Section 29

Uninterruptible Power Supplies

Applications

- Manufacturing Equipment
  - Machine controllers
  - Process control
  - Sensitive equipment
  - Safety Infrastructure

- Material and Packaging Handling
  - Fillers
  - Packaging robots
  - Panel feeders/stackers

- Automation Control
  - PLCs
  - I/O controllers
  - Industrial PCs
  - SCADA systems
  - OITs and RTUs

- IP-based Devices
  - Industrial Ethernet
  - Imaging
  - Material analysis
  - Motion sensors

Segments

- Water and Wastewater
- Mining, Metals, and Minerals
- Biotech and Pharmaceutical
- Transportation
- Chemical
- Food and Beverage
- Semiconductor
- Automotive
- Oil and Gas

Description

SUA500PDR

While everyone expects continuous power from their electric utility company, the power quality may be less than desirable—especially during times of peak demand. Issues that may arise include:

- Sag (undervoltage)
- Swell or surge (overvoltage)
- Transients

Power transmission can also be interrupted by:

- Weather conditions, such as spikes caused by lightning strikes or outages caused by downed power lines
- Accidents
- Construction

All of these conditions can cause issues with industrial processes and manufacturing, as well as with any solid state or microprocessor-controlled equipment.

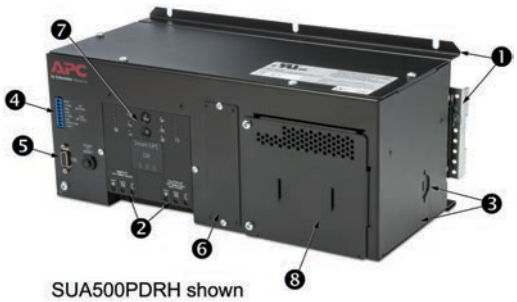
An uninterruptible power supply (UPS) can provide relief from many of these conditions. UPS devices generally provide:

- Voltage regulation
- Noise filtering
- Battery backup—up to 30 minutes, depending on power draw

The **SUA500PDR** series of DIN rail mount devices provides a reliable, flexible, and cost effective UPS for control panels. Some of the features which make these UPS devices desirable for control panels include:

- All user controls are located on the front of the device for easy access
- Device size and design are ideal for DIN rail or direct mount in panels
- Management cards are available for remote UPS management
- Multiple communications options are available
- Battery can be mounted remotely from the UPS, even externally from the enclosure
- Network communication cards are available
- Suitable for either DIN rail or panel mounting

Benefits



SUA500PDRH shown

Flexible Installation

1. Control panel or DIN rail mountable
2. Hard-wired AC input / output (120 or 230 Vac)
3. Internal or external battery installation
   - Chassis knockout—right side or bottom
   - External battery mounting complies with NEC 480.9(A)

Manageable

4. Integrated dry contact relay I/O
5. DB-9 serial port communications, RS232 protocol
6. APC Smart Slot—optional network management, Modbus, or relay I/O contacts card
7. LED status indicators—external status LEDs indicate the UPS state: On-Line or On-Battery; Battery Disconnected or Needs to be Replaced
- Audible alarms—notify the user of the following conditions: On-Battery; Low Battery; Replace Battery

Easy to Maintain

8. Simple battery replacement—trained service personnel can replace the battery even while the UPS is operating on utility power.
- Simple testing—easily scheduled “Automatic Self Test”

High Availability and Reliability

- Temperature-compensated battery charging—prolongs battery life by regulating the charge voltage according to battery temperature.
- Automatic self-test—periodic battery self-test provides early detection of a battery in need of replacement.

Technical Specifications

Table 29.1: UPS

Description		Unit of Measure-ment	SUA500PDRS (standard battery)	SUA500PDRH (high temp. battery)	SUA500PDRIS (standard battery)	SUA500PDRIH (high temp. battery)
Conformity to Standards	Certifications		cUL Recognized; UL 1778; CE; VDE			
Input	Nominal Input Voltage	**V**	120		240	
	Input Voltage Range	**Vac**	82–144		160–280	
	Input Frequency	**Hz**	45–65; auto-selecting			
	Input Connections		Hard-wired input (3-wire: H-N-G)			
Output	Nominal Output Capacity		500 VA / 325 W			
	Topology		Line interactive			
	Waveform		Sine wave			
	Input Voltage Range	**V**	120		230 (default) 220/230/240 (user configurable)	
	Output Frequency	**Hz**	50/60 +/- 3; sync to mains			
	Efficiency (Full-Load)		>94%			
	Output Voltage Distortion (Full Load)		<2% (100% linear load); <8% (100% non-linear load)			
	Output Connections		Hard-wired output (3-wire: H-N-G)			
Protection	Surge Energy Rating	**Joules**	540		340	
	Filtering		Full-time, multi-pole, noise filtering; 0.3% IEEE surge let-through; zero clamping response time; meets UL 1449			
	Thermal Protection		Yes			
Communications and Controls	Serial Port		DB9; UPS status; control of user configurable parameters			
	Smart Slot Accessories		AP9630 and AP9631 network cards; AP9613 relay I/O card; AP9622 Modbus card			
	Emergency Power Off (EPO)		Terminal block			
	Front Display Panel Buttons		On/Off; Self-Test; Alarm Silence; Cold-Start			
Visual and Audible Status Indicators	LEDs		On-Line; On-Battery; Overload; Replace Battery; Load and Battery Bar-Graphs			
	Audible Alarm		On-Line; On-Battery; Overload			
Environment	Operating Temperature / Humidity	**°F (°C)**	+32 to 104 (0 to 40) / 0–95% (non-condensing) (with standard battery) (-S SKUs) +32 to 122 (0 to 50) / 0–95% (non-condensing) (with high-temp battery) (-H SKUs)			
	Storage Temperature / Humidity	**°F (°C)**	+23 to 140 (-5 to +60) / 0–95% (non-condensing)			
	Mounting		Panel or DIN rail			

Table 29.2: Battery Cartridge

Description		Unit of Measure-ment	APCRBC135	APCRBC136
Battery	Battery Type		Maintenance-free, sealed lead acid battery	
	Nominal Battery Voltage	**Vdc**	24	
	Runtime (Full Load)		8.5 minutes	
	Recharge Time (To 90%)		<3 hours	
	Expected Battery Life		3–5 years at 68 °F (20 °C)	up to 8 years at 68–77 °F (20–25 °C)
Physical	Dimensions (H x W x D)	**in. (mm)**	4.22 x 4.20 x 5.65 (107 x 107 x 144)	
	Net Weight	**lb (kg)**	10.3 (4.68)	7.26 (3.3)
Environment	Operating Temperature / Humidity	**°F (°C)**	+32 to 104 (0 to 40) / 0–95% (non-condensing)	+32 to 122 (0 to 50) / 0–95% (non-condensing)
	Storage Temperature / Humidity	**°F (°C)**	+5 to 113 (-15 to +45) / 0–95% (non-condensing)	

Ordering Information

SUA500PDRS

Table 29.3: UPS

Input Voltage	Battery Type	Catalog Number	Weight lbs (kg)	
			UPS Only	UPS + Battery
120	Standard	SUA500PDRS	18 (8.18)	28.3 (12.86)
	High temperature	SUA500PDRH		25.26 (11.48)
230	Standard	SUA500PDRIS		28.3 (12.86)
	High temperature	SUA500PDRIH		25.26 (11.48)

NOTE: Each SUA500PDR device includes a battery, which is shipped separately.

APCRBC135

Table 29.4: Replacement Batteries

Battery Type	Catalog Number	Weight lbs (kg)
Standard	APCRBC135	10.30 (4.68)
High temperature	APCRBC136	7.26 (3.30)

NOTE: These batteries are for replacement only. Each SUA500PDR device includes a battery, which is shipped separately.

AP9630

Table 29.5: Smart Slot Accessories

Card Type	Description	Catalog Number	Weight lbs (kg)
Dry Contact I/O Smart Slot Card	Interface expanders and other options for increased UPS monitoring and control functionality. Includes USB cable.	AP9613	0.88 (0.40)
Modbus™/Jbus Interface Card	Interface expanders and other options for increased UPS monitoring and control functionality.	AP9622	0.99 (0.45)
UPS Network Management Card	For remote monitoring and control of an individual UPS by connecting it directly to the network via Ethernet. Includes software.	AP9630	0.75 (0.34)
UPS Network Management Card with Environmental Monitoring	For remote monitoring and control of an individual UPS by connecting it directly to the network via Ethernet. Includes software and temperature sensor.	AP9631	0.75 (0.34)

NOTE: These Smart Slot accessories will function in all SUA500PDR UPS devices. Only one card may be used per UPS.

AP9335T

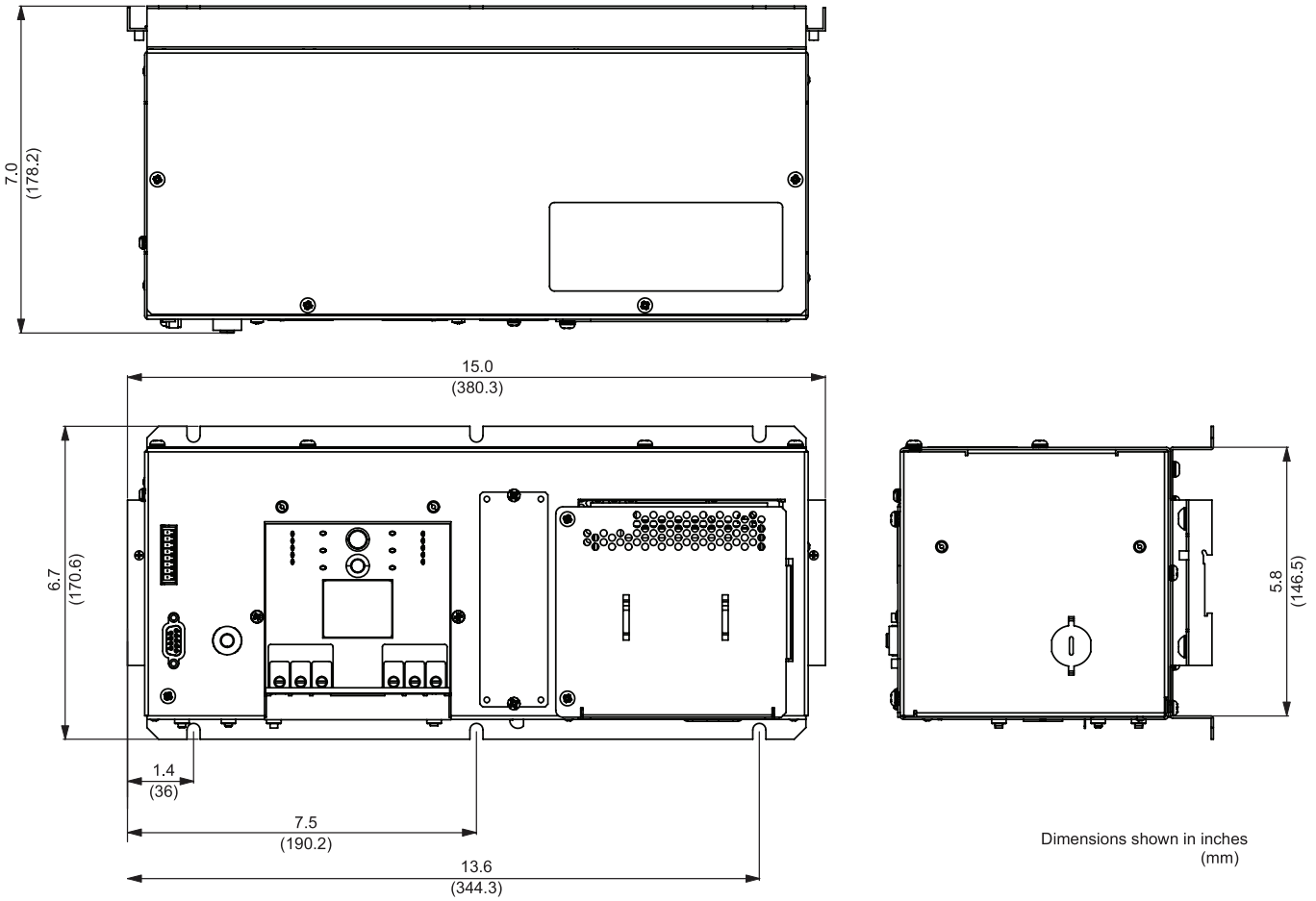
Table 29.6: Sensors for Use with AP9631 Network Management Card

Sensor Type	Catalog Number	Weight lbs (kg)
Temperature	AP9335T	0.31 (0.14)
Temperature and Humidity	AP9335TH	0.40 (0.18)

NOTE: An AP9335T temperature sensor is included with the AP9631 network management card.

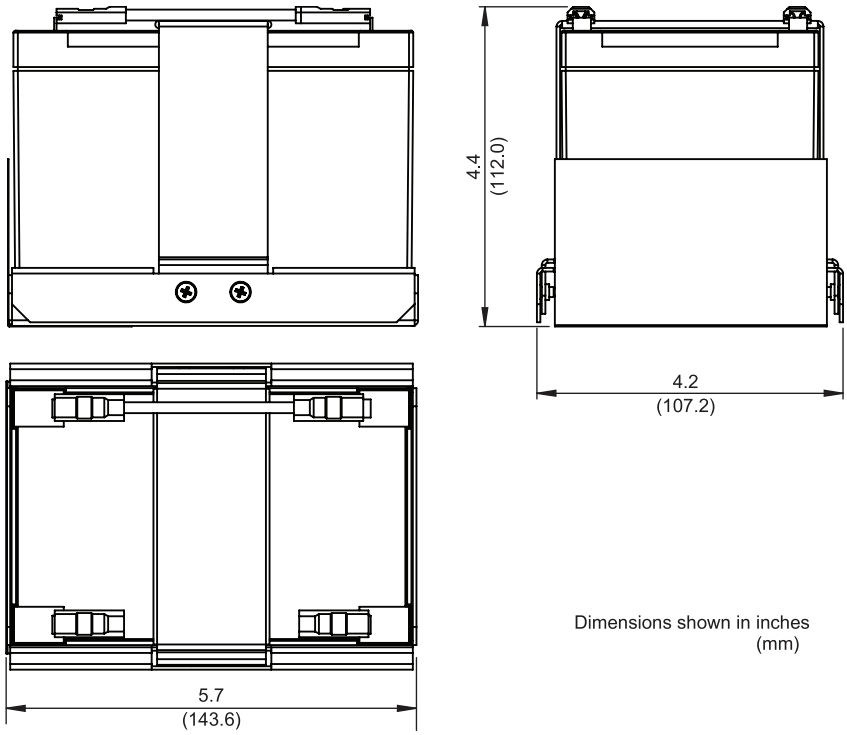
Dimensions

SUA500PDR



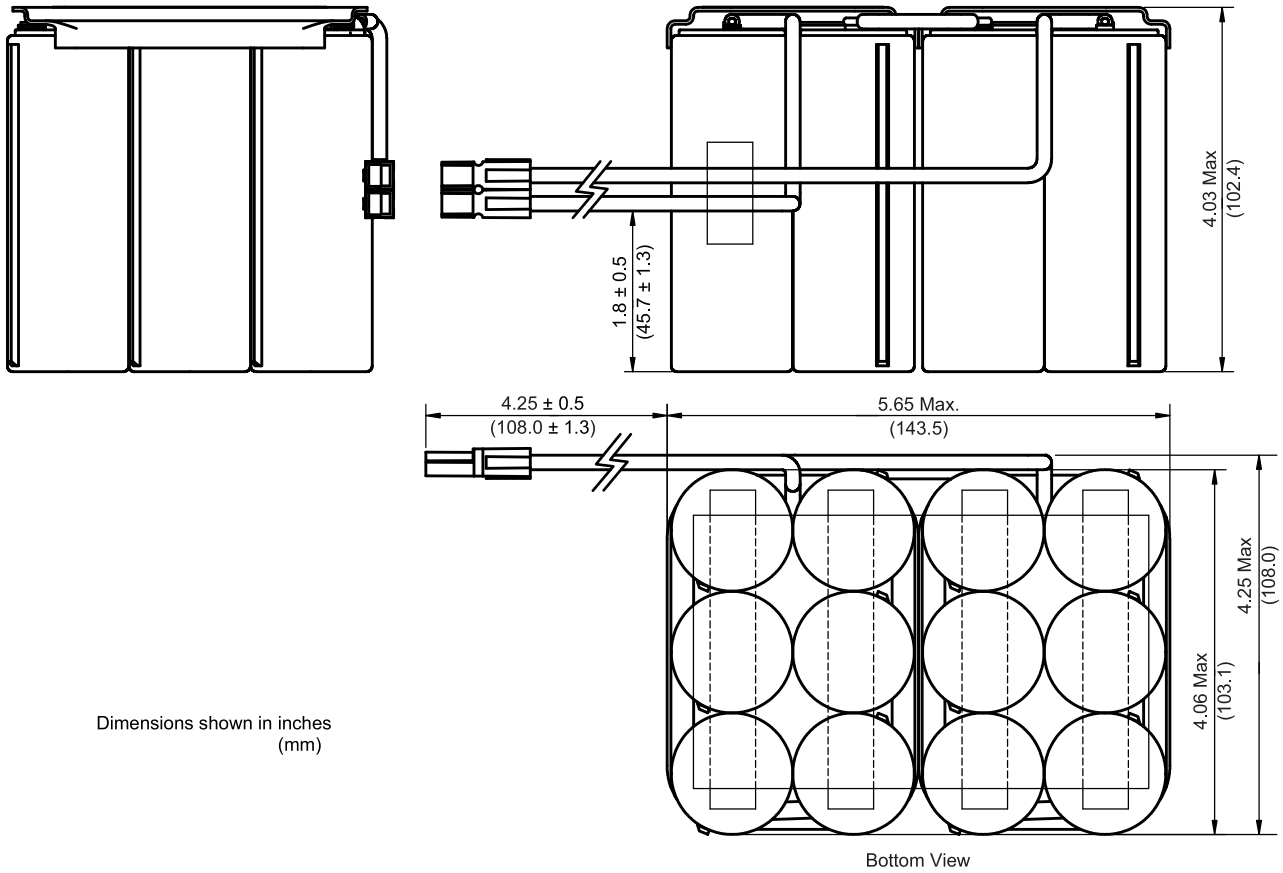
Dimensions shown in inches
(mm)

APCRBC135



Dimensions shown in inches
(mm)

APCRBC136

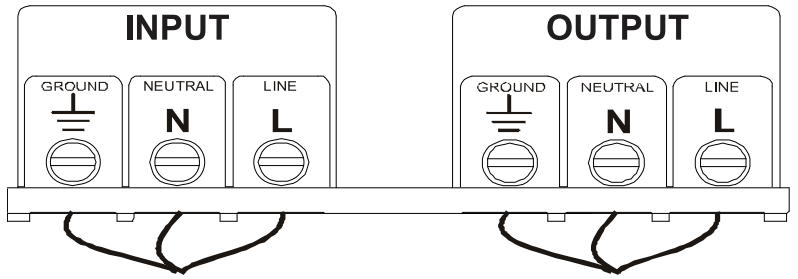


Dimensions shown in inches
(mm)

Bottom View

Wiring Diagrams

120 V Models



208/230 V Models