

FiberLink RF-over-Fiber series

EcoLink, ProLink & RedLink optical transmission systems

GENERAL

Secure and stable RF signal distribution over long distances becomes more and more relevant in satellite communication, broadcast and broadband architectures. The RF-over-Fiber optical transmission system FiberLink represents professional, flexible and reliable solutions for transmitting L-Band and/or IF signals via optical-fiber. It is especially developed for the satellite communications-, broadband- and broadcast industry and excellently suited for integrations in Teleports, Up- and downlink stations, broadcasting operations as well as cable- and IPTV facilities. The Fiberlink series offers excellent performance as well as secure and accurate signal transmission over optical-fiber at the highest quality level.

The FiberLink series features 3 different variants - EcoLink, ProLink and RedLink -.

The flexible EcoLink system is a straight forward RF-over-Fiber solution for IF and L-Band optical transmission while LNB-supply and gain adjustment is optionally available. The more advanced and professional systems ProLink & RedLink both offer various additional features like Laser/Link/RF-power monitoring, manual and automatic gain control (MGC/AGC), LNB-supply, remote access and configuration while the RedLink features 1:1 redundancy (hot-swappable) for both the TX/RX (laser/link) so to assure secure and stable signal transmission at any time.



EcoLink Products

- **FTC2S/FRC2S** 1RU/19" TX/RX -chassis
- **FTRC16S** 3RU/19" TX/RX-chassis
- **FTX714EL** Optical TX module, IF
- **FRX714EL** Optical RX module, IF
- **FTX2012EL** Optical TX-module, L-Band
- **FTX2112EL** Optical TX-module, L-Band (with Gain adjustment and LNP-supply)
- **FRX2012EL** Optical RX module, L-Band

ProLink Products

- **FLC102** 1RU/19" TX/RX chassis
- **FLC316** 3RU/19" TX/RX chassis
- **FLTXI-S** Optical TX module, IF
- **FLRXI-S** Optical RX module, IF
- **FLTXL-S** Optical TX-module, L-Band
- **FLRXL-S** Optical RX module, L-Band

RedLink Products (1:1 redundant system)

- **FLCR101** 1RU/19" TX/RX redundant chassis
- **FLCR416** 4RU/19" TX/RX redundant chassis
- **FLTXI-R** Optical 1:1 red. TX module, IF
- **FLRXI-R** Optical 1:1 red. RX module, IF
- **FLTXL-R** Optical 1:1 red. TX-module, L-Band
- **FLRXL-R** Optical 1:1 red. RX module, L-Band

EcoLink TX/RX Chassis

EcoLink TX/RX chassis FTC2S/FRC2S & FTRC16S

Made
in
Germany

GENERAL

The EcoLink RF-over-Fiber system offers various mechanical options in 1 & 3RU/19" design providing cost effective, space saving and straight forward optical distribution of IF and L-Band signals. The EcoLink chassis can be equipped either with 2 optical TX/RX modules (1RU variant) or up to 16 TX/RX modules (3RU variant) while the chassis are equipped with 1:1 redundant power-supply (hot-swappable) and status LED's.

FTC2S/FRC2S 1RU CHASSIS



FTRC16S CHASSIS



FEATURES

- Space saving 1RU/19" optical transmission chassis
- Compact IF & L-Band transmission
- Up to 2 RF signals over fiber transmission (per chassis)
- Insertion of max. 2 EcoLink TX or RX modules
- Features 1:1 power-supply redundancy (hot-swapp.)
- Front side LED's indicating power-supply status

FEATURES

- Modular 3RU/19" optical transmission chassis
- Modular IF/L-Band transmission
- Up to 16 RF signals over fiber transmission (per chassis)
- Insertion of max. 16 EcoLink TX or RX modules
- Features 1:1 power-supply redundancy (hot-swapp.)
- Front side LED's indicating power-supply status

SPECIFICATIONS

- **Mechanical dimension:** 1RU/19", 260mm deep
- **Power-supply:** 85...230V, 50/60Hz (1:1 redundant, hot-swapp.)
- **Power consumption:** <15W
- **1:1 psu alarm connector:** DB9-female (potent. free)
- **Module slots:** 2 (for TX/RX modules)
- **Environmental condit.:** ETS300019, Part 1-3, Class 3.1
- **RoHS:** Compliant

SPECIFICATIONS

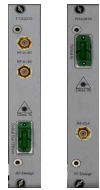
- **Mechanical dimension:** 3RU/19", 295mm deep
- **Red. Power-supply:** 85...230V, 50/60Hz (1:1 redundant, hot-swapp.)
- **Power consumption:** <60W
- **1:1 psu alarm connector:** DB9-female (pot. free)
- **Module slots:** 16 (for TX/RX modules)
- **Environmental condit.:** ETS300019, Part 1-3, Class 3.1
- **RoHS:** Compliant

EcoLink Optical modules

EcoLink optical modules FTX/FRX714EL, FTX/FRX2xxxEL

Made
in
Germany

FTX/FRX714EL MODULES (IF-range)



FTX/FRX2xxxEL MODULES (L-Band range)



TECHNICAL SPECIFICATIONS

FTX714EL optical transmitter IF

➤ Frequency range:	10...200MHz
➤ RF Input connector:	50Ohm SMA (f) or 75Ohm BNC(f)
➤ RF Input level:	0dBm max.
➤ Frequency response:	±1,0dB
➤ Return loss:	18dB (± VSWR: 1:1.29)
➤ IMA3 @ -10dBm:	< -56dBc
➤ Input noise floor:	> -133dBm/Hz (± C/N: 57dB min. @36MHz)
➤ Spurious free dyn. range:	109dB/Hz
➤ Optical Output connectors:	E2000 or SC/APC* *upon request
➤ Operating wavelength:	1310nm
➤ Optical power:	2dBm
➤ Operating temperature:	0...45°C
➤ Storage temperature:	-20°C...70°C
➤ Humidity:	90% non-condensing
➤ RoHS:	Compliant

FTX2012EL/FTX2112EL* optical transmitters L-Band

➤ Frequency range:	950...2150MHz
➤ RF Input connector:	50Ohm SMA (f) or 75Ohm F(f)
➤ RF Input level:	0dBm max.
➤ Frequency response:	±1,0dB
➤ Return loss:	16dB (± VSWR: 1:1.38)
➤ IMA3 @ -10dBm:	< -60dBc
➤ Input noise floor:	> -133dBm/Hz (± C/N: 57dB min. @36MHz)
➤ Spurious free dyn. range:	109dB/Hz
➤ Optical Output connectors:	E2000 or SC/APC* *upon request
➤ Operating wavelength:	1310nm
➤ Optical power:	2dBm
➤ *Gain adjust:	-10...+20dB
➤ *LNB-supply:	13/15/18V, 22kHz, 400mA
➤ Operating temperature:	0...45°C
➤ Storage temperature:	-20°C...70°C
➤ Humidity:	90% non-condensing
➤ RoHS:	Compliant

FRX714EL optical receiver IF

➤ Frequency range:	10...200MHz
➤ Optical Input connectors:	E 2000 or SC/APC* *upon request
➤ Operating wavelength:	1310 - 1560nm
➤ Optical Input level:	+10dBm
➤ RF Output connectors:	50Ohm SMA(f) or 75Ohm BNC(f)
➤ Frequency response:	±1,0dB
➤ Return loss:	18dB (± VSWR: 1:1.29)
➤ IMA3 @ -10dBm:	< -50dBc
➤ Noise floor:	> -133dBm/Hz (± C/N: 57dB min. @36MHz)
➤ Spurious free dyn. range:	109dB/Hz
➤ RF output power:	+10dBm
➤ Operating temperature:	0...45°C
➤ Storage temperature:	-20°C...70°C
➤ Humidity:	90% non-condensing
➤ RoHS:	Compliant

FRX2012EL optical receiver L-Band

➤ Frequency range:	950...2150MHz
➤ Optical Input connectors:	E 2000 or SC/APC* *upon request
➤ Operating wavelength:	1310 - 1550nm
➤ Optical Input level:	+10dBm
➤ RF Output connectors:	50Ohm SMA(f) or 75Ohm F(f)
➤ Frequency response:	±1,0dB
➤ Return loss:	16dB (± VSWR: 1:1.38)
➤ IMA3 @ -10dBm:	< -56dBc
➤ Noise floor:	> -133dBm/Hz (± C/N: 57dB min. @36MHz)
➤ Spurious free dyn. range:	109dB/Hz
➤ RF output power:	+10dBm
➤ Operating temperature:	0...45°C
➤ Storage temperature:	-20°C...70°C
➤ Humidity:	90% non-condensing
➤ RoHS:	Compliant

ProLink TX/RX Chassis

ProLink TX/RX chassis FLC102 & FLC316

Made
in
Germany

GENERAL

The ProLink RF-over-Fiber system offers mechanical options in 1 & 3RU/19" design for flexible and high quality optical distribution of up to 16 IF or L-Band signals. The ProLink chassis can be equipped either with 2 optical TX/RX modules (1RU variant) or up to 16 TX/RX modules (3RU variant). Furthermore the ProLink system offers various features like front side 5,7" touch screen LC-Display for local control, remote interfaces for remote access and configuration, Laser, Link and RF power monitoring, gain adjustment and LNB-supply. The ProLink chassis are designed to allow mixed configurations for insertion of IF and/or L-Band TX/RX modules within the same chassis. This professional fiber optic transmission system is perfectly suited for Satellite communications and broadband infrastructures where satellite signals have to be transmitted over long distances while perfect RF performance and error free signal distribution is assured.

FLC102 1RU CHASSIS



FLC316 3RU CHASSIS



FEATURES

- 1RU/19" optical transmission chassis
- Compact, professional and secure signal transmission
- Up to 2 RF signals over fiber transmission
- Insertion of max. 2 ProLink TX/RX modules (Mixed possible)
- 1:1 power-supply redundancy (hot-swap)
- Front side LC-Display & keypads for local configuration
- Remote access and configuration via Web-Interface, SNMP
- LED's displaying laser, link, psu & access status

SPECIFICATIONS

- **Mechanical dimension:** 1RU/19", 260mm deep
- **Power-supply:** 85...230V, 50/60Hz (1:1 redundant, hot-swapp.)
- **Power consumption:** <10W
- **1:1 psu alarm connector:** DB9-female (potential free)
- **Optical module slots:** 2 (for TX/RX modules)
- **Environmental condit.:** ETS300019, Part 1-3, Class 3.1
- **RoHS:** Compliant

FEATURES

- 3RU/19" modular optical transmission chassis
- Modular, professional and secure signal transmission
- Up to 16 RF signals over fiber transmission
- Insertion of max. 16 ProLink TX/RX modules (Mixed pos.)
- 1:1 power-supply redundancy (hot-swap)
- Front side 5,7" touchscreen for local configuration
- Remote configuration via Web-Interface, SNMP
- LED's displaying laser, link, psu & access status

SPECIFICATIONS

- **Mechanical dimension:** 3RU/19". 295mm deep
- **Red. Power-supply:** 85...230V, 50/60Hz (1:1 redundant, hot-swapp.)
- **Power consumption:** <60W
- **1:1 psu alarm connector:** DB9-female (potent. free)
- **Optical module slots:** 16 (for TX/RX modules)
- **Environmental condit.:** ETS300019, Part 1-3, Class 3
- **RoHS:** Compliant

ProLink Optical modules

ProLink optical modules FLTXX-S/FLRXX-S, FLTXXL-S/FLRXXL-S

Made
in
Germany

FLTXX-S/FLRXX-S MODULES (IF)



FLTXXL-S/FLRXXL-S MODULES (L-Band)



TECHNICAL SPECIFICATIONS

FLTXX-S optical transmitter IF

➤ Frequency range:	10...200MHz
➤ RF Input level:	0dBm max.
➤ Frequency response:	±0,5dB typ./±1,0dB max.
➤ Return loss:	18dB (≅ VSWR: 1:1.29)
➤ IMA3 @ -10dBm:	< -56dBc
➤ Input noise floor:	> -133dBm/Hz (≅ C/N: 57dB min. @36MHz)
➤ Spurious free dyn. range:	109dB/Hz
➤ Operating wavelength:	1310nm
➤ Optical power / Connectors:	2dBm / E2000 or SC/APC* *upon request
➤ RF connectors:	50Ohm SMA (f) or 75Ohm BNC(f)
➤ Port matching:	all ports 18dB
➤ Gain adjustment	MGC/AGC -15...+15dB
➤ RF power measurement:	60dB
➤ Operating temperature:	0...45°C
➤ Storage temperature:	-20°C...70°C
➤ Humidity:	90% non-condensing
➤ RoHS:	Compliant

FLTXXL-S optical transmitter L-Band

➤ Frequency range:	950...2150MHz
➤ RF Input level:	0dBm max.
➤ Frequency response:	±0,5dB typ./±1,0dB max.
➤ Return loss:	16dB (≅ VSWR: 1:1.38)
➤ IMA3 @ -10dBm:	< -60dBc
➤ Input noise floor:	> -133dBm/Hz (≅ C/N: 57dB min. @36MHz)
➤ Spurious free dyn. range:	109dB/Hz
➤ Operating wavelength:	1310nm
➤ Optical power / Connectors:	2dBm / E2000 or SC/APC* *upon request
➤ RF connectors:	50Ohm SMA(f) or 75Ohm F(f)
➤ Port matching:	all ports 16dB
➤ Gain adjustment:	MGC/AGC -15...+15dB
➤ RF power measurement:	70dB
➤ LNB supply:	13/15/18V, 22kHz, 400mA
➤ Operating temperature:	0...45°C
➤ Storage temperature:	-20°C...70°C
➤ Humidity:	90% non-condensing
➤ RoHS:	Compliant

FLRXX-S optical receiver IF

➤ Frequency range:	10...200MHz
➤ Optical Input level:	+10dBm
➤ Frequency response:	±0,5dB typ./ ±1,0dB max.
➤ Return loss:	18dB (≅ VSWR: 1:1.29)
➤ IMA3 @ -10dBm:	< -56dBc
➤ Noise floor:	> -133dBm/Hz (≅ C/N: 57dB min. @36MHz)
➤ Spurious free dyn. range:	109dB/Hz
➤ Operating wavelength:	1310 - 1560nm
➤ RF / Optical connectors:	50Ohm SMA (f) or 75Ohm BNC(f) / E 2000 or SC/APC* *upon request
➤ Gain adjustment	MGC/AGC -15...+15dB
➤ RF output power:	+10dBm
➤ RF power measurement:	60dB
➤ Operating temperature:	0...45°C
➤ Storage temperature:	-20°C...70°C
➤ Humidity:	90% non-condensing
➤ RoHS:	Compliant

FLRXXL-S optical receiver L-Band

➤ Frequency range:	950...2150MHz
➤ Optical Input level:	+10dBm
➤ Frequency response:	±0,5dB typ./ ±1,0dB max.
➤ Return loss:	16dB (≅ VSWR: 1:1.38)
➤ IMA3 @ -10dBm:	< -60dBc
➤ Noise floor:	> -133dBm/Hz (≅ C/N: 57dB min. @36MHz)
➤ Spurious free dyn. range:	109dB/Hz
➤ Operating wavelength:	1310 - 1560nm
➤ RF / Optical connectors:	50Ohm SMA(f) or 75Ohm F(f) E 2000 or SC/APC* *upon request
➤ Gain adjustment	MGC/AGC -15...+15dB
➤ RF output power:	+10dBm
➤ RF power measurement:	70dB
➤ Operating temperature:	0...45°C
➤ Storage temperature:	-20°C...70°C
➤ Humidity:	90% non-condensing
➤ RoHS:	Compliant

RedLink Redundant TX/RX Chassis

RedLink redundant TX/RX chassis FLCR101 & FLCR416

Made
in
Germany

GENERAL

The RedLink RF-over-Fiber redundant chassis FLCR101 (1RU/19") and FLCR416 (4RU/19") allow flexible, high quality and most secure optical distribution of max. 16 L-Band and/or IF signals in 1:1 redundant operation. The FLCR101 chassis can be equipped with 2 optical modules (TX/RX) while one is actively operating and 1 hot-standby so to assure a 1:1 optical transmission redundancy. The FLCR416 can be equipped with 32 optical modules (TX/RX) while 16 are actively operating and 16 hot-standby assuring a 1:1 optical transmission redundancy. The units are designed to allow mixed configurations so to insert IF and/or L-Band TX-, and/or RX modules within the same chassis. The chassis is furthermore equipped with 16 RF input and outputs, acting either as input or output interfaces, as per the individual configuration. The redundancy switching can be realized manually via the front panel touchscreen but also remotely via the Ethernet-Interface (http/SNMP). Furthermore the system features an automatic redundancy switching as per preconfigured adjustments. Once an error for an TX or RX module occurs an error message can be sent out by SNMP and the activation of the hot-standby redundant module will be done as configured, manually or automatically. The redundant RedLink system features a front side 8" LCD touch screen as well as remote interfaces for remote access and configuration. Besides this the Redlink features Laser, Link and RF power monitoring, gain adjustment as well as LNB-supply.

FLCR101 1:1 REDUNDANT CHASSIS



FLCR416 1:1 REDUNDANT CHASSIS



FEATURES

- 1RU/19" optical transmission chassis
- Professional; stable and secure signal transmission
- 1 active RF signal over fiber transmission
- Insertion of max. 2 TX/RX modules (1 active/1 hot-standby)
- Supports mixed configurations for IF/ L-Band & TX/RX
- 1:1 TX/RX redundancy (hot-swappable)
- Manual and automatic redundancy switching
- 1:1 power-supply redundancy (hot-swappable)
- Front side LC-Display & keypads for local configuration
- Remote access and configuration via Web-Interface, SNMP
- LED's displaying laser, link, psu & access status

SPECIFICATIONS

- **Mechanical dimension:** 1RU/19", 260mm deep
- **Power-supply:** 85...230V, 50/60Hz (1:1 redundant)
- **Power consumption:** <10W
- **Frequency-ranges:** IF 10...200MHz / L-Band 950...2.15GHz
- **RF Inputs/Outputs:** 2
- **RF-Connectors:** 50Ohm SMA(f) or 75Ohm F(f)
- **1:1 psu alarm connector:** DB9-female (potential free)
- **2 module slots:** 1 active/hot-standby TX/RX
- **RoHS:** Compliant

FEATURES

- 4RU/19" 1:1 redundant optical TX/RX chassis
- Professional, stable and secure signal transmission
- Up to 16 active RF signals over fiber transmission
- Insertion of max. 32 TX/RX modules (16 active/16 hot-standby)
- Supports mixed configurations for IF/L-Band & TX/RX
- 1:1 TX/RX redundancy (hot-swappable)
- Manual and automatic redundancy switching
- 1:1 power-supply redundancy (hot-swappable)
- Front side 8" LCD color touchscreen
- Remote configuration via Web-Interface, SNMP
- LED's displaying laser, link, psu & access status

SPECIFICATIONS

- **Mechanical dimension:** 4RU/19", 295mm deep
- **Power-supply:** 85...230V, 50/60Hz (1:1 redundant)
- **Power consumption:** <100W
- **Frequency-ranges:** IF 10...200MHz and/or L-Band 950...2.15GHz
- **RF Inputs/Outputs:** 16
- **RF-Connectors:** 50Ohm SMA(f) or 75Ohm F(f)
- **1:1 psu alarm connector:** DB9-female (potential free)
- **32 module slots:** 1...16 active/hot-standby TX/RX
- **RoHS:** Compliant

RedLink Redundant optical modules

RedLink redundant optical modules FLT XI-R/FLRXI-R, FLT XL-R/FLRXL-R

Made
in
Germany

FLT XI-R/FLRXI-R MODULES (IF)



FLT XL-R/FLRXL-R MODULES (L-Band)



TECHNICAL SPECIFICATIONS

FLT XI-R optical redundant Transmitter, IF

➤ Frequency range:	10...200MHz
➤ RF Input level:	0dBm max.
➤ Frequency response:	±0,5dB typ. / ±1,0dB max.
➤ Return loss:	18dB (± VSWR: 1:1.29)
➤ IMA3 @ -10dBm:	< -56dBc
➤ Input noise floor:	> -133dBm/Hz (± C/N: 57dB min. @36MHz)
➤ Spurious free dyn. range:	109dB/Hz
➤ Operating wavelength:	1310nm
➤ Optical power / Connectors:	2dBm / E2000 or SC/APC* *upon request
➤ RF connectors:	50Ohm SMA (f) or 75Ohm BNC(f)
➤ Gain adjustment :	MGC/AGC -10...+10dB
➤ RF power measurement:	60dB
➤ Status LED's:	OK, Fail
➤ Operating temperature:	0...45°C
➤ Storage temperature:	-20°C...70°C
➤ Humidity:	90% non-condensing
➤ RoHS:	Compliant

FLT XL-R optical redundant Transmitter L-Band

➤ Frequency range:	950...2150MHz
➤ RF Input level:	0dBm max.
➤ Frequency response:	±0,5dB typ. / ±1,0dB max.
➤ Return loss:	16dB (± VSWR: 1:1.38)
➤ IMA3 @ -10dBm:	< -60dBc
➤ Input noise floor:	> -133dBm/Hz (± C/N: 57dB min. @36MHz)
➤ Spurious free dyn. range:	109dB/Hz
➤ Operating wavelength:	1310nm
➤ Optical power / Connectors:	2dBm / E2000 or SC/APC* *upon request
➤ RF connectors:	50Ohm SMA (f) or 75Ohm F(f)
➤ Gain adjustment:	MGC/AGC -10...+10dB
➤ RF power measurement:	70dB
➤ Status LED's:	OK, Fail; Stand-by
➤ LNB supply:	13V, 18V & 22kHz, 400mA
➤ Operating temperature:	0...45°C
➤ Storage temperature:	-20°C...70°C
➤ Humidity:	90% non-condensing
➤ RoHS:	

FLRXI-R optical redundant Receiver, IF

➤ Frequency range:	10...200MHz
➤ Optical Input level:	0dBm max.
➤ Frequency response:	±0,5dB typ. / ±1,0dB max.
➤ Return loss:	18dB (± VSWR: 1:1.29)
➤ IMA3 @ -10dBm:	< -56dBc
➤ Noise floor:	> -133dBm/Hz (± C/N: 57dB min. @36MHz)
➤ Spurious free dyn. range:	109dB/Hz
➤ Operating wavelength:	1310 - 1560nm
➤ RF output power:	+10dBm
➤ RF / Optical connectors:	50Ohm SMA(f) or 75Ohm BNC(f) E 2000 or SC/APC*
➤ Gain adjustment:	MGC/AGC -10...+10dB
➤ RF power measurement:	60dB
➤ Status LED's:	OK, Fail; Stand-by
➤ Operating temperature:	0...45°C
➤ Storage temperature:	-20°C...70°C
➤ Humidity:	90% non-condensing
➤ RoHS:	Compliant

FLRXL-R optical redundant Receiver, L-Band

➤ Frequency range:	950...2150MHz
➤ Optical Input level:	+10dBm
➤ Frequency response:	±0,5dB typ./±1,0dB max.
➤ Return loss:	16dB (± VSWR: 1:1.38)
➤ IMA3 @ -10dBm:	< -60dBc
➤ Noise floor:	> -133dBm/Hz (± C/N: 57dB min. @36MHz)
➤ Spurious free dyn. range:	109dB/Hz
➤ Operating wavelength:	1310 - 1560nm
➤ RF output power:	+10dBm
➤ RF / Optical connectors:	50Ohm SMA(f) or 75Ohm F(f) E 2000 or SC/APC* (*upon request)
➤ Gain adjustment:	MGC/AGC -10...+10dB
➤ RF power measurement:	70dB
➤ Status LED's:	OK, Fail; Stand-by
➤ Operating temperature:	0...45°C
➤ Storage temperature:	-20°C...70°C
➤ Humidity:	90% non-condensing

FiberLink RF-over-Fiber series

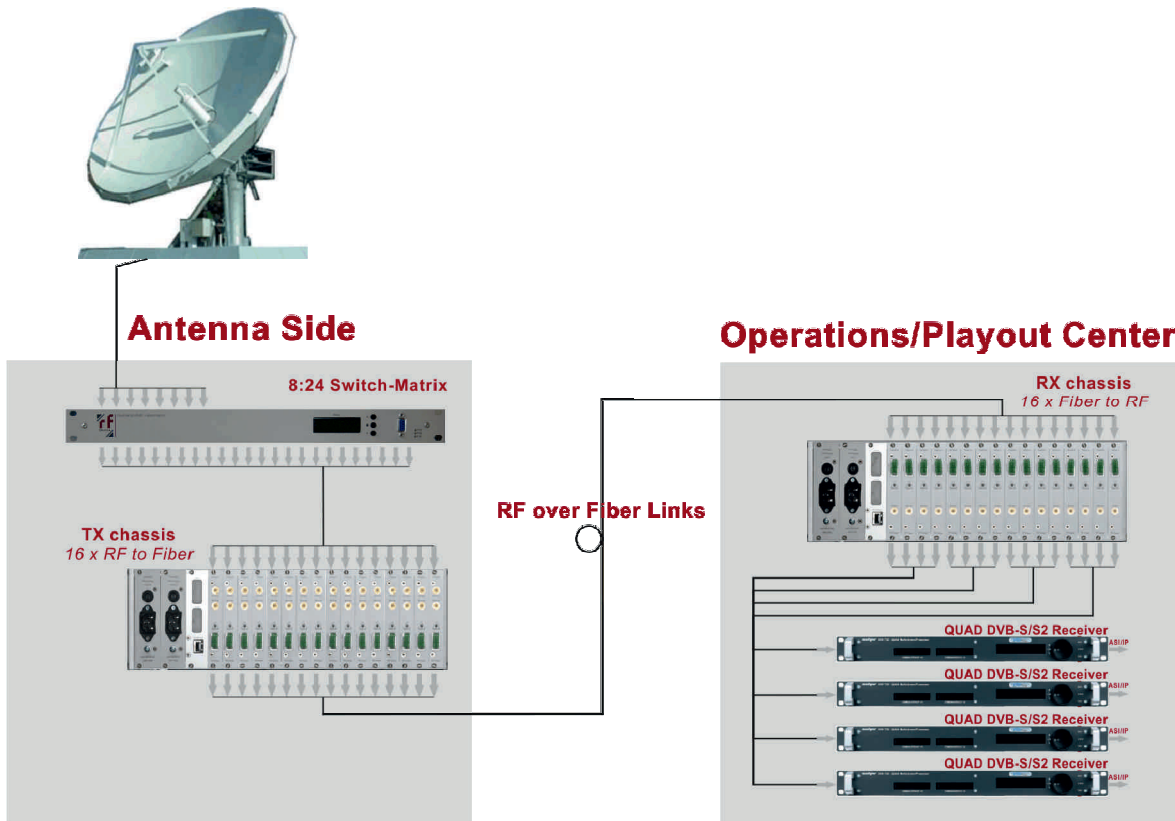
EcoLink, ProLink & RedLink optical transmission systems

Made
in
Germany

GENERAL

The FiberLink RF-over-Fiber series features various possibilities for efficient and high performance optical distribution of IF and L-Band signals. This system is ideally suited for the Satellite, broadcast and broadband communications industry and applicable for Teleports, Up- and downlink stations, broadcasting operations as well as cable- and IPTV RF-distribution infrastructures.

APPLICATION EXAMPLE



FEATURE TABLE

SYSTEM	1:1 redundant power-supply	1RU & Modular type design	Mixed configuration (IF & L-Band, TX & RX)	Laser/Link Monitoring	RF-power Monitoring	MGC/AGC (Gain adjust)	Threshold Monitoring	1:1 TX/RX Redundancy	LNB-supply	Local access/configuration	LC-Display/keypads	Status LED's	Remote access/configuration	Touchscreen LC-Display
EcoLink System	✓	✓	No	No	No	FTX2112EL Only	No	No	FTX2112EL Only	No	No	✓	No	No
ProLink System	✓	✓	✓	✓	✓	✓	✓	No	✓	✓	✓	✓	✓	✓
RedLink System	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓