USER'S MANUAL (IFU)

Colossal SERIES

DSP Sine Wave INVERTER
(3 Phase In - 3 Phase Out)

Salient Features

- Designed Using World's Most Advanced DSP Sine Wave Technology.
- Designed for Heavy Duty domestic & industrial Applications.
- Regulated 3 Phase output.
- User Friendly LCD Panel.
- Smart Overload & Short Circuit Protection.
- Automatic Protection For High and Low Voltage.
- Smart Thermal Management.
- Great Power Saving.
- Field Settable Heavy Duty Charger (2A-20A) for all capacity of Battery.
- INVERTER monitoring & control software.
- Future Expand ability Possible.

GLOBAL CERTIFICATIONS:

ISO 9001 : 2000
ISO 14001:2004

R&D Recognised by GOVERNMENT OF INDIA MINISTRY OF SCIENCE & TECHNOLOGY

Before connecting, operating, or adjusting this unit, please read this instruction booklet carefully .

Customer care: +91 - 11 - 44231111

PKG-ML- 043

Su-Kam

Contents

Introduction

Dear Customer,

Thank you for selecting Su-kam 3 phase Colossal series DSP Sine Wave INVERTER designed to meet requirements concerning reliability and quality of electrical energy supply in the most demanding applications. The Colossal series INVERTER are based on DSP Sine Wave technology. 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 to AC voltage to supply to the load, when mains fail.

This design and product topology is recognized as the only one able to match the highest requirements of power reliability for critical applications. High output power quality, excellent behavior with dynamic load variation, adequate protections and filtering are some of the most important features of this DSP SineWave INVERTER.

APPLICATIONS:

- Security Systems
- Air-Conditioner
- Water Motor Pump
- Tube Light
- Microwave Oven
- Lift / Elevator
- Industrial AC
- Video Camera
- Washing Machine
- Refrigerator
- Home Theatre System
- Food Processor
- Process Control
- Photo Copier
- Projector
- Room Cooler
- Television
- CFL Light
- Fan
- Telecom Towers

IMPORTANT SAFETY NOTES

SAVE THESE INSTRUCTIONS

This manual contains important safety notes that should be followed during the Installation and Maintenance of the DSP Sine Wave INVERTER.
Follow these instructions during the unpacking, installation & maintenance of the INVERTER & the Batteries. If you have any problem with the INVERTER, please refer the troubleshooting chart before calling the **Su-Kam** technical services.
Please read this manual thoroughly before attempting to operate this Sine Wave INVERTER.

! WARNING

- To prevent the risk of Fire or Electric Shock, install the INVERTER in a temperature and humidity controlled room, free of conductive contaminants.
- Operate the INVERTER only from a properly grounded/earthed 4 Wire, 3 Phase AC supply.
- To reduce the risk of electric shock, do not remove the INVERTER covers, as it has no user-serviceable parts inside. Some components are live, even when AC power is disconnected. For service, contact a qualified **Su-Kam** trained Engineer.

CAUTION

Although your INVERTER has been designed and manufactured to assure personal safety, improper use can result in electrical shock or fire. To ensure safety, please observe the following rules:

- Turn off your INVERTER Systems before cleaning. Do not use liquid or aerosol cleaners. A dry cloth is recommended to remove dust from the surface of your INVERTER.
- Do not install your INVERTER near water.
- Do not place INVERTER on an uneven surface.
- Do not place INVERTER under direct sunlight or close to heat emitting sources.
- Allow proper ventilation of INVERTER, do not block or cover sides of unit.
- Do not place INVERTER power cord in any area where it may get damaged by heavy objects.

- Do not touch the Batteries as they can present the high risk of electric shock.
- Do not dispose off batteries in fire, the battery may explode.
- The normal Operating Temperature is 0-45 degree C.

ATTENTION

Turn off your INVERTER system from the front panel, turn off the mains MCB and select the rotary switch into by pass mode and contact the service engineer if:

- The cables are damaged.
- Liquid has been spilled from Battery or Batteries are getting heated .
- The MCB of INVERTER tripping frequently.
- The INVERTER does not operate even when user follows the operating instructions.

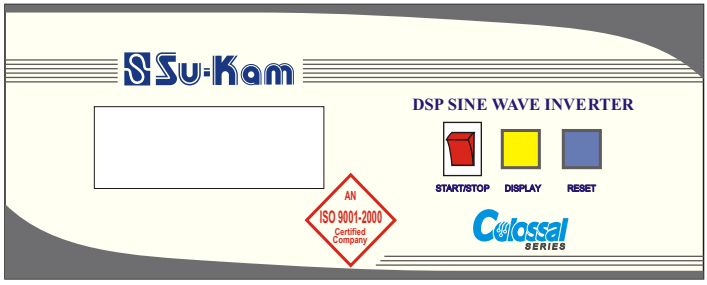
CONDITIONS OF USE

The input/output receptacle & battery must be within 2Mtr to 2.5Mtr from the INVERTER.
Your INVERTER provides conditioned power to connected equipment. Maximum load must not exceed that shown on INVERTER rating label. If uncertain, consult **Su-Kam** HELPLINE NOS.
Keep the unit clean & vacuum the ventilation intake periodically.
Switch Off the INVERTER systems from **Start / Stop button** on front panel while you are leaving it for the day.
Placing magnetic storage media on top of the INVERTER may result in data corruption or malfunctioning of the INVERTER.

WARNING - RISK OF EXPLOSIVE GASSES.

WORKING IN THE VICINITY OF A LEAD ACID BATTERY MAY BE DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASSES DURING NORMAL OPERATION.
Provide ventilation to outdoors from the battery compartments. The battery enclosures should be designed to prevent accumulation and concentration of hydrogen gas in "pockets" at the top of the compartment. Vent the battery compartment from the highest point. A sloped lid can also be used to direct the flow to the vent opening location.
To reduce the risk of battery explosion, follow all the instructions of battery supplier for any equipment you intend to use in the vicinity of batteries.

FRONT PANEL VIEW OF 5KVA - 30KVA DSP SINE WAVE INVERTER



Front Panel User Controls (DSP Based 3P-3P SineWave INVERTER)

Front Panel Switches: Start/Stop, Display, and Reset.

1. Start/Stop button:

Press Start/Stop button to switch ON & OFF the INVERTER system.

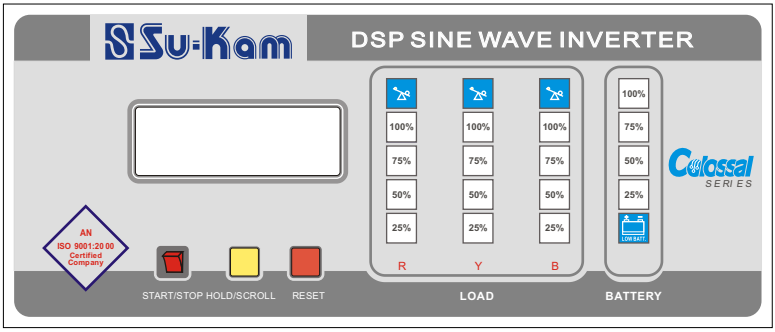
2. Display Button:

Press the display button to switch between holding & scrolling.

3. RESET Button:

To reset the INVERTER system press Reset Button till LCD panel Blanks.

FRONT PANEL VIEW OF 40KVA & 50KVA DSP SINE WAVE INVERTER



SWITCHES :

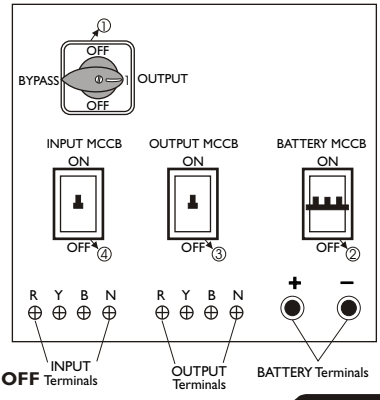
- **START/STOP** : For Switch ON/OFF The INVERTER System.
- **DISPLAY** : For Holding / Scrolling The LCD Parameters.
- **RESET** : For Resetting The INVERTER System.

DESCRIPTION OF FRONT VIEW

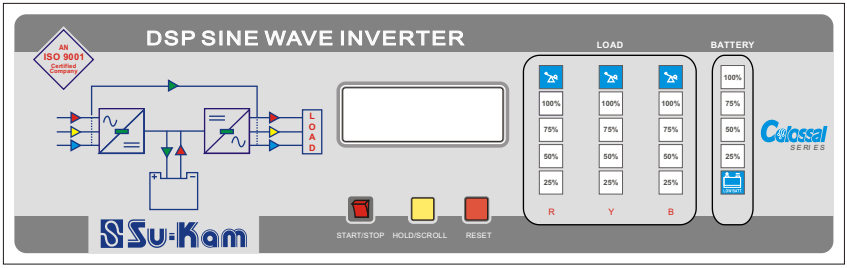
1. Rotary Switch
2. Battery MCCB
3. OUTPUT MCCB
4. INPUT MCCB

✦ **Rotary Switch Operation**
A three position Rotary Switch is provided On the Rear Panel.
The Positions Are: 1. OUTPUT 2. Bypass 3. OFF

FRONT VIEW 40KVA & 50KVA



FRONT PANEL VIEW OF 65KVA - 100KVA DSP SINE WAVE INVERTER



SWITCHES :

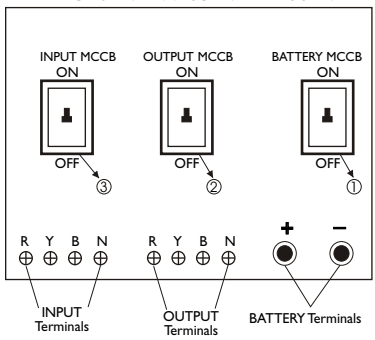
- **START/STOP** : For Switch ON/OFF The INVERTER System.
- **DISPLAY** : For Holding / Scrolling The LCD Parameters.
- **RESET** : For Resetting The INVERTER System.

DESCRIPTION OF FRONT VIEW

Rear Panel Connections :

1. Battery MCCB
2. OUTPUT MCCB
3. INPUT MCCB

FRONT VIEW 65KVA - 100KVA



Knowing Your DSP Sine Wave Inverter

In its most basic form, a Colossal series INVERTER transforms Direct Current (DC) to Alternating Current (AC). The battery bank with the INVERTER acts, as a reservoir to ensure continuous supply of power whenever supply from utility power is not available.

A) DESCRIPTION OF FRONT PANEL:

On the front panel of Colossal series INVERTER there is one INVERTER ON/OFF, one Hold / Scroll, one Reset Switch and a LCD panel.

PARAMETERS DISPLAYED ON LCD PANEL OF COLOSSAL SERIES INVERTER

1. Mains not Available & INVERTER Switch is in OFF Condition

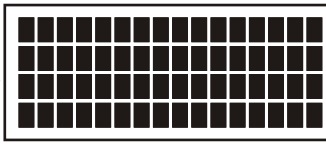
1. *SU-KAM WELCOMES YOU*
   DSP SINE WAVE INVERTER
   3-ø INPUT-3ø OUTPUT

2. SELF TEST IN PROGRESS ...

3. SYSTEM CAPACITY
   040 KVA - 360VDC

4. H/W VER - 3P_DOLU4
   S/W VER - 24.09.07

5. LCD SELF TEST

6. 

7.	AUTO CALIBRATION PASS	13.	* DSP 3-Ø INVERTER * R-O/P FREQ : 000.0 Hz Y-O/P FREQ : 000.0 Hz B-O/P FREQ : 000.0 Hz
8.	REFERENCE SIGNAL PASS	14.	* DSP 3-Ø INVERTER * R-O/P CRNT : 000.0 A Y-O/P CRNT : 000.0 A B-O/P CRNT : 000.0 A
9.	SELF TEST PASS	15.	* DSP 3-Ø INVERTER * R-O/P POWER : 000.0 VA Y-O/P POWER : 000.0 VA B-O/P POWER : 000.0 VA
10.	* AUTO DISPLAY MODE *	16.	* DSP 3-Ø INVERTER * R-O/P VOLT : 000.0 V R-O/P FREQ : 000.0 Hz R-O/P CRNT : 000.0 A
11.	MAINS FAIL INVERTER SWITCH OFF	17.	* DSP 3-Ø INVERTER * Y-O/P VOLT : 000.0 V Y-O/P FREQ : 000.0 Hz Y-O/P CRNT : 000.0 A
12.	* DSP 3-Ø INVERTER * R-O/P VOLT : 000.0 V Y-O/P VOLT : 000.0 V B-O/P VOLT : 000.0 V	18.	* DSP 3-Ø INVERTER * B-O/P VOLT : 000.0 V B-O/P FREQ : 000.0 Hz B-O/P CRNT : 000.0 VA

19.
```
* DSP 3-Ø INVERTER *

DC VOLT : 365.2V
```

20.
```
* POWER FAIL LOG *
LAST :   00:00:00
NOW :   00:07:25
```

2.Mains not Available & INVERTER Switch in ON Condition

1.
```
MAINS FAIL

INVERTER SWITCH ON
```

2.
```
* DSP 3-Ø INVERTER *
R-O/P VOLT : 232.0 V
Y-O/P VOLT : 231.8 V
B-O/P VOLT : 228.4 V
```

3.
```
* DSP 3-Ø INVERTER *
R-O/P FREQ : 49.90 Hz
Y-O/P FREQ : 50.10 Hz
B-O/P FREQ : 49.90 Hz
```

4.
```
* DSP 3-Ø INVERTER *
R-O/P CRNT : 016.8 A
Y-O/P CRNT : 017.2 A
B-O/P CRNT : 017.6 A
```

5.
```
* DSP 3-Ø INVERTER *
R-O/P POWER : 04504 VA
Y-O/P POWER : 04657 VA
B-O/P POWER : 04377 VA
```

6.
```
* DSP 3-Ø INVERTER *
R-O/P VOLT : 229.5 V
R-O/P FREQ : 50.10 Hz
R-O/P CRNT : 016.8 A
```

7.
```
* DSP 3-Ø INVERTER *
Y-O/P VOLT : 232.0 V
Y-O/P FREQ : 50.10 Hz
Y-O/P CRNT : 015.2 A
```

8.
```
* DSP 3-Ø INVERTER *
B-O/P VOLT : 232.0 V
B-O/P FREQ : 49.90 Hz
B-O/P CRNT : 014.4 A
```

19.
```
* DSP 3-Ø INVERTER *

DC VOLT : 363.8V
```

20.
```
* POWER FAIL LOG *
LAST :   00:00:00
NOW :   00:13:02
```

3.Mains Available & INVERTER Switch in ON Condition

1.
```
MAINS PRESENT

INVERTER SWITCH ON
```

2.
```
* DSP 3-Ø INVERTER *
R-O/P VOLT : 227.8 V
Y-O/P VOLT : 225.1 V
B-O/P VOLT : 228.2 V
```

3.
```
* DSP 3-Ø INVERTER *
R-O/P FREQ : 49.83 Hz
Y-O/P FREQ : 50.70 Hz
B-O/P FREQ : 50.91 Hz
```

4.
```
* DSP 3-Ø INVERTER *

DC VOLT : 343.8V
[■■■■■■■■■■          ]
```

5.
```
* POWER FAIL LOG *
LAST :   00:00:00
NOW :   00:00:00
```

4.Mains Available & INVERTER Switch in OFF Condition

1.
```
MAINS PRESENT

INVERTER SWITCH OFF
```

2.
```
* DSP 3-Ø INVERTER *
R-I/P VOLT : 226.4 V
Y-I/P VOLT : 225.5 V
B-I/P VOLT : 228.7 V
```

3.
```
* DSP 3-Ø INVERTER *
R-I/P FREQ : 50.89 Hz
Y-I/P FREQ : 49.65 Hz
B-I/P FREQ : 50.27 Hz
```

4.

```
* DSP 3-Ø INVERTER *

DC VOLT : 367.4V
[■■■■■■■■■■■      ]
```

5.

```
* POWER FAIL LOG *
LAST :   00:00:00
NOW :    00:00:00
```

Under Various Protection Condition

a. O/P Short Circuit with Buzzer Beep

1.

```
* PROTECTION *

O/P SHORT CIRCUIT
```

b. Overload Occurred with Buzzer Beep

1.

```
* ATTENTION *

B-OVERLOAD > 110%
B-O/P CRNT : 030.8 A
```

2.

```
* PROTECTION *

OVERLOAD SHUTDOWN
LOAD > 110%
```

c. Low Battery Attention with Buzzer Beep

1.

```
* ATTENTION *

BATTERY VOLTAGE LOW
```

Mains Low Cut (INVERTER Switch OFF)

1.

MAINS LOW CUT

INVERTER OFF

Mains Low Cut (INVERTER Switch ON)

1.

MAINS LOW CUT

INVERTER ON

Mains High Cut (INVERTER Switch OFF)

1.

MAINS HIGH CUT

INVERTER OFF

Mains High Cut (INVERTER Switch ON)

1.

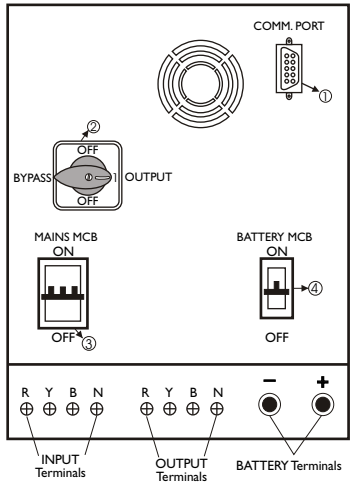
MAINS HIGH CUT

INVERTER ON

BACK PANEL OF 5KVA - 30KVA

DESCRIPTION OF BACK PANEL

BACK PANEL 5KVA - 30KVA



Rear Panel Connections :

Refer to figure for the terminal details for connecting
Input Utility Power
Output INVERTER Power
Battery Terminal for DC Voltage

1. Comm. Port
2. Rotary Switch
3. Mains MCB
4. Battery MCB

✦ **Rotary Switch Operation**
A three position Rotary Switch is provided On the Rear Panel.
The Positions Are: 1. INVERTER 2. Bypass 3. OFF

✦ **RS-232 PC Interface (with Comm. Port) :**

The INVERTER provides an isolated computer interface via which the INVERTER status can asigned to a computer. To use this feature an interface it consisting of a customized ca le and monitor software installation CD developed for Win 98/2000 specifically is re uired which is availa le as an accessory. The customer will have to order it separately.

INSTALLATION

Do not try to Install the INVERTER system yourself. A qualified engineer will be deputed from Su-Kam for Installation and commissioning of the INVERTER Systems. Any tampering or shifting or unauthorized addition of load after the installation annuls the warranty. Strictly follow the operating instructions.

Unpacking & Inspection

While unpacking a Brand New INVERTER system check for the following:

- The condition of the packing box
- The INVERTER Box contains Warranty Card & Product Manual
- Check for the Physical damages occurred during transit.

Keep Safe all the packing material until the inspection & installation is complete.
In case of any shortage & damage intimates carriers & company immediately.

Pre-check & commissioning

The installation work should be carried out only under the supervision of a qualified Engineer (from Su-kam). The Customer should provide all necessary material handling equipment and hand tools & labour including an electrician.
Remove the side Panel and Top panel. Check there is no wires broken. Also check for terminals, loose screws, dislodged control cards or control connectors. Rectify if necessary. Check and tighten all Power connections.

Battery Bank connections

Install Batteries in the Battery Cabinet/stand. Measure the Individual Battery voltage. These voltages should be between 12.2 to 13.1V & not having voltage difference more than 0.2V. Connect all batteries in series. The total battery bank should be 360V - 400V(**can differ as per INVERTER DC bus design**). Check the battery connections & tighten all the battery connections. Apply white Petroleum jelly on the terminals to avoid corrosion.

Installation Procedure

After unpacking & inspection follow the simple installation procedure

- Check the battery type & battery Ah.
- **All batteries should be of same capacity, make & model.**
- Connect batteries in series and make the DC bank (confirm battery MCB is OFF)
- Connect the battery bank to the system.
- Allow battery to charge for 12 hours before first use.
- Check the input earth to neutral voltage. It should be less than 5V.
- Connects the INVERTER to utility mains (Ensure R, Y, B & N are connected to appropriate terminals).
- Switch ON the mains MCB & measure the DC voltage on battery terminal if OK, then
- Press the start button & measure the INVERTER output voltage. If OK then
- Switch OFF the INVERTER by pressing Stop button.
- Switch ON the Mains MCCB & then switch on battery MCB.
- Once battery charge is over switch ON the INVERTER.
- Load the INVERTER gradually.
- Switch OFF the Mains MCCB & allow INVERTER to be loaded with batteries for some time.
- Switch ON the Mains MCCB.

☺ **Congratulations! You have successfully installed the INVERTER.** ☺

Storage Instruction

To prolong the battery life & keep proper function of INVERTER system maintain the temperature of site at 25 - 35 degree C.

Charge the battery at least 12 Hrs every three months (2 months is necessary if in high temperature area) where the temp. Is more than 35 degree C.

Enhanced Features

- **Battery Management Protocol (BMP)**

  Su-kam INVERTER has highly advanced battery management algorithm that is designed to prevent damage to batteries and extend the useful life of your batteries by regulating the charging voltage and current. Batteries can overheat if the charge rate is too high.

- **Auto Reset**

  Su-Kam Colossal series INVERTER has auto reset function in case of Overload, Low battery. It will reset the INVERTER in fault condition automatically.

- **Automatic Protection**

  Low battery voltage, high battery voltage, over load and short circuit.

Auto Power Saving

Fan control system takes care of operation of fan when ever necessary. This saves your power and also enhances the life of fan.

- **AC Mains Cut-Out**

  Su-Kam Colossal series INVERTER continuously monitors the AC mains Voltage. When AC voltage falls below the preset level, the INVERTER automatically transfers from AC to DC power. This cut out voltage is Factory preset as Per technical specification mentioned on Page 21-22.

PREVENTIVE MAINTENANCE

To get long trouble free service from INVERTER system the frequent Maintenance of INVERTER as well as battery is required.

*Read **Caution** before attempting any maintenance of INVERTER System.*

INVERTER system maintenance

Switch Off INVERTER from Stop Button & then switch off mains & battery MCCB. Ensure the following;

- Proper Ventilation Of Site
- Premises is dry & clean
- No Loose Contacts anywhere in the input AC, DC & utility output powering the INVERTER
- INVERTER is not Overloaded
- Clean the panel at least once in 30 days with the help of dry cotton cloth.

Battery Maintenance

Switch off the Battery MCCB and then

- Check all the connections are tight.
- If Loose tight the same with **Insulated** Spanner.
- Remove the dirt/dust from terminals
- Clean the terminals with the help of dry cloth.
- Apply petroleum jelly/Vaseline.
- Check the Individual Battery Voltage with multimeter. All batteries should have identical voltages of Approx 12.6 to 12.85V.

For Flooded Batteries use the following additional steps;

- Use only PVC mug for topping UP.
- Avoid Naked Light in Battery room.
- Check the battery level at least in 60 days.
- Always use distilled water for topping up.
- Topping should be done before charging or early part of charging cycle.
- Check & record individual battery voltage .All batteries should have voltage of 12.6V to 13.2V.

Trouble Shooting

S. No.	Problem	Possible Cause (S)	Action Recommended
01	INVERTER system works on batteries When mains is present	• Mains MCB trip • Input connecting wire may be loose • INVERTER defective • Mains is beyond the range	Check the MCB Check the wiring Call engineer
02	No Battery backup Or Less Battery backup	• Battery MCB could Be OFF • Few batteries of battery bank may be defective. • Charger section of INVERTER may be defective	Check the MCB Call engineer Call engineer
03	Mains MCB Tripping	• MCB rating low • Battery fully drained + INVERTER over loaded • INVERTER may be defective	Change the MCB of proper rating Check all the conditions Call engineer
04	INVERTER does not Start	• Load may be higher than the capacity • Battery fully drained + Mains not present problem with inverter	Check load Call engineer Call engineer
05	Indications:	• Input Mains not present • Isolator defective • LCD not displaying data	No problem with INVERTER Call electrician Reset the System

Trouble shooting

S. No.	Problem	Possible Cause (S)	Action Recommended
06	Sudden shutdown of Unit	• Short CKT / Overload at the output • System may be faulty	Check wiring Call engineer
07	Excessive gassing of Batteries	• Could be over charging	Call engineer

Our Recommendations

- ✓ Never use Automobiles Batteries with your INVERTER. They are not suitable for these applications.
- ✓ Always use Deep cycle batteries that are best suited for INVERTER.
- ✓ Always check the water level in batteries (For flooded batteries only) after every 2-3 months. This will keep your batteries in good condition & also enhance its life.
- ✓ Use good quality wires with Input, Output & battery terminals.
- ✓ Never disconnect battery wires or switch OFF battery MCB while INVERTER or battery charger is operating.
- ✓ Use 16A Su-Kam TDR with 1.5 Ton AC

Cable Requirement

Capacity	Input Cable (3 Core) x 4Nos	Output Cable (3 Core) x 4Nos	Battery Cable (2 Core) x 2Nos
5KVA/180V	4mm^2	2.5mm^2	6mm^2
7.5KVA/180V	6mm^2	4mm^2	10mm^2
10KVA/180V	6mm^2	4mm^2	16mm^2
15KVA/180V	6mm^2	10mm^2	16mm^2
20KVA/180V	10mm^2	10mm^2	25mm^2
5KVA/360V	4mm^2	2.5mm^2	6mm^2
7.5KVA/360V	6mm^2	4mm^2	6mm^2
10KVA/360V	6mm^2	4mm^2	10mm^2
15KVA/360V	6mm^2	4mm^2	10mm^2
20KVA/360V	10mm^2	10mm^2	16mm^2
25KVA/360V	10mm^2	10mm^2	16mm^2
30KVA/360V	16mm^2	10mm^2	25mm^2
40KVA/360V	25mm^2	16mm^2	35mm^2
50KVA/360V	25mm^2	16mm^2	50mm^2
65KVA/360V	35mm^2	25mm^2	70mm^2
80KVA/360V	50mm^2	35mm^2	95mm^2
100KVA/360V	70mm^2	50mm^2	150mm^2

Technical Specifications

For 5KVA - 20KVA (180VDC)

S.No.	PARAMETERS	SPECIFICATION
1.	AC Input Voltage Range	310V - 480V (Phase - Phase)
2.	AC Input Frequency Range	45 - 55 Hz
3.	AC output Voltage	230V ± 2% (P - N)
4.	AC Output Frequency	50Hz + 0.1 Hz
5.	Output Waveform	Sine Wave
6.	Total Harmonic Distortion	Less than 3%
7.	Transient Response	+ 5% recovery within 1.5 cycle
		(For 100% Dynamic loading)
8.	Efficiency (At 100% Load)	>92%
9.	Crest Factor	> 4 : 1
10.	Short Circuit Protection	> 400% Load
11.	Overload Handling Capacity	110% for 5 minutes
		150% for 15 Seconds
		200% for 10 Seconds
		300% for 3 Seconds
12.	Load Power Factor	0.8 Lag to Unity
13.	Nominal Battery Voltage	180V
14.	Battery Low Alarm	165V ± 0.5V
15.	Battery Low Protection	162V ± 0.5V
16.	Battery High Protection	225V
17.	Display	20 X 4 Lines LCD
18.	Storage Temperature	0 to +55 degree C
19.	Operating Temperature	0 to +45 degree C
20.	Relative Humidity	0 to 95%, non-condensing

These INVERTERS are especially designed for Lift / Elevator applications

***Note:** Due to Continuous product improvement specifications are subject to change without prior notice*

Technical Specifications

For 5KVA - 100KVA (360VDC)

S.No.	PARAMETERS	SPECIFICATION
1.	AC Input Voltage Range	310V - 480V (Phase - Phase)
2.	AC Input Frequency Range	45 - 55 Hz
3.	AC output Voltage	230V ± 2% (P - N)
4.	AC Output Frequency	50Hz + 0.1 Hz
5.	Output Waveform	Sine Wave
6.	Total Harmonic Distortion	Less than 3%
7.	Transient Response	+ 5% recovery within 1.5 cycle
		(For 100% Dynamic loading)
8.	Efficiency (At 100% Load)	>92%
9.	Crest Factor	> 4 : 1
10.	Short Circuit Protection	> 300% Load
11.	Overload Handling Capacity	110% for 5 minutes
		150% for 15 Seconds
		200% for 3 Seconds
		300% for 1 Seconds
12.	Load Power Factor	0.8 Lag to Unity
13.	Nominal Battery Voltage	360V
14.	Battery Low Alarm	330V ± 0.5V
15.	Battery Low Protection	324V ± 0.5V
16.	Battery High Protection	450V
17.	Display	20 X 4 Lines LCD
18.	Storage Temperature	0 to +55 degree C
19.	Operating Temperature	0 to +45 degree C
20.	Relative Humidity	0 to 95%, non-condensing

***Note:** Due to Continuous product improvement specifications are subject to change without prior notice*

Dimensions & Weight

Capacity	Dimensions in MM L x W x H			Weight (In Kg)
5KVA/180V	700	450	735	112.4
7.5KVA/180V	700	450	735	129.5
10KVA/180V	700	450	735	135.0
15KVA/180V	700	450	735	160.0
20KVA/180V	700	450	735	180.0
5KVA/360V	700	450	735	115.0
7.5KVA/360V	700	450	735	130.0
10KVA/360V	700	450	735	139.6
15KVA/360V	700	450	735	165.1
20KVA/360V	700	450	735	190.0
25KVA/360V	810	500	785	223.7
30KVA/360V	810	500	785	259.5
40KVA/360V	750	600	1210	326.0
50KVA/360V	810	755	1462	------
65KVA/360V	810	755	1462	------
80KVA/360V	995	800	1552	------
100KVA/360V	995	800	1552	------

***Note:** Due to Continuous product improvement specifications are subject to change without prior notice*

Terms and conditions of warranty

- ★ SU-KAM POWER SYSTEMS LIMITED warrant to the original purchaser provided the product is still in possession of and used by the original purchaser from the date of purchase.
- ★ The warranty stands on all parts (except LCD's, switches and external body) for INVERTER will be for a period of 12 months.
- ★ The warranty will be automatically terminate on the expiry of the warranty period, even in case of the INVERTER not being in use in the specified period.
- ★ This warranty is valid only if it is duly signed by the authorized dealer.
- ★ The warranty will be invalid if defects arising in company's opinion by reasons of accident, abuse, misuse, neglect, improper installation (if not undertaken by the company or its representative), fire, flood, or other act of GOD and any other natural calamities and any other unauthorized repairs done or carried out will have to be borne by the purchaser. The problem of fuse blown will not be included in the warranty of the product. The services given for the same will be paid service.
- ★ The company will not be held liable in any condition for any loss or injury or damage caused to life or property or death and disability caused to any form of life for any reason whatsoever.
- ★ The warranty will not apply if the original seals are found broken or tampered with.
- ★ Free service under the terms of warranty will be provided only by authorized representatives/dealers of the company anywhere in India.
- ★ The company expressly denies the right of any person to incur or assure for it any other liability or obligation in connection with the sale of INVERTER.
- ★ Claims if any, to this warranty shall be made only before courts having jurisdiction in New Delhi.
- ★ Now register your product or lunch online complaints at www.su-kam.com for prompt after sales services.

WARRANTY CARD

Colossal SERIES

Model. :----------

Serial No. :----------

Name of Purchaser :----------

Address :----------

Date of Purchase :----------

Dealer's Name :----------

DEALER STAMP

SU-KAM OFFICES ADDRESSES

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PKG-ML- 043