rehlko

REHLKO *PW* 1000PRO

Standalone tower or rack mount single-phase uninterruptible power supply with internal or external batteries

(1–3 kVA / kW)

Technical Specification

Document Control

ISSUE	DATE	REVISION SUMMARY
TS_703_01	28/1/2026	1st Edition
TS_703_02	06/05/2026	Minor amends to weights and formatting

Useful Contacts

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REHLKO PW 1000PRO (1-3kVA) UPS system description

By using the latest technological developments in power engineering, the PW 1000PRO (1-3kVA) represents a new generation of transformerless UPS-System. Its advanced double conversion Voltage and Frequency Independent (VFI) topology responds fully to both the highest availability and environmentally friendly requirements, compliant with IEC 62040-3 (VFI-SS-111) standards.

PW 1000PRO (1-3kVA) UPS model range

The full PW UPS range comprises models rated from 1kVA to 2000kVA. This specification applies to models in the lower range, rated at 1 kVA, 2 kVA and 3 kVA only, each of which is designed as a self-contained UPS comprising a rectifier, battery charger, inverter, static switch and battery pack. All the models in this range are easy to install, and supplied with suitably terminated power cables.

The PW 1000PRO operates as a stand-alone UPS module and can be mechanically configured as a floor-standing tower unit or installed in a standard 19 inch rack. An accessory pack which contains all the parts necessary to configure the unit for either type of installation is supplied with the UPS.

Optional external battery cabinets are available to increase the UPS autonomy time. The battery cabinet design compliments the UPS cabinet and the two cabinets can be mechanically connected together to form a single unit when installed as a tower system. Up to three external battery cabinets can be connected in tandem as part of the UPS system.

Advanced design features

By using the latest technological developments in power engineering, the PW 1000PRO (1-3kVA) represents a new generation of transformerless UPS-System. Its advanced double conversion Voltage and Frequency Independent (VFI) topology responds fully to both the highest availability and environmentally friendly requirements, compliant with IEC 62040-3 (VFI-SS-111) standards.

Following, are some of this unit's advanced design features:

- True online technology continuously supplies your critical applications with stable, regulated, transient-free pure sine-wave AC power.
- High-Frequency Transformerless technology and tower-convertible enclosure enables the UPS to be integrated into even the most difficult environments with space constraints.
- User-friendly design that permits simple and trouble-free installation. All units are supplied with input and output power cables as standard.
- Smart battery management system which extends the battery life span.
- Highly efficient PWM sine-wave technology yields excellent UPS efficiency. The high crest factor of the inverter handles peak inrush current loads and so avoids a need to upgrade to a UPS with a higher power rating.
- Compliant with various stringent international EMC standards for electromagnetic interference and protection.
- Selection of output voltages (200/208/220/230/240) available to match the UPS to local supply specifications or specific load voltage requirements.

- A selectable bypass voltage tolerance (low/high sensitivity) restricts the range of voltages that can be applied to the load when the UPS operates on bypass. The ranges are ±15% (low sensitivity) and ±10%V (high sensitivity). For example, if the output voltage setting is 230V the bypass sensitivity Low range is 230V ±15%.

- Fully digitized control logic for better functionality and enhanced power protection. Digital signal processing (DSP) also provides efficient communication capabilities for enhanced remote control and monitoring flexibility.

- Active power factor correction (PFC) control function constantly maintains the UPS input power factor to >0.99 at 100% load, with resulting outstanding energy efficiency.

- Wide input voltage tolerance, from 110V~300V, allows the UPS to operate normally without draining the battery unnecessarily during significant mains voltage dips, which helps extend the battery service life.

- DC-start function permits the UPS to be started during a utility power failure if required.

- Overload protection system automatically switches the UPS to bypass mode if an overload occurs and automatically switch back to inverter mode once the overload condition ceases. Should the output become short-circuited, the UPS puts the system in stand-by mode, provides visible and audible alarms, and turns off the output supply automatically until the short circuit situation is resolved manually.

Specifications

Model	230V – 1 kVA	230V – 2 kVA	230V – 3 kVA
Power Rating, VA	1000 VA	2000 VA	3000 VA
Power Rating, W	1000W	2000W	3000W
Topology / Type	Double Conversion On-Line / Rack / Tower Convertible		

INPUT	
Voltage Rating	110Vac~300Vac , Single Phase 160-300 Vac: 0 ~ 100% Load 140-160 Vac: 0 ~ 80% Load 110-140 Vac: 0 ~ 60% Load
Frequency Rating	40-70 Hz 50Hz fin> 40Hz and fin < 60Hz 60Hz fin> 50Hz and fin < 70Hz
Phase	Single phase with ground
Power Factor	≧ 0.99 at full linear load
Current harmonic	THDi < 5% (Nominal voltage with <1% V_{THD} for 100% linear load)

OUTPUT	
Voltage	230 Vac, adjustable to 200/208/220/230/240 Vac (200Vac / 208Vac with 80% power capacity derating)
Voltage Regulation	Static：within ±1% until low-battery warning
Frequency Regulation	±0.1Hz unless synchronized to line
Frequency (Synchronized Range)	50Hz system 47Hz ~ 53Hz (selectable: 49Hz ~ 51Hz) 60Hz system 57Hz ~ 63Hz (selectable: 59Hz ~ 61Hz)
Crest Factor	3:1
Power Factor	1.0
Voltage Harmonic Distortion(THDv)	THDv < 2% at full linear load THDv ≤3.5% at 0.9 non-linear load
Output Waveform	Pure sine wave

Efficiency	
On Line mode	Up to 93%
ECO mode	Up to 98%

Transfer time	
AC to DC	0 ms

Battery (VRLA Lead Acid Type)				
Battery System Voltage		36Vdc	72Vdc	72Vdc
Number of batteries / string		3	6	6
Battery type		12Vdc /7Ah	12Vdc /9Ah	12Vdc /9Ah
Uptime with internal battery in minutes	50% load	10	11	9
	100% Load	3	3	2

Charger				
Charge Current	Standard	1A / 2A selectable		
	Optional	1A / 2A / 4A / 8A selectable		
Recharge time (to 90%)		5hr (2A Charging Current for Internal Battery)		
Charge Voltage	Lead-Acid Battery	40.95Vdc ± 1%	81.9Vdc ± 1%	81.9Vdc ± 1%

Outlet			
Outlet	3 x IEC 320-C13	6 x IEC 320-C13	6 x IEC 320-C13 1 x IEC 320-C19

Protection	
Overload in On Line Mode	＜105% continuous 106-110% for 10 minutes and then switch to the bypass mode 111-130% for 1 minutes and then switch to the bypass mode 131-150% for 10 seconds and then switch to the bypass mode 151-250% for 0.2 seconds and then switch to the bypass mode ＞250% for 0.1 seconds and then switch to the bypass mode
Overload in Backup Mode	＜105% continuous 106-110% for 30 seconds shuts down 111-130% for 10 seconds shuts down 131-150% for 1 seconds shuts down 151-250% for 0.2 seconds shuts down ＞250% for 0.1 seconds shuts down Buzzer continuously alarms.
Overload in ECO Mode	＜105% continuous 106-110% for 10 minutes and then shutdown 111-130% for 2 minutes and then shutdown 131-150% for 10 seconds shuts down 151-250% for 0.32 seconds shuts down ＞250% for 0.16 seconds shuts down Buzzer continuously alarms.
EPO	UPS shuts down immediately.

Physical				
Dimensions W x H x D	mm	440 x 88 (2U) x 454	440 x 88 (2U) x 640	440 x 88 (2U) x 640
Net Weight	kg	16	25	27

Interface	
Standard	RS232, USB, EPO/ROO
Option	SNMP card / Relay card Temperature compensation (available only in lead-acid type standard version with batteries and without batteries)

Environmental				
Operating Temperature		0ºC to +40ºC (The battery must be maintained at 20°C to ensure its lifespan is not reduced)		
Non-operating/Storage Temperature		UPS without Batteries: -10ºC to +50ºC UPS with Lead-Acid Batteries: -10ºC to +40ºC UPS with Lithium Batteries: -10ºC to +35ºC (<6 months)		
Relative Humidity		<95% RH @ 0ºC to +40ºC (Non-condensing)		
IP Rating		IP 20		
Operating elevation		0 to +2,000 m without derating of output power		
Pollution Degree		2 (non conductive pollution, temporary conductivity caused by condensation)		
Overvoltage Category		CAT II		
Applicable power grid power distribution system		TN		
Noise Level	Line mode (battery full charged)	<45dBA @ 1 metre	<55dBA @ 1 metre	<55dBA @ 1 metre
	Backup mode	<50dBA @ 1 metre	<55dBA @ 1 metre	<55dBA @ 1 metre

Standards and Certifications	
Safety	IEC/EN 62040-1/ 62040-3/ 62040-4
EMC	EN IEC 62040-2:2018 C2
Markings	CE, UKCA

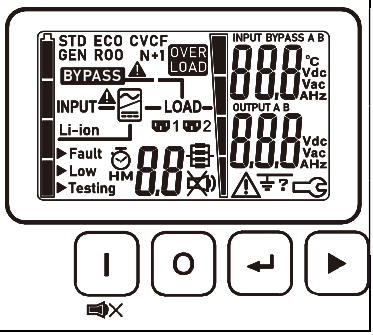
Extended Battery Cabinet

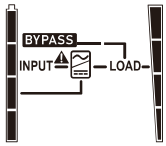
Model		For 1 kW	For 2-3 kW
Battery Type		Lead Acid	
Voltage Rating		36vDC	72vDC
Output Current (Max)		50A	
Battery Quantity		6	12
Capacity x Strings		7Ah x 2	9Ah x 2
Dimensions WxHxD mm		440 x 88 (2U) x 464	440 x 88 (2U) x 583
Weight Kg	No Battery	6	7
	With batteries	19	42
Operating Temperature		0ºC to +40ºC (20°C to ensure lifespan is not reduced)	
Non-operating / Storage Temperature		Without Batteries: -10ºC to +50 ºC With Lead-Acid Batteries: -10ºC to +40 ºC	
Relative Humidity		<95% RH @ 0ºC to +40ºC (Non-condensing)	
IP Rating		IP 20	
Operating Elevation		0 to +2,000 m	
Pollution Degree		2 (non conductive pollution, temporary conductivity caused by condensation)	
Overvoltage Category		CAT II	
Compliance and Certifications		CE, UKCA	

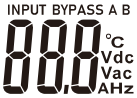
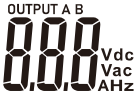
UPS Functional Descriptions

Front Panel Display

4-Key Buttons	
Symbol	**Description**
I	UPS On/Alarm Silence
O	UPS OFF Switch
↵	To re-confirm the change of UPS Setting
▶	Select display page or change the setting of the UPS

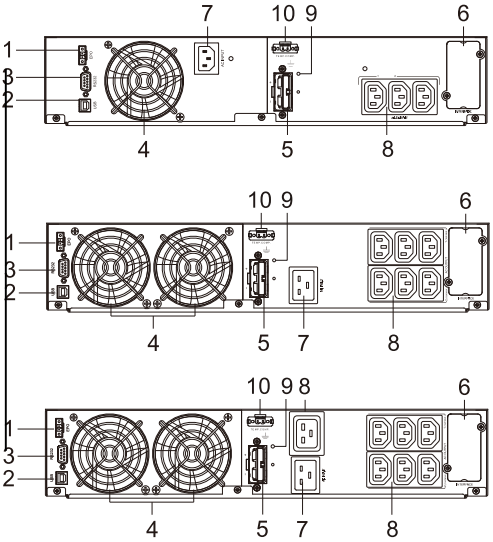


4-Key LCD display		
Sign	**Description**	
STD ECO CVCF GEN ROO N+1	UPS Mode	
	STD — Standard Mode	
	ECO — ECO Mode	
	CVCF — CVCF Mode	
	GEN — Generator Mode	
	ROO — Remote On/Off Mode	
	N+1 — Parallel Redundancy (1-3K Mode Not supported)	
	UPS Flow Chart	
OVER LOAD	UPS Overloading	
⚠	Bypass or Utility Abnormal	
Li-ion	Lithium Battery Model	
1 2	indicate there is an output available at the Programmable Outlet 1 & Programmable Outlet 2	
▶Fault	Battery Abnormal	
▶Low	Battery Low	
▶Testing	Self Test	
HM 8.8	Remaining battery runtime	
	Parallel Mode (1-3kVA, Mode Not supported)	
	Buzzer Silent	

	Indicates Battery Capacity level by 0-25%,26-50%,51-75%,and 76-100%
	Indicates Load level by 0-25%,26-50%,51-75%,and 76-100%
	Input 3-Digit Measurement Display
	Output 3-Digit Measurement Display
	UPS Fault or Abnormal Warning
	Site Wiring Fault
	UPS Working in Service, Manual Bypass, Calibration mode

Rear Panel

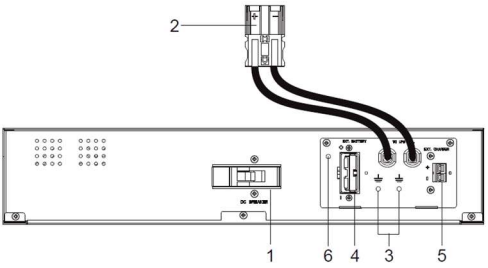
REHLKO PW 1000PRO UPS



1. Emergency Power Off (EPO) / Remote ON/OFF (ROO) Dry contact signal inputs
2. USB port
3. RS-232 port
4. Fan
5. External Battery connector
6. Slot for optional communication cards*
7. AC power connection socket
8. AC outlets(Program Relay)
9. External Battery Ground
10. Temperature compensation *(For Lead-Acid Batteries Only)

* Remark: Optional function

Extended Battery Cabinet



1	DC Breaker
2	DC Power Cord
3	Earth Terminal
4	Battery Connector
5	External Charger Connection (Optional)
6	Temperature Compensation (Optional)

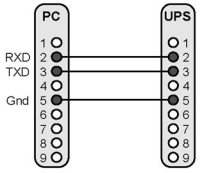
Communication Port Explanation

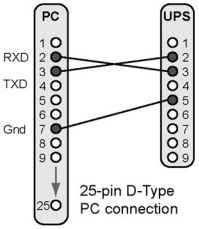
The UPS is equipped with a true RS-232 communication port as standard to provide communication with bundled UPS monitoring software for remote monitoring of the UPS status using a PC.

You may use optional interfaces cards for R2E (RS-232), RSE (RS-485), USE (second USB), DCE (Dry Contact), and SNMP. However, the R2E card, RSE card and USE card must not be used simultaneously.

When the optional interface cards are used together with the onboard USB port the EPO signals will get highest priority, then the SNMP/WEB card, then the shutdown command at the DCE, R2E, RSE, and USE cards, and then finally the onboard USB port gets the lowest priority.

RS-232 Interface settings	
Baud Rate	2400 bps
Data Length	8 bits
Stop bit	1
Parity	None





EPO

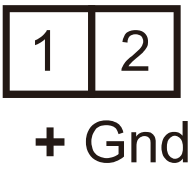
The Emergency Power Off (EPO) option allows you to turn off the UPS using an external switch or contact that is wired to the EPO terminal block on the back of the UPS. The external circuit consists of a 'normally open' external contact that will power-off the UPS when the contact is closed.

When the EPO circuit is activated the UPS output is shut down, removing power to the load, but the battery charger remains operational to maintain battery charging. An EPO alarm is shown on the LCD display but you can still scroll through and monitor the UPS input, battery and output metering.

Once the external EPO command is removed, the UPS must be restarted by pressing the UPS ON button to restore the UPS to normal operation.

The external EPO connection should be made using a screened, single pair cable (0.5mm²) with a maximum length of 100 metres.

Pin Assignment

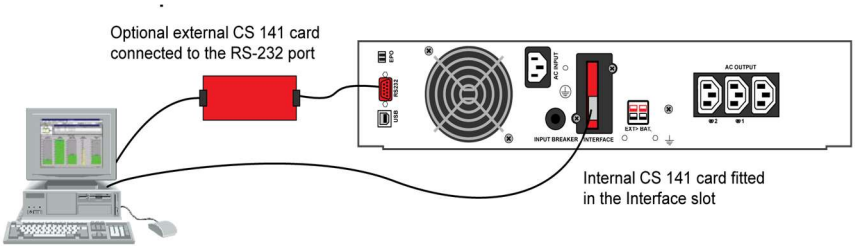


Function setting:

1. EPO NC Shutdown UPS
2. EPO NO → Shutdown UPS
3. ROO NC → Start-up UPS
4. ROO NO → Start-up UPS

this function setting by setting tool

CS141 /SMNP adapters



Simple Network Management Protocol (SNMP) is a world-wide, standardised communication protocol that can be used to monitor any network-connected device via a simple control language and display the results in a browser-based application. The software agent built in to the CS141 adapter card makes the UPS data available in this SNMP format which can then be utilized by a number of UPS management software applications.

The card contains a serial interface, which can be connected directly to a computer's serial port, and an RJ-45 connector which allows it to be connected to a network using a standard CAT-5 cable. The SNMP adapter can be configured via Telnet, http (browser) or serial connection. For normal operation, at least one Ethernet network connection is necessary.

Once installed, the UPS-Management software agent, which is already installed in the card, monitors the UPS operation and outputs its data in SNMP format to the connected network. The card enables automated generation of event/alarm emails, server controlled shut down (with optional licenses) and other tasks, and can also be integrated with BMS software over a local area network (LAN) for SNMP or Modbus information over IP.

Rehlko offer monitoring software with SNMP functionality for Novell, OS/2, and Windows that run both on INTEL and on ALPHA, DEC VMS and Apple.

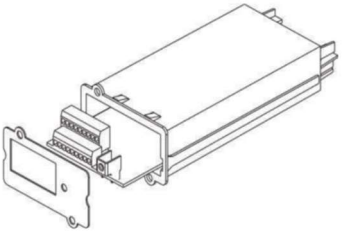
An optional external SNMP adapter can be connected to the UPS via its RS232 port if the UPS card slot is in use (e.g. DCE card fitted) but SNMP facilities are still required.

RCCMD

RCCMD (Remote Console Command Module) for 'multi-server shut down' is an independent software module intended for transmitting and receiving 'remote commands'. Using the 'RCCMD send' function, the SNMP adapter can send status messages to connected users or initiate automatic shut down throughout the whole network. Our CS141 SNMP adapters are fully compatible with RCCMD.

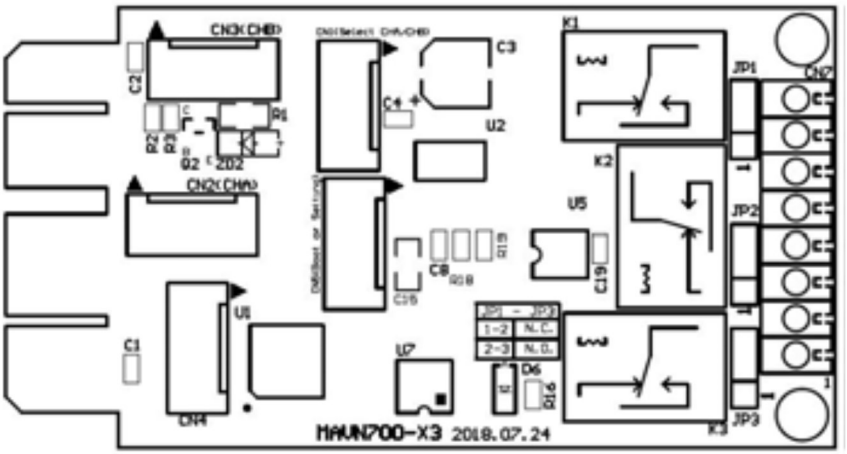
Dry Contact card

DCE-**F** is an UPS management product for monitoring the status and **an** input contact as a shutdown UPS command. The volt-free signalling outputs can be integrated into an external alarm monitoring panel or building management system.



All the output connections are switched by independent relays. Details for configuration are provided in the documentation that accompanies the card.

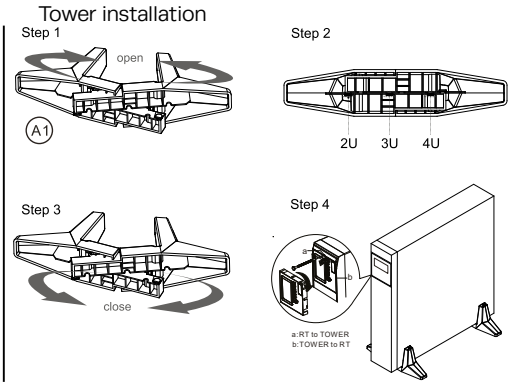
Relay terminals are rated up to 40VDC, 800mA



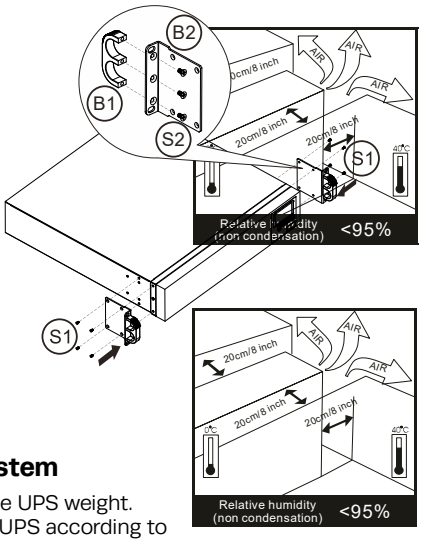
Pin	Function
CN7_Pin_1	Shutdown+ Input Voltage Range:5~25 VDC
CN7_Pin_2	Shutdown-
CN7_Pin_3	AC abnormal (JP3 for K3 NO)
CN7_Pin_4	AC abnormal (K3 Common)
CN7_Pin_5	Battery low (JP2 for K2 NO)
CN7_Pin_6	Battery low (K2 Common)
CN7_Pin_7	UPS alarm (JP1 for K1 NO)
CN7_Pin_8	UPS alarm common (K1 Common)

Installation

Installation of Accessories Kit

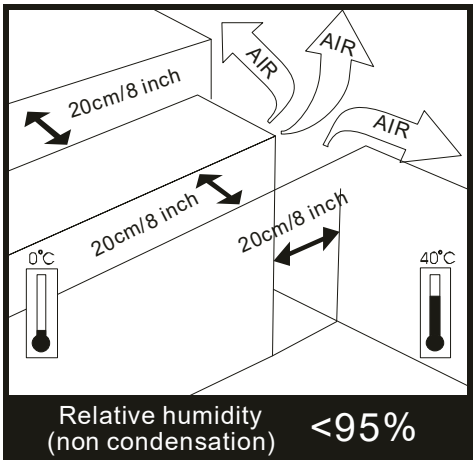


Rack Mount Installation



Selecting an installation position for the UPS system

The UPS is heavy. Select a location sturdy enough to support the UPS weight. To ensure proper operation and long operating life, position the UPS according to the following requirements.



1.Keep at least 20 cm side and rear clearance away from walls or any obstructions.

2. Ensure the air vents on UPS are not blocked. Allow adequate space for proper ventilation.

3. Ensure that the installation site is free from excessive dust and the ambient temperature and humidity are within the specified limits.

4. Do not place the UPS in a dusty or corrosive environment or near any flammable objects.

5. This UPS is not designed for outdoor use.

Selecting an installation position for the Extended Battery Cabinet

It is necessary to select a proper environment to install the unit, in order to minimize the possibility of failure to the battery bank and extend the life of the batteries. Please follow the instructions below:

1. Keep at least 20cm (8 inches) clearance from the rear panel of the battery bank from the wall or other obstructions.
2. Do not block the air-flow to the ventilation openings of the unit.
3. Ensure the installation site environmental conditions are in accordance with the battery bank working specifications to avoid overheat and excessive moisture.
4. Do not place the battery bank in a dusty or corrosive environment or near any flammable objects.
5. This battery bank is not designed for outdoor use.