



# FlexLink R25 Switch Matrix System

...designed for perfect signals



## Extended L-Band Switch Matrix System Eco and Pro Version 64:64

The FlexLink R25-Eco represents an unique, innovative & clever L-Band Switch Matrix system, built into a 3RU/5RU/19" rack mount chassis with only 500mm depth. It comes as scalable fan-out/distributive system allowing to switch/route any selected input to any or all outputs or fan-in/combining system enabling to switch/route various inputs to a dedicated output. The 3RU/5RU/19" chassis can be assembled with various input/output configurations from 4:4 to 64:64 (symmetrically & unsymmetrically)

The FlexLink R25 Switch Matrix system is a future proof solution coming with widened bandwidth supporting the extended L-Band (850 – 2450MHz) frequency range making it a perfect solution also for KA-Band and HTS applications.

This scalable Switch Matrix system offers a maximum in flexibility combined with state-of-the-art functionalities, features, excellent RF performance and various options. All matrix switch boards are hot-swappable and easy to replace without removing any cables.

The flexible modular design makes it possible to mix the input and output connectors with various connector types (50Ohm SMA or BNC, 75Ohm F or BNC as well as optical inputs) giving the operator the flexibility for future expansions.

The FlexLink R25-Eco features variable gain control & slope-equalization, RF power monitoring as well as a 10MHz reference signal port. Furthermore, it supports status monitoring of all active components and comes with 1:1 redundant dual power supply (hot-swappable). Additional flexibility is being provided via available options like switchable LNB-supply, individually selectable and configurable for each input.

Beyond its state-of-the-art and unique mechanical concept, all the functionalities and options the FlexLink R25-Eco also assures superior and stable RF performance at the highest quality level.



The FlexLink R25-Eco matrix system can be configured and monitored locally via its front-side 7/10.4" colored touchscreen. Remote configuration can be done via an Ethernet-Interface (WebGUI, SNMP). RF-Design's local and remote configuration platform for the FlexLink R25-Eco allows the configuration of all relevant matrix settings including routing/switching settings, cross point locking, signal-path backup routing with reverse switch-back, double back-up storage of all settings/configurations, variable gain control, slope-equalization and of course all available options (if activated).

The configuration software also supports user administration management and user rights assignment, logbook function, storage functions and various parameter-monitoring functions for critical RF values but also for each individual switch board, power supplies and ventilators.

The FlexLink R25-Eco is ideal for flexible signal assignment and perfectly suited for RF distribution applications in Teleports, Satellite Earth Stations as well as Broadcast and CATV/IPTV headend operations.

## FEATURES & BENEFITS

### Conceptual Features R25 5RU Version

- ▶ Space saving 5RU/19" modular rack mount design
- ▶ Extended L-Band frequency 850 – 2450MHz
- ▶ From 8:8 to up to 64:64 inputs/outputs within one chassis as fan-out/distributive and fan-in/combining systems
- ▶ Easy expandable with external components
- ▶ Coax inputs & outputs 50/75Ohm SMA(f), F(f) or BNC(f) or optical inputs and outputs (mixed input & output configuration)

- ▶ 10MHz reference signal port (rear side)\*
- ▶ Beneficial options such as switchable LNB-power
- ▶ Hot-swappable controller card and matrix switch boards
- ▶ 10.4" front-side touchscreen LC-Display for local configuration
- ▶ 1000MBit Ethernet-Interface (WebGUI, SNMPv2c)
- ▶ 1:1 redundant dual power supply (hot-swappable)
- ▶ 1:1 redundant dual controller card (hot-swappable)\*

*\* upon request only*

### Conceptual Features R25 3RU Version

- ▶ Space saving 3RU/19" modular rack mount design
- ▶ Extended L-Band frequency 850 – 2450MHz
- ▶ From 4:4 to up to 32:32 inputs/outputs within one chassis as fan-out/distributive and fan-in/combining systems
- ▶ Easy expandable with external components
- ▶ Coax inputs & outputs 50/75Ohm SMA(f), F(f) or BNC(f) or optical inputs and outputs (mixed input & output configuration)

- ▶ 10MHz reference signal port (rear side)\*
- ▶ Beneficial options such as switchable LNB-power
- ▶ Hot-swappable controller card and matrix switch boards
- ▶ 7" front-side touchscreen LC-Display for local configuration
- ▶ 1000MBit Ethernet-Interface (WebGUI, SNMPv2c)
- ▶ 1:1 redundant dual power supply (hot-swappable)
- ▶ 1:1 redundant dual controller card (hot-swappable)\*

*\* upon request only*

### Hardware & RF Features

- ▶ Variable gain control (@ any input)
- ▶ Slope-equalization (@ any input)
- ▶ Threshold alarming (local and remote signaling)
- ▶ RF power monitoring, dynamic range (@ any input/output)
- ▶ Internal monitoring of all active components
- ▶ Switching time is 50 ms

- ▶ Input connectors available as 50Ohm SMA or BNC, 75Ohm F or BNC or Optical-inputs 1110 – 1650nm increments of 8)
- ▶ Output connectors available as 50Ohm SMA or BNC, 75Ohm F or BNC (increments of 8)
- ▶ Superior RF performance especially @ Isolation and Frequency Response

### Software & Configuration Features

- ▶ Local and remote configuration for all relevant settings and adjustments
- ▶ Local configuration via 7/10.4" colored touchscreen LC-Display
- ▶ Remote configuration via 1000MBit Ethernet-Interface and RS232 (WebGUI, SNMPv2c)
- ▶ User administration with user rights management

- ▶ Cross point/routing locking for individual users
- ▶ Signal path backup routing with reverse switch-back
- ▶ Logbook and storage function
- ▶ Various parameter monitoring & error diagnosis functions for critical RF values, all switch boards, fan speed, psu´s...
- ▶ Save operation via double back-up storage for all settings

## TECHNICAL SPECIFICATIONS

### General Specifications 5RU Units

<b>Dimensions:</b>	5RU/19", 400mm deep, 45kg
<b>Switch Matrix Type:</b>	Fan-out/distributive & fan-in/combining
<b>Configuration Variants:</b>	8:8 – 64:64 (increments of 8), symmetrical & unsymmetrical
<b>Power Supply:</b>	85 – 230, 50/60Hz, 1:1 redundant (hot- swappable)
<b>Power Consumption:</b>	<350W (@64:64 configuration)
<b>Frequency Range:</b>	850 – 2450MHz (extended L-Band)
<b>Available I/O Connectors:</b>	50Ohm SMA(f), 50Ohm BNC(f), 75Ohm F(f), 75Ohm BNC(f)
<b>Optical Input Connectors:</b>	SC/APC, 1100...1650nm
<b>Variable Gain Control:</b>	-20dB to +10dB (1dB steps)
<b>Slope Equalization:</b>	0 to 7dB
<b>10MHz Reference*:</b>	50Ohm SMA(f)*, rear side
<b>RF Power Monitoring:</b>	65dB dynamic range
<b>Input Level Control:</b>	Monitoring threshold adjustment/alarming
<b>Local Configuration:</b>	10" Touchscreen LC-Display
<b>Remote Configuration:</b>	RJ45 Ethernet-Interface (WebGUI, SNMPv2c)
<b>Serial Interface:</b>	RS232*
<b>LNB-Supply/10MHz*:</b>	Switchable 13/15/18VDC, 22kHz tone, 400mA current monitoring*

\*Option

### General Specifications 3RU Units

<b>Dimensions:</b>	3RU/19", 400mm deep, 35kg
<b>Switch Matrix Type:</b>	Fan-out/distributive
<b>Configuration Variants:</b>	4:4 – 32:32 (increments of 4), symmetrical & unsymmetrical
<b>Power Supply:</b>	85 – 230, 50/60Hz, 1:1 redundant (hot- swappable)
<b>Power Consumption:</b>	<250W (@32:32 configuration)
<b>Frequency Range:</b>	850 – 2450MHz (extended L-Band)
<b>Available I/O Connectors:</b>	50Ohm SMA(f), 50Ohm BNC(f), 75Ohm F(f), 75Ohm BNC(f)
<b>Optical Input Connectors:</b>	SC/APC, 1100...1650nm
<b>Variable Gain Control:</b>	-20dB to +10dB (1dB steps)
<b>Slope Equalization:</b>	0 to 7dB
<b>10MHz Reference*:</b>	50Ohm SMA(f)*, rear side
<b>RF Power Monitoring:</b>	65dB dynamic range
<b>Input Level Control:</b>	Monitoring threshold adjustment/alarming
<b>Local Configuration:</b>	7" Touchscreen LC-Display
<b>Remote Configuration:</b>	RJ45 Ethernet-Interface (WebGUI, SNMPv2c)
<b>Serial Interface:</b>	RS232*
<b>LNB-Supply/10MHz*:</b>	Switchable 13/15/18VDC, 22kHz tone, 400mA current monitoring*

\*Option

## RF Specifications Distributive Matrix

<b>Frequency Range:</b>	850 – 2450MHz (extended L-Band)
<b>Frequency Response:</b>	± 2dB typ. ±3dB max. (@ Extended L-Band), ± 0,25dB max. (@ 40MHz window)
<b>Group Delay Variation (850-2450 MHz):</b>	±2 ns max.
<b>Group Delay Variation (Any width of 36 MHz):</b>	±0.5 ns max.
<b>Noise Figure:</b>	<12dB
<b>Input/Output Return Loss:</b>	14dB min., 16dB typ.
<b>Isolation:</b>	≥60dB typ. (In/In) ≥60dB typ. (In/Out) ≥60dB typ. (Out/Out)
<b>Operational Input Power:</b>	-70dBm to -10dBm nominal, 0dBm max. (Recommended)
<b>RF Input Power:</b>	+3dBm max. (damage level, depends on gain setting)
<b>RF Output Power:</b>	+8dBm max. (damage level, depends on gain setting)
<b>IMA3 @ -10dBm:</b>	<60dBc
<b>P1dB:</b>	+8dBm
<b>SFDR:</b>	< -80dBm

## RF Specifications Combining Matrix

<b>Frequency Range:</b>	850 – 2450MHz (extended L-Band)
<b>Frequency Response:</b>	± 2dB typ. ±3dB max. (@ Extended L-Band), ± 0,25dB max. (@ 40MHz window)
<b>Noise Figure:</b>	<16dB
<b>Input/Output Return Loss:</b>	14dB min., 16dB typ.
<b>Isolation:</b>	≥75B typ. (In/In) ≥60dB typ. (In/Out) ≥75dB typ. (Out/Out)
<b>Operational Input Power:</b>	-70dBm to -10dBm nominal, 0dBm max. (Recommended)
<b>RF Input Power:</b>	+6dBm max. (damage level, depends on gain setting)
<b>RF Output Power:</b>	+10dBm max. (damage level, depends on gain setting)
<b>IMA3 @ -10dBm:</b>	<50dBc
<b>P1dB:</b>	+12dBm
<b>SFDR:</b>	< -80dBm

## Optical Specifications (Unit with optical inputs)

<b>Fiber Type:</b>	Single mode 9/125
<b>Optical Input Connector:</b>	SC/APC
<b>Optical Wavelength:</b>	1100...1650nm
<b>Optical Input Power:</b>	-10dBm (min. optical sensitivity) to +10dBm max. (damage level)
<b>SFDR:</b>	-107dB/Hz typ.

## Environmental Specifications

<b>Location:</b>	Indoor use only
<b>Operating Temperature:</b>	0°C to 45°C
<b>Storage Temperature:</b>	-10°C to 65°C
<b>Humidity:</b>	90%, non-condensing



**ORDER INFORMATION**

Type	Type No.:	Short Description
FlexLink R25/5 Switch Matrix Main Chassis For custom configuration	9001289	FlexLink R25/5 Switch Matrix Chassis, 15 x internal Center Switch, CPU/LPC main controller, 10" touchscreen, RJ45 1Gbit Ethernet Interface (WebGUI, SNMP), 1:1 redundant dual power supply, 5RU/19" rack mount
FlexLink R25/3 Switch Matrix Main Chassis For custom configuration	9001290	FlexLink R25/3 Switch Matrix Chassis, 8 x internal Center Switch, CPU/LPC main controller, 7" touchscreen, RJ45 1Gbit Ethernet Interface (WebGUI, SNMP), 1:1 redundant dual power supply, 3RU/19" rack mount

**R25/5 - RF Switch Cards for Custom Configuration**

Type	Type No.:	Short Description
FlexLink R25 ISB0816D Input Switch Board 8:16	9001291	Input Switch Board, 8 x RF Input, extended L-Band 850 - 2450MHz, 50Ohm SMA(f)
FlexLink R25 OSB1608D Output Switch Board 16:8	9001292	Output Switch Board, 8 x RF Output, extended L-Band 850 - 2450MHz, 50Ohm SMA(f)
FlexLink R25 ISB0816DF Optical Input Switch Board 8:16	9001343	Optical Input Switch Board, 8 x RF Input, extended L-Band 850 - 2450MHz, SC/APC
FlexLink R25 OSB1608D Output Switch Board 16:8	9001345	Optical Output Switch Board, 8 x RF Output, extended L-Band 850 - 2450MHz, SC/APC
FlexLink R25 ISB0808C Input 8:8 Combiner Board	9001294	Input Combiner Switch Board, 8 x RF Input, extended L-Band 850 - 2450MHz, 50Ohm SMA
FlexLink R25 ISB0808CE Input 8:8 Combiner Expansion Board	9001331	Input Combiner Switch Board, 8 x RF Input, extended L-Band 850 - 2450MHz, 50Ohm SMA for System expansion
FlexLink R25 OCB1601C Output 16:1 Combiner Board	9001295	Output Combining Switch Board, 16 x RF Input to 1 output, extended L-Band 850 - 2450MHz, 50Ohm SMA
FlexLink R25 ISB0116D Input 1:16 Distribution Board	9001296	Input Distribution Switch Board, 1 x RF Input to 16 Outputs, extended L-Band 850 - 2450MHz, 50Ohm SMA

**R25/3 - RF Switch Cards for Custom Configuration**

Type	Type No.:	Short Description
FlexLink R25/3 ISB0408D Input Switch Board 4:8	9001341	Input Switch Board, 4 x RF Input, extended L-Band 850 - 2450MHz, 50Ohm SMA(f)
FlexLink R25/3 OSB0804D Output Switch Board 8:4	9001342	Output Switch Board, 4 x RF Output, extended L-Band 850 - 2450MHz, 50Ohm SMA(f)
FlexLink R25/3 ISB0408DF Input Switch Board 4:8	9001344	Optical Input Switch Board, 4 x RF Input, extended L-Band 850 - 2450MHz, 50Ohm SMA(f)
FlexLink R25/3 OSB0804DF Output Switch Board 8:4	9001346	Optical Output Switch Board, 4 x RF Output, extended L-Band 850 - 2450MHz, 50Ohm SMA(f)



**PRE-CONFIGURED SYSTEMS (fan-out/distributive)**

Type	Type No.:	Short Description
FlexLink R25/5-6464D-50S Switch Matrix 64:64 (fan-out/distributive) pre-configured	9001316	L-Band Switch Matrix 64:64 (distributive), 64:64, 50Ohm SMA(f), extended L-Band 850 - 2450MHz, 5RU/19" rack mount chassis, 1:1 redundant power supply, front panel touchscreen, RJ45 1000MBit (WebGUI, SNMP)
FlexLink R25/5-1632D-50S Switch Matrix 16:32 (fan-out/distributive) pre-configured	9001329	L-Band Switch Matrix 16:32 (distributive), 16:32 50Ohm SMA(f), extended L-Band 850 - 2450MHz, 5RU/19" rack mount chassis, 1:1 redundant power supply, front panel touchscreen, RJ45 1000MBit (WebGUI, SNMP)
FlexLink R25/5-16128D-50S Switch Matrix 16:128 (fan-out/distributive) pre-configured	9001297	L-Band Switch Matrix 16:128 (distributive), 50Ohm SMA(f), extended L-Band 850 - 2450MHz, 5RU/19" rack mount chassis, 1:1 redundant power supply, front panel touchscreen, RJ45 1000MBit (WebGUI, SNMP)
FlexLink R25/5-1664D-50B Switch Matrix 16:64 (fan-out/distributive) pre-configured	9001348	L-Band Switch Matrix 16:64 (distributive), 50Ohm BNC(f), extended L-Band 850 - 2450MHz, 5RU/19" rack mount chassis, 1:1 redundant power supply, front panel touchscreen, RJ45 1000MBit (WebGUI, SNMP)

**PRE-CONFIGURED SYSTEMS (fan-in/combining)**

Type	Type No.:	Short Description
FlexLink R25/3-3216C-50S Switch Matrix 32:16 (fan-in/combining) pre-configured	9001330	L-Band Switch Matrix 32:16 (combining), 32:16, 50Ohm SMA(f), extended L-Band 850 - 2450MHz, 3RU/19" rack mount chassis, 1:1 redundant power supply, front panel touchscreen, RJ45 1000MBit (WebGUI, SNMP)
FlexLink R25/3-12808C-50S Switch Matrix 128:8 (fan-in/combining) pre-configured	9001298	L-Band Switch Matrix 128:8 (combining), 50Ohm SMA(f), extended L-Band 850 - 2450MHz, 3RU/19" rack mount chassis, 1:1 redundant power supply, front panel touchscreen, RJ45 1000MBit (WebGUI, SNMP)
FlexLink R25/3-6408C-50B Switch Matrix 64:8 (fan-in/combining) pre-configured	9001347	L-Band Switch Matrix 64:8 (combining), 50Ohm BNC(f), extended L-Band 850 - 2450MHz, 3RU/19" rack mount chassis, 1:1 redundant power supply, front panel touchscreen, RJ45 1000MBit (WebGUI, SNMP)

*Other configuration on request / Other connectors on request*