The APC Computer Interface Port

This application note provides technical information regarding APC UPS computer interface ports. This information is for customers attempting to use the port for unsupported purposes. The computer interface port on APC products provides proprietary functionality and is intended for use only with APC software, cables, interface kits and accessories. The design and function of the APC computer interface port is proprietary; including descriptions, setup, and function information. This document describes basic and advanced ports for UPS. It provides the technical information necessary for using the ports, and details implementations of the ports.

APC products can include either an advanced or basic computer interface port, depending on model, which is used to communicate with a computer running power management software or other device.

Description of Ports

The following section contains general descriptions of the basic and advanced computer interface ports. Specific values and variations are noted in the text and described in the subsequent section.

Basic Port

Basic ports supply simple UPS signaling for on-battery and low-battery conditions. The following limitations and capabilities apply to the basic port interface.

Pins 3, 5, and 6 are chassis-referenced, open collector outputs. These transistors are rated for non-inductive loads of up to 25 mAdc and voltages of up to +40 Vdc. Use only pin 4 as the common.

The output at pin 2 generates a LO-to-HI RS-232 voltage level when the device is signaling on-battery. The pin is normally at a LO RS-232 voltage level.

The UPS shuts down when a high RS-232 voltage level is applied to pin 1 for a duration specific to each family and indicated in Table 1. The UPS responds to this signal, after a delay, only during on-battery operation.

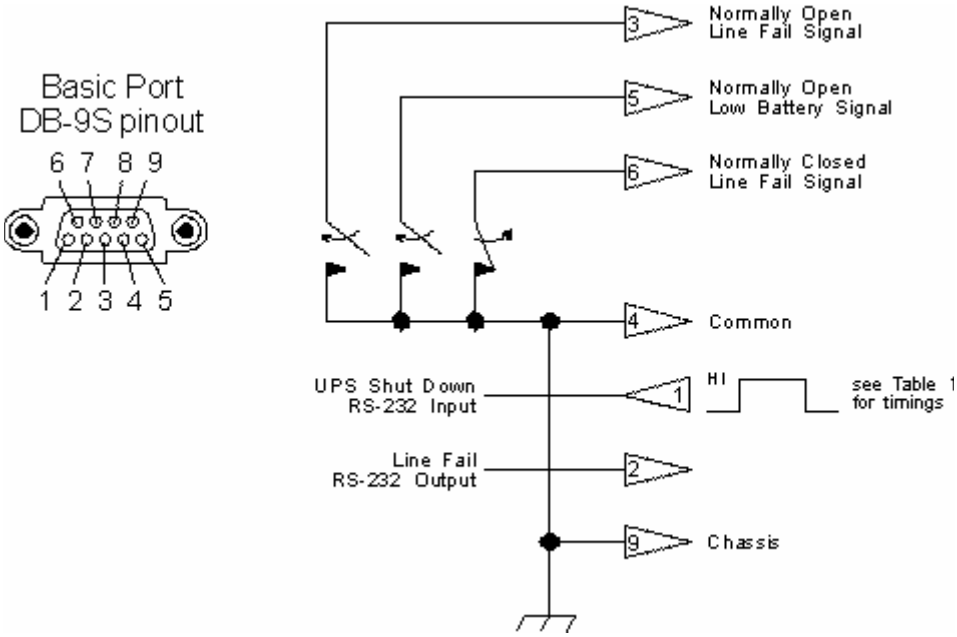


Table 1. Shutdown Signal Period: Pin 1

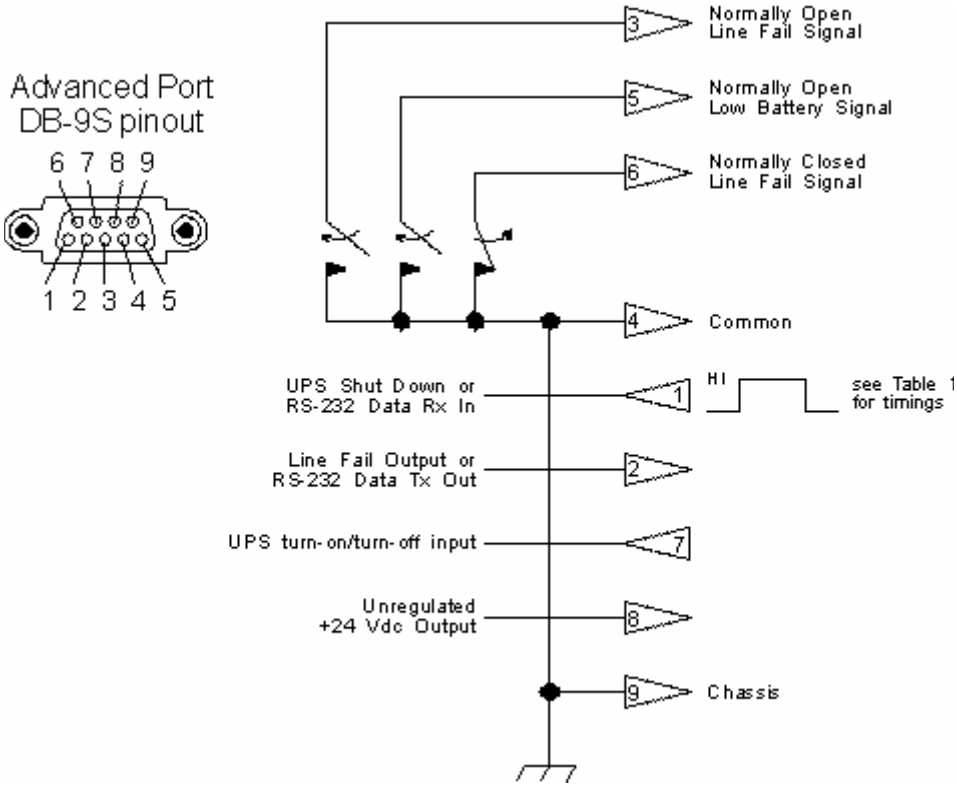
Model	Time (seconds)
Back-UPS	1
Back-UPS Pro Smart-UPS v/s Smart-UPS Matrix-UPS	6

Advanced Port

The advanced port is a basic port with the following additional limitations and capabilities:

An unregulated, chassis-referenced +24 Vdc (approximate range ± 10 V) appears at Pin 8 of the advanced port. This supply is current-limited to 50 mA. Pin 8 power is not implemented in the Back-UPS Pro or Smart-UPS v/s models, and is switched on and off under specific conditions in the Smart-UPS® models (see below).

Applying a momentary (about 1 second) high RS-232 voltage level to Pin 7 turns the UPS and its loads on. A momentary (about 1 second) low RS-232 voltage level turns the UPS and its loads off. Leave pin 7 floating if UPS on/off operation is not needed at the computer interface port.



Special Considerations

Unregulated Supply Switching

In units with an advanced port, the voltage supply at pin 8 is switched. A nominal voltage of 24 Vdc (approximate range ± 10 V) appears at pin 8 when the UPS is turned on and on-line. The supply on Matrix-UPS models is switched off when the UPS is turned off. The supply to the Smart-UPS models is switched on if the unit is supplying an output voltage, if it is plugged in to a working outlet, or, in the case of utility failure, until 9 minutes after UPS shutdown due to low battery. In Smart-UPS model 2000 the supply to pin 8 is switched on if the unit is running and supplying an output voltage, or, if the unit is off, if it is plugged in to an operative outlet and the enable switch is on. In other models pin 8 remains on when the UPS is turned off, permitting direct discharge of the battery.

Table 2. Port Characteristics

Models	Basic	Advanced	Remote On/Off (Pin 7)	Voltage Supply (Pin 8)
Back-UPS	yes	no	no	no
Back-UPS Pro and Smart-UPS v/s	yes	no	yes	no
Smart-UPS 250 and 400	yes	yes	no	yes*
Smart-UPS 600, 900, 1250, 2000	yes	yes	yes	yes†
Smart-UPS 450, 700, 1000, 1400, 2200, 3000	yes	yes	yes	yes**
All Matrix-UPS	yes	yes	yes	yes‡

*Smart-UPS 250 supplies only 18 Vdc at pin 8. Accessories may be used with a suitable external power adapter.

†Smart-UPS 2000 switched supply: off if enable switch is off or if enable switch is on but unit is neither providing output voltage nor plugged in to a live wall outlet.

**Switched Supply: switched off after 9 minute delay when no line voltage or UPS is turned off.

‡Switched Supply: switched off when UPS is turned off (switch-off time varies by serial number).

Table 3. Accessory Compatibility with APC UPS Models

	Models[1]				
Accessory	**Smart-UPS 450, 700, 1000, 1400, 2200, 3000**	**Smart-UPS 250**	**Smart-UPS 400**	**Smart-UPS 600, 900, 1250, 2000**	**Matrix-UPS**
Measure-UPS #AP9503	yes		yes	yes	yes
Share-UPS #AP9207	yes		yes	yes	yes
Remote UPS Turn-on #AP9502	yes			yes	yes
SNMP Adapters: #AP9205 #AP9206 #AP9201 #AP9203 Big #AP9605	all except #AP9206	with external chassis (#AP9600)		yes	yes
Call-UPS II Remote UPS Monitoring #AP9208	yes	with ac adapter (#AP9205)	yes	yes	yes
SmartSlot Call-UPS II #AP9608	yes	with external chassis (#AP9600)			
SmartSlot Interface Expander (Share-UPS) #AP9607	yes	with external chassis (#AP9600)			
SmartSlot External Chassis #AP9600	yes	with ac adapter	yes	yes	yes

p*Back-UPS, Back-UPS Pro, and Smart-UPS v/s models are incompatible with APC's UPS accessory products.