

<b>Product</b>	Passive Entry passive start system (LF transmitter and LF transceiver)
<b>Model</b>	B1NA5
<b>Year</b>	2021
<b>Manufacturer</b>	Denso International America, Inc.

## 1. General description

The B1NA5 system is composed of a BCM (Body Control Module), a maximum of 8 antennas, a UID (User Identification Device), and an RF Receiver. It is used for locking or unlocking the vehicle's door or starting the vehicle's engine. I.e: When a valid user is identified, the system locks or unlocks the vehicle's door or starts the engine.

The BCM is installed in the vehicle and transmits low-frequency wave signals. Depending on the operational mode, it can use from 1 up to 3 of the installed antennas.

The second generation of BCM employs ASK/OOK for transmission of signaling and challenge data (UID), operating over a single channel at the frequency of 125 kHz with a rated output power from 1.58 mW to 4.5 mW.

The RF output power of this device is variable according to the mechanics of the key fob approaching the BCM, which means that it can operate using half-bridge configurations and full-bridge configurations at a maximum of 3 antennas at the same time, there are several antennas configurations according to the car size. There is not any internal software regulating the BCM or antenna's behavior.

There are 3 different transmission types that can be used in vehicle applications.

- PEPS (Passive Entry, Passive Start)
- Approach Mode
- Immobilizer Mode

### Notes:

- The BCM device can not be operated stand-alone in its intended use.
- For intended use of the BCM device, a data connection to the host vehicle is required.
- The BCM equipment is not available to the end-user. The equipment is manufactured by Denso International America, Inc and sold to the relevant vehicle manufacturers.
- Damaged BCM's on a vehicle can only be replaced by the vehicle manufacturer's professional authorized repair workshops as calibration and adjustment with dedicated tools are required after the replacement.

## 2. Components



Symbol	Item
A	BCM (LF driver & Transceiver system)
B	Interior Antenna
C	Bumper Antenna
D	Trunk Antenna with Steel Mounting Plate
E	Rocker Passenger Antenna with Steel Mounting Plate
F	Rocker Driver Antenna with Steel Mounting Plate
G	Combo (LF/IMMO) Antenna
H	Bracket Antenna with Steel Mounting Plate
I	Bracket Antenna with Aluminum Mounting Plate

## 3. Installation

The B1NA5 is a BCM component, mounted in the car during its manufacturing. This part doesn't have any interface for the user and it is hidden by the interior surface of the car. The antennas connected to the BCM are not installed in accessible parts and under regular conditions, the antennas will be kept at a distance greater than 20 cm from the human body anytime.

Some of the BCM ports have no connection related to the LF transmission or antennas as they are related to other vehicle applications. To make the Radio part and antennas operational, the BCM should look similar to the figure below:

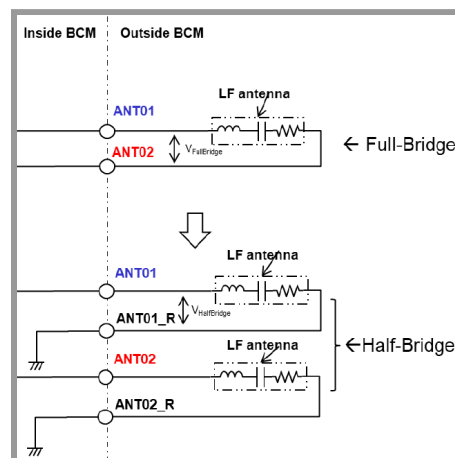


The following considerations are needed for the installation:

- A vehicle manufacturer shall create an owner's manual in compliance with each international regulation.
- The OEM describes in the User Manual all important functions for the end customer for the error-free operation of the BCM.
- The device's maximum operating temperature is 85°C.
- The material used for the BCM's case and its terminals have proven V0 flammability levels
- This device must be installed at a height of a maximum of 2 meters from the floor.

#### 4. Antennas

There are 2 different antenna connection schemes: Full-bridge and Half-bridge.



Improper antenna positioning will detune the antenna; drive current may be higher or lower than the current setting or antenna resonant frequency may shift. Please follow the guidelines below to prevent antenna detuning and communication failure during operation.

- For Air Tuned antennas: Place the antenna on a flat non-metal surface; Keep metal and other antennas away, minimum 30mm, from all directions. Dotted red line shows the metal prohibition area.



- For Metal Tuned antennas: Place antenna on a flat metal surface; Keep metal other antennas away, minimum 30mm, from antenna top and sides directions. Dotted red line shows the metal prohibition area.



## 5. User Manual requirements

Our product is one of vehicle parts incorporated into the vehicle as original equipment.

We will include following statements in the user manual of the vehicle in accordance with FCC and IC requirements.

### FCC Requirement

In accordance with 15.21 of FCC rule, following statement will be included in the user manual of the vehicle.

#### FCC WARNING

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

In accordance with FCC§15.19(a)(3), following statement will be included in the user manual of the vehicle.

#### NOTE

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, (2) this device must accept any interference received, including interference that may cause undesired operation, (3) To satisfy RF exposure requirements, this device and its antennas must operate with a separation distance of at least 20 cm from all persons.

### ISED Requirement

In accordance with the requirements of RSS-GEN, the following statement will be included in the user manual of the vehicle.

#### NOTE

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference.
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

To satisfy RF exposure requirements, this device and its antennas must operate with a separation distance of at least 20 cm from all persons.

Additionally, the compliance distance for meeting the requirements for RSS-102 Nerve Stimulation must be listed. This distance will be reported in the RSS-102 report for assessment of compliance to Nerve Stimulation requirements for SPR-002.

Compliance distance: 2 cm

#### REMARQUE

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) L'appareil ne doit pas produire de brouillage;
- (2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Pour satisfaire aux exigences d'exposition RF, cet appareil et ses antennes doivent fonctionner à une distance de séparation d'au moins 20 cm de toutes les personnes.

De plus, la distance de conformité pour répondre aux exigences de la stimulation nerveuse RSS-102 doit être indiquée. Cette distance sera indiquée dans le rapport RSS-102 pour l'évaluation de la conformité aux exigences de stimulation nerveuse pour SPR-002.

Distance de conformité: 2 cm