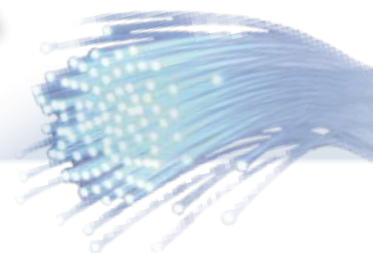
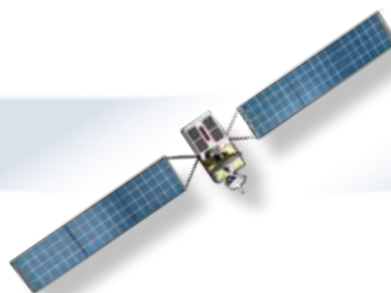




REDUNDANT HOT-SWAP RF Over FIBER LINK

EXTENDED BAND = 45 – 3000 MHz

RF Over FIBER
Series **ROF-X-X**



- Best Performance / Price / Space available
- Suited for HTS & Ka-band applications
- Fully Remote Operations / Configurations
- Alert NOCs / operators / engineer via Trap or Mail
- World wide reachable via SNMP & WEB
- Ideal for small & large Operators & Teleports

**INNOVATIVE
PERFORMANCE**

for: SYSTEM INTEGRATOR,
TELEPORT BROADCASTER,
CABLE NETWORK, GOVERNMENT
& MILITARY COMMUNICATIONS



 1972 > 2022 >>

MORE THAN 50 YEARS OF TECHNOLOGY INNOVATION

• ROF-X-X Benefit & Features	p. 4
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• Plug-in Modules Options	p. 20

This image shows a full-page view of a notebook or worksheet. At the top, there is a solid light blue horizontal band. Centered within this band is the word "NOTES" in a large, bold, red sans-serif font. Below the blue band, the rest of the page is white and filled with horizontal dashed lines, providing space for writing. The lines are evenly spaced and extend across the width of the page.

- Top quality RF-over-Fiber link (45-3000 MHz) with OMI Measure
- Outdoor and Indoor Chassis providing Built-in Redundant Configuration 1+1, 2+1, 3+1 or 4+1
- Front and Rear Ethernet plus 2 SFP Slots for Ethernet over Fiber allows perfect integration in any customer system
- All Optical RX & Optical TX modules are HOT-SWAPPABLE including Power Supply and Local Display Controller
- The ROF system can be Configured, Controlled and Monitored via the front panel Display Controller or via WEB GUI or SNMP
- All 3 Chassis are specially designed to allow mixed configurations TX + RX and support all the main Optical & RF Connectors
- Internal LNB Powering with minimum current alarms, can powering up-to 20 LNBs, 500 mA each

BENEFIT

- All HOT-SWAPP Module
- HOT-SWAPP 1+1, 2+1, 3+1, 4+1 Redundant Switch
- All OPTICAL Connections in the Front
- All RF Connections in the Rear
- Front accessible -20 dB RF Monitor Ports
- External or Internal LNB Powering with Current Monitoring
- OMI measurement
- Superior RF, OMI Linearity and Low Noise
- Suited for HTS & Ka-Band Applications

FEATURES

- 45-3000 MHz Frequency Range for HTS & Ka-Band
- DFB Laser, 1310 nm or 1550 nm, with End of Live Alarm
- Monitoring with Local Display Controller, SNMP & WEB-GUI
- LED Alarms RF-Laser-LNB, available in all front panel Modules
- RF & OPTICAL Power Sensor Monitor & Alarms
- 50 & 75 Ohm available with F, SMA, BNC, N, RF-Connectors
- SC-APC, FC-APC, LC-APC, E200 available Optic Connectors
- Fully Compatible with existing Systems
- Serve all Up-Link dedicated Requirements

INDOOR CHASSIS

mod. ROF-8-IU • 8+8 SLOTS



- 1 Unit 19" Rack Chassis
- Front Hot-Swap Slots:
 - Key Board display Controller with 1 Copper Ethernet LAN
 - Indoor Redundant Power Supply
 - Up to 8 Optical RX or TX Module
- Rear Slot and Connections
 - RF Conn. Impedance Adapt. or 1/2/3/4+1 Redundant switch
 - Hot-Swap Fan
 - 1 Copper Ethernet LAN
 - 2 SFP for Ethernet over Fiber
 - SUB-D9 Dry contact Alarm & Remote Reset

mod. ROF-20-IU • 20+20 SLOTS



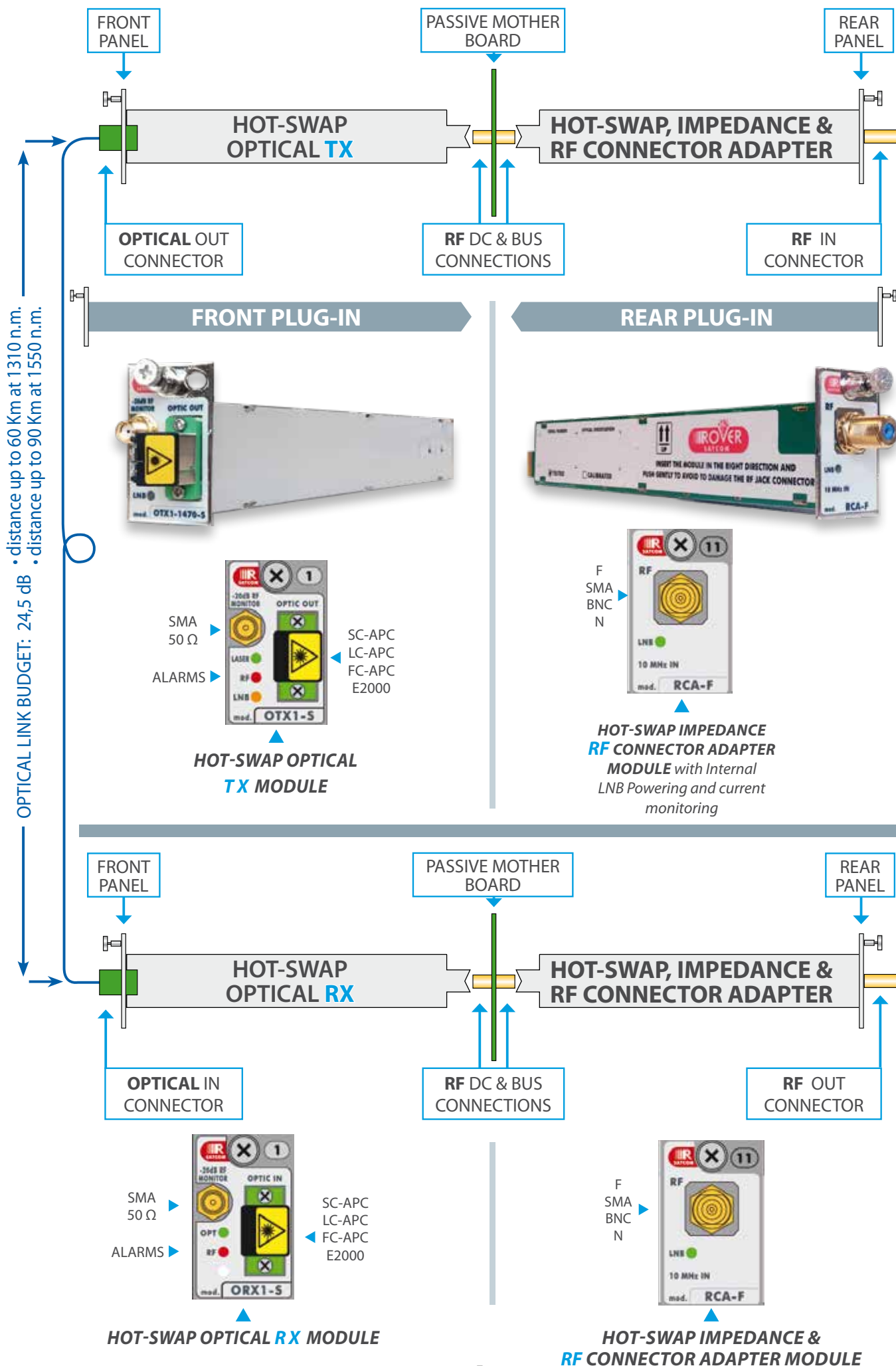
- 2 Unit 19" Rack Chassis
- Front Hot-Swap Slots:
 - Key Board display Controller with 1 Copper Ethernet LAN
 - Indoor Redundant Power Supply
 - Up to 20 Optical RX or TX Module
- Rear Slot and Connections
 - RF Conn. Impedance Adapt. or 1/2/3/4+1 Redundant switch
 - Hot-Swap Fan
 - 1 Copper Ethernet LAN
 - 2 SFP for Ethernet over Fiber
 - SUB-D9 Dry contact Alarm & Remote Reset

OUTDOOR CHASSIS

mod. ROF-20-OU • 20+20 SLOTS

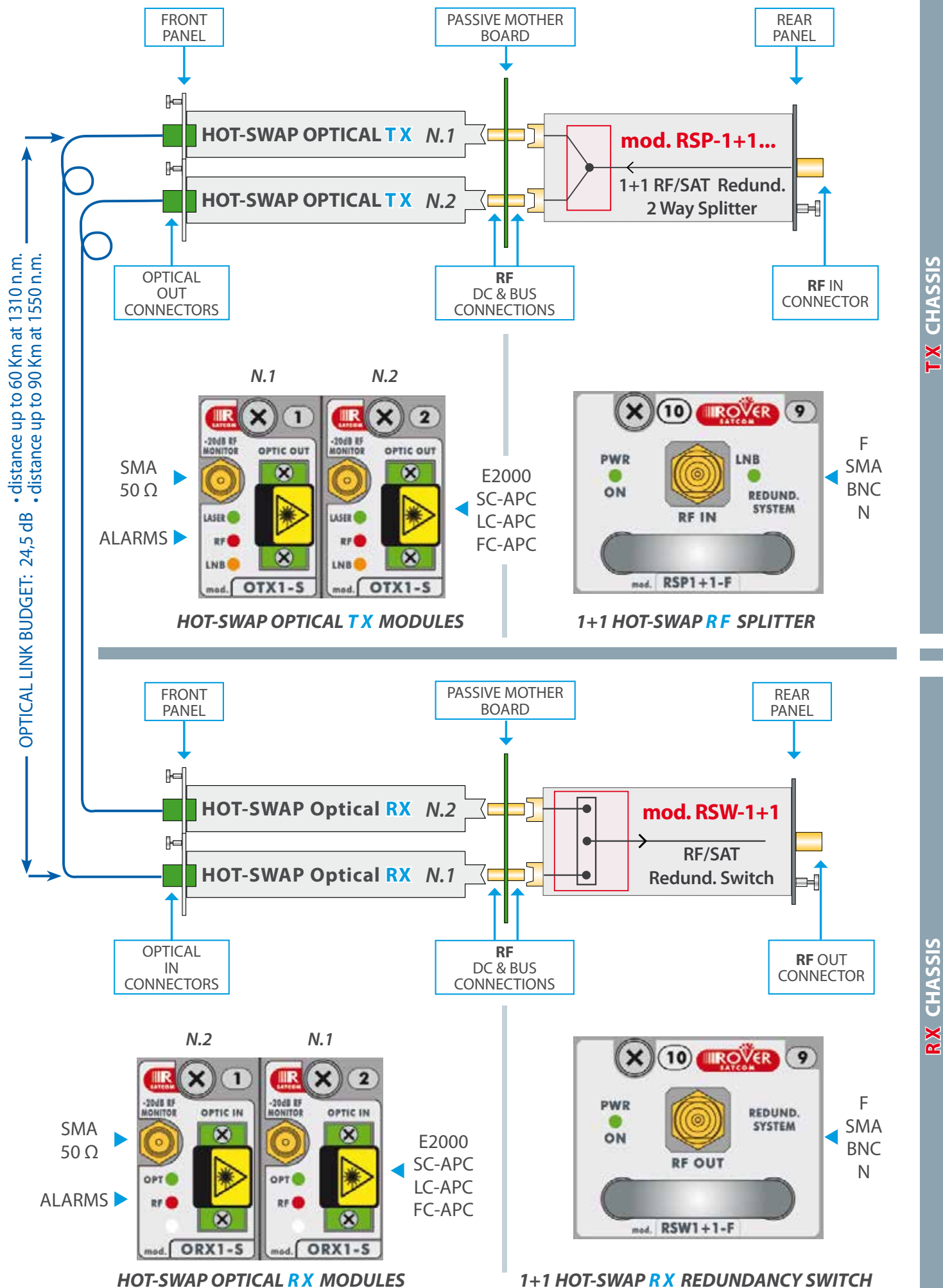
- 6 Unit 17" Rack Chassis
- Front Hot-Swap Slots:
 - Key Board display Controller with 1 Copper Ethernet LAN
 - Indoor Redundant Power Supply
 - Up to 20 Optical RX or TX Module
- Rear Slot and Connections
 - RF Conn. Impedance Adapt. or 1/2/3/4+1 Redundant switch
 - Hot-Swap Fan
 - 1 Copper Ethernet LAN
 - 2 SFP for Ethernet over Fiber
 - SUB-D9 Dry contact Alarm & Remote Reset
- Optical Patch Panel & RF patch Panel (opt.)
- De-Icing & sun shade (opt.)

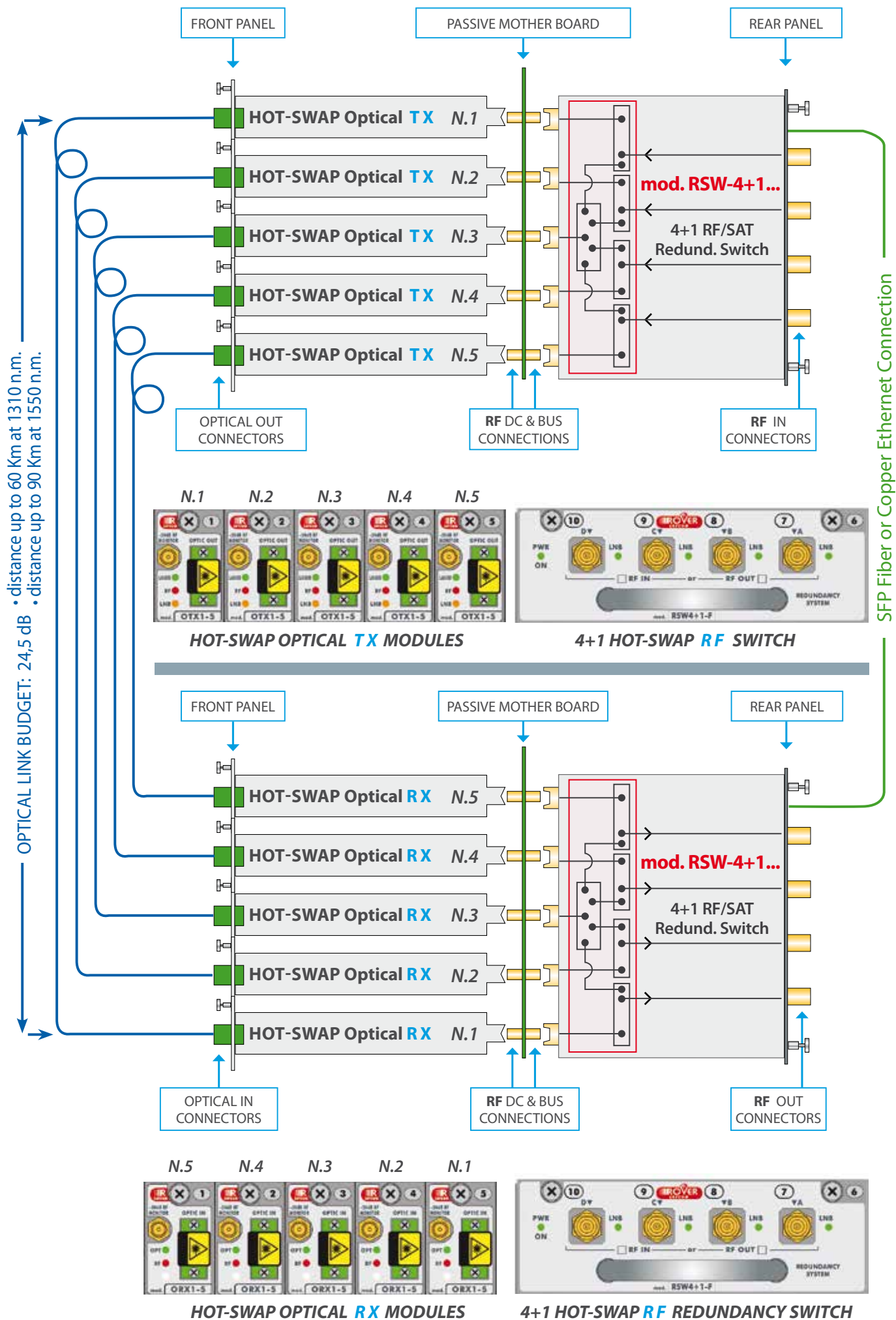




TX CHASSIS

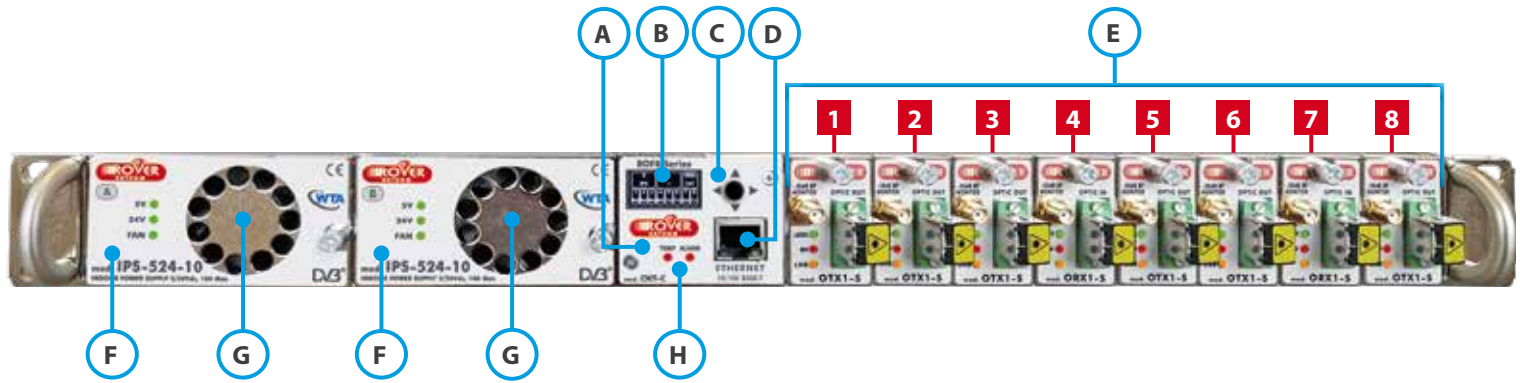
RX CHASSIS





TX CHASSIS

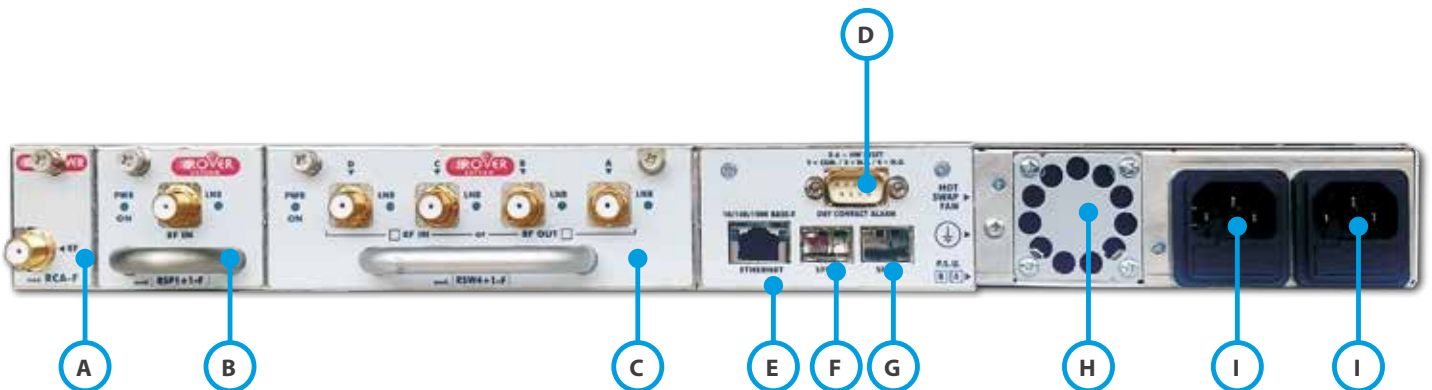
RX CHASSIS



- A. Hot-Plug Controller Module
- B. Oled Display
- C. Keypad
- D. Ethernet Connector (opt.)

- E. 8 Slot for Hot-swap Optical TX or RX Modules
- F. Hot-Swap Indoor Power Supply Module
- G. Built-In Fan
- H. TEMP & ALARM Leds

ROF-8 REAR PANEL DESCRIPTIONS



- A. Slot for Hot-Swap RF Connector Adapter Modules with Internal or External LNB Powering (1 slot)
- B. 1+1 RF Redundant Switching Module (2 slots)
- C. 4+1 RF Redundant Switching Module (5 slots)
- D. Sub-D Dry 9 Contact Alarm and Remote Reset

- E. Copper Ethernet Connector 10/100/1000 BASE-T
- F. SFP 1 Slot for Ethernet over Fiber
- G. SFP 2 Slot for Ethernet over Fiber
- H. Swappable Chassis Fan
- I. Mains and Fuse Receptacle

ADJUSTABLE RACK HANDLE POSITION



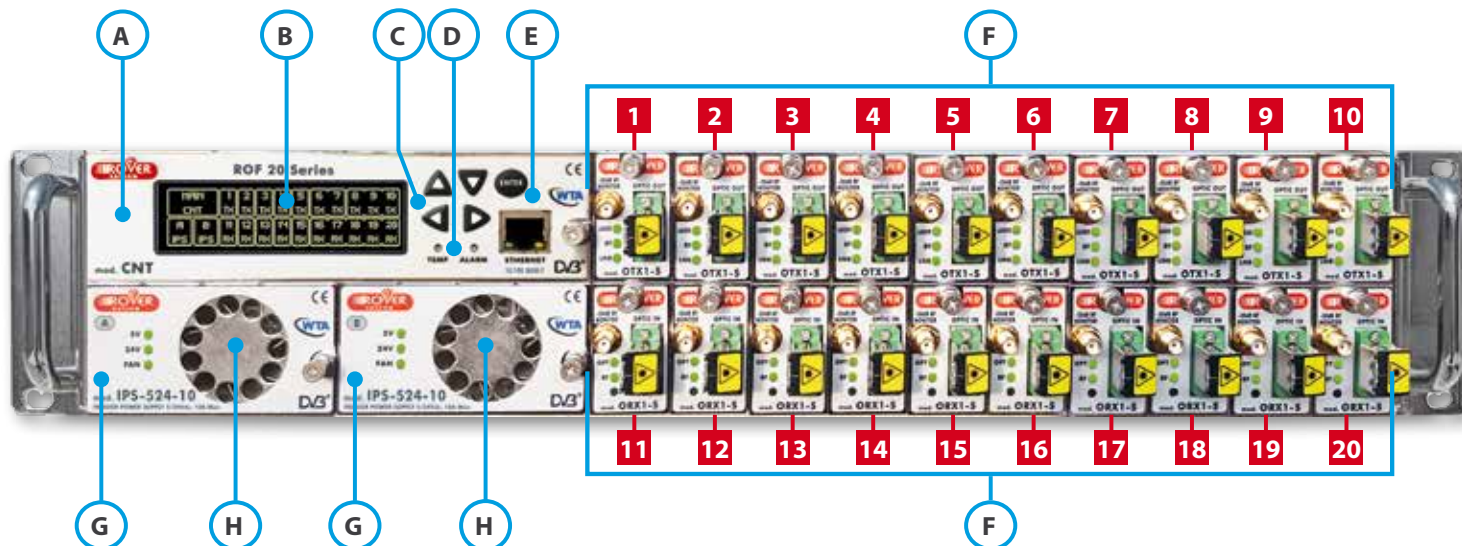
Handle: external to the Front Panel
(Position suggested to protect the Front Optical Connectors)



Handle: aligned to the Front Panel

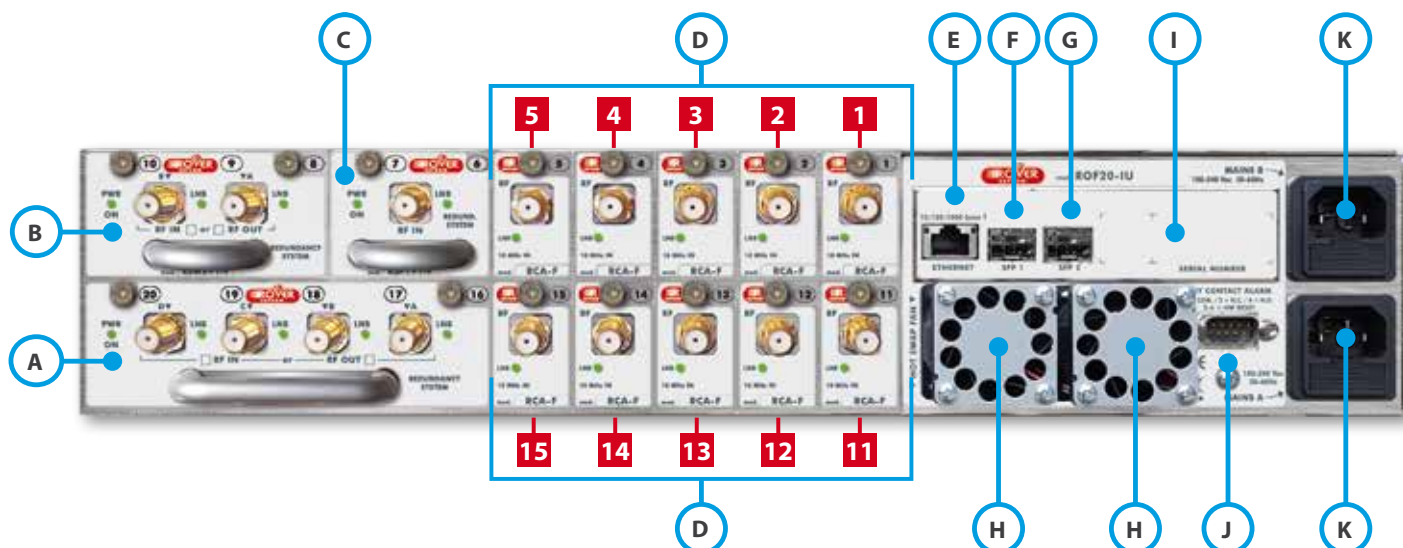


Handle: internal to the Front Panel



- A. Hot-Plug Controller Module
- B. Oled Display
- C. Keypad
- D. TEMP & ALARM Leds
- E. Ethernet Connector (opt.)
- F. 20 Slot for Hot-swap Optical TX or RX Modules
- G. Hot-Swap Indoor Power Supply Module
- H. Built-In Fan

ROF-20 REAR PANEL DESCRIPTIONS



- A. 4+1 RF Redundant Switching Module (5 slots)
- B. 2+1 RF Redundant Switching Module (3 slots)
- C. 1+1 RF Redundant Switching Module (2 slots)
- D. 10 Slots for Hot-Swap RF Connector Adapter Modules with Internal or External LNB Powering (1 slot)
- E. Copper Ethernet Connector 10/100/1000 BASE-T
- F. SFP 1 Slot for Ethernet over Fiber
- G. SFP 2 Slot for Ethernet over Fiber
- H. Swappable Chassis Fan
- I. Serial Number
- J. Sub-D Dry 9 Contact Alarm and Remote Reset
- K. Mains and Fuse Receptacle

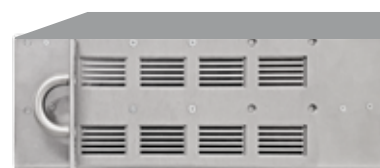
ADJUSTABLE RACK HANDLE POSITION



Handle: external to the Front Panel
(Position suggested to protect the Front Optical Connectors)



Handle: aligned to the Front Panel



Handle: internal to the Front Panel

mod. OTX1-x (Hot-Swap Optical TX Module)

RF	
• Frequency range :	50-3000 MHz
• Full Range Flatness :	1 dB typ. 1,5 Max
• 36 MHz Flatness :	0,25 dB
• RF Connector (via RCA adapter) :	F-SMA-BNC-N
• Return Loss (to RCA adapter) :	16 dB typ.
• Noise Figure :	9 dB typ. Max 10 at Max Gain
• IMD :	50 dBc with 2 tones at -10 dBm
• IP1 :	+ 8 dBm (RMS) (at minimum Gain)
• RF Input Monitor port (front panel) :	- 20 dB (SMA)
• RF Input Power Sensor Alarm :	- 55 to +6 dBm (RMS)
• RF Input Power Range :	- 55 to 0 dBm (RMS)
• RF Damage Input Level :	+15 dBm (RMS)
• RF Adjustable gain :	Manual 45 dB (AGC 3 dB Max, around the adjusted manual Gain Value)
• RF Gain Stability :	24 h 0,25 dB (over temp. range 2 dB)

LNB^s

• Internal LNB Powering (via RCA adapter) :	0, 13, 18 (24) V, 22 KHz, 500 mA
• LNB Current Monitoring and Alarm :	from Internal PSU

OPTICAL

• OMI (Optical Modulation Index):	Automatic Measure
• Power output :	+ 4,5 dBm typ.
• Wavelength :	1310 n.m./1550 n.m. ± 20 n.m.
• Connectors :	E2000, SC-APC, LC-APC, FC-APC Single Mode Fiber
• Laser :	DFB, Class 1M (opt. CWDM)
• Transmission distance :	60 Km at 1310 n.m. or 90 Km at 1550 n.m.

POWER SUPPLY

• Voltage :	5 & 24 Vdc (from Mainframe chassis)
• Current :	400 mA

ALARMS

• Over Temperature:	Led, Display, SNMP, WEB GUI
• Optical Power :	Led, Display, SNMP, WEB GUI
• Laser End of Life :	Led, Display, SNMP, WEB GUI
• RF Input Power (RMS) :	Led, Display, SNMP, WEB GUI
• LNB Powering Current :	Led, Display, SNMP, WEB GUI
• PSU Redundant Failure :	Led, Display, SNMP, WEB GUI

mod. ORX1-x (Hot-Swap Optical RX Module)

RF	
• Frequency range :	50-3000 MHz
• Frequency Range Flatness :	1 dB typ. 1,5 Max
• 36 MHz Flatness :	0,25 dB
• RF Connector (via RCA adapter) :	F-SMA-BNC-N
• Return Loss (to RCA adapter) :	16 dB typ.
• IMD :	50 dBc with 2 Tone at - 10 dBm
• OP1 :	+ 20 dBm (RMS)
• RF Output Monitor port (front panel) :	- 20 dB (SMA)
• RF Output Power Sensor Alarm :	- 55 to + 6 dBm (RMS)
• RF Output Power Range :	- 55 to + 6 dBm (RMS)
• RF Adjustable gain :	Manual 45 dB (AGC 3 dB Max around the Adjusted Manual Gain Value)
• RF Gain Stability :	(24h = ±0,25 dB) (over Temperature range = 2 dB)

OPTICAL

• Input Power measurement range :	- 30 to + 6 dBm
• Input Power sensitivity range :	- 20 to + 6 dBm
• Wavelength :	1.100 to 1.650 n.m.
• Connectors :	E2000, SC-APC, LC-APC, FC-APC Single Mode Fiber
• Fotodiode :	PIN

POWER SUPPLY

• Voltage :	5 & 24 Vdc (from Mainframe Chassis)
• Current :	300 mA

ALARMS

• Optical Power :	Led, Display, SNMP, WEB GUI
• RF Power Sensor :	Led, Display, SNMP, WEB GUI

FULL LINK TX + RX

• Total Gain Adjust. :	Max 90 dB	• P1 dB at Min. gain :	0 dBm
• Noise at Max. gain :	9 dB typ.	• P1 dB at Max. gain :	+ 20 dBm
• Noise at Min. gain :	15 dB typ.	• SFDR at Max. gain :	120 dBc/Hz - 2/3
• Dynamic Range at 500 MHz traffic :	87 dB		

TEMPERATURE RANGE

• Operating :	- 10 to + 50 ° Celsius
• Max (no condensing) :	- 20 to + 60 ° Celsius

mod. RCA-x (Hot-Swap RF Connector Adapter Module with Internal LNB Powering)

- RCA-F : RF "F" Female Connector
- RCA-S : RF "SMA" Female Connector
- RCA-B : RF "BNC 50 Ω " Female Connector
- RCA-N : RF "N50 Ω " Female Connector

mod. RSW1+1 (1+1 Hot-Swap Redundancy Switch Module)

- 2 Way RF Output Switch (50-3000 MHz)
- "F" Output Connectors (opt. SMA-BNC-N)
- Automatic or Remote Manual Control

mod. RSP1+1 (1+1 Hot-Swap Redundancy Splitter Module)

- 2 Way RF Input Splitter (250-2350 MHz or 5-3000 MHz)
- "F" Input Connector (opt. SMA-BNC-N)
- Insertion LOSS = 5 dB

mod. RSW2+1 (2+1 Hot-Swap Redundancy Splitter Module)

- 3 Way RF Input or Output Switch (50-3000 MHz)
- "F" Input or Output Connectors (opt. SMA-BNC-N)
- Automatic or Remote Manual Control

mod. RSW3+1 (3+1 Hot-Swap Redundancy Splitter Module)

- 4 Way RF Input or Output Switch (50-3000 MHz)
- "F" Input or Output Connectors (opt. SMA-BNC-N)
- Automatic or Remote Manual Control

mod. RSW4+1 (4+1 Hot-Swap Redundancy Splitter Module)

- 5 Way RF Input or Output Switch (50-3000 MHz)
- "F" Input or Output Connectors (opt. SMA-BNC-N)
- Automatic or Remote Manual Control

mod. IPS-524 (INDOOR Hot-Swap Dual Voltage 5+24 Vdc PSU)

- Input voltage : 100 to 240 Vac
- Output voltage : 5 V and 24 V
- Max Output Current : 10 A
- Alarm : Led, Display, SNMP, WEB GUI
- Fan : High Speed with alarm

mod. OPS-524 (OUTDOOR Hot-Swap Dual Voltage PSU Module)

- Input voltage : 100 to 240 Vac
- Output voltage : 5 V and 24 V
- Max Output Current : 10 A
- Alarm : Led, Display, SNMP, WEB GUI
- Fan : High Speed with alarm

mod. CNT (Plug-In Display Key Board Controller Module)

- Operational : Local or Remote SNMP, WEB GUI
- Connectivity : Front and Rear Copper & Fiber Ethernet LAN (opt.)
- Display : Oled type

mod. ROF-8-INDOOR CHASSIS (N.1 Unit 19" Rack)

- Slot capacity : N. 10 Front and N. 11 Rear
- Rear Connectivity : 1 Copper Ether. LAN + 1 Fiber SFP Ether. LAN
- Dry Contact Alarms : SUB-D9 connector

mod. ROF-20-INDOOR CHASSIS (N.2 Unit 19" Rack)

- Slot capacity : N. 23 Front and N. 20 Rear
- Rear Connectivity : 1 Copper Ether. LAN + 2 Fiber SFP Ether. LAN
- Dry Contact Alarms & Remote Reset : ... SUB-D9 connector

mod. ROF-20-OUTDOOR CHASSIS (N.6 Unit 17" Rack)

- Slot capacity : N. 27 all Front
- Connectivity : 1 Copper Ether. LAN + 2 Fiber SFP Ether. LAN
- Dry Contact Alarms & Remote Reset : SUB-D9 connector

GENERAL SPECIFICATIONS

- TEMPERATURE Range: -30 to + 55° C (operating)
- UMIDITY: 90% not condensed

mod. ROF-8-IU • PHYLOSOPHY & CAPABILITY • Optical RX side example

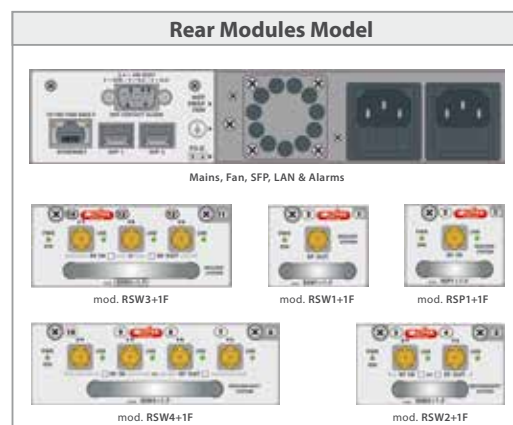
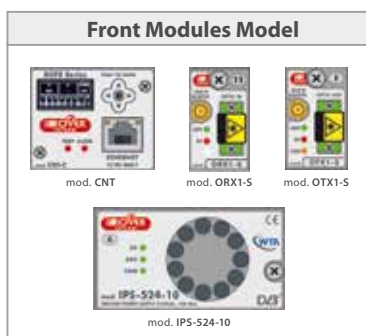
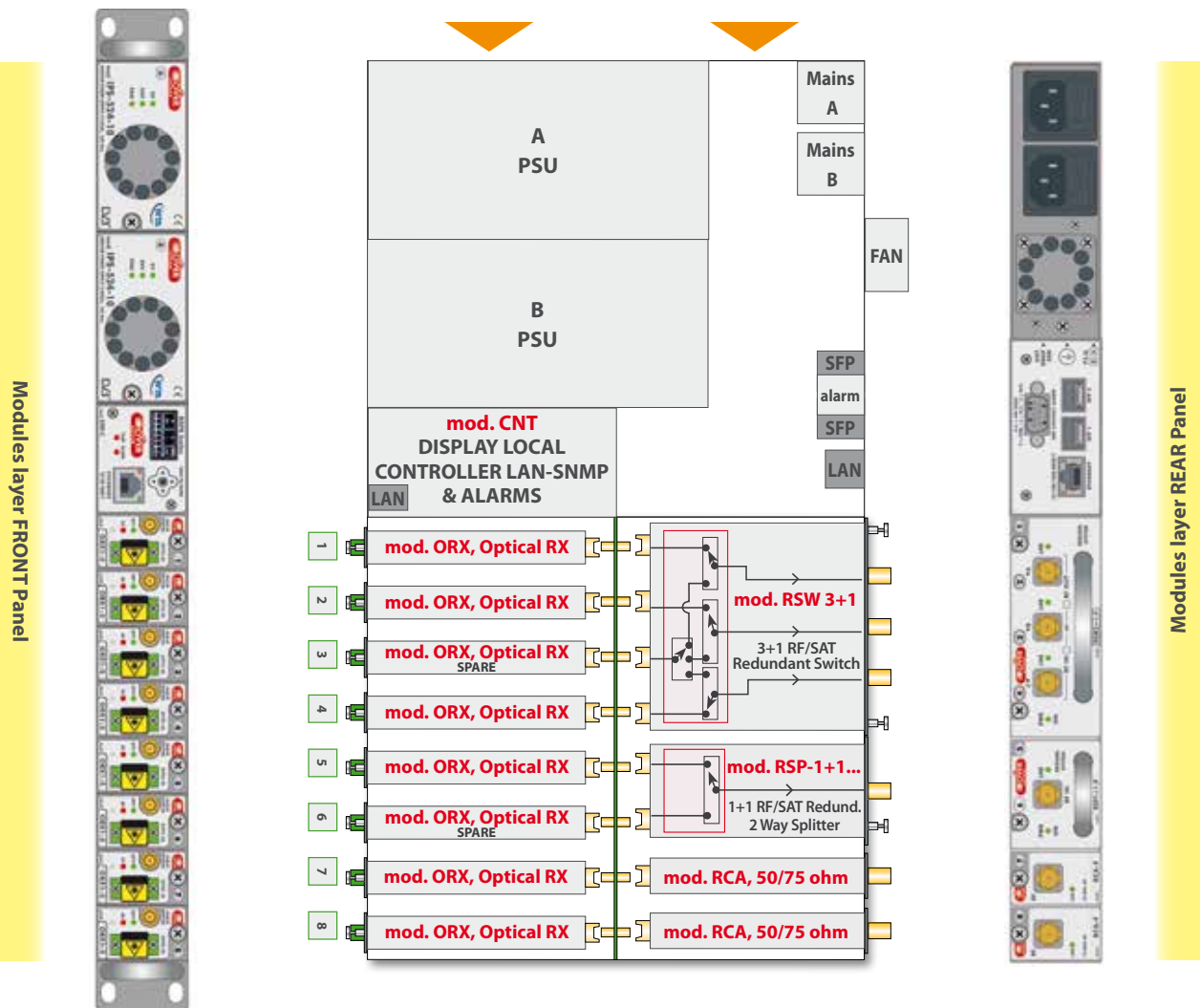
Hot-swapp Modules Configuration list:

- | | |
|---|---|
| <ul style="list-style-type: none"> N. 1 mod. ROF-8-IU Mainframe N. 1 mod. CNT Display Controller N. 2 mod. PSU-5-24 N. 8 mod. ORX | <ul style="list-style-type: none"> N. 1 mod. RSW-3+1 N. 1 mod. RSW-1+1 N. 2 mod. RCA |
|---|---|

OPTIC OUTPUT
SC/FC/LC/E2000

RF/SAT INTERFACE
SMB - 50 ohm

RF/SAT INPUT
BNC/F 75 ohm
SMA/N 50 ohm



mod. ROF-8-IU • PHYLOSOPHY & CAPABILITY • Mixed Optical TX & RX example

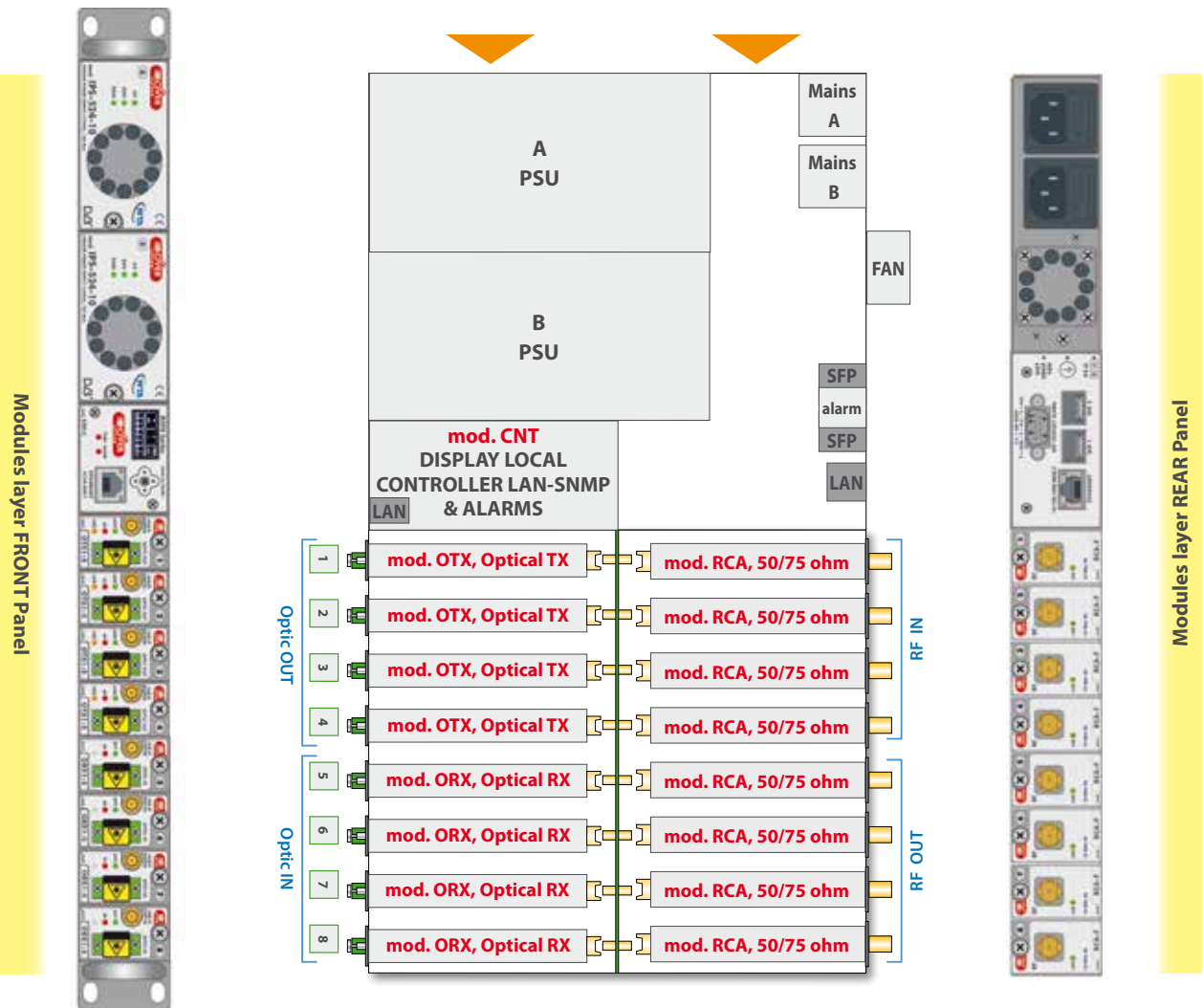
Hot-swapp Modules Configuration list:

- | | |
|--|---|
| <ul style="list-style-type: none"> N. 1 mod. ROF-8-IU Mainframe N. 1 mod. CNT Display Controller N. 2 mod. PSU-5-24 N. 4 mod. OTX N. 4 mod. ORX | <ul style="list-style-type: none"> N. 8 mod. RCA |
|--|---|

OPTIC IN & OUT
SC/FC/LC/E2000

RF/SAT INTERFACE
SMB - 50 ohm

RF/SAT IN & OUT
BNC/F 75 ohm
SMA/N 50 ohm



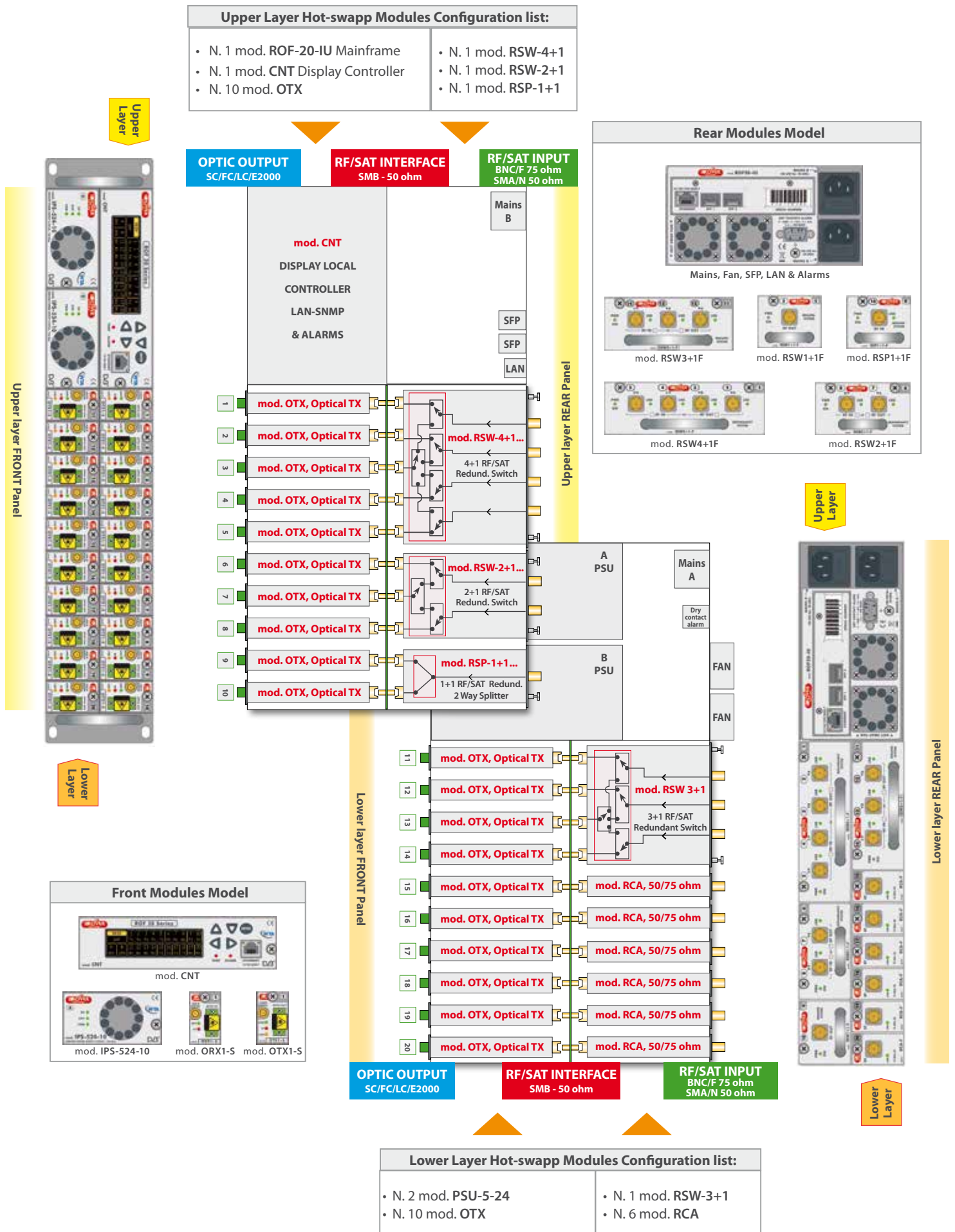
Front Modules Model



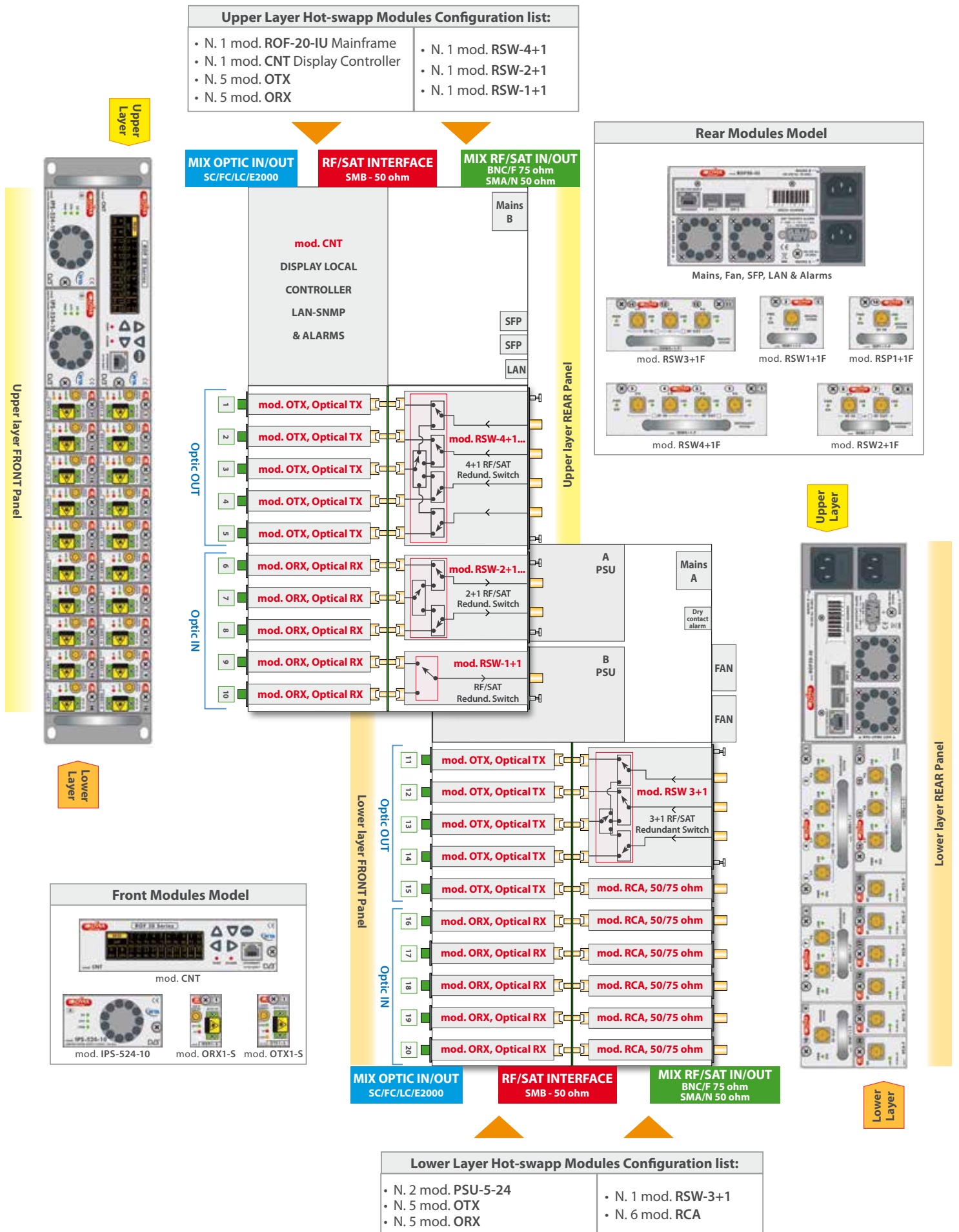
Rear Modules Model



mod. ROF-20-IU • PHILOSOPHY & CAPABILITY • Optical TX side example

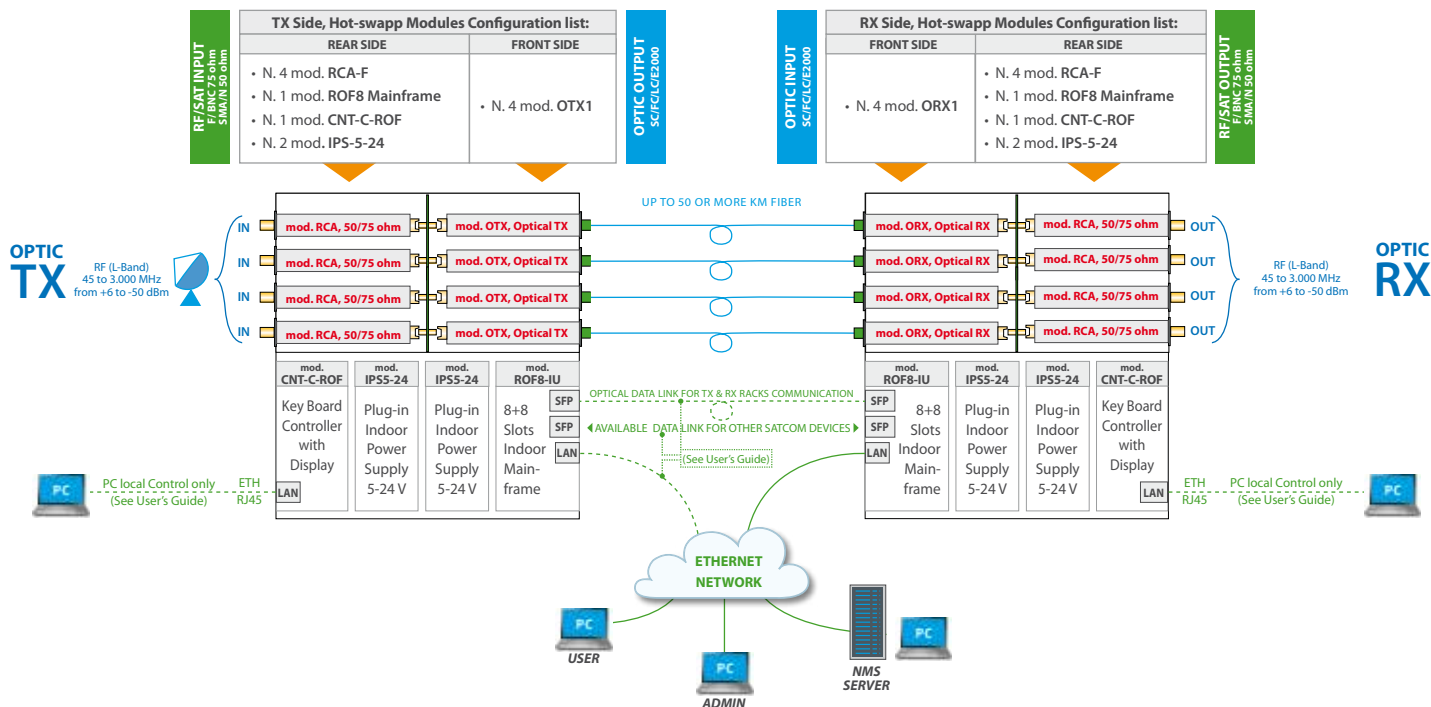


mod. ROF-20-IU • PHYLOSOPHY & CAPABILITY • Mixed Optical TX & RX links

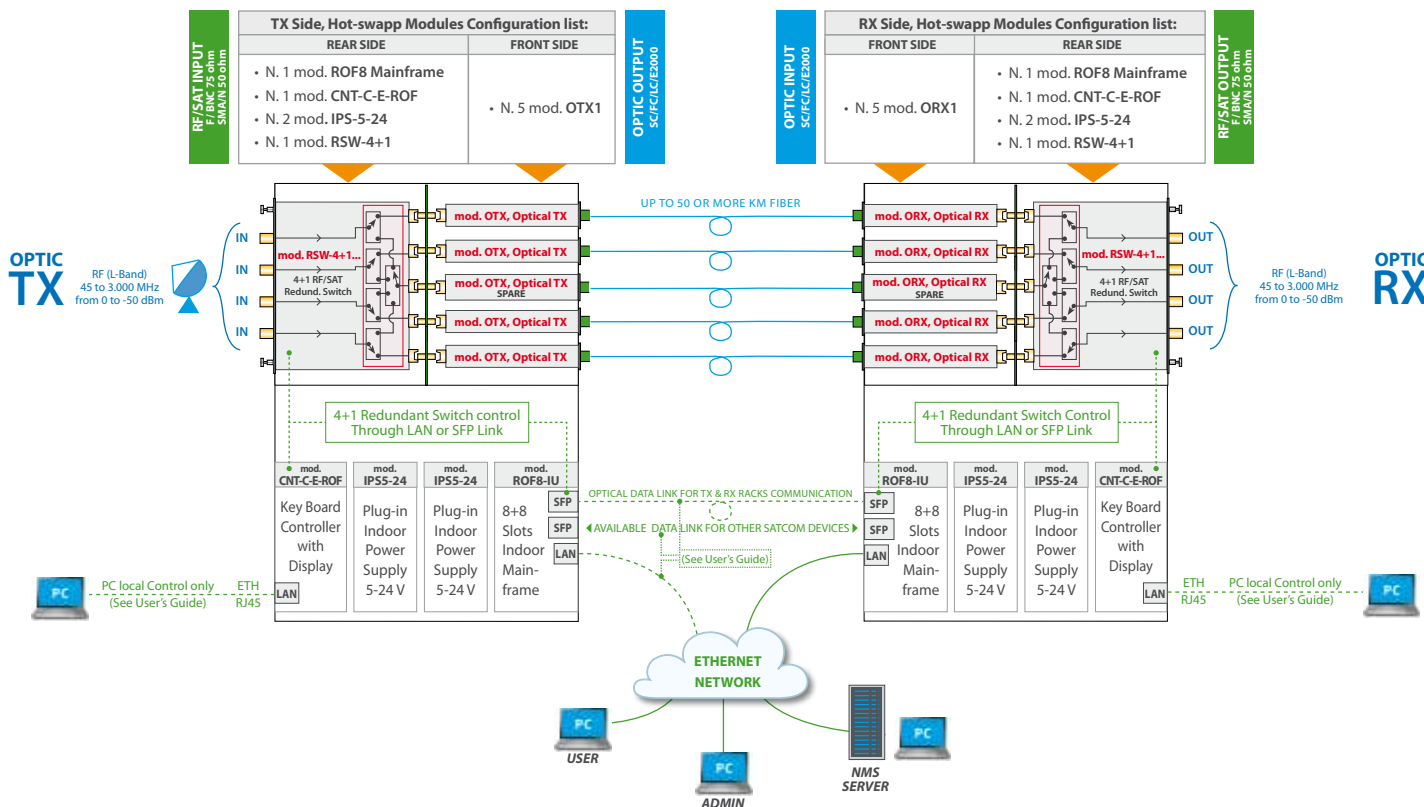




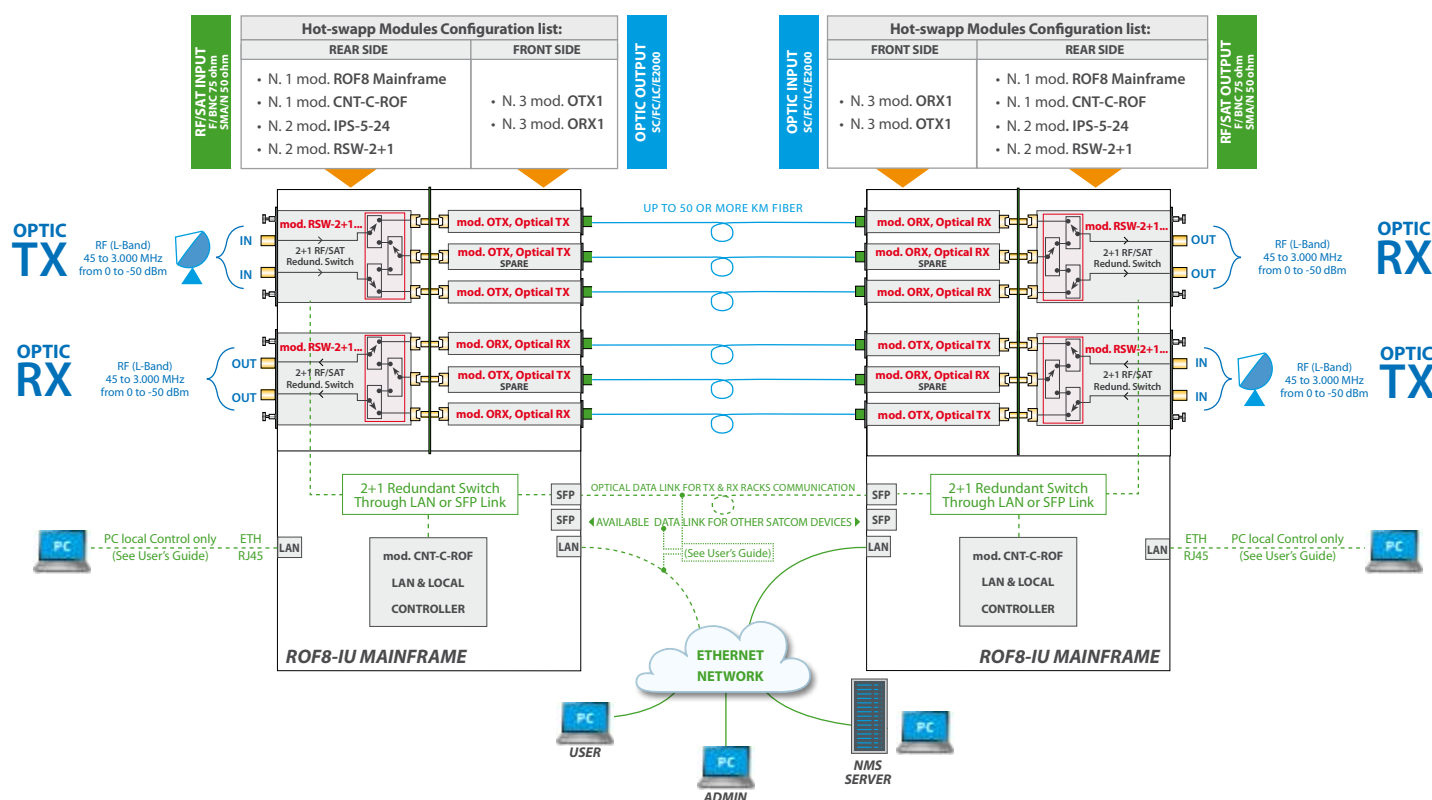
Example of N. 4 Complete RF OVER FIBER LINK.



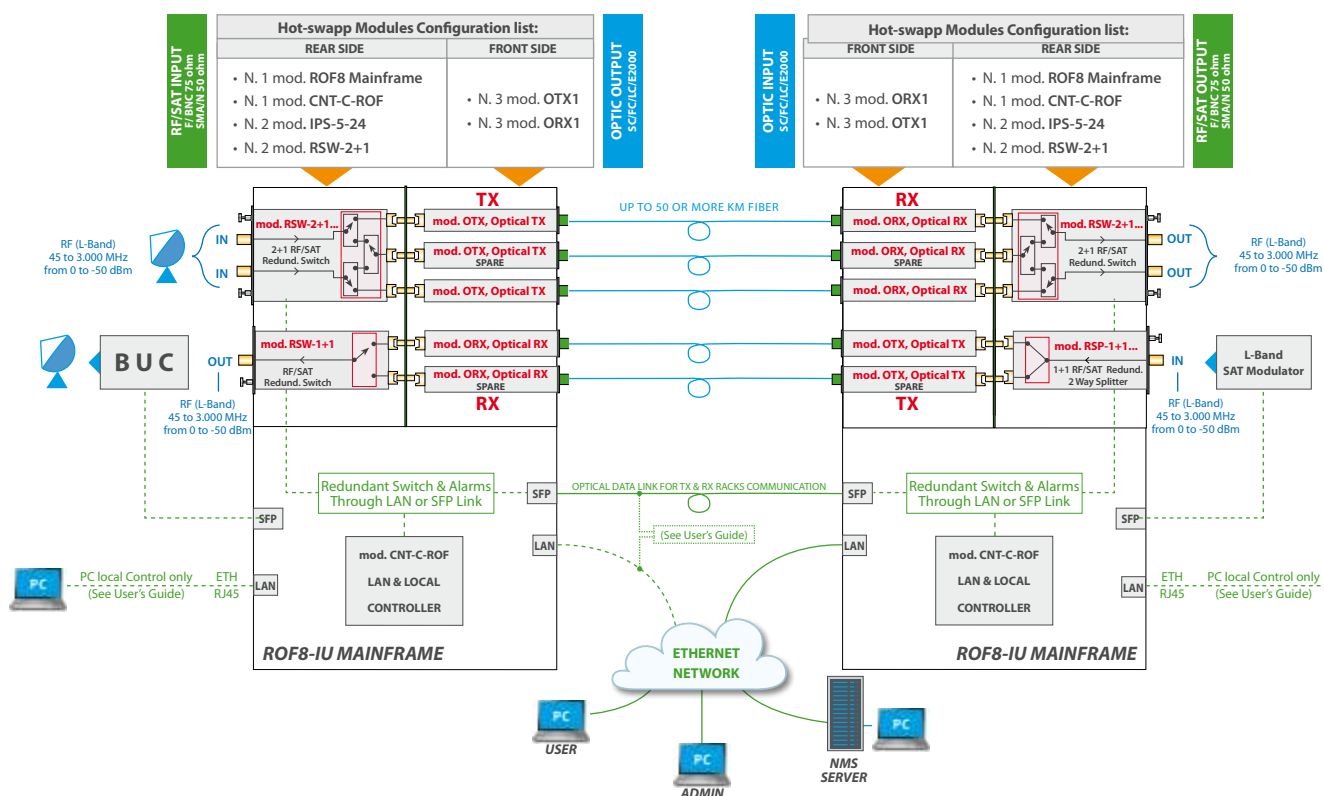
Example of N. 4 Redundant (4+1) RF OVER FIBER LINK.



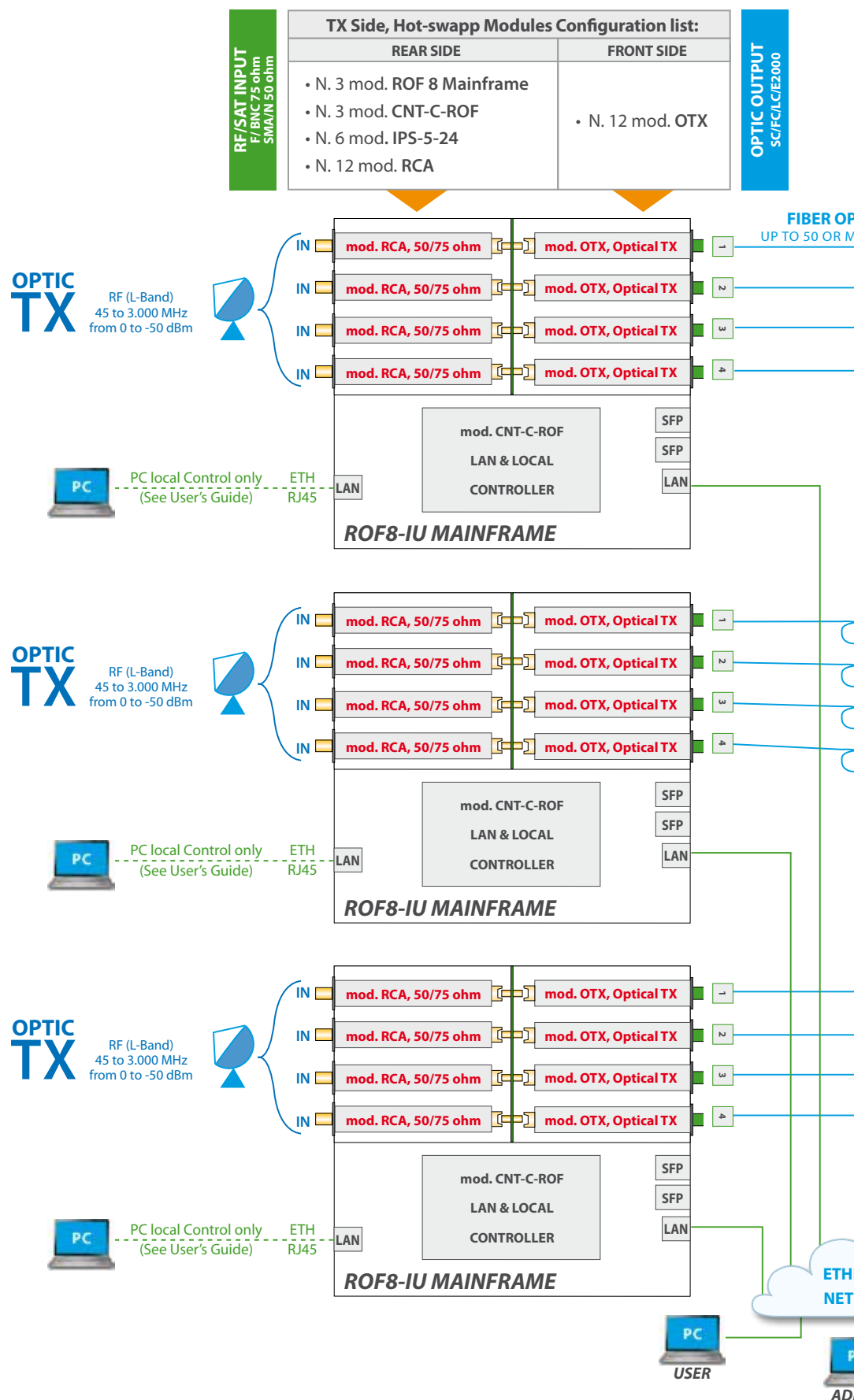
Example of N. 4 Redundant (2+1) BIDIRECTIONAL RF OVER FIBER LINK.



Example of N. 3 Redundant (2+1 & 1+1) UP & DOWN RF OVER FIBER LINK.



Example of N. 12 R



OPTIC LINK

MORE KM FIBER



MODEL/CODE	DESCRIPTION	APPLICATION
ROF8-IU	1 Unit 19" Rack Chassis for RF over Fiber Links, 8+8 Slots for Tx/Rx, 1+1, 2+1 or 4+1 Path Redundancy, Redundant Hot-Swap Power Supplies, exchangeable Key Board Controller with Display, 1(2) Ethernet and optional 2 SFP Modules	
ROF20-IU	2 Unit 19" Rack Chassis for RF over Fiber Links, 20+20 Slots for Tx/Rx, 1+1, 2+1 or 4+1 Path Redundancy, Redundant Hot-Swap Power Supplies, Hot-Swap Key Board Controller with Display, 1(2) Ethernet and optional 2 SFP Modules	
ROF20-OU	12 Unit Outdoor Chassis for RF over Fiber Links, 20+20 Slots for Tx/Rx, 1+1, 2+1 or 4+1 Path Redundancy, Redundant Hot-Swap Power Supplies, Hot-Swap Key Board Controller with Display, 1(2) Ethernet and optional 2 SFP Modules, easy Cable Routing with RF and Optical Path Panels, optional De-Icing	
CONTROLLER MODULE for ROF In-/Outdoor Chassis		
- CNT+E	Hot-Swap Key Board Controller with Local Display, 1 Ethernet front and 1 Ethernet rear, Rover Web GUI, SNMP	
- CNT	Hot-Swap Key Board Controller with Local Display, 1 Ethernet rear, Rover Web GUI, SNMP	
POWER SUPPLY MODULE (PSU) for ROF Indoor Chassis		
- IPS-524	Hot-Swap Dual Voltage Power Supply for ROF Indoor Chassis, 5V/10A 24V/10A with high Speed FAN, LED Alarms	

PLUG-IN MODULES OPTIONS

MODELS/CODES	DESCRIPTIONS
OTX1-1310-X	Hot-Swap OPTICAL TX MODULE, DFB Laser, 1310±20 nm, 4,5 dBm, 50-3000 MHz, LNB Powering 13/18 V 0/22 kHz, 20 dB SMA RF Monitor Port, LED Alarms, SC/APC, FC/APC, LC/APC, E2000 HRL Connectors
OTX1-1550-X	Hot-Swap OPTICAL TX MODULE, DFB Laser, 1550±20 nm, 4,5 dBm, 50-3000 MHz, LNB Powering 13/18 V 0/22 kHz, 20 dB SMA RF Monitor Port, LED Alarms, SC/APC, FC/APC, LC/APC, E2000 HRL Connectors
OTX2-CWDM-X	Hot-Swap OPTICAL CWDM TX MODULE, DFB Laser, CWDM±5 nm, 4,5 dBm, 50-3000 MHz, LNB Powering 13/18 V 0/22 kHz, 20 dB SMA RF Monitor Port, LED Alarms, SC/APC, FC/APC, LC/APC, E2000 HRL Connectors SC/APC Connector
ORX1-X	Hot-Swap OPTICAL RX MODULE, High Sensitivity Photodiode, 1260-1610 nm, 50-3000 MHz, 20 dB SMA RF Monitor Port, LED Alarms, SC/APC, FC/APC, LC/APC, E2000 HRL Connectors
RCA-X	Hot-Swap RF Connector Adapter Module, DC Path Through, 50-3000 MHz, F(f) & BNC(f) 75 Ohm, SMA(f) & N(f) 50 Ohm Connectors
RCA-X-10	Hot-Swap RF Connector Adapter Module, 10 MHz & DC Path Through, 50-3000 MHz, F(f) & BNC(f) 75 Ohm, SMA(f) & N(f) 50 Ohm Connectors
RCA-X-exLP	Hot-Swap RF Connector Adapter Module, DC Path Through or External LNB Powering, 50-3000 MHz, F(f) & BNC(f) 75 Ohm, SMA(f) & N(f) 50 Ohm Connectors
RSP-1+1-X	Hot-Swap 2 Way RF Splitter for 1+1 Path Redundancy, DC Path Through, 50-3000 MHz, LNB Powering LED Indicator, F(f) & BNC(f) 75 Ohm, SMA(f) & N(f) 50 Ohm Connectors
RSW-1+1-X	Hot-Swap RF Switch for 1+1 Path Redundancy, DC Path Through, 50-3000 MHz, LNB Powering LED Indicator, F(f) & BNC(f) 75 Ohm, SMA(f) & N(f) 50 Ohm Connectors
RSW-2+1-X	Hot-Swap RF Switch for 2+1 Path Redundancy, DC Path Through, 50-3000 MHz, LNB Powering LED Indicator, F(f) & BNC(f) 75 Ohm, SMA(f) & N(f) 50 Ohm Connectors
RSW-4+1-X	Hot-Swap RF Switch for 4+1 Path Redundancy, DC Path Through, 50-3000 MHz, LNB Powering LED Indicator, F(f) & BNC(f) 75 Ohm, SMA(f) & N(f) 50 Ohm Connectors