sensor-1.com

Agricultural Electronics 1-800-SENSOR-1

SET-UP & OPERATION MANUAL
MULTIAG-TOOL

S1-MULTIAG - Version 1.8
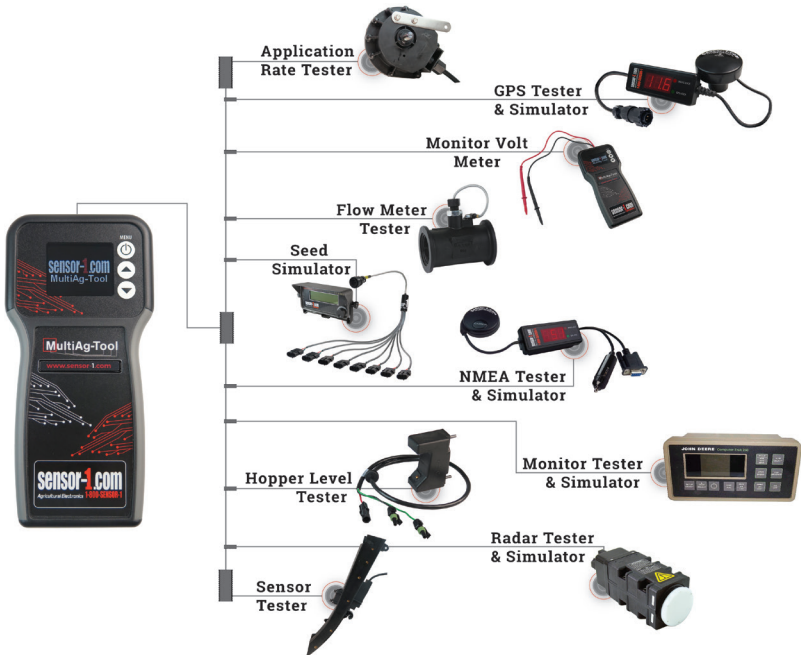
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MultiAg-Tool Overview

Application Rate Tester

GPS Tester & Simulator

Monitor Volt Meter

Flow Meter Tester

Seed Simulator

NMEA Tester & Simulator

Monitor Tester & Simulator

Hopper Level Tester

Radar Tester & Simulator

Sensor Tester

Welcome! The new Sensor-1 MultiAg-Tool is designed to Test and/or Simulate various farming applications including testing sensors, monitors, GPS, and radars. The back-lit LCD screen features an easy to read visual. These are just some of the features it can do. It is hand-held and portable. The small amount of buttons makes for a hassle-free tester that any farmer needs.

Power/Menu/Select
Up Arrow
Down Arrow

*Screen: 1.375"x1.125"
Back-lit Color LCD

*Battery: 9V
(cover on backside,
easy replacement)

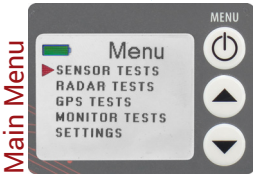*To Power Off, go back to Main Menu and hold down the Menu Button

**To Clear, hold down the down arrow when program allows for it.
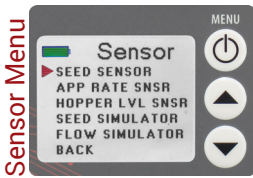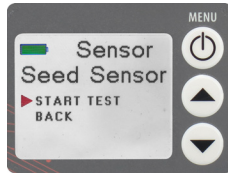
PG 3

Seed Sensor Tester
DIRECTIONS

Start Screen

*Push the Power/Menu Button to turn On. This screen will show first before it moves on to Main Menu.
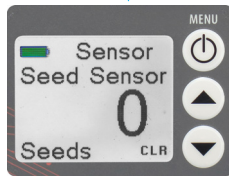
Main Menu

Menu
- ►SENSOR TESTS
- RADAR TESTS
- GPS TESTS
- MONITOR TESTS
- SETTINGS

Select **SENSOR TESTS.**

Sensor Menu

Sensor
- ►SEED SENSOR
- APP RATE SNSR
- HOPPER LVL SNSR
- SEED SIMULATOR
- FLOW SIMULATOR
- BACK

Select **SEED SENSOR.**

Sensor
Seed Sensor
- ►START TEST
- BACK

Select **START TEST.**

Sensor
Seed Sensor
0
Seeds   CLR
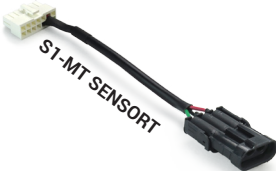
After correct adapter is connected to seed sensor on tube, start dropping seeds and watch the number increase.

To clear the number, hold down the downward arrow beside **CLR.

S1-MT SENSORT

Used to test functionality of your Population/Seed Flow Sensors. If they are working properly, the MultiAg-Tool will show you how many seeds are dropping or if they are dropping period. If the seed count isn't moving, then the Sensor isn't functioning. (Testing the Seed Sensor of working properly)

Application Rate Tester
DIRECTIONS

Select **SENSOR TESTS**.

Select **APP RATE SNSR.**

Select **START TEST.**

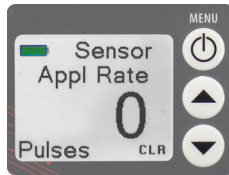After adapter is connected to the App Rate Sensor, turn shaft and see number of pulses increase according to how hard you rotate.
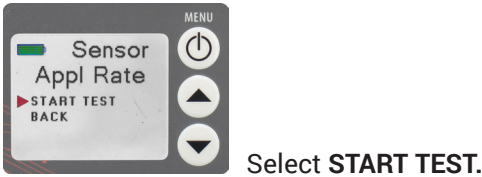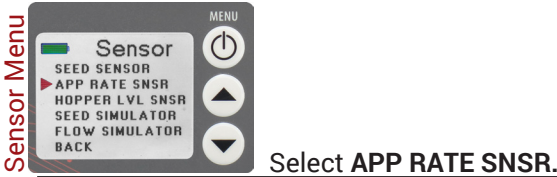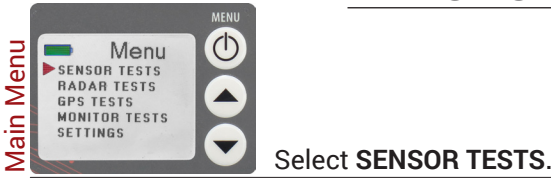
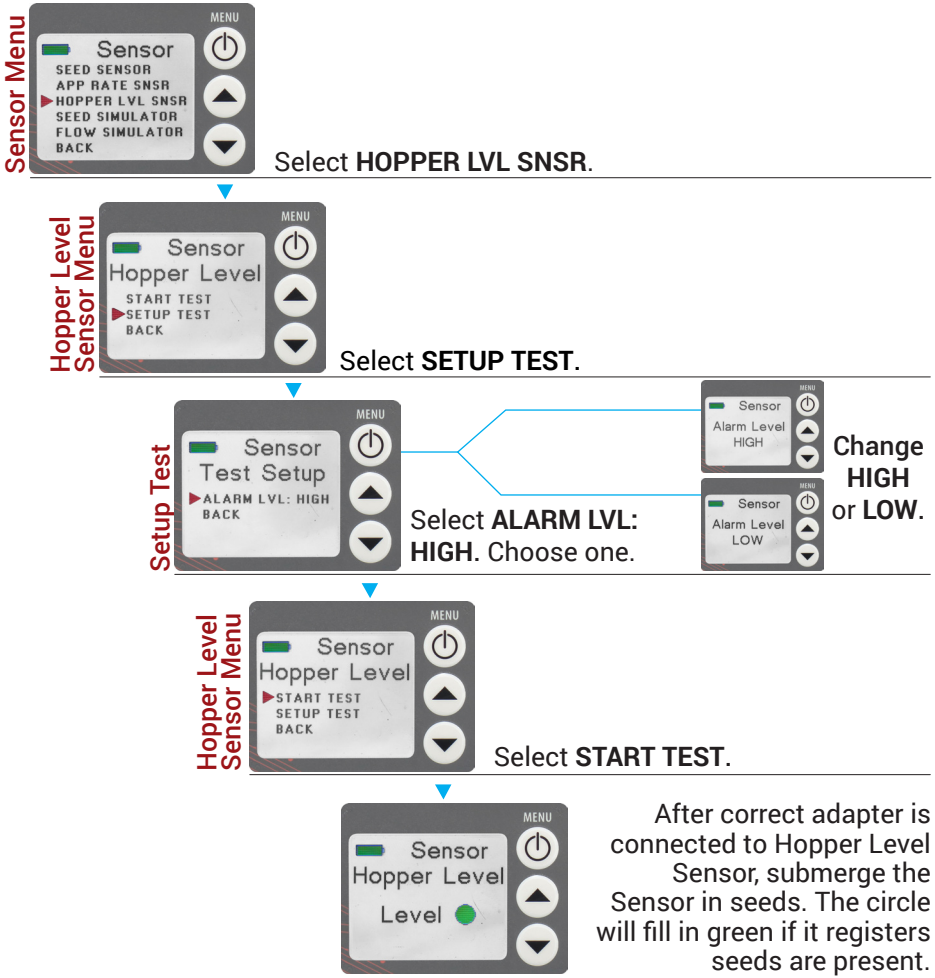**To clear the number, hold down the downward arrow beside **CLR.**

S1-MT ARST

Used to test functionality of your Application Rate Sensors. If they are working properly, the MultiAg-Tool will show you how many pulses are being put out of the sensor depending on how hard you rotate the sensors shaft. If the pulses don't move, then the Sensor isn't functioning.
(Testing the Application Rate Sensor of working properly)

Hopper Level Sensor Tester
DIRECTIONS

Sensor Menu

Select **HOPPER LVL SNSR**.

Hopper Level Sensor Menu

Select **SETUP TEST**.

Setup Test

Select **ALARM LVL: HIGH**. Choose one.

Change **HIGH** or **LOW**.

Hopper Level Sensor Menu

Select **START TEST**.

After correct adapter is connected to Hopper Level Sensor, submerge the Sensor in seeds. The circle will fill in green if it registers seeds are present.

S1-MT HLST
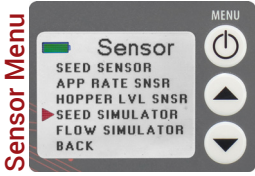
Used to test functionality of your Hopper Level Sensors. If they are working properly, the MultiAg-Tool will show you if seeds are detected by filling in the circle green. If the circle is still red, then Sensor isn't detecting anything at that time. (Testing Hopper Level Sensor of active seed flow detection)

Seed Simulator
DIRECTIONS

Select **SEED SIMULATOR**.

Select **START SIMULATOR**.

After correct adapter is connected to sensor, move the number of seeds dropped per second up or down on Tool and see if the monitor is reading the same.

S1-MT SEEDSIM

Used to substitute a Population/or Seed Flow Sensor by sending a pulse to monitor. The monitor should show the same reading as the MultiAg-Tool is showing, as far as seeds dropped per second, consistently.
(Testing the Harness of relaying a seed drop speed to the Monitor)

Flow Simulator
DIRECTIONS

Menu
- SENSOR TESTS
- RADAR TESTS
- GPS TESTS
- MONITOR TESTS
- SETTINGS

Select **SENSOR TESTS**.

Sensor
- SEED SENSOR
- APP RATE SNSR
- HOPPER LVL SNSR
- SEED SIMULATOR
- FLOW SIMULATOR
- BACK

Select **FLOW SIMULATOR**.

Sensor Flow Sim
- START SIMULATOR
- SETUP SIMULATOR
- BACK

Select **SETUP SIMULATOR**.

Sensor Sim Setup
- PPG: 250
- UNITS: LPM
- BACK

Select **PPG: 250**.

Sensor Pulses/Gal 250

Change the **Pulses/Gal** or Pulses per Gallon to your preference.

Sensor Flow Sim
- START SIMULATOR
- SETUP SIMULATOR
- BACK

Select **START SIMULATOR**.

S1-MT F-RSIM

S1-MT F-DSIM

Sensor Flow Sim
5 gpm
251 PPG

After correct adapter is connected to monitor's Flow Meter cable pigtail, move the gallons per minute number up or down on Tool and see if the monitor is reading the same liquid flow rate.
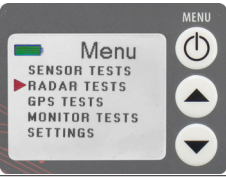
Used to substitute a Raven Flow Meter by sending a pulse to monitor where the monitor should show the same reading as the MultiAg-Tool is showing, as far as the rate of flow in GALLONS/MINUTE at your choice of PULSES/GALLON. (Testing Monitor of receiving Flow Meter's rate results)

Radar Speed Test
DIRECTIONS

Main Menu

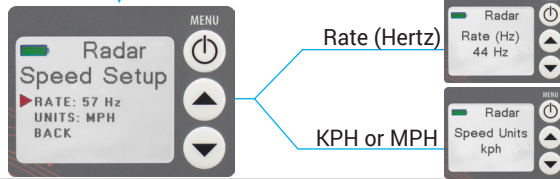Select **RADAR TESTS.**

Radar Menu

Select **GND SPEED TEST.**

Radar Ground Speed Test Menu

Select **SETUP TEST.**

Choose your preferences for Rate(Hertz) & Units.

Rate (Hertz)

KPH or MPH

Radar Ground Speed Test Menu

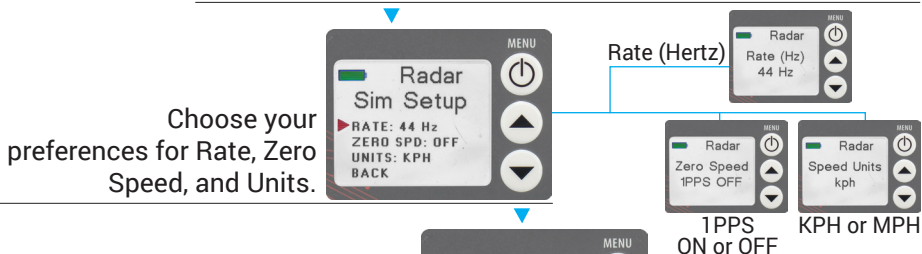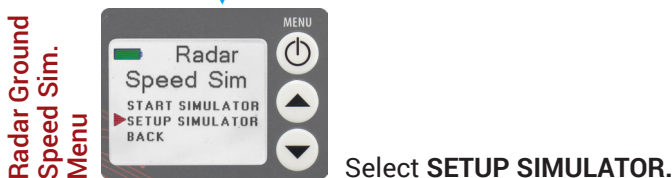Select **START TEST.**

S1-MT R-RSIM

S1-MT R-DSIM

After correct adapter is connected to Radar, start moving and see your MPH/KPH increase.

Used to test a Radar Ground Speed Sensor by sending a pulse to the monitor to see if you are going the same speed as your radar is reading.
(Testing Radar's Speed Results)

Radar Speed Simulator
DIRECTIONS

Main Menu

Select **RADAR TESTS**.

Radar Menu

Select **GND SPEED SIM.**

Radar Ground Speed Sim. Menu

Select **SETUP SIMULATOR.**

Rate (Hertz)

Choose your preferences for Rate, Zero Speed, and Units.

1PPS ON or OFF   KPH or MPH

Select **START SIMULATOR.**

S1-MT R-RSIM

S1-MT R-DSIM

After correct adapter is connected to Radar, move speed up or down on Tool and see if the monitor is reading the same speed.
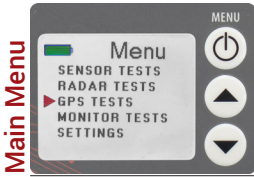

Used to substitute a Radar Ground Speed Sensor by sending a pulse to monitor from where the radar should be to see if the monitor is reading the same speed as the MultiAg-Tool, consistently.
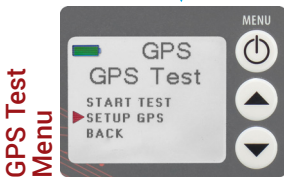(Testing Monitor of receiving Radar's speed results)

GPS Test
DIRECTIONS

Main Menu

Menu
- SENSOR TESTS
- RADAR TESTS
- ► GPS TESTS
- MONITOR TESTS
- SETTINGS

Select **GPS TESTS**.

GPS Menu

GPS
- ► GPS TEST
- GPS/SPEED TEST
- GPS SIMULATOR
- BACK

Select **GPS TEST.**

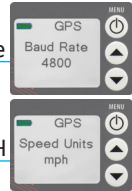**GPS Test Menu**

GPS
GPS Test
- START TEST
- ► SETUP GPS
- BACK

Select **SETUP GPS.**

Choose your preferences for Baud Rate & Units.

GPS
GPS Setup
- ► BAUD: 4800
- UNITS: MPH
- BACK

Baud Rate

GPS
Baud Rate
4800

KPH or MPH

GPS
Speed Units
mph

GPS
GPS Test
- ► START TEST
- SETUP GPS
- BACK

Select **START TEST**.

S1-MT NMEAT

S1-MT GPS-RT

S1-MT GPS-D

After correct adapter is connected to GPS, wait for signal and see if you gain a GPS and/or WAAS lock.

GPS
GPS Test
GPS ● WAAS ○
FIX TYPE: N/A
GPS SOG: N/A

After correct adapter is connected to GPS, wait for signal and see if you gain a GPS and/or WAAS lock.
(Testing GPS of receiving signals from satellites)

GPS/Speed Test
DIRECTIONS

Select **GPS TESTS.**

Select **GPS/SPEED TEST.**

Select **SETUP TEST.**

S1-MT GPS-R

S1-MT GPS-D

S1-MT NMEAT

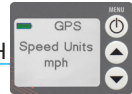Select **SETUP GPS** or **SETUP GND SPD**.

Rate (Hertz)

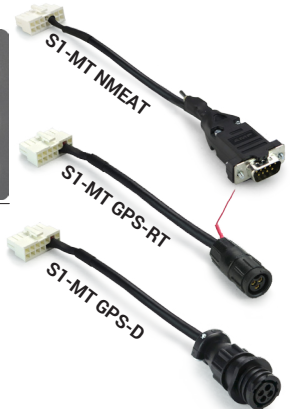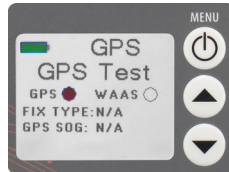Baud Rate

Choose your preferences for Baud Rate & Units.

KPH or MPH

KPH or MPH

Select **START TEST**.

After your adapter is connected to GPS, wait for signal and see if you gain a GPS and/or WAAS lock. Start moving and see your MPH/KPH increase.

Used to test a GPS Ground Speed Sensor by sending a pulse to monitor to show the speed you are going on both the monitor and the MultiAg-Tool. The Tool will also show if your GPS has a satellite lock and a WAAS lock.
(Testing GPS of Speed Results)

GPS Simulator
DIRECTIONS

Main Menu

Select **GPS TESTS**.

GPS Menu

Select **GPS SIMULATOR.**

GPS Sim. Menu

Select **SETUP SIMULATOR.**

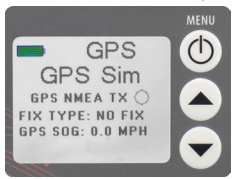Choose your preferences for Baud Rate & Units.

Baud Rate

KPH or MPH

Select **START SIMULATOR**.

S1-MT NMEASIM

After correct adapter is connected to GPS, watch the blinking circle until it becomes solid. Thats when you have a lock.

Used to transmit NMEA data to the MultiAg-Tool by sending a pulse consistently, along with showing if your GPS has a NMEA lock. This only works on Sensor-1 GPS with DB9/Cigarette Lighter connectors. (i.g. DS-GPS-DB9F-5) (Testing GPS of receiving NMEA Data of Speed and Signal lock)

(Monitor)
Ground Speed Simulator
DIRECTIONS

Main Menu
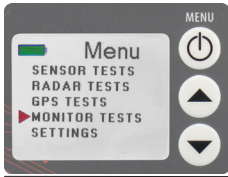
Select **MONITOR TESTS.**
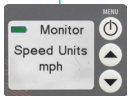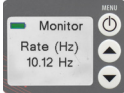
Monitor Menu

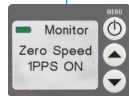Select **GND SPEED SIM.**

Monitor Speed Sim. Menu

Select **SETUP SIMULATOR.**

Rate (Hertz)

Units   Zero Speed

Choose your preferences for Rate, Zero Speed, and Units.
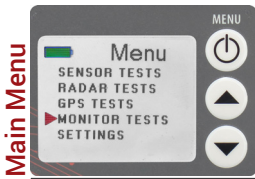
Select **START SIMULATOR.**

S1-MT GPS-R

S1-MT GPS-D

After correct adapter is connected to monitor's GPS pigtail, move speed up or down on Tool and see if the monitor is reading the same speed.
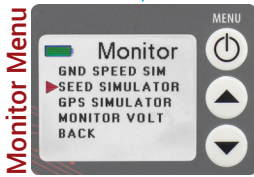
Used to substitute a GPS Ground Speed Sensor or Radar by sending a pulse to monitor from where the GPS should be to see if the monitor is reading the same speed as the MultiAg-Tool, consistently.
(Testing the Monitor of receiving Speed results from GPS accurately)

(Monitor) Seed Simulator
DIRECTIONS

Main Menu

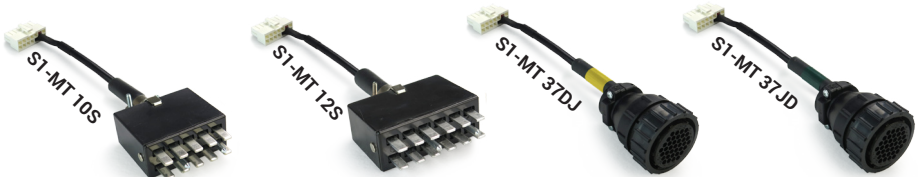Select **MONITOR TESTS.**

Monitor Menu

Select **SEED SIMULATOR.**

Seed Sim. Menu

Select **START SIMULATOR.**

After correct adapter is connected to monitor, move the number of seeds dropped per second up or down on Tool and see if the monitor is reading the same.

S1-MT 10S

S1-MT 12S

S1-MT 37DJ

S1-MT 37 JD

Used to substitute a Population/or Seed Flow Sensor by sending a pulse to monitor. The monitor should show the same reading as the MultiAg-Tool is showing, as far as seeds dropped per second, consistently.
(Testing the Monitor of receiving message of seed flow/count from the sensors)

(Monitor) GPS Simulator
DIRECTIONS

Main Menu

SENS...
RADAR
GPS TEST...
▶MONITOR T...
SETTINGS

...lect **MONITOR TESTS.**

Monitor Menu

Monit...
GND SPEED SIM
SEED SIMULATOR
▶GPS SIMULATOR
MONITOR VOLT
BACK

...S SIMULATOR.

Monitor GPS Sim. Menu

Monitor
GPS Sim

START SIMULATOR
▶SETUP SIMULATOR
BACK

Sel... ...SIMULATOR.

Baud Rate

GPS
Baud Rate
4800

KPH or MPH

Radar
Speed Units
kph

Monitor Setup Menu

Monitor
Sim Setup

BAUD: 4800
UNITS: MPH
BACK

Choo...
prefer...
Baud Ra...

Monitor
GPS Sim

▶START SIMULATOR
SETUP SIMULATOR
BACK

Select **START SIMULATOR.**

S1-MT NMEASIM

Monitor
GPS Sim

GPS NMEA TX ○
FIX TYPE: NO FIX
GPS SOG: 0.0 MPH

After correct adapter i...
nected to Monitor, see i...
monitor is receiving the NME...
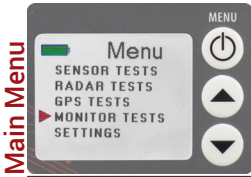signal a GPS would receive.

Used to substitute a GPS Ground Speed Sensor by sending a pulse to monitor from where GPS should be to see if the monitor is reading the NMEA Data.
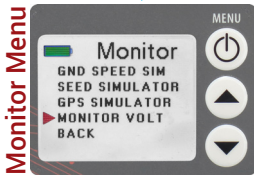(Testing Monitor of receiving the NMEA data from GPS)
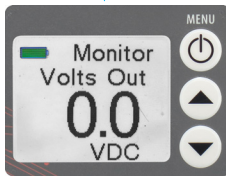
Monitor Voltage Meter
DIRECTIONS

Main Menu

Menu
SENSOR TESTS
RADAR TESTS
GPS TESTS
► MONITOR TESTS
SETTINGS

Select **MONITOR TESTS.**

Monitor Menu

Monitor
GND SPEED SIM
SEED SIMULATOR
GPS SIMULATOR
► MONITOR VOLT
BACK

Select **MONITOR VOLT.**

Monitor
Volts Out
0.0
VDC

After the probes are touching the correct pins in the monitor cable's connector, see how many Volts are being put out by that monitor.

JD 37-Pin –	**Power 27** **Ground 38**
DJ 37-Pin –	**Power 24 & 25** **Ground 26 & 27**
12 Spade –	**Power 11** **Ground 12**
10 Spade –	**Power 11** **Ground 12**

S1-MT VOLTMTR
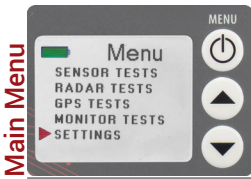
Used to see what voltage your monitor is putting out. Less than about 8.2 won't power your sensors sufficiently.
(Testing Monitor Voltage output)

Settings
DIRECTIONS

Main Menu

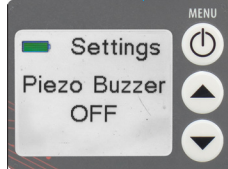Select **SETTINGS.**

Settings Menu

Select **BRIGHTNESS, PIEZO BUZZER, AUTO PWR OFF, or FIRMWARE.**

Brightness
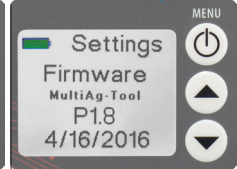
Change Backlight brightness with arrows.

Buzzer

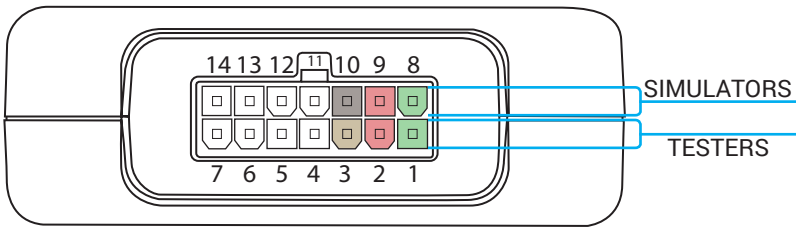Turn On or Off the Buzzer with arrows.

Auto Power Off

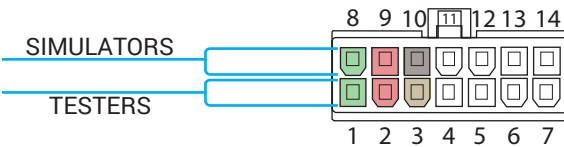Change minutes to Auto Power Off with arrows.

Firmware

Firmware Details.

SIMULATORS

TESTERS

Cable Connector Pin Numbers
Case End View

SIMULATORS

TESTERS

Cable Plug Pin Numbers
Pin End View

Testers

Pin#	Function	Description	Signal Level
1	Sensor Pulse IN	GPS/Radar, Seed Sensor, Application Rate Sensor, Hopper Level Sensor, NMEA Input	0 to 12 VDC
2	External Power IN	Tester External Power Input, Voltage Sense	8 to 14.7 VDC, 100mA(max)
3	GND(DC Common)	DC Common Ground	

Simulators

8	Sensor Pulse OUT	GPS/Radar, Harness, Monitor Output	0 to 12 VDC
9	Sensor Power OUT	Sensor Power Output, Sensor Voltage Sense	0 to 12 VDC, 50 mA(max)
10	GND(DC Common)	DC Common Ground	

Sensor-1 Return Policy

Sensor-1 offers a full refund or replacement for merchandise returned unused in resealable condition. All merchandise must be returned in its original packaging within 30 days or original invoice date. All returned items must be accompanied by a Return Merchandise Authorization number (RMA#). You may obtain an RMA# by calling a Sensor-1 service representative at 1-800-736-7671. All returns may be subject to a 15% restocking fee. Any item that is returned within the warranty period, as defective, will be tested by one of our technicians and either repaired or replaced. Any parts returned that have been used will be replaced or repaired and returned to sender. If credit is required, a 15% restocking fee is charged. Parts returned due to customer error will be subject to a restocking fee and any non-catalog or custom items are non-returnable. All shipping charges are non-refundable.

Sensor-1 Warranty

Sensor-1 warrants to the original purchaser for use that, if any part of the product proves to be defective in material or workmanship within **one** year from the date of original purchase, Sensor-1 will (at our option) either replace or repair said part. This warranty does not apply to damage resulting from misuse, neglect, accident, or improper installation and maintenance. THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OF MERCHANTABILITY FITNESS FOR PURPOSE AND OF ANY OTHER TYPE, WHETHER EXPRESSED OR IMPLIED. Sensor-1 neither assumes nor authorizes anyone to assume for it any other obligation or liability in connection with said part and will not be liable for consequential damages. Purchase accepts these terms and warranty limitations unless product is returned within thirty days for a full refund if the product is not used. A 5% restocking fee will apply to all returned items. Special orders are non-refundable.

Operation Manual
MultiAg–Tool

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purchasing@sensor–1.com

sensor-1.com
Agricultural Electronics 1-800-SENSOR-1

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