

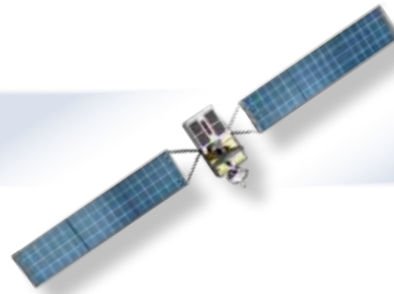


## HOT-SWAP RF Over FIBER LINK

EXTENDED BAND = 45 – 3.000 MHz

RF Over FIBER

Series **ROF-X-X**



- 5 years Warranty
- 45 to 3.000 MHz
- Ideally suited for HTS or Ka-Band Application
- Perfect Integration into any System due to LAN @ Front & Rear plus 2 SFP Slots for Ethernet over Fiber
- 1+1, 2+1, 3+1 or 4+1 Hot-Swapp Redundant plug-in Module

**INNOVATIVE  
PERFORMANCE**

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

CE DVB



1972 > 2021 >>

49 YEARS OF INNOVATION

- Top quality RF-over-Fiber link (45-3.000 MHz)
- 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 Network 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 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

- TX & RX 5 years warranty
- 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 or Ka-Band Applications

## FEATURES

- 45-3.000 MHz Frequency Range
- DFB Laser, 1.310 n m or 1.550 n m opt.
- Monitoring with Local Display Controller , SNMP & WEB-GUI
- LED Alarms 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
- Ideal for HTS (High Throughput Satellite) & Ka-Band Ready
- Serve all Up-Link dedicated Requirements

## INDOOR CHASSIS

### mod. ROF-8-IU • 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 SLOTS



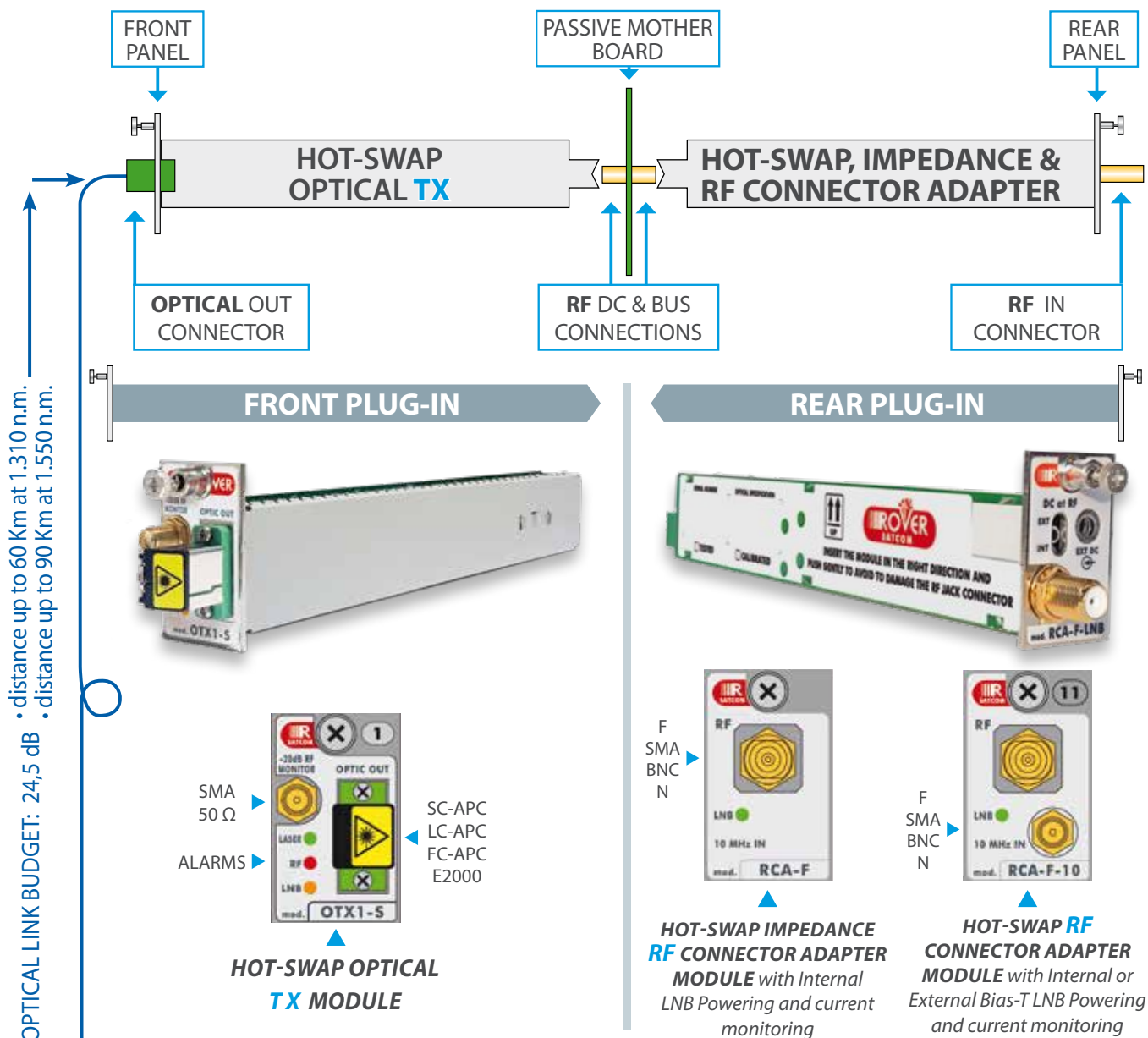
- 2 Unit 19" Rack Chassis
- Front Hot-Swap Slots:
  - Key Board display Controller with 1 Copper Ethernet LAN
  - Indoor Redundant Power Supply
  - Up to 20 Optical RX or TX Module
- Rear Slot and Connections
  - RF Conn. Impedance Adapt. or 1/2/3/4+1 Redundant switch
  - Hot-Swap Fan
  - 1 Copper Ethernet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

## OUTDOOR CHASSIS

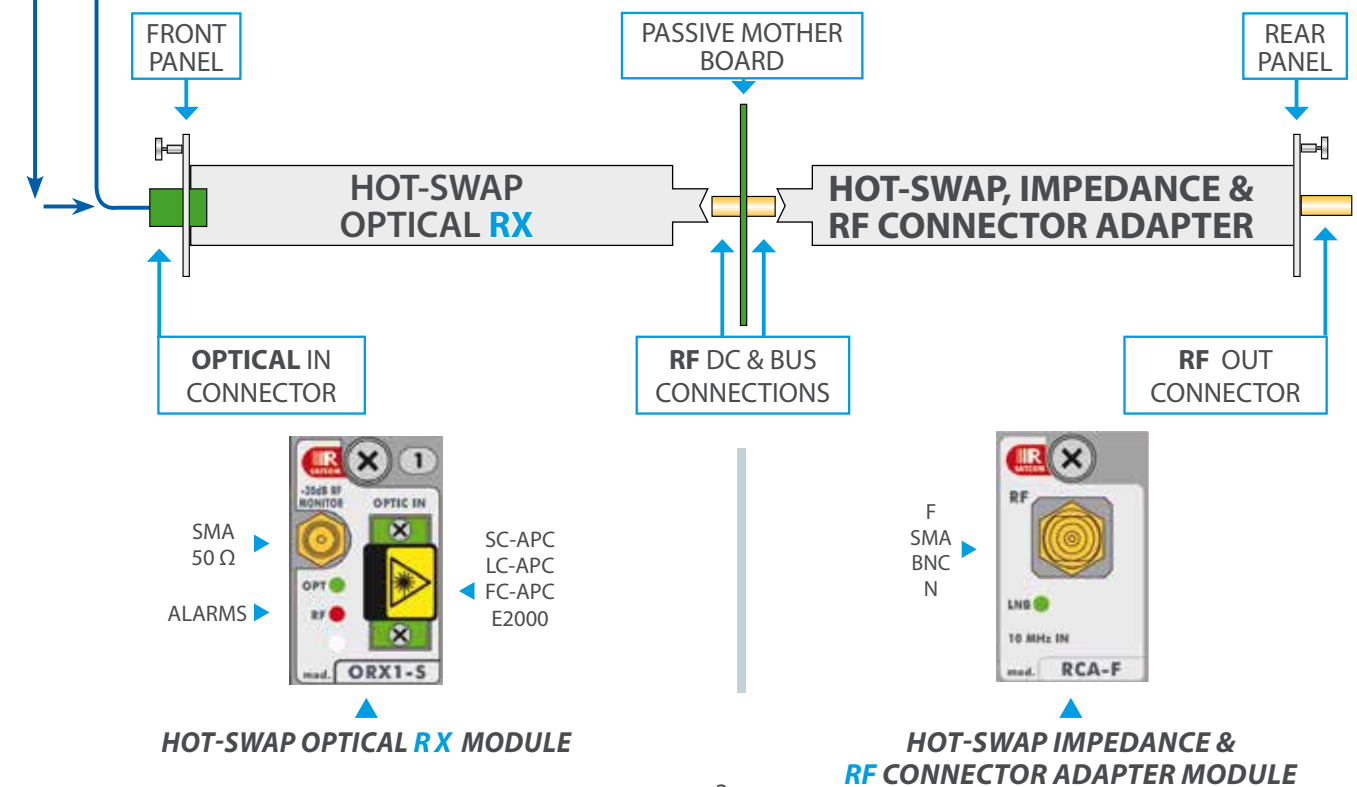
### mod. ROF-20-OU • 20 SLOTS

- 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.)

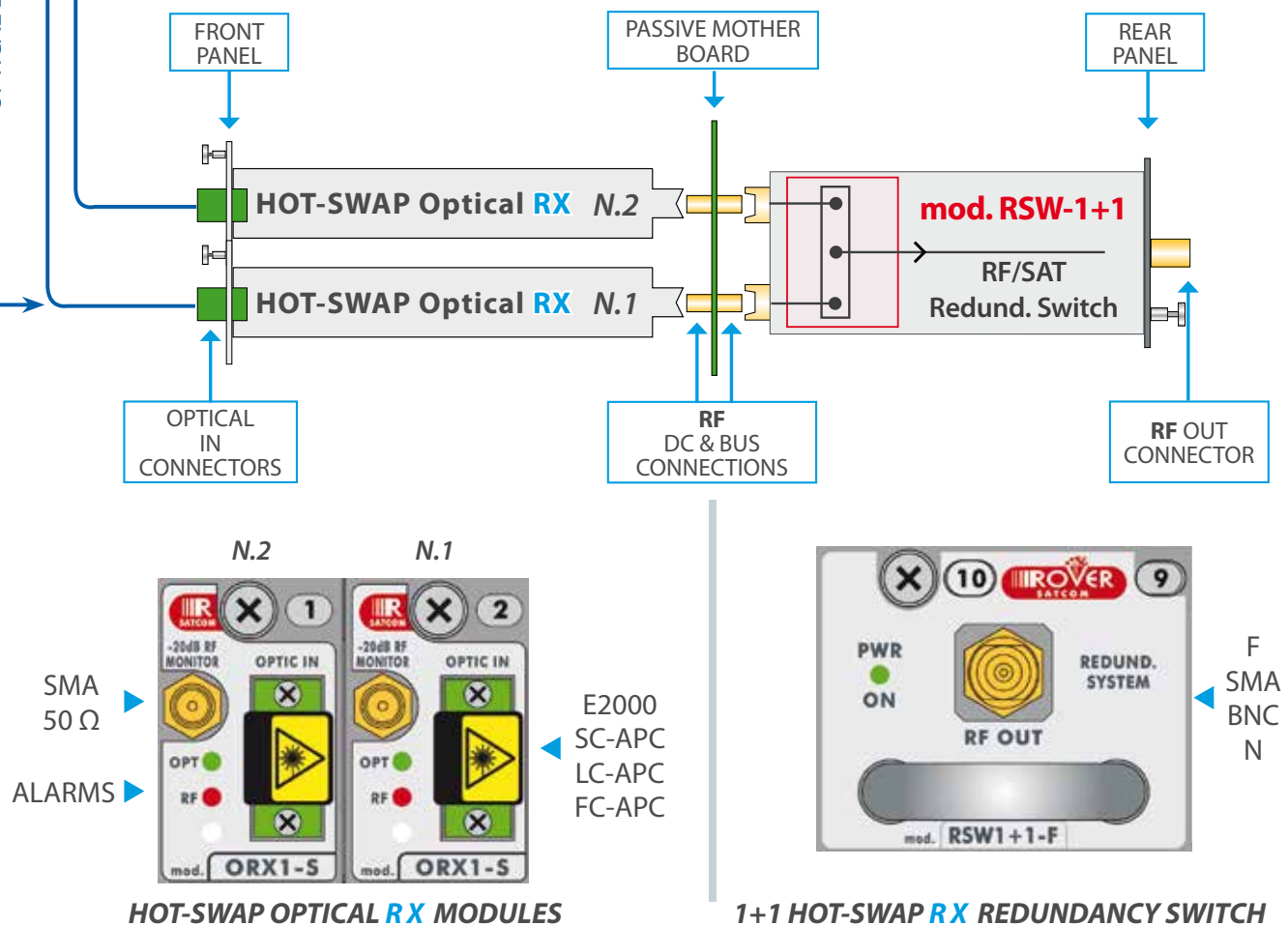
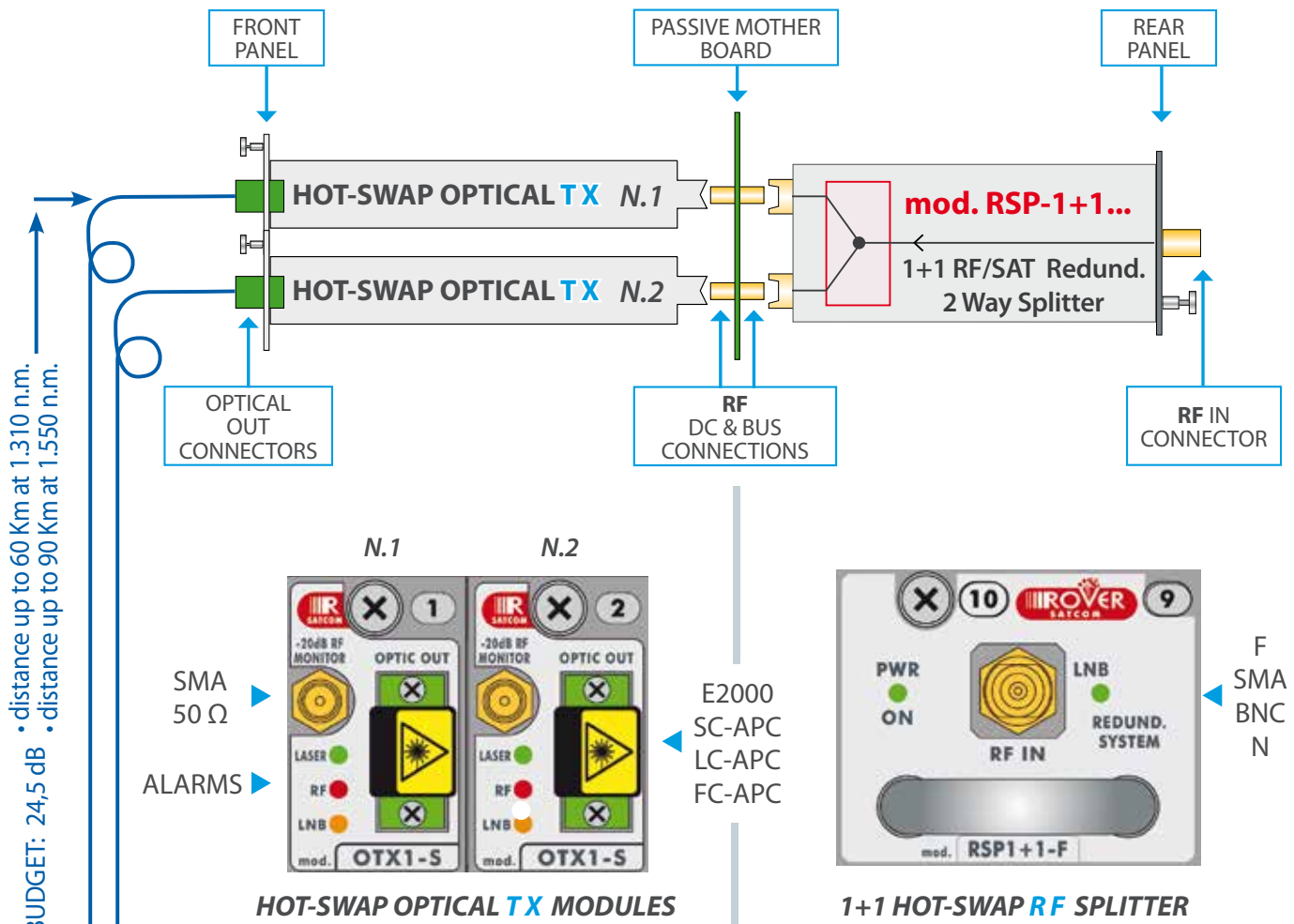


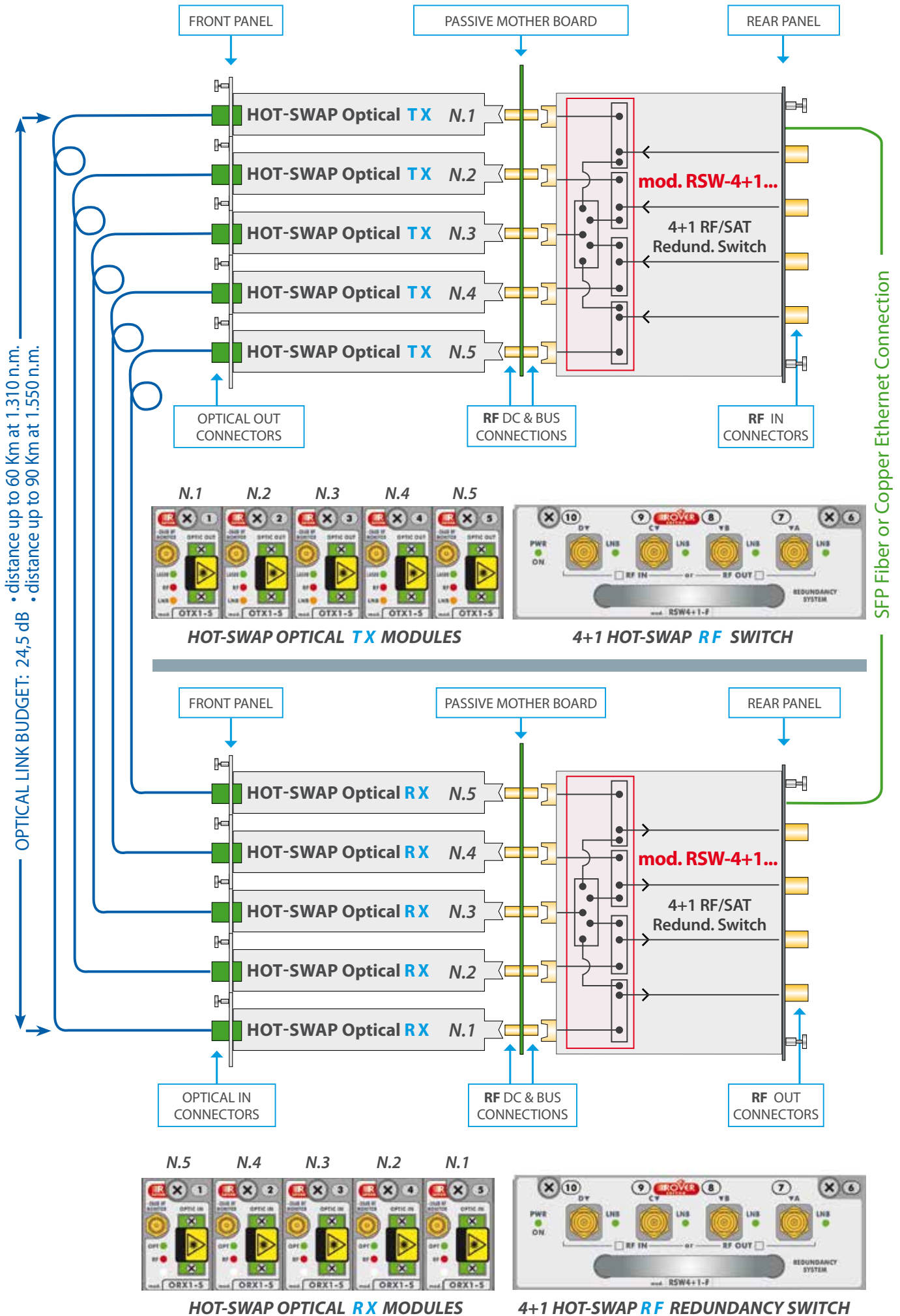


TX CHASSIS

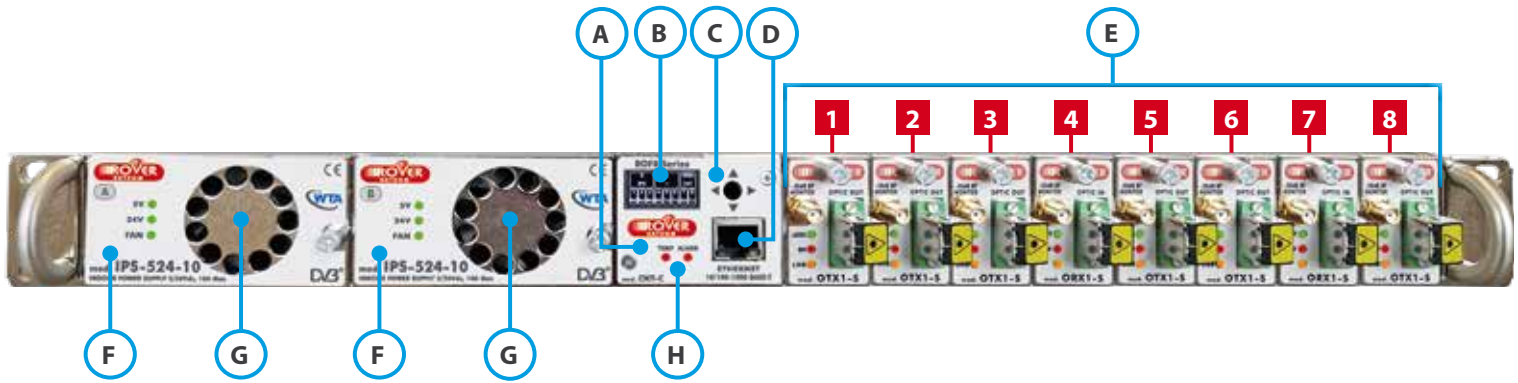


RX CHASSIS





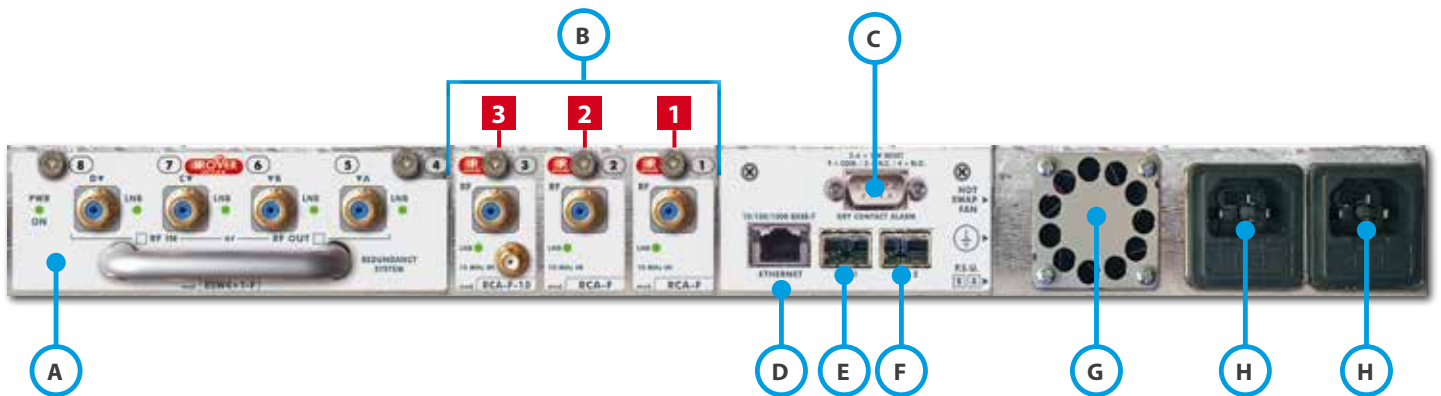
OPTICAL LINK BUDGET: 24,5 dB  
 • distance up to 60 Km at 1.310 n.m.  
 • distance up to 90 Km at 1.550 n.m.



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

- E. 20 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. 4+1 RF Redundant Switching Module (5 slots)
- B. 3 Slots for Hot-Swap RF Connector Adapter Modules with Internal or External LNB Powering (1 slot)
- C. Sub-D Dry 9 Contact Alarm and Remote Reset
- D. Copper Ethernet Connector 10/100/1000 BASE-T

- E. SFP 1 Slot for Ethernet over Fiber
- F. SFP 2 Slot for Ethernet over Fiber
- G. Swappable Chassis Fan
- H. Mains and Fuse Receptacle

## ADJUSTABLE RACK HANDLE POSITION



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

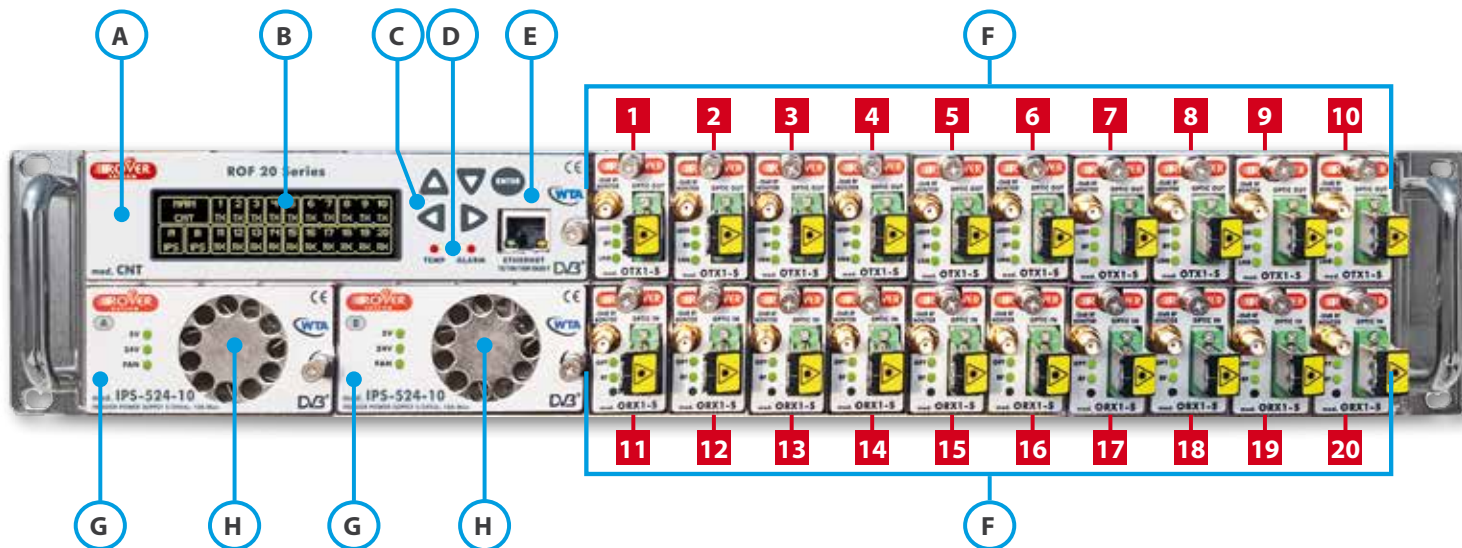


Handle: aligned to the Front Panel



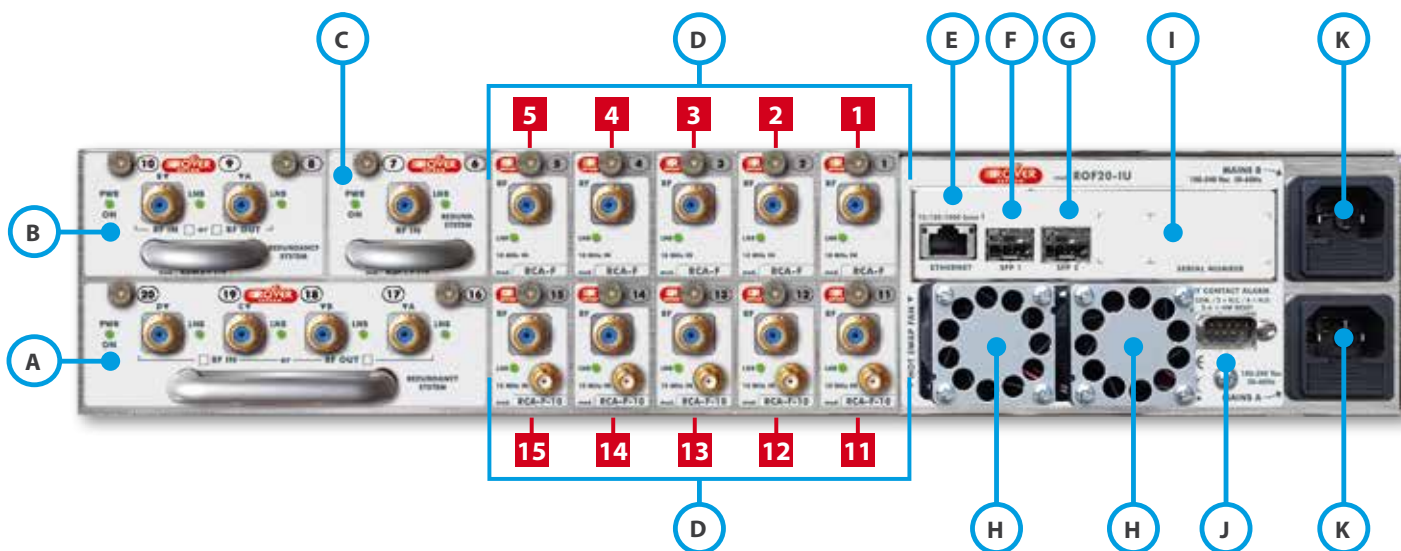
Handle: internal to the Front Panel

## ROF-20 FRONT PANEL DESCRIPTIONS



- 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

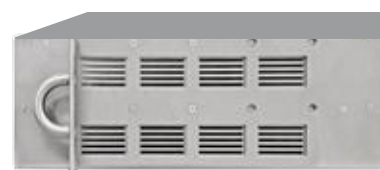
## ADJUSTABLE RACK HANDLE POSITION



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

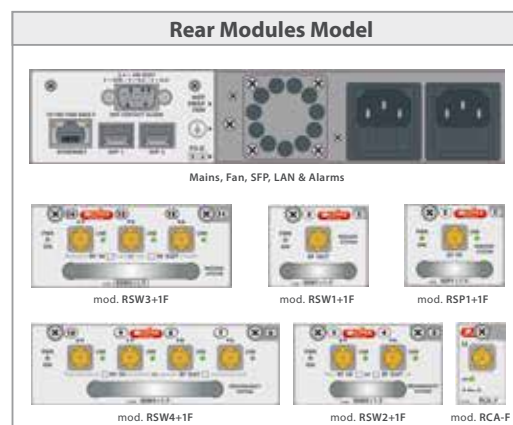
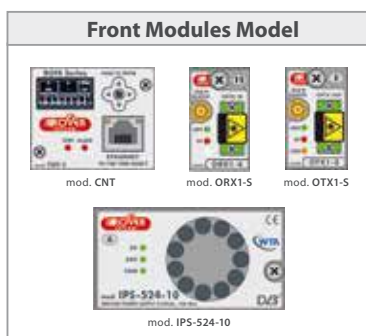
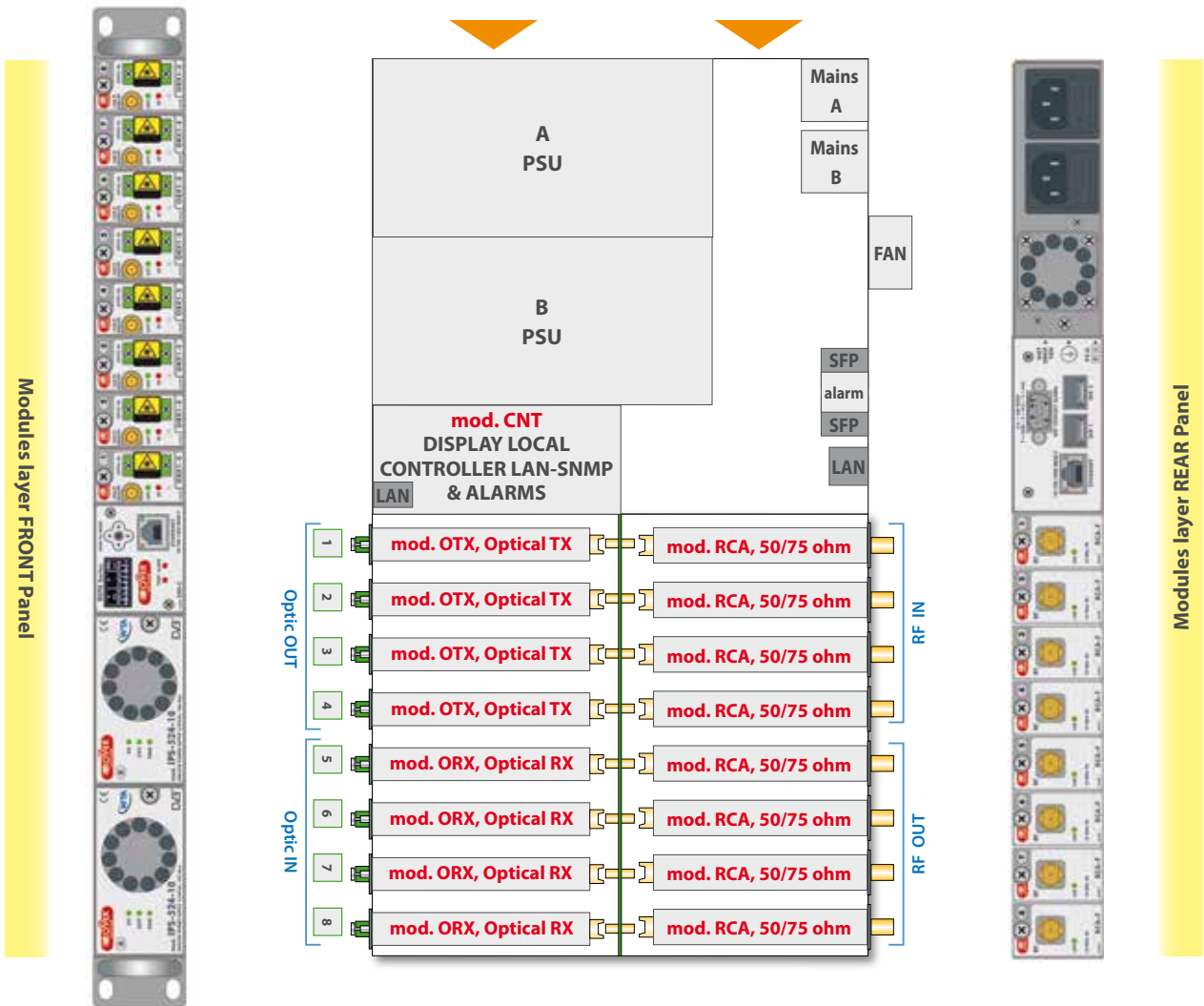
# mod. ROF-8-IU • PHYLOSOPHY & CAPABILITY • Mixed Optical TX & RX example

Hot-swapp Modules Configuration list:	
<ul style="list-style-type: none"> <li>• N. 1 mod. ROF-8-IU Mainframe</li> <li>• N. 1 mod. CNT Display Controller</li> <li>• N. 2 mod. PSU-5-24</li> <li>• N. 4 mod. OTX</li> <li>• N. 4 mod. ORX</li> </ul>	<ul style="list-style-type: none"> <li>• N. 8 mod. RCA</li> </ul>

**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

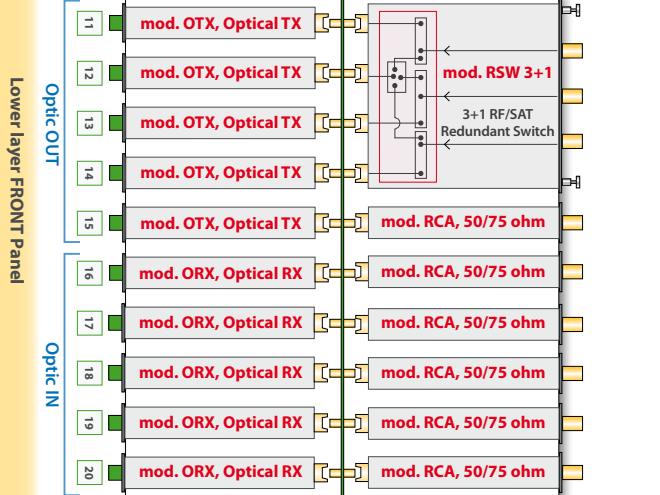
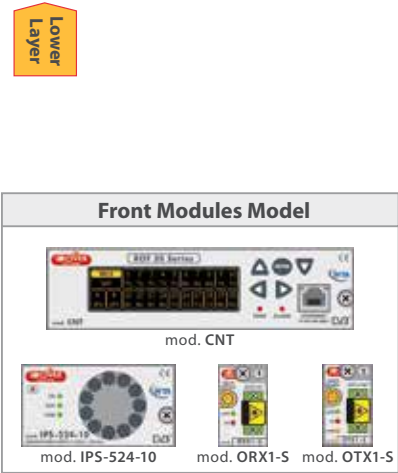
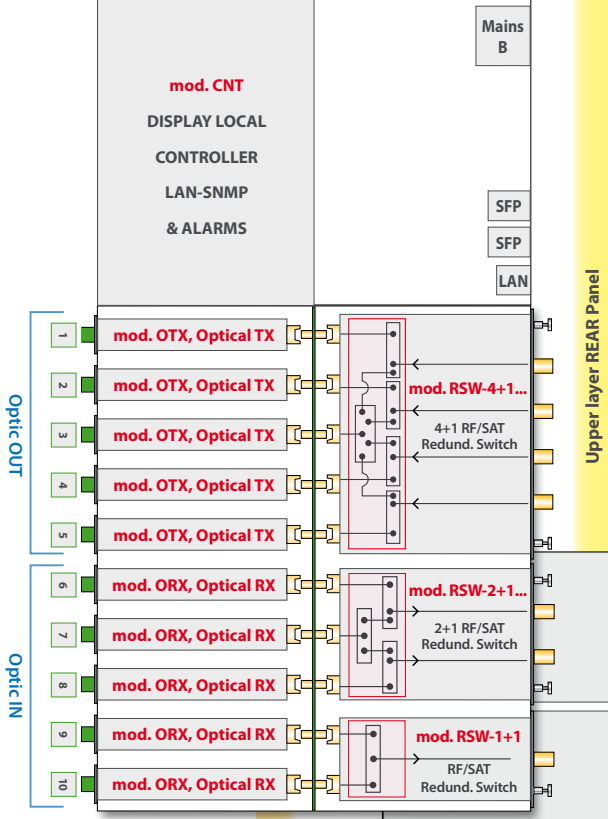
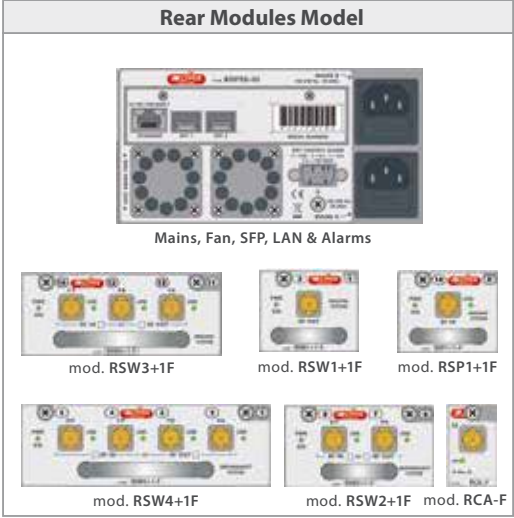




# mod. ROF-20-IU • PHILOSOPHY & CAPABILITY • Mixed Optical TX & RX links

Upper Layer Hot-swapp Modules Configuration list:	
• N. 1 mod. ROF-20-IU Mainframe	• N. 1 mod. RSW-4+1
• N. 1 mod. CNT Display Controller	• N. 1 mod. RSW-2+1
• N. 5 mod. OTX	• N. 1 mod. RSW-1+1
• N. 5 mod. ORX	

MIX OPTIC IN/OUT SC/FC/LC/E2000	RF/SAT INTERFACE SMB - 50 ohm	MIX RF/SAT IN/OUT BNC/F 75 ohm SMA/N 50 ohm
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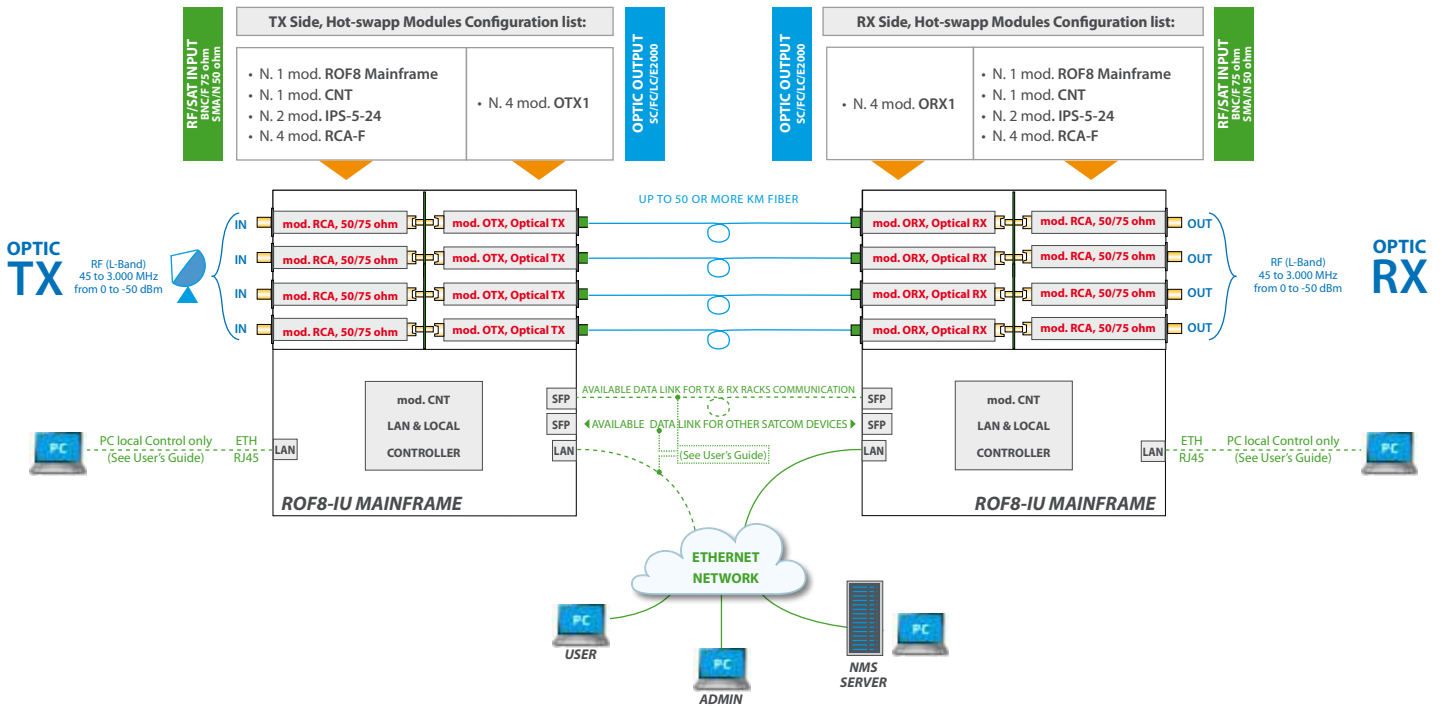


MIX OPTIC IN/OUT SC/FC/LC/E2000	RF/SAT INTERFACE SMB - 50 ohm	MIX RF/SAT IN/OUT BNC/F 75 ohm SMA/N 50 ohm
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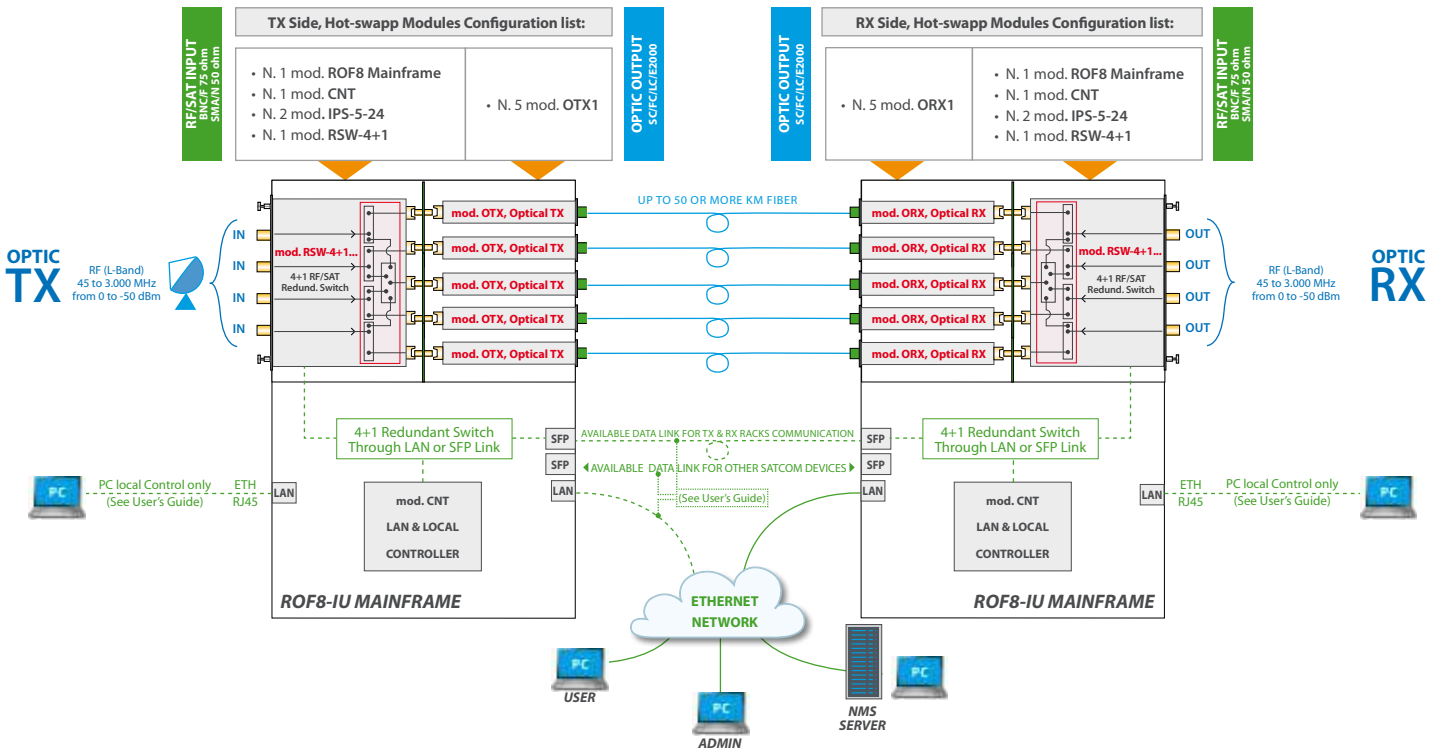
Lower Layer Hot-swapp Modules Configuration list:	
• N. 2 mod. PSU-5-24	• N. 1 mod. RSW-3+1
• N. 5 mod. OTX	• N. 6 mod. RCA
• N. 5 mod. ORX	



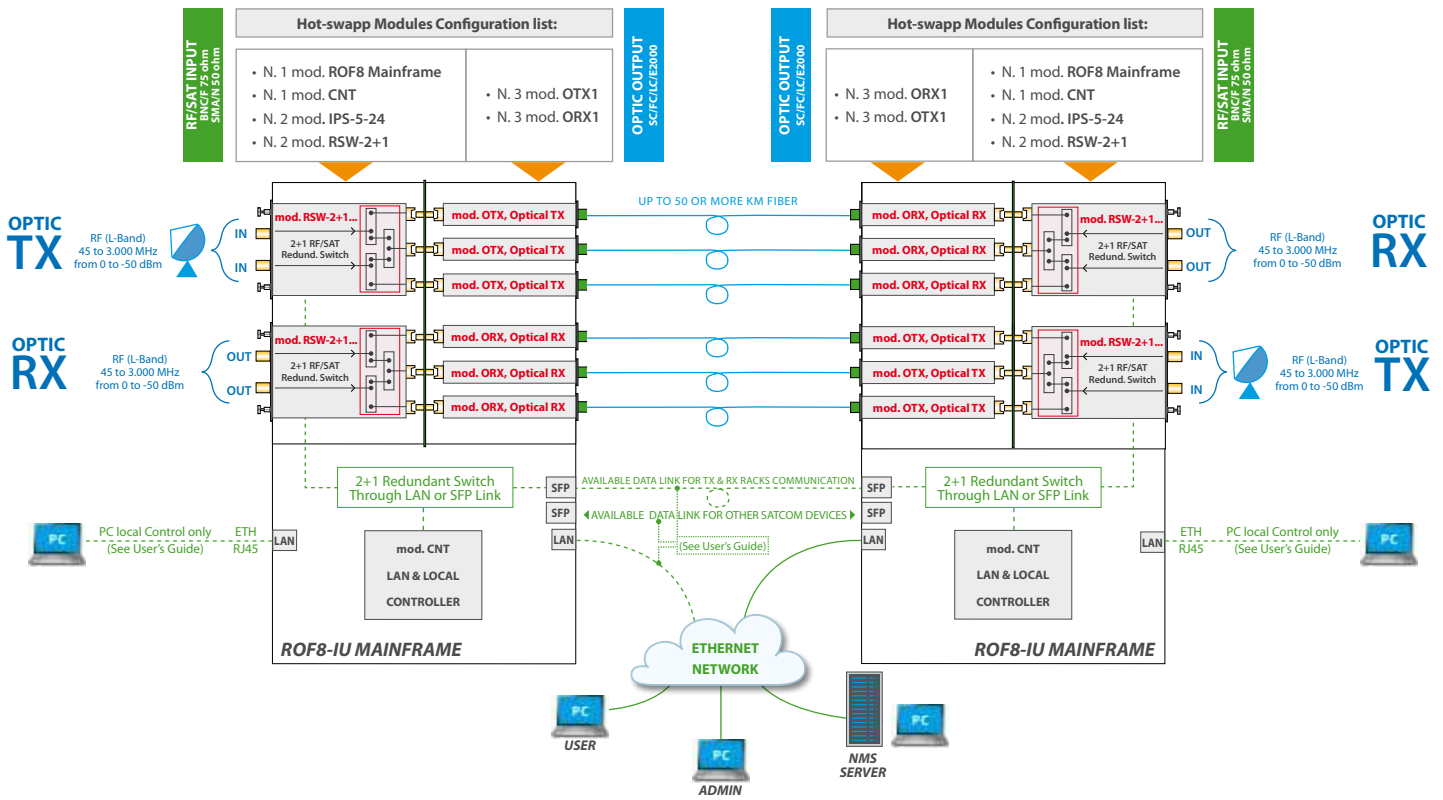
## Example of N. 4 Complete RF OVER FIBER LINK.



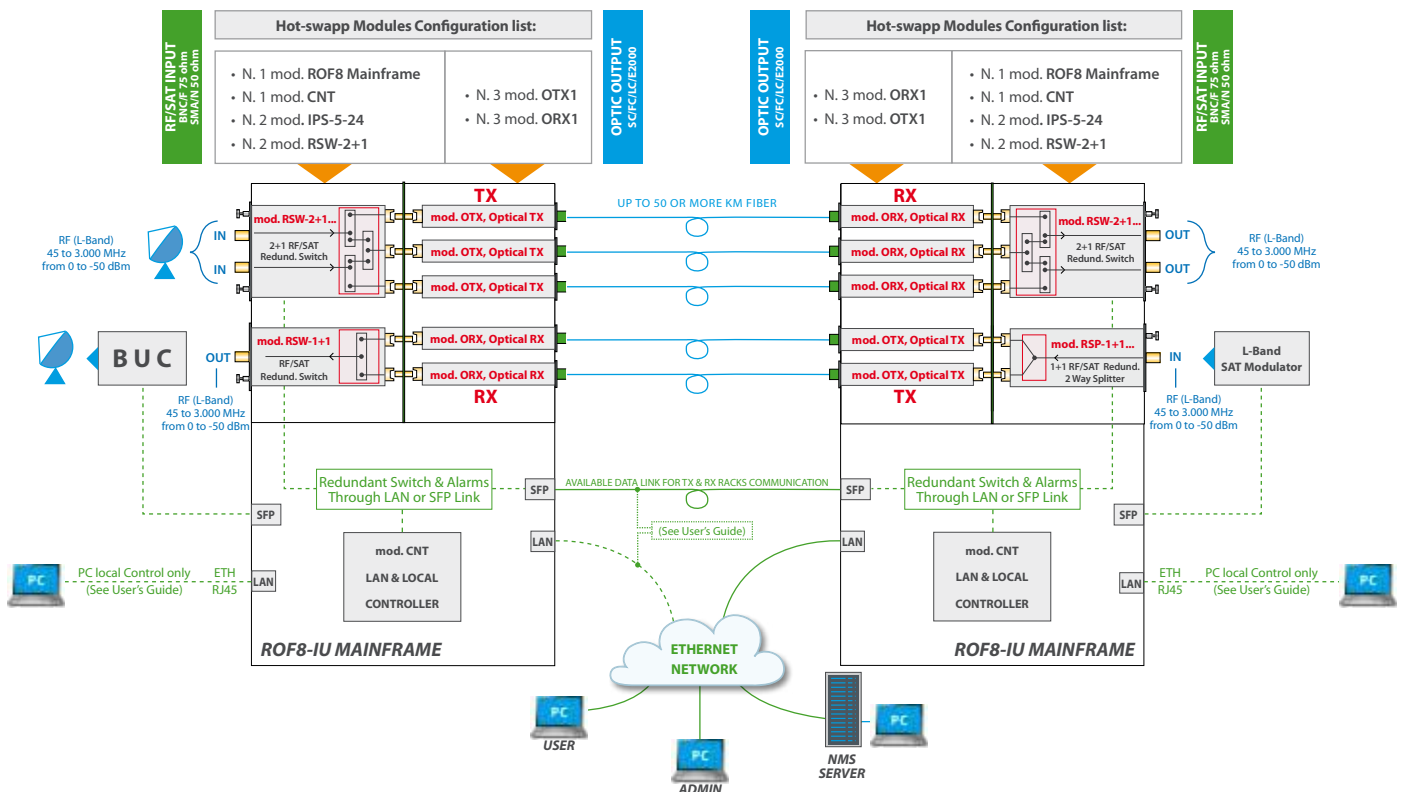
## Example of N. 4 Redundant (4+1) RF OVER FIBER LINK.



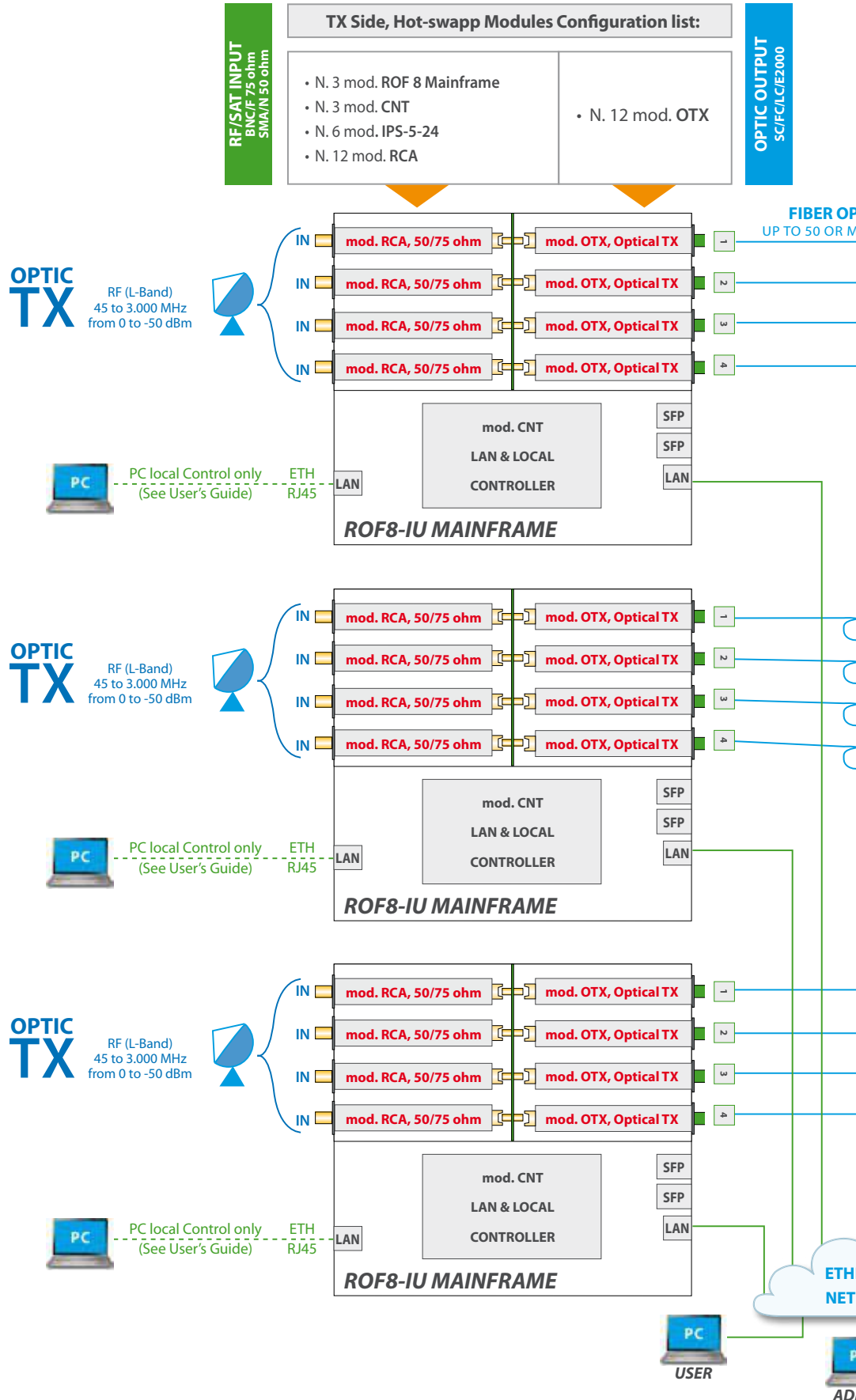
## Example of N. 4 Redundant (2+1) BIDIRECTIONAL RF OVER FIBER LINK.



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

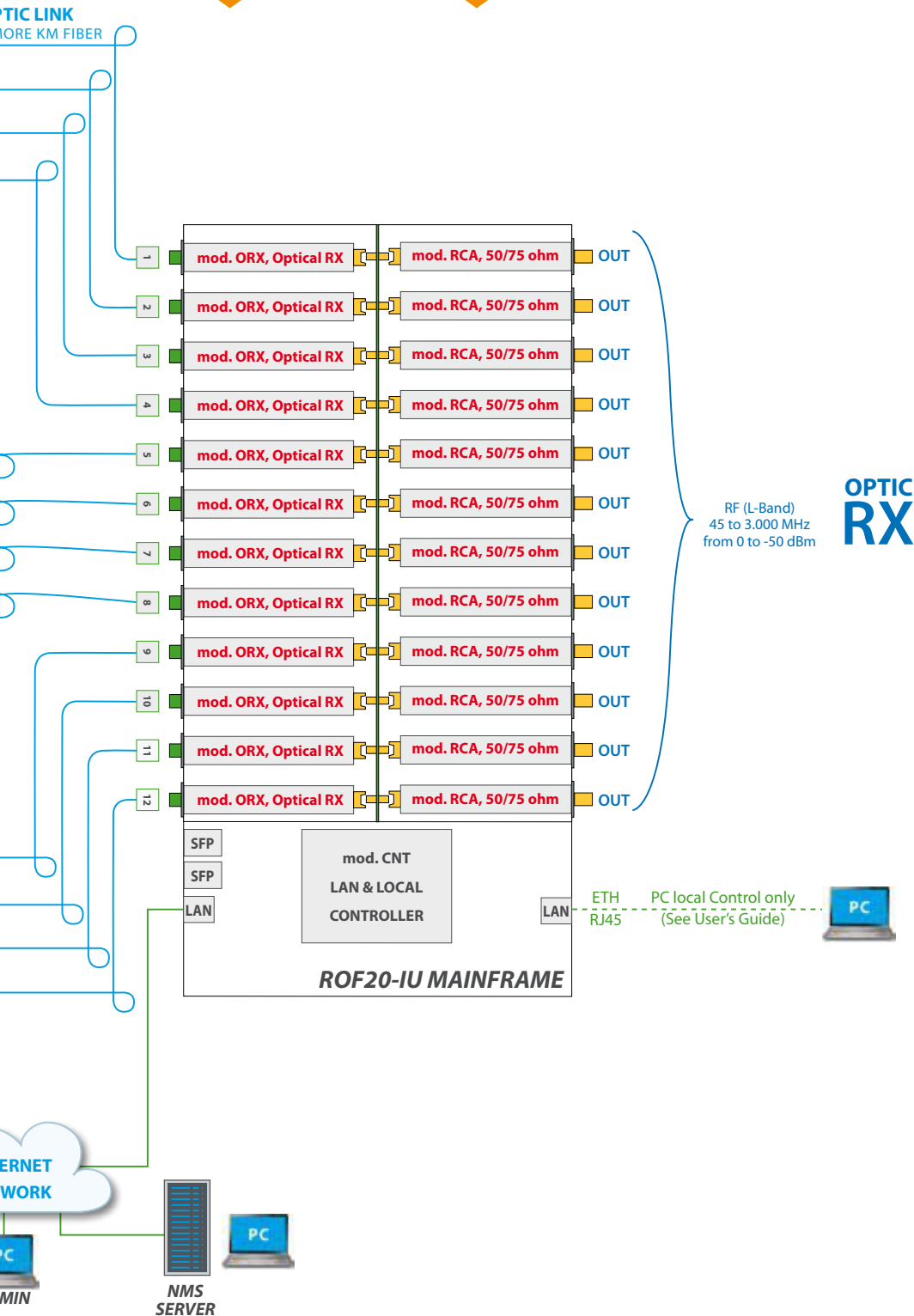


## Example of N. 12 R



# F OVER FIBER LINK.

<b>OPTIC OUTPUT</b> SC/FC/LC/E2000	<b>RX Side, Hot-swapp Modules Configuration list:</b>	<b>RF/SAT INPUT</b> BNC/F 75 ohm SMA/N 50 ohm
	<ul style="list-style-type: none"> <li>• N. 12 mod. ORX</li> <li>• N. 1 mod. ROF20 Mainframe</li> <li>• N. 1 mod. CNT</li> <li>• N. 2 mod. IPS-5-24</li> <li>• N. 12 mod. RCA</li> </ul>	



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

### RF

- Frequency range : ..... 50-3000 MHz
- Range Flatness : .....  $\pm 1,5$  dB
- 36 MHz Flatness : .....  $\pm 0,3$  dB
- RF Connector (via RCA adapter) : ..... F-SMA-BNC-N
- Return Loss (to RCA adapter) : .....  $> 14$  dB
- Noise Figure : .....  $< 10$  dB@ max gain
- IMD : .....  $> 40$  dBc@2 tones -13 dBm
- IP1 : ..... +5 dBm (RMS)
- RF Monitor front panel port : ..... -20 dB (SMA)
- RF Power Sensor Alarm : ..... -50 to +10 dBm (RMS)
- RF Input Power Range : ..... -50 to +10 dBm (RMS)
- RF Damage Input Level : ..... +15 dBm (RMS)
- RF Adjustable gain : ..... 30 dB (Auto/Manual)
- RF Gain Stability : ..... (24h= $\pm 0,25$  dB) (over range= $\pm 3$ dB)

### LNB<sup>5</sup>

- Internal LNB Powering (via RCA adapter) : ..... 0, 13, 18 (24) V, 22 KHz, 600 mA
- External LNB Powering (via RCA LNB adapter) : . 0, 13, 18 (24) V, 22 KHz, 600 mA
- LNB Current Monitoring and Alarm : ..... from Internal/External Powering

### OPTICAL

- OMI : ..... Automatic or Manual
- Power output : ..... + 4,5 dBm
- Wavelength : ..... 1310 n.m./1550 n.m.
- Connectors : ..... E2000, SC-APC, LC-APC, FC-APC
- 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
- Current : ..... 400 mA

### ALARMS

- Optical Power : ..... Led, Display, SNMP, WEB GUI
- RF Power Sensor : ..... Led, Display, SNMP, WEB GUI
- LNB Powering : ..... Led, Display, SNMP, WEB GUI

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

### RF

- Frequency range : ..... 50-3000 MHz
- Range Flatness : .....  $\pm 1,5$  dB
- 36 MHz Flatness : .....  $\pm 0,3$  dB
- RF Connector (via RCA adapter) : ..... F-SMA-BNC-N
- Return Loss (to RCA adapter) : .....  $< 14$  dB
- IMD : .....  $> 40$  dBc@2 tones -13 dBm
- OP1 : ..... +10 dBm (RMS)
- RF Monitor front panel port : ..... -20 dB (SMA)
- RF Power Sensor Alarm : ..... -50 to 0 dBm (RMS)
- RF Output Power Range : ..... -50 to +10 dBm (RMS)
- RF Adjustable gain : ..... 30 dB (AGC/Manual)
- RF Gain Stability : ..... (24h= $\pm 0,25$  dB) (over range= $\pm 3$ dB)

### OPTICAL

- Input Automatic Gain Control : ..... Automatic or Manual
- Input Power sensitivity range : ..... -20 to +4 dBm
- Wavelength : ..... 1100 to 1650 n.m.
- Connectors : ..... E2000, SC-APC, LC-APC, FC-APC
- Input Power measurement range : ..... -30 to +5 dBm
- Fotodiode : ..... PIN

### POWER SUPPLY

- Voltage : ..... 5 & 24 Vdc
- Current : ..... 300 mA

### ALARMS

- Optical Power : ..... Led, Display, SNMP, WEB GUI
- RF Power Sensor : ..... Led, Display, SNMP, WEB GUI

## 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  $\Omega$ " Female Connector
- RCA-N : ..... RF "N50  $\Omega$ " Female Connector

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

- RCA-F-LNB : ..... RF "F" Female Connector
- RCA-S-LNB : ..... RF "SMA" Female Connector
- RCA-B-LNB : ..... RF "BNC 50  $\Omega$ " Female Connector
- RCA-N-LNB : ..... RF "N50  $\Omega$ " 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 : ..... 5V and 24 V
- Max Output Current : ..... 10A
- 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 : ..... 5V and 24 V
- Max Output Current : ..... 10A
- 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

MODEL/CODE	DESCRIPTION	APPLICATION
<b>ROF8-IU</b>	1 Unit 19" Rack Chassis for RF over Fiber Links, 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	
<b>ROF20-IU</b>	2 Unit 19" Rack Chassis for RF over Fiber Links, 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	
<b>ROF20-OU</b>	12 Unit Outdoor Chassis for RF over Fiber Links, 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	
<b>CONTROLLER MODULE for ROF In-/Outdoor Chassis</b>		
- <b>CNT+E</b>	Hot-Swap Key Board Controller with Local Display, 1 Ethernet front and 1 Ethernet rear, Rover Web GUI, SNMP	
- <b>CNT</b>	Hot-Swap Key Board Controller with Local Display, 1 Ethernet rear, Rover Web GUI, SNMP	
<b>POWER SUPPLY MODULE (PSU) for ROF Indoor Chassis</b>		
- <b>IPS-524</b>	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
<b>OTX1-1310-X</b>	Hot-Swap OPTICAL TX MODULE,DFB Laser, 1310±20, 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
<b>OTX1-1550-X</b>	Hot-Swap OPTICAL TX MODULE,DFB Laser, 1550±20, 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
<b>OTX2-CWDM-X</b>	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
<b>ORX1-X</b>	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
<b>RCA-X</b>	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
<b>RCA-X-10</b>	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
<b>RCA-X-exLP</b>	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
<b>RSP-1+1-X</b>	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
<b>RSW-1+1-X</b>	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
<b>RSW-2+1-X</b>	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
<b>RSW-4+1-X</b>	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