

LUMINOUS

DSP SINE WAVE 3P-3P INVERTER



Cruze

Rating: 10KVA | 15KVA | 20KVA

IDEAL SOLUTION FOR INDUSTRIAL &
DOMESTIC APPLICATIONS

LUMINOUS

Luminous Power Technologies Pvt. Ltd.
Plot No. 150, Sector-44, Gurugram-122003 (India),
sales@luminous-global.com, service@luminous-global.com
www.luminous-global.com

PRN-MN-EXP-022-00

Made In India

USER MANUAL

Table of Content

1. LUMINOUS 3 Phase System

1.1 Technical structure of the 3 Phase system

1.2 System Overview

1.3 Left Side Overview

1.4 Special Features

2. Installation

2.1 Selecting the Mounting Location

2.2 System Connection Recommendations

2.3 Installation Procedure

3. User Selectable Settings & Description

4. Safety Instructions

4.1 Warnings

4.2 Safety Guidelines

4.3 Service and Upgrades

5. Troubleshooting

6. Care and Maintenance

7. Technical Specifications

7. Technical Specifications

CONTENTS	PARAMETERS	10KVA/180V	15KVA/240V	20KVA/360V
TECHNOLOGY	TOPOLOGY	DSP CONTROLLED, IGBT BASED, WITH TRANSFORMER		
RATING	SYSTEM RATING	10KVA	15KVA	20KVA
OUTPUT	PF	0.8		
	CONFIGURATION	3P + N + E (3 PHASE, 4 WIRES + EARTH)		
	OUTPUT VOLTAGE SETTING	230V / 220V ± 2% (PHASE-NEUTRAL) 400V/380V(PHASE-PHASE) (SELECTABLE)		
	OUTPUT FREQUENCY	50 Hz ± 0.5 Hz		
	THD (LINEAR LOAD)	<3%		
	OVERLOAD / NUMBER OF RETRY	110% FOR 5 MIN		
		150% FOR 15 SEC		
		200% FOR 7 SEC		
		300% FOR 3 SEC		
	EFFICIENCY	>= 88% (BATTERY MODE)		
		>90% (CHARGER)		
	TRANSFER TIME MAINS TO INVERTER	<70mSec		
	TRANSFER TIME INVERTER TO MAINS	<2mSec		
	TRANSIENT RESPONSE	± 5%		
	RECOVERY TIME	RECOVERY TO -2% OF NOMINAL VOLTAGE IN <60mSec		
INPUT	OUTPUT VOLTAGE REGULATION ON 100% UNBALANCED LOAD	± 5%		
	CREST FACTOR	3:1		
	INPUT VOLTAGE	415V, 3PHASE + NEUTRAL		
	NOMINAL INPUT VOLTAGE RANGE	150-280V / 180-270V / 190-260V (PHASE-NEUTRAL) 260-480V / 312-468V / 329-450V(PHASE-PHASE) (USER SELECTABLE)		
	FREQUENCY RANGE	44 - 55 Hz		
BATTERY CHARGER	PF	0.85 TO 0.92		
	TYPE	FLOAT - BOOST, CVCC TYPE		
	BATTERY SELECTION	TUBULAR / FLAT / SMF		
	NO OF BATTERIES	15	20	30
ENVIRONMENT	CHARGING CURRENT	10A / 15A / 20A		
	AMBIENT TEMPERATURE	45 DEG C		
	HUMIDITY	95% RH - HUMIDITY		
	NOISE LEVEL	55 dB*		
INGRESS PROTECTION	IP	20		
VENTILATION	VENTILATION	FORCED AIR COOLED		
DISPLAY	LCD DISPLAY + LED	MONOCHROME ALPHANUMERIC LCD + 6 LEDs		
PROTECTION	INPUT & OUTPUT PROTECTION & WARNING	REVERSE BATTERY, INPUT PHASE REVERSAL, MAINS LOW / HIGH CUT, DC LOW VOLTAGE / OVER VOLTAGE, OVERLOAD, SHORT CIRCUIT, HIGH TEMPERATURE		
INDICATIONS	LED INDICATION	GRID, BATTERY CHG / CHARGED, OVERLOAD / SHORT CIRCUIT, BATTERY LOW, SWITCH ON/OFF, INPUT PHASE REVERSAL		
	LCD DISPLAY	SYSTEM TYPE, SYSTEM CAPACITY, H/W & S/W REVISION, INPUT VOLTAGE, INPUT FREQUENCY, OUTPUT VOLTAGE, OUTPUT FREQUENCY, OUTPUT LOAD STATUS, BATTERY VOLTAGE AND INVERTER SWITCH POSITION, SYSTEM SETTINGS, PROTECTION (IN FAULT CONDITION)		
DIMENSIONS (LxWxH) in mm		680x436x820		
NET WEIGHT (Approx.)		120.0Kg approx	134.0Kg approx	150.0Kg approx

*Noise level may change w.r.t different load condition and charging condition.

6. Care and Maintenance:

LUMINOUS 3 Phase Systems are designed for rugged and refined operation, hence require minimal maintenance. But it is recommended to keep the Battery, System and the connecting Leads under periodic check and maintenance schedule to ensure the highest possible utilization of the equipment.

- Turn off your Systems and MCBs before cleaning. Ensure that no loose or damaged.
- Connections are present. Hot points should not be present in the connections.
- Clean the dust and dirt accumulated in battery and ventilation grids with dry cloth.
- Check the Battery voltages of each battery. They should not differ more than 0.3V amongst each other.
- If flooded / Tubular batteries are being used, there water level should be regularly checked and only.
- Battery Grade distilled water should be used for topping up.
- Never use Automobiles Batteries with your system. They are not suitable for these applications.
- Never tamper with the connections, especially when the System or the Battery charger is in running mode.

If any abnormal operation in the setup or system function is observed, immediately contact the authorised person.

Maintenance Interval	Maintenance Action
2-3 months	<ul style="list-style-type: none">✓ Cleaning by Dry Cloth✓ Battery Voltage and Water Level Check
6-24 months	<ul style="list-style-type: none">✓ Check Input/output terminals✓ Check tightness of Connections.✓ Clean Cooling Fan (To be done by company engineer)✓ Check operation of cooling fan, check for corrosion on terminals and other surfaces (To be done by company engineer)
5-10 Years	<ul style="list-style-type: none">✓ Change Cooling fans✓ Check DC voltage ripple for Degraded capacitors (To be done by company engineer)✓ Contact authorised service engineer for performance check and maintenance (If required)

Dear Valuable Customer,

Welcome to the ever-increasing family of satisfied LUMINOUS users. LUMINOUS 3 Phase System is designed to meet requirements concerning reliability and quality of electrical energy supply in the most demanding applications. During mains availability the AC input voltage is bypassed to load and also converted to DC voltage to charge the battery and then re-converted into AC voltage to supply to the load, when mains fail. This system is able to match the highest requirements of power reliability for critical applications. High output power quality, excellent behavior with even 100% unbalanced Load, all required electrical protections and User friendly design are some of the most important features of this DSP Sine Wave System. In full accordance with our High Quality standards, this product is designed to give you trouble-free operations & efficient performance with minimal care and maintenance.



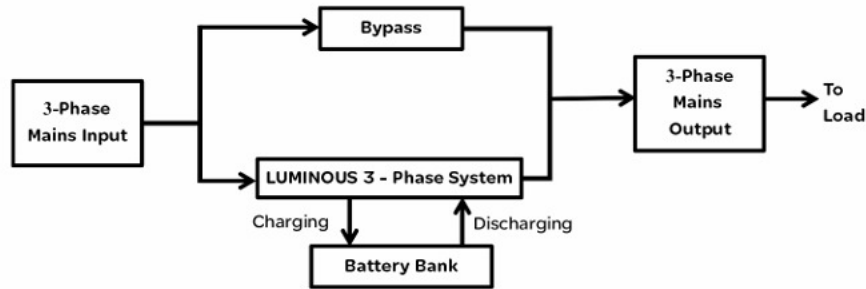
Please read this manual thoroughly before attempting to operate this 3 Phase Sine Wave System.

Distinguished Features of your LUMINOUS 3 Phase System

- DSP controlled: IGBT based System and charger.
- Designed for Heavy duty operation.
- Pure Sine wave output with THD <3% on linear loads.
- Compact design. Smallest footprint among all available competitor variants.
- Intelligent LCD display for all system parameters and status with dedicated LED Indications.
- Auto shutdown in case of deep discharged batteries.
- Auto shutdown in case of overload.
- Capable to run 100% unbalanced loads.
- Heavy inrush current handling capability.
- More than 88% system efficiency.
- Smart Bypass selection rotary switch.
- Output voltage selection: 220V/230V.
- Three User Selectable Input voltage windows by front display & switch.
- Battery type and Charging Current selection to suit all type of Battery Banks.
- Intelligent Reverse Battery Protection without MCB tripping or Blown Fuse.
- In-built Mains Phase Reversal detection.
- Equipped with Intelligent fault sense and all required electrical protections.

1. LUMINOUS 3 Phase System

This system converts direct current from the Battery into alternating current in case of Power failure or Power outages, bypasses the Incoming Grid Supply to the connected loads and charges the batteries in case of Incoming Grid Availability. This enables you to run your most power demanding appliances during power failures



1.1 Technical structure of the 3 Phase System

A galvanic isolation of the system from the grid is achieved through a DC/AC converter with an integrated PWM Driven transformer. The high-quality MS Powder coated casing corresponds to protection class IP20 and is protected against weathering processes by surface refinement. The cooling characteristic profile is designed so that operation of the system is possible with ambient temperatures from 0 to +45°C.

A controlled cooling profile is used for the removal of the heat dissipation caused through the voltage conversion Power Devices Switching. An internal temperature control protects the device against excessive temperatures in the interior of the system.

The system is controlled by High End Digital Signal processor, which also implements communication and the monitoring of values and messages on the LCD display. Basic protection requirements are met by electrically isolating the grid from the Battery Bank.

5. Troubleshooting:

PROBLEM	POSSIBLE CAUSE(S)	ACTION RECOMMENDED
A. The mains supply is normal but... a) The MAINS indicator is off. The system is either working on battery (BATTERY ON indicator is glowing) or battery has exhausted (BATTERY LOW is glowing) b) Output Load not functional	<ul style="list-style-type: none">• Mains MCB may have tripped• Mains wiring is loose• Mains input voltage out of range• Any Phase is not coming.• Output wiring may be loose.• System may have gone faulty.	<ul style="list-style-type: none">• Check the MCB• Check the wiring• Wait for mains to normalize.• Check the Wiring• Contact authorized service person
B. No Output or lesser backup In the battery Mode all indicators are off but the BATTERY LOW LED glows.	<ul style="list-style-type: none">• The Battery may have got discharged from recent use.• The Battery connections may have got loose or corroded.• Few Batteries of the bank may have gone defective	<ul style="list-style-type: none">• Recharge the Battery after mains restoration• Check and clean all battery connections• Contact Authorized service person
C. In the battery mode all indicators are off but the OVER LOAD LED is blinking.	<ul style="list-style-type: none">• The system in Overload protection Mode	<ul style="list-style-type: none">• Reduce the load and Reset On/Off switch (on the front panel)
D. Mains MCB tripping	<ul style="list-style-type: none">• Load more than system capacity.• Battery fully drained	<ul style="list-style-type: none">• Reduce the Loads.• Switch off the Loads and allow the batteries to get Charged.
E. System does not start	<ul style="list-style-type: none">• The Battery and mains MCB in the Back panel may be Off.• System may be faulty	<ul style="list-style-type: none">• Switch On the MCBs after checking all the connections.• Contact Authorized service personnel.
F. Low surge power	<ul style="list-style-type: none">• Battery may be weak or the cable length may be too Long	<ul style="list-style-type: none">• The Battery used and cables should be as per recommendation
G. Sudden shutdown of System	<ul style="list-style-type: none">• System in Battery Low Protection• Output Short circuit or overload• System failure	<ul style="list-style-type: none">• Check LCD for information.• Charge battery if Discharged or• Check output load if Overload or short circuit.• Contact authorized service personnel.

Audio Indications(Buzzer) / Mute*

Battery low pre alarm	Buzzer beeping
Over load warning	Buzzer beeping
Short circuit in battery mode	Buzzer beeping
DC over voltage	Buzzer beeping
Over temperature warning	Buzzer beeping

* Buzzer, Mute by pressing LCD hold button

Protection indications

Protections	Indication	Remedy
Over load	LED / LCD	Reduce load
Short circuit	LED / LCD	Correct the load wiring
Battery low	LED / LCD	Charge the battery
Phase reversal	LED / LCD	Correct the Phase sequence

4. SAFETY INSTRUCTIONS

During installation, testing and inspection adherence to the following handling and safety instructions is mandatory.

4.1 WARNINGS!

- Before operating the Three Phase System, ensure that the power cable and wall outlet have been earthen proper.
- This unit is not intended to be opened by a user. It must only be opened by a qualified Luminous engineer for installation and maintenance purposes.
- Repairs or testing under power must only be performed by qualified Luminous engineer.
- Do not remove the system cover before five minutes have elapsed after disconnecting all sources of power. Only use likeable connectors for DC input. Otherwise, there is a risk of electric shock from energy stored in the capacitor.

CAUTION:

This unit must be operated under the specified operating specifications, as described in the technical specification document.

4.2 Safety guidelines

Always observe the following precautions to reduce the risk of injury and property damage. If the system is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Heat and product ventilation

Components inside the system will generate heat when turned on or when batteries are under charging. Always follow these basic precautions:

- Do not operate your system or charge the batteries near flammable materials or in explosive environments. Ventilation slots, fans and/or heat sinks are provided with the product for safety, comfort, and reliable operation. These features might inadvertently become blocked by placing the product on a blocked environment.
- Remove dust from vents. More frequent cleaning might be required for systems in dusty areas.
- Do not restrict or block any ventilation openings. Do not block or cover sides of unit.
- Do not install your system near water.
- Do not place system on an uneven surface.
- Do not place system under direct sunlight or close to heat emitting sources.
- The 3 Phase System shall be protected against harsh weather conditions. To prevent the risk of Fire or Electric Shock, install the system in a temperature and humidity controlled room, free of conductive contaminants.

Electrical current safety information

⚠ RISK OF ELECTRIC SHOCK IN CASE OF IMPROPER HANDLING!

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance or reconfiguration of this product by yourself.
- Connect to properly wired outlets for any equipment that will be attached to this product.
- Never turn on the system when there is evidence of fire, water or structural damage.
- Disconnect the attached power cords, battery bank and all the cables before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Operate the system only from a properly grounded/earthed and 4 Wire, 3 Phase AC supply.
- Turn off your Systems before cleaning. Do not use liquid or aerosol cleaners. A dry cloth is recommended to remove dust from the surface of your system.
- Do not place system power cord in any area where it may get damaged.
- Do not touch the Batteries as there is high risk of electric shock.
- The system and the metal work must be earthen according to Local and national electric standards.
- Isolation of the AC wiring; the AC wiring from the system must have provision for electrical isolation from the grid mains supply, for inspection, fault detection, testing, maintenance and repair.
- The Wire and connecting terminals should be as per recommendations in this Manual.
- Use external circuit breakers as recommended in the manual for AC input and Output Connections.
- Proper earthen should be provided to the system as per recommendation and standards.

4.3 Service and upgrades

Do not attempt to service a product yourself unless instructed to do so by the Customer Support Centre or your documentation. Only use a service provider who is approved to repair your particular product.

After unpacking the product, check that no signs of transport damages are to be found on the product and that the delivery is complete. If the equipment has been damaged, do not install it.

CAUTION

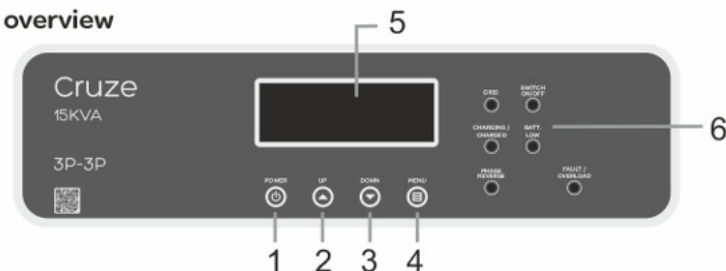
Rechargeable Battery Notice

Batteries supplied by Luminous Power Tech. Pvt. Ltd. for use with your product have been tested for compatibility and should only be replaced with the batteries recommended by Luminous. The Charging Current and Battery type selection in the system should be as per Battery bank connected.

If the battery pack is incorrectly replaced, there is danger of an explosion. To avoid possible injury:

- Replace only with a battery of the type recommended by Luminous Power Tech. Pvt. Ltd.
- Keep the battery pack away from fire.
- Do not expose it to excessive heat.
- Do not expose it to water or rain.
- Do not attempt to disassemble it.
- Do not short-circuit it.
- Store it in a cool dry place.
- Keep it away from children.
- Do not drop the battery pack.

1.2 System overview



Front Panel Overview

The Luminous system is equipped with Intelligent LCD display showing all the System Parameters along with Warning in Fault condition. The Display is in continuous scrolling with the information as shown below. To hold a screen for better observation, the Scroll/Hold Switch can be used. In Hold condition, Buzzer will also be mute.

1) Power switch: Switch for On and Off the inverter. It also works as EXIT switch. If the Switch is in Off condition, the unit will not provide any output in case of Mains Failure. This Switch is also used for resetting the Faults.

2) UP scroll switch: Switch for increasing the value. To hold/scroll the LCD display message. Also used to mute the buzzer and backlight ON.

3) Down scroll switch: Switch for decreasing the value. To hold/scroll the LCD display message. Also used to mute the buzzer and backlight ON.

4) Menu switch: Switch for entering the user settable Menu. It also works as ENTER switch.

5) LCD Display: Displays various parameters on the screen

6) LED Indications:

6a) Battery Charging/Charged: Green LED blink on battery charging through Mains glows steady when battery is fully charged.

6b) Fault/Overload: RED LED blink in Overload Fault Condition. Glows steady in case of Fault condition.

6c) Battery Low: RED LED blink during battery low warning/pre-alarm. Glows steady when the system is in Battery Low mode.

6d) Phase Reversal: Red LED glows when Mains supply phase sequence is reversed or connected in reverse polarity.

6e) Switch ON/OFF: When inverter is off white LED will not glow and When inverter is Switch ON white LED will glow steady.

6f) GRID: When Mains is available green LED glows steady.

Display Screen Status

- Screen 1
System Detail
- Screen 2
System Capacity
- Screen 3
Hardware and Software Revision
- Screen 4
Input Voltage Status
- Screen 5
Input Frequency Status
- Screen 6
Output voltage Status
- Screen 7
Output Frequency Status
- Screen 8
System Output Load
- Screen 9
Battery and System status
- Screen 10
Current System Setting status

DSP SINEWAVE SYSTEM 3Ø INPUT - 3 Ø OUTPUT
SYSTEM CAPACITY xxKVA - xxxV DC
PLATFORM VERSION: xxxxxxx SW REV.: xxxxxxxx
R-IP VOLT: xxx.xV Y-IP VOLT: xxx.xV B-IP VOLT: xxx.xV MAINS xxxxx
R-IP FREQ: xx.x Hz Y-IP FREQ: xx.x Hz B-IP FREQ: xx.x Hz
R-OP VOLT: xxx.xV Y-OP VOLT: xxx.xV B-OP VOLT: xxx.xV
R-OP FREQ: xx.x Hz Y-OP FREQ: xx.x Hz B-OP FREQ: xx.x Hz
R-OP LOAD: xxx % Y-OP LOAD: xxx % B-OP LOAD: xxx %
BATTERY V = xxx.x V INVERTER SWITCH: ON/OFF
SYSTEM SETTING INPUT WINDOW -: NARROW CHARGING CUR -: 5 A BATT -: SMF O/P V -: 230

Protection Messages	*** PROTECTION *** BATTERY LOW	*** PROTECTION *** SHORTCIRCUIT	*** PROTECTION *** OVERLOAD	*** PROTECTION *** OVERTEMPERATURE	*** PROTECTION *** BATTERY HIGH	*** PROTECTION *** REF FAIL	*** PROTECTION *** OVER VOLTAGE
Warning Messages	*** WARNING *** BATTERY LOW	*** WARNING *** OVERLOAD	*** WARNING *** OVER TEMPERATURE				

The parameters shown here are arbitrary and will vary with different models and operating conditions.

3. User Selectable Settings & description from front display & switches
Battery Type Selection

Selection/Type	Tubular
	Flat Plate
	SMF

Charging Current Selection

Selection/Type	Cruze model
Low	10 Amp.
Medium	15 Amp.
High	20 Amp.

Mains Input window Selection

Selection/Type	Cruze model
Wide	150 – 280 V AC (Phase - Neutral)
Medium	180 – 270 V AC (Phase - Neutral)
Narrow	190 – 260 V AC (Phase - Neutral)

System Output voltage mode selection

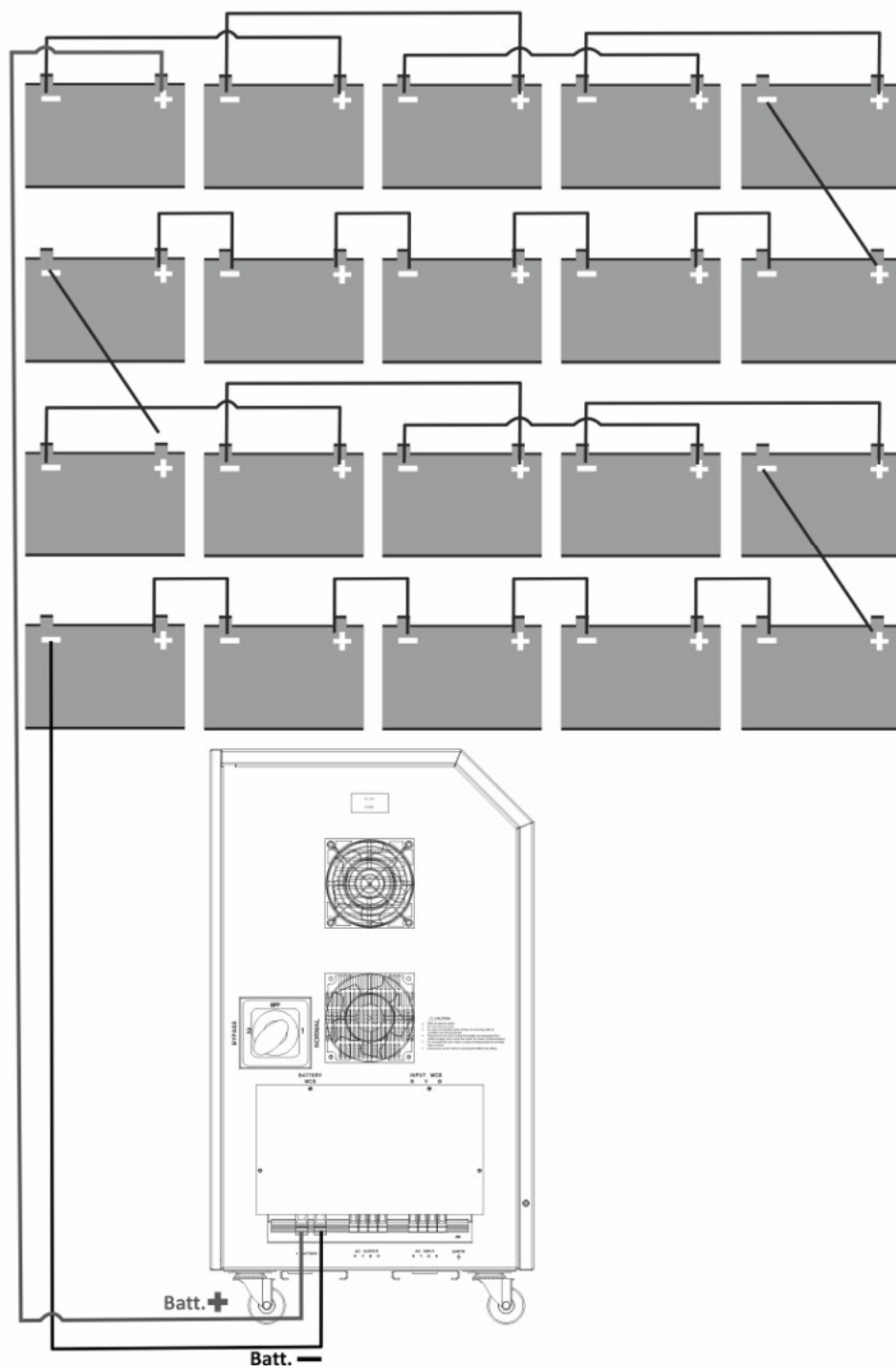
Selection/Type	230V AC (Phase - Neutral)
	220V AC (Phase - Neutral)

Covers are provided for Battery Parameter selections switches and input, Battery & Output Termination Box. Close the covers before operating the system.

Setting the Settable Menu Parameters:-

Press the menu switch for selecting the parameters and use UP or down scroll switch to change the display parameters. When required parameter is displayed, press menu switch and select the required parameter value by using UP & down scroll switch. Press menu switch again to save the parameter value and then press power button to exit to measurement parameter display.

Battery Bank Setup (Fig. A)



1.3 Left Side Overview

1. Mains Bypass Selection Switch: Default position of Manual ByPass Switch is at Position-1(Normal). In case of system failure or in case of emergency turn into the switch to ByPass (Position-2).

2. Two Pole Battery MCB: DC Circuit breaker to disconnect / connect the system power circuitry from the Battery Bank.

3. Three Pole Input Mains MCB: Three Pole AC Circuit Breaker to disconnect / connect the System Input from Grid utility Power.

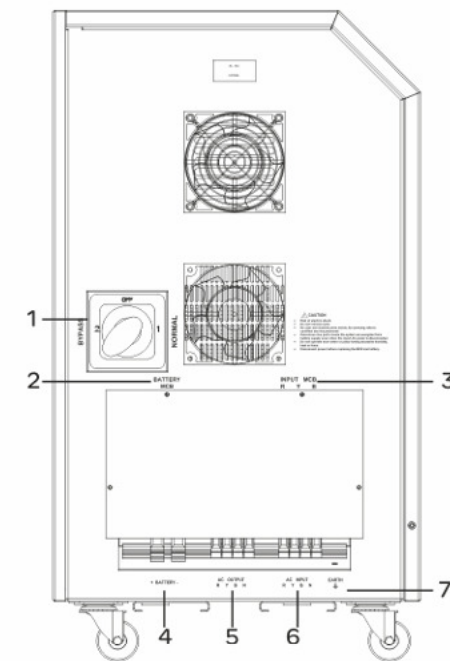
4. Battery Terminals: For connecting battery Positive and Negative Wires from Battery Bank. Observe correct polarity of termination on these terminals.

Red: Battery +Ve & Black: Battery -Ve

5. AC Output terminal: 3 Phase AC Output Terminal for Load Connection. Follow the color coding for R, Y, B & Neutral Connections.

6. AC Input Terminal: Connect 3 Phase AC Input Supply on these terminals to power up the system. Follow the color coding for R, Y, B & Neutral Connections.

7. Earth : provided here to ACO/P terminal.



1.4 Special Features:

1. Output Voltage selection: The System Output is very stable with a tolerance of less than 2% within the full operating battery voltage range and balance load. To facilitate use with maximum appliances and ensure better performance of attached peripherals, two output voltage settings have been provided. Select between 220V and 230V AC as per your requirement.

2. Three Input Voltage Window: You can choose between Wide, Medium and Narrow Mains voltage window setting. According to the setting selected, the system will cut the mains when the voltage varies beyond a preset voltage and switch to battery Mode. Choose the range according to the tolerance acceptable for the Output appliances.

3. Battery Type Selection: The system is equipped with Battery Type and battery Charging Current selection. It should be set according to the Battery make, model and capacity used with the system. Improper setting will result in lesser backup and degraded battery performance or permanent damage to Battery.

4. Smart Battery Protections: The system continuously monitors the Battery Status and thus prevents any fault resulting in battery or system damage. Also on reverse connection of the Battery, the system does not get on until the Battery is correctly connected.

5. Intelligent Phase Reversal detection: There is dedicated LED Indication for Phase sequence reversal of Input Grid supply. The Phase should be connected properly for normal operation of the system.

6. Auto Protections: The system is equipped with intelligent protections for Grid low/High Voltage cut off, Battery Over voltage, Battery Low voltage, over temperature, Over Load, Output short Circuit etc.

2. Installation

2.1 Selecting the Mounting Location

Chassis Clearance

The heat dissipation solution requires the following clearance areas between the Three Phase System chassis and all types of obstructions, such as wires and walls:

1. 48" (4Ft.) to the top of the system.
2. 36" (3Ft.) to the Back, Right and Left side of the system.

NOTE: - If more than one Three Phase Systems are installed side by side, the distances between them must exceed 48" (4Ft.).

2.2 System Connection Recommendations:

Do follow the recommendations for best and efficient performance of the system and attached peripherals. Ignoring these may cause hazardous results.

- Always ensure that the safety recommendations mentioned below are strictly followed.
- Cable size recommendations

Parameter	10KVA - 180V	15KVA - 240V 20KVA - 360V
Battery Wire	10 sq. mm	16 sq. mm
Input Mains Wire	06 sq. mm	10 sq. mm
Output Mains Wire	04 sq. mm	06 sq. mm
Earthing Wire	04 sq. mm	04 sq. mm

• Recommended Circuit breakers (For AC Supply)

Parameter		MCB rating	MCB Type	MCB Class
10KVA	Input AC MCB	40 Ampere	3 Pole	C Class
	DC MCB	40 Ampere	2 Pole	C Class
15KVA & 20KVA	Input AC MCB	63 Ampere	3 Pole	C Class
	DC MCB	40 Ampere	2 Pole	C Class

- For Best and most efficient performance of the system, it is recommended to keep the Length of wire from battery Bank to the unit less than 5 meter.

• Recommended Battery Capacity

Cruze Models	10KVA	15KVA	20KVA
Recommended Battery Capacity	80Ah to 200Ah		

For proper functioning of the system, the Battery type and Charging current should be selected according to Battery Bank Capacity. Also after selection, the switches should be covered using the cover plate provided. Wrong selection will result in improper charging and health degradation of the Battery Bank.

2.3 Installation Procedure.

Do not try to install the system yourself. **ONLY LUMINOUS AUTHORIZED PERSONNEL IS ALLOWED TO CARRY OUT THE ELECTRICAL INSTALLATION!** Any tampering or shifting or unauthorized addition of load after the installation annuls the warranty. Strictly follow the operating instructions mentioned in this Manual.

- **Unpacking:** On receiving your Luminous 3 Phase system, unpack the system and check for any physical damages occurred in the System during transport. Also check if the system is supplied with the manual, battery wire (RED & Black) & battery connectors (19Nos)

- **Commissioning:** Installation must be carried out under the supervision of LUMINOUS authorized engineer.

The Customer must provide all tools, materials, electrician and labor as required for installation

- **Battery Bank setup & Connection detail recommendation:**

Install Batteries in Cabinet or stand as per given in **battery bank setup (fig. A)**. The Battery used should be of same Make, Model, and Capacity & Manufacturing date. Check the battery voltages. They should not differ more than 0.3V and preferably OCV should be greater than 12.3 V. Connect all Batteries in series to make the required DC Bus Voltage as per operating DC voltage of the system. Check and tighten all the battery connections properly.

It is recommended to keep the Batteries paralleled to each other for at least two hour before bank setup to ensure Battery Balancing. In Case of Flat or Tubular Batteries to avoid corrosion of battery terminals, apply white petroleum jelly on them.

- **Installation & Operation:**

- Before any connection, confirm that all the MCBs are in OFF position.
- Connect the battery Bank with the System battery Input terminals carefully.
- Connect the system with Utility Mains. Be sure to connect the R, Y and B Phase in the proper terminals as per color codes of Terminal Blocks. Use external Circuit Breaker between System and Grid supply as recommended in this manual.
- Connect the Output Load to the 3 Phase Output terminals with external Circuit breaker as recommended in the manual.
- Ensure the Connections and Wiring should be proper and as per the local Safety guidelines and relative laws
- Use the selection switches to set the system parameters as per your requirement
- Switch on the Battery MCB and switch on the system from On-Off Switch at front panel and wait for the system to turn on. Check that the LCD display is showing the parameters as given in this manual and also check the O/P voltage at R, Y, B (Phase) with respect to neutral. It should be as per O/P Voltage selection switch.
- Check that the Output Load is properly running.
- Switch on the mains MCB and wait for the charging indication to turn on.
- Allow Battery to Charge for 12 Hrs. before first use.

