

FiberLinkplus

N+1 & N+2 redundant RF-over-Fiber System

The N+1 and N+2 redundant RF-over-Fiber system of our FiberLinkplus Series comes in sizes of 1RU/19" or 3RU/19". It is designed for flexible, high quality and absolute secure optical transmission of up to 16 RF signals (L-Band, Extended L-Band) over a distance of up to 20km. This redundant RF-over-Fiber allows several N+1 and N+2 redundant configurations and can be populated with 1 -16 active optical TX/RX modules and up to 4 hot-standby TX/RX modules.

The 1RU/19" chassis can be populated with 3 TX/RX modules for a 2+1 redundant operation. The 3RU/19" chassis can hold max. 20 TX/RX modules for various N+1 or N+2 redundant operations.

All available chassis are designed to allow mixed population with TX/RX modules within the same chassis, while the chassis are equipped with corresponding RF ports (50Ohm or 75Ohm), which are used either as input or output port as per the individual configuration.

The system features automatic N+1/N+2 redundancy switching as per preconfigured configurations. Once an error at a TX or RX module occurs, the system automatically activates a switchover to a back-up TX or RX module thus ensuring an almost interference-free signal transmission at any time.

Additionally, the system comes with beneficial features such as Laser/Link monitoring, status LED's at any TX/RX module, variable gain control, RF power monitoring, hot-swappable TX/RX modules and 1:1 redundant dual power-supply.

Configuration and monitoring is possible via the front-panel LC-Display or 7" touchscreen while remote configuration is available via its Ethernet-Interface (WebGUI, SNMP).

This professional 1:1 redundant RF-over-Fiber system stands for perfect RF performance, secure signal distribution and is perfectly suited for Teleports, Satellite Earth Stations, Broadcasting and Cable/IPTV operations.



FEATURES & BENEFITS

- Versatile N+1 and N+1 redundant RF-over-Fiber
- Supporting L-Band 950 - 2150MHz and Extended L-Band 850 - 2450MHz
- 1RU/19" chassis 2+1 redundant operation)
- 3RU/19" chassis for max. 4 x 4+1 or 2 x 8+2 redundant operation
- Manual and automatic redundancy switching
- Hot swappable TX/RX modules
- 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
- Excellent quality and superior RF performance
- 1:1 redundant dual power-supply



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TECHNICAL SPECIFICATIONS

19" Chassis

- **Dimensions:** 1RU/19" (260mm deep) or 4RU/19" (300mm deep)
- **Power supply:** 85...265V, 50/60Hz, dual 1:1 redundancy (hot swappable)
- **Power consumption:** <20W (1RU/19"), <100W (3RU/19")
- **Frequency range:** 950...2150MHz (L-Band) & 850...2450MHz (Extended L-Band)
- **TX/RX configurations:** See 4th page (order information)
- **TX/RX module capacity:** 3 slots for 1 x 2+1 redundant operation @ 1RU/19" chassis
20 slots for max. 4 x 4+1 or 2 x 8+2 redundant operation @ 4RU/19" chassis
- **RF connectors I/O ports @ chassis:** 50Ohm SMA(f), 75Ohm F(f)
50Ohm BNC(f)*, 75Ohm BNC(f)*
- **Local configuration:** LC-Display/keypads or 7" colored touchscreen display
- **Remote configuration:** Ethernet (WebGUI, SNMPv2c)
- **Operating temperature:** 0°C...45°C
- **Storage temperature:** -10°C...70°C
- **Humidity:** 90%, non-condensing
- **RoHs:** Compliant

**upon request*

TX Module (L-Band 950...2150MHz & Extended L-Band 850...2450MHz)

- **Frequency range:** 950...2150MHz (L-Band) & 850...2450MHz (Extended L-Band)
- **RF input connector:** Via Chassis RF I/O ports (50Ohm SMA, BNC* or 75Ohm F, BNC*)
- **Optical Output connector:** SC/APC
- **Fiber type:** Single mode 9/125
- **RF input power level:** +15dBm max. (damage level)
- **Frequency response:** ±0,5dB typ., ±1,0dB max.
- **Return loss:** 15dB typ. (± VSWR: 1:1.4)
- **Laser type:** DFB with Isolator
- **Laser class** 1M
- **Operating wavelength:** 1310nm ±5nm
- **Optical output power:** +3dBm min.
- **Variable gain control:** -12dB...+12dB (1dB steps)
- **RF power monitoring:** 70dB dynamic range
- **Status LED's:** OK, Fail, Stand-By
- **Operating temperature:** 0°C...45°C
- **Storage temperature:** -10°C...70°C
- **Humidity:** 90%, non-condensing
- **RoHs:** Compliant

**upon request*

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TECHNICAL SPECIFICATIONS

RX Module (L-Band 950...2150MHz & Extended L-Band 850...2450MHz)

- **Frequency range:** 950...2150MHz (L-Band) & 850...2450MHz (Extended L-Band)
- **Optical Input connector:** SC/APC
- **Fiber type:** Single mode 9/125
- **RF Output connector:** Via Chassis RF I/O ports (50Ohm SMA, BNC* or 75Ohm F, BNC*)
- **Optical input power level:** -5dBm (min. optical sensitivity)
- **Frequency response:** $\pm 0,5\text{dB typ.}, \pm 1,0\text{dB max.}$
- **Return loss:** 16dB typ. ($\triangleq$ VSWR: 1:1.4)
- **Operating wavelength:** 1310nm – 1560nm
- **RF output power:** +10dBm max.
- **Variable gain control:** -12dB...+12dB (1dB steps)
- **RF power monitoring:** 70dB dynamic range
- **Status LED's:** OK, Fail, Stand-By
- **Operating temperature:** 0°C...45°C
- **Storage temperature:** -10°C...70°C
- **Humidity:** 90%, non-condensing
- **RoHs:** Compliant

**upon request*

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
- **Dynamic range:** -100dBm to 0dBm
- **Max. link gain:** 24dB ($\pm 1,0\text{dB}$)
- **Gain stability:** $< \pm 0,3\text{dB}$
- **Group delay distortion:** $< 2\text{ns}$
- **Nominal RF Input level:** 0dBm
- **Noise figure:** $< 23\text{dB}$
- **SFDR:** -107dB Hz typ.
- **RF Output power:** +13dBm max.
- **IMA3 @ -10dBm:** $< -70\text{dBc}$
- **Input power dyn. Range:** -50 to +10dBm
- **Output IP3:** +30dBm
- **Output IP1:** +7dBm

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ORDER INFORMATION

Chassis

Chassis Type	Short Description	Chassis size	Capacity TX/RX slots	Max. Links	RF coax I/O connectors
FLCR1121plus-50S FLCR1121plus-75F FLCR1121plus-50B* FLCR1121plus-75B*	1RU/19" modular TX/RX chassis, 3 TX/RX slots, 1 x 2+1 TX/RX redundancy, 2 RF coax I/O's, local config. via LC-Display/keypad, remote config. via Ethernet-Interface (WebGUI, SNMP), 1:1 redundant dual PSU	1RU/19"	3 2+1 redundancy	1	2 x 50Ohm SMA(f) 2 x 75Ohm F(f) 2 x 50Ohm BNC(f)* 2 x 75Ohm BNC(f)*
FLCR3441plus-50S FLCR3441plus -75F FLCR3441plus -50B* FLCR3441plus -75B*	3RU/19" modular TX/RX chassis, 20 TX/RX slots, min. 2+1, max. 4 x 4+1 TX/RX redundancy, 16 RF coax I/O's, local config. via touchscreen, remote config. via Ethernet-Interface (WebGUI, SNMP), 1:1 redundant dual PSU	3RU/19"	20 Max. 4 x 4+1 redundancy	16	16 x 50Ohm SMA(f) 16 x 75Ohm F(f) 16 x 50Ohm BNC(f)* 16 x 75Ohm BNC(f)*
FLCR3282plus-50S FLCR3282plus -75F FLCR3282plus -50B* FLCR3282plus -75B*	3RU/19" modular TX/RX chassis, 20 TX/RX slots, min. 2+1, max. 2 x 8+2 TX/RX redundancy, 16 RF coax I/O's, local config. via touchscreen, remote config. via Ethernet-Interface (WebGUI, SNMP), 1:1 redundant dual PSU	3RU/19"	20 Max. 2 x 8+2 redundancy	16	16 x 50Ohm SMA(f) 16 x 75Ohm F(f) 16 x 50Ohm BNC(f)* 16 x 75Ohm BNC(f)*

*upon request

TX & RX Module: L-Band 950...2150MHz

Module Type	Short Description	Optical I/O connector	Frequency range
FLT2150plus	Optical Transmitter TX-Module, 950 - 2150MHz, RF coax Input via FLC(R) chassis RF coax I/O panel, Optical Output SC/APC, variable gain-control, RF power monitoring	SC/APC	950...2150MHz
FLR2150plus	Optical Receiver RX-Module, 950 - 2150MHz, Optical Input SC/APC, RF coax Output via FLC(R) chassis RF coax I/O panel, variable gain-control, RF power monitoring	SC/APC	950...2150MHz

TX & RX Module: Extended L-Band 850...2450MHz

Module Type	Short Description	Optical I/O connector	Frequency range
FLT2450plus	Optical Transmitter TX-Module, 850 - 2450MHz, RF coax Input via FLC(R) chassis RF coax I/O panel, Optical Output SC/APC, variable gain-control, RF power monitoring	SC/APC	850 - 2450MHz
FLR2450plus	Optical Receiver RX-Module, 850 - 2450MHz, Optical Input SC/APC, RF coax Output via FLC(R) chassis RF coax I/O panel, variable gain-control, RF power monitoring	SC/APC	850 - 2450MHz