

## SLI50 SERIES INVERTERS

2U x 19" | 48VDC INPUT  
 230VAC | 5000W OUTPUT

### DESCRIPTION

The SLI50 Series inverter provide an ideal solution for telecom, IT and industrial applications. Due to innovative technology solutions like the patent-pending "Compact Coil", the SLI50 Series inverter packs 5000 watts of power into a compact package that is 19" rack mountable and only two rack units high.

Electrical performance of the SLI50 Series inverter is at the top of the market with efficiency that peaks at 93% and a patent-pending control algorithm that compensates current harmonics on the DC side without using bulky and expensive filters.

The inverter includes an on-board powerful Digital Signal Processor (DSP) that allows easy programmability of the main parameters on the front panel LCD display and keypad. The SLI50 Series inverters can be interfaced with RS485.

### TWO-YEAR WARRANTY

### SAFETY COMPLIANCE

UL60950-1 2<sup>nd</sup> Edition  
 CSA22.2, No. 60950-1 2<sup>nd</sup> Edition  
 EN60950-1 2<sup>nd</sup> Edition



LVD2006/95/EC  
 ROHS2011/65/EU

### FEATURES

- ◆ Compact design: 2U height, 19" rack mountable
- ◆ Front panel LCD Display Unit to monitor and set main parameters  
 or  
 LED Unit for visual indication available
- ◆ High efficiency: up to 93%
- ◆ True sine wave output
- ◆ RS485 serial link
- ◆ Input reflected ripple current <150mA<sub>rms</sub> @ maximum load
- ◆ Advanced cooling system to optimize fan life and minimize noise
- ◆ Parallelable up to 12 units
- ◆ 2-position subrack available

### STANDARD MODELS

MODEL *	FEATURES
SLI 50 48-230	Fitted with LED Indicator Module
SLI 50 48-230-CTRL	Fitted with Display Module/Controller

\* Input is isolated allowing connection to positive or negative DC sources.

[www.unipowerco.com](http://www.unipowerco.com)

NORTH AMERICA CALL: +1-954-905-1071 • LATIN AMERICA CALL: +1-954-905-1078 • EUROPE CALL: +44 1903 768200

## SPECIFICATIONS

### Input

PARAMETER	DESCRIPTION / CONDITION	MIN	NOM	MAX
Input Voltage		40VDC	48VDC	60VDC
Input Current				150A
Inrush Current	ETSI EN 300 132-2; Ver. 2.12, Clause 4.7			

### Output

PARAMETER	DESCRIPTION / CONDITION	MIN	NOM	MAX
Output Power				5000W 7000VA
Output AC Voltage		200VAC	230VAC	240VAC
Output Current				30Arms
Frequency	Adjustable	47Hz	50Hz	63Hz
Efficiency				93%
Load Power Factor	Lagging or leading	0.33		1
Crest Factor	I <sub>pk</sub> /I <sub>rms</sub>		3	
Load Regulation	Over full operating range (R-Load)	-0.5%		+0.5%
Line Regulation	Load: over full operating range (R-Load)	-6.0% -8.5%		0% 0%
Total Harmonic Distortion	On Resistive Load			<0.5%

### Protection

PARAMETER	DESCRIPTION / CONDITION	MIN	NOM	MAX
Input Overcurrent	@48VDC input	150A		
Input Overvoltage	@48VDC input	65VDC		
Input Undervoltage	@48VDC input	36VDC		
Output Overload	@40VDC input			5500W
Output Overvoltage		-2%	260VAC	+2%
Output Undervoltage		-2%	195VAC	+2%
Output Overcurrent	selectable with I <sup>2</sup> T curve	15A		30A
Safety Overcurrent	fuse		30A	
Overtemperature	T <sub>amb</sub> >67°C and T <sub>int</sub> >110°C (Visual indication 5°C before shutdown)			
Protection Restore Modes	The restore mode of each protection can be individually selected to "latch" or "auto-restart".			

### Interface & Control Signals

PARAMETER	DESCRIPTION / CONDITION	
LCD Display Unit	128 x 128 pixel graphic with keypad used for monitoring and setting the main parameters.	LED Indicators for both units: GREEN - Power ON YELLOW - Fan Failure, Addresses RED - Overtemperature, Faulty Condition
LED Unit	Standard for visual indication of the main parameters	
General Alarm Signal	Form C signal relay	

### Safety, Regulatory and EMC

PARAMETER	DESCRIPTION / CONDITION	CRITERION
Safety Certifications	IEC 60950-1:2005; EN 60950-1/A11:2009; UL60950-1 2nd Ed.; CAN/CSA-C22.2 No.60950-1, 2nd Ed.; CE according to Low Voltage and EMC Directives; Kema; CB Report	
Insulation	Primary-to-Secondary: Primary-to-Ground: Secondary-to-Ground: Signal-to-Ground:	3000Vrms 400VDC 1500Vrms 500VDC
EMC	Emission: EN61000-6-4: 2001; EN55022: 1998 A1:2000 + A2:2003 (Class B) Immunity: EN61000-6-2: 1999; EN61000-4-2: 1995 + A1:1998 + A2: 2001 (Crit. A); EN61000-4-3: 2006 (Crit. A); EN61000-4-4: 2004 (Crit. A); EN61000-4-5: 2006 (Crit. A); EN61000-4-6: 1996 + A1:2001 (Crit. A); EN61000-4-8: 1993 + A1:2001 (Crit. A); ETSI EN 300-132-2 (Crit. A)	

### Environmental

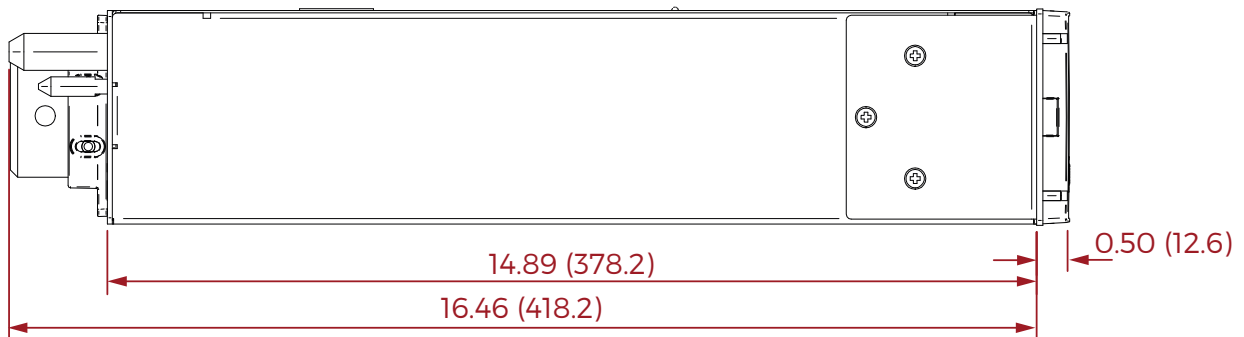
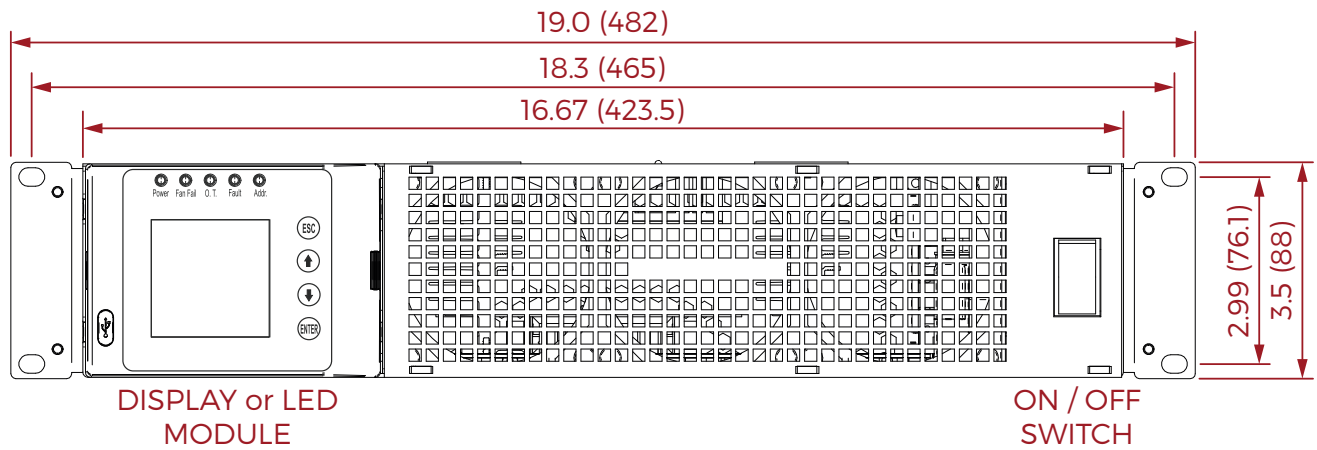
PARAMETER	DESCRIPTION / CONDITION	MIN	NOM	MAX
Altitude	Operating: Non-Operating:			13K ft 40K ft
Operating Temperature	@ full load; Power Derating: 150W/°C: +55°C to +65°C	-25°C		+55°C
Storage Temperature		-40°C		+85°C
Relative Humidity	@ 40 °C, non-condensing			90%
MTBF	@ 40°C excluding fan	200k hrs		

### Mechanical

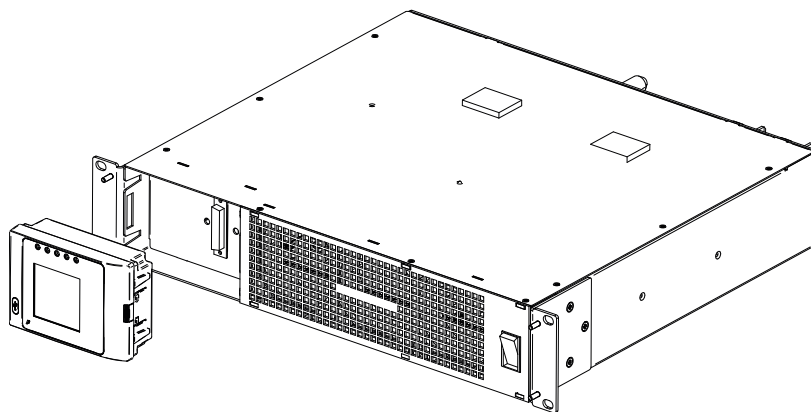
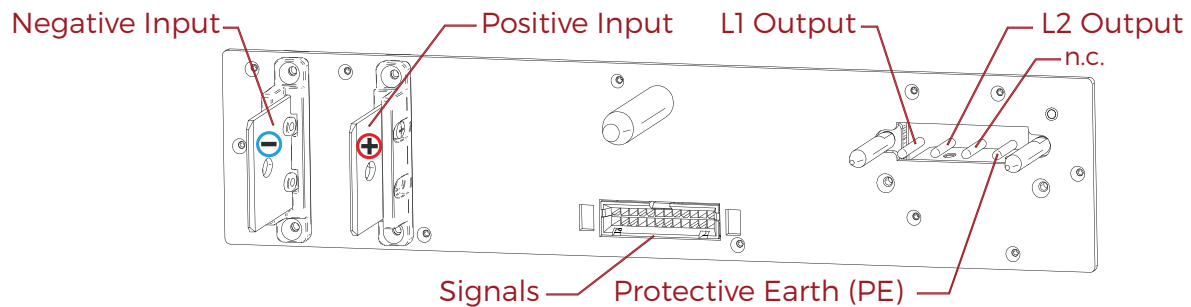
PARAMETER		
Dimensions	19" Width x 3.46" Height x 15.7" Depth	482.6mm Width x 87.9mm Height x 398.8mm Depth
Weight	32.0 lb	14.5 kg

## Mechanical Outline

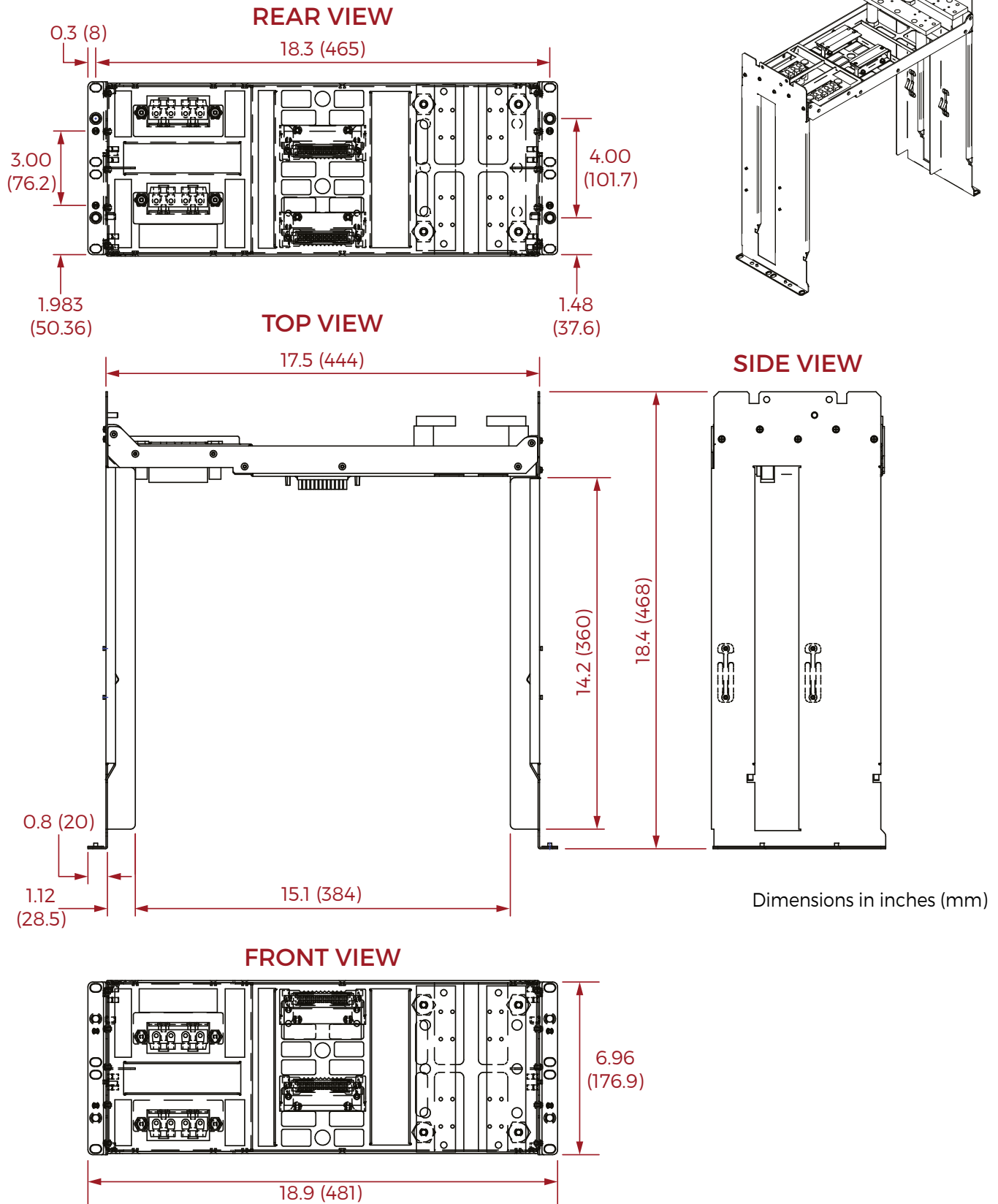
Dimensions in inches (mm)



## REAR PANEL CONNECTIONS



## Hot-Plug Subrack





## **INSTALLATION MANUAL SLI 50 INVERTER**

**[www.unipowerco.com](http://www.unipowerco.com)**

**Manual No. SLI-50-48-3**  
sli50-man-rev3-0516.indd

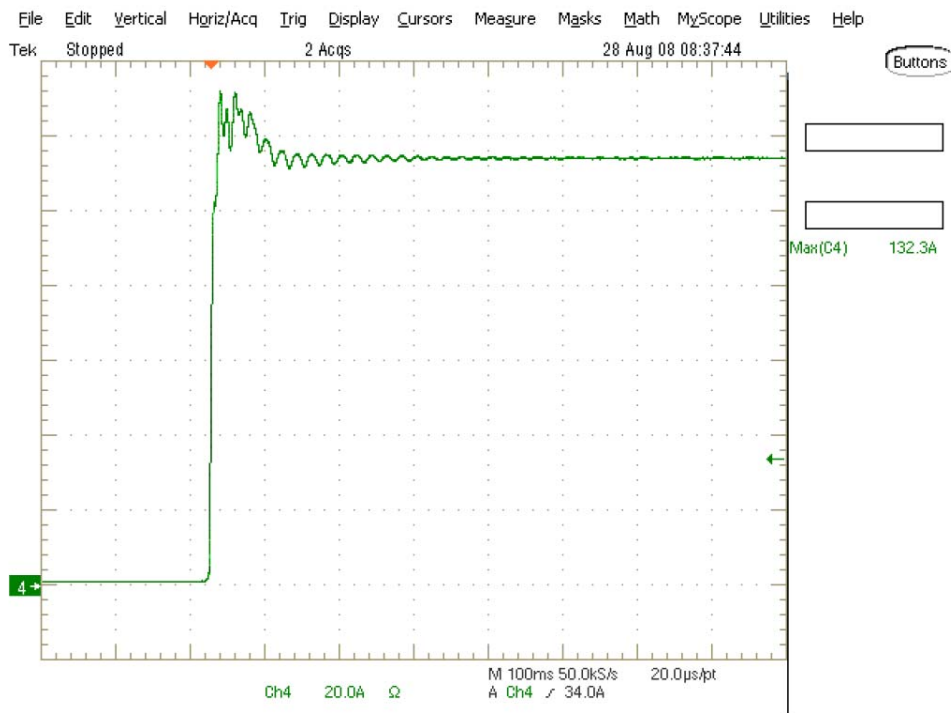
**© 2016 UNIPOWER LLC  
All Rights Reserved**

## 1 INTRODUCTION

The Inverter is designed to operate from a DC Source, its input current features a very low ripple. His psophometric value is 44dBnrc (without battery).

The above feature allows the inverter to be supplied by a charger or power supply even without a battery in the circuit, as long as the DC source has the necessary current capacity to sustain the inverter's inrush current and the current variations induced by load changes of which the following diagram shows the worst case.

Figure 1-1 Input current absorption with 5000W resistive load step at 48Vdc input



Input and Output Voltages are floating: even though it is possible to refer to GND one Input or Output terminal this connection it is not required.



**WARNING** It is essential to read and understand all Warnings, Cautions and Notes before performing any connections to the Unit or System.



**WARNING** Before any connections are made to the Unit or the System, be sure to disconnect any AC load and any DC Input source. If the DC Input source is a battery, make all connections to the inverter BEFORE connecting DC leads to the battery.

## 2 TECHNICAL FEATURES

PARAMETER	CONDITION/DESCRIPTION	MIN	NOM	MAX	UNIT
DC Input Voltage		40	48	60	VDC
DC Input Voltage undervoltage			36		VDC
Max. Input Current			112 150		ADC
Input Surge Current	For 2 seconds	150		200	ADC
Input Overcurrent				200	ADC
AC Output Voltage	Adjustable	200	230	240	VAC
Frequency	Adjustable	47	50	63	HZ
Output Power				5 7.5	kW kVA
Output Current				30	Arms
Efficiency				93	%
Dimensions	Width Height Depth			482 88 418	mm
Weight				14.5	kg

## 3 LOCATION SELECTION

The SLI Inverter is designed for indoor application, away from heat and moisture. The inverter will provide its full performance with internal forced ventilation at ambient temperatures ranging from -25°C to +55°C (+65°C with power derating, see also Technical specification).

Therefore, the following requirements must be considered when choosing a mounting location:

1. Inverter must be sheltered from the elements. Select a clean, dry location
2. Inverter requires proper ventilation for cooling. It can be installed vertically as well as horizontally provided a minimum clearance of 10 inch on the backside to provide adequate airflow. The fans suck in the air from the front vent holes and blow it through the backside holes.
3. Inverter should be mounted as close to the DC Input source as possible to minimize losses in the DC Input cables.



## 4 RECEIVING INSTRUCTIONS

---



**WARNING** For your protection, the following information and the product manual should be read and thoroughly understood before unpacking, installing or using the equipment.

---

We present all equipment to the delivering carrier securely packed and in perfect condition. Upon acceptance of the package from us, the delivering carrier assumes responsibility for its safe arrival to you.

Once you receive the equipment, it is your responsibility to document any damage the carrier may have inflicted, and to file your claim promptly and accurately.

### 4.1 Package Inspection

---

- Examine the shipping crate or carton for any visible damage: punctures, dents and any other signs of possible internal damage.
- Describe any damage or shortage on the receiving documents and have the carrier sign their full name.

### 4.2 Equipment Inspection

---

- Within fifteen days, open crate or carton and inspect the contents for damages. While unpacking, be careful not to discard any equipment, parts or manuals. If any damage is detected, call the delivering carrier to determine the appropriate action. They may require an inspection.

***Save all shipping material for the inspector to see!***

- After the inspection has been made, call us. We will determine if the equipment should be returned to our plant for repair or if some other method would be more expeditious. If it is determined that the equipment should be returned to us, ask the delivering carrier to send the packages back at the delivering carrier's expense.
- If repair is necessary, we will invoice you for the repair so that you may submit the bill to the delivering carrier with your claim forms.
- It is your responsibility to file a claim with the delivering carrier. Failure to properly file a claim for shipping damages may void warranty service for any physical damages later reported for repair.

---

## 4.3 Handling

Handle the inverter with care. Do not drop or lean on front panel or connector. Keep away from moisture.

---

## 4.4 Identification Label

Model number and serial number located on label on the cover identify the unit. Please refer to these numbers in all correspondence with UNIPOWER.

---

## 4.5 Part Number

The SLI50 Inverter is available with different P/N:

UNIPOWER P/N	CUSTOMER P/N	MODEL
3F51991F100G	SLI 50 48-230	Inverter with LED indicator
3F51991F200G	SLI 50 48-230-CTRL	Inverter with Display Controller



**WARNING** Only one Display Unit can be present in a system with SLI50 units in parallel.

---

---

## 4.6 Initial Settings

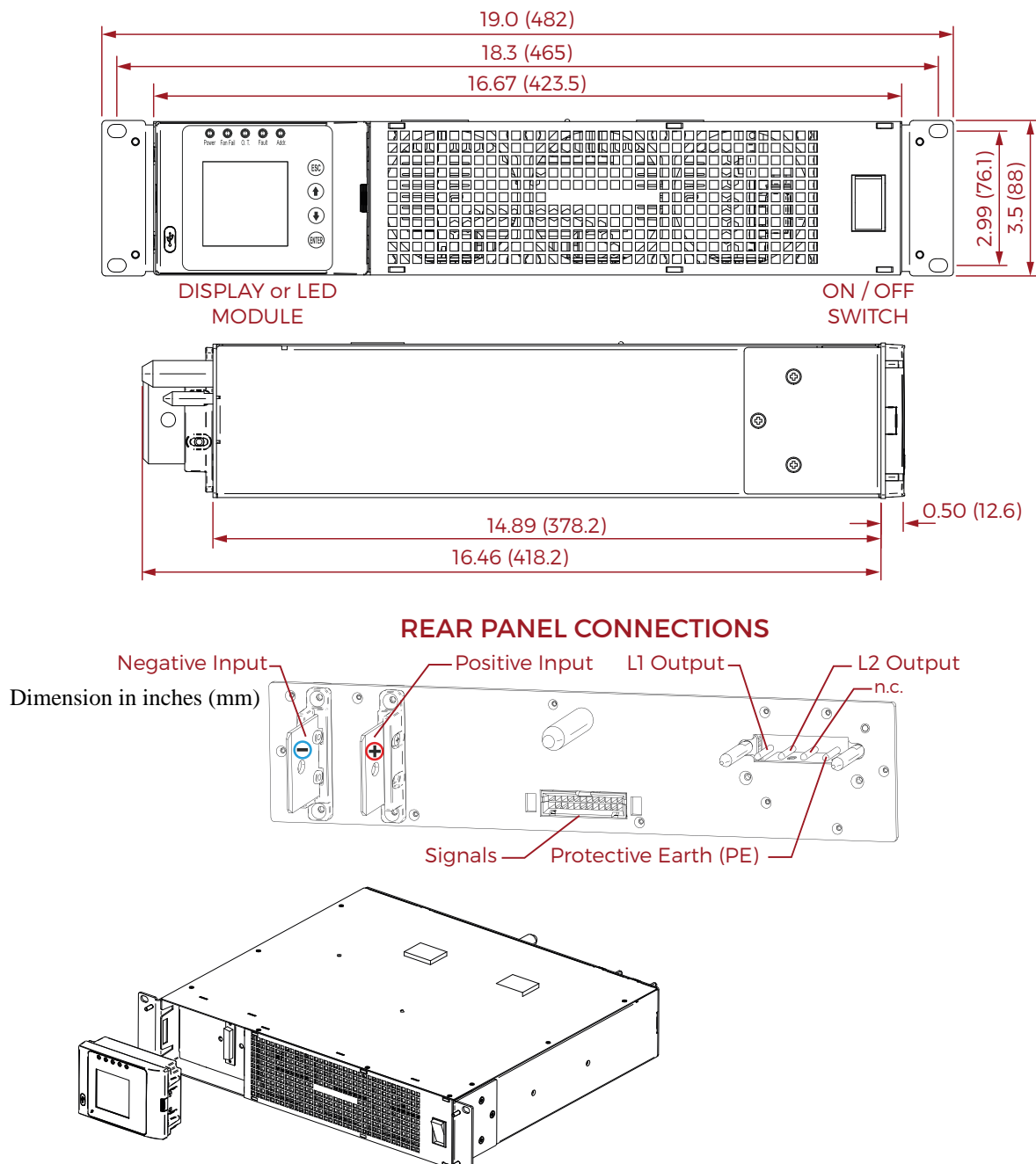
All equipment is shipped from our production facility **fully checked and adjusted**. Do not make any adjustments until you have referred to the technical reference or product manual.

## 5 MOUNTING PROCEDURE



**WARNING** Mounting brackets are included with the inverter when they are shipped from the factory. Failure to follow proper mounting procedures could result in the unit failing causing personal injury and equipment damage.

Figure 5-1



## 5.1 Rack Mounting

The inverters will fit a 19 inch relay rack.

Leave adequate clearance between this shelf and any existing shelves: a 10-inch minimum clearance is required in the rear.

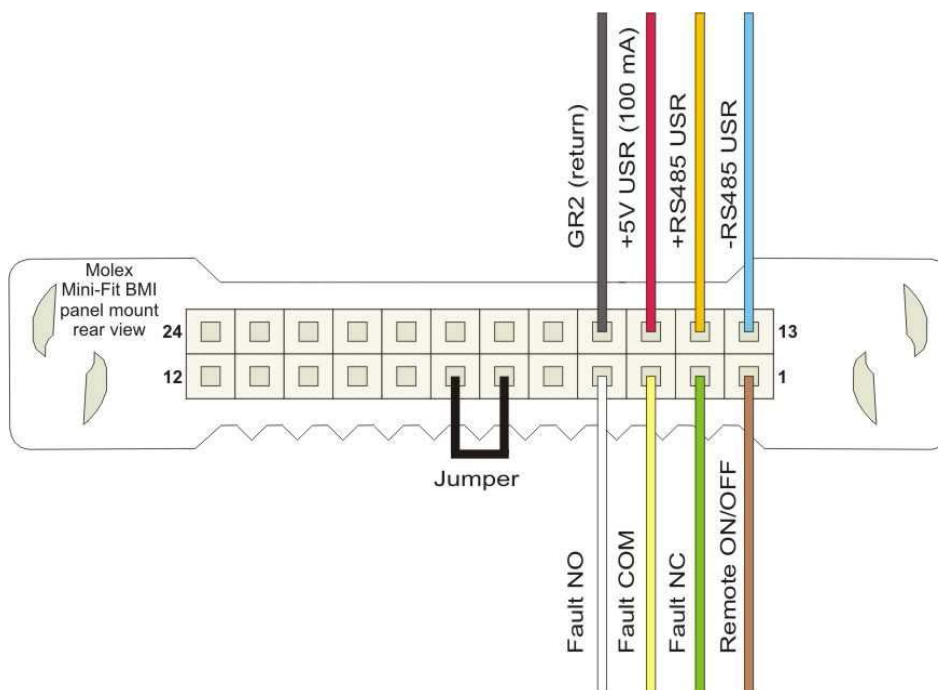
Connect the protective earth (PE) of the rack / tower to the safety earth.

## 5.2 Stand Alone Unit

The units for Stand - Alone application will be delivered from factory with a Stand-Alone cabling kit in order to connect output and signals connectors properly.

It contains the mating parts for the output AC connector and the mating part for signals pre-assembled in factory with 800mm of length wires, see drawing below:

Figure 5-2



To facilitate the connection the input bars have M6 holes, polarity identifiers are labeled on the chassis (minus is near the corner of the metal box), the minimum recommended gauge wire is 50 mm<sup>2</sup> (AWG0).

## 5.3 Hot-plug Replacement

Up to 12 units of SLI 50 inverter can be paralleled in single-phase system.

A single unit can be turned off and unplugged from a parallel system without turn off the entire system.

Simply open the onboard breakers of the unit to replace and extract that from the system.



**WARNING** Make sure to open the onboard breaker before plug / unplug to avoid damage of the input connectors.



**WARNING** Make sure the remaining units are able to supply the load before to turn off the unit to replace, otherwise the system may be shut down.

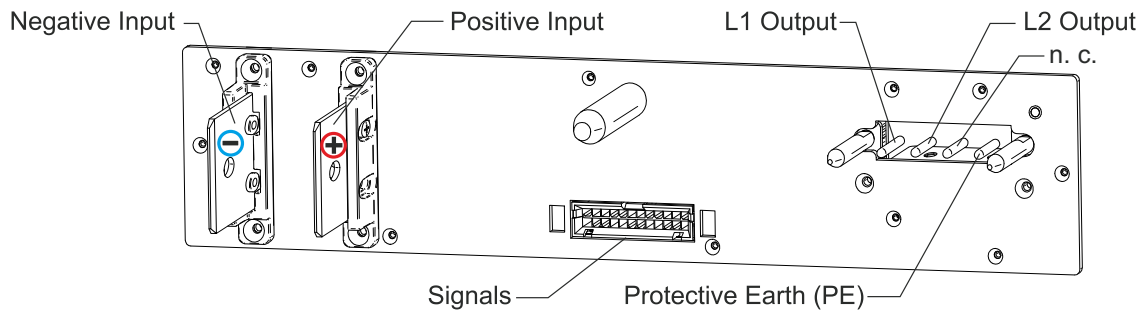
In the same way a new unit can be inserted in a working system.

Turn off the onboard breaker of the new unit, insert that into the system and turn on the breaker. The new unit loads the main parameters from the Master unit of the system and after some seconds it will turn on and start to share the load with the other units.

## 5.4 Connections

On the following figure a rear view of the unit showed all the connections:

Figure 5-3 Connections (Rear View)



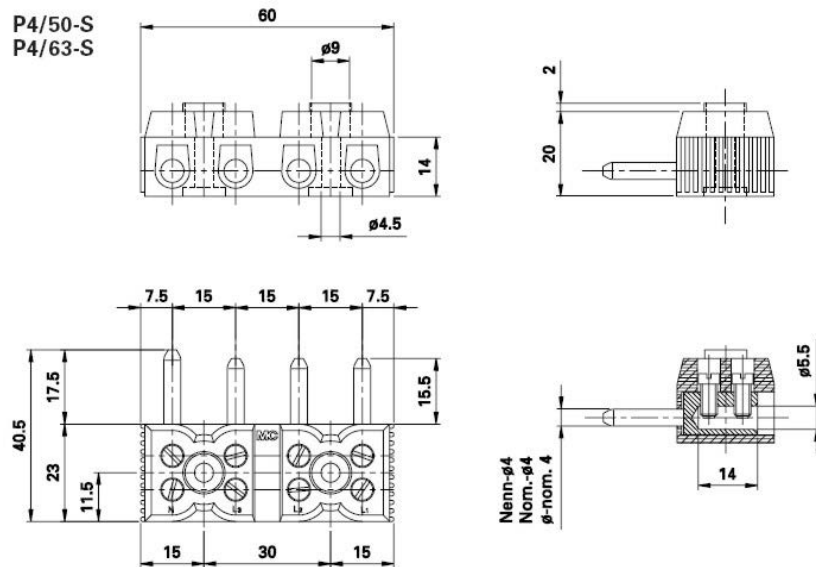
### 5.4.1 Input Connections

Positive (+) and Negative (-) input terminals consist of two bars located on the rear of the chassis (see Figure 5-3). The bars can be mated with clips or bolted to bus bars or cables. To facilitate the connection for Stand Alone system the input bars have M8 holes. Polarity identifiers are labeled on the chassis.

### 5.4.2 Output Connections

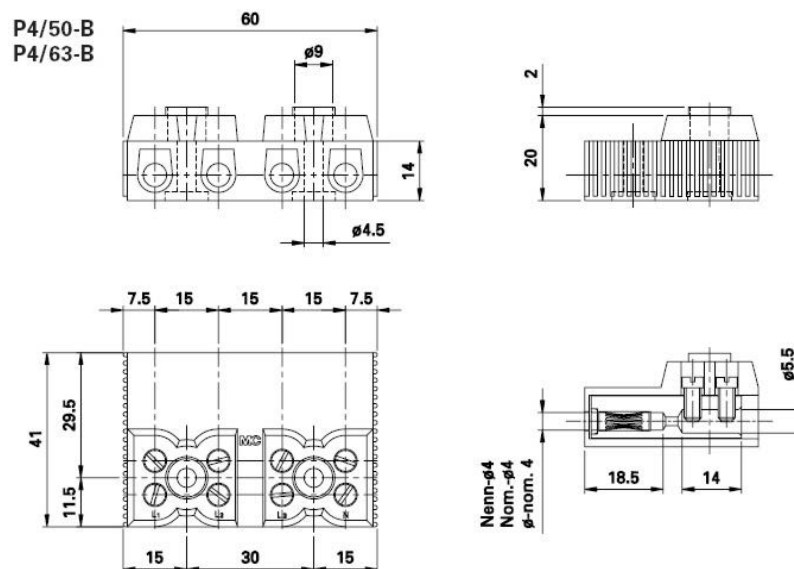
The units are equipped with MULTICONTACT P4/63-S-PCD connector (order code 15.0117). For location see Figure 5-3.

Figure 5-4 Multicontact P4/63-S-PCD



The mating part for this connector is MULTICONTACT P4/63-B-PCD (order code 15.0118)

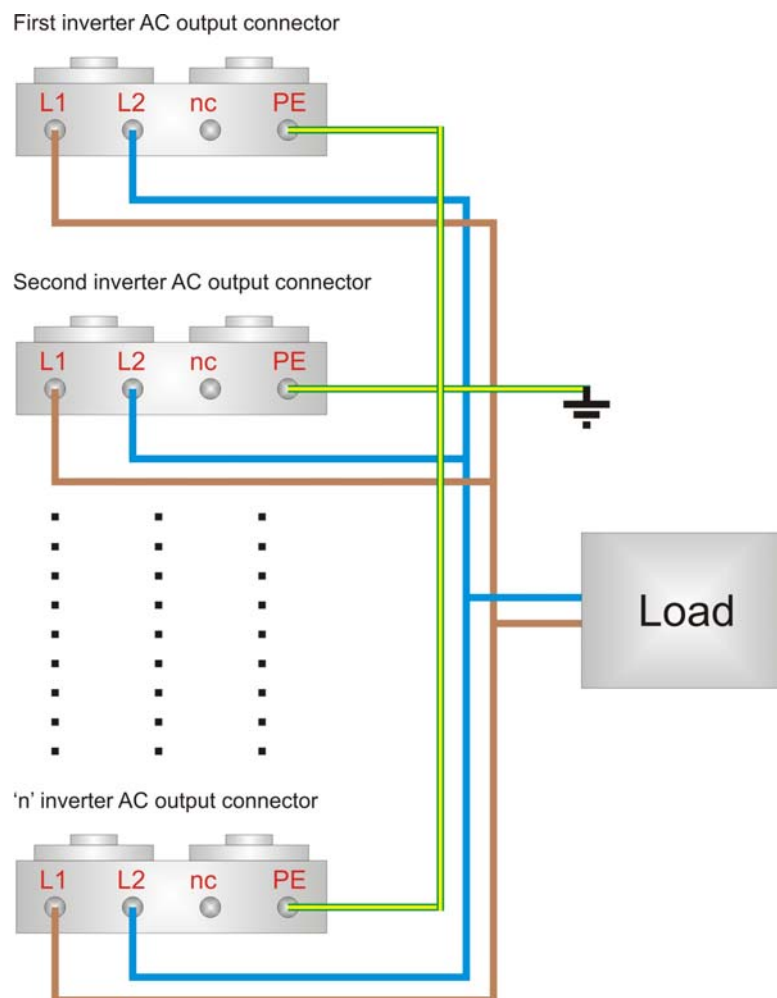
Figure 5-5 Multicontact P4/63-B-PCD



#### 5.4.2.1 AC Output Connections for Parallel Configuration

When you connect multiple units in parallel, pay attention to observe the correct **pin-to-pin correlation** between the terminals avoiding cross connections (**pin L1** to pin **L1**, **pin L2** to **pin L2**).

Figure 5-6

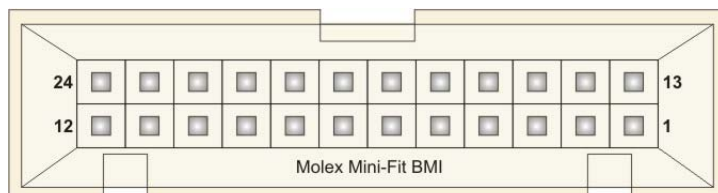


The minimum recommended gauge wire is 8mm<sup>2</sup> (AWG8).

### 5.4.3 Signal Connections

The unit is equipped with a 24 poles Molex Mini-Fit BMI connector (order number 15-24-9245).

Figure 5-7 Molex Mini-Fit BMI connector



The mating part is:

Molex Mini-Fit BMI panel mount (order number 15-06-0241)

The crimp terminals are series 5556-T, for AWG18 to 24 wires, (order number 39-00-0038)  
Suggested wires are AWG24 style 1007 (300V)

PIN	SIGNAL DESCRIPTION	REFERS TO
1	- Remote on	GR2 User Return (pin 16)
2	Fault NC	Floating
3	Fault COM	Floating
4	Fault NO	Floating
5	Not Connected	
6	GR1 Common return for system communication	
7	-INS	GR1 System Communication Return (pin 6 & 18)
8	CAN L	GR1 System Communication Return (pin 6 & 18)
9	CAN H	GR1 System Communication Return (pin 6 & 18)
10	+5V COM1	GR1 System Communication Return (pin 6 & 18)
11	+485 COM1	GR1 System Communication Return (pin 6 & 18)
12	-485 COM1	GR1 System Communication Return (pin 6 & 18)
13	-485 user	GR2 User Return (pin 16)
14	+485 user	GR2 User Return (pin 16)
15	+5V user	GR2 User Return (pin 16)
16	GR2 Common return for user signals	
17	Not Connected	
18	GR1 Common return for system communication	
19	PHASE SYNC	GR1 System Communication Return (pin 6 & 18)
20	-GRID SYNC	GR1 System Communication Return (pin 6 & 18)
21	Not Connected	



22	+5V COM2	GR1 System Communication Return (pin 6 & 18)
23	+485 COM2	GR1 System Communication Return (pin 6 & 18)
24	-485 COM2	GR1 System Communication Return (pin 6 & 18)

**Grounding detail:**

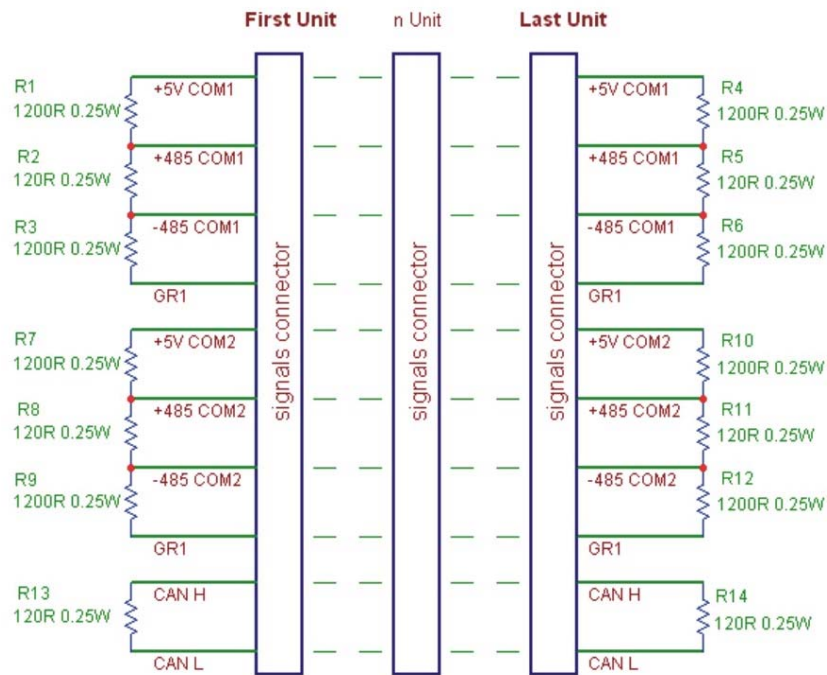
GR1 = 500 Vdc insulation from earth ground (PE) and from GR2

GR2 = 500 Vdc insulation from earth ground (PE) and from GR1

**Signal Description**

Pin1	Remote on/off. Turn on active low. The units are configured in factory to turn on remotely connecting that signal to pin 16 (through a switch or relay). Please note: That function can be configure by the control display units, menu Settings / on-off mode, to turn on/off the unit via a RS485 serial interface software command. That mode of function disable the hardware signal.
Pin 2, 3, 4	Fault signal. Low voltage relay contacts that provides a general failure indication related to any fault condition of the unit. Those signals are floating but have only 500VDC insulation from earth ground (PE). The contact rating is 1A at 30Vdc.
Pin 5, 17	Not used
Pin 7	-INSert signal, to control the hot plug of the unit in the system. It must be connected to GR1 to turn on the unit
Pin 8, 9	Serial CAN interface (system reserved for communication between units) This line must be terminated according to the figure below.
Pin 10, 11, 12	Serial RS485 # 1 hi-speed (system reserved for load sharing of the units) This line must be terminated according to the figure below.
Pin 22, 23, 24	Serial RS485 # 2 hi-speed (system reserved for load sharing redundancy) This line must be terminated according to the figure below.
Pin 13, 14	User side serial RS485
Pin 15	User auxiliary voltage 5V 100mA referred to GR2
Pin 19	PHASE SYNC (System reserved) bidirectional signal generated by the Master unit to synchronize the phase of the Slave units
Pin 20	GRID SYNC (system reserved) input signal received from the STS to synchronize the inverter system with the distribution grid

Figure 5-8 SLI 5000 Serial Interfaces Termination and Polarization



The termination and polarization network detailed in the figure are available in termination boards assembled over the sub-rack (for two inverters).

#### 5.4.3.1 Connecting units in Parallel using signals connector

To operate the units in parallel, Pins 1, 2, 3, 4, 5, 8, 9,10,11,12,13,14,15, 16, 17, 18,19, 20, 22, 23, 24 of each unit must be connected together as described in the figure below

Every unit must have a jumper from Pin 6 and pin 7.

Remote turning on/off of all the units can be controlled with a single switch between pin 1 and pin 16 (close the switch to turn on).



**WARNING** Hardware on/off is not functioning if the on/off mode selected is RS485 serial interface command (see signals connector description, pin 1).

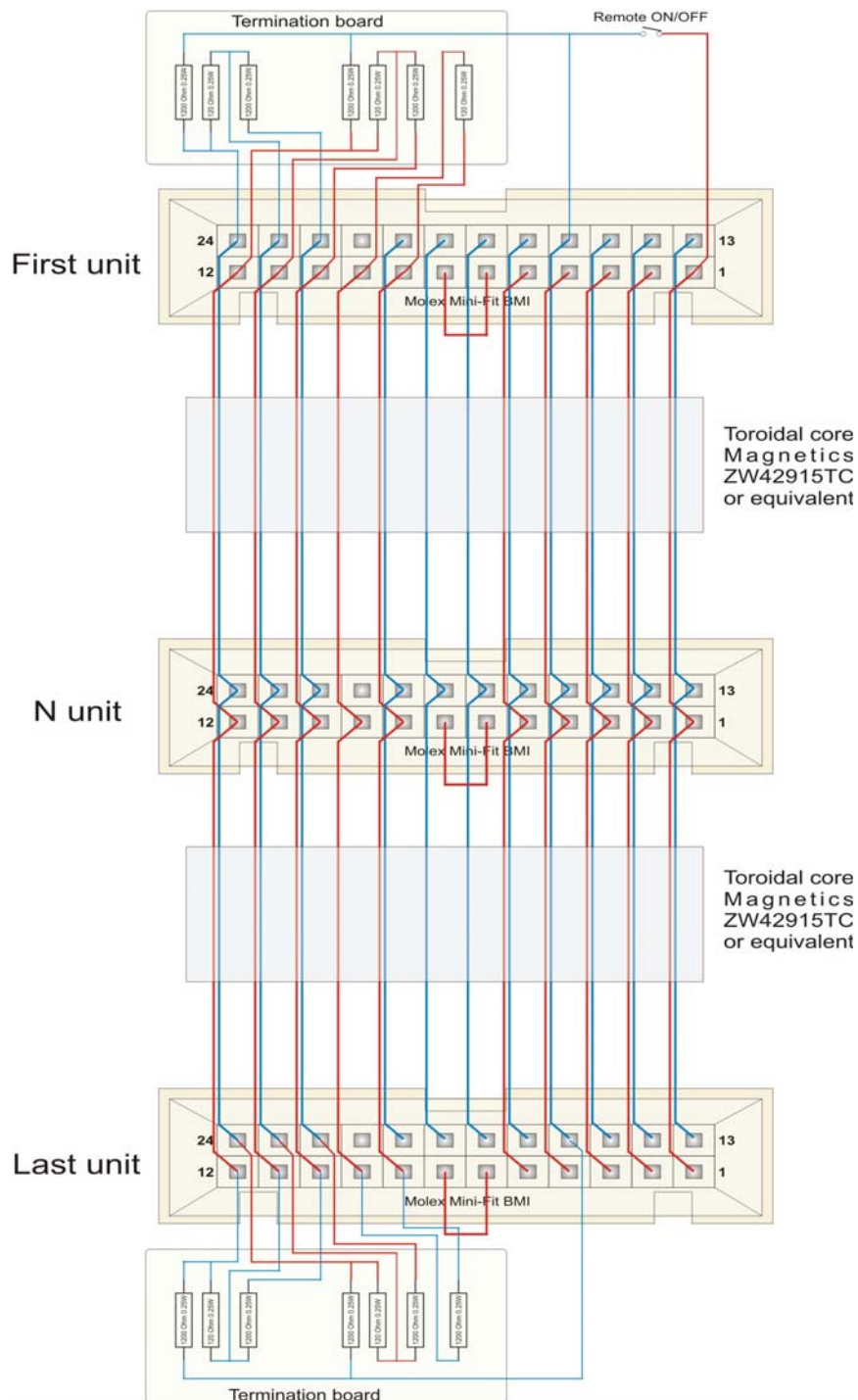


**WARNING** Change the on/off mode from RS485 to Hardware (see signals connector description, pin 1) may result in an immediate turning on of the units if the hardware signal is switched on (close).



**WARNING** The serial interface lines must be terminated and polarized according to the figure to guarantee proper operations

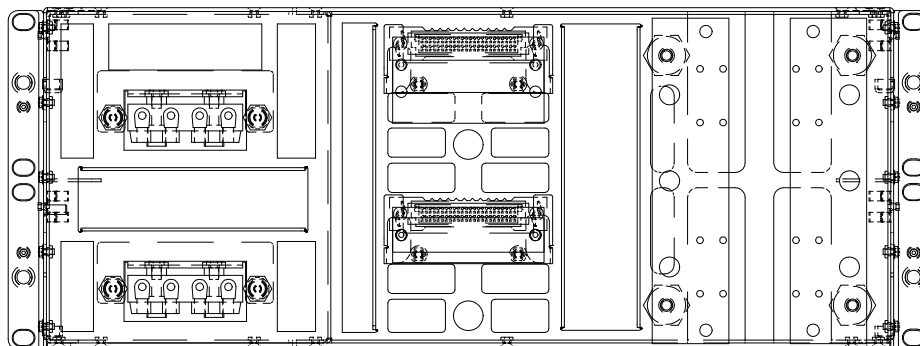
Figure 5-9 Single-Phase Parallel Cabling



#### 5.4.3.2 Connecting units in parallel using the sub-rack with Signal Connector Board Adapter

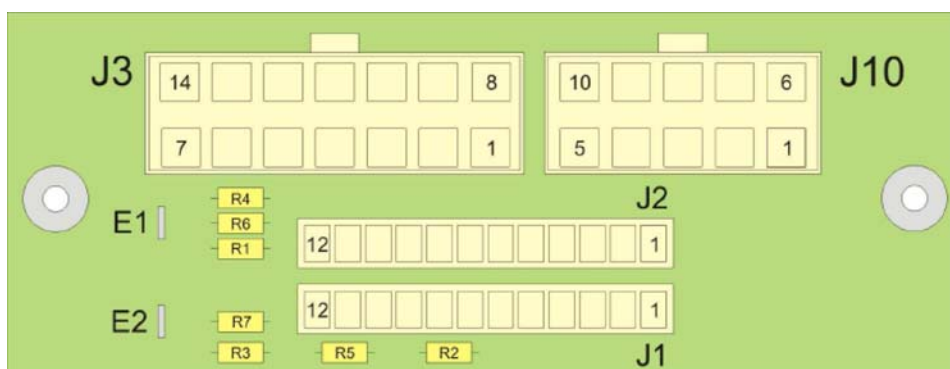
By the sub-rack, the parallel connection among several units is immediate as shown on previous figure. The Pin assignment is the same as that described on previous pages. Two pc-board are assembled to the sub-rack in order to provide correct line termination.

Figure 5-10



If units are paralleled and pin-to-pin connection of the signal connectors is done, it is not possible to discriminate Fault signals coming from each individual unit  
If such discrimination is needed, the signal connector board adapter should be used (remove the wires from pin 2-3-4 of the paralleled cable and get the fault signal individually from the proper connector).

#### 5.4.3.3 Interface board UNIPOWER 9F53F512213G

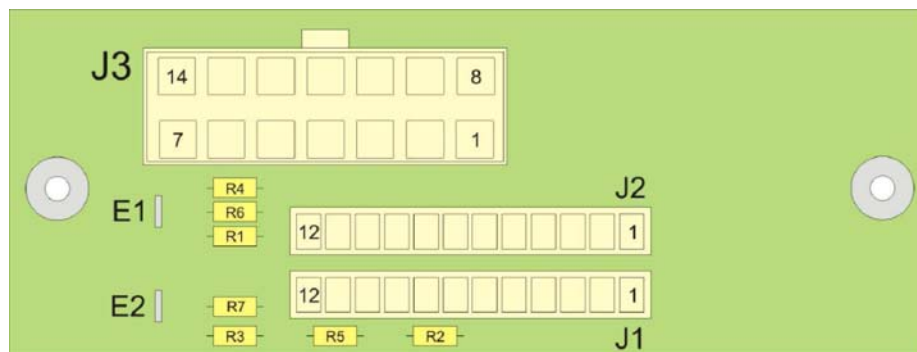


The interface board (upper board) can be used to link an inverter system to extend the display features. Single Display Controller can show all the measurements and control all the system.  
Only one termination board should be present in a system.

#### 5.4.3.4 Termination board UNIPOWER 9F53F512203G

The termination board is the same circuit of the previous but fitted with different components.

Only one termination board should be present in a system.



**WARNING** In a system with two or more sub-racks connected together (3 to 12 Inverters) must be present only one Interface board and only one termination board. Leave the upper Interface board and the lower Termination board of the sub-rack chain and remove all the others by direct connecting the cabling from two consecutive sub-rack.

## 6 STEP-BY-STEP PROCEDURE TO TURN THE UNIT ON

---

### 6.1 Change of main Parameters

---

The main function parameters may be changed via the **Display/Controller Unit** (please refer to the Display Unit operating manual).



**WARNING** This step operates on critical unit parameters: we suggest changing the factory settings only if it is strictly needed.

---

### 6.2 Stand-Alone Configuration

---

- Be sure every AC user is disconnected and the onboard input breaker on the front panel is turned off.
- Connect the signal connector. Refer to paragraph 4.2. Make sure the remote on/off control is turned off.
- Connect the output wiring to the load and check that the rated input power of the load is less or equal to the rated output power of the inverter.
- Connect the input wiring to the input source
- Turn on the main input breaker so the microcontroller run the initial test of fans.
- The 'Address' LED (yellow) remain on and the 'Power' LED (green) blink slowly to show the stand-by condition.
- If there's a display / control unit installed the 'Address' LED show a slow blinking.
- If an external controller is connected on the RS485 and the unit is correctly addressed the 'Address LED show a fast blinking.
- Switch the remote on/off signal in 'on' position, the inverter start-up the AC output and close the output relay to supply the load, the 'Power' LED (green) stop to blink and remain light. The display/controller unit (If present) show the main parameters measure.

### 6.3 Parallel configuration (up to 12 units)

---

#### 6.3.1 Master – Slave function

In a parallel system only one **master** unit can be installed, other units operate as **slaves**. The master unit has the 'Address' LED (yellow) lighted.



**WARNING** The 'Address' LED may blink in some different way if there are serial connections active over that address (see display unit manual for details).

---

**The first unit powered by main input breaker becomes the master.**

If all the units have the onboard breaker close and the input power-up happen by an external switch (that connect the battery) **the unit with lower serial number become the Master.**

For proper parallel operation all units need to have the same main parameters. At system power-up the master unit updates with his parameters all the Slave units, during that phase the 'Power' LED (green) of the slave units show a fast blinking.

**6.3.2 Hot plug in a system (working or stand-by)**

- Be sure the onboard breaker of the unit to insert is turned off
- Insert the unit in the sub-rack and push it to the final position
- Fix the brackets to the sub-rack with the apposite screws
- Turn on the main input breaker, the unit loads automatically the main parameters from the master unit within some seconds and then it's ready to work. If the system is working the units start-up, share the load with the other units and the LED 'Power' (green) is lighted.

**6.3.3 Add or Replace units in System Fault condition**

Never replace a unit with all the other units in fault. The new units added, or turned on, need a master unit in the system to download from it the system parameters. If the system is in fault condition the master is missing and the new units will not be updated.

**6.3.4 Unit replacement in unpowered system**

- Be sure the onboard input breaker of the unit to insert is turned off
- Insert the unit in the sub-rack and push it to the final position
- Fix the brackets to the sub-rack with the apposite screws
- Switch off the remote on/off signal
- Switch on the main input breaker of the previous installed units (at least one of them) to force that as 'master' unit
- Turn on the onboard input breaker of the new unit to force the parameter loading
- During the parameters update the 'Power' LED show a fast blinking
- When the 'Power' LED (green) pass to a slow blinking the unit is updated



---

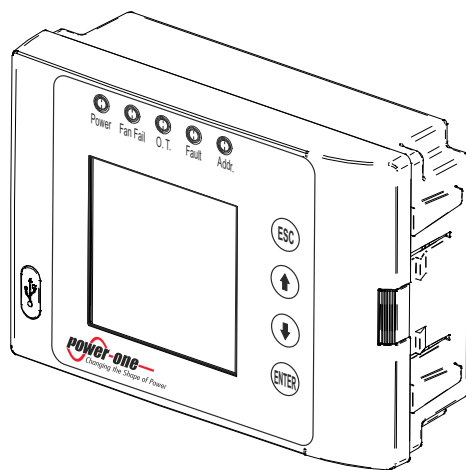
**WARNING** For proper parallel operation all units need to have exactly the same Frequency, Voltage, Current limit, remote on/off, protections and auto-restart settings.

---

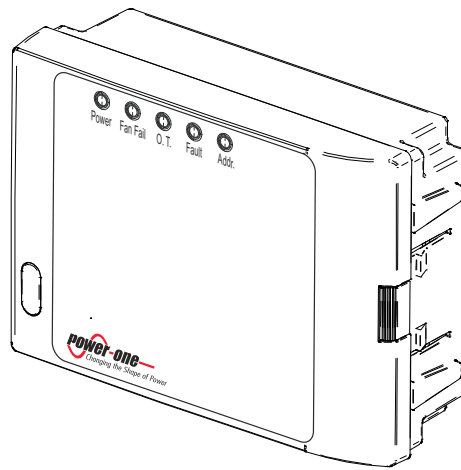
## 7 LED UNIT & DISPLAY UNIT

The SLI inverter may be configured alternatively with display unit or LED's unit.

Figure 7-1



Display Unit



LED Unit



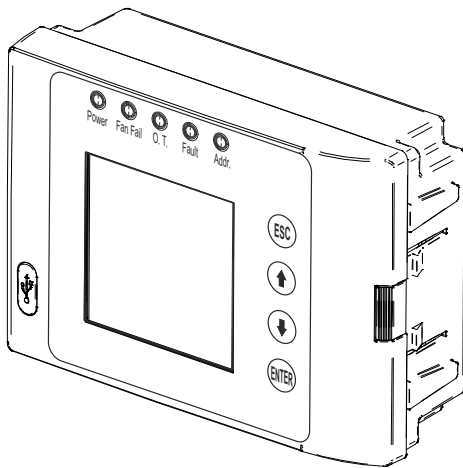
**NEED MORE INFORMATION?** For detailed description see SLI50 Display Unit / SLI50 LED Unit Installation Manual.

*This document is believed to be correct at time of publication and UNIPower LLC accepts no responsibility for consequences from printing errors or inaccuracies. Specifications are subject to change without notice.*

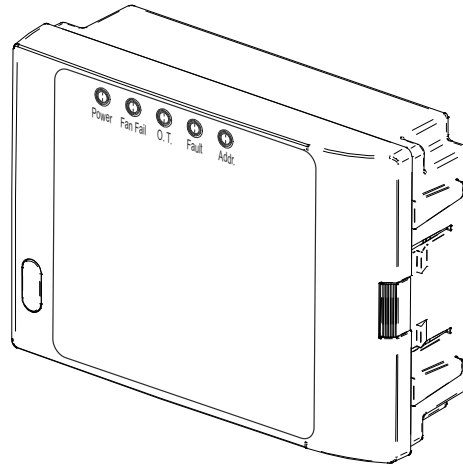


## INSTALLATION MANUAL

### SLI 50 DISPLAY UNIT | SLI 50 LED UNIT



Display Unit  
(P/N: 3G10001F100G)



LED Unit  
(P/N: 3G34001F100G)

[www.unipowerco.com](http://www.unipowerco.com)

## 1 Introduction

---

There are two options available:

- SLI 50 LED Unit is a standard option for visual indication of the main parameters and it's factory assembled into the SLI 50 48-230 inverters.
- SLI 50 Display Unit is a graphic display unit with keypad used for monitoring and changing of the main parameters in the SLI 50 inverter systems. It's factory assembled into the SLI 50 48-230-CTRL inverters.

Both, the LED unit and the Display unit, are hot-plug replaceable and can be plugged in every position.

The units have a plastic key near the connector to avoid insertion in wrong position.

Only one Display Unit can be present in an inverter system, the other one must be a LED unit. Display Unit in an inverter system can be plugged and moved from any of the inverters.

Both modules can be supplied as spare parts by factory.



---

**WARNING** It is essential to read and understand all Warnings, Cautions and Notes before performing any connections to a Unit or a System.

---

## 2 Receiving Instructions

---



---

**WARNING** The following information and the product manual should be read and thoroughly understood before unpacking, installing or using the equipment.

---

We present all equipment to the delivering carrier securely packed and in perfect condition. Upon acceptance of the package from us, the delivering carrier assumes responsibility for its safe arrival to you.

Once you receive the equipment, it is your responsibility to document any damage the carrier may have inflicted, and to file your claim promptly and accurately.

### 2.1 Package Inspection

---

- Examine the shipping crate or carton for any visible damage: punctures, dents and any other signs of possible internal damage.
- Describe any damage or shortage on the receiving documents and have the carrier sign their full name.

## 2.2 Equipment Inspection

---

- Within fifteen days, open crate or carton and inspect the contents for damages. While unpacking, be careful not to discard any equipment, parts or manuals. If any damage is detected, call the delivering carrier to determine the appropriate action. They may require an inspection.

### ***Save all shipping material for the inspector to see!***

- After the inspection has been made, call us. We will determine if the equipment should be returned to our plant for repair or if some other method would be more expeditious. If it is determined that the equipment should be returned to us, ask the delivering carrier to send the packages back at the delivering carrier's expense.
- If repair is necessary, we will invoice you for the repair so that you may submit the bill to the delivering carrier with your claim forms.
- It is your responsibility to file a claim with the delivering carrier. Failure to properly file a claim for shipping damages may void warranty service for any physical damages later reported for repair.

## 2.3 Handling

---

Handle the inverter with care. Do not drop or lean on front panel or connector. Keep away from moisture.

## 2.4 Identification Label

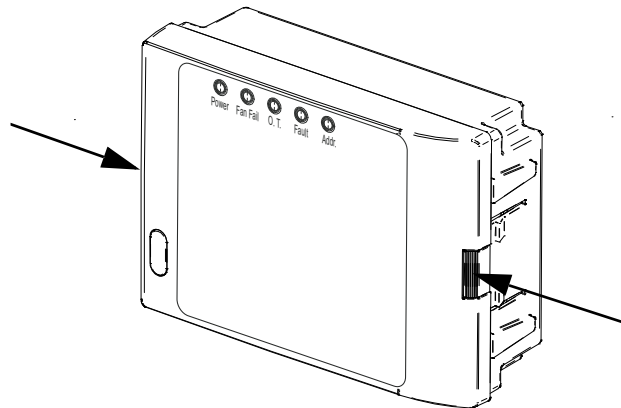
---

Model number and serial number located on label on the cover identify the unit. Please refer to these numbers in all correspondence with Power-One.

### 3 Mounting Procedure

To remove the unit from docking position press both lateral tabs inside the unit and pull it out.

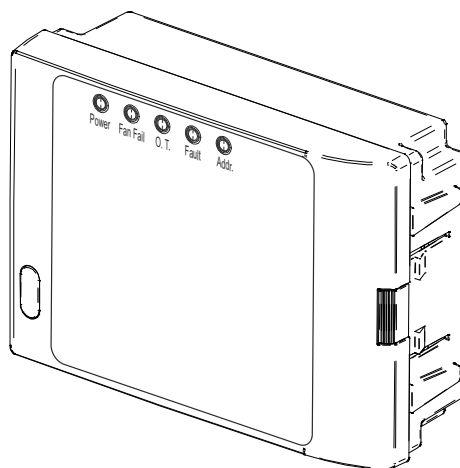
Figure 3-1



To install the unit, simply insert the unit into the docking position. The units are hot plug / unplug replaceable.

### 4 LED Unit

Figure 4-1 LED Unit



## 4.1 LED Unit Connections

---

The unit is equipped with a D-Sub 25 poles connector on the backside.

## 4.2 LED Unit Description

---

Description of the LED Unit functionality :

- When the power is turned ON all five LEDs light up for about 1 second (LED test)

### **Power LED (green):**

- Fast blinking for several seconds when the power is turned ON and the SLI50 slave unit is added to the system. (At this time the slave unit takes up the parameters from the master unit of the system.)
- Slow blinking if the SLI50 unit is powered but in Stand-by mode (from remote signal or control)
- Light ON when the SLI50 unit is working

### **Fan Fail LED (yellow):**

- Light OFF during normal operation
- Fast blinking if single fan failure
- Light ON in case of two or more fans failure

### **O.T. LED (red):**

- Light OFF during normal operation
- Blinking during High Temperature Warning (start to blink 5 °C before protection)
- Light ON at OverTemperature protection

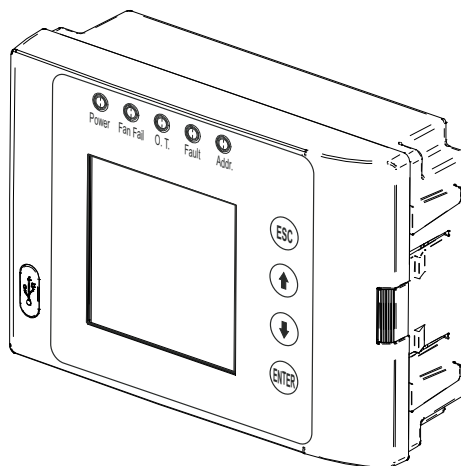
### **Fault LED (red):**

- Light OFF during normal operation
- Light ON at Fault condition (output of SLI50 unit is turned off)

### **Address LED (yellow):**

- Light OFF for SLI50 unit during normal operation, if slave in a parallel system
- Light ON for SLI50 unit during normal operation, if master in a parallel system
- Light ON for single SLI50 unit (Stand alone)
- Slow blinking if SLI50 unit selected by display unit (via CAN interface) to read the measurements
- Fast blinking if SLI50 unit selected by external controller (via RS-485) to read the measurements
- The fast blinking may be superimposed to the slow blinking if both the interfaces require the same information from the same unit.

Figure 5-1 Display Unit



### 4.3 LED Unit Connections

The unit is equipped with a D-Sub 25 poles connector on the backside.

### 4.4 LED Unit Description

Display Unit has the same five LEDs with the same functionality as the LED Unit and a graphic display with a small keypad.

It can be plugged and moved to any position inside the SLI50 system with the same functionality.

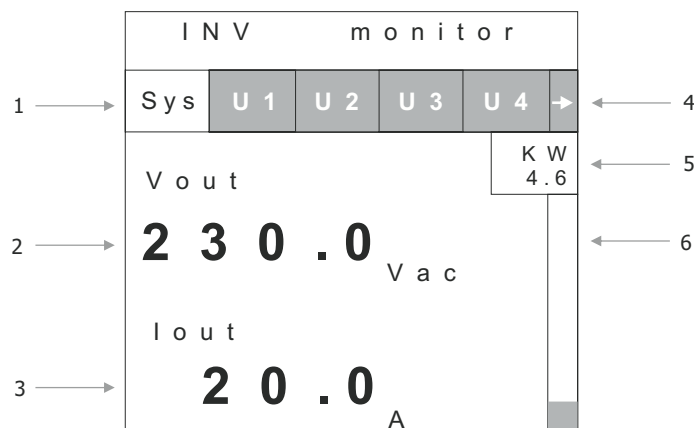
### 4.5 Introduction

When the system is powered, after a short splash-screen, the Display unit shows the main measurements of the system.

It is possible to change the main parameters by entering the settings menu.

## 4.6 Inverter Monitor

### 4.6.1 Inverter Main Monitor



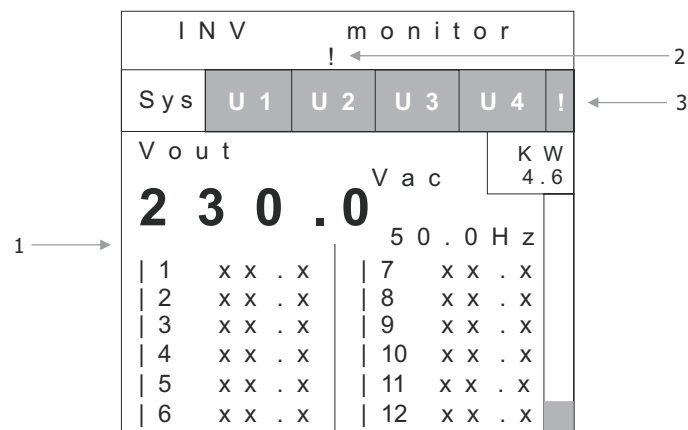
**KEYPAD:** UP / DOWN      change view  
ESC / ENTER      change tab  
long ENTER      switch to INVerter view

#	DESCRIPTION	MESSAGE	COMMENT / TROUBLESHOOTING
1	<b>SYS</b>		Active tab, in case of stand alone inverter only the U1 tab is present
2	<b>System output voltage</b>	Value	Load voltage measurement (on the master inverter)
3	<b>System output current</b>	Value	Total system output current (sum of all the active inverters)
4	<b>More units</b>		There are some other hidden tabs, show that with ENTER / ESC
5	<b>System power</b>		Total of system, can show kVA or kW (see System Settings)
6	<b>Power bar</b>		Power meter bar, end of scale is dynamic, depend from inverter's number on the system

Scroll with UP / DOWN keys to change the measurements showed on display.  
The combinations are:

<b>Vout - Iout</b>	<b>Vout – Fout</b>	<b>Iout – Pout</b>	<b>Vout – Pout</b>
<b>Pout - Papp</b>	<b>PF – Fout</b>	<b>Vin – Iin</b>	<b>Vin – Vout</b>

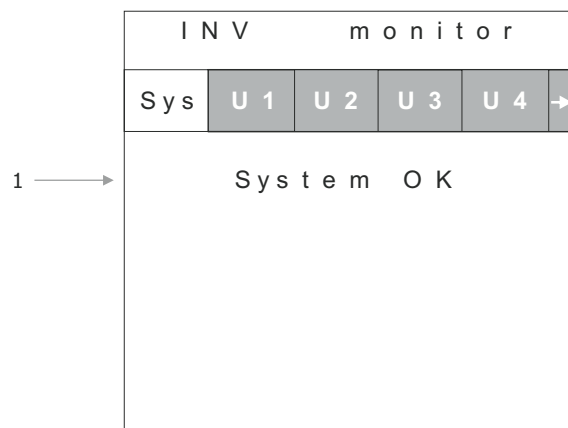
## 4.6.2 Inverter System Current Monitor



**KEYPAD:** UP / DOWN      change view  
ESC / ENTER      change tab

#	DESCRIPTION	MESSAGE	COMMENT / TROUBLESHOOTING
1	Output currents	Value	Measure of all the inverters (max 12) of the system
2	Warning		It shows that unit have problems, ESC / ENTER to show the related tab.
3	Warning		Some other units of the system has problems in a hidden tab, ESC / ENTER to show the related tab

## 4.6.3 Inverter System State

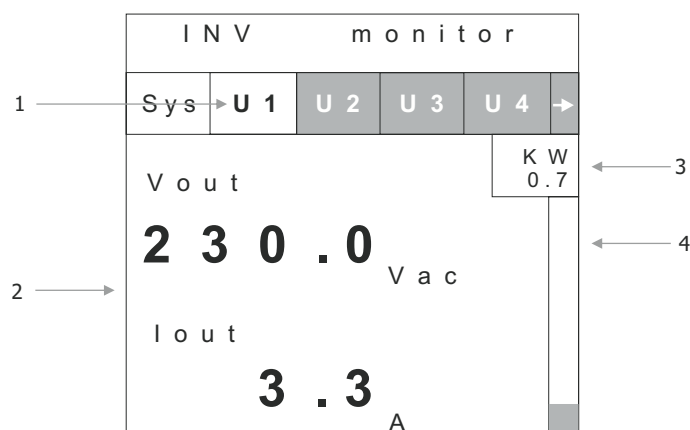


**KEYPAD:** UP / DOWN      change view  
ESC / ENTER      change tab



#	DESCRIPTION	MESSAGE	COMMENT / TROUBLESHOOTING
1	State	SYSTEM OK WARNING ALARM SYSTEM PROTECTION	All the inverters of the system are OK. Some of the inverters have problems. System failure

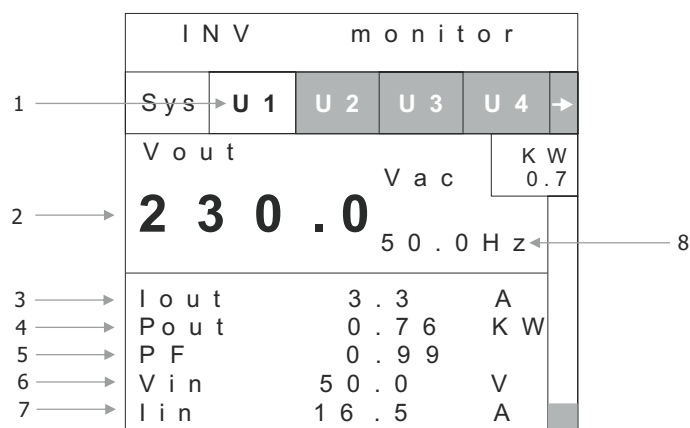
#### 4.6.4 Inverter Specific Unit Monitor



**KEYPAD:** UP / DOWN      change view  
ESC / ENTER      change tab

#	DESCRIPTION	MESSAGE	COMMENT / TROUBLESHOOTING
1	U1		Active tab, in case of stand alone inverter only the U1 tab is present
2	Couple of measures	Values	Same of the system view, UP / DOWN to change couple
3	System power	Value	Power of the unit, can show kVA or kW (see System Settings)
4	Power bar		Power meter related to the selected Unit, end of scale is 7500VA or 7500W

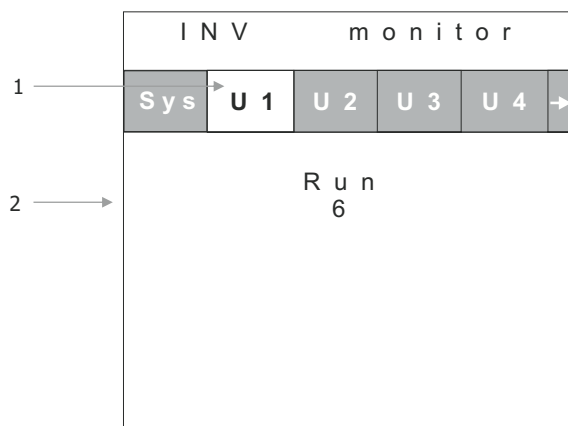
## 4.6.5 Inverter Specific Unit Main Data



**KEYPAD:** UP / DOWN      change view  
ESC / ENTER      change tab

#	DESCRIPTION	MESSAGE	COMMENT / TROUBLESHOOTING
1	<b>U1</b>		Active tab, in case of stand alone inverter only the U1 tab is present
2	<b>Vout</b>	Value	Load voltage measured on U1 output
3	<b>Iout</b>	Value	Output current measure of unit U1
4	<b>Pout</b>	Value	Output power of unit U1
5	<b>PF</b>	Value	Power Factor measure of U1
6	<b>Vin</b>	Value	Input voltage measure of U1
7	<b>Iin</b>	Value	Input DC current measure of U1
8	<b>Frequency</b>	Value	Output frequency measure of U1

### 4.6.6 Inverter Specific Unit State



**KEYPAD:** UP / DOWN      change view  
ESC / ENTER      change tab

#	DESCRIPTION	MESSAGE	COMMENT / TROUBLESHOOTING
1	<b>U1</b>		Active tab, in case of stand alone inverter only the U1 tab is present
2	<b>State</b>		State of the U1 unit, see the next chapter for complete list

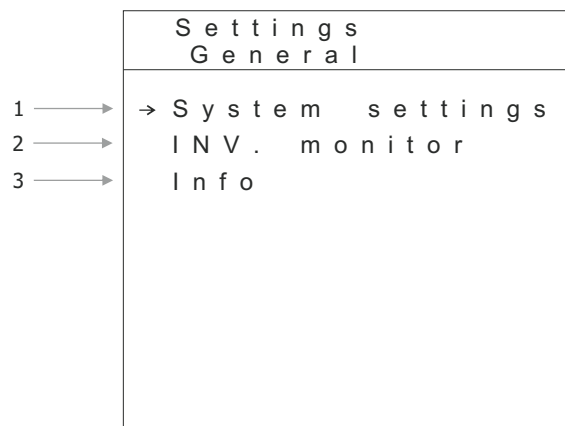
### 4.6.7 Inverter State Table and Troubleshooting

STATE #	DISPLAY MESSAGE	COMMENT
0	<b>Standby</b>	Powered without remote on
1 to 5	<b>Startup</b>	Passed through during turn on
6	<b>Run</b>	Normal working condition
9	<b>Wrong Insertion</b>	Rear panel signal connector not inserted
10	<b>Input underv.</b>	Input voltage below minimum settings
11	<b>Input overcurr.</b>	Input overcurrent
12	<b>Inter. overvolt.</b>	Internal bulk overvoltage
13	<b>Inter. undervolt.</b>	Internal bulk undervoltage
14	<b>Input overcurr.</b>	Input overcurrent
15	<b>Input overvoltage</b>	Input voltage greater than 60V
16	<b>Input overcurr.</b>	Input overcurrent
17	<b>Input low volt.</b>	Input voltage below start-up voltage
18	<b>Inter. overvolt.</b>	Internal bulk overvoltage
19	<b>Wrong bus volt.</b>	Master Inverter detect voltage over output bus before start-up
20	<b>Output overcurr.</b>	Output I2T overcurrent
21	<b>Output overvolt.</b>	Output overvoltage
22	<b>Output underv.</b>	Output undervoltage

24	Internal error	
26	Output overcurr.	Output overcurrent
30 - 31	xxxx amb. temp.	Wrong ambient temperature
32 to 35	xxxx int. temp	Wrong internal temperature
40 to 48	Internal error	
49	Output fuse error	Output fuse broken
52	Internal error	
53 - 54	System error	Internal error
170	System error	Internal error
243	Startup	Passed through during turn on
244	Set factory def.	Checksum error over the internal memory, reset to factory default
246	Set factory def.	Data error over the internal memory, reset to factory default
253 to 255	System error	Internal error

## 4.7 General Settings

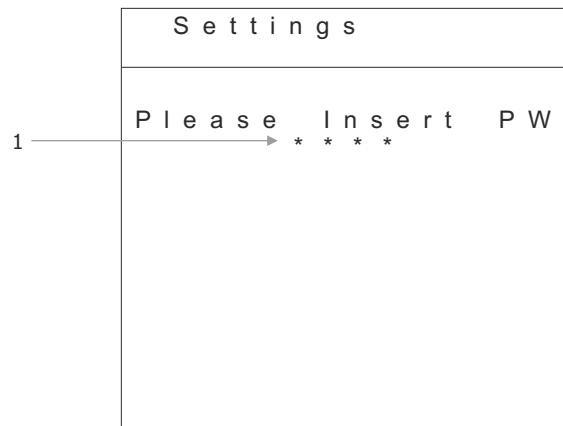
### 4.7.1 General Settings



**KEYPAD:** UP / DOWN      change selected  
long ESC              from any view  
ENTER                  access

#	DESCRIPTION	MESSAGE	COMMENT / TROUBLESHOOTING
1	System settings		To access the change of main parameters, password is required (see the next chapter). <b>Default password is 0000.</b>
2	INV. monitor		Go to inverter monitor view
3	Info		Show information about hardware and firmware versions of all the system components

## 4.7.2 Password

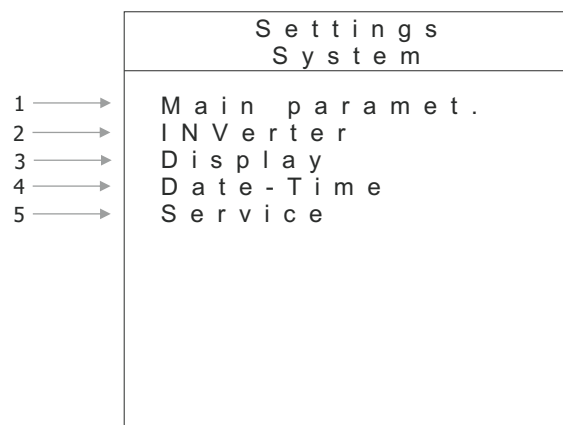


**KEYPAD:** UP / DOWN      change selected digit  
ENTER                      confirm and pass to next  
ESC                         turn back



**WARNING** Default password is 0000, it may be changed in Service menu.

## 4.7.3 System Parameters



**KEYPAD:** UP / DOWN      change selected  
ENTER                      access  
ESC                         turn back

#	DESCRIPTION	MESSAGE	COMMENT / TROUBLESHOOTING
1	Main parameters		Set system voltage and frequency
2	INVerter		Set inverter parameters
3	Display		Set display visibility and Inverter's Power Bar measurement unit
4	Date - Time		Set system clock
5	Service		Fault log, inverter's serial interface address , password change

#### 4.7.4 Main Parameters

	Settings sys. Main param.	
1 →	V r m s n o m .	2 3 0 . 0 V
2 →	F r e q . n o m .	5 0 . 0 H z

**KEYPAD:** UP / DOWN change selected  
ENTER access value

#	DESCRIPTION	MESSAGE	COMMENT / TROUBLESHOOTING
1	Vrms nominal		Set nominal voltage for the whole system
2	Frequency nominal		Set nominal frequency for the whole system

	Settings sys. Main param.	
	V r m s n o m .	2 3 0 . 0 V
	F r e q . n o m .	5 0 . 0 H z

**KEYPAD:** UP / DOWN      change value  
ENTER                      turn back  
ESC                        escape from window (confirm modification to apply)

#### 4.7.5 Display

	Settings sys. Display	
1 →	Backlight	Off
2 →	Light int.	9
3 →	Contrast	5
4 →	IN V pow bar	K W

**KEYPAD:** UP / DOWN      change selected  
ENTER                      access value

#	DESCRIPTION	MESSAGE	COMMENT / TROUBLESHOOTING
1	Backlight		Turn on/off the backlight illumination
2	Light intensity		Adjust the light
3	Contrast		Adjust the contrast
4	INVerter pow bar		Select the unit of measure for the inverter's power bar meters, kVA or kW

**KEYPAD:** UP / DOWN      change and apply  
ESC                        turn back

## 4.7.6 Clock

S e t t i n g s   s y s .	
C l o c k	
1 5	A p r   2 0 1 3
1 2 : 2 3 :	4 5

**KEYPAD:** UP / DOWN      change selected  
ENTER                      select next  
ESC                         turn back



**WARNING** Last ENTER apply new settings and turn to previous menu.

## 4.7.7 Service

S e t t i n g s   s y s .	
S e r v i c e	
1 →	→ R S 4 8 5   A d d r e s s
2 →	C h a n g e   p a s s w o r d

**KEYPAD:** UP / DOWN      change selected  
ENTER                      access  
ESC                         turn back

#	DESCRIPTION	MESSAGE	COMMENT / TROUBLESHOOTING
1	<b>RS485 Address</b>		Manage inverter's RS485 address
2	<b>Change password</b>		Change password to access to system parameters



### 4.7.8 RS485 Address

Settings sys. RS485 address	
Module	Addr
1 → SN 000001	← 2 09
SN 000002	15
SN 000003	16
SN 000005	18
SN 000007	20

**KEYPAD:** UP / DOWN change selected  
ENTER access value

Settings sys. RS485 address	
Module	Addr
SN 000001	09
SN 000002	15
SN 000003	16
SN 000005	18
SN 000007	20

**KEYPAD:** UP / DOWN change address  
ENTER turn back  
ESC escape from window (confirm modification to apply)

### 4.7.9 System Password Change

System Password
0 * * *

**KEYPAD:** UP / DOWN      change selected digit  
ENTER                      confirm and pass to next  
ENTER                      the last digit confirm and apply  
ESC                        turn back



**WARNING** Make sure to save the password in a safe place if changed because without it no access to system parameters is possible

### 4.7.10 System Info

	System Info
1 →	Display
2 →	SN 000001
3 →	FW uP A.2.0.2

**KEYPAD:** UP / DOWN      scroll windows  
ESC                        turn back

#	DESCRIPTION	MESSAGE	COMMENT / TROUBLESHOOTING
1	<b>Unit</b>	Type	Display Inverter
2	<b>SN</b>	#	Adjust the light
3	<b>FW</b>	Version	Prefix 'FW uP' followed by version for microprocessor Prefix 'FW DSP' followed by version for DSP

## 4.8 Inverter Settings

Every inverter units has a proper configuration memory onboard with the main parameters of functioning.

In a stand alone configuration (single inverter), the unit load the functioning parameters from memory when it's power up from DC battery voltage and then it's ready to work.

In a system of paralleled inverters, all the units must share the same parameters.

To do that the source of the configuration will be only one, the Master unit that is always an inverter.

If you supply the DC battery simultaneously to all the units (for instance with a common breaker on the DC battery input), the inverter with lower serial number become the Master, yellow led

'Address' show that (look at the LED's unit description to see the address LED functionality).

If you turn on the inverter's onboard circuit breaker sequentially, the first units powered become the master.

All other units, when powered, become slave and ask the configuration to the master. In this phase the green LED 'Power' blink fast, when the auto-updating is completed all the unit have the same parameters, also into the onboard memory.

Display unit and serial RS485 interface software generate broadcast command recognized by all the units, make sure that all the inverters are powered and in stand-by mode (to ensure that all the memories remain with the same settings).

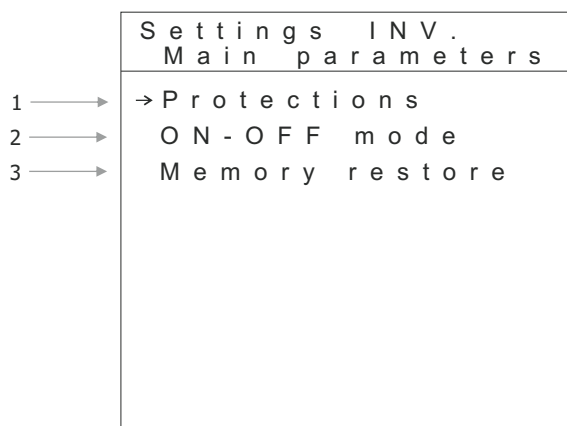
Otherwise put the system in standby (by remote or software off), program one of the unit, with the other unpowered, and then power up, in sequence, all the others in order that they can do an autoupdate.

Auto-update procedure is very useful in case of inverters replacement into systems.

That substitution can be done in very easy way also with system working:

- Turn off the onboard breaker of the fault units and removed it from the system (hot unplug)
- Turn off the onboard breaker of the new unit, insert it into the rack and turn on the breaker (hot plug). The unit performs an auto-update of parameters and then start up to work in parallel to the others.

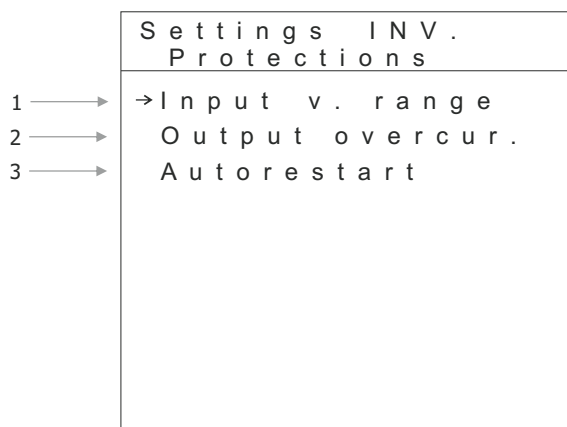
### 4.8.1 Inverter Main Parameters



**KEYPAD:** UP / DOWN      change selected  
ENTER                      access  
ESC                        turn back

#	DESCRIPTION	MESSAGE	COMMENT / TROUBLESHOOTING
1	<b>Protections</b>		Current protection and autorestart parameters
2	<b>ON - OFF mode</b>		Remote hardware or software command
3	<b>Memory restore</b>		Restore the settings to the factory default

### 4.8.2 Inverter Protections



**KEYPAD:** UP / DOWN      change selected  
ENTER                      access  
ESC                        turn back

#	DESCRIPTION	MESSAGE	COMMENT / TROUBLESHOOTING
1	Input voltage range		Define input voltage range
2	Output overcurrent		Set output overcurrent I2T curve for inverter
3	Autorestart		Set autorestart parameter of the inverter

### 4.8.3 Inverter input Voltage Range

Settings INV.	
Input v. range	
1 →	Startup 43.0 V
2 →	Underv. 36.0 V

**KEYPAD:** UP / DOWN change selected  
ENTER access  
ESC turn back

The changes will be applied after confirmation when ESCape from windows.

#	DESCRIPTION	MESSAGE	COMMENT / TROUBLESHOOTING
1	Startup voltage	36 - 60	This is the threshold the output can be turned on, default 43 V, (standby mode is available from 36 to 60 VDC)
2	Undervoltage	33 - 48	Set undervoltage protection, default value is 36 VDC

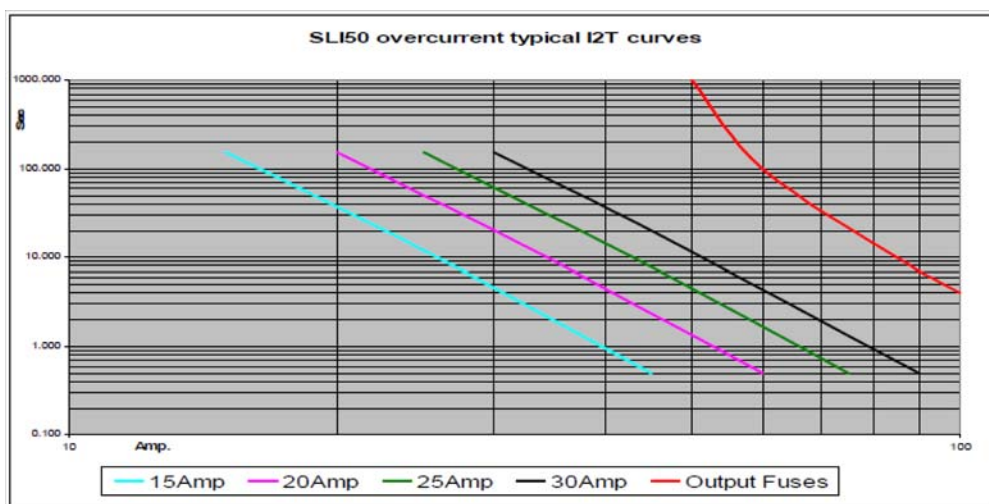
**KEYPAD:** UP / DOWN change value  
ESC turn back (confirm to apply)

#### 4.8.4 Inverter Overcurrent

Settings INV. Overcurrent	
1 → Overcurr.	30 A
2 T limit curve	
2 → 30 A	150 sec
3 → 60 A	5.5 sec
4 → 90 A	0.5 sec

**KEYPAD:** UP / DOWN      change value  
ENTER                      access value

#	DESCRIPTION	MESSAGE	COMMENT / TROUBLESHOOTING
1	Ovecurrent	15 to 30 A	Starting from the selected value the inverter apply a I2Tdelayed curve of protection as showed in figure below
2	Overcurrent curve	time	Only for reference



### 4.8.5 Inverter Autorestart

Settings INV. Autorestart	
1 →	System
2 →	In UV
3 →	In OV
4 →	Bulk UV
5 →	Bulk OV
6 →	Out UV
7 →	Out OV
8 →	Overload
	Restart Never Time 250 sec

**KEYPAD:** UP / DOWN change selected  
ENTER access

#	DESCRIPTION	MESSAGE	COMMENT / TROUBLESHOOTING
1	System		System generic error protection restart parameters
2	Input undervoltage		Input undervoltage protection restart parameters
3	Input overvoltage		Input overvoltage protection restart parameters
4	Bulk undervoltage		Bulk undervoltage protection restart parameters
5	Bulk overvoltage		Bulk overvoltage protection restart parameters
6	Output undervoltage		Output undervoltage protection restart parameters
7	Output overvoltage		Output overvoltage protection restart parameters
8	Output overload		Input / output overload protection restart parameters

Settings INV. Autorestart	
System	Restart Never
In UV	
In OV	
Bulk UV	Time
Bulk OV	250 sec
Out UV	
Out OV	
Overload	

**KEYPAD:** UP / DOWN change value  
ENTER change parameter

Settings INV. Autorestart	
System	Restart
In UV	Never
In OV	Time
Bulk UV	250 sec ← 3
Bulk OV	
Out UV	
Out OV	
Overload	

KEYPAD: ESC                      turn back (confirm to apply)

#	DESCRIPTION	MESSAGE	COMMENT / TROUBLESHOOTING
1	Type of autorestart	ALWAYS	Always restart, from selected protection, after the time specified at point 2 below
		1 to 10 TIMES	Inverter restart 'n' times
		NEVER	Inverter latch the specified protection and never restart
2	Time delay	sec / min	Delay time for autorestart, depend from protections if seconds or minutes.

#### 4.8.6 Inverter ON-OFF Mode



**WARNING** System common parameters, view related chapter.

Settings INV. ON - OFF mode	
1 →	Remote signal
2 →	RS 485 command



**KEYPAD:** UP / DOWN      change selected  
ENTER                      access  
ESC                        turn back

#	DESCRIPTION	MESSAGE	COMMENT / TROUBLESHOOTING
1	Remote signal		on-off controlled by remote wired signal (see SLI50 Inverter manual)
2	RS485 command		on-off controlled by serial command (see RS485 SLI system manual)

#### 4.8.7 Inverter Restore Factory Defaults



**WARNING** Every change made by the user in terms of system configuration and value of parameters will be lost and overwritten with the factory default.

Settings INV. Restore Fact.	
Restore Factory Default Settings	
Confirm restore	NO

**KEYPAD:** UP / DOWN      access to confirmation  
ESC                        turn back

Settings INV. Restore Fact.	
Restore Factory Default Settings	
Confirm restore	NO

**KEYPAD:** ENTER      second confirmation  
ESC                      turn back

Settings INV. Restore Fact.	
Warning! Every change will be lost	
Confirm restore	NO

**KEYPAD:** UP / DOWN      access to confirmation  
ESC                              turn back

Settings INV. Restore Fact.	
Warning! Every change will be lost	
Confirm restore	NO



**WARNING** By pressing ENTER the system will return to factory default.

*This document is believed to be correct at time of publication and UNIPower LLC accepts no responsibility for consequences from printing errors or inaccuracies. Specifications are subject to change without notice.*