MPPT Solar Charge Controller
User's Manual

For Model #:
M48120

Version 2.1 (PN:M48120230129)

Manufacturer Information

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US Warehouse:

Please record the Sigineer Power unit's model and serial number in case you need to provide this information in the future. It is much easier to record this information now than try to gather it after the unit has been installed.

Order Number:________________________
Model Number:________________________
Serial Number:________________________

1 Important Safety Information 3
    1.1 General Safety Precautions 3
    1.2 Precautions When Working with Batteries 3
    1.3 Target Group 4
2 Introduction 4
    2.1 General Information 4
    2.2 Mechanical Design 4
    2.3 Features 5
3 Installation 6
    3.1 Location 6
    3.2 Unpacking and Inspection 6
    3.3 Battery Wiring 7
    3.4 Lithium Battery Communication 8
    3.5 Inverter Communication 10
    3.6 Wi-Fi/GPRS Module Connection 12
    3.7 PV Connection 13

1 Important Safety Information

Save This Manual! Read this manual before installation, it contains important safety, installation and operating instructions. Keep it in a safe place for future reference.
All wiring must follow the National Electric Code, Provincial or other codes in effect at the time of installation, regardless of suggestions in this manual. This off grid solar inverter should be connected to a grounded wiring system. If the system ground is floating, please follow the codes in effect.
MISTAKES TO AVOID **1 Don't reverse the PV input polarity.** **2 Don't use any third-party accessories, BTS, communication cables on the solar charger.** **3 Only ground the charger via its ground lug.** **4 Don't connect it to solar panels without batteries.**

1.1 General Safety Precautions

1.1.1 Before installing and using the solar charger, read the manual and cautionary markings on the enclosure. Be sure to read all instructions and cautionary markings for any equipment attached to this unit. Installers must be certified technicians or electricians.

1.1.2 This product is designed for indoor/compartment installation. Do not expose the charger to rain, snow, spray, bilge or dust. To reduce the risk of hazard, do not cover or obstruct the ventilation openings. Do not install it in a zero-clearance compartment. Overheating may result. Allow at least 30CM (11.81 inches) of clearance around the charger for air flow. Make sure that the air can circulate freely around the unit. A minimum air flow of 145CFM is required.

1.1.3 To avoid a risk of fire and electronic shock. Make sure that existing wiring is in good electrical condition; and that wire size is not undersized. Do not operate the charger with damaged or substandard wiring.

1.1.4 This equipment contains components which can produce arcs or sparks. To prevent fire or explosion do not install in compartments containing batteries or flammable materials or in locations which require ignition protected equipment. This includes any space containing gasoline-powered machinery, fuel tanks, or joints, fittings, or other connection between components of the fuel system. See Warranty for instructions on obtaining service.

1.1.5 Do not dis-assemble the charger. It contains no user serviceable parts. Attempting to service the charger yourself may result in a risk of electrical shock or fire. Internal capacitors remain charged after all power is disconnected.

1.1.6 To reduce the risk of electrical shock, disconnect DC power from the charger before attempting any maintenance or cleaning. Turning off power switch will not reduce this risk

1.2 Precautions When Working with Batteries

1.2.1 If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flood eye with running cold water for at least 20 minutes and get medical attention immediately.

1.2.2 Never smoke or allow a spark or flame in the vicinity of battery or engine.

1.2.3 Do not drop a metal tool on the battery. The resulting spark or short-circuit on the battery of other electrical part may cause an explosion.

1.2.4. Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a

lead-acid battery. A lead-acid battery produces a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.
1.2.5 To reduce the risk of injury, charge only rechargeable batteries accepted by our inverter such as deep-cycle lead acid, lead antimony, lead calcium gel cell, absorbed mat, NiCad/NiFe or Lithium battery. Other types of batteries may burst, causing personal injury and damage. NEVER charge a frozen battery.
1.2.6 Don’t install the inverter near batteries, the inverter may heat battery electrolyte and cause corrosive fumes to vent and damage/corrode nearby electronics or metals.

1.3 Target Group

This document is intended for qualified persons and end users. Tasks that do not require any particular qualification can also be performed by end users. Qualified persons must have the following skills:
Knowledge of how an inverter works and is operated
Training in how to deal with the dangers and risks associated with installing and using electrical devices and installations
Training in the installation and commissioning of electrical devices and installations
Knowledge of the applicable standards and directives
Knowledge of and compliance with this document and all safety information

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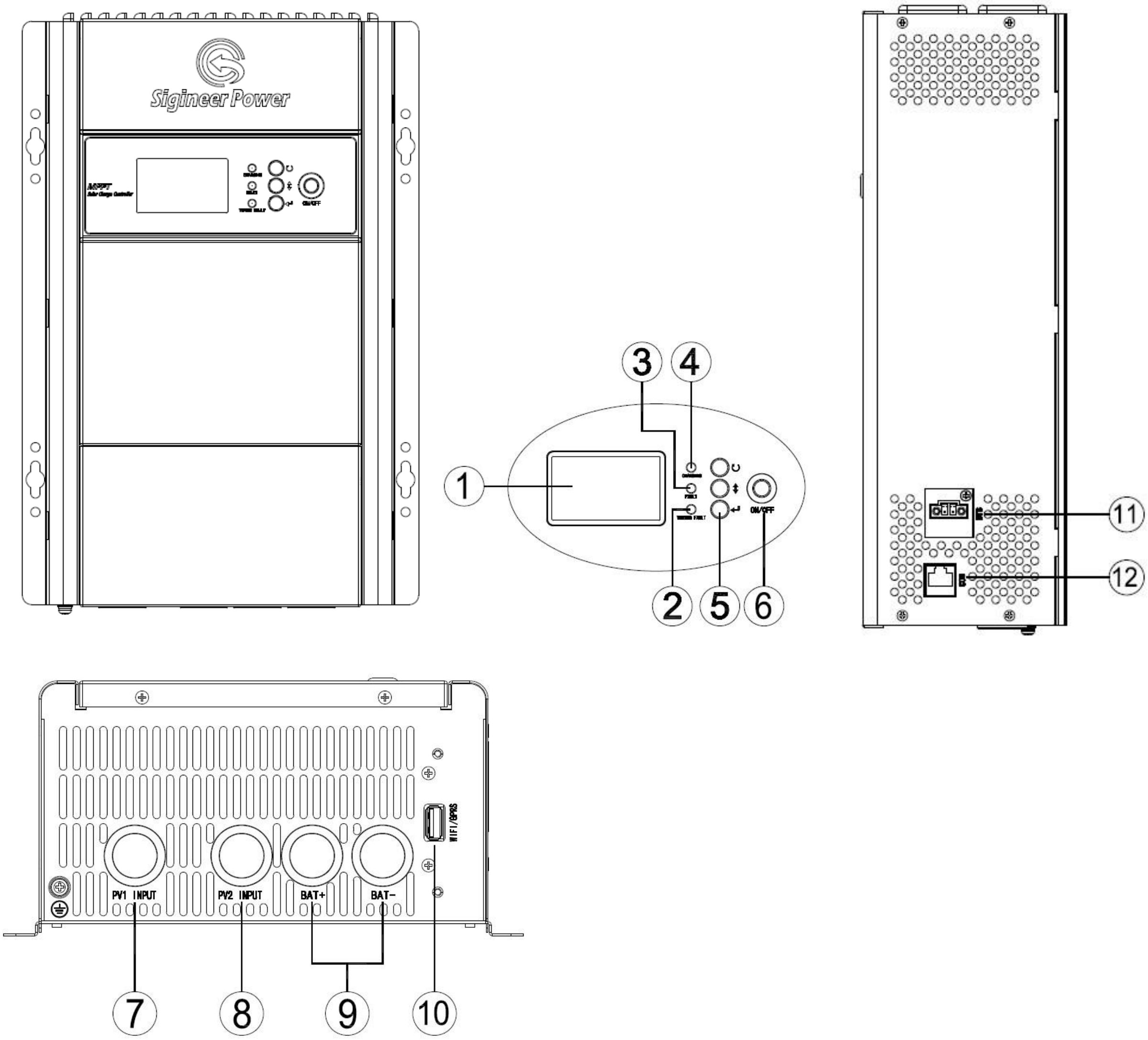
2 Introduction

2.1 General Information

Thank you for purchasing the M48120 Solar Charger.

This MPPT solar controller is an advanced 120A maximum power point tracking solar battery charger. The controller features a smart tracking algorithm that finds and maintains operation at the solar array peak power point, maximizing energy converting efficiency.
It has two separate 60A MPPT trackers, they also work in parallel to accept a max of 7KW input power from a single solar array at 120A.
The MPPT solar controller charging process has been optimized for long battery life and improved system performance. Self-diagnostics and electronic error protections prevent damage when installation mistakes or system faults occur. The Wi-Fi / GPRS module is a plug-and-play monitoring device which allow users to monitor the status of the PV system from the mobile phone or from the website anytime anywhere.

2.2 Mechanical Design


Sigineer Power
MPPT
ON/OFF
1
2
3
4
5
6
11
12
WIFI/GPRS
PV1 INPUT
PV2 INPUT
BAT+
BAT−
7
8
9
10

(48V100/48V120)

1.LCD Display	2. Warning Indicator	3. Fault indicator
4. Charging Indicator	5. Function Buttons	6. On/Off switch
7. PV1± input(60A)	8. PV2± input(60A)	9. Battery input
10. Wi-Fi/GPRS Communication Port	11. BTS Port	12. BMS Communication Port(For RS485/CAN Protocol)

2.3 Features

- 12V/24V/48V battery voltage automatic detection
- Two Separate 60A MPPT Solar Trackers
- Capable of accepting a max of 7KW 120A PV input
- Parallel Operation up to 2 pcs
- Multi-stage charging optimizes battery performance
- MPPT tracking efficiency >99.5%, peak conversion efficiency 98%
- Compatible with GEL, AGM flooded, sealed lead acid and lithium battery
- Comprehensive protections
- Wi-Fi/GPRS Monitoring

- Communication Port for BMS (Works with solar inverter to expand capacity)

3 Installation

3.1 Location

Follow all the local regulations to install the charger.
Please install the equipment in a dry, clean, cool location with good ventilation.
Working temperature: -10℃ to 55℃(14℉ to 131℉)
Storage temperature: -15℃ to 60℃(5℉to 140℉)
Relative Humidity: 5% to 95%, non-condensing
Cooling: Forced air
Warning! Operation in a condensing environment will invalid warranty.

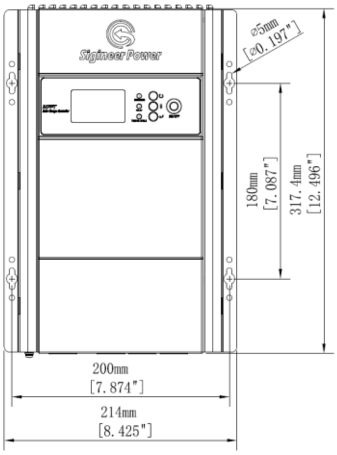
3.2 Unpacking and Inspection

Before installation, please inspect the unit. Be sure that nothing inside the package is damaged. You should have received the following items in the package:
*The charger x 1
*User manual x 1
*Communication cable x 1

Mounting the Unit
Before connecting all wiring, please take off bottom cover by removing two screws as shown below.
Consider the following points before selecting where to install:

Do not mount the inverter on flammable construction materials.
Mount on a solid surface
Install this inverter at eye level in order to allow the LCD display to be read at all times.
The ambient temperature should be between 0°C and 55°C to ensure optimal operation.
The recommended installation position is to be adhered to the wall vertically.
Be sure to keep other objects and surfaces as shown in the right diagram to guarantee sufficient heat dissipation and to have enough space for removing wires.

SUITABLE FOR MOUNTING ON CONCRETE OR OTHER NON-COMBUSTIBLE SURFACE ONLY
Install the unit by screwing the six sets of screws.

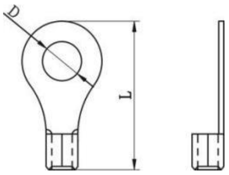


Install the unit by screwing three screws. It’s recommended to use M4 or M5 screws.

Note: For proper air circulation to dissipate heat, allow a clearance of approx. 20cm to the side and approx. 50 cm above and below the unit. Be sure to install each unit in the same level.

3.3 Battery Wiring

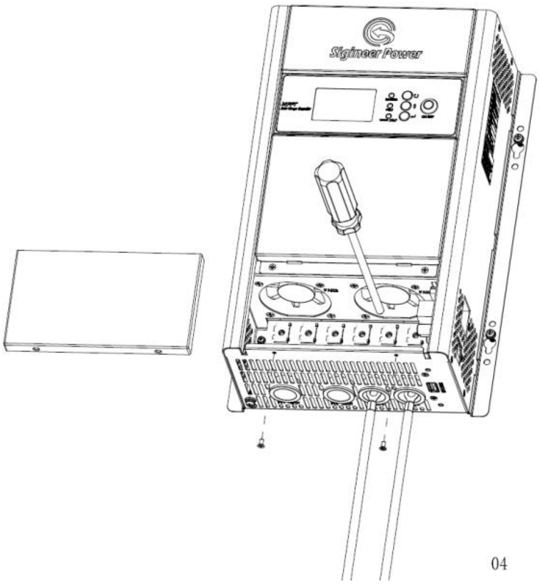
CAUTION: For safety operation and regulation compliance, it’s requested to install a separate DC over-current protector or disconnect device between battery and controller. It may not be requested to have a disconnect device in some applications, however, it’s still requested to have over-current protection installed. Please refer to typical amperage in below table as required fuse or breaker size.
Ring terminal:
WARNING! All wiring must be performed by a qualified person.
WARNING! It's very important for system safety and efficient operation to use appropriate cable for battery connection. To reduce risk of injury, please use the proper recommended cable and terminal size as below.



Note: For the lead acid battery, the recommended charge current is 0.2C(C-battery capacity). Please follow below steps to implement lead-acid battery connection:
Assemble battery right terminal based on recommended battery cable and terminal size.
Connect all battery packs as units requires. It’s suggested to connect at least 550Ah capacity battery for 48V/120A model to operate at full power.

Model	M4860	M4880	M48100	M48120
Capacity of battery	250Ah	350Ah	450Ah	550Ah

Insert the ring terminal of battery cable flatly into battery connector of controller and make sure the bolts are tightened with torque of 2-3Nm. Make sure polarity at both the battery and the controller is correctly connected and ring terminals are tightly screwed to the battery terminals.



For the M48120 solar charger, there are 6 screws, the sizes are
M6*8*2PCS
M5*8*4PCS

⚠	WARNING: Shock Hazard Installation must be performed with care due to high battery voltage in series.

⚠	CAUTION!! Do not place anything between the flat part of the controller terminal and the ring terminal. Otherwise, overheating may occur. CAUTION!! Do not apply anti-oxidant substance on the terminals before terminals are connected tightly. CAUTION!! Before making the final DC connection or closing DC breaker, be sure positive (+) must be connected to positive (+) and negative (-) must be connected to negative (-).

Recommended cable size:

Model	Copper Wire Type	Recommended Size	Minimum Size
M4860	Copper	5AWG	6AWG
M4880	Copper	4AWG	5AWG
M48100	Copper	3AWG	4AWG
M48120	Copper	2AWG	3AWG

Note：When the solar charger is powered on batteries without PV input, it will automatically power off in one minute to save power.

3.4 Lithium Battery Communication

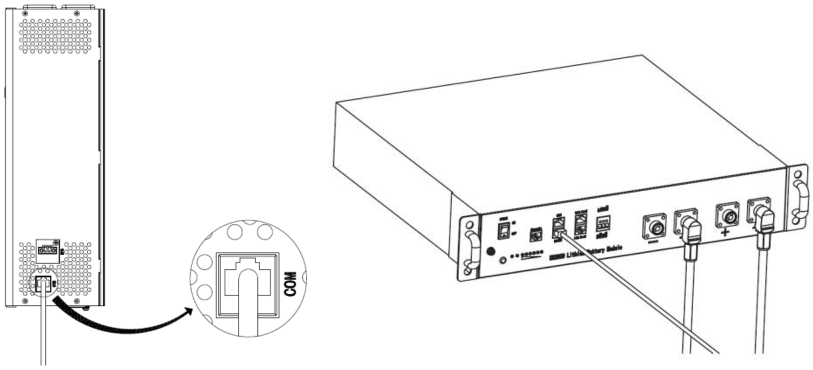
If choosing lithium battery for the controller, you are allowed to use the lithium battery only which have configured. There're two connectors on the lithium battery, RJ45 port of BMS and power cable.

Please follow below steps to implement lithium battery connection:

Assemble battery ring terminal based on recommended battery cable and terminal size (same as Lead acid, see section Lead-acid Battery connection for details) .

Insert the ring terminal of battery cable flatly into battery connector of inverter and make sure the bolts are tightened with torque of 2-3Nm. Make sure polarity at both the battery and the inverter/charge is correctly connected and ring terminals are tightly screwed to the battery terminals.

Connect the end of RJ45 of battery to the communication port of the controller.



The other end of RJ45 insert to battery comm port.

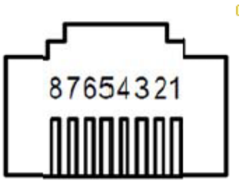
Note: If choosing lithium battery, make sure to connect the BMS communication cable between the battery and the controller.　You need to choose battery type as “lithium battery”

Lithium battery communication and setting

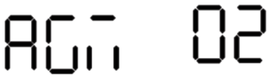
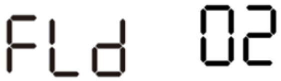
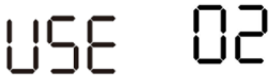
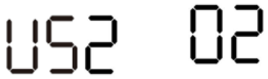
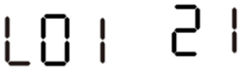
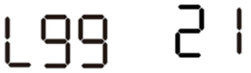
In order to communicate with battery BMS, you should set the battery type to “LI” in Program 2. Then the LCD will switch to Program 21, which is to set the protocol type. There are several RS485 protocols in the controller which can match some customized battery, please consult with supplier first before you choosing the battery model.

Connecting the communication port between the controller and battery
Make sure the lithium battery BMS port connects to the controller is Pin to Pin, the controller communication port pin assignment shown as below (“COM” port on the controller, support RS485 or CAN protocol).

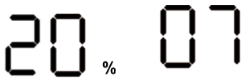
Pin number	RS485	CAN
1	RS485B	--
2	RS485A	--
3	--	--
4	--	CANH
5	--	CANL
6	--	--
7	--	--
8	--	--



LCD setting
To connect battery BMS, need to set the battery type as “LI” in Program 02. After set “LI” in Program 02, it will switch to Program 21 to choose battery type. There will be some options under Program 21.
RS485 communication protocol is L01 to L49，The CAN communication protocol is L51 to L99.

02	Battery type	AGM (default) 
		Flooded 
		User-Defined  If "User-Defined" is selected, battery charge voltage and low DC cut-off voltage can be set up in program 05, 06 and 07.
		User-Defined 2  Suitable for lithium battery when inverter not communicated with BMS. If "US2" is selected, battery charge voltage and low DC cut-off voltage can be set up in program 05,06 and 07.
		Lithium Only suitable for lithium battery when inverter communicated with BMS. The lithium battery BMS communication protocol options:  …… 

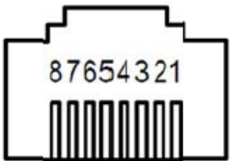
When the battery type set to Li, the setting option 07 will change to display percent.
Note: When the battery type set as "Li", the Maximum charge current can't be modified by the user. When the communication fail, the inverter will cut off output.

07	Low DC cut-off SOC. If "Li" is selected in program 2, this program can be set up.	 Default 20%, 5%~50% Settable.

3.5 Inverter Communication

Sigineer off grid inverters and this controller can communicate to summarize data. Make sure the inverter connect to the controller Pin to Pin as below by communication port ("COM" port on the controller).

Pin number	RS485	CAN
1	RS485B	--

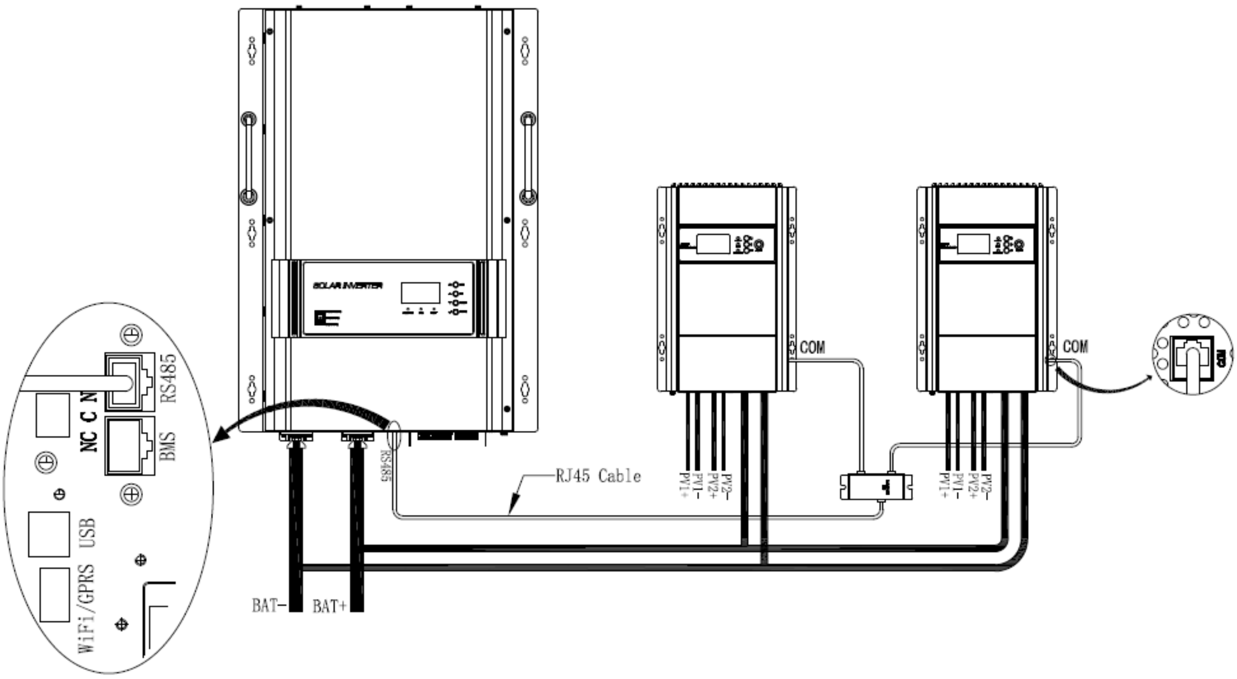


2	RS485A	--
3	--	--
4	--	CANH
5	--	CANL
6	--	--
7	--	--
8	--	--

There will be 2 options to connect with inverter in Program 08. Set to mode CL1 if you select RS485 communication, set to CL2 if you select CAN communication. Details as below:

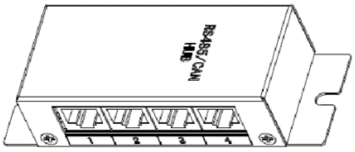
08	Communication model	SIG 08 SIG (default), used to communicate with upper computer
		CL1 08 CL1, used to communicate through RS485
		CL2 08 CL2, used to communicate through CAN.
09	RS485 Communication Address	1 09 Address 1 (default) Used to communicate with controller in CL1 or CL2, or used to communicate with upper computer in SIG

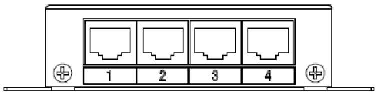
Communication operation between one inverter and one controller
Set parameters on the controller: Program 08 as CL1, Program 09 as Protocol 2.

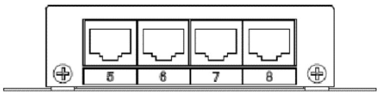

SOLAR INVERTER
RS485
BMS
NC C N
USB
WiFi/GPRS
RS485
RJ45 Cable
BAT−
BAT+
COM
PV1+
PV1−
PV2+
PV2−
COM
PV1+
PV1−
PV2+
PV2−
COM

Communication operation between one inverter and two controllers
Set parameters on the first controller: Program 08 as CL1, Program 09 as Protocol 2.
Set parameters on the second controller: Program 08 as CL1, Program 09 as Protocol 3.

There will be a RS485/CAN Hub needed to converge the communication cables from the controllers to the inverter.
RS485/CAN Hub:







Note: The battery type should be set as the same for the inverter and controllers.
Note: The M48120 solar charger can only communicate with the solar inverter, the solar charger can’t communicate with each other.

3.6 Communication with Wi-Fi/GPRS Module or PC

The M48120 solar charger supports Wi-Fi/GPRS module, and can be monitored on the APP.

Solar Inverter APP Monitor Software (SG Solar Mobile Monitor)

The module should be plugged into the “10. Wi-Fi/GPRS Communication Port”.

Sigineer Power
MPPT
PV1 INPUT
PV2 INPUT
BAT+
BAT-
Sigineer Power

***The Wi-Fi/GPRS module isn't offered for free with the solar charger, it is sold separately.**

It can also be monitored on the PC with a USB to USB cable on the “SG Solar Power Monitor)”
https://www.sigineer.com/support/software-download/

3.7 PV Connection

CAUTION: Before connecting to PV modules, please install separately a DC circuit breaker between controller and PV modules.

WARNING! All wiring must be performed by qualified personnel.
WARNING! It'' very important for system safety and efficient operation to use appropriate cable for PV module connection. To reduce risk of injury, please use the proper recommended cable size as below.
WARNING! Don’t connect it to solar panels without batteries.

PV Module Selection:
When selecting proper PV modules, please be sure to consider below parameters:
Open circuit Voltage (Voc) of PV modules should not exceed max PV array open circuit voltage of controller.
Open circuit Voltage (Voc) of PV modules should be higher than min. battery voltage.

MPPT CONTROLLER MODEL	M48120
Max. PV Array Open Circuit Voltage	250Vdc max
PV Array MPPT Voltage Range	60~245Vdc

Please follow below steps to implement PV module connection:

Remove insulation sleeve 10 mm for positive and negative conductors.

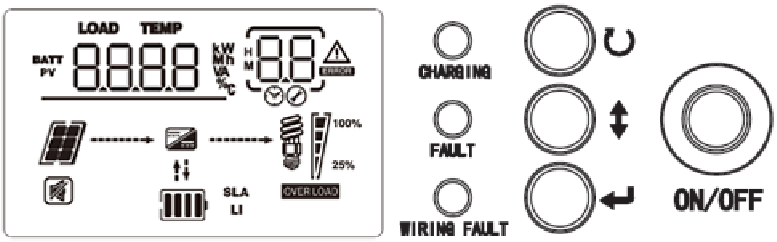
Check correct polarity of connection cable from PV modules and PV input connectors. Peel the plastic tube 10mm from the positive polarity end of the wire. Insert the wire into the ring terminal and crimp the edges by tools. Then connect the wire to the PV Input port "PV+" of the controller. Also use the same method to connect the PV Input port "PV-".

Make sure the wires are securely connected.

There are two 60A PV tracker built inside the solar charger, they can be paralleled to accept 120A 7Kw PV input from one PV array.

Operation

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


LOAD
TEMP
BATT
PV
kW
Mh
VA
%C
H
M
ERROR
100%
25%
SLA
LI
OVER LOAD
CHARGING
FAULT
WIRING FAULT
ON/OFF

Power ON/OFF

Press the “ON/OFF” button to turn on or turn off the system.

Note: When there is NO PV input, the solar charger will cut off to save power.

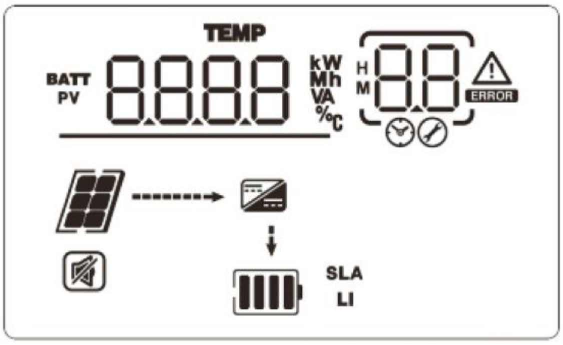
LED Indicator

LED Indicator			Messages
CHARGING	Green	Solid On	System is running fine, but not charging now
		Flashing	During charging now
FAULT	Red	Solid On	An error occurs
		Flashing	A warning occurs
WIRING FAULT	Red	Solid On	Battery wiring reversed

Function Buttons

Button	Description
ESC	To exit setting mode
UP/DOWM	To change selection
ENTER	To confirm the selection in setting mode or enter setting mode

LCD Display Icons


TEMP
BATT
PV
kW
Mh
VA
%C
H
M
ERROR
SLA
LI

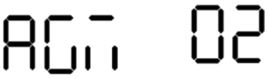
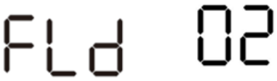
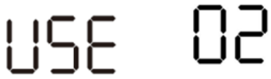
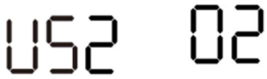
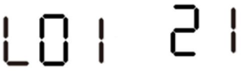
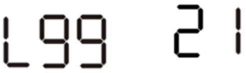
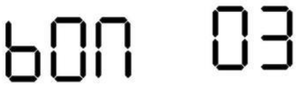
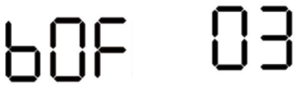
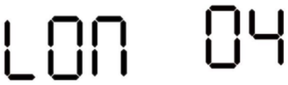
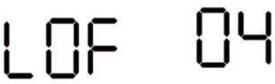
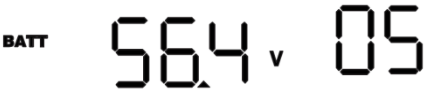
Icon	Function Description
System Parameters Information	

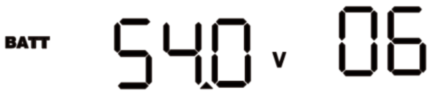
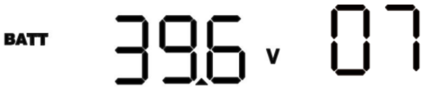
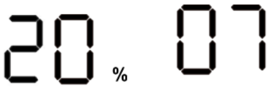
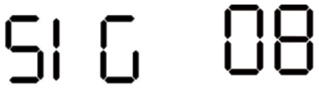
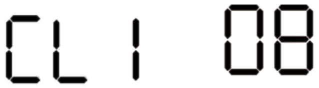
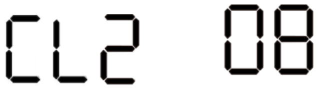
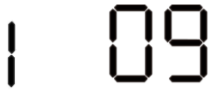
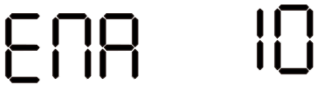
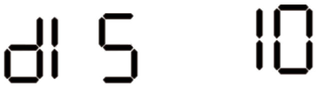
BATT	Indicates the battery
PV	Indicates the PV input
LOAD TEMP 8888 kW Mh VA %°C	Indicate PV voltage, battery voltage, charging current etc.
Configuration Program and Fault Information	
88	Indicates the setting programs.
88 ⚠	Warning: flashing with warning code.
88 ERROR	Fault: lighting with fault code
System Status Information	
🔋	Indicates battery level by 0-24%, 25-49%, 50-74% and 75-100% in battery mode and charging status in line mode.
SLA	Indicates SLA battery
LI	Indicates Lithium battery
	Indicates unit connects to the PV panel.
	Indicates the DC/DC circuit is working.
🔇	Indicates unit alarm is disabled.

LCD Setting

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

Program	Description	Setting Option
01	Maximum charging current	PV 80 A 01 120A model: Default 60A, 10A~120A Settable 100A model: Default 60A, 10A~100A Settable 80A model: Default 60A, 10A~80A Settable

		60A model: Default 60A, 10A~60A Settable (If Li is selected in program 2, this program can't be set up)	
02	Battery type	AGM (default) 	
		Flooded 	
		User-Defined  If "User-Defined" is selected, battery charge voltage and low DC cut-off voltage can be set up in program 05,06 and 07.	
		User-Defined 2  Suitable for lithium battery when inverter not communicated with BMS. If "US2" is selected, battery charge voltage and low DC cut-off voltage can be set up in program 05,06 and 07.	
		Lithium Only suitable for lithium battery when inverter communicated with BMS. The lithium battery BMS communication protocol options:  …… 	
03	Buzzer	Buzzer on (default) 	Buzzer off 
04	Backlight Control	Backlight on (default) 	Backlight off 
05	Bulk charging voltage (C.V voltage)	 48V mode: default 56.4V, 48.0V~58.4V Settable 24V mode: default 28.2V, 24.0V~29.2V Settable	

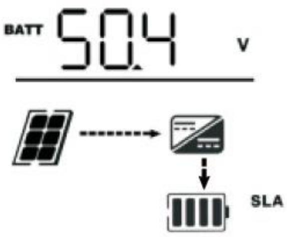
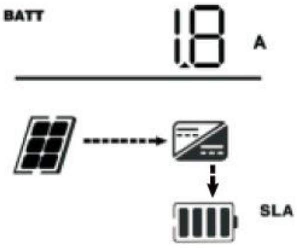
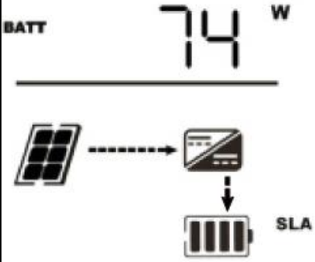
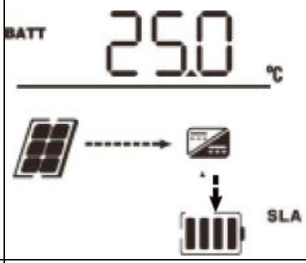
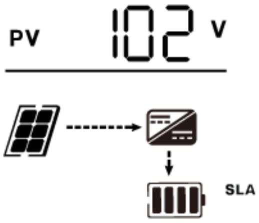
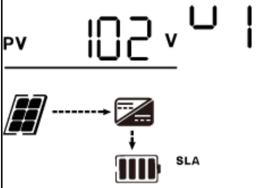
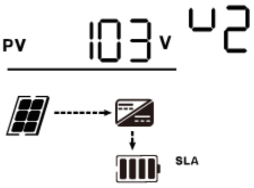
		12V mode: default 14.1V, 12.0V~14.6V Settable If “Li” is selected ,it can’t be set up
06	Floating charging voltage	 48V mode: default 54.0V, 48.0V~58.4V Settable 24V mode: default 27.0V, 24.0V~29.2V Settable 12V mode: default 13.5V, 12.0V~14.6V Settable If “Li” is selected ,it can’t be set up
07	Low DC cut-off voltage	 48V mode: default 42.0V, 40.0V~48.0V Settable 24V mode: default 21.0V, 20.0V~24.0V Settable 12V mode: default 10.5V, 10.0V~12.0V Settable
		 48V Li model: default 20%,5%~50% Settable
08	Communication mode	 SIG (default), used to communicate with upper computer
		 CL1, used to communicate through RS485
		 CL2, used to communicate through CAN.
09	RS485 Communication Address	 Protocol 1 (default) Used to communicate with controller in CL1 or CL2, or used to communicate with upper computer in SIG
10	Battery equalization	  If ”Flooded” or ”User-Defined” is selected in program this program can be set up.

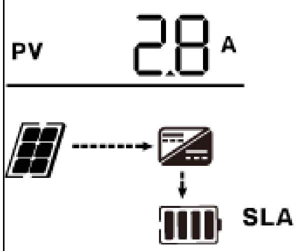
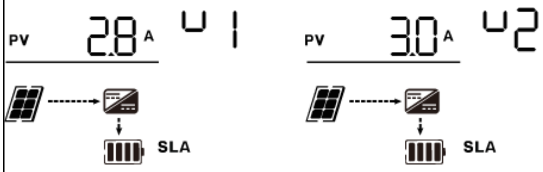
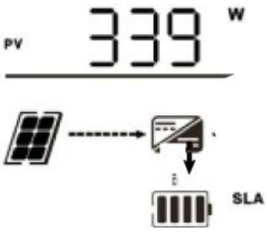
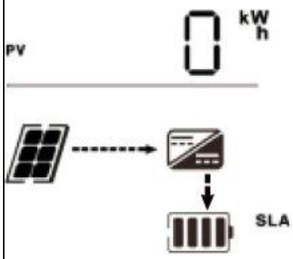
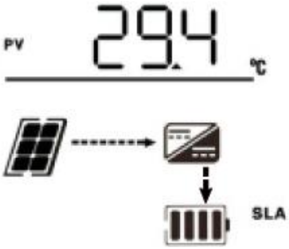
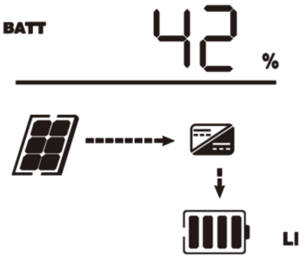
11	Battery equalization voltage	58.0 V 11 48.0V model: default 58.0V,48~60V Settable
12	Battery equalization time	030 12 Setting range is from 5 min to 900 min. Increment of each click is 1 min.
13	Battery equalization timeout	060 13 Setting range is from 5 min to 900 min. Increment of each click is 1 min.
14	Equalization interval	001 14 Setting range is from 1 to 30 days. Increment of each dick is 1 day.
15	Equalization activated immediately	ENA 15 dIS 15 If equalization function is enabled in program 10, 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 show "Eq", If "Disable" is selected, it will cancel equalization function until next activated equalization time arrives based on program 14 setting. At this time, "Eq" will not be shown in LCD main page.

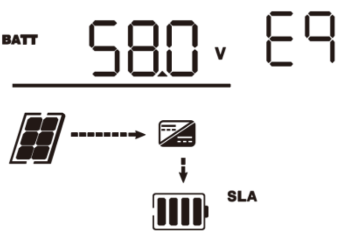
LCD Display Information

The LCD display information will be switched in turns by pressing "UP/DOWN" key. The selectable information is switched as below order.

Setting Information	LCD display

Charging voltage	 BATT 50.4 V SLA
Battery charging/discharging current	 BATT 18 A SLA
Battery charging/discharging power	 BATT 74 W SLA
Battery temperature sensor (BTS)	 BATT 25.0 ℃ SLA
PV input voltage	 For 60A and 80A
	 PV 102 V U 1 SLA PV 103 V U2 SLA For 48V100/48V100-M and 48V120/48V120-M

PV generated current	 For 48V60/48V60-M and 48V80/48V80-M
	 PV 2.8 A U 1 SLA PV 3.0 A U2 SLA For 48V100/48V100-M and 48V120/48V120-M
PV generated power	
Total PV generated energy	
PV controller temperature	
Battery level	Battery SOC=42% 

Battery Equalization	

Fault Code

Fault Code	Fault Event	Icon On
01	Fan is locked when controller is off.	01 ERROR
02	Over temperature	02 ERROR
03	Battery voltage is too high	03 ERROR
20	BMS communication loss	20 ERROR
63	Can’t communicate with the inverter	63 ERROR

Warning Code

Warning Code	Warning Event	Icon Flashing
04	Battery voltage is too low	04 ⚠
06	PV input voltage is too high	06 ⚠
07	Overload	07 ⚠

Battery Equalization

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

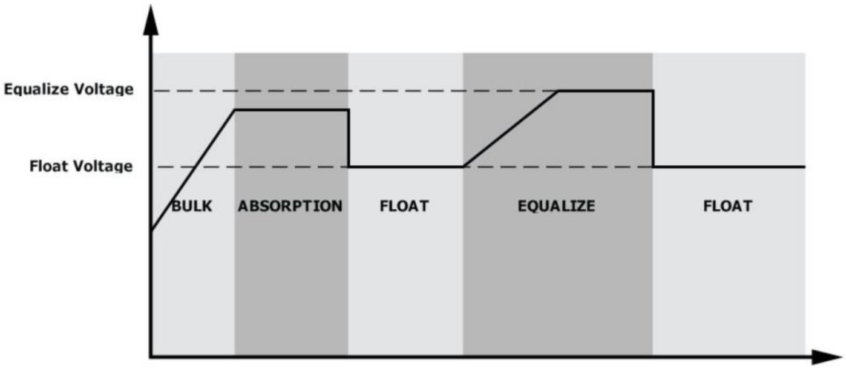
You must enable battery equalization function in monitoring LCD setting program 10 first. Then, you may apply this function in device by either one of following methods:

1. Setting equalization interval in program 14.

2. Active equalization immediately in program 15.

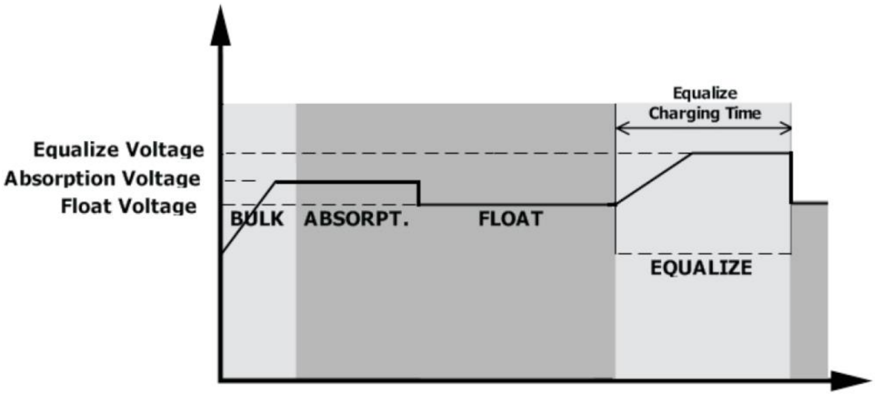
When to Equalize

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.

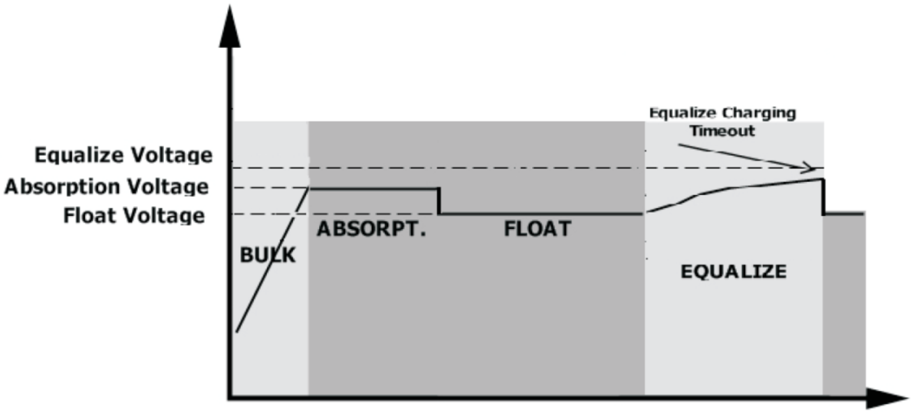

Equalize Voltage
Float Voltage
BULK
ABSORPTION
FLOAT
EQUALIZE
FLOAT

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.


Equalize Voltage
Absorption Voltage
Float Voltage
Equalize Charging Time
BULK
ABSORPT.
FLOAT
EQUALIZE

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.


Equalize Voltage
Absorption Voltage
Float Voltage
BULK
ABSORPT.
FLOAT
Equalize Charging Timeout
EQUALIZE

Trouble Shooting

Use the table below to solve minor problems.

Problem	LCD/ LED/ Buzzer	Explanation	What to do
When power fails, the backup time is shorten.	Battery low alarm issue quickly.	Battery voltage is too low.	Charge the unit at least 8 hours.
		Battery capacity is not full even after charge the unit for at least 8 hours.	Check the date code of the battery. If the batteries are too old, replace the batteries.
No LED display on the front panel when PV/battery is working	No LED display.	Battery/PV is not connected well.	Return to repair center.
Buzzer beeps continuously and red LED is on.	Fault code 01	Fan fault	Replace the fan.
	Fault code 02	Internal temperature of controller component is over 90°C.	Check whether the air flow of the unit is blocked or whether the ambient temperature is too high.
	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.
	Warning code 04	The battery voltage is too low.	Connect with PV to charge, the problem will be solved.
	Warning code 06	PV input voltage is too high	Return to repair center.
	Fault code 20	BMS Communication failed	Check the BMS communication wire to see if it’s well connected Check the transceiver signal
	Fault code 63	Inverter Communication failed	Check the communication wire to see if it’s well connected Check the transceiver signal

If any unlisted abnormal situations occur, please call the service people for professional examination.

Specifications

MODEL	M4860	M4880	M48100	M48120
Solar System Voltage	12V/24V/48V			
Electrical				
PV operating voltage	15 ~75Vdc@12V 30~150Vdc@24V 60~245Vdc@48V	15 ~75Vdc@12V 30~150Vdc@24V 60~245Vdc@48V	15 ~75Vdc@12V 30~150Vdc@24V 60~245Vdc@48V	15 ~75Vdc@12V 30~150Vdc@24V 60~245Vdc@48V
Max. PV open circuit voltage	250Vdc	250Vdc	250Vdc	250Vdc

Max. PV input power	1000W@12V	1250W@12V	1500W@12V	1750W@12V
	2000W@24V	2500W@24V	3000W@24V	3500W@24V
	4000W@48V	5000W@48V	6000W@48V	7000W@48V
Number of MPPT trackers	1	1	2	2
Max. charging current	60A	80A	100A	120A
Self Consumption	3W	3W	5W	5W
MPPT Efficiency	99.5%	99.5%	99.5%	99.5%
Conversion Efficiency	97%	97%	97%	97%
Protection	High voltage, high temperature protection			
Battery Charging				
Battery Type	Sealed, AGM, Gel, Flooded, Lithium, User define			
Charging Algorithm	Bulk, Absorption, Float, Equalize			
Bulk charge voltage	Sealed:14.4V AGM Gel:14.1V Flooded:14.6V User define:12-14.6V (For 24V system, total voltage*2; for 48V system, total voltage*4)			
Float charge voltage	Sealed/Gel/AMG:13.7V Flooded:13.6V User define :12-14.6V (For 24V system, total voltage*2; for 48V system, total voltage*4)			
Low DC Warning SOC (Only Li)	Low DC Cut-off SOC+5%			
Low DC Warning Return SOC (Only Li)	Low DC Cut-off SOC+15%			
Temperature compensation	-5mV/°Cwith BTS(Optional)			
Communication				
Communication Port	USB			
Mechanical				
Net weight	3KG	3.2KG	4KG	4.2KG
Dimensions	295*180*100	295*180*100	320*200*105	320*200*105
Cooling	Fan cooling			
Enclosure	IP20			
Environment				
Ambient Temperature	-20~55℃ (Derating from 45℃)			
Storage Temperature	-40℃~+60℃			
Humidity	100% non-condensing			

***Cold start voltage is the minimal battery voltage for the inverter to power on without PV or AC input.**

※Errors and omissions reserved. Specifications in this manual are subject to change without prior notice.

SAVE THIS MANUAL!

READ THIS MANUAL BEFORE INSTALLATION, IT CONTAINS IMPORTANT SAFETY, INSTALLATION AND OPERATING INSTRUCTIONS. KEEP IT IN A SAFE PLACE FOR FUTURE REFERENCE.

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