MasterPower®

MANUAL DEL USUARIO

MF-OME-UM1.2KV2/MF-OME-UM3KV2
INVERSOR SOLAR / CARGADOR

Version: 1.0

Índice

ACERCA DE ESTE MANUAL

Propósito

Este manual describe el montaje, la instalación, el funcionamiento y la resolución de problemas de esta unidad. Por favor, lea atentamente este manual antes de realizar instalaciones y operaciones. Conserve este manual para futuras consultas.

Alcance

Este manual proporciona directrices de seguridad e instalación, así como información sobre herramientas y cableado.

INSTRUCCIONES DE SEGURIDAD

ADVERTENCIA: Este capítulo contiene importantes instrucciones de seguridad y funcionamiento. Lea y conserve este manual para futuras consultas.

1. Antes de utilizar la unidad, lea todas las instrucciones y marcas de precaución de la unidad, las pilas y todas las secciones correspondientes de este manual.
2. **PRECAUCIÓN** --Para reducir el riesgo de lesiones, cargue únicamente baterías recargables de plomo-ácido de ciclo profundo. Otros tipos de baterías pueden explotar, causando lesiones personales y daños.
3. No desmonte la unidad. Llévela a un centro de servicio cualificado cuando sea necesario realizar tareas de mantenimiento o reparación. Un reensamblaje incorrecto puede provocar riesgos.
4. Para reducir el riesgo de descarga eléctrica, desconecte todos los cables antes de realizar cualquier operación de mantenimiento o limpieza. Apagar la unidad no reducirá este riesgo.
5. **PRECAUCIÓN** - Sólo personal cualificado puede instalar este dispositivo con batería.
6. **NUNCA** cargue una batería congelada.
7. Para un funcionamiento óptimo de este inversor/cargador, siga las especificaciones requeridas para seleccionar el tamaño de cable adecuado. Es muy importante utilizar correctamente este inversor/ cargador.
8. Sea muy prudente cuando trabaje con herramientas metálicas en las baterías o cerca de ellas. Existe el riesgo potencial de que la caída de una herramienta provoque chispas o cortocircuitos en las baterías u otras piezas eléctricas, lo que podría causar una explosión.
9. Siga estrictamente el procedimiento de instalación cuando desee desconectar los terminales de CA o CC. Consulte la sección INSTALACIÓN de este manual para más detalles.
10. Un fusible de 150 A sirve de protección contra sobrecorriente para la alimentación de la batería.
11. INSTRUCCIONES PARA LA PUESTA A TIERRA - Este inversor/cargador debe conectarse a un sistema de cableado con puesta a tierra permanente. Asegúrese de cumplir con los requisitos y normativas locales para instalar este inversor.
12. **NUNCA** provocar un cortocircuito entre la salida de CA y la entrada de CC. NO conecte a la red cuando la entrada de CC esté en cortocircuito.
13. **¡Advertencia!** Este aparato sólo puede ser reparado por personal cualificado. Si los errores persisten después de seguir la tabla de solución de problemas, por favor envíe este inversor/cargador de vuelta a su distribuidor local o centro de servicio para su mantenimiento.
14. **ADVERTENCIA:** Dado que este inversor no está aislado, sólo se aceptan tres tipos de módulos FV: monocristalinos, policristalinos con clasificación de clase A y módulos CIGS. Para evitar cualquier fallo de funcionamiento, no conecte al inversor ningún módulo FV con posibles fugas de corriente. Por ejemplo, los módulos FV conectados a tierra provocarán fugas de corriente al inversor. Cuando utilice módulos CIGS, asegúrese de que NO hay conexión a tierra.
15. **PRECAUCIÓN:** Se recomienda utilizar una caja de conexiones FV con protección contra sobretensiones. De lo contrario, se producirán daños en el inversor cuando se produzcan rayos en los módulos FV.

INTRODUCCIÓN

Se trata de un inversor/cargador multifunción que combina las funciones de inversor, cargador solar y cargador de batería para ofrecer un soporte de alimentación ininterrumpida con un tamaño portátil. Su completa pantalla LCD ofrece botones de funcionamiento configurables por el usuario y de fácil acceso, como la corriente de carga de la batería, la prioridad del cargador CA/solar y la tensión de entrada aceptable en función de las distintas aplicaciones.

Características

- Inversor de onda sinusoidal pura
- Puerto de comunicación BMS integrado
- Kit antipolvo incorporado
- Inversor que funciona sin batería
- Rango de tensión de entrada configurable para electrodomésticos y ordenadores personales a través de la pantalla LCD
- Corriente de carga de la batería configurable en función de las aplicaciones mediante la pantalla LCD.
- Prioridad del cargador de CA/solar configurable mediante la pantalla LCD
- Compatible con tensión de red o generador
- Protección contra sobrecarga/sobretemperatura/cortocircuito
- Diseño de cargador de batería inteligente para optimizar el rendimiento de la batería

Arquitectura básica del sistema

La siguiente ilustración muestra la aplicación básica de este inversor/cargador. También incluye los siguientes dispositivos para disponer de un sistema de funcionamiento completo:

- Generador o utilidad.
- Módulos fotovoltaicos

Consulte con su integrador de sistemas otras posibles arquitecturas del sistema en función de sus necesidades.

Este inversor puede alimentar todo tipo de aparatos en entornos domésticos o de oficina, incluidos aparatos con motor, como tubos de luz, ventiladores, frigoríficos y aparatos de aire acondicionado.

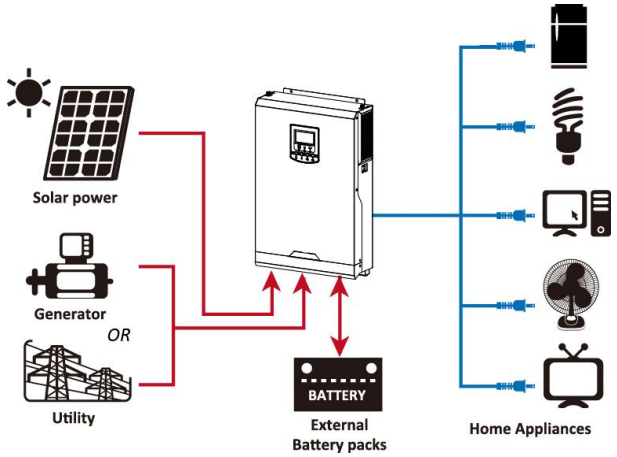
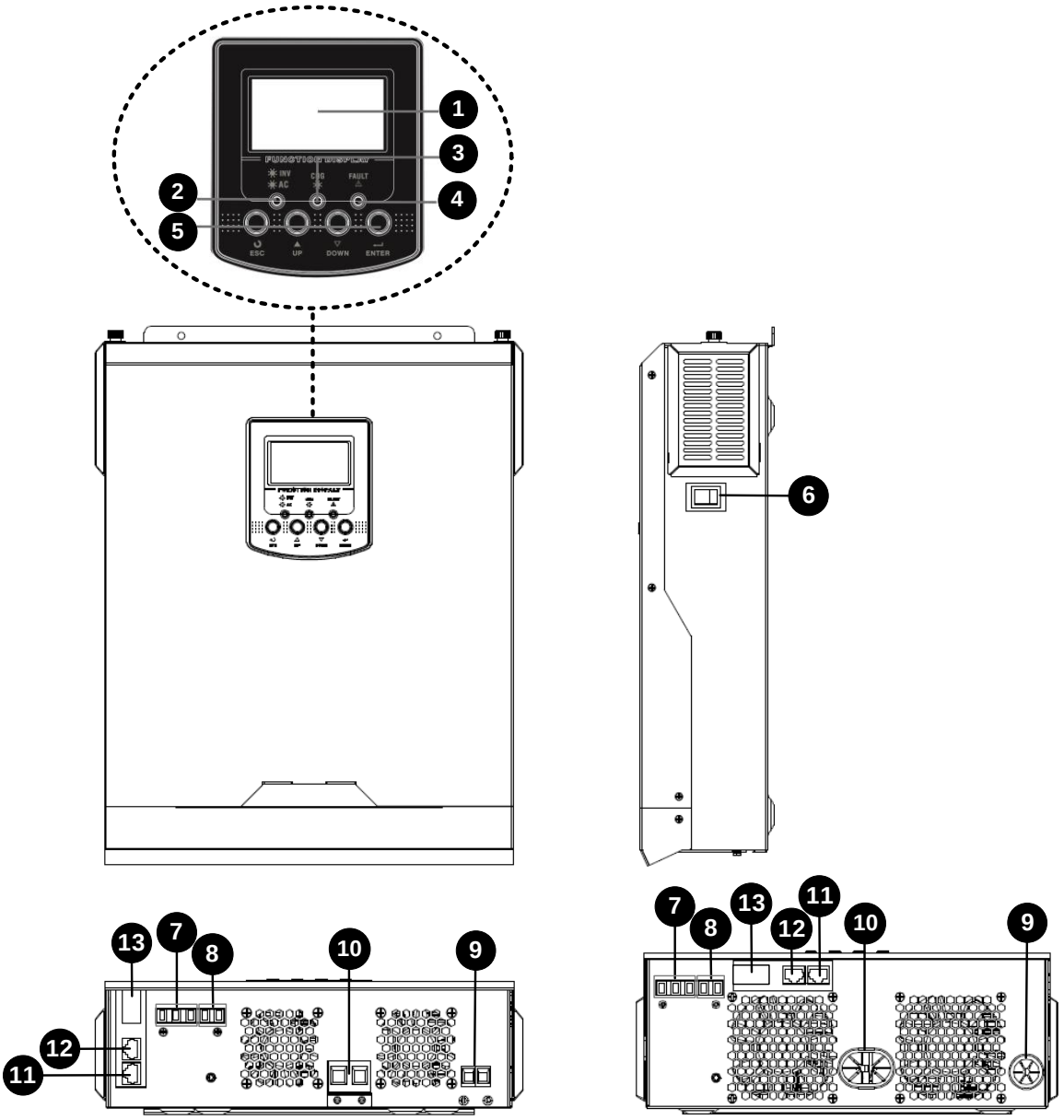


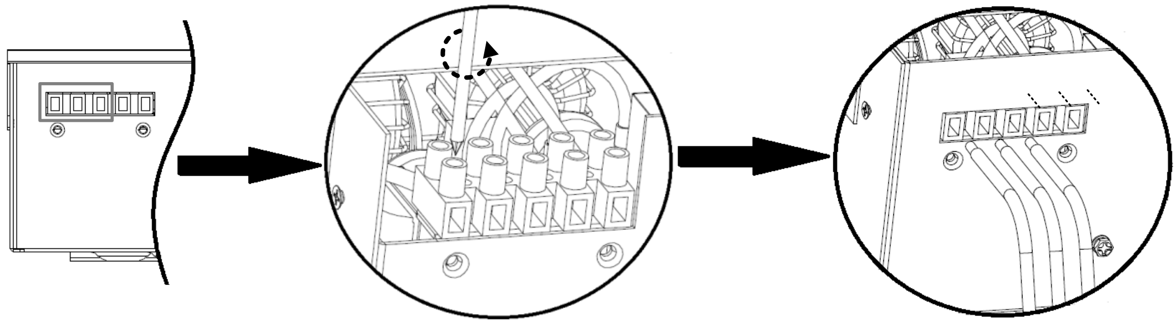
Figura 1 Sistema eléctrico híbrido

Productos



1.Modelos de 2KVA **Modelo 3K**

1. Pantalla LCD
2. Indicador de estado
3. Indicador de carga
4. Indicador de avería
5. Botones de función
6. Interruptor de encendido/apagado
7. Entrada CA
8. Salida CA
9. Entrada FV
10. Entrada de batería
11. Puerto de comunicación RS-232
12. Puerto de comunicación BMS
13. WiFi opcional

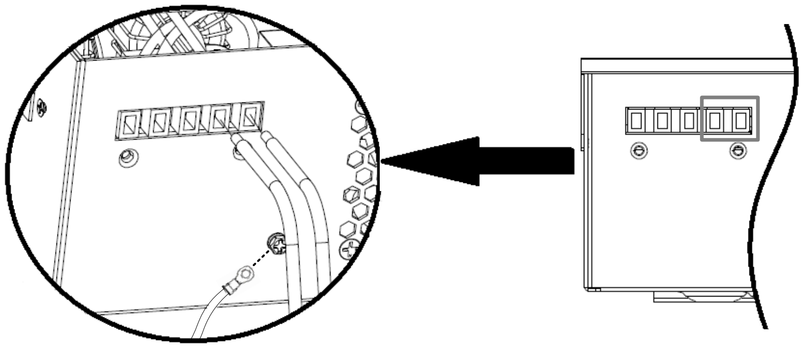


4.□FRQWLQXDFLyQLQVHUWHORVFDEOHVGHVDOLGDGH&VHJ~QODVSRODULGDGHVLQGLFDGDVHQHOEORTXHGHWHU
DSULHWHORVWRUQLOORVGHORVWHUPLQDOHV6HJ~UHVHGHFRQHFWDUSULPHURHOFRQGXFWR ⏚ GHSURWHFFLyQ3(

⏚→**Tierra (amarillo-verde)**

L→L NEA (marr n o ne ra)

N→Neutro (a ul)



5.□VHJ~UDWHGHTXHORVFDEOHVHVWiQELHQFRQHFWDGRV□

P CA CI N: /RVDSDUDWRVFRPRHODLUHDFRQGLFLRQDGRQHFHVLWDQDOPHQRVaPLQXWRVSDUDUHLQLFLDUV TXHHVQHFHVDULRGLVSRQHUGHWLHPSRVXILFLHQWHSDUDHTXLOLEUDUHOJDVUHIULJHUDQWHGHQWURGHORVFLU SURGXFHXQFRUWHGHFRUULHQWH\VHUHFXSHUDHQSRFRWLHPSRFDXVDUiGDxRVDORVDSDUDWRVFRQHFWDGRVE HYLWDUHVWHWLSRGHGDxRVFRPSUXHEHFRQHOIDEULFDQWHGHODLUHDFRQGLFLRQDGRVLHVWiHTXLSDGRFRQI GHUHWDUGRDQWHVGHODLQVWDODFLyQ'HORFRQWUDULRHVWHLQYHUVRUFDUJDGRUDFWLYDUiHOIDOORGH FRUWDUiODVDOLGDSDUDSURWHJHUVXDSDUDWRSHURDYHFHVHVHJXLUiFDXVDQGRGDxRVLQWHUQRVDODLUHDFRQG

&RQH[LyQ)9□

35(&$8&,Ï1 : QWHVGHFRQHFWDUORVPyGXORV)9LQVWDOHXQGLVXQWRU GHFRUULHQWHFRQWLQXDHQWUHHO LQYHUVRU\ORVPyGXORV)9□

,03257$17((VPX\LPSRUWDQWHSDUDODVHJXULGDGGHOVLVWHPD\HOIXQFLRQDPLHQWRHILFLHQWHXWLOL]DUHOFDEOH DGHFXDGRSDUDODFRQH[LyQGHORVPyGXORV)9RWRYROWDLFRV3DUDUHGXFLUHOULHVJRGHOHVLRQHVXWLOLFHH GHFDEOHUHFRPHQGDGRTXHVHLQGLFDDFRQWLQXDFLyQ□

DPDxRFDEOH	Cable (mm²)□	DORUGHSDU (max)
1 x 12AWG	4	1.2 Nm□

9(57(1&,$□ Dado que este inversor no está aislado, sólo se aceptan tres tipos de módulos FV: monocristalinos, policristalinos con clasificación de clase A y módulos CIGS.
Para evitar cualquier fallo de funcionamiento, no conecte al inversor ningún módulo FV con posibles fugas de corriente. Por ejemplo, los módulos FV conectados a tierra provocarán fugas de corriente al inversor. Cuando utilice módulos CIGS, asegúrese de que NO hay conexión a tierra.

PRECAUCIÓN: Se recomienda utilizar una caja de conexiones FV con protección contra sobretensiones. De lo contrario, se dañará el inversor cuando se produzca un rayo en los módulos FV.
Nunca toque directamente los terminales del inversor. Podría provocar una descarga eléctrica letal.

Selección de módulos fotovoltaicos:

A la hora de seleccionar los módulos fotovoltaicos, asegúrese de tener en cuenta los siguientes parámetros:

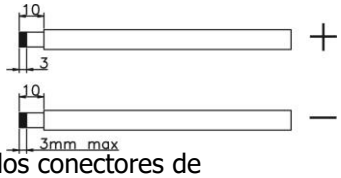
1. La tensión de circuito abierto (Voc) de los módulos FV no supera la tensión de circuito abierto máxima del inversor. Tensión de circuito abierto del conjunto FV del inversor.
2. La tensión en circuito abierto (Voc) de los módulos FV debe ser superior a la tensión mínima de la batería

MODELO DE INVERSOR	1.2KVA	3KVA
Max. Tensión de circuito abierto de la matriz FV	350Vdc	450Vdc
Rango de tensión MPPT de FV	30~300Vdc	30~400Vdc

Tomemos como ejemplo un módulo fotovoltaico de 250 Wp. Teniendo en cuenta los dos parámetros anteriores, las configuraciones recomendadas para los módulos se indican en la tabla siguiente.

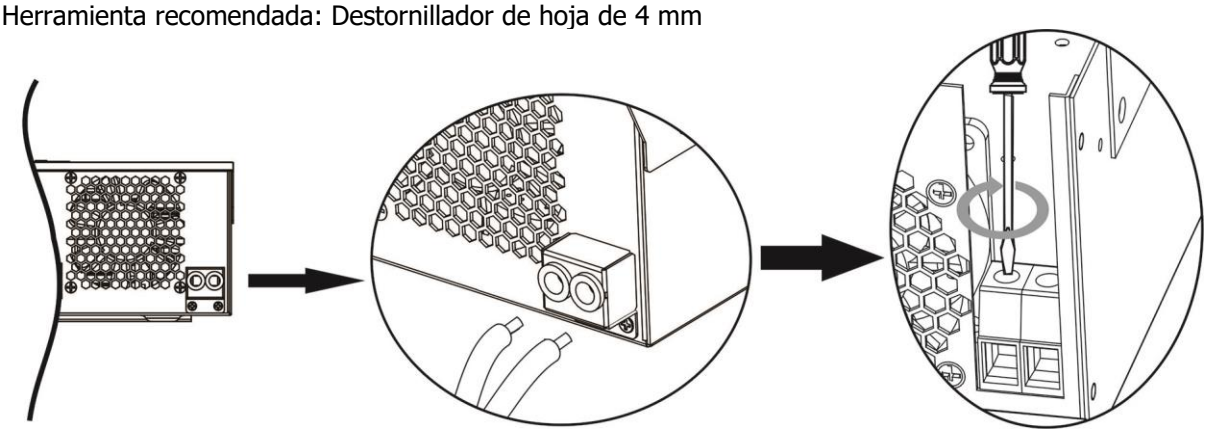
Especificaciones del panel solar - 250Wp - Vmp: 30.1Vdc - Imp: 8.3A - Voc: 37.7Vdc - Isc: 8.4A - Células: 60	ENTRADA SOLAR	Cantidad de paneles	Potencia total de entrada
	Mínimo en serie: 3 piezas, máx. en serie: 12 piezas		
	3 unidades en serie	3 pcs	750W
	6 unidades en serie	6 pcs	1500W
	8 unidades en serie	8 pcs	2000W
	12 unidades en serie	12 pcs	3000W

Conexión de cables del módulo FV

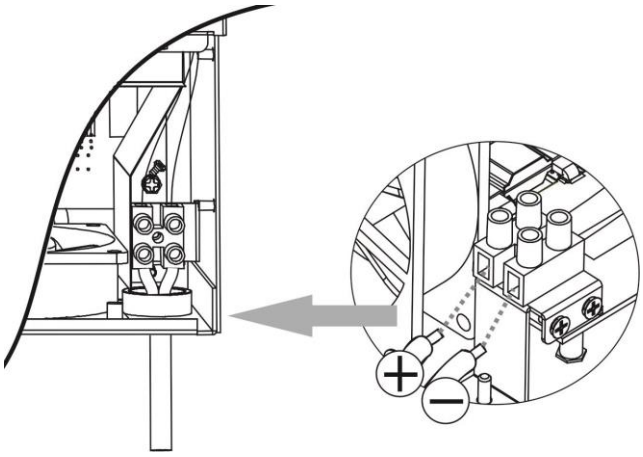


Siga los pasos que se indican a continuación para realizar la conexión del módulo FV:

1. Retire el manguito aislante 10 mm para los conductores positivo y negativo.
2. Sugerir que se coloquen terminales en los extremos de los cables positivo y negativo con una herramienta de crimpado adecuada.
3. Compruebe la polaridad correcta de la conexión de los cables de los módulos FV y los conectores de entrada FV. A continuación, conecte el polo positivo (+) del cable de conexión al polo positivo (+) del conector de entrada FV. Conecte el polo negativo (-) del cable de conexión al polo negativo (-) del conector de entrada FV. Atornille firmemente los dos cables en el sentido de las agujas del reloj.
4. Herramienta recomendada: Destornillador de hoja de 4 mm



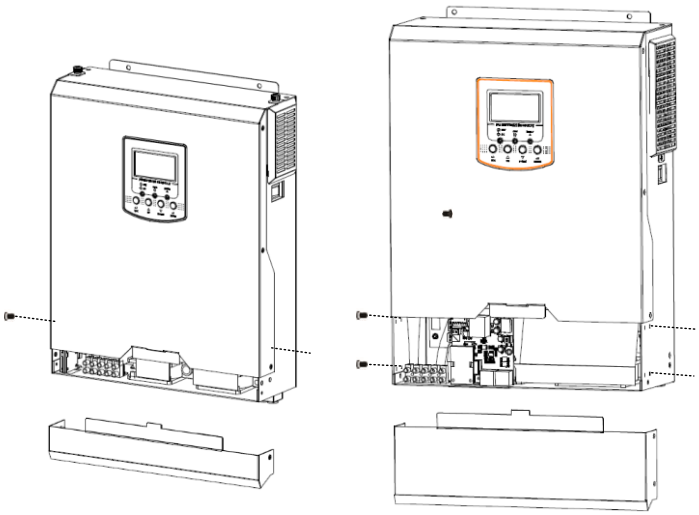
Modelo de 1,2 KVA



Modelo 3KVA

Montaje final

Después de conectar todos los cables, vuelva a colocar la cubierta inferior atornillando los tornillos como se muestra a continuación.



Modelo de 1,2 KVA **Modelo 3KVA**

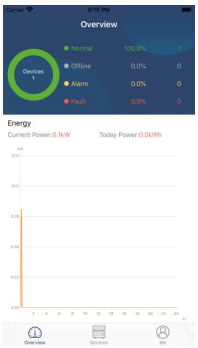
Opciones de comunicación

Conexión en serie

Utilice el cable serie suministrado para conectar el inversor a su PC. Instale el software de monitorización desde el CD incluido y siga las instrucciones en pantalla para completar la instalación. Para obtener información detallada sobre el funcionamiento del software, consulte el manual del usuario del software incluido en el CD.

Conexión Wi-Fi opcional

Puede adquirir una función Wi-Fi opcional de la unidad que está equipada con un transmisor Wi-Fi. El transmisor Wi-Fi permite la comunicación inalámbrica entre los inversores aislados y la plataforma de monitorización. Los usuarios pueden acceder y controlar el inversor monitorizado con una APP descargada. Puede encontrar la aplicación "WatchPower" en Apple® Store o "WatchPower Wi-Fi" en Google® Play Store. Todos los registradores de datos y parámetros se guardan en iCloud. Para una instalación y funcionamiento rápidos, consulte el Apéndice II.



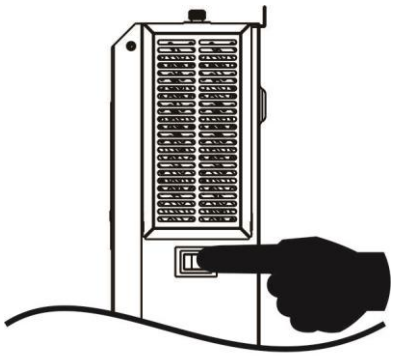
Comunicación BMS

Se recomienda adquirir un cable de comunicación especial si se va a conectar a bancos de baterías de iones de litio. Por favor, consulte el Apéndice B- Instalación de Comunicación BMS para más detalles.

OPERACIÓN

Power ON/OFF

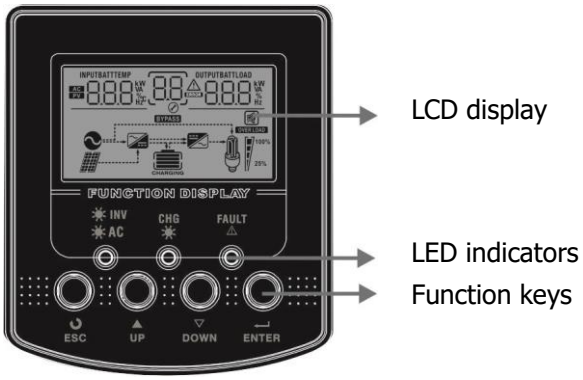
Side view of unit



Once the unit has been properly installed and the batteries are connected well, simply press On/Off switch (located on the button of the case) to turn on the unit.

Operation and Display Panel

The operation and display panel, shown in below chart, is on the front panel of the inverter. It includes three indicators, four function keys and a LCD display, indicating the operating status and input/output power information.



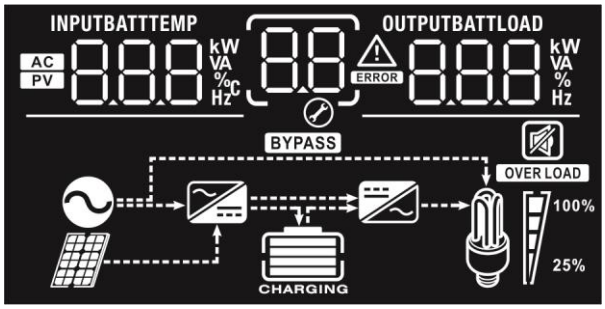
LED Indicator

LED Indicator			Messages
☀ AC / ☀ INV	Green	Solid On	Output is powered by utility in Line mode.
		Flashing	Output is powered by battery or PV in battery mode.
☀ CHG	Green	Solid On	Battery is fully charged.
		Flashing	Battery is charging.
⚠ FAULT	Red	Solid On	Fault occurs in the inverter.
		Flashing	Warning condition occurs in the inverter.

Function Keys

Function Key	Description
ESC	To exit setting mode
UP	To go to previous selection
DOWN	To go to next selection
ENTER	To confirm the selection in setting mode or enter setting mode

LCD Display Icons

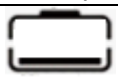


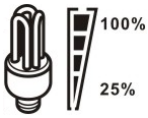
Icon	Function description
Input Source Information	
AC	Indicates the AC input.
PV	Indicates the PV input
INPUTBATT	Indicate input voltage, input frequency, PV voltage, charger current, charger power, battery voltage.
Configuration Program and Fault Information	
	Indicates the setting programs.
	Indicates the warning and fault codes. Warning: flashing with warning code. Fault: lighting with fault code
Output Information	
OUTPUTBATTLOAD	Indicate output voltage, output frequency, load percent, load in VA, load in Watt and discharging current.
Battery Information	
CHARGING	Indicates battery level by 0-24%, 25-49%, 50-74% and 75-100% in battery mode and charging status in line mode.

In AC mode, it will present battery charging status.

Status	Battery voltage	LCD Display
Constant Current mode / Constant Voltage mode	<2V/cell	4 bars will flash in turns.
	2 ~ 2.083V/cell	Bottom bar will be on and the other three bars will flash in turns.
	2.083 ~ 2.167V/cell	Bottom two bars will be on and the other two bars will flash in turns.
	> 2.167 V/cell	Bottom three bars will be on and the top bar will flash.
Floating mode. Batteries are fully charged.		4 bars will be on.

In battery mode, it will present battery capacity.

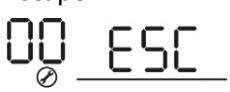
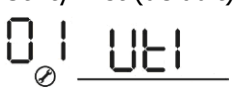
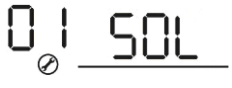
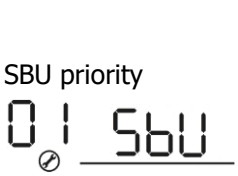
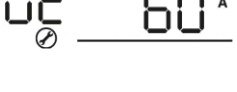
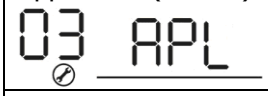
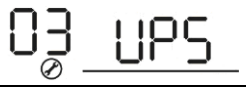
Load Percentage	Battery Voltage	LCD Display
Load >50%	< 1.85V/cell	
	1.85V/cell ~ 1.933V/cell	
	1.933V/cell ~ 2.017V/cell	
	> 2.017V/cell	
Load < 50%	< 1.892V/cell	
	1.892V/cell ~ 1.975V/cell	
	1.975V/cell ~ 2.058V/cell	
	> 2.058V/cell	

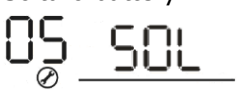
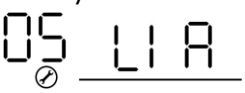
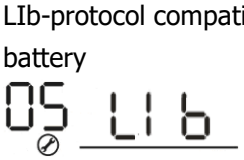
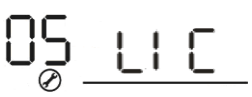
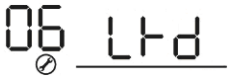
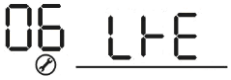
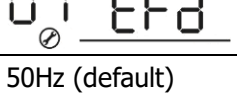
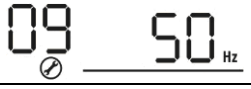
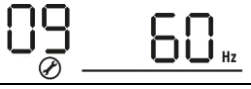
Load Information				
OVER LOAD	Indicates overload.			
	Indicates the load level by 0-24%, 25-49%, 50-74% and 75-100%.			
	0%~24%	25%~49%	50%~74%	75%~100%
				
Mode Operation Information				
	Indicates unit connects to the mains.			
	Indicates unit connects to the PV panel.			
BYPASS	Indicates load is supplied by utility power.			
	Indicates the utility charger circuit is working.			
	Indicates the DC/AC inverter circuit is working.			
Mute Operation				
	Indicates unit alarm is disabled.			

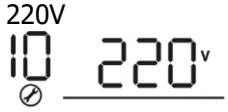
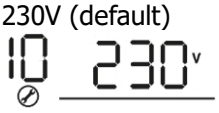
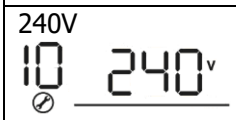
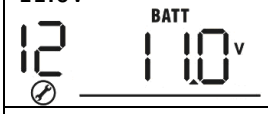
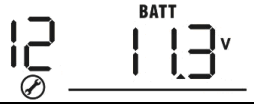
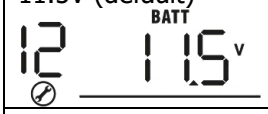
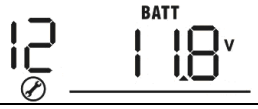
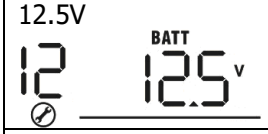
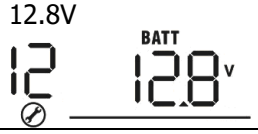
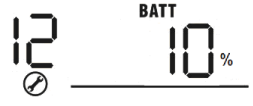
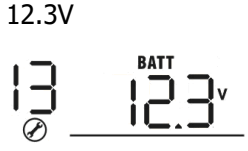
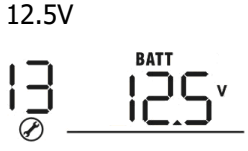
LCD Setting

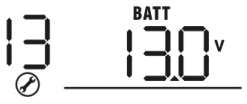
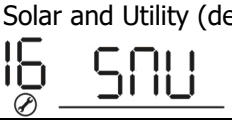
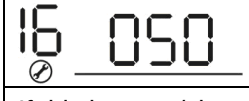
After pressing and holding ENTER button for 3 seconds, the unit will enter setting mode. Press "UP" or "DOWN" button to select setting programs. And then, press "ENTER" button to confirm the selection or ESC button to exit.

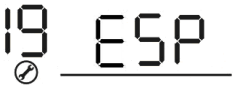
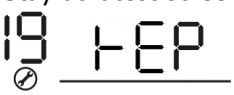
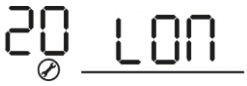
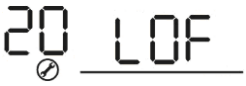
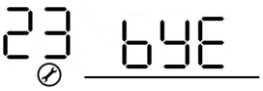
Setting Programs:

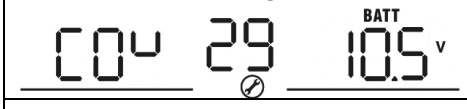
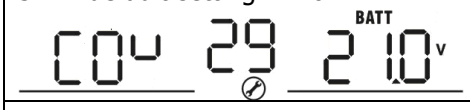
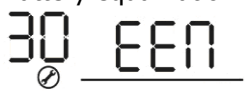
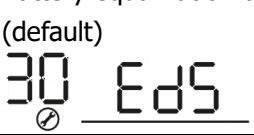
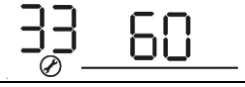
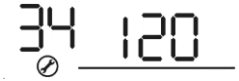
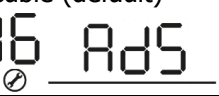
Program	Description	Selectable option	
00	Exit setting mode	Escape 	
01	Output source priority: To configure load power source priority	Utility first (default) 	Utility will provide power to the loads as first priority. Solar and battery energy will provide power to the loads only when utility power is not available.
		Solar first 	Solar energy provides power to the loads as first priority. If solar energy is not sufficient to power all connected loads, Utility energy will supply power to the loads at the same time.
		SBU priority 	Solar energy provides power to the loads as first priority. If solar energy is not sufficient to power all connected loads, battery energy will supply power to the loads at the same time. Utility provides power to the loads only when battery voltage drops to either low-level warning voltage or the setting point in program 12.
02	Maximum charging current: To configure total charging current for solar and utility chargers. (Max. charging current = utility charging current + solar charging current)	60A (default) 	Setting range is from 10A to 100A. Increment of each click is 10A.
03	AC input voltage range	Appliances (default) 	If selected, acceptable AC input voltage range will be within 90-280VAC.
		UPS 	If selected, acceptable AC input voltage range will be within 170-280VAC.
05	Battery type	AGM (default) 	Flooded 

05	Battery type	User-Defined 	If "User-Defined" is selected, battery charge voltage and low DC cut-off voltage can be set up in program 26, 27 and 29.
		Pylontech battery 	If selected, programs of 02, 26, 27 and 29 will be automatically set up. No need for further setting.
		WECO battery 	If selected, programs of 02, 12, 26, 27 and 29 will be auto-configured per battery supplier recommended. No need for further adjustment.
		Soltaro battery 	If selected, programs of 02, 26, 27 and 29 will be automatically set up. No need for further setting.
		LIA-protocol compatible battery 	Select "LIA" if using Lithium battery compatible to CAN protocol. If selected, programs of 02, 26, 27 and 29 will be automatically set up. No need for further setting.
		LIb-protocol compatible battery 	Select "LIb" if using Lithium battery compatible to RS485 protocol. If selected, programs of 02, 26, 27 and 29 will be automatically set up. No need for further setting.
		3rd party Lithium battery 	Select "LIC" if using Lithium battery not listed above. If selected, programs of 02, 26, 27 and 29 will be automatically set up. No need for further setting. Please contact the battery supplier for installation procedure.
06	Auto restart when overload occurs	Restart disable (default) 	Restart enable 
07	Auto restart when over temperature occurs	Restart disable (default) 	Restart enable 
09	Output frequency	50Hz (default) 	60Hz 

10	Output voltage	220V 	230V (default) 
		240V 	
11	Maximum utility charging current Note: If setting value in program 02 is smaller than that in program in 11, the inverter will apply charging current from program 02 for utility charger.	40A (default) 	Setting range is 2A, then from 10A to 80A. Increment of each click is 10A.
12	Setting voltage point back to utility source when selecting "SBU priority" or "Solar first" in program 01.	Available options in 1.2KVA model:	
		11.0V 	11.3V 
		11.5V (default) 	11.8V 
		12.0V 	12.3V 
		12.5V 	12.8V 
		Available options in 3KVA model:	
		23.0V (default) 	Setting range is from 22V to 25.5V. Increment of each click is 0.5V.
		Available options when any lithium battery type is selected in Program 05.	
		SOC 10% (default for Lithium) 	If any types of lithium battery is selected in program 05, setting value will change to SOC automatically. Adjustable range is 5% to 95%.
13	Setting voltage point back to battery mode when selecting "SBU priority" or "Solar first" in program 01.	Available options in 1.2KVA model:	
		Battery fully charged 	12.0V 
		12.3V 	12.5V 

<table>
<tr><td></td><td></td><td>12.8V
  </td><td>13.0V
  </td></tr>
<tr><td></td><td></td><td>13.3V
  </td><td>13.5V (default)
  </td></tr>
<tr><td></td><td></td><td>13.8V
  </td><td>14.0V
  </td></tr>
<tr><td></td><td></td><td>14.3V
  </td><td>14.5V
  </td></tr>
<tr><td></td><td></td><td colspan="2">Available options in 3KVA model:
Setting range is FUL and from 24V to 29V. Increment of each click is 0.5V.</td></tr>
<tr><td></td><td></td><td>Battery fully charged
  </td><td>27V (default)
  </td></tr>
<tr><td></td><td></td><td colspan="2">Available option when any lithium battery type is selected in Program 05.</td></tr>
<tr><td></td><td></td><td>SOC 80% (default for Lithium)
  </td><td>If any types of lithium battery is selected in program 05, setting value will change to SOC automatically. Adjustable range is 10% to 100%. Increment of each click is 5%.</td></tr>
<tr><td>16</td><td>Charger source priority:
To configure charger source priority</td><td colspan="2">If this inverter/charger is working in Line, Standby or Fault mode, charger source can be programmed as below:</td></tr>
<tr><td></td><td></td><td>Solar first
  </td><td>Solar energy will charge battery as first priority.
Utility will charge battery only when solar energy is not available.</td></tr>
<tr><td></td><td></td><td>Solar and Utility (default)
  </td><td>Solar energy and utility will charge battery at the same time.</td></tr>
<tr><td></td><td></td><td>Only Solar
  </td><td>Solar energy will be the only charger source no matter utility is available or not.</td></tr>
<tr><td></td><td></td><td colspan="2">If this inverter/charger is working in Battery mode, only solar energy can charge battery. Solar energy will charge battery if it's available and sufficient.</td></tr>
</table>

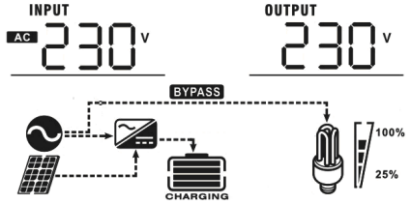
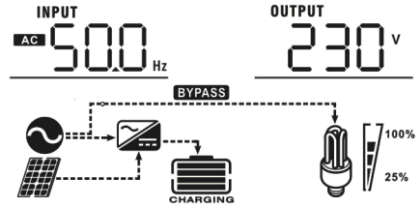
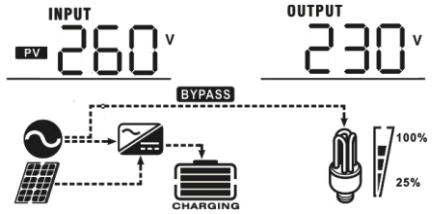
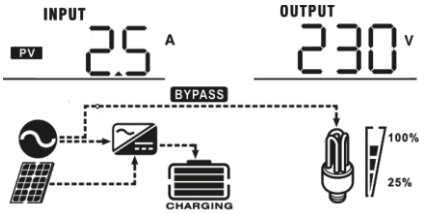
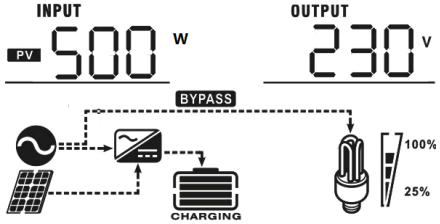
18	Alarm control	Alarm on (default) 	Alarm off 
19	Auto return to default display screen	Return to default display screen (default) 	If selected, no matter how users switch display screen, it will automatically return to default display screen (Input voltage /output voltage) after no button is pressed for 1 minute.
		Stay at latest screen 	If selected, the display screen will stay at latest screen user finally switches.
20	Backlight control	Backlight on (default) 	Backlight off 
22	Beeps while primary source is interrupted	Alarm on (default) 	Alarm off 
23	Overload bypass: When enabled, the unit will transfer to line mode if overload occurs in battery mode.	Bypass disable (default) 	Bypass enable 
25	Record Fault code	Record enable (default) 	Record disable 
26	Bulk charging voltage (C.V voltage)	1.2KVA default setting: 14.1V 	
		3KVA default setting: 28.2V 	
		If self-defined is selected in program 5, this program can be set up. Setting range is from 12.5V to 15.0V for 1.2KVA model and 25.0V to 31.0V for 3KVA model. Increment of each click is 0.1V.	
27	Floating charging voltage	1.2KVA default setting: 13.5V 	
		3KVA default setting: 27.0V 	
		If self-defined is selected in program 5, this program can be set up. Setting range is from 12.5V to 15.0V for 1.2KVA model and 25.0V to 31.0V for 3KVA model. Increment of each click is 0.1V.	

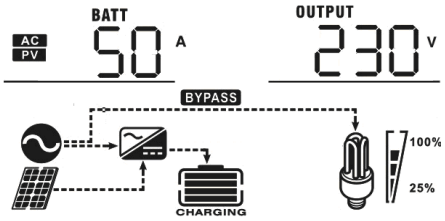
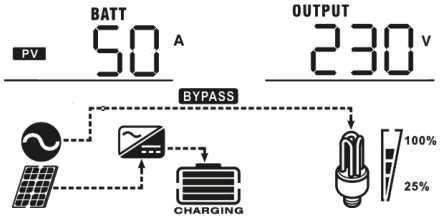
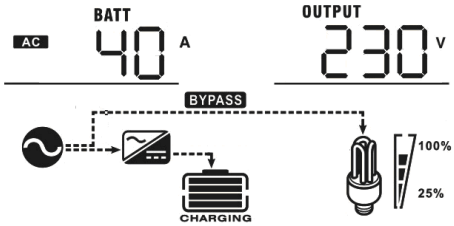
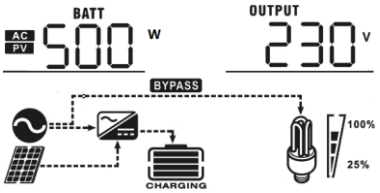
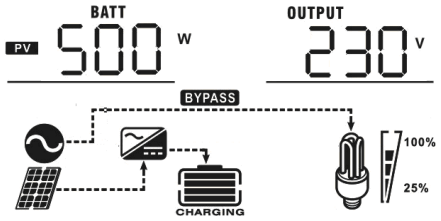
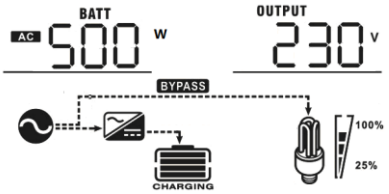
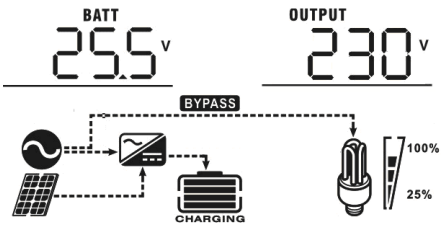
<table>
<tr><td rowspan="3">29</td><td rowspan="3">Low DC cut-off voltage</td><td colspan="2">1.2KVA default setting: 10.5V
  </td></tr>
<tr><td colspan="2">3KVA default setting: 21.0V
  </td></tr>
<tr><td colspan="2">If self-defined is selected in program 5, this program can be set up. Setting range is from 10.5V to 12.0V for 1.2KVA model and 21.0V to 24.0V for 3KVA model. Increment of each click is 0.1V. Low DC cut-off voltage will be fixed to setting value no matter what percentage of load is connected.
lithium battery default setting: SOC 5%
 
If any type of lithium battery is selected in program 05, setting value will change to SOC automatically. Adjustable range is 0% to 90%. Increment of each click is 1%.</td></tr>
<tr><td rowspan="2">30</td><td rowspan="2">Battery equalization</td><td>Battery equalization
  </td><td>Battery equalization disable (default)
  </td></tr>
<tr><td colspan="2">If “Flooded” or “User-Defined” is selected in program 05, this program can be set up.</td></tr>
<tr><td rowspan="3">31</td><td rowspan="3">Battery equalization voltage</td><td colspan="2">1.2KVA default setting: 14.6V
  </td></tr>
<tr><td colspan="2">3KVA default setting: 29.2V
  </td></tr>
<tr><td colspan="2">Setting range is from 12.0V to 15.0V for 1.2KVA model and 25.0V to 31.0V for 3KVA model. Increment of each click is 0.1V.</td></tr>
<tr><td>33</td><td>Battery equalized time</td><td>60min (default)
  </td><td>Setting range is from 5min to 900min. Increment of each click is 5min.</td></tr>
<tr><td>34</td><td>Battery equalized timeout</td><td>120min (default)
  </td><td>Setting range is from 5min to 900 min. Increment of each click is 5 min.</td></tr>
<tr><td>35</td><td>Equalization interval</td><td>30days (default)
  </td><td>Setting range is from 0 to 90 days. Increment of each click is 1 day</td></tr>
<tr><td>36</td><td>Equalization activated immediately</td><td>Enable
  </td><td>Disable (default)
  </td></tr>
</table>

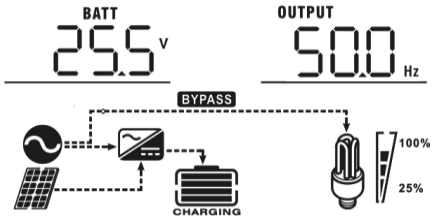
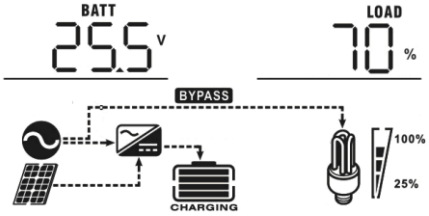
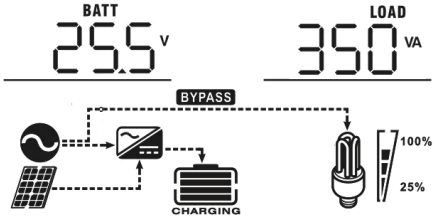
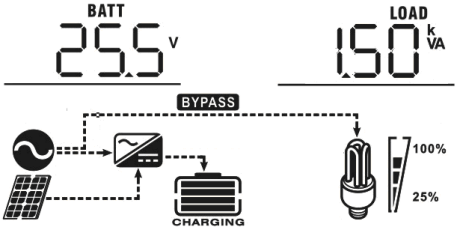
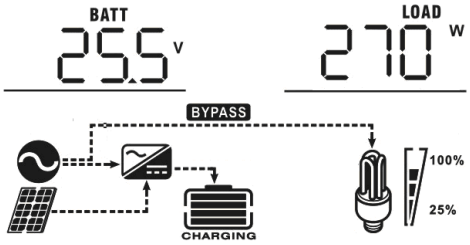
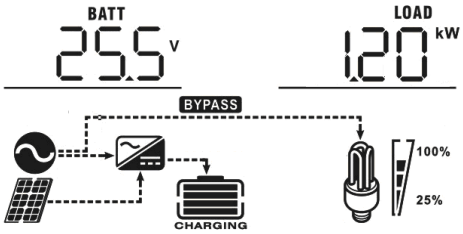
		If equalization function is enabled in program 30, this program can be set up. If "Enable" is selected in this program, it's to activate battery equalization immediately and LCD main page will shows "E9". If "Disable" is selected, it will cancel equalization function until next activated equalization time arrives based on program 35 setting. At this time, "E9" will not be shown in LCD main page.

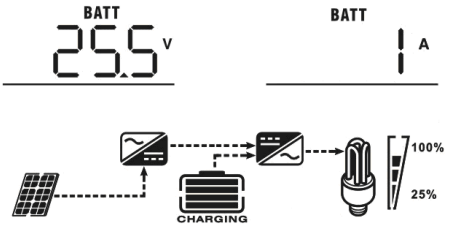
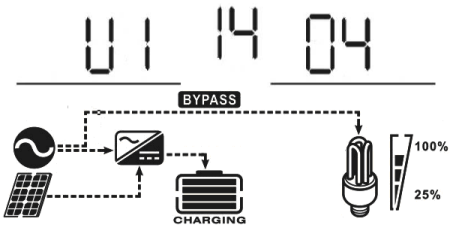
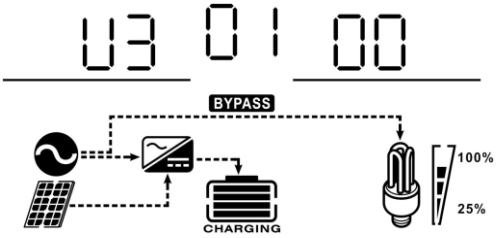
Display Setting

The LCD display information will be switched in turns by pressing "UP" or "DOWN" key. The selectable information is switched as following order in listed table.

Selectable information	LCD display
Input voltage/Output voltage (Default Display Screen)	Input Voltage=230V, output voltage=230V 
Input frequency	Input frequency=50Hz 
PV voltage	PV voltage=260V 
PV current	PV current = 2.5A 
PV power	PV power = 500W 

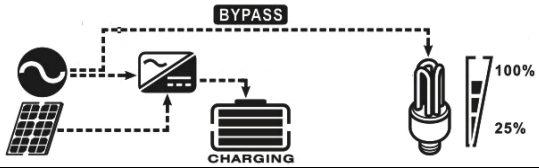
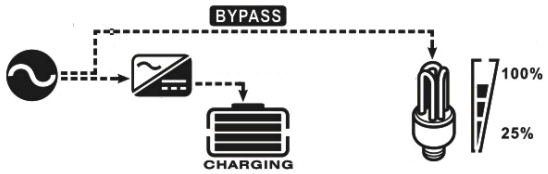
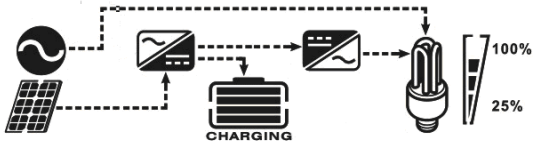
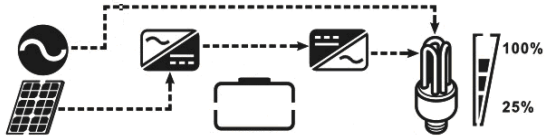
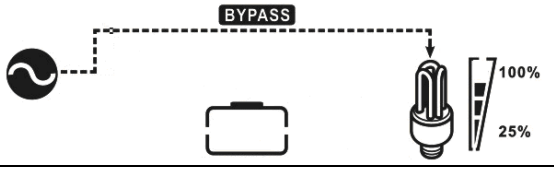
Charging current	AC and PV charging current=50A  PV charging current=50A  AC charging current=40A 
Charging power	AC and PV charging power=500W  PV charging power=500W  AC charging power=500W 
Battery voltage and output voltage	Battery voltage=25.5V, output voltage=230V 

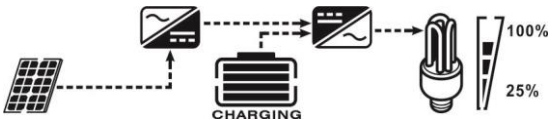
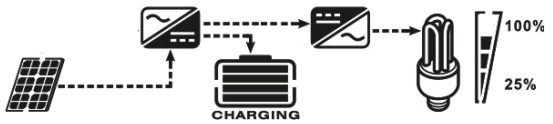
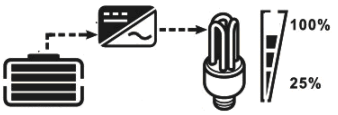
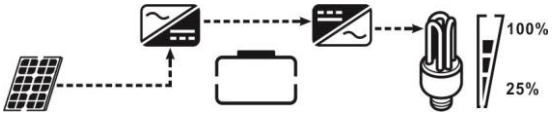
Output frequency	Output frequency=50Hz 
Load percentage	Load percent=70% 
Load in VA	When connected load is lower than 1kVA, load in VA will present xxxVA like below chart.  When load is larger than 1kVA (≧1KVA), load in VA will present x.xkVA like below chart. 
Load in Watt	When load is lower than 1kW, load in W will present xxxW like below chart.  When load is larger than 1kW (≧1KW), load in W will present x.xkW like below chart. 

Battery voltage/DC discharging current	Battery voltage=25.5V, discharging current=1A 
Main CPU version checking	Main CPU version 00014.04 
Secondary CPU version checking.	Secondary CPU version 00001.00 

Operating Mode Description

Operation mode	Description	LCD display
Standby mode **Note:** *Standby mode: The inverter is not turned on yet but at this time, the inverter can charge battery without AC output.	No output is supplied by the unit but it still can charge batteries.	Charging by utility and PV energy. 
		Charging by utility. 
		Charging by PV energy. 
		No charging. 

Operation mode	Description	LCD display
Fault mode Note: *Fault mode: Errors are caused by inside circuit error or external reasons such as over temperature, output short circuited and so on.	PV energy and utility can charge batteries.	Charging by utility and PV energy. 
		Charging by utility. 
		Charging by PV energy. 
		No charging. 
Line Mode	The unit will provide output power from the mains. It will also charge the battery at line mode.	Charging by utility and PV energy. 
	The unit will provide output power from the mains. It will also charge the battery at line mode.	Charging by utility. 
		If "solar first" is selected as output source priority and solar energy is not sufficient to provide the load, solar energy and the utility will provide the loads and charge the battery at the same time. 
		If "solar first" is selected as output source priority and battery is not connected, solar energy and the utility will provide the loads. 
		Power from utility. 

Operation mode	Description	LCD display
Battery Mode	The unit will provide output power from battery and PV power.	Power from battery and PV energy. 
		PV energy will supply power to the loads and charge battery at the same time. 
		Power from battery only. 
		Power from PV energy only. 

Battery Equalization Description

Equalization function is added into charge controller. It reverses the buildup of negative chemical effects like stratification, a condition where acid concentration is greater at the bottom of the battery than at the top. Equalization also helps to remove sulfate crystals that might have built up on the plates. If left unchecked, this condition, called sulfation, will reduce the overall capacity of the battery. Therefore, it's recommended to equalize battery periodically.

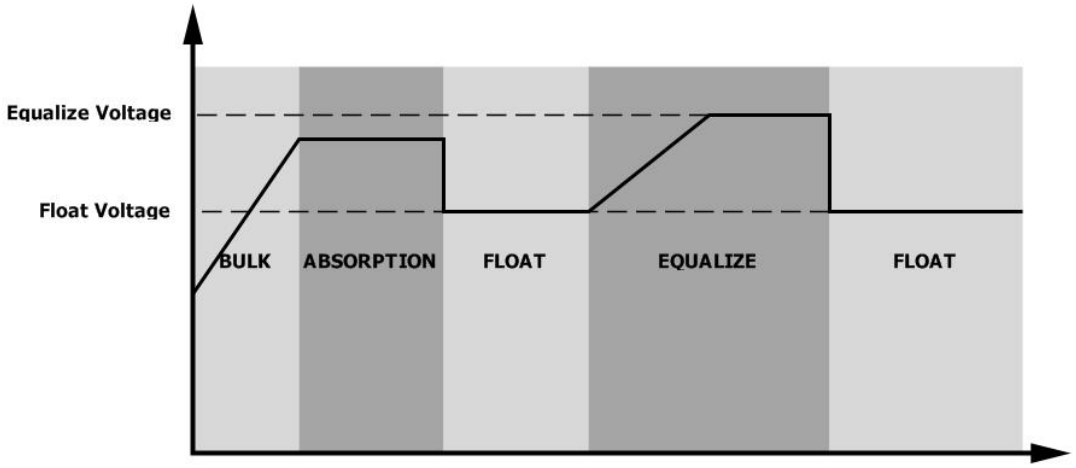
- **How to Apply Equalization Function**

You must enable battery equalization function in monitoring LCD setting program 30 first. Then, you may apply this function in device by either one of following methods:

1. Setting equalization interval in program 35.
2. Active equalization immediately in program 36.

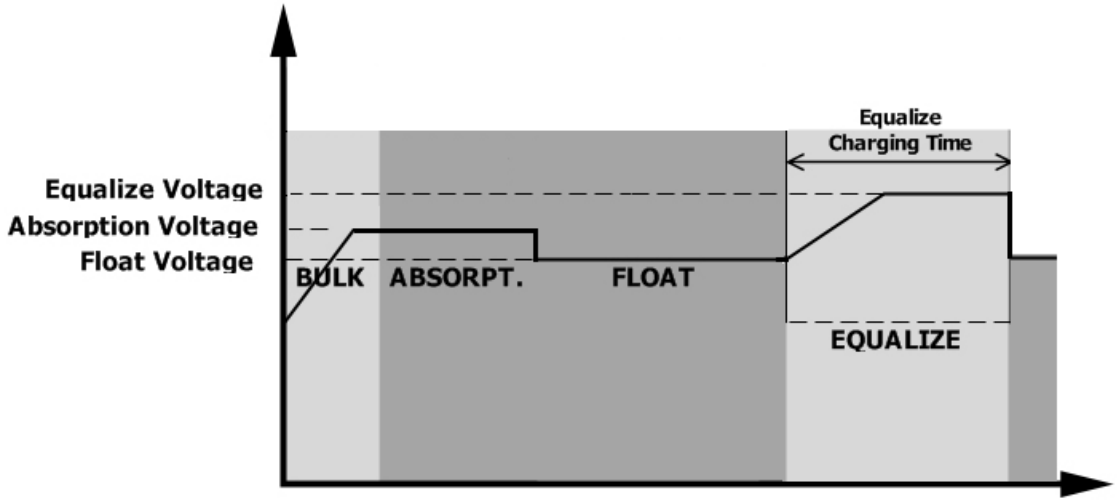
- **When to Equalize**

In float stage, when the setting equalization interval (battery equalization cycle) is arrived, or equalization is active immediately, the controller will start to enter Equalize stage.

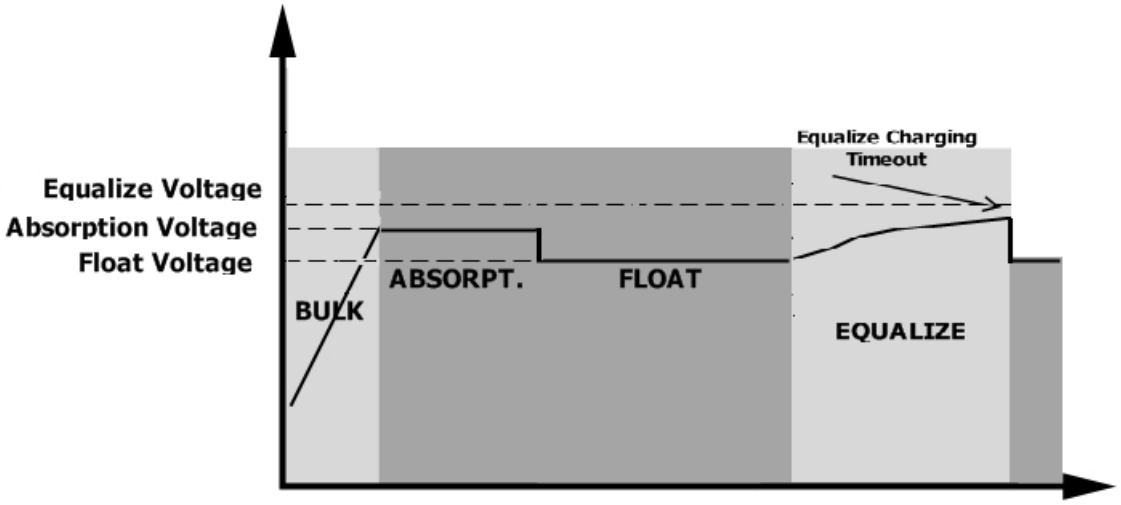


- **Equalize charging time and timeout**

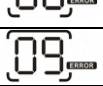
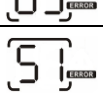
In Equalize stage, the controller will supply power to charge battery as much as possible until battery voltage raises to battery equalization voltage. Then, constant-voltage regulation is applied to maintain battery voltage at the battery equalization voltage. The battery will remain in the Equalize stage until setting battery equalized time is arrived.



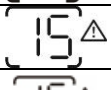
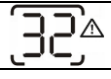
However, in Equalize stage, when battery equalized time is expired and battery voltage doesn't rise to battery equalization voltage point, the charge controller will extend the battery equalized time until battery voltage achieves battery equalization voltage. If battery voltage is still lower than battery equalization voltage when battery equalized timeout setting is over, the charge controller will stop equalization and return to float stage.

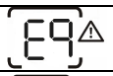


Fault Reference Code

Fault Code	Fault Event	Icon on
01	Fan is locked when inverter is off.	
02	Over temperature or NTC is not connected well.	
03	Battery voltage is too high	
04	Battery voltage is too low	
05	Output short circuited or over temperature is detected by internal converter components.	
06	Output voltage is too high.	
07	Overload time out	
08	Bus voltage is too high	
09	Bus soft start failed	
51	Over current or surge	
52	Bus voltage is too low	
53	Inverter soft start failed	
55	Over DC voltage in AC output	
57	Current sensor failed	
58	Output voltage is too low	
59	PV voltage is over limitation	

Warning Indicator

Warning Code	Warning Event	Audible Alarm	Icon flashing
01	Fan is locked when inverter is on.	Beep three times every second	
02	Over temperature	None	
03	Battery is over-charged	Beep once every second	
04	Low battery	Beep once every second	
07	Overload	Beep once every 0.5 second	
10	Output power derating	Beep twice every 3 seconds	
15	PV energy is low.	Beep twice every 3 seconds	
16	High AC input (>280VAC) during BUS soft start	None	
32	Communication failure between inverter and communication board	None	

E9	Battery equalization	None	
bP	Battery is not connected	None	

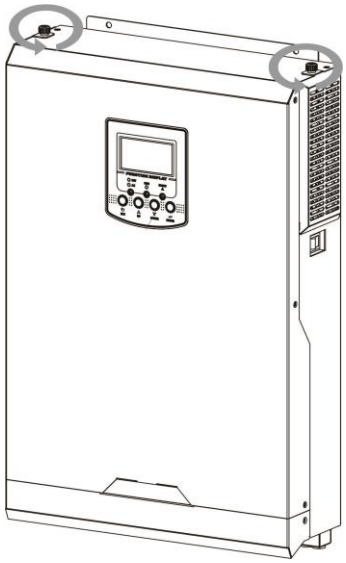
CLEARANCE AND MAINTENANCE FOR ANTI-DUST KIT

Overview

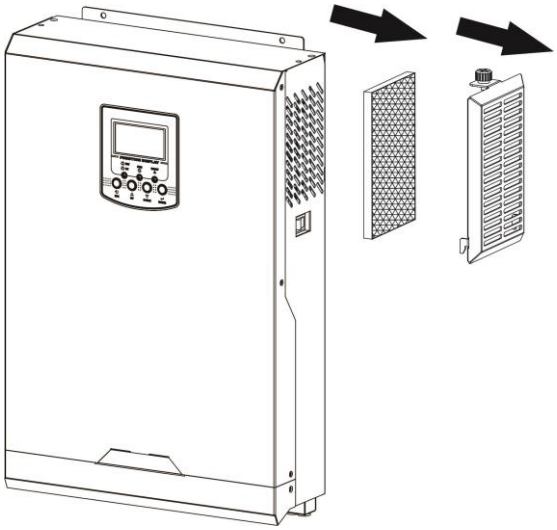
Every inverter is already installed with anti-dusk kit from factory. This kit keeps dusk from your inverter and increases product reliability in harsh environment.

Clearance and Maintenance

Step 1: Please loosen the screw in counterclockwise direction on the top of the inverter.



Step 2: Then, dustproof case can be removed and take out air filter foam as shown in below chart.



Step 3: Clean air filter foam and dustproof case. After clearance, re-assemble the dust-kit back to the inverter.

NOTICE: The anti-dust kit should be cleaned from dust every one month.

SPECIFICATIONS

Table 1 Line Mode Specifications

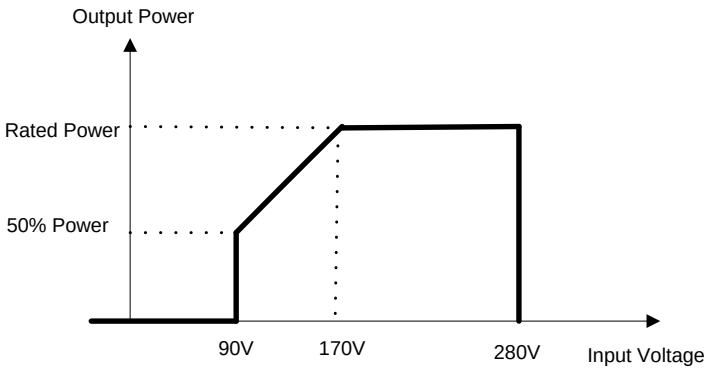
INVERTER MODEL	1.2KVA	3KVA
Input Voltage Waveform	Sinusoidal (utility or generator)	
Nominal Input Voltage	230Vac	
Low Loss Voltage	170Vac±7V (UPS); 90Vac±7V (Appliances)	
Low Loss Return Voltage	180Vac±7V (UPS); 100Vac±7V (Appliances)	
High Loss Voltage	280Vac±7V	
High Loss Return Voltage	270Vac±7V	
Max AC Input Voltage	300Vac	
Nominal Input Frequency	50Hz / 60Hz (Auto detection)	
Low Loss Frequency	40±1Hz	
Low Loss Return Frequency	42±1Hz	
High Loss Frequency	65±1Hz	
High Loss Return Frequency	63±1Hz	
Output Short Circuit Protection	Circuit Breaker	
Efficiency (Line Mode)	>95% (Rated R load, battery full charged)	
Transfer Time	10ms typical (UPS); 20ms typical (Appliances)	
Output power derating: When AC input voltage drops to 170V, the output power will be derated.		

Table 2 Inverter Mode Specifications

INVERTER MODEL	1.2KVA	3KVA-24V
Rated Output Power	1.2KVA/ 1.2KW	3KVA/3KW
Output Voltage Waveform	Pure Sine Wave	
Output Voltage Regulation	230Vac±5%	
Output Frequency	50Hz	
Peak Efficiency	93%	
Overload Protection	5s@≥130% load; 10s@105%~130% load	
Surge Capacity	2* rated power for 5 seconds	
Nominal DC Input Voltage	12Vdc	24Vdc
Cold Start Voltage	11.5Vdc	23.0Vdc
Low DC Warning Voltage @ load < 50% @ load ≥ 50%	 11.5Vdc 11.0Vdc	 23.0Vdc 22.0Vdc
Low DC Warning Return Voltage @ load < 50% @ load ≥ 50%	 11.7Vdc 11.5Vdc	 23.5Vdc 23.0Vdc
Low DC Cut-off Voltage @ load < 50% @ load ≥ 50%	 10.7Vdc 10.5Vdc	 21.5Vdc 21.0Vdc
High DC Recovery Voltage	15Vdc	31Vdc
High DC Cut-off Voltage	16Vdc	32Vdc
No Load Power Consumption	<35W	

Table 3 Charge Mode Specifications

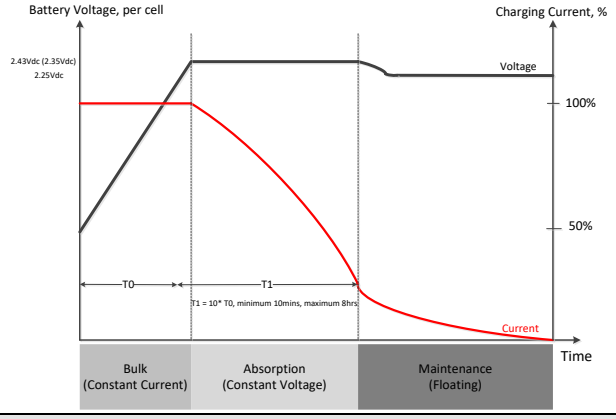
Utility Charging Mode			
INVERTER MODEL		**1.2KVA**	**3KVA-24V**
Charging Algorithm		3-Step	
AC Charging Current (Max)		80Amp (@$V_{I/P}$=230Vac)	
Bulk Charging Voltage	**Flooded Battery**	14.6Vdc	29.2Vdc
	AGM / Gel Battery	14.1Vdc	28.2Vdc
Floating Charging Voltage		13.5Vdc	27Vdc
Charging Curve			
MPPT Solar Charging Mode			
INVERTER MODEL		**1.2KVA**	**3KVA-24V**
Max. PV Array Power		2000W	3000W
Nominal PV Voltage		240Vdc	
Start-up Voltage		70Vdc +/- 10Vdc	
PV Array MPPT Voltage Range		30~300Vdc (30V~60V with battery)	30~400Vdc (30V~60V with battery)
Max. PV Array Open Circuit Voltage		350Vdc	450Vdc
Max. Input Current		13Amp	
Max Charging Current (AC charger plus solar charger)		100Amp	

Table 4 General Specifications

INVERTER MODEL	**1.2KVA**	**3KVA-24V**
Safety Certification	CE	
Operating Temperature Range	-10°C to 50°C	
Storage temperature	-15°C~ 60°C	
Humidity	5% to 95% Relative Humidity (Non-condensing)	
Dimension (D*W*H), mm	90 x 288 x 357	110 x 288 x 390
Net Weight, kg	6.5	7.2

TROUBLE SHOOTING

Problem	LCD/LED/Buzzer	Explanation / Possible cause	What to do
Unit shuts down automatically during startup process.	LCD/LEDs and buzzer will be active for 3 seconds and then complete off.	The battery voltage is too low (<1.91V/Cell)	1. Re-charge battery. 2. Replace battery.
No response after power on.	No indication.	1. The battery voltage is far too low. (<1.4V/Cell) 2. Internal fuse tripped.	1. Contact repair center for replacing the fuse. 2. Re-charge battery. 3. Replace battery.
Mains exist but the unit works in battery mode.	Input voltage is displayed as 0 on the LCD and green LED is flashing.	Input protector is tripped	Check if AC breaker is tripped and AC wiring is connected well.
	Green LED is flashing.	Insufficient quality of AC power. (Shore or Generator)	1. Check if AC wires are too thin and/or too long. 2. Check if generator (if applied) is working well or if input voltage range setting is correct. (UPS→Appliance)
	Green LED is flashing.	Set "Solar First" as the priority of output source.	Change output source priority to Utility first.
When the unit is turned on, internal relay is switched on and off repeatedly.	LCD display and LEDs are flashing	Battery is disconnected.	Check if battery wires are connected well.
Buzzer beeps continuously and red LED is on.	Fault code 07	Overload error. The inverter is overload 105% and time is up.	Reduce the connected load by switching off some equipment.
		If PV input voltage is higher than specification, the output power will be derated. At this time, if connected loads is higher than derated output power, it will cause overload.	Reduce the number of PV modules in series or the connected load.
	Fault code 05	Output short circuited.	Check if wiring is connected well and remove abnormal load.
		Temperature of internal converter component is over 120°C.	Check whether the air flow of the unit is blocked or whether the ambient temperature is too high.
	Fault code 02	Internal temperature of inverter component is over 100°C.	
	Fault code 03	Battery is over-charged.	Return to repair center.
		The battery voltage is too high.	Check if spec and quantity of batteries are meet requirements.
	Fault code 01	Fan fault	Replace the fan.
	Fault code 06/58	Output abnormal (Inverter voltage below than 190Vac or is higher than 260Vac)	1. Reduce the connected load. 2. Return to repair center
	Fault code 08/09/53/57	Internal components failed.	Return to repair center.
	Fault code 51	Over current or surge.	Restart the unit, if the error happens again, please return to repair center.
	Fault code 52	Bus voltage is too low.	
	Fault code 55	Output voltage is unbalanced.	
	Fault code 59	PV input voltage is beyond the specification.	Reduce the number of PV modules in series.

Appendix I: BMS Communication Installation

1. Introduction

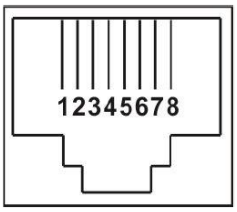
If connecting to lithium battery, it is recommended to purchase a custom-made RJ45 communication cable. Please check with your dealer or integrator for details.

This custom-made RJ45 communication cable delivers information and signal between lithium battery and the inverter. These information are listed below:

- Re-configure charging voltage, charging current and battery discharge cut-off voltage according to the lithium battery parameters.
- Have the inverter start or stop charging according to the status of lithium battery.

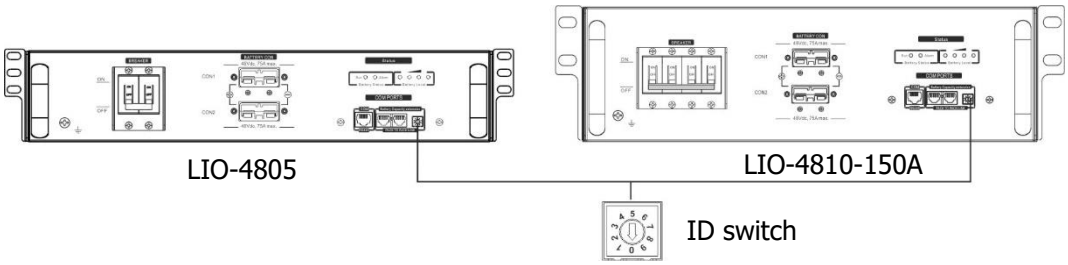
2. Pin Assignment for BMS Communication Port

	Definition
PIN 1	RS232TX
PIN 2	RS232RX
PIN 3	RS485B
PIN 4	NC
PIN 5	RS485A
PIN 6	CANH
PIN 7	CANL
PIN 8	GND

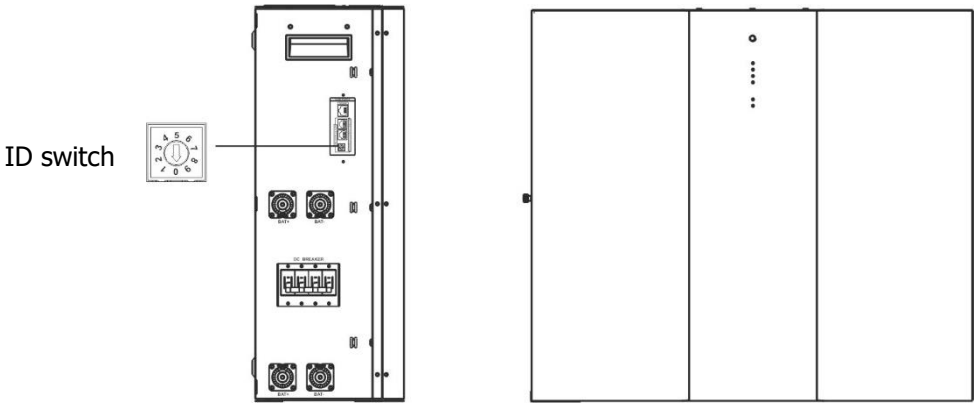


3. Lithium Battery Communication Configuration

LIO-4805/LIO-4810-150A

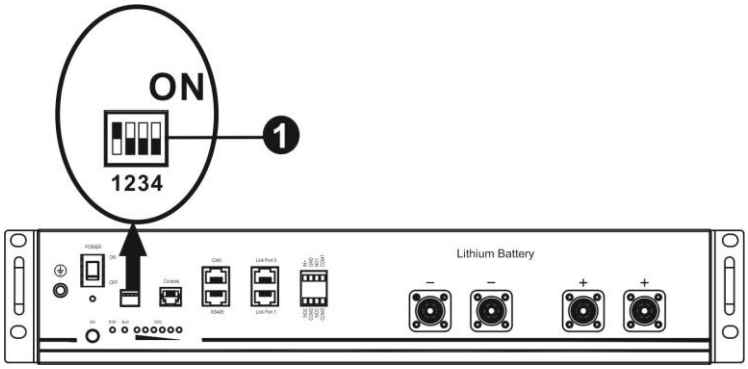


LIO II-4810



ID Switch indicates the unique ID code for each battery module. It's required to assign an identical ID to each battery module for normal operation. We can set up the ID code for each battery module by rotating the PIN number on the ID switch. From number 0 to 9, the number can be random; no particular order. Maximum 10 battery modules can be operated in parallel.

PYLONTECH



❶ Dip Switch: There are 4 Dip Switches that sets different baud rate and battery group address. If switch position is turned to the "OFF" position, it means "0". If switch position is turned to the "ON" position, it means "1".

Dip 1 is "ON" to represent the baud rate 9600.

Dip 2, 3 and 4 are reserved for battery group address.

Dip switch 2, 3 and 4 on master battery (first battery) are to set up or change the group address.

NOTE: "1" is upper position and "0" is bottom position.

Dip 1	Dip 2	Dip 3	Dip 4	Group address
1: RS485 baud rate=9600 **Restart to take effect**	0	0	0	Single group only. It's required to set up master battery with this setting and slave batteries are unrestricted.
	1	0	0	Multiple group condition. It's required to set up master battery on the first group with this setting and slave batteries are unrestricted.
	0	1	0	Multiple group condition. It's required to set up master battery on the second group with this setting and slave batteries are unrestricted.
	1	1	0	Multiple group condition. It's required to set up master battery on the third group with this setting and slave batteries are unrestricted.
	0	0	1	Multiple group condition. It's required to set up master battery on the fourth group with this setting and slave batteries are unrestricted.
	1	0	1	Multiple group condition. It's required to set up master battery on the fifth group with this setting and slave batteries are unrestricted.

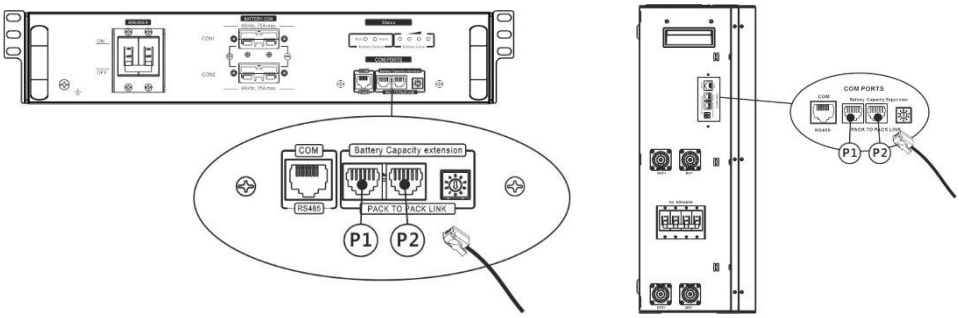
NOTE: The maximum groups of lithium battery is 5 and for maximum number for each group, please check with battery manufacturer.

4. Installation and Operation

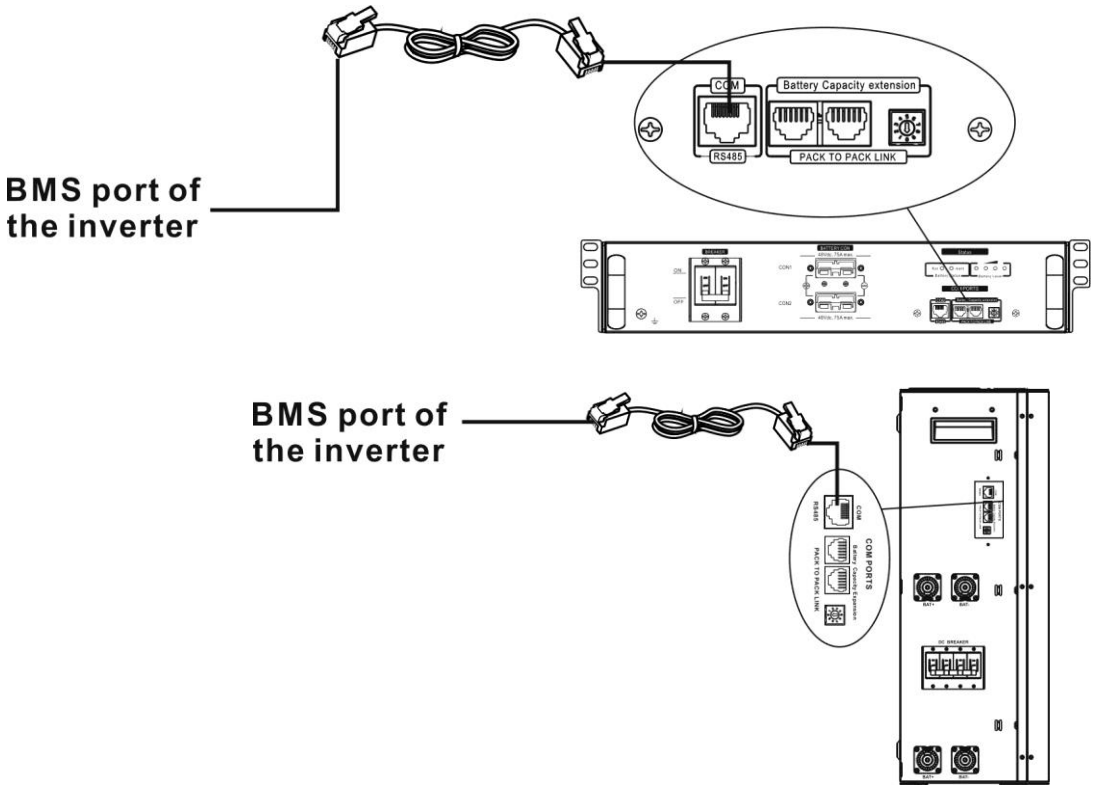
LIO-4805/LIO-4810-150A/ESS LIO II-4810

After ID no. is assigned for each battery module, please set up LCD panel in inverter and install the wiring connection as following steps.

Step 1: Use supplied RJ11 signal cable to connect into the extension port (P1 or P2).



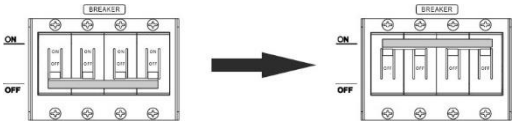
Step 2: Use supplied RJ45 cable (from battery module package) to connect inverter and Lithium battery.



Note for parallel system:

1. Only support common battery installation.
2. Use custom-made RJ45 cable to connect any inverter (no need to connect to a specific inverter) and Lithium battery. Simply set this inverter battery type to "LIB" in LCD program 5. Others should be "USE".

Step 3: Turn the breaker switch "ON". Now, the battery module is ready for DC output.



Step 4: Press Power on/off button on battery module for 5 secs, the battery module will start up.

*If the manual button cannot be approached, just simply turn on the inverter module. The battery module will be automatically turned on.

Step 5. Turn on the inverter.

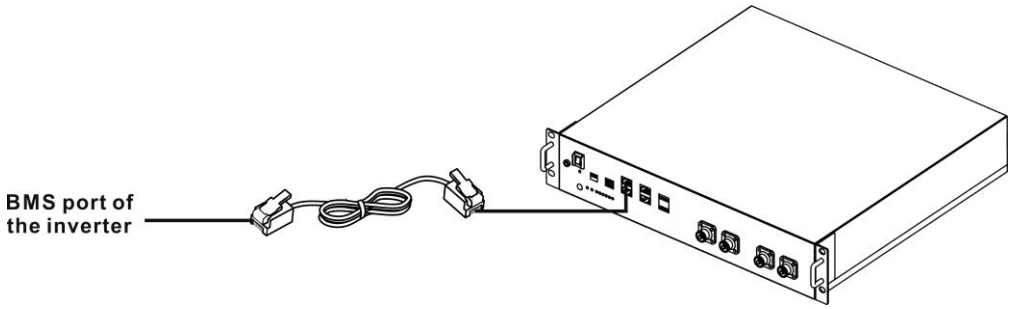
Step 6. Be sure to select battery type as "LIB" in LCD program 5.

If communication between the inverter and battery is successful, the battery icon  on LCD display will flash. Generally speaking, it will take longer than 1 minute to establish communication.

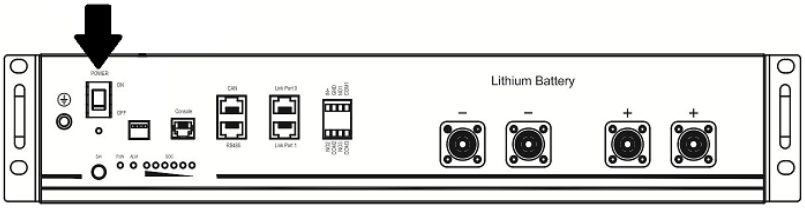
PYLONTECH

After configuration, please install LCD panel with inverter and Lithium battery with the following steps.

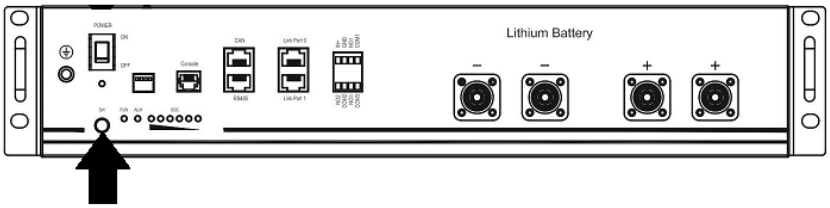
Step 1. Use custom-made RJ45 cable to connect inverter and Lithium battery.



Step 2. Switch on Lithium battery.

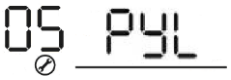


Step 3. Press more than three seconds to start Lithium battery. Output power is ready.



Step 4. Turn on the inverter.

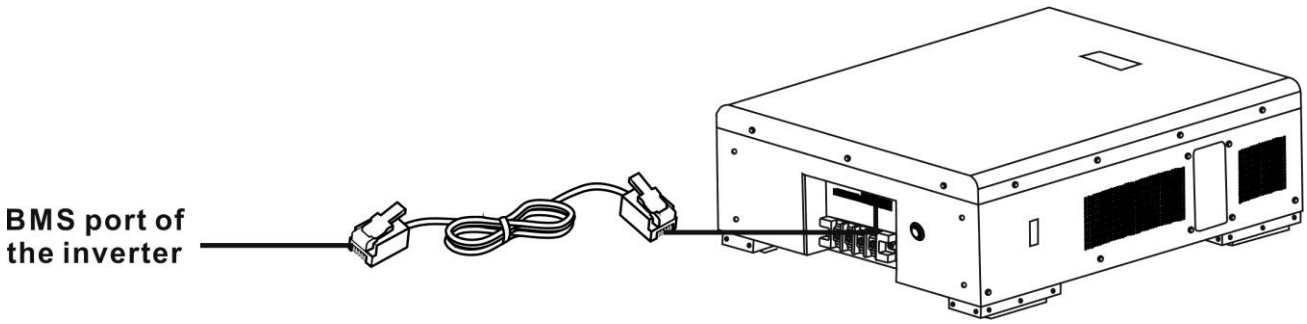
Step 5. Be sure to select battery type as "PYL" in LCD program 5.



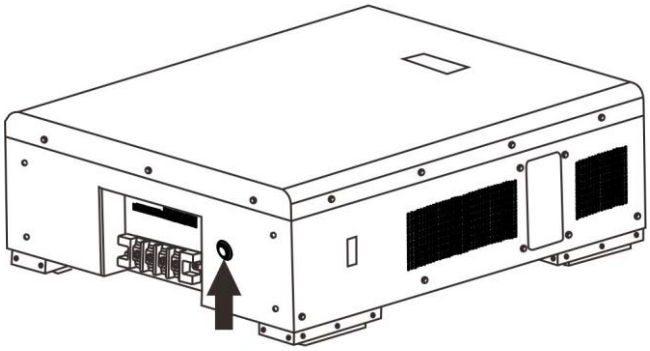
If communication between the inverter and battery is successful, the battery icon  on LCD display will flash. Generally speaking, it will take longer than 1 minute to establish communication.

WECO

Step 1. Use a custom-made RJ45 cable to connect inverter and Lithium battery.

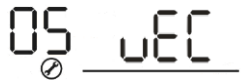


Step 2. Switch on Lithium battery.



Step 3. Turn on the inverter.

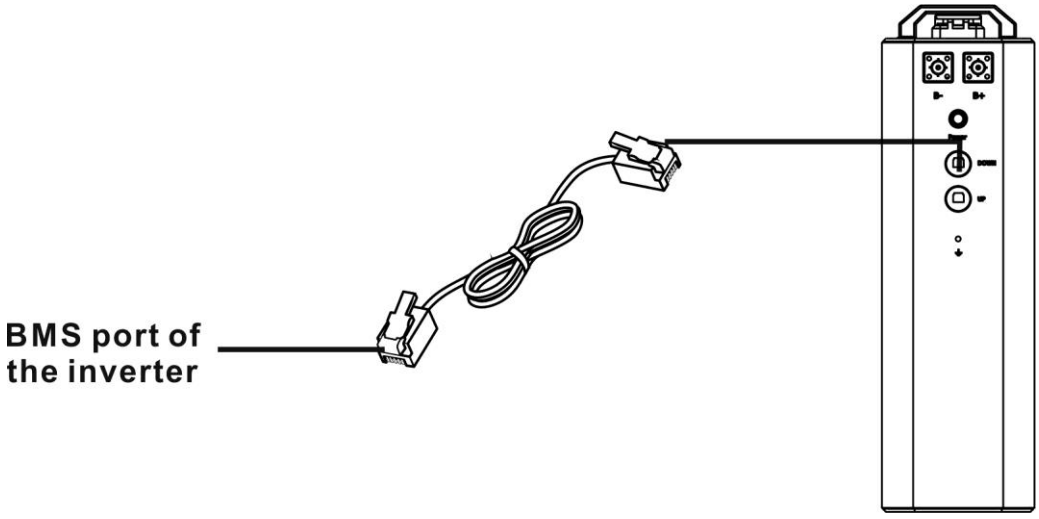
Step 4. Be sure to select battery type as "WEC" in LCD program 5.



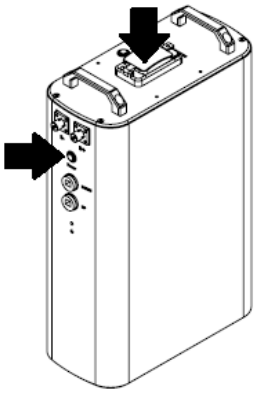
If communication between the inverter and battery is successful, the battery icon  on LCD display will "flash". Generally speaking, it will take longer than 1 minute to establish communication.

SOLTARO

Step 1. Use a custom-made RJ45 cable to connect inverter and Lithium battery.

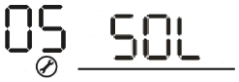


Step 2. Open DC isolator and switch on Lithium battery.



Step 3. Turn on the inverter.

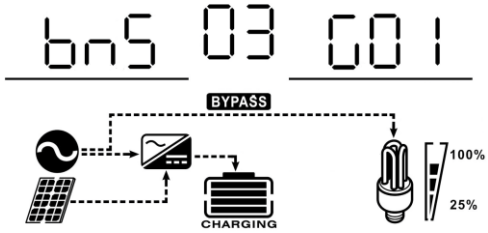
Step 4. Be sure to select battery type as "SOL" in LCD program 5.



If communication between the inverter and battery is successful, the battery icon  on LCD display will "flash". Generally speaking, it will take longer than 1 minute to establish communication.

5. LCD Display Information

Press "UP" or "DOWN" button to switch LCD display information. It will show battery pack and battery group number before "Main CPU version checking" as shown below.

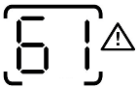
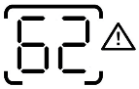
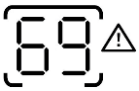
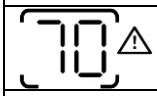
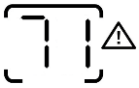
Selectable information	LCD display
Battery pack numbers & Battery group numbers	Battery pack numbers = 3, battery group numbers = 1 

Active Function

This function is to activate lithium battery automatically while commissioning. After battery wiring and commissioning is successfully, if battery is not detected, the inverter will automatically activate battery if the inverter is powered on.

5. Code Reference

Related information code will be displayed on LCD screen. Please check inverter LCD screen for the operation.

Code	Description
	If battery status is not allowed to charge and discharge after the communication between the inverter and battery is successful, it will show code 60 to stop charging and discharging battery.
	Communication lost (only available when the battery type is setting as any type of lithium-ion battery.) ● After battery is connected, communication signal is not detected for 3 minutes, buzzer will beep. After 10 minutes, inverter will stop charging and discharging to lithium battery. ● Communication lost occurs after the inverter and battery is connected successfully, buzzer beeps immediately.
	Battery number is changed. It probably is because of communication lost between battery packs. Please check the cables between the batteries.
	If battery status is not allowed to charge after the communication between the inverter and battery is successful, it will show code 69 to stop charging battery.
	If battery status must be charged after the communication between the inverter and battery is successful, it will show code 70 to charge battery.
	If battery status is not allowed to discharge after the communication between the inverter and battery is successful, it will show code 71 to stop discharging battery.

Appendix II: The Wi-Fi Operation Guide in Remote Panel (Option)

1. Introduction

Wi-Fi module can enable wireless communication between off-grid inverters and monitoring platform. Users have complete and remote monitoring and controlling experience for inverters when combining Wi-Fi module with WatchPower APP, available for both iOS and Android based device. All data loggers and parameters are saved in iCloud.

The major functions of this APP:

- Delivers device status during normal operation.
- Allows to configure device setting after installation.
- Notifies users when a warning or alarm occurs.
- Allows users to query inverter history data.

2. WatchPower App

2-1. Download and install APP

Operating system requirement for your smart phone:

iOS system supports iOS 9.0 and above

Android system supports Android 5.0 and above

Please scan the following QR code with your smart phone and download WatchPower App.

Android system

iOS system

Or you may find "WatchPower" app from the Apple® Store or "WatchPower Wi-Fi" in Google® Play Store.

2-2. Initial Setup

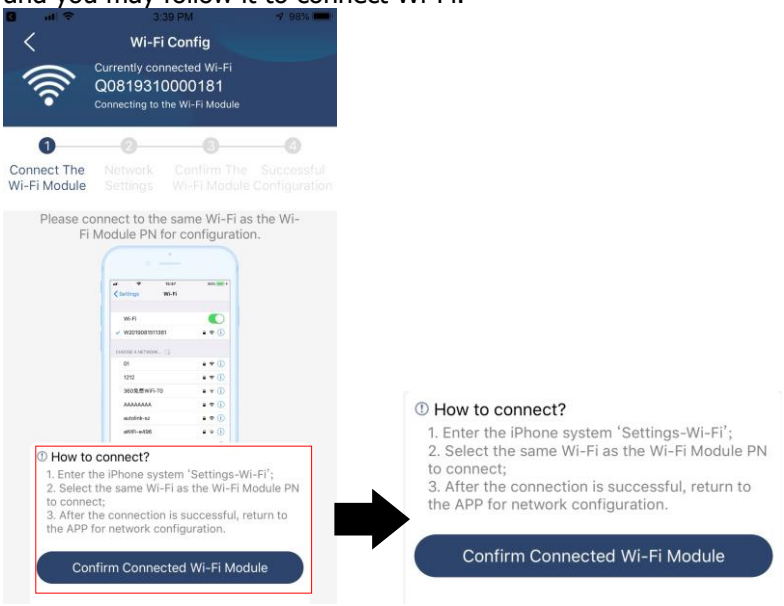
Step 1: Registration at first time

After the installation, please tap the shortcut icon to access this APP on your mobile screen. In the screen, tap "Register" to access "User Registration" page. Fill in all required information and scan the remote box PN by tapping icon. Or you can simply enter PN directly. Then, tap "Register" button.

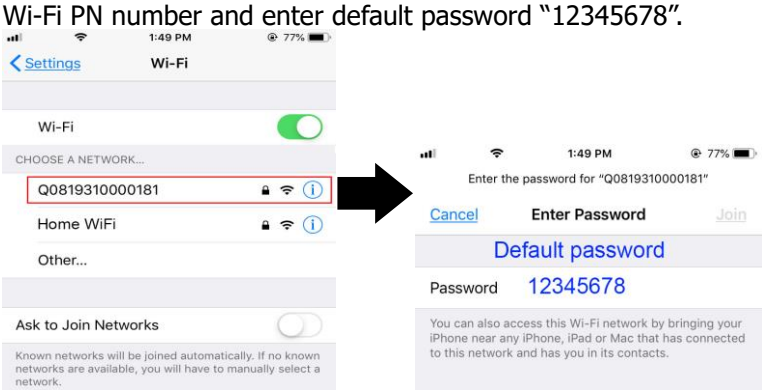
Then, a "Registration success" window will pop up. Tap "Go now" to continue setting local Wi-Fi network connection.

Step 2: Local Wi-Fi Module Configuration

Now, you are in "Wi-Fi Config" page. There are detailed setup procedure listed in "How to connect?" section and you may follow it to connect Wi-Fi.



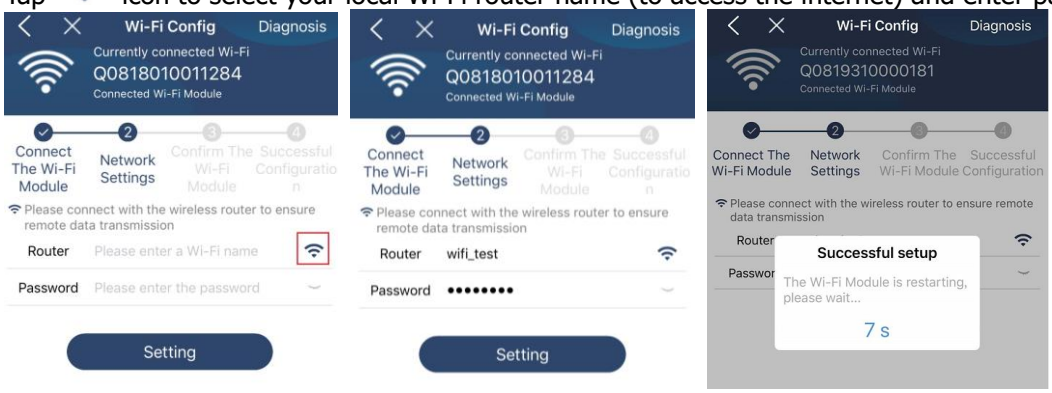
Enter the "Settings→Wi-Fi" and select connected Wi-Fi name. The connected Wi-Fi name is the same to your Wi-Fi PN number and enter default password "12345678".



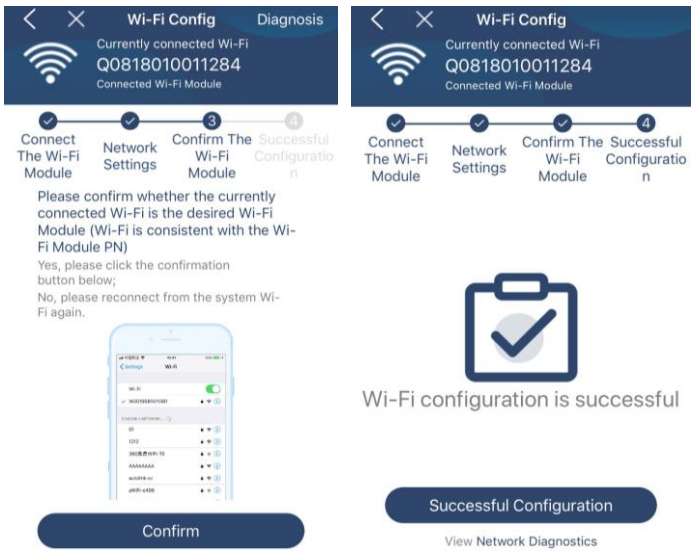
Then, return to WatchPower APP and tap " Confirm Connected Wi-Fi Module " button when Wi-Fi module is connected successfully.

Step 3: Wi-Fi Network settings

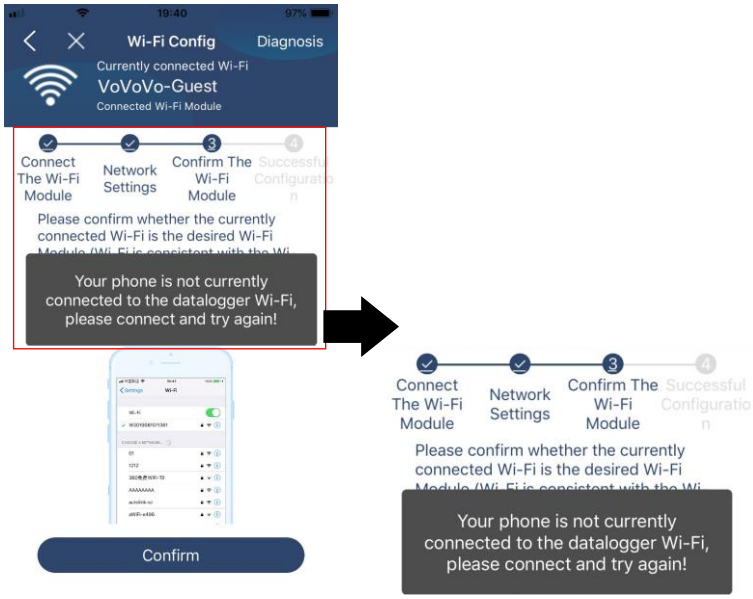
Tap icon to select your local Wi-Fi router name (to access the internet) and enter password.



Step 4: Tap "Confirm" to complete the Wi-Fi configuration between the Wi-Fi module and the Internet.

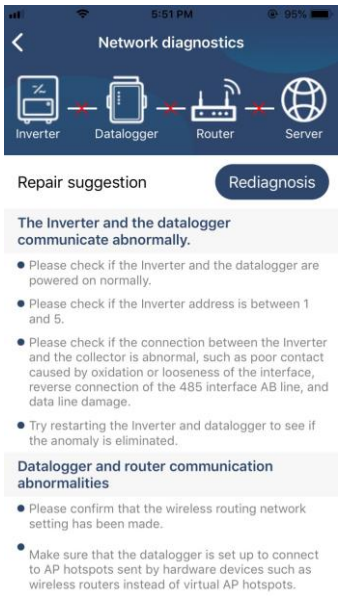


If the connection fails, please repeat Step 2 and 3.



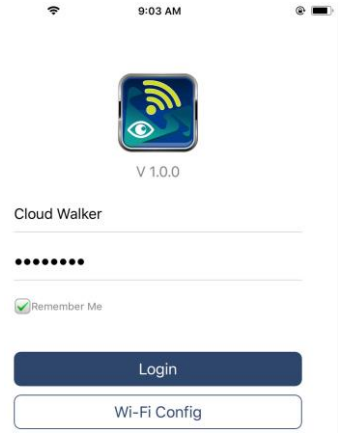
Diagnose Function

If the module is not monitoring properly, please tap " Diagnosis " on the top right corner of the screen for further details. It will show repair suggestion. Please follow it to fix the problem. Then, repeat the steps in the chapter 4.2 to re-set network setting. After all setting, tap "Rediagnosis" to re-connect again.



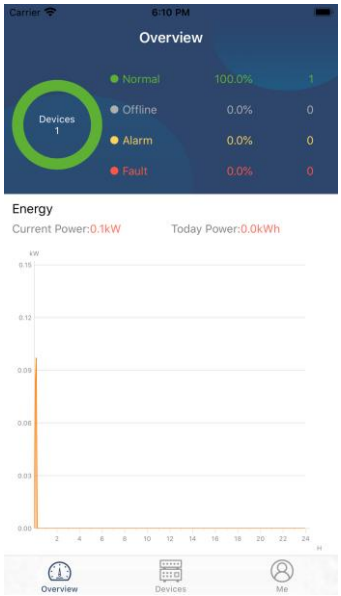
2-3. Login and APP Main Function

After finishing the registration and local Wi-Fi configuration, enter registered name and password to login. Note: Tick "Remember Me" for your login convenience afterwards.



Overview

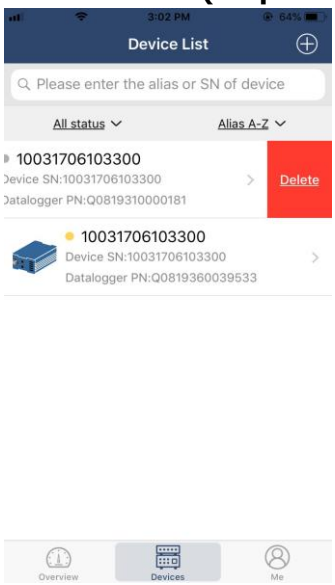
After login is successfully, you can access "Overview" page to have overview of your monitoring devices, including overall operation situation and Energy information for Current power and Today power as below diagram.



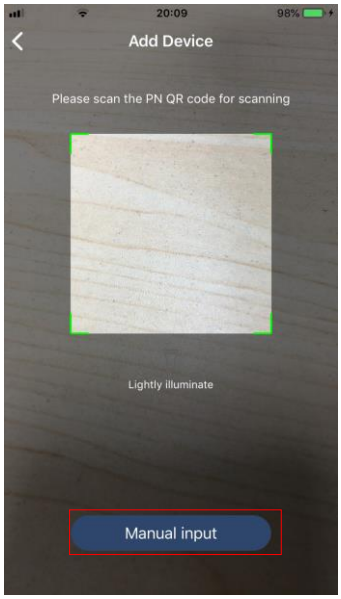
Devices

Tap the Devices icon (located on the bottom) to enter Device List page. You can review all devices here by adding or deleting Wi-Fi Module in this page.

Add device **Delete device (swipe left)**



Tap icon on the top right corner and manually enter part number to add device. This part number label is pasted on the bottom of remote LCD panel. After entering part number, tap "Confirm" to add this device in the Device list.

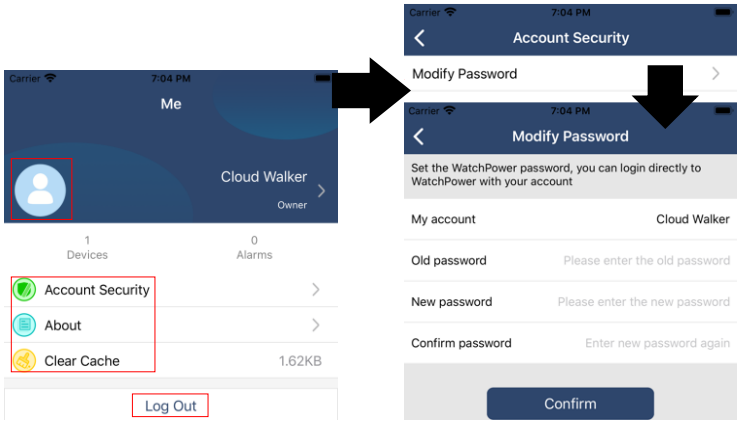


Part number label is pasted on the bottom of remote LCD panel.

For more information about Device List, please refer to the section 2.4.

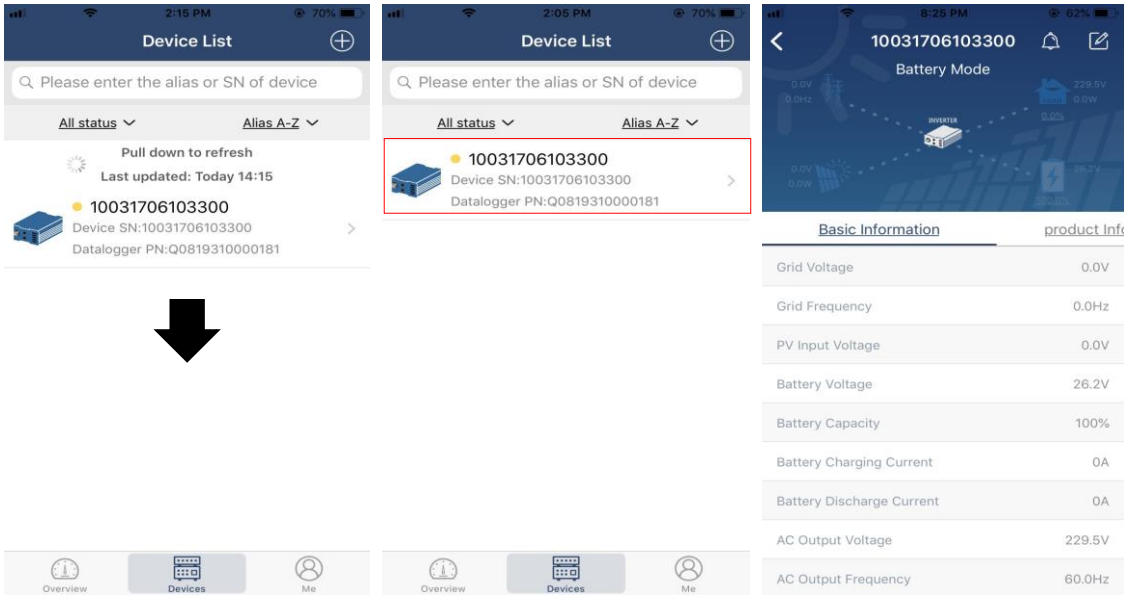
ME

In ME page, users can modify "My information", including【User's Photo】,【Account security】, 【Modify password】,【Clear cache】,and【Log-out】, shown as below diagrams.



2-4. Device List

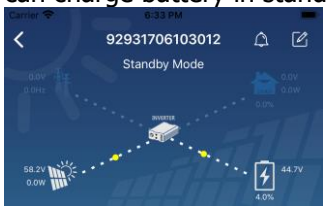
In Device List page, you can pull down to refresh the device information and then tap any device you want to check up for its real-time status and related information as well as to change parameter settings. Please refer to the parameter setting list.



Device Mode

On the top of screen, there is a dynamic power flow chart to show live operation. It contains five icons to present PV power, inverter, load, utility and battery. Based on your inverter model status, there will be 【Standby Mode】, 【Line Mode】, 【Battery Mode】.

【Standby Mode】 Inverter will not power the load until "ON" switch is pressed. Qualified utility or PV source can charge battery in standby mode.

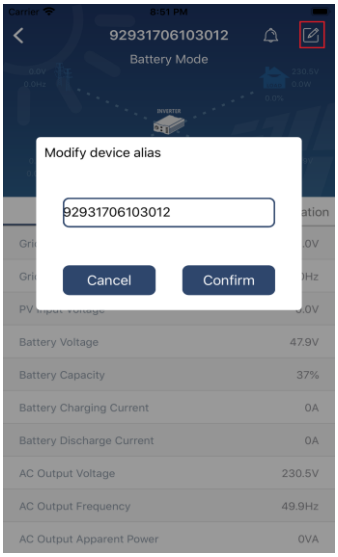


【Line Mode】 Inverter will power the load from the utility with or without PV charging. Qualified utility or PV source can charge battery.

【**Battery Mode**】Inverter will power the load from the batter with or without PV charging. Only PV source can charge battery.

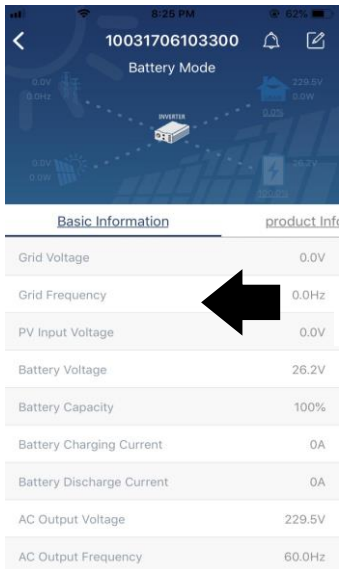
Device Alarm and Name Modification

In this page, tap the  icon on the top right corner to enter the device alarm page. Then, you can review alarm history and detailed information. Tap the  icon on the top right corner, a blank input box will pop out. Then, you can edit the name for your device and tap "Confirm" to complete name modification.



Device Information Data

Users can check up 【Basic Information】,【Product Information】,【Rated information】,【History】, and 【Wi-Fi Module Information】by swiping left.



Swipe left

【**Basic Information**】displays basic information of the inverter, including AC voltage, AC frequency, PV input voltage, Battery voltage, Battery capacity, Charging current, Output voltage, Output frequency, Output apparent power, Output active power and Load percent. Please slide up to see more basic information.

【**Production Information**】displays Model type (Inverter type), Main CPU version, secondary CPU version and WiFi version.

【**Rated Information**】displays information of Nominal AC voltage, Nominal AC current, Rated battery voltage, Nominal output voltage, Nominal output frequency, Nominal output current, Nominal output apparent power and Nominal output active power. Please slide up to see more rated information.

【**History**】displays the record of unit information and setting timely.

【**Wi-Fi Module Information**】displays of Wi-Fi Module PN, status and firmware version.

Parameter Setting

This page is to activate some features and set up parameters for inverters. Please be noted that the listing in "Parameter Setting" page in below diagram may differ from the models of monitored inverter. Here will briefly highlight some of it,【Output Setting】,【Battery Parameter Setting】,【Enable/ Disable items】,【Restore to the defaults】to illustrate.

There are three ways to modify setting and they vary according to each parameter.

a) Listing options to change values by tapping one of it.

b) Activate/Shut down functions by clicking "Enable" or "Disable" button.

c) Changing values by clicking arrows or entering the numbers directly in the column.

Each function setting is saved by clicking "Set" button.

Please refer to below parameter setting list for an overall description and be noted that the available parameters may vary depending on different models. Please always see the original product manual for detailed setting instructions.

Parameter setting list:

Item		Description
Output setting	Output source priority	To configure load power source priority.
	AC input range	When selecting "UPS", it's allowed to connect personal computer. Please check product manual for details.
		When selecting "Appliance", it's allowed to connect home appliances.
	Output voltage	To set output voltage.
	Output frequency	To set output frequency.

Item		Description
Battery parameter setting	Battery type:	To set connected battery type.
	Battery cut-off voltage/SOC	To set the battery stop discharging voltage or SOC. Please see product manual for the recommended voltage or SOC range based on connected battery type.
	Back to grid voltage/SOC	When "SBU" or "SOL" is set as output source priority and battery voltage is lower than this setting voltage or SOC, unit will transfer to line mode and the grid will provide power to load.
	Back to discharge voltage/SOC	When "SBU" or "SOL" is set as output source priority and battery voltage is higher than this setting voltage or SOC, battery will be allowed to discharge.
	Charger source priority:	To configure charger source priority.
	Max. charging current	It's to set up battery charging parameters. The selectable values in different inverter model may vary. Please see product manual for the details.
	Max. AC charging current:	
	Float charging voltage	
	Bulk charging voltage	It's to set up battery charging parameters. The selectable values in different inverter model may vary. Please see product manual for the details.
	Battery equalization	Enable or disable battery equalization function.
	Real-time Activate Battery Equalization	It's real-time action to activate battery equalization.
	Equalized Time Out	To set up the duration time for battery equalization.
	Equalized Time	To set up the extended time to continue battery equalization.
	Equalization Period	To set up the frequency for battery equalization.
	Equalization Voltage	To set up the battery equalization voltage.
Enable/Disable Functions	LCD Auto-return to Main screen	If enable, LCD screen will return to its main screen after one minute automatically.
	Fault Code Record	If enabled, fault code will be recorded in the inverter when any fault happens.
	Backlight	If disabled, LCD backlight will be off when panel button is not operated for 1 minute.
	Bypass Function	If enabled, unit will transfer to line mode when overload happened in battery mode.
	Beeps while primary source interrupt	If enabled, buzzer will alarm when primary source is abnormal.
	Over Temperature Auto Restart	If disabled, the unit won't be restarted after over-temperature fault is solved.
	Overload Auto Restart	If disabled, the unit won't be restarted after overload occurs.
	Buzzer	If disabled, buzzer won't be on when alarm/fault occurred.
Restore to the default	This function is to restore all settings back to default settings.	