

fiberplex
TECHNOLOGIES, LLC

USER MANUAL

PKG-CCR

EXPORT WARNING: ITAR CONTROLLED: Information contained herein is subject to the International Traffic in Arms Regulations. This data may not be transferred, or otherwise made available to a foreign national within the United States, or abroad without the prior written approval of the U.S. Department of State, Directorate of Defense Trade Controls.

Warning for Your Protection

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any of the ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

The apparatus shall not be exposed to dripping or splashing. No objects filled with liquids, such as vases, shall be placed on the apparatus.

"WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture."

General Installation Instructions

Please consider these general instructions in addition to any product-specific instructions in the "Installation" chapter of this manual.

Unpacking

Check the equipment for any transport damage. If the unit is mechanically damaged, if liquids have been spilled or if objects have fallen into the unit, it must not be connected to the AC power outlet, or it must be immediately disconnected by unplugging the power cable. Repair must only be performed by trained personnel in accordance with the applicable regulations.

Installation Site

Install the unit in a place where the following conditions are met:

- The temperature and the relative humidity of the operating environment must be within the specified limits during operation of the unit. Values specified are applicable to the air inlets of the unit.
- Condensation may not be present during operation. If the unit is installed in a location subject to large variations of ambient temperature (e.g. in an OB-van), appropriate precautions must be taken.
- Unobstructed air flow is essential for proper operation. Ventilation openings of the unit are a functional part of the design and must not be obstructed in any way during operation (e.g. - by objects placed upon them, placement of the unit on a soft surface, or improper installation of the unit within a rack or piece of furniture).
- The unit must not be unduly exposed to external heat sources (direct sunlight, spot lights).

Ambient Temperature

Units and systems by FiberPlex are generally designed for an ambient temperature range (i.e. temperature of the incoming air) of +5...+40 °C. When rack mounting the units, the following facts must be considered:

- The permissible ambient temperature range for operation of the semiconductor components is 0 °C to +70 °C (commercial temperature range for operation).
- The air flow through the installation must allow exhaust air to remain cooler than 70 °C at all times.
- Average temperature increase of the cooling air shall be about 20 °C, allowing for an additional maximum 10 °C increase at the hottest components.

If the cooling function of the installation must be monitored (e.g. for fan failure or illumination with spot lamps), the exhaust air temperature must be measured directly above the modules at several places within the enclosure.

Grounding and Power Supply

Grounding of units with mains supply (class I equipment) is performed via the protective earth (PE) conductor integrated in three pin IEC connector. Units with battery operation (< 60 V, class III equipment) must be earthed separately. Grounding the unit is one of the measures for protection against electrical shock hazard (dangerous body currents). Hazardous voltage may not only be caused by defective power supply insulation, but may also be introduced by the connected audio or control cables.

This equipment may require the use of a different line cord, attachment plug, or both, depending on the available power source at installation. If the attachment plug needs to be changed, refer servicing to qualified personnel.

Warranty, Service and Terms and Conditions of Sale

For information about Warranty or Service information, please see our published 'Terms and Conditions of Sale'. This document is available on fiberplex.com, or can be obtained by requesting it from clients@fiberplex.com or calling 301.604.0100.

Disposal

Disposal of Packing Materials

The packing materials have been selected with environmental and disposal issues in mind. All packing material can be recycled. Recycling packing saves raw materials and reduces the volume of waste. If you need to dispose of the transport packing materials, recycling is encouraged.

Disposal of Used Equipment

Used equipment contains valuable raw materials as well as substances that must be disposed of professionally. Please dispose of used equipment via an authorized specialist dealer or via the public waste disposal system, ensuring any material that can be recycled has been. Please take care that your used equipment cannot be abused. After having disconnected your used equipment from the mains supply, make sure that the mains connector and the mains cable are made useless.

Disclaimer

The information in this document has been carefully checked and is believed to be accurate at the time of publication. However, no liability is assumed by FiberPlex for inaccuracies, errors, or omissions, nor for loss or damage resulting either directly or indirectly from use of the information contained herein.

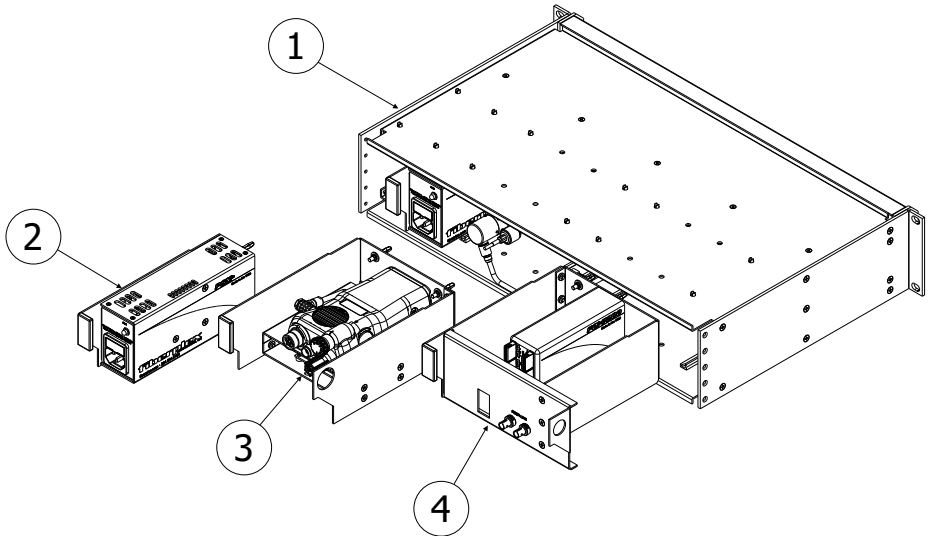


Figure 1 Rack Mount Radio Chassis

Introduction

The PKG-CCRP is a packaged solution for remoting the audio, control and data from a ITT Excelis RO Tactical Radio via fiber to a desktop interface unit. The PKG-CCRP consists of two major components, the RMC-CCRP which is a 2U rack mounted unit designed to hold, power and convert the radio, and the CCRP-B which is the desktop remote unit and includes a connection for a handset, an integrated speaker and RS-232 control port.

Key Features

- Allows the radio and antenna to be optimally located for best reception
- Rack mount radio chassis has capability for local access via front panel
- Provides remote access to the audio communication to a more suitable location
- Provides redundant power for the RO Tactical Radio
- Remote unit includes speaker output with volume control and mute
- Radio can be programmed and monitored via serial connection on remote desktop unit
- Fiber connection creates secure and error free transmission path

Getting Started

Initial Inspection

Immediately upon receipt, inspect the shipping container for damage. The container should be retained until the shipment has been checked for completeness and the equipment has been checked mechanically and electrically. If the shipment is incomplete, if there is mechanical damage, or if the unit fails to operate notify FiberPlex and make the shipping materials available for the carrier's inspection.

PKG-CCRP Components

- 1 **RMC-CCRP** – Standard 17", 2U rack mount chassis designed to hold, provide power to, and convert the audio from the ITT Excelis RO Tactical Radio. Includes front panel indicators and connection for a local handset.
- 2 **PSM-2010 Power Supply Module** - Hot swappable, redundant power supply module for the RMC-CCRP. 2ea are included.
- 3 **CMA-CCRP Radio Carrier Tray** - Custom carrier tray for radio with integrated power supply.
- 4 **CMA-2100 Fiber Converter Tray** - Includes FOI-7280-L12 audio to fiber converter and provides connections for radio handset and ST fiber patch.
- 5 **CCRP-B**- Remote desktop unit. Includes handset connection and integrated speaker.

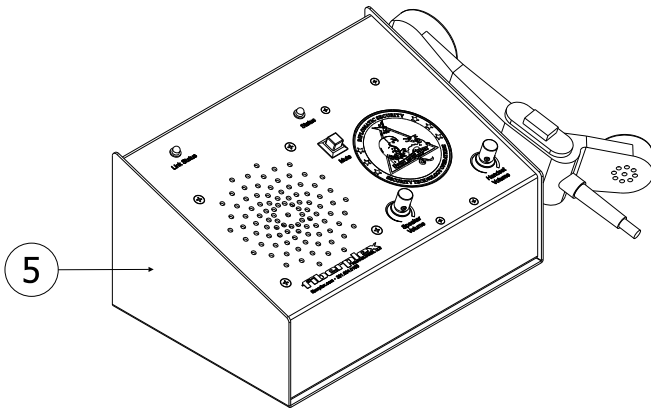


Figure 2 Remote Desktop Unit

Power Requirements and Mounting

Mount the empty RMC-CCRCP chassis using fasteners appropriate to your standard 19" rack enclosure. All four (4) mounting points **MUST** be utilized. Ensure that there exists adequate clearance for front and rear ventilation. The chassis should be located in an environment where an ambient temperature between 0° and 50° C can be maintained.

Mounting Radio

The following is the procedure for mounting and installing the radio into the RMC-CCRCP.

1. The CMA-CCRCP utilizes the same mounting holes on the radio that are used for a belt clip accessory. If the belt clip is present, remove the clip and retain the screws.
2. Attach the radio to the CMA-CCRCP using these holes and the retained screws.
3. Connect the Lemo™ power cable that is integrated into the CMA-CCRCP to the radio.
4. Install the CMA-CCRCP into the center designated slot.
5. Connect the Radio Communications Cable from the RMC-CCRCP to the handset connector on the radio.
6. Attach the external antenna connection to the radio. Refer to the radio user's manual for more information.

Power Requirements & PSM Mounting

The power supply modules (PSM-2010) as well as the CCRP-B Desktop Unit accept voltages from 100-240 VAC, 50/60 Hz. Maximum power consumption is 125W per module.

Although the PSM-2010 power supply modules are designed to be hot swappable, it is optimal practice to insert a module into the chassis prior to the application of AC power. The power supplies must be installed in the slot left most slot when viewing the insertion end of the respective model chassis. A secondary redundant power supply may be installed in the next slot to the right.

To access the fuses, disconnect power cord, and remove the power supply unit from the chassis. Replacement fuses must have the required current rating and must be of the specified type. Use of repaired fuses and/or bypass of the fuse holders is not recommended and will void the warranty.

The system power requirement for a 17-unit (maximum) rack configuration is 115 VAC @ 20 Amps; if supplied with 230 VAC, 10 Amps is required.

Power Supply Module Fuse Replacement

The power supply modules are each protected by a single 2A time-delay fuse (Littlefuse model 218.002 Slo-Blo). Replacement of the fuse requires the power cord to be disconnected from the power supply power inlet. Slide open the integral fuse holder, remove the blown fuse and replace. A spare fuse is stored on the outer position of the fuse holder. Replace only with identical or equivalent time-delay fuse.

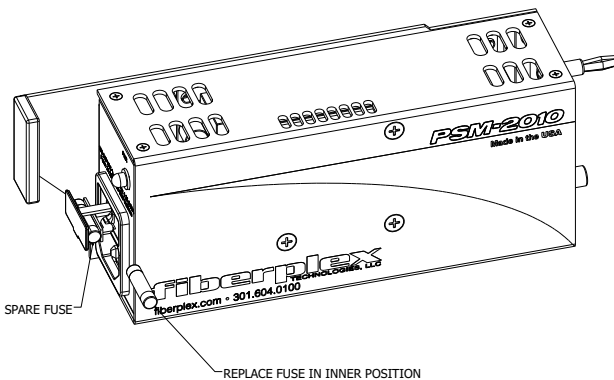


Figure 3 PSM-2010 fuse installation

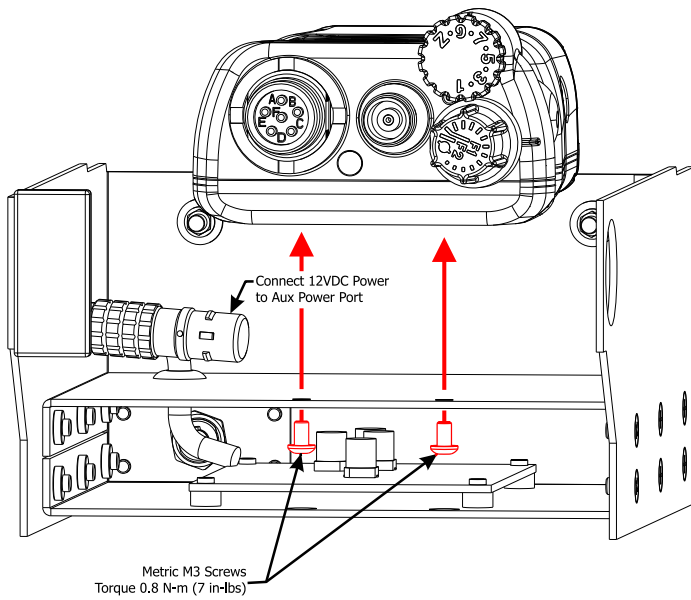


Figure 4 Mounting the Radio

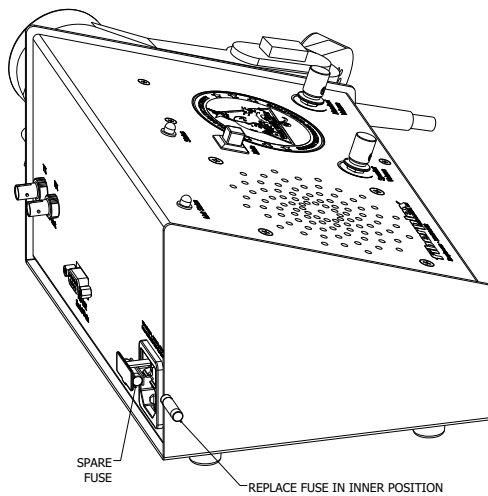


Figure 5 CCRP-B fuse installation

RMC-CCRП Front Indicators/Connections

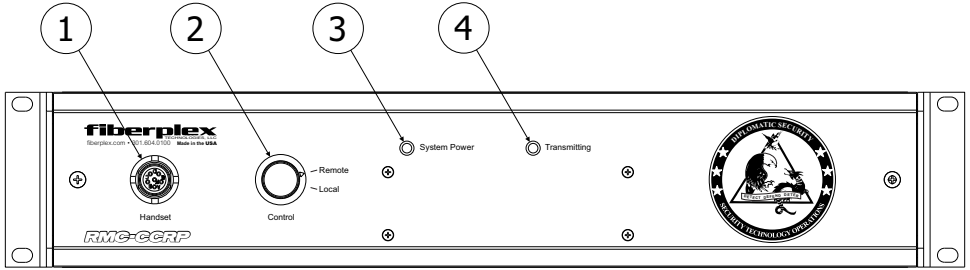


Figure 6 RMC-CCRП Front Face

- 1 Handset Connector** - A radio compatible handset can be connected here for local utilization of the radio while installed in the RMC-CCRП chassis. The handset only needs to be connected while being used in local mode.
- 2 Control Selector** - Selects between 'Remote' and 'Local' radio mode. In the Remote position, all communication with the radio is routed via fiber to the remote desktop unit. In the Local position, all communication with the radio is achieved via the front panel.
- 3 System Power Indicator** – A green LED indicates power is good.
- 4 Transmitting Indicator** - This LED mimics the Transmit LED functionality of the radio. It will illuminate green during radio transmission.
- 5 PSM-2010 Power Indicator** - Indicates that the +9VDC output voltage is present, and that the module is operating properly.
- 6 Radio Communications Connector** – Connects to the handset connector on the radio. This routes all signals to the Remote/Local selector on the front panel. This must be installed for proper operation. Disconnect before removing radio carrier.

Front Indicators/Connections

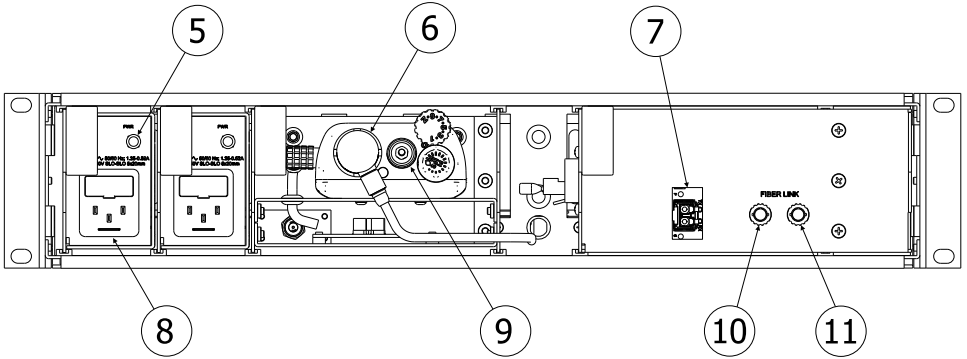


Figure 7 RMC-CCRP Rear Face

7 Fiber Status Viewing Window – Allows visibility to the fiber status indicators on the FOI-7280-L5B. There are four LEDs visible through this window. The top LED is the power indicator which indicates the presence of DC power in the FOI unit. Note that on start-up, the unit will perform a quick lamp check, flashing all LEDs. A Blue LED indicates that the power supply is working properly.

The next two LEDs are in order TX Fault and RX Detect. These are fiber status indicators and can be interpreted using the following table:

TX Fault	RX Detect	SFP Installed	Transmitter Functioning	Receive Signal Present
Off	Off	No	n/a	n/a
Red	Red	Yes	No	No
Red	Green	Yes	No	Yes
Green	Red	Yes	Yes	No
Green	Green	Yes	Yes	Yes

The bottom LED in the viewing window indicates the health status of the FOI unit. The LED can be interpreted according to the following table.

Status Indicator	
Off	If Power LED is on, there is an internal failure inside the FOI. Replace
Green	Power supply is operating properly
Amber	At limit of normal range of temperature, apply more cooling to the unit
Red	Exceeding temperature limits or internal failure

8 PSM-2010 Power Input Connector – Industry standard IEC power connector. Accept voltages from 100-240 VAC, 50/60 Hz.

9 Radio Antenna Connector – Connect antenna according to radio manufacturer’s instruction. Disconnect antenna before removing radio carrier.

10 Fiber Transmit (TX) Connector – Routes fiber signals to the RX connector on the remote desktop unit.

11 Fiber Receive (RX) Connector - Routes fiber signals from the TX connector on the remote desktop unit.

Front Indicators/Connections

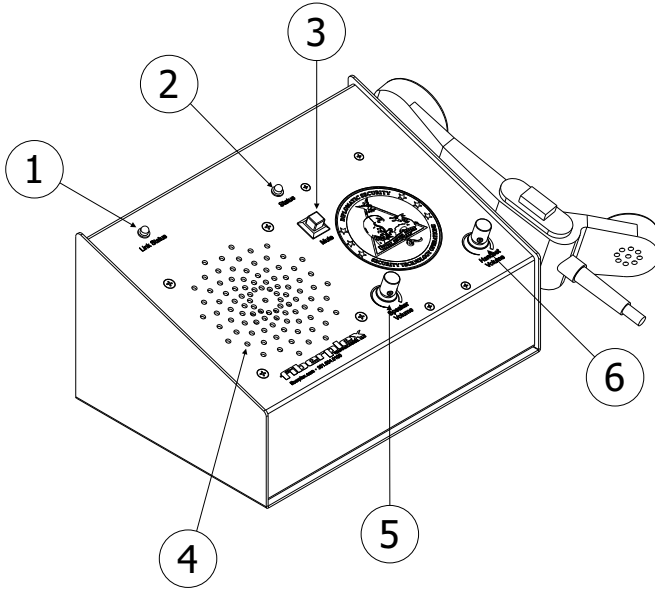


Figure 8 CCRP-B Desktop Unit Front Face

- 1 **Link Status Indicator** - Green if fiber connection is up and running, Red if either the Tx or Rx has a hard fault/loss of signal, Yellow if the fiber signal is present but that the unit isn't syncing to its partner
- 2 **Status Indicator** – Indicates the mute status of the audio. Yellow indicates the audio is muted. Off indicates normal operation.
- 3 **Mute Button** - Mutes the audio in the integrated speaker only when depressed.
- 4 **Speaker** - Integrated speaker reproduces audio coming from remote radio. Duplicates what is heard in attached handset.
- 5 **Speaker Volume** - Controls the audio level in the integrated speaker.
- 6 **Handset Volume** - Controls the audio level in the attached handset.

Rear Indicators/Connections

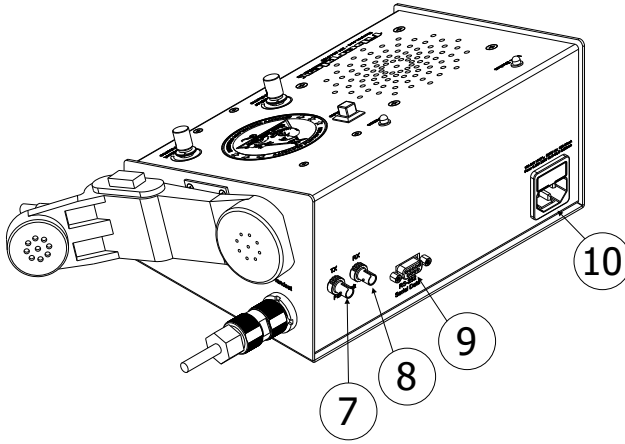


Figure 9 CCRP-B Desktop Unit Rear Face

- 7** **Fiber Transmit (TX) Connector** – Routes fiber signals to the RX connector on the remote rack mount unit.
- 8** **Fiber Receive (RX) Connector** - Routes fiber signals from the TX connector on the remote rack mount unit.
- 9** **RS-232 Serial Data Connection** - RS-232 data connection port for configuration and monitoring of remote radio. See radio owner's manual for more information.
- 10** **AC Power Connection** - Industry standard IEC power connector. Accept voltages from 100-240 VAC, 50/60 Hz.

Specifications

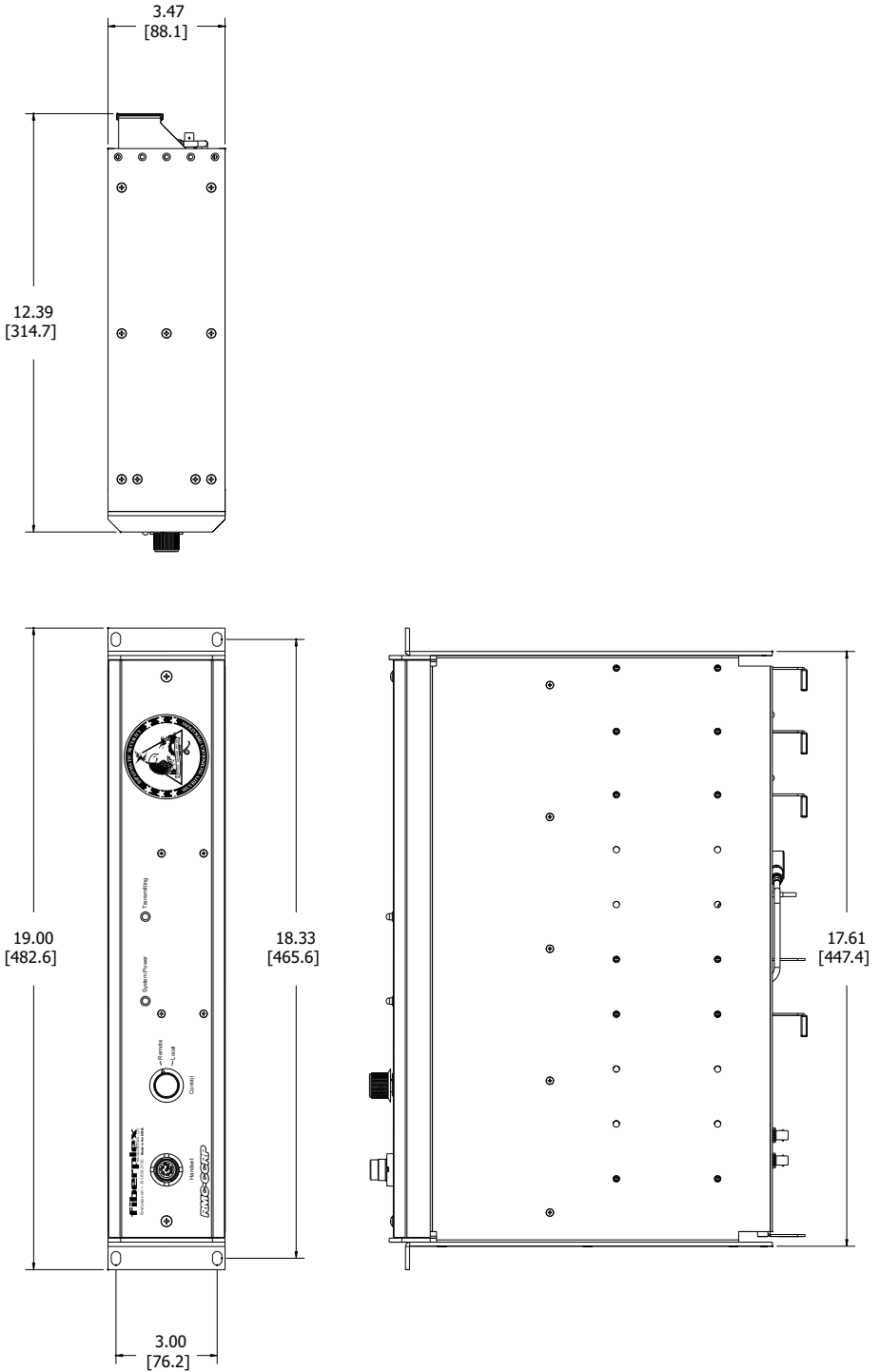


Figure 10 RMC-CCRP Dimensions

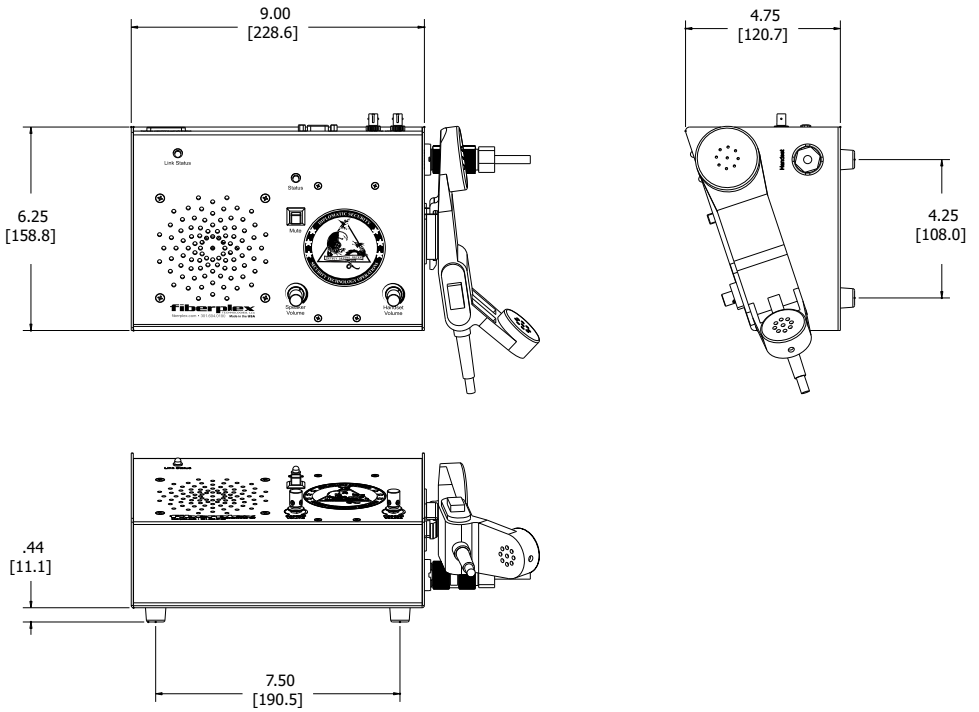


Figure 11 CCRP-B Desktop Unit Dimensions

Alternate Desktop Mounting Option

In some applications it is desirable to have the RMC-CCRP configured as a desktop unit rather than rack mounted. In this case, four (4) self-adhesive rubber feet are included in the RMC-CCRP packaging and can be affixed to the bottom of the unit as shown in Figure 12. Note that the bottom deck of the chassis is slightly recessed below the side brackets, so for best stability in a desktop mounting application, it is highly recommended that the rubber feet be installed.

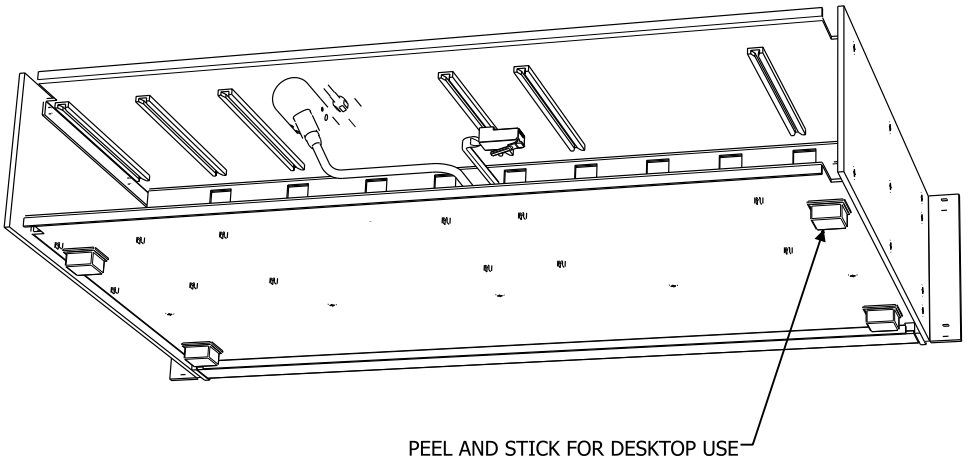


Figure 12 Installing rubber feet on the RMC-CCRP

AUDIO SPECIFICATIONS (FOI-7280)

		Min	Typ	Max	unit
Frequency Response	20 Hz to 25 KHz	-0.5	0	0.5	dB
	26 KHz to 45 KHz	-1.5	0	1.5	dB
Third Harmonic Distortion plus Noise (THD+N)* - 1 KHz @ +4 dBu		-	0.015	-	%
Input Level (with max 1% THD)		-60	0	+17	dBu
			-		VDC
Input Sensitivity		0.020	0.775	7	Vrms
Input Noise Floor ref +0 dBu		-	-80	-	dBu
Input Impedance		-	2	-	K Ω
Output Level		0.02	0.775	7	Vrms
Output Impedance		-	150	-	Ω
Output for Use with Nominal		-	600	-	Ω
Audio Latency (point to point)		-	1260	-	μ s
Sampling Rate		24 bit / 96kHz or 24 bit / 48 kHz			

*Hum & Noise are measured with an AES17 compliant filter at 20 kHz. Temperature condition @+10 - +25° C.

SERIAL DATA SPECIFICATIONS

		Min	Typ	Max	unit
RS-232	Output Levels, 3K Ω Termination	\pm 5	\pm 5.4	-	VDC
	Input Levels	-15	-	+15	VDC
	Input Threshold	\pm 3	-	-	VDC
	Data Rate	0	-	1	Mbps
	Input Termination	3	-	2.3	K Ω

ELECTRICAL SPECIFICATIONS

		Min	Typ	Max	unit
Environmental	Storage Temperature (°C)	-40	-	85	°C
	Operating Temperature (°C)	0	-	50	°C
Power Requirement	Voltage Range	7	9	12	VDC
	Supply Current, no SFPs	-	600	-	mA

OPTICAL SPECIFICATIONS

External SFP Interface		Min	Typ	Max	unit
Data Rate		-	346	-	Mbps
Recommended Jitter		-	40	-	psec
Operating Voltage		-	3.3		VDC
Maximum Current		-	-	500	mA
Optical Modules	SFP MSA (SFF-8431, SFF-8432, SFF-8433) compliant slot, data rate 266 – 1.25 Gbps				
Output Power (50 μ fiber)		-9	-	-4	dBm
Extinction Ration		9	-	-	dB
TX Optical Wavelength		830	850	860	nm
RX Sensitivity		-	-	-18	dBm
Max Received Power		0	-	-	dBm
RX Optical Center Wavelength		770	-	860	nm

The CCRP is optimized for 50 micron multimode fiber. This will allow a link up to approximately 2 km, depending on cable grade, number of splices or patch panels, etc. When using 62.5 micron fiber the maximum distance for a link with the CCRP is approximately 1.8 km.



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UMCCRP
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