CORNING

GX Higher Power 40 W Dual-Band WCS/2.5 GHz TDD DAS Remote Quick Installation Sheet

CMA-600-AEN

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   Corning's product warranty will be void and no longer valid.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® pull-out 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
   - Interface box (IFB) – interfaces between the headend unit (HEU/IHU) and OCH
   - ERFCv2-OCH cable – extender cable interfacing to the RIX module and the OCH
   - SC-450 unit – system controller required for GX management
5. Two people are required for mounting – unit weight: 147 lb (66.6 kg)
6. Wooden pole-mountable option accessory kit (AK-GX-QUAD-BRKT-WDPOLE) is available (ordered separately). Instructions are provided with the kit.
7. For deployments alongside GX quad-band remotes – via the GX 2x1 external low-band and high-band combiner (P/N: AK-GX-LH-COMB).

This document describes the GX dual-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	Quantity	Image
GX 40 W Dual-Band Remote Unit: GX-WCSM2500M-40 GX-WCSM2500M-40 GX-WCSS2500S-40 GX-WCSS2500S-40-DC	1	
Mounting Bracket (used for both pole- and wall-mountable installations)	1	
Nuts M8, Spring Washers ø 8, Plain Washers ø 8 (used for securing GX when hung on bracket protrusions)	2 (per item)	
Masonry Bolt (set) M10x110 – used for wall-mountable 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^2)	1	
Ethernet Communication Cable	1	

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

1. VERIFY PACKAGE CONTENTS (CONTINUED)

Additional Required Items (ordered separately) for Installations with Corning® Optical Network Evolution (ONE™) Solution	Quantity	Image
ERFCv2-OCH – RF Cables used for interfacing between HEU extender module and the OCH unit	1	
AK-ONE-HE-GX-INTBOX – GX Accessory ONE Headend-to-GX Interface Box (IFB); used to combine the RF services from two HEUs/IHUs and required for synchronizing the TDD band (includes IF clock module for generating a 2970 MHz pilot signal)	1	
AK-RIU-4-OCH-CABLES/AK-RIU-12-CABLES – Accessory Kits including QMA/QMA RF cables required for IFB-to-OCH connections: • AK-RIU-4-OCH-CABLES — includes four QMA/QMA R/A 1000 mm cables • AK-RIU-12-CABLES — includes four RF QMA/QMA R/A 1000 mm cables	1-3 (each IFB supports 12 QMA connections to OCHs)	—
OCH-4-WDM (top) – 4-Port Optical Central Hub supporting up to four SISO remotes; wavelength division multiplexing technology; single-mode fiber OCH-8-WDM (bottom) – 8-port optical central hub supporting up to eight SISO remotes or four MIMO remotes; wavelength division multiplexing technology; single-mode fiber	1	
SC-450 – System Controller used for management of GX and OCH	1	

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

2. ADDITIONAL REQUIRED TOOLS

- Electric Drill (ø 12 diameter head for drilling holes for wall mount)
- Spanner (0.31-in for tightening GX M8 nuts)
- For pole-mountable installations – the GX bracket supports wooden pole mounting via 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(s) — OCH-4-WDM or OCH-8-WDM; installed in 19-in communication rack with HEU
- Interface box — installed in 19-in communication rack with HEU and OCH
- 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 IFB, OCH, and SC-450 for instructions on how to install the units.

Refer to Figure 1 for an example of where to install the units in the communication rack in order to facilitate the cable connections.

Step 1: Refer to Figure 2 and connect the 9-pin connector side of the ERFCv2-OCH cable to an available HEU/IHU RIX port and secure the connector in place.

Note: *Each ERFCv2 cable supports HEU-to-IFB UL/DL connections for three service groups and one 10 MHz clock reference connection.*

Step 2: Connect a pair of the ERFCv2 cable UL/DL QMA connectors to each of the three IFB UL/DL service group input ports (i.e., SG1, SG2, and SG3).

Step 3: Connect the single ERFCv2 10 MHz cable connector to the IFB 10 MHz port, located in the middle of the front panel.

Step 4: Perform Steps 1-2 above for second HEU if installed (no need for 10 MHz clock reference connection).

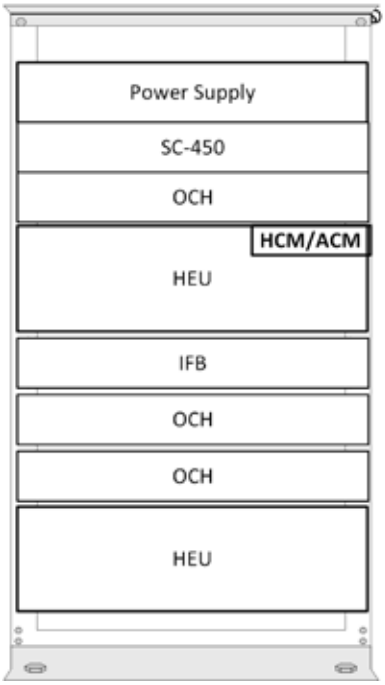


Figure 1. Example of Rack Configuration

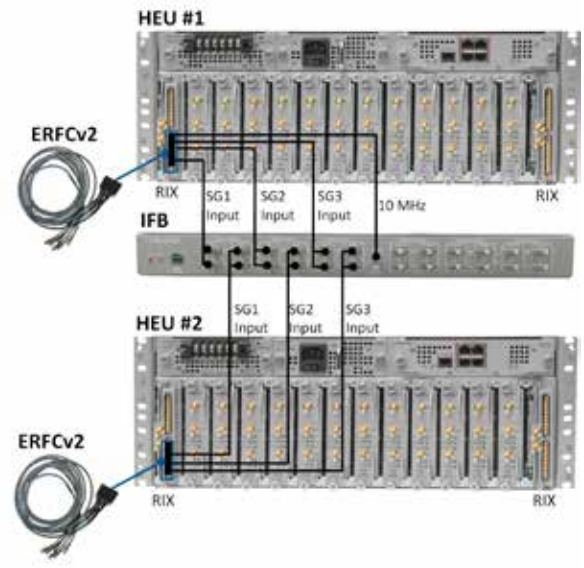


Figure 2. HEU-to-IFB Connections

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

(CONTINUED)

Step 5: Connect a pair of QMA/QMA cables from each of the service group UL and DL output ports to the OCH optical module UL and DL link ports. IFB supports connections to two optical modules per service group (see Figure 3).

Note the following:

- *The IFB output connections to the OCH are performed using QMA/QMA cables (not provided with unit). Corning accessory kits, including appropriate cables, can be ordered separately.*
- *Each IFB supports connections to two optical modules (i.e., one OCH-8 or two OCH-4 units) per service group so that each unit supports connections to up to six OCH-4/three OCH-8 units.*

Step 6: Refer to Figure 4 and perform the management connections as follows:

1. Connect the SC-450 front panel "LAN" port to any one of the HEU control module's (HCM/ACM) four "INTERNAL" ports using an RJ45 CAT 5 Ethernet cable (provided with the SC-450). See Figure 4.
2. Connect the OCH "To SC-450" port to one of the SC-450 RJ45 ports using an RJ45 CAT 5 Ethernet cable. See Figure 5.

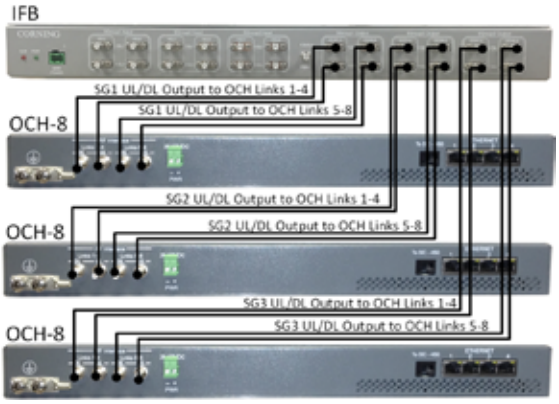


Figure 3. IFB-to-OCH Connections

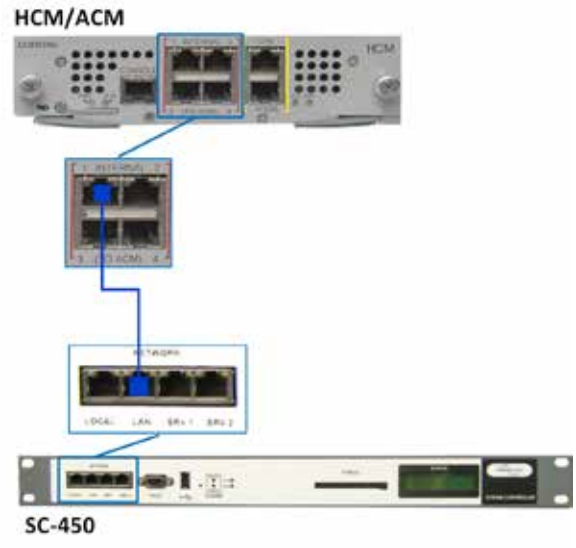


Figure 4. HCM-to SC-450 Management Connection

Figure 5. OCH-to-SC-450 Management Connection

4. 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).

5. BRACKET WALL-MOUNTABLE 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 6), 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 (M10x110) masonry bolts per bracket – secure the mounting brackets to the wall with the protruding M8 nuts facing toward you. See Figure 6.

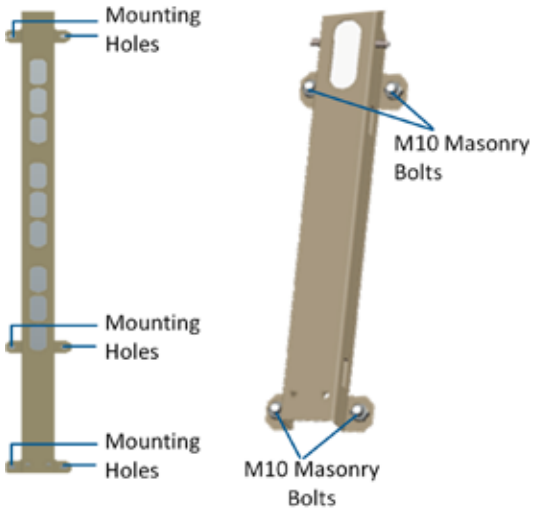


Figure 6. GX Bracket Wall-Mountable Option

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

7. MOUNT THE GX ONTO THE BRACKET

Step 1. Referring to Figure 7, carefully fit and hang the GX unit onto the bracket with the connectors facing down.

Step 2. Referring to Figure 8, 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 thread locker is recommended to tightly seal the nuts.*

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

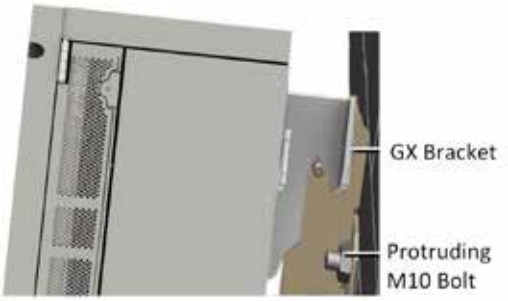


Figure 7. Hanging GX on Bracket

8. FOR DEPLOYMENTS ALONGSIDE GX QUAD-BAND UNITS – INSTALL GX 2x1 EXTERNAL LOW-BAND AND HIGH-BAND COMBINER

Notes: *GX dual-band can be deployed alongside the following GX quad-band units:*

- *GX-E17E85P19L70-40*
- *GX-E17E85P19L70-40-DC*

Refer to GX low-band and high-band external combiner (AK-GX-LH-COMB) quick installation sheet for detailed installation procedure instructions.

The GX low-band and high-band external combiner interfaces to the GX dual-band and to the GX 4x1 external combiner (AK-GX-ECPL-COMB) converging the frequencies received from the GX quad-band

The GX 2x1 external combiner should be mounted adjacent to the GX dual-band RF interfaces (DIN to DIN cables = 1.2 m).

Figure 8. Tightening M8 Nuts – Underside

For wall-mountable installations:

Step 1. Using combiner bracket mounting holes (indicated as "A" in Figure 9) as a guide, mark and drill four holes for M6 bolts (provided with external combiner).

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

For pole-mountable installations:

Slip a hose clamp through the holes (indicated as "B" Figure 9) at each end of the factory-assembled mounting bracket and secure to pole by tightening.

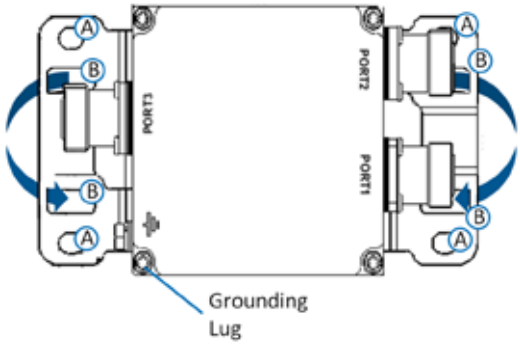


Figure 9. External Combiner Mounting Options and Grounding Lug

9. 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^2) GND cable to the GND connector and the equipment rack or building earth. See Figure 10.

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 9).

Figure 10. GX Grounding Connection

10. 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 lightning protection for each antenna port.

Step 3. Waterproof all RF ports (recommended drip loops).

Step 4. Terminate any unused GX and RF ports.

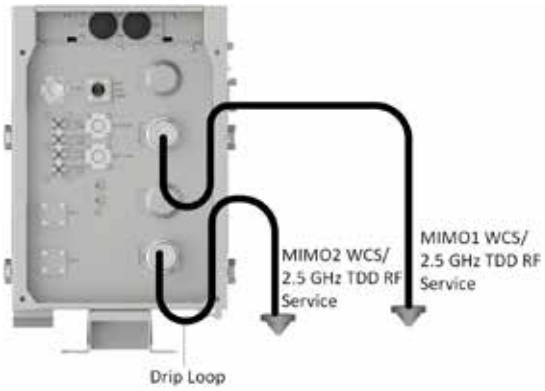


Figure 11. GX (MIMO) Connections to DAS Antennas

For connections via GX 2x1 external combiner (P/N: AK-GX-LH-COMB):

Step 1. Using DIN cables (provided with external combiner), connect the RF output to one of the external combiner input ports.

Note: *MIMO units required two 2x1 external combiners (one for each RF antenna output port).*

Step 2. Ensure lightning protection for each antenna port.

Step 3. Waterproof all RF ports.

Step 4. Terminate any unused GX RF ports.

Step 5. Connect external combiner output connector to broadband antenna. Refer to Figure 12.

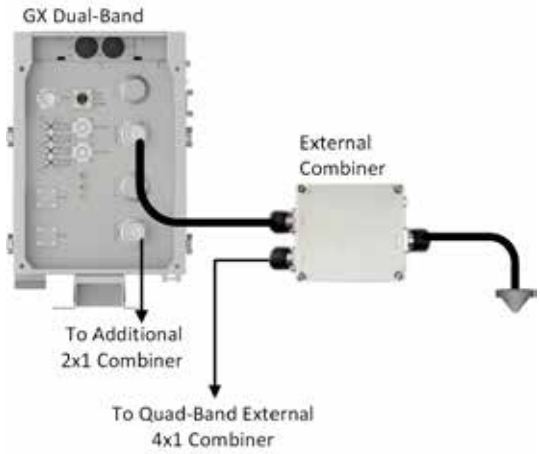


Figure 12. GX (MIMO) Connections to External Combiner

11. OPTIC FIBER CONNECTION

Notes:

The fiber connections are performed from the GX towards the OCH (at the headend) via the fiber optic patch panel.

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.

IMPORTANT! *MIMO units require two fiber connections, where each one must be connected to a different optical module, as shown in Figure 13.*

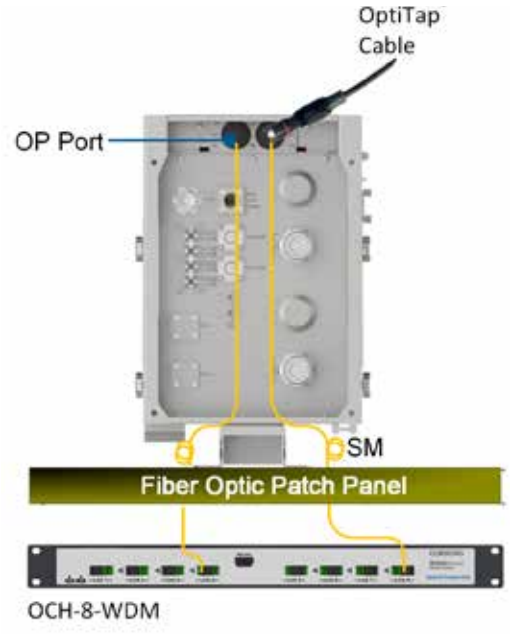


Figure 13. GX Fiber Connection (MIMO)

Step 1. Install splice box near the remote unit.

Step 2. Referring to Figure 13, connect OptiTap cable to splice box and to the GX OP OptiTap port.

12. 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.

12A. POWERING UP AC MODELS

Step 1. Unscrew the two screws of the side panel and open to access the power connector. See Figure 14.

Step 2. Connect the supplied power cable to the power supply port: (100-240 VAC/47-63 Hz, 11 A maximum).

Maximum power consumption:
SISO models —750 W; MIMO models — 1100 W

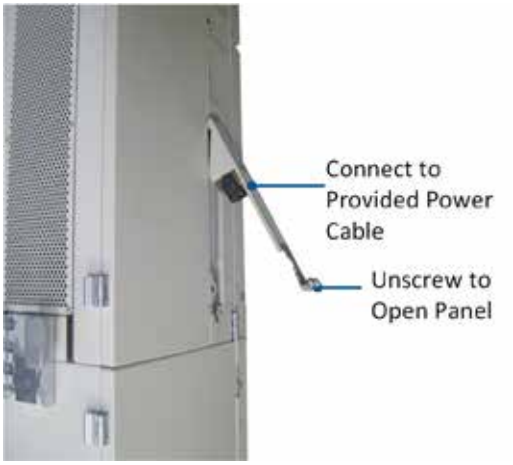


Figure 14. GX AC Model Power Connector

12B. POWERING UP DC MODELS

IMPORTANT! Verify the following before connecting DC power cable:

The following additional elements are required (ordered separately):

- DC power supplier must be turned off before performing the power connections!
- DC cable supports required voltage and current specifications:
  - -40 to -57 VDC and 27.5 A maximum
  - Maximum power consumption: 1100 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 15.

Step 2. Referring to Figure 16, 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 17).

Step 6. It is strongly recommended to secure the power cords to the enclosure. Additional holes are provided for this purpose. See Figure 18.

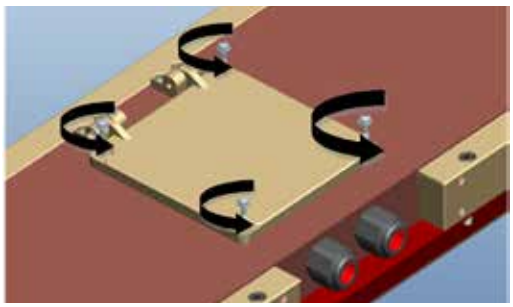


Figure 15. GX Quad-Power Connector

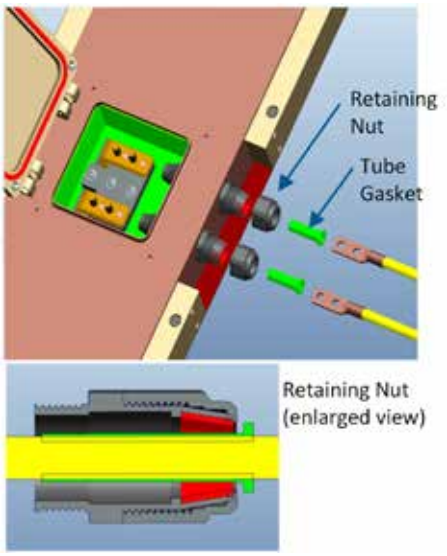


Figure 16. Routing DC Power Cords

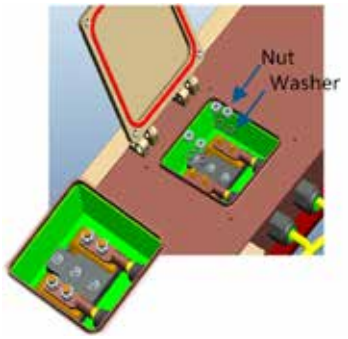


Figure 17. Tightening Lug to Terminal

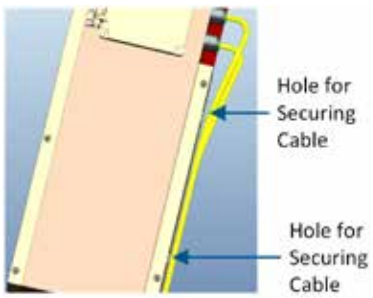
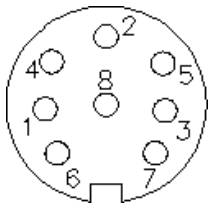


Figure 18. Securing Power Cable

13. (OPTIONAL) EXTERNAL ALARM CONNECTIONS

Support for up to four dry-contact alarm connections from external sources (incoming outputs). See Figure 19 for pinout description.

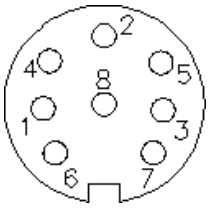


Pin	Description
1	EXT_ALM1
2	EXT_COM1
3	EXT_ALM2
4	EXT_COM2
5	EXT ALM3
6	EXT_COM3
7	EXT ALM4
8	EXT_COM4

Figure 19. External Alarm Pinout Description

14. (OPTIONAL) SYSTEM ALARM CONNECTIONS

Relay alarm support for remote main status alarm. See Figure 20 for pinout description.



Pin	Description
1	EXT_OPEN
2	EXT_COM
3	EXT_CLOSE

Figure 20. System Alarm Pinout Description

15. VERIFY NORMAL OPERATION

Step 1. Confirm the fans are working after powering.

Step 2. Verify normal operation via LEDs:

LED	Status	Description
RUN	Blinking green	Normal status, power on
	Off	Alarm status
COMM	Steady red	General alarm
	Blinking red (two-second blinking)	Synchronization alarm
	Blinking red (one-second blinking)	Optical attenuation alarm
	Off	Normal status
ALM	Blinking green — blinks on each command received by the GX	Normal communication
	Off	Communication fault

Figure 21. GX LED Status Indicators

NOTES:

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