User Guide

PowerChute™ Serial Shutdown v1.5 Agent

For Simple Signaling

TME10991D-001

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Introduction

PowerChute™ Serial Shutdown (PowerChute) provides UPS management, system shutdown, and energy management for devices connected to the UPS.

In the case of a UPS critical event, the software performs a graceful system shutdown of connected devices before the UPS battery is exhausted.

Simple Signaling

During installation, if you have configured PowerChute Serial Shutdown to use Simple Signaling using the Interface Expander 2 Card (AP9624), you will see a reduced number of options in the PowerChute Serial Shutdown Agent web user interface, when compared with standard Smart Signaling options. This document describes the options available in PowerChute for Simple Signaling only. See **Interactivity in shutdown durations**, and the **PowerChute Serial Shutdown Installation Guide** available on **www.se.com** for more information on Simple Signaling configuration.

Previous generation accessories such as the UPS Interface Expander 1 (AP9607) and the APC Share-UPS (AP9207) also provided graceful system shutdown for multiple servers, using PowerChute Serial Shutdown. For more information on the operation of the Share-UPS or Interface Expander 1, see their associated user guides available on the **Schneider Electric website**, and Knowledge Base article **FA156051**.

Related Documents

This document describes the PowerChute Agent web user interface:

- For information on installing PowerChute Serial Shutdown, see the **PowerChute Serial Shutdown Installation Guide**.
- For security-related information, see the **PowerChute Serial Shutdown Security Handbook**.
- For up-to-date information on the operating systems, JRE, service packs, and processors with which PowerChute Serial Shutdown is compatible, see the latest revision of **PowerChute Serial Shutdown Operating System and Processor Compatibility Chart.**

How to Log On

You can access the user interface of the PowerChute Serial Shutdown Agent in two ways, locally and remotely.

To access the PowerChute Serial Shutdown Agent on a **local** Windows computer, select the Windows **start** button, then select **PowerChute Serial Shutdown > PowerChute Serial Shutdown**.

To access the PowerChute Agent **remotely**, in a Web browser type the servername or Agent IP address and port:

```
https://servername:6547
```

```
https://agentipaddress:6547
```

For example, if your server is named COMP1, enter:

```
https://COMP1:6547
```

If you have forgotten the username or password created during installation, you can reset the credentials by using the PowerChute configuration file. See **Resetting your Username and Password**.

Account Lock-Out

PowerChute will automatically “lock out” for 2 minutes after three unsuccessful login attempts (incorrect username and/or password) to prevent brute force password cracking.

Changing Language

The PowerChute Agent User Interface (UI) is available in 7 languages: English, Chinese, French, German, Italian, Brazilian-Portuguese, and Spanish. To change the UI display language, click on the language selector in the top-right corner of the UI, and select a language from the drop-down list.

Simple Signaling

UPS Status

The UPS Status screen shows System Status.

System Status

The **Device Status** field under **System Status** indicates the present operating status of the UPS and displays one of the following states listed in the table below. **NOTE:** Possible states depend on the UPS model.

Possible Device Status	Description
On Line	The UPS is running normally on AC utility power.
On Battery	The UPS is using its battery to provide output power to the load.
Low Battery	The UPS is on battery, and the “Runtime Remaining” **Runtime Remaining** reported by the UPS is less than the **At runtime limit** value on the **Shutdown Settings** screen. By default, a **Low Battery** shutdown begins.
Unknown	The status of the UPS is unknown.
UPS Off	Your UPS is turned off.

Event Configuration

The **Event Configuration** screen lists the events that can occur and separates them into three categories - critical (severe), warning, and informational. You cannot change an event's category.

By default, the Informational events are hidden, click the **+** icon beside **Informational** to display them. You can also click the **-** sign to hide any of the three categories.

You can configure events to cause certain actions, named in separate columns:

- **Logging**: Records the event in the Event Log when the checkbox is selected.

You can disable all logging, see **Log Settings**.

- **E-Mail**: Sends an e-mail message to users and administrators when an event occurs. The checkbox must be selected to enable this. E-mail must be configured in PowerChute, see **E-Mail Settings**.
- **Shutdown**: Initiates an operating system shutdown sequence in response to an event when the checkbox is selected. See **Shutdown**.

IMPORTANT: Changing the shutdown and command file options for events has a direct effect on the configuration you specify on the **Shutdown Settings** page. See **Power Outage Configuration and Shutdown on Event Configuration**.

- **Command File**: Runs a user-specified command file when an event occurs.

Command files are often used to shut down open applications in order to avoid loss of data. They have to be placed in this folder:

```
<Installation folder>\APC\PowerChute Serial Shutdown\agent\cmdfiles
```

which for example is, by default on Windows, this folder:

```
C:\Program Files\APC\PowerChute Serial Shutdown\agent\cmdfiles
```

Click on the Command File icon to enable it, and choose a file to run and a duration.

All command file types are supported.

IMPORTANT: PowerChute does not check the contents of a command file before executing it.

When you have enabled a command file for an event, the icon color changes from grey, , to green,  .

See also **Power Outage Configuration and Shutdown on Event Configuration**.

Some events cannot be configured to trigger certain actions and have no checkbox for that action. For example, most informational events cannot cause a shutdown so the checkbox is missing in the Shutdown column for those events.

Description of events

For descriptions of individual events, see:

- **Critical events**
- **Warning events**
- **Informational events**

The events that display depend on your UPS, some events described below might not display for your UPS.

Critical events

Critical (severe) events can cause the UPS to stop supplying power to its supported equipment. These events require your immediate attention.

Event Name	Description
Low Battery	A UPS *that is operating on battery power* has reached the low runtime threshold - the **Runtime Remaining** reported by the UPS is less than the **At runtime limit** value on the **Shutdown Settings** screen. Alternatively, a UPS management accessory (such as a UPS Interface Expander 2 Card) has triggered the Low Battery event in order to request a shutdown.

Warning events

Warning events alert you to situations that should be monitored

Event Name	Description
On Battery	The UPS has switched to battery operation due to a power outage or poor power quality.
Time On Battery Threshold Exceeded	The UPS on battery power has reached the number of seconds configured via **Shutdown Settings > Power Outage Configuration > "After the UPS has been on battery for**".
Invalid Configuration File	The contents of the `pcssconfig.ini` file are invalid. Open the `pcssconfig.ini` file using a text editor (e.g. Notepad) to view and resolve the errors.
Invalid User Login	A user has unsuccessfully attempted to log in to the PowerChute user interface. **NOTE:** PowerChute will automatically "lock out" for 2 minutes after three unsuccessful login attempts (incorrect username and/or password) to prevent brute force password cracking.

Informational events

Informational events report data about the operation of the UPS device.

Event Name	Description
No Longer On Battery	AC utility power has been restored; the UPS is no longer running on battery power. This event follows **On Battery**.
Shutdown Starting **Shutdown in Progress**	Various stages of the shutdown procedure.
Communication Established	PowerChute has established communication with the UPS.
Monitoring Started **Monitoring Stopped**	PowerChute has started or stopped monitoring the UPS.
Configuration File Changed	The `pcssconfig.ini` file has been edited directly.
User Logged On	A user has successfully logged into the PowerChute user interface.
User Logged Off	A user has successfully logged out of the PowerChute user interface or the PowerChute session has expired. By default, the PowerChute session times out after 15 minutes of inactivity and users will be automatically logged out of the PowerChute UI.

E-Mail Settings

The **E-Mail Settings** screen lists the e-mail addresses of users configured to be notified when an event occurs. In order to receive e-mail notifications when an event occurs, the e-mail address must be set up here. See **Event Configuration** for information on configuring an event to send an e-mail when it occurs.

The following five fields must be defined to enable PowerChute to send e-mail messages when events occur. (This includes messages to pagers that accept e-mail).

- **SMTP Server (Hostname, IPv4, or IPv6)** identifies the SMTP server by one of the three methods mentioned: its name, its IPv4 address, or its IPv6 address. An example hostname is mail.server.com.
- **From E-Mail Address** specifies the e-mail that the recipient gets the mail from. It is the e-mail account to be used to send notifications.
- **Port** specifies the port number from which e-mail is sent via SMTP. Port numbers can have a maximum of five digits and can be set to 25, 465, 587, or any number ranging from 5000 to 32768. If you do not enter a port number, the default of 25 is used.
- **Use SSL/TLS** defines the e-mail encryption protocol that will be used when e-mail is sent. There are three options available:
  - **None selected** – if authentication is disabled, no e-mail encryption protocol will be used and e-mail will be sent unencrypted. If authentication is enabled, e-mail will be encrypted using the SMTPS protocol.
  - **SSL** – e-mail will be encrypted using the SSL encryption protocol. You must select port 465 or the port your email administrator has assigned for SSL communications.
  - **TLS** – e-mail will be encrypted using the TLS encryption protocol. You must select port 587 or the port your email administrator has assigned for TLS communications.

The **Enable Server Identity Check** checkbox, if selected, verifies that the provided SMTP Server has a valid certificate to ensure you are connected to the correct server. This setting reduces the risk of man-in-the-middle attacks and should be selected if SSL/TLS is selected.

Click the **Test** button to send a test e-mail to all configured recipients. This button is only enabled when valid e-mail settings and e-mail recipients are provided. If you do not receive a test e-mail, check the pcss.log file for errors. Common reasons for the test e-mail not being received are incorrect credentials, server identity mismatch, proxy issues, the SMTP server is unreachable, or the chosen protocol is not supported.



If you are using SSL/TLS and your SMTP Server uses a self-signed certificate, the certificate must be added to the trusted certificate store of the bundled Java JRE.

On Windows:

1. Stop the PowerChute service via the services console – PowerChute Serial Shutdown – or using the command `net stop APCPBEAgent`
2. Copy `server.crt` (or `server.cer`) to the security directory in the installed PowerChute directory (e.g. `C:\Program Files\APC\PowerChute Serial Shutdown\jre\lib\security`).
3. Open a command prompt with Administrator privileges and navigate to this security directory.
4. Execute the following command to import the email certificate into the JRE trusted certificate store:

   ```
   ..\..\bin\keytool -import -alias mailserv -file server.crt -keystore cacerts -storepass changeit
   ```

5. Accept the certificate when prompted.
6. Start the PowerChute service via the services console – PowerChute Serial Shutdown – or using the command `net start APCPBEAgent`

On Unix/Linux:

1. Stop the PowerChute service using one of the following commands: `service pbeagent stop`, or `systemctl stop PBEAgent.service`, or `/etc/init.d/PBEAgent stop`
2. Copy `server.crt` (or `server.cer`) to the security directory in the installed PowerChute directory (e.g. opt/APC/PowerChuteSerialShutdown/jre/lib/security)
3. Open a Terminal with Administrator privileges and navigate to this security directory.
4. Execute the following command to import the email certificate into the JRE trusted certificate store:

   ```
   ../../bin/keytool -import -alias mailserv -file server.crt -keystore cacerts -storepass changeit
   ```

5. Accept the certificate when prompted.
6. Start the PowerChute service using one of the following commands: `service pbeagent start`, or `systemctl start PBEAgent.service`, or `/etc/init.d/PBEAgent start`

NOTE: In the above examples, mailserv is the alias of the mail server used within the cert file, and `server.crt` is the self-signed SSL cert of the mail server. `.cer` files are also accepted.

For more information, see **Replace Default PowerChute SSL Certificate**.

See also: **Authenticating e-mail**.

Adding and removing e-mail recipients

To add an e-mail, under the **Add/Remove E-Mail Recipients** section, type an e-mail address and click the Apply button.

To remove an e-mail, select the checkbox to the right of the address, and click Apply.

Filling in the **Contact Name** and **System Location** under **Contact Information** is optional. If present, the information is included in e-mails. The name is intended to represent the person responsible for the maintenance of the UPS. The location is the physical location of the server hosting the PowerChute Agent.

See also: **Authenticating e-mail**



We advise testing your e-mail settings after configuration. You can do this by selecting an E-Mail checkbox for an event with **Event Configuration**, and then create that event.

Authenticating e-mail

Authenticating e-mail is optional. You can enable it by selecting the **Basic E-Mail for Authentication** checkbox. Contact your e-mail administrator if you're not sure about authentication.

If you are going to use authentication, you can specify a server username and password in the respective fields, but you do not have to do so. If you don't specify a server username and password, PowerChute uses the **SMTP Server (Hostname, IPv4, or IPv6)** to obtain a list of IP Addresses that are allowed to send authenticated e-mails.

SNMP Settings

PowerChute Serial Shutdown can be configured to communicate via Simple Network Management Protocol (SNMP), and can be discovered via SNMP by a Network Management System (NMS). Using SNMP and the PowerNet MIB, you can query and configure PowerChute settings, and generate SNMP traps to automatically notify you of UPS shutdown events and lost communication events.

The PowerNet MIB is located in the etc directory in the PowerChute installation directory. The latest version is also available on the **Schneider Electric website**, choose **Firmware Upgrades - MIB** from the **Filter by Software / Firmware** drop-down box.

SNMPv1 and SNMPv3 are supported by PowerChute Serial Shutdown, and are enabled via the Agent web interface. The SNMP Agent is not discoverable via SNMP until SNMPv1 or SNMPv3 is enabled, and one user profile is configured.

SNMPv1 is less secure than SNMPv3. SNMPv1 does not provide encryption or authentication, and the Community Name is sent over the network in plain text. To use encryption and authentication with SNMP, configure SNMPv3 settings.

See:

- SNMPv1 Configuration
- SNMPv3 Configuration
- SNMP Trap Configuration
- SNMP Data Points

SNMP v1 Configuration

Select **Enable SNMPv1 access** to configure the User Profiles required to communicate via SNMPv1. Select **Add Profile** or edit the default profile (PCSSUser) and configure:

1. **Community Name**: The Community Name is sent with each SNMP request to obtain access to a device. The maximum length is 15 ASCII characters.
2. **NMS IP/Host Name**: The IP address, Host Name or Fully Qualified Domain Name of the Network Management System (NMS). An NMS is software that is used to manage software and hardware components on the network. It can be used to manage PowerChute via SNMP by issuing SNMP GET and SET commands. The default value of 0.0.0.0 permits access from any NMS.
3. **Access Type**:
   - **Disable**: No SNMP GET or SET requests are permitted.
   - **Read:** Only SNMP GET requests are permitted.
   - **Read/Write**: SNMP GET and SET requests are permitted.

To edit an existing SNMPv1 user profile, click the pen icon. To delete an SNMPv1 user profile, click the bin icon.

Click **Apply** to save the SNMPv1 configuration.

Certain Network Management Systems require the SNMP Engine ID to communicate via SNMP. The SNMP Engine ID is displayed under the Miscellaneous section of the SNMP Settings page.

See also: SNMP Data Points below.

SNMP v3 Configuration

Select **Enable SNMPv3 access** to configure the SNMPv3 settings. Select **Add Profile** and configure:

1. **User Name**: In SNMPv3, all GET and SET requests and SNMP Traps are matched to a user profile by the User Name. Enter a user name of a length less than or equal to 32 ASCII characters.
2. **Authentication Protocol**: Select MD5, SHA-1 or SHA-2 (SHA256 or SHA512) protocol. It is recommended to use an SHA-2 protocol, if the NMS supports it.
3. **Authentication Passphrase**: Enter an authentication password for the protocol selected, of 8-32 ASCII characters.
4. **Privacy Protocol**: Select AES-128, AES-192, AES-192 Ex†, AES-256, AES-256 Ex†, or DES. It is recommended to use the AES-256 protocol, if the NMS and PowerChute JRE support it:

NOTE: Certain SNMP Network Management Systems use a non-standard AES key extension algorithm for 192 and 256 bit key lengths. This non-standard implementation or “Key extension algorithm” is specified by the IETF.

If your NMS requires the use of the Key Extension algorithm, select Privacy Protocol options AES-192 Ex or AES-256 Ex.

5. **Privacy Passphrase**: Enter a privacy password for the encryption protocol selected, of 8-32 ASCII characters.
6. **Access Type**:
   – **Disable**: No SNMP GET or SET requests are permitted.
   – **Read**: Only SNMP GET requests are permitted.
   – **Read/Write**: SNMP GET and SET requests are permitted.

To edit an existing SNMPv1 user profile, click the pen icon. To delete an SNMPv1 user profile, click the bin icon.

Click **Apply** to save the SNMPv1 configuration.



Certain Network Management Systems require the SNMP Engine ID to communicate via SNMP. The SNMP Engine ID is displayed under the Miscellaneous section of the SNMP Settings page.

See also: SNMP Data Points

SNMP Trap Configuration

You can specify the device(s) that receive the SNMP traps generated by PowerChute for UPS critical and lost communication events.

To configure a Trap Receiver, select **Add Trap Receiver** and configure:

1. **Enable**: Select the checkbox to enable the Trap Receiver.
2. **NMS IP/Host Name**: The IP address, Host Name or Fully Qualified Domain Name of the NMS.
3. **Port**: The port on which the NMS will listen for incoming traps. The default port number is 162.
4. **SNMPv1**: Select this if you want to send the traps via SNMPv1.
   – **Community Name**: Enter the Community Name of the SNMPv1 user profile to be used as an identifier when SNMPv1 traps are sent to this receiver.
5. **SNMPv3**: Select this if you want to send the traps via SNMPv3.
   – **User Name**: Select the user name of the SNMPv3 user profile to be used as an identifier when SNMPv3 traps are sent to this receiver.

Click the **SNMP Trap Receiver Test** to send a test trap to the configured Trap Receiver. Check the Trap Receiver to ensure that the test trap was received.

To edit an existing SNMPv1 user profile, click the pen icon. To delete an SNMPv1 user profile, click the bin icon

UPS Critical Events

PowerChute sends SNMP traps to the configured Trap Receiver(s) upon the following events:

- **PowerChute Shutdown Event Occurs**

  When a shutdown event occurs and a Shutdown is triggered, PowerChute sends an SNMP trap to the configured Trap Receiver detailing the Event Name.

Lost Communication Events

PowerChute sends SNMP traps to the configured Trap Receiver(s) when the **Communication Lost** event occurs.

If the option to **Send Trap when condition is cleared** is enabled, a Communications Established trap is sent when the communications lost event is resolved.

Other Events

Software Update Available Trap

When the PowerChute Auto Update functionality detects that there is a new update available; a trap is sent to the configured Trap Receiver.

PowerChute Test Trap

When configuring a Trap Receiver, a test trap can be sent to determine if the Trap Receiver is receiving the traps. See **SNMP Trap Configuration**.

Configuring SNMP Trap Notification Settings

To configure the settings for UPS Critical Event or Lost Communication traps:

1. Go to **SNMP Settings > SNMP Traps**
2. Click on the icon next to **UPS Critical Events** or **Lost Communication Events**
3. Select the **Enable** checkbox to enable traps for those events.
4. **Delay**: Specify the length of time that Event must persist before a trap is sent. If the Event is cleared before this time, no trap is sent.
5. **Repeat Interval**: Specify the time interval in seconds that the trap is re-sent.
6. Select:
   - **Repeat until condition clears** if you want the trap to be sent at the repeat interval until the Event is cleared.
   - **Repeat X times** to specify the number of times the trap will be sent when the Event occurs.
7. Select **Send Trap when condition is cleared** to be notified when the Event is cleared.

   NOTE: If the PowerChute Serial Shutdown Agent is shutdown due to a UPS Critical Event, no clearing Trap will be sent to the NMS.



See also: SNMP Data Points > SNMP Traps

SNMP Data Points

The following table lists the SNMP Object Identifiers (OIDs) supported by PowerChute Serial Shutdown.

NOTE: Your UPS may not support all SNMP OIDs listed.



Refer to the PowerNet MIB available on the **Schneider Electric website** for detailed descriptions of each OID, including parameters for SET and GET operations.

UPS Information

SNMP OID Name	Access	Description
upsBasicBatteryStatus	read-only	The status of the UPS batteries.
upsBasicOutputStatus	read-only	The current state of the UPS (e.g. On Line, On Battery, etc.).

upsAdvConfigAllowedSetTable	read-only	Read this OID to get the UPS data points for which you set values, using an SNMP SET. Querying this table returns the following OIDs: • upsAdvConfigRatedOutputVoltage • upsAdvConfigHighTransferVolt • upsAdvLowTransferVolt • upsAdvConfigLowBatteryRunTime The query also returns the acceptable range of values you can set for each OID. If your UPS does not support an OID, the query will return `null`.
upsAdvControlBypassSwitch	read-write	Write to this OID to control the UPS bypass mode.
upsAdvTestDiagnostics	read-write	Write to this OID to command the UPS to perform a diagnostic self test.
upsAdvTestDiagnosticsResults	read-only	The results of the last diagnostic UPS Self Test.
upsAdvTestRuntimeCalibration	read-write	Writing to this OID provides options to perform a Runtime Calibration Test.
upsAdvTestCalibrationResults	read-only	The results of the last Runtime Calibration test.
upsCommStatus	read-only	The status of the SNMP Agent's communication with the UPS.

PowerChute Serial Shutdown Identity Information

SNMP OID Name	Access	Description
pcbehostname	read-only	The hostname of the PowerChute Serial Shutdown Agent.
pcbeVersion	read-only	The PowerChute Serial Shutdown version number, in the format x.x.x.x.
pcbeOS	read-only	The operating system and version on which the PowerChute Serial Shutdown is installed.
pcbeJavaVersion	read-only	The version of Java installed with PowerChute Serial Shutdown.
pcbeUIProtocol	read-only	The protocol used to connect to the PowerChute Agent web interface (http/ https).
pcbeHttpsPort	read-only	The port used for the PowerChute https web interface.

PowerChute Serial Shutdown Alarm Information

SNMP OID Name	Access	Description
pcbeCriticalFlag	read-only	This OID indicates that PowerChute Serial Shutdown has begun a graceful shutdown of the host.
pcbeCriticalCause	read-only	This OID provides the reason that PowerChute Serial Shutdown has begun a graceful shutdown of the host.

pcbeComsLostFlag	read-only	This OID indicates that PowerChute cannot communicate with the UPS.
pcbeUpdateAvailableFlag	read-only	This OID indicates that a new version of PowerChute is available.
pcbeUpdateDesc	read-only	This OID provides the description of the new version of PowerChute that is available.

SNMP Traps

The tables below details the OID names of the SNMP traps sent by PowerChute for critical and lost communication events.

UPS Critical Events

SNMP OID Name	Level	Description
pcbeCriticalEventActive	Severe	PowerChute Serial Shutdown has begun a graceful shutdown of the host due to a critical event.
pcbeCriticalEventResolved	Informational	The PowerChute critical event has been resolved, and a graceful shutdown of the host continues.

Lost Communication Events

SNMP OID Name	Level	Description
pcbeComsLost	Severe	PowerChute cannot communicate with the UPS.
pcbeComsLostResolved	Informational	PowerChute has re-established communications with the UPS.

Other Events

SNMP OID Name	Level	Description
pcbeTest	Informational	PowerChute has sent a test trap to the NMS.
pcbeUpdateAvailable	Informational	PowerChute has detected that an update is available.

Shutdown

In PowerChute Serial Shutdown, shutdowns can be initiated:

- Through an event occurring, see **Event Configuration**.
- When the **UPS signals the Low Battery event** in a Simple Signaling configuration.

Shutdowns can also be initiated manually through the UPS LCD or from “outside” PowerChute, e.g. from the Network Management Card (NMC). However, using the NMC in conjunction with PowerChute Serial Shutdown is not supported.

Shutdown Settings

This screen summarizes your shutdown configuration and also enables you to configure some steps of the shutdown sequence.



The summary includes timing and delays, with the “base time” being the occurrence of the On Battery event. The options chosen on this screen can affect the configuration of events, set up in **Event Configuration**. This can include which events are selected to cause a shutdown. Read the other sections below for further information.

See also:

- **Power Outage Configuration**
- **Power Outage Configuration and Shutdown on Event Configuration**
- **Interactivity in shutdown durations**

Simple Signaling Limitations

The PowerChute Serial Shutdown supported configuration for Simple Signaling is described in the **PowerChute Serial Shutdown Installation Guide**. In this configuration, an Interface Expander 2 Card (IE2) can be used to provide a graceful system shutdown for up to three network servers (or other devices) during a power outage, by using only one UPS and simple signaling. In the event of a power outage, all connected servers shut down at the same time.

In the supported configuration, a Master Server is connected directly to the smart computer interface of the UPS, and up to two Slave Servers can be connected to the UPS via the IE2 card basic ports.

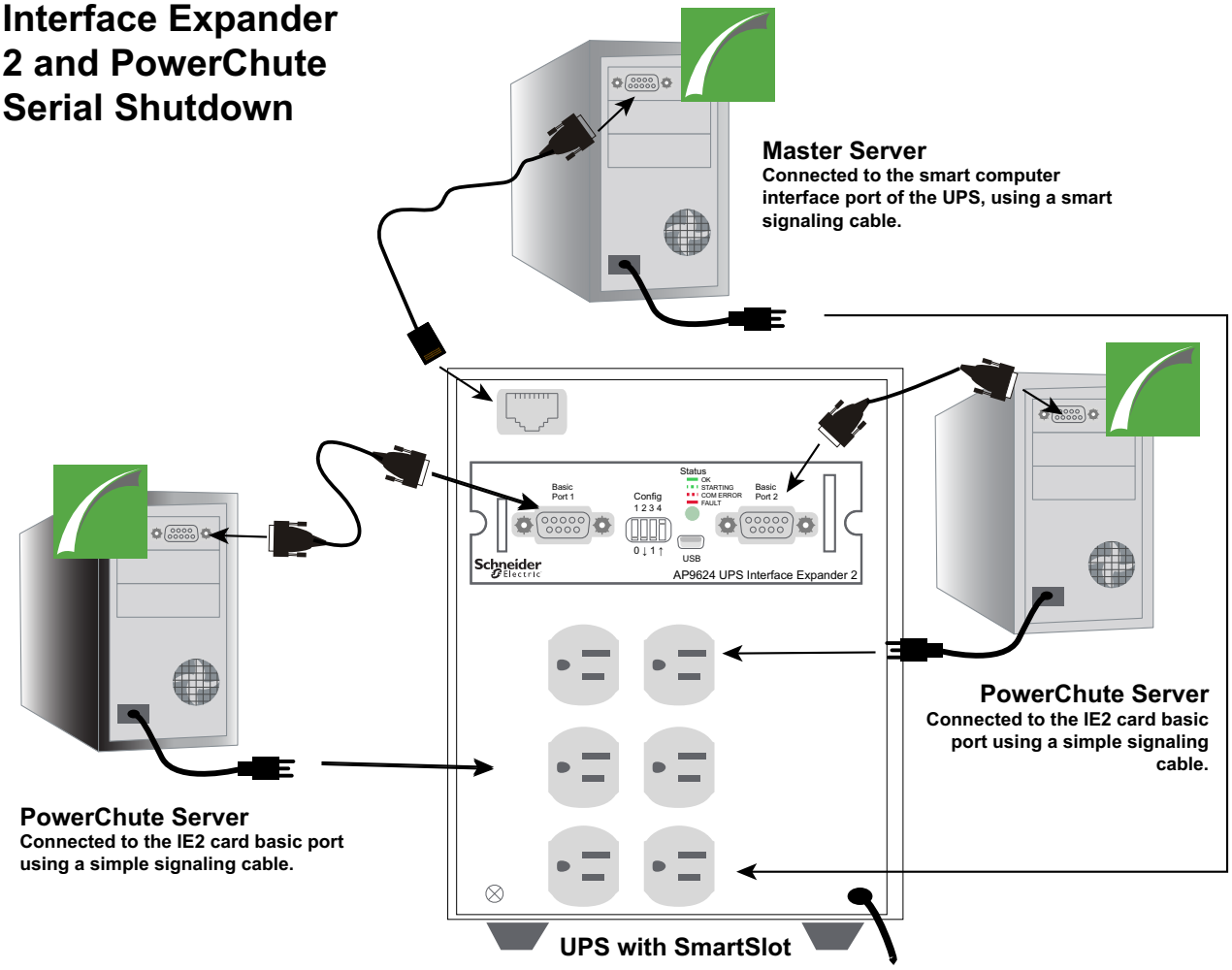
NOTE: Some Type B UPS devices with the SRC and all UPS devices with SRV prefixes do not support simple signaling. For example: SRC1KI, SRC2KI, SRC1KI-IN, SRC1KUXI, SRVLPM1KRIL, SRVLPM2KRIL, and SRVLPM3KRIL etc.



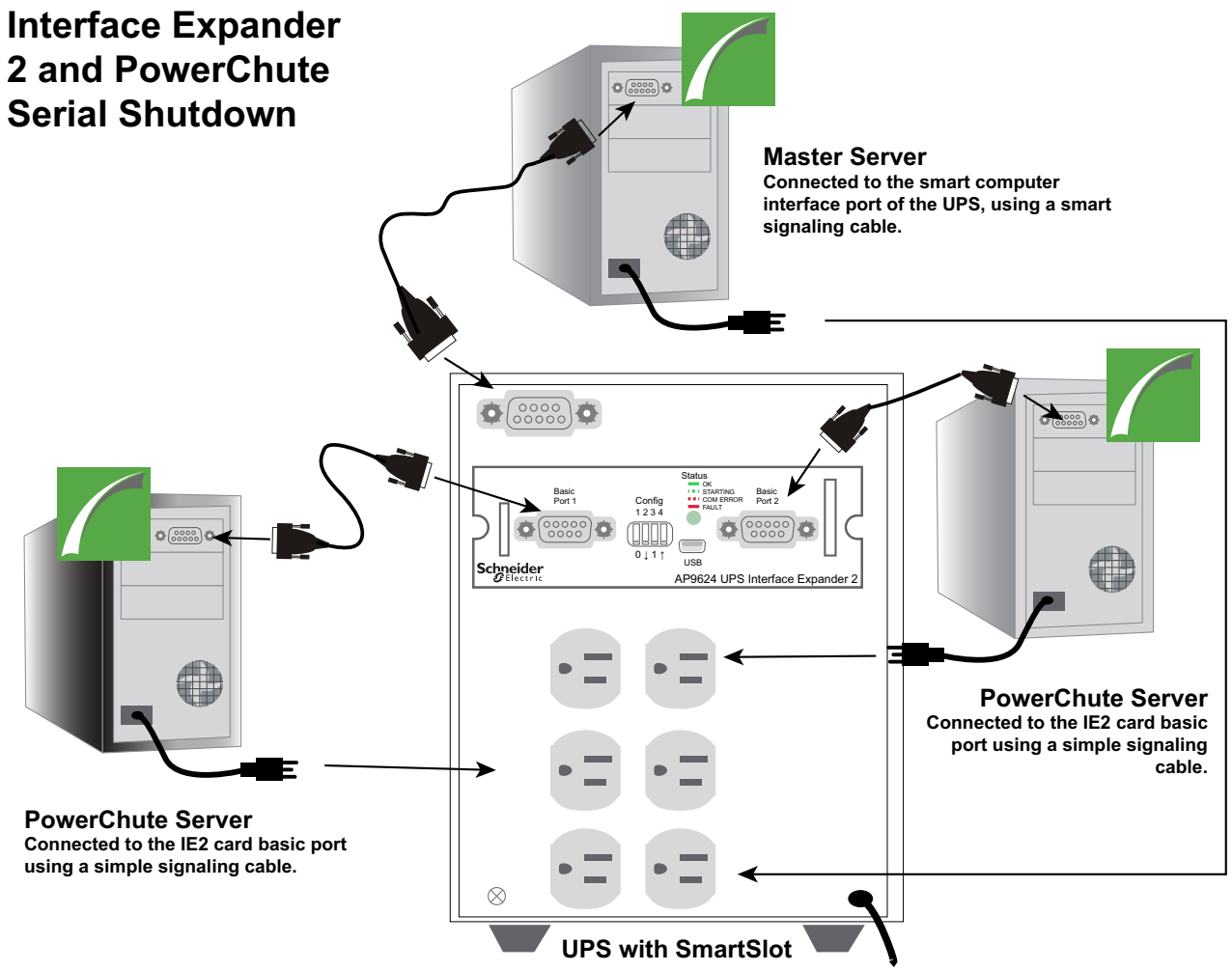
Visit Knowledge Base article **FA315835** to find out more about UPS model types.

Supported Configuration for **Type A** UPS devices:

Interface Expander 2 and PowerChute Serial Shutdown



Supported Configuration for **Type B** UPS devices:



You can use PowerChute to configure when a shutdown should occur through the Shutdown Settings page. Due to the nature of simple signaling, there are limitations to the shutdown features available, when compared with a standard configuration:

- **IMPORTANT:** You must make sure that all PowerChute Agents running on the servers in a Simple Signaling configuration have the same settings to ensure a graceful shutdown:
  - The Power Outage Configuration must be the same for each Agent.
  - Event Configuration must be the same for each Agent - see **Power Outage Configuration and Shutdown on Event Configuration**.
  - Different command files may be used on each Agent, but they must use the same **Time required for command file to run.**
- If you disconnect a communication cable in an active simple signaling configuration, PowerChute will not detect the disconnected cable, and you will experience unexpected shutdown behavior. Disconnecting communication cables during simple signaling is not supported. If you need to disconnect a simple signaling cable, manually shut down the connected server first.

NOTE: Do not edit the shutdown settings in the PowerChute UI when the IE2 card is in timer mode as PowerChute relies on the default configuration (“When the UPS signals the Low Battery event”) to shut down the connected servers in this mode. The PowerChute shutdown settings should only be modified when the IE2 card is in confirmed mode. For more information on the IE2 modes of operation, see Knowledge Base article **FA156051**.

Installation and Configuration with Simple Signaling and Type A UPS devices

Provide a high delay in the **Time for operating systems to shut down** field in the **Shutdown Settings** screen in the Master Server. Setting a high value here will give the operating system more time to shut down.

Connect all servers, including the simple clients, to a PowerChute outlet group. Doing this will ensure that the servers turn off in accordance with the **Outlet Sequence** screen in the Master Server.

Shutdown Functionality with Simple Signaling and Type B UPS devices

After the Interface Expander 2 card issues a shutdown command to simple clients, a turn off command is also issues to turn off the UPS. To ensure graceful shutdown, the delay of this turn off command is forced to be equal to the values set for **Time for operating systems to shut down** and **At runtime limit** in the **Shutdown Settings** screen of the Master Server.

Set the **At runtime limit** value in the Master Server appropriately, as this decides the turn off delay of the UPS.

Power Outage Configuration

The **Power Outage Configuration** options define the response when a power problem causes the UPS to switch to battery operation.

- **Immediately** initiates a shutdown as soon as a **On Battery** event indicates that the UPS switched to battery power. See **Time on Battery Threshold Exceeded** on the **Event Configuration** screen.
- **After UPS has been on battery for** initiates a shutdown when the UPS has been operating on battery power for the period of time configured here.
- **When the UPS signals the Low Battery event** initiates a shutdown when the UPS signals that the Low Battery event has occurred. In a Simple Signaling configuration, this can impact a slave server when the Master Server connected to the UPS signals to all slave servers connected to the Interface Expander 2 Card that it is shutting down. For more information on Simple Signaling configuration, see the **PowerChute Serial Shutdown Installation Guide**. This is the default power outage configuration in a simple signaling configuration.**NOTE:** For Type B UPS devices, the value set for **At runtime limit** in the **Shutdown Settings** screen is also added to the UPS turn off delay.
- **Do not shut down during a power outage** relies on the **Low Runtime Warning** event to cause a shutdown.
  The Low Runtime Warning event is generated when battery runtime falls below the combined time configured for Application and Operating System shutdown: see the **Operating System and Application Shutdown** section of this screen.

NOTE: This Low Runtime Warning event does not display on the **Event Configuration** screen as it is not configurable (because it *always* causes a shutdown).

When you select different radio button options here, the displayed summary information on this screen (under the **Shutdown Summary** heading) changes.

Power Outage Configuration and Shutdown on Event Configuration

Choosing one of the four **Power Outage Configuration** options on Shutdown Settings (discussed above) works interactively with the Event Configuration **Shutdown** checkboxes for different events.

You can see this by selecting a radio button option here, pressing Apply, and going to the **Event Configuration** screen to note the differences.

This is also true in reverse: changing a **Shutdown** checkbox for an event in Event Configuration can change which radio button option is selected here on Shutdown Settings.

If the check box is selected, a warning appears on the screen to inform you of this.

This table summarizes the interaction:

With this On Battery option selected:	...the Shutdown checkbox of these events is selected		
	Low Battery	On Battery	Time on Battery Threshold Exceeded
Immediately	No	**Yes**	No
After UPS has been on battery for	No	No	**Yes**
When the UPS signals the Low Battery event	**Yes**	No	No
Do not shut down in the event of a power outage	No	No	No

* The **Low Runtime Remaining** event is always configured to shutdown for these **Power Outage Configuration** options. This event is only displayed in the **Event Log**, and is not configurable on the **Event Configuration** page.

For example, if you choose **Immediately** here and apply it, you will see in the **On Battery** row of **Event Configuration** that the **Shutdown** checkbox has been selected automatically.

And if you then clear the **Shutdown** checkbox for the **On Battery** event of Event Configuration, apply it, and return here to **Shutdown Settings**, the **Immediate** option will NOT be the selected option.

Interactivity in shutdown durations

Another field on this **Shutdown Settings** screen, **Time required for command file to run** under Operating System and Application Shutdown, interacts with the **Command File Execution Duration** field for the **Shutdown Starting** event on **Event Configuration**. When they are changed, these fields automatically update each other.



Shutdown Starting command file duration (Event Configuration)

Time required for command file to run

(Note that the **Time required for command file to run** field only displays on **Shutdown Settings** when you have chosen a command file).

Logging

Event Log

A PowerChute event can be critical, warning, or informational. An example of a critical event is a low battery, and a warning event could be when power to the UPS has been interrupted. Informational events are everyday occurrences such as the monitoring of your system has started, or a self test has passed.

The **View Event Log** screen lists and classifies the recent UPS events and the date and time each event occurred. The list starts with the most recent events. See **Event Configuration** for descriptions of events.

To export the log to a text file, `EventLog.txt`, click the **Export** button. View this file in `C:\Program Files\APC\PowerChute Serial Shutdown\agent` (or wherever it is installed).

To delete the contents of the event log, click the **Clear Log** button at the bottom of the screen.

Click **Refresh** to view events that might have occurred after you first displayed this screen.

Energy Usage Log

PowerChute stores the connected UPS device's energy usage in a log file, located in the `C:\Program Files\APC\PowerChute Serial Shutdown\agent\energylog` directory (or wherever it is installed).

The energy usage logs have the following structure:

`2010timestamp;realLoad(watts);relativeLoad(percentage);calculatedLoad(watts)`

For example: `368633153;200.0;200.0;200.0`

Reading the Log File

Timestamp: To interpret the timestamp:

1. Calculate the difference between the UNIX timestamp starting point (01/01/1970) and the `2010timestamp` value from the log (01/01/2010), which is 1262304000.
2. Add the timestamp value from the log file (for example `368633153`) to 1262304000, which equals 1,630,937,153.
3. Using a third-party tool such as **Epoch Converter**, enter the value calculated in step 2 into the text box and click **Timestamp to Human date**. The output will reveal the timestamp:

   Converting 1630937153:

   Assuming that this timestamp is in seconds:

   GMT: Monday, September 6, 2021 2:05:53 PM

   Your time zone: Monday, September 6, 2021 3:05:53 PM GMT+01:00 DST

   Relative: 2 days ago

Load Entries: Each entry in the log file captures the UPS device's energy usage in Watts over a 5-minute period. If the `realLoad` column has a value other than null, it will be used. If the `realLoad` value is null, the `calculatedLoad` is used instead. If both values are null, the line is skipped. For example: `368633153;200.0;200.0;200.0` equals 200.0 Watts.

Calculating Energy Usage

To convert the load value in Watts used in 5 minutes into kilowatt hours (kWh), divide the load value by 12,000. For example: 200.0 Watts used in 5 minutes equals 0.01666667 kWh. This 12,000 value is calculated using the following formula:

1. Multiply the load value by 300,000 to convert the interval from 5 minutes into milliseconds (5 x 60 x 1000).
2. Divide the value by 3,600,000,000 to convert the interval into seconds, then hours, and then from Watts to Kilowatts (3600 x 1000 x 1000).

Log Settings

Log Settings enables you to configure the recording parameters of the Event Log. This includes disabling logging. If event logging is disabled, the options relating to logging in **Event Configuration** are also disabled.

The Event Log records individual event occurrences.

Use **Event Log Entry Expiration** to choose a time interval for deleting log entries. For example, if you choose a month, then entries are deleted when they are a month old.

Log files taking up disk space

The log files can take a lot of disk space on your server. Be aware of this when you configure the options on this screen:

- With the **Expiration** fields (Event Log Entry Expiration), choosing *a long time interval* could mean that your log eventually takes up a lot of disk space.
- If you choose **Do Not Delete Entries**, the files might get very large after a period of time.

About

The About dialog provides information about the system connected to the UPS.

Protected System Information

Parameter	Description
Server Name	The name of the server connected to the UPS on which the PowerChute Agent is running.
IP Address	The IP address(es) of the server connected to the UPS.
Operating System	The operating system running on the server connected to the UPS.
UPS Communication Port	The communication port on the server to which the PowerChute Agent is connected.
Contact Name	The contact name assigned to the server connected to the UPS.
System Location	The location of the server connected to the UPS.

Product Version

Parameter	Description
PowerChute Serial Shutdown Agent Version	The version number of the PowerChute Serial Shutdown Agent running on the server.
Java Version	The version number of Java running on the server. To update the Java version used with PowerChute, see **Java Update**.

General

PowerChute Configuration File

PowerChute stores some configuration settings in a file called `pcssconfig.ini`, located in the Agent directory in the installed PowerChute directory. If the default location was chosen during installation, the `pcssconfig.ini` file can be found at:

- `C:\Program Files\APC\PowerChute Serial Shutdown\agent` for Windows systems
- `/opt/APC/PowerChuteSerialShutdown/Agent/` **for Linux systems**

It is not recommended to edit the `pcssconfig.ini` file directly as this may lead to invalid configurations.

It is also not recommended to delete the `pcssconfig.ini` or `pcssconfig_backup.ini` files from the installation directory. Deleting these files will result in the PowerChute service not starting, and PowerChute must be uninstalled and re-installed

PowerChute stores the below settings to the configuration file:

- **SNMP Settings**

  • SNMPv3 passphrases are not saved to the configuration file as they need to be stored securely. When the configuration file is copied over to another machine, you must manually enter the passphrases. For more information, see Knowledge Base article **FA360658**.

- **Changing Language**

  After you have configured one installation of PowerChute, you can use the `pcssconfig.ini` file to apply the same configuration to another copy of PowerChute on a different machine.

  To apply the settings on the target machine:

1. Stop the PowerChute service. For more information, see Knowledge Base article **FA360654.**
2. Replace the existing copy of `pcssconfig.ini` in the Agent directory.
3. Start the PowerChute service.

Resetting your Username and Password

If you have forgotten the username or password created during installation, you can reset the credentials by using the `pcssconfig.ini` file:

1. Open the `pcssconfig.ini` file with a text editor (e.g. Notepad) and add the following:

   ```
   [Credentials]
   username=
   password=
   ```

   Enter the new username and password directly after the equals sign.
   – The username must be between 6 and 128 characters in length.
   – The password requires:
   - Minimum 8 and maximum 128 characters in length
   - 1 upper and lower case letter
   - 1 number or special character
   - The username cannot be part of the password.

NOTE: The username and password cannot contain double-byte characters.

2. Save the `pcssconfig.ini` file.
3. Restart the APC PBE Agent service. See Knowledge Base article **FA360654.**
4. If the username and password meet the requirements, the `[Credentials]` section is deleted from the `pcssconfig.ini` file, and the new credentials are ready to use.
   – If the credentials entered in `pcssconfig.ini` do not meet the requirements, an error is written to the file. Check the file for the error, adjust the credentials accordingly, and restart the Agent service.
5. Log in to the PowerChute web interface with your new credentials.

Java Update

The Java Update feature enables you to change the Java Development Kit (JDK) used by PowerChute to any other JDK already installed on your system. Follow the steps below to update the Java version used by PowerChute:

1. Download a valid JDK on your system. JDKs can be downloaded from the **Adoptium OpenJDK website**.

   PowerChute v1.5 ships with latest version of Adoptium OpenJDK release. You can only update the Java version used with PowerChute to a 64-bit JDK. The Java versions supported by PowerChute are available in the **Compatibility Chart**.

2. Navigate to the PowerChute installation directory, and create a new folder called “Updates”. If the default installation directory was chosen during installation, this location will be:
   – `C:\Program Files\APC\PowerChute Serial Shutdown\Updates` for Windows systems
   – `/opt/APC/PowerChuteSerialShutdown/Updates/` for Linux systems
3. Copy the Java file (tar.gz or zip) downloaded in Step 1 above to the Updates directory.
4. Navigate to the **About** dialog in the PowerChute UI. Under **Software Updates**, the downloaded Java file will be listed in a drop-down box in the **Java Update Available** field.
5. Select the Java version you want to update PowerChute to use from the drop-down box, and click **Update Java**.
6. An authentication dialog will appear asking for your PowerChute credentials if you are upgrading the Java version used for the first time. Enter your credentials and click **Sign In**. Upon successful authentication, the Java upgrade process begins.
7. PowerChute restarts automatically during the Java upgrade process. Wait 3-5 minutes for the Java version to successfully update.
8. When the PowerChute service restarts, refresh your browser and navigate to the **About** dialog. The **Java Version** field will be updated to show the new Java used by PowerChute.

Replace Default PowerChute SSL Certificate

For information on how to replace the default PowerChute SSL certificate, see the **PowerChute Serial Shutdown Security Handbook**.

Third Party Licenses

Third party licenses used in PowerChute Serial Shutdown are available to view in the THIRDPARTYLICENSEREADME.txt file in the Agent directory. If the default location was chosen during installation, this text file can be found at:

- `C:\Program Files\APC\PowerChute Serial Shutdown\agent` for Windows systems
- `/opt/APC/PowerChuteSerialShutdown/Agent/` **for Linux systems**

Preferences

Customer Experience Improvement Program (CEIP)

PowerChute's Customer Experience Improvement Program (CEIP) provides us with the information that enables us to improve our product and services, and helps us to advise you on how best to deploy and configure PowerChute.

As part of the CEIP, we will collect certain information about how you configure and use PowerChute Serial Shutdown in your environment. This information is completely anonymous, and cannot be used to personally identity any individual. For more information, please refer to the **CEIP Frequency Asked Questions**.

By default, you are participating in the PowerChute CEIP. If you prefer not to participate, unselect the **Join PowerChute Customer Experience Improvement Program ("CEIP")** checkbox in the PowerChute Customer Experience Improvement Program page. You can join or leave the CEIP at any time.

PowerChute Updates

PowerChute automatically checks for updates and informs you if a new version of the software is available to download. This update check sends anonymous PowerChute environment data to the Schneider Electric update server.

The **Enable PowerChute Updates** checkbox is selected by default. If you prefer to opt-out of checking for updates, unselect this checkbox.

Troubleshooting

PowerChute Files ZIP Archive

To help the PowerChute team resolve customer issues, the PowerChute files ZIP archive feature creates a ZIP archive of the necessary PowerChute configuration files for troubleshooting. This feature can be found in the **Troubleshooting** section in the **About** dialog. This ZIP archive will be saved in the Agent directory in the installed PowerChute directory. If the default location was chosen during installation, the `PcssFiles-<TimeStamp>.zip` file can be found at:

- `C:\Program Files\APC\PowerChute Serial Shutdown\agent` for Windows systems
- `/opt/APC/PowerChuteSerialShutdown/Agent/` for Linux systems

The PowerChute configuration files exported to the ZIP archive are:

energylog directory	DataLog file
etc directory	EventLog.txt file
EventLog_Eng.txt	cmdfile.log file
log directory	pcssconfig.ini file
comps.m11 file	PCSS-Summary.json file
critical.cfg file	proclog.txt file
data.dat file	

If you have a PowerChute customer issue, contact your regional **Technical Support team**, and provide the `PcssFiles-<TimeStamp>.zip` file to help resolve your issue.

Worldwide Customer Support

Access to customer support terms may vary by product. Customer support is available in the following ways:

- Visit the Schneider Electric web site, to access documents in the Schneider Electric Knowledge Base and to submit customer support requests.
  - **www.se.com** (Corporate Headquarters)
    Connect to localized Schneider Electric web site for specific countries, each of which provides customer support information.
  - **www.se.com/support/**
    Global support searching Schneider Electric Knowledge Base and using e-support.
- Contact the Schneider Electric Customer Support Center by telephone or e-mail.
  - Local, country-specific centers: go to **www.se.com/support** for contact information.

For information on how to obtain local customer support, contact the Schneider Electric representative or other distributor from whom you purchased your Schneider Electric product.

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