DYNESS



ARM24V-40A USER MANUAL

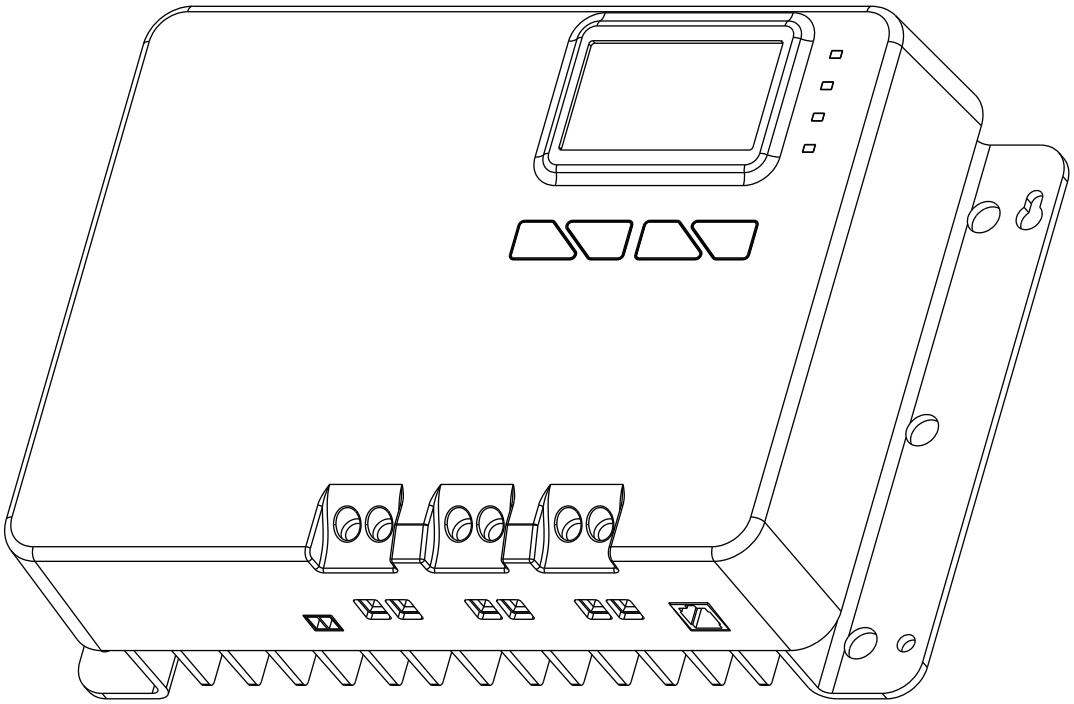
Battery System
24V/40A

File version-20250425-V1-EN Information might be subject to change without notice during product improving.

MPPT Solar Charge Controller

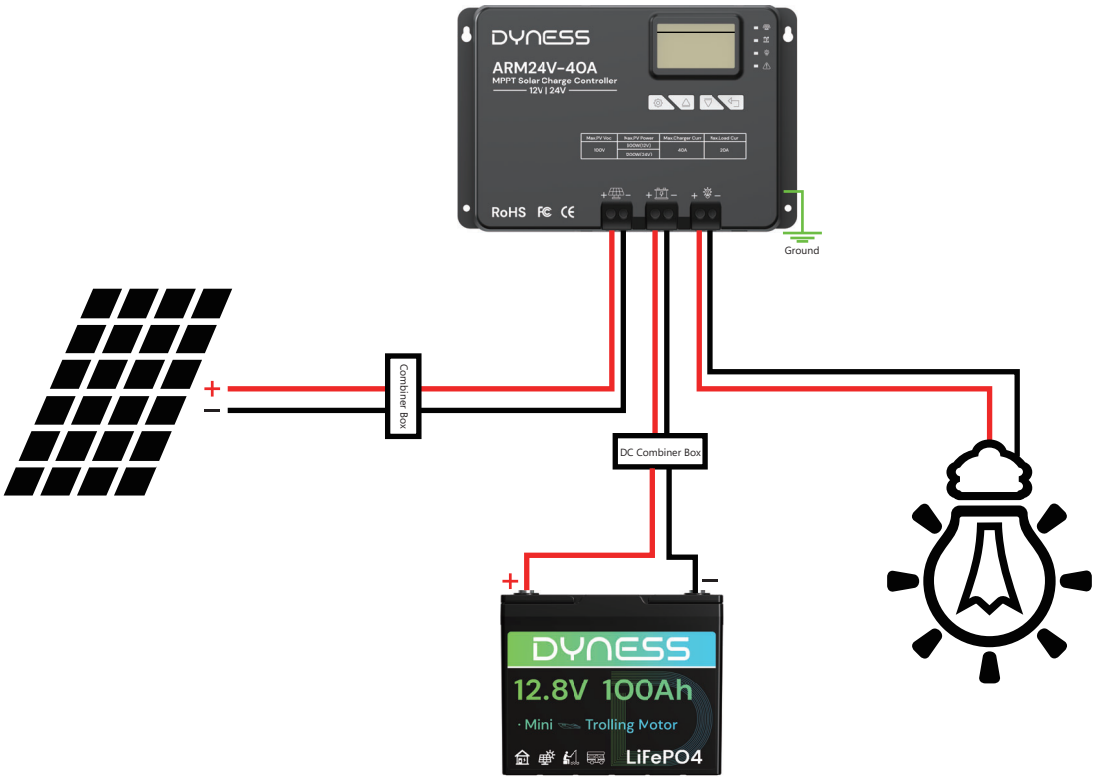
Negative Grounded - APP Operation

User Manual



Download APP on Apple Store / Google Play Store

*We may modify these specifications without prior notice.



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Quick Guide of APP Operation

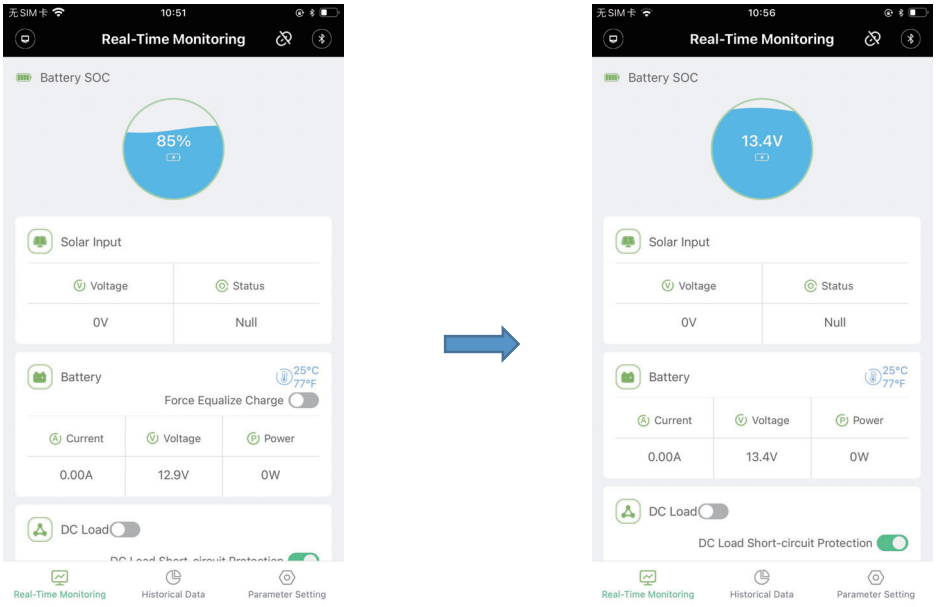
Step 1

* Start the APP, and connect to the target Bluetooth device ID.
* View the Bluetooth device information in “Device Information” page.



Step 2

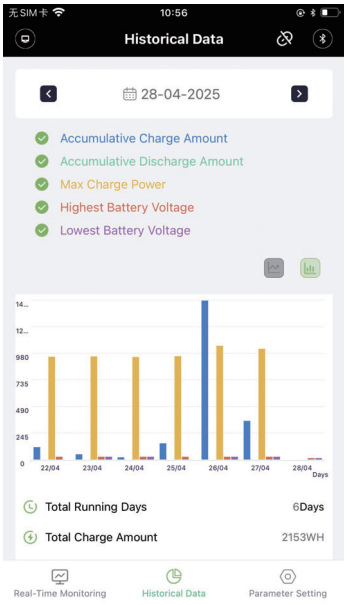
* View and monitor the system working status in “Real-time Monitoring” page.
* Set “Force Equalize Charge”, “DC Load Switch”, “DC Load Short-circuit Protection” accordingly.



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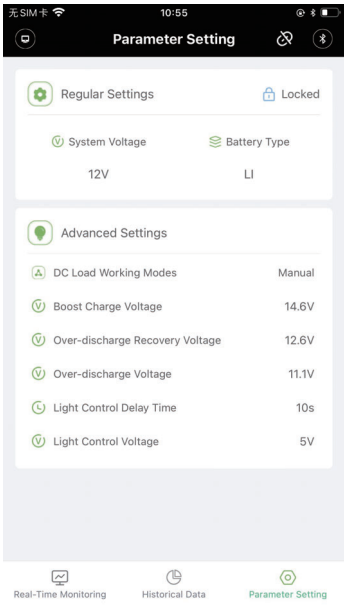
Step 3

* View the historical data in “Historical Data” page, in curve graph or histogram.
* View the detailed data recorded in the diagram.



Step 4

* View the battery type setting.
* Set the battery type and charge voltages accordingly



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1.Warnings and Toolslc on Chart

Icons	Name	Description
	High Voltage	High Voltage device. Installation should be performed by an electrician.
	High Tem Perature	This device will produce heat. Mount device away from other items.
	Environmental Hazard	Electronic Equipment. Do not put in landfill.
	WIrene Cutter	A wire cutter is needed for cutting and stripping prior wires to connect.
	Multi-meter	A multi-meter is needed for testing equipment and verifying polarity of cables.
	Anti-static Glove	Anti-static gloves are recommended to prevent controller damage caused by static electricity.
	Electrical Tape	Electrical tape is recommended to safely insulate spliced or bare wires.
	Screwd river	A common size screwdriver is needed to attach wires to the controller.

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2. Safety Tips

· It is very important to review this manual thoroughly before attempting installation.

· Beware of any nearby electrical equipment that may interfere with installing this device. And please don't plug in any AC source to this DC-DC product, or it may cause a fire or burn to the device.

· Lithium batteries are not allowed to be reverse connected, for risks might happen in battery activation if the wiring connection reversed.

(Refer to wiring diagram on the home page)

· Don't plug in power inverter directly to the controller DC load output, or it might cause short-circuit in this device or even fire due to over-current.

· Always keep children away from this device.

· Please don't keep the battery side open for long time, while the PV input keeps plugging in, or it may cause a screen failure in this device.

· Solar panels can generate high voltages and currents, make sure your solar panels are completely covered from sunlight during installation. It is recommended that installation be performed by a qualified electrician.

· To avoid damage to the battery or controller, use proper fuses or DC breakers in wiring. Please do not hesitate to contact the professions if you need help with fuse and DC breaker sizing.

· Connecting wires to this device can generate sparks, please wear proper insulation gear while installing this device.

· This device is common negative designed, please wiring negative grounded if grounding job is required.

Solar Input Current	5A	10A	20A	30A	40A
Wire Cross Section Area (mm^2)	1.5	2.5	5	8	10
Wire AWG	15	13	10	8	7

* We suggest no more than 5A's current for each square millimeter's wire core, e.g., for current of 10A, at least you should use 2mm2's wire.

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3. Product Features

Thankyou for choosing our products. This MPPT solar charge controller is a device for solar charge regulation and direct current output load control. This device is mainly used in small and medium sized off-grid solar power systems.

These MPPT charge controllers have features as follows:

· By continuously checking solar panel power output changes, the controllers employ multiple MPPT charge algorithms in combination to boost charging efficiency in different weather and temperature conditions.

· Built-in buffer, allows max 25% exceeding rated power input.

· Charging modes available for most common deep-cycle battery types in the market, including AGM (sealed lead acid batteries), GEL, Flooded, and Lithium.

· We have built-in BT communication module in this controller and we provide APP ChargePro for mobile phone monitoring and operation. You can search "ChargePro" and download the APP at iOS APP Store and Google Play Store.

· Still allows external BT communication module connection for APP operation, linking through the RJ12 port in the controller, in case the controller might be placed inside a metal closure with bad BT signal transmission condition for inbuilt BT module, or under similar situations.

· Auto recognition of 12V/24V battery system voltage by M2420N/M2430N/M2440N models. Lithium battery excluded from this feature.

· Supports recording of system running data including power generated and power utilized for up to 300 days, compatible with monitoring App through iOS and Android.

· Provides multiple load control mode options for light based, time based and manually adjusted scenarios. Low no-load loss.

• Industrial grade design with full range of electronic protections, such as battery over-charge, battery over-discharge, PV over-voltage, controller over-heating, DC load short-circuit, DC load over-load, as well as reverse polarity protection for PV and battery sides, and etc.

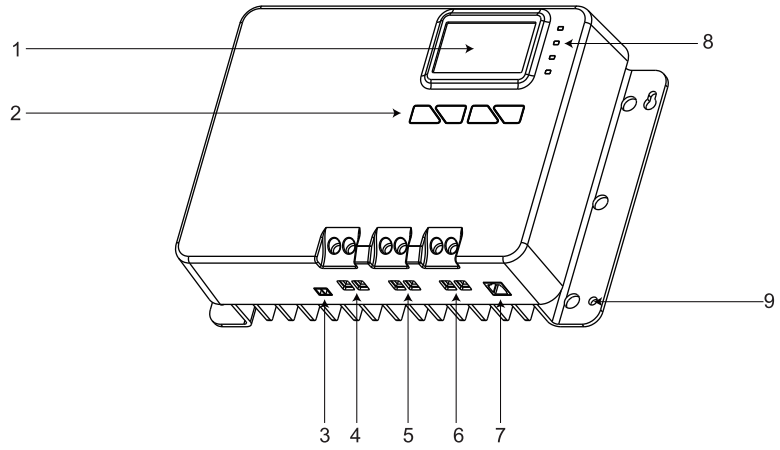
• Supports RS485 communication with Modbus protocol (RJ12).

• Supports parallel charge function of dual units by linking each other with the parallel charge cable (optional accessory, not in the standard package list).

• Supports remote display screen for monitoring and operation, linking through RJ12 port in the controller. (optional accessory, not in the standard package list).

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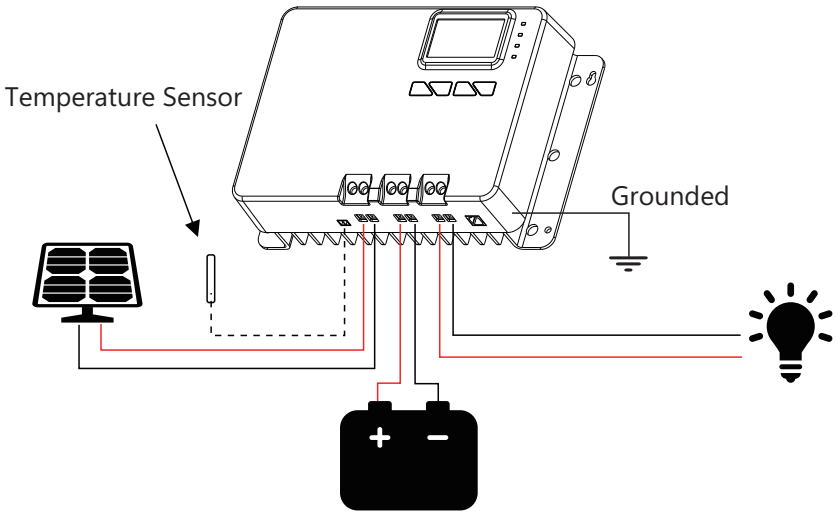
4. Device Diagram



#	Description	#	Description
1	LCD Display Screen	6	DC Load Terminals
2	Function Key ([SET], [UP], [DOWN], [ESC])	7	RS485 Communication Port (RJ12)
3	External Temperature Sensor Terminal	8	LED Indicator (PV, BAT, LOAD, FAULT)
4	Solar Terminals	9	Installation Mounting Holes
5	Battery Terminals		

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5. Wire Connection Sequences



During installation of your MPPT controller, please follow the order of connection below :

· Connect the positive battery wire followed by the negative battery wire.

· Make sure your solar panels are fully covered to prevent electrical shock.

· Connect the positive solar array output wire followed by the negative solar array output wire.

· Make sure your solar panels are fully covered to prevent electrical shock.

· Connect the external temperature sensor to its terminal shown above.

· Download APP ChargePro and turn on the BT function in the mobile phone. Testing the APP function with the controller.

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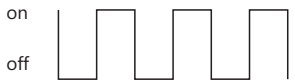
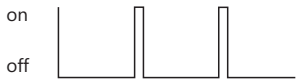
6. LED Light Signal Interpretation Chart

LED Name	LED Display	Signal Indication
PV	Off	Solar Input Not Charging *PV LED is generally off during nighttime.
	Double Flash	Solar Input Detected/Solar Over Voltage
	Single Flash	Solar Input Reverse Polarity
	Steady On	MPPT Charge MOde
	Slow Flash	In Equalize/Boost/Float Charge
BATTERY	Single Flash	Battery Input Reverse Polarity
	Fast Flash	Battery Over Voltage
	Slow Flash	Battery Over Discharged
	Steady On	Battery On
LOAD	Off	Load Off
	Fast Flash	DC Load Short Circuit/ Overload
	Steady On	DC Load On
FAULT	Off	No Errors
	Steady On	System Error – Check Error Code

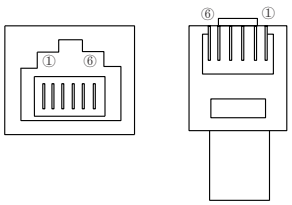
*Check the Fault light to spot if a system error may be present.

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7. LED Flash Rhythm Chart

Flash Status	Indication	Description
Steady On		LED light on.
Off		LED light off.
Fast Flash		LED light blinks at frequency of 2Hz (twice every second).
Slow Flash		LED light blinks at frequency of 0.5Hz (once every two seconds).
Single Flash		LED light blinks for 0.1 second after every 2 seconds.
Double Flash		LED light blinks for 0.1 second twice after every 4 seconds.

8. RS485 Connection Diagram (RJ12)

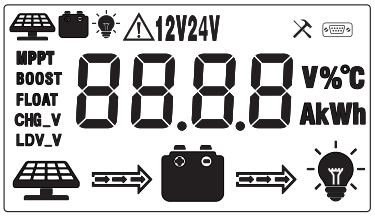


RS485 PIN (RJ12)					
PIN-1	PIN-2	PIN-3	PIN-4	PIN-5	PIN-6
VDD	VDD	GND	GND	D-	D+

*Support 3.3V, 20mA

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9. LCD Display Interface Overview



Display Section	Display Layout
Charge and Load Status	
Charge & Set Mode	
Parameter	
Unit	V%℃ AkWh
Active Functions	

10. LCD Status Information

Status Icon	Indication	Status	Description
	Solar Charge Indication	Flowing	Solar Power Charging Battery
		Off	Solar Power Not Charging Battery
	DC Load Indication	Flowing	DC Load Drawing Power
		Off	DC Load Off
MPPT	Charge Mode	Steady On	MPPT Charge Mode
BOOST			Boost Charge Mode
FLOAT			Float Charge Mode

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Status Icon	Indication	Status	Description
CHG_V	Voltage Setting (Only for LI and USE)	On	Setting Charge Voltage
		Off	Charge Voltage Has Been Set
LDV_V	Over Discharge Volt Settings (Only for LI and USE)	On	Setting Discharge Voltage
		Off	Discharge Voltage Has Been Set
12V24V	System Volt	One of 12V/24V ON	Current System Voltage
	Warning	On	System failure occur
		Off	No System failure
	Setting	On	Setting Mode
		Off	View Mode
	Communication	On	In the Modbus communication
		Off	No communication
	Solar Icon	Steady On	Daylight Detected
		Off	No Daylight Detected
		Fast Flash	Solar System Over Voltage
	Battery Icon	Steady On	Battery Connected and Functional
		Off	No Battery Connection
		Fast Flash	Over Voltage
		Slow Flash	Battery Over-Discharged or Reverse Connection
	Load Status	ON	Load On
		OFF	Load Off
		Fast Flash	DC Load Short Circuitt
		Slow Flash	Over Load

* There is no charge mode displayed in the controller screen when it's in equalize charge mode.

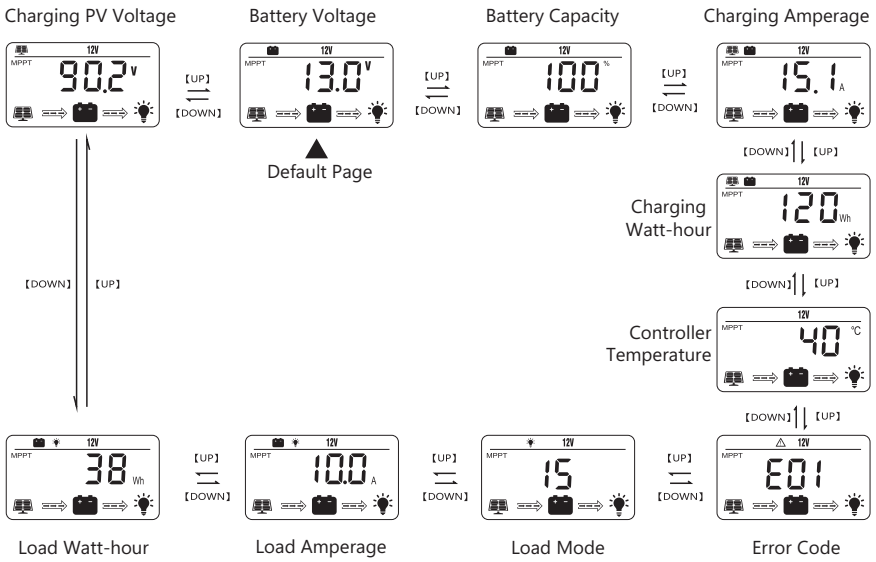
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11. Key Functionality Chart

Function Key	System Mode	Input	Input Function
	View Mode	Long Press	Enter SET mode
	View Mode	Short Press	View Previous Page
	View Mode	Short Press	View Next Page
	View Mode	Short Press	DC Load On/Off (Manual Control Program Only)
	SET Mode	Long Press	Save Data & Exit SET Mode
		Short Press	Next Setting Item
	SET Mode	Short Press	Increase Parameter Value
	SET Mode	Short Press	Decrease Parameter Value
	SET Mode	Short Press	Exit SET Mode Without Saving

12. LCD Display Rules & Cycles

LCD Screen Display Cycle



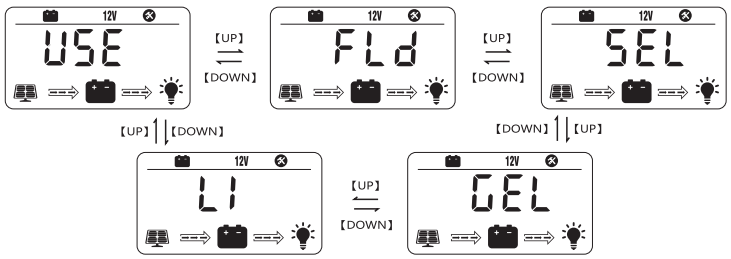
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The battery voltage view will be displayed by default. Use the up and down arrow keys to cycle through different views. The battery voltage view will resume upon 30seconds of inactivity. The error code view will be displayed when an error is detected.The backlight in the screen will be on for 20 seconds with any button operation.

13. Key Functionality Chart

Setting Battery Mode

Enter SET mode by long pressing the SET key in any view page other than Load Mode. Use the up and down arrow keys to select battery mode, then long press SET key to save.



Abbreviations	Battery Types	Description
FLD	Flooded Battery	Auto-recognition with default parameters set for each type of batteries.
SEL	Sealed/AGM Battery	
GEL	Gel Battery	
LI	Lithium Battery	Some parameters can be customized.
USE	Advanced User Mode	Most parameters can be customized.

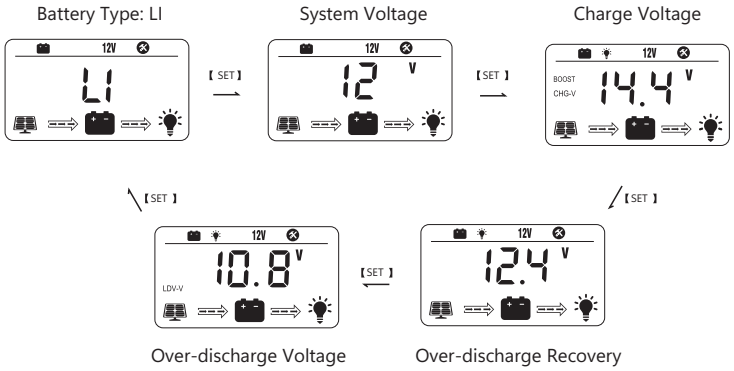
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Advanced Battery Settings

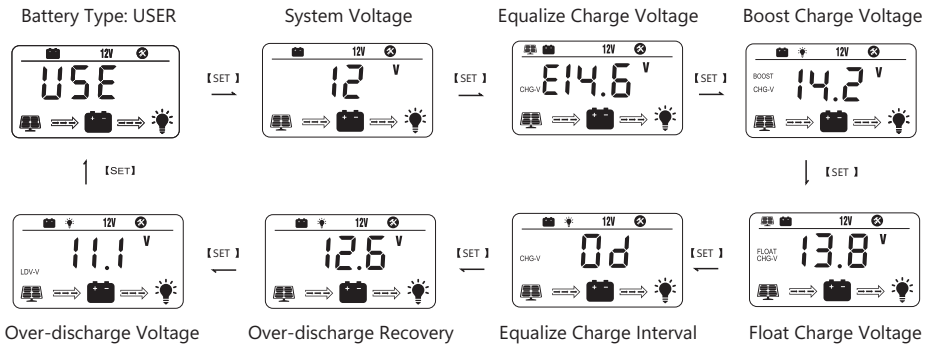
In Lithium or User mode, short press the SET key again to cycle through each parameter view.

Use the up and down arrow key to adjust parameter value, then long press SET key to save.

For Battery Type: LI



For Battery Type: USE

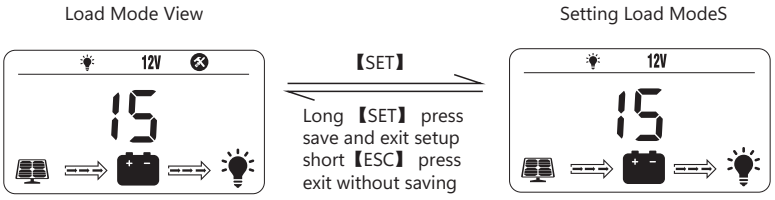


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Load Mode Settings

Enter Load SET Mode by long pressing the SET key in Load Mode view only

Use the arrow key to cycle through load modes before long pressing SET to save and exit.
Short pressing ESC will exit without saving.



Mode	Definition	Description
0	Daylight Auto Control	DC load turns on when no daylight is detected, and off when daylight is detected.
1~14	Daylight On/Timer Off	DC load turns on when no daylight is detected. DC load turns off according to timer.
15	Manual Mode	DC load turns on/off by pressing the Return key.
16	Testing Mode	DC load turns on and off in a quick succession.
17	Always On	DC load stays on.

*For load mode 1-14, the number means the load lasting time, e.g.," 1"means the load would turn off in 1 hour after turning on,"8"means off in 8 hours. Please notice that the sunlight would turn off the load for all load modes 1-14, even the timer hasn't run out yet.

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14. Error Code Chart

Code	Error	Description & Quick Troubleshootescription
E00	No Error	No action needed.
E01	Battery Over discharged	Battery voltage is too low. DC load will be turned off until battery re-charges to recovery voltage.
E02	Battery Over-voltage	Battery voltage has exceeded controller limit. Check battery bank voltage for compatibility with controller.
E04	Load Short Circuit	DC load short circuit.
E05	Load Overload	DC load power draw exceeds controller capability. Reduce load size or upgrade to a higher load capacity controller.
E06	Overheating	Controller exceeds ambient temperature limit. Ensure the controller is placed in a well-ventilated cool, dry place.
E07	Environmental Overtemperature	The environment temperature sampled by external temperature probe is too high.
E10	Solar Over-voltage	Solar array voltage exceeds controller rated input voltage. Decrease the voltage of solar panels connected to the controller.
E13	Solar Reverse Polarity	Solar array input wires connected with reverse polarity. Disconnect and re-connect with correct wire polarity.
E14	Battery Reverse Polarity	Battery connection wires connected with reverse polarity.Disconnect and re-connect with correct wire polarity.
E15	Under Low Temperature charging Protec-tion Status	Increase the ambient temperature above 5°C/41°F

*Please contact professions for technical support on additional troubleshooting.

*Controller M4860N would not display error code "E 13" in the screen.

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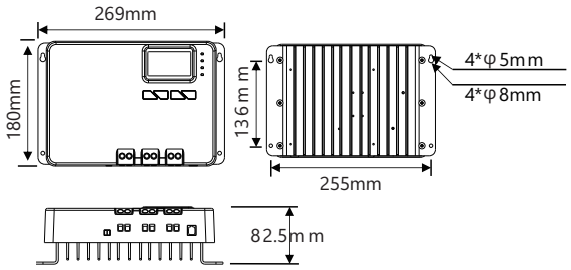
15. Controller Specification

The variable “n” is adopted as a multiplying factor when calculating parameter voltages, the rule for “n” is listed as: if battery system voltage is 12V, n=1; 24V, n=2.
For example, the equalize charge voltage for a 12V FLD (Flooded) battery bank is 14.8V*1=14.8V.
The equalizing charge voltage for a 24V FLD (Flooded) battery bank is 14.8V*2=29.6V.

Parameter	Value				
Model No.	ARM24V-40A				
System Wiring Grounded	Negative Grounded				
Battery System Voltage	12V/24V Auto (FLD/GEL/SEL/USE) Manual (LI/USE)				
No-load Loss	12ma(12V),10ma(24V)				
Max Solar Input Voltage	<100Voc				
Rated Solar Charge Current	20A				
Max Solar Input Power	600W/ 12V 1200W/ 24V				
Light Control Voltage	5V*n				
Light Control Delay Time	10s				
Max Load Output Current	20A				
Operating Temperature	-35ºC ~ +45ºC				
IP Protection	IP32				
Net Weight	2.0 kg				
Communication Port	RS485(RJ12)/ Inbuilt BT				
Operating Altitude	≤3000 meters				
Controller Dimension(mm)	269*180*82.5				
Parameter	**Battery Parametersattery**				
Battery Types	FLD	SEL	GEL(default)	USE(adjustable)	LI(adjustable)
Equalize Charge Voltage	14.8V*n	14.6V*n	--	Default	--
Boost Charge Voltage	14.6V*n	14.4V*n	14.2V*n	Default: GEL	Default: 14.4V*n
Float Charge Voltage	13.8V*n			Default: GEL	--
Boost Charge Recovery Voltage	13 2V*n			Default: GEL	--
Over-discharge Recovery Voltage	12.6V*n			Default: GEL	--
Over-discharge Voltage	11.1V*n			Default: GEL	Default: 10.8V*n
AutoTemperature Compensation	-3mV/2V/ºC			Default: GEL	--

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16. Product Dimension



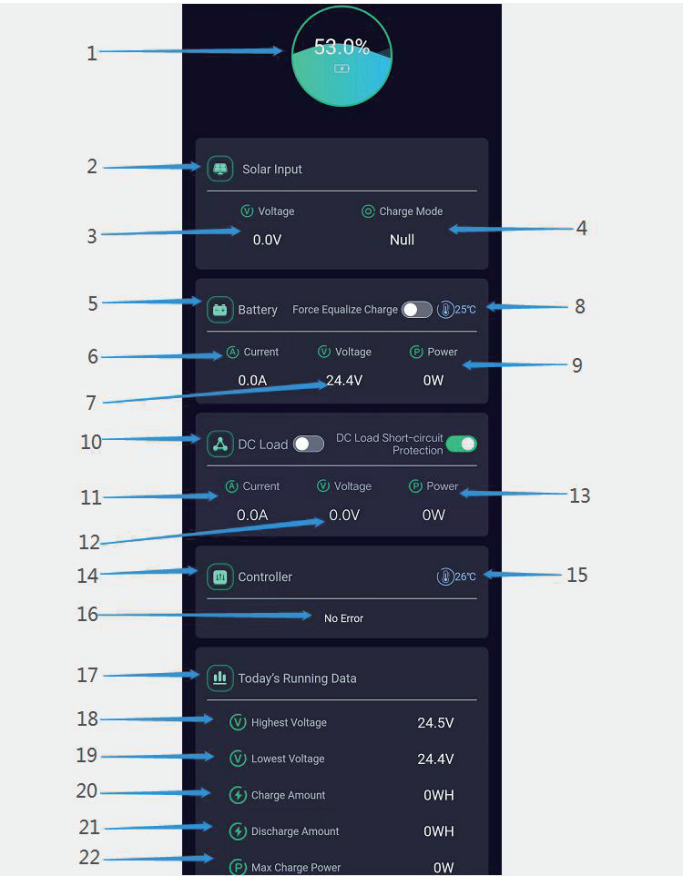
ARM24V-40A

Product Dimension: 269*180*82.5mm
Installation Area Dimension: 255*136mm
Installation Hole Size: φ5mm& φ8mm
Connection Socket Size: 7.5*10mm

17.APP Operation Instruction

Section 1: "Real-Time Monitoring" Page Overview & Instruction

1.1 "Real-Time Monitoring" Page Overview

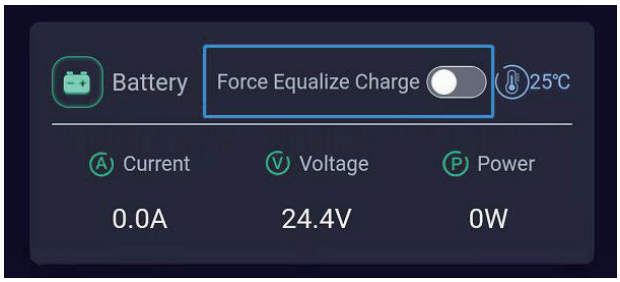


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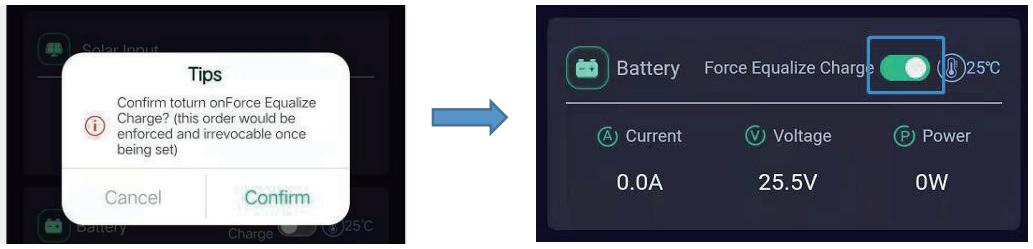
No.	Item	Description	Remark
1	Battery SOC Information	to display the present battery capacity	state of charge 0% - 100%
2	Solar Input Information	solar input information area	
3	PV Voltage	to display the present PV input voltage	
4	Charge Mode	to display the present PV charge mode	Null / MPPT / Boost / Float / Equalize
5	Battery Information	battery information area	
6	Battery Charge Current	to display the present battery charge current	it's not the PV input current
7	Battery Voltage	to display the present battery voltage	
8	Battery Temperature	to display the present battery temperature	only available when battery temperature sensor connected and attached to the battery, or view of 25℃ may stay on the screen.
9	Battery Charge Power	to display the present battery charge power	
10	DC Load Information	DC load information area	not available for controller with no DC load control function
11	DC Load Current	to display the present DC load current	
12	DC Load Voltage	to display the present DC load voltage	
13	DC Load Power	to display the present DC load power	
14	Controller Information	controller information area	
15	Controller Temperature	to display the present controller temperature	it's the temperature inside the controller indicated
16	Controller Error Info	to display the present controller error information	"battery over-discharge", "controller over-heating", etc, and please refer to the user manual for more information
17	Today's Running Data	to display system working status in the present day	status only for the present day
18	Highest Voltage	to display the highest battery voltage this day	value only for the present day
19	Lowest Voltage	to display the lowest battery voltage this day	value only for the present day
20	Charge Amount	to display the total charge amount this day	value only for the present day
21	Discharge Amount	to display the total discharge amount this day	value only for the present day
22	Max Charge Power	to display the max charge power this day	value only for the present day

1.2 Operations on "Real-Time Monitoring" Page

1.2.1 Force Equalize Charge Switch Function



In the Battery Information area, we may notice there is a switch (remains "off") for "Force Equalize Charge" use. To turn the switch "on" and click on "confirm" on the following dialog box, to active this function, and the controller would enforce one time of Equalize Charge for the battery after the latest Boost Charge process.



Please notice that once the order of "Force Equalize Charge" has been confirmed, it won't be allowed to cancel. And if you have confirmed it by mistake, and want it to be back, then please disconnect both PV and battery connections from the controller, and reconnect them again, meanwhile, at the APP side, also disconnect the Bluetooth device and reconnect to it, then you will find that switch is "off".

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Remarks & Tips on "Force Equalize Charge Switch":

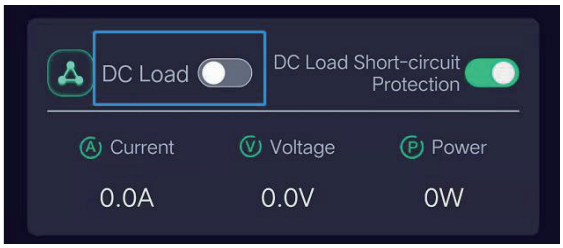
* The default settings of auto equalize charge interval in the controller is 30 days (one time in every 30 days), but once we disconnect the controller from the system, this "interval" would recount again from day 1. Therefore, in some cases, the battery might never be equalize charged at all, so it is very meaningful to have this "Force Equalize Charge" function available for user's option.

* Such function only available for battery types on "FLD"(flooded)/ "SEL"(sealed or AGM) / "USE" (user), and there is no switch icon displaying in Battery Information area when the battery type set on "GEL"(Gel) and "Li"(Lithium). Please notice that Equalize Charge would cause permanent damage to Gel and Lithium battery.

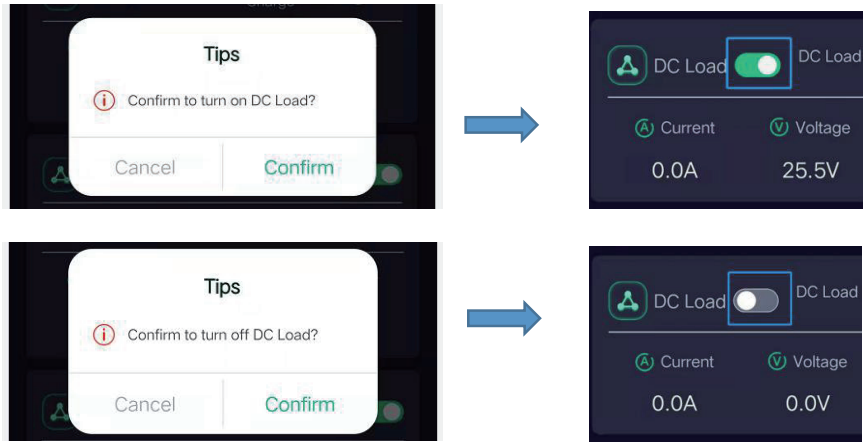
* Some models of our controller do not support this function, so you may not see that switch in Battery Information area. And for some of our older version controllers, this function may also not available for setting, though you can find that switch is in the screen (the switch may get back to "off" even if you can turn it "on" for a few seconds).

1.2.2 DC Load Switch Function

In the DC Load Information area, we may notice there are 2 switches, and the one on the left side is for turning "ON/OFF" the controller DC load manually.



You can click on the switch to turn on/off the load, and confirm the orders in the following dialog boxes:



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Please do notice that the DC Load Switch will be only displayed if your controller has DC load control function (some controllers have no DC load control, but only for solar charge use). At meanwhile, you have to keep your controller DC Load Mode on “Manual”, or this DC Load Switch will not be displayed as well, and we will have an instruction for this part in the “Parameter Settings” page.

Remarks & Tips on “DC Load Switch”:

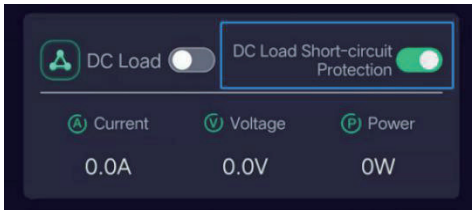
* This switch is only for DC Load on Manual mode, and you would not see it in the screen when the controller is on the other DC load modes, like “dusk to Dawn”, “Light Control + Timing”, “Debugging” and “Always On”. When the DC load appliance is actually ON in the other modes, you still would not see that switch in the screen.

* This switch would keep ON even if you have disconnected the DC load from the controller, and only one more click on switch in APP to turn it to OFF (you also can turn it off in the controller). We advise you to switch it to OFF manually, if you have turned off your DC load and may not use it in a quite time.

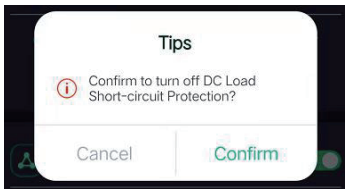
* This switch would turn OFF automatically, once the battery in the system have been over-discharged, or regarded as over-discharged by the controller, meanwhile the DC load output also would be cut.

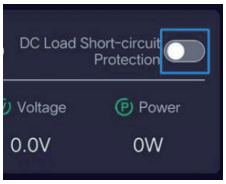
1.2.3 DC Load Short-circuit Protection Switch

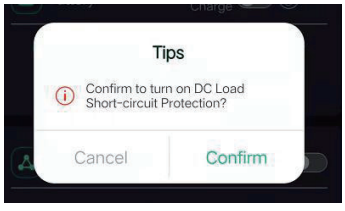
In the DC Load Information area, we may notice there are 2 switches, and the one on the right side is for turning “OFF/ON” the function of DC Load Short-circuit Protection.



The default setting for this switch is ON, and that means the DC load short-circuit protection in the controller is active presently, and any load current higher than the rated value would be cut by the system in some ways. You can click on the switch to turn off/on this protection, and confirm the orders in the following dialog boxes:









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DC load short-circuit protection is very important for solar charge controller. Once there is any short-circuit happened in the load side, the controller could cut the load output to limit the damages and protect the system. However, there are many DC load appliances would have huge current in the starting process, and such high current may trigger the DC load short-circuit protection and cut the DC load output, so the load actually would not be turning on at all. In order to start such DC load appliances with high starting current, we decide to add such switch here for user's option, to disable the protection temporarily, and allow the loads to be turning on.

Remarks & Tips on "DC Load Short-Circuit Protection Switch":

* The same as "DC Load Switch", you would not see this switch if your controller has no DC Load control function. However, you would see this switch as long as the controller has load control, no matter what DC Load mode it is in, and that's different from "DC Load Switch".

* In any ways, to turn off DC load short-circuit protection might be dangerous. If it is OFF, the DC load output would still keep on even if the load has been short-circuited at the meantime, and that might cause worse damage to all parts in the system. You may consider to turn the protection ON again, after such DC loads has been started successfully, but before the next start, you still ould have to switch it off again as well.

* Some DC loads may have special design, and we still could not turn them on even if we have turned OFF the protection.

* Don't turn off this protection if you can turn the DC load on with this switch ON. And please don't try to plug in DC load with higher current than rated value for the controller (while this switch is OFF), it would CAUSE FIRE to the controller!!!

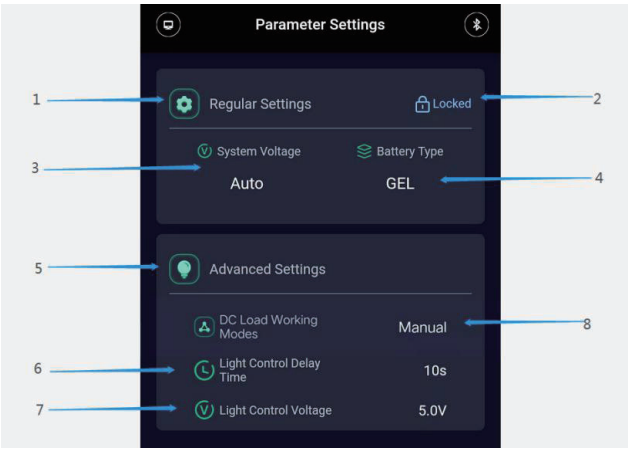
* The status of this protection would not be recovered even if you recover the controller back to default settings (5.1).

Section 2: "Parameter Settings" Page & Instruction

2.1 "Parameter Settings" Page Overview

2.1.1 GEL/FLD/SEL Battery Type Setting Page Overview (default: Li)

Settings for battery type "GEL" (gel battery), and the same are for "FLD" (flooded battery) and "SEL" (sealed or AGM battery). Basically, they are all Lead-Acid Battery, and we don't allow much parameters to be set for them.



No.	Item	Description	Remark
1	Regular Settings Information	for charge controller regular settings	for general settings
2	Setting Lock	to lock or unlock the settings page	to prevent wrong settings by mistake
3	Battery System Voltage	battery system voltage display & Settings	not adjustable for GEL/FLD/SEL
4	Battery Type Setting	battery type display & setting	to set battery type GEL/FLD/SEL/LI/USE
5	Advanced Settings Information	for charge controller advanced settings	for professions' settings only
6	Light Control Delay Time	for dusk to dawn function switch delay time	a delay time before "dusk to dawn" function enforcement, to prevent DC load turning on or off in a wrong time or wrong way.
7	Light Control Voltage	For dusk to dawn function switch	when the PV voltage drops to a lower value than that, the "dusk to dawn" function (DC load turning on) would be available; when the PV voltage exceeds to a higher value than that, the "dusk to dawn" function (DC load turning off) would be available.
8	DC Load Working Modes	to select DC load working modes	please refer to 4.2.3.1

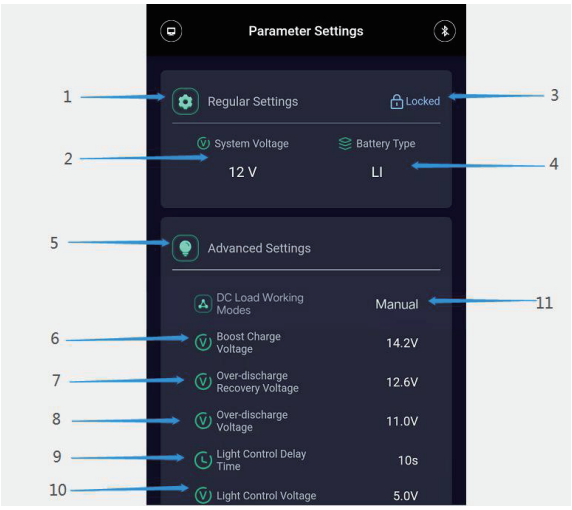
Remarks & Tips on "GEL/FLD/SEL" Battery Type Settings:

* "GEL/FLD/SEL" have already covered most of the Lead-Acid type battery, and please use the default settings for them.

* If you need to set different charge parameters for your Lead-Acid type battery other than the default settings, please advise the professions before you process any operation.

2.1.2 LI / Lithium Battery Type Setting Page Overview

Battery Type LI page is for lithium battery information display and settings. When you set the battery type on "LI", then you would see the content at below page.



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No.	Item	Description	Remark
1	Regular Settings Information	for charge controller regular settings	for general settings
2	Battery System Voltage	battery system voltage display & Settings	12V-24V-36V-48V manually setting for Lithium Battery
3	Setting Lock	to lock or unlock the settings page	to prevent wrong settings by mistake
4	Battery Type Setting	battery type display & setting	to set battery type GEL/FLD/SEL/LI/USE
5	Advanced Settings Information	for charge controller advanced settings	here is for Lithium Battery settings only
6	Boost Charge Voltage	to view and set over-charge or max charge voltage for lithium battery	Here is for over-charge or max charge voltage for lithium battery only
7	Over-discharge Recovery Voltage	to view and set over-discharge recovery voltage	
8	Over-discharge Voltage	to view and set over-discharge voltage	
9	Light Control Delay Time	for dusk to dawn function switch delay time	a delay time before “dusk to dawn” function enforcement, to prevent DC load turning on or off in a wrong time or wrong way.
10	Light Control Voltage	For dusk to dawn function switch	when the PV voltage drops to a lower value than that, the “dusk to dawn” function (DC load turning on) would be available; when the PV voltage exceeds to a higher value than that, the “dusk to awn” function (DC load turning off) would be available.
11	DC Load Working Modes	to select DC load working modes	please refer to 4.2.3.1

Remarks & Tips on “LI” Lithium Battery Type Settings:

* The default setting of “LI” Battery Type is for 12.8V Lithium Iron Phosphate (LiFePO4).

* We advise you to decrease a little of “Boost Charge Voltage” for lithium battery by 0.2V-0.4V. Like for 4S LiFePO4 battery, the required Charge Voltage in the specs is 3.65V * 4 = 14.6V, but it’s better to set 3.6V * 4 = 14.2V.

2.1.3 USE / User Battery Type Setting Page Overview

USE/User mode is for battery or solar professions to customize a set of battery charge parameters for some certain kinds of batteries for some certain usage that requires different settings from the other common type of batteries. When you select “USE” in Battery Type, you would enter the below page, with a full range of battery parameters available for setting.



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No.	Item	Description	Remark
1	Regular Settings Information	for charge controller regular settings	for general settings
2	Battery System Voltage	battery system voltage display & Settings	12V-24V-36V-48V manually setting for User Type battery
3	Setting Lock	to lock or unlock the settings page	to prevent wrong settings by mistake
4	Battery Type Setting	battery type display & setting	to set battery type GEL/FLD/SEL/LI/USE
5	Advanced Settings Information	for charge controller advanced settings	here is for User Battery Type settings only
6	Equalize Charge Voltage	to view and set equalize charge voltage	
7	Boost Charge Voltage	to view and set boost charge voltage	
8	Float Charge Voltage	to view and set float charge voltage	
9	Boost Charge Recovery Voltage	to view and set boost charge recovery voltage	
10	Over-discharge Recovery Voltage	to view and set over-discharge recovery voltage	
11	Over-discharge Voltage	to view and set over-discharge voltage	
12	Equalize Charge Time	to view and set equalize charge time	
13	Boost Charge Time	to view and set boost charge time	Boost Charge Time
14	Light Control Delay Time	for dusk to dawn function switch delay time	a delay time before “dusk to dawn” function enforcement, to prevent DC load turning on or off in a wrong time or wrong way.
15	Light Control Voltage	for dusk to dawn function switch	when the PV voltage drops to a lower value than that, the “dusk to dawn” function (DC load turning on) would be available; when the PV voltage exceeds to a higher value than that, the “dusk to dawn” function (DC load turning off) would be available.
16	Temperature Compensation	for battery maintenance in high and low temperature	
17	Equalize Charge Interval	to view and set equalize charge interval in days	
18	DC Load Working Modes	to select DC load working modes	please refer to 4.2.3.1

Remarks & Tips on USE / User Battery Type Settings

* Only professions are allowed to process advanced operation in Voltage & Time Settings for USE Type of battery.

* If you have done any settings under USE battery type by mistake, it’s better to recover it to the factory settings, and then re-set it again.

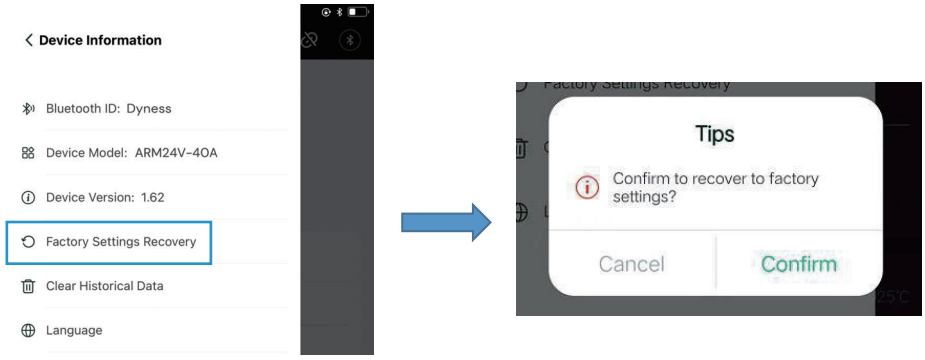
Section 3: Other Operations

3.1 Factory Settings Recovery

In the “Device Information” page, we will see a function area of “Factory Settings Recovery”, where we can set the controller back to the default factory settings.

Usually when you have realized that you might have done some wrong settings in the controller, or found the controller working in an abnormal way, but have no idea how and why, then we can operate to recover to the factory settings, and do more operations under profession’s advises.

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To click and confirm on the recovery order, and the relevant controller would get back to the factory settings immediately, but please notice that you may need to wait for some time to find the recovery default settings in the APP (for some controllers).

Remarks & Tips on "Factory Settings Recovery"

* Recovery to the factory settings would erase your previous settings on the controller, and that is unrecoverable.

* Recovery to the factory settings would not change the current status of "DC Load Short-circuit Protection".

* If you are not sure what would happen for such operation, please try to inquire the professions.

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FCC WARNING

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.
-- Increase the separation between the equipment and receiver.
-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-- Consult the dealer or an experienced radio/TV technician for help.

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum 20cm distance between the radiator and your body: Use only the supplied antenna.

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DYNESS

Address: No. 511 Chenzhuang West Road, Sanshui Street,
Jiangyan District, Taizhou City
Email: dynesscare@dyness-tech.com
Tel: +86 400 666 0655

Official Website

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