



# AUTOELECTRO

Since 1986

## STARTER MOTORS & ALTERNATORS

### Smart Charge Testing Procedures

Check the battery; it must be a Silver Calcium type, check the voltage with the engine off, you should have a reading of between 12.0v and 12.6v. If you are showing a reading lower than this then remove the battery and re-charge. The alternator should not be used to charge up a dead battery.

Remove the smart charge 3 pin plug from the back of the alternator this removes the control from the ECU, run the engine and check the voltage at the battery. If you are reading around 13.8v the alternator is not at fault.

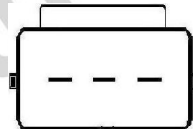
Ensure that the engine is NOT running when you remove or replace the ECU plug.

Testing the unit requires a picoscope.

A/S = Alternator Feedback

SIG = Alternator Load Request

FR = Reference Voltage



A/S SIG FR

**FR** must match battery voltage. Check for high resistance on the fuse circuit, this can cause a voltage drop and affect the performance of the smart charge system.

**SIG** communicates from the ECU to the alternator. There should be a square wave form from this pin that will vary in shape depending upon the load request. Switch on lights, heaters etc for this test back probing with the plug connected. If the wave form does not change then the problem could be within the ECU.

**A/S** is the communication from the alternator back to the ECU. This should show a constant wave pattern which should not vary, if the wave form reflects the same pattern variation as pin 2 then the alternator is suspect.

The loom that leads from the alternator to the ECU is prone to failure, these wires control when the alternator sends a charge to the battery and the voltage it supplies. Replace the loom from the alternator to the ECM; these are available in the aftermarket or main dealers.

**Never** jump start a Smart Charge vehicle with a flat battery, the system can output up to 18volts and can damage major components.

**FREE** vehicle specific technical information is available by  
visiting [autoelectro.co.uk](http://autoelectro.co.uk) OR scan this QR code



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