WR3 Installation Guide

Installation Overview

1.0 Introduction

The WR3 Ignition Interlock is an electronic breath alcohol analyzer, which connects to the ignition and other control systems of a motor vehicle. It measures the BAC of the intended driver and prevents the vehicle from being started if the BAC exceeds a preset limit.

It comprises an Interface Module and detachable handset. The WR3 is soldered to the vehicle in a tamper-resistant fashion.

Note: WR3 is intended for installation on all vehicles with 12V electrical systems.

2.0 Part Lists

2.1 Parts and equipment available from Alcohol Countermeasure Systems

WR3 Install Kit	ACS # 95-000517
WR3 Ignition Interlock interface module	ACS # 79-004725
WR3 Ignition Interlock handset	ACS # 79-004745
Plastic mouthpiece	ACS # 95-000140
ACS Auto Calibration Unit	ACS # 79-006104
15 watt, 8 ohm, 12 volt DC alarm horn (if required)	ACS # 79-000916
Ethyl alcohol standard solution (50 mg%)	ACS # 95-000305

Computer communication cord:

Note: Communication cables that exceed 15 feet, require a signal booster

10 Feet (standard)	ACS # 79-000855
20 Feet with booster	ACS # 79-006883
50 Feet with booster	ACS # 79-006885
100 Feet with booster	ACS # 79-006886
150 Feet with booster	ACS # 79-006887
200 Feet with booster	ACS # 79-006888

2.2 Power tools to be supplied by Installer

Portable reversible battery-operated drill with bits

Electric soldering gun and spool of rosin-core solder

Portable butane soldering gun

Heat-shrink gun

Industrial-strength battery charger

2.3 Hand tools and test equipment to be supplied by Installer

Wire stripper (16-22 gauge)

Diagonal side cutters

Scissors

12 volt test probe

Mechanic's Trouble Light with receptacles

Set of screwdrivers (Phillips, flathead, Robertson)

Socket/Ratchet set (metric and imperial)

Electrical tape

Utility knife

Digital voltmeter

Needle-nose pliers

Extension cord

2.4 Material to be supplied by Installer

Fender cover

Shop towels

Hand cleaner

Eight 6-inch tie straps

Heat-shrink tubing: 3/16", 1/4", 3/32", and 3/8" sizes as required

16-18 gauge wire (for tachometer)

Firewall probe

Methyl hydrate cleaner

3.0 Inspection

3.1 Inspecting the electrical system

In order for the WR3 Ignition Interlock System to operate properly, it is essential that the vehicle's electrical system be in good operating condition. The key components that you must inspect are:

- Battery
- Charging system
- Starting system

If any of these areas are found to be defective or inoperative, it is the client's responsibility to have the vehicle repaired *prior* to the installation.

3.2 Battery inspection

1. Visually inspect the battery for cracks, holes, leakage, and other damage.
2. Visually inspect the cleanliness of the battery case and posts.
3. Visually check the electrolyte level of the battery.
4. If a battery is detected to be fully discharged ("dead"), a charge or boost might be required to start the vehicle.

3.3 Charging system inspection

1. Visually inspect the condition of all wires and belts that connect to the starter, alternator (or generator/voltage regulator), and battery.
2. Visually check the status of the charging-system warning light, or check the voltmeter in the dash to make sure that there are at least 14 volts.

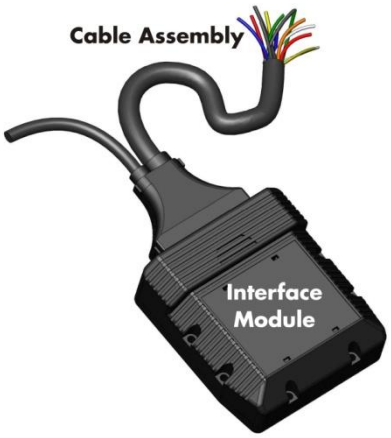
3.4 Starting system inspection

If you detect a starting problem, attach a voltmeter to the battery terminals, noting the voltage as the engine cranks. If the voltage is below 9.0, or there is no cranking, suggest that the starting system be inspected and repaired.

4.0 Interface Module installation

When you have tested the vehicle's electrical, charging, and starting systems, and found them in satisfactory condition, you can install the WR3 Ignition Interlock system. Installation consists of these steps:

- Mounting the interface module in an appropriate location
- Mounting and connecting the 15 watt, 8 ohm, alarm horn
- Locating and attaching the tachometer signal wire
- Connecting the cable assembly of the interface module
- Testing the installed system
- Connecting and mounting the handset



Note: As you install, remember that the system must one day be removed from the vehicle, and that the vehicle must be returned to the same condition as it was before the installation. You must, therefore, choose a location that permits installation with the smallest amount of drilling/modification to the vehicle. Always try to use existing hardware and holes to minimize modification.

4.1 Mounting the Interface Module

1. Locate a convenient, easily accessible area to mount the interface module (preferably under the dashboard). It must not obstruct the functioning of the vehicle (e.g., keep it away from the brake and gas pedals). Wherever possible, use existing screws and holes. Be sure to position the module so that you can connect the handset cable securely.

   NOTE: You must position the module so that it does not interfere with the normal operation of the vehicle.

2. Mount the interface module with the cable assembly connector opening facing downwards. This is done so that the open part of the interface module case would be facing down (to defend the connector opening from the elements, i.e. water leakage, dust, etc.).

3. Use Velcro® or cable ties to attach the interface module in a secure location. If Velcro is used to mount the interface module, attach the loop half of the hook and loop tape to the back of the interface module, and attach the hook half to the vehicle. If cable tie wraps are used, put them around the interface module securely.

4. Securely tighten all hardware, and inspect the finished assembly.

   NOTE: Place the interface module in the correct mounting position. Run the wires to the interface module, ensuring that you can hide all of them after the installation.

4.2 Mounting and connecting the alarm horn

1. Remove the existing bracket from the alarm horn. Open the vehicle's hood, and attach the bracket to the firewall, fender well, or other suitable location.
2. As you mount the alarm horn to the bracket, make sure that there is enough clearance (i.e., closing the hood does not damage the hood or the alarm horn).
3. Attach the alarm horn and tachometer wires to the probe. Feed them through the firewall, making sure that you leave sufficient slack under the dashboard.
4. Solder the connections to the alarm horn.
5. Tuck the alarm horn wire neatly under the vehicle's existing wiring. Wire-loom and cable-tie it away from vehicle components that move, or that are excessively hot.

4.3 Attaching the tachometer signal wire

1. Locate the tachometer signal.
2. Verify the tachometer signal (e.g., using the WR3 Handset diagnostic feature in the Service menu).
3. To prevent tampering, the tachometer wire from the cable assembly must be soldered onto the tachometer signal wire from the vehicle, use electrical tape to tape off the connection and tamper-seal it.
4. Tuck the wire neatly under the vehicle's existing wiring. Wire-loom and cable-tie it away from vehicle components that move, or that are excessively hot.

NOTE: If tachometer signal is not located, use DTS (ACS # 94-001890) on the alternator and refer to installation notes inside the DTS package. At no time should an individual coil pack or fuel injector be used as a tack source, as it may damage the fuel injector.

4.4 Connecting the Interface Module cable assembly

The cable assembly consists of 18 coloured wires, and one handset cable. You must connect eight of these wires to specific points in the vehicle's wiring system. Connect the other wire to the alarm horn. The other nine wires are for future use.

Each connection must be as neat and secure as possible (through soldering and shrink-wrapping) to help ensure correct WR3 operation. Use tamper-proof (*T*P*S*) shrink-wrap tubing on all solder connections (or, if necessary, a tamper seal).

NOTE: Do not use the vehicle's fuse box for the wire connections. In most cases, it is easily accessible and vulnerable to tampering.

***Section 4.4.1** has a step by step procedure to wire the interface module, and **section 4.4.2** has the wiring diagram which can be used as an aid while the steps are being followed.

The wires that comprise the Interface Module cable assembly are:

Wire #	Colour	Location
4	Red	+12 volts (main power)
13	Red-Yellow	+12 volts (main power)
5	Black	Ground
1	Black-Yellow	Ground
14	Yellow	Brake
24	White	Ignition (+12 volts, switched-on position only)
19	Blue-Yellow	Starter (coming from the ignition switch)
10	Light Blue	Starter (going to the starter)
8	Orange	Alarm horn +(positive)
15	Light Green	Tachometer
26	None	Connector Tamper detection
27	None	Connector Tamper detection

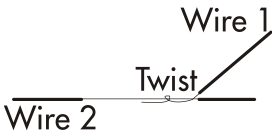
Handset	CPC Cable
2, 3, 6, 11, 12, 20, 21, 22	7-wire moulded handset connector cable

Wire #	Colour	(Future Use)
23	Gray	Remote starter
25	Pink	Trip
7	Yellow-Red	CAN BUSS
9	Dark Blue-White	CAN BUSS
17	Dark Green-Yellow	RS232
16	Light Green-Black	RS232
18	Brown	Spare
28	Brown-Red	Spare
29	Brown-White	Spare

4.4.1 Steps to connect the Interface Module cable assembly

1. Prepare the cable assembly by stripping back the wires approximately 1/2 inch. Apply heat-shrink tubing to all wires except # 4 & 13, 1 & 5, and 3.

   NOTE: When connecting wires to each other, twist the wires onto each other for a secure connection.



2. Locate Wire # 1 & 5 in the cable assembly. Connect it to a ground point using a ring terminal and a tamper-proof screw.

   NOTE: To avoid damaging the interface module, connect the ground to the Interlock first.

3. Locate Wire 4 & 13 in the cable assembly. Connect Wire 4 & 13 to a continuous (unswitched) source of +12 volts fused at 10 amperes (minimum) from the vehicle's main harness.

   Use the test probe to locate the appropriate source. Test it by moving the ignition switch through all positions (including the START and ACCESSORIES positions). The +12 volts must be present at all times.

   Use the strippers to expose 1/2 inch of the source wire. Twist the end of Wire 4 & 13 around the +12 volt continuous source.

   NOTE: Do not solder until all wires have been attached, and the system has been tested.

4. Locate Wire 24 in the cable assembly. Connect it to a source of +12 volts from the vehicle's main harness that is present only when the ignition switch is in the ON or START position.

Use the test probe to locate the appropriate source. Test it by moving the ignition switch through all positions. The +12 volts must be present only when the ignition switch is in the ON or START position, and must be absent in all the other positions.

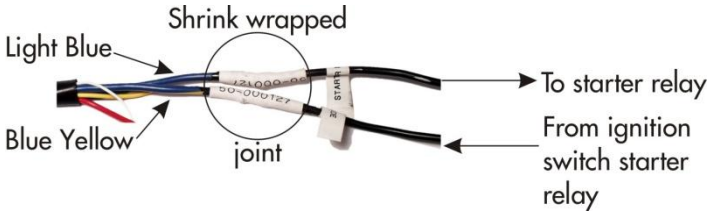
Use the strippers to expose 1/2 inch of the source wire. Twist the end of Wire 24 around it.

5. Locate Wire 19 and Wire 10 in the cable assembly. You must connect these wires in series to the wire running between the ignition switch and the starter relay or solenoid (depending on the make of the vehicle):

   Use the test probe to locate the wire coming from the ignition switch supplying the "start" signal.

   Clip the wire in half, and remove 3/4 inch of insulation from each end. Test the wire by moving the ignition switch to the Start position. The starter should not engage.

   Connect Wire 19 to the wire coming from the ignition switch. Connect Wire 10 to the wire going to the starter relay or solenoid.



6. Locate Wire 8 in the cable assembly. You must connect this wire to the red wire coming from the alarm horn under the hood:

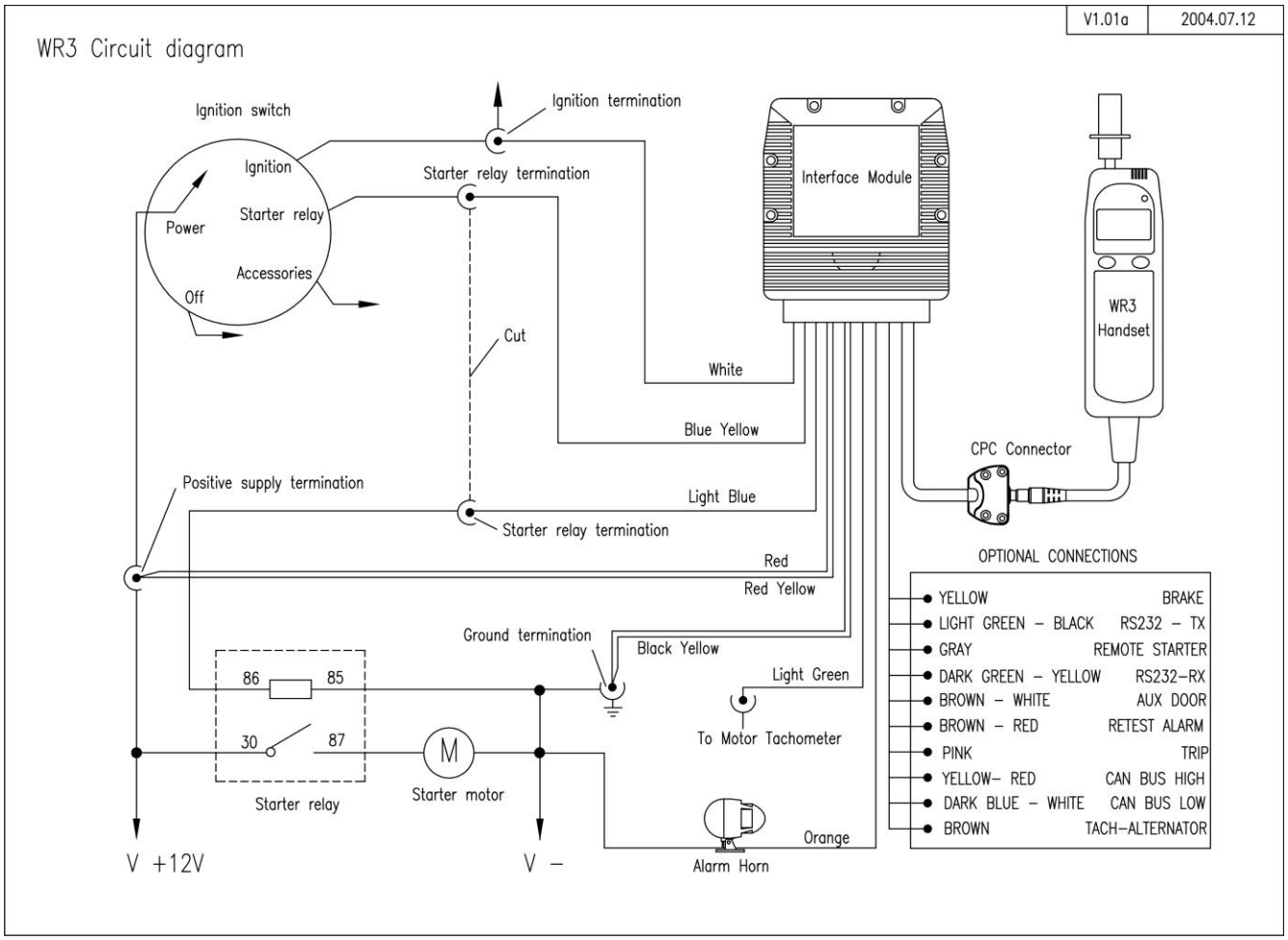
   Attach Wire 8 from the interface module to the "+" (positive, red) wire of the alarm horn.

   Attach the "–" (black, ground) wire of the alarm horn to the spot at which Wire 1 and Wire 5 connect.

7. Locate Wire 15 from the cable assembly. Attach it to the wire coming from the tachometer location under the hood.

4.4.2 WR3 Wiring Diagram

The following diagram illustrates the wiring steps in section 4.4.1.



4.5 Testing the installed system

Connect the *WR3 handset* to the Interface Module's handset port, and go into Diagnostic mode. Use the two buttons on the handset to navigate through the menus to perform a test procedure. This procedure allows you to verify that the Interface Module has been installed correctly, and that all critical functions are performing within established limits.

AFTER YOU HAVE COMPLETED THE TESTING SEQUENCE SUCCESSFULLY:

1. Solder all connections. Shrink-wrap, tape, and neatly tie-strap them.
2. Apply tamper seals to the alarm horn and tachometer wires.
3. Reinstall all vehicle panels.
4. Perform a final visual inspection. Make sure that you have returned the vehicle to its original appearance.

4.6 Connecting and mounting the handset (Optional)

1. Mount the handset clip fixture in an accessible location for the driver. The handset and its coiled cable must not obstruct the vehicle's controls, and must not hinder in any way the normal operation of the vehicle
2. The clip fixture can be mounted using Velcro hook and loop tape (attach the loop half of the hook and loop tape to the back of the clip fixture, and attach the hook half to the dashboard).
3. Plug the cable from the interface module into the handset, and place the handset in the clip fixture.
4. After mounting the handset, perform a visual inspection to insure that the vehicle is back to its original appearance before the installation.

5.0 Removing Interface Module

To remove the interlock from the vehicle, first ensure that the vehicle is in the off ignition position.

1. Locate Wire 15 from the cable assembly and disconnect it from the wire that is coming from the tachometer location under the hood.

   Use heat-shrink tubing on the tachometer wire to return its condition the same as before the installation.

2. Locate Wire 8 in the cable assembly. Disconnect Wire 8, which goes from the interface module to the "+" (positive, red) wire of the alarm horn. Disconnect the "–" (black, ground) wire of the alarm horn from the spot where Wire 1 and Wire 5 connect.

   Use heat-shrink tubing to return wire 8 to the same condition as before the installation.

3. Locate Wire 19 and Wire 10 in the cable assembly. Disconnect these wires from the wire that was cut during installation (Wire 19 and Wire 10 are connected in series with this wire), this wire was originally running between the ignition switch and the starter relay or solenoid (depending on the make of the vehicle):

   Reconnect the wire that was clipped in half during the installation. Test the wire by moving the ignition switch to the Start position, the starter should engage. Solder the wire back together and shrink wrap it once the connection is checked.

4. Locate Wire 24 in the cable assembly, disconnect it from +12 volts source wire that was found during installation.

   Shrink wrap and seal the part of the +12 volts wire that was exposed during installation.

5. Locate Wire 4 & 13 in the cable assembly. Disconnect Wire 4 & 13 from the continuous (unswitched) source of +12 volts that was found during installation.

   Use shrink wrap to cover the exposed part of the +12 volts source wire.

6. Locate Wire 1 & 5 in the cable assembly. Disconnect the wires from the ground point (the connection to the ground point during installation was made using a ring terminal and a tamper-proof screw).

   NOTE: To avoid damaging the interface module, the ground point should be disconnected last.

7. Ensure that all the wires that were cut and reconnected are soldered together and heat-shrink tubing is used to reseal them.

   Use heat-shrink tubing to cover all the exposed parts of any of the wires.

6.0 Disposing the Interlock

Return to your service provider for removal of the interlock from your vehicle.

Following the removal, proper disposal of the interlock (interface module, handset, or both) at the end of its service life will be done by the manufacturer.

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