

R1000 Radar gun troubleshooting guide.

Most of the procedures in this guide will require someone with some technical and/or computer experience. The visual inspection test can be performed by almost anyone. The continuity and voltage tests may require someone with electrical or electronics experience. The data communications tests will require someone that has computer experience.

Visual inspection

Visual inspection of the cable that connects between the radar gun and the display. You may need a magnifying lens to get a good look at the connectors unless you are one of the rare few that have extremely good eyesight.

- Check the radar gun end of the cable. There should be four pins in a rectangular fashion.
- Check the display end of the cable. There should be two rows of pins for a total of 9 pins.
- Straighten any bent pins. If any pins are broken, the cable will need to be sent to the factory for repair before use.

Cable Continuity test

Continuity test of the cable that connects between the radar gun and the display.

The drawing below shows the wiring of the radar gun end of the cable. The red dot is actually on the rear of the connector. Note that the slot is wider nearest pin 1.

The drawing below shows the wiring of the display end of the cable. Note that only pins 2,3,4 and 5 are used.

DB-9 pin 1 – Not used
DB-9 pin 2 – RD - Yellow
DB-9 pin 3 – TD - Green
DB-9 pin 4 – DSR - Red
DB-9 pin 5 – SG - Black

- For this test, make sure that the ends of the cable are disconnected from the radar gun and display respectively.
- Obtain a multimeter that is capable of measuring resistance and/or continuity. Almost any continuity tester will work.

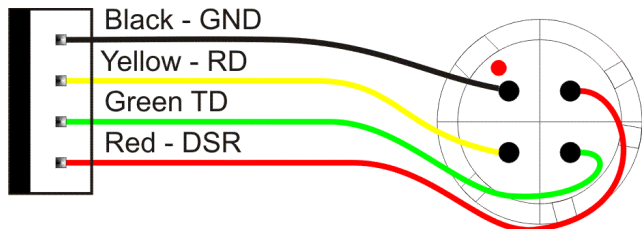
- Pin 1 of the Radar gun (4 pin round) connector is connected to Pin 5 of the display (DB9) connector.
- Pin 2 of the Radar gun (4 pin round) connector is connected to Pin 2 of the display (DB9) connector.
- Pin 3 of the Radar gun (4 pin round) connector is connected to Pin 3 of the display (DB9) connector.
- Pin 4 of the Radar gun (4 pin round) connector is connected to Pin 4 of the display (DB9) connector.

Testing the cable for shorts between pins.

- Obtain a multimeter that is capable of measuring resistance and/or continuity. Almost any continuity tester will work.
- Pins 4,5 should be open circuit.
- Pins 3,5 should be open circuit.
- Pins 2,5 should be open circuit.
- Pins 3,4 should be open circuit.
- Pins 2,4 should be open circuit.
- Pins 2,3 should be open circuit.

Radar Gun Internal wiring

The port connector connects to a square pin connector with 4 pins.



Some times the round port connector twists and breaks the leads to the round connector. If broken, they need to be resoldered. Internally, all four leads are black and you cannot tell which lead goes to which pin. This means that you need to take the entire gun apart and look at the square

pin header (see picture above) to determine which leads correspond to the various pins. The resistance and voltage tests described below may aid in determining which pins correspond to the respective connector pins.

Cable and Radar Gun Resistance test

Continuity test of the display connector at the end of the cable connected to the port connector on the radar gun.

- For this test, make sure that the radar gun is off and that the batteries are removed from the handle.
- Connect the round end of the cable to the radar gun.
- Obtain a multimeter that is capable of measuring resistance
- Pins 4,5 should measure 1M to 2M ohm. (Nominal 1.8M ohm)
- Pins 3,5 should measure 4K to 5K ohms. (Nominal 4.5K ohm)
- Pins 2,5 should be open circuit.
- Pins 3,4 should measure 1.8M ohm. (Nominal 1.8M ohm)
- Pins 2,4 should be open circuit.
- Pins 2,3 should be open circuit.

Radar Gun Voltage test

Voltage test of the display connector at the end of the cable connected to the radar gun.

- Connect the cable to the port connector on the radar gun.
- Install the batteries and turn the radar gun on by pressing the power button.
- Pins 4,5 should measure 3 volts or more. (Nominal 3.1 volts)
- Pins 3,5 should measure 0 volts.

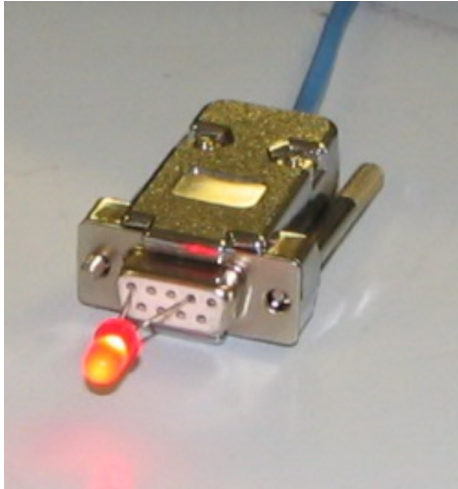
- Pins 2,5 should measure -6 to -7 volts. (Nominal 6.5 volts)

Voltage test of the port connector on the radar gun. If the previous test passes, there is no need to perform this test.

- Do not do this test if the previous test passes. It is very easy to damage the pins on the radar gun port connector.
- Disconnect the cable from the port connector on the radar gun.
- Install the batteries and turn the radar gun on by pressing the power button.
- Pins 1,4 should measure 3 volts or more. (Nominal 3.1 volts)
- Pins 1,3 should measure 0 volts.
- Pins 1,2 should measure -6 to -7 volts. (Nominal 6.5 volts)

Data signal test of the Display end connector on cable connected to the radar gun.

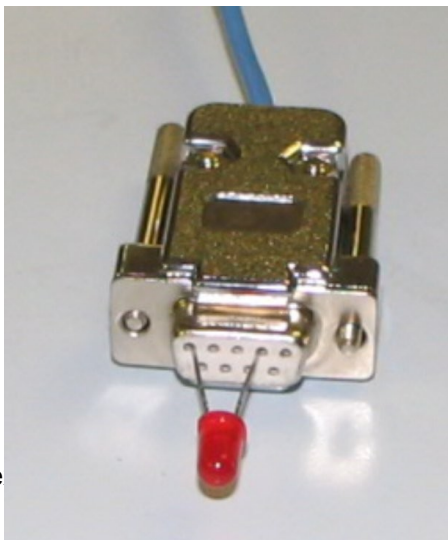
- Go to the local Radio Shack or other electronics store and purchase an LED. Red is the preferable color although any color will suffice.
- Connect the cable to the port connector on the radar gun.
- Install the batteries and turn the radar gun on by pressing the power button.



- Connect the LED between pins 2 and 5 on the connector that connects to the display.
- If the negative lead of the LED is connected to pin 2 and the positive lead of the LED is connected to pin 5, the LED should be lit.
- If the positive lead is connected to pin 2 and the negative lead of the LED is connected to pin 5, the LED should be off.
- Leave the positive lead of the LED connected to pin 2 and the negative lead of the LED connected to pin 5.

Trigger the radar gun to measure a speed. The speed should display in the LCD display on the radar gun. At the same time, the LED should flash on for a brief moment. This indicates that the radar gun just sent data to the remote display.

Data signal test of the port connector on the radar gun.



Alxate

If the previous test passes, there is no need to perform this test.

Do not do this test if the previous test passes. It is very easy to damage the pins on the radar gun port connector.

- Go to the local Radio Shack or other electronics store and purchase an LED. Red is the preferable color although any color will suffice.
- Connect the cable to the port connector on the radar gun.
- Install the batteries and turn the radar gun on by pressing the power button.
- Connect the LED between pins 1 and 2 on the connector that connects to the display.
- If the negative lead of the LED is connected to pin 2 and the positive lead of the LED is connected to pin 1, the LED should be lit.
- If the positive lead is connected to pin 2 and the negative lead of the LED is connected to pin 1, the LED should be off.
- Leave the positive lead of the LED connected to pin 2 and the negative lead of the LED connected to pin 1.
- Trigger the radar gun to measure a speed. The speed should display in the LCD display on the radar gun. At the same time, the LED should flash on for a brief moment. This indicates that the radar gun just sent data out on the port connector.

Data Communication Test

In this test we will be sending data from the radar gun to a computer.

You will need a computer that has an RS-232 serial port. If your computer does not have an RS-232 serial port, but has a USB port, you can purchase a USB to RS-232 Serial converter. Belkin makes a good unit although almost any brand will work.

- Connect the cable to the port connector on the radar gun.
- Connect the other end of the cable to the RS-232

serial port connector on the computer.

- Open up the terminal program.
- Find the communications configuration menu and set the COMM port the match the actual communications port that you are using. Set the baud rate to 1200. Set the number of data bits to 8. Set the number of stop bits to one. Set the parity to NONE.
- Install the batteries and turn the radar gun on by pressing the power button.
- Trigger the radar gun to measure a speed. The speed should display in the LCD display on the radar gun. At the same time, the speed should also appear in the terminal program window. This indicates that the radar gun just sent data out on the port connector. The format of the data will be "061000".

NOTE: If you are not sure that you have the correct COMM port, you can temporarily remove the cable. Short pins 2 and 3 together on the RS232 DB9 connector and type some characters in the terminal program window. If local echo is on, you will see two characters for every character typed. If local echo is off, you will see one character for every character typed. Remove the short and type some more characters. If local echo is on, you will see one character for every character typed. If local echo is off, you will see no characters.