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Control Module

1. **Geotab Recording Device**: Primary on-board memory and firmware to record GPS and sensor data and deliver by cellular modem.
2. **Touch Key Housing and Touch Key Housing Harness**: Used together with Geotab Key (8) for several purposes including technician diagnostics and Driver Identification.
3. **Combo Antenna**: Active GPS antenna to receive location information and Quad Band Cellular Antenna / RF Antenna: 900 MHz RF Antenna.
4. **Auxiliary Wiring Harness**: 8 inputs available (Eg. To record door open/close activity).
5. **Main Wiring Harness**: Includes a 6-pin connector for either 3-wire harness connection or engine management connection.
6. **Buzzer**: Included is a buzzer used for technical diagnostics and speed alarm.
7. **EZ Harness**: ALDL Harness used for Engine Management OBD\CAN.
8. **Optional Power Supply Harness**: Optional extra used for 3-wire install.
9. **12-Way Pass-through Addition to Main Harness**: Used to cater for legacy protocols, supported by version 2.
Connecting the GO4 Unit to the Vehicle’s Power Source

There are two ways that the unit can be connected to the vehicle’s power source.

3-Wire Installation
The system receives +12V, ignition and ground from a hard wire connection as seen in Figure 1.1

1. Locate the vehicle’s ignition switch wire that is +12V at all times when the ignition switch is in the "On" position and 0V or floating when the ignition is in the off position.
2. Check that this wire does not change state during crank. If the wire changes state, a different connection point must be traced.
3. Locate the yellow wire from the GO Connector. Solder this wire to the switched ignition wire.
4. Connect the Black wire to a good chassis ground.
5. Locate +12 V near the ignition switch. The positive feed will normally be a thick wire that is hot at all times. Make certain that this connection does not lose +12V during engine crank.
6. Insulate all connections well.

Figure 1.1
Engine data port installation (ALDL)

If the unit supports engine diagnostics, the system will connect directly to the data port on the engine. In this case, the unit will source power from and receives engine data via the diagnostic port in the vehicle. The protocols currently supported and the corresponding harnesses that they use can be seen in figure 1.2. Units must be configured to the correct protocol at time of purchase. Color coding is used to clearly distinguish between protocols. The labels on a J1708 unit will be Orange, labels for J1939 units will be Green and all other labels will be White.

![Diagram of engine data port installations](image)

Figure 1.2
There are two types of engine data installations.

1) EZ and C & D harness installation – which connect directly into the engine port

Or

2) OEM T harness installation (E1, E2, E3 and EC).

1) Installing the EZ or C & D series harness

Simply find the engine port usually positioned at the underside of the dash on the driver’s side. Plug in the harness.
And insert the connector

2) Installing the OEM T harnesses (E1, E2, E3 and EC)

Disconnect the engine port ALDL

Connect the one side of the T harness to the engine port
Connect the other end in place of the engine port

Connect to unit and hide wiring behind the dash
Installation of Ignition Detect

In some installation instances an ignition detect signal wire will be required. This is caused by the fact that the required signals are not present on the ALDL (ODBII) connector in certain vehicles. In order for the Geotab unit to know that the vehicle ignition is switched on, a wire found in the product package (SPR-ACCWIRE a yellow wire which is included in SPR-ZIPBAG) will have to be installed as indicated below. This may be required for any of the currently supplied harnesses. This installation is required under either of the scenarios listed below:

- When using the engine harness and ‘Ignition ON by RPM’ is not supported, RPR-ACCWIRE is used to supply a switched ignition (or Trigger) feed to the unit
- When using the engine harness with the immobilization circuit wired in, RPR-ACCWIRE is used to supply a switched ignition (or Trigger) feed to the unit

![Diagram of installation process]

Note: The switched Ignition feed must NOT change state when the vehicle is being cranked.

Connect to a fused switched 12 volt supply (Tests as 0 Volts in OFF position, 12 volts in KEY ON and START positions.)

Insert SPR-ACCWIRE into pin 1 Position

E Series Engine Harnesses

C & D Series Engine Harnesses
Installation of the Touch Key Housing Bracket Mounting

Locate a flat metal (if available) surface area on the underside of the dashboard that is within arm’s reach of the driver. Secure the bracket to the metal area with the suitable 6 mm bolt and nut supplied. Connect the 4 way connector from the Geotab harness.

![Diagram of Touch Key Housing Bracket Mounting]

Installation of the GPS Antenna

The antenna must be mounted so it has an unobstructed view to the sky. The windshield must be cleaned before the antenna is mounted. Ensure that tinting or any metallic objects do not obscure the line of sight. Note the adhesive tape side is the active side and must face the sky.

1. Make certain to mount in position outside of the wiper blades movement arc.
2. Do not mount on the tinted area at the top of some windscreens as these can contain metal content and may degrade the antenna sensitivity.
3. Avoid running the antenna cable next to antenna cables from two way radios, cell phones etc.
4. Do not lengthen / shorten the shielded antenna cable.
5. Only use the special RF double sided adhesive tape supplied with the Antenna, other double sided tapes may degrade signal strength. (In the event of re-installation spare tape can be ordered from GEOTAB).
6. Take special care when plugging and unplugging the antenna connector into the male / female connector.
7. Take care not to place the antenna under a structure such as a metal Roof Rack.
Installation of Communication Antenna (GSM/CDMA, RF or Wi-Fi)

The windshield must be cleaned before antenna is mounted.

1. It must be mounted vertically and not horizontally.

2. Avoid running the antenna cable next to antenna cables from two way radios, cell phones

3. Do not lengthen / shorten the shielded antenna cable.

4. Take special care when plugging and unplugging the antenna connector into the male / female connector.
Note the GSM antenna will have a male pin in the center coaxial connection, while the RF antenna has a female connector and the Wi-Fi has a silver connector where the other two are gold.
Wiring Auxiliary Inputs

All GO4 units are equipped with 8 auxiliary wires. The figure below shows their pin out and coloring. The auxiliary numbers are also printed on the respective wires.

Common uses for the auxiliaries are detection of seat belt, PTO, reverse light and cargo door.

It is important to keep a standard when wiring the auxiliary wires. Example, if monitoring Seat Belts, Reverse and PTO switches. Use Seat Belts as Auxiliary 1, and Reverse as Auxiliary 2 and PTO switches as Auxiliary 3 and 4. Keep this standard for every vehicle install to prevent confusion in Checkmate as to which component has been activated.

All auxiliaries are switched via reading a ground on the input. The inputs are de-bounced so the ground must be present for a minimum of 1 second in order for GEOTAB control module to read as a valid switch.

A multi-meter is required for every hardware install with the ability to perform a continuity check. Any change in voltage to or from 0 V can be monitored easily. Simply connect the auxiliary wire to line which changes to 0 V when active and changes from 0 V when inactive. This case is called “negative trigger”. There are 3 possible scenarios:

**Positive Trigger:** Line voltage changes to or from 12 V, when active

**Negative Trigger:** Line voltage changes to or from 0 V, when active

**Floating:** The wire is disconnected from the circuit

If the line is positive trigger, a relay is required. If the line is negative trigger, a relay is recommended to avoid false readings on the auxiliary line. False readings may occur if the PTO light is driven from an ignition or accessory instead of a constant battery source. The ignition will sink to ground when it is off and as a result Auxiliary wire will be pulled to ground through the PTO lamp. This will appear to have a PTO engaged with ignition off.

**Negative Trigger:** Check continuity to ground to determine whether voltage changes to or from 0 V

If the voltage switches to 0 V when the switch is active then connect the relay as shown below.
Positive Trigger: If you determine that the voltage switches to 12 V when the switch is active then connect the relay as shown below.
Starter inhibit installation

This installation is required when ‘hard’ immobilizing is required; please note that the HRN-GOIMM harness is required for this installation. Installation of this harness will ensure that the vehicle remains immobilized until a driver ID key is inserted into the GO unit. This option comes with a 12V normally open starter kill relay. Please note that the relays supplied are MUST be compatible with the voltage of the vehicle (normally 12V)

Installation Instructions
Locate the active wire from the ignition switch that is positive during crank. This wire will normally drive the starter solenoid
Cut this wire and solder the ends to the two thick wire with white markers to both sides. Insulate the connections with heat shrink sleeving. Ensure that the connections are well insulated.
Note: The vehicle will not be immobilized if this feature is not enabled for the device in Checkmate.
Installation Testing

Entering Test Mode

To verify the hardware and the fitment, in-vehicle diagnostics with the unit in test mode, should be performed on every fitment. In test mode, the unit beeps on every log.
By default when a unit leaves the factory it will always power-up in test mode. The unit will automatically come out of test mode after two ignition cycles. If you need to do further diagnostics, you can put the unit in test mode by means of a test key.

Creating a Test Key

To create a test key, click on “Tools”→ “Key” → “Create A Test Key”, using Checkmate software available from http://checkmate.geotab.com. Be sure to select, “Vehicle test key” and not “Radio range key”.

Note: A key reader and key are needed to complete this step.

Once the key is successfully created, insert the key into the Geotab touch key housing for 3 seconds and remove to toggle test mode.
You will hear the buzzer sound 3 beeps followed by 1 beep; the unit is now in test mode.
If you insert the test key into the touch key housing again, the buzzer will sound 3 beeps followed by 2 beeps indicating that the unit is no longer in test mode.
First Time Power Up

The very first time the control module is powered up it will sound 3 beeps and if one second later three more beep sounds the units has powered up in test mode. To exit test mode, insert a test key into the touch key housing, or cycle the ignition twice.

Diagnostic Sounds

<table>
<thead>
<tr>
<th></th>
<th>Diagnostics (Not Test Mode)</th>
<th>Diagnostics (In Test Mode)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Power Up</td>
<td>3 Beeps</td>
<td>3 Beeps followed by 3 Ticks</td>
</tr>
<tr>
<td>Test Key Insert</td>
<td>3 Beeps followed by 1 beep</td>
<td>3 beeps followed by 2 beeps</td>
</tr>
<tr>
<td></td>
<td>(The unit is now in test mode)</td>
<td>(The unit is no longer in test mode)</td>
</tr>
<tr>
<td>Ignition Changes</td>
<td>No Beep</td>
<td>1 Beep</td>
</tr>
<tr>
<td>(Either 3-wire install or Engine Management)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satellite Latch</td>
<td>No Beep</td>
<td>1 Long Beep</td>
</tr>
<tr>
<td>Record Log</td>
<td>No Beep</td>
<td>1 Beep</td>
</tr>
<tr>
<td>Programming Key</td>
<td>3 Beeps</td>
<td>3 Beeps</td>
</tr>
<tr>
<td>Ignition on with GPS Antenna Disconnected (Open Circuit)</td>
<td>3 Long Beeps directly after ignition on</td>
<td>3 Long Beeps directly after ignition on</td>
</tr>
<tr>
<td>Firmware upgrade key inserted</td>
<td>Series of short beeps indicating download 2 Beeps on download complete(after which key should be removed) continuous tics indicating installation 3 Beeps on installation complete</td>
<td>Series of short beeps indicating download 2 Beeps on download complete(after which key should be removed) continuous tics indicating installation 3 Beeps on installation complete</td>
</tr>
<tr>
<td>Extract key inserted</td>
<td>Series of short beeps while downloading 2 Beeps when download complete</td>
<td>Series of short beeps while downloading 2 Beeps when download complete</td>
</tr>
</tbody>
</table>

Testing Auxiliary Inputs

In Test Mode, when an auxiliary input is connected to ground the control module will verify the state change with a sequence of beeps corresponding with the auxiliary that has been triggered e.g. If Aux 2 is connected to ground, the control module will sound 3 more beeps one second later.
grounded then two beeps will sound, similarly 3 beeps when Aux 3 is grounded etc. The appropriate beeps will also sound when the auxiliary is disconnected from ground.

**Testing GPRS Communication (GO Live)**

1. Unit must be in test mode. See section on creating a Test Key.

2. With ignition off, LED will flash once every two seconds.

3. Turn the ignition on. One beep will indicate ignition change. A double flash will appear on the LED every 5 seconds until GPS latch. A GPS latch could take from 2-10 minutes on a cold start (When unit powers on for the first time). The GPS latch will occur only after the ignition is turned on (i.e.- only when ignition line yellow wire is +12 V). The GPS antenna must have clear view of the sky to ensure GPS latch.

4. Once the unit acquires GPS latch, 1 long beep will sound and the LED will flash every 5 seconds.

5. Once the unit has configured the modem, the unit will sound 1 beep.

6. Once the unit is on the cellular network, the unit will sound 2 beeps

7. 3 beeps will confirm data has been sent, and therefore GPRS communication is confirmed. If no GPRS diagnostics are heard, verify that cellular antenna is connected securely.

**Testing RF Communication**

1. Unit must be in test mode. See section on creating a Test Key.

2. With ignition off, LED will flash once every two seconds.

3. Turn the ignition on. One beep will indicate ignition change. A double flash will appear on the LED every 5 seconds until GPS latch. A GPS latch could take from 2-10 minutes on a cold start (When unit powers on for the first time). The GPS latch will occur only after the ignition is turned on (i.e. - only when ignition line yellow wire is +12 V). The GPS antenna must have a clear view of the sky to confirm GPS latch.

4. Once the unit acquires GPS latch, 1 long beep will sound and the LED will flash every 5 seconds.

5. On ignition off, the unit will try to connect to a RF downloader. GO4 RF units can support multiple RF channels (frequencies). The buzzer will sound one beep while the unit attempts to connect to a different channel. If the vehicle did not stop in range of a RF downloader, the buzzer will sound a long beep on the last unsuccessful channel attempt.

6. If the unit is in range of a RF downloader, you will hear 1 short beep for every channel checked. Once the unit finds a RF downloader, the buzzer will double beep. If the serial number is not entered in the database, the double beep will repeat every 5 seconds. The buzzer will beep 3 times when downloading starts and twice when downloading succeeds, confirming RF communication.
Testing WIFI Communication

1. Unit must be in test mode. See section on creating a Test Key.

2. With ignition off, LED will flash once every two seconds.

3. Turn the ignition on. One beep will indicate ignition change. A double flash will appear on the LED every 5 seconds until GPS latch. A GPS latch could take from 2-10 minutes on a cold start (When unit powers on for the first time). The GPS latch will occur only after the ignition is turned on (i.e. - only when ignition line yellow wire is +12 V). The GPS antenna must have a clear view of the sky to confirm GPS latch.

4. Once the unit acquires GPS latch, 1 long beep will sound and the LED will flash every 5 seconds.

5. On ignition off, the unit will try to connect to a wireless access point. The buzzer will sound one beep +- every 10 seconds while attempting to connect to a maximum of 5 attempts. If it is unable to connect to the server it will try again at the next heartbeat an hour later.

6. If the unit can connect to the server, the buzzer will beep 3 times when downloading starts and twice when downloading succeeds, confirming WIFI connection with the server.

Completing Installation

As a final step, turn the ignition on and verify that no sound is heard to ensure vehicle is out of test mode. Do not mount the control module facing downwards (i.e. with cables exiting at the top). The control module must be mounted upright with the cables exiting towards the floor. If the control module is not mounted correctly, it may malfunction due to water penetration. Secure the control module to a non-moving part within the dash area using self-tapping screws and ties.

DO NOT MOUNT THE MODULE UPSIDE DOWN

CORRECT MOUNTING OF MODULE UNIT

DO NOT UNDER ANY CIRCUMSTANCES INSTALL THE UNIT IN THE ENGINE COMPARTMENT
Contact Details

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