

# Mark Grasser - DC Power Solutions, LLC.

*With everything in life becoming so complicated our goal is to keep our solutions simple.*

## The **Smart-Charge-R210a**



*New* EIGHT Algorithms for Lead Acid, TWO Algorithms for LFP.

*New* Better resistance to water intrusion.

*New* Easy to access connector for temp sensors and remote.

*New* Temp sensors that allow for better control of alternator output vs temperature.

*New* Optional panel mount remote duplicates the six LEDs and Force to Float button of the R210a.

*As always* Battery and alt. temp sensors included at no cost.

*As always* Two year warranty covering any manufacturing defects.

*As always* Designed and manufactured in Eliot, Maine. USA.

### Product operation:

1. Constant Current (C.C.) LED flashing - Soft Start, from 20 seconds to 2 minutes depending on the condition of the batteries.
2. Constant Current LED on solid – Full available current being delivered.
3. C.C. LED on solid and Constant Voltage (C.V.) LED flashing – Regulator is in transition from C.C. to C.V.
4. C.V. LED on solid – Regulator is in Constant Voltage mode and is being timed. Time is determined by a calculation that was made during C.C.
5. Float LED on solid – Regulator is in Float mode.
6. Float LED flashing – Regulator is in Force to Float. (see #12 below)
7. Over voltage LED on solid – regulator has seen voltage above 15.5(31.0) volts and has switched off the field.
8. Battery Over Temp LED flashing – no temp sensor or bad temp sensor connection.

9. **Bat Over Temp LED on solid – Battery is in overtemp. Approx 122°F (50°C)**
10. **Alternator Over Temp LED flashing – no temp sensor or bad temp sensor connection.**
11. **Alternator Over Temp LED on solid – The regulator starts cutting back output at 239°F(115°C). If temp cutback is unable to control the alternator temperature by field cutback the regulator will switch off the alternator output at 275°F(135°C).**
12. **Force to Float button (lower left of label) press and hold until Float LED flashes. To return to normal operation press and hold until Constant Voltage LED is on solid**

## Easy Install of the *Smart-Charge-R210a*

1. Select an algorithm from page three.
2. Connect The six wires:
  - a. **RED (Positive power feed for the alternator field) Connect to a 12 volt positive supply. With an inline 15 amp fuse.**
  - b. **ORANGE (positive sense lead) Connect to the positive battery cable termination point nearest the battery. Use an in line 5 amp fuse at the point of connection.**
  - c. **VIOLET (regulator positive electronics power) Connect to ignition or instrument power point. Typically the ign. Terminal on the key switch. Use a 5 amp in line fuse at the point of connection.**
  - d. **BROWN (negative sense lead) Connect to the negative battery cable termination point nearest the battery.**
  - e. **BLACK (regulator negative electronics power) Connect to the most convenient negative power buss.**
  - f. **WHITE (Field output lead) Connect to the field brush. On our alternator it is the "F" terminal. Others could be as serious as disassembling the alternator to find the brush connection.**
3. Connect the over temperature sensors. (note: the temp sensor is apoxied into the ring terminal.)
  - a. **The battery temp sensor should be connected to the negative battery post.**
  - b. **The alternator temp sensor should be mounted to a 1/4" (6mm) frame bolt on the alternator.**
  - c. **Temp sensor cables attach to the side connector as indicted.**

**List of Algorithms:**

1. 14.8v Constant Volatage (absorption) 13.5v float. C.V. time from 60min to 600 min. Boost multiplier 10.
2. 14.8v Constant Volatage (absorption) 13.3v float. C.V. time from 60min to 600 min. Boost multiplier 10.
3. 14.6v Constant Volatage (absorption) 13.5v float. C.V. time from 60min to 600 min. Boost multiplier 10.
4. 14.6v Constant Volatage (absorption) 13.3v float. C.V. time from 60min to 600 min. Boost multiplier 10.
5. 14.4v Constant Volatage (absorption) 13.5v float. C.V. time from 60min to 600 min. Boost multiplier 8.
6. 14.4v Constant Volatage (absorption) 13.3v float . C.V. time from 60min to 600 min. Boost multiplier 8.
7. 14.2v Constant Volatage (absorption) 13.8v float . C.V. time from 60min to 600 min. Boost multiplier 5.
8. 14.8v Constant Volatage (absorption) 15.3v Equalization 13.3 volt float. . Equalization time is 240 min.
9. LFP Constant Volatage 14.5 volts 30min then 13.4 volt rest voltage. C.V. time 20min.
0. LFP Constant Strait 13.4 volt cruiser voltage.