

# Compact Fleet & CAN Hardware Installation Guide



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**POINTER**

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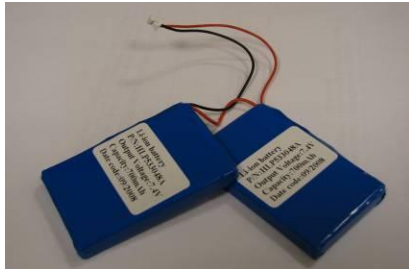
# 1 Introduction

This document provides all necessary information for a technician who is involved in the installation of a Compact Fleet or Compact CAN system. It describes how to install and verify the proper functioning of the Compact Fleet installation kit elements with additional information relevant to the Compact CAN installation kit elements provided throughout the text and, specifically, in Section 5.




## 1.1 Overview of Hardware Installation Elements

The Compact Fleet Hardware Installation kit includes the items listed in Table 1.

Table 1. Compact Fleet Hardware Installation Kit

Name/Part Number	Description	Picture
<p><b>Cellocator End Unit</b></p> <p>Please refer to Pointer representative for the specific part number.</p>	<p>Compact Fleet or CAN unit. Includes a GSM modem and supplied with GPS receiver module.</p>	
<p><b>GPS Receiver module</b></p> <p>PN 813-22720</p>	<p>A standard Cellocator GPS receiver (SiRFIII chipset). Supplied with 3 meters cable. Supports only indoor installation.</p>	
<p><b>Back up batteries (optional)</b></p> <p>PN 711-20051</p>	<p>2 x 3.7v rechargeable Li-ion batteries. Typical capacity: 720 mAh.</p>	

Name/Part Number	Description	Picture
<p><b>Dallas kit</b> (optional) PN 712-20015</p>	<p>The Dallas button is an electronic component which provides driver identification. It is enclosed in a 16 mm stainless steel casing. The Dallas kit includes a reader and two different unique ID keys.</p>	
<p><b>Handsfree kit</b> (optional) PN 712-20016</p>	<p>Used for vocal communication between the driver and assistance representatives or control center operators. Includes Cellocoator Handsfree module, speaker and microphone.</p>	
<p><b>Vehicle harness</b> (optional) Please refer to Pointer representative for the specific part number</p>	<p>Wiring harness for vehicle installation. Compact Fleet: Several harness types are available (please refer to table 2). Compact CAN: Only the Full Vehicle Harness (PN 711-00196) is applicable.</p>	
<p><b>Fuse and Fuse housing</b> PN 710-00001 PN 710-00002</p>	<p>3A Fuse and Fuse Housing for vehicle Installation.</p>	
<p><b>Distress button</b> PN 711-20001</p>	<p>Push Button, used for connection to unit's input. Can serve as a distress button for example, or as a Voice call control button.</p>	

Name/Part Number	Description	Picture
<b>12V Immobilizer relay with holder</b> PN 711-20000 PN 711-20023	12V 40/30A relay supports immobilizing and general purpose applications.	
<b>24V Immobilizer relay with holder</b> PN 711-20006 PN 711-20023	24V 40/30A relay supports immobilizing and general purpose applications	
<b>Cross plug</b> PN 711-20055 <b>Programming cable for PC COM port</b> PN 711-00078	DB9 (M) to DB9 (F) cross over plug (null modem), and cable for connection of unit to COM port of PC.	

## 1.2 Compact Unit Types

### 1.2.1 Compact Fleet Types

Compact Fleet unit can be delivered in several types:

- Four digital inputs (does not support pins 5 and 11)
- Three digital inputs and one analog input (pin 15)
- Six digital inputs
- Five digital inputs and one analog input (pin 15)
- Four digital inputs and two analog inputs (pins 14 and 15).

Information about the configuration is provided on the device label together with the unit part number.

Installation of the wires of pin 14 and 15 is performed as digital input or as analog input according to the unit type.

The Compact Fleet utilizes a 20-pin connector to connect the harness. The pin out of the Compact Fleet connector is described in Table 2.



**NOTE:** Please consult your Pointer sales account manager regarding the configuration supported by each Compact Fleet model.

### 1.2.2 Compact CAN Types

Compact CAN unit can be delivered in several types according to the following table:

Type No.	digital Inputs	Analog Inputs	CAN Parameters
1.	4	0	8
2.	3	1	8
3.	4	0	25
4.	3	1	25

Information about a configuration is provided on the device label together with the unit part number.

Installation of the wires of pin 14 is performed as digital input or as analog input according to the unit type

The Compact CAN utilizes a 20-pin connector to connect the harness. The pin out of the Compact CAN connector is described in Table 2.

**NOTE:** Please consult your Pointer sales account manager regarding the configuration supported by each Compact CAN model.

### 1.3 Compact Harness Overview

Cellocator provides several types of harnesses as listed in Table 3. This section describes the installation of the full harness, PN 711-00196. The other harnesses utilize only some of the full harness wires and thus only the relevant wires should be referenced.

The full harness is made up of 15 cables, 3 meters long, connected to a 20-pin connector that links to the Cellocator Compact unit. Please refer to the following illustration for the cable and pin structure of the harness.

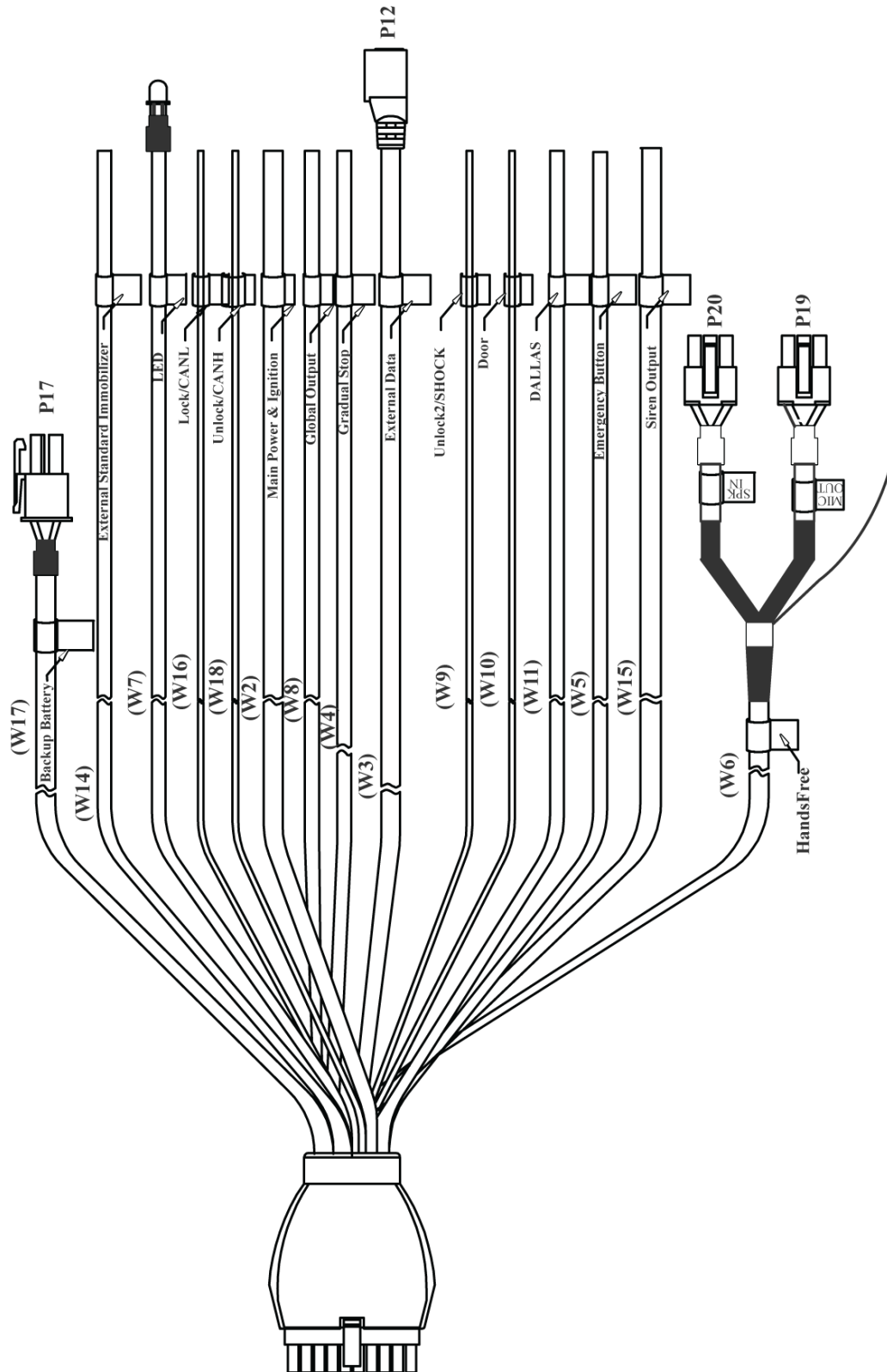


Figure 1: 711-00196 Full Harness Diagram

The following table provides a description of the harness. Additional information can be found in the relevant sections dealing with the harness installation instructions.



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Table 2. Compact Harnesses Pin-to-Pin Configurations

Wire Number	Wire Label	Wire Color	Cellocator unit Pin Number	Harness Adaptors Pin Number	Function
W2	Main Power & Ignition	Red	P1.2		Main Power
		Black	P1.3		Main GND
		Violet	P1.4		Ignition
W3	External Data	Black	P1.3	P12.1	RS232 GND
		Blue	P1.12	P12.3	RS232 TXD
		Green	P1.13	P12.4	RS232 RXD
W4	Gradual Stop	Red	P1.2		Power for Output
		Brown	P1.17		Gradual immobilizing, or global output, or Geo-Fence notification.
W5	Emergency Button	Black	P1.3		GND for digital input
		Grey	P1.16		Global input, usage counter, or emergency voice call initiation
W6	Handsfree	Red	P1.4		Power for Handsfree module
		Grey	P1.9	P20.3	Handsfree – Audio Out
		Yellow	P1.10	P19.1	Handsfree - Audio In
		Black	P1.19	P20.2	Handsfree – Analog GND
		Green	P1.19	P19.3	Handsfree – Analog GND
W7	LED	Red	P1.2		Power for output
		Black	P1.6		Global output, LED, or Geo-Fence notification
W8	Global Output	Red	P1.2		Power for global output



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Wire Number	Wire Label	Wire Color	Cellocator unit Pin Number	Harness Adaptors Pin Number	Function
		Yellow	P1.18		Global output, system feedback, or Geo-Fence notification
W9	Unlock2/ SHOCK	Brown	P1.15		Analog input or digital input according to unit type.  As digital input it can be programmed to: Global input, standard voice call control, privacy mode control, or usage counter input.
W10	Doors	White	P1.14		In Compact Fleet: analog input or digital input according to unit type.  In Compact CAN: only digital input  As a digital input it can be programmed to: door sensor, or global input, or usage counter input, or transparent data forwarding switch, or emergency voice call initiation
W11	Dallas	Black	P1.3		GND for Dallas
		Orange	P1.20		Dallas
W14	External Standard Immobilizer	Red	P1.4		Power for output
		Green	P1.7		Global output, engine Immobilizer, or Geo-Fence notification
W15	Siren Output	Red	P1.2		Power for output
		Blue	P1.8		Global output, system feedback, or Geo-



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Wire Number	Wire Label	Wire Color	Celloco unit Pin Number	Harness Adaptors Pin Number	Function
					Fence notification
W16	Lock/CANL	Orange	P1.5		In Compact Fleet: Global digital input, or usage counter.  In Compact CAN: CAN Bus interface
W17	Backup Battery	Red	P1.1	P17.1	Backup Battery
		Black	P1.3	P17.2	GND for Backup Battery
W18	Unlock/CANH	Green	P1.11		In Compact Fleet: Global digital input, or usage counter.  In Compact CAN: CAN Bus Interface

### 1.4 Harness Types

Table 3 provides a list of various harnesses that can be supplied with the Compact Fleet Hardware Installation kit.

*Table 3. Compact Fleet Harnesses*

PIN	Title	Function	711- 00068	711- 00088	711- 00156	711- 00196
1	Main Power	Backup Battery				X
2	Main Power	VCC	X	X	X	X
3	Main Power	Ground	X	X	X	X
4	Input	Ignition Switch	X	X	X	X
5	Input	<b>In Compact Fleet:</b> Global Input  <b>In Compact CAN:</b> CAN Bus interface				X
6	Output	LED				X
7	Output	External Standard Immobilizer			X	X



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PIN	Title	Function	711- 00068	711- 00088	711- 00156	711- 00196
8	Output	Siren				X
9	Hands Free	Audio Output				X
10	Hands Free	Audio Input				X
11	Input	<b>In Compact Fleet:</b> Global Input <b>In Compact CAN:</b> CAN Bus Interface				X
12	Ext. Data	Tx				X
13	Ext. Data	Rx				X
14	Input	Door				X
15	Input	Global Input Unlock 2	X	X		X
16	Input	Emergency Button			X	X
17	Output	Gradual Output			X	X
18	Output	Global Output				X
19	Hands Free	Audio Ground				X
20	Dallas	Dallas	X			X

All installation instructions are relevant to harness 711-00196. All other harnesses are subsets of this harness and relevant guidelines are provided in the following paragraphs.

For harness 711-00088 (4 wires) refer to the relevant sections:

- Main Power and Ignition (Section 4.3.1)
- Global Input (Shock) (Section 4.2.1)
- Pin-Out Definition (Table 2) pin numbers: 2, 3, 4 and 15.

For harness 711-00068 (6 wires) refer to the relevant sections:

- Main Power and Ignition (Section 4.3.1)
- Dallas button (Section 4.2.6)
- Global Input (Shock) (Section 4.2.1)
- Pin-Out Definition (Table 2) pin numbers: 2, 3, 4, 15 and 20.

For harness 711-000156 (6 wires) refer to the relevant sections:

- Main Power and Ignition (Section 4.3.1)
- External Standard Immobilizer Output (Section 4.1.4)



- Distress/Emergency Button (Section 4.2.4)
- Gradual Output (Section 4.2.1)
- Pin-Out Definition (Table 2) pin numbers: 2, 3, 4, 15 and 20.

## 1.5 Pre-Installation Information

**NOTE:** All installations instructions are relevant for both the Compact Fleet unit and the Compact CAN unit unless indicated otherwise.

Prior to commencing any installation procedures, technicians should study and be aware of the following admonitions.

**WARNING:** To avoid possible bodily injury, or damage to the vehicle, the Installer must be a certified technician who has been qualified to install the system.

**CAUTION:** Installation in vehicles having computerized systems may have unexpected results. Please consult with your local car dealer before performing any vehicle OEM invasive installation.

**NOTE:** Specifications are subject to change without notice.

## 2 Compact Unit Installation Instructions

The following section explains how to install the Compact unit.

### 2.1 Installing the SIM Card

To install the SIM card, perform the following steps:

**NOTE:** Make sure that your SIM card PIN is identical to the PIN programmed in the compact unit, or disabled. The default value of the compact unit PIN code is 1234. If the SIM PIN and the compact unit pin differ, insert the SIM card into a regular cellular phone and either change its PIN to the compact unit PIN (1234) or disable it.

Units which utilize FW 28 and above allow remote setting of the SIM PIN protection and value (locking the SIM) automatically providing PIN synchronization between the SIM and the unit.

1. Remove the back cover of Compact Fleet unit.
2. Gently slide the SIM card into the SIM holder as shown on the following illustration.



*Figure 2: Inserting the SIM Card*

### 2.2 Installing the Batteries

In the event that you have purchased a backup battery with Compact Fleet:

1. Arrange the batteries on the back cover as shown in the following illustration.



*Figure 3: Battery Arrangement in the Unit Enclosure*

2. Plug the backup battery cable into the appropriate two-pin connector on the Compact Fleet unit as described below.



*Figure 4: Connecting the Battery Backup Connector*

**CAUTION:** RISK OF EXPLOSION IF BATTERY IS REPLACED BY INCORRECT TYPE. Handle batteries according to the Battery Handling Procedure (Section 6.2).

3. Close the back cover of compact unit.

### 3 GPS Receiver Module Installation Instruction

A standard Cellocator GPS Receiver is supplied with a 3-meters cable.

**CAUTION:** The GPS Receiver is not waterproof (intended for indoor installation) and the wire **must not** be shortened.



Figure 5: 6-Way Connector



Figure 6: GPS Receiver Module

Correct operation of the Compact unit can only be achieved if the GPS Receiver module has been installed according to the following instructions.

- The GPS Receiver module must be mounted internally. Furthermore, the surface marked THIS SIDE UP must be fully exposed unhindered by metallic objects such as the vehicle roof or internal panels.
- The GPS Receiver should be mounted on the surface of the dashboard, the rear parcel shelf of a salon car, or directly on the front or rear windshield (where the angle of the screen does not exceed 45°). If a concealed installation is required, the GPS Receiver can be located under the dashboard, or under the parcel shelf, but the face of the GPS Receiver marked THIS SIDE UP **must** be fully exposed. It must not be located under any metallic materials.
- Installation of the unit in a concealed fashion may not be possible in all types of vehicles.
- The GPS Receiver may not receive a quality GPS satellite signal through solar-shielded glass.
- The vehicle's ignition must be in the ON position for the initial configuration.

## 4 Main Harness Installation Instructions

### 4.1 Harness Output Installation Specifications

#### 4.1.1 General

The harness contains a special cable for each one of the following outputs:

- Led
- External Standard Immobilizer Output
- Siren Output
- Special Immobilizer (Gradual) Output
- Global Output

The following information is common for all the outputs:

- Each Output cable (with the exception of the External Standard Immobilizer cable) is comprised of two wire bundles that are configured as follows:
  - The Red wire is a permanent Main Power connection.
  - The Compact Fleet output wires have the following colors: brown, yellow, green, and blue respectively to the selected outputs.
- All Outputs are Open Collector type and can sink up to 300 mA continuous.
- External devices (not OEM) that consume more than 300mA should be powered by a Relay. In such cases, the output implementation requires an external relay.
- The outputs can be activated or deactivated from the control center using the OTA command.

#### 4.1.2 Relay Pin-Out

The relay is provided to serve as an adaptor between the harness output and a device in the vehicle (immobilizer, siren, etc.). The following figure shows the pin-out location of the relay. The pin numbers are also printed on the Relay itself.

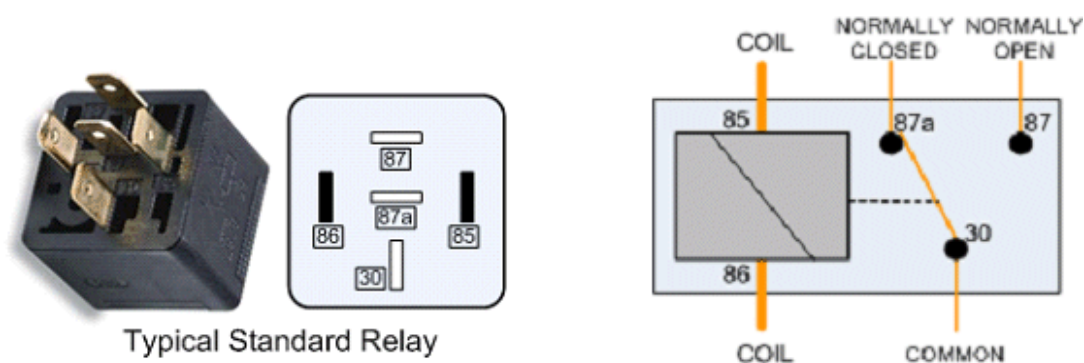


Figure 7: Relay Pin-Out

The relay figure and the pins numbers are used when describing harness outputs installations.



### 4.1.3 LED Output

The harness LED wire is connected to the Compact unit pin no. 6. The led itself is already connected to the led wire and it is a part of the harness. The LED provides an indication of system status. A full description of LED indications in the Compact Fleet and Compact CAN is presented below.

The LED output can be used as general purpose open collector output, or as a Geo-Fence notification, if configured accordingly.

No installation is required for the LED, apart from positioning in the vehicle.

#### 4.1.3.1 LED Output in Compact Fleet and Compact CAN

In the Compact unit prior to firmware release 28, LED output is as follows:

- Blinking – the modem is registered to GSM network
- Glowing – The modem is on a voice call
- Off – The modem is not registered on the GSM network.

In Compact unit from firmware release 28 and higher the LED output involves a sophisticated blinking pattern which provides monitoring status of both GPS and GSM status.

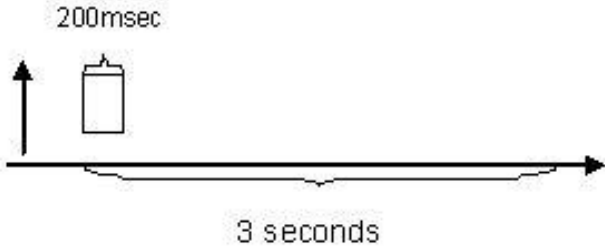
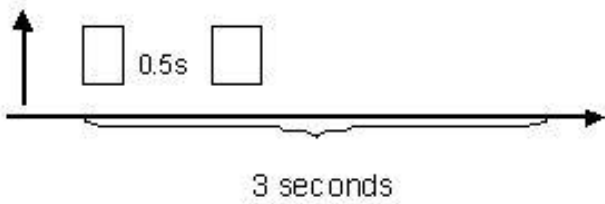
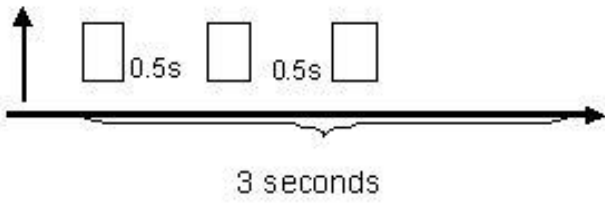
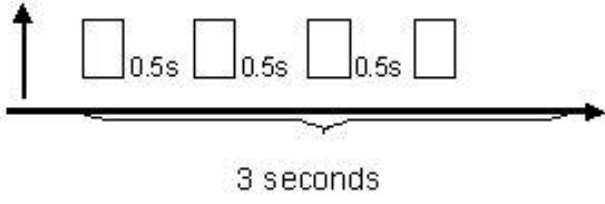
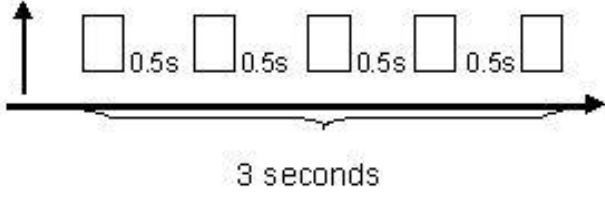
The blinking pattern is constructed of repeated cycles of two blinking zones each. The first zone represents GSM functionality and the second zone, GPS functionality.

- Each zone lasts for 3 seconds with a 1-second LED off interval between them.
- A 5 seconds LED off interval separates between each cycle.

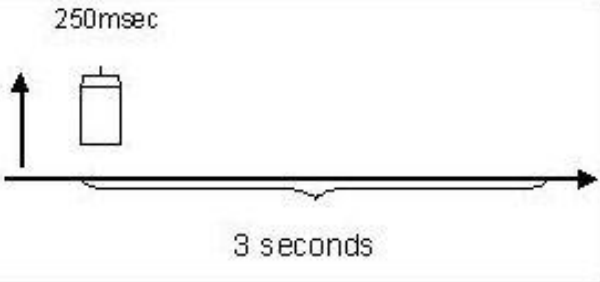
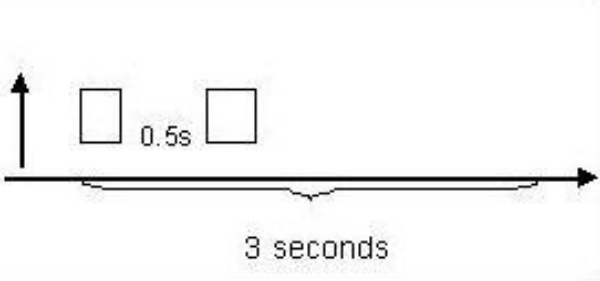
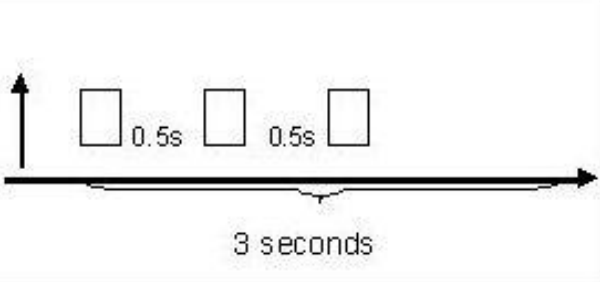
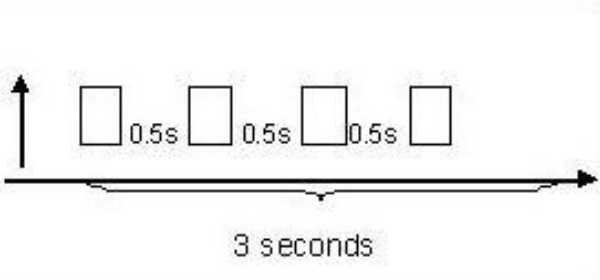
GSM Monitoring Zone – 3 seconds	Interval – 1 second	GPS Monitoring Zone – 3 seconds	Interval – 5 seconds	GSM Monitoring Zone – 3 seconds	Interval – 1 second	GPS Monitoring Zone – 3 seconds
---------------------------------	---------------------	---------------------------------	----------------------	---------------------------------	---------------------	---------------------------------

**IMPORTANT:** To ensure backward compatibility during the voice call, the LED will continually glow from the moment a voice call is triggered until hang up. The cycles of two blinking zones is renewed subsequent to the end of the voice call.

### 4.1.3.2 GSM Monitoring Zone Definition

Status	Blinking Pattern
GSM modem off	off
Not registered to GSM / No SIM	
Registered in Home GSM network (not attached to GPRS)	
Registered in Roaming GSM network (not attached to GPRS)	
Attached to GPRS/home	
Attached to GPRS/roaming	

### 4.1.3.3 GPS Monitoring Zone Definition

Status	Blinking Pattern
GPS module off	off
GPS is unplugged / faulty	 <p>250msec</p> <p>3 seconds</p>
GPS communicating, but not navigating	 <p>0.5s</p> <p>3 seconds</p>
GPS is in navigation mode	 <p>0.5s</p> <p>0.5s</p> <p>3 seconds</p>
GPS is in GYRO mode	 <p>0.5s</p> <p>0.5s</p> <p>0.5s</p> <p>3 seconds</p>

### 4.1.4 External Standard Immobilizer Output

The harness External Standard Immobilizer Output wire is connected to the Compact Fleet pin no. 7.

This cable has two wires: red and green and **External Standard Immobilizer** is printed on the wire bundle tag.

The output functionality is defined according to programming parameters (PL).

In most cases the output is used by the Compact unit to activate/deactivate the vehicle engine immobilizer. In that case, the output shall be connected to the vehicle engine as shown in the installation diagram below. Alternatively, the External Standard Immobilizer Output can be used as a general purpose output, or for Geo-Fence notification, if configured accordingly.

This External Standard Immobilizer can be activated/deactivated via an OTA command from the control center.

The following illustration provides the External Standard Immobilizer output installation when deployed for engine immobilizer application.

**NOTE:** the original wire must be cut and the relay connected between the original relay and the vehicle power.

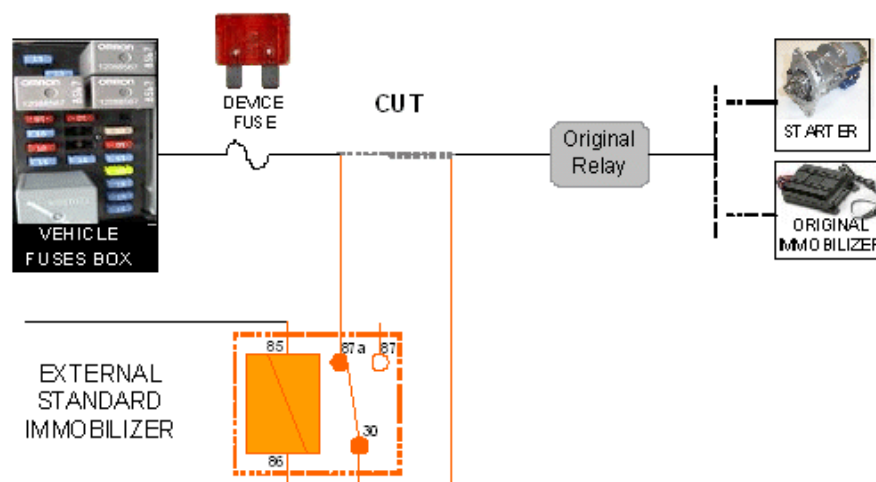


Figure 8: External Standard Immobilizer Output Installation Diagram

Normally, the power for the immobilizer Relay is taken from the ignition switch wire (and configured such that power is provided only when the ignition switch is in the ON position).

If the External Standard Immobilizer output is configured to work while the ignition is in the OFF position, then the red wire should not be used and a permanent connection (car battery) should be used instead for the Relay (pin 85).

#### 4.1.5 Gradual Output

The harness Gradual Output wire is connected to the Compact Fleet pin no. 17.

This cable has two wires: red and brown and **Gradual Stop** is printed on the wire bundle tag

The output functionality is defined according to programming parameters (PL). It can be programmed for gradual immobilizing of the vehicle. In that case the output shall be connected to the fuel pump, as shown in the installation diagram below, providing the Cellocator unit with control over the fuel supply to the engine.

This output can also be used as a global output, or for Geo-Fence notification, if configured accordingly.

The External Gradual Output can be activated/deactivated by an OTA command from the control center.

The following illustration provides the Gradual Output installation when deployed for fuel pump control.

**NOTE:** the original wire must be cut and the relay connected between the original relay and the vehicle power.

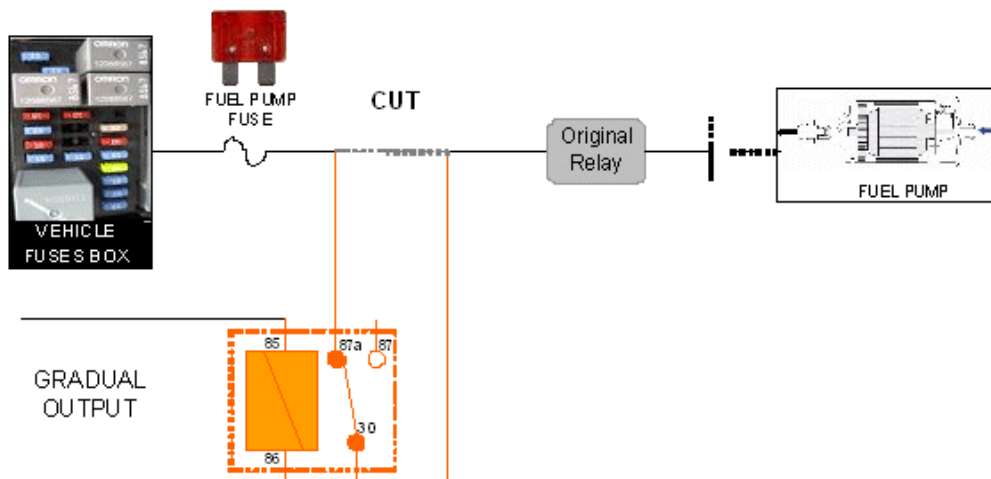


Figure 9: Gradual Output Installation Diagram

#### 4.1.6 Global Output

The harness Global Output wire is connected to the compact fleet Pin no. 18.

This cable has two wires: red and yellow and **Global Output** is printed on the wire bundle tag.

The output functionality is defined according to programming parameters (PL). In most cases, the Compact unit uses this output as a global output, allowing activation/deactivation of several devices, such as blinkers, parking lights, an additional siren, etc. In that case the output shall be connected to the required device as shown in the installation diagram below. The Global output can also be used for system feedback, or for Geo-Fence notification, if configured accordingly.

It can be activated/deactivated by an OTA command from the control center.

The following illustration provides the Global Output installation.

**NOTE:** the original wire must be cut and the relay connected between the original relay and the vehicle power.

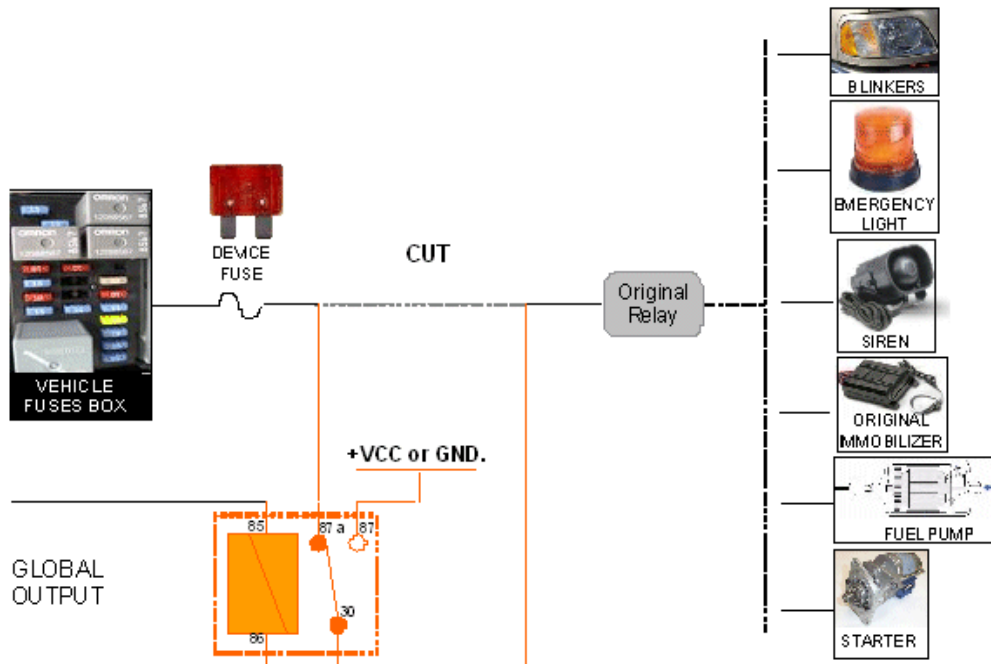


Figure 10: Global Output Installation Diagram

#### 4.1.7 Siren Output

The harness Siren Output wire is connected to the Compact Unit pin no. 8.

This cable has two wires: red and blue and **Siren** is printed on the wire bundle tag.

The output functionality and installation diagram for the siren are the same as those of the Global Output.

### 4.2 Harness Inputs Installation Specifications

#### 4.2.1 Global Purpose Input (Shock)

The harness Global Purpose Input (Shock) wire is connected to the Compact Fleet pin no. 15.

This cable has one brown wire and **UNLOCK2** is printed on the wire tag.

The input can serve as an analog input or as a digital input according to the Compact unit type as discussed in Section 1.2.

When the analog input is supported, it can be used to connect an analog device (0 V to 2.5 V), such as a fuel gauge, thermometer, etc.

When the digital input is supported, its functionality is defined according to programming parameters (PL). Thus, it can serve as:

- General purpose input.
- Standard voice calls control.
- Privacy mode control.
- Usage counter input.



### 4.2.2 Global Input 1

The harness Global Input 1 wire is connected to the Compact Fleet pin no. 5.

This Orange wire is labeled as Lock/CANL.

In the case of the 6-input Compact Fleet configuration, this input can be used as a general purpose input or as a usage counter.

**CAUTION:** To avoid causing damage to the system, do not connect this wire when using the 4 inputs configuration of the Compact Fleet.

In the case of the Compact CAN, this input is used as CANL and should be connected to Pin 14 (CAN Low) of the vehicle OBDII connector as illustrated in the installation diagram in chapter 5.

### 4.2.3 Global Input 2

The harness Global Input 2 wire is connected to the Compact Fleet pin no. 11.

This Green cable is labeled as Unlock/CANH.

In the case of the 6-input Compact Fleet configuration, this input can be used as a general purpose input or as a usage counter.

**CAUTION:** To avoid causing damage to the system, do not connect this wire when using the 4 inputs configuration of the Compact Fleet.

In the case of the Compact CAN, this input is used as CANH and is connected to Pin 6 (CAN High) of the vehicle OBDII connector as illustrated in the installation diagram in chapter 5.

### 4.2.4 Distress/Emergency Button Input

The harness Distress/Emergency/Panic Button Input wire is connected to the Compact Fleet pin no. 16.

This cable has two wires: gray and black and is labeled Emergency Button.

The input functionality is defined according to programming parameters (PL) and can be used as:

- general purpose input
- usage counter
- emergency voice call initiation

When serving as a trigger for emergency voice call initiation, each wire is connected to one of the connection poles of the distress button as illustrated in the installation diagram below.

### 4.2.5 Doors Sensor Input

The harness Doors Sensor Input wire is connected to the Compact Fleet pin no. 14.

The cable has one white wire and is labeled as **Door Sensor**.



The input can serve as an analog input or as a digital input according to the Compact Fleet type as discussed in Section 1.2. The Compact CAN supports only the digital input option.

When the Compact Fleet type supports analog input, it can be used to connect an analog device (0 V to 2.5 V), such as a fuel gauge, thermometer, etc.

On Compact CAN or on Compact Fleet type which supports digital input, its functionality is defined according to programming parameters (PL). Thus, it can serve as:

- General purpose input.
- Transparent data forwarding switch.
- Emergency voice call initiation.
- Usage counter input.

For door sensing the wire should be connected to the doors-open indicator light of the dashboard control panel as illustrated in the installation diagram below.

## 4.2.6 Dallas Button Input

The harness Dallas Button Input wire is connected to the Compact Fleet pin no. 20.

This cable is labeled as **Dallas** and has two wires: orange and black, which are connected to the Dallas Reader. The black wire is connected to the Dallas Reader's brown wire (ground) and the orange wire is connected to the blue wire on the Dallas Reader.

## 4.3 Harness Power Installation Specifications

### 4.3.1 Main Power and Ignition

This input cable has three wires: red, black and purple.

- Red – the red wire is connected to the Compact Fleet pin no. 2 and should be connected to the car's battery (12V / 24V) (refer to Installation Drawing, Section 4.6).
- Black – the black wire is connected to the Compact Fleet pin no. 3 and should be connected to vehicle ground (at dedicated points) (refer to Installation Drawing, Section 4.6).
- Purple – the purple wire is connected to the Compact Fleet pin no. 4 and should be connected to the ignition switch (in the ON position).

**NOTE:** the Compact unit must be protected by means of a 3A fast blow fuse. The fuse should be installed either between the red wire and the vehicle battery or between the black wire and the vehicle ground.

### 4.3.2 External Backup Battery (Optional)

The harness supports a special adapter for external battery connection. The adapter is illustrated in the Figure 11.

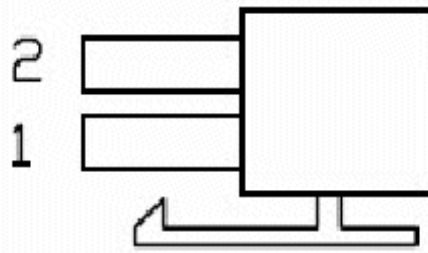


Figure 11: Backup Battery Connector – Side View

The adapter pin 1 is connected via a red wire to Compact Fleet pin 1. The adapter pin 2 is connected via a black wire to the vehicle ground.

The external battery must utilize a connector that matches the harness adapter. A 7.4 V Li-Ion or Li-Polymer battery must be used.

The battery is continuously charged by the Compact Fleet unit when the vehicle is active via an 8.2 V voltage supply.

**NOTE:** Overcharge protection is not provided by the Compact Unit for the external back up battery and should be supported by the battery itself.

## 4.4 Serial Port Connector

The harness supports an RJ45 female connector allowing external devices communication to the Compact Fleet via its RS232 interface (Compact Fleet pins 12 and 13). The connector is illustrated Figure 12.

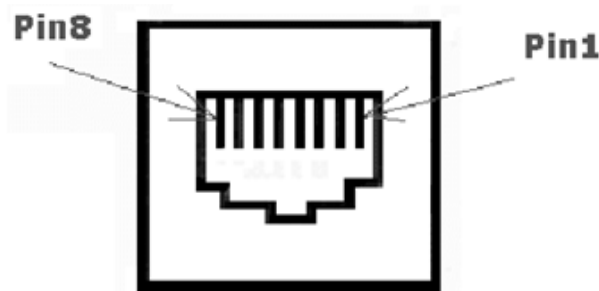


Figure 12: Serial Port Adaptor Connector – Front View

The following devices can be connected to the Compact Fleet RS232 interface:

- A PC for updating the firmware or the configuration (PL file) of the Compact Fleet. In this case the Programming cable (PN 711-00078) and Cross Plug (PN 711-20055) are used to connect the RJ45 connector on the harness to the PC COM port. The cross plug DB9 connector supplies the following signals:
  - TXD – PIN 2
  - RXD – PIN 3
  - GND – PIN 5



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- A handheld device, such as the Garmin PNA, a Pocket PC, etc. The device is supplied with an RS232 cable and it is the installer's responsibility to connect the cable to the RJ45 connector on the harness.
- Mobile Data Terminal (MDT) for message exchange with the control center. The MDT is supplied with a cable adapter which connects the RJ45 connector on the harness to the MDT connector.

### 4.5 Cellocator Handsfree installation

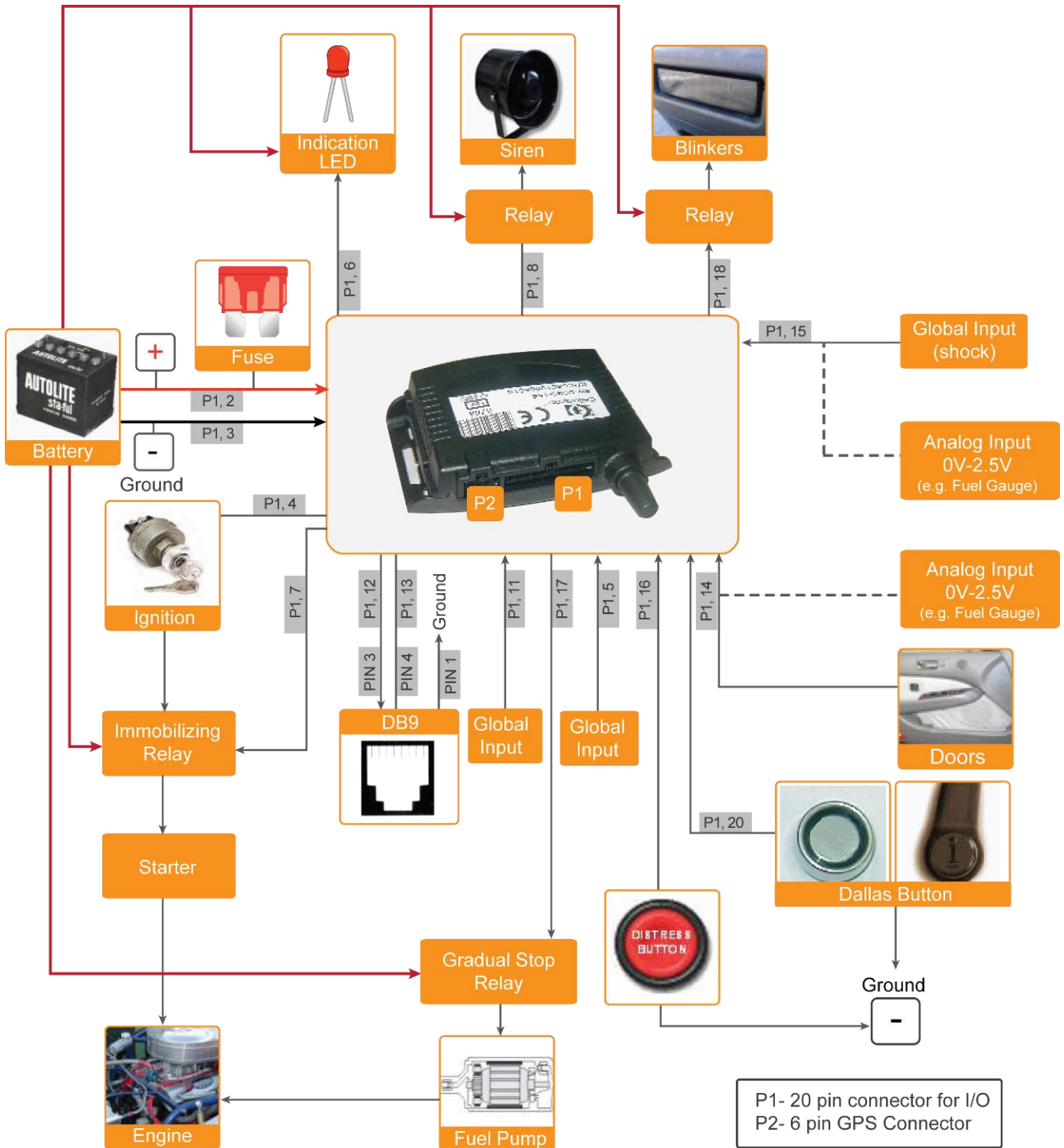
The harness supports connection of the Cellocator Handsfree via the Handsfree extension cable labeled as **HANDSFREE**. The Handsfree extension cable includes: an SPK 2 pin jack, a MIC 2 pin jack and a Power-In red wire.

Please refer to the *Cellocator Handsfree Product Overview* for installation instruction.

### 4.6 Compact Fleet Installation Diagram

Please refer to Table 3 for detailed information about the harness.

Please refer to Section 5 for the Compact CAN installation diagram.



## 5 Information Specific to Installation of the Compact CAN

### 5.1 Introduction

On-Board Diagnostics (OBD) is a generic term referring to a vehicle's self-diagnostic and reporting capability. OBD systems provide state of health information for various vehicle sub-systems and are connected to external systems by an OBDII connector.

The Compact CAN system provides an interface to On-Board Diagnostic (OBD) systems via the OBDII connector. Installation is basically the same as described for the Compact Fleet unit, with the following exceptions.

#### 5.1.1 Compact CAN Types

Compact CAN unit can be delivered in several types according to the following table:

Type No.	Digital Inputs	Analog Inputs	CAN Parameters
5.	4	0	8
6.	3	1	8
7.	4	0	25
8.	3	1	25

Two pins (pins 5 and 11) are used to connect to the CAN OBDII connector.

#### 5.1.2 Compact CAN Harness

The compact can supports only the 711-00196 full harness as described in Section 1.3. Its wiring description is presented in Table 2.

### 5.2 Connection of Compact CAN to OBDII Interface

The OBDII connector is illustrated below.

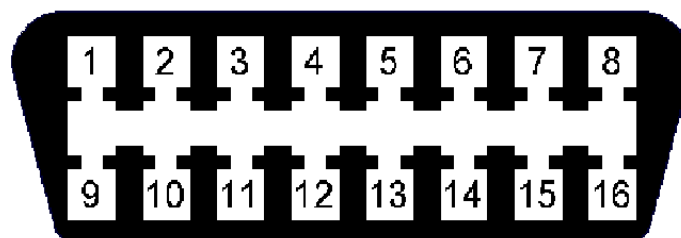


Figure 13: OBDII Connector

The following is the pin-out configuration of the connector.

- Pin 2 - J1850 Bus +
- Pin 4 - Chassis Ground
- Pin 5 - Signal Ground



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- Pin 6 - CAN High (J-2284)
- Pin 7 - ISO 9141-2 K Line
- Pin 10 - J1850 Bus
- Pin 14 - CAN Low (J-2284)

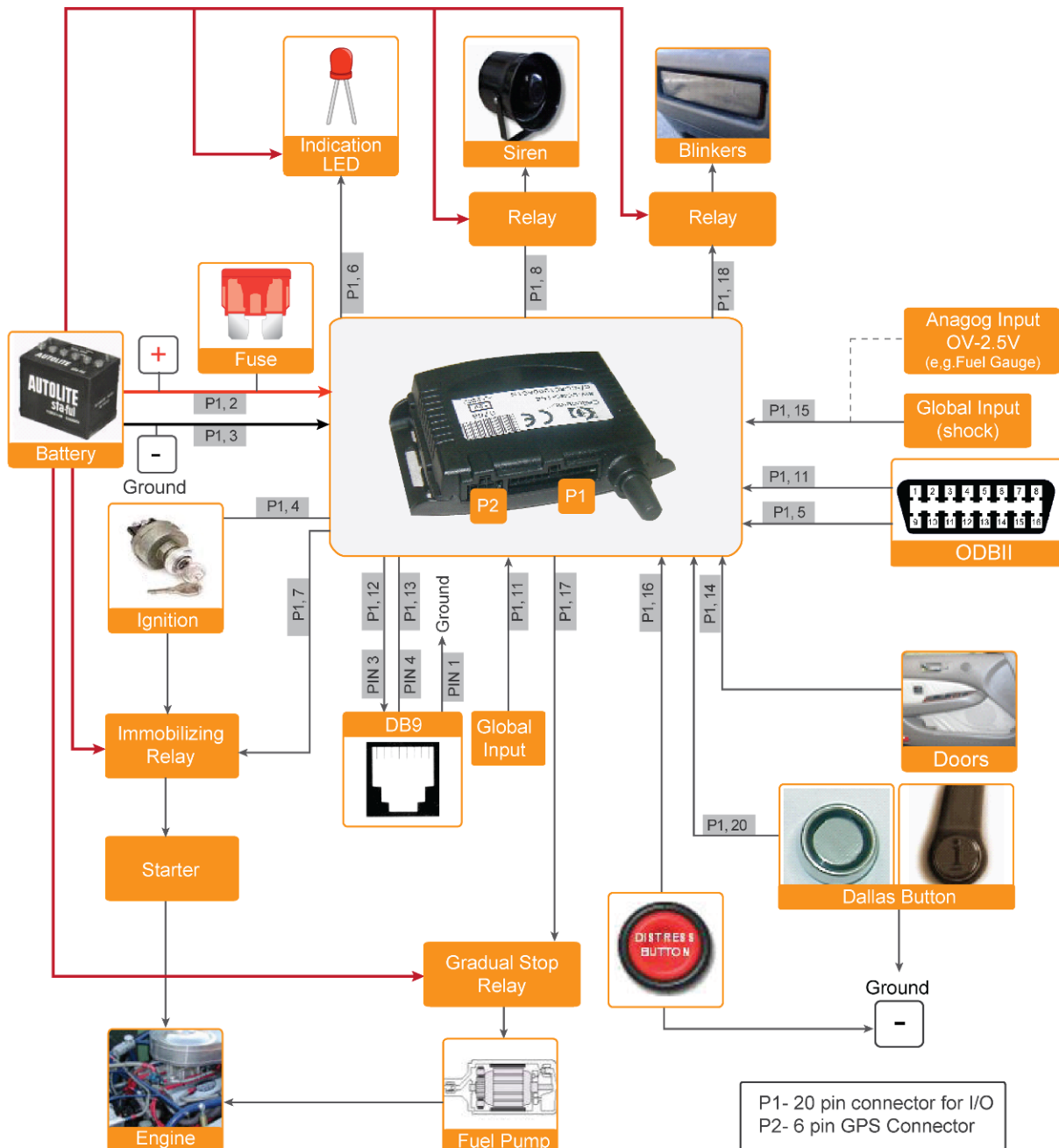
CANH (P1.11) is a green wire marked CANH on the installation harness. It should be connected to pin 6 of the OBDII connector.

CANL (P1.5) is an orange wire marked CANL on the installation harness. It should be connected to pin 14 of the OBDII connector.

The connections are illustrated in the installation diagram below.

### **5.3 Compact CAN Installation Diagram**

Please refer to Table 3 for detailed information about the harness.





## 6 Battery Handling Procedure

### 6.1 Introduction

#### 6.1.1 Scope

Lithium-Ion (Li-Ion) / Lithium-Polymer (Li-Poly) batteries are characterized by small size, high capacity and extended life time. These characteristics have turned these battery types into a preferred choice for many applications. However, Li-Ion / Polymer demands applying a unique charging algorithm and handling precautions that should be followed precisely in order to lengthen the battery life time together with ensuring installer and user safety.

#### 6.1.2 Purpose

This section should be used as guidelines reference for backup battery maintenance in Cellocator devices equipped with Li-ion / Li-Poly backup batteries.

### 6.2 Battery Handling Guidelines

#### 6.2.1 General

- Do not keep unused batteries for long periods of time, either installed in the product or in storage. When a battery has been unused for 6 months, check its charge status and charge it or dispose of it, if it cannot be charged to a sufficient charge level as outlined in the following sections.
- The typical estimated life time of a Lithium-Ion battery is up to 3 years or up to 500 charge cycles - whichever comes first. One charge cycle is a period of use from fully-charged, to fully-discharged, and fully charged again. Apply a 2-3 year life expectancy for batteries that do not run through complete charge cycles.
- Rechargeable Lithium-Ion batteries have limited life time and gradually lose their capacity to hold a charge. This loss of capacity (aging) is irreversible. As the battery loses capacity, the length of time it will power the product (run time) naturally decreases.
- Lithium-Ion batteries continue to slowly discharge (self-discharge) when not in use or while in storage. Routinely check the battery's charge status while in storage for long time periods. Best charge level of the battery while stored is 40-60% of maximum capacity, in which self discharge is minimal.
- A 1-year warranty is granted by Pointer for Li-ion / Li-Poly backup batteries installed in Cellocator devices (assuming battery was operated according to the manufacturer's instructions).

#### 6.2.2 Handling Precautions

- Do not disassemble, crush, or puncture a battery.
- Do not short the external contacts on a battery.
- Do not try to burn a battery or place it in water.
- Do not expose a battery to temperatures above 60 °C (140 °F).
- Do not expose to very low temperatures - most Li-Ion / Li-Poly battery electrolytes freeze (irreversibly) at approximately -40 °C



- Do not use a damaged battery.
- If a battery pack leaks, do not touch the fluid. Dispose of a leaking battery pack (see Section 6.2.7).
- In the event of eye contact with fluid, do not rub eyes. Immediately flush eyes thoroughly with water for at least 15 minutes, lifting upper and lower lids, until no evidence of the fluid remains. Seek immediate medical attention.
- Keep the battery away of children.

### 6.2.3 Storage

- Charge or discharge the battery to approximately 50% of capacity before storage. This is the charge level in which Cellocator backup batteries are shipped to the customer.
- Charge the battery to approximately 50% of capacity (i.e. 3.7 V) at least once every six months.
- Remove the battery from the product and store separately, or disconnect the battery installed in the product, following Pointer's instructions.
- It is recommended to store the battery at temperatures between 5 °C and 25 °C.

**NOTE:** The battery self-discharges during storage at temperatures above 25 °C. This reduces effective storage life time of the battery.

### 6.2.4 Preparing New Li-Ion / Li-Poly Batteries for Use

- A new battery pack does not need cycling through charging and discharging before usage.
- Inspect the battery manufacturing date. Batteries in storage more than 2 years should be disposed of.
- Measure battery voltage and verify that it is above 3V level per cell. A battery under 3V and/or more than 2 years in storage should be disposed of. Otherwise, recharge the battery.

### 6.2.5 Charging

- Always follow your product's user manual and/or online help for detailed information about charging a backup battery inside a Cellocator device.
- Charging Cellocator Li-Ion / Poly backup batteries using an external charger is allowed only through a CCCV charger approved by Pointer.

### 6.2.6 Transportation

- Always check all applicable local, national, and international regulations before transporting a Li-Ion / Li-Poly battery.
- Transporting temperature should not exceed the allowed storage temperature. Recommended transportation temperatures are 5 °C to 25 °C.
- Transporting an end-of-life, damaged, or recalled battery may, in certain cases, be specifically limited or prohibited. Please consult with your account manager at Pointer in such a case.



## 6.2.7 Replacement, Disposal and Recycling

- Do not transfer a used backup battery from one Cellocator device to another if the battery has been in use for more than 1 year. This process might affect capacity and cause low performance of the battery in its "second life cycle".
- It is highly recommended to replace backup batteries more than 2 years old as a standard maintenance procedure for Cellocator devices. This ensures high reliability and proper functionality in case of external power loss or disconnection.
- Replace a backup battery in Cellocator devices only with an approved model as specified by Pointer technical support.

**WARNING:** There is a serious risk of battery explosion if a battery is replaced with incorrect type.

- Li-Ion / Poly batteries are subject to disposal and recycling regulations that vary by country and region. Always check and follow your applicable regulations before disposing of any battery. Contact Rechargeable Battery Recycling Corporation ([www.rbrc.org](http://www.rbrc.org)) for U.S.A. and Canada, or your local battery recycling organization.
- Many countries prohibit the disposal of waste electronic equipment in standard waste receptacles.
- Place discharged batteries in a battery collection container only. Use electrical tape or other approved covering over the battery connection points to prevent short circuits.