AC Distribution Panel

Operating Manual
IMPORTANT SAFETY INSTRUCTION

SAVE THESE INSTRUCTIONS — This manual contains important instructions for AC Distribution Panel that must be followed during installation, operation and maintenance of the equipment.

WARNING
OPENING ENCLOSURES EXPOSES HAZARDOUS VOLTAGES. ALWAYS REFER SERVICE TO QUALIFIED PERSONNEL ONLY.

NOTE
As standards, specifications and designs are subject to change, please ask for confirmation of the information given in this publication.

This manual is a controlled document. Pages should not be removed individually from this binder.
AC Distribution Panel Operating Manual
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Revision History

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How to use this manual

This manual is designed for ease of use and easy location of information.

This manual uses Noteboxes to convey important information. Noteboxes come in four varieties:

- **WARNING**
  A WARNING notebox indicates information provided to protect the user and service personnel against safety hazards and/or possible equipment damage.

- **CAUTION**
  A CAUTION notebox indicates information provided to protect the user and service personnel against possible equipment damage.

- **IMPORTANT**
  An IMPORTANT notebox indicates information provided as an operating instruction, or as an operating tip.

- **NOTE**
  A NOTE notebox indicates information provided as an operating tip or an equipment feature.
This manual contains installation, operation, and maintenance information for the AC distribution panel (ACDP). This product is designed for use in the Topaz Inverter Plant, which consists of the equipment rack, maintenance bypass switch, ACDP, and the inverter. The ACDP includes a 24-pole distribution panelboard, used to distribute power to attached loads. It also includes lamps that indicate 'AC POWER ON' and 'BREAKER TRIP' conditions.

A schematic diagram of the ACDP is included in this manual (drawing number D6421P-S). Figure 1-1 shows the location of major internal components.

### 1.1 Specifications

**Electrical:**

- **Rating:** 120/240VAC, 200 A  
  65,000 A panel short circuit rating
- **Wires:** Line, Neutral (L2) & Safety Ground  
  AC Output: 120/240 VAC, 200 A
- **Breaker Options:**  
  15-50 A, single pole, type QO 10,000 AIC.  
  15-50 A, two pole, type QO 10,000 AIC.  
  15-30 A, single pole, type QOXXXVH 22,000 AIC.  
  15-50 A, two pole, type QOXXXVH 22,000 AIC.  
  All recommended square D circuit breakers are equipped with alarm switch
- **Wires:** Line, Neutral (L2) & Safety Ground

**Mechanical:**

- **Dimensions (in/cm):** 21.82” (55.4 cm) H x 7.5” (19.05 cm) D  
  x 17” (43.18 cm) W
- **Mounting:** Shipped with mounting brackets for 19” (48.20 cm)  
  23” (58.42 cm) mounting. 25” (63.5 cm) mounting brackets available as an option
- **Weight (lb/Kg):** 42 lbs.(19 Kg)
AC distribution panel

Figure  Major internal components and mechanical layout

1-1

FOR 1/2" (1.27 cm) AND 3/4" (1.90 cm) CONDUITS (TYP)

FOR 1/2" (1.27 cm) CONDUITS (TYP)

FOR 1" (2.5 cm), 1-1/4" (3.17 cm), 2" (5.08 cm) CONDUITS (TYP)

TOP VIEW WITH PUNCHOUT HOLES

CIRCUIT BREAKER  AC ON LAMP  BREAKER TRIP LAMP

RIGHT SIDE VIEW WITH PUNCHOUT HOLES

FOR 1/2" (1.27 cm) CONDUITS (TYP)

FOR 1/2" (1.27 cm) AND 3/4" (1.90 cm) CONDUITS (TYP)

TB1  K1

GND  CHASSIS GND  TB2  TB3

FRONT VIEW SHOWN WITHOUT COVER

FOR 1" (2.54 cm) AND 1-1/2" (3.81 cm) CONDUITS (TYP)

FOR 1" (2.54 cm), 2" (5.08 cm) AND 3" (7.62 cm) CONDUITS (TYP)
1.2 Shipping and handling

After accepting the shipment from the freight carrier, inspect all exterior surfaces for damage. Damage claims should be filed directly with the carrier.

1.3 Installation

The ACDP may be shipped pre-installed in the Topaz Inverter Plant. If so, installation of the plant is necessary; follow the installation instructions as listed in the Topaz Inverter Plant operating manual. If the panel is shipped as a stand-alone unit, it must be installed into a rack. Using the supplied hardware, install the mounting brackets to each side of the panel. The panel can now be mounted into the rack using additional (supplied) hardware. See Figure 1-1 for the location of mounting brackets.

1.4 Electrical

The electrical requirements of the ACDP are defined in the specifications section above. Figure 1 shows the location of knockouts and terminals for input and output cabling. Size the input and output cables according to the capacity of the inverter up to 21 kVA, and/or the current capacity of the individual load to be supplied by individual breakers.

The following connections must be made to the panel:

1.5 Input Connections

If purchased as part of a complete Topaz Inverter Plant, the interconnect wiring to the input terminals of the panel is prewired at the factory. If purchased as a stand-alone unit, the input wiring to the panel must be connected by the customer. This requires running appropriately sized power wires (sized for the kVA of the inverter) from the output of the maintenance bypass switch to the input, neutral, and ground terminals of the AC distribution panel.

The panel is preset at the factory for 120 VAC operation. To configure for 220/230/240 VAC operation, follow these steps:

- Remove 2 AWG jumper connected between L1 and L2
- Remove jumpers J1, and J2 from TB2
- Remove wire labeled number 4 (14 AWG) from neutral and connect it to TB1-3 (Top)

See the schematic for the electrical connection, and Figure 1-1 for the location of the terminal block. Table 1-1 provides details of input and output power connections.
1.6 **Load connections**  The panel board mounted in the ACDP accepts type QOXXX-2100 (10,000 AIC, 15A through 50A, one and two pole), and type QOXXXVH-2100 (22,000 AIC, 15A through 30A single pole and 15A through 50A two pole). These breakers should be ordered separately. Up to 13 one pole circuit breakers with alarm switch can be installed in ACDP for 110-120V application. Up to six two pole breakers with alarm switch can be installed in ACDP for 220-240V application.

The load side wiring of the branch breakers on the panel board must be connected to the intended load(s) through the knockout area shown in Figure 1-1.

Table 1-1 provides details of all input and output power connections.

1.7 **Trip alarm switch wiring**  Branch breakers with a bell alarm switch option will have two control wires extending from the frame of the breaker. Trip alarm switch wiring requires connecting the two wires of the trip alarm switch to TB1, terminals 1 and 2. See the schematic, and the location of the terminal block in Figure 1-1.

Table 1-2 provides details of all control connections.

1.8 **Trip indicating form ‘C’ contacts**  To monitor the breaker trip indicating signal, three wires from TB3 must be routed to the external device(s) which will monitor the status of the breaker. The knock out area shown in Figure 1-1 can be used for routing the cables.

Table 1-2 provides details of all control connections.
Table  Power wiring

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB4-6 MBPS</td>
<td>AC Input line Neutral, inverter output L1 (120V)</td>
</tr>
<tr>
<td>TB4-7 MBPS</td>
<td>AC Input line Neutral, inverter output L2 (220-240V)</td>
</tr>
<tr>
<td>TB4-5 MBPS (Ground)</td>
<td>Distribution Panel Safety Ground</td>
</tr>
</tbody>
</table>

**Input connections:**

**Output connections:**

- Branch CB L1 (Phase A) Load L1 (Phase A)
- Branch CB L2 (Phase B) Load L2 (Phase B)
- Neutral Bus Neutral
- Ground Bus Safety Ground

Table  Control wiring

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Branch CB trip switch</td>
<td>TB1-1</td>
<td>Connection internal to Panel</td>
</tr>
<tr>
<td>Branch CB trip switch</td>
<td>TB1-2</td>
<td>Connection internal to Panel</td>
</tr>
<tr>
<td>TB3-1 (N.O.)</td>
<td></td>
<td>Remote CB trip indication</td>
</tr>
<tr>
<td>TB3-3 (N.C.)</td>
<td></td>
<td>Remote CB trip indication</td>
</tr>
<tr>
<td>TB2-2 Common</td>
<td></td>
<td>Remote CB trip indication</td>
</tr>
</tbody>
</table>
1.9 **Operation**

Under normal operating conditions, AC power from the output of the inverter or maintenance bypass switch is supplied to the input terminals of the ACDP.

Input power is internally distributed to the branch breakers which are mounted on the panel board.

The load is fed from the load side of individual distribution breaker.

**System status:**
The panel has two indicating lamps on the front:

- **AC ON**
- **BREAKER TRIP**

**AC ON (Green)**
The lamp labeled ‘AC ON’ on the front of the panel indicates the presence of AC input power on the input terminals of the panel.

**Breaker trip (Red)**
The specified branch breakers are equipped with bell alarm switches which change states when the corresponding breaker trips. These bell alarm switches are used to indicate the status of the breaker(s). If one of these breakers trips, relay K1 will energize and the form ‘C’ contact of K1 wired to terminal TB3 will change states. The Red “Breaker Trip” lamp will be on.

The Red ‘BREAKER TRIP’ lamp indicates an abnormal condition. In case of the ‘BREAKER TRIP’ lamp comes on, the cause of the breaker tripping should be determined. Output loading should be checked to make sure that the sum of all loads is within the power rating of the panel, and that individual loads do not exceed corresponding branch breaker rating.

After making sure that all conditions are normal, the tripped breaker can be reset and return to service.

1.10 **Maintenance**
The ACDP has no user serviceable parts. Under normal operation conditions, the ACDP does not require maintenance. If service is required, call for MGE hotline service at 1-800-532-0142.
AC distribution panel
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