



# IFL

## interfacility link systems

**MICROWAVE PHOTONICS LINKS TO 30 GHZ**

**WDM MUX AND DEMUX NETWORKS**

**DUAL REDUNDANT POWER SUPPLIES**

**FULLY HOT-SWAPPABLE**

**UP TO SIX LINK MODULES PER 1RU RACK**

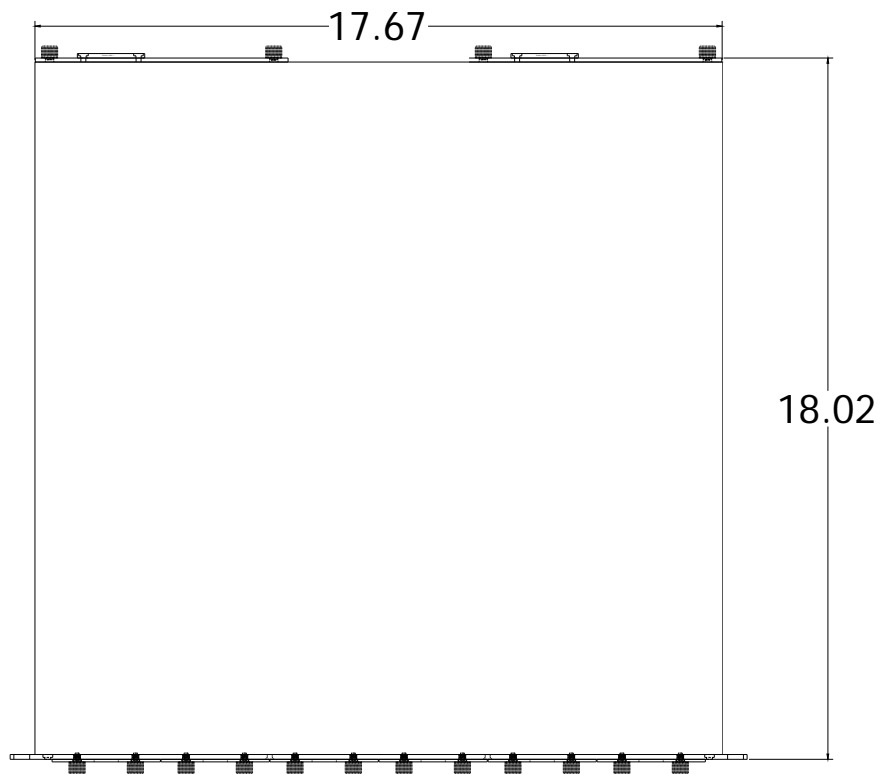
Linear Photonics' IFL Rack Subsystems provide high density, high reliability, interchangeable interfacility communications links in a standard 1RU chassis.

A 1RU Chassis allows up to six single-wide or three double-wide microwave fiber optic communications link plugins, with microwave link frequency range options to 30 GHz. The Chassis also includes dual-redundant AC power supplies and optional data communications and programming interfaces. All link modules are hot-swappable for plug-and-play operation.

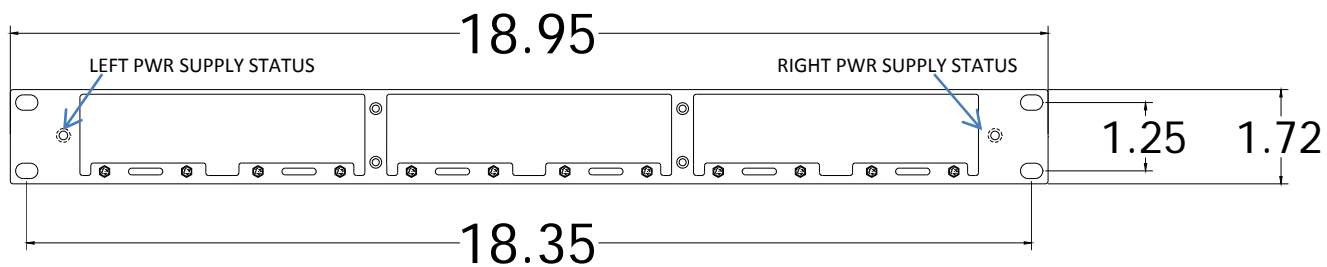
Applications include signal and antenna remoting, communications, radar and information processing.



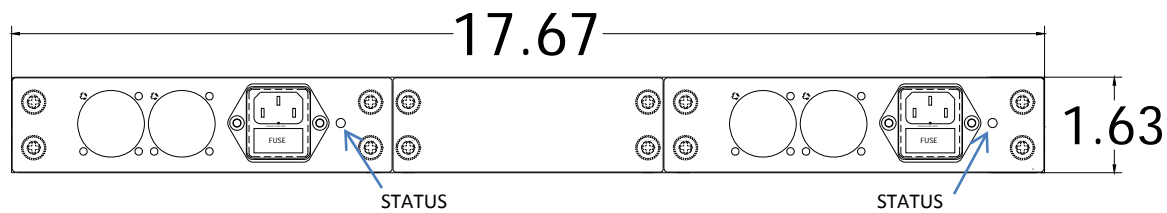
■ IFL RACK TOP



■ IFL RACK FRONT



■ IFL RACK REAR WITH POWER SUPPLIES



■ IFL RACK CHASSIS SPECIFICATION

AC Input	95 - 260 V 50/60 Hz 2 A fused
Dimensions w x l x h inch(cm)	18.9 x 18.75 x 1.7 (7.5 x 7.4 x 1.7)
Front Panel Indicators	Right/Left Power Supply LEDs
Empty Weight	12 lbs including dual power supplies
Capacity	6 single-wide slots



■ IFL PLUG-IN OPTIONS

Module	Description	Width	Model
DiLink	DiLink series microwave links, up to 5 GHz	single	IFL-DLx
XiMod Tx	20 GHz XiMod Transmitter	double	IFL-XMT-x
XiMod Rx	XiMod series Photoreceivers, up to 30 GHz	single	IFL-XMR-x
TRIMOD	4 GHz TRIMOD Transceiver	double	IFL-TM
HiLink	HiLink series microwave transmitters, up to 12 GHz	single	IFL-HL-x
WDM	CWDM/DWDM Mux/Demux	various	IFL-WDM-x

■ IFL PART NUMBER INFORMATION

Part Number	Description
IFL-RACK-PS	1RU Rack Chassis with Dual Power Supplies
IFL-RACK	1RU Rack Chassis
IFL-PS	Power Supply Module
IFL-CIM	Communications Interface Module
IFL-PS-BP	Power Supply Blank Panel
IFL-CIM-BP	Communications Interface Blank Panel
IFL-SW-BP	Single-Wide Blank Panel
IFL-DW-BP	Double-Wide Blank Panel



# IFL-PS

## IFL power supply

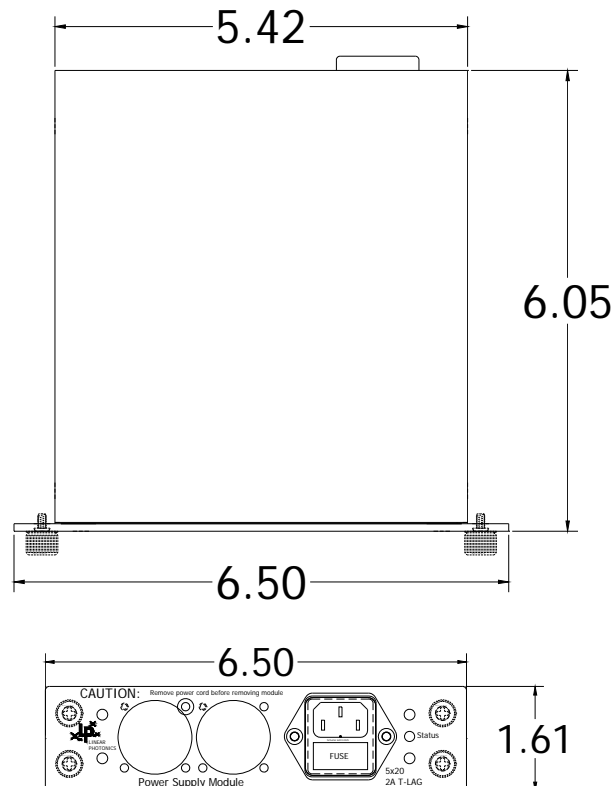


IFL Power Supplies provide prime power for all IFL Rack equipment and plug-in modules.

Each Power Supply is designed to provide power for full capacity to the rack. Two supplies can be installed, providing automatic redundant backup in case of failure.

### IFL-PS SPECIFICATION

AC Input	95 - 260 V 50/60 Hz 2 A fused
AC Line Fuse	5x20 mm 2A T-LAG
STATUS LED	Dual Color (RED=ALARM, GREEN=OK)
Power	50 Watts at full rack capacity





# IFL-DL

## DiLink plug-in modules

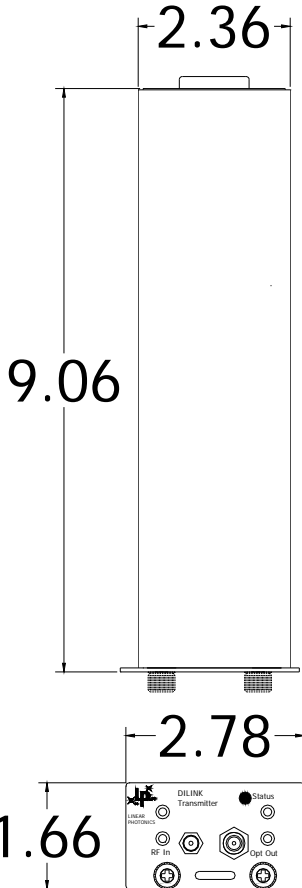
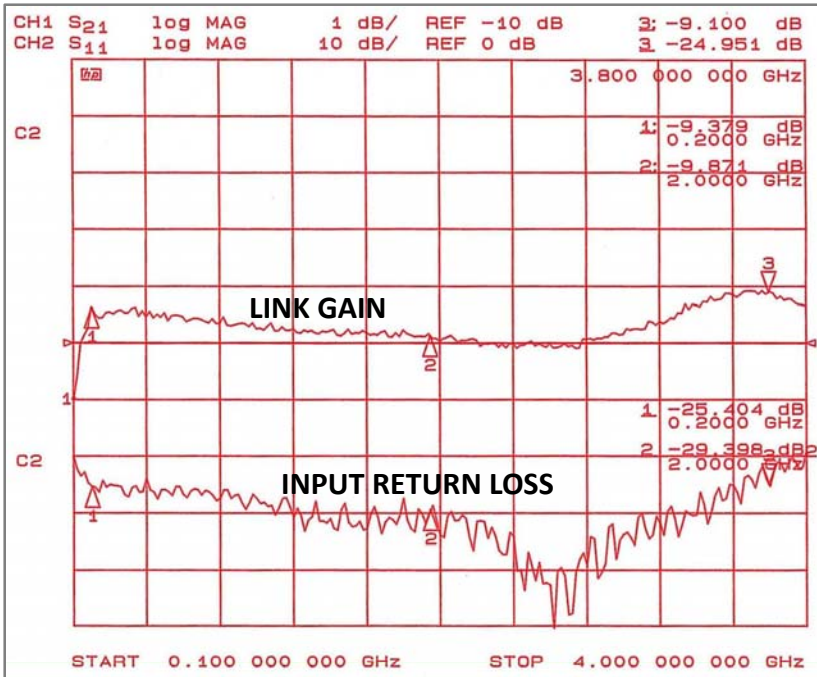


LPL DiLink series Fiber Optic Communications Links provide industry-leading performance in frequency bands from HF through 4 GHz.

All standard and custom DiLink modules are available as hot-swappable IFL Plug-ins. Consult the LPL DiLink Data Sheet for additional information, available at [www.linphotonics.com](http://www.linphotonics.com).

Single wide plug-in allows up to 6 modules per 1RU IFL Rack Chassis.

■ IFL-DL DiLink Plug-in TYPICAL LINK RESPOSNE (Ultra Wideband Unit)



■ IFL-DL DiLink Plug-in LINK SPECIFICATIONS (1 km link)

Style	Gain	Freq	Link Gain @ centerband	Gain Flatness Full Band	Gain Flatness any 250 MHz	RF Input Compression	RF Input IP3	Link Noise Figure	SFDR3 typical
W	0	2 to 500	0 +/- 2	+/- 1 dB		0	15	30	107
W	0	100 to 1000	0 +/- 2	+/- 1 dB	+/- 0.25 dB	0	15	30	107
W	0	500 to 2500	0 +/- 2	+/- 1 dB	+/- 0.25 dB	0	15	30	107
W	0	1000 to 4000	0 +/- 2	+/- 1 dB	+/- 0.25 dB	0	12	30	105
W	15	2 to 500	15 +/- 2	+/- 1 dB	+/- 0.25 dB	-6	10	30	104
W	15	100 to 1000	15 +/- 2	+/- 1 dB	+/- 0.25 dB	-6	10	30	104
W	15	500 to 2500	15 +/- 2	+/- 1 dB	+/- 0.25 dB	-6	10	30	103
W	15	1000 to 4000	15 +/- 2	+/- 1 dB	+/- 0.25 dB	-6	6	30	101
N	0	2 to 100	0 +/- 2	+/- 1 dB		5	17	29	109
N	0	100 to 500	0 +/- 2	+/- 1 dB	+/- 0.25 dB	5	17	29	109
N	0	900 to 2250	0 +/- 2	+/- 1 dB	+/- 0.25 dB	4	17	30	108
N	0	2000 to 3400	0 +/- 2	+/- 1 dB	+/- 0.25 dB	2	12	28	106
N	15	2 to 100	15 +/- 2	+/- 1 dB		3	13	29	106
N	15	100 to 500	15 +/- 2	+/- 1 dB	+/- 0.25 dB	3	13	29	106
N	15	900 to 2250	15 +/- 2	+/- 1 dB	+/- 0.25 dB	-1	13	30	105
N	15	2000 to 3400	15 +/- 2	+/- 1 dB	+/- 0.25 dB	-1	8	28	103
I	0	2 to 100	0 +/- 2	+/- 1 dB		17	30	43	108
I	0	100 to 500	0 +/- 2	+/- 1 dB	+/- 0.25 dB	17	30	43	108
I	0	900 to 2250	0 +/- 2	+/- 1 dB	+/- 0.25 dB	14	29	43	107
I	0	2000 to 3400	0 +/- 2	+/- 1 dB	+/- 0.25 dB	12	22	43	103

**ALL UNITS:**

Temperature Range	0 to 50°C
RF Connector	SMA female
Optical Connector	FC/APC

■ IFL-DL DiLink Plug-in PART NUMBER INFORMATION

<b>I F L - D L m w s f g</b>	<b>m</b> <b>Module Type</b> T Transmitter R Receiver	<b>f</b> <b>Frequency Range</b> 1 2 to 500 (W style only) 2 100 to 1000 (W style only) 3 500 to 2500 (W style only) 4 1000 to 4000 (W style only) 5 2 to 100 6 100 to 500 7 900 to 2250 8 2000 to 3400 C custom
example: <b>IFL-DLT5W30</b> Transmitter 1550 nm Wideband 500 - 2500 MHz 0 dB Link Gain	<b>w</b> <b>Wavelength</b> 3 1310 5 1550 C custom	<b>s</b> <b>Style</b> W Wideband N HDN/LN I HDN/HIP3
		<b>g</b> <b>Link Gain</b> 0 0 dB 1 15 dB C custom

Custom options are available. Call LPL.



# IFL-XMT

## XiMod 25 GHz transmitter plug-in modules

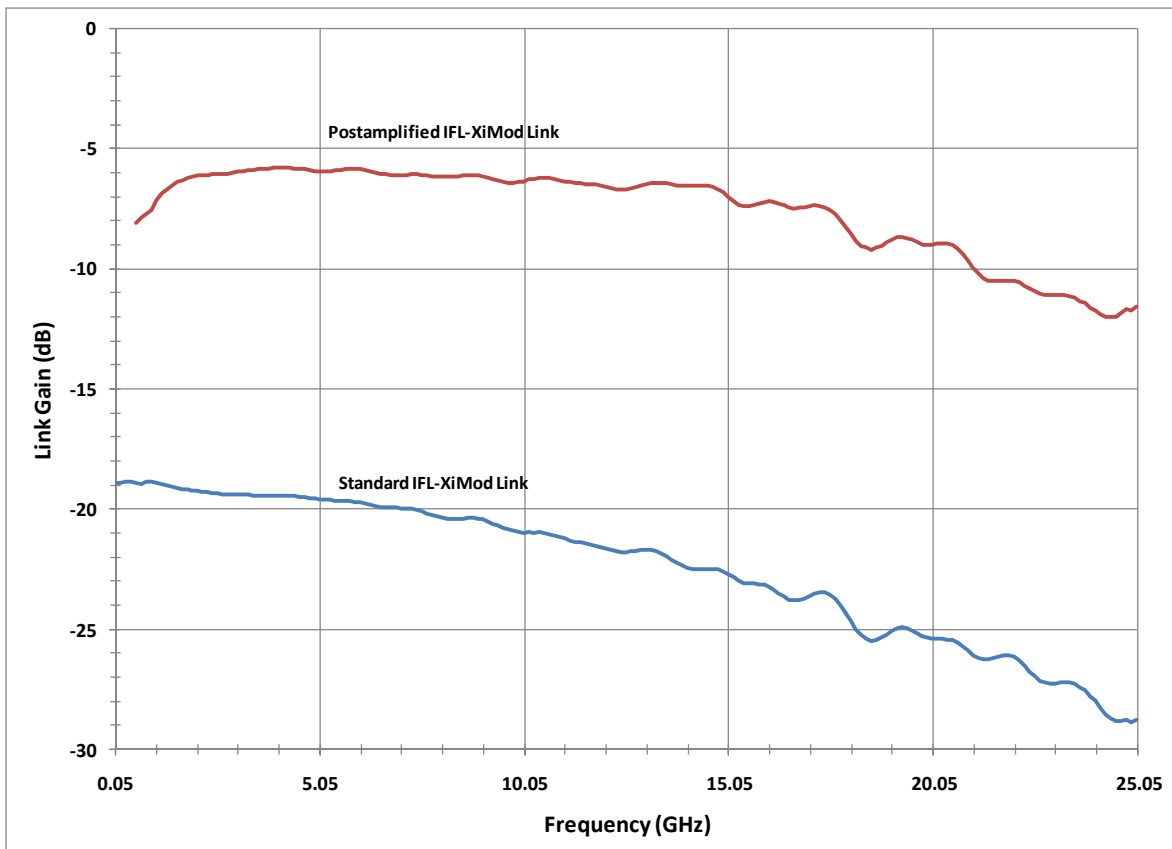


LPL XiMod series Transmitters provide industry-leading performance using externally modulated lasers.

All standard and custom XiMod Transmitters are available as hot-swappable IFL Plug-ins. Consult the LPL XiMod Data Sheet for additional information, available at [www.linphotonics.com](http://www.linphotonics.com).

Double wide plug-in allows up to 3 modules per 1RU IFL Rack Chassis.

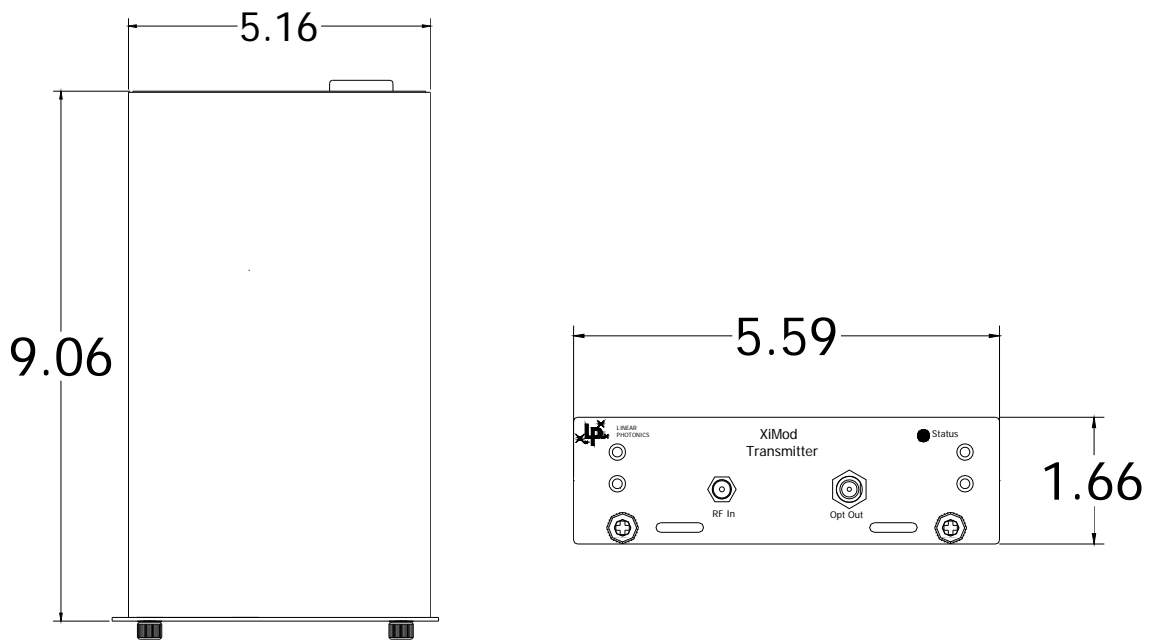
### ■ IFL-XMT XiMod Plug-in RF O/E AND RETURN LOSS (1 km link using MPR0020 Standard Photoreceiver)



■ IFL-XMT XiMod Plug-in TYPICAL LINK PERFORMANCE (1 km link using MPR0020 Standard Photoreceiver)

Parameter	Unamplified Transmitter Unamplified Receiver	Amplified Transmitter Unamplified Receiver	Unamplified Transmitter Amplified Receiver	Amplified Transmitter Amplified Receiver	Units
Operating Frequency	0.2 to 25	2 to 25 (standard) 0.5 to 25 (extended)	2 to 25 (standard) 0.5 to 25 (extended)	2 to 25 (standard) 0.5 to 25 (extended)	GHz
RF Link Gain					
	2 GHz -22	-8	-8	5	dB
	10 GHz -26	-12	-12	2	dB
	20 GHz -31	-17	-17	-2	dB
RF Link Noise Figure					
	2 GHz 38	24	40	27	dB
	10 GHz 42	28	44	30	dB
	20 GHz 47	33	49	35	dB
RF Input 1 dB Compression					
	2 GHz 10	-4	10	-4	dBm
	10 GHz 14	0	14	0	dBm
	20 GHz 18	4	18	4	dBm
RF Input Third-order Intercept					
	2 GHz 22	8	22	8	
	10 GHz 36	12	26	12	
	20 GHz 30	16	30	16	
3rd Order Spur-free Dynamic Range	107	106	105	105	db-Hz <sup>2/3</sup>
Transmit Wavelength	1550 ± 30	1550 ± 30	1550 ± 30	1550 ± 30	nm
Nominal Transmit Optical Power	8	8	8	8	dBm

■ IFL-XMT XiMod Plug-in Outline



■ IFL-XMT XiMod Plug-in PART NUMBER INFORMATION

IFL-XMT	0.2 to 25 GHz XiMod Transmitter Plug-in
IFL-XMT-PA	2 to 25 GHz XiMod Transmitter Plug-in with Standard Preamplifier
IFL-XMTPAL	0.5 to 25 GHz XiMod Transmitter Plug-in with Extended Low End Preamplifier

Custom options are available. Call LPL.





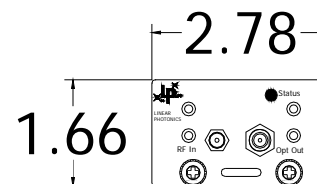
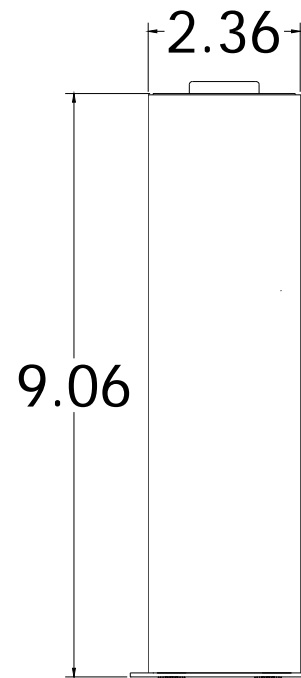
# IFL-XMR

## XiMod receiver plug-in modules

LPL XMR Receiver Plug-ins are available in passive and post-amplified options up to 30 GHz.

All LPL photoreceivers consist of high reliability, high responsivity InGaAs PIN diodes. Amplified versions employ InP or GaAs low noise HEMT technology.

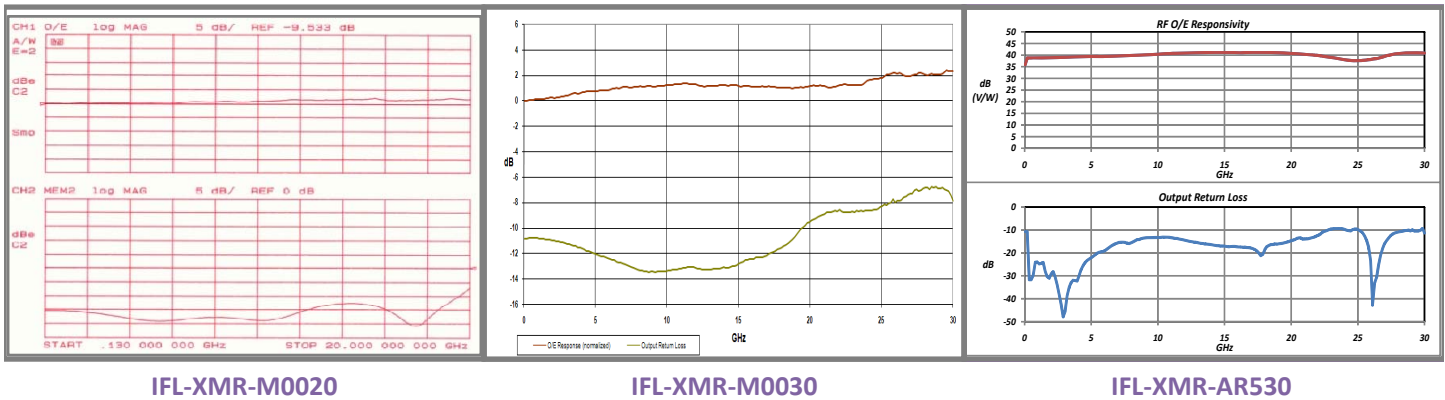
Single wide plug-in allows up to 6 modules per 1RU IFL Rack Chassis.



## IFL-XMR Receiver Plug-in PERFORMANCE SPECIFICATIONS

Parameter	IFL-XMR-M0020	IFL-XMR-M0030	IFL-XMR-A0230	IFL-XMR-A2530	Units
RF Detection Bandwidth	DC to 20	DC to 30	2 to 30	0.5 to 30	GHz
Output Impedance	50	50	50	50	ohms
Output Return Loss	DC to 18 GHz: 10 18 to 20 GHz: 8	DC to 18 GHz: 10 18 to 30 GHz: 6	DC to 20 GHz: 10 20 to 30 GHz: 8	DC to 20 GHz: 10 20 to 30 GHz: 8	dB
RF Response Flatness	± 2	± 3	± 3	± 3	dB
Optical Wavelength	1200 to 1600	1200 to 1600	1200 to 1600	1200 to 1600	nm
DC Responsivity	0.7 min., 0.9 typ.	0.7 min., 0.9 typ.	0.7 min., 0.9 typ.	0.7 min., 0.9 typ.	A/W
Max Optical Input Power	7	7	7	7	mW
RF Connector	3.5 mm "K" female	3.5 mm "K" female	3.5 mm "K" female	3.5 mm "K" female	
Optical Connector	FC/APC	FC/APC	FC/APC	FC/APC	
Post-Amplifier Gain	N/A	N/A	13	13	dB

## IFL-XMR Receiver Plug-in TYPICAL O/E RESPONSE AND OUTPUT RETURN LOSS



## IFL-XMR Receiver Plug-in PART NUMBER INFORMATION

IFL-XMR-M0020	DC to 20 GHz Photoreceiver
IFL-XMR-M0030	DC to 30 GHz Photoreceiver
IFL-XMR-A0130	2 to 30 GHz Amplified Photoreceiver
IFL-XMR-AR530	0.5 to 30 GHz Amplified Photoreceiver

Custom options are available. Call LPL.