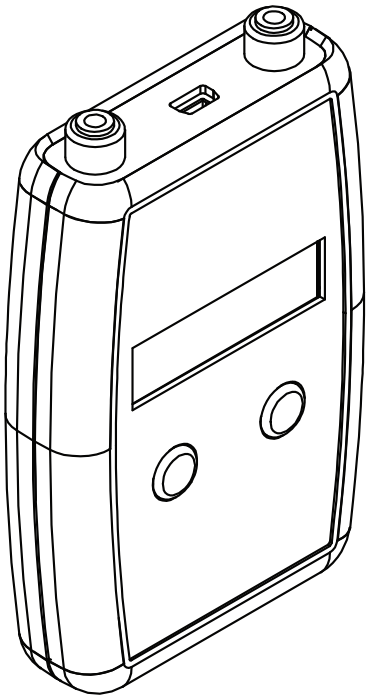
ACS

ALCOHOL COUNTERMEASURE SYSTEMS



AUTOMOTIVE
DIAGNOSTIC TOOL

Instruction Manual

Introduction

The Automotive Diagnostic Tool can be used during the installation of an alcohol interlock to determine the function (power, ignition, start) of the wires in the vehicle main harness, measure tach signal or locate the best position for the Digital Tach Sensor (DTS), or simulate a tach signal to perform tests when an alcohol interlock registers a "Tach Fault".

⚠ *WARNING!*

- Do not attempt to use device to measure amperage or AC voltage
- Do not attempt to measure voltage that may be over +50V DC
- *Failure to follow these warnings can result in damage to the device and personal injury*

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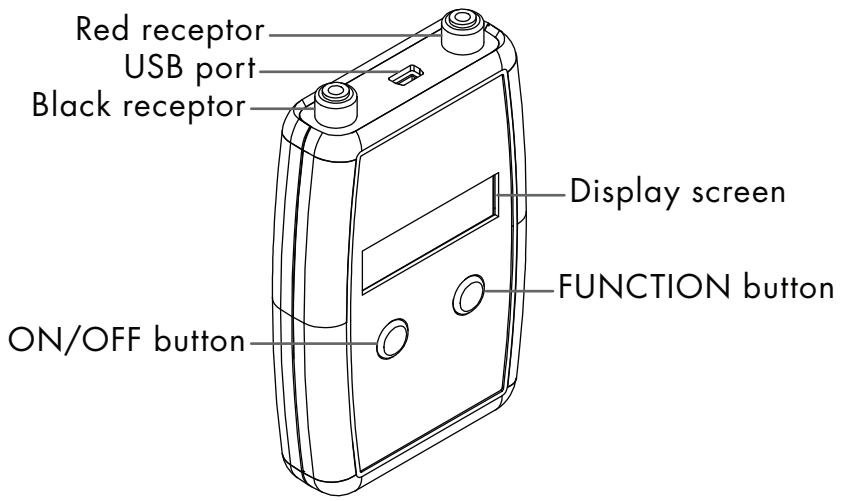
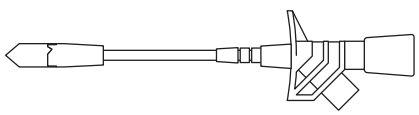
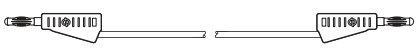
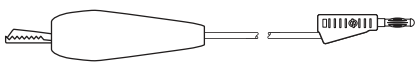
Parts included

Handset


2 x Multimeter probes (red and black)	2 x Test leads (red and black)
	
Black alligator grounding clamp	**Tach sensor**
	

Handset function

Basic function

- To turn on handset, press and hold **ON/OFF** (left) button for three seconds
- When on, pressing the **ON/OFF** button without hold will turn a back light on/off
- Use the **FUNCTION** (right) button to scroll to the desired function
- To turn off, press and hold **ON/OFF** button for three seconds

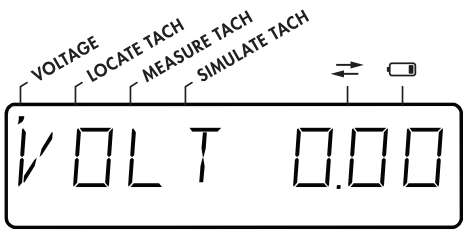
> ***NOTE:***
>
> The device has an auto-off feature that will shut it down after it has been left idle for five minutes.

Handset function

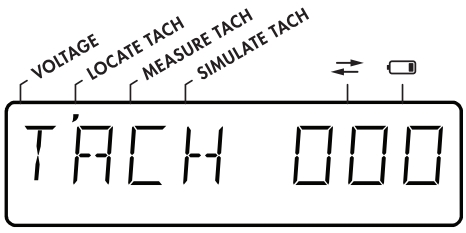
Display

Functions

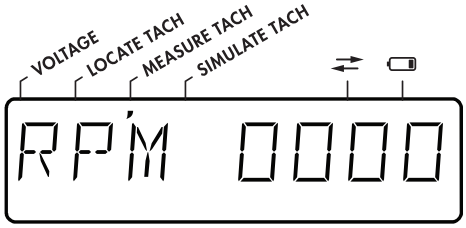
Functions are shown on the display with text and comma indicators that line up with function names on the label:



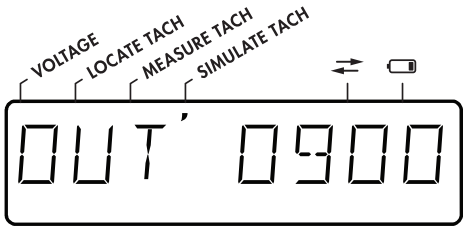
VOLTAGE
Indicated by VOLT X.XX
and comma position 1



LOCATE TACH
Indicated by TACH XXX
and comma position 2

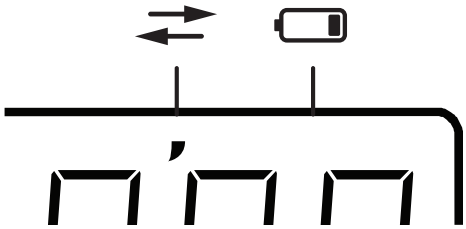


MEASURE TACH
Indicated by RPM XXXX
and comma position 3

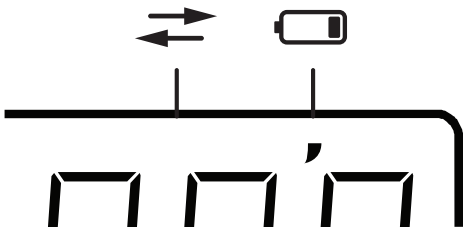


SIMULATE TACH
Indicated by OUT 0900 or OUT 2250 and comma position 4

Other indicators



Indicates RS232 communication is active on USB connector



Indicates low battery

Batteries

The device takes two AA, 1.5V alkaline batteries.

Testing wire voltage

⚠ *CAUTION!*

Before performing any test, it is important to ground the Automotive Diagnostic Tool to avoid sustaining electrical shock. To ground the diagnostic tool, insert the **alligator grounding clamp** or **black multimeter probe** via black test lead into black receptor on handset, then connect the clamp to ground source or the probe to grounding wire.

1. Turn on handset and press **FUNCTION** button until reaching **VOLTAGE** function, indicated on display by "VOLT 0.00" and comma position 1.

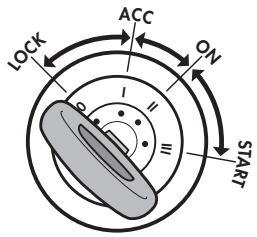
2. Connect **red multimeter probe** to handset via red test lead. Press base of probe to expose contact. Insert wire to be tested against exposed contact and release base. This should pinch the wire.

🗎 *NOTE:*

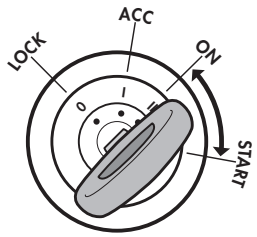
It is important to make sure the probe has sufficiently pinched the wire in order to get a reading. If voltage is not displayed on the device, wiggle the probe or attempt pinch again.

Determining wire function

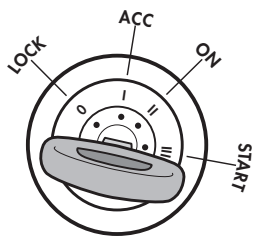
In the vehicle main wire harness, individual wire function may be determined based on the following readings:



The POWER wire (continuous un-switched source wire) will register at approximately +12 or +24 volts in any key position



The IGNITION wire (non-continuous switched source wire) will register at approximately +12 or +24 volts only when the key is in the "ON" or "START" position



The START wire will register at +12 or +24 volts only when the key is in the "START" position

Ground wire will not register any volts under any circumstances

Locating tach signal on alternator

If a tach signal wire cannot be found or signal is weak, it may be necessary to determine the best location to fasten the permanent Digital Tach Sensor (DTS) on the alternator:

1. Turn on handset and press **FUNCTION** button until reaching the **LOCATE TACH** function, indicated on display by "TACH 000" and comma position 2.
2. Insert tach sensor into USB port on top of device.
3. Place (DTS) sensor on the top of the alternator to determine where the strongest signal is and move sensor around if it is still showing a weak or no signal at all. This will be the point that the permanent DTS needs to be fastened.

Measuring tach signal

To determine if there is a good signal from the tach signal wire, perform the following steps:

1. Turn on handset and press **FUNCTION** button until reaching **MEASURE TACH** function, indicated on display by "RPM 000" and comma in position 3.
2. Connect **alligator clamp** to black receptor and **red multimeter probe** to red receptor on handset. Under the hood, attach **alligator clamp** to ground source.
3. With vehicle running, pinch tach wire with **red multimeter probe**.
4. The tach reading will be given on the display. (Make sure to rev engine over 1000 RPM to see if tach signal is rising and signal does not drop)

Simulating tach signal

In the case that the alcohol interlock registers a "Tach Fault", this function is used to determine if there is a problem with the tach signal (either in the wiring or digital tach signal) or the ECU itself.

1. If a tach fault occurs, cut the tach signal wire and connect **red multimeter probe** to wire leading to ECU.

2. Press the **FUNCTION** button on the handset until "OUT 0900" or "OUT 2250" appears on display.

3. OUT 0900 will simulate a tach signal as if the engine was idling. OUT 2250 will simulate a tach signal as if the engine was revving. To switch between the two, press the **ON/OFF** button while in this mode.

4. If the ECU registers the simulated tach signal, the problem is with the vehicle's tach signal. If the ECU does not register the simulated tach signal, the problem is with the ECU.

Troubleshooting

If the Automotive Diagnostic Tool is malfunctioning, send back to ACS for maintenance or replacement.

Contact information

For assistance, contact your jurisdictional program manager.

Alcohol Countermeasure Systems Corp
60 International Boulevard
Toronto, Ontario M9W 6J2
CANADA

Replacement parts

To order a new device or replacement parts, contact ACS and refer to the appropriate part number(s) below:

Part name	Part number
Handset	15-000408
Multimeter probe (red)	22-000827
Multimeter probe (black)	22-000826
Test lead (red)	27-000144
Test lead (black)	27-000143
Black alligator grounding clamp	13-001122
Tach sensor assembly with mini USB connector	13-001121

Notes

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IRM-EN-60-000196-A