

DOMETIC MPPT 30 A & 40 A SOLAR CONTROLLER

User Manual

SC-DB-MPPT-30

SC-DB-MPPT-40



CONTENTS

ABOUT THIS MANUAL.....	3
GENERAL SAFETY INFORMATION	3
SAFETY PRECAUTIONS.....	3
1. PRODUCT OVERVIEW.....	5
1.1 GENERAL DESCRIPTION.....	5
1.2 FEATURES.....	5
1.3 WHAT'S INCLUDED	5
1.4 DIMENSIONS.....	6
1.5 REGULATORY INFORMATION	7
1.6 SPECIFICATIONS	7
1.7 MAXIMUM POWER POINT TRACKING (MPPT) TECHNOLOGY.....	8
1.8 SYSTEM VOLTAGE AND CURRENT	9
1.9 CURRENT DERATING	9
1.10 TEMPERATURE COMPENSATION.....	9
1.11 BATTERY TYPE.....	9
1.12 BATTERY CHARGING STAGES.....	10
2. PRE-INSTALLATION.....	12
2.1 CHOOSING AN INSTALLATION LOCATION	12
2.2 REQUIRED TOOLS AND MATERIALS.....	12
3. INSTALLATION INSTRUCTIONS.....	12
3.1 MOUNTING THE CONTROLLER.....	12
3.2 INSTALLATION OF THE SOLAR PANELS.....	12
3.3 WIRE TYPE AND GAUGE	12
3.4 SOLAR CONTROLLER WIRING	13
3.5 RV-C CONNECTION	14
4. OPERATION	15
4.1 POWER ON.....	15
4.2 LED INDICATORS	15
4.3 INSTANCES.....	15
4.4 POWERTRAK DISPLAY.....	15
4.5 USING THE CONNECT APP	18
5. MAINTENANCE	21
6. TROUBLESHOOTING.....	21
6.1 PROBLEMS WITH VOLTAGE.....	21
6.2 PROBLEMS WITH CURRENT	22
7. LIMITED WARRANTY	23
8. APPENDIX	24
8.1 MOUNTING TEMPLATE	24

ABOUT THIS MANUAL

Thank you for choosing this Dometic Solar Controller. This manual will provide you with all the information you need to properly install and use your solar controller. This manual contains important information about the safe installation and operation of the solar controller. Please keep this manual for future reference.

GENERAL SAFETY INFORMATION

Read this manual carefully and look at the solar controller equipment to become familiar with the device before trying to install, operate, or maintain it. The following signal words may appear throughout this documentation or on the equipment to warn of potential hazards or call to attention to information that clarifies or simplifies procedure. Make sure that you thoroughly understand the meaning of each signal word and comply with the manual instruction. Always refer to the manual.

DANGER	“DANGER” indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
---------------	---

WARNING	“WARNING” indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
----------------	---

CAUTION	“CAUTION” indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury or damage to the equipment.
----------------	---

SAFETY PRECAUTIONS



Warning:
Disconnect all power sources

Electricity can be very dangerous. Installation must be performed only by licensed electrician or qualified personnel.



Warning:
Battery and wiring safety

Observe all safety precautions of the battery manufacturer when handling or working around batteries. When charging, some batteries may produce hydrogen gas, which is highly explosive.



Warning:
Wiring Connection

Ensure all connections are tight and secure. Loose connections may generate sparks and heat. Be sure to check connections one week after installation to ensure they are still tight.



Mandatory Action:
Work Safely

Wear protective eye wear and appropriate clothing during installation. Use extreme caution when working with electricity and when handling and working around batteries. Use properly insulated tools only.



Warning:
Observe correct polarity at all times

Reverse polarity of the battery terminals and/or solar array will cause the controller to display a warning. The controller will not function unless battery terminals are connected to a battery with proper polarity. Failure to correct this fault could damage the controller.



Warning:
Do not exceed the SC-DB-MPPT max voltage ratings

The maximum voltage of the array is the sum of the solar panel-rated open-circuit voltage of the series connected panels multiplied by 1.25 (or by a value from NEC 690.7 provided in Table 690.7 A). The resulting voltage is not to exceed 96V. If your solar system exceeds this value, contact your dealer for a suitable controller alternative. Always refer to the manual.



Warning:
Always use a fuse or breaker

There must be overcurrent protection installed between the controller and battery on the positive wire. An overcurrent protection device is not provided with this equipment and must be purchased separately.



Mandatory Action:
Mounted Indoor

Ensure that the controller is mounted indoors and protected from exposure to the elements and water.

1. PRODUCT OVERVIEW



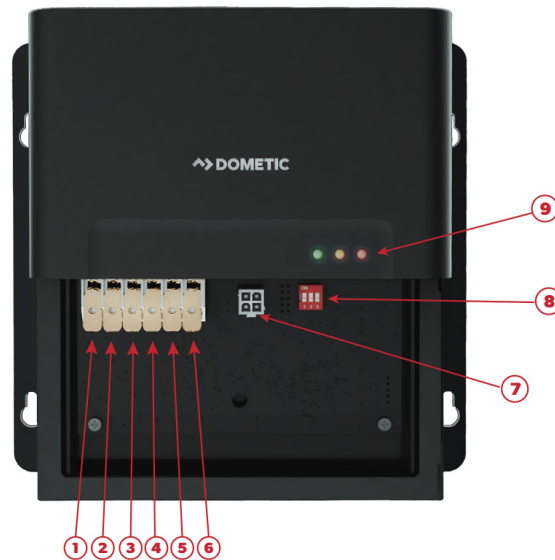
1.1 GENERAL DESCRIPTION

A solar controller, also known as a charge controller or regulator, is an essential component of your photovoltaic solar system. The controller maintains the life of the battery by protecting it from overcharging and maximizes the power usage from your solar panel. When your battery has reached a 100% state of charge, the controller prevents overcharging by limiting the current flowing into the batteries from your solar array.

The SC-DB-MPPT uses maximum power point tracking (MPPT) technology and a unique four stage charging system that includes an optional equalization setting to charge and protect your battery bank. In addition, the SC-DB-MPPT has the ability to trickle charge a secondary battery. The intended use of this feature is to maintain the RV starter battery while it is parked for long periods of time.

The 30 A and 40 A MPPT controllers are intended for use at 12 or 24 VDC nominal system voltage, and are rated for a maximum continuous DC charge current of 30 A and 40 A respectively. The SC-DB-MPPT is suitable for use with lead acid batteries (flooded, GEL, or AGM), as well as lithium iron phosphate (LiFePO4) batteries that are supplied with a battery management system (BMS).

1.2 FEATURES



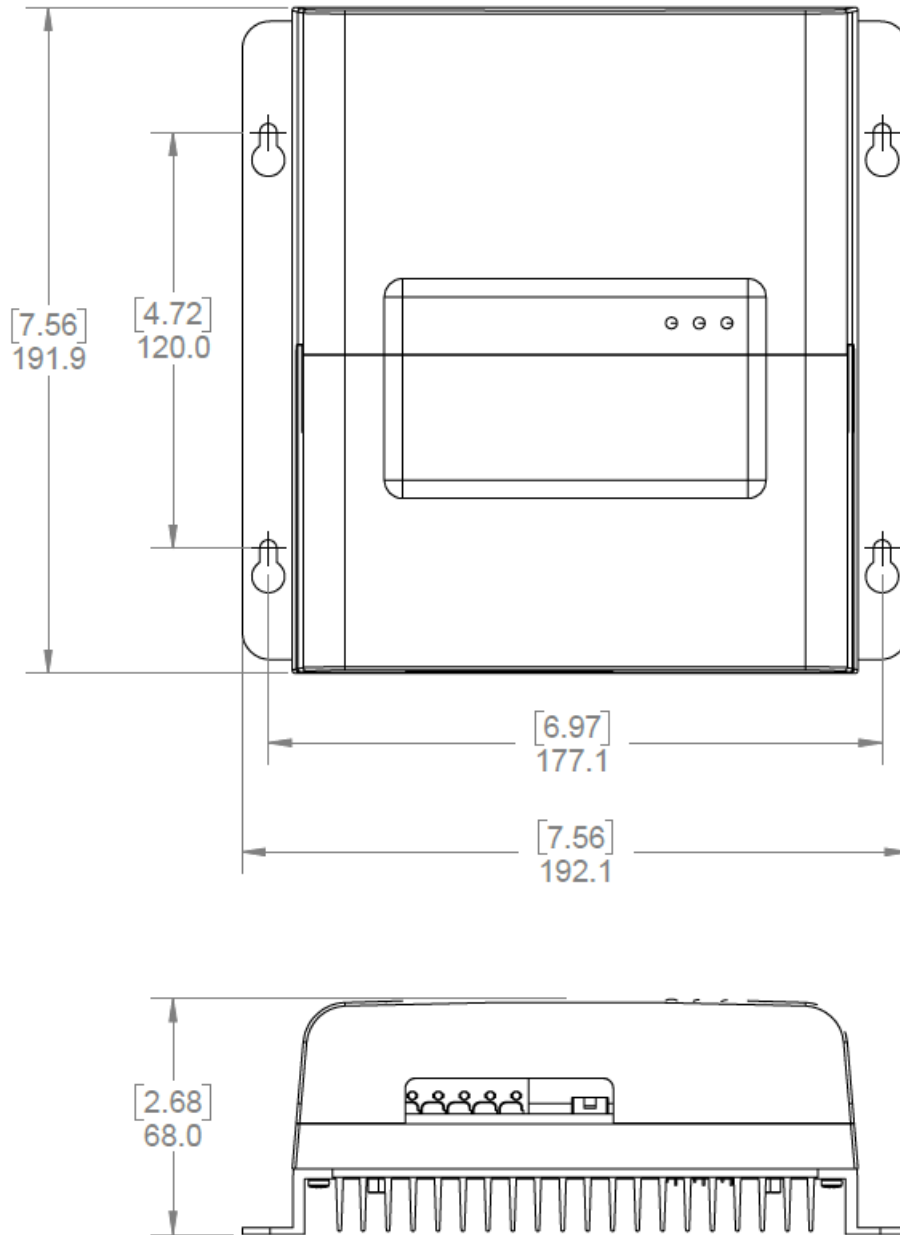
NO.		DESCRIPTION	
1	Solar +	6	Battery 2 -
2	Solar -	7	RV-C Communication Port
3	Battery 1 +	8	DIP Switches
4	Battery 1 -	9	LED Indicators (Green, Yellow, Red)
5	Battery 2 +		

1.3 WHAT'S INCLUDED

ITEM	QUANTITY
SC-DB-MPPT	1
Mounting Screws (#8 x 1")	4
Quick Start Guide	1

1.4 DIMENSIONS

Note The dimensioned drawing is not to scale. Refer to the appendix for the mounting template.



1.5 REGULATORY INFORMATION



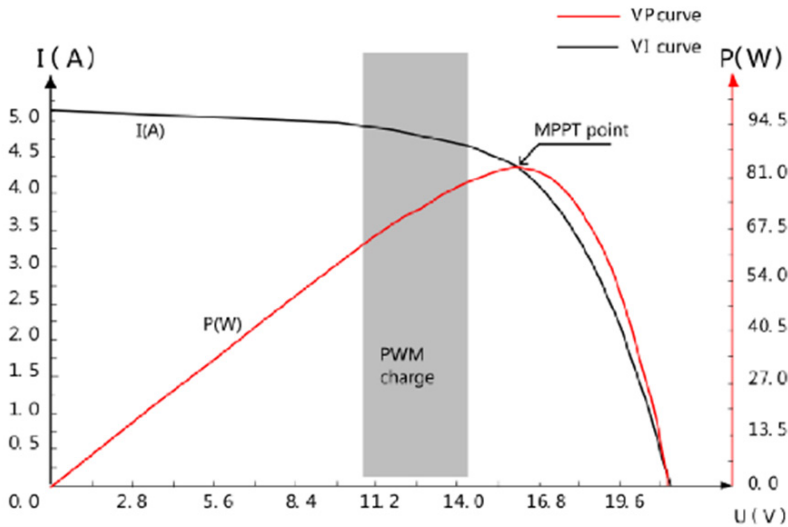
Certified to CSA Std. C22.2 No. 107.1

1.6 SPECIFICATIONS

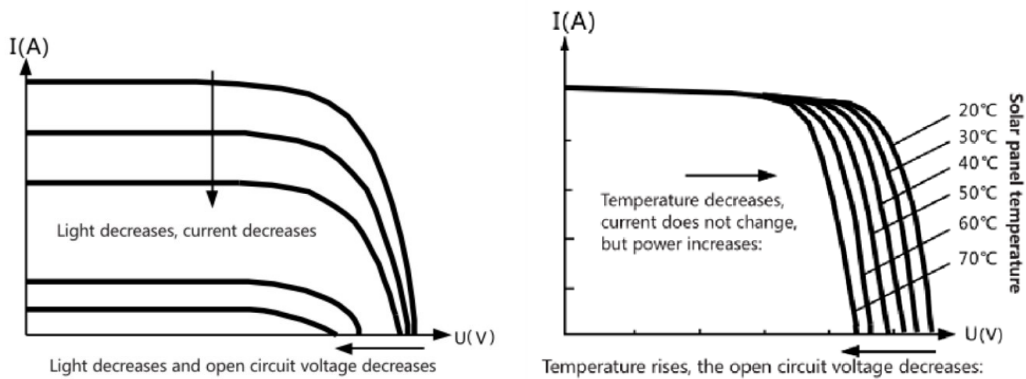
DESCRIPTION	SC-DB-MPPT-30	SC-DB-MPPT-40
Nominal System Voltage	12/24 V	
Temperature Compensation	-24 mv/°C (configurable), none for Lithium batteries	
Battery Voltage Range	8 – 32 V	
Maximum Total Charge Current	30 A	40 A
Maximum Secondary Charge Current	2.5 A	
Conversion Efficiency	Up to 98 %	
MPPT Tracking Efficiency	Up to 99.9 %	
Max Panel Input Voltage	96 Voc	
Max PV Power Input	600 W @ 12 V / 1200 W @ 24 V	900 W @ 12 V / 1800 W @ 24 V
Idle Current	36.5 mA @ 12.5 V	
Grounding	Common Negative	
Operating Temperature (Without Derating)	-40 to 55 °C	-40 to 40 °C
Storage Temperature	-40 to 60 °C	
Humidity	95 % non-condensing	
Battery Type	Lead Acid (Sealed, Gel, Flooded), Lithium, Custom	
Number of Battery Outputs	2	
Max Wire Gauge B1 and B2	8 AWG	
Water Ingress Protection	IP32	
Altitude	< 4000 m	
Standards	FCC Part 15 Class B, RoHS	
Protection	Battery reverse polarity, over temperature, internal overvoltage, PV overcurrent, reverse current (battery to PV)	

1.7 MAXIMUM POWER POINT TRACKING (MPPT) TECHNOLOGY

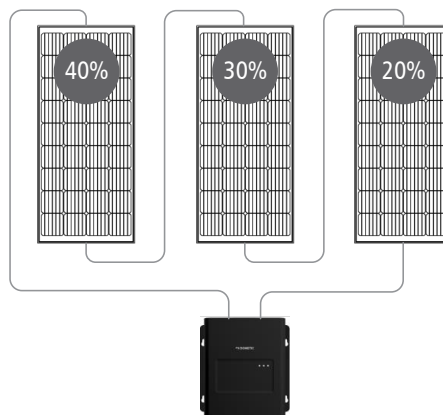
Maximum power point tracking (MPPT) is an advanced charging technology that efficiently harvests power from solar panels in all conditions. This is achieved by continuously tracking the I-V curve of the solar array and modifying operating conditions to maximize output power. The graph below shows the MPPT point compared to a traditional PWM charger, which always runs the solar array at a voltage close to the battery voltage.



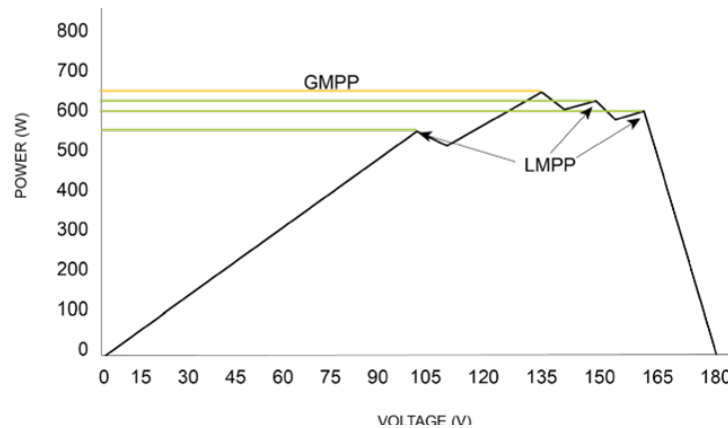
Due to differences in ambient temperature and light conditions, the maximum power point often changes. The MPPT controller can adjust parameters according to quickly changing conditions to keep the system near to its maximum working point. The whole process is fully automatic and does not require any adjustments or interference by users. The graphs below show how the IV curve changes with varying sunlight conditions, and varying temperatures.



In partially shaded conditions there can also be multiple peaks in the P-V curve that can confuse an MPPT algorithm. Shown in the diagram below is a series string of solar panels.



The corresponding graph below shows local maximum power points (LMPP) and the global maximum power point (GMPP) that will result in maximum energy transfer. The SC-DB-MPPT controllers have a smart algorithm that will always choose the correct peak.



The SC-DB-MPPT controller has an MPPT efficiency of up to 99.9 %, meaning there is no wasted potential from your solar panels.

1.8 SYSTEM VOLTAGE AND CURRENT

The 30 A and 40 A MPPT controllers are intended for use at 12 or 24 VDC nominal system voltage and are rated for a maximum continuous DC charge current of 30 A and 40 A respectively, and maximum solar input voltage of 96 Voc.

Per the National Electric Code (NEC) article 690.7 and 690.8, solar panel nameplate ratings at Standard Test Conditions (STC) must be multiplied by required values (typically 1.25 for both voltage and current) to obtain the maximum voltage and continuous current available from the panel.

The voltage and current ratings of all equipment connected to solar panels must be capable of accepting the voltage and current levels available from solar panels installed in the field.

1.9 CURRENT DERATING

The SC-DB-MPPT constantly monitors the internal temperature to ensure it does not exceed temperature limits. In applications that require full output current in high ambient temperatures, the solar controller starts limiting the current delivered to the battery to keep the internal temperature within the required specifications.

1.10 TEMPERATURE COMPENSATION

The SC-DB-MPPT has the ability to perform temperature compensation. This feature extends the life of the battery by preventing overcharging in warm temperatures, and undercharging in cold temperatures. Temperature compensation is not required for lithium batteries. In order to utilize the temperature compensation feature, the SC-DB-MPPT must be paired with an RV-C device that reports the battery temperature, such as the PowerTrak Smart Shunt (sold separately). The temperature compensation coefficient is -24 mV/°C by default, and can be adjusted using the PowerTrak Display (sold separately).

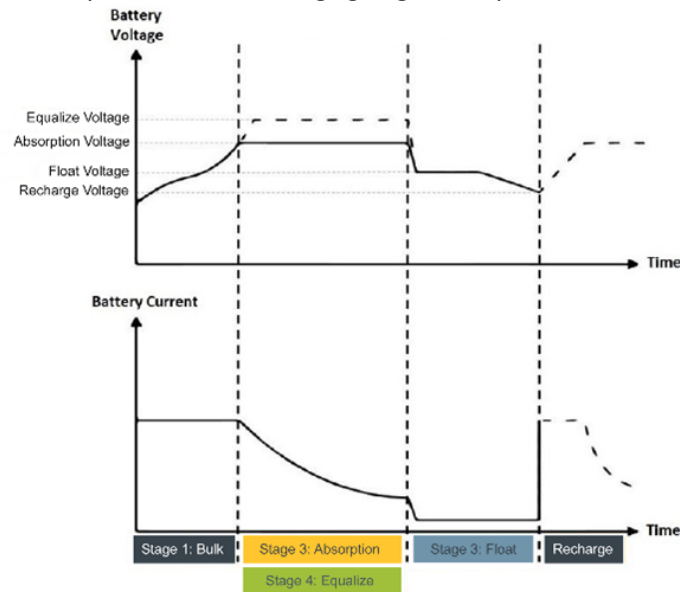
1.11 BATTERY TYPE

The SC-DB-MPPT controller is suitable for use with lead acid batteries (vented, GEL, or AGM) as well as lithium iron phosphate (LiFePO4) batteries that are supplied with a battery management system (BMS).

A custom profile in the settings allows creating a specific battery profile by programming and adjusting various charging parameters such as the charging voltage set points.

1.12 BATTERY CHARGING STAGES

Maximum power point tracking is used to charge the batteries with the highest current possible, but this is only part of the equation. The multistage battery charger can use up to four different charging stages to help monitor and keep the batteries healthy.



These stages include bulk, absorption, float and, for some types of batteries, equalization.

1.12.1 FIRST STAGE: BULK

In the bulk stage, the battery voltage has not yet reached the set value of full charge voltage (i.e. equalizing/boost charge voltage) and the controller will perform MPPT charging, which will provide maximum solar energy to charge the battery. When the battery voltage reaches the absorption voltage, the second stage will start.

1.12.2 SECOND STAGE: ABSORPTION

When the battery voltage reaches the absorption voltage, the controller will perform constant voltage charging. This is no longer MPPT charging, and the charging current will gradually decrease with time.

1.12.3 THIRD STAGE: FLOAT

After the absorption stage, the controller will reduce the charge current to a small amount in order to reduce sulfates on the battery plates or to allow a lithium battery to balance its cells. If the load exceeds this small current the battery voltage will start to decrease until it reaches the recharge voltage. When the battery voltage falls below the recharge voltage, the controller will switch back to bulk charging.

1.12.4 FOURTH STAGE: EQUALIZATION



Warning: Risk of explosion! Equalizing vented lead-acid battery may generate explosive gases. So, the battery compartment must be well ventilated.



Caution: Damage of device! Equalization can increase the battery voltage to levels that may damage sensitive DC loads. It is necessary to verify that the allowable input voltage of all system loads is greater than the equalizing charge set value.



Caution: Damage of device! Over charge and excessive gas evolution may damage the battery plates and cause active substances on the battery plate to come off. Equalizing charge may cause damage if voltage is too high, or time is too long. Please carefully check the specific requirements of battery used in the system.

Certain battery types benefit from equalization charging to stir up stratified electrolyte and to reverse any battery plate sulfation that may have occurred. The equalization charge increases the battery voltage above a standard voltage, causing vaporization of battery electrolyte. By default, this happens every 30 days for flooded batteries.

1.12.5 RECHARGE

After the battery is completely charged the charging cycle completes and the battery is allowed to slowly discharge until it reaches the charge return voltage at which point a new charge cycle is initiated.

1.12.6 CHARGE PARAMETERS FOR VARIOUS BATTERY TYPES

If the manufacturer of your third-party battery recommends charging parameters that differ from the parameters in the table below, select the custom battery option to manually set your charging profile.

PARAMETER	GEL 12V/24V	AGM 12V/24V	FLOODED 12V/24V	LIFEPO4 12V/24V	CUSTOM 12V/24V
High Voltage Disconnect	16.0 / 32.0 V	16.0 / 32.0 V	16.0 / 32.0 V	14.6 / 29.2 V	14.0 V..16.0 V / 28.0 V..32.0 V
Equalize Voltage	-	-	14.9 / 29.8 V	-	<16.0 V / <32.0 V
Bulk-Absorption Voltage	14.1 / 28.2 V	14.4 / 28.8 V	14.4 / 28.8 V	14.4 / 28.8 V	<16.0 V / <32.0 V
Float Voltage	13.7 / 27.4 V	13.7 / 27.4 V	13.7 / 27.4 V	14.0 / 28.0 V	<16.0 V / <32.0 V
Recharge Voltage	13.2 / 26.4 V				<16.0 V / <32.0 V
Over-Discharge Return Voltage	12.8 / 25.2 V	12.8 / 25.2 V	12.8 / 25.2 V	12.2 / 24.4 V	11.0 V..22.0 V / 16.0 V..32.0 V
Under-Voltage Warning Level	11.0 V..22.0 V / 14.0 V..28.0 V				
Discharge Limit Voltage	10.0 V..20.0 V / 13.0 V..26.0 V				
Over-Discharge Time Delay	0..250 seconds				
Equalize Duration	-	-	120 minutes	-	0..65530 minutes
Absorption Duration	120 minutes				0..65530 minutes
Equalize Interval	-	-	30 days	-	0..250 days
Temperature Compensation Factor	-24 mV/°C	-24 mV/°C	-24 mV/°C	-	0..-99 mV/°C
High Voltage Limit	14.0 V..16.0 V / 28.0 V..32.0 V				
High Voltage Return	11.0 V..16.0 V / 22.0 V..32.0 V				

2.1 CHOOSING AN INSTALLATION LOCATION

The SC-DB-MPPT controller is designed to be mounted flush against a wall, out of the way, but easily visible with an unobstructed view of the status LEDs. The SC-DB-MPPT must be installed in a location that meets the following requirements.

- The controller must be mounted as close to the battery as possible.
- The controller must be mounted vertically on a non-flammable surface with power terminals facing downward to optimize cooling of the unit by natural convection.
- The controller must be indoors, protected from the weather.
- The controller must be mounted with at least 6 inches of air gap above and below for the natural convection to be effective.

Solar connections should connect directly to the controller. Positive and negative battery connections must connect directly from the controller to the batteries. Use of a positive or negative distribution bus is allowed between the controller and battery as long as it is properly sized, electrically safe and an adequate wire size is maintained.



2.2 REQUIRED TOOLS AND MATERIALS

- Phillips screwdriver
- Drill
- 7/64" drill bit
- No tools needed for wiring connections (tool-less lever terminals)

3. INSTALLATION INSTRUCTIONS

3.1 MOUNTING THE CONTROLLER

Use the SC-DB-MPPT mounting template located in the appendix to mark out all four mounting holes in the desired mounting location. Drill four pilot holes with a 7/64" drill bit at the marked locations. Insert the screws in the top two mounting holes, without fully tightening them. Align the top two mounting holes of the controller with the pre-fixed screws and hang the controller on the wall. Tighten the top two screws, then insert the bottom two screws and tighten them.

3.2 INSTALLATION OF THE SOLAR PANELS

Install your solar array, and cover panels with opaque material until all wiring is complete. If your SC-DB-MPPT was purchased as part of a solar power kit, follow the installation guide provided. Otherwise, follow manufacturer's instructions for solar panel mounting and wiring.

3.3 WIRE TYPE AND GAUGE

If this SC-DB-MPPT was purchased as part of a solar power kit, appropriate wire type, gauge, and length is provided. If the SC-DB-MPPT was purchased separately, follow the instructions included here.

Wire type is recommended to be a stranded copper. Note, any external wiring should be UV-resistant, outdoor rated wire. Wire gauge should be able to sustain rated current and minimize voltage drop.

3.3.1 WIRE GAUGE & FUSE SIZING

The table below outlines the suggested minimum wire gauge and maximum fuse size with a 25 ft maximum length from the solar array to the battery bank. The wire length between the battery bank and the solar controller should be maximum 10ft.

PARAMETER	SC-DB-MPPT-30	SC-DB-MPPT-40
Minimum Wire Gauge (105 C rated insulation)	10 AWG	8 AWG
Maximum Fuse Size	40 A	55 A

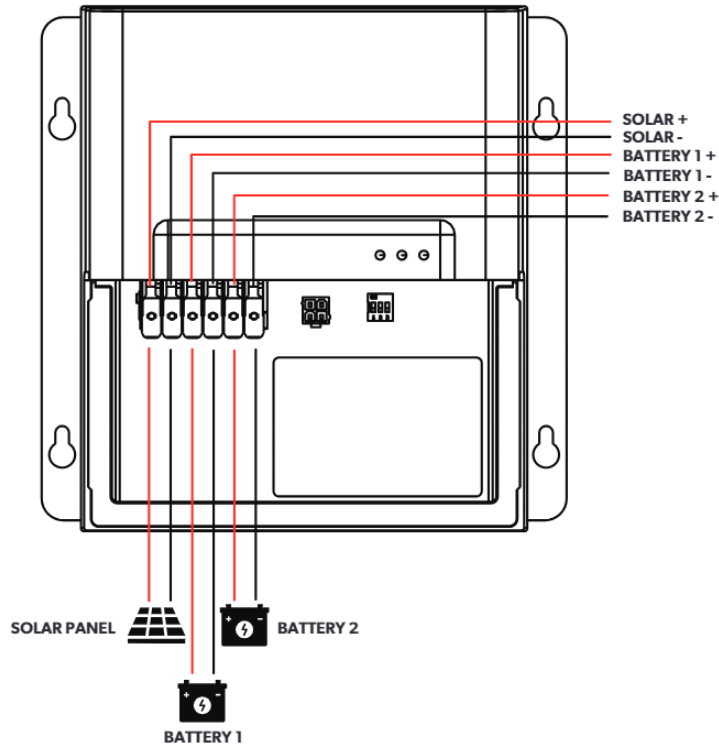


IMPORTANT: Identify the polarity (positive and negative) on the cable used for the battery and solar panel. Use colored wires or mark the wire ends with tags. Although the SC-DB-MPPT is reverse polarity protected, a reverse polarity contact may damage the unit or other connected equipment.

3.3.2 WIRE STRIP LENGTH

The wire stripping length for the push-in cage clamps is approximately 11-13 mm (0.5 in).

3.4 SOLAR CONTROLLER WIRING



1. Route the wires from the solar array and the batteries to the location of the SC-DB-MPPT controller.



If a fuse is being used as circuit protection, do not connect to the batteries at this time. If a breaker is being used as circuit protection, batteries may be connected, but ensure breaker is in the off position.



Keep the solar array covered with an opaque material until all wiring is completed.



IMPORTANT: All wiring must be in accordance to National Electrical Code, ANSI/NFPA 70. Always use appropriate circuit protection on any conductor attached to a battery.

- Remove the cover from the solar controller. Refer to the wiring diagram above or terminal ID label on the inside of the removable cover for connection details.

Note The wires will be connected with the push-in cage clamps. To do so, lift the orange lever until it is perpendicular with the terminals and insert the wire into the terminal. Push in the wire as far as the terminal will allow. Press down on the orange lever to lock the wire in place. Ensure the wire is securely inserted by pulling back firmly on the wire.

- Connect the main battery to the B1+ and B1- terminals as shown in the terminal diagram. The main battery alone can power on the controller.
- Connect PV to the PV+ and PV- terminals as shown in the terminal diagram. PV alone can power on the controller.
- Connect the secondary battery to the B2+ and B2- terminals as shown in the terminal diagram (optional). The secondary battery alone will not power on the controller.

Note The controller will not work unless there is a battery connected to the battery terminals with at least 8 V or energized solar panels connected.



CAUTION: Risk of Electric Shock: When the photovoltaic array is exposed to light, it supplies a DC voltage to this equipment.



CAUTION: Internal Temperature Compensation: Risk of fire, ensure the length of wire between the controller and the batteries is less than 3m.

- Turn on breakers or connect to batteries in the order of battery 1, battery 2, and PV. The controller will power up and the green LED will start flashing. Remove the opaque material from the solar array.

Note The negative solar array and battery wiring must be connected directly to the controller for proper operation. Do not connect the negative solar array or negative battery controller wiring to the chassis of the vehicle.

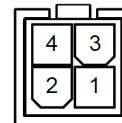


WARNING: This unit is not provided with a GFDI device. This charge controller must be used with an external GFDI device as required by Article 690 of the National Electric Code for the installation location.

3.5 RV-C CONNECTION

The RV-C connector is a standard RV-C Molex connector with the following pinout.

1	2	3	4
CAN H	CAN L	GND	+12 V



Use this to connect the SC-DB-MPPT to the RV-C bus, and other RV-C devices, like the PowerTrak Display (sold separately).

4. OPERATION

4.1 POWER ON




The SC-DB-MPPT controller will automatically power on when it is connected to the battery or energized solar panels.



IMPORTANT: You must set the battery type on the SC-DB-MPPT before you begin to use the controller (follow steps in section 4.4.5). The default battery setting is for AGM batteries.

4.2 LED INDICATORS

The SC-DB-MPPT controller has three LED indicators that display the status of the controller.

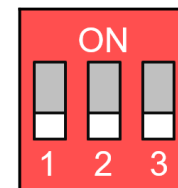
LED	STATUS	FUNCTION
 Green	On Slow (750 ms) Fast (100 ms)	Charging enabled and sufficient PV Voltage Charging disabled or battery not detected Charging enabled and insufficient PV voltage
 Yellow	Off On	Warnings clear Warnings active
 Red	Off On	Faults clear Faults active



4.3 INSTANCES

The DIP switches on the SC-DB-MPPT are for setting the controller instances. This is how devices are distinguished on the RV-C bus. Refer to the table below or the instance ID label on the inside of the removable cover to set the instances. If you have multiple solar controllers in your system, make sure they each have a unique instance ID.

INSTANCE ID	DIP 1	DIP 2	DIP 3
1	OFF	ON	ON
2	ON	OFF	ON
3	OFF	OFF	ON
4	ON	ON	OFF
5	OFF	ON	OFF



4.4 POWERTRAK DISPLAY

The PowerTrak Display is the remote required for controlling the settings on the SC-DB-MPPT and viewing system details. The SC-DB-MPPT and the PowerTrak Display (sold separately) are compatible with the Dometic PowerTrak system. The PowerTrak system technology ensures compatible devices work together to optimize power flow and efficiency. This section will outline connection and basic operation of the PowerTrak Display. For more details, please use the QR code below to access the user manual for the PowerTrak Display.

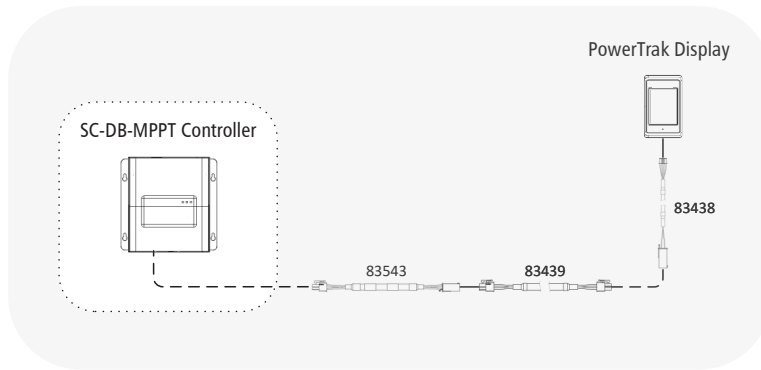


Scan the QR code to access the PowerTrak Display user manual.

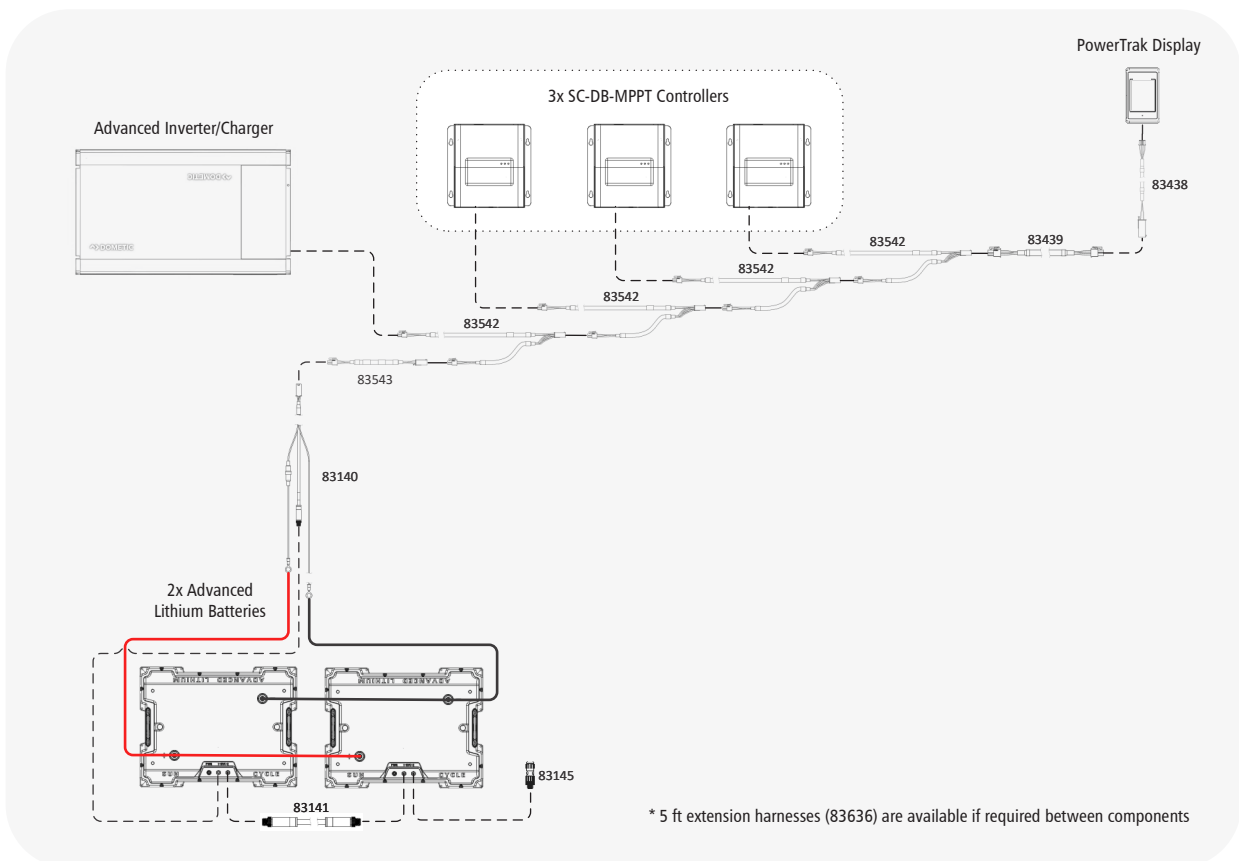
4.4.1 DEVICE CONNECTION

The PowerTrak devices are connected via RV-C harnessing (sold separately). The wiring diagram below shows the connection details for a system with a SC-DB-MPPT and a PowerTrak Display.

Note The adapter harness (83438) is included with the PowerTrak Display. All other RV-C harnesses must be purchased separately from Dometic.



Other examples of PowerTrak compatible devices include the Advanced Inverter/Charger, and the Advanced Lithium Batteries. A wiring diagram for an example system including these devices is shown below.



* 5 ft extension harnesses (83636) are available if required between components

If your power system contains other RV-C compatible devices, you may require a different combination of RV-C harnesses. Please refer to our RV-C Configurator through the QR code below to determine which cables are required for your system. Contact technical support at 1-866-247-6527 if you are unsure about the RV-C requirements for your system.



Scan the QR code to access the RV-C Configurator.

4.4.2 DISPLAY POWER-UP

The PowerTrak Display is powered from the SC-DB-MPPT controller via the RV-C cable, and automatically turns on when connected to the system. A message is displayed that a search for connected devices is in progress.


Confirm the SC-DB-MPPT is loaded on the screen, along with any other components that are in your system.

1. Press the  button.



Note

If the SC-DB-MPPT is connected to Advanced Lithium Batteries and is being set up for the first time, you will be prompted to auto-configure the system. If you would like to do so, press "Yes".

4.4.3 OPENING THE DISPLAY SETTINGS

1. Press the  button to open the settings.
2. Press the name of the setting to be adjusted.

4.4.4 SWITCHING THROUGH THE SETTINGS

1. Press the arrow buttons to switch through the settings.
2. Press the  button in the top left corner of the display to switch to the previously displayed screen.
3. Press the  button to display the home screen.

4.4.5 SOLAR SETTINGS

1. Press the "Solar Settings" button on the settings screen.
2. Press the "B1 Battery Type" and "B2 Battery Type" buttons to set the battery type for the B1 (main) battery and B2 (trickle charge) battery in your system.
3. Press the "B1 Capacity" and "B2 Capacity" buttons to set the capacity of the B1 (main) battery and B2 (trickle charge) battery in your system.
4. Press the "Force Charge" button to change the charge state on the B1 (main) battery or B2 (trickle charge) battery in your system.
5. If you selected "Custom" batteries for B1 and/or B2, solar settings pages 4-13 will be visible. The values on these pages must be set if you have a custom battery bank set up. Refer to the battery manufacturers recommendations when setting these values.

4.5 USING THE CONNECT APP



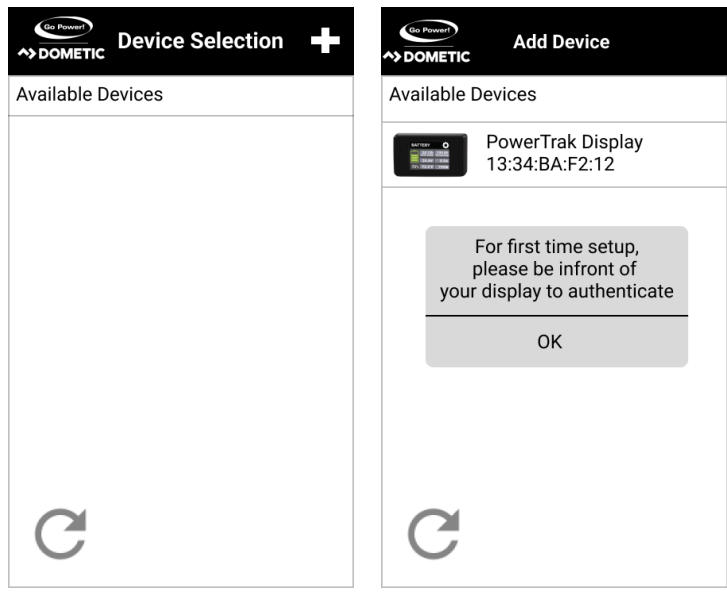
Scan the QR code to access the download page for the Connect app.

4.5.1 CONNECTING THE POWERTRAK DISPLAY TO THE APP

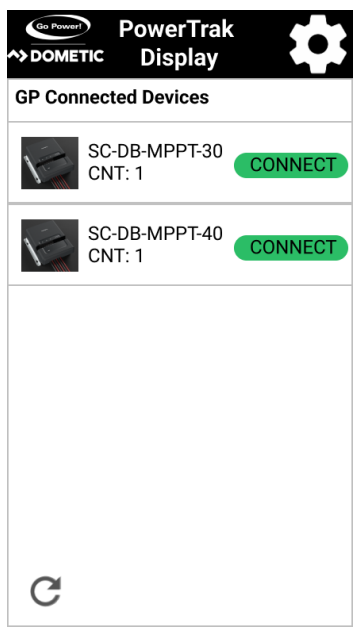
1. Use the + button to pair the PowerTrak Display with the app.

Note Ensure that the BLE function is enabled in the PowerTrak Display settings, and that location and BLE are enabled on your device.

2. A message will be displayed asking to place the devices to be paired close to each other for first time set up. Press the **OK** button.

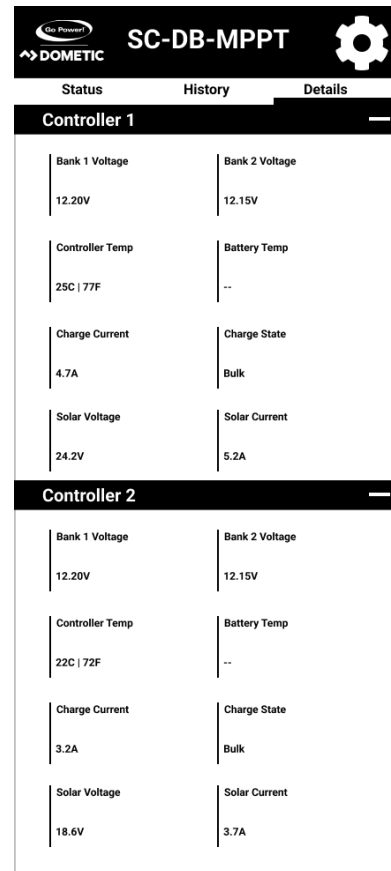
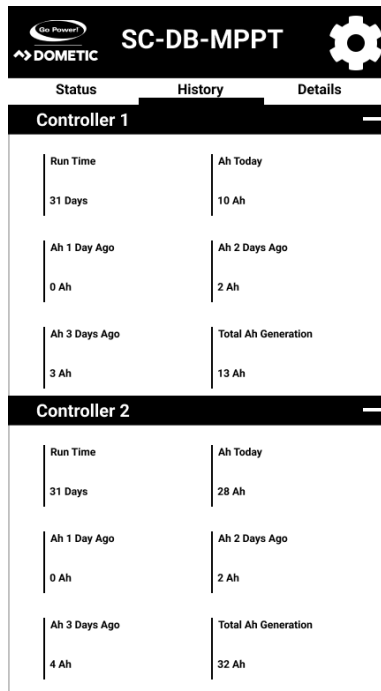
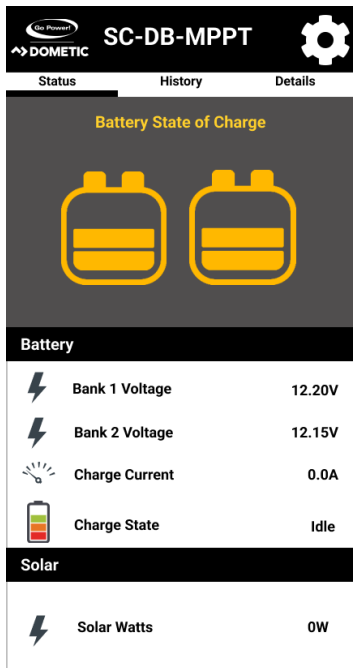



3. After pairing the connected devices are listed. If the PowerTrak Display is connected to the SC-DB-MPPT and has been paired with the app correctly, the SC-DB-MPPT should be listed as a connected device. If necessary, press the refresh button in the bottom left corner to reload the list.




4.5.2 ACCESSING THE SOLAR SETTINGS

1. Press the **CONNECT** button that corresponds to the SC-DB-MPPT.
2. The main status screen for the SC-DB-MPPT will be displayed. The history and details tabs can be pressed to display more details about the controller.



3. Press the  button to access the solar settings. Press the setting you would like to change, and follow the app instructions.

 **MPPT Settings**

Battery Settings

Bank 1 Battery Type Lithium

Bank 1 Capacity 300Ah

Bank 2 Battery Type Lithium

Bank 2 Capacity 300Ah

Controller Settings

Bank 1 Charging Limit 30A

Bank 2 Charging Limit 25A


Additional Settings

FW Version 1.13

App Version 1.79

Reset MPPT to Default Settings

4. If a custom battery type is selected, the following settings will be available.

 **MPPT Settings**

Battery Settings

Bank 1 Battery Type Custom

Bank 1 Capacity 300Ah

Bank 2 Battery Type Custom

Bank 2 Capacity 300Ah

Controller Settings

Bank 1 Charging Limit 30A

Bank 2 Charging Limit 25A

Advanced Bank 1 Settings

Bank 1 High Voltage Disconnect 16.0V

Bank 1 Equalize Voltage 14.1V

Bank 1 Equalize Duration 30 Min

Bank 1 Equalize Internal 5 Days

Bank 1 Bulk-Abs Voltage 14.4V

Bank 1 Absorption Duration 120 Min

Bank 1 Float Voltage 14.1V

Bank 1 Recharging Voltage 12.8V

Bank 1 Under Voltage Warning 10.5V

Bank 1 Discharge Limit Voltage 10.0V

Bank 1 Over-Discharge Delay Time 15 Sec

Bank 1 Over-Discharge Return 10.3V

Advanced Bank 2 Settings

Bank 2 High Voltage Disconnect 16.0V

Bank 2 Equalize Voltage 14.1V

Bank 2 Equalize Duration 30 Min

Bank 2 Equalize Internal 5 Days

Bank 2 Bulk-Abs Voltage 14.4V

Bank 2 Absorption Duration 120 Min

Bank 2 Float Voltage 14.1V

Bank 2 Recharging Voltage 12.8V

Bank 2 Under Voltage Warning 10.5V

Bank 2 Discharge Limit Voltage 10.0V

Bank 2 Over-Discharge Delay Time 15 Sec

Bank 2 Over-Discharge Return 10.3V

Additional Settings

FW Version 1.13

App Version 1.79

Reset MPPT to Default Settings

Maintaining your solar charge controller is essential to ensure it operates efficiently and effectively. We recommend following these maintenance protocols **once every six (6) months**:

- Inspecting the controller: Check the charge controller regularly to see if it's in good condition. Inspect the wires, terminals, and other parts for damage or wear.
- Inspect the solar panels: Check the solar panels for damage or debris that can reduce their efficiency. Keep them clean and clear of obstructions.
- Check the wiring: Inspect the wiring and connections regularly to ensure they're in good condition and not loose or damaged.
- Keep the battery clean: Clean the battery terminals and connections regularly to prevent corrosion, which can affect the battery's performance.

6. TROUBLESHOOTING

How to Read this Section

Troubleshooting Problems is split into two sub-sections, grouped by symptoms involving key components. Components considered irrelevant in a diagnosis are denoted 'Not Applicable' (N/A). A multimeter or voltmeter may be required for some procedures listed.

It is imperative all electrical precautions stated in the Warning Section and outlined in the Installation Section are followed. Even if it appears the system is not functioning, it should be treated as a fully functioning system generating live power.

6.1 PROBLEMS WITH VOLTAGE

Voltage Reading: Inaccurate

Time of Day: Daytime/Nighttime

Possible Causes:

- Excessive voltage drop from batteries to controller due to loose connections, small wire gauge, too long of wire length, or a combination of these.

How to tell:

1. Check the voltage at the controller battery terminals with a voltmeter and compare with the voltage reading at the battery terminals.
2. If there is a voltage discrepancy of more than 0.5 V, there is an excessive voltage drop.

Remedy:

Check all connections from the controller to the battery including checking for correct wire polarity. Check that all connections are clean, tight, and secure. Shorten the distance from the controller to battery or obtain larger gauge wire.

6.2 PROBLEMS WITH CURRENT

Current Reading: Less than expected

Time of Day: Daytime, clear sunny skies

Possible Cause:

- Current is being limited as per normal operation due to over temperature, or charging stage.
- Incorrect series/parallel solar panel configuration and/or wiring connections and/or wire gauge (for multiple panel systems).
- Dirty or shaded panel or lack of sun.
- Blown diode in solar panel when two or more panels are connected in parallel.

How to tell:

1. Battery voltage is at or very near the boost or float charge setting.
2. The device temperature is too high.
3. Check that the panels and batteries are configured correctly. Check all wiring connections.
4. Panels look dirty, overhead object is shading panels or it is an overcast day in which a shadow cannot be cast.

Note

Avoid any shading no matter how small. An object as small as a broomstick held across the solar panel may cause the power output to be reduced. Overcast days may also decrease the power output of the panel.

5. Disconnect one or both array wires from the controller. Take a voltage reading between the positive and negative array wire. Compare to nameplate rating. If you have more than one solar panel, you will need to conduct this test between the positive and negative terminals of each panel junction box with either the positive or the negative wires disconnected from the terminal.

Remedy:

1. Reconnect in correct configuration. Tighten all connections. Check wire gauge and length of wire run. Refer to suggested minimum wire gauge in section 3.
2. Clean panels, clear obstruction or wait for conditions to clear.
3. If the open circuit voltage of a non-connected solar panel is lower than the manufacturer's specifications, the panel may be faulty. Check for blown diodes in the solar panel junction box, which may be shorting the power output of the panel.

7. LIMITED WARRANTY

The Dometic warranty is valid against defects in materials and workmanship for the specific product warranty period. It is not valid against defects resulting from, but not limited to:

- Misuse and/or abuse, neglect, or accident.
- Exceeding the unit's design limits.
- Improper installation, including, but not limited to, improper environmental protection and improper hook-up.
- Acts of God, including lightning, floods, earthquakes, fire, and high winds.
- Damage in handling, including damage encountered during shipment.

A warranty shall be considered void if the warranted product is in any way opened or altered. The warranty will be void if any fasteners used to seal the unit are removed or altered, or if the unit's serial number is in any way removed, altered, replaced, defaced, or rendered illegible.

Warranty Return Procedure

Before contacting the customer service department, please read the "frequently asked questions" section of our website to troubleshoot the problem. If trouble persists:

Call the Technical Support team (1-866-247-6527) or return defective product to place of purchase.

Unless approved by Dometic Management, all product shipped collect to Dometic will be refused. Test items or items that are not under warranty, or units that are not defective, will be charged a minimum bench charge of \$50.00 US plus taxes and shipping. A 15% restocking charge will be applied on goods returned and accepted as "new" stock.

An RMA (return materials authorization) number from Dometic Customer Service is required prior to returning any Dometic products. Dometic reserves the right to refuse any items sent to Dometic without an associated RMA number. To obtain an RMA number, please contact customersupport.gopower@dometic.com or Telephone 1-866-247-6527.

Out of Warranty

Dometic electronic products are non-repairable. Dometic does not perform repairs on its products nor does it contract out those repairs to a third party. Dometic does not supply schematics or replacement parts for any of its electronic products.

8.1 MOUNTING TEMPLATE

