

FORAX-LOS4 User Guide

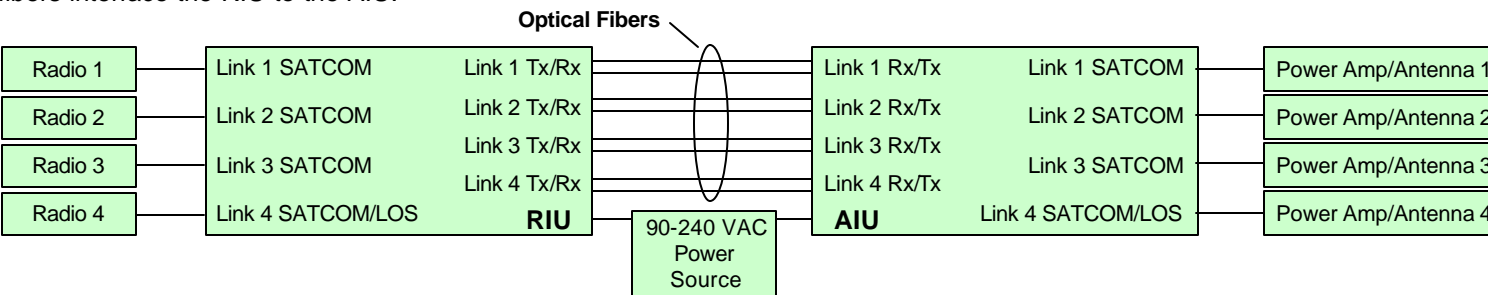
SYNTONICS

System Description

The FORAX-LOS4 system is designed to connect up to four radios with half-duplex UHF SATCOM and 30-512 MHz receive capabilities, plus one radio has 30-512 MHz line-of-sight (LOS) transmit capability.

Basic System Installation

The FORAX-LOS system consists of a Radio Interface Unit (RIU) and Amplifier Interface Unit (AIU). Eight single mode optical fibers interface the RIU to the AIU.



- Install the RIU in a sheltered location that provides sufficient air flow for cooling. **NOTE: Do not block the ventilation holes.**
- Install the AIU in close proximity to the power amplifier(s). **NOTE: The AIU is weatherproof and can be mounted outside.**
- Route the RF and fiber optic cables close to the appropriate RIU and AIU link paths.
- Carefully remove protective caps on the AIU/RIU fiber optic connectors and mate to single mode fiber optic cable. **NOTE: It is imperative to keep the fiber connectors as clean as possible to minimize RF link losses. ALL fiber connectors should be cleaned each time they are mated. When fiber connectors are not in use, the provided covers should be installed to prevent dirt intrusion.**
- Using the shortest possible Type N RF cables, connect the tactical radio(s) to the RIU SATCOM LINK(s). Similarly, connect the AIU SATCOM LINK(s) to the power amplifier / antenna set(s). **WARNING: DO NOT TRANSMIT ON ANY LINK THAT IS NOT CONNECTED TO AN AMPLIFIER, DAMAGE TO THE AIU WILL OCCUR.**
- Connect the provided AIU/RIU power cables to a 90-240 VAC power source. Once power is properly applied, verify the RIU LEDs are illuminated, and the AIU fan is running. **NOTE: ALWAYS remove power prior to mating or demating any RF or fiber optic connections.**

Operation

The FORAX-LOS4 system is designed to operate autonomously with minimal user configuration required. RF and fiber optic link status is indicated by three-color LEDs on the front panel of the RIU.

Controls and Indicators

LNA Switch (All Channels): LNA ON (30 dB Nominal Gain) / LNA OFF (Bypassed)

MODE Switch (Link 4 Only): LOS enables LOS MODE, SATCOM enables SATCOM MODE

BAND Switches (Link 4, LOS Mode Only): Selects one of seven available filter bands from 30 to 512 MHz

Status LEDs: TX RF: ● TX RF Link Good ● TX RF Level Out of Nominal Range ● Power Amp Over Temp / Fault
○ No RF

LASER: ● Optical Link Good ● Optical Link Marginal ● Optical Fault
●/○ *Flashing* Command Link Re-Sync (may occur during normal operation and does not indicate fault)

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Class 1 Laser Product
Optical Fiber Communication System
Service Group 1
Maximum Power 10 mW
Wavelength 1550 nm
Complies with 21 CFR 1040.10 and 1040.11

System Specifications

RF/Fiber Optic Link Characteristics	
SATCOM Link TX Configuration	Half-duplex UHF SATCOM
LOS Link TX Configuration	Seven selectable sub-bands (MHz): 30-43, 43-62, 62-90, 90-135, 135-215, 215-325, 325-512
Antenna LNA gain into AIU	10 dB (LNA gain less cable loss)
Radio TX power into RIU	5 +/- 1 W nominal, 20 W survival
FORAX AIU output power to external amplifier/antenna	SATCOM: 2 W PEP LOS: 10 W PEP
Bandwidth	30-512 MHz
Link gain (30 m fiber)	LNA On: +18 LNA Off: -15 dB
Noise figure (NF)	LNA On: +9 LNA Off: +39 dB
1-dB compression point	LNA On: -20 LNA Off: +12 dBm
Third-order intercept point (IIP3) (30 m fiber)	LNA On: -10 LNA Off: +24 dBm
Spur-free dynamic range (SFDR) (30 m fiber)	LNA On: +103 LNA Off: +105.5 dBm/Hz

Product Characteristics

Fiber optic connector type	MIL-28876
RF connector type	N-type female
Power connector type	AIU: MIL-C-5015 14S RIU: IEC C13
Power requirements	Input Voltage: 90-240 VAC RIU Power: 20 W (all modes) AIU Power: 25 W (4 x RX) 80 W (4 x SATCOM TX) 270 W (3 x SATCOM TX + 1 LOS TX)
Operating temperature	-34 C to +60 C
Storage temperature	-40 C to +80 C
Case Size	RIU and AIU (WxHxD): RIU: 20 x 8 x 26 cm, 7.9 x 3 x 10 in AIU: 36 x 18 x 33 cm, 14.25 x 7 x 13 in
Weight	RIU: 3.6 kg (8 lb) AIU: 9.5 kg (21 lb)

Limited Hardware Warranty

Syntonics warranty obligations are limited to the terms set forth below:

1. LIMITED WARRANTY. SYNTONICS warrants this hardware product against defects in materials and workmanship, under normal use and service, for a period of one (1) year from the date of receipt by the Purchaser.

If the Purchaser discovers a defect within the warranty period, SYNTONICS will repair the product with either new or refurbished replacement parts at no charge. If SYNTONICS is unable to restore the product to good working order, SYNTONICS will, at its option, replace or refund the purchase price of the product. All products that are replaced will become the property of SYNTONICS. Any replaced or repaired product is warranted for the remainder of the initial warranty period or ninety days, whichever is longer. SYNTONICS shall not be responsible for any software, firmware, information or memory data of the Purchaser contained in, stored on, or integrated with any products for system components returned to SYNTONICS pursuant to any warranty.

2. RETURN PROCEDURES. To obtain service under this warranty within the established period, the Purchaser must:

Call SYNTONICS Technical Service Support Operations at 1-410-884-0500 between 9 a.m. and 5 p.m. EST, Monday through Friday, excluding holidays.

To insure that your product qualifies for return to factory warranty service, you will be asked to provide the model and serial number of your product, the date of original purchase, and the Purchaser's name, address, and phone number.

Products returned to SYNTONICS' Technical Service Support Operations must be pre-authorized by SYNTONICS with a Return Material Authorization (RMA) number marked on the outside of the package, and sent prepaid, insured, and packaged appropriately for safe shipment. The repaired or replaced item will be shipped to the Purchaser at SYNTONICS' expense.

3. APPLICABILITY.

This warranty applies only to hardware products (including internal components) supplied by SYNTONICS that can be identified by the "SYNTONICS" trademark, trade name, or logo affixed to them. Any warranty on external third-party hardware installed by SYNTONICS with this product is provided by the hardware vendor, not SYNTONICS. This warranty applies to all SYNTONICS products and third party products included in each purchase. This warranty does not apply to damage caused by accident, abuse, misuse, improper installation or testing, misapplication, service performed by a third party other than SYNTONICS, or any other cause beyond the range of the intended use, or by fire, lightning, or other hazard; if the product has been modified without the written permission of SYNTONICS; or if any SYNTONICS serial number has been removed or defaced.

4. LIMITATIONS OF REMEDIES AND DAMAGES.

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