

Smart Slot™

Triple Chassis

for Silcon
DP300E Series UPSs

AP9604S AP9604SR



Thank You!

Thank you for selecting APC SmartSlot Triple Chassis for Silcon DP300E Series UPSs. It has been designed for many years of reliable, maintenance-free service in combination with your American Power Conversion (APC) Silcon DP300E Series uninterruptible power supply (UPS). APC is dedicated to the development of high-performance electrical power conversion and control products. We hope that you will find this product a valuable, convenient addition to your computing system.

Please read this manual! It provides important safety, installation, and operating instructions that will help you get the most from your Silcon Triple Chassis.

Save this manual! It includes instructions for obtaining warranty service.

Radio frequency interference

WARNING: 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.

NOTE: 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.

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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Introduction

Overview

The SmartSlotTM Silcon DP300E Triple Chassis (AP9604S) is an American Power Conversion (APC) accessory that allows you to use SmartSlot monitoring and control accessories with your APC Silcon DP300E series UPS. The retrofit model (AP9604SR) is for use with Silcon DP300E series UPSs that are not equipped with a 24 VDC power port.

Features of the Silcon Triple Chassis

Your Silcon Triple Chassis...

- Can be used as a freestanding desktop unit or mounted on a wall, in an APC NetShelter[®] enclosure, or other 19" rack.
- Has three accessory housings that accommodate APC SmartSlot accessories that can monitor and control the Silcon UPS.

Safety warning

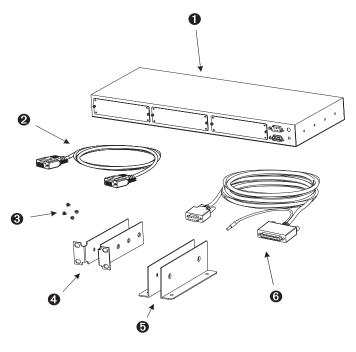


Use the Silcon Triple Chassis only in conjunction with an APC Silcon UPS. You must configure the Silcon Triple Chassis to work with the specific Silcon DP300E UPS to which it is connected. See "Configuring via the Monitoring Port" on page 10.

Use the communications cable provided with the Silcon Triple Chassis. Do not connect a computer to any Silcon Triple Chassis port using a straight-through extension cable. Connections using a cable made by any other manufacturer may cause damage or improper operation of the Silcon Triple Chassis, the UPS, or the computer.

Product Description

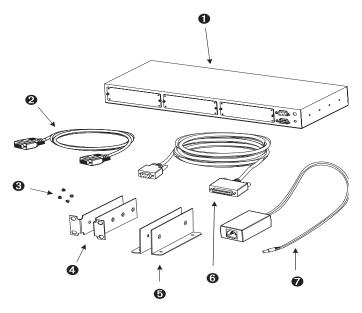
AP9604S inventory: Figure 1 The AP9604S model of the Silcon Triple Chassis consists of the parts shown in the figure below.



- 1 Triple Chassis
- 2 Monitoring cable
- Mounting screws
- A Rack-mount brackets
- **6** Wall-mount brackets
 - 6 Silcon UPS cable

Product Description continued

AP9604SR inventory: Figure 2 The AP9604SR model of the Silcon Triple Chassis consists of the parts shown in the figure below.

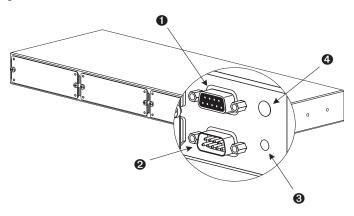


- Triple Chassis
- 2 Monitoring cable
- Mounting screws
- A Rack-mount brackets
- 6 Wall-mount brackets
- 6 Silcon UPS cable
- Universal 24 VDC adapter

Product Description continued

Rear panel: Figure 3

The following figure shows the rear panel of the Silcon Triple Chassis.



- Monitoring port
- Status LED
- To UPS port
- Optional Power port

Monitoring port

The Monitoring port has two functions:

- Connecting to a terminal for configuring the Silcon Triple Chassis unit. For direct connection to the Monitoring port, you must use the Monitoring cable supplied with the Silcon Triple Chassis unit (APC P/N 940-0024C).
- Connecting to other APC accessories in a daisy chain.

Product Description continued

To UPS port

The "To UPS" port is for connecting the Silcon Triple Chassis unit to the UPS, using the Silcon UPS cable. The cable connector plugs into a communications port on a Silcon DP300E series UPS.

LED: Table 1

The Silcon Triple Chassis LED provides important information concerning operation of the unit. Refer to the table below for a description of the conditions indicated by the LED.

IF the LED is	THEN the Silcon Triple Chassis		
off	is not receiving power.		
flashing quickly (5 times per second)	has not been configured. See "Configuring via the Monitoring Port" on page 10.		
blinking slowly (1 time per second)	is powered on but is not communicating with the UPS.		
on	is operating normally.		

Optional Power input

With the Optional Power input, you can power either model of the Silcon Triple Chassis from an external source, using a 24 VDC power adapter. A universal adapter (AP9505*i*) is supplied with AP9604SR. Both models of adapter, AP9505 and AP9505*i*, can be purchased separately from APC.

Mounting the Silcon Triple Chassis

Warning



Do not operate the Silcon Triple Chassis where the conditions are outside the limits listed in "Product specifications: Table 5" on page 29.

Installation options

You can install the Silcon Triple Chassis in one of three ways:

- Place on a desktop.
- Mount in a NetShelter enclosure or other 19" rack.
- Mount on a wall.

For installation instructions, refer to the appropriate paragraphs in this section.

Please recycle



The shipping materials for the Silcon Triple Chassis are recyclable. Please save them for later use or dispose of them appropriately.

Placement on a desktop

The Silcon Triple Chassis is equipped with rubber feet for desktop use. To install on a desktop:

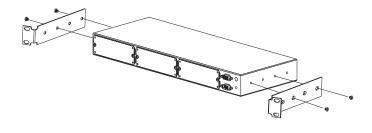
- 1 Choose a permanent location for the unit. It should be located on a clean and level surface within 15 feet (5 m) of the communications port of the UPS. Make sure that the rear panel of the Triple Chassis is accessible.
- 2 Continue with "Configuring via the Monitoring Port" on page 10.

Mounting the Silcon Triple Chassis continued

Mounting the chassis in a NetShelter enclosure: Figure 4 To mount the Silcon Triple Chassis in a NetShelter enclosure or other 19" rack:

- 1 Remove the rubber feet from the bottom of the Triple Chassis.
- 2 Fasten each rack-mount bracket (supplied) to the chassis as shown, using two flat head mounting screws (supplied) and a #2 Phillips screwdriver.

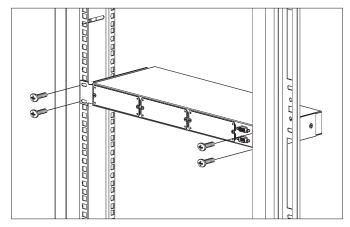
Note: You can attach the mounting brackets at various hole positions along the side of the Triple Chassis. Choose a position that will not cause the unit or cables to interfere with closing the door of the enclosure or to otherwise protrude from the cabinet. If more than two mounting holes are aligned, use the pairs that are the farthest apart.



Mounting the Silcon Triple Chassis continued

Mounting the chassis in a NetShelter enclosure: Figure 5

3 Attach the assembly to the rack, using 4 caged nuts and machine screws supplied with your NetShelter enclosure or using mounting hardware supplied with another rack. Refer to the user documentation supplied with the enclosure or rack.



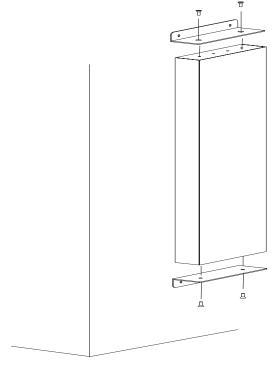
4 Continue with "Configuring via the Monitoring Port" on page 10.

Mounting the Silcon Triple Chassis continued

Mounting the chassis on a wall:
Figure 6

To mount the Silcon Triple Chassis on a wall:

1 Fasten the mounting brackets (supplied) to the chassisasshown, using the flatheads crews (supplied).



- 2 Attach the assembly to the wall, using mounting hardware (not supplied) that is sturdy enough to support the weight of the chassis and the Smart-Slot accessories to be installed in it.
- 3 Continue with "Configuring via the Monitoring Port" on page 10.

Configuring via the Monitoring Port

Introduction

Using the Monitoring cable (supplied), you can connect the Monitoring port of the Silcon Triple Chassis to a DTE device to configure the chassis. (DTE stands for *data terminal equipment*—a dumb terminal or a computer running terminal emulation software.) After establishing communications with the Silcon Triple Chassis through the Monitoring port (see "Establishing communications with the Silcon Triple Chassis" on page 12), you will access the Silcon Triple Chassis menu to change the UPS settings. The next paragraphs in this section describe the configuration procedure.

Connecting the chassis to the UPS

To connect the Silcon Triple Chassis to the UPS, perform the following steps in the order given.

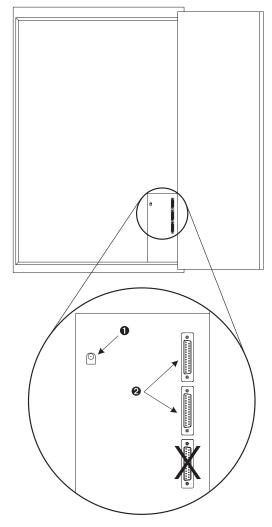
- 1 Connect the 9-pin end of the Silcon UPS cable to the "To UPS" port on the rear panel of the chassis. See "Connecting the chassis to the UPS: Figure 7" on page 11.
- 2 Connect the 25-pin end of the Silcon UPS cable to a DB-25 serial port of the Silcon UPS. See "Connecting the chassis to the UPS: Figure 7" on page 11.
- 3 Power the Silcon Triple Chassis by following the step that applies to the model you are using.
 - a *AP9604S:* Connect the power connector of the Silcon UPS cable to the 24 VDC power supply of the UPS. (See the instructions provided with your UPS.)
 - b *AP9604SR:* Connect the power connector of the supplied universal power adapter to the Optional Power port of the Silcon Triple Chassis. Plug the other end of the power adapter into a protected power outlet.

Configuring via the Monitoring Port continued

Connecting the chassis to the UPS:

Figure 7

This figure shows the connection panel of a Silcon DP310E UPS. Other models vary.



- 24 VDC Power Supply
- 2 DB-25 Serial Ports

Configuring via the Monitoring Port continued

Connecting to the Monitoring port

To connect locally to the Silcon Triple Chassis, you must use the Monitoring cable (940-0024C) supplied with the Silcon Triple Chassis. Connect one end of the cable to the Monitoring port of the Silcon Triple Chassis, and the other end to the DTE device.

Establishing communications with the Silcon Triple Chassis

To establish communication with the Silcon Triple Chassis, perform the following steps in the order given.

- 1 Set the communication parameters of the DTE device to 2400 baud, 8 data bits, no parity, 1 stop bit, and no flow control.
- 2 Press ENTER or RETURN.
- 3 The Main menu of the Silcon Triple Chassis appears.

Main menu: Figure 8

The following figure shows a sample of the Main menu.

```
AMERICAN POWER CONVERSION AP9604S

SILCON DP300E TRIPLE CHASSIS:
FIRMWARE VERSION: 3
SERIAL NUMBER: WA9999038691
MANUFACTURE DATE: 24/07/1999 (DD/MM/YYYY)
HARDWARE REVISION: A1

SILCON UPS:
A. MODEL: Silcon DP310E
B. SERIAL NUMBER WA0000061284
C. MANUFACTURE DATE: 14/09/99 (DD/MM/YY)
D. NOMINAL OUTPUT VOLTAGE: 208

SELECT LETTER, <ESC> TO EXIT:
```

Configuring via the Monitoring Port *continued*

Main menu description

The Main menu consists of two sections:

- Silcon DP300E Triple Chassis—factory settings of the Triple Chassis.
- Silcon UPS—settings of the connected UPS. You must ensure that these settings match those of the attached UPS.

Changing the Silcon UPS settings

To change the Silcon UPS settings to match the settings of the UPS, type the letter associated with the setting that you want to change and follow the instructions that appear on the screen.

After configuration

After you have configured the Silcon Triple Chassis, perform the following steps in the order given.

- 1 Return to the Main menu and press ESC to quit the session.
- 2 Disconnect the DTE device from the Silcon Triple Chassis.
- 3 Remove power from the the Silcon Triple Chassis by following the step that applies to the model you are using.
 - a AP9604S: Disconnect the power connector of the Silcon UPS cable from the 24 VDC power supply of the UPS.
 - b *AP9604SR*: Unplug the universal power adapter from the power outlet.
- 4 Continue with "Installing Accessories" on page 14.

Installing Accessories

Introduction

Read the paragraphs in this section to become familiar with the process of installing other APC accessories with your Silcon Triple Chassis. When you are ready to proceed, follow the procedure in "Installing accessories: procedure" on page 17.

Accessory types

There are two basic types of APC accessories that work with the Silcon Triple Chassis:

- SmartSlot accessories, which fit into APC accessories that are equipped with a SmartSlot housing.
- External accessories, which connect to the Monitoring (or Advanced) port of APC accessories.

Note: The name of the port varies from product to product, but its purpose is the same—to replicate the UPS communications port.

Order of accessories

Because the UPS signals are passed from accessory to accessory, you must install APC accessories in the correct order for them to work together properly. See "Priority of APC accessories: Table 2" on page 16.

Installing Accessories continued

Daisy-chaining the chassis with other APC accessories

If you need more than the three SmartSlot housings available with the Silcon Triple Chassis, or if you want to use other external accessories, you can daisy-chain external accessories together, provided that the total amperage of all installed accessories—SmartSlot *and* external—does not exceed the supplied amperage. (See "Powering the Silcon Triple Chassis" on page 18.)

To add SmartSlot housings, you can daisy-chain the Silcon Triple Chassis with standard Triple Chassis (AP9604) accessories, installing the Silcon Triple Chassis closer to the UPS.

Note: When daisy-chaining Triple Chassis units, you may need to use a power adapter (see "Determining power requirements: Table 3" on page 19).

Slot numbering scheme

The SmartSlot accessory housings are numbered 1 to 3, from left to right, as viewed from the rear of the chassis.

Installing Accessories continued

Priority of APC accessories: Table 2 Install SmartSlot accessories as dictated by the following table. An accessory with higher priority is to be placed in the accessory slot with the higher number.

Note: The Share-UPS accessory (AP9207) has the same priority as the SmartSlot Interface Expander. For information on accessories that are not listed, see the documentation provided with the accessory.

Accessory	P/N	Priority	Position	
PowerNet SNMP Adapter or Web/SNMP Management Card	AP9605 AP9603 AP9606	Highest	High-numbered slot	
Call-UPS [®] II	AP9608	Second- highest		
Relay I/O Module	AP9610	Third- highest		
Interface Expander	AP9607	Second lowest		
Measure-UPS [®]	AP9612T AP9612TH	Lowest	Low-numbered slot	

Installing Accessories continued

Installing accessories: procedure

To install accessories, perform the following steps.

- 1 Make sure that the Silcon Triple Chassis is powered off.
- 2 Install the SmartSlot accessories into the housings on the rear of the chassis. See the instructions supplied with the accessories and "Priority of APC accessories: Table 2" on page 16.
- 3 If daisy-chaining with other APC external accessories: Connect the UPS cable (supplied with the accessory) to the Monitoring port of the Silcon Triple Chassis and to the "To UPS" port of the other accessory (Share-UPS, MasterSwitch, etc.). See "Daisy-chaining the chassis with other APC accessories" on page 15.
- 4 Power the Silcon Triple Chassis and all accessories. See Step 4 of "Connect the 25-pin end of the Silcon UPS cable to a DB-25 serial port of the Silcon UPS. See "Connecting the chassis to the UPS: Figure 7" on page 11." on page 10.

Note: If your configuration requires additional power (see "Powering accessories" on page 18), connect a 24V AC/DC power adapter, available from APC(part number AP9505 or AP9505i) for all models of Triple Chassis.

Powering the Silcon Triple Chassis

Powering accessories

The Silcon Triple Chassis supplies power to the installed SmartSlot accessories and to the Monitoring port, allowing you to power multiple accessories.

AP9604S power considerations

The AP9604S model of the Silcon Triple Chassis receives its power from the UPS through the power connector of the Silcon UPS cable. If the total current required by all the installed accessories exceeds 500 mA, you must use a 24 VDC power adapter.

To find out whether you need additional power, see "Determining power requirements: Table 3" on page 19.

Power adapters

APC offers two models of 24 VDC power adapter.

- The standard adapter (AP9505) can provide an additional 400 mA.
- The universal adapter (AP9505*i*) can provide 850 mA.

Using a power adapter

To use the adapter, plug it into a protected power outlet and into the Optional Power port of the Silcon Triple Chassis.

Note: If the power adapter loses power because of a UPS shutdown, its attached accessories may not operate properly, thus adversely affecting the UPS and its protected equipment.

Powering the Silcon Triple Chassis continued

AP9604SR power considerations

The AP9604SR model receives its power from the UPS through the supplied 24 VDC universal adapter. The total current required by your accessories must not exceed the 850 mA limit of the power adapter.

See "Determining power requirements: Table 3" on this page.

Determining power requirements: Table 3

To determine the total amount of current required by your accessories, add the individual current requirements for each SmartSlot accessory to be installed in the Silcon Triple Chassis to the current requirements of the chassis itself. Refer to this table.

Part #	Accessory	Draw (mA)
AP9207	Share-UPS UPS interface expander	65
AP9600	Expansion Chassis	30
AP9604	Triple Chassis	20
AP9604S[R]	Silcon Triple Chassis	90
AP9606	Web/SNMP Management Card	110
AP9607	Interface Expander	45
AP9608	Call-UPS <i>II</i>	35
AP9612	Measure-UPSII	60
AP9825i	Isolated Extension Cable	50
AP9830	Remote Power-Off Device	35

Powering the Silcon Triple Chassis continued

After powering the Silcon Triple Chassis

After you have connected the Silcon Triple Chassis to protected power, continue with "Checking Operation" on page 21.

Checking Operation

Procedure

After you have completed configuration and installation of your Triple Chassis:

- 1 Verify that the chassis is communicating properly with the UPS by observing that the Status LED is on.
- 2 Verify that an installed APC accessory is able to identify the correct UPS model number and nominal output voltage.

If you have problems with your Triple Chassis "Troubleshooting: Table 4" on page 22 covers many of the problems that might arise with the Triple Chassis. If you encounter a problem with your chassis, refer to the table first. There may be a simple solution you are overlooking.

Checking Operation *continued*

Troubleshooting: Table 4 The following table shows the solution to common problems with the operation of the Triple Chassis.

Problem	Possible Cause	Solution
Status LED is off	The chassis is not receiving adequate power.	See "Powering the Silcon Triple Chassis" on page 18, and verify that you are not exceeding current require- ments.
Status LED is flashing quickly	The chassis has not been configured.	Configure the Triple Chassis. See "Configuring via the Monitoring Port" on page 10.
Status LED is blinking slowly The chassis not commu cating with the UPS.		Verify that the supplied UPS cable is properly connected to the Triple Chassis and to a communications port on the UPS.
Attached accessory cannot identify UPS model or nominal output voltage.	The accessory firm- ware does not support 3- phase UPSs.	You may be able to upgrade the firmware of the accessory. Call APC Customer Support.

Checking Operation *continued*

If problems persist

For problems not covered in the troubleshooting chart (see "Troubleshooting: Table 4," on page 22) or for persistent problems, follow this procedure:

- 1 Note the serial number and date of purchase of the the Triple Chassis. Contact APC Customer Support at the phone number or address that is listed on the back cover of this manual.
- 2 Be prepared to provide a description of the problem. A technician will help solve the problem over the phone, if possible, or will give you a return material authorization (RMA) number.
- 3 If the the Triple Chassis is under warranty, repairs are free of charge. If the warranty has expired, there will be a nominal charge for repair.
- 4 Pack the Triple Chassis carefully in its original packaging, if possible. Do not use polystyrene beads for packing. Damage sustained in transit is not covered under the warranty. Enclose a letter in the package with your name, address, RMA number, a copy of the sales receipt, daytime phone number, and payment (if applicable).
- 5 Mark the RMA number clearly on the outside of the shipping carton. The factory will not accept any materials without this marking.
- 6 Return the the Triple Chassis by insured, prepaid carrier to the address given to you by APC Customer Support.

Warranty Information

Limited warranty

American Power Conversion (APC) warrants the Triple Chassis to be free from defects in materials and workmanship for a period of two years from the date of purchase. Its obligation under this warranty is limited to repairing or replacing, at its own sole option, any such defective products. This warranty does not apply to equipment which has been damaged by accident, negligence, or misapplication or has been altered or modified in any way. This warranty applies only to the original purchaser.

Warranty limitations

Except as provided herein, American Power Conversion makes no warranties, express or implied, including warranties of merchantability and fitness for a particular purpose. Some jurisdictions do not permit limitation or exclusion of implied warranties; therefore, the aforesaid limitation(s) or exclusion(s) may not apply to the purchaser.

Except as provided above, in no event will APC be liable for direct, indirect, special, incidental, or consequential damages arising out of the use of this product, even if advised of the possibility of such damage.

Specifically, APC is not liable for any costs, such as lost profits or revenue, loss of equipment, loss of use of equipment, loss of software, loss of data, costs of substitutes, claims by third parties, or otherwise. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

Warranty Information continued

Obtaining service

To obtain service under warranty, you must obtain a Returned Material Authorization (RMA) number from APC or a designated APC service center. Products must be returned to APC or an APC service center with transportation charges prepaid and must be accompanied by a brief description of the problem encountered and proof of date and place of purchase.

Life-Support Policy

General policy

As a general policy, APC does not recommend the use of any of its products in life support applications where failure or malfunction of the APC product can be reasonably expected to cause failure of the life-support device or to affect significantly its safety or effectiveness. APC does not recommend the use of any of its products in direct patient care. APC will not knowingly sell its products for use in such applications unless it receives in writing assurances satisfactory to APC that (a) the risks of injury or damage have been minimized, (b) the customer assumes all such risks, and (c) the liability of American Power Conversion is adequately protected under the circumstances.

Examples of lifesupport devices

Life-support devices include but are not limited to neonatal oxygen analyzers, nerve stimulators (whether used for anesthesia, pain relief, or other purposes), autotransfusion devices, blood pumps, defibrillators, arrhythmia detectors and alarms, pacemakers, hemodialysis systems, peritoneal dialysis systems, neonatal ventilator incubators, ventilators for both adults and infants, anesthesia ventilators, and infusion pumps as well as any other devices designated as "critical" by the U.S. FDA.

Hospital-grade wiring devices and leakage current protection may be ordered as options on many APC UPS systems. APC does not claim that units with these modifications are certified or listed as Hospital Grade by APC or any other organization. Therefore these units do not meet the requirements for use in direct patient care.

Specifications

Monitoring port pin assignments

The Monitoring port is a 9-pin communications port. The port operates with no flow control at a rate of 2400 baud. The data format is 8 data bits with 1 start bit, 1 stop bit, and no parity.

When the Triple Chassis operates with simple signaling, the following limitations and capabilities apply to the Monitoring port:

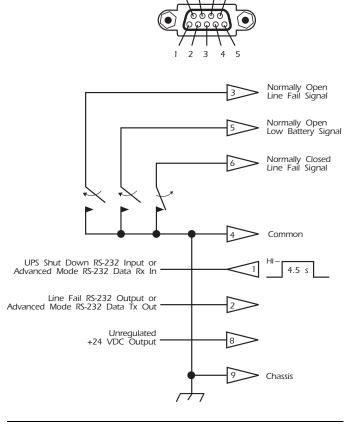
- Pins 3, 5, and 6 are open collector outputs which must be pulled up to a common referenced supply no greater than +40 VDC. The transistors are capable of a non-inductive load of 25 mA. Use only Pin 4 as the common.
- The output at Pin 2 generates a low-to-high RS-232 level when the device is signaling an On Battery condition. The pin is normally at a low RS-232 level.
- The UPS is signaled to shut down when a high RS-232 level is applied to Pin 1 for 4.5 seconds. Shutdown is also dependent on the UPS status.

When the Triple Chassis operates with advanced signaling, the following limitations and capabilities apply to the Monitoring port:

- Pin 7 is unassigned.
- DC operating voltage is available on Pin 8. This voltage may be from the UPS or from an external adapter, whichever is greater.

Specifications continued

Monitoring port pin assignments: Figure 9 The following figure shows the Monitoring port pin assignments.



Continued on next page

Specifications continued

Product specifications: Table 5

The following table shows the product specifications for the Triple Chassis.

Item	Specification
Power	
Turn on voltage:	> 22 VDC
Turn off voltage:	< 16 VDC
Current draw (normal operation):	90 mADC
Current draw (voltage < 16 VDC):	< 1 mADC
Physical	
Size $(H \times W \times D)$:	$1.75 \times 17.0 \times 5.0 \text{ in}$ (4.4 × 43.2 × 12.7 cm)
Weight:	4.02 lb (1.81 kg)
Shipping weight:	8.12 lb (3.65 kg)
Environmental	
Elevation (above MSL): Operating Storage	0 to 10,000 ft (0 to 3000 m) 0 to 50,000 ft (0 to 15 000 m)
Temperature: Operating Storage	32 to 113°F (0 to 45°C) -4 to 158°F (-20 to 70°C)
Relative humidity: Operating Storage	0 to 95%, non-condensing 0 to 95%, non-condensing
Electromagnetic immunity:	EN50082-1 verified

Specifications continued

Product specifications: Table 5, continued

Item	Specification
Approvals	
EMC verification:	FCC/DOC Class A, EN 50022 Class A verified
Other:	CE, C-Tick (AS/NZS 3548), VCCI

Declaration of conformity

Application of Coun- 89/336/EEC

cil Directives

Standards to Which

Conformity is Declared

EN55022: 1995 EN50082-1: 1992 including

IEC 1000-4-2: 1995 IEC 1000-4-3: 1995 IEC 1000-4-4: 1995

Manufacturer's Name and Address American Power Conversion 132 Fairgrounds Road

West Kingston, Rhode Island 02892

USA -or-

American Power Conversion (A.P.C.) b.v.

Ballybritt Business Park

Galway, Ireland

Address

Importer's Name and American Power Conversion (A.P.C.) b.v.

Ballybritt Business Park

Galway, Ireland

Type of Equipment UPS Accessory Equipment

Model Numbers AP9604S, AP9604SR

I, the undersigned, hereby declare that the equipment specified above conforms to the above directives.

St. Louis, MO May 20, 1999

Ted Eckert

Place Date Regulatory Compliance Engineer



Toll-free Customer Support:

U. S. & Canada	1-800-800-4272
Austria	
1145414	0660 6480
Belgium	0800 15063
Czech Republic	0 800 102063
Denmark	800 18 153
Finland	9800 13 374
France	0 800 906 483
Germany	01300818907
Holland	0800 0224655
Hungary	00800 12221
Ireland	1 800 702000 x 2045
Israel	177 353 2206
Italy	1678 74731
Japan	0120-80-60-90
Luxembourg	0800 2091
Norway	800 11 632
Poland	00800 353 1202
Portugal	050 553182
South Africa	0800 994206
Spain	900 95 35 33
Sweden	020 795 419
Switzerland	0800 556177
Turkey	0800 35390275
U. K.	0800 132990

Areas without toll free numbers:

+1 401 789 5735 (USA) or +353 91 702020 (Ireland)

+7095 916 7166 (Russia)

E-mail Customer Support:

Australia	anztech@apcc.com
Europe	apceurtech@apcc.com
India	isbtech@apcc.com
Japan	jsupport@apcc.com
Latin America	apctchla@apcc.com
SE Asia	asetech@apcc.com

Online Customer Support:

U.S. & Canada http://support.apcc.com/

Addresses:

American Power Conversion Corporation 132 Fairgrounds Road

P. O. Box 278

West Kingston, Rhode Island 02892

USA

APC Ireland (A. P. C.) b. v.

Ballybritt Business Park

Galway Ireland

APC Japan BR Gotanda 7th Floor 2-30-4 Nishi-gotanda,

Shinagawa-ku Tokyo 141 Japan

APC Europe

143 Bis Avenue de Verdun 92442 Issy les Moulineaux Cedex

France

Serial number:

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