NetSure™ -48 VDC GMT Distribution Unit

Installation and User Manual

Specification Number: 563171

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Technical Support Site

If you encounter any installation or operational issues with your product, check the pertinent section of this manual to see if the issue can be resolved by following outlined procedures.

Visit https://www.vertiv.com/en-us/support/ for additional assistance.

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Admonishments Used in this Document

DANGER! Warns of a hazard the reader ***will*** be exposed to that will ***likely*** result in death or serious injury if not avoided. (ANSI, OSHA)

WARNING! Warns of a potential hazard the reader ***may*** be exposed to that ***could*** result in death or serious injury if not avoided. This admonition is not used for situations that pose a risk only to equipment, software, data, or service. (ANSI)

CAUTION! Warns of a potential hazard the reader ***may*** be exposed to that ***could*** result in minor or moderate injury if not avoided. (ANSI, OSHA) This admonition is not used for situations that pose a risk only to equipment, data, or service, even if such use appears to be permitted in some of the applicable standards. (OSHA)

ALERT! Alerts the reader to an action that ***must be avoided*** in order to protect equipment, software, data, or service. (ISO)

ALERT! Alerts the reader to an action that ***must be performed*** in order to prevent equipment damage, software corruption, data loss, or service interruption. (ISO)

FIRE SAFETY! Informs the reader of fire safety information, reminders, precautions, or policies, or of the locations of fire-fighting and fire-safety equipment. (ISO)

SAFETY! Informs the reader of general safety information, reminders, precautions, or policies not related to a particular source of hazard or to fire safety. (ISO, ANSI, OSHA)

Important Safety Instructions

Safety Admonishments Definitions

Definitions of the safety admonishments used in this document are listed under “Admonishments Used in this Document” on page iv.

Safety and Regulatory Statements

Refer to Section 4154 (provided with your customer documentation) for Safety and Regulatory Statements.

Déclarations de Sécurité et de Réglementation

Reportez-vous à la Section 4154 (fourni avec les documents de votre client) pour les déclarations de sécurité et de réglementation.

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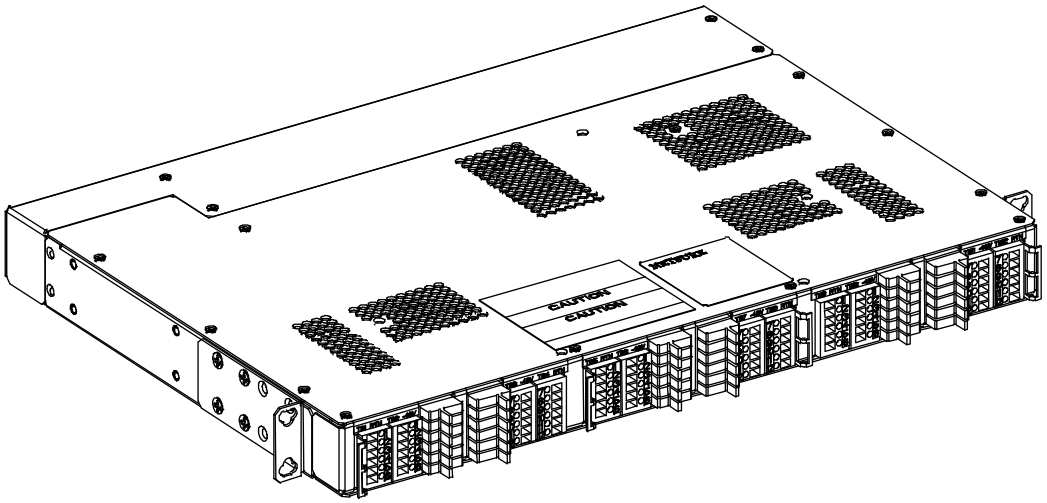
1 Description

A 1RU high by 19” wide distribution unit with thirty-six (36) GMT fuse load positions.

Provides…

- (36) GMT fuse load distribution positions (0 A to 15 A).
- Three (3) input connection points.
- CBA/FA alarm relay contacts and resistive battery for connection to external alarms.



2 Specifications

2.1 Electrical

1. Input / Output Voltage: Nominal –48 VDC.
2. Maximum Input Current: 150 A.
3. Maximum Load Distribution Current: 150 A at @ +40 °C (+104 °F) and 80 A @ +65 °C (+149 °F).
4. Maximum GMT Fuse Block Capacity: 35 A @ +40 °C (+104 °F) and 30 A @ +65 °C (+149 °F).
5. Maximum GMT Fuse Size: 15 A.
6. Circuit Breaker / Fuse Alarm Circuit: A set of Form-C alarm relay contacts and resistive battery are provided for connection to external CBA/FA alarms. Relay contacts rated for 2 A @ 30 VDC, 0.6 A @ 110 VDC, and 0.6A @ 125 VAC.

2.2 Environmental

1. Operating Ambient Temperature Range: -40 °C to +65 °C (-40 °F to +149 °F).
2. Storage Ambient Temperature Range: -40 °C to +70 °C (-40 °F to +158 °F).
3. Relative Humidity: Capable of operating in an ambient relative humidity range of 0% to 95%, non-condensing.
4. Altitude: Capable of operating in an altitude range of -200 feet to 10,000 feet. The maximum operating ambient temperature should be de-rated by 3 °C per 1000 feet above 6562 feet.

2.3 Compliance Information

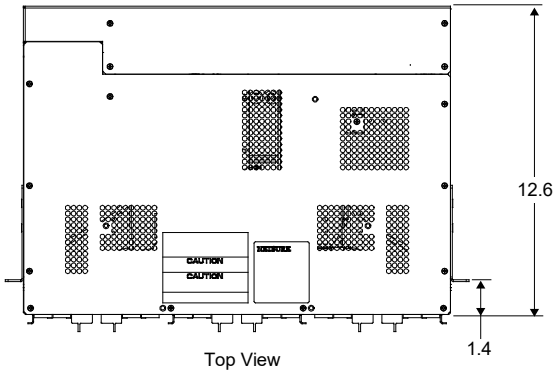
1. Safety Compliance: This panel is UL Recognized for use in DC Power Distribution Centers for Communications Equipment.
2. NEBS Compliance: Compliance verified by a Nationally Recognized Testing Laboratory (NRTL) per GR-1089-CORE and GR-63-CORE. Contact Vertiv for NEBS compliance reports.
3. GR-3108: GR-3108 Class 2 Compliant.

2.4 Dimensions and Weight

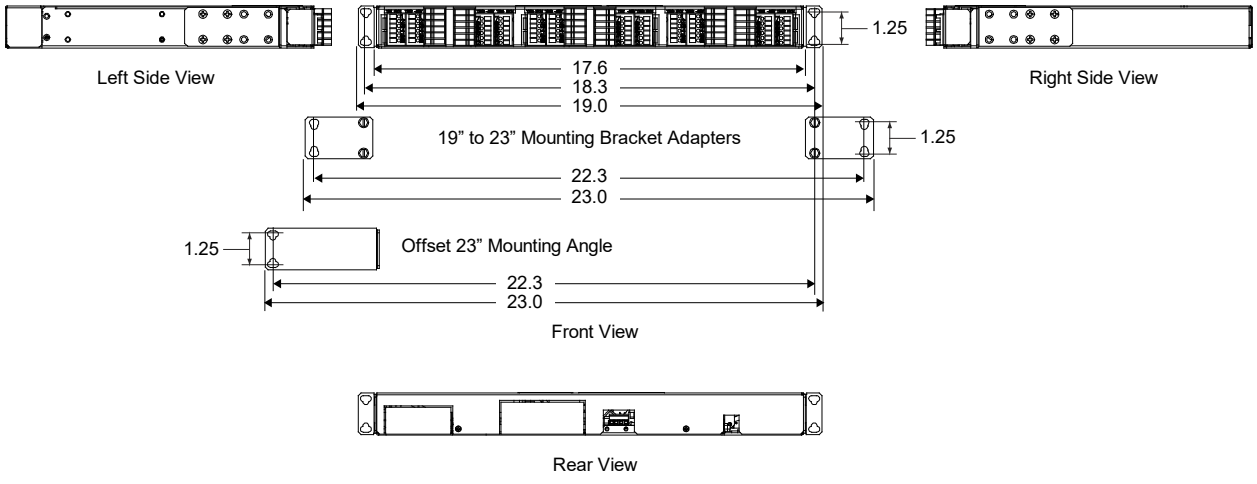
See Figure **2.1**.

Figure 2.1 Dimensions and Weight

Notes:
1. Dimensions are in inches, unless otherwise specified.
2. Finish: Galvanized Steel.
3. Weight:
   Net: 13.5 lbs.
4. 19" to 23" mounting bracket adapters can be attached to the standard 19" mounting brackets.
5. An offset 23" mounting angle can be attached to the left side of the shelf (replaces the standard mounting angle for that side).
6. Standard 19" mounting angles can be adjusted for 1.4" or 5" front projection mounting.



Top View



Left Side View

Right Side View

Front View

Rear View

3 Accessories

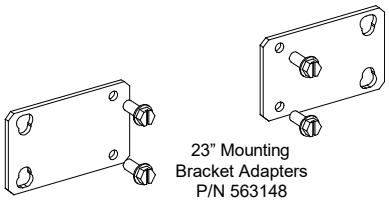
Order the following by part number as required.

3.1 Mounting Brackets and Adapters

3.1.1 23” Mounting Bracket Adapter Plates, P/N 563148

Attaches to the 19” standard mounting brackets to allow 23” mounting.

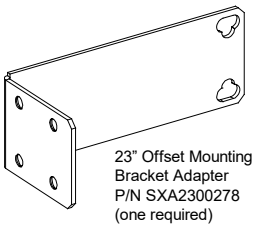
P/N 563148 provides two (2) mounting bracket adapter plates. Order as required.



3.1.2 23” Offset Mounting Bracket Adapter, P/N SXA2300278

Replaces the 19” standard mounting bracket on the left side of the shelf to allow 23” offset mounting.

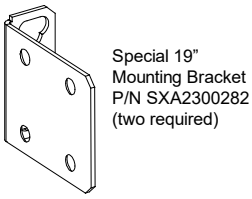
Provided with the distribution unit.



3.1.3 Special 19” Mounting Brackets, P/N SXA2300282

Replaces the 19” standard mounting brackets to allow the side access holes in the shelf to be used with other equipment. There will be a 5” front projection mounting when this bracket is used.

Provided with the distribution unit.



3.2 GMT Load Distribution Fuses

The distribution unit holds up to thirty-six (36) GMT load distribution fuses.

Order GMT fuses as required per **Table 3.1**.

Table 3.1 GMT Fuses

Ampere Rating	Part Number	Fuse Color
18/100 (GMT-A)	248610301	--
1/4	248610200	Violet
1/2	248610300	Red
3/4	248610500	Brown
1-1/3	248610700	White
2	248610800	Orange
3	248610900	Blue
5	248611000	Green
7-1/2	248611300	Black-White
10	248611200	Red-White
15	248611500	Red-Blue
Replacement Safety Fuse Cover (GMT-Y)	102774	--
Replacement Dummy Fuse	248872600	--

3.3 Lugs

Standard Crimp Lugs

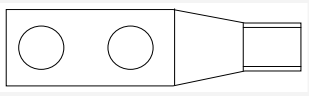
For use on the rear input busbars.

Specify part number from **Table 3.2** for desired lead size.

Maximum lug size for rear input landing point connections is 1/0 AWG flex wire lug P/N 112902.

Table 3.2 Crimp Lug, Two-Hole, 1/4" Bolt Clearance Hole, 5/8" Centers

Lead Size	Part Number
14-10 AWG	245342300
8 AWG	245390200
6 AWG	245346700
4 AWG	245346800
2 AWG	245346900
1/0 AWG	112902 (Narrow Tongue) (Flex Wire)



Note: Lugs should be crimped per lug manufacturer's specifications.

4 Installing the Distribution Unit

4.1 General

This product is intended for installation in network telecommunication facilities (CO, vault, hut, or other environmentally controlled electronic equipment enclosure).

This product is intended to be connected to the common bonding network in a network telecommunication facility (CO, vault, hut, or other environmentally controlled electronic equipment enclosure).

4.2 Securing the Distribution Unit to a Relay Rack or a Cabinet Equipment Rack (if required)

DANGER! If the distribution unit is mounted in a relay rack, the relay rack must be securely anchored to the floor before the distribution unit is installed.

The distribution unit is designed to mount in a standard 19" relay rack or equipment rack having 1" or 1-3/4" multiple drillings.

- Two 19" mounting brackets are furnished (adjustable for 1.4" or 5" front projection mounting).
- A special 19" mounting bracket is available (2 required) to allow the side access holes in the shelf to be used with other equipment. There will be a 5" front projection mounting when this bracket is used.
- A 23" offset mounting bracket adapter is furnished.
- 23" mounting bracket adapter plates are available.

Refer to Figure **2.1** on page 2 for overall dimensions.

Procedure

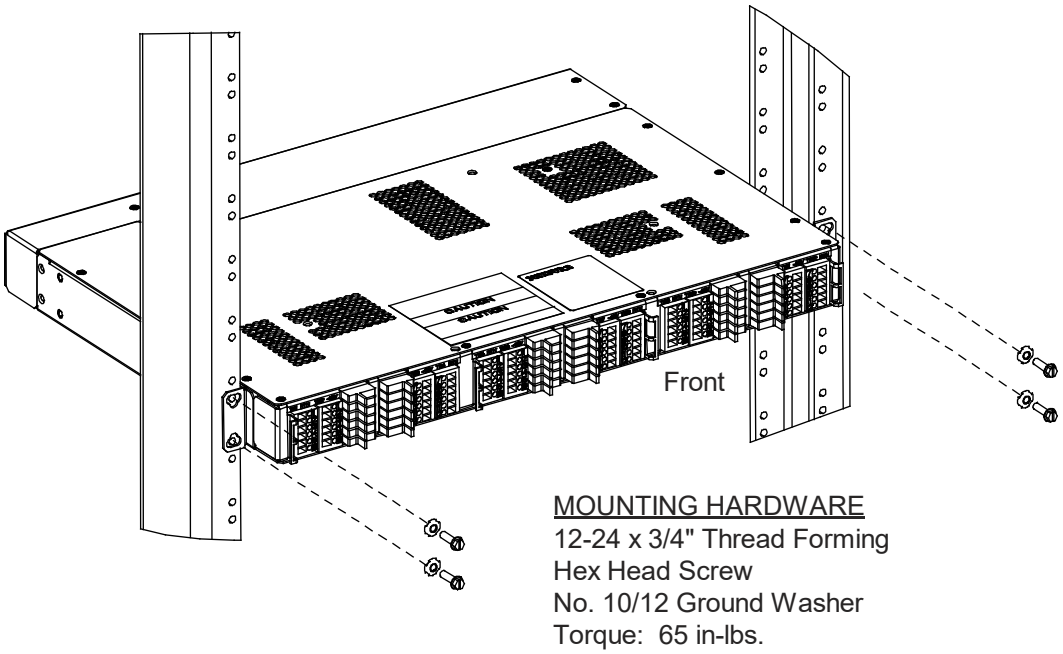
1. For 23" mounting, attach the 23" mounting bracket adapter plates to the standard 19" mounting brackets or use the provided 23" offset mounting bracket.
2. Position the distribution unit in the relay rack or cabinet equipment rack.
3. Secure the distribution unit to the relay rack or cabinet equipment rack using hardware as shown in **Figure 4.1** (see **Figure 4.1** for recommended torque). Use grounding washers as indicated in **Figure 4.1**.

NOTE! *Install (orient) the ground washers so the teeth dig into the mounting angles for a secure ground connection.*

NOTE! *Compliance with Telcordia GR-1089-CORE requires that prior to mounting the system to the equipment rack:*

- *All paint must be removed from the front surface of each equipment rack rail where it mates with a shelf-mounting bracket, so that good metal-to-metal contact can be established between the shelf and rack.*
- *The shelf-to-rack mating surfaces must be cleaned.*
- *Electrical anti-oxidizing compound must be applied to the shelf-to-rack mating surfaces.*

Figure 4.1 Mounting the Distribution Unit in a Relay Rack or a Cabinet Equipment Rack



4.3 Installing Fuses

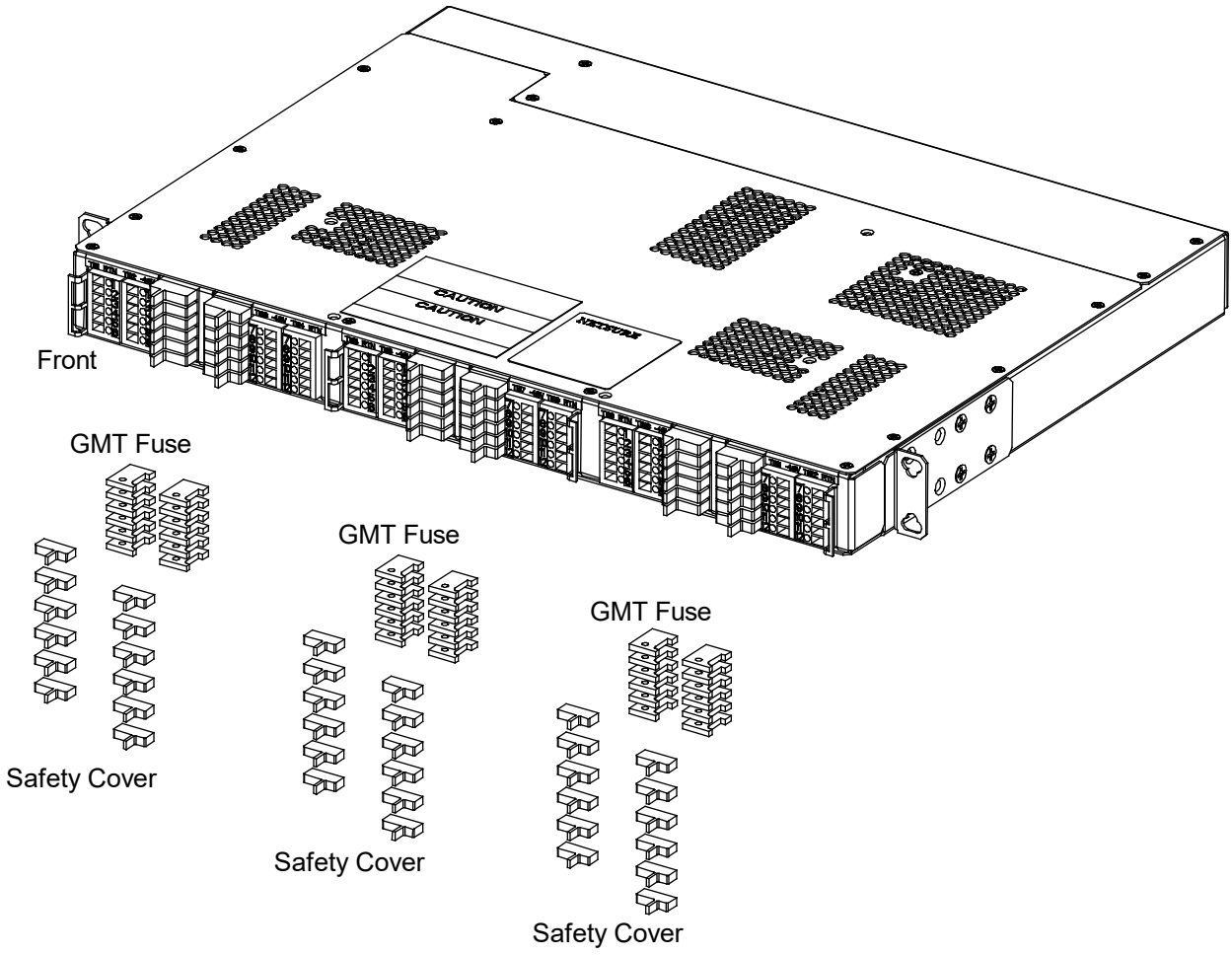
Refer to “Specifications” on page 1 for any temperature, sizing, and spacing restrictions.

GMT Load Distribution Fuses

Procedure

1. Install correctly sized GMT fuses into the fuseholders located on the front of the distribution unit, as required. If a dummy fuse is installed, first remove the dummy fuse. Install a safety fuse cover over each GMT fuse. Install a dummy fuse in all unused fuse positions. See **Figure 4.2**.

Figure 4.2 Installing GMT Load Distribution Fuses



5 Making Electrical Connections

5.1 Important Safety Instructions

DANGER! Adhere to the “Important Safety Instructions” presented at the front of this document.

WARNING! When this panel is used in non-factory integrated systems, external branch circuit protection is required for all input feeds.

5.2 Wiring Considerations

All wiring, branch circuit protection, and grounding should follow the current edition of the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC), and applicable local codes. For operation in countries where the NEC is not recognized, follow applicable codes.

5.3 Relay Rack / Cabinet Frame Grounding Connection

NOTE! *This applies to the relay rack or cabinet equipment rack the distribution unit is installed in.*

For relay rack / cabinet frame grounding requirements, refer to the current edition of the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC), applicable local codes, and your specific site requirements.

5.4 Distribution Unit Frame Grounding Connection

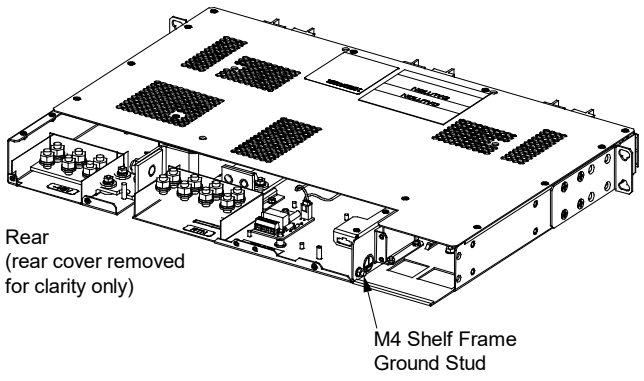
For distribution unit frame grounding requirements, refer to the current edition of the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC), applicable local codes, and your specific site requirements.

Procedure

1. The frame grounding connection to the distribution unit is made by using grounding washers with the mounting hardware used to secure the distribution unit to the relay rack or cabinet. Refer to “Securing the Distribution Unit to a Relay Rack or a Cabinet Equipment Rack” on page 4. Ensure that the relay rack or cabinet is properly grounded.

NOTE! *An M4 frame ground stud is located on the rear of the distribution unit. Provide a grounding lead to this connection point, if required. Refer to* ***Figure 5.1*** *for location.*

Figure 5.1 Distribution Unit Frame Grounding Connection Points

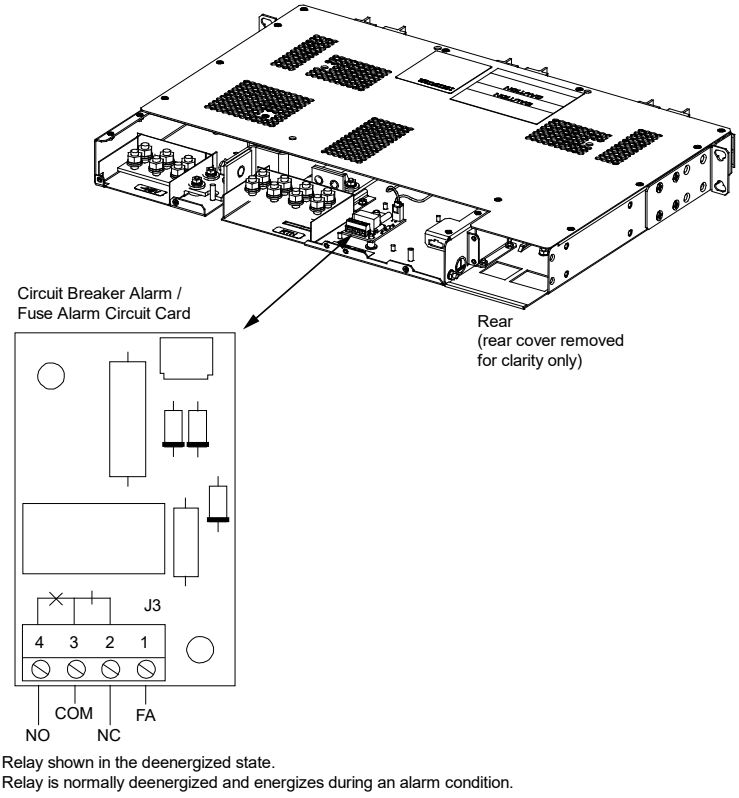


5.5 External Fuse Alarm Connections

External fuse alarm wiring is made to terminal block J3 located on alarm circuit card P/N 541183. Refer to **Figure 5.2** for location. Terminal block J3 accepts a wire size in the range of 26 AWG to 14 AWG. Recommended torque is 0.5 Nm to 0.6 Nm.

- If a fuse in the distribution unit opens, relay contacts open between terminals 2 and 3 of J3 and relay contacts close between terminals 3 and 4 of J3. Normal operation provides close relay contacts between terminals 2 and 3 of J3 and open relay contacts between terminals 3 and 4 of J3.
- If a fuse in the distribution unit opens, -48 VDC is provided at terminal 1 of J3.

Figure 5.2 External Circuit Breaker / Fuse Alarm Connections



5.6 Load Distribution Wiring to GMT Fuse Blocks

WARNING! Observe proper polarity when making load connections.

NOTE! *When used for power distribution, load should not exceed 80% of device rating, except 10 A and 15 A fuses, for which load should not exceed 70% of device rating.*

Load and load return leads are connected to screw-type terminal blocks located on the front of the distribution unit (refer to **Figure 5.3**). Refer to **Figure 5.3** also for terminal block wire size capacity and recommended torque.

The rating of the distribution device determines the wire size requirements. Refer to the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC) and applicable local codes.

5.7 Input Wiring

WARNING! Observe proper polarity when making input connections.

Input source and input return leads terminated in two-hole lugs are connected to threaded studs located on the rear inside of the distribution unit (refer to **Figure 5.3**). Refer to **Figure 5.3** also for stud size/spacing and recommended torque.

Input wire size and lug requirements vary depending on power requirements, therefore no specific information is provided for wire size. Refer to **Table 5.1** for recommended wire sizes and lugs at rated maximum assembly load and other various loads. Note that loads typically should not exceed 80% of capacity; therefore, input wires have been sized for an overcurrent protection device rated at 125% of the expected load. All lugs for customer connections must be ordered separately. See **Table 5.1** for available lugs.

NOTE! *The DC return connection to this system can remain isolated from system frame and chassis (DC-I).*

Using Side Access Holes

Optional 19" mounting brackets P/N SXA2300282 can be installed to allow wiring through the side access holes in the shelf. Requires 5" front projection mounting.

Procedure

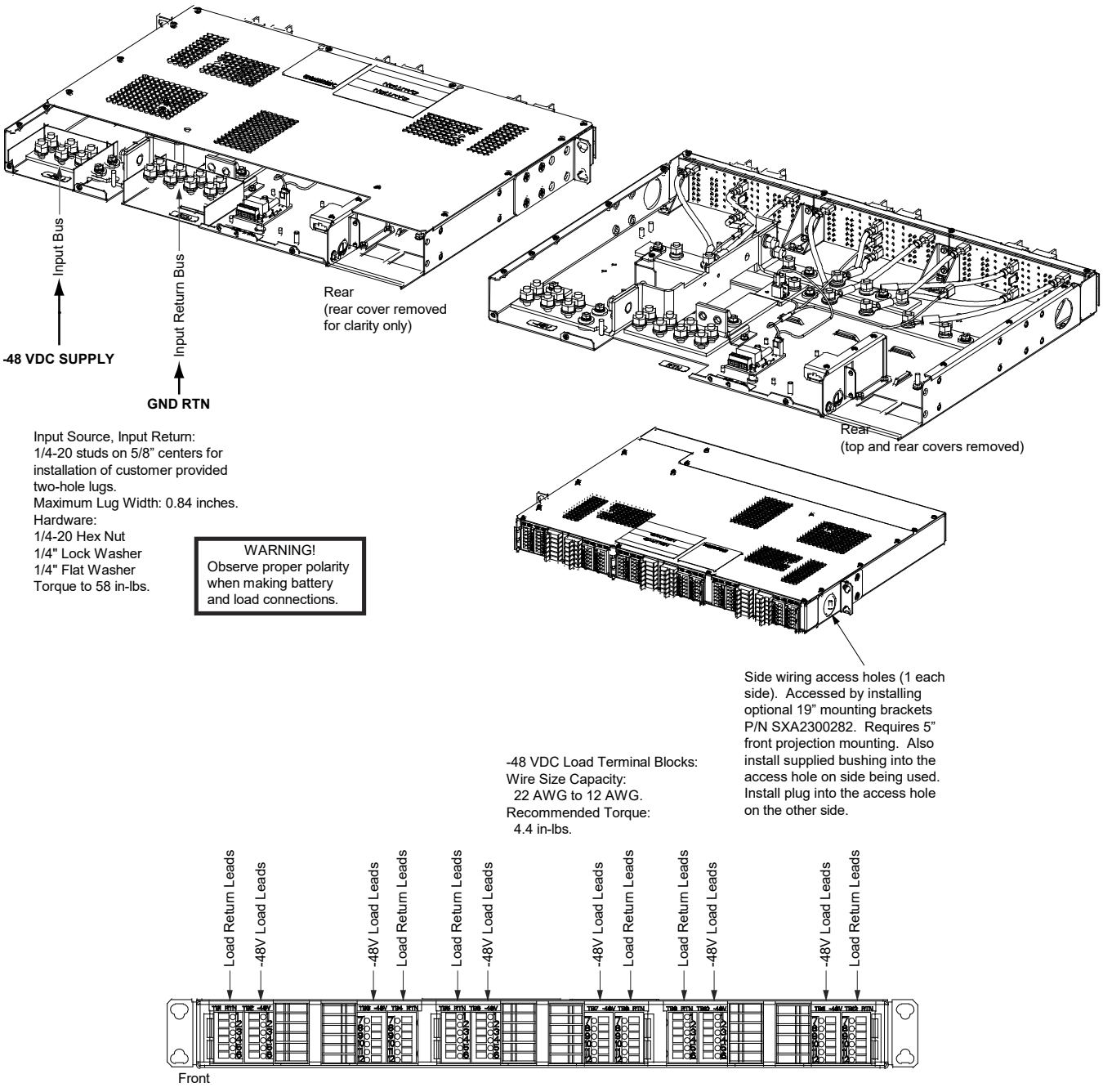
1. Install mounting brackets P/N SXA2300282.
2. Remove the top cover.
3. Select which side of shelf you want to bring the wires in from. Install supplied bushing into the access hole on this side. Install plug into the access hole on the other side. Refer to **Figure 5.3**.
4. Run customer supplied wires from RTN and -48 VDC studs in the shelf through the access hole to the appropriate external terminations.
5. Replace the top.
6. Wire the shelf's FA termination to the external alarm circuits as required.

Table 5.1 Recommended Input External Branch Circuit Protection, Wire Sizes, and Lug

External Overcurrent Protection Device Rating	Ambient Operating Temperature [1]	Loop Length (Ft) 1.0 Voltage Drop [2]	Recm 90°C Wire Size (AWG) [1]	Recommended Crimp Lug [3]
150 A	40°C	63	1/0	112902
125 A	40°C	76	1/0	112902
100 A	40°C	59	2	245346900

1. Wire sizes based on recommendations of the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC). Table 310.15 (B) (16) for copper wire at 90 °C conductor temperature. For operation in countries where the NEC is not recognized, follow applicable codes.
2. Recommended wire sizes are sufficient to restrict maximum voltage drop to 1.0 volt at rated full load output current of the shelf for the loop lengths shown in this column. Loop length is the sum of the lengths of the positive and negative leads.
3. These lugs are two-hole for 1/4" bolt clearance on 5/8" centers. Lugs should be crimped per lug manufacturer's specifications.

Figure 5.3 Load Distribution Wiring and Input Wiring



6 Initial Startup

Procedure

1. Apply input power to the distribution unit.

7 Troubleshooting and Repair

7.1 Contact Information

Refer to Section 4154 (provided with your customer documentation) for support contact information.

7.2 Replacement Procedures

DANGER! Adhere to the “Important Safety Instructions” presented at the front of this document.

7.2.1 Replacing a Distribution Device

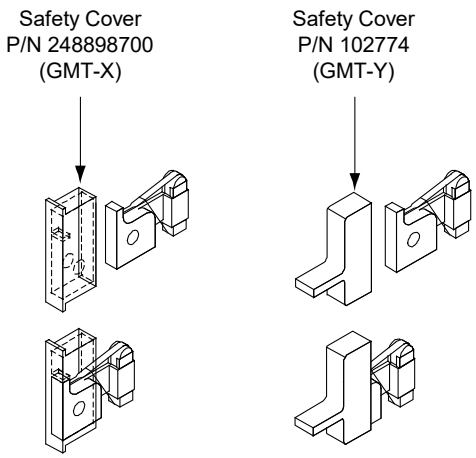
Replace distribution devices with the same type and rating.

Replacing a GMT Distribution Fuse

Procedure

1. Refer to **Figure 4.2** and replace the fuse. Ensure a safety fuse cover is installed on the replacement fuse, as shown in **Figure 7.1**.
2. Verify no alarms are active.

Figure 7.1 Installation of Safety Fuse Covers



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