

USER MANUAL (BUKU PETUNJUK PEMAKAIAN)



Uninterruptible Power Systems

SIN1100C
SIN1500C
SIN2100C
SIN3100C

ICA

CONTENTS / *DAFTAR ISI*

	Page / <i>Halaman</i>
I. SAFETY NOTES / <i>CATATAN KESELAMATAN</i>	1
II. INTRODUCTION / <i>PENDAHULUAN</i>	3
III. TECHNICAL SPECIFICATION / <i>SPESIFIKASI TEKNIK</i>	5
IV. FRONT PANEL & REAR PANEL VIEW / <i>TAMPAK PANEL DEPAN & PANEL BELAKANG</i>	6
V. UPS INSTALLATION / <i>PEMASANGAN UPS</i>	9
VI. UPS START UP / <i>MENGHIDUPKAN UPS</i>	11
VII. OPERATION PROCEDURE / <i>CARA PENGOPERASIAN</i>	12
VIII. TABLE OF INDICATOR STATUS / <i>TABEL STATUS INDIKATOR</i>	13
IX. TROUBLE SHOOTING / <i>PETUNJUK KETIDAK NORMALAN</i>	14

I. SAFETY NOTES / CATATAN KESELAMATAN

I.1. Electrical Safety

- Do not work alone under hazardous conditions.
- High current through conductive materials could cause severe burns.
- Check that the power cord(s), plug(s), and socket are in good condition.
- When grounding cannot be verified, disconnect the equipment from the utility power outlet before installing or connecting to other equipment. Reconnect the power cord only after all connections are made.
- Connect the equipment to a three wire utility outlet (two pole plus ground). The receptacle must be connected to appropriate branch circuit/ mains protection (fuse or circuit breaker). Connection to any other type of receptacle may result in risk of electrical shock.

I.2. Deenergizing Safety

- If the UPS has an internal energy source (battery), the output may be energized when the unit is not connected to a utility power outlet.
- To deenergize a pluggable UPS, press the OFF button or switch to shut the equipment off. Unplug the UPS from the utility power outlet. Disconnect the external batteries where applicable and disconnect the internal battery. Push the ON button to deenergize the capacitors.

I.1. Keselamatan Listrik

- Jangan bekerja sendiri dalam situasi berbahaya.
- Tegangan tinggi melalui bahan konduktif dapat menyebabkan luka bakar.
- Periksa agar kabel listrik, fitting, dan soket berada dalam kondisi baik.
- Bila grounding tak dapat diverifikasi, putuskan hubungan peralatan listrik dengan keluaran listrik AC sebelum memasang atau menghubungkannya dengan peralatan lain. Hubungkan kembali dengan kabel listrik hanya jika seluruhnya selesai dihubungkan.
- Hubungkan peralatan ke keluaran listrik AC tiga kabel (dua kutub dan ground). Soket penerima harus terhubung secara benar melalui sirkuit cabang/pelindung utama (sekring atau pemutus arus). Hubungan ke soket penerima dalam bentuk lainnya dapat menyebabkan bahaya sengatan listrik.

I.2. Keselamatan Saat Membuang Arus Listrik

- Jika alat memiliki sumber energi internal (baterai), output mungkin masih mengandung arus listrik walaupun unit tidak terhubung dengan tegangan listrik AC.
- Untuk membuang arus listrik dari UPS yang terhubung, tekan tombol OFF untuk mematikan alat. Putuskan alat dari outlet listrik AC. Lepaskan baterai dan putuskan baterai internal. Tekan tombol ON untuk membuang listrik di dalam kapasitor.

I.3. Battery Safety

- Repair are to be performed only by qualified personnel.
- Do not dispose of batteries in a fire. The batteries may explode.
- Do not open or mutilate batteries. They contain an electrolyte that is toxic and harmful to the skin and eyes.
- Replace batteries with the same number and type of batteries as originally installed in the equipment.



Do not dispose of leftover packaging for this product as household waste: Take it to a collection point for recycling.

For information about the nearest recycling facility, contact your local waste disposal authority.

Disposing of the product

The UPS contains internal material that (in case of disposal) are considered TOXIC and HAZARDOUS WASTE, such as electronic circuit boards and batteries. Treat these materials according to the laws applicable referring to qualified service personnel. Their proper disposal contributes to respect the environment and human health.

I.3. Keselamatan Baterai

- Perbaikan hanya dilakukan oleh seorang teknisi yang memiliki kualifikasi.
- Jangan buang baterai ke dalam api, dapat meledak.
- Jangan membongkar baterai. Baterai mengandung elektrolit yang beracun dan dapat merusak kulit dan mata.
- Ganti baterai dengan nomor dan jenis yang sama seperti aslinya terpasang dalam alat.



Jangan buang sisa kemasan produk ini sebagai limbah rumah tangga: Bawa ke tempat pengumpulan untuk didaur ulang.

Untuk informasi tentang tempat daur ulang terdekat, hubungi petugas pembuangan limbah setempat.

Pembuangan produk

UPS berisi bahan internal yang (dalam kasus pembuangan) dianggap LIMBAH BERACUN dan BERBAHAYA, seperti papan sirkuit elektronik dan baterai. Perlakukan bahan-bahan ini sesuai dengan undang-undang yang berlaku dengan merujuk pada personel servis yang berkualifikasi. Pembuangan yang tepat berkontribusi untuk menghormati lingkungan dan kesehatan manusia.

II. INTRODUCTION / PENDAHULUAN

The ICA Uninterruptible Power Supplies is an advanced true on-line sinewave with technology high voltage PWM (Pulse Width Modulation) and static transfer switch. The UPS can provide reliable, regulated, transient free AC power to sensitive equipment ranging from computers & telecommunication systems to computerized instrument.

The UPS has high non-linear load current capability (crest ratio 3:1) and this is suitable for powering special loads such Switching Power Supplies or load high capacitive.

The systems static transfer switch (STS) provides bypass power as its standby source. Upon inverter failure or overload, the STS will switch the output power Bypass (if the power line exists) within 0 ms. The STS can retransfer back to inverter automatically when the system is restored to normal condition within 2 ms.

This UPS is also provided completed by interface for communication with computer, with operating system Windows and Linux. Information from UPS to Computer is **power fail** and **battery low**.

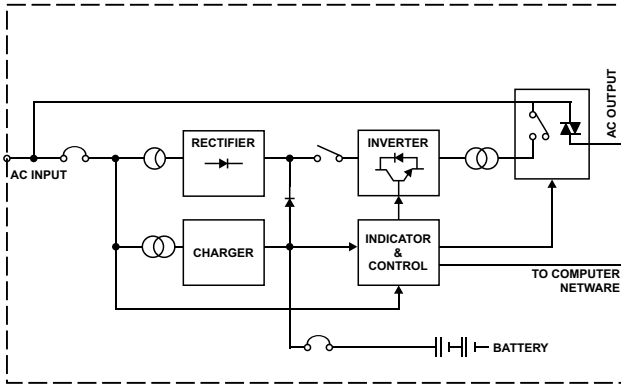
UPS ICA adalah Uninterruptible Power Supplies jenis tidak terputus dengan output sinusoida yang menggunakan teknologi high voltage PWM (Pulse Width Modulation) dan dilengkapi dengan static transfer switch. Sehingga UPS ini menghasilkan sumber daya output yang sangat stabil dan bebas dari tegangan transient, jadi sangat baik untuk digunakan pada peralatan yang sensitif seperti komputer, sistem telekomunikasi, dan peralatan canggih lainnya.

UPS ini mempunyai kemampuan beban non-linier yang tinggi (crest ratio 3:1), sehingga memungkinkan untuk digunakan pada beban-beban seperti Switching Power Supply atau beban kapasitif tinggi.

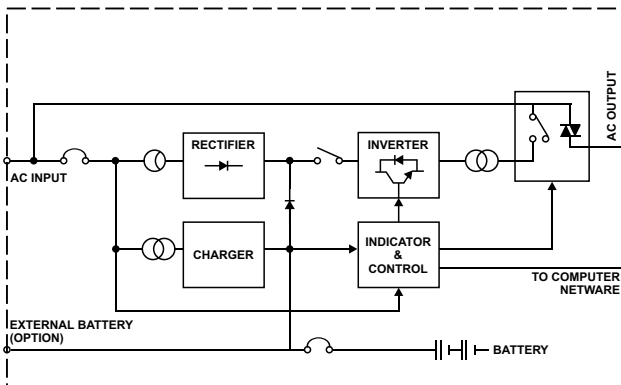
Sistem static transfer switch (STS) merupakan suatu sistem dimana output UPS berasal dari inverter di by-pass ke Input PLN pada saat kondisi overload (bila PLN ada) dengan waktu transfer 0 ms dan Static Transfer Switch secara otomatis akan kembali memindahkan output UPS ke Inverter, bila sudah tidak terjadi Overload. Bila terjadi kerusakan pada Inverter, output UPS melalui STS juga akan di bypass ke Input PLN dengan waktu transfer hanya sekitar 2 ms.

UPS ini dilengkapi juga interface untuk berkomunikasi dengan komputer, baik dengan sistem operasi Windows dan Linux. Informasi yang diberikan ke komputer adalah saat **PLN mati** dan pada saat **baterai hampir habis**.

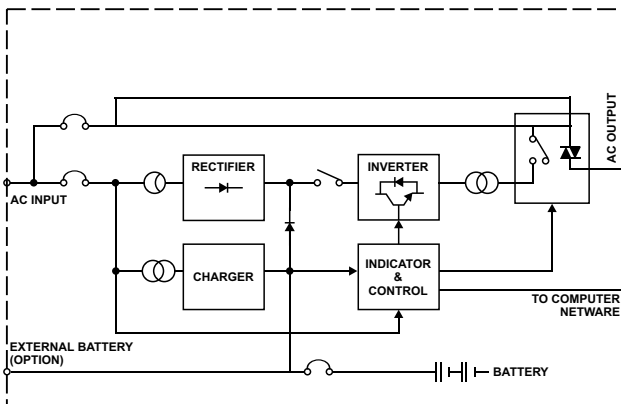
II.1. DIAGRAM BLOCK VIEW / GAMBAR BLOK DIAGRAM



UPS SIN1100C, UPS SIN1500C



EXTERNAL BATTERY (OPTIONAL) UPS SIN2100C

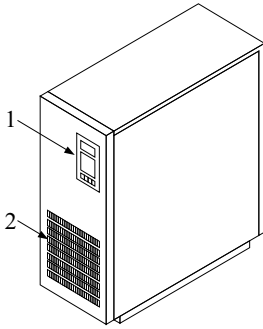


EXTERNAL BATTERY (OPTIONAL) UPS SIN3100C

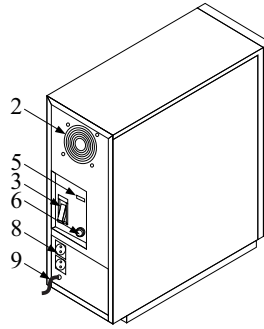
III. TECHNICAL SPECIFICATION / SPESIFIKASI TEKNIK

ITEM		UNITS	SPECIFICATION				REMARKS
MODEL			SIN1100C	SIN1500C	SIN2100C	SIN3100C	
CAPACITY		VA/W	1600 / 1040	2500 / 1625	3100 / 2015	5000 / 3250	
AC IN PUT	Voltage	V	185 ~ 250				
	Frequency	Hz	50 ± 5%				
	Protection		No Fuse Breaker				
DC IN PUT	Voltage	V	84	120	192		
	Internal Battery		7 x 12V, 7Ah	10 x 12V, 7Ah		16 x 12V, 7Ah	Sealed lead acid battery
	Protection		No Fuse Breaker				
CHG	Topology		Switching Regulation				
	Floating Voltage	V	94,5	135		216	
I N V O U T	Wave Form		Sinusoida				
	Distortion		< 3% THD				Load from 0 ~ 100%
	Topology		Pulse Width Modulation (PWM)				
	Voltage	V	220 ± 2%				
	Frequency	Hz	50 ± 1%				
	Efficiency	%	± 85				At full load
Transfer Time when AC Input Loss		ms	0				On-Line / Continuous
Static Transfer Switch		ms	2 ms from Inverter to Bypass, 0 ms back to Inverter				
Back Up Time		min	10				At nominal load
BUZ ZER	AC Input Abnormal		Intermittent Sound with 4 seconds Interval				AC input loss or less than 185V
	Low Battery		Intermittent Sound with 1 second Interval				
Operation Temperature		°C	0 ~ 40				
Dimension		mm	510 x 205 x 450	610 x 230 x 475	630 x 265 x 610	630 x 265 x 690	D x W x H
Weight		kg	64	80	104	123,5	Gross

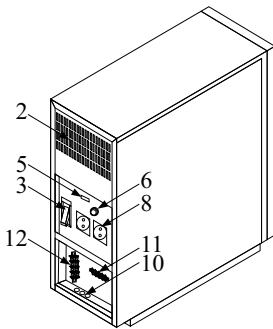
IV. FRONT PANEL & REAR PANEL VIEW / *TAMPAK PANEL DEPAN & PANEL BELAKANG*



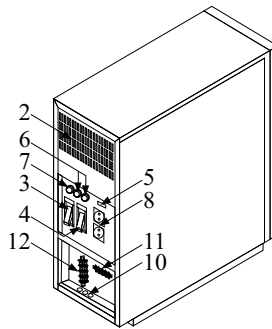
FRONT PANEL VIEW



**REAR PANEL VIEW
UPS SIN1100C, SIN1500C**



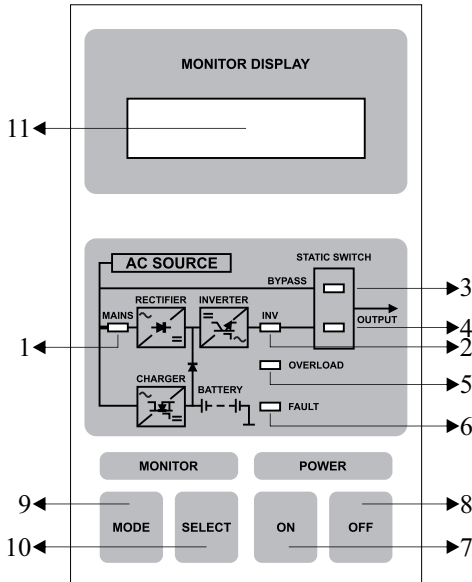
**REAR PANEL VIEW
UPS SIN2100C**



**REAR PANEL VIEW
UPS SIN3100C**

1. Panel Monitor
2. Ventilation / Lubang Angin
3. MCCB 1
4. MCCB 2
5. Communication port / Port Komunikasi
6. Fuse Output
7. Fuse Static Switch
8. Outlet / Stopkontak Output
9. Input AC Cable / Kabel AC Input
10. Cable Hole / Lubang Kabel
11. Input Terminal / Terminal Input
12. Output & Battery Terminal / Terminal Output dan Terminal Baterai

IV.1. PANEL MONITOR



1. Mains : Green led, indicate AC Power ON / *Led hijau, menunjukkan PLN ada.*
2. Inverter On : Green led, indicate Inverter ON / *Led Hijau, menunjukkan Inverter bekerja.*
3. Bypass Output: Yellow led, indicate output from AC input through Static Transfer Switch / *Led Kuning, menunjukkan output berasal dari PLN melalui static transfer switch.*
4. Inverter Output: Green led, indicate output from Inverter / *Led Hijau, menunjukkan Output berasal dari Inverter.*
5. Overload : Red led, indicate overload / *Led Merah, menunjukkan keadaan beban lebih.*
6. Fault : Red led, indicate inverter failure / *Led Merah, menunjukkan adanya gangguan pada Inverter.*
7. Switch ON : Switch for “ON” UPS / *Switch untuk menghidupkan UPS setelah main switch (MCCB) dihidupkan.*
8. Switch OFF : Press 1 time for power “OFF” UPS, press and hold ± 10 seconds to reset LCD display / *Tekan 1 kali untuk mematikan UPS, tekan terus ± 10 detik untuk reset display LCD.*
9. Switch Mode : Switch for viewing main menu on LCD display / *Switch untuk melihat Menu Utama pada display LCD .*
10. Switch Select: Switch for viewing UPS status and setting LCD display / *Switch untuk melihat status UPS dan merubah display LCD.*
11. LCD Display : LCD display can showing time, various of measurement and UPS status in alternately with pressed monitor mode switch (9) and monitor select switch (10) / *Display LCD ini dapat menunjukkan waktu, bermacam-macam pengukuran dan status UPS secara bergantian dengan menekan tombol monitor switch mode (9) dan tombol monitor switch select (10).*

Notes / Catatan :

If error in LCD display, push the SELECT button during ± 7 seconds or until LCD display return to normal. /
Jika display LCD error, tekan tombol SELECT selama ± 7 detik atau sampai LCD kembali normal.

V. UPS INSTALLATION / PEMASANGAN UPS

1. Location Selection

- Put this UPS on the protected place.
- Do not blocking the airflow intake/ exhaust and retain 10 cm between wall and others equipment.

2. Installation

- It is recommended that UPS (SIN1100C & SIN1500C) connect to outlet which have 15 Amp safety circuit breaker.
- UPS SIN-2100C, SIN-3100C have standard terminal block and needs wiring that connect the UPS to power line even with sensitive load. Open the terminal cover.

Opened the terminal cover, Figure 4-1 shows terminal block placing at lower side of UPS back panel.

1. Pemilihan Lokasi

- Letakkan UPS ini pada tempat yang terlindung.
- Lubang ventilasi jangan tertutup dan beri jarak minimal 10 cm dari dinding atau peralatan lainnya.

2. Pemasangan

- Disarankan UPS (SIN1100C & SIN1500C) dihubungkan dengan outlet yang berpengaman (dengan circuit breaker) 15 Amp.
- UPS SIN-2100C, SIN-3100C memiliki terminal blok standar dan memerlukan pengkabelan yang menghubungkan UPS ini dengan sumber daya listrik maupun dengan beban sensitif. Bukalah tutup terminal.

Tutup terminal yang terbuka, Gambar 4-1 memperlihatkan letak dari terminal blok yang berada dibagian bawah panel belakang UPS ini.

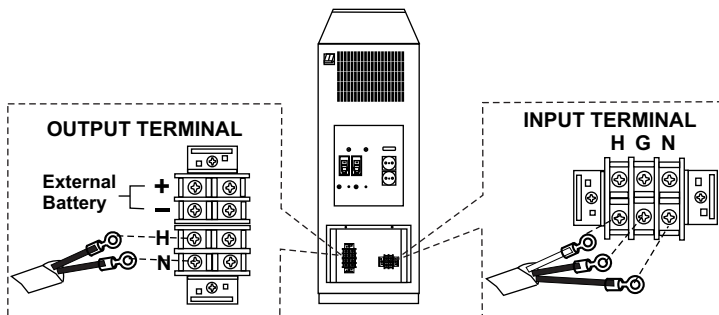


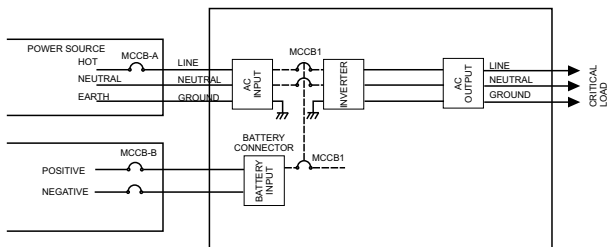
Figure 4-1. (UPS SIN2100C and SIN3100C)

V. UPS INSTALLATION / PEMASANGAN UPS

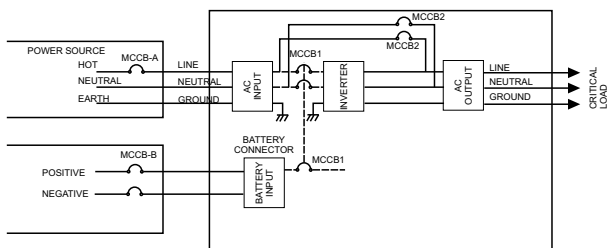
1. High voltage DC at external battery terminal, although all the circuit breaker “OFF” don’t touch this terminal battery.
2. Because there is a high voltage, installation must be done by technician.
3. Make sure circuit breaker at “OFF” position before wiring installation.
4. Cause of current needed higher than wall outlet capacity, do not connect directly the input cable to wall outlet.
5. Only use match cable size for the MCCB.

1. Tegangan tinggi DC ada pada terminal blok baterai luar, walaupun semua circuit breaker dalam keadaan “OFF” jangan sentuh terminal blok baterai ini.
2. Dikarenakan ada tegangan tinggi, pemasangan harus dikerjakan oleh teknisi.
3. Pastikan circuit breaker dalam keadaan “OFF” sebelum pemasangan kabel - kabel.
4. Karena diperlukan arus listrik yang lebih besar dari kemampuan outlet pada dinding, jangan hubungkan secara langsung kabel input dengan outlet tersebut.
5. Gunakan pengamanan MCCB dan kabel dengan ukuran yang sesuai.

Figure 4-2. UPS Customer Wiring



UPS SIN2100C



UPS SIN3100C

VI. UPS START UP / MENGHIDUPKAN UPS

- a. Make sure all the circuit breaker is in the “OFF” position and no load is connected to the Output UPS.
- b. Turn on all the circuit breaker, indicator “MAINS” and “BYPASS” will light on.
- c. Push the “ON” switch on the front panel, the indicator “INVERTER ON” light on and the unit's cooling fan will run.

Note :

If the indicator fail to light on or cooling fan doesn't run, push the “ON” switch again. If it doesn't work, contact our local agent for service assistance.

- d. After about 20 seconds, the indicator “BYPASS” will go out and the indicator “OUTPUT INVERTER” will light on. Now UPS is in normal operation and output voltage are supplied from inverter.
- e. Disconnect the input cable, the indicator “MAINS” will go out and buzzer will sound after about 4 seconds, so UPS running from the battery source.
- f. Plug in the power again, the indicator “MAINS” will light on again.
- g. Now UPS is ready to work. Plug the critical devices such us computer, disk drives, monitor, printer or electronic instrument to the output UPS.

Note :

If any condition is different, call our local agent for service assistance.

-
- a. Pastikan posisi semua circuit breaker pada posisi “OFF” dan tidak ada beban terpasang pada terminal Output UPS.
 - b. Hidupkan semua circuit breaker, indikator “MAINS” dan “BYPASS” akan menyala.
 - c. Tekan tombol “ON” pada panel depan, indikator “INVERTER ON” akan menyala dan kipas berputar.

Catatan :

Bila indikator tidak menyala atau kipas tidak berputar, tekan tombol “ON” lagi. Jika tetap tidak bekerja, panggil agen kami untuk bantuan service.

- d. Sesudah ± 20 detik, indikator “BYPASS” akan mati dan indikator “OUTPUT INVERTER” akan menyala. Sekarang UPS bekerja normal dan tegangan output disupply dari inverter.
- e. Lepaskan kabel AC input, indikator “MAINS” akan mati dan buzzer akan berbunyi setiap 4 detik, berarti UPS bekerja dengan battery sebagai sumbernya.
- f. Hubungkan kembali kabel AC input, indikator “MAINS” akan menyala kembali.
- g. Sekarang UPS siap menjalankan fungsinya. Hubungkan peralatan yang sensitif seperti komputer, diskdrive, monitor, printer atau instrumen elektronik lainnya ke output UPS.

Catatan :

Apabila terjadi kondisi yang berbeda, panggil agen kami untuk bantuan service.

VII. OPERATION PROCEDURE / CARA PENGOPERASIAN

1. Turn on procedure
 - a. Turn on all the circuit breaker on the back panel.
 - b. Push the “ON” switch on the front panel.
 - c. Turn on the load that are connected to the output.
2. When utility power is interrupted, the UPS can work without transfer time (0 ms) and buzzer sound every 4 seconds. When battery low, buzzer will sound every 1 second.
3. Turn off procedure
 - a. Turn off all the load that are connected to the UPS.
 - b. Push the “OFF” switch on the front panel.
 - c. Turn off all the circuit breaker.

Notes :

The UPS battery should charge for at least 10 hours to ensure sufficient runtime. The unit is being charged whenever it is connected to utility power, and UPS must be turn ON.

1. Menghidupkan UPS
 - a. Hidupkan semua circuit breaker pada panel belakang.
 - b. Tekan tombol “ON” pada panel depan.
 - c. Hidupkan beban yang terpasang pada output.
2. Pada saat tegangan jala-jala mati, UPS akan segera bekerja tanpa waktu transfer (0 ms) dan buzzer akan berbunyi tiap 4 detik. Pada saat baterai akan habis, buzzer akan berbunyi tiap 1 detik.
3. Mematikan UPS
 - a. Matikan semua beban yang terpasang pada UPS.
 - b. Tekan tombol “OFF” pada panel depan.
 - c. Matikan semua circuit breaker pada panel belakang.

Catatan :

Baterai UPS harus di isi sekurangnyanya 10 jam untuk memastikan UPS beroperasi dengan memadai. Unit akan mengisi bilamana dihubungkan dengan sumber listrik, dan UPS harus dihidupkan.

**VIII. TABLE OF INDICATOR STATUS / *TABEL STATUS*
*INDIKATOR***

MAINS	INVERTER OUTPUT	BYPASS	FAULT	OVER LOAD	BUZZER	STATUS CONDITION	RECOMMENDED SOLUTION
On	-	On	-	-	Every 30 seconds	UPS not running	Push "ON" switch
On	On	-	-	-	-	Normal	-
-	On	-	-	-	Every 4 seconds	Normal, utility Power failure	-
-	On	-	-	-	Every 1 seconds	Normal, battery will discharge completely	Close your software and files in use
On	On	-	-	-	Every 4 seconds	Rectifier failure	Call for service
On	-	On	-	On	-	1. UPS not running 2. Overload	1. Push "ON" switch 2. Refer to trouble shooting guide
-	-	-	On	-	Continuous	Utility power failure and battery discharge completely	Turn off UPS, restart UPS on recovery of utility power
On	-	On	On	-	Continuous	1. Inverter failure 2. Battery used up and utility power has recovered	Refer to trouble shooting guide

ON : Light on - extinguished

IX. TROUBLE SHOOTING GUIDE / *PETUNJUK KETIDAK NORMALAN*

SYMPTOM	PROBABLE CAUSE	RECOMMENDED SOLUTION
“MAINS” and “BYPASS” indicators are ON	UPS not running	Turn on the UPS
“MAINS”, “OVERLOAD” and “BYPASS” indicators are ON	Overload	<ol style="list-style-type: none"> 1. Remove some load from the UPS 2. If it remains the situation, call for service
“FAULT” indicator is ON and Alarm sounds continuously	<ol style="list-style-type: none"> 1. “MAINS” and “BYPASS” indicators are also ON 	<ol style="list-style-type: none"> 1. Push “OFF” switch first and push “ON” switch again. 2. If UPS doesn’t recover, call for service
	<ol style="list-style-type: none"> 2. “MAINS” LED is OFF 	<ol style="list-style-type: none"> 1. Battery discharged completely. 2. Restart the UPS by pushing “OFF” switch first and “ON” switch later when utility power recovers. 3. If it doesn’t work, call for service.
“MAINS” LED is OFF and Alarm sounds periodically	Utility power failure	<ol style="list-style-type: none"> 1. Check utility power is present at wall outlet. 2. Otherwise, call for service.
No Output Voltage when Input power fails	Batteries discharged completely.	<ol style="list-style-type: none"> 1. Recharging the battery by kept the circuit breaker “ON” for at least 4 hours. 2. Retest the battery discharging again. If it Remains the same, call for service.
“MAINS” and “INVERTER OUTPUT” indicators are ON but alarm sounds.	Rectifier failure	Call for service

SERVICE CENTRE
ICA

Jln. Pinangsia Raya I No: 22BB
Jakarta - 11120
Phone : (021) 6906020 (Hunting)



Notes :
For further information, please visit "www.icaups.co.id".

Catatan :
Untuk informasi lebih lanjut, silakan kunjungi "www.icaups.co.id".