

CONTENTS

Introduction	III
Specification.....	V
Dimension	
Chapter 1 Installation.....	1-1
1.1 Box Contents.....	1-1
1.2 Location	1-1
1.3 Requirements.....	1-1
1.4 Connection of Battery Cables	1-2
1.5 Connection of AC Cabling	1-2
1.6 Optional Connections	1-3
1.7 Grounding.....	1-3
1.8 Remote Control Panel (RCP-3)	1-3
Chapter 2 Settings.....	2-1
2.1 Four Control Modes Application	2-1
Auto 1: AC Power as Priority Support	2-1
Auto 2: AC Generator Support with Dynamic Power Shifting	2-4
Inverter Only Mode	2-6
Charger Only Mode.....	2-8
Chapter 3 Wiring	3-1
3.1 Front Panel Display	3-1
3.2 Panel Connection	3-4
3.3 Battery Connection	3-6
Chapter 4 User Constants	4-1
4.1 Structure of User Constants.....	4-2
4.2 Operation Flow.....	4-6

Chapter 5 Constants List.....	5-1
U Group: Monitor.....	5-1
A Group: Initialize.....	5-2
B Group: General.....	5-2
C Group: Inverter.....	5-3
D Group: Charger.....	5-3
E Group: Aux-Relay.....	5-3
O Group: Operator.....	5-8
Chapter 6 Programming Constants.....	6-1
A Group: Initialize.....	6-1
B Group: General.....	6-3
C Group: Inverter.....	6-8
D Group: Charger.....	6-10
E Group: Aux-Relay.....	6-13
O Group: Operator.....	6-19
U Group: Monitor.....	6-21
Chapter 7 Trouble Shooting Table.....	7-1

Introduction

General

- **Multi-functional Feature**

The “SSL series” is a powerful true sine wave inverter, a sophisticated battery charger that features adaptive charge technology and a high-speed AC Auto Transfer Switch (ATS) in a single compact enclosure. Besides these primary functions, however, the SSL series has several advanced features that provide a range of new applications as outlined below:

- **Uninterrupted AC Power**

In the event of a grid failure, or shore or generator power being disconnected, the inverter within the SSL series is automatically activated and takes over supply to the connected loads. This happens so fast (less than 10 milliseconds) that computers and other electronic equipment will continue to operate without disruption.

- **Power Control-Dealing with limited generator or shore side power**

The “SSL series” is a very powerful battery charger. It will therefore draw a lot of current from the generator or shore side power. A maximum generator or shore current can be set (B2-05). The “SSL series” will then take account of other AC loads and use whatever is extra for charging thus preventing the generator or shore supply from overload.

- **Power Assist-Boosting the capacity of shore or generator power**

This feature takes the principle of Power Control to a farther dimension allowing the “SSL series” to supplement the capacity of the alternative source. Where peak power is so often required only for a limited period; it is possible to reduce the size of generator needed or conversely enable more to be achieved from typically limited shore connection. When the load reduces, the spare power is used to recharge the battery.

Battery Charger

- **Adaptive 4-stage charge characteristic: Bulk-Absorption-Float-Equalize**

The “SSL series” features a microprocessor controlled “adaptive” battery management system that can be preset to suit different types of batteries. The “adaptive” feature will automatically optimize the process relative to the way the battery is being used.

- **The right amount of charge: Variable Absorption Time**

When only shallow discharges occur (a yacht connected to shore power for example), the absorption time is kept in order to prevent overcharging of the battery. After a deep discharge, the absorption time is automatically increased to make sure that the battery is completely recharged.

- Preventing damage due to excessive gassing: The Battery Safe Mode
If, in order to quickly charge a battery, a high charge current in combination with a high absorption voltage has been chosen. The “SSL series” will prevent damage due to excessive gassing by automatically limiting the rate of voltage increase once the gassing voltage has been reached.

- Less maintenance and aging when the battery is not in use: The Equalize Mode
The equalize mode kicks in whenever the battery has not been subjected to discharge during 24 hours. In the equalize mode, float voltage is reduced to 2.2V/cell (13.2V for 12V battery) to minimize gassing and corrosion of the positive plate. One a week, the voltage is raised back to absorption level to “equalize” the battery. This feature prevents stratification of the electrolyte and sulphation, a major cause of early battery failure.

- 2 outputs to charge 2 battery banks
The “SSL series” features 2 outputs, of which 1 can carry the full output current. The second output, limited to approximately 4A and with a slightly lower output voltage, is intended to top up a starter battery.

- To increase battery life: Temperature Compensation
Every “SSL series” can come with an optional battery temperature sensor (BTS-3) when connected, charge voltage will automatically decrease with increasing battery temperature. This feature is especially recommended for sealed batteries and/or when important fluctuation of battery temperature is expected.

- Battery Voltage Sense
In order to compensate for voltage loss due to cable resistance, the “SSL series” is provided with a voltage sense facility so that the battery always receives the correct charge voltage.

Specification

MODEL	12 Volt System 24 Volt System 48 Volt System	KI-1500SSL-12V KI-1500SSL-24V KI-1500SSL-48V	KI-3000SSL-12V KI-3000SSL-24V KI-3000SSL-48V
GENERAL			
Ventilation		Forced cooling	Forced cooling
Temperature – Operation		-20 ~ +70	-20 ~ +70
– Storage		-25 ~ +80	-25 ~ +80
Protection			
a. Output short circuit		✓	✓
b. Over load		✓	✓
c. Battery voltage too high		✓	✓
d. Battery voltage too low		✓	✓
e. DC voltage ripple too high		✓	✓
f. Temperature Sensor			
Transformer		✓ (105)	✓ (105)
Electronic & Powerstage		✓ (70)	✓ (70)
BTS-3		✓ (50)	✓ (50)
Humidity		0~95% (non condensing)	0~95% (non condensing)
Power control Function		✓	✓
Power assist Function		✓	✓
Uninterrupted AC power		✓ (less than 10 msec)	✓ (less than 10 msec)
Adaptive 4-stage charge		✓	✓
Two output to charge 2 battery banks		✓	✓
Auxiliary Relay		X 3	X 3
Battery voltage sensor		✓	✓
Battery Temperature sensor (BTS-3)		✓	✓
Remote control port		✓	✓
INVERTER			
Input Voltage Range (VDC)		9.5 -16V / 19-32V / 38-64V	
Output Voltage (VAC)		185~240 VAC / 90~120 VAC	
Output Frequency		50Hz /60Hz ± 0.1%	
Output Waveform		Pure sinewave	
Output Voltage THD		< 5%	
Power Factor (All Loads)		✓	

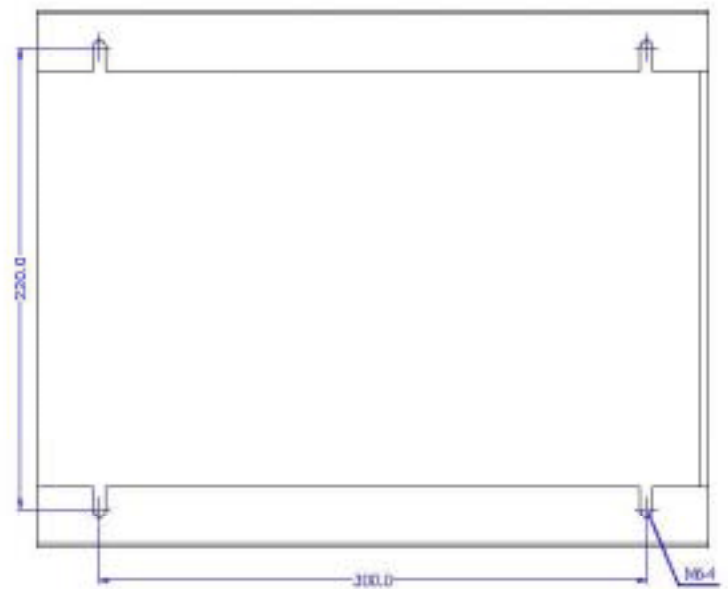
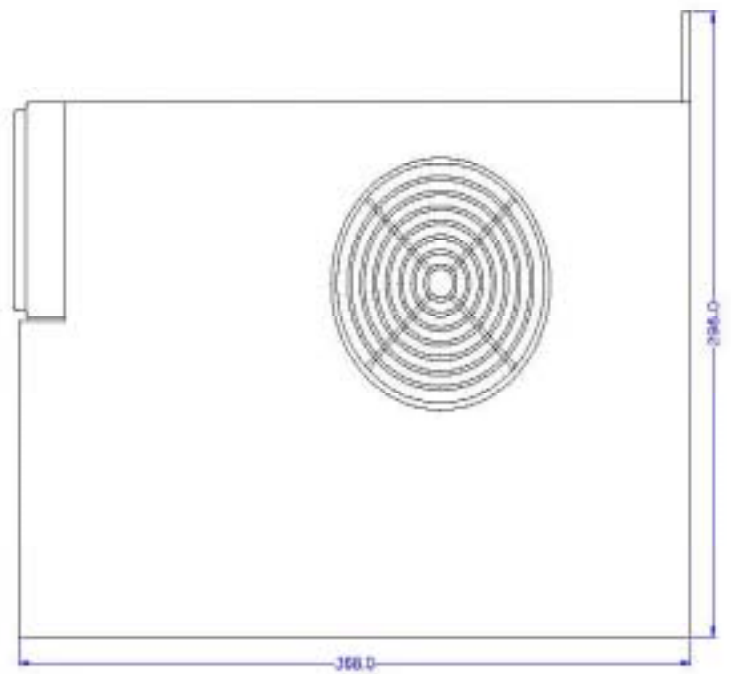
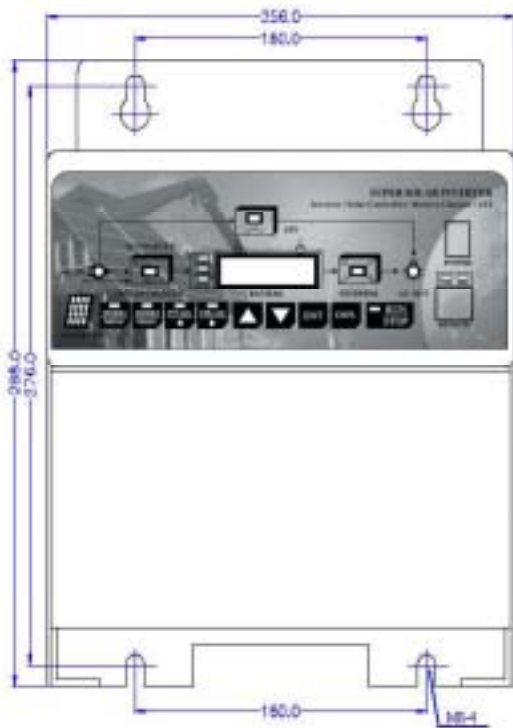
No linger load, crest factor	3: 1	
Cont. Power Output (W) Under 70 (cos =1.0)	1500W (No derate)	3000W (No derate)
Cont. Power Output (W) Over 70 (cos =1.0)	0W (Shutdown)	0W (Shutdown)
Maximum Power (W)	3000W	6000W
Maximum Efficiency (%)	82/84/85	84/86/89
Zero-load Power (W)	12W	18W
BATTERY CHARGER		
Input Voltage Range (VAC)	200~250 VAC / 100~125 VAC	
Input Frequency	45-55Hz /55-65 Hz	
Power Factor	1	
Charge Characteristic	4-stage adaptive / Bulk-Absorption-Float-Equalize	
Maximum DC Voltage Ripple (Vrms)	< 1.25 V	
Charge Current House Battery (A)	70A/40A/20A	140A/70A/40A
Charge Current Starter Battery (A)	4A	
Absorption Voltage Default (VDC)	14.4V / 28.8V / 57.6V	
Float voltage Default (VDC)	13.8V / 27.6V / 55.2V	
Equalize Voltage default (VDC)	13.2V / 26.4V / 52.8V	
Output Charge Voltage (min ~ max)	8V~16V / 11V~32V / 22V~64V	
Battery Temperature sensor	BTS-3	
AC INPUT SWITCH		
AC IN Terminal Circuit Breaker	30A (110V) /15A (220V)	60A (110V) /30A (220V)
Switch-over Time		
a. inverter to AC input	0 msec.	
b. AC input to inverter	0 msec.	
Detection Time AC Input Fault	4 ~10 msec.	
Trip Level AC Input to Inverter	90 VAC / 180 VAC	
Trip Level Inverter to AC Input	94 VAC / 187 VAC	
Min.~ Max. Frequency Range	45-55 Hz / 55-65 Hz	
MECHANICAL		
Cabinet / Protecting Class	Aluminum / IP20	
Dimension (HXWXD)	Wall: 298 x 256 x 368 mm Table: 189 x 285 x 494 mm	Wall: 355 x 256 x 368 mm Table: 189 x 285 x 708 mm
Weight (kgs)	30 kgs	35 kgs

SOLAR CHARGER	
System voltage ratings	12V,24V,48 VDC
Current ratings	40A
Accuracy	12/24V: $\leq 0.1 \% \pm 50 \text{ mV}$ 48V: $\leq 0.1 \% \pm 100 \text{ mV}$
Min.voltage to operate	9V
Max.solar array Voc	140V
Max.operating voltage	68V
Total current consumption	While operating-25 mA,at idle-3mA
High temp shutdown	90 disconnect solar 70 reconnect solar
Transient surge protection	
Pulse power rating	4500 watts
response	< 5 nanosec
ENVIRONMENTAL	
Ambient temperature	-40 to + 45
Storage temperature	-55 to + 85
Humidity	100% (NC)

Dimension for Wall Mounting/Vertical SSL series 1500W

KI-1500SSL-12/24

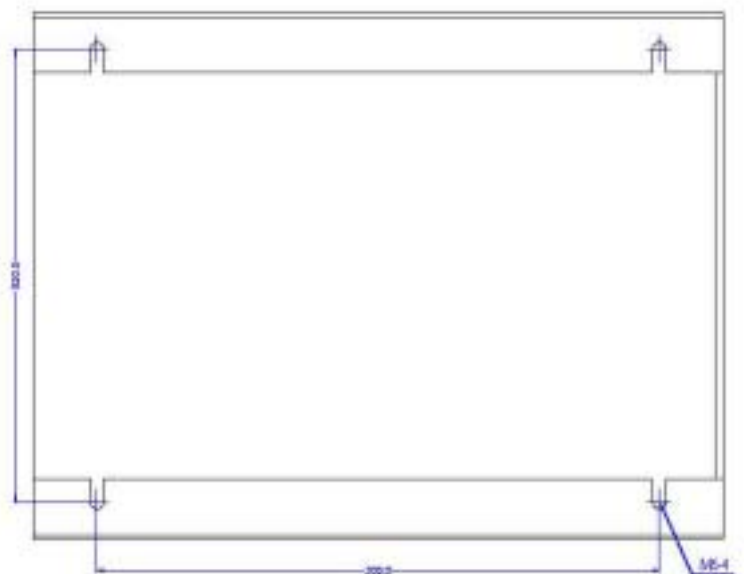
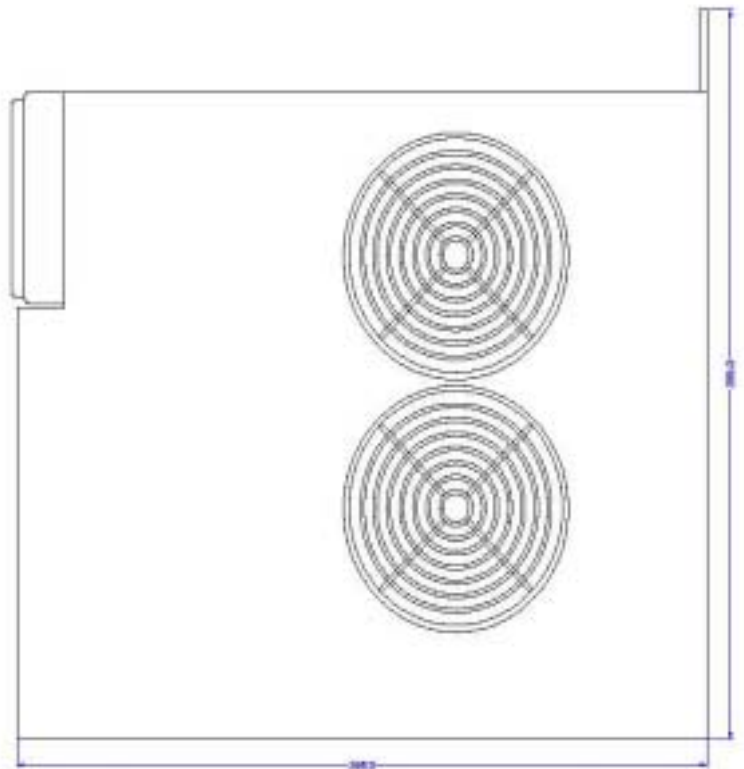
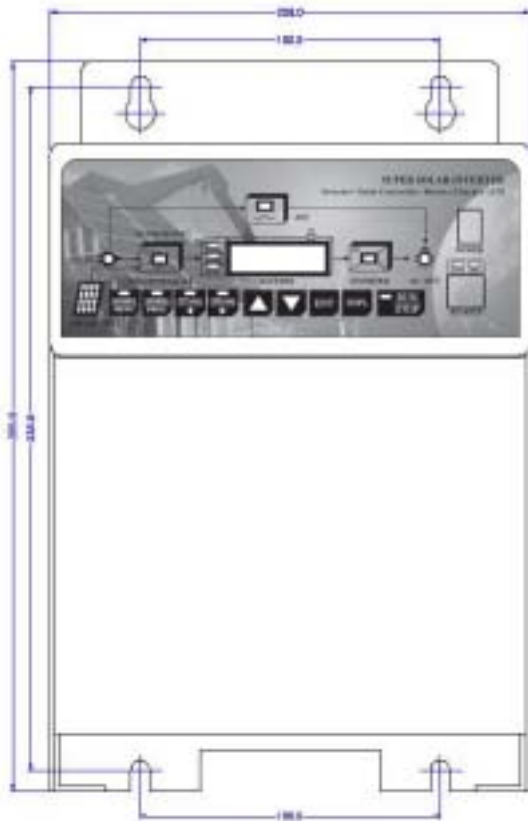
Unit: mm



Dimension for Wall Mounting/Vertical SSL series 3000W

KI-3000SSL-12/24

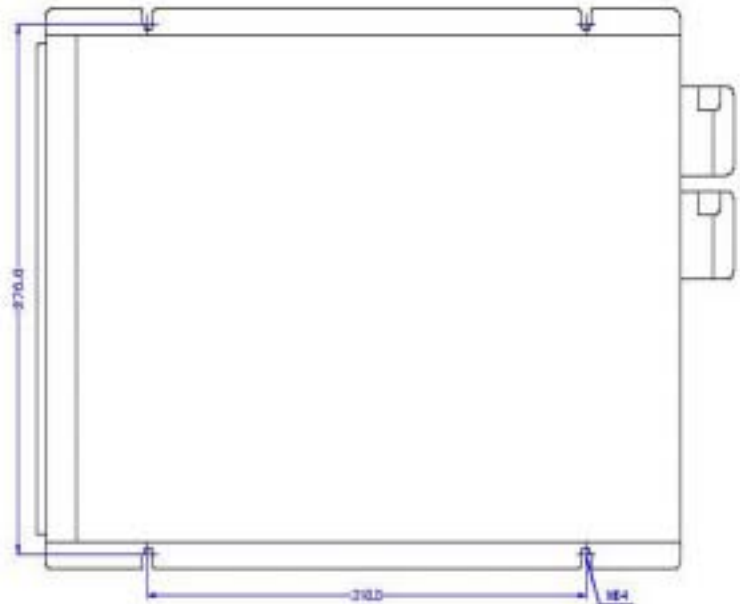
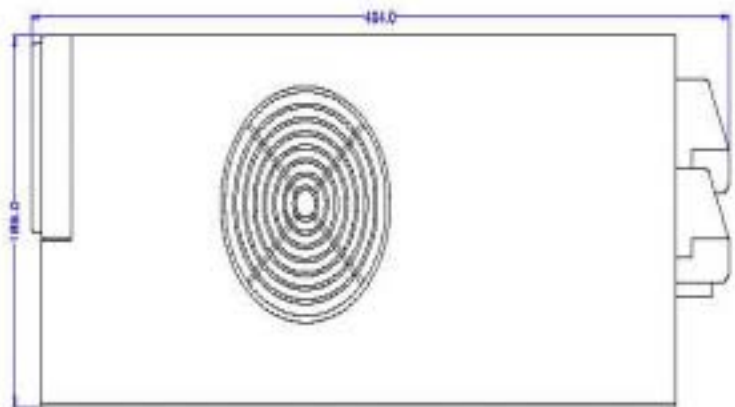
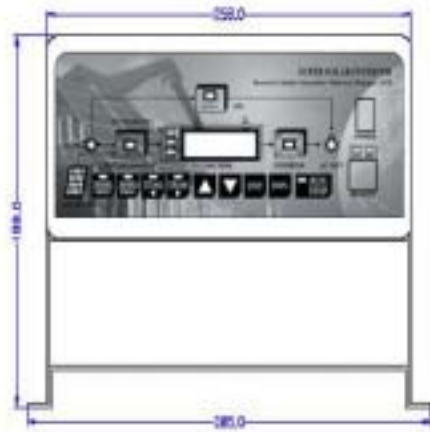
Unit: mm



Dimension for Table Mounting/Horizontal SSL series 1500W

KI-1500SSL-12/24

Unit: mm



Dimension for Table Mounting/Horizontal SSL series 3000W
KI-3000SSL-12/24

