

### Long Range L-Band Transport

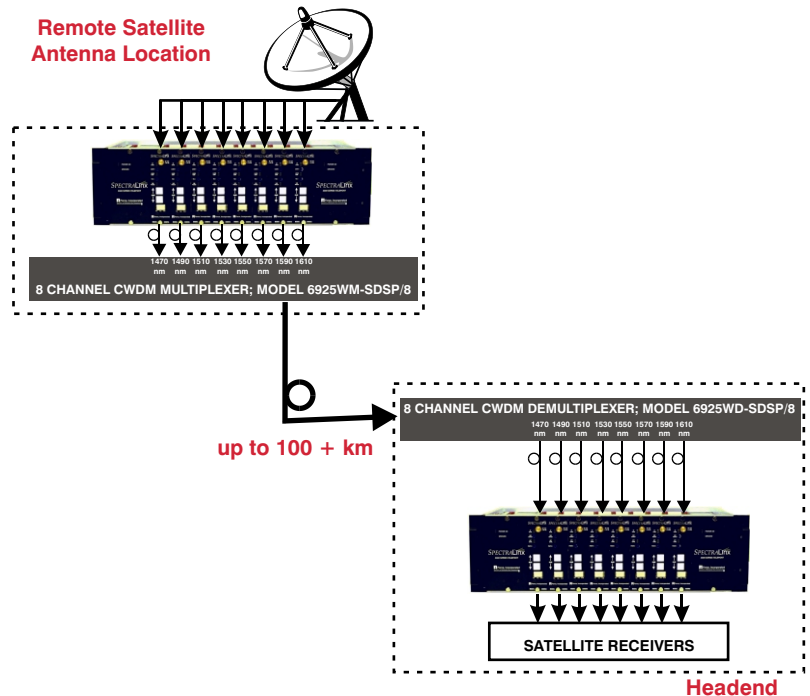
- 100 km+ depending on configuration.
- Model 3000 optically transports the entire L-Band frequency range (950-2150 MHz) and is designed to operate in stringent teleport environments.
- The modular transmitter design allows the user to choose a variety of options for impedance, packaging, wavelength, and optical connector type.
- User-selectable gain controls allow for automatic, manual, and fixed gain adjustments in the field.
- 3RU chassis mounted modules are hot-swappable to ensure maximum system up-time.
- The Model 3000 is format independent and provides a -20 dB RF test point for ease of use, commissioning, and troubleshooting.



3RU and Stand-alone Modules



The Model 3000 L-Band Satellite Transport System brings a state-of-the-art modular approach to the demanding Teleport environment. The link transmits in the frequency range of 950-2150 MHz and employs a number of feature rich components to create a highly reliable system. The system may be ordered in a stand-alone or 3RU rack-mount configuration. The laser type may be specified for conventional 1310 nm or 1550 nm operation, CWDM operation or DWDM operation. Both the transmitter and the receiver may be specified for 75 Ohm or 50 Ohm inputs. The transmitter may also be ordered to provide +18 Volts DC for LNB power. The 3RU rack chassis configuration offers increased system reliability via dual, redundant power supplies and hot-swappable modules. The system provides a -20 dB RF test point and other test points to determine laser current draw, laser cooler current draw, and ground, further ensuring proper Teleport system operations.



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# Specifications and Ordering Information

## Optical and RF Characteristics

	Min	Typ	Max	Units
Tx Optical Output	+2	+3	+4	dBm
CWDM/DWDM Optical Output		+3		dBm
Rx Optical Input Power	-15		+3	dBm
Optical Loss Range	0		18/60	dB/km
Wavelength (conventional)*	1280	1310	1340	nm
Wavelength (conventional)*	1520	1550	1580	nm
Impedance		75		Ohms
Impedance		50		Ohms
VSWR (Tx) (75 Ohm)		1:1.2		
VSWR (Rx) (75 Ohm)		1:1.4		
Frequency Range (Std).	950		2150	MHz
Flatness (950-2150 MHz) (1)		±1.25	±1.75	dB
Flatness (@ any 36 MHz) (1)		±0.25		dB
Intermodulation Products		-55		dBc
Noise Figure (2)	19		46	dB
CNR (36 MHz, -20 dBm in)(3)		37		dB
RF Input Signal Range (sm. ap.)	-50		-20	dBm
RF Input Signal Range (lg. ap.)	-30		0	dBm
AGC Output Signal Range (total power)	-25		-10	dBm
Rx Automatic/Fixed Gain Control		15		dB
Rx Manual Gain Control		46.5		dB

### Notes:

- DWDM values will be slightly higher. Contact Force, Inc. for exact specifications
- Min./max. power @ maximum optical loss.
- Measured at 30 km, 1310 nm or 50 km, 1550 nm.
- This product conforms to the Electromagnetic Compatibility Requirements in accordance with European Community Directive #89-336-EEC.

A full link includes part numbers for the transmitter module, the factory-installed laser cartridge, and the receiver module as listed separately below.

## Long Range L-Band Transmitters and Laser Cartridges

3000 Tx Options	75 Ohm, No LNB Power	50 Ohm, No LNB Power	75 Ohm, LNB Power	50 Ohm, LNB Power
3RU, SC/APC, Small Antenna	3000TA-NNSP <sup>1</sup>	3000TB-NNSP <sup>1</sup>	3000TA-NNSP-L <sup>1</sup>	3000TB-NNSP-L <sup>1</sup>
3RU, SC/APC, Large Antenna	3000TC-NNSP <sup>1</sup>	3000TD-NNSP <sup>1</sup>	3000TC-NNSP-L <sup>1</sup>	3000TD-NNSP-L <sup>1</sup>
Std-alone, SC/APC, Small Antenna	3000TE-NNSP <sup>1,3</sup>	3000TF-NNSP <sup>1,3</sup>	3000TE-NNSP-L <sup>1,3</sup>	3000TF-NNSP-L <sup>1,3</sup>
Std-alone, SC/APC, Large Antenna	3000TG-NNSP <sup>1,3</sup>	3000TH-NNSP <sup>1,3</sup>	3000TG-NNSP-L <sup>1,3</sup>	3000TH-NNSP-L <sup>1,3</sup>

3000 Laser Cartridges	3RU Rack-mount	Stand-alone
1310 nm DFB	3000LA-SCNN	3000LB-SCNN
1550 nm, DFB	3000LA-SDNN	3000LB-SDNN
CWDM, DFB	3000LAC-SDNN/ZZ <sup>2</sup>	3000LBC-SDNN/ZZ <sup>2</sup>
DWDM, DFB	3000LAD-SDNN/ZZ <sup>2</sup>	3000LBD-SDNN/ZZ <sup>2</sup>

## Electrical, Environmental, and Physical Characteristics (4)

	Min	Typ	Max	Units
Power Supply Voltage		+20		VDC
DWDM Tx Supply Current		0.7		A
Rx Supply Current		0.25		A
Operating Temp. Range (DWDM)	0		+40	°C
Operating Temp. Range	-10		+55	°C
Storage Temp. Range	-40		+60	°C
Humidity (RH, non-condensing)	5		95	%
3RU Module Weight		8		oz.
Stand-alone Module Weight		2		lbs.
3RU Tx/Rx Dimensions	5.06 x 1.39 x 12.00			in.
Stand-alone Tx/Rx Dimensions	4.36 x 1.26 x 11.50			in.

The following conditions will trigger a summary fault on the 3000 Chassis DB-25 connector:

Transmitter	Receiver
System Over Temp	System Over Temp
Laser Over Temp	RF Output High
RF Input High	RF Output Low
RF Input Low	Optical Input Low
Laser Power Failure	Optical Input High



Transmitter and Receiver Front and Rear Views

## Long Range L-Band Receivers

3000 Rx Options	75 Ohm	50 Ohm
3RU, SC/APC	3000RA-SFSP <sup>1</sup>	3000RB-SFSP <sup>1</sup>
Std-alone, SC/APC	3000RE-SFSP <sup>1</sup>	3000RF-SFSP <sup>1</sup>

### NOTES ON ORDERING:

- FC/APC connectors are also available. Replace SP in the part number with AP.
- The "ZZ" in the part number specifies one of eight CWDM wavelengths or one of 32 DWDM ITU channels. Contact a Force, Inc. Applications Engineer for complete part numbers. CWDM wavelengths are 1471 nm, 1491 nm, 1510 nm, 1531 nm, 1551 nm, 1571 nm, 1591 nm, and 1611 nm, depending on the channel plan ordered. DWDM ITU channels are: Ch. 22-25 (4-ch. plan), Ch. 22-29 (8-ch. plan), Ch. 22-37 (16-ch. plan), and Ch. 21-36 plus Ch. 41-56 (32-ch. plan). See AN138: Specifying Force, Inc. CWDM and DWDM Compatible Transport Modules for more information.
- Force, Inc. supplies the PS3000 wall-mount power supply for use with the stand-alone transmitters and receivers.

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