User Guide

Professional II+ Series (1P/1P)

With Built-in Isolation Tran s f o r me r

Towe r Type

PRO900-ESI

1-3KVA

Contents [hide]

IMPORTANT SAFETY WARNING

Please comply with all warnings and operating instructions in this manual strictly. Save this manual properly and read carefully the following instructions before installing the unit. Do not operate this unit before reading through all safety information and operating

instructions carefully.

1-1. Transportation

- Please transport the UPS system only in the original package to protect against shock and impact

1-2. Preparation

- Condensation may occur if the UPS system is moved directly from cold to warm environment. The UPS system must be absolutely dry before being installed. Please allow at least two hours for the UPS system to acclimate the environment
- Do not install the UPS system near water or in moist environments
- Do not install the UPS system where it would be exposed to direct sunlight or near heater
- Do not block ventilation holes in the UPS housing

1-3. Installation

- Do not connect appliances or devices which would overload the UPS system (e.g. laser printers) to the UPS output sockets
- 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 outlet which 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 outlet (shockproof outlet)
- Please use only VDE-tested, CE-marked power cables to connect the loads to the UPS system
- When installing the equipment, it should ensure that the sum of the leakage current of the UPS and the connected devices does not exceed 3.5mA

1-4. Operation

- Do not disconnect the mains cable on the UPS system or the building wiring 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 live even if the UPS system is not connected to the building wiring outlet.
- In order to fully disconnect the UPS system, first press the OFF/Enter button to disconnect the mains.
- Prevent no fluids or other foreign objects from inside of the UPS system.

1-5. Maintenance, service and faults

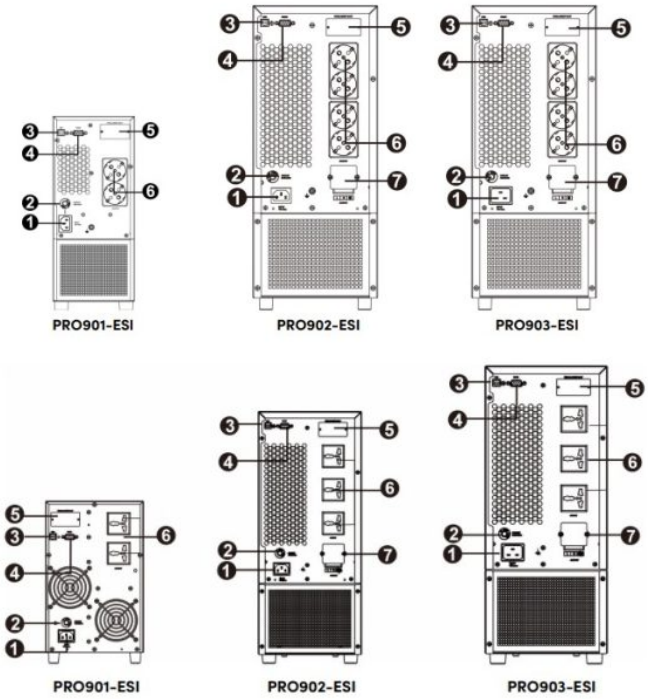
- The UPS system operates with hazardous voltages. Repairs may be carried out only by qualified maintenance personnel.
- Caution – risk of electric shock. Even after the unit is disconnected from the mains (building wiring outlet), components inside the UPS system are still connected to the battery and electrically live and dangerous.
- Before carrying out any kind of service and/or maintenance, disconnect the batteries and verify that no current is present and no hazardous voltage exists 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. Unauthorized 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 with the same type and amperage in order to avoid fire hazards.
- Do not dismantle the UPS system.
- WARNING: This is a category C2 UPS product. In a residential environment, this product may cause radio interference, in which case the user many be required to take additional measures.

INSTALLATION AND SETUP

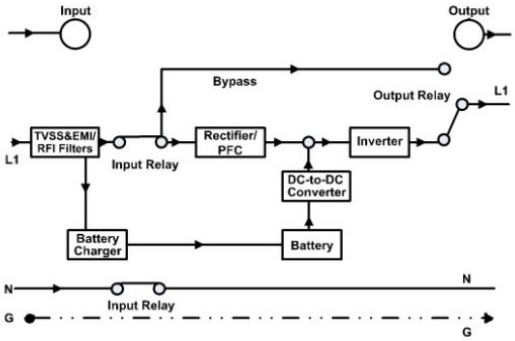
NOTE: Before installation, please inspect the unit. Be sure that nothing inside the package is damaged. Please keep the original package in a safe place for future use.



1. AC input
2. Input circuit breaker
3. USB communication port
4. RS-232 communication port
5. SNMP intelligent slot (option)
6. Output receptacles
7. Output terminal

2-2. Operating principle

The operating principle of the UPS is shown as below:



2-3. Setup the UPS

Step 1: UPS input connection

Plug the UPS into a two-pole, three-wire, grounded receptacle only. Avoid using extension cords. The power cord is supplied in the UPS package.

Step 2: UPS output connection

- For socket-type outputs, simply connect devices to the outlets.
- For terminal-type input or outputs, please follow below steps for the wiring configuration:

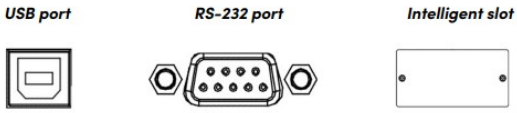
a) Remove the small cover of the terminal block

b) Suggest using AWG14 or 2.1mm power cords for 3KVA. Please also install a 2-port breaker 20A, 250V for 3KVA between the mains and AC input of UPS for safety operation.

c) Upon completion of the wiring configuration, please check whether the wires are securely affixed. d) Put the small cover back to the rear panel.

Step 3: Communication connection

Communication port:



To allow for unattended UPS shutdown/start-up and status monitoring, connect the communication cable one end to the USB/RS-232 port and the other to the communication port of your PC. With the monitoring software installed, you can schedule UPS shutdown/start-up and monitor UPS status through PC.

The UPS is equipped with intelligent slot perfect for either SNMP or AS400 card. When installing either SNMP or AS400 card in the UPS, it will provide advanced

communication and monitoring options. PS. USB port and RS-232 port can't work at the same time.

Step 4: Turn on the UPS

Press the ON/Mute button on the front panel for two seconds to power on the UPS.

Note: The battery charges fully during the first five hours of normal operation. Do not expect full battery run capability during this initial charge period.

Step 5: Install software

For optimal computer system protection, install UPS monitoring software to fully configure UPS shutdown. You may insert provided CD into CD-ROM to install the monitoring software. If not, please follow steps below to download and install monitoring software from the internet:

1. Go to the website http://www.power-software-download.com
2. Click View Power software icon and then choose your required OS to download the software.
3. Follow the on-screen instructions to install the software.
4. When your computer restarts, the monitoring software will appear as an orange plug icon located in the system tray, near the clock.

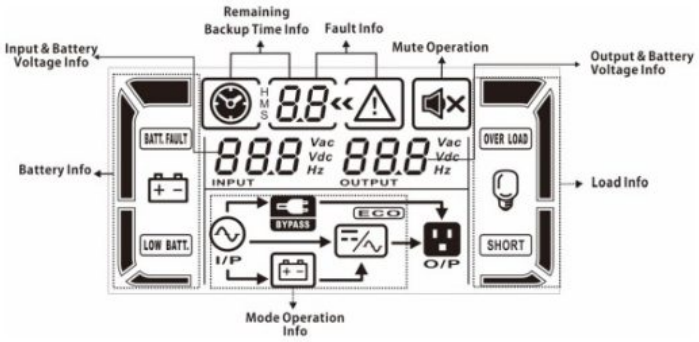
OPERATIONS

3-1. Button operation

Button	Function

ON/Mute Button	Turn on the UPS: Press and hold ON/Mute button for at least 2 seconds to turn on the UPS. Mute the alarm: When the UPS is on battery mode, press and hold this button for at least 5 seconds to disable or enable the alarm system. But it's not applied to the situations when warnings or errors occur. Up key: Press this button to display previous selection in UPS setting mode. Switch to UPS self-test mode: Press and hold ON/Mute button for 5 seconds to enter UPS self-testing while in AC mode, ECO mode, or converter mode.
OFF/Enter Button	Turn off the UPS: Press and hold this button at least 2 seconds to turn off the UPS. UPS will be in standby mode under power normal or transfer to Bypass mode if the Bypass enable setting by pressing this button. Confirm selection key: Press this button to confirm selection in UPS setting mode.
Select Button	Switch LCD message: Press this button to change the LCD message for input voltage, input frequency, battery voltage, output voltage and output frequency. It will return back to default display when pausing for 10 seconds. Setting mode: Press and hold this button for 5 seconds to enter UPS setting mode when UPS is in standby mode or bypass mode. Down key: Press this button to display next selection in UPS setting mode.
ON/Mute + Select Button	ØSwitch to bypass mode: When the main power is normal, press ON/Mute and Select buttons simultaneously for 5 seconds. Then UPS will enter to bypass mode. This action will be ineffective when the input voltage is out of acceptable range.

3-2. LCD Panel



Display	**Function**
Remaining backup time information	
	Indicates the remaining backup time in pie chart.
	Indicates the remaining backup time in numbers. H: hours, M: minute, S: second
Fault information	
	Indicates that the warning and fault occurs.
	Indicates the warning and fault codes, and the codes are liste d in details in 3-5 section.
Mute operation	
	Indicates that the UPS alarm is disabled.
Output & Battery voltage information	
	Indicates the output voltage, frequency or battery voltage. Vac : output voltage, Vdc: battery voltage, Hz: frequency
Load information	
	Indicates the load level by 0-25%, 26-50%, 51-75%, and 76-1 00%.
	Indicates overload.

SHORT	Indicates the load or the UPS output is short circuit.
Mode operation information	
	Indicates the UPS connects to the mains.
	Indicates the battery is working.
	Indicates the bypass circuit is working.
	Indicates the ECO mode is enabled.
	Indicates the Inverter circuit is working.
	Indicates the output is working.
Battery information	
	Indicates the Battery level by 0-25%, 26-50%, 51-75%, and 7 6-100%.
BATT. FAULT	Indicates the battery is fault.
LOW BATT.	Indicates low battery level and low battery voltage.
Input & Battery voltage information	
	Indicates the input voltage or frequency or battery voltage. Va c: Input voltage, Vdc: battery voltage, Hz: input frequency

3-3. Audible Alarm

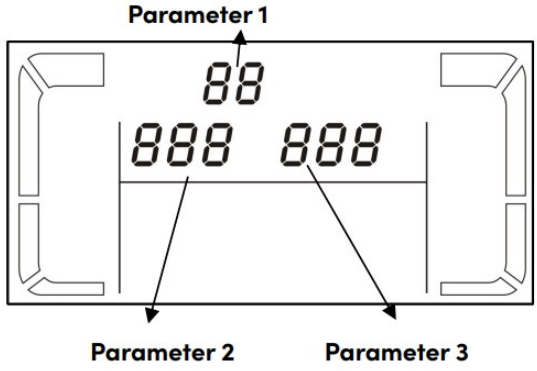
Battery Mod e	Sounding every 4 seconds
Low Battery	Sounding every second
Overload	Sounding twice every second

Fault	Continuously sounding
Bypass Mode	Sounding every 10 seconds

3-4. LCD display wordings index

Abbreviation	**Display content**	**Meaning**
ENA		Enable
DIS		Disable
ESC		Escape
HLS		High loss
LLS		Low loss
BAT		Battery
CF		Converter
TP		Temperature
CH		Charger
FU		Bypass frequency unstable
EE		EEPROM error

3-5. UPS Setting



There are three parameters to set up the UPS.

Parameter 1: It's for program alternatives. Refer to below table.

Parameter 2: and parameter 3 are the setting options or values for each program.

• **01: Output voltage setting**

Interface	**Setting**
	Parameter 2: Output voltage For 208/220/230/240 VAC models, you may choose th e following output voltage: 208: presents output voltage is 208Vac 220: presents output voltage is 220Vac 230: presents output voltage is 230Vac (Default) 240: presents output voltage is 240Vac For 110/150/120/127 VAC models, you may choose th e following output voltage: 110: presents output voltage is 110Vac 115: presents output voltage is 115Vac 120: presents output voltage is 120Vac (Default) 127: presents output voltage is 127Vac

02: Frequency Converter enable/disable

Interface	Setting

	Parameter 2: Enable or disable converter mode. You may choose the following two options: ENA: converter mode enable DIS: converter mode disable(Default)

03: Output frequency setting

Interface	**Setting**
	Parameter 2: Output frequency setting. You may set the initial frequency on battery mode: BAT 50: presents output frequency is 50Hz BAT 60: presents output frequency is 60Hz If converter mode is enabled, you may choose the foll owing output frequency: CF 50: presents output frequency is 50Hz CF 60: presents output frequency is 60Hz

04: ECO enable/disable

Interface	**Setting**
	Parameter 2: Enable or disable ECO function. You ma y choose the following two options: ENA: ECO mode enable DIS: ECO mode disable (Def ault)

05: ECO voltage range setting

Interface	**Setting**

	Parameter 2: Set the acceptable high voltage point and low voltage point for ECO mode by pressing Down key or Up key. HLS: After pressing “Enter” key, it will show HL in parameter 1 and high loss voltage in ECO mode in parameter 2. For 208/220/230/240 VAC models, the setting range in parameter 3 is from +7V to +24V of the nominal voltage. (Default: +12V) For 110/115/120/127 VAC models, the setting range in parameter 3 is from +3V to +12V of the nominal voltage. (Default: +6V) LLS: After pressing “Enter” key, it will show LL in parameter 1 and low loss voltage in ECO mode in parameter 2. For 208/220/230/240 VAC models, the setting range in parameter 3 is from -7V to -24V of the nominal voltage. (Default: -12V) For 110/115/120/127 VAC models, the setting voltage in parameter 3 is from -3V to -12V of the nominal voltage. (Default: -6V)

06: Bypass enable/disable when UPS is off

Interface	**Setting**
	Parameter 3: Enable or disable Bypass function. You may choose the following two options: ENA: Bypass enable DIS: Bypass disable (Default)

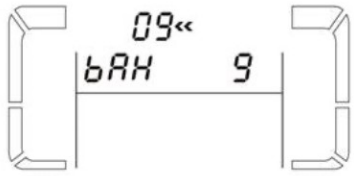
07: Bypass voltage range setting

Interface	Setting
	Parameter 2 & 3: Set the acceptable high voltage poin t and acceptable low voltage point for Bypass mode b y pressing the Down key or Up key. HLS: After pressing “Enter” key, it will show HL in para meter 1 and bypass high loss voltage in parameter 2. For 208/220/230/240 VAC models: 230-264: setting the high voltage point in parameter 3 from 230Vac to 264Vac. (Default: 264Vac) For 110/115/120/127 VAC models: 115-132: setting the high voltage point in parameter 3 from 115Vac to 132Vac(Default: 132Vac) LLS: After pressing “Enter” key, it will show LL in para meter 1 and bypass low loss voltage in parameter 2. For 208/220/230/240 VAC models: 180-220: setting the low voltage point in parameter 3 f rom 180Vac to 220Vac. (Default: 180Vac) For 110/115/120/127 VAC models: 90-110: setting the low voltage point in parameter 3 fr om 90Vac to 110Vac. (Default: 90Vac)

8: Autonomy limitation setting

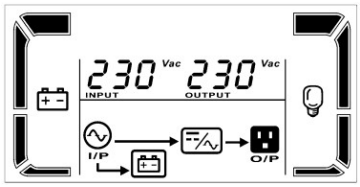
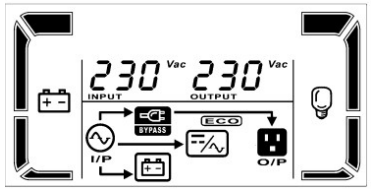
Interface	Setting
	Parameter 3: Set up backup time on battery mode for general outlets. 0-999: setting the backup time in minutes from 0-999 f or general outlets on battery mode. 0: When setting as “0”, the backup time will be only 10 seconds. 999: When setting as “999”, the backup time setting will be disabled. (Default)

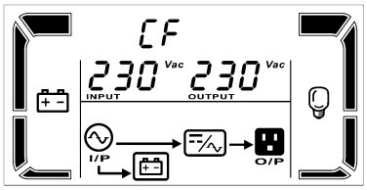
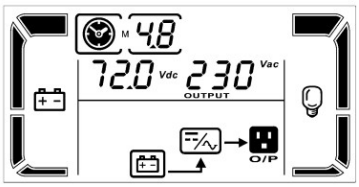
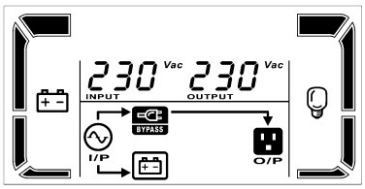
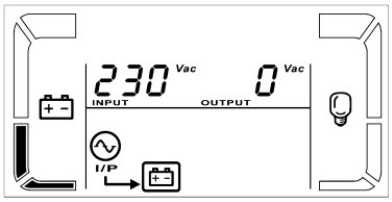
9: Total battery AH

Interface	Setting
	Parameter 3: Set up total battery AH value of the UPS . (unit: AH) 7-999: setting the total battery capacity fro m 7 to 999. Please set up this figure if external battery pack is connected. If the UPS is standard model, the default setting is 9A H. If the UPS is long-run model, the default setting is 6 5AH.

• 00: Exit setting

3-6. Operating Mode Description

Operating mo de	Description	LCD display
Online mode	When the input voltage is within acce ptable range, UPS will provide pure a nd stable AC power to output. The UP S will also charge the battery at online mode.	
ECO mode	Energy saving mode: When the input voltage is within volta ge regulation range, UPS will bypass voltage to output for energy saving.	

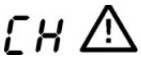
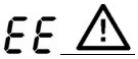
Frequency Converter mode	When input frequency is within 40 Hz to 70 Hz, the UPS can be set at a constant output frequency, 50 Hz or 60 Hz. The UPS will still charge battery under this mode.	
Battery mode	When the input voltage is beyond the acceptable range or power failure and alarm is sounding every 4 second, UPS will backup power from battery.	
Bypass mode	When input voltage is within acceptable range but UPS is overload, UPS will enter bypass mode or bypass mode can be set by front panel. Alarm is sounding every 10 second.	
Standby mode	UPS is powered off and no output supply power, but still can charge batteries.	

3-7. Faults Reference Code

Fault event	**Fault code**	**Icon**	**Fault event**	**Fault code**	**Icon**
Bus start fail	01	x	Inverter output short	14	
Bus over	02	x	Battery voltage too high	27	
Bus under	03	x	Battery voltage too low	28	

Bus unbalance	04	x	Over temperature	41	x
Inverter soft start failure	11	x	Overload	43	
Inverter voltage high	12	x	Charger failure	45	x
Inverter voltage Low	13	x			

3-8. Warning indicator

Warning	**Icon (flashing)**	**Alarm**
Low Battery		Sounding every second
Overload		Sounding twice every second
Battery is not connected		Sounding every second
Over Charge		Sounding every second
Over temperature		Sounding every second
Charger failure		Sounding every second
Battery fault		Sounding every second
Out of bypass voltage range		Sounding every second
Bypass frequency unstable		Sounding every second
EEPROM error		Sounding every second

TROUBLESHOOTING

If the UPS system does not operate correctly, please solve the problem by using the table below:

Symptom	Possible cause	Remedy
No indication and alarm even though the mains is normal	The AC input power is not connected well	Check if input power cord firmly connected to the mains
	The AC input is connected to the UPS output	Plug AC input power cord to AC input correctly
The icon ⚠ and 🔋 flashing on LCD display and alarm is sounding every second	The external or internal battery is incorrectly connected	Check if all batteries are connected well
Fault code is shown as 27 and the icon BATT. FAULT is lighting on LCD display and alarm is continuously sounding	Battery voltage is too high or the charger is fault	Contact your dealer
Fault code is shown as 28 and the icon BATT. FAULT is lighting on LCD display and alarm is continuously sounding	Battery voltage is too low or the charger is fault	Contact your dealer
The icon ⚠ and OVER LOAD is flashing on LCD display and alarm is sounding twice every second	UPS is overload	Remove excess loads from UPS output
	UPS is overloaded. Devices connected to the UPS are fed directly by the electrical network via the Bypass	Remove excess loads from UPS output

	After repetitive overloads, the UPS is locked in the Bypass mode. Connected devices are fed directly by the mains	Remove excess loads from UPS output first. Then shut down the UPS and restart it
Fault code is shown as 43 and The icon OVER LOAD is lighting on LCD display and alarm is continuously sounding	The UPS shut down automatically because of overload at the UPS output	Remove excess loads from UPS output and restart it
Fault code is shown as 14 and the icon SHORT is lighting on LCD display and alarm is continuously sounding	The UPS shut down automatically because short circuit occurs on the UPS output	Check output wiring and if connected devices are in short circuit status
Fault code is shown as 01, 02, 03, 04, 11, 12, 13, 41 and 45 on LCD display and alarm is continuously sounding	A UPS internal fault has occurred. There are two possible results: 1. The load is still supplied, but directly from AC power via bypass. 2. The load is no longer supplied by power	Contact your dealer
Battery backup time is shorter than nominal value	Batteries are not fully charged	Charge the batteries for at least 5 hours and then check capacity. If the problem still persists, consult your dealer
	Batteries defect	Contact your dealer to replace the battery

STORAGE AND MAINTENANCE

Operation

The UPS system contains no 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.

 Be sure to deliver the spent battery to a recycling facility or ship it to your dealer in the replacement battery packing material.

Storage

Before storing, charge the UPS 5 hours. Store the UPS covered and upright in a cool, dry location. During storage, recharge the battery in accordance with the following table:

Storage Temperature	Recharge Frequency	Charging Duration
-25°C – 40°C	Every 3 months	1-2 hours
40°C – 45°C	Every 2 months	1-2 hours

Elevation

Operating	Storage
0 – 1,000 m: normal operation	0 – 15,000m

SPECIFICATIONS

Standard Models

MODEL	PRO901-ESI	PRO902-ESI	PRO903-ESI
INPUT			
Input voltage	208/220/230/240 VAC		

Voltage Range	Low Line Transfer	180VAC/160VAC/140VAC/120VAC±5% (Ambient Temp.<350C) (based on load percentage 100% – 80 % / 80 % – 70 % / 70 – 60 % / 60 % – 0)
	Low Line Comeback	195VAC/175VAC/155VAC/135VAC ± 5 % (Ambient Temp.<350C) (based on load percentage 100% – 80 % / 80 % – 70 % / 70 – 60 % / 60 % – 0)
	High Line Transfer	300 VAC ± 5 %
	High Line Comeback	290 VAC ± 5 %
Frequency Range		40Hz ~ 70 Hz
Phase		Single phase with ground
Power Factor		≧ 0.99 @ nominal voltage (input voltage)
OUTPUT		
Output voltage		208/220/230/240VAC
AC Voltage Regulation		±1% (Batt. Mode)
Frequency Range		47 ~ 53 Hz or 57 ~ 63 Hz (Synchronized Range)
Frequency Range (Batt. Mode)		50 Hz ± 0.25 Hz or 60Hz ± 0.3 Hz
Overload		Ambient Temp.<350C

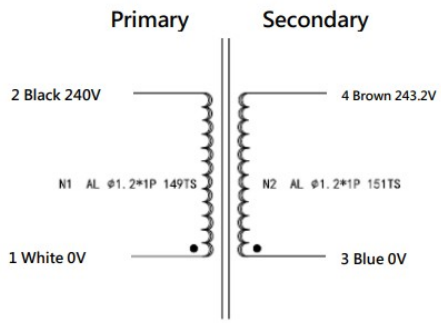
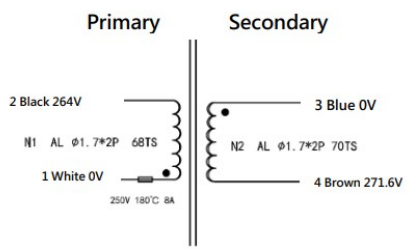
Current Crest Ratio		3:1		
Harmonic Distortion		≦ 3 % THD (linear load); ≦ 6 % THD (non-linear load)		
Transfer Time	AC Mode to Batt. Mode	Zero		
	Inverter to Bypass	4 ms (Typical)		
Waveform (Batt. Mode)		Pure Sinewave		
EFFICIENCY				
AC Mode		82.5%	84%	85%
Battery Mode		76.5%	80%	80%
ECO Mode		87%	90%	90%
BATTERY				
Battery Type		12V/10AH		
Numbers		4 (24VDC design with 2 parallel strings battery)	6	8
Recharge Time		4 hours recover to 90% capacity (Typical)		
Charging Current		1.0 A (max.)		
Charging Voltage		27.4VDC ± 1%	82.1 VDC ±1%	109.4 VDC ±1%
PHYSICAL				
Dimension, D x W x H(mm)		400 x 180 x 280	421x 190 x 448	

Net Weight (kgs)/ Gross weight(kgs)	27	50.3	63.7
ENVIRONMENT			
Operation Humidity	20-90 % RH @ 0- 40°C (non-condensing)		
Noise Level	Less than 50dBA @ 1 Meter		
MANAGEMENT			
Smart RS-232 or USB	Supports Windows® 2000/2003/XP/Vista/2008/7/8, Linux, Unix and MAC		
Optional SNMP	Power management from SNMP manager and web browser		

* Derate capacity to 70% of capacity in Frequency converter mode or when the output voltage is adjusted to 208VAC.

** Product specifications are subject to change without further notice.

ISOLATION TRANSFORMER

Model	Schematic diagram
PRO901-ESI	
PRO902-ESI & PRO903-ESI	

Electrical parameters			
MODEL	**PRO901-ESI**	**PRO902-ESI**	**PRO903-ESI**
DC Resistance	PIN: 1–2= 1. 5Ω MAX PIN: 3–4= 1. 6Ω MAX	PIN: 1–2= 0.35Ω MAX PIN: 3–4= 0.4Ω MAX	
Exciting current	PIN: 1–2= 2000mA MAX @240V/50Hz	PIN: 1–2= 7.5A MAX @264V/50Hz	
Turn ratio	N1 : N2= 149TS : 151TS	N1 : N2= 68TS : 70TS	
Output empty load	PIN: 1–2=240V±3% PIN:3–4=243.2V±3%	PIN: 1—2=264V±3% PIN:3—4=271.6V±3%	
Insulation impedance	≥500MΩ 500V DC winding & core	≥100MΩ 500V DC winding & core	
voltage-endurance	PRI–SEC–CORE 1500V/5mA/60S SEC–CORE 1000V/5mA/60S	PRI–SEC–CORE 3000V/5mA/60S SEC–CORE 1500V/5mA/60S	
Insulation level	CLASS B 130°C	CLASS H 180°C	

Worldwide Customer Care Centers

INDONESIA Office

PT PROLINK INTIDATA NUSANTARA

Walk-In : Jl. Cideng Barat No. 79, Jakarta Pusat 10150, Indonesia.

Telephone : +62 21 3483 1777

Sale Enquiries : sales.id@prolink2u.com

Technical Support : support.id@prolink2u.com

MALAYSIA Office

FIDA SYSTEMS (M) SDN BHD

Walk-In : 29 Jalan USJ 1/31, 47600 Subang Jaya, Selangor Darul Ehsan, Malaysia.

Telephone : +60 3 8024 9151

Sale Enquiries : sales.my@prolink2u.com

Technical Support : support.my@prolink2u.com

SINGAPORE Office

FIDA INTERNATIONAL (S) PTE LTD

Walk-In : Block 16 Kallang Place #06-02, Kallang Basin Industrial Estate, Singapore 339156.

Telephone : +65 6357 0668

Sale Enquiries : sales@prolink2u.com

Technical Support : support@prolink2u.com

Technical Support Hotline

INDONESIA : +62 21 3483 1717

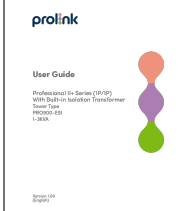
MALAYSIA : +60 3 8023 9151

SINGAPORE : +65 6357 0666

Note: Closed on Saturdays, Sundays and local/regional Public Holidays.

Register online for your Product Warranty at www.prolink2u.com

Documents / Resources

	Prolink Professional II+ Series Tower Long Run Models [pdf] User Manual PRO900-ESI 1-3KVA, Professional II Series Tower Long Run Models, Pro fessional II Series, Tower Long Run Models, Run Models, Models

References

- User Manual

PROLiNK

Models, PRO900-ESI 1-3KVA, Professional II Series, Professional II Series Tower Long Run Models, PROLiNK, Run Models, Tower Long Run Models

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