MOBASE ELECTRONICS MBECROA2207 Child Present Detection User Manual

Contents

MOBASE ELECTRONICS MBECROA2207 Child Present Detection

Product Information

Specifications

- **Product Name:** Child Present Detection System
- **Frequency:** 60-64GHz
- **RF Method:** FMCW Radar
- **Connectivity:** CAN Bus
- **Manufacturer:** MBE Company

Product Usage Instructions

Introduction

- This system utilizes a 60-64GHz RF system for in-vehicle occupancy detection, specifically designed to detect the presence of children in the vehicle.

Abbreviations

- **FMCW:** Frequency Modulated Continuous Wave
- **RFIC:** Radio Frequency Integrated Circuit
- **CPD:** Child Present Detection
- **CAN:** Controller Area Network

Sensor System Overview

- The CPD sensor detects movements ranging from large motions like a child’s arms or legs to subtle movements like a sleeping newborn’s breathing. It is a motion sensor that does not detect stationary objects.

Hardware CPD Sensor

- The CPD sensor helps prevent accidents by detecting children left in parked vehicles and alerts the driver.

RF-Transceiver

- The RFIC utilizes the FMCW radar method within the 60-64GHz frequency band.

Data Interface

- The CPD is connected to the vehicle's CAN bus for control and communication.

Connectors

- The CPD connector has 4 male pins that connect to the vehicle's 4 female connectors with pin arrangement as follows:

Pin No	Pin Name
1	CAN L
2	CAN H
3	GND
4	Vbat

System Integration and Use Cases

The system is integrated into the vehicle's interior cover area for optimal detection and functionality.

Warning Statement

This device complies with FCC regulations and must not cause harmful interference or undesired operation due to external interference.

FAQ (Frequently Asked Questions)

Q: How does the CPD sensor detect children in the vehicle?

A: The CPD sensor detects movements, ranging from large to small, such as a child's arms, legs, or even subtle breathing patterns of a sleeping newborn.

Q: What happens when the driver leaves the vehicle?

A: The CPD system continues to operate for several minutes after the driver leaves and the vehicle's ignition is turned off to ensure ongoing child presence detection.

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Introduction

This document describes a 60-64GHz RF system of “child present detection” for in-vehicle occupancy detection.

Abbreviations

Abbreviation	Description
FMCW	Frequency Modulated Continuous Wave
RFIC	Radio Frequency Integrated Circuit
RF	Radio Frequency
CPD	Child Present Detection
CAN	Controller Area Network

Sensor system overview

- CPD detects large movements, such as movement of a child’s arms, legs, and seat, to small movements of a sleeping newborn’s breathing.
- Since it is a motion sensor, it does not detect stationary objects. The CPD is connected to the car’s CAN bus and controlled, and it operates for several minutes when the driver gets off and the vehicle’s ignition is turned off.

Hardware

CPD Sensor

- In hot weather, the temperature inside a parked vehicle can become very high, which is fatal to children left in the vehicle. CPD prevents these accidents by detecting the occupancy of children left behind and alerting the driver.

RF-Transceiver

- RFIC uses the FMCW radar method and uses a frequency band of 60~64GHz.

Data interface

- The CPD is connected to the CAN bus. It is controlled and communicates with the CAN signal.

Connectors

- The CPD connector consists of 4 male pins and is connected to the vehicle's 4 female connectors. Table 1 shows the pin arrangement of the connector.

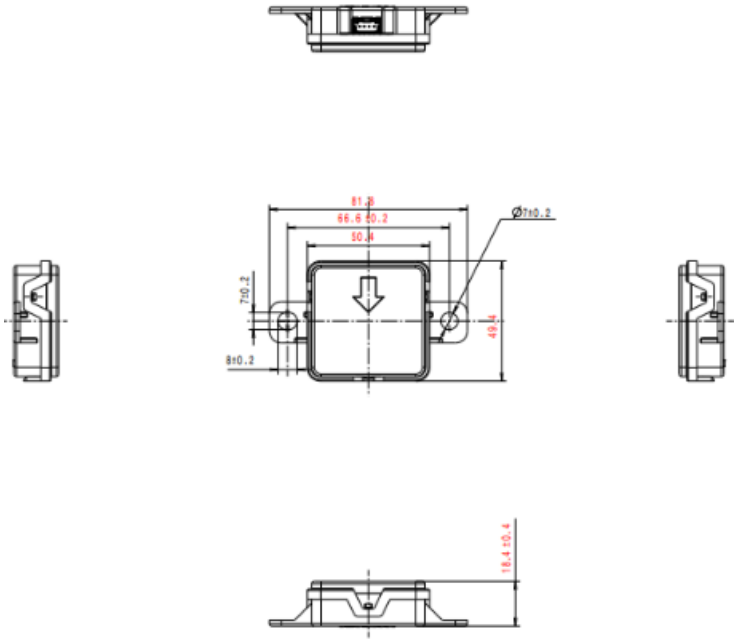

Figure 1. Child Present Detection sensor

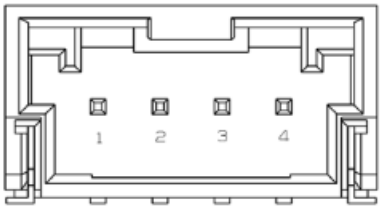

Figure 2. Connector

Table 1. Pin arrangement

Pin No	Pin Name
1	CAN L
2	CAN H
3	GND
4	Vbat

System integration and use cases

The CPD is installed above the headliner and is not visible from the inside of the vehicle. The CPD is installed facing the detection area. The installation angle and location of the CPD can be adjusted with a bracket that connects and fixes the sensor to the vehicle, and it depends on the relative position of the sensor and the seat and sensing space inside the vehicle. In a use case, children can sit on a car seat in the rear seat and the distance from the sensor is greater than that of an adult.

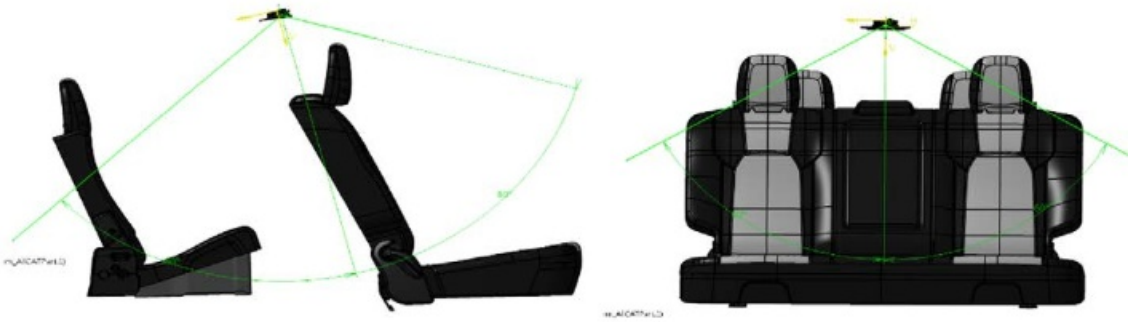

Figure 3. CPD vehicle interior cover area

FCC Statement

Warning Statement

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

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Documents / Resources

	MOBASE ELECTRONICS MBECROA2207 Child Present Detection [pdf] User Manual MBECROA2207 Child Present Detection, MBECROA2207, Child Present Detection, Present Detection, Detection

References

- User Manual