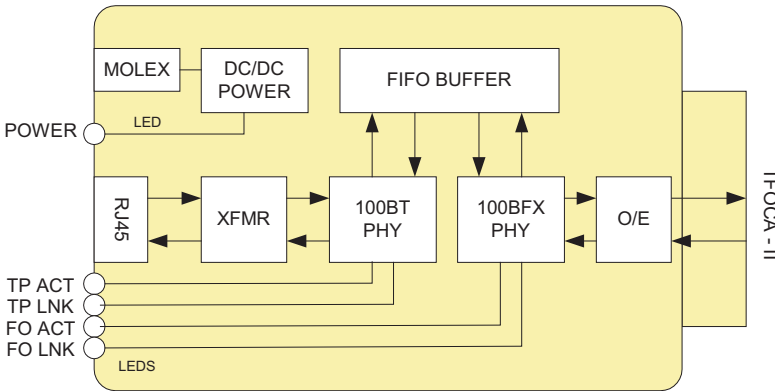
The T2F-1RJ-28Vx optical media converter performs all functions necessary to convert 100BT electrical signals to/from 100BFX optical signals. The electrical signals are transformer coupled into a Physical Layer device (PHY), buffered, and then regenerated into 100BFX compliant data stream. The 100BFX data stream is then routed to an internal optical transceiver to create a 1310nm optical signal. The optical signal is routed into the TFOCA-II compliant connector interface for direct connection to TFOCA-II multimode fiber cable.

The media conversion process is fully compliant to the IEEE 802.3u specifications for Fast Ethernet 100BT and 100BFX. The 100BT electrical connection supports Auto-negotiation for 10/100BT interfaces. The 100BT connection also supports auto-cross to automatically support both crossed and un-crossed Ethernet CAT5 cables.

Power is presented to the unit through a latching power connector. An internal DC/DC converter regulates the 28VDC input into voltages used by the converter. The DC converter is tolerant to a wide range of input voltages and noise spikes typical for vehicle bus power. The input power is reverse polarity protected to prevent damage in case the power is accidentally reversed.

Status LED indicators are located on the backshell to aid in system deployment, debug, and visual validation of proper operation.

BLOCK DIAGRAM



ORDERING INFORMATION

T 2 F - 1 R J - 2 8 V X

Product Family	Application	Interface	Power	Operating Temperature
T2= Stratos Media Converter for TFOCA -II	F= Fast Ethernet 1310nm Multimode	1RJ= 1xRJ45 (single channel)	28V= 28 VDC Bus Power (18-32)	H= -40 to 85 C, No Coating
				M= -40 to 85 C, Conformal Coating



7444 West Wilson Avenue, Chicago, IL 60706 USA
Telephone: 708.867-9600, Fax: 708867-0996
Webpage: www.stratoslightwave.com

T2F-1RJ-28Vx STRATOS MEDIA CONVERTER for use with TFOCA-II® Connector

Fast Ethernet (100Mbps), RJ Interface, 28VDC Power

1310nm LED Multimode, Up to 2km Link Distance

PRELIMINARY

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	Minimum	Typical	Maximum	Unit
Storage Temperature	T_S	-55	-	+100	°C
Absolute Operating Temperature ¹	T_{OPA}	-55	-	+100	°C
Supply Voltage ²	V	-32	-	+32	V

1. Survivability, performance not guaranteed.
2. Reverse Polarity protected.

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Operating Temperature Limit, case	T_c	-40		+85	°C
Supply Voltage	V_S	+18	+28	+32	V
Supply Current	I_S	-	35	55	mA

OPTICAL PERFORMANCE

Fiber Type = 62.5/125 μ m, T_c = Operating Temperature Range

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Output Power ¹	P_o	-19		-14	dBm
Output Center Wavelength	λ_{OUT}	1263	1310	1360	nm
Output Spectral Width	$\Delta\lambda_{RMS}$ $\Delta\lambda_{FWHM}$	-	-	63 147	nm nm
Transmit Extinction Ratio	ER	8	12		dB
Transmit Rise / Fall Time (10 - 90%)	t_R	-	-	3.0	ns
Receive Sensitivity ²	P_I	-32		-8	dBm
Receive Wavelength	λ_{IN}	1261	-	1380	nm

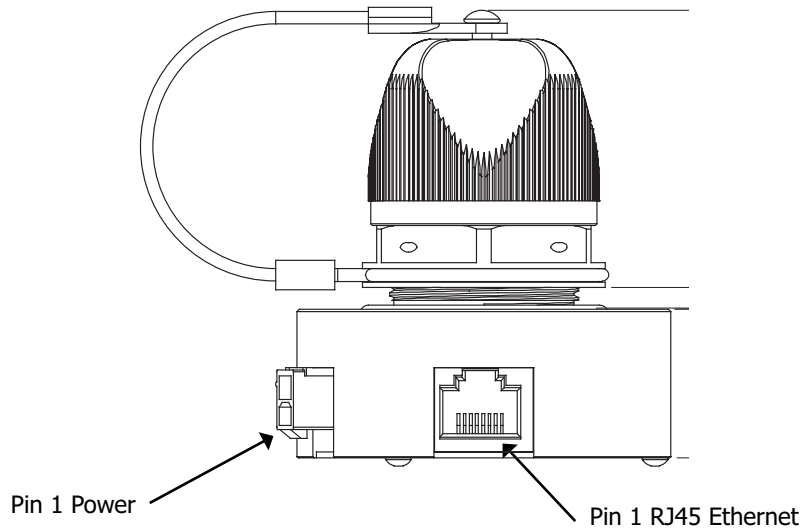
1. Output Power measured @ 125 Mbps, PRBS 2⁷-1, NRZ
2. Receive Sensitivity at BER=10⁻¹⁰ @ 125 Mbps, PRBS 2⁷-1, NRZ

T2F-1RJ-28Vx STRATOS MEDIA CONVERTER for use with TFOCA-II® Connector

Fast Ethernet (100Mbps), RJ Interface, 28VDC Power

1310nm LED Multimode, Up to 2km Link Distance

PRELIMINARY



2-PIN POWER CONNECTOR

Use mating connector and crimp pins Stratos P/N AB-2PWR-KIT, included with each unit

Pin	Symbol	Type ¹	Signal Description
1	GND	P	Power Return. Connect to Power Ground.
2	+28V	P	18 - 32 VDC Power. Connect to Positive DC Power.

RJ45 ETHERNET CONNECTOR (Ethernet Hub pinout) - Auto-Cross compliant

Pin	Symbol	Type ¹	Signal Description
1	RX+	I	Receive Positive. IEEE 802.3u 100BT Ethernet input to bulkhead
2	RX-	I	Receive Negative. IEEE 802.3u 100BT Ethernet input to bulkhead
3	TX+	O	Transmit Positive. IEEE 802.3u 100BT Ethernet output from bulkhead
4	NC	-	No Connect
5	NC	-	No Connect.
6	TX-	O	Transmit Negative. IEEE 802.3u 100BT Ethernet output from bulkhead
7	NC	-	No Connect.
8	NC	-	No Connect.

Notes:

1. Signal Type P= Power, O = Output (from Bulkhead Media Converter, I = Input (to Bulkhead Media Converter)
2. Auto-Cross allows MDI or MDI-X configuration to allow use of crossed or un-crossed Ethernet cables.



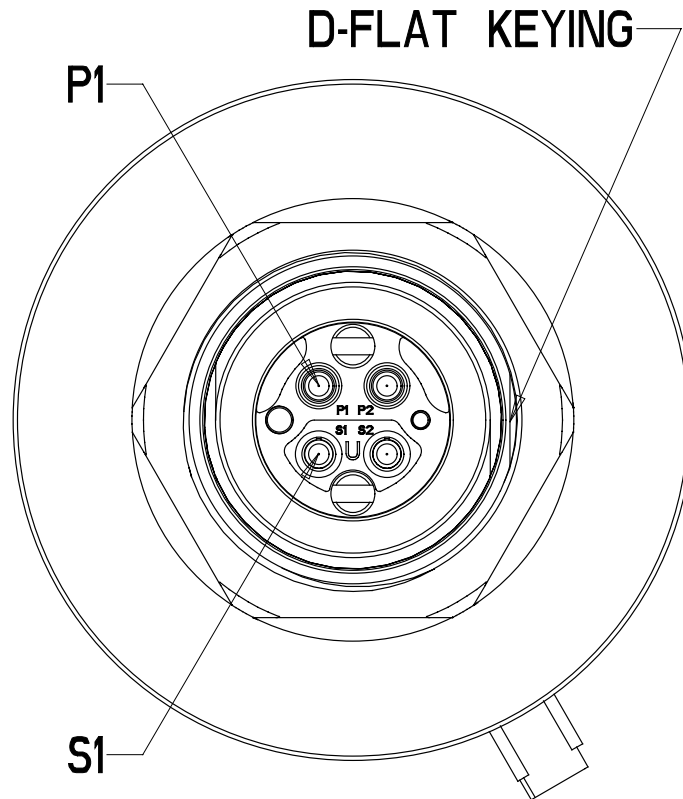
7444 West Wilson Avenue, Chicago, IL 60706 USA
Telephone: 708.867-9600, Fax: 708867-0996
Webpage: www.stratoslightwave.com

T2F-1RJ-28Vx STRATOS MEDIA CONVERTER for use with TFOCA-II® Connector

Fast Ethernet (100Mbps), RJ Interface, 28VDC Power

1310nm LED Multimode, Up to 2km Link Distance

PRELIMINARY



TFOCA-II COMPATIBLE OPTICAL CONNECTOR INTERFACE

Pin	Symbol	Type ¹	Signal Description
P1	TX	O	Optical Transmit IEEE 802.3u 100BFX output from bulkhead
S1	RX	I	Optical Receive. IEEE 802.3u 100BFX input in bulkhead
P2	NC	-	No Connect (dummy termini)
S2	NC	-	No Connect (dummy termini)

Notes:

1. Signal Type P= Power, O = Output (from Bulkhead Media Converter, I = Input (to Bulkhead Media Converter)

T2F-1RJ-28Vx STRATOS MEDIA CONVERTER for use with TFOCA-II® Connector

Fast Ethernet (100Mbps), RJ Interface, 28VDC Power

1310nm LED Multimode, Up to 2km Link Distance

PRELIMINARY



LED STATUS INDICATORS

LED Label	Description
POWER	Solid Green -- indicates unit is powered.
TP LINK	Solid Amber -- Twisted Pair link is established
TP ACT	Blinking Amber -- Twisted Pair link activity is detected
FO LINK	Solid Amber -- Fiber Link is established Blinking Amber or Dim Amber -- Far End Fault detected
FO ACT	Blinking Amber -- Fiber Link activity is detected

T2F-1RJ-28Vx STRATOS MEDIA CONVERTER for use with TFOCA-II® Connector

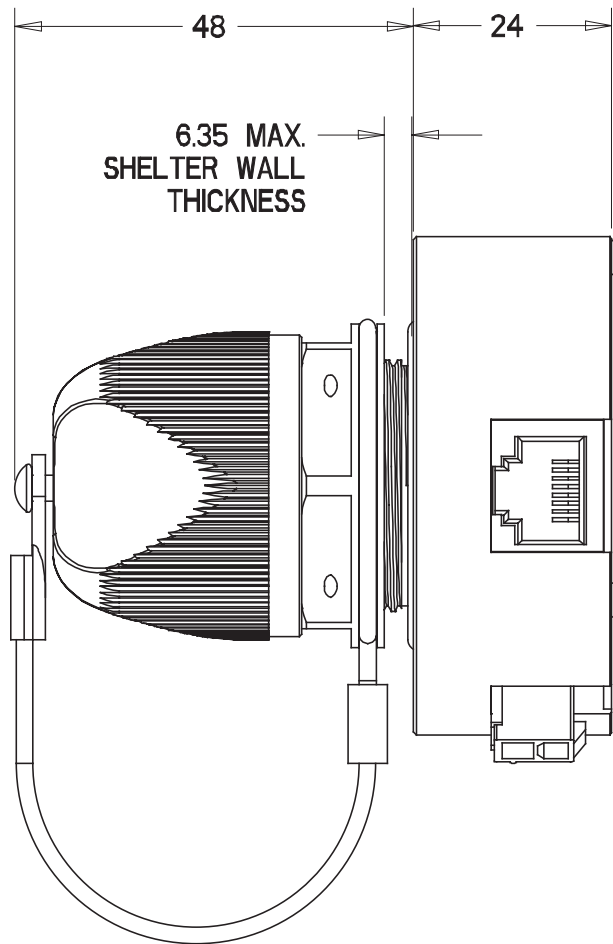
Fast Ethernet (100Mbps), RJ Interface, 28VDC Power

1310nm LED Multimode, Up to 2km Link Distance

PRELIMINARY

BULKHEAD MECHANICAL DIMENSIONS

Dimensions in millimeters



7444 West Wilson Avenue, Chicago, IL 60706 USA
Telephone: 708.867-9600, Fax: 708867-0996
Webpage: www.stratoslightwave.com

T2F-1RJ-004P
January 26, 2006

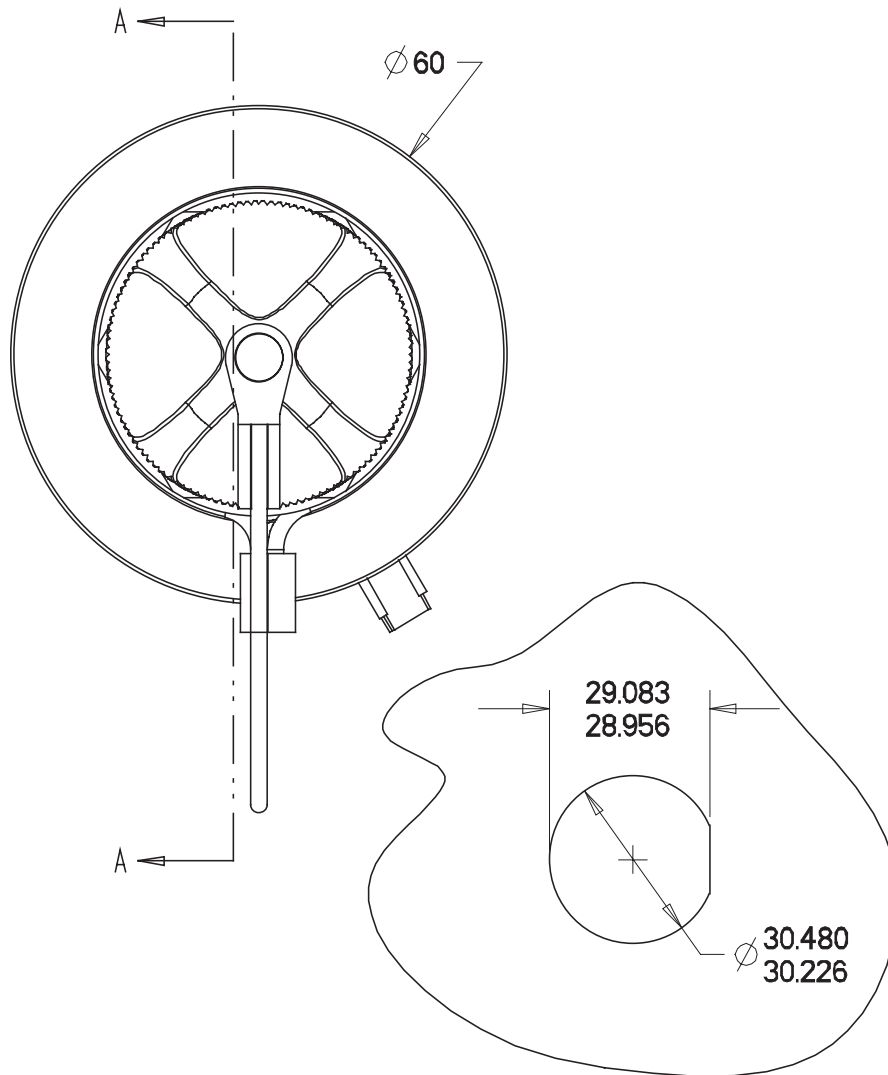
T2F-1RJ-28Vx STRATOS MEDIA CONVERTER for use with TFOCA-II® Connector

Fast Ethernet (100Mbps), RJ Interface, 28VDC Power

1310nm LED Multimode, Up to 2km Link Distance

PRELIMINARY

FORM, FIT AND FUNCTION TO MIL-PRF-83526/17



SHELTER WALL CUT-OUT DIMENSIONS

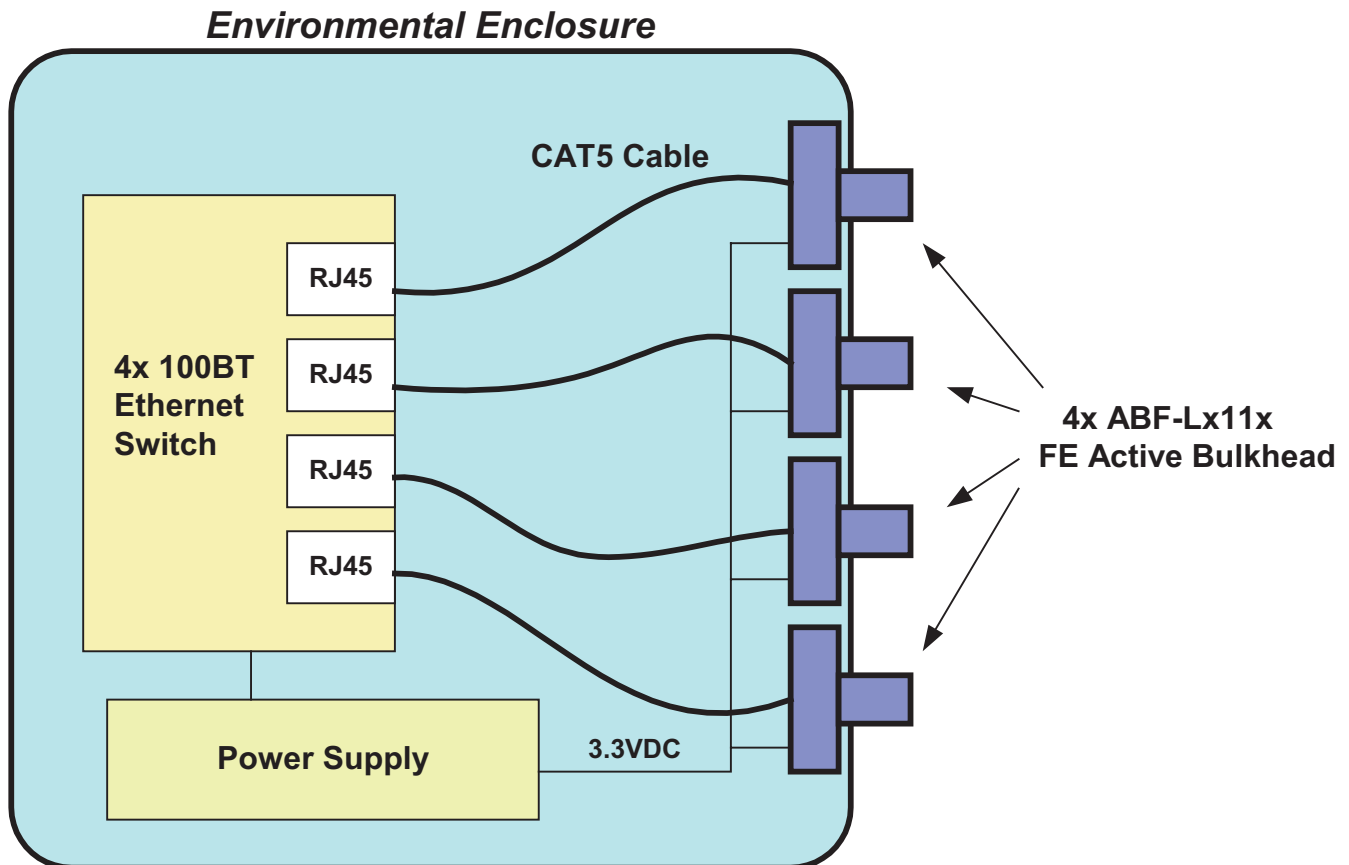
T2F-1RJ-28Vx STRATOS MEDIA CONVERTER for use with TFOCA-II® Connector

Fast Ethernet (100Mbps), RJ Interface, 28VDC Power

1310nm LED Multimode, Up to 2km Link Distance

PRELIMINARY

APPLICATION EXAMPLE



Harsh Environment 4 Port Fast Ethernet Switch

Harsh environment Ethernet Switch

This application uses a standard Ethernet Switch enclosed in an environmental chassis along with a Power Supply. The Stratos Converter assemblies are mounted through the environmental chassis, and are connected to the Switch using standard CAT5 RJ45 modular jack cabling. The Bulkhead units are powered using Bus Power ranging from 18V to 32V (28V nominal).

The Stratos Media Converter bulkhead assemblies offer 1310nm multimode connectivity for Fast Ethernet, supporting link distances up to 2km per link. The Stratos Media Converter bulkhead contains all the circuitry necessary to convert the 100BT signal from the Ethernet Switch to the optical domain. The Stratos Media Converter bulkhead assembly is designed to support Harsh Environments for the portion of the bulkhead that protrudes through the D-Hole panel.

STRATOS

7444 West Wilson Avenue, Chicago, IL 60706 USA
Telephone: 708.867-9600, Fax: 708867-0996
Webpage: www.stratoslightwave.com

T2F-1RJ-004P
January 26, 2006

T2F-1RJ-28Vx STRATOS MEDIA CONVERTER for use with TFOCA-II® Connector

Fast Ethernet (100Mbps), RJ Interface, 28VDC Power

1310nm LED Multimode, Up to 2km Link Distance

PRELIMINARY

CONFORMAL COATING OPTION

Parameter	Value
Specification	MIL-I-46058C, Type XY
Coating:	Parylene type C
Deposition:	Vacuum deposited
Film Thickness:	1 MIL +/- 0.0002

ENVIRONMENTAL COMPLIANCE

Category	Standard	Conditions
Thermal Cycle	MIL-STD-883E, section 1010.7	1000 cycles, -40C to +85C
Thermal Shock	MIL-STD-883E, section 1011.9	20 cycles, 0C to 100C
High Temp Oper Life	MIL-STD-202G, section 108A	2000 hours at 85C
Vibration	MIL-STD-810F, section 514.5	16.9grms, 3 axis, 1 hour per axis
Shock	MIL-STD-883E, section 2002	1500g peak, 0.5ms
Humidity	MIL-STD-202G, section 103B	85%/85C, 500 hours
Altitude		15,000 feet
MTBF	MIL-HDBK-217FN2	2.8M hours, 30C GB environment

REGULATORY COMPLIANCE

Requirement	Feature	Condition	Notes
MIL-STD-883-3015.7	ESD	Class II	2200V
IEC-801-2	ESD	Human Body Model	25KV
IEC-801-3	EMI	Immunity	10V/M
FCC	EMI	Class B	>20dB
EN 55022 (CISPR 22A)	EMI	Class B	10V/M
IEC-825 Issue 1993-11	Eye Safety	Class 1	TUV Certificate Number One File
FDA CDRH 21-CFR 1040	Eye Safety	Class 1	CDRH Accession Number On File

IMPORTANT NOTICE

Stratos Lightwave, LLC. reserves the right to make changes to or discontinue any optical link product or service identified in this publication, without notice. Stratos Lightwave recommends that its customers obtain the latest version of the publications to verify, before placing orders, that the information being relied on is current. Stratos Lightwave warrants performance of its optical link products to current specifications in accordance with the Stratos Lightwave standard warranty. Testing and other quality control techniques are utilized to the extent that Stratos Lightwave has determined it to be necessary to support this warranty. Specific testing of all parameters of each optical link product is not necessarily performed on all optical link products. Stratos Lightwave products are not designed for use in life support appliances, devices, or systems where malfunction of a Stratos Lightwave product can reasonably be expected to result in a personal injury. Stratos Lightwave customers using or selling optical link products for use in such applications do so at their own risk and agree to fully indemnify Stratos Lightwave for any damages resulting from such improper use or sale. Stratos Lightwave assumes no liability for Stratos Lightwave applications assistance, customer product design, software performance, or infringement of patents or services described herein. Nor does Stratos Lightwave warrant or represent that a license, either expressed or implied is granted under any patent right, copyright, or intellectual property right, and makes no representations or warranties that these products are free from patent, copyright, or intellectual property rights. Applications that are described herein for any of the optical link products are for illustrative purposes only. Stratos Lightwave makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.



7444 West Wilson Avenue, Chicago, IL 60706 USA
Telephone: 708.867-9600, Fax: 708.867-0996
Webpage: www.stratoslightwave.com