Power Distribution Unit

150 kVA

Operation

PDPB150G6F

11/2019

Legal Information

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Important Safety Instructions — SAVE THESE INSTRUCTIONS

Read these instructions carefully and look at the equipment to become familiar with it before trying to install, operate, service or maintain it. The following safety messages may appear throughout this manual or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a “Danger” or “Warning” safety message indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages with this symbol to avoid possible injury or death.

⚠DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

Failure to follow these instructions will result in death or serious injury.

⚠WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

Failure to follow these instructions can result in injury or equipment damage.

NOTICE

NOTICE is used to address practices not related to physical injury. The safety alert symbol shall not be used with this type of safety message.

Failure to follow these instructions can result in equipment damage.

Please Note

Electrical equipment should only be installed, operated, serviced, and maintained by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

Safety Precautions

This manual contains important instructions that must be followed during installation, operation, and maintenance of the PDU (Power Distribution Unit). For safety reasons, only trained users are allowed to operate the PDU.

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Electrical equipment must be installed, operated, serviced, and maintained only by qualified personnel.

Failure to follow these instructions will result in death or serious injury.

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Live power exists within the PDU. Shut down power to the PDU at the mains before any maintenance is performed.
- The PDU does not incorporate a mains disconnect. Live power exists within the equipment when the power is turned off at the input circuit breaker. A disconnect device must be incorporated external to the equipment.

Failure to follow these instructions will result in death or serious injury.

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- The PDU must be installed in accordance with the National Electrical Code or the Canadian Electrical Code and all applicable local codes
- Service access areas are locked with a Red Key. The Red Keys must remain under the control of qualified service personnel.
- Wear appropriate personal protection equipment (PPE) when performing maintenance on this PDU.

Failure to follow these instructions will result in death or serious injury.

⚠WARNING

UNEXPECTED BEHAVIOR OF APPLICATION

Only trained users should operate the PDU.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠CAUTION

UNPROTECTED OUTPUTS

Apply circuit protection to all outputs.

Failure to follow these instructions can result in injury or equipment damage.

Regulatory Agency Approval

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with

the installation guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Commissioning

Pre-Start Checklists

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Procedures in this section should only be performed by qualified personnel.
- Equipment must be properly de-energized and locked-out prior to performing service.

Failure to follow these instructions will result in death or serious injury.

After installation, verify that all components are working properly and that the equipment is ready to begin operation.

Initial Inspection Checklist

Ensure the:

- Installation procedure is complete according to the installation manual.
- Equipment shows no signs of damage.
- Clearance around the equipment is in accordance with local and national codes and regulations as well as the installation manual.
- Equipment is leveled and joined to the adjacent racks as specified in the installation manual.

Electrical Inspection Checklist

Ensure the:

- Incoming voltages match the phase and voltage listing on the nameplate.
- Electrical wiring complies with local and national codes and regulations.
- Equipment is properly grounded.
- All field electrical connections are tight.
- Circuit breakers are correct.

User Interface Inspection Checklist

Ensure the:

- The building management system is connected correctly.
- The network port is connected correctly and an IP address has been assigned to the equipment.

Final Inspection Checklist

Ensure the:

- System is clean and free from debris.
- Packaging materials are disposed off properly.

Start-up Inspection Checklist

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

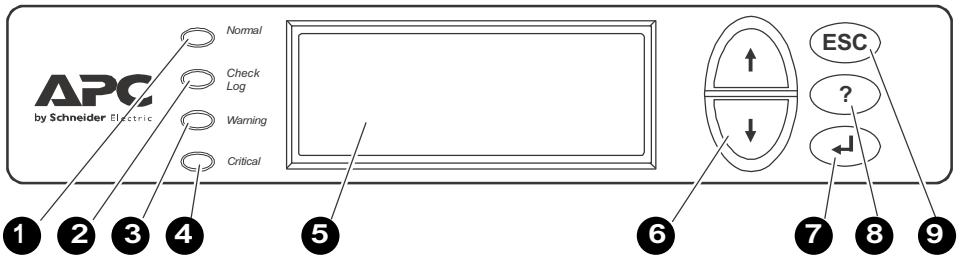
- Procedures in this section should only be performed by qualified personnel.
- Live power exists within the Power Distribution Unit (PDU) even when the unit's circuit breakers are OFF. Shut down power to the unit at the mains before any maintenance is performed.
- Wear appropriate personal protective equipment (PPE) when checking hazardous voltages.

Failure to follow these instructions will result in death or serious injury.

- Verify that the PDU is in Total Power OFF mode. The upstream feeder circuit breaker bringing the mains power into the unit must be SHUT OFF.
  - The following circuit breakers are all set to OFF.
    - Main Input Breaker
    - Panel 1 Breaker
    - Panel 2 Breaker
    - Subfeed breaker
- Turn ON the 480V upstream feeder CB bringing the Mains power into the unit.
- Measure the input voltage at the input terminal blocks of the PDU (480V nominal).
- Using a phase rotation meter, verify clockwise phase rotation at the input terminal blocks of the PDU.
- Power up the PDU:
  - Check that all poles of the 5 amp circuit breaker (in the electrical drawer) are set to ON.
  - Set the following circuit breakers to ON.
    - Main Input Breaker
    - Panel 1 Breaker
    - Panel 2 Breaker
  - If used, set the Subfeed Breaker to ON
- Verify that the display interface is working properly.
- Resolve any unexpected alarms.
- Configure the date and time through the display interface.
- Review the Event Log. Check for abnormalities in the log. Resolve any abnormalities in the log. Clear the Event Log when you are finished.
- Configure the date and time through the display interface.

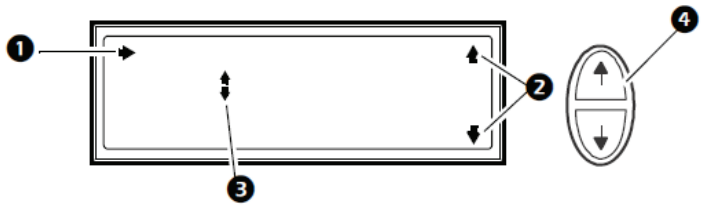
Operation

Display Interface



1	Normal LED	Green = no alarms are present.
2	Check Log LED	Green = a new event has been added to the log.
3	Warning LED	Yellow = there are one or more active warning alarms in the system.
4	Critical LED	Red = there are one or more active critical alarms in the system.
5	LCD Screen	Displays alarms, status data, instructional help, and configuration items.
6	UP and DOWN keys	Used to scroll through menu items.
7	ENTER	Press to display new screens, open menu items, and finalize selections.
8	? - HELP	Press to open content-sensitive help.
9	ESC	Press to return to the previous screen.

Navigate the Display Interface



1. Selector arrow. Press the UP or DOWN arrow key **4** to move the selector arrow to a menu option or setting. Press the ENTER key to view the selected screen or modify the setting.
2. Continue arrows. Indicate that additional screens are available on a menu or status screen. Press the UP or DOWN arrow key to view the additional items.
3. Input arrows. Input arrows next to a selected setting indicate that the setting can be modified by pressing the UP or DOWN arrow key. Press the ENTER key to save the change or the ESC key to cancel.
4. Press the UP or DOWN arrow key to:
    a. navigate the selector arrow through the menu prompts
    b. change the target item
    c. edit a text string. Press the UP or DOWN arrow key to change the character in the text string.

       Press ENTER to confirm and advance to the next character.

Top Dynamic Display

When the system is running, the display interface will automatically scroll through a series of screens showing general information about the PDU and any active alarms on the system.

You can press the UP or DOWN arrow keys to manually scroll through these screens.

Press ENTER at any time to go to the main menu screen.

If the display interface is inactive for the duration of a user-configured time-out setting, it will return to the top dynamic display.

Overview Screens (No active alarms)

```
No Active Alarms

System Date/Time:
28-May-2012 10:37:01
```

```
Out      Amps     kW       kVA
L1:      0.0      0.00     00.0
L2:      0.0      0.00     00.0
L3:      0.0      0.00     00.0
```

```
Output Voltage
L1: 00V L1-2: 0V
L2: 00V L2-3: 0V
L3: 00V L3-1: 0V
```

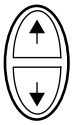
Overview Screen Alarm Shown

```
Active Alarms: 1 of 15
Communication Lost
With Metering Board
[1.6]
```

Main Menu Screen

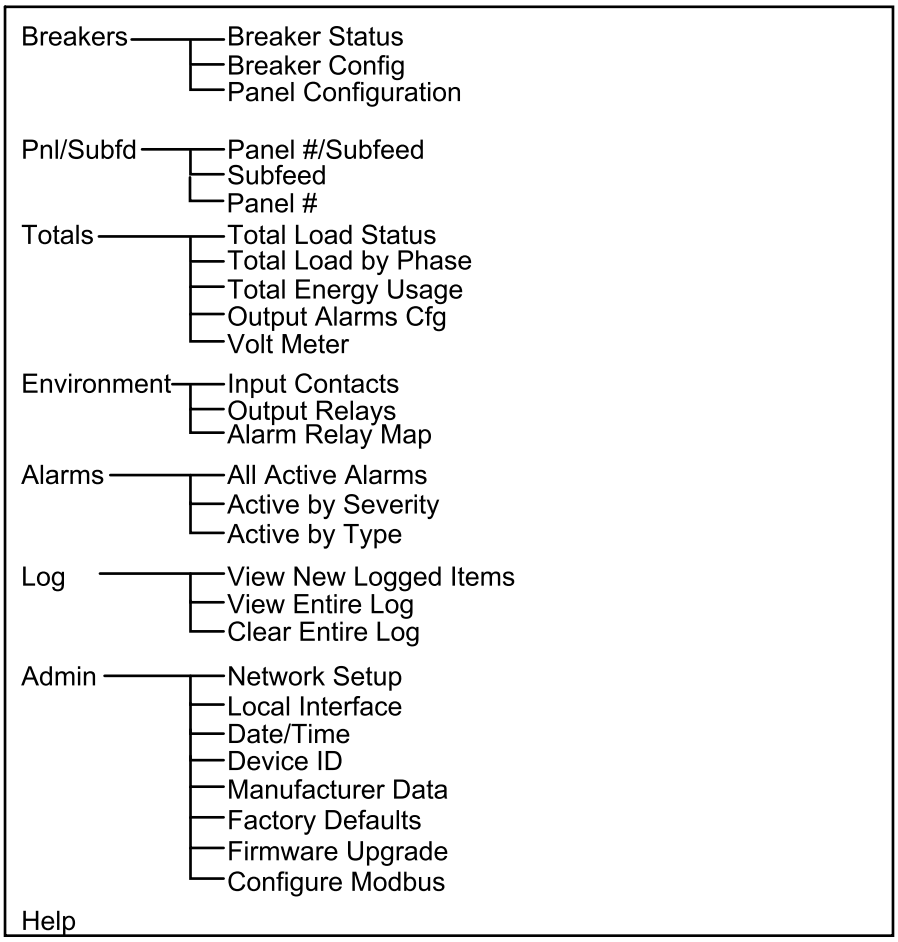
The main menu screen is the top-level screen on the display interface. The main menu contains eight submenus that allow you to monitor and configure specific aspects of the system.

```
Breakers          Alarms
Pnl/Subfd         Log
Totals            Admin
Environment       Help
```



NOTE: Pressing the UP arrow key when the first item in the main menu is selected will result in the cursor moving to the last item on the screen, and vice versa.

Menu Tree

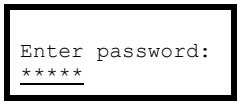


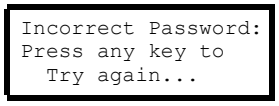
Password Protection

Certain screens can be configured to require a predefined password in order to allow the user access to those screens. Pressing the ENTER key after selecting a protected screen will result in the user being prompted for the password.

Passwords are case sensitive and can be up to eight characters in length. Use the UP or DOWN arrow keys to scroll to different letters in the alphabet. Upper case characters are shown first and then lower case characters. Press the ENTER key to make a character selection. After you make your selection, the cursor will automatically move to the location of the next character. At the end of the string, select the underline ("_") character and press ENTER.

Your system administrator may configure some screens to be password-protected. The input password will expire after a period of inactivity also configured by the administrator.





Breakers Submenu

View the Breaker Status Information

1. From the main menu screen, select **Breakers > Breaker Status > Odd/Even Pnl #**.
2. Choose the circuit you wish to view from Even or Odd on Panel 1 or Panel 2. Use the UP or DOWN arrow keys to scroll through the list and press ENTER.

   The Ckt number, amps, percent of load in use, and L1, L2, or L3 are shown on the first page. Power: Shown in kW, Energy: Shown in kWh, and the current date are shown on the second page.

Configure the Breaker Name and Location

1. From the main menu screen, select **Breakers > Breaker Config > Odd/Even Pnl #**.
2. Scroll up or down to select the **Ckt** (Circuit) - (01 of 04) and press the ENTER key.
3. Scroll to first page for **Name** and **Location**.
4. Press ENTER to select **Name** or **Location**. Use the UP or DOWN arrow keys to scroll through the character menu. Press ENTER to select a character and move to the next space. Select ESC to quit entering characters.

Configure the Breaker Amperage

1. From the main menu screen, select **Breakers > Panel Configuration > Odd/Even Pnl #**.
2. Scroll through the list to select the relevant breaker and press the ENTER key. The breakers are listed by position with the amperage listed in the second column.
3. Use the UP or DOWN arrow key to change the breaker amperage and press the ENTER key to save the changes and return to the breaker list.

Panels and Subfeed Submenu

View the Panel and Subfeed Configuration

1. From the main menu screen, select **Breakers > Pnl/Subfd > Panel #/Subfeed > Status**.
2. Choose the panel number or subfeed which are each shown on separate display pages. Use the UP or DOWN arrow to view them. Press ENTER to choose one.
3. Press the ENTER key again while the cursor is in front of **Status**, to view the amperage and percent load usage for L1, L2, and L3.
4. Press the DOWN arrow key to view the Power shown in kW, Energy shown in kWh, and the condition of the breaker (open or closed).

Configure the Subfeed

1. From the main menu screen, select **Pnl/Subfd > Subfeed > Configuration**.
2. Use the UP/DOWN arrow keys and the ENTER key to access and configure the following submenus:
    a. **Alarm Configuration**: Select **Alarms Enabled/Disabled**, **Alarm Thresholds**, and/or **Position Alarms** and make your configurations.
    a. **Name**: View only.
    b. **Location**: Name the Subfeed location. Use the UP or DOWN arrow keys to scroll through the character menu. Press ENTER to select a character and move to the next space. Select ESC to quit entering characters.
    c. **Reset kWh**: Select **YES, Reset kWh** to reset or **NO, ABORT** to cancel the reset and press the ENTER key.
    d. **Breaker Dial IR**: Adjust the breaker capacity. Use the UP or DOWN arrow keys and the ENTER key to change the setting — this setting must match the setting on the breaker dial. If the settings do not match, the setting for the alarm thresholds will be incorrect.

Configure the Panel

1. From the main menu screen, select **Pnl/Subfd > Panel # > Configuration**.
2. Use the UP/DOWN arrow keys and the ENTER key to access and configure the following submenus:
    a. **Alarm Configuration**: Select **Alarms Enabled/Disabled**, **Alarm Thresholds**, and/or **Position Alarms** and make your configurations.
    a. **Name**: View only.
    b. **Location**: Name the Panel location. Use the UP or DOWN arrow keys to scroll through the character menu. Press ENTER to select a character and move to the next space. Select ESC to quit entering characters.
    c. **Reset kWh**: Select **YES, Reset kWh** to reset or **NO, ABORT** to cancel the reset and press the ENTER key.
    d. **Breaker Add**: Add a new breaker to the Panel. Use the UP or DOWN arrow keys and the ENTER key to configure the new breaker (**Poles**, **Position**, **Rating**/**CT Rating**, **Alarm Thresholds**. Select **Apply** and press the ENTER key to confirm and save the settings for the new breaker.

Totals Submenu

The **Totals** submenu allows you to view comprehensive information concerning the operational status of the PDU. It also allows you to set and reset alarm thresholds for the entire system.

View Total Load Status

1. From the main menu, select **Totals > Total Load Status > Total Load Summary**.
2. Status can be **Normal**, **Warning**, or **Critical**. View power factor (PF) and load (in kW and kVA).

Total Output Current by Phase

1. From the main menu, select **Totals > Total Load by Phase**.
2. View **Total Output Current** and power factor for each phase. **High!**, **Low!**, **Min!**, or **Max!** indicates a reading above or below the threshold level.

```
Total Output Current
L1: 000A 000%
L2: 000A 000% High!
L3: 000A 000%
```

```
    KVA    kW    PF
L1: 00.0   00.0  0.00
L2: 00.0   00.0  0.00
L3: 00.0   00.0  0.00
```

View or Reset Total Energy Usage by Phase

1. From the main menu, select **Totals > Total Energy Usage**.

```
 Total Energy Usage
 Energy: 000000 kWh
→  Usage by Phase: a
   Reset: mm/dd/yyyy: b
```

   a. Select **Usage by Phase** and press ENTER to view total energy usage by phase.

```
Energy Usage (kWh)
L1: 0000000
L2: 0000000
L3: 0000000
```

   b. Select **Reset** and press ENTER to reset the total KiloWatt hours energy usage to zero. The date of the last reset is shown.
   Select **YES, Reset Now** to apply the reset, or **NO, ABORT** to abort.
   Press ENTER.
   The next screen confirms that the reset has been completed. Press any key to continue.

```
 Confirm Reset:
 Total Output: kWh
   NO, ABORT
→  YES, Reset Now
```

```
 KiloWatt-Hours
 now reset
 Press any key . . .
```

View Distribution Panel Settings

1. From the main menu, select **Totals > Output Alarms Cfg > Nominal Settings**.

```
 Total Load Thresh
 Voltage Thresholds
 Frequency Threshold
→Nominal Settings
```

2. View **Voltage**, **Frequency**, and **Ampere Rating** for the distribution panel.

```
 Distribution Panel
 Voltage (L-N): 000 V
 Frequency: 00 Hz
 Ampere Rating: 000 A
```

View Voltage and Frequency

1. From the main menu, select **Totals > Volt-Meter**.
2. View frequency and voltage by phase.

```
 Voltages  Freq:  60.0
 L1: 0.0   L1-2:  0.0
 L2: 0.0   L2-3:  0.0
 L3: 0.0   L3-1:  0.0
```

Configure Critical and Warning Alarm Thresholds for Total Output Current

1. From the main menu, select **Totals > Output Alarms Cfg > Total Load Thresh**.
2. Select the **Total Current Alarm** threshold you want to configure.

```
 Total Current Alarm
→  Warning Thresholds a
   Critical Thresholds b
```

   a. Select **Warning Thresholds** and press ENTER.
   Scroll to the desired **High** and **Low** warning thresholds and set **Alarm** as **Enabled** or **Disabled** for each of these thresholds. Press ENTER.

```
 Total Current
 Warning Thresholds
→  High:↕ 00% (000.0 A)
   Alarm:↕ Enabled
```

```
 Total Current
 Warning Thresholds
   Low:↕ 00% (000.0 A)
   Alarm:↕ Disabled
```

   b. Select **Critical Thresholds** and press ENTER.
   Scroll to the desired **Max** and **Min** critical thresholds and set **Alarm** as **Enabled** or **Disabled** for each of these thresholds. Press ENTER to save your settings.

```
 Total Current
 Critical Thresholds
→  Max:↕ 00% (000.0 A)
   Alarm:↕ Enabled
```

```
 Total Current
 Critical Thresholds
   Min:↕ 00% (000.0 A)
   Alarm:↕ Disabled
```

Configure Critical and Warning Alarm Thresholds for Total Output Voltage

1. From the main menu, select **Totals > Output Alarms Cfg > Voltage Thresholds**.
2. Select the **Output Voltage Alarm** threshold you want to configure.

```
 Output Voltage Alarm
→   Warning Thresholds a
    Critical Thresholds b
```

   a. Select **Warning Thresholds** and press ENTER.
   Scroll to the desired **High** and **Low** warning thresholds and set **Alarm** as **Enabled** or **Disabled** for each of these thresholds. Press ENTER.

```
 Output Voltage
 Warning Thresholds
→  High:↕ 00% (000.0 A)
   Alarm:↕ Enabled
```

```
 Output Voltage
 Warning Thresholds
   Low:↕ 00% (000.0 A)
   Alarm:↕ Disabled
```

   b. Select **Critical Thresholds** and press ENTER.
   Scroll to the desired **Max** and **Min** critical thresholds and set **Alarm** as **Enabled** or **Disabled** for each of these thresholds. Press ENTER to save your settings.

```
 Output Voltage
 Critical Thresholds
→  Max:↕ 00% (000.0 A)
   Alarm:↕ Enabled
```

```
 Output Voltage
 Critical Thresholds
   Min:↕ 00% (000.0 A)
   Alarm:↕ Disabled
```

Configure the Nominal Frequency Range to Affect Alarm Conditions

1. From the main menu, select **Totals > Output Alarms Cfg > Frequency Threshold**.
2. Set **Range** for +/- 9.0 Hz, +/- 5.0 Hz, +/- 4.0 Hz, +/- 3.0 Hz, +/- 2.0 Hz, +/- 1.5 Hz, +/- 1.0 Hz, +/- 0.5 Hz, +/- 0.2 or **Disabled**. Press ENTER.

```
Output Frequency
Critical Thresholds
  Range: Disabled
```

Environment Submenu

View the Status or Configure Input Contact Settings

1. From the main menu, select **Environment > Input Contacts**.
2. Scroll to the desired **Input Contact**. Up to 4 input contacts can be installed. The contact name reflects your selection. Status can be **Normal**, **Warning**, or **Critical**.

```
 Input Contact:↕ 0 of 4
 < contact name >
→  Status: Normal a
    Configuration b
```

   a. Select **Status** and press ENTER.
   View the **Normal** condition (**Open** or **Closed**) of the contact and the actual **State** of the contact (**Open** or **Closed**).

      NOTE: When **Normal** and **State** are the same, the **Status** is **Normal**. When **Normal** and **State** are different, an alarm condition occurs.

```
< Contact name >
Status: Normal
Normal: Open
State: Open
```

   b. Select **Configuration** and press ENTER.
   Set **Alarms** as **Enabled** or **Disabled**.
   Set **Severity** as **Warning** or **Critical**.
   Set **Normal** state as **Open** or **Closed**.
   Select **Name/Location** and press ENTER.
   Specify the **Name** and **Location** of the input contact by scrolling through the characters.
   Press ENTER to select the displayed character and proceed to the next character. To end the string, select the underline ("_") character and press ENTER.

```
→Name/Location X
 Alarms: Enabled
 Severity: Critical
 Normal: Open
```

```
→Contact X Name:
   User Contact X
 Location:
   Location: X
```

Configure Output Relay Settings

1. From the main menu, select **Environment > Output Relays**.
2. Scroll to the desired **Output Relay**. Up to 4 output relays can be installed. The contact name reflects your selection. **Status** can be **Open** or **Closed**. Select **Configuration** and press ENTER.

```
 Output Relay:↕ 0 of 4
 < contact name >
 Status: Normal
→  Configuration
```

3. Specify the **Name** of the output relay by scrolling through alphabet characters. Press ENTER to select the displayed character and proceed to the next character. To end string, select underline ("_") and press ENTER. Set **Normal** state as **Open** or **Closed**. Press ENTER.

```
Relay X Name:
  Output Relay X
Normal: Closed
```

Configure the Alarm Relay Map

1. From the main menu, select **Environment > Alarm Relay Map**.
2. Select a category: **Environment**, **System Output**, **Panel Breakers**, or **Panel #**. Categories are system specific. Press ENTER.
   Select an alarm condition for the selected category (**a**, **b**, **c**, or **d**). Press ENTER.

```
→ Environment a
  System Output b
  Panel Breakers c
  Panel # d
```

a.

```
 Environment
→   Contact 1
    Contact 2
    Contact 3
```

```
    Contact 4
```

b.

```
 System Output
→  Max Current
   High Current
   Low Current
```

```
   Min Current
→  Max Voltage
   High Voltage
   Low Voltage
```

```
   Min Voltage
   Freq Alarm
```

c.

```
Panel Breakers
   Max Current
   High Current
→  Low Current
```

```
   Min Current
   Breaker Pos
```

d.

```
Panel #
   Max Current
   High Current
→  Low Current
```

```
   Min Current
   Breaker Pos
```

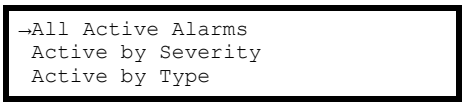
3. Select the **Relay** or **Relays** (**R1**, **R2**, **R3**, and **R4**) that will be activated when the specified alarm condition occurs. Press ENTER. Both category and alarm condition can be changed from this screen to allow you to configure the entire map using this screen.

```
System Output
  Max Current
Relays:
  R1   R2   R3   R4
```

Alarms Submenu

View Alarms

1. From the main menu, select **Alarms**.



2. Select from the submenu:

   a. Select **All Active Alarms**.

   The most recent **Active Alarm** is displayed. Press the ENTER or UP arrow key to go to the next alarm in sequence. Press the DOWN arrow key to go to the previous alarm in sequence.
   When there are no active alarms, the **No Alarms** screen displays.

```
Active Alarm: 00 of 00
< Description
        of active
              alarm >
```

```
No Active Alarms

System Date/Time:
01-Jan-2012 17:45:00
```

   b. Select **Active by Severity**.

   Select **Warning** or **Critical**.
   0 is the number of active alarms of that type. Press ENTER.
   The most recent **Active Alarm** of the severity you chose is displayed. Press the ENTER or UP arrow key to go to the next alarm in sequence. Press the DOWN arrow key to go to the previous alarm in sequence.
   If there are no active alarms of the selected severity, the next screen will inform you.

```
 View Active Alarms
→  Warning (0)
   Critical (0)
```

```
Active Alarm: 00 of 00
< Description
        of active
              alarm >
```

```
No Active Alarms
of Type Warning.
System Date/Time:
01-Jan-2012 17:45:00
```

   c. Select **Active by Type**.

   Select **Distribution** or **Environment**.
   The most recent **Active Alarm** of the type you chose is displayed. Press the ENTER or UP arrow key to go to the next alarm in sequence. Press the DOWN arrow key to go to the previous alarm in sequence.
   If there are no active alarms of the selected severity, the next screen will inform you.

```
 View Active Alarms
→  Distribution (0)
   Environment (0)
```

```
Active Alarm: 00 of 00
< Description
        of active
              alarm >
```

```
No Active Alarms
of Type Warning.
System Date/Time:
01-Jan-2012 17:45:00
```

Log Submenu

View or Clear Log Items

1. From the main menu, select **Log**.

```
→New Logged Items
 Entire Log
 Clear Log
```

2. Select from the submenu:

   a. Select **New Logged Items**. All events logged since your last viewing will display. The most recent item is displayed first.

      NOTE: All logged items include a time stamp.

      Press the ENTER or UP arrow key to go to the next alarm in sequence. Press the DOWN arrow key to go to the previous alarm in sequence. The No Logged Items screen displays when there are no new logged items.

```
Logged Item:  00 of 00
< Description of
  Most Recent Alarm >
dd/mm/yyy   hh:mm:ss
```

```
No New Logged Item

System Date/Time:
21-Jan-2012  17:45:00
```

   b. Select **Entire Log**. All events logged since the log was last cleared will display.

      The most recent item is displayed first. Press the ENTER or UP arrow key to go to the next item in sequence.

      Press the DOWN arrow key to go to the previous item in sequence.

      The **No Logged Items** screen displays when there are no new logged items.

   c. Select **Clear Entire Log**.

      The following screens are typically password protected. Select **YES, Clear Log** to clear the log, or **NO** to cancel the process. If you press **YES, Clear Log**, the next screen confirms that the log has been cleared. Press any key to continue.

```
 Confirm:
 Clear Entire Log
   Cancel
→  YES, Clear Log
```

```
Log cleared
Press any key to
return to previous menu.
```

Admin Submenu

Configure the Network Address Settings

1. From the main menu, select **Admin > Network Setup**.
2. View network address information. Select **Mode** and press ENTER.

```
 Stat:  +Up
→  Mode: DHCP & BOOTP
 IP: 000.000.000.000
 SM: 000.000.000.000
```

```
GW: 000.000.000.000
MAC Address:
[ 00 00 00 00 00 00 ]
```

3. Select the appropriate network configuration type.

```
→Fixed IP Addr a
 DHCP Only b
 BOOTP Only b
DHCP & BOOTP b
```

   a. Select **Fixed IP Address** and press ENTER. Specify the IP, Subnet Mask (SM), and Gateway (GW) addresses. Select **Use Fixed Address** and press ENTER.

```
IP: 000.000.000.000
SM: 000.000.000.000
GW: 000.000.000.000
Use Fixed Address
```

   b. Select **DHCP Only**, **BOOTP Only**, or **DHCP & BOOTP**. Select **YES, Restart Now** to reboot with new address, or **NO, Revert** to revert to the previous address.

```
 Reboot needed for
 this change, OK?
   NO, Revert
→  YES, Restart Now
```

Configure Device ID Settings

1. From the main menu, select **Admin > Device ID**.
2. Select the setting you want to change and press ENTER.
   For **Device Name**, **Product Contact**, or **Product Location**, specify the information for an external device by scrolling through alphabet characters. Press ENTER to select displayed character and proceed to the next character. To end the string, select underline "_" and press ENTER.

```
→Device Name
 Product Contact
 Product Location
```

```
→ < Field Name >
    < User Defined Data
                  String >
```

Change the Password

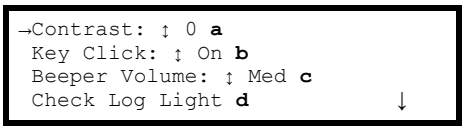
1. From the main menu, select **Admin > Local Interface > Local Password**.
2. Specify the new **Password** by scrolling through alphabet characters using the UP or DOWN arrow keys. Press ENTER. You can also change the **Timeout** period. Scroll to your numerical selection and press ENTER.

An Administrator User can cause a password timeout to expire using the **Invalidate NOW** feature. This is useful if another user has logged in and neglected to log out since only one user at a time may be logged in.

NOTE: Characters are presented in the following sequence: _, (space), A, B, C, D, E, etc. Press the ENTER key to select the displayed character and proceed to the next character. Passwords can be up to eight characters in length. If your password is less than eight characters, end with the underline ("_") character.

Change Display Interface Settings

1. From the main menu, select **Admin > Local Interface > Display Behavior**.
2. Select the setting you want to change and press ENTER.



a. **Contrast** can be set between **1** (low) and **7** (high).

b. **Key Click** can be set to **On** or **Off**.

c. **Beeper Volume** can be **Low**, **Med**, **High**, or **Off**.

d. The **Check Log Light** option allows you to change the types of logged items that cause the Check Log LED to illuminate. Select **Check Log Light** and press ENTER.
Scroll to choose **Info** (informational), **Warning**, **Critical**, or **Disabled** and press ENTER. Your selection represents the minimal type of event monitored by the **Check Log Light**.

Change the Date and Time on the Display Interface

1. From the main menu, select **Admin > Date/Time**.
2. Select the setting you want to change and press ENTER.

```
 Mode: Manual
→Format: dd/mm/yyyy a
   Date:  21/01/2012 b
   Time: 12:00:00 c
```

   a. **Format**: You can change how the date is presented by scrolling through the **Format** options.

   b. **Date**: Scroll through the screen that opens to set the new **Month**, **Day**, and **Year**. Select **Apply New Date** and press ENTER to save your changes.

```
→Month:  January
 Day: 21
 Year: 2012
   Apply New Date
```

   c. **Time**: Scroll through the screen that opens to set the new **Time**. Select **Apply New Time** and press ENTER to save your changes.

```
→Time: 12:00:00
   Apply New Time
```

View System Component Information

1. From the main menu, select **Admin > Manufacturer Data**.
2. Scroll to the desired system component. Up to 15 components can be cataloged. Enter the information regarding the component. Press ENTER to save your changes.

```
→Manuf. Data: 0 of 15
 < Data Name >
 < Factory Data >
```

Set the Configuration to Factory Defaults

1. From the main menu, select **Admin > Factory Defaults**.
2. Select **YES, Set Defaults** to set to the configuration to factory defaults, or **NO, ABORT** to abort the process. Press ENTER.

```
 Set Configuration
 to Factory Defaults?
   NO, Abort
→  YES, Set Defaults
```

Upgrade Metering Board Firmware

NOTE: Firmware versions 3.7.1 and later will auto-update.

1. From the main menu, select **Admin > Firmware Upgrade**.
2. Select **YES. Download** to download firmware, or **NO. ABORT** to abort the process. Press ENTER.

```
 Update Meter PCB
 FW to rev XX.XX?
   NO. ABORT
→  YES. Download
```

3. If **YES. Download** is selected, this screen confirms that the firmware is being upgraded. Wait for the process to conclude and then press any key to continue.

```
Updating Meter PCBs
This will take
approximately XX min.
Press any key . . .
```

Help Submenu

Use the Help Feature

1. From the main menu, select **Help**.
2. Press the ? key on any line of any screen on the display interface to receive context-sensitive help. Press the DOWN arrow key to view the rest of the help screen. Press the UP arrow key to go back to the previous screen. Press ESC to exit.

```
On any screen & any
line, press '?' for
context sensitive
help. Try it now ...
```

Modbus Configuration

Configure Modbus Through the Display Interface

Modbus TCP Configuration

1. From the main menu, select **Admin > Configure Modbus > TCP**.
2. Choose your selection and press ENTER to set or change:

```
Status: Disabled
Port:  502
```

   a. **Status**: Enable or disable Modbus TCP to view the device through your building management service's interface.

   b. **Port**: Each Modbus TCP must have a unique target TCP port number. Enter a unique number, ranging from 502, 5000 to 32768.

3. Press ENTER. The display interfaces will navigate to the reboot page to save your settings.

```
Reboot needed for
this change. OK?
NO, Revert,
YES, Reboot Now
```

Modbus Serial Configuration

1. From the main menu, select **Admin > Configure Modbus > Serial**.
2. Choose your selection and press ENTER to set or change:

```
Access: Disabled
Target ID:  001
Baud Rate: 9600
```

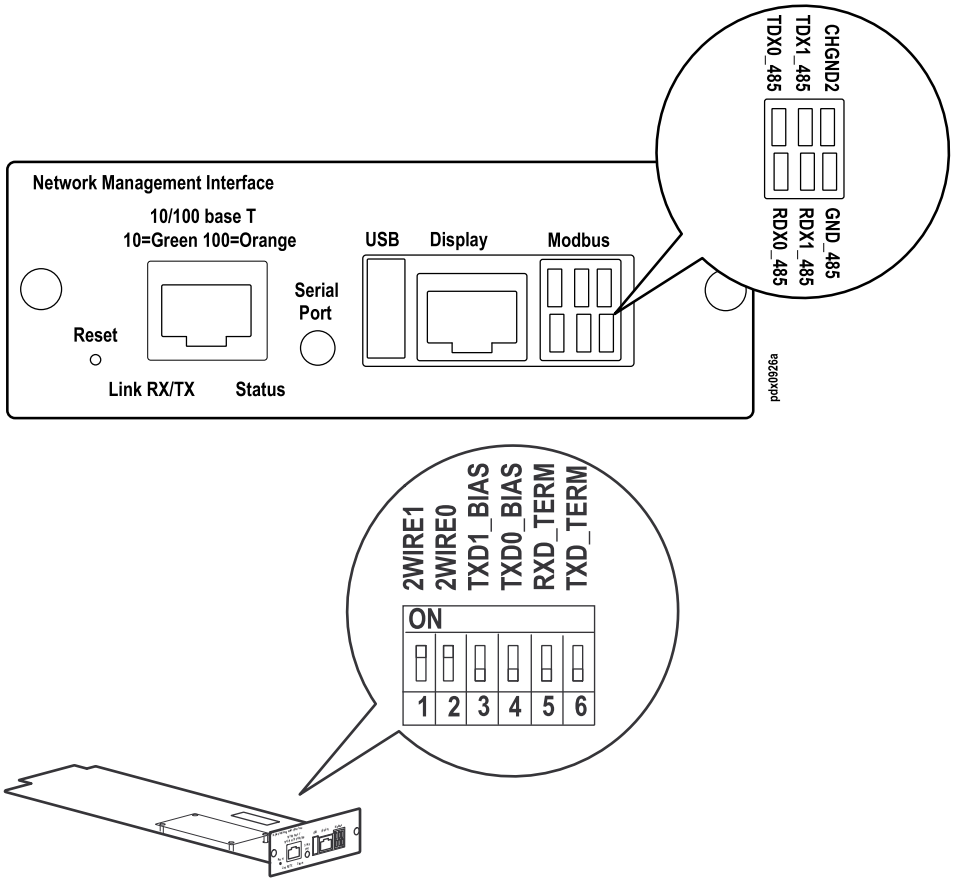
   a. **Access:** Enable or disable Modbus.

   b. **Target ID:** Each Modbus device must have a unique target identification number. Enter a unique number, ranging from 1 to 247, for this unit.

   c. **Baud Rate:** Choose either 9600 bps or 19200 bps.

3. Press ENTER to save your settings.

Modbus Cable Connection



The Modbus RS485 serial port can be configured to accommodate 2-WIRE or 4-WIRE Building Management Systems (BMS). Connect your Modbus cable to the port on the Network Management Interface plate. Use the terminal blocks in the accessories package.

The DIP switches controlling Modbus configuration are located on the main board. To configure for your BMS, remove the two screws holding the Network Management Interface plate which is connected to the main printed circuit board and pull it out far enough to access the DIP switches.

Check the DIP switch positions and select from the following choices:

DIP switch	4-wire unterminated	4-wire terminated	2-wire unterminated	2-wire terminated
1	Open	Open	Closed	Closed
2	Open	Open	Closed	Closed
3	Open	Open	Open	Open
4	Open	Open	Open	Open
5	Open	Closed	Open	Closed
6	Open	Closed	Open	Open
Open=OFF, closed=ON				

There are two 3-pin connectors included with the unit. Use both connectors for 4-wire applications. Use only one connector, inserted in the lower row, for 2-wire applications. As an option, the terminating resistor and the jumper wires for 2-wire operation can be accomplished externally by using both supplied connectors. Use termination when connecting multiple PDUs in a chain. The last PDU in the chain is terminated

NOTE: Modbus TCP is also supported.

Network Management Configuration

Overview

NOTE: For complete Network Management Card setup instructions, see the online User Guide at *www.apc.com*.

Initial Setup

You must configure the following three TCP/IP settings before the PDU can operate on a network:

- IP address of the PDU
- Subnet mask
- Default gateway

  If a default gateway is unavailable, use the IP address of a computer (that is usually running) located on the same subnet as the NMC. The NMC uses the default gateway to test the network when traffic is light.

  NOTE: Do not use the loopback address as the default gateway address for the Network Management Card. You will lose communication with the equipment. Doing so will disable the card and require you to reset TCP/IP settings to their defaults using a local serial login.

TCP/IP Configuration Methods

Use one of the following methods to define the basic TCP/IP settings needed by the Network Management Card.

- Device IP Configuration Wizard
- BOOTP or DHCP server
- Networked computer
- Display interface

Device IP Configuration Wizard

The Wizard runs on Microsoft Windows 2000, Windows 2003, and Windows XP operating systems. The Device IP Configuration Wizard configures the IP address, subnet mask, and default gateway of one or more NMCs.

You can use the Wizard in either of the following ways:

- Remotely over your TCP/IP network to discover and configure unconfigured NMCs on the same network segment as the computer running the Wizard.
- Through a direct connection from a serial port of your computer to the PDU to configure or reconfigure it.

Installation

Install the Wizard from a downloaded executable file:

1. Go to *www.apc.com*.
2. Download the Device IP Configuration Wizard.
3. Run the executable file in the folder in which it was downloaded.

Launch the Wizard

The installation creates a shortcut link in the Start menu to launch the Wizard. Most software firewalls must be temporarily disabled for the Wizard to discover unconfigured NMCs.

Supported Web Browsers

Use Microsoft® Internet Explorer (IE) 7.x and higher (Windows operating systems) or Mozilla Firefox 3.0.6 or higher (all operating systems) to access the NMC through its Web interface. Other commonly available browsers may work but have not been fully tested by Schneider Electric. The NMC cannot work with a proxy server. Before using a Web browser to access its Web interface, do one of the following:

- Configure the Web browser to disable the use of a proxy server for the NMC.
- Configure the proxy server so that it does not proxy the specific IP address of the NMC.

Network Management Features

These applications and utilities work with a Modular PDU that connects to the network through its Network Management Card:

- StruxureWare —Provide enterprise-level power management and management of Schneider Electric agents, Modular PDUs, information controllers, and environmental monitors
- PowerNet® Management Information Base (MIB) with a standard MIB browser—Perform SNMP SETs and GETs and to use SNMP traps
- APC Device IP Configuration Wizard—Configure the basic settings of one or more NMCs over the network
- APC Security Wizard—Create the components needed for high security for the NMC when using Secure Sockets Layer (SSL) and related protocols and encryption routines

Log On

Use the DNS name or System IP address of the NMC for the URL address of the Web interface. The default user name differs by account type:

- **apc** for a Super User
- **device** for a Device user
- **readonly** for a Read-Only user

If you are using HTTPS (SSL/TSL) as your access protocol, your logon credentials are compared with information in a server certificate. If the certificate was created with the APC Security Wizard, and an IP address was specified as the common name in the certificate, you must use an IP address to log on to the NMC. If a DNS name was specified as the common name on the certificate, you must use a DNS name to log on.

URL Address Formats

Type the DNS name or IP address of the NMC in the URL address field of the Web browser and press ENTER. When you specify a non-default Web server port in Internet Explorer, you must include **http://** or **https://** in the URL.

Common Browser Error Messages at Log-on.

Error Message	Browser	Cause of the Error
“This page cannot be displayed.”	Internet Explorer	Web access is disabled, or the URL was not correct.
“Unable to connect.”	Firefox	

Security

Access Priority for Logging On

Only one user at a time can log on to the Modular PDU.

- Local access from a computer with a direct serial connection to the Modular PDU.
- Telnet or Secure SHell (SSH) access to the control console from a remote computer.
- Web access, either directly or through StruxureWare Central.

User Accounts

The three levels of access are protected by user name and password requirements. During authentication, the user's credentials are compared against the Local User Database and/or are validated against a RADIUS server (depending on configuration). If valid, access with appropriate permissions is granted.

- An Administrator can use all the menus in the Web interface. The default user name for the Administrator User is **apc**.
- A Device User can access only the menus on the Home, Power Distribution, and Logs tabs in the Web interface. The default user name for the Device User is **device**.
- A Read-Only User has only Web interface access. The same menus as Device User are visible but no changes can be made. Links to configuration options are visible but disabled. Event and data logs display no button to clear the log. The default user name is **readonly**.

Watchdog Features

Watchdog mechanisms detect internal problems. After a restart, a System: Warmstart event is recorded in the event log.

Network Interface Watchdog Mechanism

Watchdog mechanisms protect the NMC from becoming inaccessible over the network. If it does not receive any network traffic for 9.5 minutes, it assumes there is a problem with its interface and restarts.

Resetting the Network Timer

To ensure the NMC does not restart if the network is quiet for 9.5 minutes, it attempts to contact the default gateway every 4.5 minutes. The gateway response resets the 9.5-minute timer. If your application does not require or have a gateway, specify the IP address of a computer that is running on the network most of the time and is on the same subnet. The network traffic of that computer will restart the 9.5-minute timer frequently enough to prevent the NMC from restarting.

Recover from a Lost Password

1. At the local computer, select a serial port, and disable any service that uses it.
2. Connect the provided serial cable to the computer and the port on the PDU.
3. Run a terminal program (such as HyperTerminal®) and configure the port for 9600 bps, 8 data bits, no parity, 1 stop bit, and no flow control.
4. Press ENTER, repeatedly if necessary, to display the **User Name** prompt. If you are unable to display the **User Name** prompt, verify the following:
   - The serial port is not in use by another application.
   - The terminal settings are correct as specified in step 3.
   - The correct cable is being used.
5. Press the reset button on the back of the unit. The status LED will flash. Press the reset button a second time while the status LED is flashing to temporarily reset both the user name and password to **apc**.
6. Press ENTER as many times as necessary until the **User Name** prompt displays, then use the temporary user name and password **apc**. (If you take longer than 30 seconds to log on after the **User Name** prompt is displayed, you must repeat step 5 and log on again.)
7. At the command line interface, use the following commands to change the **Password** setting, which is now temporarily **apc**:

   ```
   user -n <user name> -pw <user password>
   ```

   For example to change the a password to XYZ, type:

   ```
   user -n apc -pw XYZ
   ```

   The super user's password must be specified when making any changes to the user account. For more information, see the "user" section in the NMC CLI Guide.

   NOTE: For security reasons, it is possible to disable the super user account. To verify that the super user account is enabled, type:

   ```
   user -n <user name>
   ```

   If *Access: Disabled* is returned, the super user account can be re-enabled by typing:

   ```
   user -n <user name> -e enable
   ```

8. Type **quit** or **exit** to log off, reconnect any serial cable you disconnected, and restart any service you disabled.

Maintenance

Parts Replacement

Determine if you Need a Replacement Part

To determine if you need a replacement part, contact Schneider Electric Customer Support and follow the procedure below so that a representative can assist you promptly:

1. The display interface may show additional screens if module replacement is necessary. Press any key to scroll through these lists, record the information, and provide it to the representative.
2. Write down the serial number of the unit so that you will have it easily accessible when you contact Customer Support.
3. If possible, call Customer Support from a telephone that is within reach of the unit so that you can gather and report additional information to the representative.
4. Be prepared to provide a detailed description of the problem. A representative will attempt to help you over the telephone, if possible, or will assign a Return Material Authorization (RMA) number to you. If a module is returned, this RMA number must be clearly printed on the outside of the package.
5. If the unit is within the warranty period, repairs or replacements will be performed free of charge. If it is not within the warranty period, there will be a charge.
6. If the unit is covered by a service contract, have the contract available to provide information to the representative.

Return Parts

Contact Customer Support to obtain an Returned Materials Authorization (RMA) number.

To return a module, pack the module in the original shipping materials, and return it by insured, prepaid carrier. The Customer Support representative will provide the destination address. If you no longer have the original shipping materials, ask the representative about obtaining a new set. Pack the module properly to avoid damage in transit. Never use Styrofoam beads or other loose packaging materials when shipping a module, as the module may settle in transit and become damaged. Enclose a letter in the package with your name, RMA number, address, a copy of the sales receipt, description of the problem, a phone number, and a check as payment (if necessary).

NOTE: Damages sustained in transit are not covered under warranty.

Replace the Split Core Current Transformers (CTs)

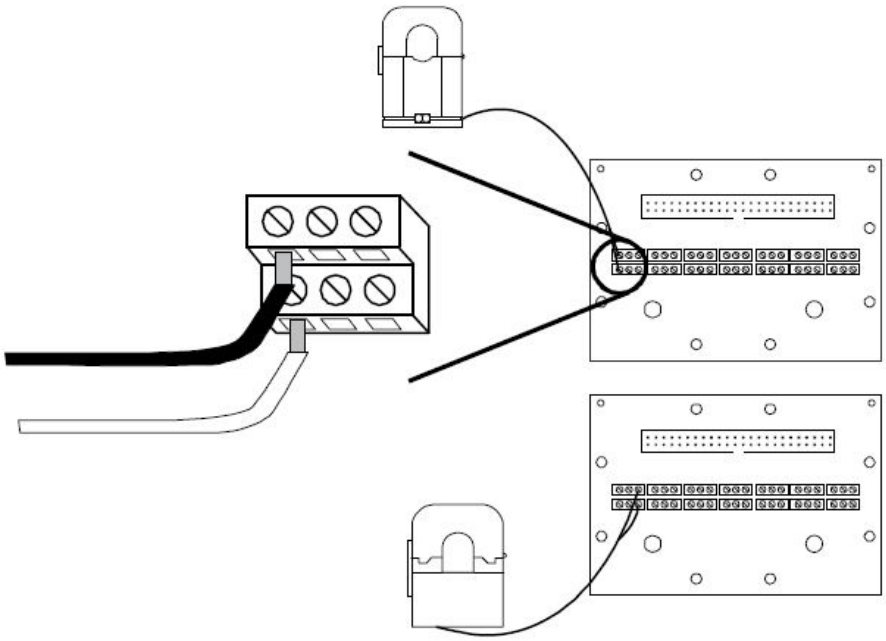
⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- This equipment must be installed and serviced by qualified personnel only.
- Turn off all power supplying the PDU before starting this task.
- Use a properly rated voltage sensing device to confirm that the power is off.
- Do not perform this task while the unit is on.

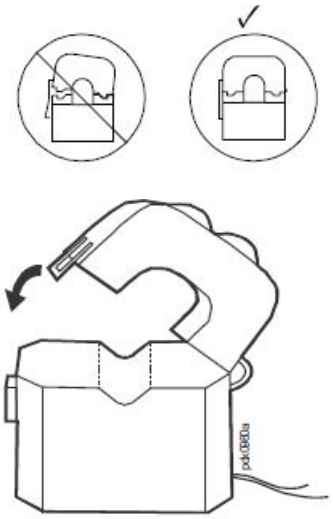
Failure to follow these instructions will result in death or serious injury.

1. Turn off incoming power.
2. Shut off the main input circuit breaker.
3. Open the front door and remove the cover panel.
4. Trace the wires from the old CT to the adapter board. Remove wires from Veris adapter board. Panel A uses Odd numbers. Panel B uses even numbers. White and black wires. Remove Black wire first.



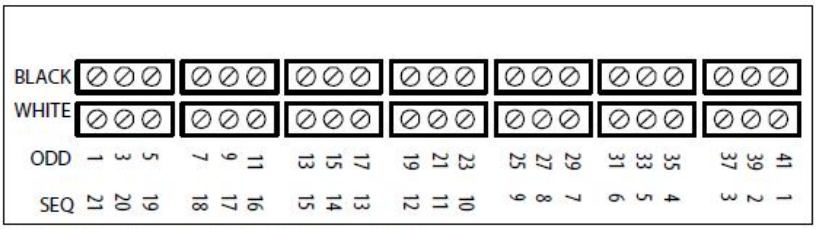
5. Cut the wire from the old CT and tape the cut ends. Remove the old CT. Maintain good isolation between line voltage and Safety Extra Low Voltage (SELV).
6. Install the current sensor onto the conductor to be monitored. Sensors can be mounted facing either direction. Orientation does not affect meter accuracy.

7. Close the CT until the clasp clicks into place to ensure that contact surfaces are firmly seated.



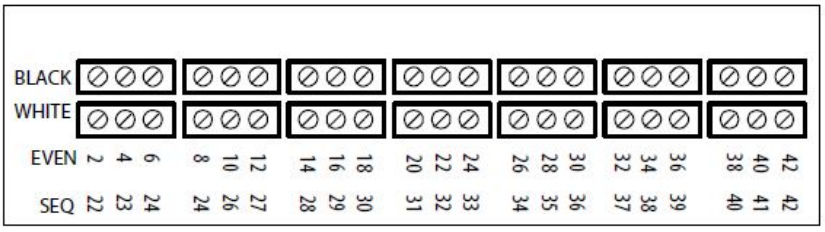
8. The adapter boards are silk screened with two rows of numbers. This application requires odd/even branch circuit numbering. Use the row designated ODD or EVEN.

   NOTE: Veris board replacement: If a board must be replaced, remove wires one pair at a time and move them to the same positions on the new board.



Adapter Board A numbering:

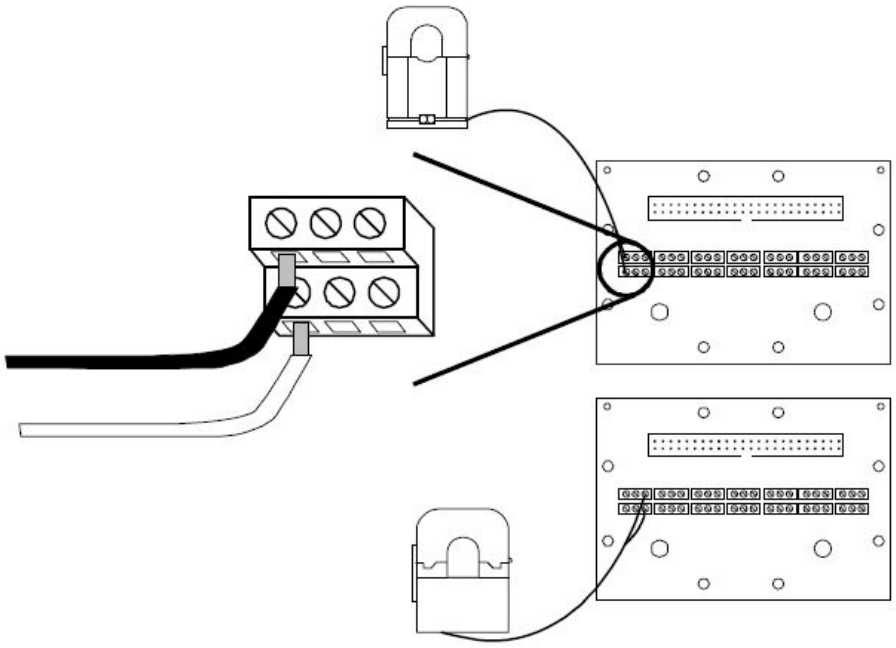
ODD	1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39	41
SEQ	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1



Adapter Board B numbering:

EVEN	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42
SEQ	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42

9. Replace the old wires with the new wires using a small flat tipped screw driver.



NOTE:

Location on the cable does not affect the operation of the CT.

Direction of the CT does not affect operation.

Add a Whip

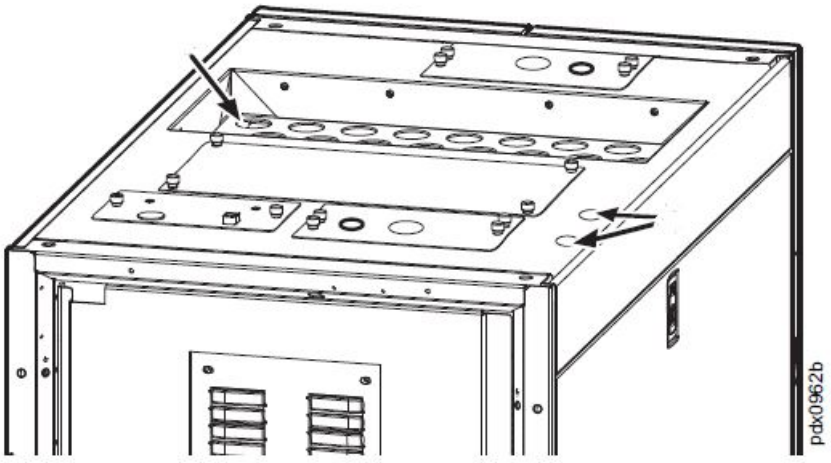
⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

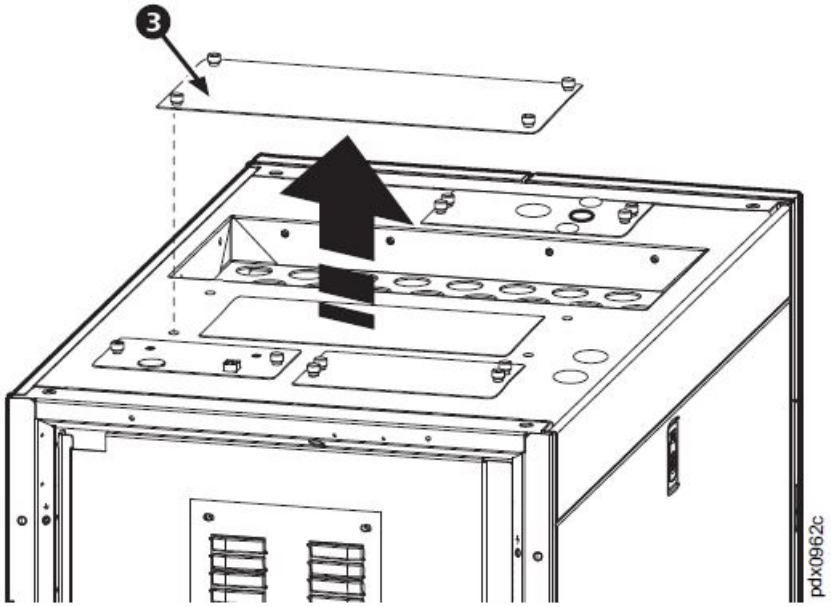
- This equipment must be installed and serviced by qualified personnel only.
- Turn off all power supplying the PDU before starting this task.
- Use a properly rated voltage sensing device to confirm that the power is off.
- Be careful to not drop anything into the PDU while the access panel is removed.

Failure to follow these instructions will result in death or serious injury.

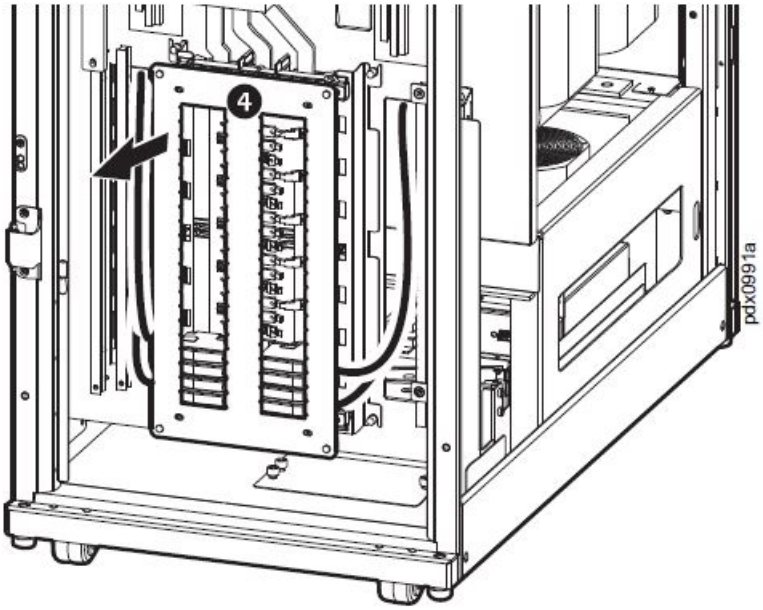
1. Whips can be added through the existing holes in the roof cutout panel or through the two available knockouts in the top right of the roof.



2. Remove all power from the unit by opening the upstream feeder.
3. Remove the roof access panel. Do NOT drop anything into the unit while the access panel is removed. The PDU could be permanently damaged when power is restored.

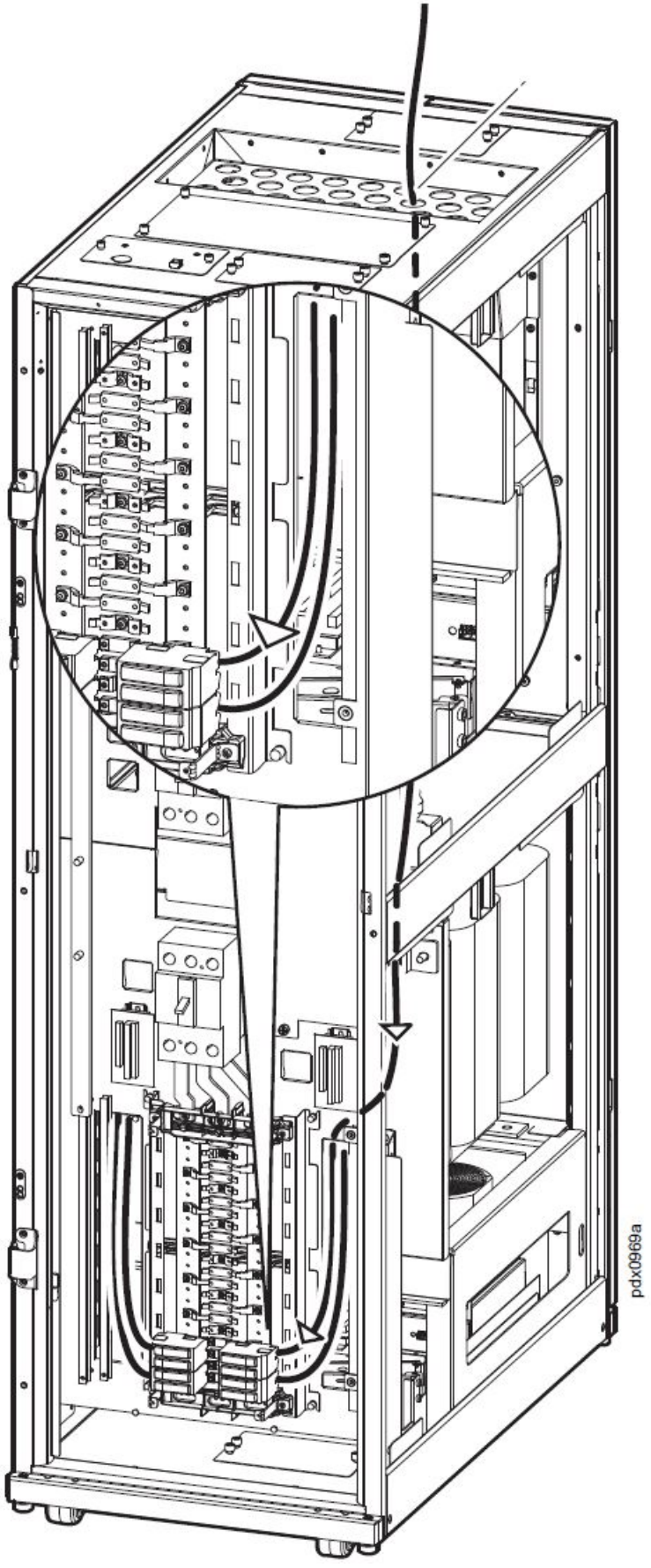


4. Open the front door and the hinged inner door. Remove the panel board safety door.



5. Install a properly sized strain relief or conduit fitting (not provided) into the roof access hole or knockout selected. If a larger hole is needed, use the knockout holes as pilot holes and punch those holes to make larger.

6. Route the new cable through the strain relief, into the unit, and through the cable access cutouts beside the panel board.



Add a Circuit Breaker to a Panel

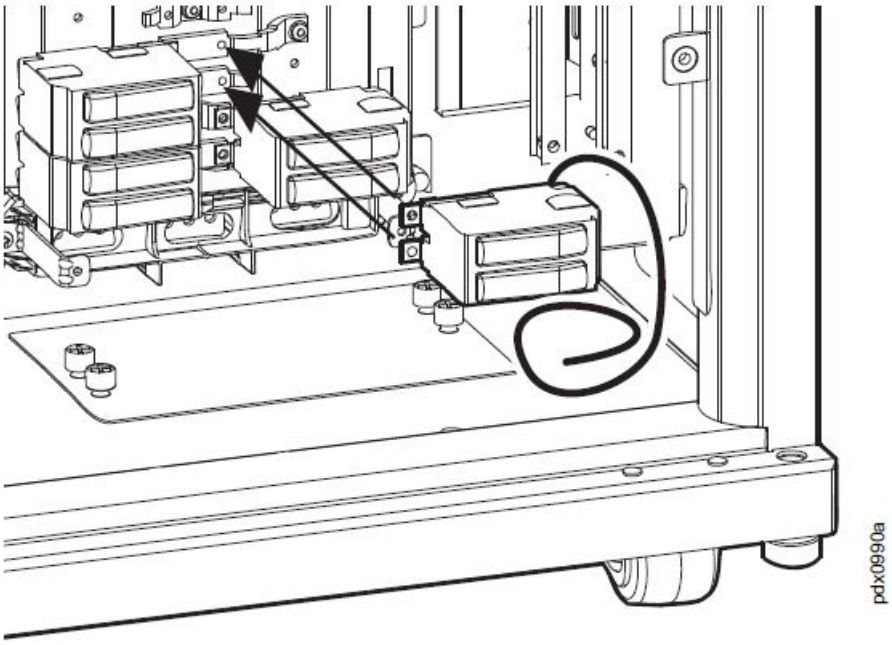
⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- This equipment must be installed and serviced by qualified personnel only.
- Turn off all power supplying the PDU before starting this task.
- Use a properly rated voltage sensing device to confirm that the power is off.
- Do not perform this task while the unit is on.

Failure to follow these instructions will result in death or serious injury.

1. Install a Square D QOB-style circuit breaker according to the instructions provided with the breaker.



2. Install the cable to the breaker following the instructions provided with the breaker. Install the ground and neutral conductors (if applicable) into the provided terminal strips beside the panel board using 20 lb-in (2.2 N-m) torque.
3. Tie off the cable to the strain relief bracket behind the panel board.
4. Replace the panel board safety door. Torque screws to 80 in-lb (9 N-m).
5. Close the hinged inner panel. Torque the screws to 80 in-lb (9 N-m).
6. Replace the roof access panel. Torque the thumb screws to 20 lb-in (2.2 N-m).

Troubleshooting

Status and Alarm Messages

The PDU may display any of the following status and alarm messages. The messages are listed in alphabetical order, along with recommended corrective actions to help you troubleshoot problems.

Display Message	Meaning	Corrective Action
Cooling Fan Failure	Some/All fans are stopped.	Check that all three poles of the 5 amp circuit breaker (located in the electronics drawer) are in the ON position. Check the connections from the fan tray to the fan controller board. If the connections are secure and the circuit breaker is ON, contact Customer Support.
High Subfeed Current	The subfeed current exceeded the high threshold.	Evaluate the threshold setting. If necessary, adjust it to properly accommodate your situation.
High Total Output Current	The total output current exceeded the high threshold.	Evaluate the threshold setting. If necessary, adjust it to properly accommodate your situation.
High Output Voltage	The output voltage exceeded the high threshold.	Evaluate the threshold setting. If necessary, adjust it to properly accommodate your situation.
Low Subfeed Current	The subfeed current dropped below the low threshold.	Evaluate the threshold setting. If necessary, adjust it to properly accommodate your situation.
Low Total Output Current	The total output current dropped below the low threshold.	Evaluate the threshold setting. If necessary, adjust it to properly accommodate your situation.
Low Output Voltage	The output voltage dropped below the low threshold.	Evaluate the threshold setting. If necessary, adjust it to properly accommodate your situation.
Maximum Subfeed Current	The subfeed current exceeded the maximum threshold.	Evaluate the threshold setting. If necessary, adjust it to properly accommodate your situation.
Max Total Output Current	The total output current exceeded the maximum threshold.	Evaluate the threshold setting. If necessary, adjust it to properly accommodate your situation.
Max Output Voltage	The output voltage exceeded the maximum threshold.	Evaluate the threshold setting. If necessary, adjust it to properly accommodate your situation.
Minimum Subfeed Current	The subfeed current dropped below the minimum threshold.	Evaluate the threshold setting. If necessary, adjust it to properly accommodate your situation.
Min Total Output Current	The total output current dropped below the minimum threshold.	Evaluate the threshold setting. If necessary, adjust it to properly accommodate your situation.
Min Output Voltage	The output voltage dropped below the minimum threshold.	Evaluate the threshold setting. If necessary, adjust it to properly accommodate your situation.
Output Frequency	The output frequency is exceeding the frequency deviation threshold.	Evaluate the threshold setting and the power quality. If necessary, adjust the threshold setting to properly accommodate your situation. **NOTE:** Some backup generators do not tightly regulate their output during normal operation and can trigger this alarm.
Subfeed Breaker Open	A subfeed circuit breaker is open.	Check the subfeed circuit breakers to see if one has been overloaded.
Transformer Overheating	The transformer is too hot.	Ensure the loads are balanced evenly on each phase. If necessary, reduce the size of the load.

Radio Frequency Interference

NOTE: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

USA—FCC

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this user manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference. The user will bear sole responsibility for correcting such interference.

Canada—ICES

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

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As standards, specifications, and design change from time to time, please ask for confirmation of the information given in this publication.

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