FORAX-RM

Rack Mount Modular System

RF over Fibre

FORAX-RM (rack-mount) connects radios to distant antennas. FORAX-RM offers a high performance alternative to conventional radio:antenna coaxial cable connections, affording great flexibility in antenna location plus opto-isolation for all the user's radios. Antennas can be located up to 10 km from the radio or > 75 km by special order.

A FORAX-RM RF-over-fibre link consists of a radio interface module (RIM) and an Antenna Interface module (AIM). At the radio site, RIMs are mounted in a 19-inch rack mount chassis and connected by short coaxial cables to each radio's antenna port. At the antenna site, AIMs are mounted in a 19-inch rack mount chassis and connected to each antenna with coaxial cables. Each chassis is equipped with redundant hot-swappable AC power supplies.

Radio Interface Unit (RIU)

Up to 10 Radio Interface Modules (RIM) per chassis plus dual hot-swappable power supplies

Customer Antennas

Each antenna is connected via coaxial cable to its AIM

Available Waveforms

HF • SINCGARS • VHF • Maritime • UHF • UHF MILSATCOM ("TACSAT") including DAMA and HPW • EPLRS • SRF • WNW • ANW2 • GPS • Digital Data

Antenna Interface Unit (AIU)

Up to 4 Antenna Interface Modules (AIM) per chassis plus dual hot-swappable power supplies

Customer's Radios

Each radio's antenna port is connected via coaxial cable to its RIM

Customer's Optical Fibre Plant

- < 5 dBo optical loss
- < - 50 dBo optical reflectance
- Other specifications by special order

FORAX-RM functions as a long, loss-free link between the radio and the antenna. System limitations and installation difficulties associated with coaxial cable are overcome by the simplicity and performance of RF-over-fibre connections. FORAX-RM provides:

Feature	Benefit
Long Connections	Radio and its antenna can be located up to 10 km apart using single mode fibre
EMP / EMI Immunity	• Lightning, electromagnetic pulses, or RF interference cannot propagate over, or influence the signals on, optical fibre cables • Radio equipment is opto-isolated from antenna
Easy Routing	• RF signals are carried on lightweight, flexible, rugged, optical cables • Multiple radios can be carried on a single fiber optic cable
All Frequencies, All Modualations	• Geographic diversity in RF signal routing becomes easy • FORAX-RM modules cover 30-512 MHz • FORAX-RM modules handle all modulations including AM, FM, SINCGARS, HAVEQUICK, EPLRS, DAMA TACSAT, GPS (RX only)

RF Link Parameters	RF Performance	
Link Gain	+ 18 dB (with 30 m of fibre)	
Noise Figure (NF)	+ 9 dB	
1 dB Compression Point	- 20 dBm	
Third Order Intercept Point (IIP3)	- 10 dBm (with 30 m of fibre)	
Spur Free Dynamic Range (SFDR)	+ 103 dBm/Hz (with 30 m of fibre)	
Common Frequency Bands for Factory-Installed Bandpass Filter or Diplexer Option: Auto-tuning or hopping filters available for some waveforms	• HF 1-30 MHz • SINCGARS 30-88 MHz • Aircraft VHF 116-150 MHz • Maritime VHF and AIS 156-162 MHz • Military UHF 225-400 Hz • UHF TACSAT 243-318 MHz	• EPLRS/SADL 420-450 MHz • SRW (UHF) • WNW (UHF or L-Band) • ANW2 (UHF or L-Band) • GPS L1, L2 (receive only)

Product Characteristics	Radio Interface Modules (RIM)	Antenna Interface Modules (AIM)
Half-Duplex RX/TX Switching Time Option: Full Duplex or Simplex Link	Supports DAMA TACSAT, EPLRS, SRW, WNW, ANW2	
Optical Loss Budget	< 5 dBo (Higher optical loss budgets available)	
Radio TX Power into FORAX RIM	• 2 W (AM) • 5 W (FM) • 20 W survive Other configurations available	-
AIM TX Power into Antenna Controllable in 3 dB decrements	-	• HF modules: 100 mW • VHF, UHF: 10 W @ 50% duty cycle • TACSAT: 2 W or 20 W @ 50% duty cycle Other TX power levels available
User Interface	Link Controls (details vary with waveform): • TX power reduction, 3 dB steps • Filter band selection Monitor LEDs: • Laser operation (end-to-end) • TX RF operation • AIU TX amplifier over-temp • Command link fault	Monitor LEDs: • Power
Packaging Option: Weather-tight enclosures with tactical fibre optic cables for field use in all environments	Up to 10 RIMs in chassis with two hot-swappable power supplies. RIMs are quarter-rack wide and 1U tall.	Up to 4 AIMs in chassis with two high-power hot-swappable power supplies. AIMs are half-rack wide and 1U or 2U tall.
Installation Notes	User's facility supplies AC power and fibre optic (FO) connection from RIU to AIU. Patch Cable Kits optionally available with coax cable for radio and FO patch cables.	
Fibre Optic Connector Type	SC/APC (other types available)	
RF Connector Type	N-type female (other types available) for radio links; BNC for GPS links	
Power	Universal AC	
Operating Temperature	- 10°C to + 60°C	- 10°C to + 60°C [Rack-mount] - 34°C to + 60°C [Optional weather-tight enclosure]
Storage Temperature	- 40°C to + 80°C	- 40°C to + 80°C

September 2018

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