



VPM RM Series

■ USER'S MANUAL ■

For Models
VPM RM 1~6kVA
VPML RM 1~6kVA

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Safety and EMC instructions

Please read carefully the following user manual and the safety instructions before installing the unit or using the unit!

Transport

Please transport the UPS only in the original packaging (to protect against shock and impact).

Installation

- Condensation may occur if the UPS is moved directly from a cold to a warm environment. The UPS must be absolutely dry before being installed. Please allow an acclimatization time of at least two hours.
- Do not install the UPS near water or in damp environment.
- Do not install the UPS where it would be exposed to direct sunlight or near heat.
- Do not block ventilation openings in the UPS's housing.
- Do not connect appliances or items of equipment which would overload the UPS (e.g. laser printers, etc) to the UPS output.
- Place cables in such a way that no one can step on or trip over them.
- Do not connect domestic appliances such as hair dryers to UPS output sockets.
- The UPS can be operated by any individuals with no previous technical experience.

Following for 1K(L)/2K(L)/3K(L) special

- Assure to connect with the earth reliably.
- The building wiring socket outlet (shockproof socket outlet) must be easily accessible and close to the UPS system.
- With the installation of the equipment, the sum of the leakage current of the UPS and the connected consumer does not exceed 3.5mA

Following for 6K special

- Warning -This is a product for restricted sales distribution to informed partners. Installation restrictions or additional measures may be needed to prevent disturbances.
- A readily accessible disconnect device shall be incorporated in the building installation wiring and the disconnect device must be easily accessible and close to the UPS system.
- This is permanently connected equipment and only qualified maintenance personnel may carry out installations.

Operation

- The UPS system features its own, internal current source (batteries). The UPS output sockets may still exist even if the UPS system is not connected to the building wiring socket outlet.
- In order to fully disconnect the UPS system, first press the Standby switch then disconnect the mains lead.
- Ensure that no fluids or other foreign objects can enter the UPS system.

Maintenance, servicing and faults

- The UPS operates with hazardous voltages. Repairs may be carried out only by qualified maintenance personnel.
- Caution - risk of electric shock. Even after the unit is disconnected from the mains power supply (building wiring terminal), components inside the UPS are still connected to the battery which are potentially dangerous.
- Before carrying out any kind of service and/or maintenance, please disconnect the batteries. Verify that no current is present and no hazardous voltage exists in the capacitor or BUS capacitor terminals.
- Batteries must be replaced only by qualified personnel.
- Caution - risk of electric shock. The battery circuit is not isolated from the input voltage. Hazardous voltages may occur between the battery terminals and the ground. Verify that no voltage is present before servicing!
- Batteries have a high short-circuit current and pose a risk of shock. Take all precautionary measures specified below and any other measures necessary when working with batteries:
- Remove all jewellery, wristwatches, rings and other metal objects
- Use only tools with insulated grips and handles.
- When changing batteries, replace with the same quantity and the same type of batteries.
- Do not attempt to dispose of batteries by burning them. It could cause explosion.
- Do not open or destroy batteries. Escaping electrolyte can cause injury to the skin and eyes. It may be toxic.
- Please replace the fuse only by a fuse of the same type and of the same amperage in order to avoid fire hazards.
- Do not dismantle the UPS, except the qualified maintenance personnel.

Storage

- The UPS must be stockpiled in the room where it is ventilated and dry.

Standards

1K(L)/2K(L)/3K(L)

Safety: IEC62040-2: 2003

Conducted Emission: IEC62040-2 Class B

Radiated Emission: IEC62040-2 Class B

Harmonic Current: IEC61000-3-2

Voltage Fluctuations and Flicker: IEC61000-3-3

EMS:

IEC61000-4-2(ESD) Level 4

IEC61000-4-3(RS) Level 3

IEC61000-4-4(EFT) Level 4

IEC61000-4-5(lightning surge) Level 4

IEC61000-2-2 (Immunity to low frequency signals)

6K

Safety: IEC62040-2:2003

Conducted Emission: IEC62040-2 Rated output current exceeding 25A limits

Radiated Emission: IEC62040-2 Rated output current exceeding 25A limits

EMS:

IEC61000-4-2(ESD) Level 4

IEC61000-4-3(RS) Level 3

IEC61000-4-4(EFT) Level 4

IEC61000-4-5(lightning surge) Level 4

IEC61000-2-2 (Immunity to low frequency signals)

1) INTRODUCTION

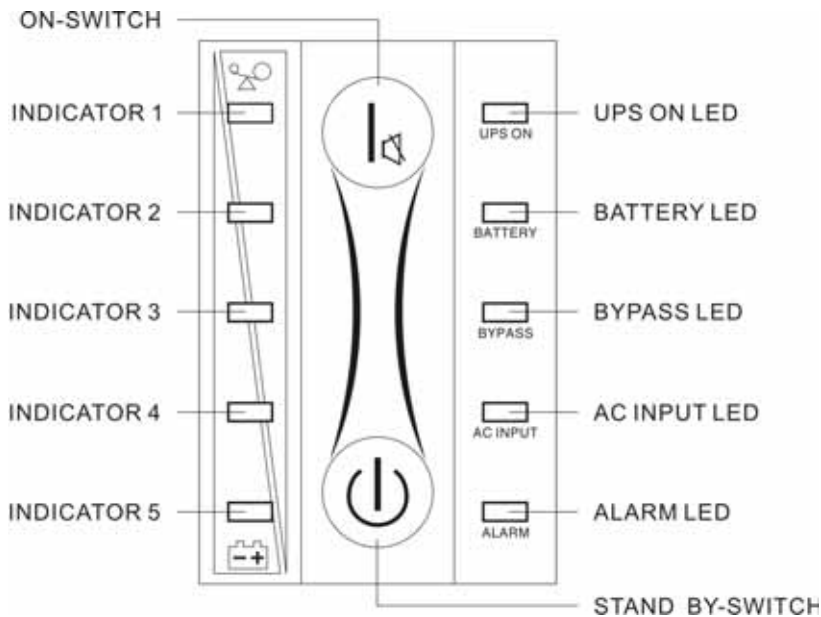
This rack-mounting On-Line Series is an uninterruptible power supply. It supplies power immediately to prevent the data lost and your system damaged when the main power is abnormal. With Power Track™ software, the uninterruptible power supply (UPS) will safely store data and shut down your network operating system before the battery is fully discharged, whether you're there or not. It provides perfect protection specifically for file servers, minicomputers, Internet hubs, telecommunication systems and other mission-critical applications.

The rack-mounting On-Line Series includes: 1K(L), 2K(L), 3K(L), 6K. The models with L extension allow for expanding runtime by simply plugging in additional battery packs.

2) SYSTEM DESCRIPTION

2.1 Display Panel

The UPS power control and operating indicators are located on the front display panel.



ON-SWITCH

- The UPS can be turned on by pressing ON-SWITCH button for at least 1 second.
- The acoustic alarm can be deactivated by pressing ON-SWITCH button.

STANDBY-SWITCH

- The inverter can be turned off by pressing STANDBY-SWITCH. The output can be provided by the mains power via the bypass.

AC INPUT LED

- Lights up when the mains power is normal.
- Blinks when the mains power is abnormal or the live conductor and the neutral conductor reversed at the input.

UPS ON LED

- Lights up when output power provided by the mains power via the inverter.

BATTERY LED

- Lights up when the mains power is failed and the inverter is powered by the batteries.

BYPASS LED

- Lights up when output power provided by the mains power via the bypass.

ALARM LED

- Lights up when the UPS system is in fault condition, at the same time, an acoustic warning signal is issued every second.

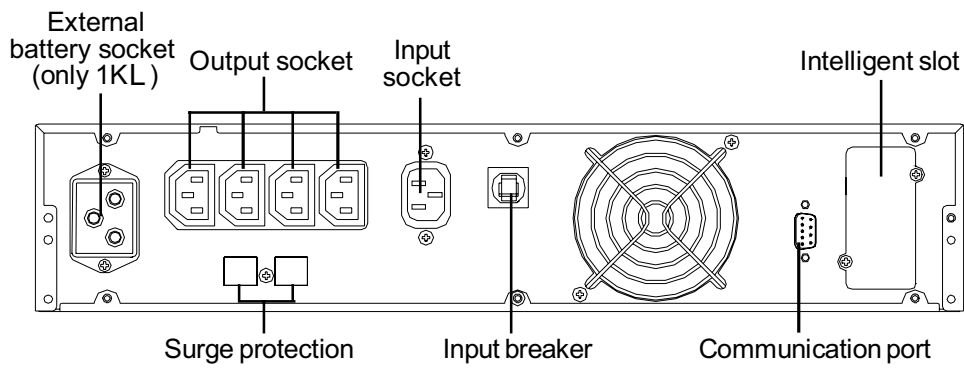
INDICATOR #

- Load level signaled when the **AC INPUT LED** lighting up.
- Battery level signaled when the **BATTERY LED** lighting up.

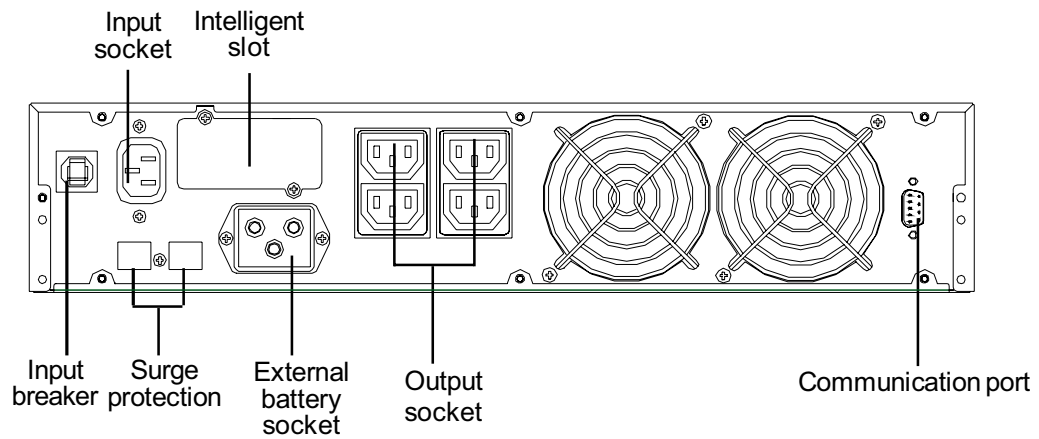
	Load level		Battery level
INDICATOR 1~5	96%-105%	INDICATOR 1	1%-35%
INDICATOR 2~5	76%-95%	INDICATOR 1~2	36%-55%
INDICATOR 3~5	56%-75%	INDICATOR 1~3	56%-75%
INDICATOR 4~5	36%-55%	INDICATOR 1~4	76%-95%
INDICATOR 5~5	1%-35%	INDICATOR 1~5	96%-100%

2.2 Rear Panel

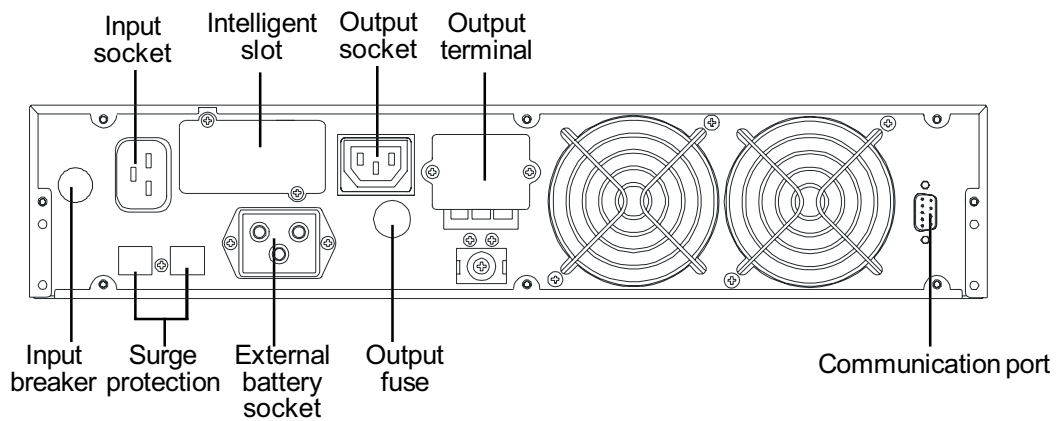
The rear panels of your UPS and battery pack can be found among below drawings. The input and output connectors and some other useful connectors are on the rear panel.



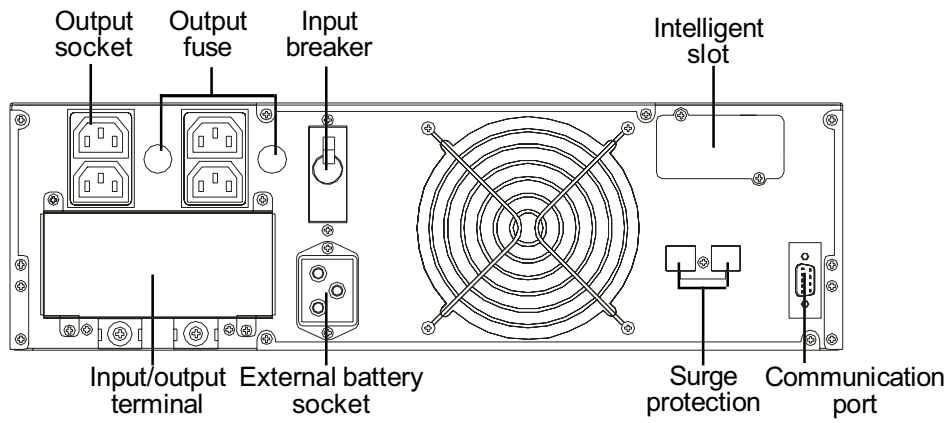
1K(L)



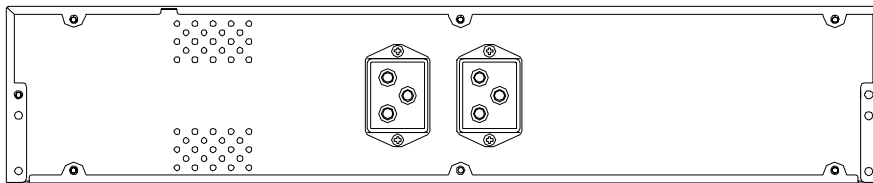
2K



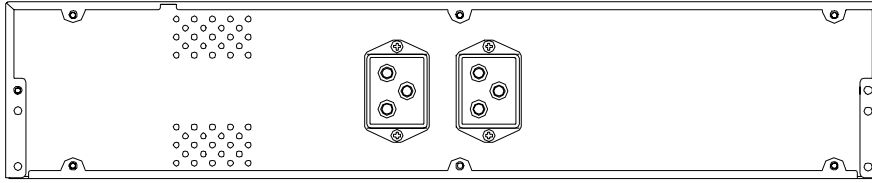
2KL/3K(L)



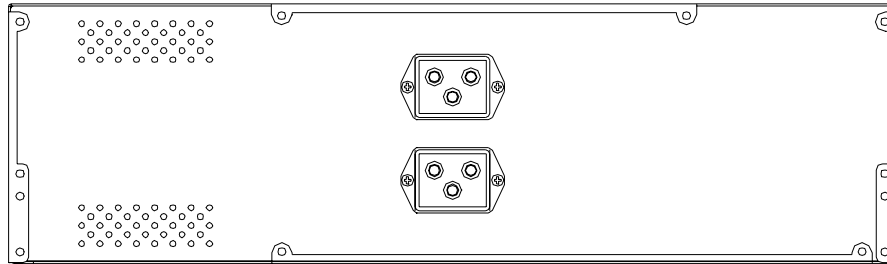
6K



Battery Pack for 1K(L)



Battery Pack for 2K(L)/3K(L)



Battery Pack for 6K

Surge Protection: Provide a surge protection for telephone fax and network line protectors and so on.

Communication Port: Power Track™ software can be used with the UPS for power management. Standard serial interface cable is compatible with 1K(L)/2K(L)/3K(L) UPS, however, only the special cable applied with the UPS can be used on 6K UPS.

Input/Output: If socket is available, just insert compatible cable plug. If terminal is available, wiring can be accomplished by professional electrician.

Note: Terminal cover should be put back for safety reason after wiring completed.

Input Breaker: If the breaker pops out/off, reduce the load on the UPS by unplugging equipment and reset the breaker.

External Battery Socket: Special cable is offered for the battery pack, insert one end into the external battery socket on the UPS, the other to the battery pack, the same packs can be paralleled together to achieve desired back up time.

Notes: One chain of battery packs can be connected to one UPS only. Only the battery connectors marked with the equal voltage can be connected.

3) MAINTENANCE

3.1 Battery application

The battery can be charged to 90% capacitance within 5 hours.

If the battery service life (3 - 5) years at 25°C ambient temperature has been exceeded, the batteries must be exchanged. In this case please contact your dealer.

If there is not any operation to the UPS for longtime then the battery must be charged every three month.

3.2 Troubleshooting

Using the table below, some common problems can be solved. If the problem still exists or some problems not found in the following table, please call the After-Sales service department. Be sure you have the following information:

1. Model number, serial number
2. Date on which the problem occurred
3. Description in detail of the problem

PROBLEM	POSSIBLE CAUSE	REMEDY
No indication, no warning tone even though system is connected to mains power supply	No input voltage	Check building wiring socket outlet, check input cable
AC INPUT LED blinks	Phase and neutral conductor at input of UPS system are reversed	Turn mains power socket by 180° or connect UPS system according to chapter 4
AC INPUT LED blinks and BATTERY LED lights up	Input power and/or frequency are out of tolerance	Check input power source and inform dealer if necessary
AC INPUT and BYPASS LED light up even though the power supply is available	Inverter not switched on	Press On button "I"
UPS ON LED lights up, warning tone at intervals (every 1 or 4 seconds)	Mains power supply has failed	battery operation; warning tone at intervals of 1 second means battery is almost empty
ALARM LED lights up, warning tone once a second	Overload	Reduce number of users at UPS output
ALARM-LED lights up, permanent warning tone	UPS-mistake	Notify dealer!!
Emergency supply period shorter than nominal value	Batteries not fully charged / batteries defective	Charge the batteries for at least 1 - 2 hours. Check capacity. If the problem still persists, consult your dealer.

4) TECHNICAL SPECIFICATIONS

Model VPM RM		VPM RM 1k	VPM RM 2k	VPM RM 3k	VPM RM 6k
Power Rating	P.F=0.7	1kVA/700W	2kVA/1400W	3kVA/2100W	6kVA/4200W
Input	Voltage	220V/230V/240V, 1Φ 2 wires			
	Frequency	50/60Hz +/-10%			
	Voltage range	120V ~ 286V			
	Power Factor	≥ 98%			
	THDi	<5%			
Output	Voltage (on battery)	220V/230V/240V +/-1% (selectable output voltage), 1Φ 2 wires			
	Frequency (on battery)	50/60Hz +/-0.1%			
	Transfer Time	0 ms			
	Efficiency	>94%			
	UPS Design Technology	On-line / Fully digitized microprocessor controlled			
	Output Wave Form	Pure Sinewave			
	Total harmonic distortion	<3% THD at linear load, <5% of THD at non-linear load			
	Crest Factor	3:1			
Protection & Filtering	Overload Protection	125% for 10 minutes and 150% for 1 minute			
	Short Circuit Protection	UPS output cut off immediately /fuse/circuit breaker protection			
System Display Warning	LED indicators	On-line mode, bypass mode, back up mode, batt. capacity, load level, fault			
	Audible Alarm	Beep every 4 seconds (Battery back up)			
	Overload Alarm	Beep twice every second			
Battery	Battery Type	Sealed, maintenance-free lead acid batteries, 3-5 years typical life time			
	Typical recharge Time	5 hrs to 90% Full			
	- Long back up model	Depending on external batteries			
	DC Voltage	36VDC	96VDC	240VDC	
	Management	Self-test, adjustable battery transfer points and alarm settings			
	Cold Start	YES			
	Battery Protection	Cuts off without draining any current when battery is low			
	Back up time	5 min	9 min	5 min	8 min
- Long back up model	Longer back up time depending on extra battery pack for models with external battery socket				
Communication	AS-400*, USB*, RS-232	Interface with power management software			
	SNMP*	Power management from SNMP manager and web browser			
	Compatibiltiy	Windows 98/NT/2000/XP/2003, Linux, Sun Solaris, IBM Aix, Compaq True64, SGI IRIX, FreeBSD, HP-U X and MAC/ME			
Physical	W×D×H Case & Battery Pack	450 x 482.6 x 87 mm (2U)			482.6 x 600 x 132 mm(3U)
	Net Weight	15kg (33lb)	9.6kg (21.12lb)	10kg (22lb)	18.3kg (40.26lb)
	- Long back up model	8.2kg (18.04lb)	10.5kg (23.1lb)	10.9kg (23.98lb)	
	Shipping Weight	16.3kg (35.86lb) with battery	10.3kg (22.66lb)	11.2kg (24.64lb)	19.1kg (42.02lb)
	- Long back up model		11.5kg (25.3lb)	12.3kg (27.06lb)	
Battery Pack	21kg (46.2lb)	26kg (57.2lb)		64.2kg (141.24lb)	
Environment	Operating temperature	0°C~40°C			
	Storage Temperature	-20°C~50°C			
	Altitude	3,500 meters max			
	Audible Noise	<42dBA at 1 Meter		<45dBA at 1 Meter	
	Relative Humidity	20~90% humidity, non-condensing			
Standards & Certifications	Performance	EN 50091-3 / IEC 62040-3			
	Safety	UL 1778, CE, E 50091-1, EN 60950 (RD/), IEC 60950			
	EMC (EMS/EMI)	IEC 61000-4-2/-3/-4/-5/-6/-8/-11, IEC 61000-3-2/-3, FCC Part 15, CISPR 22,			
		EN 50091-2/IEC 62040/2, EN 55022/B, FCC 47 Part 15 - SubpartB - ClassA			
	Design,production,services	ISO 9001			
Environment	ISO 14001 certified company				
Marking & Certifications	CE, TUV/GS, UL, cUL, C-Tick				

*For optional features

4.1 Communication Port

The type of signals, serial command (RS-232), is provided by the UPS to communicate with a host computer. The RS-232 communication port transmits both utility power and UPS status to the host computer, providing the host computer with proprietary command sequence to monitor the utility power and UPS status and to control the UPS output.

The data format of RS-232 is listed as followed:

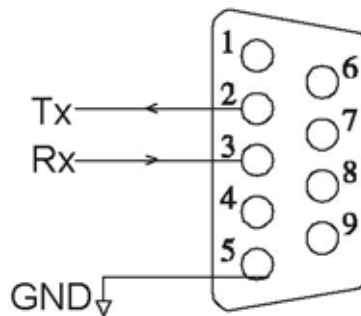
Baud Rate: 2400 bps, Data Length: 8 bits, Ending Bit: 1 bit, Parity Bit: none.

4.1.1 RS-232 Interface

For 1K(L)/2K(L)/3K(L)/6K

Two types of signals, relay contact or serial command (RS-232), are provided by the UPS to communicate with a host computer. The relay contact transmits both utility power and UPS status to the host computer by using “ ON “ and “ OFF “ states of relays, providing the host computer with proprietary command sequence to monitor the utility power and UPS status and to control the UPS output. The host computer can also monitor the UPS through RS-232 communication port.

Pin #	Description	I/O
2	TXD	Output
3	RXD	Input
5	GND	Input



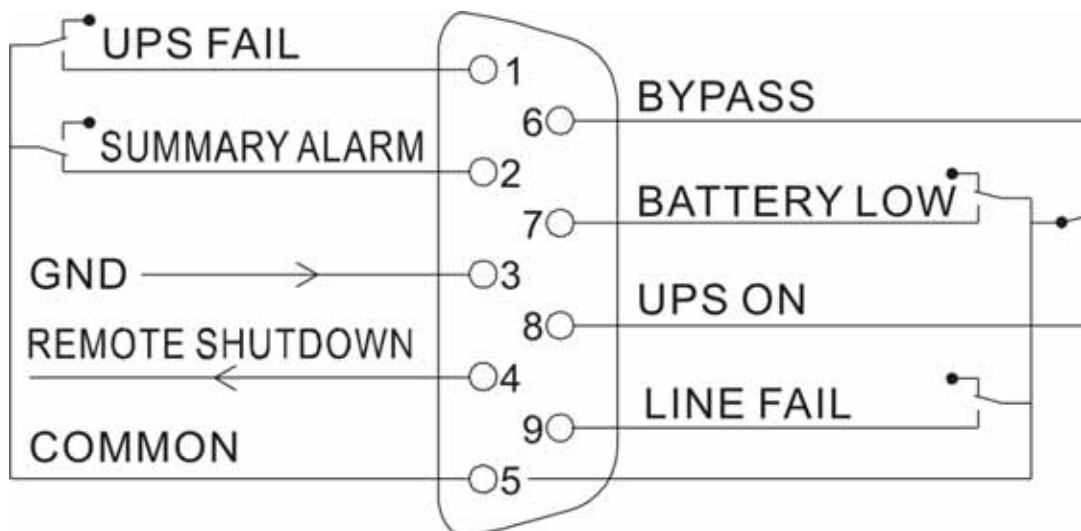
RS-232 Interface

4.1.2 AS-400 Interface

Except for the communication protocol as mentioned above, this series UPS has AS-400 card (an optional accessory) for AS-400 communication protocol. Please contact your local distributor for details.

The following is the pin assignment and description of DB-9 connector in AS-400 card.

Pin#	Description	I/O type
1	UPS Failure	Output
2	Summary Alarm	Output
3	GND	
4	Remote shutdown	Input
5	Common	
6	Bypass	Output
7	Battery Low	Output
8	UPS ON	Output
9	Utility power failure (Line Loss)	Output



DB9 Interface of AS-400 communication protocol

Service & Technical Notes

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10.

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Please visit our website at www.pceups.com for updates and additional product information.

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