

CAN Contactless Adapter Product Overview



Cellocator Division
Pointer Telocation Ltd.

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Version 1.0

Revised and Updated: December 11, 2016



POINTER



CAN Contactless Adapter Product Overview



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CAN Contactless Adapter Product Overview



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CAN Contactless Adapter Product Overview



Table of Contents

1	Introduction	5
1.1	Scope and Purpose	5
1.2	Abbreviations	5
1.3	References	5
1.4	Revision History	5
2	General Description.....	6
2.1	Overview.....	6
2.2	Highlights.....	7
2.3	Product Description	8
3	Installation Instructions	10
3.1	Pre-installation Information	10
3.2	CAN Contactless Adapter Installation	10
4	Technical Specifications	14



CAN Contactless Adapter Product Overview



1 Introduction

1.1 Scope and Purpose

The purpose of this document is to describe the features and capabilities of the Cellocator CAN Contactless Adapter. It includes a description, installation instructions, and technical specifications of the device.

The document is intended for TSP or IT integrators who want to integrate Cello units with Vehicle CANBUS and to use the information provided by them within their Telematics applications. It is intended to provide all the required information for customers, customer support, and sales personnel.

1.2 Abbreviations

Abbreviation	Description
CAN	Controller Area Network
PCB	Printed Circuit Board
TSP	Telematics Service Provider
IT	Information Technology

Table 1: Definitions, Acronyms and Abbreviations

1.3 References

All the reference documents listed in the following table can be downloaded from the [Knowledge Base](#) section of the [Cellocator website](#).

#	Reference	Description
1.	CelloFamily Hardware Installation Guide	
2.	Harness Selection Wizard	

Table 2: References and Bibliography

1.4 Revision History

Version	Date	Description
1.0	11/12/2016	Initial version

Table 3: List of Changes

2 General Description

2.1 Overview

The 715-50500 CAN Contactless Adapter serves as low cost, easy to install, non-intrusive, non-galvanic interface with the vehicle CANBUS. This is especially useful in scenarios where OBDII installations require a non-intrusive, non-galvanic interface with the vehicle. The CAN High, CAN Low signals are connected to the Cello-CANiQ CAN interface as if it was directly connected to the original vehicle bus.

It senses the electromagnetic field generated when data is sent over CAN wires and translates these fields into CAN High and CAN Low signals.

The CAN Contactless Adapter can be powered by the ignition line to avoid power consumption when the vehicle is in an ignition-off state. Note that it is mandatory to have a common ground signal between the Cello-CANiQ and the CAN Contactless Adapter.

The schematic diagram below illustrates how the CAN Contactless Adapter is used to intercept CAN signals sent over the non-terminated OBDII interface. The CAN Contactless Adapter is attached to the wires coming from the ECU towards the OBDII connector, and converts the received signals into CAN High and CAN Low signals which are then connected to the Cello-CANiQ CAN interface. As a result, the CAN Contactless Adapter prevents CAN queries generated by the Cello-CANiQ from being asserted to the OBDII interface, thus further emphasizing the non-intrusive nature of the installation.

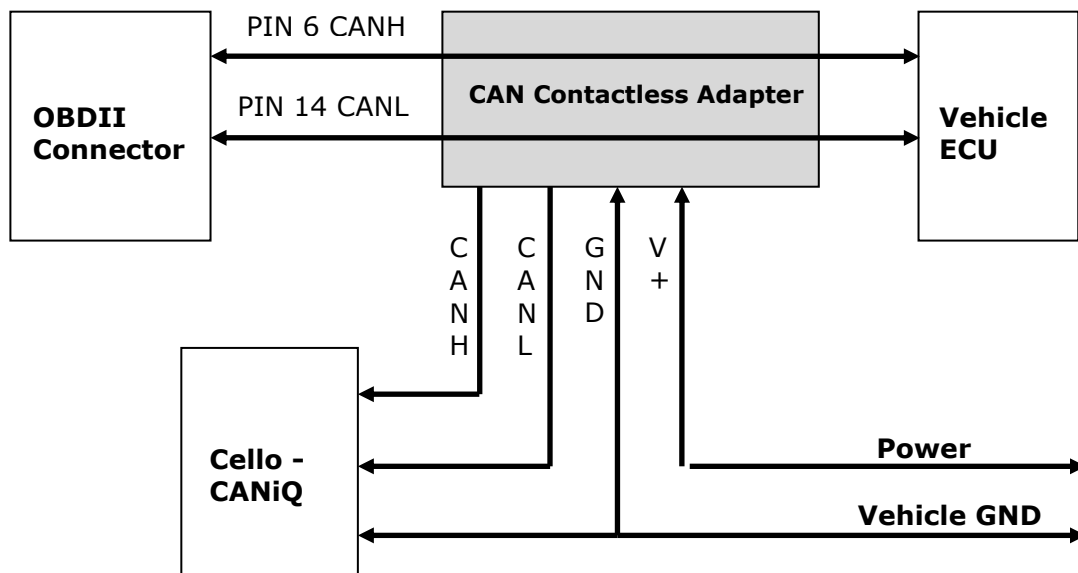


Figure 1: CAN Contactless Schematic Diagram

In addition, the CAN Contactless Adapter supports vehicle (cars, trucks) environments and complies with the required regulations.



CAN Contactless Adapter Product Overview



2.2 Highlights

The main highlights of the CAN Contactless Adapter include:

- ◆ Senses the electromagnetic field generated when data is sent over a vehicle's CAN wires
- ◆ Provides standard CAN High and CAN Low signals in its output
- ◆ Powered from vehicle battery or ignition
- ◆ Supports vehicle electric environment (low power consumption, power protection)
- ◆ Fast, easy, and screw-less installation
- ◆ Low cost

2.3 Product Description

2.3.1 General

The CAN Contactless Adapter is shipped as per the image below.

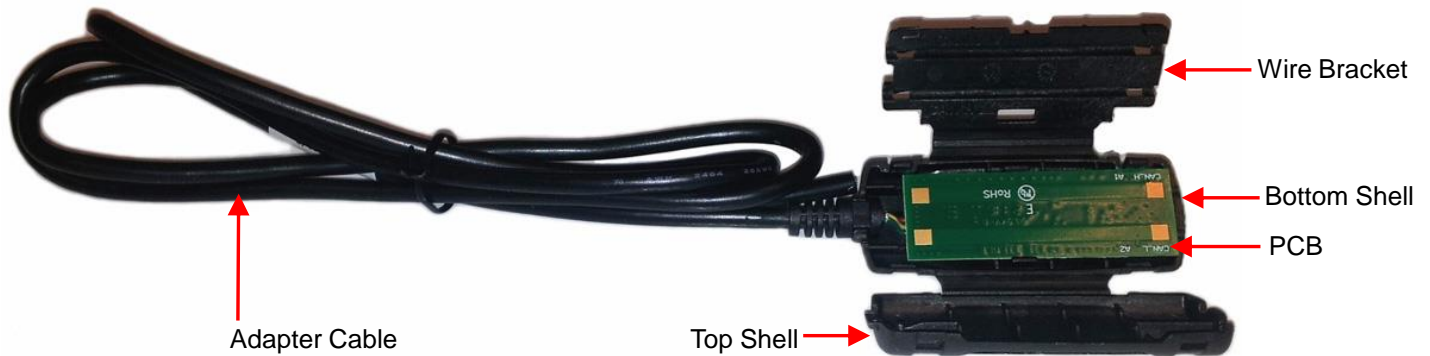


Figure 2: CAN Contactless Adapter

2.3.2 Interfaces

The CAN Contactless Adapter interfaces are:

- ◆ **Power in and GND** – supports 7-32V vehicle batteries.
- ◆ **CAN-H and CAN-L** - complies with CAN 2.0B, in accordance with international standard ISO 11898-1:2003.

2.3.3 Enclosure and Cable

The Adapter is housed in an appropriate, well-designed enclosure which supports the electronic circuit board, and the interface cable. It is designed for fast installation with tunnels and ribs to hold the CAN wires, with the location of CANH and CANL wires clearly labeled and snaps providing screw-less closing. The design is optimized for AWG-22 (1.6mm) to AWG-20 (1.8mm) wires.

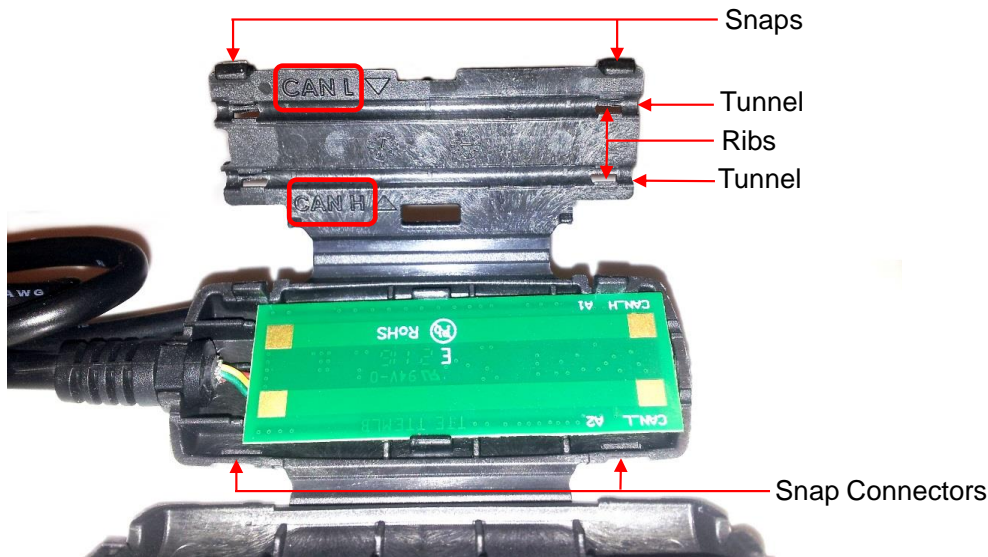


Figure 3: CAN Contactless Adapter Enclosure

The Adapter cable is 100 cm in length, shielded black cable, and includes four wires. The wires colors and their relevant functionality are listed in the table below:

Wire Color	Function	Connected to
Green	CAN-H	Cello Harness CAN-H wire
Yellow	CAN-L	Cello Harness CAN-L wire
Red	Power	Vehicle Battery or Ignition
Black	GND	Vehicle GND

Table 4: Wire Connections



CAN Contactless Adapter Product Overview



3 Installation Instructions

3.1 Pre-installation Information

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

CAUTION:

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

For extensive installation instructions of Cellocator products, including complete descriptions of prerequisites, preparations, recommended installation practices, recommended installation locations, forbidden installation schemes etc, please refer to the relevant product installation manual on the [Knowledge Base](#) section of the [Cellocator website](#).

3.2 CAN Contactless Adapter Installation

➤ **To install the CAN Contactless Adapter:**

1. Locate the CAN wires in the vehicle. If required, you may need to untwist the wires to ensure they are straight so they can easily entered into the Adapter tunnels.
2. Place the two CAN wires (CAN-H and CAN-L) into their relevant tunnels on the wires bracket, as indicated on the wires bracket, as shown in Figure 3 (the CAN-H wire should only be entered into the CAN-H tunnel; similarly, the CAN-L wire should only be entered in the CAN-L tunnel). Note that the cables should be slotted in securely in the tunnels via the ribs at each end of the tunnel; ensure the wires remain straight as they are inserted into the tunnel.

CAN Contactless Adapter Product Overview

Once inserted, the wires should look as per the image below.

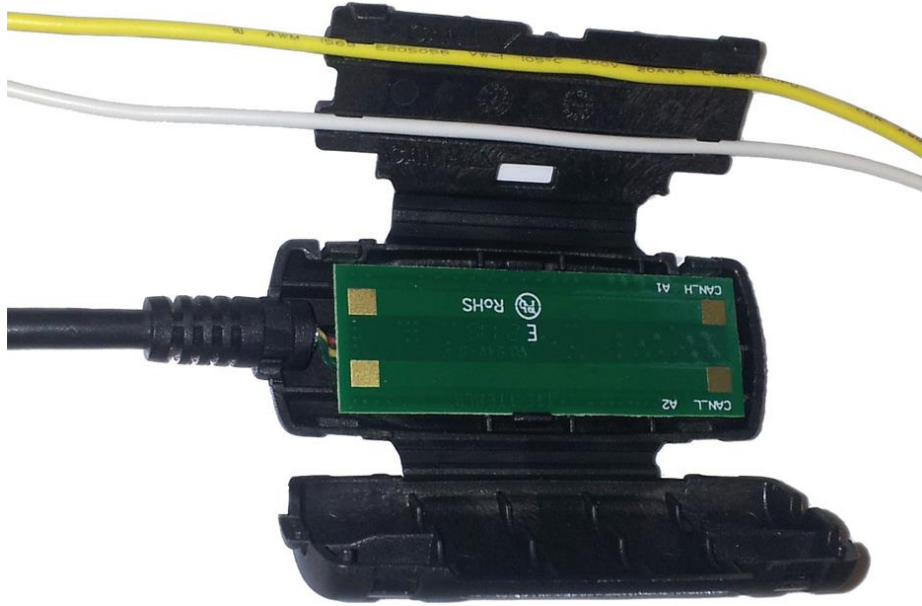


Figure 4: CAN Contactless Adapter Wires

3. Flip the wire bracket over so that the CAN wires are now on top of the PCB, and snap it securely into the bottom shell, as shown in the following image.

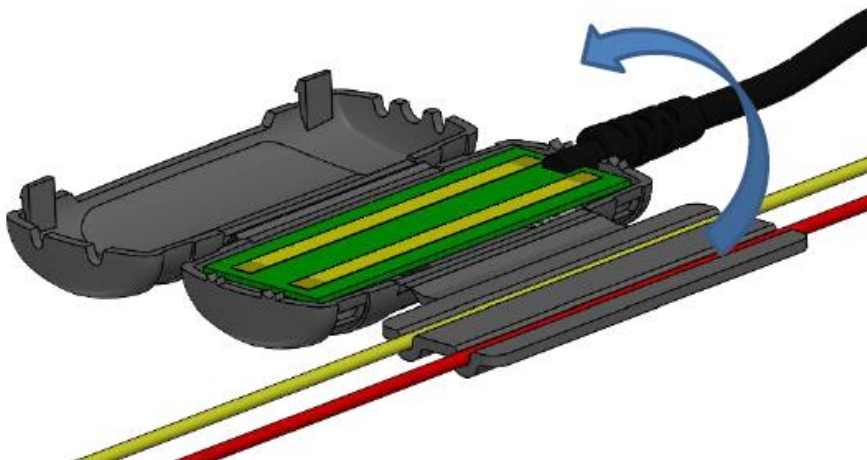


Figure 5: Flipping the Wire Bracket over the Bottom Shell and PCB

4. Then flip the top shell over the wire bracket and the bottom shell and snap it into the bottom shell.

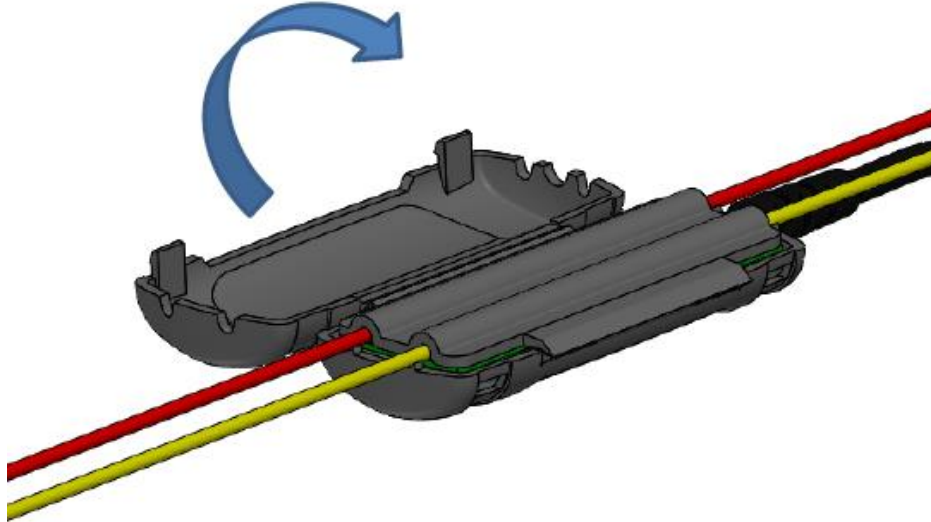


Figure 6: Flipping the Top Shell over the Wire Bracket

The Adapter should now look as shown below.



Figure 7: CAN Contactless Adapter

5. Connect the 4 wires of the Adapter cable according to the connections listed in [Table 4](#).
6. Secure the CAN Contactless Adapter with the two plastic ties that come with the Adapter. These ties help ensure the Adapter stays secure during vibrations/driving conditions.



CAN Contactless Adapter Product Overview



The plastic ties should be fastened around the Adapter in the two channels on the main body of the Adapter, as indicated below.



Figure 8: CAN Contactless Adapter Fastening Channels



CAN Contactless Adapter Product Overview



4 Technical Specifications

Parameter	Values
Communication	
CAN Frequency	500kbs, 250kbs, 125kbs
CAN Standards	CAN 2.0B ISO 11898-1:2003
Power	
Input Voltage	7-32VDC
Average Current Consumption (@12V)	< 3.5 mA
Environment	
Temp, operation	-30°C to +70°C
Temp, storage	-40°C to +85°C
Humidity	95% non-condensing
Ingress Protection	IP40
Regulatory Compliant	
ISO	ISO7637-2:2011 and ISO16750-2:2012 (immunity to electrical loads in the vehicle's environment in accordance with e-mark directive)
FCC	Part 15 Subpart B, part 22/24
CE	CE EMC & R&TTE according to 89/336/EEC or 1999/5/EC CE Safety EN60950-1:2001+A11:2004 Automotive Directive 2004/104/EC (E-Mark)
IC	Industrial Canada
RoHS	RoHS 2 Directive 2011/65/EU
Conflict Mineral	Conflict Mineral directives
Dimensions and Weight	
Enclosure Dimensions	60x27x14 mm
Weight	20gr



CAN Contactless Adapter Product Overview



Housing and Cable	
Housing Material	Nylon Grilon TS, Black
UL	UL94 V-0 Compliant
Cable Length	100cm
Cable Description	Shielded black cable, which includes four 26AWG wires (black, red, yellow, green).

Table 5: Technical Specifications