Uninterruptible Power Supply-UPS

IP Compact series

1KVA~6KVA

USER MANUAL

1. Safety Instructions

1.1 Transport

Please read the FOLLOWING user manual and the safety instructions before installing the unit and starting it up!

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

1.2 Set-up

★ Condensation may occur if the UPS system is moved directly from a cold to a warm environment. The UPS system must be absolutely dry before being installed. Please allow an acclimatization time of at least two hours.

★ Do not install the UPS system near water or in damp environments.

★ Do not install the UPS system where it would be exposed to direct sunlight or near heat.

★ Do not block off ventilation openings in the UPS system's housing.

1.3 Installation

★ Do not connect appliances or items of equipment which would overload the UPS system (e.g. laser printers) to the UPS outlet socket

★ 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 experience

★ Connect the UPS system only to an earthed shockproof socket outlet.

★ The building wiring socket outlet (shockproof socket outlet) must be easily accessible and close to the UPS system.

★ Please use only VDE-tested, CE-marked mains cable (e.g. the mains cable of your computer) to connect the UPS system to the building wiring socket outlet (shockproof socket outlet).

★ Please use only VDE-tested, CE-marked power cables to connect the loads to the UPS system.

★ This is operator installable.

★ When installing the equipment, it should ensure that the sum of the leakage current of the

UPS and the connected consumer does not exceed 3.5mA.

1.4 Operation

★ Do not disconnect the mains cable on the UPS system or the building wiring socket outlet (shockproof socket outlet) during operations since this would cancel the protective earthing of the UPS system and of all connected loads.

★ The UPS system features its own, internal current source (batteries). The UPS output sockets or output terminals block may be electrically lived 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.

★ The UPS operates with hazardous voltages. Only qualified maintenance personnel may carry out repairs

1.5 Maintenance, servicing and faults

★ The UPS system 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 socket outlet), components inside the UPS system are still connected to the battery and are still electrically live and dangerous.

★ Before carrying out any kind of servicing and/or maintenance, disconnect the batteries and verify that no current is present and no hazardous voltage exist in the terminals of high capability capacitor such as BUS-capacitors.

★ Only persons are adequately familiar with batteries and with the required precautionary measures may replace batteries and supervise operations. Unauthorised persons must be kept well away from the batteries.

★ 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. Before touching, please verify that no voltage is present!

★ Batteries may cause electric shock and have a high short-circuit current. Please take the precautionary measures specified below and any other measures necessary when working with batteries:

- remove wristwatches, rings and other metal objects
- use only tools with insulated grips and handles.

★ When changing batteries, install the same number and same type of batteries.

★ Do not attempt to dispose of batteries by burning them. This could cause battery 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 system.

2. Description of commonly used notations

Some or all of the following Notations may be used in this manual and may appear in your application process. Therefore, all users should be familiar with them and understand their explanations.

Notation and Explanation	
Notation	Explanation
	Alert you to pay special attention
	Caution of high voltage
	Turn on the UPS
	Turn off the UPS
	Idle or shut down the UPS
	Alternating current source (AC)
	Direct current source (DC)
	Protective ground
	Alarm silence
	Overload indication
	Battery check
	Recycle
	Keep UPS in a clear area

3. Introduction

This On-Line-Series is an uninterruptible power supply incorporating double-converter technology. It provides perfect protection specifically for Novell, Windows NT and UNIX servers.

The double-converter principle eliminates all mains power disturbances. A rectifier converts the alternating current from the socket outlet to direct current. This direct current charges the batteries and powers the inverter. On the basis of this DC voltage, the inverter generates a sinusoidal AC voltage, which permanently supplies the loads. Computers and periphery are thus powered entirely by the mains voltage. In the event of power failure, the maintenance-free batteries power the inverter.

This manual covers the UPS listed as follows. Please confirm whether it is the model you intend to purchase by performing a visual inspection of the Model No. on the rear panel of the UPS.

Model No.	Type	Model No.	Type
1K	Standard	1KL	Long backup time
1K RM		1KL RM	
2K		2K	
2K RM		2K RM	
3K		3KL	
3K RM		3KL RM	
5K		5KL	
5K RM		5KL RM	
6K		6K	
6K RM		6K RM	

Remark：

“L” Model: Long backup time

“RM” Model: Rack Mount

4. System Description

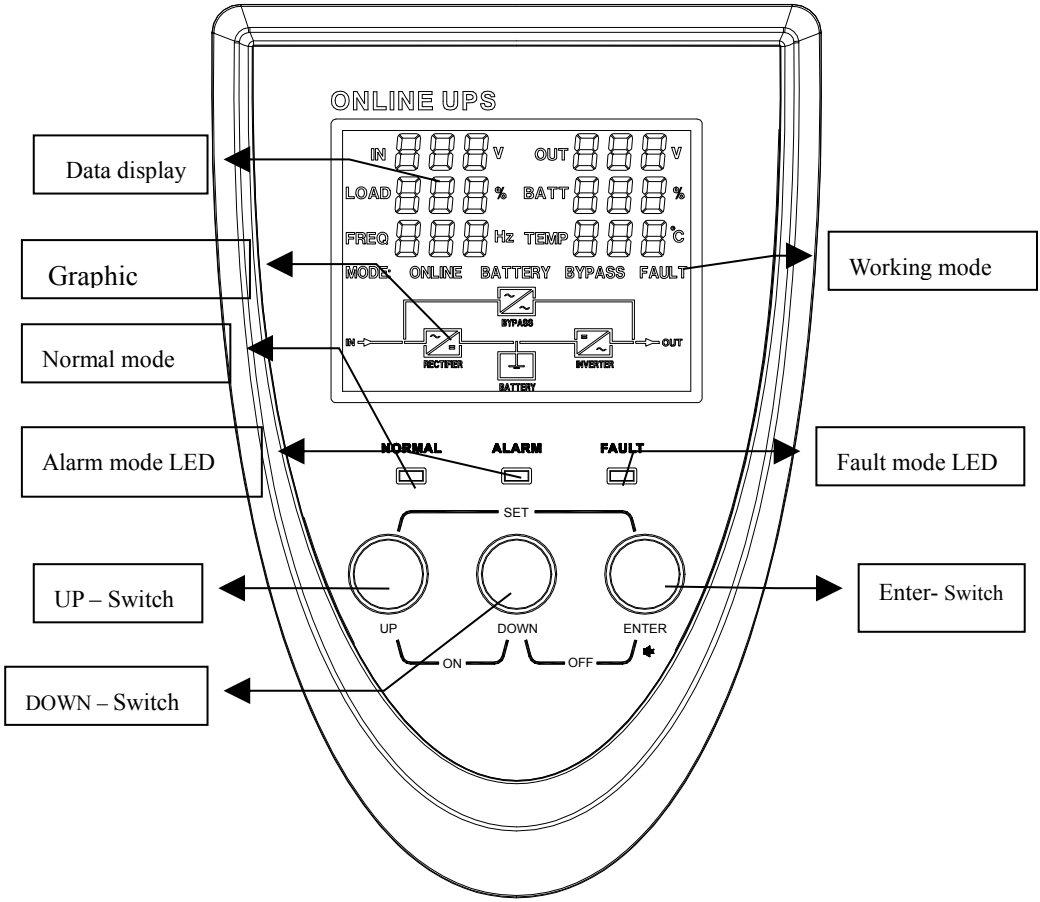


Figure 1: LED Display Panel

Switch	***Function***
UP Switch	Page up
DOWN-Switch	Page down
ENTER Switch	Confirm the selection When UPS is under battery model, you can put this button for Mute.
UP+DOWN Switch	Turn on UPS system: By pressing the Switches the UPS system is turned on.

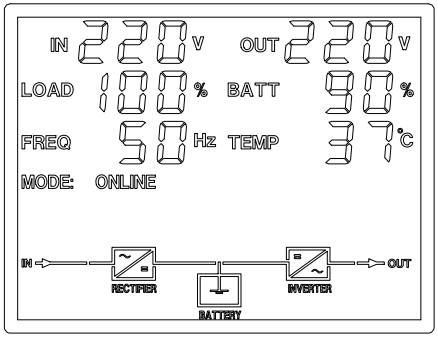
DOWN+ENTER Switch	When mains power is normal, the UPS system switches to Standby mode by pressing the Switches. It is then switched to Bypass and the inverter is off. At this moment, the output sockets are supplied with voltage via the bypass if the mains power is available.
UP+ENTER Switch	When set UPS parameter, which can be set only under bypass and standby mode. Please contact with your supplier when you need to set parameter

Display	***Function***
NORMAL mode LED	LED flashing under Line mode and battery mode means UPS working normally
ALARM mode LED	The BAT mode LED lights up when the mains power has failed and the inverter is being powered by the batteries.
FAULT mode LED	The FAULT mode LED lights up and an acoustic warning signal is issued continuously when the UPS system is in fault condition.

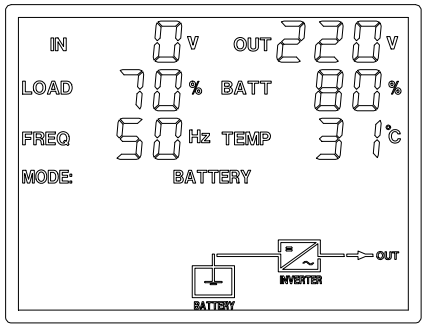
Display	***Function***
Data Display Area	When UPS working, data displayed here: input voltage, output voltage, load, battery capacity ,output frequency , inside temperature of the cabinet
Working Display Area	Mainly display UPS working condition , line mode, battery mode, bypass mode, fault mode
Graphic Display	Show the UPS working condition directly with graphic

LCD display details as following:

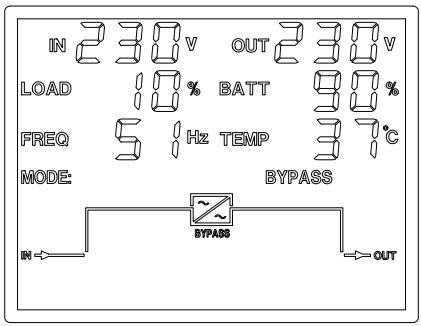
ℓ Line Mode



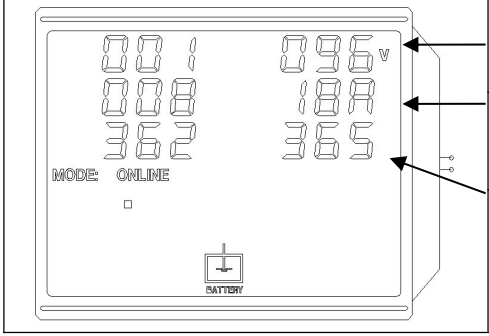
ℓ Battery Mode

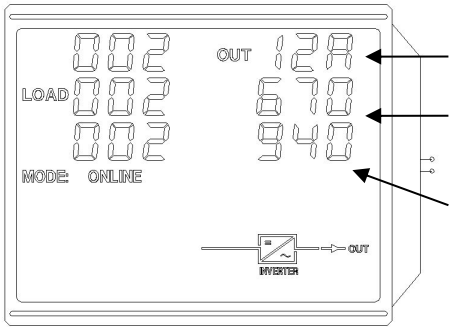


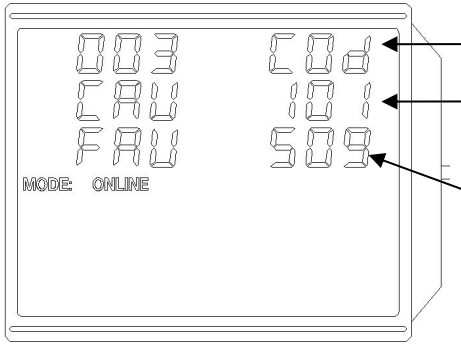
ℓ Bypass Mode

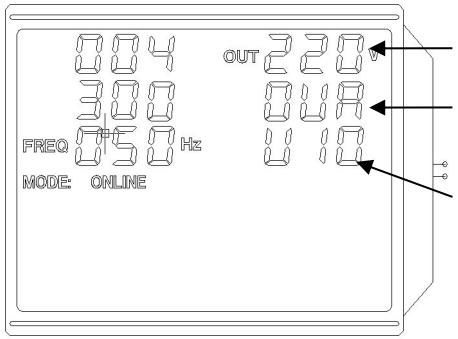


ℓ You can press “up” or “down” button change Page1~4, as following.

Page 1	Left	Right
	Page number	Battery voltage
	Battery quantity	Battery current
	PBUS voltage	NBUS voltage

Page 2	Left	Right
	Page number	Output current
	the value of output active power(watt)	
	The value of output total power (VA)	

Page 3	Left	Right
	Page number	code
	Caution code	
	Fault code	

Page 4	Left	Right
	Page number	Output rated voltage
	Rated capacity	
	Rated frequency	Soft wave version

Fault Code Table

FAULT	CODE	FAULT	CODE
INV SHORT	**508**	INV VOLTAGE LOW	**507**
PBUS VOLTAGE OVER	**501**	INV SOFT FAIL	**509**
NBUS VOLTAGE OVER	**502**	BUS DISCHARGE FAIL	**510**
BUS SOFT FAIL	**504**	INV OVER TEMPERATURE	**511**
INV VOLTAGE HIGH	**506**	DC OVER TEMPERATURE	**512**
OVER LOAD	**513**	NO FAULT	**0**

Warning Code Table

Warning message	CODE	Warning message	CODE
Site Fail	**101**	Battery Low	**102**
Battery Over	**104**	Battery open	**103**
Charger Fail	**105**	DC Temperature High	**106**
Fan Locked	**109**	INV Temperature High	**107**
OverLoad	**110**	EPO Active	**112**

5. Connection and Operation

The system may be installed and wired only by qualified electricians in accordance with applicable safety regulations!

5.1 Connection and operation

When installing the electrical wiring, please note the nominal amperage of your incoming feeder

1) Inspection: Inspect the packaging carton and its contents for damage. Please inform the transport agency immediately should you find signs of damage.
Please keep the packaging in a safe place for future use.

Note: Please ensure that the incoming feeder is isolated and secured to prevent it from being switched back on again.

2) Connection:

2.1) UPS Input Connection

If the UPS is connected via the power cord, please use a proper socket with protection against electric current, and pay attention to the capacity of the socket: over 15A for 1~3K.

2.2) UPS Output Connection

Simply plug the load power cord to the output sockets to complete connection.

Model No.	***Output Socket (pcs)***	***Terminal Block***
1~3K(L)	*yes*	*no*
5~6K(L)	*yes*	*yes*

2.3) Computer Connection:

Connect your computer to the outlet sockets of the UPS system following the above diagram.

Caution!

*Do not connect equipment which would overload the UPS system (e.g. laser printers)

* Max current of socket is 10A.

3) Battery Charge: Fully charge the batteries of the UPS system by leaving the UPS system connected to the mains for 1-2 hours. You may use the UPS system directly without charging it but the stored energy time may be shorter than the nominal value specified.

4) Turn On the UPS:

4.1) With utility power connecting:

Connect the utility power UPS will get into the Bypass mode, the Bypass mode LED will light up. Press “ON” button continuously for more than 1 second to turn on the UPS. Then the UPS will get into self-test status first. After finishing the self-test, the UPS will get into the inverter mode, at this time, the LINE mode LED will light up.

4.2) Without utility power connecting:

Even though utility power is not connected to the UPS, the UPS still can be turned on by just simply pressing “ON” button continuously for more than 1 second. Then the UPS will get into self-test status first. After having finishing the self-test, the UPS will get into the inverter mode, at this time, Battery mode LED, will light up.

5) Test Function:

Test the function of the UPS system by either pressing the On-Switch or disconnecting the input of the UPS system from the power supply.

6) Turn Off the UPS:

6.1) In Inverter Mode:

Press “OFF“ button continuously for more than 1 second to turn off the UPS. Then the UPS will get into self-test status first. After having finished the self-test, the UPS will get into bypass mode and Bypass mode LED will light up. At this time, the UPS might has output. Disconnect the utility power to turn off the output.

6.2) In Battery Mode:

Press “OFF“ button continuously for more than 1 second to turn off the UPS. Then the UPS will get into self-test status first. After having finished the self-test, the UPS will be turned off completely.

7) Audible Alarm Mute Function: If the alarm is too annoying in battery mode, you may press “ON” button continuously for more than 1 second to clear it. Moreover, the alarm will be enabled when the battery is low to remind you to

shutdown the load soon.

8) Operation Procedure of External Battery for Long Backup time Model (“L” Model)

(1) Use the battery pack with right voltage. Connection of batteries more than or less than required will cause abnormality

(2) One end of the external battery cord is a plug for connecting the UPS and the other end has a plug for connecting the user battery cabinet

(3) Do not connect the UPS to any load yet. Then, connect the power cord of the UPS to supply utility power to the UPS to make the UPS operate in utility power mode.

(4) Connect the plug of the external battery cord to the external battery socket on the rear panel of the UPS to complete the connection procedure and the UPS will start to charge the battery pack.

6. Maintenance

6.1 Operation

The UPS system doesn’t contain user-serviceable parts.If the battery service life (3 - 5 years at 25°C ambient temperature) has been exceeded, the batteries must be replaced. In this case please contact your dealer

6.2 Storage

If the batteries are stored in temperate climatic zones, they should be charged every three months for 1-2 hours. You should shorten the charging intervals to two months at locations subject to high temperatures.

7. Technical Data

7.1 Electrical specifications

INPUT

Model No.	1K(S/L RM)	2K(S/L RM)	3K(S/L RM)	5K(S/L RM)	6K(S/L RM)
Phase	Single				
Frequency	50/60Hz				

OUTPUT

Model No.	1K (S/L RM)	2K(S/L RM)	3K(S/L RM)	5K(S/L RM)	6K(S/L RM)
Power rating	1kVA/0.9kW	2kVA/1.8kW	3kVA/2.7kW	5KVA/4KW	6KVA/4.8KW
Voltage	220/230/240×（1 ± 2%）VAC				
Frequency	50/60×（1±0.3%）Hz (Battery mode)				
Wave form	sinusoidal				

BATTERIES

Model No.	1K	2K	3K	5/6K
Number and type	3×12V 7Ah OR 2×12V 7Ah	8×12V 7Ah OR 6×12V 7Ah OR 4×12V 7Ah	8×12V 7Ah OR 6×12V 7Ah	8×12V 9Ah OR16×12V 7Ah

7.2 Operating Environment

Environment Temperature	0 °C to 40 °C
Operating humidity	< 95%
Altitude	< 7000Feet
Storage temperature	0 °C ~ 40 °C

7.3 Dimensions and weights

Model No.	Dimensions W x D x H (mm)	Net Weight kg
1K	144X 418X215	14(12kg 2pcs batteries)
1KL	144X 418X215	7
2KS	191X474X338	32(21kg 4pcs batteries)

		(26kg 6pcs batteries)
2KL	191X474X338	15
3KS	191X474X338	32.5(26kg 6pcs batteries)
3KL	191X474X338	16
5K/6KL	213 X 489 X 340	18
5K/6KS	213 X 510 X 427	37.0(8pcs batteries)

the following standards:

EN62040-1-1 (safety)

Conducted Emission: EN50091-2……Class B

Radiated Emission: EN50091-2……...Class B

Harmonic Current: EN61000-3-2

Voltage Fluctuations and Flicker: EN61000-3-3

EMS: EN61000-4-2(ESD)……..Level 4

EN61000-4-3(RS) ……..Level 3

EN61000-4-4(EFT)…… Level 4

EN61000-4-5(lighting surge)……Level 4

EN61000-2-2 (Immunity to low frequency signals)

9. Communication Port

9.1 RS232 Interface

The following is the pin assignment and description of DB-9 connector.

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

9.2 AS400 Interface(Option)

Except for the communication protocol as mentioned above, this series UPS has

AS400 card (an optional accessory) for AS400 communication protocol . Please contact your local distributor for details. The following is the pin assignment and description of DB-9 connector in AS400 card.

Pin #	Description	I/O
1	UPS Fail	Output
2	Summary Alarm	Output
3	GND	Input
4	Remote Shutdown	Input
5	Common	Input
6	Bypass	Output
7	Battery Low	Output
8	UPS ON	Output
9	Line Loss	Output

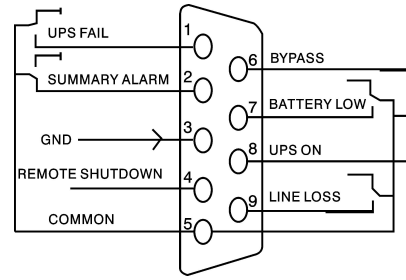


Figure 16.2: DB-9 Interface of AS400 communication protocol