

CommScope ERA[®] CAP M2 with Fiber Interface

2nd Generation Medium Power Carrier Access Point

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ERA[®] and ION-E[®]

ERA is an extension of the hardware and software architecture that CommScope originally introduced as ION-E. Going forward, all new systems are ERA. Since ION-E and ERA share the same hardware modules, system software and management systems, existing ION-E systems can be updated and expanded using ERA components.

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Andrew Wireless Systems GmbH, 08 August 2022

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DOCUMENT OVERVIEW

This guide provides a product overview and installation instructions for CAP M2 fiber variants.

[Table 1](#) lists the supported CAP M2 fiber variants.

Table 1. Supported CAP M2 Fiber Models

Part Number	Model Name
7851671-1001	CAP M2 C-Band F-AC
7851671-1002	CAP M2 C-Band F-DC
7851671-1003	CAP M2 35LT/35HT F-AC
7851671-1004	CAP M2 35LT/35HT F-DC
F in name (after the bands) stands for Fiber	



For information on how to find the minimum software requirements for ERA hardware, refer to ["Hardware to Software Mapping Information" on page 43](#).

Document Revision History

This is the first release of the *CommScope ERA™ CAP M2 Fiber Medium Power Carrier Access Point Installation Guide*.

Document Cautions and Notes

This document may contain any of the following notes, cautions, and warning icons.



The icon to the left is used to indicate a caution or warning. Cautions and warnings indicate operations or steps that could cause personal injury, induce a safety problem in a managed device, destroy or corrupt information, or interrupt or stop services.



The icon to the left indicates a caution or warning that pertains to laser equipment.



The icon to the left indicates a caution or warning that pertains to Radio Frequency (RF).



The icon to the left indicates that the hardware is susceptible to Electro-Static Discharge (ESD) damage.



The icon to the left indicates a caution or warning that pertains to an electrical hazard.



The icon to the left indicates a Note. Notes provide information about special circumstances.

Abbreviations Used in this Guide

AP	Access Point	ISDE	Innovation, Sciences et Développement économique Canada
AUX	Auxiliary	ISED	Innovation, Science and Economic Development Canada
C	Celsius	kg	Kilogram
CAN	Central Area Node	LED	Light Emitting Diode
CAP L 2	Low Power Carrier Access Point, Second Generation	LPS	Limited Power Source
CAP M2	Medium Power Carrier Access Point, Second Generation	MHz	Megahertz
Cat	Category	mm	Millimeter
CAT	Copper Transport	MMF	Multi-Mode Fiber
dB	Decibel	N/A	Not Applicable
dBm	Decibel-milliwatts	OPT	Optical Transport
DC	Direct Current	PN	Part Number
DCCS	Distributed Coverage and Capacity Solutions	RAN	Regional-Area Network
RF	Radio Frequency	ION	Intelligent Optical Network
EMC	Electromagnetic Compatibility	RU	Rack Unit
EMEA	Europe, Middle East, Africa	SFP	Small Form-Factor Pluggable
EU	European Union	SMF	Single-Mode Fiber
F	Fahrenheit	TEN	Transport Expansion Node
FCC	Federal Communications Commission	UAP	Universal Access Point
Gb	Gigabyte	Vdc	Volts, direct current
GHz	Gigahertz	W	Watts
EFTA	European Free Trade Association		

Safely Working with ERA Hardware

The following sections provide important information that you should read and know before working with any ERA hardware. Observe all cautions and warnings listed in this section.

Health and Safety Precautions



A high leakage current ground (earth) connection to the Power Supply Unit (PSU) is essential before making any other connections to the PSU.



Laser radiation. Risk of eye injury in operation. Do not stare into the laser beam; do not view the laser beam directly or with optical instruments.



High frequency radiation in operation. Risk of health hazards associated with radiation from the antenna(s) connected to the unit. Implement prevention measures to avoid the possibility of close proximity to the antenna(s) while in operation.



If the CAP M2 power connector is not easily accessible, a disconnect device in the mains power circuit must be provided within easy reach.

Property Damage Warnings



Keep operating instructions within easy reach and make them available to all users.



Only license holders for the respective frequency range are allowed to operate this unit.



Read and obey all the warning labels attached to the unit. Make sure that all warning labels are kept in a legible condition. Replace any missing or damaged labels.



Make sure the unit's settings are correct for the intended use (refer to the manufacturer product information) and regulatory requirements are met. Do not carry out any modifications or fit any spare parts, which are not sold or recommended by the manufacturer.

General Installation Safety Requirements



Wet conditions increase the potential for receiving an electrical shock when installing or using electrically powered equipment. To prevent electrical shock, never install or use electrical equipment in a wet location or during a lightning storm.



This system is a RF Transmitter and continuously emits RF energy. Maintain a minimum clearance from the antenna while the system is operating. Whenever possible, power down the CAP M2 before servicing the antenna.



Do not remove caps from any of the connectors until instructed to do so.



The CAP M2 is to be used only with CommScope (NEC Class 2) or Limited Power Source ERA Subrack, or equivalent.

Guard Against Damage from Electro-Static Discharge



Electro-Static Discharge (ESD) can damage electronic components. To prevent ESD damage, always wear an ESD wrist strap when working with ERA hardware components. Not all ERA hardware requires grounding. For those ERA hardware components for which grounding is required, connect the ground wire on the ESD wrist strap to an earth ground source before touching the ERA component. Wear the wrist strap the entire time that you work with the ERA hardware.

Compliance

- 1 Notice:** For installations, which have to comply with FCC RF exposure requirements, the antenna selection and installation must be completed in a way to ensure compliance with those FCC requirements. Depending on the RF frequency, rated output power, antenna gain, and the loss between the repeater and antenna, the minimum distance D to be maintained between the antenna location and human beings is calculated according to this formula:

$$D_{[cm]} = \sqrt{\frac{P_{[mW]}}{4 * \pi * PD_{[mW/cm^2]}}}$$

where

- P (mW) is the radiated power at the antenna, i.e. the max. rated repeater output power in addition to the antenna gain minus the loss between the repeater and the antenna.
- PD (mW/cm²) is the allowed Power Density limit acc. to 47 CFR 1.1310 (B) for general population / uncontrolled exposures which is
 - f (MHz) / 1500 for frequencies from 300MHz to 1500MHz
 - 1 for frequencies from 1500MHz to 100,000MHz

RF exposure compliance may need to be addressed at the time of licensing, as required by the responsible FCC Bureau(s), including antenna co-location requirements of 1.1307(b)(3).

- 2 Notice:** For installations which have to comply with European EN50385 exposure compliance requirements, the following Power Density limits/guidelines (mW/cm²) according to ICNIRP are valid:
 - 0.2 for frequencies from 10 MHz to 400 MHz
 - F (MHz) / 2000 for frequencies from 400 MHz to 2 GHz
 - 1 for frequencies from 2 GHz to 300 GHz
- 3 Notice:** Installation of this equipment is in full responsibility of the installer, who has also the responsibility, that cables and couplers are calculated into the maximum gain of the antennas, so that this value, which is filed in the FCC Grant and can be requested from the FCC data base, is not exceeded. The industrial boosters are shipped only as a naked booster without any installation devices or antennas as it needs for professional installation.
- 4 Notice:** For installations which have to comply with FCC/ISED requirements:

English:

This device complies with FCC Part 15. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

This device complies with Health Canada's Safety Code. The installer of this device should ensure that RF radiation is not emitted in excess of the Health Canada's requirement. Information can be obtained at http://www.hc-sc.gc.ca/ewh-semt/pubs/radiation/radio_guide-lignes_direct-eng.php.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Antenna Stmt for ISED:

This device has been designated to operate with the antennas having a maximum gain of 15 dBi. Antennas having a gain greater than 15 dBi are prohibited for use with this device without consent by ISED regulators. The required antenna impedance is 50 ohms.

The antenna(s) used for this transmitter must be installed to provide a minimum separation distance from all persons and must not be co-located or operating in conjunction with any other antenna or

transmitter. Users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

French:

Cet appareil est conforme avec Santé Canada Code de sécurité 6. Le programme d'installation de cet appareil doit s'assurer que les rayonnements RF n'est pas émis au-delà de l'exigence de Santé Canada. Les informations peuvent être obtenues:

http://www.hc-sc.gc.ca/ewh-semr/pubs/radiation/radio_guide-lignes_direct-eng.php

Les changements ou modifications non expressément approuvés par la partie responsable de la conformité pourraient annuler l'autorité de l'utilisateur à utiliser cet équipement.

Antenne Stmt pour ISDE:

Ce dispositif a été désigné pour fonctionner avec les antennes ayant un gain maximal de 15 dBi. Antennes ayant un gain plus grand que 15 dBi sont interdites pour une utilisation avec cet appareil sans le consentement des organismes de réglementation d'ISDE. L'impédance d'antenne requise est 50 ohms.

L'antenne (s) utilisé pour cet émetteur doit être installé pour fournir une distance de séparation minimale par rapport à toute personnes et ne doit pas être co-localisées ou opérant en conjonction avec une autre antenne ou émetteur. Les utilisateurs et les installateurs doivent être fournis avec des instructions d'installation de l'antenne et des conditions de fonctionnement de l'émetteur pour satisfaire la conformité aux expositions RF.

- 5 Notice:** The unit complies with Overvoltage Category II. It also complies with the surge requirement according to EN 61000-4-5 (fine protection); however, installation of an additional medium (via local supply connection) and/or coarse protection (external surge protection) is recommended depending on the individual application in order to avoid damage caused by overcurrent.

For Canada and US, components used to reduce the Overvoltage Category shall comply with the requirements of IEC 61643-series. As an alternative, components used to reduce the Overvoltage Category may comply with ANSI/IEEE C62.11, CSA Certification Notice No. 516, CSA C22.2 No. 1, or UL 1449. Suitability of the component for the application shall be determined for the intended installation.

- 6 Notice:** Corresponding local particularities and regulations must be observed. For national deviations, please refer to the respective documents, which are available from CommScope.
- 7 Note:** For a Class B digital device or peripheral:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced RF technician for help.

- 8 Notice:** For a Class A digital device or peripheral.

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 his own expense.

- 9 **Note:** This unit complies with European standard EN62368-1.

Equipment Symbols Used / Compliance

Please observe the meanings of the following symbols used in our equipment and the compliance warnings listed in [Table 2](#).

Table 2. Compliance Labels

Symbol	Compliance	Meaning
—	FCC	For industrial (Part 20) signal booster: 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.
		For (Part 90) signal booster: 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. You MUST register Class B signal boosters (as defined in 47 CFR 90.219) online at www.fcc.gov/signal-boosters/registration . Unauthorized use may result in significant forfeiture penalties, including penalties in excess of \$100,000 for each continuing violation.
—	ISED	WARNING: This is NOT a CONSUMER device. It is designed for installation by an installer approved by an ISED licensee. You MUST have an ISED LICENCE or the express consent of an ISED licensee to operate this device. AVERTISSEMENT: Ce produit N'EST PAS un appareil de CONSOMMATION. Il est conçu pour être installé par un installateur approuvé par un titulaire de licence d'ISDE. Pour utiliser cet appareil, vous DEVEZ détenir une LICENCE d'ISDE ou avoir obtenu le consentement exprès d'un titulaire de licence autorisé par ISDE.
CE	CE	To be sold exclusively to mobile operators or authorized installers - no harmonized frequency bands, operation requires license. Intended use: EU and EFTA countries.
		Indicates conformity with the RED directive 2014/53/EU and/or RoHS directive 2011/65/EU.

Maximum Output Power Levels

Table 3 lists the frequencies and maximum power output for bands supported in the CAP M2 variants.

Table 3. Maximum Power Output by Frequency

Band	DL Frequency Range	Power Output [dBm]
35LT	3410 – 3640 MHz	35
35HT	3570 – 3800 MHz	35
C-Band	3700 – 3980 MHz	35

Required Antenna Distances

Table 4. Minimum Antenna Distances

Model	Antenna Gain Without Cable Loss (dBi)	Minimum Distance DL			
		FCC		ISED	
		meters	inches	meters	inches
CAP M2 C-Band	15	1.784	70.236	2.751	108.307

FIBER CAP M2 OVERVIEW

This installation guide describes the Fiber CAP M2, which interfaces with a Classic CAN or TEN via an optical link. This allows the Fiber CAP M2 to provide data over Single-Mode Fiber (SMF) or Multi-Mode Fiber (MMF). Power for Fiber CAP M2s is provided over External AC/DC or remotely through hybrid fiber (see "[Connect the Cables to the Fiber CAP M2](#)" on page 28).

On the downlink, the Fiber CAP M2 converts data arriving at the CAP M2 to analog signals and sends them to the Antenna ports. On the uplink, received signals are digitized and serialized into data streams, which are sent back to the Classic CAN or TEN.

The Fiber CAP M2 is designed for indoor and outdoor use. It is passively cooled with a temperature range of: -33°C to +50C (-27.4°F to +122°F); see also "[Recommended Tools and Material](#)" on page 16.

Connectors and LED for the Fiber CAP M2

Figure 1 and Table 5 identify the Fiber CAP M2 connectors and its LED; corresponding connectors are shown.

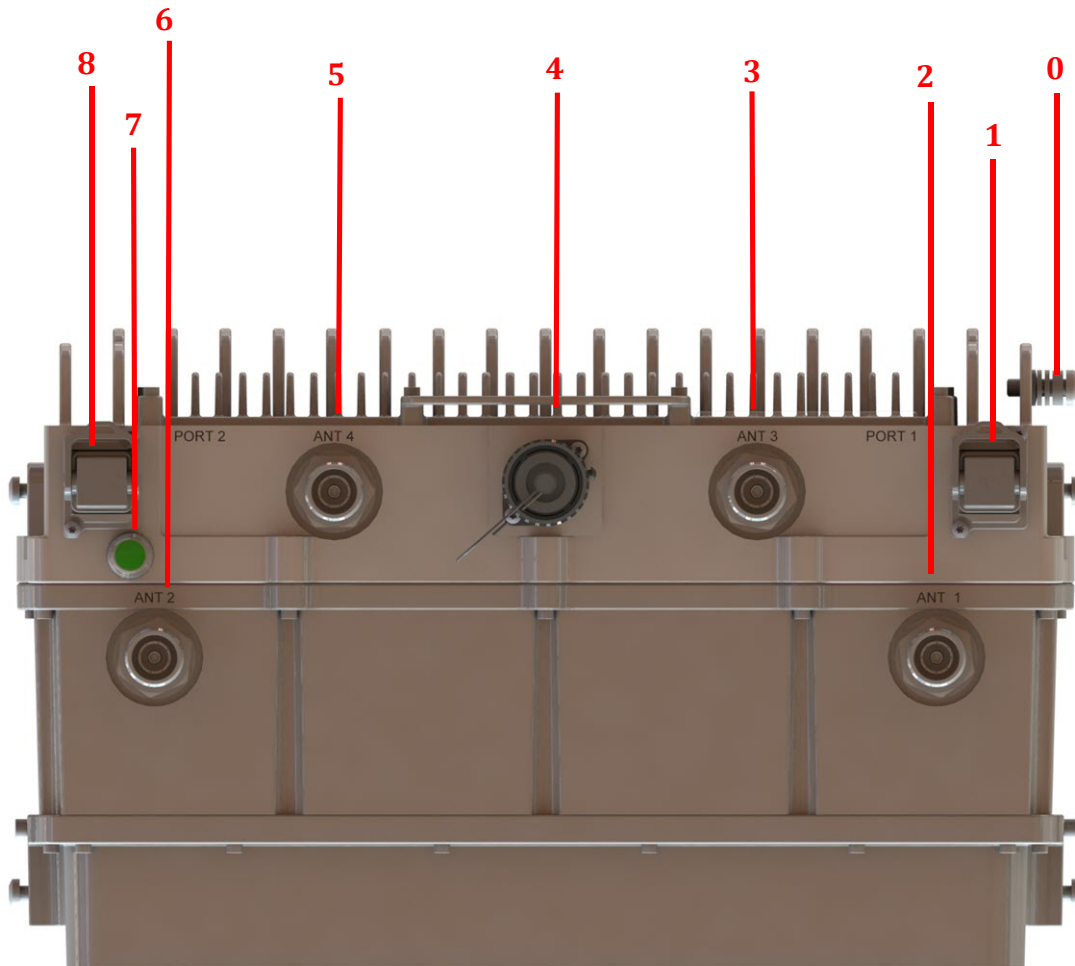


Figure 1. CAP M2 Connectors and LED

Table 5. Function of the CAP M2 Connectors and LED

Ref #	Label	Description	Function
0	None	Grounding Bolt	Connects the CAP MX to an approved earth-ground source.
1	Port 1	Port 1 OCTIS Connector	Port to pass fiber cable to the SFP+ module. The port seal is the OCTIS Universal connector PN 7847069. Connecting the fiber cable to the CAP M2 requires removing the service lid.
2	ANT 1	4.3-10 RF connector	Connect to external antennas or to one of the ports on a multiple input cross-polarized antenna via 50Ω coaxial cable. The antenna ports ship with dust caps that can be discarded upon unit installation.
3	ANT 3	4.3-10 RF connector	Connect to external antennas or to one of the ports on a multiple input cross-polarized antenna via 50Ω coaxial cable. The antenna ports ship with dust caps that can be discarded upon unit installation.
4	None	Power connector (Vac or Vdc)	Connects to any of the following (graphic shows the port populated): <ul style="list-style-type: none"> • Vac—Main power • Vdc—Remote DC power supply or a Hybrid Fiber Junction Bo
5	ANT 4	4.3-10 RF connector	Connect to external antennas or to one of the ports on a multiple input cross-polarized antenna via 50Ω coaxial cable. The antenna ports ship with dust caps that can be discarded upon unit installation.
6	ANT 4	4.3-10 RF connector	Connect to external antennas or to one of the ports on a multiple input cross-polarized antenna via 50Ω coaxial cable. The antenna ports ship with dust caps that can be discarded upon unit installation.
7	None	Power and Status LED	See " Connectors and LED for the Fiber CAP M2 " on page 8
8	Port 2	Port 2 OCTIS Connector	Port to pass fiber cable to the SFP+ module. The port seal is the OCTIS Universal connector PN 7847069. Connecting the fiber cable to the CAP M2 requires removing the service lid.

CAP M2 Accessories and Options

The Fiber CAP M2 accessories and options are described in the following sections:

- "[Mounting Kits](#)" on page 9
- "[SFP+ Module Kits](#)" on page 10
- "[OCTIS™ Universal Lever Assembly Kits](#)" on page 11

Mounting Kits



Wall Mounting Kit 7851781-00 (EMEA) is provided in the CAP M2 kit.

Wall Mounting Kit 7851753 (NAR) is not provided in the CAP M2 kit and must be ordered separately.

Mounting and Power Kits are described in the applicable installation process:

Table 6. Mounting and Power Kits

Mounting/Power Kit	CommScope PN	See
Wall Mounting Bracket Kit	7851781-00 (EMEA)	"Mounting CAP M2 with a Wall Mounting Kit" on page 19
	7851753 (NAR)	
Power Supply/Hybrid Fiber Mounting Kit	7774354-xx	"Mounting a CAP M2 with a Hybrid Fiber Splice Box Kit (optional)" on page 22

SFP+ Module Kits

Contact your local CommScope sales representative to obtain the following components, as required, for this installation.

- Per the installation plan, obtain either Single Mode Fiber (SMF) or Multi Mode Fiber (MMF) that is of sufficient length to reach from the CAP M2 to a Classic CAN or TEN.
- All CAP M 2s ship with the required Optical OCTIS Kit (PN 7770612).
- Obtain SFP+ Module pairs (two SFP+ modules for the TEN/CAN side and two SFP+ modules for the CAP M2 side) that are appropriate for this installation. [Table 7](#) identifies the available SFP+ Modules and the maximum range for each.

Table 7. Supported SFP+ Modules

CommScope PN	Description	Maximum Range
7660511	SFP+, 10GBase-SRR, Multi Mode	OM3 300m OM4 400m
7680813	SFP+, 10GBase-LR, Single Mode	10km
7803247	SFP+, 10GBase CWDM-270	40km
7803249	SFP+, 10GBase CWDM-290	40km
7803291	SFP+, 10GBase CWDM-310	40km
7803293	SFP+, 10GBase CWDM-330	40km
7803295	SFP+, 10GBase CWDM-350	40km
7803298	SFP+, 10GBase CWDM-370	40km
7803900	SFP+, 10GBase CWDM-390	40km
7803902	SFP+, 10GBase CWDM-410	40km
7803904	SFP+, 10GBase CWDM-430	40km
7803906	SFP+, 10GBase CWDM-450	40km
7801330	SFP+, 10GBase CWDM-470	40km
7801340	SFP+, 10GBase CWDM-490	40km
7801342	SFP+, 10GBase CWDM-510	40km
7801344	SFP+, 10GBase CWDM-530	40km
7801360	SFP+, 10GBase CWDM-550	40km
7801363	SFP+, 10GBase CWDM-570	40km
7801365	SFP+, 10GBase CWDM-590	40km
7801367	SFP+, 10GBase CWDM-610	40km
7832204	SFP+, 10G BiDi TX1270/RX1330	40km
7832206	SFP+, 10G Bi-Di TX1330/RX1270	40km
A7845626	SFP+, 10G Bi-Di TX1330/RX1270	20km

Table 7. Supported SFP+ Modules (Continued)

CommScope PN	Description	Maximum Range
A7846857	BIDI 40km Kit 1 x Attenuator, LC/UPC, 7dB A7843668 1 x 10G BIDI SFP+ TX1270/RX1330 40km A7832204 1 x 10G BIDI SFP+ TX1330/RX1270 40km A7832206	40km

OCTIS™ Universal Lever Assembly Kits



OCTIS™ is a trademark of Radiall. The following connector drawings and instructions were provided by Radiall.

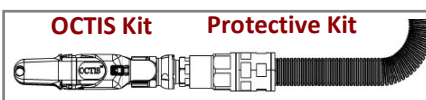


Scan the QR code to the right to watch the OCTIS SFP+ connector assembly video.

All CAP M2s include two OCTIS Universal Connector Kits (CommScope PN 7847069) for the interface to the Classic CAN or TEN that plugs into Port 1 and Port 2 on the CAP M2. CommScope provides the two OCTIS Kits for each CAP M2.

Table 8. CAP M2 OCTIS Kits

Kit Name	CommScope PN	Description
OCTIS Universal Connector Kit	7847069	This is the connector that you use to seal the fiber cable port. The OCTIS Universal Kit is provided with the CAP M2.
Fiber/Cable Protective Kit	7823597	Use to protect fibers or cables; is 2m (78.7") long. NOTE: An Optical OCTIS Kit is required and must be ordered separately.



OCTIS Universal Lever Assembly Instructions



Octis™ is a trademark of Radiall. The following connector drawings and instructions were provided by Radiall.

The following instructions are for the OCTIS Universal Lever kit (CommScope PN: 7847069). For additional information, please contact Radiall.



Figure 2 and Figure 3 show the LC Duplex connector at the cable termination. The BiDi (single fiber) cable termination follows the same OCTIS assembly instructions.

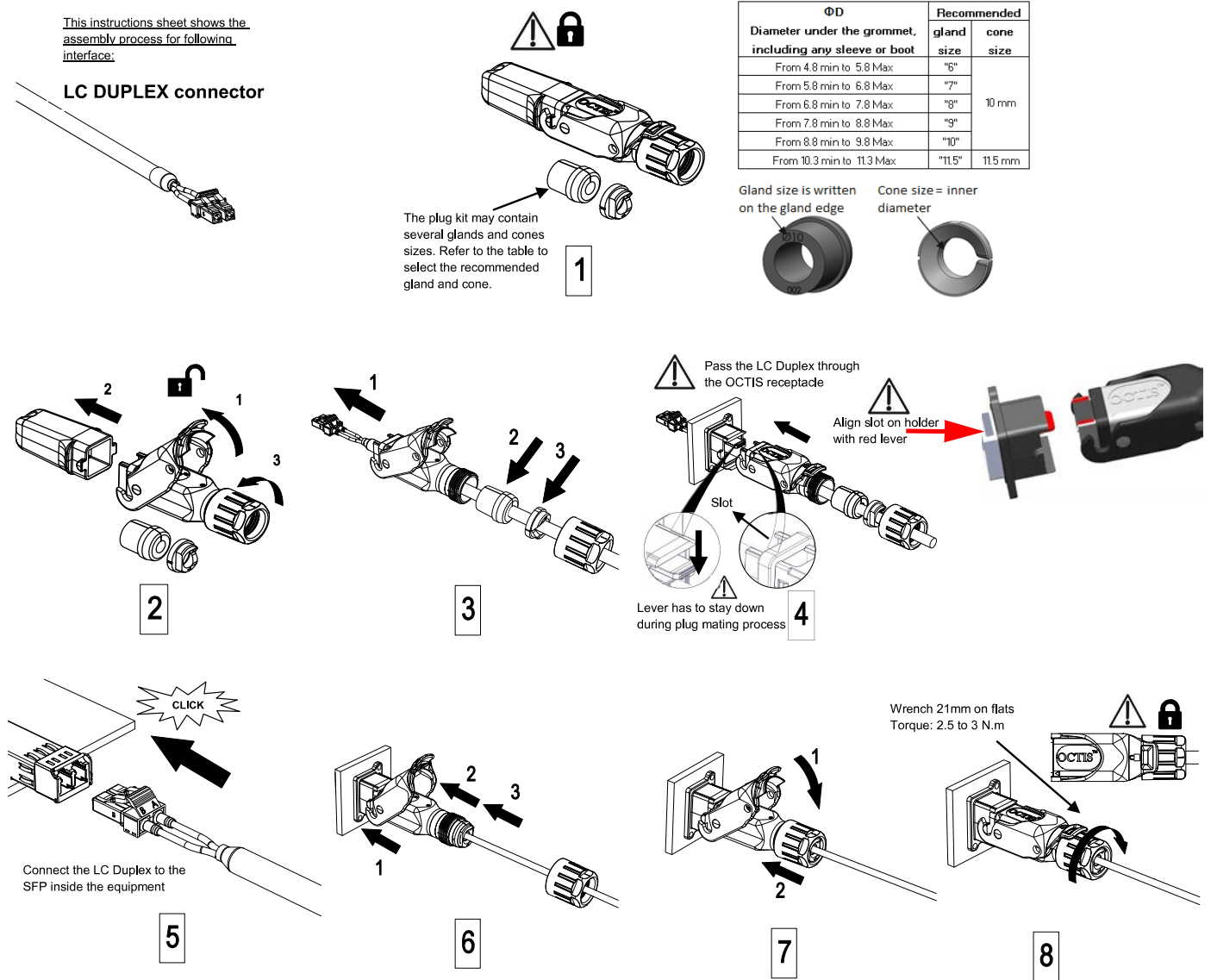


Figure 2. OCTIS Universal Lever Assembly Instructions

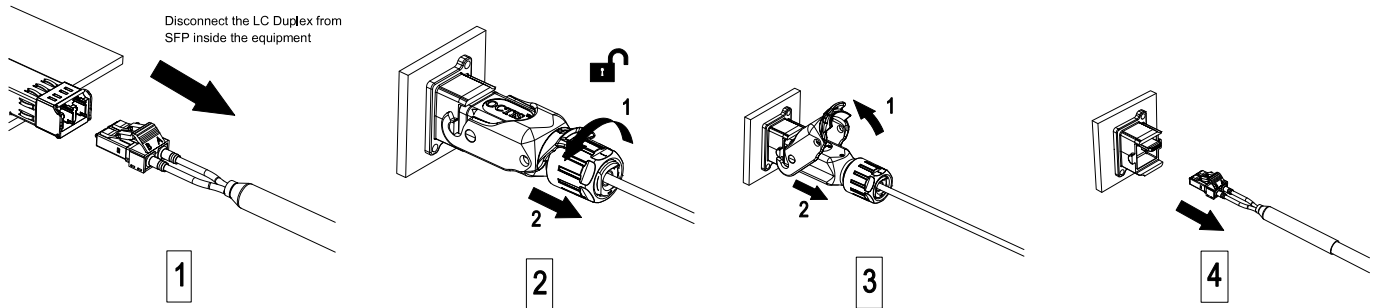


Figure 3. OCTIS Universal Lever Unmating Instructions

PLAN AND PREPARE FOR A FIBER CAP M2 INSTALLATION

Do the following before beginning installation.

- 1 Review and know the information in ["Maximum Number of Fiber CAP M2s Supported in an ERA System" on page 13.](#)
- 2 Review and know the information in ["Safely Working with ERA Hardware" on page 2.](#)
- 3 ["Determine the CAP M2 Installation Site" on page 14,](#) which includes understanding and meeting requirements for:
 - ["Recommended Tools and Material" on page 16](#)
 - ["CAP CAP M2 Weights" on page 15](#)
 - ["Recommended Tools and Material" on page 16](#)
 - ["CAP M2 Dimensions" on page 15.](#)
- 4 Map out all cable runs.
- 5 Identify and obtain all tools and materials required to complete the installation as described in ["Recommended Tools and Material" on page 16.](#)
- 6 Obtain any accessories required for this installation; see ["CAP M2 Accessories and Options" on page 9.](#)
- 7 ["Unpack and Inspect the CAP M2 and Optional Accessories" on page 16.](#)

Maximum Number of Fiber CAP M2s Supported in an ERA System

When installing a Fiber CAP M2, you must observe the following rules.

- SMF or MMF connects the Fiber CAP M2 via its Optical Port to the OPT Card.

If the total used signal bandwidth is more than 320MHz a second fiber link is needed. It is connected to Optical Port 2.

- You connect CAP M2s to an OPT Card installed in Slots L1, L2, L3, or L4 in the TEN or Classic CAN.
 - Each OPT Card has four 10 Gbps ports (labeled 1 - 4) for fiber connections.

- Depending on the transmit bandwidth requirements, you can connect up to four CAP M 2s to each OPT Card.



Fiber CAP M2s must be connected to OPT Cards installed in Slots L1, L2, L3, or L4 in a TEN or Classic CAN. OPT Cards installed in WCS Slots L5 - L8 cannot be used to connect APs.

Determine the Power Consumption of the CAP M2

Use the power consumption matrix in [Table 9](#) to calculate power consumption for a Fiber CAP M2, where the consumption numbers are at the CAP M2 power inputs and do not account for feed losses.

Table 9. CAP M2 Fiber Power Consumption

Configuration	Voltage Range (V)	Typical Power (W)	Maximum Power (W)
Fiber CAP M2	100 to 240 Vac -60 Vdc to -36 Vdc	120	200



Mains power must be interruptible with an external delay-actions mains breaker. For the Mains breaker, observe the following recommendations.

- CAP M2 APs require a minimum 120 Volt / 15 Amp or 240 Volt / 13 Amp, single-phase, 50 / 60 Hz AC service. MAINS power must be interruptible with an external delay-actions mains breaker. CommScope recommends external AC breakers capable of at least 15 Amps maximum for 120-Volt service or at least 13 Amps for 240-Volt service. One type B breaker can support up to two CAP M2 units, and a type C breaker can support up to four AP M2 units.
- For the DC power supply, observe the local regulations of the DC service provider.

Determine the CAP M2 Installation Site

When deciding on a suitable mounting site, observe the following rules; refer also to "[Mounting Orientation for Wall Mounts](#)" on [page 18](#). The Fiber CAP M2 is suitable for indoor installation.

The following sections provides weight and dimension requirements needed to determine the best installation site for the Fiber CAP M2.

CAP M2 Dimensions

Use the dimensions shown in the section applicable to this installation to determine the space required at the mounting site.

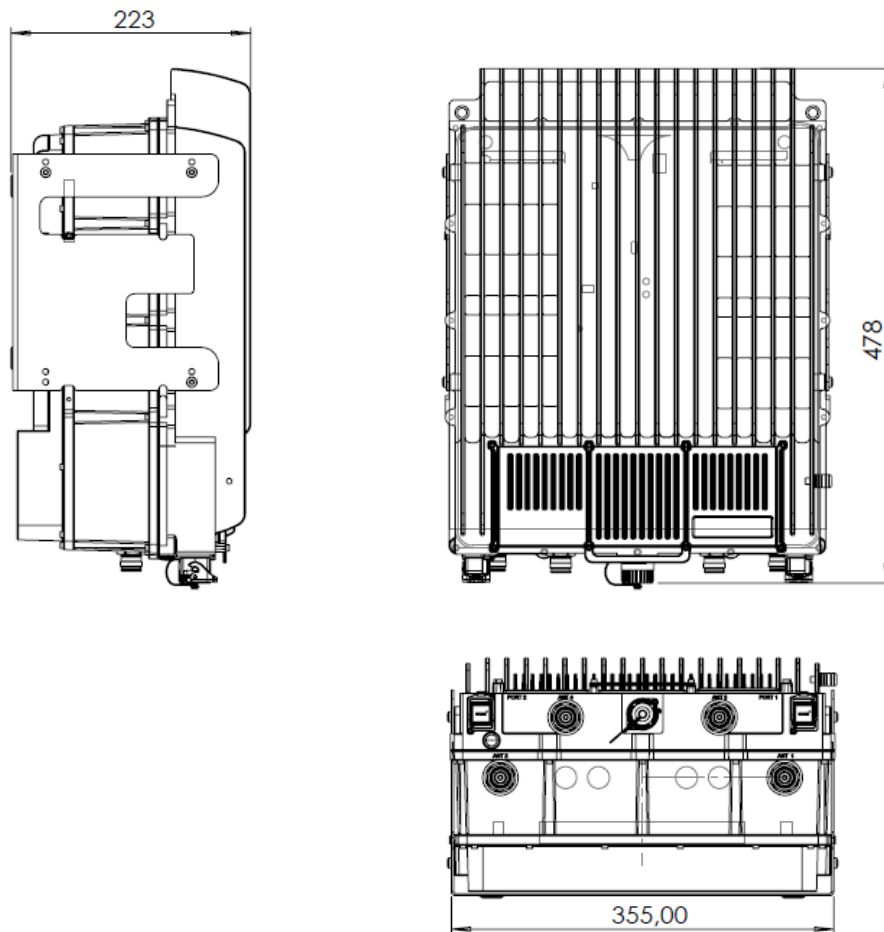


Figure 4. CAP M2 Mounting Dimensions

CAP CAP M2 Weights

Use the weights listed in [Table 10](#) to determine a site that can bear the weight of the Fiber CAP L that is being installed, where:

- The “Maximum Lift Weight” is the highest weight that must be lifted during installation. (An installer only needs to lift CAP M2 components at one time, not the wholly configured CAP M2.)
- The “Total Hanging Weight” is the weight of the CAP M2, including the weight of the Mounting Bracket and Power Supply, minus the weight of the external cables and connectors, that the mounting site must be able to support.

Table 10. Maximum CAP M2 Installation Weights*

CAP M2 configured with this kit ...	Maximum Lift Weight		Total Hanging Weight	
	kg	lbs.	kg	lbs.
Single Mounting Bracket	19	42	19.7	43.4

Recommended Tools and Material

- Electrostatic Discharge (ESD) wrist strap
- Drill and bits to mount the to a wall
- Fiber cleaning equipment

Unpack and Inspect the CAP M2 and Optional Accessories

- 1 Inspect the exterior of the shipping container(s) for evidence of rough handling that may have damaged the components in the container.
- 2 Unpack each container while carefully checking the contents for damage and verify with the packing slip.
- 3 If damage is found or parts are missing, file a claim with the commercial carrier and notify CommScope Technical Support (see "[CMS Global Technical Support](#)" on page 42). Save the damaged cartons for inspection by the carrier.
- 4 Save all shipping containers for use if the equipment requires shipment at a future date.

Obtain the Required Materials

Contact your local CommScope sales representative to obtain the following components, as required, for this installation.

- Obtain the cable required for this installation.
 - Per the installation plan, obtain either Single Mode Fiber (SMF) or Multi Mode Fiber (MMF) that is of sufficient length to reach from the CAP M2 to the Classic CAN or TEN.
 - Per the installation plan, obtain 50Ω coaxial cables that are of sufficient length to reach from the CAP M2 to the passive RF antenna. The end of the 50Ω coaxial cable that will connect to the ANT connector can be either a push-pull connector or a threaded connector.
- Obtain the Optical OCTIS Kits required for this installation; see "[OCTIS™ Universal Lever Assembly Kits](#)" on page 11.
- Obtain SFP+ Module pairs that are appropriate for this installation; see [Table 7 on page 10](#).
- Obtain the Mounting Kits for the installation. Mounting Kits are not included with the CAP M2 and must be ordered separately.

MOUNT THE FIBER CAP M2

A Fiber CAP M2 is suitable for indoor and outdoor installations.

Mounting instructions are divided into the sections listed below. Follow the mounting instructions that are applicable to this installation:

- "Wall Mount a CAP M2" on page 18
 - "Mounting Orientation for Wall Mounts" on page 18
 - "Mounting CAP M2 with a Wall Mounting Kit" on page 19
 - "Mounting a CAP M2 with a Hybrid Fiber Splice Box Kit (optional)" on page 22

General Mounting Cautions

The following cautions apply to all Fiber CAP M2 installations; there may be other mounting cautions applicable to a specific mounting option, which will be defined in the applicable mounting procedure.



Attach all CAP M2 securely to a stationary object as described in this installation guide.



To maintain proper ventilation, keep at least 76 mm (3-inch) clearance around the CAP M2.



The installation site must be able to bear the weight of the CAP M2; see [Table 10 on page 16](#).

Wall Mount a CAP M2

The following sections provide the installation methodology and steps required to mount a Fiber CAP M2 to a wall.

Mounting Orientation for Wall Mounts

When wall mounting a Fiber CAP M2, the recommendations should be observed.

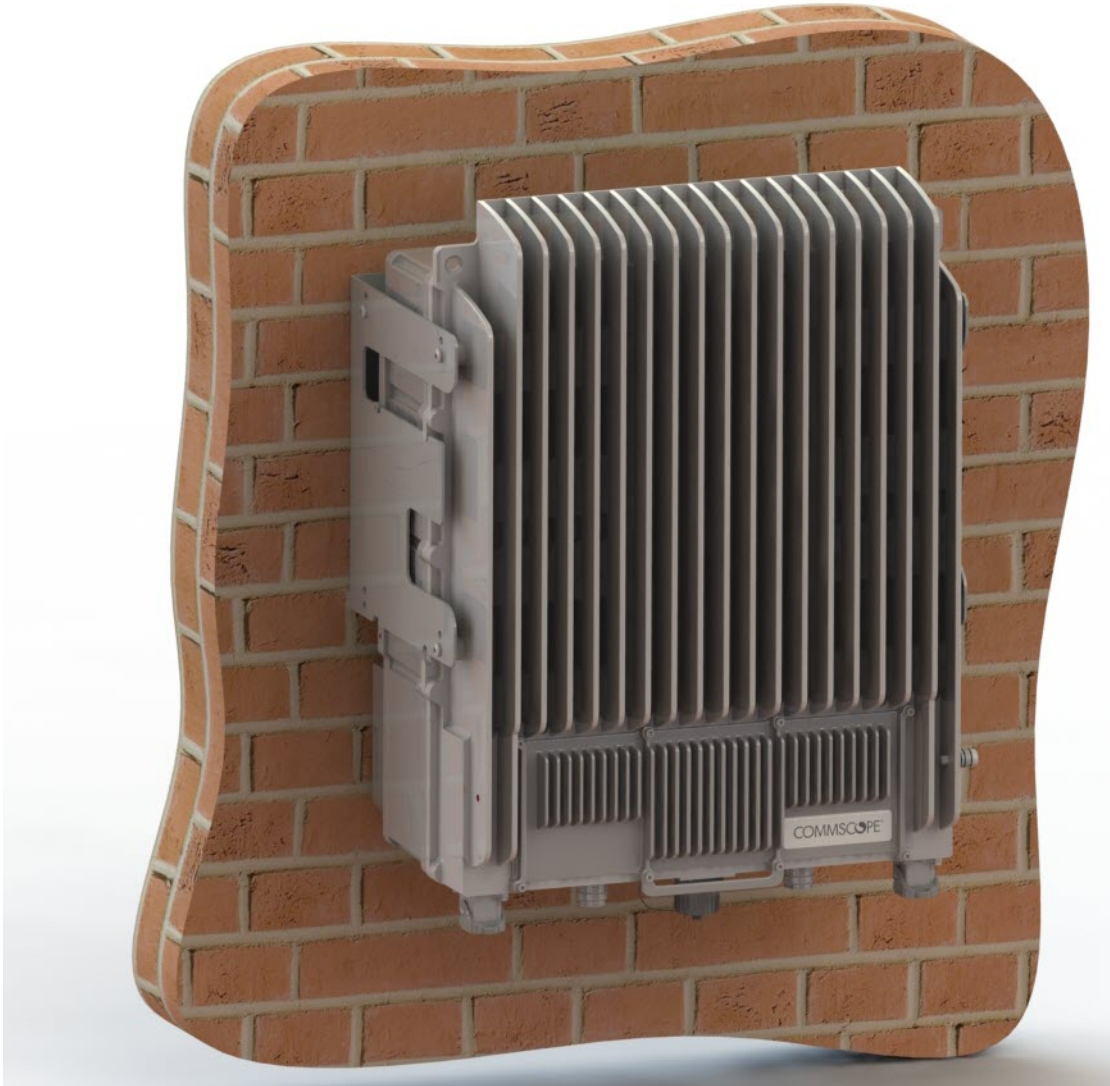


Figure 5. Wall Mounting Orientation for a CAP M2

Mounting CAP M2 with a Wall Mounting Kit

The following sections provide the installation methodology and steps required to mount a CAP M2 to a wall. When wall mounting a CAP M2, the recommendations should be observed.

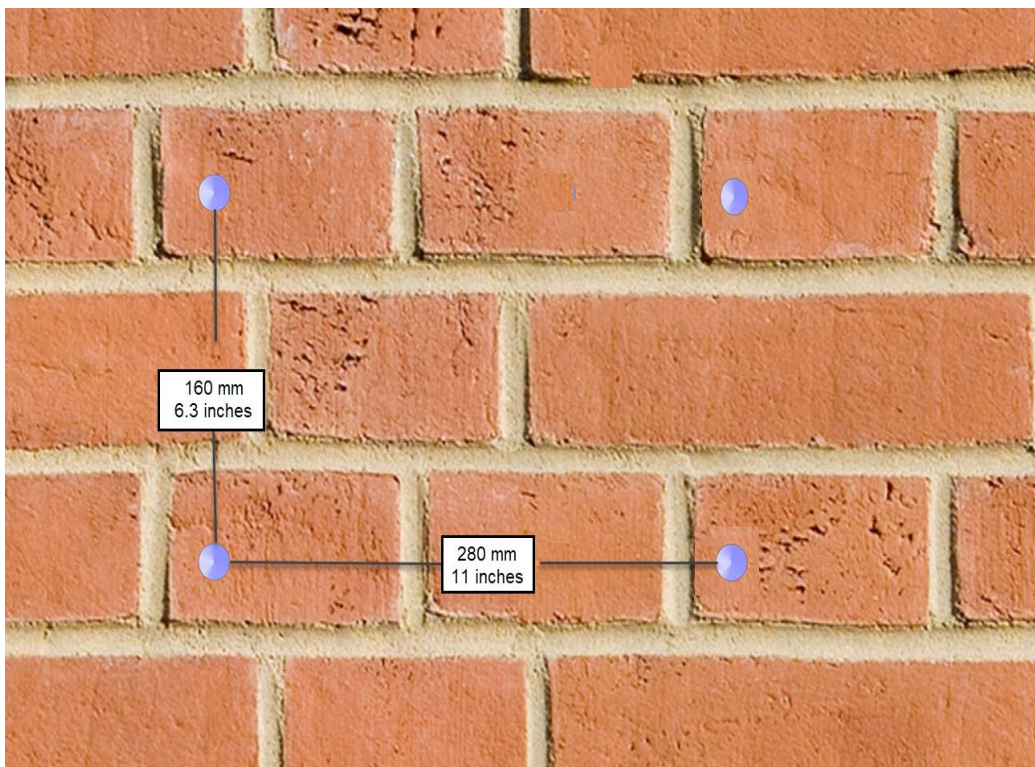


The CAP M2 must be installed with the antenna ports point downward. See "[Mounting Orientation for Wall Mounts](#)" on page 18.

Table 11. Wall Mount Kit (784842) components

Part Number	Region	Quantity	Component
7851781-00	EMEA	1	Wall Mounting Bracket, single NOTE: Kit included with CAP M2
7851753	NAR	2	NAR Wall mounting brackets CAP M2, single NOTE: Kit must be order from CommScope

- 1 Use "[Plan and Prepare for a Fiber CAP M2 Installation](#)" on page 13 to identify the installation site and installation requirements, and to prepare for the installation.
- 2 Refer to and observe all cautions listed in "[General Mounting Cautions](#)" on page 17.
- 3 Determine the mounting orientation of the Fiber CAP M2. Refer to "[Mounting Orientation for Wall Mounts](#)" on page 18 to determine the mounting orientation of the CAP M2.
- 4 Hold the wall mounting bracket on the wall where the CAP M2 will be mounted and mark the location of the holes on the wall.



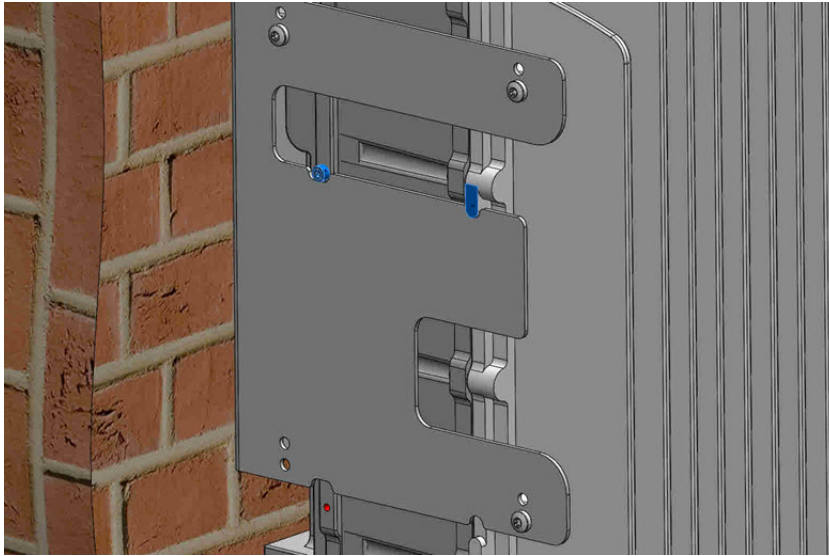
- 5 Secure the wall mount bracket to the wall, using four anchor screws.



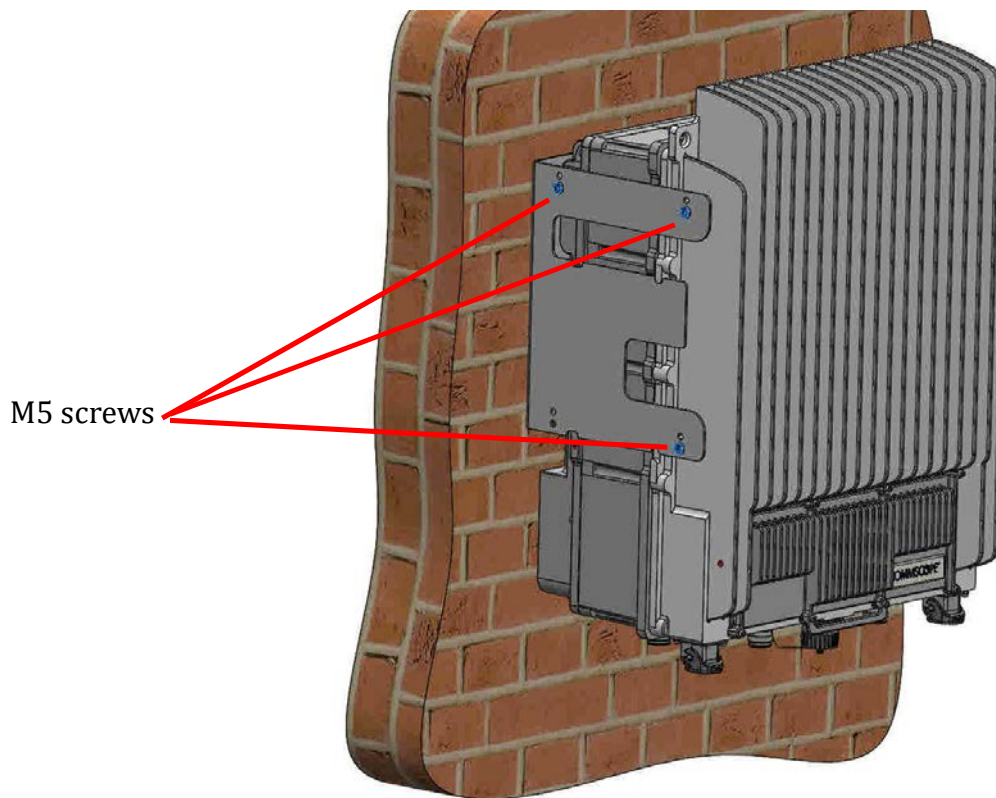
The anchor screws do not ship with the CAP M2 as the anchor type is dependent on the on-site conditions (wall structure and materials). Use screw anchors that are rated for the mounting surface.

The hole for the screws in the bracket is 7.5 mm in diameter and will accommodate screws between 5.8 mm and 7.5 mm.

- 6 Confirm that the Wall Mount Bracket is securely fastened to the wall.
- 7 Lift the CAP M2 onto the bracket and align the holes on the CAP M2 with the rear holes of the bracket, closest to the mounting surface. Ensure that the hanger tab is secure on the bracket.



- 8 Tighten the CAP M2 M5 screws, provided with the CAP M2, on both sides on the top and bottom at a Torq of 6.5 Nm.



- 9 Confirm that the CAP M2 is securely attached to the Wall Mount Bracket.
- 10 After you mount the CAP M2 on a wall, follow the steps in
 - ["Ground the Fiber CAP M2 \(Optional\)" on page 28](#) (if grounding is required)
 - ["Connect the Fiber CAP M2 to a Passive RF Antenna" on page 29](#)

Mounting a CAP M2 with a Hybrid Fiber Splice Box Kit (optional)

The CAP M2 Hybrid Fiber Splice Box Kit (CommScope PN 7781091-xx) provides a connection solution for both power and optical signals to a CAP M2. For Fiber CAP M 2s, you have the option to use composite cable to transport signals from a TEN or Classic CAN via fiber and power from a remote DC supply, and then use the CAP M2 Hybrid Fiber Splice Box Kit to terminate the power and fiber at the CAP M2.



The CAP M2 is designed to be supplied by two LPS (Limited Power Source, <100VA) circuits. By using LPS circuits, some electrical code requirements for installing the power cables are relaxed. The CAP M2 supports a combined/parallel circuit approach. That is, two LPS circuits can be combined in parallel and the CAP M2 supplied by a single, higher power source. In either configuration, all electrical and safety code requirements must be followed.



It is the responsibility of the customer/installer to observe the local regulations of the DC service provider and to comply with Limited Power Source (LPS) requirements where applicable.

Prepare for CAP M2 Hybrid Fiber Splice Box Kit Installation

- 1 Follow the steps in ["Unpack and Inspect the CAP M2 and Optional Accessories"](#) on page 16.
- 2 Refer to ["Determine the CAP M2 Installation Site"](#) on page 14 to determine the mounting location, which must be able to support the weight and dimensions of the CAP M2.
- 3 Refer to ["Mounting Orientation for Wall Mounts"](#) on page 18 to determine the mounting orientation of the CAP M2.

Assembling and Wiring the Hybrid Fiber Splice Box

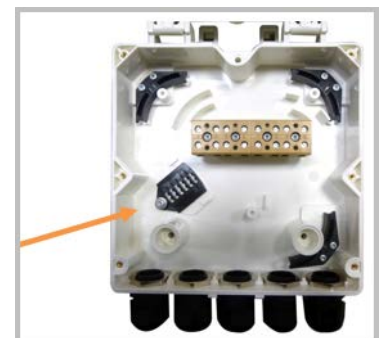
The following subsections describe how to assemble the Hybrid Fiber Splice Box and then how to wire it to provide power to the CAP M2:

- ["Assembling and Wiring the Hybrid Fiber Splice Box"](#) on page 23 tells you how to place the wires into the Hybrid Fiber Splice Box.

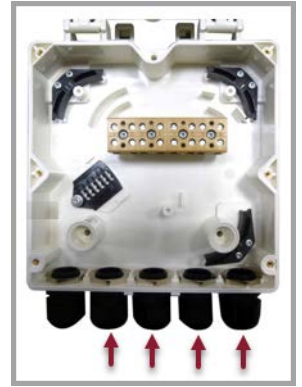
Wire the Hybrid Fiber Splice Box

Do the following to assemble and wire the Hybrid Fiber Splice Box.

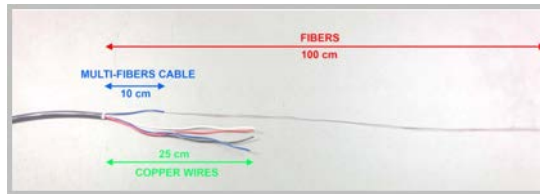
- 1 Open the Hybrid Fiber Splice Box and remove the installation kit that is inside.
- 2 Using the parts from the Hybrid Fiber Splice Box, insert the Splice Holder and fasten it using a PTK 30x6 screw and one M4 washer.



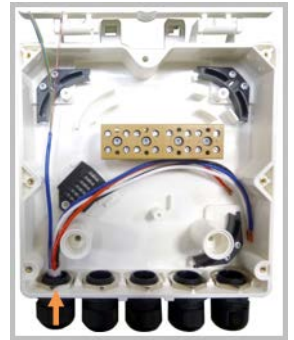
- From the CAP M2 Hybrid Fiber Splice Box Kit, insert Fiber Patch Cord in one of the cable glands indicated in the graphic to the right.



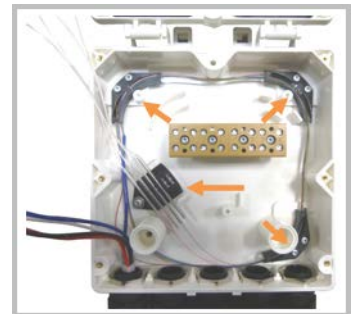
- Strip the insulation of the composite cable for 100 cm and the fibers for 90 cm, and then shorten the copper cables to 25 cm.



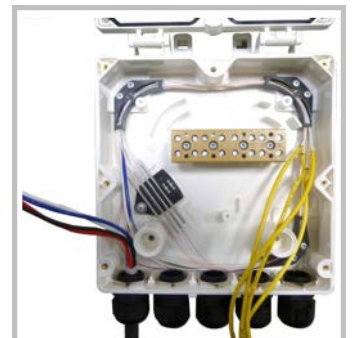
- Insert the composite cable in the first cable gland and separate the multi-fibers cable from the copper wires. It is necessary to remove the nut to perform this action. The cable must be fed through the nut and it must be retightened once finished.



- Bend the spliced fibers using the corner guides and fix the splices to the splice holder.



- Bend the optical cables as shown in the picture to the right.



- 8 If a second splice holder is needed, it can be assembled using the M4 insulating washer and two M4 plain washers, as shown to the right. The required screw is a PTK30 x 12.



- 9 Remove the sealing nut and rubber of the cable gland and insert the optical cables.



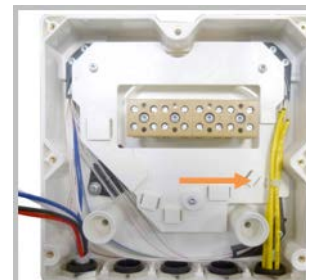
- 10 Place each cable into one of the grooves of the seal insert.



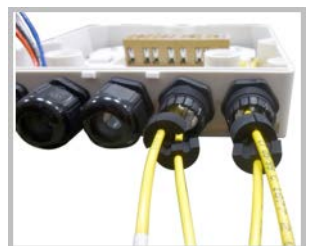
- 11 Press the seal insert into the clamp ring opening.



- 12 Fix the optical cables inside the box using one cable tie and tight the sealing nut.



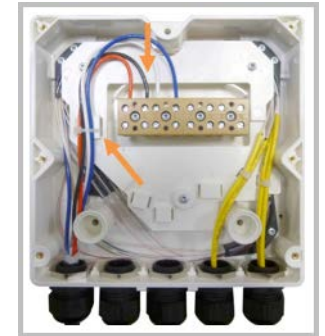
- 13 It is possible to separate the optical cables and use two different cable glands. Remove the sealing nut and rubber on each cable gland.



- 14 Close all unused grooves with the plastic cylinders, no matter if one or two cable glands are used.



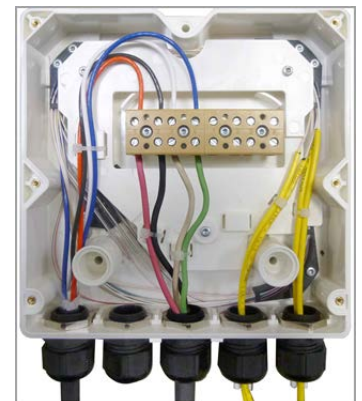
- 15 Insert the copper wires in the first multiple terminal connectors. See markings on the internal support. Then fasten the copper cables inside the box using one cable tie.



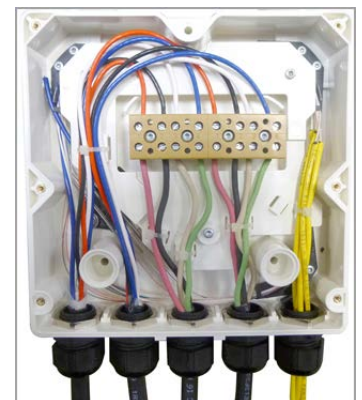
- 16 Remove the sealing nut and insert the CAP M2 supply cable and tighten the sealing nut.



- 17 Connect the supply cable to the terminal strip and fix it inside the box using one cable tie.



It is possible to connect a second supply cable to cascade two CAP M2s, as shown in the graphic to the right.



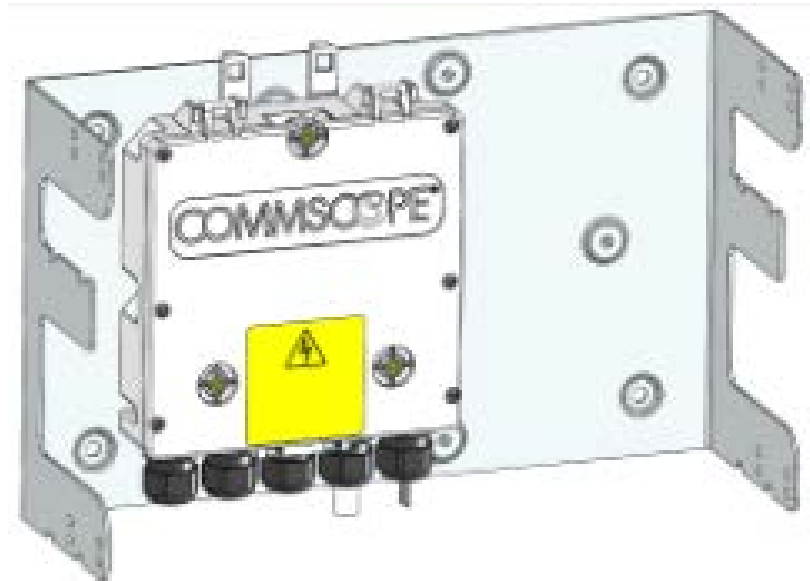
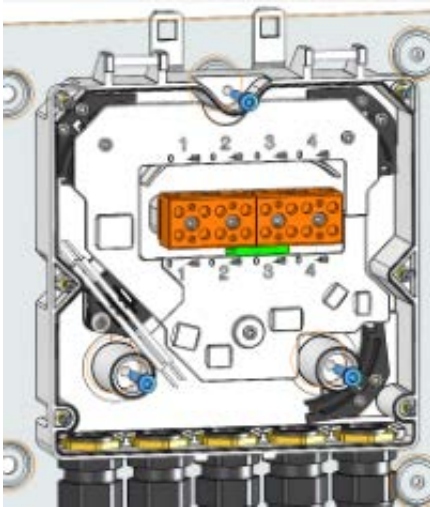
- 18 Complete the steps in ["Wall Mount a CAP M2 Using a CAP M2 Hybrid Fiber Splice Box Kit \(optional\)"](#) on page 27.

Wall Mount a CAP M2 Using a CAP M2 Hybrid Fiber Splice Box Kit (optional)



The steps in this section pertain only to those installations that require the use of the optional Hybrid Fiber Splice Box to provide fiber and power to the CAP M2.

- 1 Remove the Hybrid Fiber Box cover.
- 2 Attach the Hybrid Fiber Splice Box to the Wall Bracket with the three captive screws already installed in the Splice Box.
- 3 Replace the cover.



- 4 Attach the assembled Wall Mounting Bracket and Hybrid Splice Box to the selected mounting location.
- 5 If required, install an SFP+ module and follow the instructions in ["Installing SFP+ Modules in the CAP M2" on page 34](#).
- 6 Follow procedure in ["Mounting CAP M2 with a Wall Mounting Kit" on page 19](#).

CONNECT THE CABLES TO THE FIBER CAP M2

Complete the following procedures in the order in which they are presented.

- "Ground the Fiber CAP M2 (Optional)" on page 28
- "Connect the Passive RF Antenna" on page 32
- "Connect the Fiber CAP M2 to a Classic CAN or TEN" on page 36
- "Powering on a Fiber CAP M 2" on page 37
- "Powering on a Fiber CAP M 2" on page 37.



Do not remove protective caps from any of the connectors until instructed to do so.

Ground the Fiber CAP M2 (Optional)

Follow the steps below to ground the OPA only if grounding is required in your locality or if the installation plans require the CAP M2 be grounded. The different CAP M2 installation procedures will tell you when to ground the CAP M2.

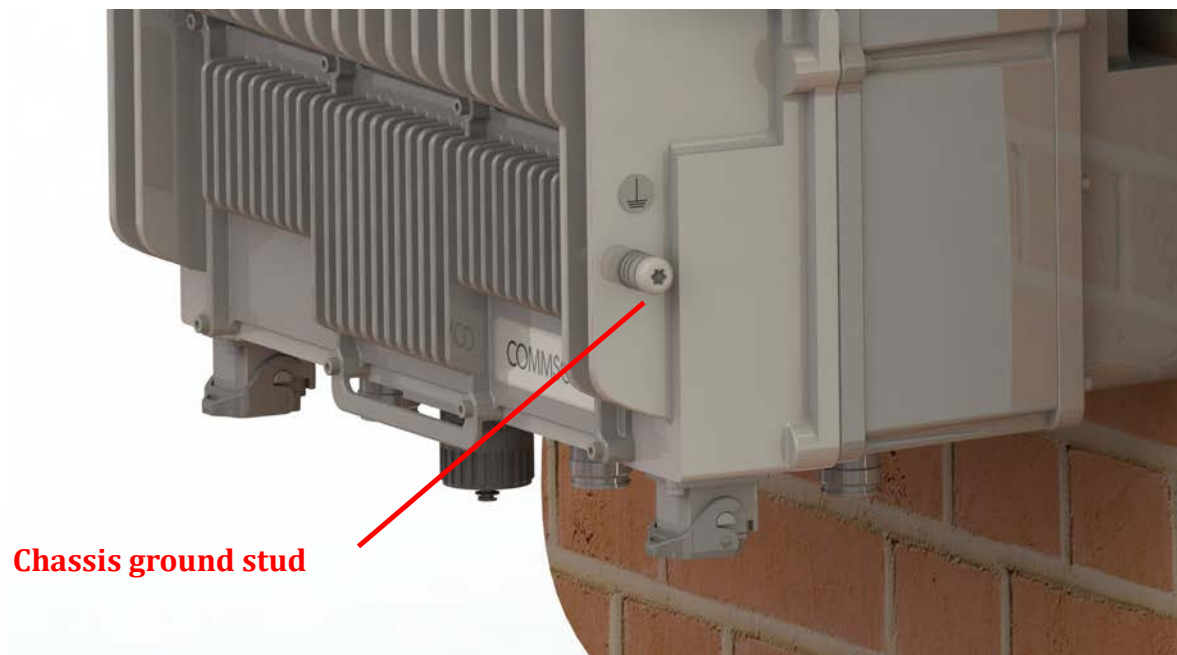


The CAP M2 is equipped with an M6 grounding stud located on the back of the unit; however, grounding is not necessary. CAP M2s are classified as low-voltage devices and do not have internal power supplies. CommScope recommends checking your local and national electrical codes to determine if grounding is a requirement.

Do the following to ground a Fiber CAP M2.

- 1 Obtain a length of #18 AWG (1.00 mm) insulated stranded copper wire for use as a chassis-grounding wire.
- 2 Terminate one end of the wire with a ring terminal.
- 3 Locate the chassis-ground stud at the rear of the enclosure.
- 4 Remove the Keps nut from the chassis-ground stud.

- 5 Attach the ring end of the wire to the chassis ground stud on the bottom, right side of the CAP M2, as shown in the graphic below.



- 6 Use the Keps nut removed in [Step 4](#) to secure the ground wire to the chassis-ground stud.
- 7 Route the free end of the chassis grounding wire to an approved (per local code or practice) earth ground source.

Connect the Fiber CAP M2 to a Passive RF Antenna

The following sections guide you through connecting the CAP M2; complete these procedures in the order in which they are presented.

- ["Clean the RF Cable Connectors" on page 30](#)
- ["Connect the Passive RF Antenna" on page 32](#)

Clean the RF Cable Connectors

This section tells you how to clean RF cable connectors. The graphics in this section illustrate the cleaning procedure and do not show the CAP M2.



This procedure requires the use of compressed air. Wear protective clothing—especially protective glasses—to protect against injury from flying particles.



This procedure requires the use of flammable material. There is a risk of fire. Keep away from sources of ignition.



This procedure requires the use of eye irritant product. There is a risk of eye irritation. Avoid contact with eyes and skin. Wear protective clothing—especially protective glasses.

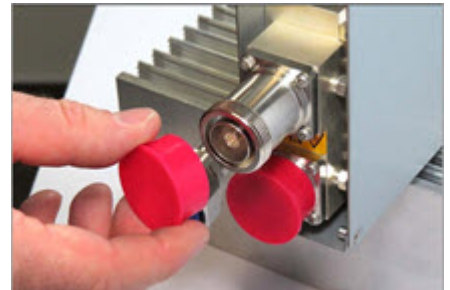
Do the following to clean the RF cable connectors.

1 Gather the following cleaning tools:

- Isopropyl alcohol
- Compressed air
- Lint-free wipe
- Cotton buds.



2 Remove the protective cap from the RF connector.



3 Use compressed air to remove metal chips and small particles from the mating and inner surfaces of the connector.



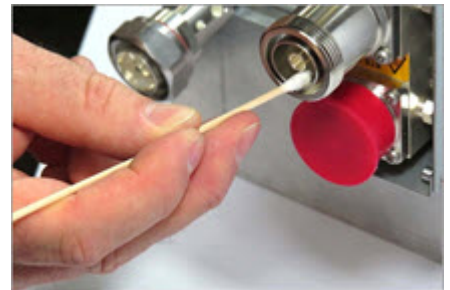
- 4 Use a lint-free wipe drenched with isopropyl alcohol to clean the connector winding.



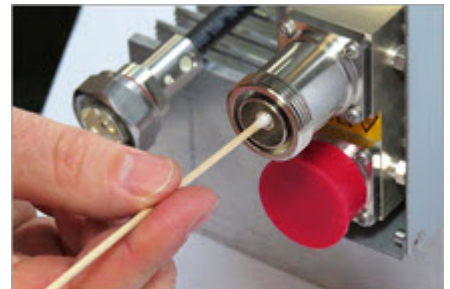
- 5 Use a cotton bud drenched with isopropyl alcohol to clean the lip of the inner ring.



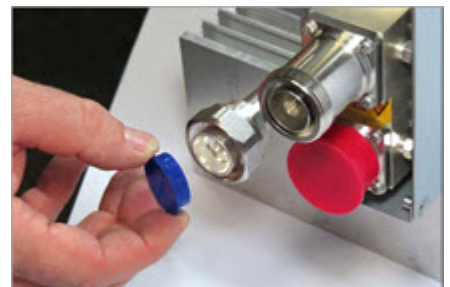
- 6 Use a cotton bud drenched with isopropyl alcohol to clean the inside surface of the inner ring.



- 7 Use a cotton bud drenched with isopropyl alcohol to clean the inside of the center conductor spring tines.



- 8 Remove the protective caps from the unit connector, and then clean it the same way that you cleaned the cable connector.



- 9 Use compressed air to remove metal chips and small particles from the mating and inner surfaces of the connector.



- 10 Use a lint-free wipe drenched with isopropyl alcohol to clean the winding area.



- 11 Use a cotton bud drenched with isopropyl alcohol to clean the inside mating surface of the inner ring.



- 12 Use a cotton bud drenched with isopropyl alcohol to clean the outside surface of the center pin.



Connect the Passive RF Antenna

Do the following to connect a Fiber CAP M2 to a passive RF antenna.

- 1 Connect the CAP M2 ANT 1, ANT 2, ANT 3 or ANT 4 connector to a passive RF antenna.
 - a Locate the 50 Ω coaxial cables obtained for this installation; see ["Obtain the Required Materials" on page 16](#).
 - b Install the passive antennas per the manufacturer's installation instructions.
 - c Remove the plastic-protective cap from the 4.3-10 connectors.
 - d Remove the IP67/EMI blank plug from the ANT 1/2/3/4 connector.
 - e Connect the passive antenna to the ANT 1, ANT 2, ANT 3 or ANT 4 connector using coaxial cable with the least amount of loss possible.

- If the 50 Ω coaxial cable has a push-pull connector, make sure the cable is seated firmly in the ANT 1, ANT 2, ANT 3 or ANT 4 connector.
 - If the 50 Ω coaxial cable has a threaded connector, torque the connector 5 N-m (3.69 ft-lb). Do not over-tighten the connector.
- f Connect the other end of the 50 Ω coaxial cable to the passive antenna installed in [Step b](#).
- 2 If necessary, repeat [Step 1 on page 32](#) to connect a 50 Ω coaxial cable to the other ANT connector.

Connect the Optical Fiber

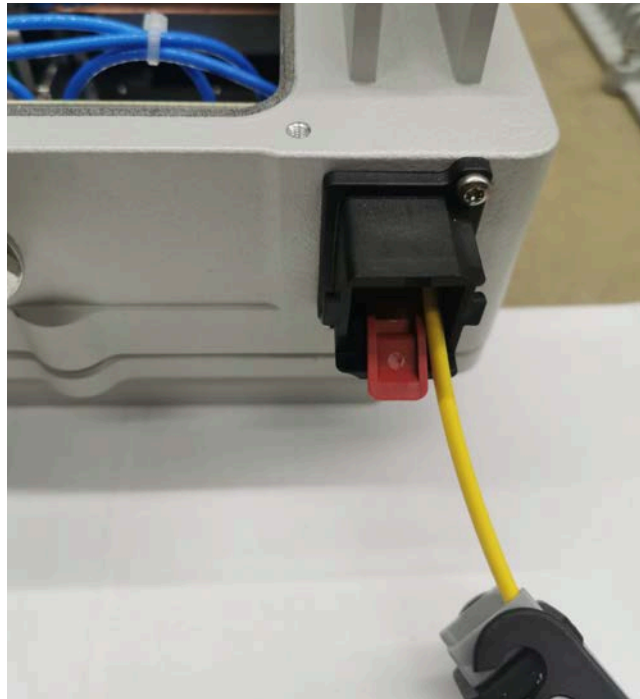
Connecting the optical fiber cable from the hybrid splice box requires removing the CAP M2 cover on the bottom of the AP.

The optical fiber cable may be connected with or without the optional SFP+ module pair.

- 1 Install the hybrid splice box on the CAP M2 bracket. See "[Mounting a CAP M2 with a Hybrid Fiber Splice Box Kit \(optional\)](#)" on page 22.
- 2 Loosen the eight torque screws on the cover located at the bottom of the CAP M2.

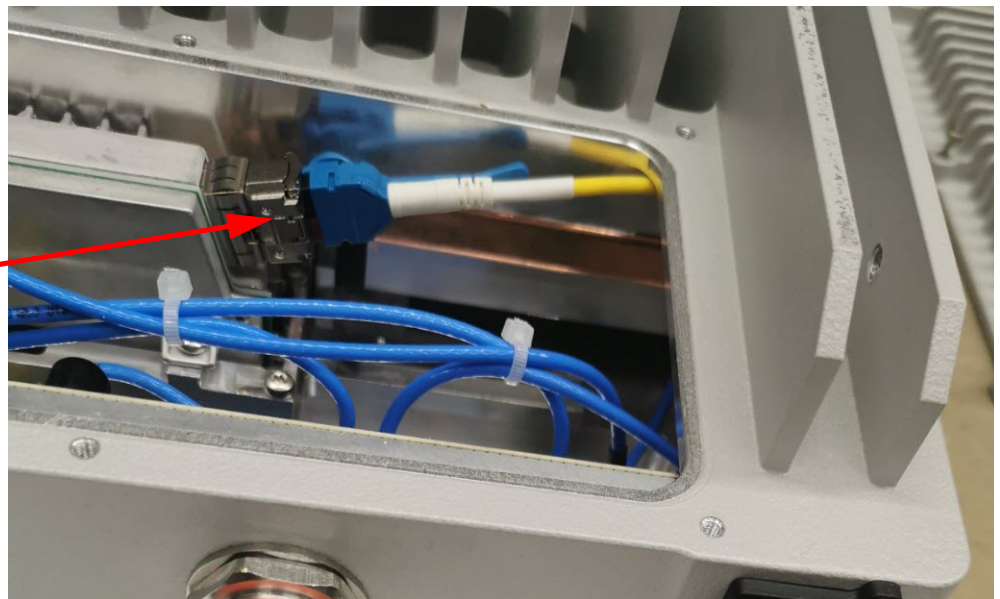


- 3 Feed the cable from the hybrid splice box through the CAP M2 port, as shown below, and assemble the OCTIS LC Universal lever and insert it into the CAP M2 port as shown in [Figure 2](#). For OCTIS Universal connector assembly instructions, see "[OCTIS Universal Lever Assembly Instructions](#)" on page 11.



- 4 Insert the cable in the fiber optic port.

Fiber optic cable
inserted into CAP M 2
port

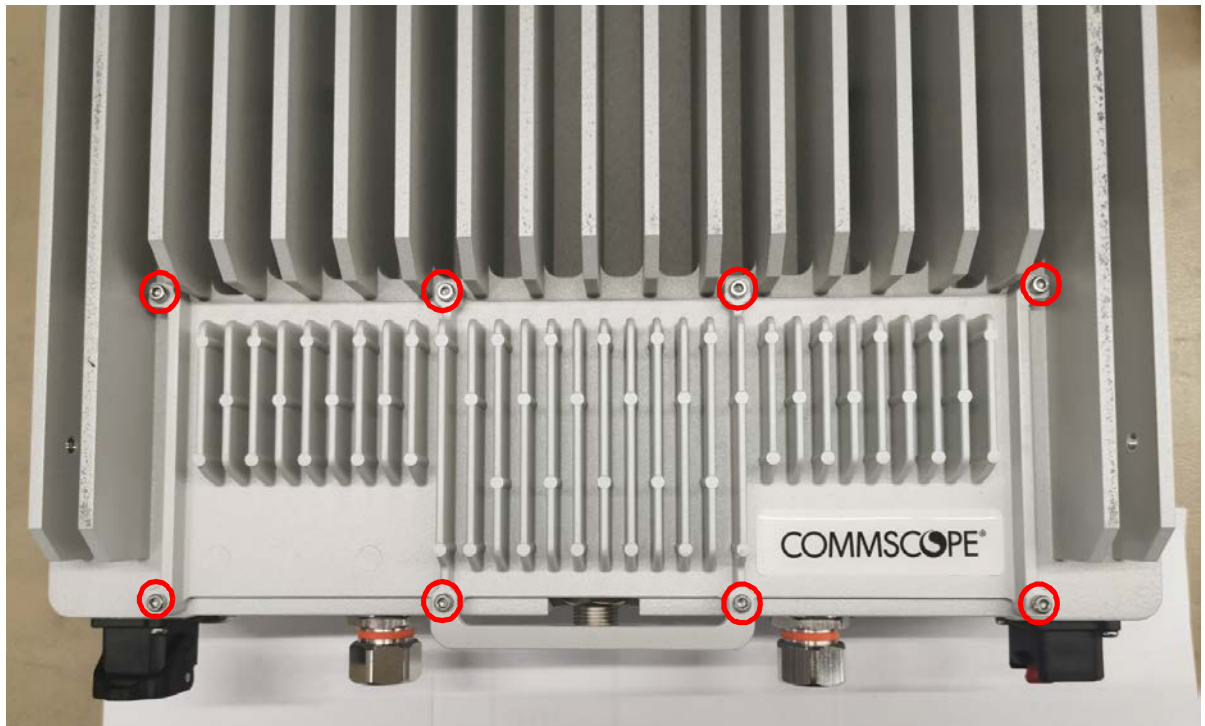


- 5 Replace the cover on the CAP M2.

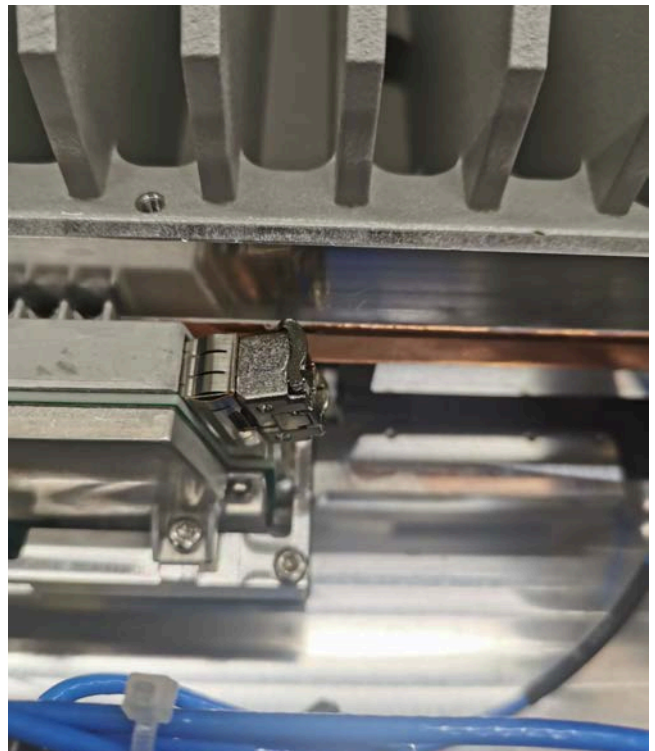
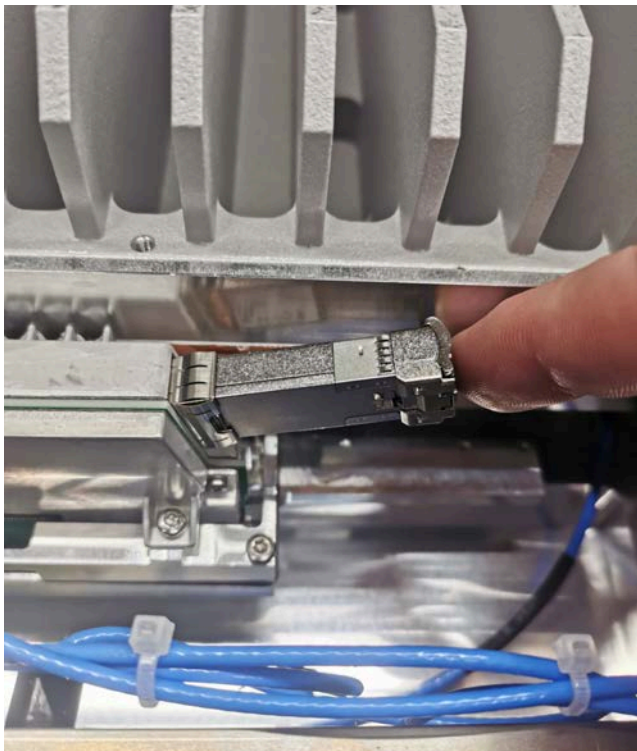
Installing SFP+ Modules in the CAP M2

See "[SFP+ Module Kits](#)" on page 10 for more information.

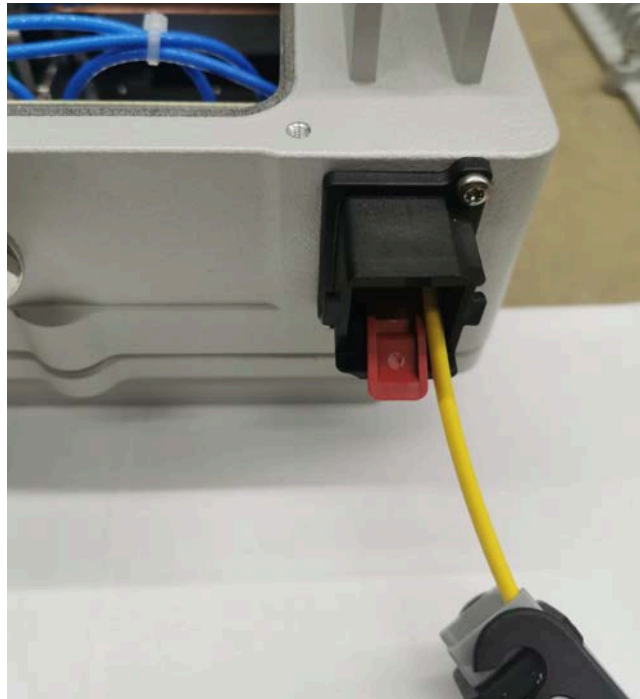
- 1 Install the hybrid splice box on the CAP M2 bracket. See "[Mounting a CAP M2 with a Hybrid Fiber Splice Box Kit \(optional\)](#)" on page 22.
- 2 Loosen the eight torque screws on the cover located at the bottom of the CAP M2.



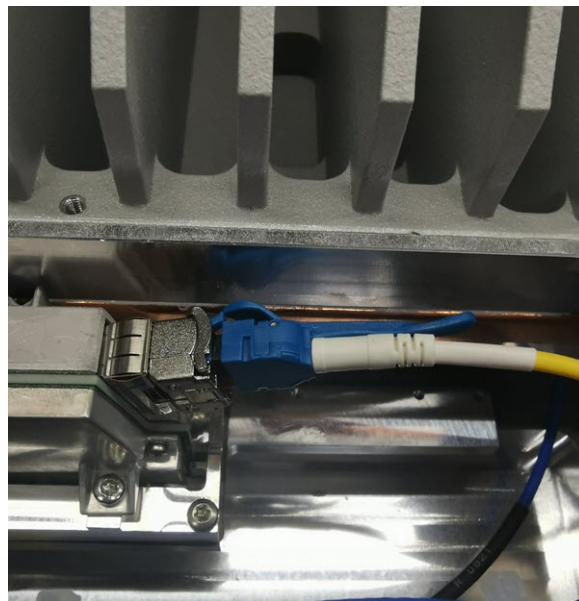
- 3 Insert the SFP+ module into the port as shown below.



- 4 Feed the cable from the hybrid splice box through the CAP M2 port, as shown below, and assemble the OCTIS LC Universal connector and insert it into the CAP M2 port as shown in [Figure 2](#).



- 5 Connect the LC connector to the SFP+ module inside the CAP M2.



- 6 Replace the cover on the CAP M2.

Connect the Fiber CAP M2 to a Classic CAN or TEN



When using duplex fibers, the fiber paths need to be crossed. Ensure that the fiber connecting the CAP M2's SFP Tx is connected to the CAN/TEN's SFP Rx and the CAP M2's SFP Rx is connected to the CAN/TEN's SFP Tx.

- 1 Connect the CAP M2 Optical Port 1 as appropriate for this installation.
 - a Remove the dust cap from the CAP M2 Optical Port 1 connector and the connectors on the SMF or MMF.
 - b Follow the local cleaning technique to clean Optical Port 1.
 - c Clean the connectors on the SMF or MMF following the fiber supplier's recommendations.
 - d Install the SFP+ connector and Optical OCTIS Kit on the end of the SMF or MMF that will connect to the CAP M2.
 - i Follow the limitations per the maximum range described in "[OCTIS Universal Lever Assembly Instructions](#)" on page 11.
 - ii Connect that end of the SMF or MMF to the CAP M2 Optical Port 1 connector.
 - e Connect the other end of the SMF or MMF to an open port on an OPT Card installed in Slots L1-L4 in the TEN or Classic CAN. WCS Slots L5-L8 cannot be used to connect APs.



If installing a CAP M2 with the CAP M2 Hybrid Fiber Splice Box Kit (PN 7781091-xx), the optical fiber will be hanging from the Hybrid Fiber Splice Box.

- 2 Go to "[Powering on a Fiber CAP M 2](#)" on page 37.

POWERING ON A FIBER CAP M 2



The CAP M2 is powered on as soon as power is connected to it. The CAP M2 must therefore be grounded before you connect any electrical power to it. If you have not completed the steps in "[Ground the Fiber CAP M2 \(Optional\)](#)" on page 28, stop and do so before proceeding.



CAP M2 APs require a minimum 120 Volt / 15 Amp or 240 Volt / 13 Amp, single-phase, 50 / 60 Hz AC service. MAINS power must be interruptible with an external delay-actions mains breaker. CommScope recommends external AC breakers capable of at least 15 Amps maximum for 120-Volt service or at least 13 Amps for 240-Volt service. One type B breaker can support up to two CAP M2 units, and a type C breaker can support up to four CAP M2 units.



For the AC power supply connection, a minimum cross section of 1.5 mm² is required and for the DC power supply connection, a minimum cross section of 2.5 mm² is required. Each wire must observe the applicable local regulations regarding loop impedance, voltage drop, and methods of installation. Make sure to connect the correct voltage to the CAP M2.

For the CAP M to operate, the Mains power must be connected to the CAP M Mains connector. Either an AC or a DC power cable is delivered with each CAP M—the type of power cable delivered is dependent on the type of power supply in the CAP M.

CAP M2 AC Power Cable

The AC power cable is a 3.2 m (10.5 ft) 16 AWG cable with a 4-pin Amphenol C016 series plug on one end to connect to the CAP M Mains connector. The other end of the cable is unterminated with 3 end splices to

connect to the AC power source. A 10 m (33.7 ft) AC power cable is also available as an option. The AC power cables for US and EU are shown in Figure 6 and Figure 7 respectively.

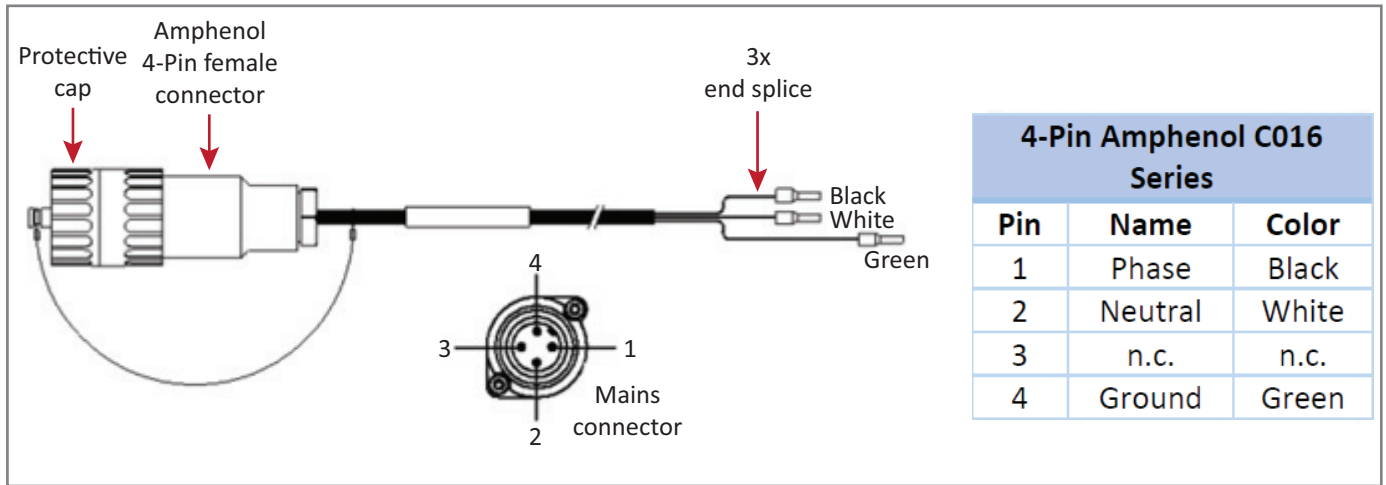


Figure 6. CAP M2 AC Power Cable US

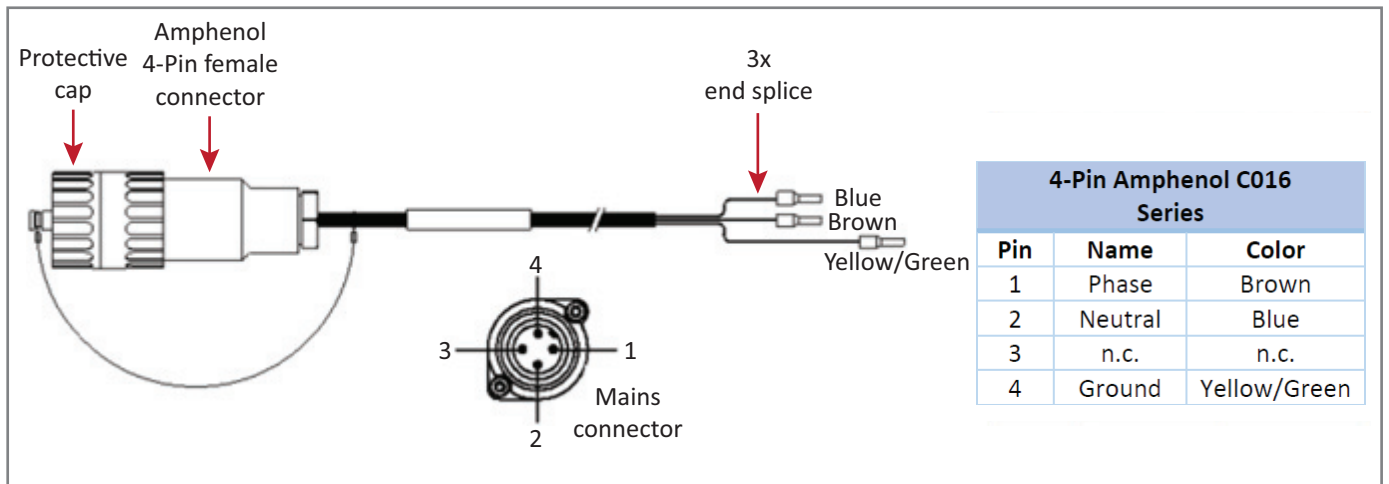


Figure 7. CAP M2 AC Power Cable EMEA

CAP M2 DC Power Cable

The standard CAP M2 DC power cable is a 3.2 m (10.5 ft) 13 AWG cable with a 4-pin Amphenol C016 series plug on one end to connect to the CAP M2 Mains connector. The other end of the cable is unterminated with 2 end splices to connect to the -48 Vdc power source. The standard DC power cable is shown in

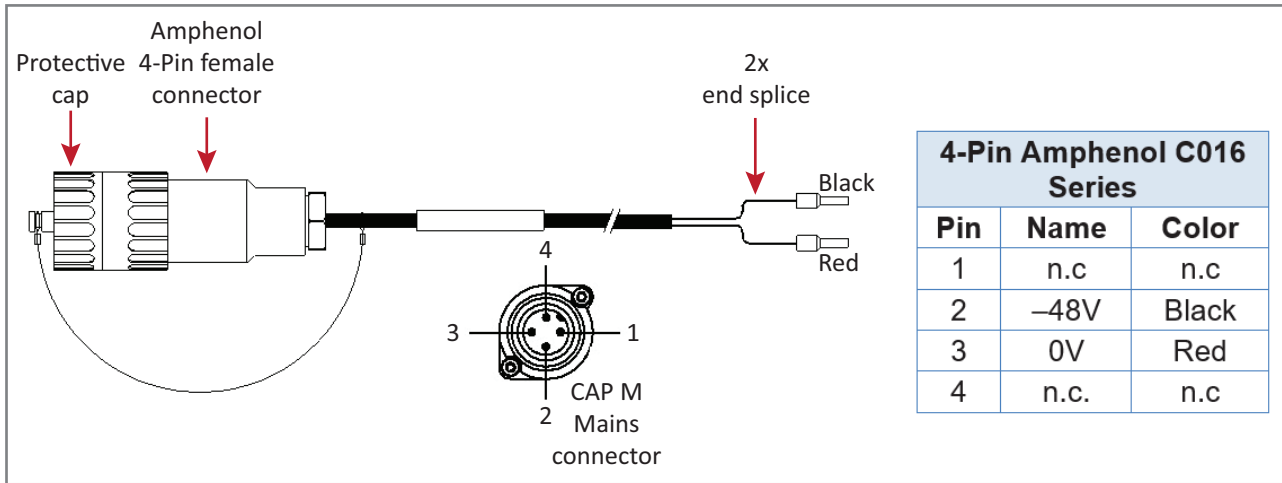


Figure 8. CAP M2 DC Power Cable

Connect the CAP M2 Power



Do not connect or disconnect the power cable at the Mains connector while power is on. Turn off Mains power before connecting the power cable at the unit, then, engage mains power again.

Connect the Power connector as appropriate for this installation:

- ["Connect the Mains Power to the CAP M2"](#) on page 39
- ["Connect a Hybrid Fiber Splice Box"](#) on page 40

Connect the Mains Power to the CAP M2

- 1 Locate the Mains power cable that was delivered with the CAP M2.
- 2 Locate or install a suitable power junction box or receptacle near the unit and route the power cable from the power source to the CAP M2.



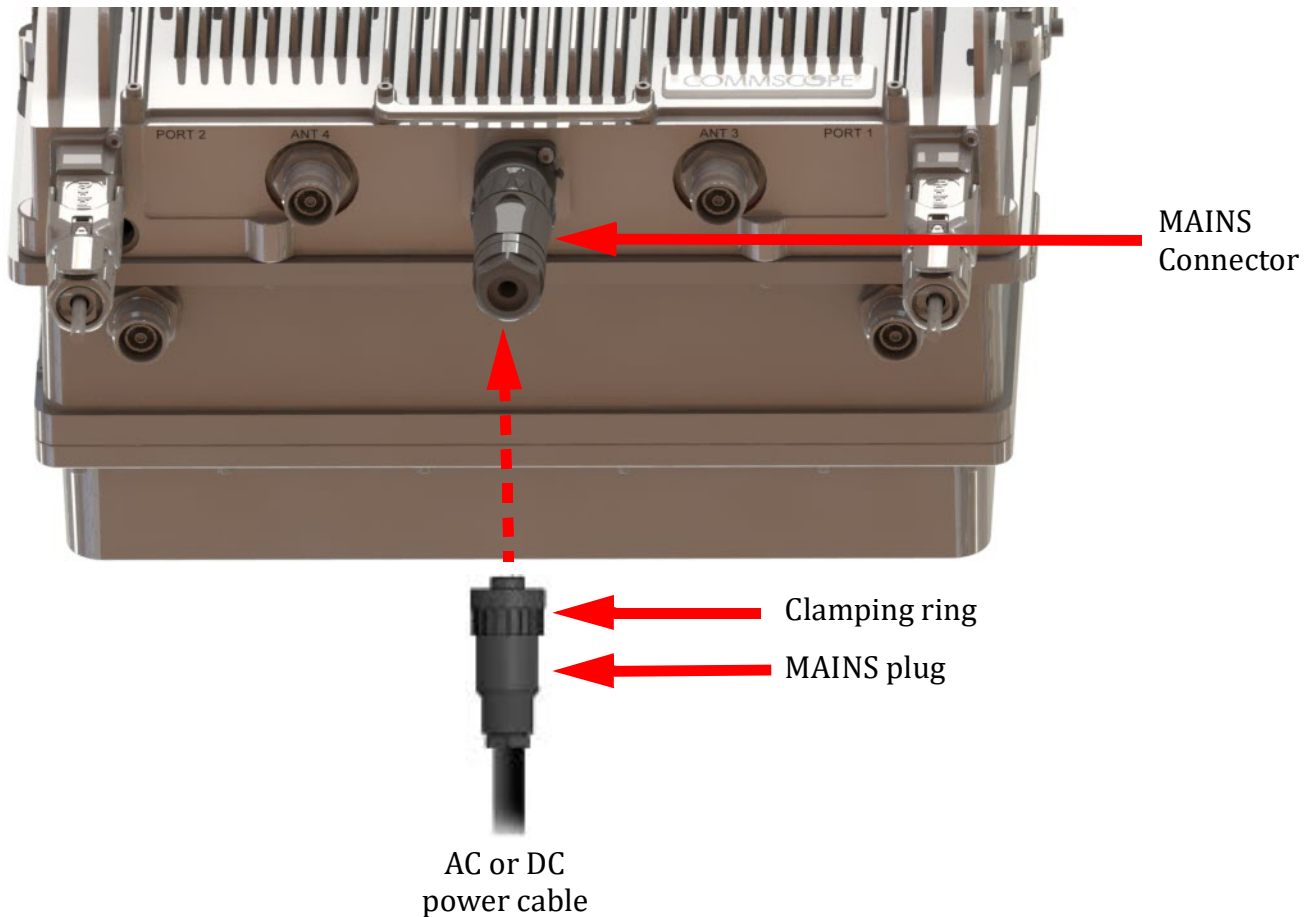
Do not connect the cable to the unit's Mains connector at this time. The power source must be interruptible.



The Mains cable must be properly secured observing local regulations and electrical codes. Be sure to allow enough slack in the cable at the CAP M2 to plug or unplug the cable into the Mains connector.

- 3 Dependent on the type of power supply used by the unit, wire the power cable to the junction box or receptacle. Refer to the color code and pin numbers shown in:
 - [Figure 6 on page 38](#) / [Figure 7 on page 38](#) for the US or EMEA AC power cables
 - [Figure 8 on page 39](#) for the DC power cable.

- 4 With the cable's Mains plug disconnected from the CAP M, turn the circuit breaker on, unscrew the plug's protective cover, and carefully test the plug with a voltmeter to ensure that the voltage and polarity are correct.
- 5 Once the testing has been completed, turn off the circuit breaker.
- 6 Unscrew the protective cover from the Mains connector of the unit.
- 7 Insert the AC or DC power cable into the Mains connector as shown below; tighten the clamping ring until it is hand tight. Do not over-tighten the clamping ring.



Connect a Hybrid Fiber Splice Box

For a CAP M2 powered by the Hybrid Fiber Splice Box (PN 7693816-xx):

- connect the power cable to the proprietary 4-pin, 36 to 60 Vdc Power connector on the CAP M2, and terminate the other end to the CAP M Hybrid Fiber Splice Box.
- install an SFP+ module of the desired type (same as used at the OPT Card port) into the OCTIS connector before connecting the LC Fiber pigtail.
- connect the LC Fiber Pigtail to the supplied OCTIS connector and splice the other end of the fiber pigtail inside the locally-mounted CAP M Hybrid Fiber Splice Box. The LC Fiber Pigtail, which is not included with the Fiber Splice Box for the CAP M must be obtained separately.

Power the CAP M2

The CAP M2 is powered on as soon as power is connected to it. Under normal operating conditions, the Power LED turns on briefly when the unit is first detected. It will then go out briefly, followed by an initialization period during which the Power LED flashes slowly while the CAP M2 is configured. The Power LED remains a steady green (not flashing) once the unit reaches a fully operational state, which typically occurs within 45 seconds.

For the CAP M2 to operate, the Mains power must be connected to the CAP M2 Mains connector. Either an AC or a DC power cable is delivered with each CAP M2—the type of power cable delivered is dependent on the type of power supply in the CAP M2.

The Power LED behavior for a Fiber CAP M2 is as follows:

- Steady **Green** – CAP/UAP is on and operational
- Slow Flashing **Green** – The CAP/UAP has been powered on and is initializing or if it is updating software.
- Fast Flashing **Green** – The CAP unit identifier is active via the Flash LED function in the Era GUI.
- Slow-Flashing **Red** – The Era GUI is reporting a critical alarm for the unit. The CAP can be recovered without replacing hardware.
- Steady **Red** – The Era GUI is reporting a critical alarm for the unit. The CAP or CAP component (e.g SFP+ module) must be replaced.

CONTACTING COMMSCOPE

The following sections tell you how to contact CommScope for additional information or for assistance.

CMS Global Technical Support

The following sections tell you how to contact the CommScope Mobility Solutions (CMS) Technical Support team. Support is available 7 days a week, 24 hours a day.

Telephone Helplines

Use the following Helpline telephone numbers to get live support, 24 hours a day:

- 24x7** +1 888-297-6433 (Toll free for U.S. and Canada)
- EMEA 8:00-17:00 (UTC +1)** + 800 73732837 (Toll free for parts of EMEA and Australia)
+ 49 909969333 (Toll charge incurred)

Calls to an EMEA Helpline outside of the 8:00 to 17:00 time frame will be forwarded to the 24x7 Helpline.

Online Support

To go to the CommScope **Wireless Support Request** web site from which you can initiate a Technical Support ticket, do one of the following:

- Scan the QR Code to the right.
- If viewing this document online as a PDF, click on the following URL link:
<http://www.commscope.com/wisupport>
- Enter the preceding URL into your web browser, and then press **ENTER** on your keyboard.



Waste Electrical and Electronic Equipment Recycling

Country specific information about collection and recycling arrangements per the Waste Electrical and Electronic Equipment (WEEE) Directive and implementing regulations is available on CommScope's website.

To access information on the CommScope recycling program, do any of the following:

- Scan the QR Code to the right.
- If viewing this document online as a PDF, click on the following URL link:
<http://www.commscope.com/corporate-responsibility-and-sustainability/environment/weee-customer-recycling/>
- Enter the preceding URL into your web browser, and then press **ENTER** on your keyboard.



Hardware to Software Mapping Information

- 1 Scan the QR Code to the right to view or download the minimum software requirements for each of the DCCS hardware modules. Alternatively, you can go to the following web address to access the portal:

<http://www.commscope.com/resources/in-building-wireless>



- 2 Click on a document link to open it, or right click on the link and select the **Save target as...** option from the contextual menu.

Mobility Solutions Technical Training

- 1 To access training on the online CommScope Mobility Solutions site, please use the following web address or scan the QR code to the right:

<https://commscopeuniversity.com>



- 2 Once you have logged in, you can search for training by typing search words in the **Search** bar or by going to the Catalog page to view the available courses.
- 3 Instructor-led courses are conducted in North America and Europe. Before choosing a course, please verify the region.
- 4 For training related questions, please contact us:

Americas: DASTrainingUS@CommScope.com

EMEA: DASTrainingEMEA@CommScope.com

Accessing ERA Series User Documentation

- 1 Access to the Customer Portal requires a user account. If you don't have an account:
 - Visit My CommScope at <https://www.mycommscope.com>.
 - Click New user registration and follow the prompts.
 - After you've registered in My CommScope, click the Request Additional Access button and select the DAS and Small Cell Customer Portal from the list of applications.
- 2 Scan the QR Code to the right to go directly to the CommScope DAS and Small Cell Customer Portal, where you can access the DAS and Small Cell user documentation.

Alternatively, you can go to the following web address to access the portal:

<https://www.commscope.com/membership>



- 3 In Tools and Documentation, search by product, document category, or title.
- 4 Click on the title of any document to open it.

