



Fiberoptics

DATA SHEET

Remote Fiber Unit

SER-RFU-2300



- OFDM optimized output complies with SXM LB and HB Signal Specifications
- High efficiency Power Amp for up to 8W (+39dBm)
- ALC circuit for adjustment and leveling output
- 39 dB Nominal Gain adjustable from 25-69 dB
- Integrated ERMS Module for monitoring, alarming, and reporting of the LB and HB SXM signal quality
- Integrated WCS Diplexer for combining the SXM LB and HB outputs with the WCS A thru D blocks
- Single Fiber input, 0-10dB Optical Link
- Remote Monitoring and Control
- -48VDC input power capable
- Natural convection cooled (no fans required)
- IP-67 Outdoor rated -40 to +55 C mast mountable
- Small form factor (13.94"L x 9.86"W x 5.24"D) 22 Lbs

Overview

The Remote Fiber Unit contains a Fiber to RF converter and pre-amplification and power amplification stages to elevate the SXM output to the desired level. An Automatic Leveling Control (ALC) loop adjusts the gain of the RFU to ensure a SXM High Band or Low Band output level no less than 17dB below the maximum composite WCS signal.

A built-in ERMS module samples the RF output of the RFU and provides demodulation of the Terrestrial HB and LB waveforms. The ERMS provides health monitoring and alarming for the LB and HB SXM waveform. SXM Signal quality metrics such as RSSI, SINR, and RS Errors are reported to the FDU and can be monitored remotely.

The Remote Fiber Units also contain an integrated Diplexer that combines the SXM LB and HB outputs with the WCS A thru D blocks enabling the simultaneous transmission of the SXM signal with the AT&T WCS signal on a common output port.

Technical Description:

The CCI Fiber IP Repeater is a cost effective and easy to implement solution to provide high power distribution of SXM LB and HB transmission over the existing AT&T network. CCI's Fiber Repeater is specifically designed to work with the SXM Dual Band Exciter (DBE) which accepts both High Band and Low Band UDP Stream inputs.

CCI's Fiber IP Repeater consists of a single Fiber Distribution Unit (FDU) which supports up to four Remote Fiber Units (RFU's) and contains an integrated RF to Fiber converter which converts the RF output from the DBE to four Fiber outputs that are used to distribute the SXM signals to multiple tower mounted Remote Fiber Units (RFU's). The Remote Fiber Units (RFU's) contain an integrated Fiber to RF converter and pre-amplification and power amplification for power transmission of the SXM LB and HB RF outputs over the AT&T network. The integrated WCS/SXM Diplexer eliminates the need for any other hardware on the tower or rooftop.

Remote Monitor and Control functionality of the Fiber IP Repeater is supported via Ethernet/SNMP. The NRCC can remotely access the FDU and its support peripherals. Local Maintenance and Control functionality is supported via the front panel. A second Ethernet port and a second set of dry contact relays are provided for alarm notification and to allow SXM to monitor the performance of the repeater system including real time monitoring of signal quality metrics of each remote repeater.



Fiberoptics

Warning

This is NOT a CONSUMER device. It is designed for installation by FCC LICENSEES and QUALIFIED INSTALLERS. You MUST have an FCC LICENSE or express consent of an FCC Licensee to operate this device. Unauthorized use may result in significant forfeiture penalties, including penalties in excess of \$100,000 for each continuing violation.

Maintain a minimum separation distance from the Transmit Antenna to a person(s) of at least 60 cm. The qualified installer and/or end user of this RF device must control the exposure conditions to a minimum separation distance between the Transmit Antenna and any bystanders in order to ensure RF Exposure compliance.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at own expense.



Fiberoptics

SPECIFICATIONS

Remote Fiber Unit

SER-RFU-2300

Electrical

RF Parameters	Specification	
Frequency Range	2324.244 - 2341.285 MHz	
VSWR (Return Loss)	1.2:1 max. (20.8 dB min.)	
	# of Carriers(COFSM/OFDM)	
RF Composite Power per Carrier	1	39 dBm*
	2	36 dBm*
	Specification	
Downlink Output Tolerance	±0.5 dB (Over Frequency)	
	±0.5 dB (Over Temperature)	
	Ports	
Nominal Gain	INPUT - OUTPUT	53 dB
Gain Range	INPUT - OUTPUT	38 to 69 dB adjustable in 0.25 dB Steps
	Specification	
Composite Input Power Nominal	-15 dBm	
Composite Input Power	-30 dBm (@ max gain 69 dB)	
In Band Spurious	< -20 dBm / MHz for carrier bandwidth ≥ 4MHz @ +36 dBm Composite Output Power	
Group Delay	200 s @ center frequency and 1 m fiber length	
	<i>* PAR 8 dB @ 0.1% per carrier, crest factor of composite signal(2 carriers combined) ≤11 dB</i>	

Optical Parameters	Specification
Optical Return Loss	45 dB min.
Optical Link Budget	0 to 10 dB

General Characteristics	
RF Input Impedance	50 ohms
Nominal Voltage	48 to 60 VDC
Operating Voltage	30 to 72 VDC
Power Consumption	70 W Max.

System Supervision and Control	Description
Web Interface	Built-In (Independent ethernet ports for AT&T and SXM)
SNMP Interface	Built-In (Independent ethernet ports for AT&T and SXM)
Alarms	Summary & Configurable (separate alarm ports for AT&T and SXM)
Supervision	Composite Output Power, Input Level Thresholds, Temperature, Optical Failure, Power Supply, SXM Signal Quality Parameters, Return Loss (VSWR)
Front Panel LED	Status of each tower unit

Environmental

Operating Temperature	-33°C to +55°C
Ingress Protection	IP67



Fiberoptics

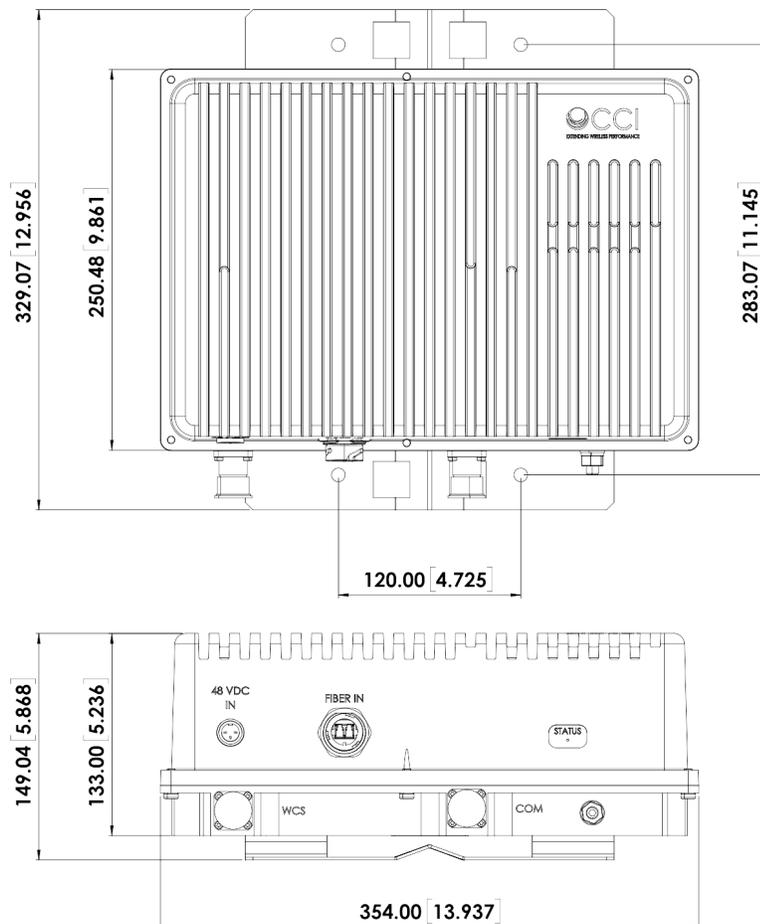
SPECIFICATIONS

Remote Fiber Unit

SER-RFU-2300

Mechanical

WCS RF Connector	1 x 4.3-10 Female
COM RF Connector	1 x 4.3-10 Female
Optical Link Connectors	TE FULL AXS
Fiber Type	Single Mode Duplex E9/125 m
Power Connector	Amphenol C091D Series 3 pin receptacle
Dimensions: (Body Only)(HxWxD)	9.861 x 13.937 x 5.236 in. (250.48 x 354.0 x 133.0 mm)
(with Mounting Bracket)(HxWxD)	12.956 x 13.937 x 5.868 in. (329.07 x 354.0 x 149.04 mm)
Weight	22 lbs (10 kg)
Mounting	Pole/Wall mounting bracket



SER-RFU-2300 Outline Drawing



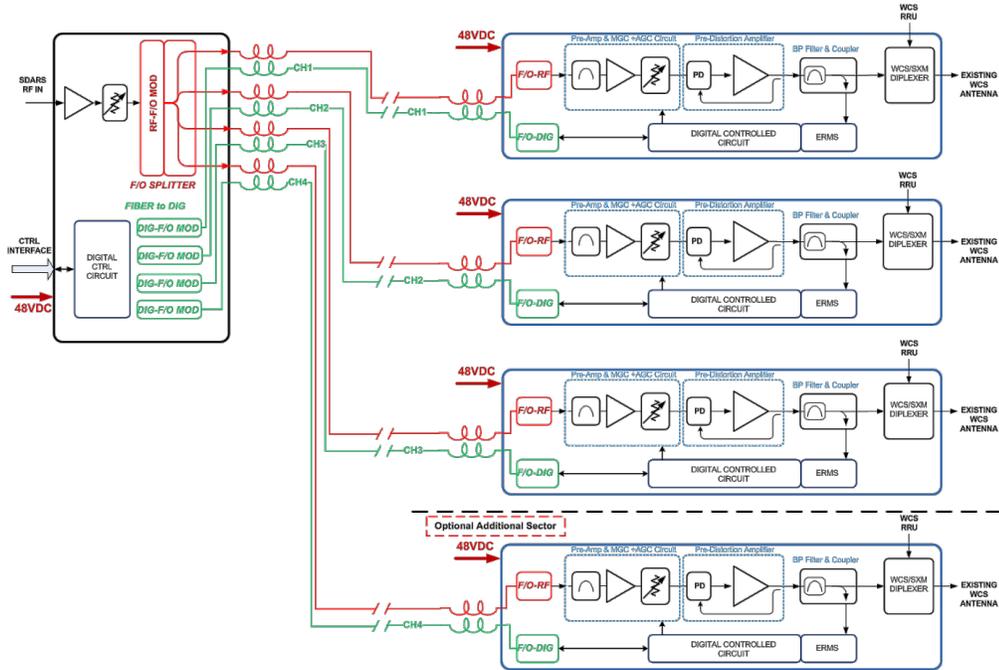
Fiberoptics

SPECIFICATIONS

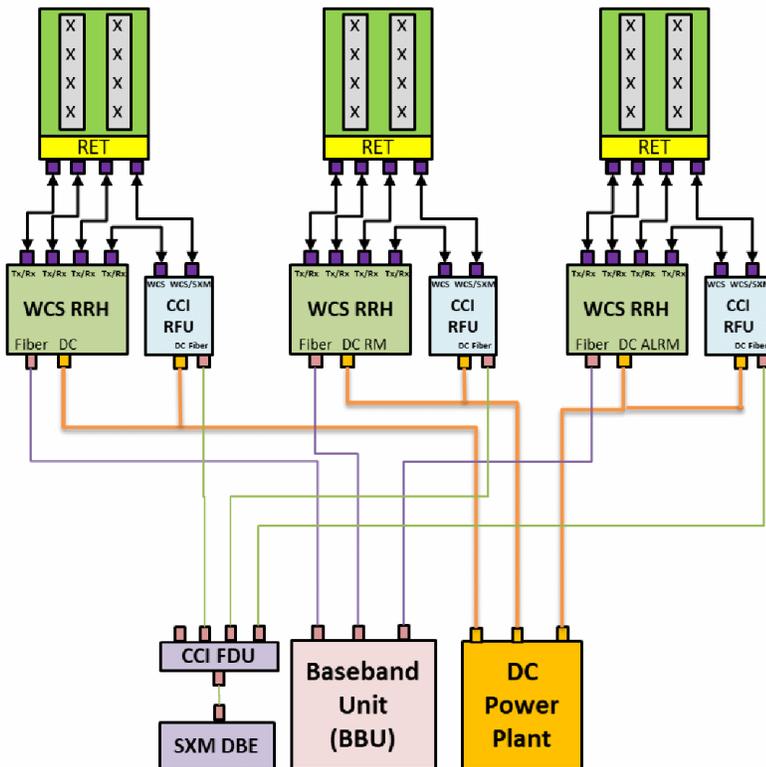
Remote Fiber Unit

SER-RFU-2300

Block Diagram



SER-RFU-2300 System Block Diagram



Typical 3-Sector Site Configuration



Fiberoptics

SPECIFICATIONS

Remote Fiber Unit

SER-RFU-2300



ECHO FIBER REPEATER SYSTEM
Click each cell for detail

	SECTOR 1	SECTOR 2	SECTOR 3	SECTOR 4
Output Level	Actual: 29 dBm, Set: 29	Actual: 30 dBm, Set: 30	Actual: 31 dBm, Set: 30	Actual: [] dBm
Input Level	-5 dBm	-5 dBm	-5 dBm	[] dBm
VSWR	1.2	1.2	3	[]
Temperature	OK	OK	ALARM	[]
Current	OK	OK	OK	[]
Voltage	OK	OK	OK	[]
Fiber Optic	OK	OK	OK	[]
SXM Signal Quality	OK	OK	OK	[]
Communication	OK	OK	OK	[]

BASE UNIT			
Output Level	Actual: -10 dBm	Automatic: <input checked="" type="checkbox"/> Set: -10	Manual: Attenuation 17
Input Level	-5 dBm	Voltage: OK	Current: OK
			Fiber Optic: OK

Last Read Time: 03-07-2019 12:12:30

Simple Operation & Setup Interface



Configuration

Application | Network | VPN | User

Alarm Thresholds		Span Between Readings	
Base Unit	Min Max	Sector	1 2 3 4
Input RF (dBm):	-25 +5	PA Temp (°C):	-10 65
Current (mA):	30 80	LNA Current (mA):	30 80
Output RF (dBm):	-25 -5	PA Current (mA):	300 900
		HB RSSI:	-72 []
		LB SNR:	-11 []
		DC Voltage:	5 20
		VSWR:	[] 2

Span Between Readings: 3 Seconds

Saved: 03-07-2019 12:15:44

Extensible Alarming/Monitoring



Fiberoptics

Remote Fiber Unit

SER-RFU-2300

SPECIFICATIONS

SXM Signal Quality Metrics - Sector1

High Band Metrics	
	Reading
RSSI:	-71
RS Errors:	0
Low Band Metrics	
TERR:	3
SNR:	-15.4
Corrected:	0
Uncorrected:	0
LAPSED:	298

Close

Complete Signal Quality Metrics

WCS/SXM Power Ratio - Sector 1

	Reading	Threshold	Max
Composite Power (dBm):	42.6		
WCS Power (dBm):	41.5		
SXM Power (dBm):	36.2		
WCS/SXM Ratio (dB):	5.3	10	

Close

WCS/SXM Power Ratio

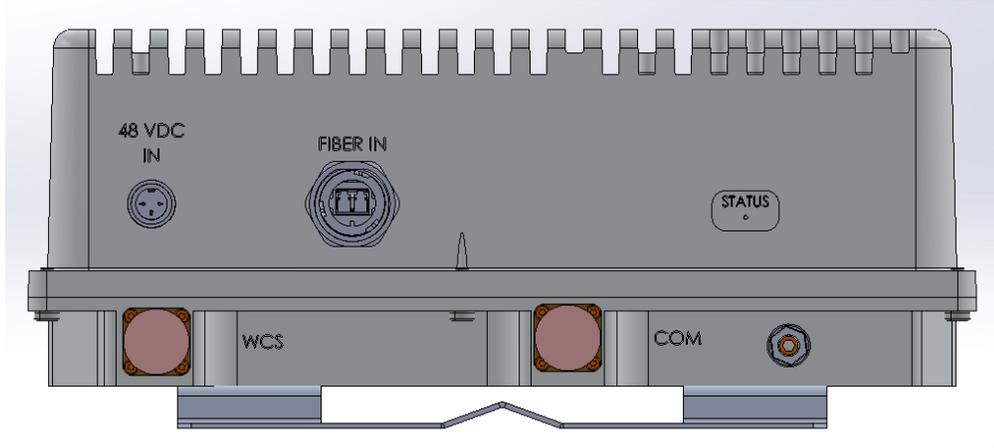


Fiberoptics

SPECIFICATIONS

Remote Fiber Unit

SER-RFU-2300



SER-RFU-2300 Remote Fiber Unit Front Panel View



Fiberoptics

STANDARDS & CERTIFICATIONS

Remote Fiber Unit

SER-RFU-2300

Parts & Accessories

SER-RFU-2300	Remote Fiber Unit
SER-FDU-1S	Single Sector Fiber Distribution Unit (FDU)
SER-FDU-2S	Two Sector Fiber Distribution Unit (FDU)
SER-FDU-3S	Three Sector Fiber Distribution Unit (FDU)
SER-FDU-4S	Four Sector Fiber Distribution Unit (FDU)

Standards & Compliance

Safety	UL 60950-1
Emission	FCC Part 15B, FCC Part 25
Environmental	EN 60529 IP67
FCC ID	NT3SERRFU8W

Certifications

Federal Communications Commission (FCC) Part 15 Class B, Federal Communications Commission (FCC) Part 25, ISO 9001

