

FiberLink^{plus}

1:1 redundant RF-over-Fiber System

The 1:1 redundant FiberLink^{plus} RF-over-Fiber system is available in 1RU/19" and 4RU/19" rack-mount design. It is designed for flexible, high quality, secure and stable optical transmission in a 1:1 redundant configuration for up to 16 RF signals (L-Band, Extended L-Band) over a distance of up to 20km.

The 1RU/19" chassis can be populated with 2 TX/RX modules for a 1:1 redundant or 4 TX/RX modules for a 2 x 1:1 redundant operation. The 4RU/19" chassis can hold max. 32 TX/RX modules for max. 16 x 1:1 redundant operation.

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.

Once an active TX or RX module fails the corresponding hot-standby TX or RX module becomes active assuring interruption 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, switchable LNB-supply*, 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.

**upon request only*



FEATURES & BENEFITS

- Versatile 1:1 redundant RF-over-Fiber system
- Supporting L-Band 950 - 2150MHz and Extended L-Band 850 - 2450MHz
- 1RU/19" chassis for max. 4 TX/RX modules (max. 2 x 1:1 redundant operation)
- 4RU/19" chassis for max. 32 TX/RX modules (max. 16 x 1:1 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
- Switchable LNB-supply (**upon request only*)
- 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:** 2 slots for 1 x 1:1 redundant operation @ 1RU/19" chassis
4 slots for max. 2 x 1:1 redundant operation @ 1RU/19" chassis
32 slots for max. 16 x 1:1 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)
- **Dry Alarm contact:** DB9 female (Option 103), unit fail, power-supply fail, module fail
- **Operating temperature:** 0°C...50°C
- **Storage temperature:** -10°C...70°C
- **Humidity:** 90%, non-condensing
- **RoHs:** Compliant

*upon request only

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/PC (SC/APC via supplied adapter)
- **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)
- **Switchable LNB-supply:** 13/15/18VDC, 22kHz tone, 450mA max (current monitoring)*
- **RF power monitoring:** 70dB dynamic range
- **Status LED's:** OK, Fail, Stand-By
- **Operating temperature:** 0°C...50°C
- **Storage temperature:** -10°C...70°C
- **Humidity:** 90%, non-condensing
- **RoHs:** Compliant

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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:** ±0,5dB typ., ±1,0dB max.
- **Return loss:** 16dB typ. (≅ 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...50°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 (±1,0dB)
- **Gain stability:** < ±0,3dB
- **Group delay distortion:** <2ns
- **Nominal RF Input level:** 0dBm
- **Noise figure:** <23dB
- **SFDR:** -107dB Hz typ.
- **RF Output power:** +13dBm max.
- **IMA3 @ -10dBm:** < -70dBc
- **Input power dyn. Range:** -50 to +10dBm
- **Output IP3:** +30dBm
- **Output IP1:** +7dBm

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ORDER INFORMATION

19" Chassis

Chassis Type	Short Description	Chassis size	Capacity TX/RX slots	Max. Links	RF coax I/O connectors
FLCR1111plus-50S FLCR1111plus-75F FLCR1111plus-50B* FLCR1111plus-75B*	1RU/19" modular TX/RX chassis, 2 TX/RX slots, 1 x 1:1 TX/RX redundancy, 1 RF coax I/O, local configuration via LC-Display/keypad, remote configuration via Ethernet-Interface (WebGUI, SNMP), 1:1 redundant dual power-supply	1RU/19"	2 1:1 redundancy	1	2 x 50Ohm SMA(f) 2 x 75Ohm F(f) 2 x 50Ohm BNC(f)* 2 x 75Ohm BNC(f)*
FLCR1211plus-50S FLCR1211plus-75F FLCR1211plus-50B* FLCR1211plus-75B*	1RU/19" modular TX/RX chassis, 4 TX/RX slots, 2 x 1:1 TX/RX redundancy, 2 RF coax I/O's, local configuration via LC-Display/keypad, remote configuration via Ethernet-Interface (WebGUI, SNMP), 1:1 redundant dual power-supply	1RU/19"	4 2 x 1:1 redundancy	2	2 x 50Ohm SMA(f) 2 x 75Ohm F(f) 2 x 50Ohm BNC(f)* 2 x 75Ohm BNC(f)*
FLCR41611plus-50S FLCR41611plus-75F FLCR41611plus-50B* FLCR41611plus-75B*	4RU/19" modular TX/RX chassis, 32 TX/RX slots, 16 x 1:1 TX/RX redundancy, 16 RF coax I/O's, local configuration via touchscreen, remote configuration via Ethernet-Interface (WebGUI, SNMP), 1:1 redundant dual power-supply	3RU/19"	16 16 x 1:1 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/PC (SC/APC via supplied adapter), variable gain-control, switchable LNB-supply*, RF power monitoring	SC/PC (SC/APC via adapter)	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

*upon request only

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/PC (SC/APC via supplied adapter), variable gain-control, switchable LNB-supply*, RF power monitoring	SC/PC (SC/APC via adapter)	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

*upon request only