

BatteryMINDer®

INSTRUCTION MANUAL

Model SCC180 Solar Controller / Charger Maintainer Desulfator with Temperature Sensing

IMPORTANT: For Solar panels up to **200 Watts** and
Voltages not to exceed **25 Volts**



READ AND SAVE THESE INSTRUCTIONS

VDC Electronics, Inc. • 155 W. Carver St., Ste. 2 • Huntington, NY 11743

www.BatteryMINDers.com • techsupport@vdcelectronics.com

Table of Contents

- Required Safety Instructions 3 - 9
- Overview & Instructions..... 9 - 10
- Battery Condition Indicator (BCI) 11
- BCI Installation 12
- Testing Battery..... 12
- Temperature Sensor Type: ABS-248 (Optional)13 - 14
- Temperature & Voltage Tables15 - 16
- Frequently Asked Questions 17
- Your Notes 18
- For Repair Or Replacement..... 19
- Guarantee And Warranty 20

Glossary of Terms

- **Maintain a battery**
BatteryMINDer ensures batteries are truly fully charged and will likely continue improving the condition of the battery to the fullest extent possible.
- **Rested**
A battery that has been as fully charged as possible and left disconnected from charger or any type load overnight.
- **Specific Gravity**
One of the key parameters of battery operation is the specific gravity of the electrolyte. Specific gravity is the ratio of the weight of a solution to the weight of an equal volume of water at a specified temperature. Specific gravity is used as an indicator of the state of charge of a cell or battery.
- **Sulfation**
Occurs when the battery sits for long periods of time and the electrolyte solution begins to break down. Sulfur in the solution leaches from the electrolyte, sticking to the lead plates as converted lead sulfuric crystals.

REQUIRED SAFETY INSTRUCTIONS WARNING

READ AND FULLY UNDERSTAND BEFORE OPERATING

**Contact VDC Electronics if uncertain about any settings or operation.
TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR
INJURY TO PERSON, OBSERVE THE FOLLOWING:**

1. SAVE THESE INSTRUCTIONS

2. *This manual contains important safety and operating instructions for all BatteryMINDer Models although not all items may be applicable to your model.*
3. Do not expose charger to rain or snow.
4. Use of an attachment not recommended or sold by VDC Electronics may result in a risk of fire, electric shock, or injury to persons.
5. To reduce risk of damage to electric plug and cord, pull by plug rather than cord when disconnecting charger.
6. An extension cord should not be used unless absolutely necessary. Use of improper extension cord could result in a risk of fire and electric shock. If an extension cord must be used, make sure:
 - a. That pins on plug of extension cord are the same number, size, and shape as those of plug on charger;
 - b. That extension cord is properly wired and in good electrical condition; and That wire size is large enough for ac ampere rating of charger as specified in Table below.
7. Do not operate charger with damaged cord or plug – replace the cord or plug immediately.
8. Do not operate charger if it has received a sharp blow, been dropped, or otherwise damaged in any way; call **Support Dept. 800.379.5579 x6 (ET)** for advice. Do not disassemble charger; call **VDC Electronics Tech Support Dept. 800.379.5579 x6 (ET)** for advice when service or repair is required. Incorrect reassembly may result in a risk of electric

Recommended minimum AWG size for extension cords for battery chargers					
AC input rating, amperes ^a		AWG size of cord			
Equal to or greater than	But less than	Length of cord, feet (m)			
		25 (7.6)	50 (15.2)	100 (30.5)	150 (45.6)
0	2	18	18	18	16

^aIf the input rating of a charger is given in watts rather than in amperes, the corresponding ampere rating is to be determined by dividing the wattage rating by the voltage rating - for example: 1250 watts/125 volts = 10 amperes

shock or fire.

9. To reduce risk of electric shock, unplug charger from outlet before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.

10. WARNING – RISK OF EXPLOSIVE GASES

- a. **WORKING IN VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON, IT IS OF UTMOST IMPORTANCE THAT YOU FOLLOW THE INSTRUCTIONS EACH TIME YOU USE THE CHARGER.**
- b. To reduce risk of battery explosion, follow these instructions and those published by manufacturer of any equipment you intend to use in vicinity of battery. Review cautionary marking on these products and on engine.

11. PERSONAL PRECAUTIONS

- a. Consider having someone close enough by to come to your aid when you work near a lead-acid battery.
- b. Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
- c. Wear complete eye protection and clothing protection. Avoid touching eyes while working near battery.
- d. 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 10 minutes and get medical attention immediately.
- e. NEVER smoke or allow a spark or flame in vicinity of battery or engine.
- f. Be extra cautious to reduce risk of dropping a metal tool onto battery. It might spark or short-circuit battery or other electrical part that may cause explosion. Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a lead-acid battery. A lead-acid battery can produce a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.
- g. Use charger for charging a LEAD-ACID battery only. It is not intended to supply power to a low voltage electrical system other than in a starter-motor application. Do not use battery charger might spark or short-circuit battery or other electrical part that may cause explosion.
- h. Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a lead-acid battery. A lead-acid battery can produce a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.

- i. Use charger for charging a LEAD-ACID battery only. It is not intended to supply power to a low voltage electrical system other than in a starter-motor application. Do not use battery charger for charging dry-cell batteries that are commonly used with home appliances. These batteries may burst and cause injury to persons and damage to property.
- j. NEVER charge a frozen battery or a battery at a temperature above 123° F.

12. PREPARING TO CHARGE

- a. If necessary to remove battery from vehicle to charge, always remove grounded terminal from battery first. Make sure all accessories in the vehicle are off, so as not to cause an arc.
- b. Be sure area around battery is well ventilated while battery is being charged.
- c. Clean battery terminals. Be careful to keep corrosion from coming in contact with eyes.
- d. Add distilled water in each cell until battery acid reaches level specified by battery manufacturer. Do not overfill. For a battery without removable cell caps, such as valve regulated lead acid batteries, carefully follow manufacturer's recharging instructions.
- e. Study all battery manufacturer's specific precautions while charging and recommended rates of charge.
- f. Determine voltage of battery by referring to car owner's manual and make sure it matches output rating of battery charger.

13. CHARGER LOCATION

- a. Locate charger as far away from battery as DC cables permit.
- b. Never place charger directly above battery being charged; gases from battery will corrode and damage charger.
- c. Never allow battery acid to drip on charger when reading electrolyte specific gravity or filling battery. Do not operate charger in a closed-in area or restrict ventilation in any way.
- d. Do not set a battery on top of charger.
- e. Always mount units in vertical position with cord sets exiting downward to ensure weather tight integrity. Unit must be mounted in this manner to ensure long term trouble free life including weatherproof integrity. **Mounting in any other manner or using un-mounted (parallel to ground) except indoors may cause unit to fail due to water intrusion that is unable to drain correctly to avoid damage.**

DC CONNECTION PRECAUTIONS

- f. Connect and disconnect DC output clips only after setting any charger switches to "off" position and removing ac cord from

electric outlet. Never allow clips to touch each other.

- g. Attach clips to battery and chassis as indicated in 15(e), 15(f), and 16(b) through 16(d).

14. FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN VEHICLE. A SPARK NEAR BATTERY MAY CAUSE BATTERY EXPLOSION. TO REDUCE RISK OF A SPARK NEAR BATTERY:

- a. Position AC and DC cords to reduce risk of damage by hood, door, or moving engine part.
- b. Stay clear of fan blades, belts, pulleys, and other parts that can cause injury to persons.
- c. Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has larger diameter than NEGATIVE (NEG, N, -) post.
- d. Determine which post of battery is grounded (connected) to the chassis. If negative post is grounded to chassis (as in most vehicles), see (e). If positive post is grounded to the chassis, see (f).
- e. When disconnecting charger, turn switches to off, disconnect AC cord, remove clip from vehicle chassis, and then remove clip from battery terminal.
- f. See operating instructions for length of charge information.

15. FOLLOW THESE STEPS WHEN BATTERY IS OUTSIDE VEHICLE. A SPARK NEAR THE BATTERY MAY CAUSE BATTERY EXPLOSION. TO REDUCE RISK OF A SPARK NEAR BATTERY:

- a. Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has a larger diameter than NEGATIVE (NEG, N, -) post.
- b. Attach at least a 24-inch-long 6-gauge (AWG) insulated battery cable to NEGATIVE (NEG, N, -) battery post.
- c. Connect POSITIVE (**RED**) charger clip to POSITIVE (POS, P, +) post of battery.
- d. Position yourself and free end of cable as far away from battery as possible – then connect NEGATIVE (**BLACK**) charger clip to free end of cable.
- e. Do not face battery when making final connection.
- f. When disconnecting charger, always do so in reverse sequence of connecting procedure and break first connection while as far away from battery as practical.
- g. A marine (boat) battery must be removed and charged on shore. To charge it on board requires equipment specially designed for marine use.

QUALIFYING YOUR BATTERY:

Preliminary Requirements

NOTE: The BatteryMINDER has no electrical output unless it is connected to a healthy battery. Testing the BatteryMINDER with a volt or an Amp meter without the unit being connected across a good battery will result in a false reading. If you experience any problems, or are not sure of how to properly use or connect your BatteryMINDER, please e-mail our technical support at: techsupport@vdcelectronics.com or call our toll-free technical support line 800-379-5579 x6 (Eastern Time). **Be certain to leave your phone number with the area code, time zone and the best time to call.**

To gain the best result from your new charger and to maximize the life and performance of your batteries we strongly recommend you qualify (test) your batteries before attempting to either charge-maintain or desulfate them. Remember, even if you just purchased a “new” battery it may have been subjected to conditions that have caused “sulfation” such as high temperature ($\geq 80^\circ$).

NOTE: If your battery is new and you are certain it was not subject to conditions that could have caused sulfation*, even before you purchased it, then you can disregard our recommendations for qualifying / testing your battery, before using the BatteryMINDER.

* Such as high temperature storage ($\geq 80^\circ\text{F}$) and/or allowed to self-discharge to **12.4 Volts** / **24.8 Volts** or lower.

Testing a Filler Cap or Manifold-type Lead Acid Battery

1. Carefully remove all caps from your battery.
2. Check the water-liquid electrolyte level. If the level is low or has ever been below top of plates, severe lead plate sulfation has taken place. Significant recharge/reconditioning time is needed to restore these plates to a condition where the battery can be expected to function normally.
3. Refill each cell with distilled water only to the liquid level indicator found in each cell. **Before proceeding further you must be thoroughly familiar with the safety and operating instructions.**
4. Recharge the battery with the BatteryMINDER to ensure that it is slowly and completely charged before you determine its condition. Allow battery to “rest” (see **Glossary of Terms**) overnight for a minimum of 12 hours before testing with a temperature compensated hydrometer and/or digital type voltmeter only.

Testing with a Hot/Cold Calibrated Hydrometer Tester

Read the tester instructions carefully for most accurate readings.

1. When using the tester the first time or after a long period of non-use, fill the tester with the battery fluid and let it sit for 1/2 hour or longer. This will soak the balls in order to give you more accurate readings. Failure to do so will give you false readings indicating a battery that may not be in as good a condition as you may have thought.
2. After inserting the tester in a cell, gently tap the tester several times against the inside wall of each cell to dislodge air bubbles that will cause more balls to float than should. Failure to do so will yield false readings that indicate a battery that is not fully desulfated or does not qualify for desulfation.
3. If no balls float in any cell, the cell is shorted. This means your battery is beyond the point of being properly recharged or reconditioned-desulfated. Dispose of the battery.
4. If each cell floats three (3) or more balls (or 1250 on gauge-type), your battery can be desulfated-reconditioned.
5. Always rinse the tester with fresh water after every use. Failure to do so will cause false readings.

Testing a Sealed, AGM or GEL Lead Acid Battery

These batteries have no filler caps or manifold-type covers. Because you cannot gain access to the interior of your battery you cannot test it with a hydrometer.

USE A DIGITAL VOLTMETER ONLY:

1. Recharge the battery with the BatteryMINDer to ensure it is as completely charged as possible, before you determine its condition. Allow battery to “rest” (see *Glossary of Terms*) overnight for a minimum of 12 hours before testing with a digital voltmeter only. Failure to test a “rested”

Specific Gravity – Capacity	
Temperature Compensated Hydrometer - Meter or 4 ball type	Full Capacity Percentage
1.270 (4 Balls floating)	100%
1.250 (3 Balls floating)	75%
1.190 (2 Balls floating)	50%
1.150 (1 Balls floating)	25%
1.120 (0 Balls floating) May denote shorted cell or battery that has been severely discharged and may not be recoverable	0%

- battery will cause false readings. Be certain to read and understand all safety related instructions (pages 3 to 6) before proceeding further.
2. Measure battery's voltage, without any load attached. If the voltage is less than **12.4 volts / 24.8 volts** (Typically 50% of charge) the battery may be too heavily sulfated to be fully recoverable. If voltage is **12.4V / 24.8V** or higher full recovery can be expected, given sufficient time (average 1-2 weeks for batteries that are heavily sulfated).
 3. Connect the BatteryMINDER to the battery.
 4. Charge battery to its maximum level. Allow battery to remain for a minimum of 72 hours before retesting. If improvement is seen, continue until battery voltage reaches full capacity level or no further increase is seen.

Note: OPTIMA brand “Yellow Top” starter/deep cycle batteries have a fully charged “resting” voltage of 13.1 (OCV). Increase above values accordingly.

Please read these simple instructions before making any attempt to permanently or temporarily installing your SCC180 controller.

OVERVIEW

Note: Your battery(s) need to be in “good” condition to gain the full benefits from your BatteryMINDER Solar maintenance charger–desulfator system. By “good” we mean no shorted cells, and a “rested” voltage of each battery = /> 12 volts*. When able to test your batteries with a hydrometer, do so only after fully charging them and waiting at least overnight before testing for specific gravity level. If your readings indicate battery is holding a charge equal to only 1125 (1.125 s.g.) or only 2 balls floating (in a 4 ball type hydrometer) or just 12.25 volts (when tested with a digital voltmeter), your batteries should first be desulfated with a 120 Vac input type charger-desulfator. Once your batteries are properly desulfated your solar charging system will be able to keep them desulfated and fully charged for years to come.

* “RESTED” - see Glossary

Solar Controller must be mounted in an area where it can be easily seen, protected from the elements (direct rainfall), and bright sunlight (where it would be difficult to see the 3 LED status indicators). Do not attempt to extend or replace (substitute) the quick connect-disconnect battery cables supplied with your system, as it is important the controller be in the same general temperature environment as the battery(s). Use the already attached Velcro adhesive pad to either temporarily or permanently mount the controller. This will allow you to change its location, should you ever wish to, without leaving holes behind. You may also choose to use the

screw holes provided.

Connect output wires from your solar panels to solar controller by sliding terminal cover on controller (see picture on left) to expose terminals beneath. Be careful to observe correct polarity.

Connect cord set (supplied) to battery clamps or directly to terminals (depends on battery type) Observe polarity indications on ring end of wires:

RED = **+** (positive) **BLACK/BLUE** = **-** (negative).

Solar Controller has three (3) separate LED status indicators: They are:

YELLOW = Solar Power - Lit when sufficient sunlight is available to charge/maintain/desulfate battery(s)

RED = Polarity Reversed (Battery only) If lit **RED**, reverse battery connector wires to battery.

GREEN = Battery Charge If lit (solid) battery is being charged-desulfated. If it blinks (flashes) battery is being maintained and desulfated (if required).

OCV=Open Circuit No Load Voltage		
OCV - "Rested" Voltage		Full Capacity Percentage
12V	24V	
12.9 - 13.1	25.8 - 26.2 Volts	100%
12.6 - 12.9	25.2 - 25.8 Volts	75%
12.4 - 12.6	24.8 - 25.2 Volts	50%
12.2 - 12.4	24.4 - 24.8 Volts	25%
12.0 - 12.2	24.0 - 24.4 Volts	0%
<11 Volts = shorted	<22 Volts = shorted	

IF NO LEDs ARE LIT, SOLAR OUTPUT IS NOT SUFFICIENT TO ALLOW ANY FUNCTIONS TO OCCUR. YOU MUST WAIT FOR ADDITIONAL SOLAR OUTPUT TO OCCUR, BEFORE ANY ACTION CAN TAKE PLACE.

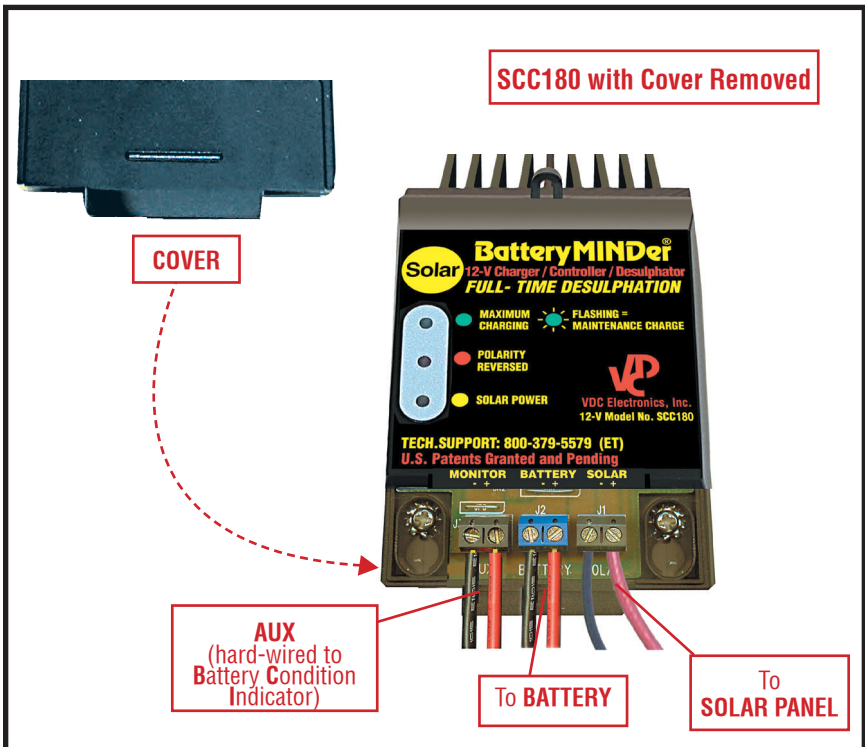
Note: Never try to use your SCC180 solar controller with any solar panels in excess of a 200 watt maximum rating. Doing so will burn out your unit and void your FIVE (5) year warranty and ONE (1) year Guarantee.

Battery Condition Indicator (BCI)

Your BCI will give you a quick and accurate indication of your battery(s) state of charge-condition. By properly using your BCI you can determine whether your battery needs to be charged, is not holding its charge or needs to be desulfated. This is what you must do if you expect accurate-helpful results:

ALWAYS test your battery only after it has been charged as fully as possible with a high power charger (5 -10 Amp rated) and left “rested” for 10 to 24 hours*. If you don’t follow these directives you will obtain information that is inaccurate or down right misleading. Take your time and do it right and your battery(s) will reap the benefits and so will your pocketbook.

* “Rested” means a charged battery that has not been recharged or discharged for a minimum of 10 hours and has had no load attached to it during this time period.



BCI Installation

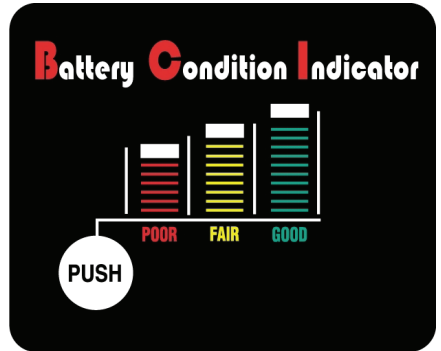
Turn engine and ALL accessories off. Carefully think of the best location on or near your battery to locate your BCI so it can be easily seen and read. Clean surface you plan to attach BCI to using an alcohol cleaning pad.

Attach the ring terminal on the **RED** wire of your BCI to the (+) Positive clamp on your battery.

Attach the ring terminal on the **BLACK** wire of your BCI to the (-) Negative clamp on your battery.

TESTING BATTERY

(Engine and ALL loads must be off for accurate readings) Remember, only test a fully charged battery and only after it has “rested”* for 10 hours minimum.



Press the area on the face of your BCI in raised area marked PUSH.

If all three (3) LEDs light (**RED**, **YELLOW** and **GREEN**) your battery is “good” = fully charged = 12.8 – 13.2 volts

If only the **RED** and **YELLOW** LEDs light your battery is “fair” = 11.8 – 12.7-volts

If only the **RED** LED lights your battery is in “poor” condition (11.2 – 11.7-volts. Battery needs to be desulfated fully before it can be further evaluated to determine if it can be returned to “good” condition.



WHEN NO LEDs are lit, battery can be considered “DEAD”, unlikely able to be restored. AGAIN, this can only be accurately determined if you have



correctly allowed your battery to “rest”^{**} after first having fully charged it as indicated above.

IMPORTANT NOTE: Fused lead (located on positive lead of battery connector): ATC-15 blade type 15 amp rated. DO NOT ATTEMPT TO BYPASS OR REPLACE WITH HIGHER RATED FUSE; SERIOUS DAMAGE WILL OCCUR.



INSTRUCTIONS TEMPERATURE SENSOR Type:ABS-248 (At-the-Battery Sensor) (OPTIONAL)

If you purchased the optional At-the-Battery Temperature Sensor, please read and fully understand all of the following before beginning your installation.

If battery is being charged or maintained in temperatures as low as 32°F to a high of 125°F this sensor must be used.

Do NOT modify by extending or shortening the extension cord.

Your first choice should be to connect it to the positive (+) or Negative (-) post (clamp or screw) of the battery. This is the best location to sense the temperature of the battery.

The second choice is to place it as close to the battery as possible. Attachment of the sensor to the side or top of battery is also a possible option, under the right circumstances. Be careful to ensure it will not come loose in service.

Finally, if placing the sensor on the battery is not practical, place it where the ambient temperature the battery is exposed to (surrounded by) can be sensed. When properly installed on the battery, your charger is set to provide your battery with what it needs to out-live and out-perform any similar battery used in the same application-conditions, by a factor of two (2).

Temperature has a direct effect on the life of a battery. The design life of the battery is based on an average annual temperature of 25°C (77°F). As the temperature increases above 25°C (77°F), the life of the battery decreases. The chart on the next page shows the effects of temperature.

Effects of Temperature on Battery Life*		
Maximum Annual Average Battery Temperature	Maximum Battery Temperature	Percent Reduction in Battery Life
25°C (77°F)	50°C (122°F)	0%
30°C (86°F)	50°C (122°F)	30%
35°C (95°F)	50°C (122°F)	50%
40°C (104°F)	50°C (122°F)	66%
45°C (113°F)	50°C (122°F)	75%
50°C (122°F)	50°C (122°F)	83%
25°C (77°F)	50°C (122°F)	0%

For example: If a battery's design life is 10 years at 25°C (77°F), but the average battery temperature is 35°C (95°F), the life of the battery will be only 5 years a 50% decrease.

*GNB Industrial Power, A Division of Exide Technologies, Section 92.30 Part No. Z99-Mar/Sep I&O REV 10/01

The chart below shows the need to regulate the output voltage of the charger to ensure against over or under charging your battery over a wide range of temperatures. Using your At-the-Battery Sensor will accomplish this better than any other known method.

AGM Charge and Float Voltages at Various Temperature Ranges**					
Temp °F	Charge		Float		Temp °C
	Optimum	Maximum	Optimum	Maximum	
≥ 120	13.60	13.90	12.80	13.00	49
110 – 120	13.80	14.10	12.90	13.20	43 – 49
100 -110	13.90	14.20	13.00	13.30	38 – 43
90 – 100	14.00	14.30	13.10	13.40	32 – 38
80 – 90	14.10	14.40	13.20	13.50	27 – 32
70 – 80	14.30	14.60	13.40	13.70	21 – 27
60 – 70	14.45	14.75	13.55	13.85	16 - 21
50 – 60	14.60	14.90	13.70	14.00	10 - 16
40 – 50	14.80	15.10	13.90	14.20	4 - 10
≤ 40	15.10	15.40	14.20	14.50	4

**East Penn Technical Manual of Valve-Regulated Lead-Acid (VRLA) Absorbed Glass Mat (AGM) Batteries, E.P.M. Form No. 0139 Rev. 3/04
Note: The above chart shows the Charge and Float voltage ranges v. temperature for sealed 24-Volt AGM type batteries. Values will differ for sealed Gel or Flooded (filler cap) or maintenance-free types.

Gel Charge and Float Voltages at Various Temperature Ranges**					
Temp °F	Charge		Float		Temp °C
	Optimum	Maximum	Optimum	Maximum	
≥ 120	13.00	13.30	12.80	13.00	49
110 – 120	13.20	13.50	12.90	13.20	44 – 48
100 -109	13.30	13.60	13.00	13.30	38 – 43
90 – 99	13.40	13.70	13.10	13.40	32 – 37
80 – 89	13.50	13.80	13.20	13.50	27 – 31
70 – 79	13.70	14.00	13.40	13.70	21 – 26
60 – 69	13.85	14.15	13.55	13.85	16 - 20
50 – 59	14.00	14.30	13.70	14.00	10 - 15
40 – 49	14.20	14.50	13.90	14.20	5 - 9
≤ 39	14.50	14.80	14.20	14.50	4

**East Penn Technical Manual of Valve-Regulated Lead-Acid (VRLA) Gelled Electrolyte (gel), E.P.M. Form No. 0139 Rev. 3/04
 Note: This chart shows the Charge and Float voltage ranges v. temperature for sealed 24-Volt Gel type batteries. Values will differ for sealed AGM, Flooded (filler cap) or maintenance-free types Manifold cover(s).

Wet Cell Charge And Float Voltages at Various Temperature Ranges			
Temp °F	Optimum		Temp °C
	Charge	Float	
≥ 120	12.5	12.6	49
110 – 120	13.6	12.7	44 – 48
100 -109	13.8	12.9	38 – 43
90 – 99	14.0	13.1	32 – 37
80 – 89	14.2	13.3	27 – 31
70 – 79	14.4	13.5	21 – 26
60 – 69	14.6	13.7	16 - 20
50 – 59	14.8	13.9	10 - 15
40 – 49	15.0	14.1	5 - 9
≤ 39	15.2	14.3	4

The accuracy of the above voltages should be +/- 0.2 volts.

Frequently Asked QUESTIONS

Q: Can the Solar BatteryMINDER be used to charge, maintain and desulfate any size or type lead acid 12-volt battery such as sealed gel, agm, deep cycle, marine, maintenance free electrolyte?

A: YES, BatteryMINDER can charge, maintain and desulfate any type size lead acid based battery, regardless of construction or brand. If possible, always charge your battery(s) to full capacity using a plug-in type 120 Vac input high output charger, before connecting it to your solar maintenance charger.

Q: Can BatteryMINDER be used to maintain and desulfate more than one battery at a time?

A: YES, but remember the limitation of the solar panel will determine how much current output your Solar BatteryMINDER can supply to the battery. See our definition of a “good” battery in instructions for the BatteryMINDER SCC180 solar maintenance charger-desulfator.

Q: Why do the solar LED indicators turn off and then suddenly turn on seconds later?

A: When the sun goes behind a cloud the solar controller shuts down, in order to prevent the battery from being discharged due to low or no solar energy. As soon as sufficient solar energy is detected by the solar controller, the LED indicators turn on again and unit resumes its function as a charger-maintainer-desulphator.

Q: Why doesn't the **GREEN** LED start blinking immediately after low solar shut off, when just before the LEDs turned off, the **GREEN** LED was blinking?

A: For the **GREEN** charge power LED to blink unit must first charge battery to approximately 14.2-volts. Once it reaches this voltage the unit automatically switches to a lower float-maintenance level where it holds the battery's voltage at approximately 13.4-volts. For the **GREEN** LED to start blinking the unit must first charge the battery again to the 14-volt level. This can take from several minutes to several hours, depending on battery size and the amount of solar energy hitting the solar panel.

NOTES:

FOR REPAIR OR REPLACEMENT

All returns must be authorized by VDC Electronics.

In the event that you believe your product may be defective, you **MUST** speak to a VDC Electronics technician at **1-800-379-5579 x6 (ET)** before proceeding further. If you must return the unit, the technician will give you an RMA #. Please use Return Form <http://batteryinders.com/forms/returns.pdf> when returning your product.

IMPORTANT NOTICE

BatteryMINDER® Five-Year Warranty Registration Reminder

Online Registration:
<http://www.batteryminders.com/register>

Please register your unit online within 10 days of purchase. **Due to the ever-changing technology associated with this BatteryMINDER® unit, we may be unable to keep you apprised of significant upgrades, changes, etc. without your registration.** The information you provide upon registration will be used to keep a record of your purchase and will assist in providing support should you ever need to contact our Technical Service department:
techsupport@vdcelectronics.com; 800-379-5579 x6 (ET).

Model **BatteryMINDER [SCC180](#)**

Serial Number _____

Place of purchase _____

Date of purchase _____

RMA# _____

ALL returns must be authorized by VDC Electronics after speaking to a VDC Electronics technician at 800-379-5579 x206 (ET). Please see our “Repair or Replacement” section of this manual for additional information.

BatteryMINDer One-Year 100% Unconditional Money-Back Guarantee

This BatteryMINDer product is guaranteed to perform as claimed or WE will refund your full purchase price, including all taxes, shipping or handling cost applicable to the **purchase**.

Unit must be returned freight prepaid together with Proof of Purchase directly to VDC Electronics, Inc., NOT TO THE DEALER FROM WHICH IT WAS PURCHASED.

BatteryMINDer Five-Year Limited Warranty

VDC Electronics, Inc. warrants this product for FIVE years from date of purchase at retail against defective material or workmanship and will be repaired or replaced at no charge. We make no warranty other than this limited warranty and expressly exclude any implied warranty including any warranty for consequential damages. This limited warranty is not transferable.

Unit must be returned freight prepaid together with Proof of Purchase directly to VDC Electronics, Inc., NOT TO THE DEALER FROM WHICH IT WAS PURCHASED.

IMPORTANT NOTICE

BatteryMINDer® Five-Year Warranty Registration Reminder Online Registration:

<http://www.batteryminders.com/register>

Please register your unit online within 10 days of purchase. **Due to the ever-changing technology associated with this BatteryMINDer® unit, we may be unable to keep you apprised of significant upgrades, changes, etc. without your registration.** The information you provide upon registration will be used to keep a record of your purchase and will assist in providing support should you ever need to contact our Technical Service department:

techsupport@vdcelectronics.com; 800-379-5579 x6 (ET).