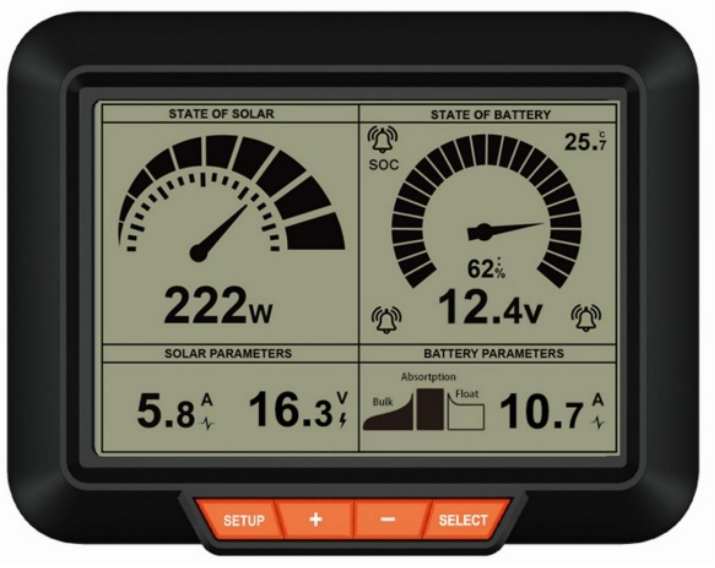
ALLTO SOLAR AS-RM-C01 Remote LCD Monitor User Manual

Allto Solar

Remote LCD Display
User Manual



Remote LCD Monitor
AS-RM-C01

Contents

AS-RM-C01 Remote LCD Monitor

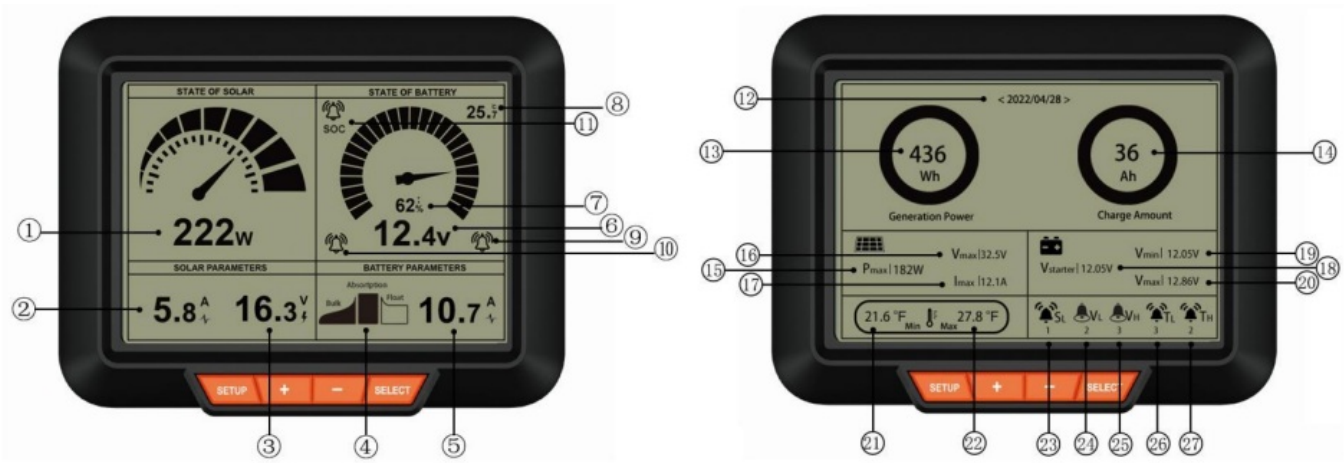
Please read all of the installation instructions carefully before installing the product. Improper installation will void manufacturer's warranty. The installation instructions are written as guidelines to assist in installing the system. Please contact us with the email if you are not comfortable installing the product. Prior to using and installing the remote LCD display, please read the safety information provided in this user manual. Be sure to use the product as outlined in this user manual.
Altercation or modifications carried out without appropriate authorization may invalidate the user's right to operate the equipment.

Introduction

The MPPT Controller display is a dedicated display for the ALLTO SOLAR 20A 30A 40A 50A 60A MPPT solar charge controller range. It can be used to read out the live and historic solar panel and battery data and it can be used to configure solar panel and battery settings.
Examples of live and historic monitoring:

- PV power, yield, voltage and current.
- Battery voltage, current and charge stage, temp.
- Low/high volt alarm, temp alarm and soc alarm
- Charging stages, boost charger current
- 60-day historical values
- Cumulative historic values over the live of the solar panel and battery

Overview



1. Solar Panel Output	10. High Battery Voltage Alarm	19 Min battery voltage
2. Solar Panel Current	11. Low SOC Alarm	20 Max battery voltage
3. Solar Panel Voltage	12. Date	21. Min battery temperature
4.Charging Stage	13. Cumulative generation pow er in Wh	22. Max battery temperature
5. Boost Charge Current	14. Cumulative charge power in Ah	23. Cumulative low soc alarm
6. Battery Voltage	15. Max solar panel output	24. Cumulative low battery voltage ala rm
7. Stage of Charge- SOC	16. Max solar panel voltage	25. Cumulative high battery voltage al arm
8. Battery Temperature	17. Max solar panel current is	26.Cumulative low temperature alarm
9. Low Battery Voltage Alarm	18.Starter battery voltage	27. Cumulative high temperature alar m

2.1 SOC-stage of charge

The state of charge (SOC) denotes the capacity that is currently available as a function of rough rated capacity and rate of charging process . The value of the SOC varies between 0% and 100%.

2.1.1 SOC(state of charge)

If the SOC is 100%, then the battery is said to has full charge, whereas a SOC of 0% indicates that the battery has zero charge. The value is calculated based on battery type and charging stages. For lead-acid battery, the initial bulk charging stage delivers the maximum allowable current into the battery to bring it up to a state of charge of approximately to 90%. During bulk charging stage, the battery's voltage increases to about 14.4 volts for a nominal 12-volt battery.

During Absorption Charging stage, constant-voltage regulation is applied but the current is reduced as the battery approach 90-98% state of charge. Float charging, sometimes referred to as "trickle" charging occurs after Absorption Charging, bring the battery to above 98% state of charge. See Image-A.

2.1.2 SOC (state of capacity)

If the SOC is 100%, then the battery is said to be fully charged, whereas a SOC of 0% indicates that the battery is completely discharged. The value is calculated based on the current battery voltage, provided full battery voltage and zero battery voltage in Section 4.2. Typically, when lead-acid battery has a full charge and charging is cut off, the battery voltage will drop off and finally reach to 12.8V-13.2V(depending on battery age). When battery is completed discharged, the voltage is 10.8V, see Image-B.

Important Note: When battery is under solar panel charging, the stage of charge value will be displayed in priority; When battery is not under solar charging, the stage of capacity value will be displayed.

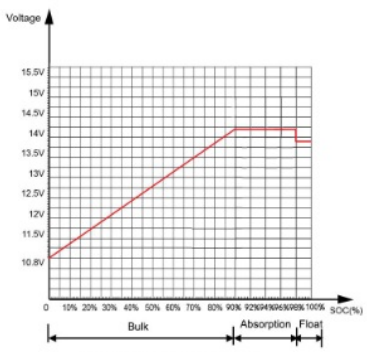


Image-A State of Charge

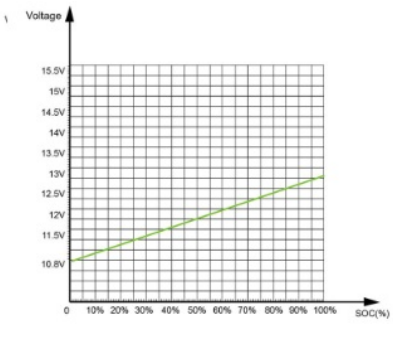


Image-B Sate of Capacity

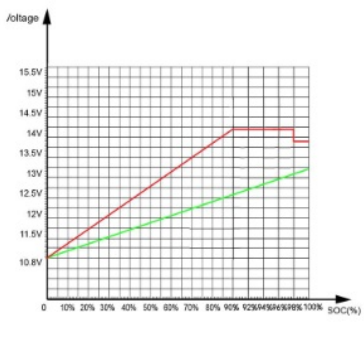
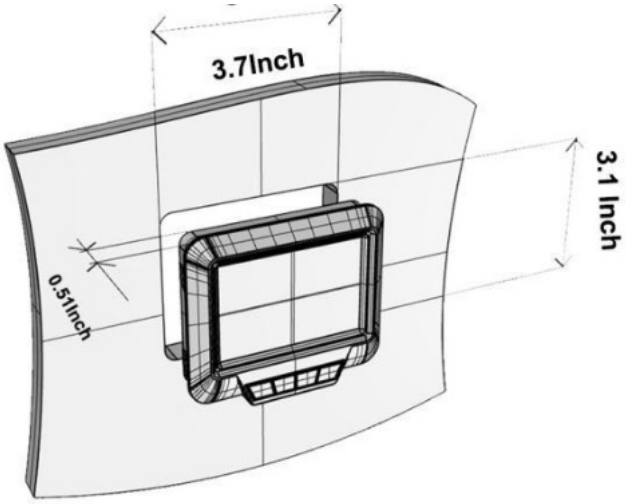


Image-A+B

Installation

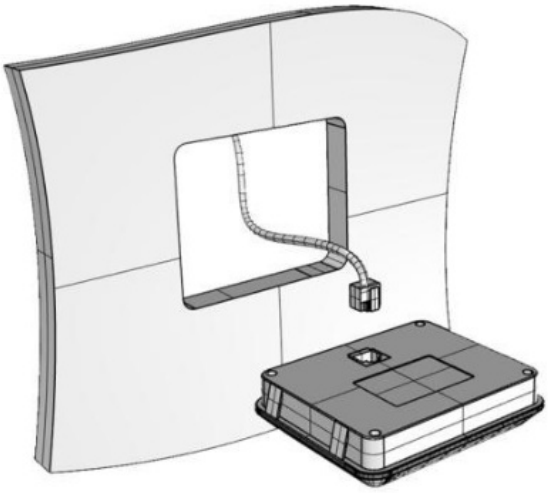
STEP 1 – Drill

Drill a hole in a mounting substrate as indicated in below figure..



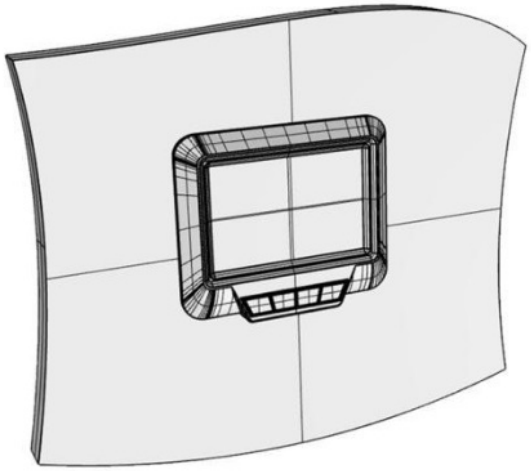
STEP 2 – Wiring

Let the cable pass thru the hole and wire to the port on back of display



STEP 3 – Install

Attach the display outer frame to the hole



STEP 4 – Assemble

Connect the cable to RS232 port in charge controller,

Operation

4.1 Using the menu

Four buttons control the display monitor, the function of the buttons depends on which mode the display is in.

Button	Function		
	In setting mode	In main screen mode	In history data mode
SETUP	-Press and hold for 3 seconds t o switch to main screen mode. -Short press to store the edited value and quit. -Short press to r eturn to selected description of parameter. -Short press to stop scrolling un derline and enter selected value editing. -Short press to confirm current value and quit editing.	Press and hold for 3 seconds t o switch to setting mode.	Press and hold for 3 se conds to switch to main screen mode.
SELECT			–
SETUP/SELECT		Press and hold for 3 seconds t o switch to history data mode.	
+	When not editing, press to mov e up the next parameter	Increase backlight intensity	Move forward date
	When editing, press or hold to i ncrement the value of selected digit.		
–	When not editing, press to mov e down the previous parameter	Decrease backlight intensity	Move downward date
	When editing, press or hold to d ecrement the value of selected digit.		

***Note: 1. Any selected value can be texted only when the underline stop flashing.
2. The display will become sleep (decrease backlight intensity to 1) when no action is detected in main screen display mode for 10 seconds, press any button to restore backlight.

4.2 Setting Mode

The following summary describes all parameters of the display.

-Press SETUP for to 3 seconds to access those setting and use the + and – buttons to browse them.
-Press SELECT to access desired parameter, the display will underline the number and description of selected parameter.

1. In Date and Alarm setting(Multiple Values), the display will scrolling underline selected value. Press SELECT to stop scrolling underline and Press + or – to edit value. Once current value editing completed, press SELECT to confirm and quit. Press + or – to switch value upon underline scrolling. Finally, press SETUP to store the value and quit.
2. In basic setting, the display will underline selected parameter. Press + or – to edit value and press SETUP to store the value and quit.

- Press SETUP at any time to store the selected parameter and quit.

01 Date Current date and time. Default 2023/02/03/ 12:00	Range Year/Month/Day/ Hour: Minute	Step Size Minute
02 Rated Solar Panel Power Rated output of solar panel. Default 100	Range 0-1000	Step Size 1W
03 Full Battery Voltage The full battery voltage must above this voltage level to consider as 100% full. (Note: the voltage is static battery voltage that battery is not under charging.For example, the12v lead-acid battery voltage raises up to 14.4 V when approach 9098% state of charge in bulk stage; when float charging complete, the voltage drop off and will finally reach 12.8V(probably 12.8v-13.2v depending on battery age), here, the full battery voltage is said to be 12.8V).		
Default 12.8V	Range 12.8V-13.2	Step Size 0.1V
04 Zero Battery Voltage The static battery voltage must below this voltage level to consider as 0% zero.Default 10.8V	Range 10.8V-11V	Step Size 0.1V
05 Backlight Intensity The intensity of backlight, ranging from 1(Min)-10(Max).Default 10	Range 1-10	Step Size 1

06 Low SOC(Stage of Capacity) Alarm When the state of charge falls below this value for 10 seconds only when the battery is not under charging, th e low soc alarm is turned on. This is a visual and audible alarm in main screen and history mode,beep lasts 3 seconds. This value is calculated basing on current battery voltage, 03 Full Battery voltage and 04 Zero Batte ry Voltage, see Image-B in Section 2.1		
Default OFF	Range ON/OFF, 0-100%	Step Size 1%
07 Low Battery Voltage Alarm When the battery voltage falls below this value for 10 seconds, the low battery alarm is turned on. This is a vi sual and audible alarm in main screen and history mode, beep lasts 3 seconds.		
Default OFF	Range ON/OFF, 0-99V	Step Size 0.1V
08 High Battery Voltage Alarm When the battery voltage raise above this value for 10 seconds, the high battery alarm is turned on. This is a visual and audible alarm in main screen and history mode,beep lasts 3 seconds.		
Default OFF	Range ON/OFF, 0-99V	Step Size 0.1V
09 Low Temperature Alarm When the battery temperature fall below this value for 10 seconds, the high battery alarm is turned on. This is a visual and audible alarm in main screen and history mode, beep lasts 3 seconds.		
Default OFF	Range ON/OFF, -40 ~ 20	Step Size 0.1℃
10 High Temperature Alarm When the battery temperature raises above this value for 10 seconds, the high battery alarm is turned on. Thi s is a visual and audible alarm in main screen and history mode, beep lasts 3 seconds.		
Default OFF	Range ON/OFF, 40 ~ 80	Step Size 0.1℃

4.3 Main Screen Display Mode

The display tracks several parameters regarding the state of solar panel and battery, and display them on the LCD screen. See section 2.0 Display for more details.

Enter main screen mode by pressing SETUP for 3 seconds when in setting mode.

- Press + or – to adjust the intensity of backlight.
- Press SETUP for 3 seconds go back to setting mode.
- Press SETUP/SELECT for 3 second to enter history mode.

4.4 History Mode

Several parameters of solar panel and battery were tracked, which can be evaluate the performance of solar panel

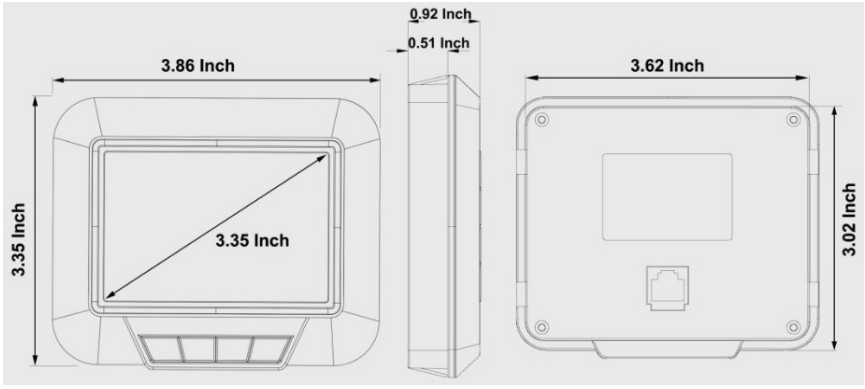
and Battery in past 60days.See Section 2.0 DISPLAY for more details.
Enter history mode by pressing SET and SELECT for 3 seconds when in main screen mode.

- Press + or – to browse the data of exact date.
- Press SETUP for 3 seconds to leave the history mode and go back to maintain screen mode.

Specification

Working voltage:5-40V
Backlight Intensity consumption:
Intensity 10: < 0.33W
Intensity 9: < 0.31W
Intensity 8: < 0.29W
Intensity 7: < 0.27W
Intensity 6: < 0.25W
Intensity 5: < 0.23W
Intensity 4: < 0.21W
Intensity 3: < 0.19W
Intensity 2: < 0.17W
Intensity 1: < 0.15W
Operation temperature: -40℃-80℃
LCD operation temperature: -10℃-80℃
Humidity: 0-100%
Communication cable: RS232, 5m

DIMENSION:



Warranty

Thank you for purchasing the remote LCD display, should you experience any defect due to the manufacturer of this product, you are entitled to get a replacement or refund. If you have any questions, feel free to sentus email **support-us@alltosolar.com**, we will get back to you within 24h.
ALLTO SOLAR
Customer Support Team

Documents / Resources

ALLTO SOLAR AS-RM-C01 Remote LCD Monitor [pdf] User Manual
AS-RM-C01, AS-RM-C01 Remote LCD Monitor, Remote LCD Monitor, LCD Monitor, Monitor

References

- **User Manual**