

## GENERAL INFORMATION

1. **IMPORTANT!** In the event the GX is:

- Modified or altered by any party other than Corning; or
- Subjected to misuse or improper handling or installation;

Corning's product warranty will be void and no longer valid. This includes replacing or removing connectors in the field during installation.

2. In both indoor and outdoor applications, the GX unit should be mounted vertically with the connectors facing upwards/downwards.

**IMPORTANT!** If the GX is mounted horizontally in an indoor application, sufficient cooling must be ensured (i.e., air conditioning) and a sufficient tethering harness is required.

3. **IMPORTANT!** OptiTap® adapter pullout force ranges from a few lb to 50+ lb with the dust cap or connector installed. This prevents damages caused to the DAS unit.

4. For deployments with the Corning® optical network evolution (ONE™) solution, the following additional elements are required (ordered separately):

- Optical central hub (OCH-4-WDM/OCH-8-WDM) – performs the RF-to-optical conversion of the service signal
- ERFCv2-OCH cable – extender cable interfacing to the HEU RIX module and the OCH
- SC-450 unit – system controller required for GX management

5. For GX models supporting the CELL band – an external filter is required (ordered separately) if GX remote is deployed along with 800 MHz band MA1000/MA2000 units. Filter to be installed before GX mounting.

6. Two people are required for mounting – unit weight: 154 lb (70 kg)

7. Wooden pole mount option accessory kit (AK-GX-QUAD-BRKT-WDPOLE) is available (ordered separately). Instructions are provided with the kit.

8. Two additional options are available (ordered separately) for performing the GX RF antenna connections:

- Via the GX 4 x 1 External Multiplexer (P/N: AK-GX-ECPL-COMB) – RF antenna connections are performed via the service specific GX external multiplexer
- Via GX couplers (P/N: AK-3COUPLER-DM-DF) – ensures that users/field engineers can measure and read signals without interrupting service due to service cable disconnections

This document describes the GX quad-band installation procedure. Note that a detailed description of the GX couplers and multiplexer are provided with the respective accessory kits.

## 1. VERIFY PACKAGE CONTENTS

Check your package contents to verify that the items in the packing list are included and that there are no signs of external damage. If there is any damage, call your Corning service representative.








Items included in GX Kit	Qty	Image
GX 40 W Quad-Band Remote Unit: GX-E17E85P19L70-40 GX-E17E85P19L70-40-DC	1	
Mounting Bracket (used for both pole and wall installations)	1	
Nuts M8, Spring Washers $\Phi$ 8, Plain Washers $\Phi$ 8 (used for securing GX when hung on bracket protrusions)	2 (per item)	
Masonry Bolt (set) M10 x 110 – used for wall-mount installations	6	
Power Supply Cable (AC) – included with AC model only	1	
Power Cable Tube Gasket – included with DC model only	2	
Copper Grounding Wire (2 m) (CSA 16 mm <sup>2</sup> )	1	
Ethernet Communication Cable	1	

Table 1. Required Items for GX Quad-Band Remote Installation

## 1. VERIFY PACKAGE CONTENTS (CONTINUED)




Additional Required Items (ordered separately) for Installations with Corning® Optical Network Evolution (ONE™) Solution	Qty	Image
ERFCv2-OCH – RF Cables used for interfacing between HEU extender module and the OCH unit	1	
OCH-4-WDM (top) – four-port optical central hub supporting up to four SISO remotes; wave division multiplexing technology; single-mode fiber OCH-8-WDM (bottom) – eight-port optical central hub supporting up to eight SISO remotes or four MIMO remotes; wave division multiplexing technology; single-mode fiber	1	
SC-450 – system controller used for management of GX and OCH	1	
<b>Additional Items (ordered separately) Required for Installations with MA1000/MA2000 Deployment including RIU</b>	<b>Qty</b>	
AK-RIU4-OCH-CABLES – RIU-4 Cable Accessory Kit required for RIU-4-to-OCH connections, four QMA-to-QMA R/A cables; Length = 1 m	1	—
AK-RIU12-OCH-CABLES – RIU-12 Cable Accessory Kit including four RF QMA/QMA R/A cables used for connections between RIU-12 and OCHs; Length = 1 m	1	—

Table 1 (continued). Required Items for GX Quad-Band Remote Installation

## 2. ADDITIONAL REQUIRED TOOLS

- Electric Drill (1/2 diameter head for drilling holes for wall mount)
- Spanner (0.31-in for tightening GX M8 nuts)
- For pole-mount installations – the GX bracket supports wooden pole mounting via the a dedicated GX accessory kit (ordered separately): AK-GX-QUAD-BRKT-WDPOLE

## 3. REQUIRED HEADEND CONNECTIONS FOR DEPLOYMENTS WITH CORNING® OPTICAL NETWORK EVOLUTION (ONE™) SOLUTION

**IMPORTANT!** Each HEU supports up to eight GX remotes.

The following additional elements are required (ordered separately):

- Optical central hub – OCH-4-WDM or OCH-8-WDM; installed in 19-in communication rack with HEU
- ERFCv2-OCH cable
- SC-450 – installed in 19-in communication rack with the HEU and OCH

*Notes: Refer to the quick installation sheets provided with the OCH and SC-450 for instructions on how to install the units.*

*Refer to Figure 1 for an example of where to install the OCH and SC-450 units in the communication rack with the HEU in order to facilitate the cable connections.*

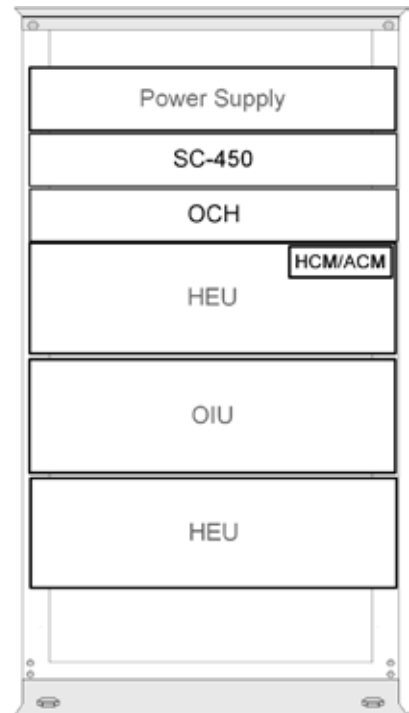


Figure 1. Example of Rack Configuration

### 3. REQUIRED HEADEND CONNECTIONS FOR DEPLOYMENTS WITH CORNING® OPTICAL NETWORK EVOLUTION (ONE™) SOLUTION (CONTINUED)

**Step 1:** Refer to Figure 2 and connect the HEU to the OCH using the ERFCv2-OCH cable as follows:

- Connect the 9-pin connector side of the ERFCv2-OCH cable to an available HEU RIX port and secure the connector in place.
- UL/DL QMA connections:
  - Each ERFCv2-OCH cable supports UL/DL connections to up to three OCH-4-WDM units or one OCH-8-WDM unit + one OCH-4-WDM unit.
  - Connect one pair of the ERFCv2-OCH cable UL/DL QMA connectors to the OCH rear panel UL and DL QMA “RF Interface” connectors.

Note that each UL/DL pair connects to one OCH optical module (OPTM), where each OPTM supports up to four SISO remotes.

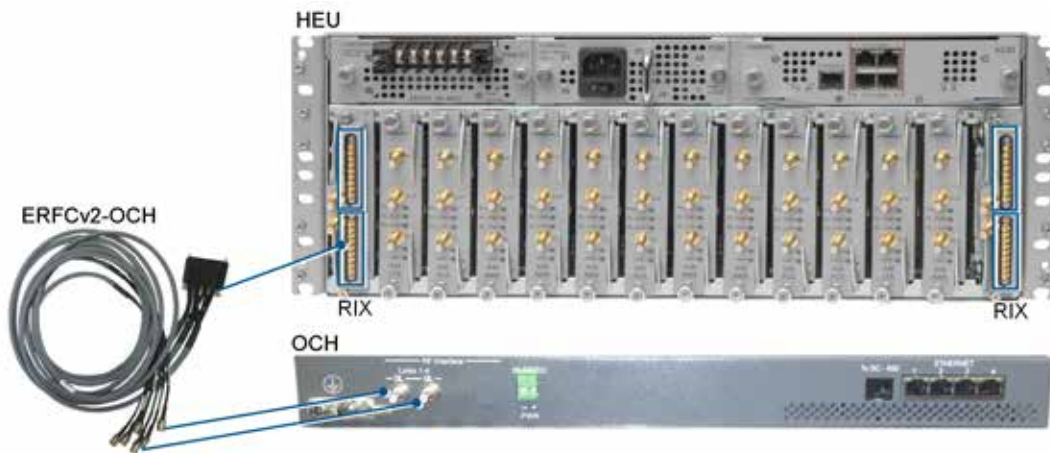


Figure 2. HEU-to-OCH Connections via ERFCv2 Cable

**Step 2:** Connect the SC-450 front panel “LAN” port to the any one of the control module’s (HCM/ACM) four “INTERNAL” ports using the RJ45 CAT 5 Ethernet cable, as shown in Figure 3.



Figure 3.

#### 4. (IF REQUIRED) FOR GX SUPPORTING THE CELL BAND – INSTALL EXTERNAL FILTER

Note: External filter (ordered separately – P/N: AK-GX-FILT-850PS) is required if GX supporting the CELL band is deployed along with units supporting the 800 MHz band. The 850 CELL and 800 MHz service signals must be conditioned and routed through two separate RF paths. Refer to Figure 4.

Note the following:

- Either an OCH-4-WDM unit per GX or an OCH-8-WDM (supporting two separate optical modules) is used.
- In installations with RIU, the services are conditioned via two independent sectors (i.e., SectorA and SectorB) and routed through dedicated optical modules in the OCH. One RIU-12 unit supports two sectors.
- In installations with RIU-4 – two RIU-4 units are required (one for routing 850 CELL and one for 800 MHz).

It is recommended to perform this procedure before the GX installation.

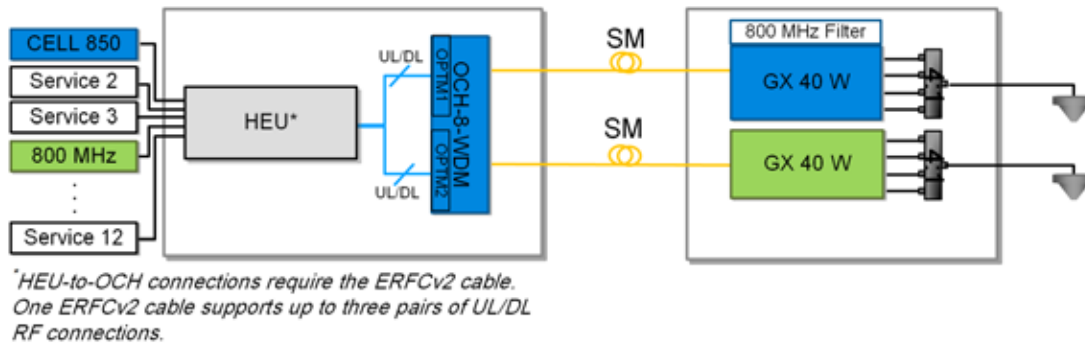


Figure 4. RF Signal Paths for GX Supporting S800 and GX with CELL 850 Deployed with HEU

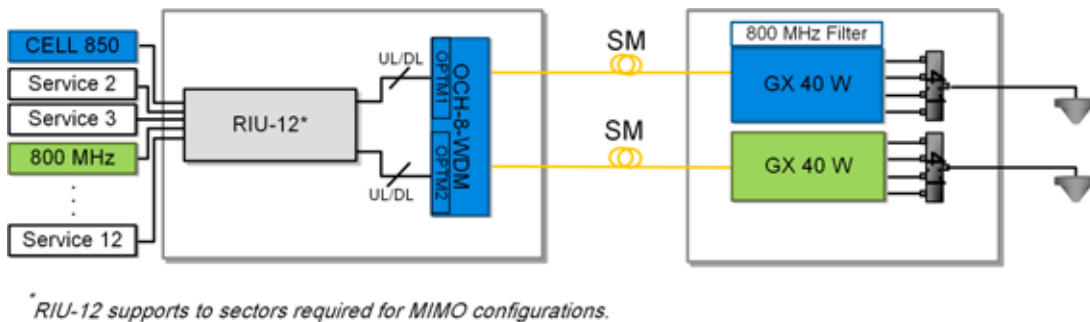


Figure 5. RF Signal Paths for GX Supporting 800 MHz and GX with CELL 850 Deployed RIU-12

#### 4. (IF REQUIRED) FOR GX SUPPORTING THE CELL BAND – INSTALL EXTERNAL FILTER (CONTINUED)

Referring to Figure 6, the external filter is mounted onto the side of the GX quad-band remote unit using mounting brackets provided with the external filter kit so that the input and output connectors face the direction of the GX quad-band panel connectors.

For instructions on how to install the external filter, refer to the quick installation sheet provided with the external filter or download from Corning partner portal (CMA-378-AEN).

#### 5. SELECT GX MOUNTING LOCATION

Select the mounting location (wall/pole):

- General surroundings
- Ventilated and easy-to-reach area
- Proximity to the antenna in order to minimize cable loss

For installations with GX external multiplexer – take into consideration that the unit must be mounted adjacent to the GX RF interfaces to facilitate the connections (DIN-DIN cables = 1.2 m).

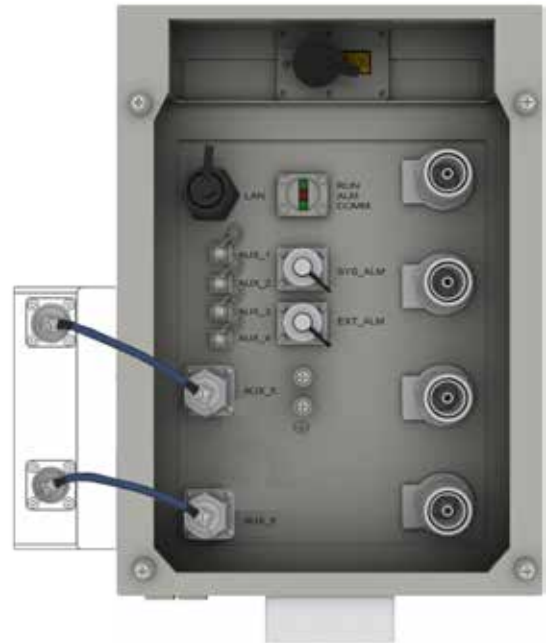


Figure 6. GX with External Filter

## 6. BRACKET WALL-MOUNT INSTALLATION

*Note:* The instructions provided in this section are for solid brick and concrete walls only.

**Step 1:** Using the mounting bracket top and bottom mounting holes as a guide (see Figure 7), measure and mark the location for drilling the (supplied) M10 masonry bolts (12 diameter) in the wall (six per bracket).

**Step 2:** Drill holes for the masonry bolts (using an electric drill with a 12 diameter head).

**Step 3:** Using six (M10 x 110) masonry bolts per bracket – secure the mounting brackets to the wall with the protruding M8 nuts facing toward you. See Figure 7.

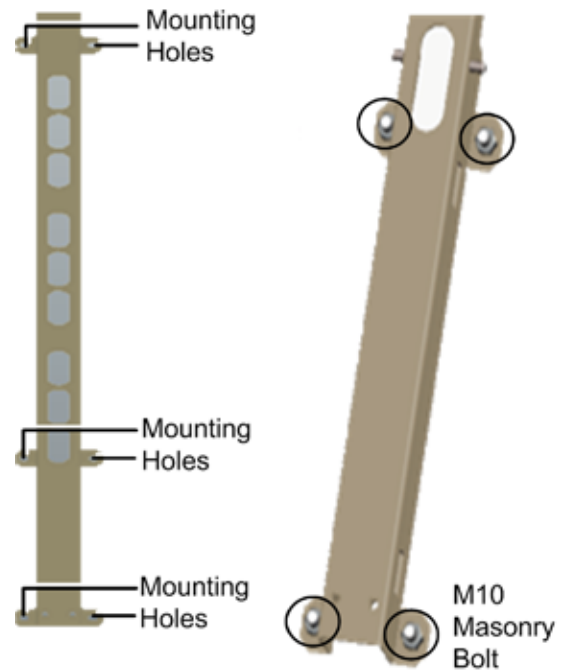


Figure 7. GX Bracket Wall-Mount Option

## 7. ADDITIONAL INSTALLATION OPTIONS

The following separately ordered mounting options are available:

- **Wooden Pole Mount:** Refer to the quick installation sheet provided with the wooden pole mount accessory kit (AK-GX-QUAD-BRKT-WDPOLE) for the pole mount installation instructions.
- **Indoor Concrete Wall Mount:** Refer to the quick installation sheet provided with the indoor concrete wall-mount accessory kit (AK-GX-QUAD-BRKT-INDOOR).



## 8. MOUNT THE GX ONTO THE BRACKET

**Step 1:** Referring to Figure 8, carefully fit and hang the GX unit onto the bracket with the connectors facing down.

**Step 2:** Referring to Figure 9, secure the GX unit to the bracket by inserting the two provided M8 bolts into the frame of the GX underside panel.

**Step 3:** Using a spanner or wrench, tighten the two M8 nuts.

*Note:* Using a threadlocker is recommended to tightly seal the nuts.

**Step 4:** Verify that unit is mounted securely to the bracket.



Figure 8. Hanging GX on Bracket

## 9. (OPTIONAL) MOUNT EXTERNAL MULTIPLEXER

- Notes:*
- Refer to GX external multiplexer quick installation sheet (CMA-372-AEN) for detailed installation procedure instructions.
  - The GX multiplexer should be mounted adjacent to the GX RF interfaces (DIN to DIN cables = 1.2 m).

### For wall-mount installations:

**Step 1:** Using applicable combiner bracket mounting holes (see A and B in Figure 10) as a guide, mark and drill four holes for M6 bolts (provided with multiplexer).

**Step 2:** Mount combiner on wall using the provided M6 bolts and spring and flat washers (four of each).

### For pole-mount installations:

Slip a hose clamp through each end of the factory-assembled mounting bracket (see indicated arrows in Figure 10) and secure to pole by tightening clamp.



Figure 9. Tightening M8 Nuts – Underside



Figure 10. External Combiner Mounting Options and Grounding Lug

## 10. GROUND THE UNIT

**⚠ 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!

- Step 1:** Connect the supplied copper wire (CSA 16 mm<sup>2</sup>) GND cable to the GND connector and the equipment rack or building earth. See Figure 11.
- Step 2:** Ground the unit by connecting the “earth wire” of the power cord to the ground terminal of the AC supply.
- Step 3:** For installations with GX external combiner – connect the grounding wire supplied with the external combiner to the earth ground and to the combiners’ grounding lug (see Figure 10).



Figure 11. GX Grounding Connection

## 11. RF CONNECTIONS

**⚠ CAUTION!** Any open RF port on GX or improper connection between GX RF ports and combiner inputs, will damage GX internal power amplifier after the equipment is powered on. Make sure all connections are performed correctly before powering.

### For direct connections to DAS antennas:

- Step 1:** Using the required coax cables, connect the GX RF ports to the service antennas.
- Step 2:** Ensure lightening protection for each antenna port.
- Step 3:** Waterproof all RF ports (recommended drip-loops).
- Step 4:** Terminate any unused GX and RF ports.

### For connections via GX 4-to-1 external combiner (P/N: AK-GX-ECPL-COMB):

- Step 1:** Using the DIN cables (provided with external combiner), connect each relevant RF output to the corresponding service connector on the external combiner.
- Step 2:** Ensure lightening protection for each antenna port.
- Step 3:** Waterproof all RF ports.
- Step 4:** Terminate any unused GX and multiplexer RF ports.
- Step 5:** Connect external combiner RF output connector to broadband antenna. Refer to Figure 13.

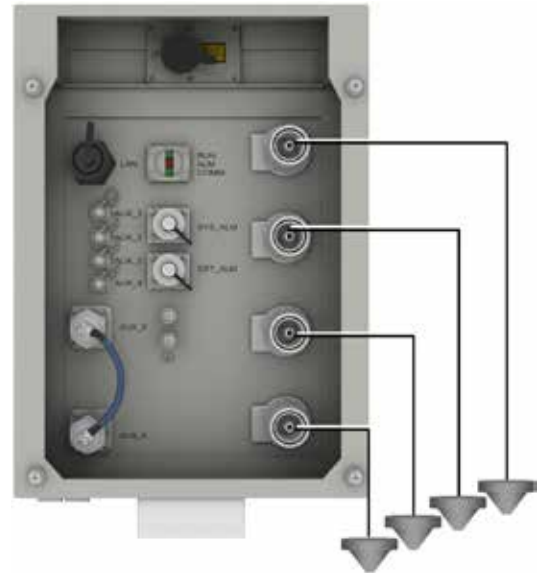


Figure 12. GX Connections to DAS Antennas

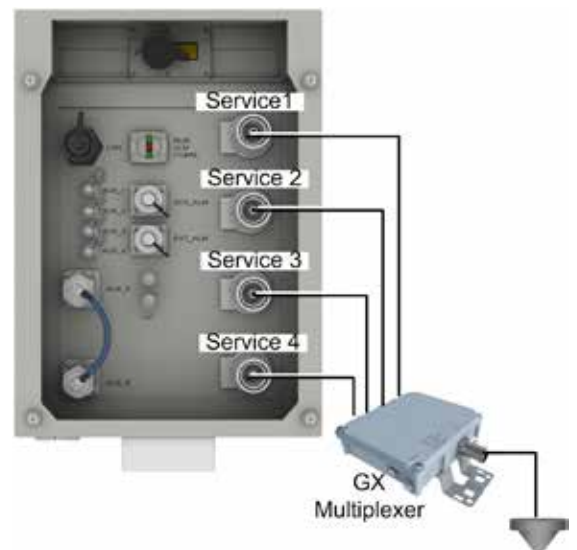


Figure 13. GX Connections to External Combiner

## 12. OPTIC FIBER CONNECTION

- Notes:
- The fiber connections are performed from the GX towards the OCH (at the headend) via the fiber optic patch panel.
  - In MIMO configurations with two GX units, the pair of optical fibers connected between the OCH optical modules and GX remote units must be equal in length to ensure the same time delay to both units.
  - Keep in mind the rules for handling and connecting fiber optic cables. The fiber optic cables will be connected to the associated OCH in the communication room at a later phase.
  - GX supports single-mode fiber.
  - An OptiTap® cable (ordered separately) is used for the fiber optic connections.
  - It is recommended to allow a drip loop when connecting.

**Step 1:** Install splice box near the remote unit.

**Step 2:** Referring to Figure 14, connect OptiTap cable to splice box and to the GX OP OptiTap port.

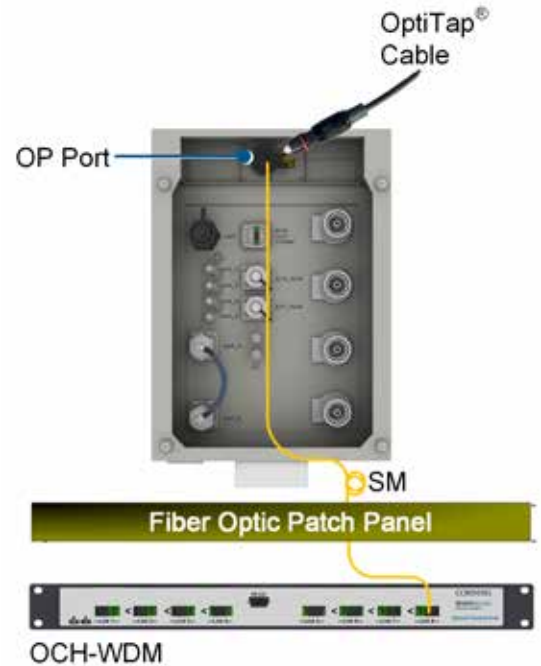


Figure 14. GX Fiber Connection

## 13. POWER UP UNIT

**⚠ ATTENTION!** Any open RF port on GX or improper connection between GX RF ports and combiner input ports will damage GX internal power amplifier after the equipment is powered on. Make sure all connections are performed correctly before powering.

### 13A. POWERING UP AC MODELS

**Step 1:** Unscrew the two screws of the side panel and open to access the power connector. See Figure 15.

**Step 2:** Connect the supplied power cable to the power supply port: (VAC 100-240/47-63 Hz, 20A max).

Maximum power consumption: 1450 W

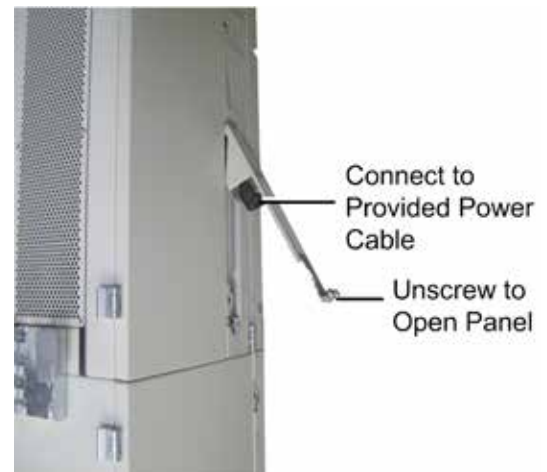


Figure 15. GX AC Model Power Connector

## 13B. POWERING UP DC MODELS

### ⚠ IMPORTANT!

Verify the following before connecting DC power cable:

- DC power supplier must be turned off before performing the power connections!
- DC cable supports required voltage and current specifications: 40-57 VDC and Max 37.5A;
- Maximum power consumption: 1450 W
- DC cable diameter range between 7 to 14 mm
- Cable lug specs:
  - Hole size: 1/4 in
  - Hole spacing: 5/8 in

**Step 1:** Open DC power chamber by loosening the four M3 screws. See Figure 16.

**Step 2:** Referring to Figure 17, remove retaining nuts and route power cord through provided tubing gaskets noting the following:

- Tubing gasket is required for power cord diameter in range of 7 to 10 mm
- Tubing gasket is not required for power cord diameter in range of 10 to 14 mm

**Step 3:** Carefully let power cord enter the chamber (through hole) and connect the lug to terminal (make sure right DC polar is connected).

**Step 4:** Tighten remaining nuts.

**Step 5:** Tighten lug to terminal with nut and washer (Figure 18).

**Step 6:** It is strongly recommended to secure the power cords to the enclosure. Additional holes are provided for this purpose. See Figure 19.

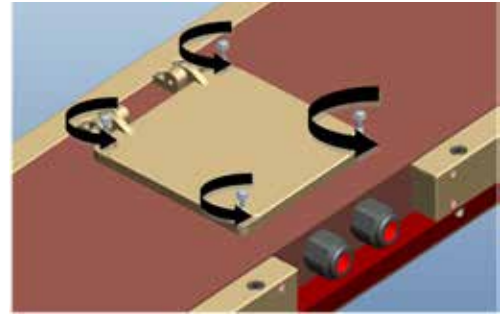


Figure 16. GX Quad Power Connector

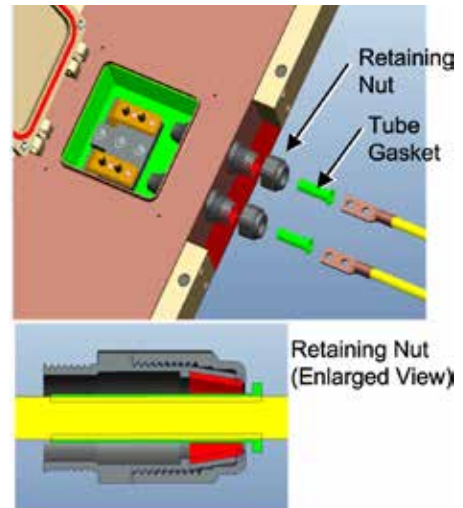


Figure 17. Routing DC Power Cords

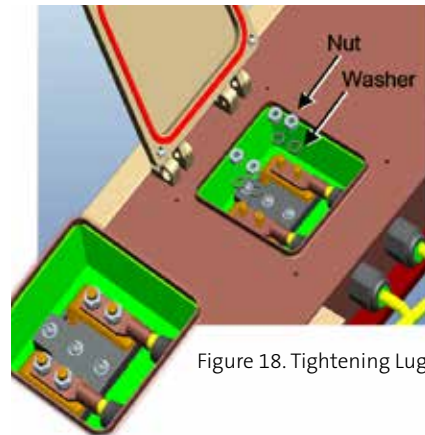


Figure 18. Tightening Lug to Terminal

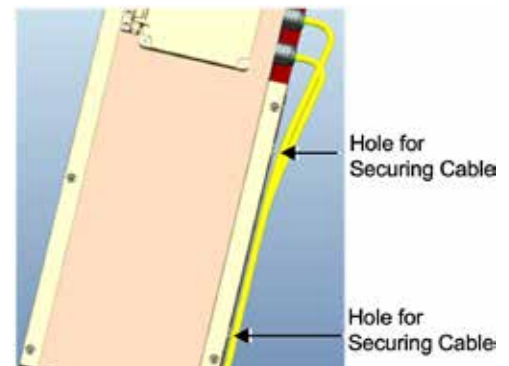
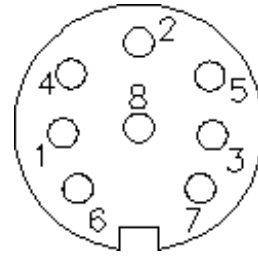


Figure 19. Securing Power Cable

## 14. (OPTIONAL) EXTERNAL ALARM CONNECTIONS

Support for up to four dry-contact alarm connections from external sources (incoming outputs). See Figure 20 for pinout description.

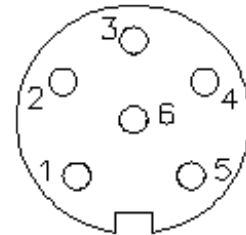


Pin No.	Description
1	EXT_ALM1
2	EXT_COM1
3	EXT_ALM2
4	EXT_COM2
5	EXT_ALM3
6	EXT_COM3
7	EXT_ALM4
8	EXT_COM4

Figure 20. External Alarm Pinout Description

## 15. (OPTIONAL) SYSTEM ALARM CONNECTIONS

Relay alarm support for remote main status alarm. See Figure 21 for pinout description.



Pin No.	Description
1	EXT_OPEN
2	EXT_COM
3	EXT_CLOSE

Figure 21. System Alarm Pinout Description

## 16. VERIFY NORMAL OPERATION

**Step 1:** Confirm the fans are working after powering.

**Step 2:** Verify normal operation via LEDs:

RUN	Flashing green upon initialization for a duration of one minute
COMM	Flashing green (When communicating with head end)
ALM	OFF



Figure 22. GX LED Status Indicators