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TESTING the A & A 5 Amp Smart Charger, Model 155

This charger has a "CHARGE ENABLE" function. If you connect a battery that has less than 6 V, the charger assumes there is a defect in the battery and it will not attempt to charge. **Likewise if you turn the charger on without a battery connected, the charger will not output any voltage / current.**

Every A & A Smart Charger is shipped with a copy of our schematic and component layout. Refer to these documents while performing the following tests.

1) With the **chip removed** and nothing connected to the charger output, apply input AC. Turn the rocker switch on, verify that the rocker neon bulb is energized. If it does not energized, check the input fuse, a 2 A fast blow 3AG fuse.

Next measure the voltage across C1a or C1b or C1c, the main filter capacitors. This voltage should be about 20 VDC. You can connect your test meter from the NEG output (front panel BLACK binding post) to any connection at RS1, RS2, RL1 or RL2. RS and RL are such a low value resistors that it won't effect the reading. This checks the AC cord, AC switch, input fuse, power transformer, power rectifier and filter capacitors. If the voltage is much lower, you may have a problem with any of the above.

2) With the chip still out, and monitoring the output at the front panel binding posts, the output should be near **zero volts**. The pass transistors **should not be turned on**. If you measure any output, either one or both of the pass transistors Q1a or Q1b may be shorted or the driver transistor Q2 may be shorted.

3) With the chip still out, and monitoring the output, connect pin 15 to pin 16 of U1. This will turn on the drive and pass transistors. You expect to get the filter voltage out. You should be able to turn the pass transistor ON/OFF by connecting/removing the connection between pin 15 & 16. The output should switch from 0 to about 20VDC. If you do not get the 20VDC, check the following:

A) drive transistor Q2 may be defective
A) pass transistors Q1a or Q1b may be defective
B) series diode D1 may be open
C) output fuse F2 (8A fast blow 3AG) may be open
D) the ammeter may be open
E) reverse polarity diode D2 may be shorted

With the pass transistors turned on, and about 20VDC at the output, **(NO CHIP - STILL TESTING)** you should measure the following:

4) Voltage at pin 12 to ground of the IC should be about 10VDC. R1 and R2 form a 2 to 1 voltage divider which drops the 20VDC down to about 10VDC

5) Voltage at pin 13 to ground of the IC should be about 3VDC. RA and RB form a 6 to 1 voltage divider which drops the 20VDC down to about 3VDC

6) Voltage at pin 10 to ground of the IC should be about 3VDC. RA and RB form a 6 to 1 voltage divider and RC should not disturb this reading.

Remove the connection between U1 pins 15 & 16.

7) To check the FAN and GREEN CHARGING LED, ground pin 1 or 8, the LED should light and the FAN should operate. For a problem here, check R11, R10, R7, R8, Q3 and the FAN polarity.

8) To check the RED FINAL CHARGE LED, ground pin 9, the LED should light. For a problem here, check R4.

9) If all above are okay, then we would suspect the chip has problems. There is no simple test other than changing it.

The UC3906N chip is available from many commercial and/or industrial electronic component suppliers. Or you may order the chip from A & A Engineering. Cost is $7.50 plus $2.50 mailing, TOTAL of $10.00

Lastly, we do service and repair. For a flat fee of $40.00 plus return shipping we will repair / refurbish any model 155 Smart Charger. Shipping cost to US 48 is $13.50. Shipping to Alaska or Hawaii, add $4.00.

If you decide to send your charger in for repair, please include check, money order or credit card info (Visa or MasterCard) or PayPal account email address along with a daytime phone number and/or email address so we can contact you if needed. You must return the unit freight prepaid along with payment information

If your 155-ASY is less than 3 months old (90 days), and has not be abused, we will repair / replace the unit at no cost to you. We will pay shipping both ways. Call or email (orderaaengr@aol.com) for return details.

Hope this helps get your charger back up and running properly!

Regards,

Stas, W6UCM