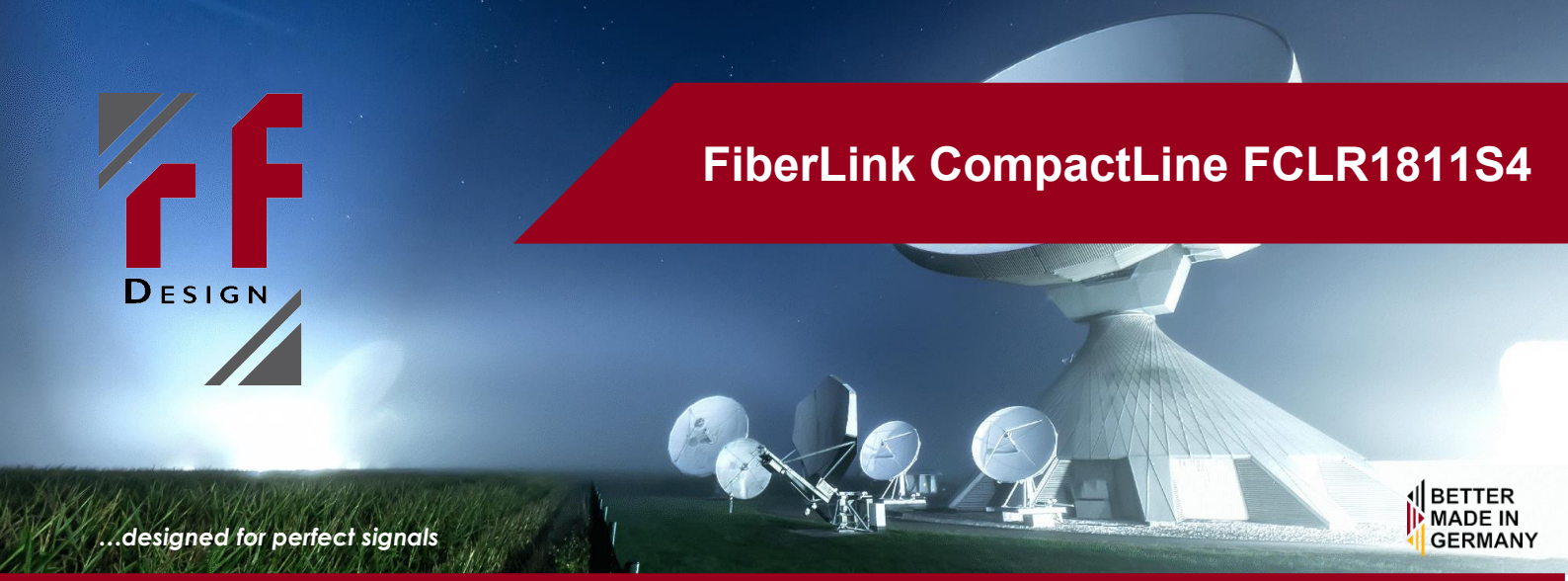


FiberLink CompactLine FCLR1811S4

8 x 1:1 redundant TX/RX RF-over-Fiber with 4 x single TX/RX RF-over-Fiber Functionality

The 8 x 1:1 redundant RF-over-Fiber system of the FiberLink CompactLine Series is housed in a compact 19" / 1RU chassis and enables the flexible, high-quality and secure optical transmission of up to eight 1:1 redundant RF signals (L-Band, Extended L-Band and Broadband up to 3.2 GHz) over distances of up to 20 km.

In addition to the redundant links, the system supports four additional TX/RX RF-over-Fiber links without redundancy within the same device. This allows the platform to combine 8 redundant RF links and 4 additional bidirectional RF-over-Fiber paths in a single chassis, providing maximum flexibility for various system architectures and applications.

The modular chassis can be populated with up to 24 active optical TX/RX modules. It allows a mixed population of TX and RX modules within the same chassis, while the system is equipped with corresponding RF ports (50 Ohm or 75 Ohm) that can be used either as input or output ports depending on the individual configuration.

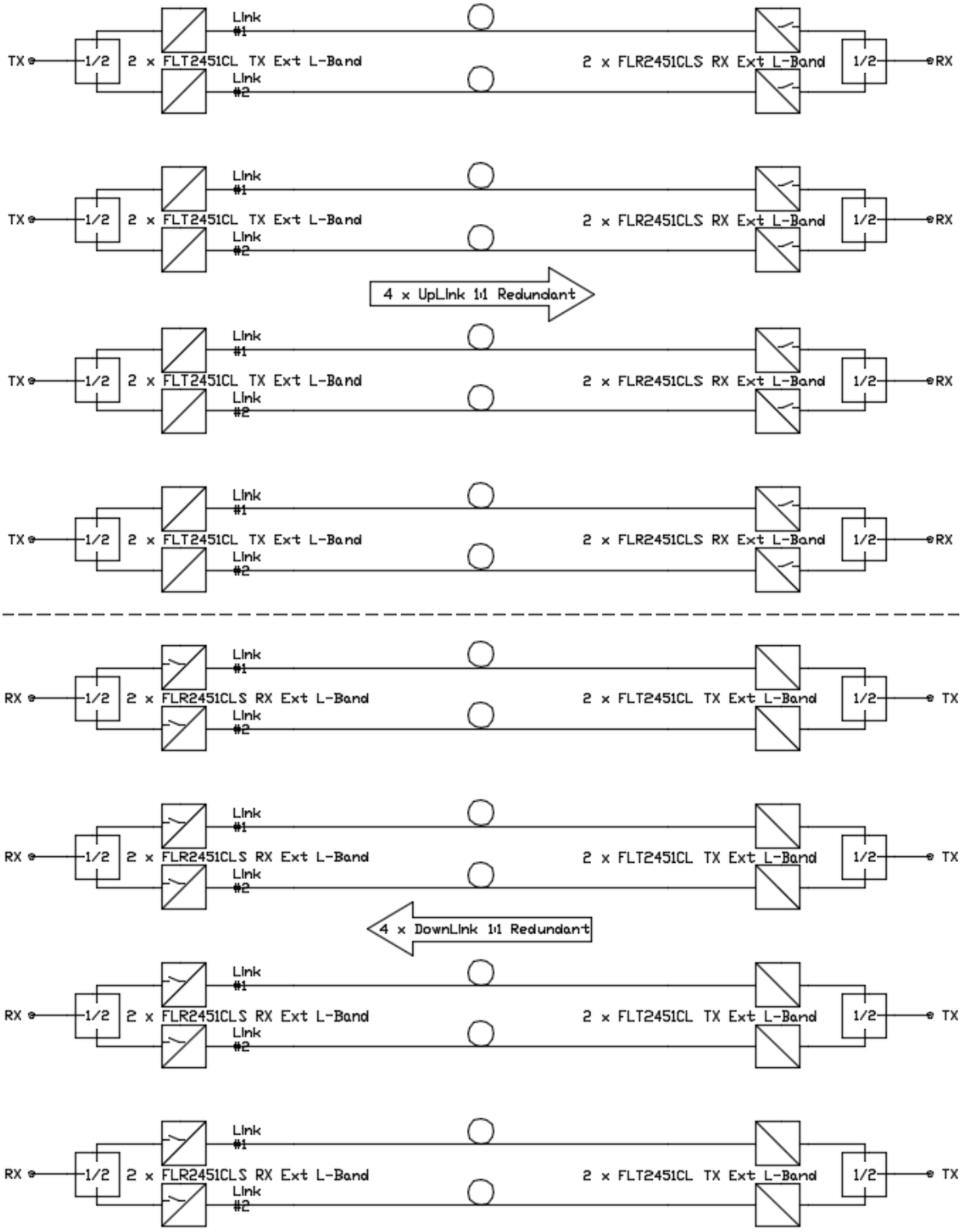
The system features automatic 1:1 redundancy handling and switching for the eight redundant links. Splitter and switching modules, as well as the TX and RX cards, are hot-swappable, ensuring high system availability and easy maintenance.

FEATURES & BENEFITS

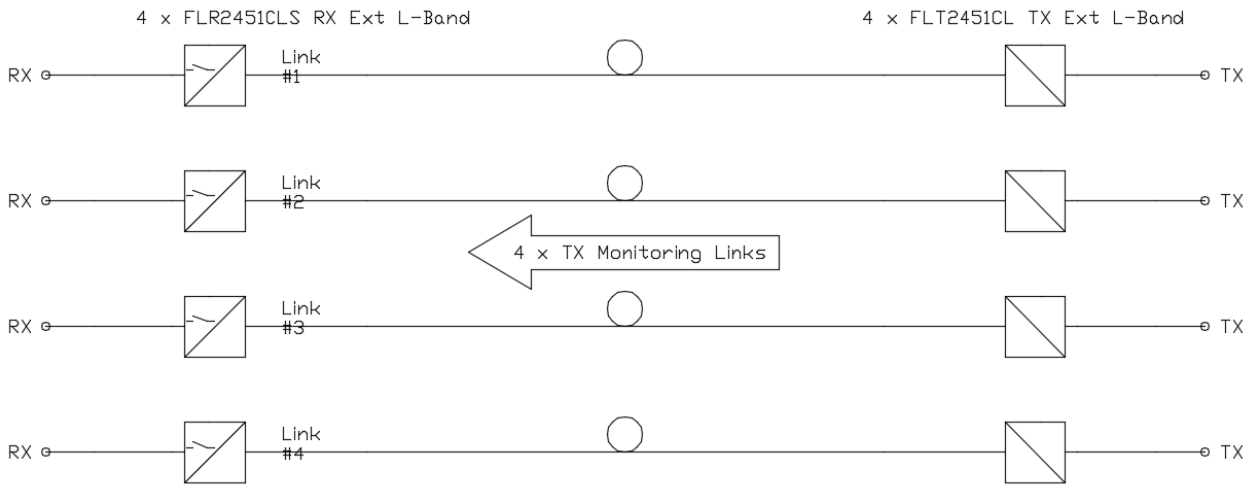
- Versatile 8 x 1:1 redundant + 4 x single RF-over-Fiber
- Supporting IF 200MHz, L-Band 950 – 2150MHz, Ext. L-Band 850 – 2450MHz and Broadband 50Mhz – 3250MHz
- 1RU/19" chassis for 1:1 redundant operation
- Manual and automatic redundancy switching
- Splitter and Switching Module hot swappable
- No active part at internal backplane, no point of failure
- Automatic Frequency and Level equalization (Option)
- Support of mixed TX/RX population
- Variable gain control at each TX/RX module
- RF power monitoring at each TX/RX module
- Status LED´s for each TX/RX module
- Easy local & remote configuration & monitoring
- Laser, link, PSU & access status monitoring
- 1:1 redundant dual power supply

LINK SCHEMATIC

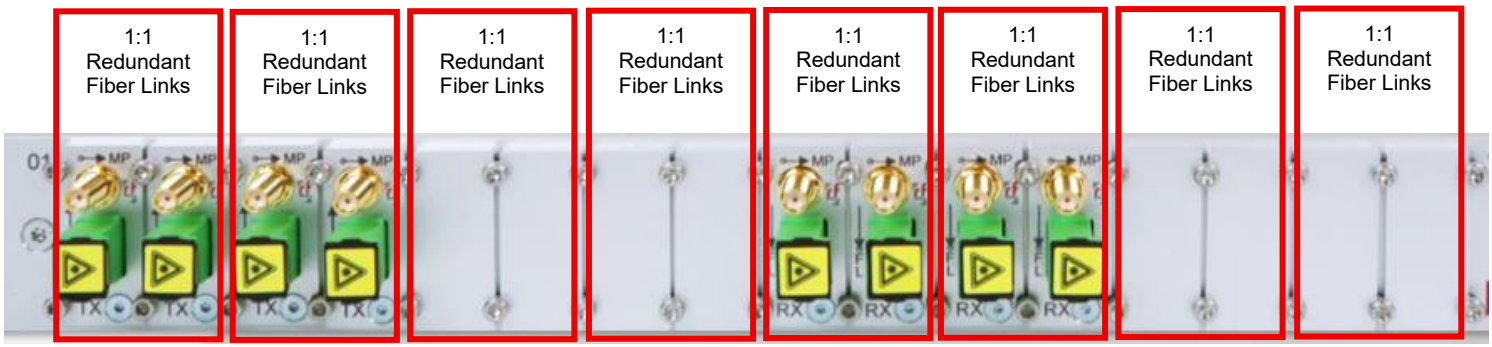
FCLR1811S4: – Configuration Example 4 x UPLINK 1:1 TX redundant and 4 x DOWNLINK 1:1 RX redundant



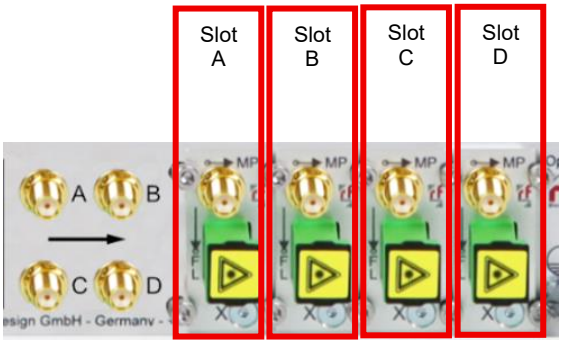
FCLR1811S4: – Configuration Example 4 x TX single for TX monitoring



FCLR1811S4: – Frontpanel Redundant Fiber Link Slots



FCLR1811S4: – Rearpanel Single Fiber Link Slots for Monitoring Purposes



TECHNICAL SPECIFICATIONS

1RU 19” Chassis

Dimensions:	1RU/19” (360mm deep)
Power Supply:	85 – 265V, 50/60Hz, dual 1:1 redundancy (hot-swappable)
Power Consumption:	<20W
TX/RX Module Capacity:	16 slots frontside for 8 x 1:1 redundant operation TX or RX free configurable 4 slots rearside for 4 x single operation TX or RX free configurable
RF Connectors I/O Ports:	50Ohm SMA(f), others on request*
Local Configuration:	LC-Display/keypads
Remote Configuration:	Ethernet (WebGUI, SNMPv2c)
Operating Temperature:	0°C to 45°C
Storage Temperature:	-10°C to 70°C
Humidity:	90%, non-condensing
RoHS:	Compliant
MTBF:	390khours MIL-HDBK-217F (25°C)
Environmental Conditions:	ETS 300019 Part 1-3 Class 3.1E

Link Specifications (L-Band 950 – 2150MHz & Extended L-Band 850 – 2450MHz)

Modulation Type:	Direct
F/O Diff. EFF:	0,15 to 0.17 W/A
IP1dB:	+3dBm
MDS:	IF: -71dBm; L-Band -63dBm; Extended L-Band -62dBm
Dynamic Range:	IF: 73dB; L-Band 66dB; Extended L-Band 64dB
Max. Link Gain:	20dB (±1,0dB) in 1:1 configuration
Gain Stability:	< ±0,3dB
Group Delay Distortion:	<+/-1ns
Nominal RF Input Level:	-20dBm
Noise Figure:	< 24dB
SFDR:	112dB/Hz 2/3
IMA3 @ -10dBm:	< -50dBc

Link Specifications Broadband (50 – 3200MHz)

Modulation Type:	Direct
F/O Diff. EFF:	0,15 to 0.17 W/A
IP1dB:	+3dBm
MDS:	-59dBm
Dynamic Range:	62dB
Max. Link Gain:	20dB (±1,0dB) in 1:1 configuration
Gain Stability:	< ±0,3dB
Group Delay Distortion:	<+/-1ns
Nominal RF Input Level:	-20dBm
Noise Figure:	< 24dB
SFDR:	112dB/Hz 2/3
IMA3 @ -10dBm:	< -46dBc

L-Band and Extended L-Band Application

TX Module (L-Band 950 – 2150MHz & Extended L-Band 850 – 2450MHz), FLT2151CL, FLT2451CL

Frequency Range:	950 – 2150MHz (L-Band) & 850 – 2450MHz (extended L-Band)
RF Input Connector:	Via Chassis RF I/O ports, Frontside Measurement Port -20dB
Fiber Type:	Connector SC/APC, Single mode 9/125
RF Input Power Level:	+16dBm max. (damage level)
Input RF Signal Operational Range:	-60 to -10 dBm or better
Frequency Response:	±0,5dB typ., ±1,0dB max., ±0,25dB@ any 36MHz Window
Return Loss:	15dB typ.
OIP3:	+20dBm
SFDR:	112dB/Hz 2/3
CNR:	< -45dB in any 36MHz Window
Noise Figure:	12dB
Laser Type:	DFB with Isolator
Laser Class:	1M
Operating Wavelength:	1310nm ±5nm
Optical Output Power:	+3dBm min.
Variable Gain Control:	0 to +6dB Manual Gain Control (MGC) (Automatic Gain Control (AGC) on request only)
Delay Group Variation:	Maximum 2ns over the entire band, maximum 1ns over any 36 MHz range
Switchable LNB-Supply:	13/15/18VDC, 22kHz tone, 450mA max (current monitoring)
RF Power Monitoring:	65dB dynamic range
Status LED´s:	OK, Fail, Stand-By
Operating Temperature:	0°C to 45°C
Storage Temperature:	-10°C to 70°C
Humidity:	90%, non-condensing
MTTF:	10e6 hours
RoHS:	Compliant

RX Module (L-Band 950 – 2150MHz & Extended L-Band 850 – 2450MHz), FLR2151CL, FLR2451CL

Frequency Range:	950 – 2150MHz (L-Band) & 850 – 2450MHz (extended L-Band)
Fiber Type:	Connector SC/APC, Single mode 9/125
RF Output Connector:	Via Chassis RF I/O ports, Frontside Measurement Port -20dB
Optical Input Power Level:	-5dBm (min. optical sensitivity)
Frequency Response:	±0,5dB typ., ±1,0dB max.
Return Loss:	16dB typ.
OIP3:	+20dBm
SFDR:	112dB/Hz 2/3
Noise Figure:	12dB
Operating Wavelength:	1310nm – 1560nm
RF Output Power:	+5dBm max.
Variable Gain Control:	0dB to +20dB (MGC) (Automatic Gain Control (AGC) on request only)
RF Power Monitoring:	65dB dynamic range
Status LED´s:	OK, Fail, Stand-By
Operating Temperature:	0°C to 45°C
Storage Temperature:	-10°C to 70°C
Humidity:	90%, non-condensing
MTTF:	10e6 hours
RoHS:	Compliant

Broadband Application

TX Module Broadband (50 – 3200MHz), FLT3251CL

Frequency Range:	50 – 3200MHz
RF Input Connector:	Via Chassis RF I/O ports, Frontside Measurement Port -20dB
Fiber Type:	SC/APC, Single mode 9/125
RF Input Power Level:	+10dBm max. (damage level)
Frequency Response:	50MHz – 850MHz ±0,5dB typ., ±1,0dB max., 850MHz – 2450MHz ±1,0dB typ., ±1,5dB max. 2450MHz – 3200MHz ±1,5dB typ., ±2,0dB max.
Return Loss:	14dB typ.
OIP3:	+20dBm
SFDR:	112dB/Hz 2/3
Noise Figure:	12dB
Laser Type:	DFB with Isolator
Laser Class:	1M
Operating Wavelength:	1310nm ±5nm
Optical Output Power:	+3dBm min.
Variable Gain Control:	0 to +6dB (MGC) (Automatic Gain Control (AGC) on request only)
RF Power Monitoring:	65dB dynamic range
Status LED´s:	OK, Fail, Stand-By
Operating Temperature:	0°C to 45°C
Storage Temperature:	-10°C to 70°C
Humidity:	90%, non-condensing
MTTF:	10e6 hours
RoHS:	Compliant

RX Module Broadband (50 – 3200MHz), FLR3251CL

Frequency Range:	50 – 3200MHz
Fiber Type:	SC/APC, Single mode 9/125
RF Output Connector:	Via Chassis RF I/O ports, Frontside Measurement Port -20dB
Optical Input Power Level:	~ -10dBm (min. optical sensitivity)
Frequency Response:	50MHz – 850MHz ±0,5dB typ., ±1,0dB max. , 850MHz – 2450MHz ±1,0dB typ., ±1,5dB max. 2450MHz – 3200MHz ±1,5dB typ., ±2,0dB max.
Return Loss:	16dB typ.
OIP3:	+20dBm
SFDR:	112dB/Hz 2/3
Noise Figure:	12dB
Operating Wavelength:	1310nm – 1560nm
RF Output Power:	+10dBm max.
Variable Gain Control:	0dB to +20dB (MGC) (Automatic Gain Control (AGC) on request only)
RF Power Monitoring:	65dB dynamic range
Status LED´s:	OK, Fail
Operating Temperature:	0°C to 45°C
Storage Temperature:	-10°C to 70°C
Humidity:	90%, non-condensing
MTTF:	10e6 hours
RoHS:	Compliant

ORDER INFORMATION

19" Chassis

Type	Type-No.:	Short Description	Chassis size	Capacity TX/RX slots	Max. links	RF coax I/O connectors
FCLR1811S4-50S	9001506	1RU/19" modular TX/RX chassis, for 8 x 1:1 TX/RX redundancy and 4 x single Links nonredundant, local config. via LC-Display/keypad, remote config. via Ethernet-Interface (WebGUI, SNMP), 1:1 redundant dual PSU	1RU/19"	16 slots TX/RX frontside and 4 slots TX/RX rearside	8+4	12 x 50Ohm SMA(f)

TX & RX Module L-Band 950 – 2150MHz with frontside measurement port -20dB

Type	Type-No.:	Short Description	Connector	Frequency Range
FLT2151CL	9001374	Optical TX-Module, 950 – 2150MHz, RF coax Input via 1RU chassis RF coax I/O panel, Optical Output SC/APC, gain control, LNB-supply, RF power monitoring, measurement port -20dB	SC/APC	950 – 2150MHz
FLR2151CL	9001375	Optical RX-Module, 950 – 2150MHz, Optical Input SC/APC, RF coax Output via 1RU chassis RF coax I/O panel, gain control, RF power monitoring, frontside measurement port -20dB	SC/APC	950 – 2150MHz

TX & RX Module Extended L-Band 850 – 2450MHz with frontside measurement port -20dB

Type	Type-No.:	Short Description	Connector	Frequency Range
FLT2451CL	9001372	Optical TX-Module, 850 – 2450MHz, RF coax Input via 1RU chassis RF coax I/O panel, Optical Output SC/APC, gain control, LNB-supply, RF power monitoring, measurement port -20dB	SC/APC	850 – 2450MHz
FLR2451CL	9001373	Optical Receiver RX-Module, 850 – 2450MHz, Optical Input SC/APC, RF coax Output via 1RU chassis RF coax I/O panel, gain control, RF power monitoring, measurement port -20dB	SC/APC	850 – 2450MHz

TX & RX Module Broadband 50MHz – 3200MHz with frontside measurement port -20dB

Type	Type-No.:	Short Description	Connector	Frequency Range
FLT3251CL	9001370	Optical Transmitter TX-Module, 50 – 3200MHz, RF coax Input via 1RU chassis RF coax I/O panel, Optical Output SC/APC, gain control, RF power monitoring, measurement port -20dB	SC/APC	50 – 3200MHz
FLR3251CL	9001371	Optical Receiver RX-Module, 50 – 3200MHz, Optical Input SC/APC, RF coax Output via 1RU chassis RF coax I/O panel, gain control, RF power monitoring, measurement port -20dB	SC/APC	50 – 3200MHz

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