QLink

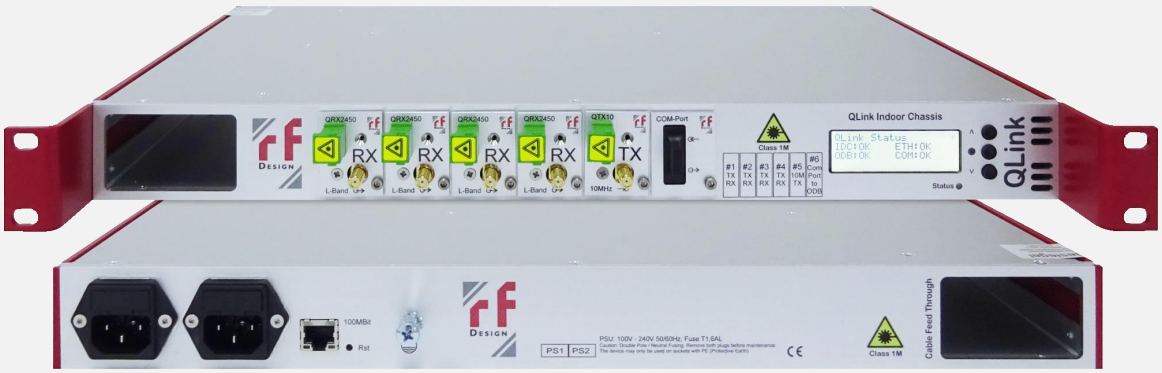
Modular Quad RF-over-Fiber System

The QLink system is a modular, compact and field expandable Quad RF-over-Fiber system. The outdoor enclosure and the indoor 1RU/19" rack mount chassis can each be populated with max. 4 optical TX and/or RX modules, also supporting mixed TX/RX population for secure and high-quality optical transmission of RF signals over a distance of up to 20km.

The system comes with beneficial features such as variable gain-control, RF power monitoring, laser/link monitoring, switchable LNB-supply and 1:1 redundant dual power supply. A 10MHz reference signal can be injected at the indoor chassis and is transmitted via an optical link to the outdoor chassis.

The QLink system supports local configuration and monitoring via front panel LC-Display/keypads and remote monitoring and configuration via Ethernet-Interface (WebGUI, SNMP). Remote management is supported for the overall QLink Quad RF-over-Fiber system while each of populated TX and/or RX modules can be configured and monitored individually as well.

The QLink system is a versatile, space and cost efficient outdoor to indoor optical transmission solutions perfectly suited for satellite uplink and downlink applications in Teleports, Satellite Earth Stations, VSAT hubs/terminals as well as Broadcast- and Broadband facilities.



FEATURES & BENEFITS

QLink Outdoor System

- Robust and weatherproof IP65 enclosure
- Direct mounting to antenna mast
- Max. 4 TX/RX modules and one 10MHz module
- Modular and field expandable
- Supports mixed TX/RX population
- Variable gain control
- RF power monitoring (@ TX & RX modules)
- LNB-supply 13/15/18V, 22kHz, 450mA max (@ TX module)
- Local and remote configuration & monitoring (WebGUI, SNMP)
- Laser, link, PSU & access status monitoring
- 1:1 redundant dual power supply
- Waterproof Connectors for all external cables

QLink Indoor System

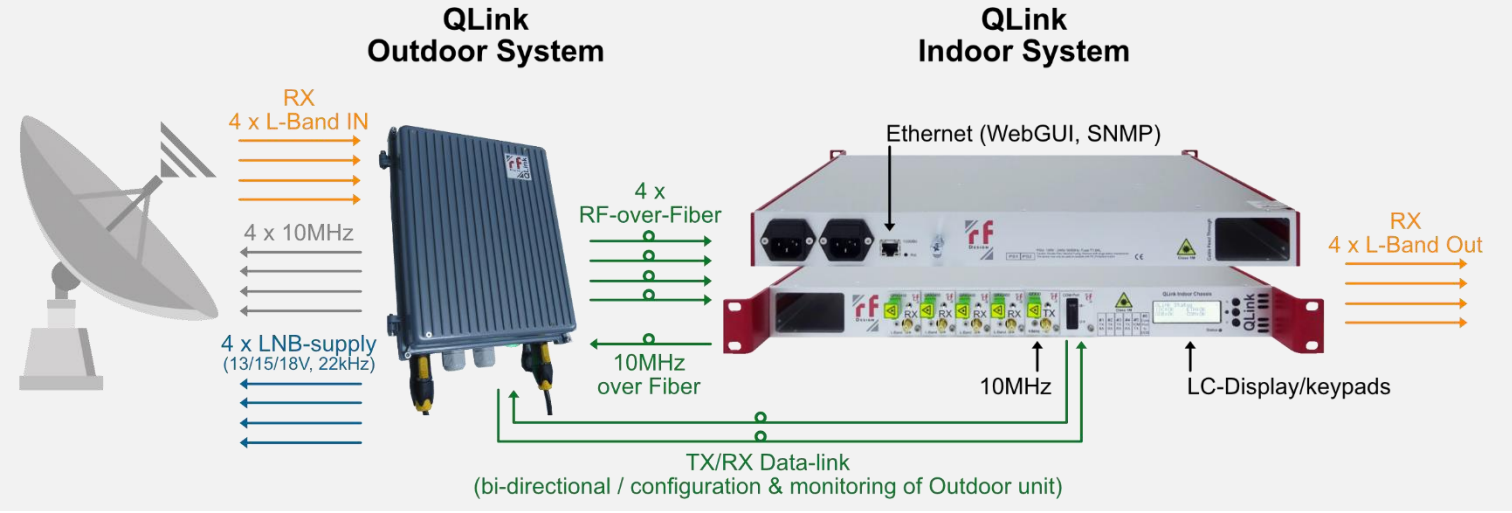
- Space saving 1RU/19" rack mount design
- Max. 4 TX/RX modules and one 10MHz module
- Modular and field expandable
- Supports mixed TX/RX population
- 10MHz external reference signal port
- Variable gain control
- RF power monitoring (@ TX & RX modules)
- Status LED´s for TX/RX modules
- Local & remote configuration & monitoring (WebGUI, SNMP)
- Laser, link, PSU & access status monitoring
- 1:1 redundant dual power supply

TECHNICAL SPECIFICATIONS

QLink Outdoor Box ODB4-50N	
Dimensions:	31 x 22 x 10 cm, Antenna mast-mount (includes mast-mount clamps)
Protection Rating:	IP65 specified
Power Supply:	85 – 265V, 50/60Hz, 1:1 redundant (via Neutrik Waterproof Connector), <20W
Frequency Range:	850 – 2450MHz (extended L-Band)
10MHz Reference:	Via 10MHz RX module (10MHz supplied from Indoor Chassis)
RF Connectors:	4 x 50Ohm N(f) – Internal TX/RX Modules with 50Ohm SMA(f)
TX/RX Module Capacity:	Max. 4 Extended L-Band TX/RX modules, 1 x 10MHz module
TX/RX Monitoring:	RF power monitoring, laser/link monitoring
Local Configuration:	Front panel LC-Display/keypads
Remote Configuration:	Via QLink Indoor Chassis (data-link connection)
Status Monitoring:	Green/Red Status LED
Operating Temperature:	-30°C to 55°C
Storage Temperature:	-30°C to 70°C
Humidity:	90%, non-condensing
RoHS:	Compliant

QLink Indoor Chassis IDC4S	
Dimensions:	1RU/19” rack mount, 260mm deep
Power Supply:	85 – 265V, 50/60Hz, 1:1 redundant (hot-swappable), <20W
Frequency Range:	850 – 2450MHz (extended L-Band)
10MHz Reference:	10MHz external reference signal port SMA(f) 50Ohm, TX via 1310nm DFB Laser +3dBm, SC/APC
RF Connectors L-Band:	50Ohm SMA(f) / 50Ohm BNC(f)*, 75Ohm F(f)*, 75Ohm BNC(f)*
TX/RX Module Capacity:	Max. 4 Extended L-Band TX/RX modules, 1 x 10MHz module
TX/RX Monitoring:	RF power monitoring, laser/link monitoring
Local Configuration:	Front panel LC-Display/keypads
Remote Configuration:	100MBit Ethernet-Interface (WebGUI, SNMPv2c)
Operating Temperature:	0°C to 45°C
Storage Temperature:	-10°C to 70°C
Humidity:	90%, non-condensing
RoHS:	Compliant

Functional Diagram 4 x TX and 4 x RX



TECHNICAL SPECIFICATIONS

QLink TX Module QTX2450-50S/-75F

Frequency Range:	850 – 2450MHz (extended L-Band)
10MHz Reference:	Injected in RF-Input (coming from 10MHz Link from Indoor Chassis)
Optical Output Connector:	SC/APC
RF Input Power Level:	+10dBm max. (damage level)
Frequency Response:	±0,5dB typ., ±1,0dB max.
RF-Input Connector:	50Ohm SMA(f) or 75Ohm F(f) (75Ohm F(f) at ODB4 needs 75Ohm Cabling Option)
Return Loss:	14dB typ.
Laser Type:	DFB with Isolator
Laser Class:	1M
Operating Wavelength:	1310nm ±5nm
Optical Output Power:	+3dBm min. (other settings upon request)
SFDR:	-107dB/Hz typ.
Variable Gain Control:	-10dB to +10dB (1dB steps)
Switchable LNB-Supply:	13/15/18VDC, 22kHz tone, 450mA max (current monitoring)
RF Power Monitoring:	60dB dynamic range
Operating Temperature:	-10°C to 45°C standard, -30°C to 55°C when operating within QLink Outdoor Box
Storage Temperature:	-10°C to 70°C standard, -30°C to 70°C when operating within QLink Outdoor Box
Humidity:	90%, non-condensing
RoHS:	Compliant

QLink RX Module QTR2450-50S/-75F

Frequency Range:	850 – 2450MHz (extended L-Band)
Optical Input Connector:	SC/APC
Optical Input Power Level:	-10dBm (min. optical sensitivity), +10dBm max. (damage level)
Frequency Response:	±0,5dB typ., ±1,0dB max.
RF Output Connector:	50Ohm SMA(f) or 75Ohm F(f) (75Ohm F(f) only for Indoor Chassis use)
Return Loss:	14dB typ.
Operating Wavelength:	1300nm – 1560nm
RF Output Power:	+5dBm max. (+10dBm max. damage level)
SFDR:	-107dB/Hz typ.
Variable Gain Control:	0 to +20dB (1dB steps)
RF Power Monitoring:	60dB dynamic range
Operating Temperature:	-10°C to 45°C standard, -30°C to 55°C when operating within QLink Outdoor Box
Storage Temperature:	-10°C to 70°C standard, -30°C to 70°C when operating within QLink Outdoor Box
Humidity:	90%, non-condensing
RoHS:	Compliant

ORDER INFORMATION (Bundle Configuration, fully assembled RFoFiber Systems)

Type*	Type-No.:	Outdoor TX Enclosure IP65 QLink-ODE-50N	Indoor chassis 1RU/19" rack mount QLink-IDC4
QLink O1R-I1T	9001203	1 x RX Extended L-Band	1 x TX Extended L-Band
QLink O1T1R-I1R1T	9001204	1 x TX, 1 x RX Extended L-Band	1 x RX, 1 x TX Extended L-Band
QLink O1T1R-I1R1T-75	9001205	1 x TX, 1 x RX Extended L-Band	1 x RX, 1 x TX Extended L-Band, 75Ohm F(f)
QLink O1T-I1R	9001206	1 x TX Extended L-Band	1 x RX Extended L-Band
QLink O2R-I2T	9001207	2 x RX Extended L-Band	2 x TX Extended L-Band
QLink O2T1R-I2R1T	9001208	2 x TX, 1 x RX Extended L-Band	2 x RX, 1 x TX Extended L-Band
QLink O2T2R-I2R2T	9001209	2 x TX, 2 x RX Extended L-Band	2 x RX, 2 x TX Extended L-Band
QLink O2T2R-I2R2T-75F	9001209	2 x TX, 2 x RX Extended L-Band	2 x RX, 2 x TX Extended L-Band, 75Ohm F(f)
QLink O2T-I2R	9001210	2 x TX Extended L-Band	2 x RX Extended L-Band
QLink O2T-I2R-75F	9001211	2 x TX Extended L-Band	2 x RX Extended L-Band, 75Ohm F(f)
QLink O4R-I4T	9001212	4 x RX Extended L-Band	4 x TX Extended L-Band
QLink O4T-I4R	9001213	4 x TX Extended L-Band	4 x RX Extended L-Band

Other configuration variants available upon request

QLink Outdoor Enclosure and Indoor Chassis

Type	Type-No.:	Short Description	Possible Modules swappable	Max. Qty. Links	RF Coax I/O Connectors
QLink-ODB4-50N	9001214	Quad Outdoor TX enclosure IP65 Max. 4 x TX/RX extended L-Band 1 x TX or RX 10MHz module 4 x RF coax I/O´s Remote configuration via data link 1:1 redundant dual power supply Including mast-mount clamps	n x QTX2450-50S n x QRX2450-50S n x QTX2450-75F* n x QRX2450-75F* 1 x QLink QRX10 or 1 x QLink QRT10 *Option 9001215 required	4	50Ohm N(f)
QLink-ODB4-75F-Option	9001215	F-Connector Option for 75Ohm Cabling at Outdoor box		4	75Ohm F(f)
QLink-ODB4-24V-Option	9001271	24V / 4A Power Box External for DC supply e.g. to BUC			
QLink-ODB4-48V-Option	9001272	48V / 2A Power Box External for DC supply e.g. to BUC			
QLink-IDC4	9001216	Indoor Chassis Max. 4 x TX/RX extended L-Band 1 x TX or RX 10MHz module 1RU/19" rack mount LC-Display/keypads Remote Interface to ODB4 Ethernet-Interf. (WebGUI, SNMP) 1:1 redundant dual power supply	n x QTX2450-50S n x QRX2450-50S n x QTX2450-75F n x QRX2450-75F 1 x QLink QRX10 or 1 x QLink QRT10	4	50Ohm SMA(f) 75Ohm F(f) Depends on module

QLink Optical TX/RX Modules

Type	Type-No.:	Short Description	Optical I/O Connector	RF-Connector
QTX10-50S 10MHz TX	9001220	Optical 10MHz TX module for QLink series, RF input 50Ohm SMA(f), Optical Output SC/PC	SC/APC	50Ohm SMA(f)
QRX10-50S 10MHz RX	9001219	Optical 10MHz RX module for QLink series, Optical input SC/APC, RF output 50Ohm SMA(f)	SC/APC	50Ohm SMA(f)
QTX2450-50S Ext. L-Band TX	9001223	Optical TX module for QLink series, extended L-Band 850 – 2450MHz, RF input 50Ohm SMA(f), Optical Output SC/PC, variable gain control, switchable LNB-supply, RF power monitoring	SC/APC	75Ohm F(f)
QTX2450-75F Ext. L-Band TX	9001217	Optical TX module for QLink series, extended L-Band 850 – 2450MHz, RF input 75Ohm F(f), Optical Output SC/PC, variable gain control, switchable LNB-supply, RF power monitoring	SC/APC	50Ohm SMA(f)
QRX2450-50S Ext. L-Band RX	9001224	Optical RX module for QLink series, extended L-Band 850 – 2450MHz, Optical Input SC/PC, RF output 50Ohm SMA(f), variable gain control, RF power monitoring	SC/APC	75Ohm F(f)
QRX2450-75F Ext. L-Band RX	9001218	Optical RX module for QLink series, extended L-Band 850...2450MHz, Optical Input SC/PC, RF output 75Ohm F(f), variable gain control, RF power monitoring	SC/APC	50Ohm SMA(f)
QRX-TTL-50S*	9001310	RX Module TTL Logic Levels on I/O, Unmodulated IRIG-B Transport, 1PPS Transport (1PPM also supported), Clock Rates up to 20 MHz, Optimization for Duty Cycle, Distortion (DCD), -20°C to +70°C Operating Temperature Range, 1310 nm	SC/APC	50Ohm SMA(f)
QTX-TTL-50S*	9001309	TX Module TTL Logic Levels on I/O, Unmodulated IRIG-B Transport, 1PPS Transport (1PPM also supported), Clock Rates up to 20 MHz, Optimization for Duty Cycle, Distortion (DCD), -20°C to +70°C Operating Temperature Range, 1310 nm	SC/APC	50Ohm SMA(f)
QTX2450-50S-HP Ext. L-Band TX	9001307	Optical TX module for QLink series, extended L-Band 850 – 2450MHz, RF input 50Ohm SMA(f), Optical Output SC/PC, variable gain control, high power input +20dBm max., RF power monitoring	SC/APC	50Ohm SMA(f)
LC/APC Adapter Option	9001314	Connector Option for LC/APC, must be ordered with every module	LC/APC	

*Only available for IDC4 Chassis, not for QLink-ODB4-50N; Populated instead COM Module.
For communication via fiber external Ethernet LAN/FO Converter is required for IDC4.

LAN over Fiber TXRX1GBit	9001308	1RU 19" chassis, Converts 1GBit TX/RX Ethernet/LAN to fiber. PSU85-230VAC	SC/APC	RJ45