

**PWM SOLAR MANAGEMENT UNIT**

The SMU (SOLAR MANAGEMENT UNIT) is a new generation of Charger platform, which provides the outstanding reliability, and high performance-price ratio.

**Salient Features**

- Convert traditional UPS/INVERTER to SOLAR INVERTER.
- Greater than 98% Efficiency while Charging the Battery from Solar Power.
- PWM Charging Control ensures Low Failure Rate.
- Smart Solar and Mains Control:** Solar-Battery-Grid / Solar-Grid-Battery / Solar Only / Grid only.
- CC & CV Charging Control, Extends Battery Life.
- Protections:** Battery Reversed, PV Reversed, Current from Battery To PV Reversed, Over PV Current, High Battery Voltage, Low Battery Voltage, High PV Voltage, PV Short etc.
- PV Panel Power Compatible up to 3840W for 48V, 7680W for 96V, 9600W for 120V, 14400W for 180V.
- Adaptability of tough operating conditions of 0-50degrees, intelligent temperature management controls, the warning & protection under abnormal circumstances.
- User Friendly interface with LCD & LED display.
- Easier System Parameters Setting through LCD: Charging voltage, Charging current, Charging Mode, Discharging Voltage, Charging Absorption Time, Grid Range etc.
- With multiple Circuit Breakers, to ensure the Safety of users.

**TECHNICAL SPECIFICATIONS**

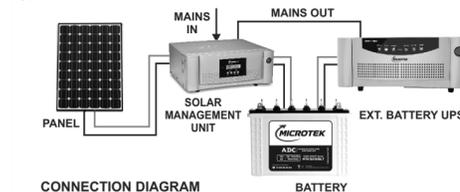
PARAMETERS	SMU 4850	SMU 9650	SMU 12050	SMU 18050
System Rating	48V - 50A	96V - 50A	120V - 50A	180V - 50A
Recommended UPS/INV Range	Up to 6KVA@48V	Up to 7.5KVA@96V	Up to 10KVA@120V	Up to 10KVA@180V
Rating Mains Input Current	35.2A	44.6A	59.3A	60.2A
Maximum Charging Current	50A (Can be set via LCD)			
Nominal Battery Voltage	48V	96V	120V	180V
Number of Batteries (in series)	4	8	10	15
Battery High Cut off	65V	130V	162.5V	243.75V
Battery High Cut off Comeback	58V	116V	145V	217.5V
Battery Low Alarm	40V	80V	100V	150V
Battery Low alarm Recovery	44V	88V	110V	165V
Priority Selection	SMB / SBM / SOLAR ONLY / MAINS ONLY			
Battery Type Selection	TUB / FLA / SMF / LOCAL			
Peak Charging Efficiency	>98.5%	>99%	>99%	>99%
Panel Open Circuit Voltage	70-90V	140-180V	170-225V	255-337.5V
Mains Input Phase	1 PH(L/N) + PE, 3-Wires			

**TECHNICAL SPECIFICATIONS**

PARAMETERS	SMU 4850	SMU 9650	SMU 12050	SMU 18050
Mains Input Voltage Range	80V-300V(Default); 140V-280V(Standard); 180-265V(Narrow)			
Low Line Comeback	Low Line Loss Voltage + 10V			
High Line Comeback	High Line Loss Voltage - 10V			
Mains Input Frequency Range	42-65Hz			
Freq. Low Comeback	Freq. Low Loss + 1 Hz			
Freq. High Comeback	Freq. High Loss - 1 Hz			
Display	LCD + 2 LEDs (Green+Red)			
Operating Temperature Range	0°C - 50°C			
Storage Temperature	-25°C - 60°C			
IP Rating	IP 21			
Humidity	0-95% Non-Condensing			
Noise Level	< 45dB			
Dimensions -W x H x D (mm)	333.5 (W) x 147.8(H) x 291.3 (mm)			
Net Weight (Kgs.)	3.31Kgs.	3.31Kgs.	3.43Kgs.	3.56Kgs.
Ventilation	Forced Air Cooling			
Reverse Battery Protection	Yes			
Reverse PV Protection	Yes			
Reverse Current from Batt. To PV	Yes			
Over PV Current Protection	Yes			
Battery High Voltage Protection	Yes			
Over Temperature Protection	Yes			
PV Short Protection	Yes			
AC Short Protection	By Breaker			
Battery Inner Short Protection	By Breaker			
Inbuilt Circuit Breaker	For PV, Battery & Grid			
PV Wire Length	< 100m (50m PV+ & 50m PV-)			
Wire Gauge for Battery & PV	8mm <sup>2</sup> -10mm <sup>2</sup> (When the Wire length is over 10m ("**"), appropriate wire gauge must be used for keeping the wiring loss with-in the limits in compliance with IS/IEC Standard)			
Wire Gauge for input Grid & UPS/INV	6mm <sup>2</sup>	8mm <sup>2</sup>	10mm <sup>2</sup>	10mm <sup>2</sup>

**INSTALLATION**

**Typical Installation of SMU with traditional UPS/INVERTER**



**CONNECTION DIAGRAM**

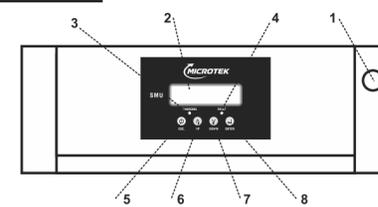
- Make the connections as shown in the above diagram.
- IMPORTANT: Panel & Battery connections must be connected with correct polarity.
- Keep the front panel switch in 'ON' position.
- ENSURE Battery/Battery Bank Voltage are as recommended.

**CAUTION**

- Wrong connections to panel or to the battery may damage the unit.
- Open circuit voltage or panel capacity exceeding the limit may damage the unit.
- AC output load exceeding the limit may damage the unit.
- Don't use battery of different types/make while making parallel or series combination.
- Be careful of the high voltage from Solar panel, Battery and Mains. Do not touch the conductive part.
- Please connect Earth wire for safety.

PRIORITY	DESCRIPTION
<b>Solar-Mains-Battery</b>	Grid power connect to output load when battery voltage less than 12V (default) per battery. <b>This voltage can be set in LCD Setting table item 8.</b>
<b>Solar-Battery-Mains</b>	Grid power connect to output load at low battery out of connected INVERTER/UPS at output of SMU or when battery voltage less than 11.25V (default) per battery. <b>This voltage can be set in LCD Setting table item 8.</b>
<b>Solar Only</b>	Grid power connect to output load at low battery out of connected INVERTER/UPS at output of SMU or when battery voltage less than 10.5V (default) per battery. <b>This voltage can be set in LCD Setting table item 8.</b>
<b>Mains Only</b>	If grid voltage is with-in selected range, grid power connect to output load directly, regardless of battery voltage

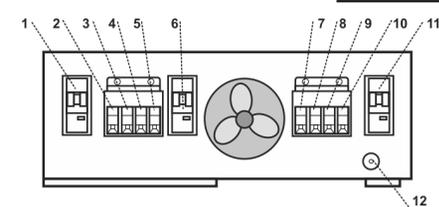
**FRONT PANEL**



1	ON/OFF SWITCH	Control the PV Charger: ON: PV Charger On, Light On. OFF: PV Charger Off, Light Off.
2	LCD DISPLAY	It displays all necessary information/Parameters of the product.
3	GREEN LED	Indicate the Charging Status: PV Charger Off: Green LED off. PV Charger On and not in Floating Mode: Green LED flashing. PV Charger On and in Floating Mode: Green LED lighting.
4	RED LED	Indicate the Warning or Fault: No Warning and Fault: Red LED off. Only Warning: Red LED flashing. Fault: Red LED lighting.
5	"ESC" BUTTON	Control the LCD Display and Set System Parameters.
6	"UP" BUTTON	
7	"DOWN" BUTTON	
8	"ENTER" BUTTON	

BUTTON	FUNCTION
ESC BUTTON	- Press this button to quit the current setting item.
UP BUTTON	- Press this button to display previous selection in setting mode. - Press this button to display previous interface in non-setting mode.
DOWN BUTTON	- Press this button to display next selection in setting mode. - Press this button to display next interface in non-setting mode.
ENTER BUTTON	- Press this button at least 1 seconds to confirm selection in setting mode.
DOWN+ENTER BUTTON	- Press these 2 buttons together for at least 2 sec. to <b>Enter Setting mode.</b> - Press these 2 buttons together for at least 2 sec. to <b>Quit Setting mode.</b>
ESC+UP BUTTON	- Press these 2 buttons together for at least 3 sec. to restore all settings to default values. (i.e. Restore Factory Setting)

**BACK PANEL**



1	PC INPUT MCB	Used to Connect/Disconnect PV Array.
2	PV INPUT +VE	Connect +VE terminal of PV Array.
3	PV INPUT -VE	Connect -VE terminal of PV Array.
4	BATTERY -VE	Connect -VE terminal of Battery Bank.
5	BATTERY +VE	Connect +VE terminal of Battery Bank.
6	BATTERY MCB	Used to Connect/Disconnect Battery Bank.
7	GRID INPUT FOR INVERTER 'L'	Connect Line of connected UPS/INVERTER to this terminal.
8	GRID INPUT FOR INVERTER 'N'	Connect Neutral of connected UPS/INVERTER to this terminal.
9	GRID INPUT 'N'	Connect Neutral of GRID Supply Source to this terminal.
10	GRID INPUT 'L'	Connect Line of GRID Supply Source to this terminal.
11	GRID INPUT MCB	Used to connect/disconnect GRID Supply Source.
12	EARTH	Used to connect Earth wire.

**LCD DISPLAY**

The figures in the following pictures are for reference only.

1	Display mains voltage	220 <sup>00</sup> OFF	The mains voltage is with-in selected range, no output.
		220 <sup>00</sup> 220 <sup>00</sup>	The mains voltage is with-in selected range, with output. The output voltage is shown on the right of the LCD.
		70.0 <sup>00</sup> Lo	Mains voltage Low.
		30.1 <sup>00</sup> Hi	Mains voltage High.

**LCD DISPLAY**

2	Display mains Frequency	50.0 <sup>00</sup> OFF	The mains frequency is in the range, no output.
		50.0 <sup>00</sup> 50.0 <sup>00</sup>	The mains frequency is in the range, with output. The output frequency is shown on the right of the LCD.
		41.0 <sup>00</sup> Lo	Mains Frequency Low
		66.0 <sup>00</sup> Hi	Mains Frequency High
3	Display PV Voltage	88.8 <sup>00</sup> OFF	The PV voltage is in the range, PV charger off.
		68.8 <sup>00</sup> 56.0 <sup>00</sup>	PV charger on, the BATTERY voltage is shown on the right of the LCD.
		68.8 <sup>00</sup> 50.0 <sup>00</sup>	PV charger on, the charging current is shown on the right of the LCD.
		65.0 <sup>00</sup> Lo	PV Voltage Low
		100 <sup>00</sup> Hi	Warning: PV Voltage High. Flashing.
4	Display Battery Voltage	48.0 <sup>00</sup> OFF	The battery voltage is normal, PV charger off.
		40.0 <sup>00</sup> Lo	Warning: BATTERY Voltage Low. Flashing.
		68.0 <sup>00</sup> Hi	Warning: BATTERY Voltage High. Flashing.
5	Display Charging Status	CHr OFF	PV charger off.
		CHr on	PV charger on.
6	Display Total Power Generation	88.8 <sup>00</sup> tot	Units "WH".
		88.8 <sup>00</sup> tot	Units "KWH".
		88.8 <sup>00</sup> tot	Units "MWH".
7	Display Warning and Fault	00.0 <sup>00</sup> SHo	Fault: PV short. Flashing.
		88.8 <sup>00</sup> rEb	Fault: PV reversed. Flashing.

7	Display Warning and Fault	50.0 <sup>00</sup> Hi	Warning: Over PV current. Flashing.
		EEP Hi	Fault: Over Temperature. Flashing.
		PL Err	Warning: IPRV ERROR. Flashing.

**LCD SETTING:** Before confirming the selection, the selection display flashing.

Item	Setting	Interface	Setting Parameter
1	Battery Type Setting	bRt 01 tub	Battery Type: Tubular (Default).
		bRt 01 FLA	Battery Type: Flat Plate.
		bRt 01 SMF	Battery Type: SMF-VRLA.
		bRt 01 Loc	Battery Type: Local.
2	Boost Voltage Setting	bSt 02 14.5 <sup>00</sup>	Default: Tubular (14.5V)/Flat Plate (14.2V) /SMF-VRLA (14.4V)/Local (14.0V), settable ± 0.5V per battery @ 0.1Vstep.
3	Floating Voltage Setting	FLo 03 13.6 <sup>00</sup>	Default: 13.6V, settable ± 0.5V per battery @ 0.1Vstep.
4	Charging Current Setting	CHr 04 50 <sup>00</sup>	Default: 50A, settable 10A, 20A, 30A, 40A, 50A.
5	Grid Voltage Range Setting	Gr1 05 dEF	Grid Voltage Range: 80V-300V(Default).
		Gr1 05 StR	Grid Voltage Range: 140V-280V.
6	Grid Connection Setting	Gr1 05 nRr	Grid Voltage Range: 180V-265V.
		Gr1 05 EnR	Grid power can connect to output load. (Default)
7	Priority Selection	Pr1 01 Snb	Priority: Solar-Mains-Battery (Default).
		Pr1 01 SbN	Priority: Solar-Battery-Mains.
		Pr1 01 SoL	Priority: Solar only.
		Pr1 01 nRr	Priority: Mains only.

**WARRANTY/SERVICING**

Microtek International P. Ltd., warrants each instrument to be free from defects in materials and workmanship for a period of Two years after initial delivery. This obligation is limited to servicing any instrument or part returned to the authorised service center for that purpose and to making good any parts thereof which shall, within the warranty period, be returned to the company or authorised Service center under a written intimation and which to the company's satisfaction be found defective. The company reserves the right to decide as to whether the repair work should be carried out in the company's service center or at site or at any other place. The freight incurred for to and fro dispatch will have to be borne by the customer and the transit risk for the material will rest with the customer.

The warranty will be invalidated if defects arising in company's opinion are by reasons of accident, abuse, misuse, neglect, improper installation (if not undertaken by the company or its representative), fire, flood, any other act of God and any other natural calamities. Further, this warranty does not extend to any instrument which has been repaired / tampered with by any agency/person not authorized by the company. The services given for the same will be paid service.

The warranty will last for a period of 24 months from the date of initial delivery/dispatch of the instrument if used within its specifications. The warranty for the replaced components will lapse along with that of the main instrument.

MICROTEK International P. Ltd., reserves the right to make changes in design and specifications without notice and without any obligation to install such changes on units previously supplied.

In no event will MICROTEK International P. Ltd., its distributors / dealers be liable for any loss or injury or damage caused to life or property or death & disability caused to any form of life for any reasons whatsoever. The company, its distributors / dealers will also not be liable for consequential damages or for any expenses incurred by the buyer or user, due to use or sale of products sold by MICROTEK International P. Ltd., directly or through its authorised Distributors / dealers or any third party.

**POST WARRANTY ANNUAL MAINTENANCE CONTRACT (AMC)**

Microtek Offers Annual Maintenance Contract to save you from any inconvenience in case of a product failure post warranty. Various options are available in select cities for all models of Microtek Products.

For Details, Contact nearest Microtek Branch or e-mail at: ho@mikrotek.in

In case of any Service requirement kindly contact Microtek Customer Care, specifying following details:

- Model Number & Serial Number of the Product.
- Name & phone no. of the contact person with full address & e-mail ID if any.
- Reported problem/description of the complaint.

Note: (a) Refer all servicing queries to Microtek Customer Care only.  
(b) Please take care that Serial Number is kept intact and that the product is not allowed to be fiddled (opened) by any unauthorised person; otherwise the warranty will be void.

**MICROTEK CUSTOMER CARE:**  
ALL INDIA NUMBER: 7283838383  
WHATSAPP: 8800255733 E-mail: cc@mikrotek.in

\*All disputes subject to Delhi jurisdiction only.

**MICROTEK INTERNATIONAL P. LTD.**  
H-57, Udyog Nagar, Rohtak Road, New Delhi-110041.

**INSTRUMENT DESCRIPTION: MICROTEK SOLAR MANAGEMENT UNIT**

SMU 4850	<input type="checkbox"/>	SMU 9650	<input type="checkbox"/>
SMU 12050	<input type="checkbox"/>	SERIAL NO.	
SMU 18050	<input type="checkbox"/>		

Authorised Dealer Stamp with Signatures

Vend. C:  
Form No.: QPN/003-294  
Issue No.: 02, 18/05/2024 (PART CODE:902-661-4850) 002-328-SMU 50-SERIES V.2



**SOLAR MANAGEMENT UNIT**  
SMU 4850 / SMU 9650 / SMU 12050 / SMU 18050

**USER MANUAL**



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