CORNING

Mid-Power Remote Expansion Unit (MxU)

User Manual

Warranties

Hardware Warranty

Corning Optical Communications LLC ("Corning") warrants to the original purchaser ("Customer") that for the duration of the warranty period, one (1) year, commencing on the date of shipment of the Hardware, unless otherwise agreed in writing by Corning (the "Hardware Warranty Period"), the Hardware furnished by Corning shall be free in all material respects from defects in material and workmanship, and shall conform to the applicable portions of the Specifications, as defined below (the "Hardware Warranty"). If notified by Customer of any such defects in material or workmanship or nonconformity with applicable portions of the Specifications within the Hardware Warranty Period, Corning shall promptly, at its own election and expense, repair or replace any such Hardware proven to be defective under the terms of this Hardware Warranty. Such repair or replacement shall be Customer's sole remedy and Corning's sole obligation in the event this Hardware Warranty is invoked. If any components comprising a part of the Hardware are replaced or repaired during the Hardware Warranty Period, the Hardware Warranty Period for such repaired or replaced components shall extend to the longer of (i) the balance of the Hardware Warranty Period or (ii) three (3) months from the date of repair or replacement. For purposes of this Warranty, "Specifications" shall mean the specifications and performance standards of the Products as set forth in documents published by Corning and delivered to Customer which contain technical specifications or performance standards for the Products.

If Customer invokes this Hardware Warranty, it shall notify Corning promptly of the claimed defect. Customer will allow Corning to inspect the Hardware at Customer's location, or to return the Hardware to Corning's closest repair facility. For Hardware returned to Corning's repair facility, Customer shall be responsible for payment of all transportation and freight costs (including insurance) to Corning's repair facility, and Corning shall be responsible for all transportation and freight costs (including insurance) incurred in connection with the shipment of such Hardware to other repair facilities of Corning and/or its return to Customer.

Notwithstanding the foregoing, in no event will Corning be liable for damage to products resulting from improper handling during or after shipment, misuse, neglect, improper installation, operation or repair (other than by authorized Corning personnel), alteration, accident, or for any other cause not attributable to defects in materials or workmanship on the part of Corning. Corning shall not reimburse or make any allowance to Customer for any labor charges incurred by Customer for replacement or repair of any goods unless such charges are authorized in advance in writing by Corning.

Software Warranty

Corning Optical Communications LLC ("Corning") warrants to the original purchaser ("Customer") that for the duration of the warranty period, one (1) year, commencing on the date of shipment of the Software, unless otherwise agreed in writing by Corning (the "Software Warranty Period"), the Software shall conform with, and perform the functions set forth in the Specifications, and shall be free from defects in material or workmanship (the "Software Warranty"). In the event the Software is proven to be defective under the terms of this Software Warranty, Corning shall correct such defects or failure and ensure that the Software conforms with, and performs the functions set forth in, the Specifications. Customer will allow Corning to inspect the Software at Customer's location or to return it to Cornings' closest repair facility.

Notwithstanding the foregoing, Corning shall have no obligation under the Software Warranty if the Software is modified or used with hardware or software not supplied or approved by Corning or if the Software is subject to abuse, improper installation or application, accident, electrical or environmental over-stress, negligence in use, storage, transportation or handling.

Third-party software distributed with the software may carry certain warranties which, to the maximum extent allowed by law, Corning hereby assigns, transfers and otherwise conveys to Customer, provided, however, that Corning itself provides no warranty of any kind, express, implied, statutory or otherwise, for any third-party software provided hereunder.

Corning does not warrant any hardware, software or services not provided by Corning.

THIS WARRANTY IS THE ONLY WARRANTY MADE BY CORNING AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. CORNING SHALL NOT BE LIABLE FOR ANY OTHER DAMAGE INCLUDING, BUT NOT LIMITED TO, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF OR IN CONNECTION WITH FURNISHING OF GOODS, PARTS AND SERVICE HEREUNDER, OR THE PERFORMANCE, USE OF, OR INABILITY TO USE THE GOODS, PARTS AND SERVICE. CORNING SALES AGENTS OR REPRESENTATIVES ARE NOT AUTHORIZED TO MAKE COMMITMENTS ON WARRANTY RETURNS.

Returns

In the event that it is necessary to return any product against above warranty, the following procedure shall be followed:

1. Return authorization is to be received from Corning prior to returning any unit. Advise Corning of the model, Serial number, and discrepancy. The unit may then be forwarded to Corning, transportation prepaid. Devices returned collect or without authorization may not be accepted.
2. Prior to repair, Corning will advise the customer of our test results and any charges for repairing customer-caused problems or out-of-warranty conditions etc.
3. Repaired products are warranted for the balance of the original warranty period, or at least 90 days from date of shipment.

Limitations of Liabilities

Corning's liability on any claim, of any kind, including negligence for any loss or damage arising from, connected with, or resulting from the purchase order, contract, quotation, or from the performance or breach thereof, or from the design, manufacture, sale, delivery, installation, inspection, operation or use of any equipment covered by or furnished under this contact, shall in no case exceed the purchase price of the device which gives rise to the claim.

Except as expressly provided herein, Corning makes no warranty, expressed or implied, with respect to any goods, parts and services provided in connection with this agreement including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Corning shall not be liable for any other damage including, but not limited to, indirect, special or consequential damages arising out of or in connection with furnishing of goods, parts and service hereunder, or the performance, use of, or inability to use the goods, parts and service.

Reporting Defects

The units were inspected before shipment and found to be free of mechanical and electrical defects. Examine the units for any damage that may have been caused in transit. If damage is discovered, file a claim with the freight carrier immediately. Notify Corning as soon as possible in writing.

Note: Keep all packing material until you have completed the inspection.

Warnings and Admonishments

There may be situations, particularly for workplace environments near high-powered RF sources, where recommended limits for safe exposure of human beings to RF energy could be exceeded. In such cases, restrictive measures or actions may be necessary to ensure the safe use of RF energy.

The equipment has been designed and constructed to prevent, as far as reasonably, practicable danger. Any work activity on or near equipment involving installation, operation or maintenance must be, as far as reasonably, free from danger.

Where there is a risk of damage to electrical systems involving adverse weather, extreme temperatures, wet, corrosive or dirty conditions, flammable or explosive atmospheres, the system must be suitably installed to prevent danger.

Equipment provided for the purpose of protecting individuals from electrical risk must be suitable for the purpose and properly maintained and used. This covers a range of activities including lifting, lowering, pushing, pulling, carrying, moving, holding or restraining an object, animal or person from the equipment. It also covers activities that require the use of force or effort, such as pulling a lever, or operating power tools.

Where some of the abovementioned activities are required, the equipment must be handled with care to avoid being damaged.

Observe standard precautions for handling ESD-sensitive devices. Assume that all solid-state electronic devices are ESD-sensitive. Ensure the use of a grounded wrist strap or equivalent while working with ESD-sensitive devices. Transport, store, and handle ESD-sensitive devices in static-safe environments.

Regulatory Compliance Information

WARNINGS!

- This is **NOT** a **CONSUMER** device. It is designed for installation by **FCC LICENCEES** 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.
- **ANTENNAS**: Use only authorized and approved antennas, cables and/or coupling devices! The use of unapproved antennas, cables or coupling devices could cause damage and may be of violation of FCC regulations. The use of unapproved antennas, cables and/or coupling devices is illegal under FCC regulations and may subject the user to fines.

RF Safety

WARNING!

To comply with FCC RF exposure compliance requirements, each individual antenna used for this transmitter must be installed to provide a separation distance greater than 100 cm or more from all persons during normal operation and must

not be co-located with any other antenna for meeting RF exposure requirements.

- The design of the antenna installation needs to be implemented in such a way so as to ensure RF radiation safety levels and non-environmental pollution during operation.

- Antenna gain should not exceed 12.5 dBi.

- Each individual antenna used for this transmitter must be installed to provide a separation distance greater than 100 cm or more from all persons and must not be co-located with any other antenna for meeting RF exposure requirements.

- The design of the antenna installation needs to be implemented in such a way so as to ensure RF radiation safety levels and non-environmental pollution during operation.

Compliance with RF safety requirements:
- Corning products have no inherent significant RF radiation.

- The RF level on the downlink is very low at the downlink ports. Therefore, there is no dangerous RF radiation when the antenna is not connected.

Standards and Certifications

Corning products have met the approvals of the following certifying organizations:

Category	Standards
Safety:	IEC 60950-1 UL 60950-1, Second edition, Information technology equipment TUV safety certifications
Radio:	FCC 47 CFR Part 15, Subpart B FCC 47 CFR Part 27, Subpart C – TDD 2500 MHz frequency band FCC Part 2
NEBS	OSP Class 2

Licensee Contact Information

Industrial boosters may only be used by FCC licensees or those given express (individualized) consent of license. Corning Optical Communications certifies all of the VARs listed as licensed installers for Corning. For the list of licensed VARs, please contact the Tech Support Hotline: (U.S.) 410-553-2086 or 800-787-1266

About This Manual

This user manual describes how to perform the physical installation of the mid-power remote expansion unit (MxU). The installation procedures of other units (e.g., HEU/IHU, OIU, and MRU) relevant to the system are detailed in their user manuals (see Additional Relevant Documentation).

Additional Relevant Documents

The following documents are required if the corresponding units are included in your system.

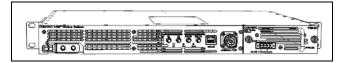| Document Name |
|---------------|
| Corning® Optical Network Evolution (ONE™) Solutions System Installation User Manual (includes HEU/IHU information) |
| Mid-Power Remote Unit User Manual |
| Corning® Optical Network Evolution (ONE™) Solution Software and Management GUI v3.2 |

TABLE OF CONTENTS

1 INTRODUCTION

The mid-power remote expansion unit (MxU) is a new addition to the Corning® optical network evolution (ONE™) solution mid-power product line which enables medium power transmission for the 2.5 GHz band (TDD). The MxU is a 1U add-on unit that enhances the scalable multiservice MRU solution, adding additional service support at a relatively low cost.

The MxU expands the MRUs service distribution at remote locations to include the 2.5 GHz LTE (TDD) band, enabling up to eight operator services (with the MRU) to be distributed over a single broadband infrastructure.

The MxU interfaces to the MRU, providing broadband frequency support over UL/DL RF expansion ports. It supports the 2.5 GHz frequency band in a single enclosure and includes a future option for connecting additional add-on units for even more band support.

All eight services are distributed over the same infrastructure: routed to the MRU over a single optic fiber, distributed over the same footprint and managed as a single element via a web session to the headend control module (HCM) — as the MRU.

MxU | Figure 1.1

1.1   Key Features and Capabilities

Supported service
Supports the 2.5 GHz LTE (TDD) band

Supported channels
Supports three contiguous 20 MHz channels

Expands mid-power remote unit (MRU) services
Expands MRU support to eight services per coverage area over the same footprint

Support for future bands via extension port interfaces to additional add-on unit

Optical fiber savings
All eight services are routed over a single optic fiber pair

Design and deployment flexibility
MxU available in AC or DC power supply options

Antenna splitting schemes are possible due to the higher power output capability

Scalable design
Scalable design enables future support of additional band via connection to additional expansion unit without disruption to existing services

Simple installation and maintenance
All connections and status LEDs located on front panel

Rack and wall-mountable installation
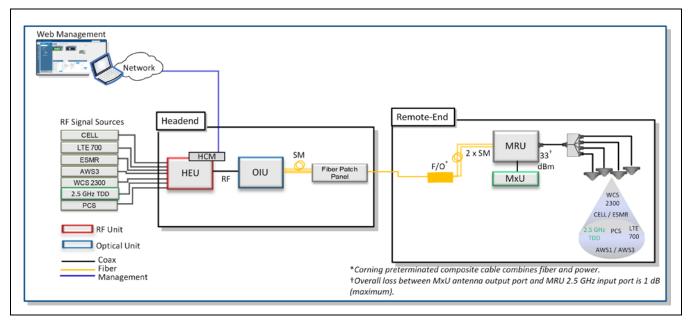
Field upgrdeable

Management and control
MxU management and control are supported by Corning® optical network evolution (ONE™) solution software v3.2 and higher

Management and control via the MRU

1.2   System Description

In the downlink, at the headend, BTS/BDA RF signals are conditioned by service-specific RIMs installed in the headend unit (i.e., HEU/IHU), ensuring a constant RF level. All eight conditioned signals (MRU + MxU) are then forwarded to the optical interface unit (OIU) and converted by the OIMs to an optical signal for transporting over single-mode fiber to the MRU at the remote location.

The services supported by the MRU are filtered and amplified by the MRU, whereas the 2.5 GHz band is filtered and amplified by the MxU. All eight services are combined and distributed via the MRU antenna port over the broadband antenna infrastructure installed at the remote locations. In the uplink, the process is reversed.

MxU System Block Diagram | Figure 1.2

1.3　System Monitoring and Management

The Corning Optical Network Evolution (ONE™) Solution headend control module (HCM) enables centralized, system-level element management and provides comprehensive end-to-end, single source setup and management of the active RF system components after their physical installation. Management capabilities are provided for the MxU via the host MRU.
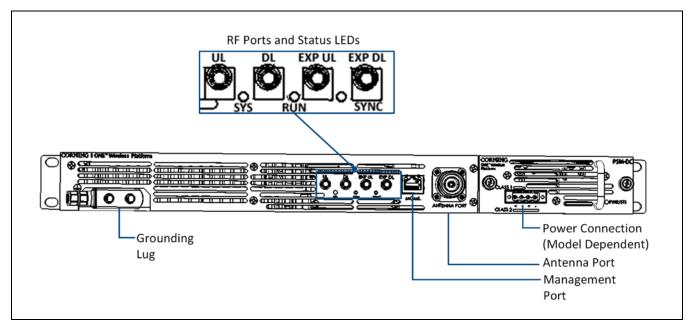
Note: Refer to the Corning ONE™ HCM and management GUI user manual for a complete description of the web management application.

Example of MxU Device View Tab | Figure 1.3

1.4 MxU Interfaces

The MxU consists of the MxU enclosure and power supply module (AC / DC). All of the MxU interfaces are located on the units' front panel. The unit interfaces include the RF, power (PSM), and management connections as well as status LEDs.

MxU Interface Ports | Figure 1.4

Table 1.1 and Table 1.2 provide descriptions of the MxU interfaces and LEDs.

Port	Description
UL / DL	QMA RF output connectors — used for MRU expansion connections
Exp. UL / Exp. DL	Future option (N / A)
MGMT	RJ45 local management port — used for MxU-to-MRU management connection
Antenna port	4.3-10 DIN male type duplexed RF antenna port — used for connecting to MRUs 2.5 GHz input port
Power connector	AC or DC power input connector (depending on PSM model): AC - three-pin AC connector compatible with provided AC power cable; 100-240 VAC DC connector – four-pin terminal block connector supporting 12-16 AWG for both Class1 and Class2 power connections; DC Class1 power input — 48 VDC (40-60 VDC); DC Class2 power input — 30-60 VDC *Note: See Appendix A for complete power specifications.*
Grounding lug	Two-hole, standard barrel grounding lug; for use with stranded copper wire conductors; 10-14 AWG; holes - 1/4 inch

MxU Interface Descriptions | Table 1.1

LED	Description
PWR / STS (PSM-AC / PSM-DC)	Steady green — power supply module power input OK Red — faulty power input
RUN	Blinking green — module software is running and operational Rapid blinking green — "Identify" feature has been enabled via the management GUI Off — No power input detected
SYNC	Steady green — TDD sync locked Steady red — TDD signal out of sync
STS	Steady green — normal operation; overall status OK Steady red — indicates generated alarm in unit Blinking red — "Over temperature" alarm active; Indicates temperature has exceeded threshold (with door open) *Note: Temperature alarm is set as first priority and overrides any other alarm indication.*
MGMT RJ45 Port LEDs	Blinking green — Ethernet connection to MRU OK

MxU LED Description | Table 1.2

2 INSTALLATION GUIDELINES

This chapter provides the general guidelines for installing the MxU and includes information such as site considerations and installation requirements.

2.1   Installation Requirements

- Working space available for installation and maintenance for each mounting arrangement. Ensure unrestricted airflow.

- Ensure grounding connector is within reach of the ground wire.

- Ensure a power source is within reach of the power cord and the power source has sufficient capacity.

- Where appropriate, ensure unused RF connectors are terminated.

- Reduce signal loss in feeder cable by minimizing the length and number of RF connections.

- Ensure the equipment will be operated within the stated environment (refer to datasheet).

- Where appropriate, confirm availability of suitably terminated grade of RF and optical fiber.

- Observe handling of all cables to prevent damage.

2.2   Installation Location

- Mounting surface shall be capable of supporting the weight of the equipment.

- In order to avoid electromagnetic interference, a proper mounting location must be selected to minimize interference from electromagnetic sources such as large electrical equipment

- Do not locate the equipment near large transformers or motors that may cause electromagnetic interference.

2.3

2.4   Environmental

Humidity has an adverse effect on the reliability of the equipment. It is recommended to install the equipment in locations having stable temperature and unrestricted airflow.

The installation location for the system should be well ventilated. The equipment has been designed to operate at the temperature range and humidity level as stated in the product specifications at temperatures ranging from -40~65 degrees Celsius and a relative humidity of maximum 85 percent.

2.5   Powering

The power supply unit provides power to all modules within the equipment. Depending on the product variant, it is recommended that the PSU operates on a dedicated AC circuit breaker or fused circuit.

ATTENTION! The MxU is intended for connection to a TN power system and IT power system of Norway only.

2.6   Grounding Requirement

Verify that the equipment has been well grounded. This includes MxU, MRU, antennas, and all cables connected to the system. Ensure lightning protection for the antennas is properly grounded.

2.7   Cable Routing

Ensure all cables, e.g., power cable, feeder cable, commissioning cable, connecting are properly routed (use drip loops) and secured so that they are not damaged.

2.8   Manual Handling

During transportation and installation, take necessary handling precautions to avoid potential physical injury to the installation personnel and the equipment.

3 SYSTEM INSTALLATION

This chapter describes the installation procedure for the MxU add-on unit. THE MxU supports the 2.5 GHz TDD band and is installed in conjunction with the mid-power remote unit (MRU) (ordered and installed separately), expanding the number of supported services to eight.

3.1 Unpacking and Inspection

Unpack and inspect the cartons as follows:

Item Description	Quantity
Mid-power Expansion Unit: MRU-ASM-AO-AC MRU-ASM-AO-DC	1
Rack-Mount Brackets (factory assembled)	2
QMA/QMA RF cables — used for UL/DL RF connections	2
RJ45 100 Base-T Ethernet Cable (P/N: 705A055702) — used for management port connection	1
4.3-10 DIN RF Jumper Cable (P/N: 705A055602) — used for antenna port connection	1
AC Power Cable (for MxU AC models only) - straight, U.S 10 A ,UL, L=8-2.5 m ,black,110 V (P/N 705900007)	1

MxU Package Items | Table 3.1

1. Open the shipping carton and carefully unpack each unit from the protective packing material.

2. Please verify that the items listed in Table 3.1 are included in your package and check for signs of external damage. If there is any damage, call your Corning service representative.

3.2 Additional Required Items

The following additional items / tools are required (not provided) for installing the MxU:

1. Four rack-mount nuts and screws for securing unit in communication rack (type depends on rack.

2. Torque wrench for RF connectors (i.e., QMA, 4.3-10 DIN).

3. Grounding tools and components:

   - Grounding wire - grounding wire should be sized according to local and national installation requirements. The provided grounding lug supports 14 AWG to 10 AWG stranded copper (or 12 AWG to 10 AWG solid) wire conductors.
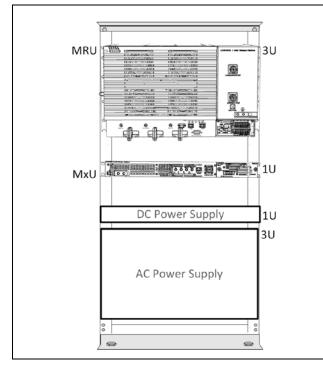
   Note: The length of the grounding wire depends on the proximity of the switch to proper grounding facilities.

   - Phillips-head screwdriver
   - Crimping tool to crimp the grounding wire to the grounding lug
   - Wire-stripping tool to remove the insulation from the grounding wire

3.3 Installing MxU in 19-in Rack

Note: MxU requires 1U rack height availability.

1. Determine the location of the MxU in the rack while considering additional units (e.g., MxU, power supply). Refer to Figure 3.1.

Example of Rack Installation | Figure 3.1

2. Install the unit in the rack and secure to rack frame via applicable bracket holes using appropriate rack nuts and screws.

3.4 MxU Connections
3.4.1 Grounding Connections

WARNING! This unit must always be grounded. Consult an appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. **DO NOT CONNECT POWER BEFORE GROUNDING!**
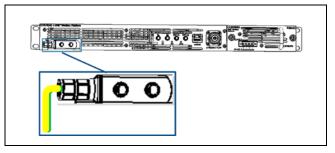
Note: An internationally acceptable color code of the ground connection wire is green/yellow.

To ground the MxU

The grounding connection is performed via a two-hole, standard barrel grounding lug located on the left of the front panel (see Figure 3.2).

Prise de terre du châssis MxU

La mise à la terre est réalisée en utilisant une cosse deux trous a œillet standard, située à gauche de la face avant (voir Figure 3.2).

MxU Grounding Connection | Figure 3.2

1. Use a wire-stripping tool to remove approximately 0.4 inch (10.9 mm) of the covering from the end of the grounding wire.

2. Insert the stripped end of the grounding wire into the open end of the grounding lug.

3. Crimp the grounding wire in the barrel of the grounding lug. Verify that the ground wire is securely attached to the ground lug by holding the ground lug and gently pulling on the ground wire.

4. Prepare the other end of the grounding wire and connect it to an appropriate grounding point at the site to ensure adequate earth ground.

3.4.2 RF and Coax Connections to MRU

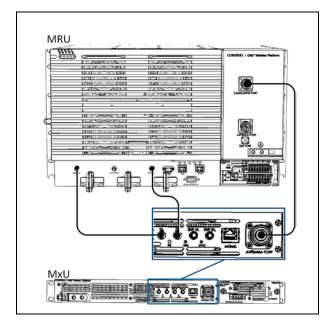Refer to Figure 3.3 and connect the RF cables according to the Table 3.2.

Note: The MRU connections are detailed in the quick installation sheet provided with the MRU (CMA-398-AEN) and in the user manual (CMA-438-AEN) which can also be downloaded from the Corning portal.

Connect MxU Port...	To MRU Port...	Using the Provided...
"UL"	"Exp. UL"	QMA/QMA RF cable
"DL"	"Exp. DL"	QMA/QMA RF cable
"Antenna Port"	"2.5 GHz Input Port"	4.3-10 DIN RF Cable

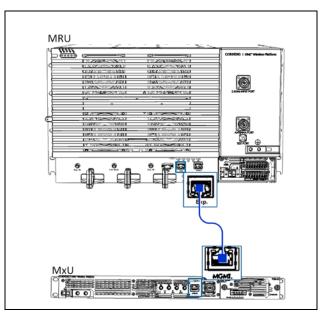MxU-to-MRU Connections | Table 3.2

IMPORTANT!

- Keep the cable straight or adhere to the bend radius of the cable when tightening the nuts:

  - Minimum bend radius (one time): 8 mm

  - Minimum bend radius (repetition): 40 mm

- Screw torque > = 5 Nm

- Make sure that the cable is not stressed when tightened

Example of MxU-to MRU Connections | Figure 3.3

3.4.3   Management Connections

Referring to Figure 3.4, connect the MxU "MGMT" port to the MRU RJ45 "Exp" Port using and RJ45 Ethernet cable.

Example of MxU-to MRU Connections | Figure 3.4

3.4.4   Power Connections

CAUTION! Any open RF port on the MxU or improper connection between units, can damage internal power amplifier after the equipment is powered on. Make sure all connections are performed correctly before powering.

 Note the following:

- The MxU power supply module (PSM) is located on the right side of the front panel.

- The PSM is model dependent: PSM-AC / PSM-DC
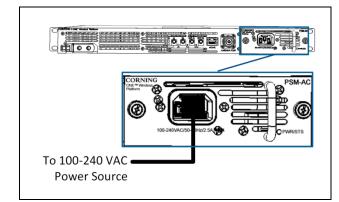
3.4.4.1 AC Power Connections

ATTENTION!

1. **Approved power cable –** the entire length of the power cable (or flexible cord) and the insulation must be intact. The cable must be firmly connected to both the electrical plug and the unit itself.

2. **Standard plug –** the use of a standard plug is mandatory. The use of a non-standard power plug can cause electrocution! Also, plugging a non-standard plug into a standard socket that does not correspond to the plugs' shape, can damage the socket making it a safety hazard.

 Connect the MxU power connector to the AC power source using the provided AC power cable (P/N 705900007):

- Power input: 100-240 VAC/50-60 Hz

- Power consumption: 128 W (maximum)
- Maximum AC current consumption: 2.5 A

See Figure 3.5 for AC connector location.

MxU PSM-AC Connection | Figure 3.5

Modèles Électriques AC

ATTENTION!

1. **Câble d'alimentation qui est approuvé -** la totalité de la longueur du câble d'alimentation (ou cordon souple) et de l'isolation doit être intact. Le câble doit être bien connecté à la fois à la prise électrique et l'appareil.

2. **Prise électrique standard –** l'utilisation d'une fiche standard est obligatoire. L'utilisation d'un cordon d'alimentation non standard peut entraîner l'électrocution!

De meme, brancher une fiche non-standard sur une prise standard ne correspondant pas à la forme de de la fiche, peut endommager la Prise, ce qui en fait un danger de sécurité.

Branchez la prise d'alimentation du MxU à la source d'alimentation secteur à l'aide du câble d'alimentation secteur fourni:
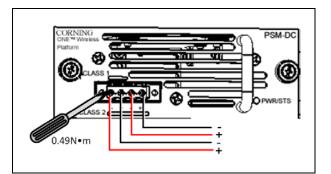
- Alimentation: 100-240 VAC / 50-60 Hz

- Consommation d'énergie : 128 W (maximum)

- La consommation de courant maximale: 2.5 A

Voir Figure 3 pour l'emplacement du connecteur AC

3.4.4.2 DC Models

DC models include one four pin terminal block connector which supports both NEC CLASS1 and CLASS2 :

- CLASS2 (default) – supported by the four pins of the DC terminal block connector for remote feed supporting two DC wiring pairs (see Figure 3.6)

- CLASS1 - supported by the first two pins (LT-to-RT) of the DC terminal block for local plant feed. To use CLASS1 - user must change default connector mode from CLASS2 to CLASS1 (see "Local plant feed – CLASS1 connector" description).

Example of DC CLASS2 Wiring | Figure 3.6

Remote feed – CLASS2 connector (default)

DC CLASS2 connector specs:

Supported wire AWG:

- Conductor cross-section, solid (AWG/mm²): 30~12 / 0.2~2.5

- Conductor cross-section, flexible (AWG/ mm²): 30~12 / 0.2~2.5

- Wire strip length: 9~10 mm

DC Power input: 24 VDC / 48 VDC (20-60 VDC)

Power amplifier consumption per pair:

- First pair: 50 W

- Second pair: 78 W

Maximum power consumption: 131 W

Maximum current consumption:

- First pair: 2.1 A

- Second pair: 3.3 A
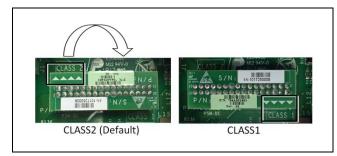
Maximum current draw per pair: 64 W

To connect local plant feed — CLASS1 connector:

1. Open PSM captive screws and pull out module from chassis.

2. Remove the four screws on the top panel to access the CLASS1/CLASS2 connector. See Figure 3.7.

PSM-DC Top Panel Removed | Figure 3.7

3. Disconnect DC input source type connector and re-connect with the arrows pointing to the "CLASS1" setting. See Figure 3.8.

Modifying DC Source Input Setting to CLASS1 | Figure 3.8

4. Close top panel and insert PSM-DC in chassis slot.

5. Route DC pair from the first two DC CLASS1 connector pins to the local power source.

   Power input: 48 VDC (40-60 VDC) 9 A maximum

3.5   Verifying Normal Operation

Upon powering up the MxU:

- Confirm the fans are working after powering.

- Refer to status LEDs on front panel to confirm normal system operation according to Table 3.3.

LED	Status	Description
PWR / STS (PSM-AC / PSM-DC)	Steady green	Power supply module power input OK
	Red	Faulty power input
RUN	Blinking green (1 sec.):	"Identify" feature has been enabled via the management GUI
	Rapid blinking	System initialized
	Off	No power input detected
SYNC	Steady green	TDD sync locked
	Steady red	TDD signal out of sync
STS	Steady green:	Normal operation; Overall status OK
	Steady red	Indicates generated alarm in unit
	Blinking red	"Over temperature" alarm active; Indicates temperature has exceeded threshold (with door open) Note: Temperature alarm is set as first priority and overrides any other alarm indication.
MGMT RJ45 Port LEDs	Steady red:	Fault

MxU Status LED Description | Table 3.3

4 APPENDICES

4.1   Appendix A: System Specifications

System Level RF Parameters per 2.5 GHz Service

LTE 2500 MHz (TDD)		
RF Parameters	DL	UL
Frequency Range (MHz)	2496-2690	
Maximum Output Power (dBm)	33	
Maximum Loss between MxU and MRU (dB)	1.0	
Input Power (dBm)	-11 to 37	
UL Gain Range (dB)		-19 to 15
SFDR (dB)		60*
Maximum Intermod Distortion (dBm)	≤ -13	
UL NF (dB) (Typical)		12
Gain Flatness/Ripple (dB)§	+/- 2.0	

*For 5 MHz bandwidth

Environmental Specifications

Parameter	Value
Operating Temperature	-40 to +65°C (-40 to +149°F)
Storage Temperature	-30° to 85°C (-22° to 185°F)
Humidity	5 percent to 85 percent RH
MTBF	15 years

Standards and Approvals

Parameter	Value
EMC / Radio	FCC 47 CFR Part 15, Subpart B FCC 47 CFR Part 27, Subpart C — TDD 2500 MHz frequency band FCC Part 2
Safety	IEC 60950-1 UL 60950-1, Second edition, Information technology equipment TUV safety certifications
NEBS	OSP Class 2

Physical Specifications

Parameter	Value			
Ports	One 4.3-10 DIN male type duplexed RF antenna port One UL QMA output connector One DL QMA output connector One RJ45 MGMT (local) connection — used for MxU-to-MRU management connection One two-hole, standard barrel grounding lug; for use with stranded copper wire conductors; 10-14 AWG; holes - 1/4 inch DC IN connectors (for models with PSM-DC) — four pin terminal block connector supporting 12-16 AWG for both Class1 and Class2 power connections One QMA input connector for EXP UL (future option) One QMA output connector for EXP DL (future option)			
Power	AC:	Power input:	100-240 VAC / 50-60 Hz	
		Maximum power consumption:	128 W	
		Maximum AC current consumption:	2.5 A	
	DC:	Power input:	DC class 1: 48 VDC (40-60 VDC) 9 A maximum DC class 2: 30-60 VD) Power consumption: • First pair: 50 W • Second pair: 78 W Maximum power consumption: 131 W Maximum current consumption: • First pair: 2.1 A • Second pair: 3.3 A	

Parameter	Value	
Physical Characteristics	Mounting:	19-in rack (1U rack height)
		Wall-mountable (separately ordered accessory kit)
	Dimensions:	1.75 x 19 x 17.7 in (44.4 x 482.6 x 449.5 mm)
Cooling Feature	Active heat dissipation (fan)	

4.2   Appendix B: Ordering Information

Note: The information listed below is updated up to the publishing date. Refer to the MxU datasheet for the most updated ordering information

MxU Assembly Configurations

Part Number	Description
MRU-ASM-AO-AC	MRU Add-On Assembly with AC power supply module supporting the 2.5 GHz (TDD) band
MRU-ASM-AO-DC	MRU Add-On Assembly with DC power supply module supporting the 2.5 GHz (TDD) band

Extended Radio Interface Modules (RIMe)

Part Number	Description
RIMe-25T	Extended Radio Interface Module supporting the 2.5 GHz (TDD) band; RF input — -11 to 37 dBm

Accessories

Part Number	Description
BR-MxU_W	Mid-Power Expansion Unit Wall-Mountable Bracket

Notes

P/N 709C01xxx Rev A00

DRAFT