



## Installation Manual

Model: FI2-TR433UDB

# 1 Installation

The Radio Frequency HUB Module (RFHM) is an integrated receiver (Base Station), usually mounted on the rear shelf of the vehicle.

## RF Hub Installation Manual

- RF Hub is mounted on cab back wall with two push pins
- Installation includes the following steps:
  - o Connect two vehicle side harnesses to RF Hub module
  - o Install RF Hub module to the cab back wall with two push pins

# 2 General Description

The RFHM interfaces with the Remote Keyless Entry (RKE) and FOB/K via both RF and LF and the Immobilizer Transponder key via LF. The Radio Frequency HUB Module (RFHM) communicates with the TPM Sensors via RF.

The Radio Frequency HUB Module (RFHM) contains the controlling logic for the Passive Entry Keyless Go (PEKG) feature, Remote Keyless Entry (RKE) feature, and the Keyless Ignition Node (KIN) lighting where applicable.

The Radio Frequency HUB Module (RFHM) communicates on CAN C to the rest of the vehicle modules. The RFHM communicates to Keyless Ignition Node (KIN) via a dedicated KIN-Line.

The RFHM receives ignition states, OFF/LOCK (KEY-OUT), OFF (KEY-IN), ACC, RUN & START from the Ignition Node Module (IGNM) and then uses that information to determine actual ignition position and communicate that information over the CAN vehicle communication bus.

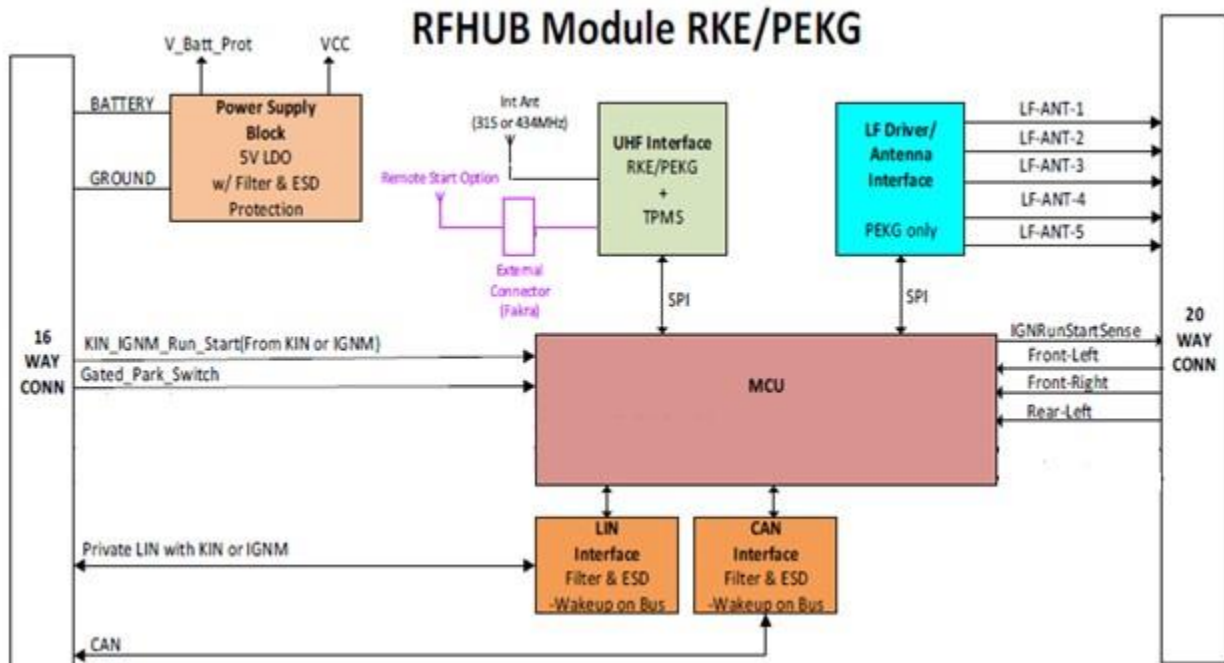
The Radio Frequency HUB Module (RFHM) also interfaces with the vehicle's door handles, trunk/lift-gate and multiple LF antennas for purposes of providing PEKG system functionality.

# 3 Technical and Functional Description

This is an RF Hub module (RFHM) with Keyless Go and optional Passive Entry functionality. It has an LF driver for communication with a Fob for the PEKG function and an RF receiver for TPM, RKE and PEKG

reception from a Fob or TPM sensor (433.92MHz or 315 MHz depending Market). It communicates to a Keyless Ignition Node (KIN) via a dedicated LIN bus. It also communicates to the rest of the vehicle via the CAN bus. While the KIN performs the Immobilizer, back-up start mode to cover a dead battery, the RFHM controls the KIN via the LIN bus and validates the key that the KIN reads. The module also has several inputs and outputs to aid PEKG function. It reads the door handle inputs to initiate the PE function. It also reads the KIN switch state (back-up for LIN failure). It reads the park state of the transmission. It has several outputs. They include a HSD to control a redundant IgnRun state to the BCM.

There are two models one with an internal antenna and one with an external output for an external antenna. The module provides 5V to power the external antenna on the center conductor of the external antennas coax cable.



## 4 Main Characteristics

Supply Voltage Range	<p>6-16, LF drive only works down to 9V per specification</p> <p><math>U_{S_{Min}} = 6V</math>; <math>U_{S_{Max}} = 16V</math></p> <p><math>U_{Typ} = 13.5V</math></p>
Temperature range	<p>-40 to 85 °C</p> <p><math>T_{Max} = 85\text{ °C}</math>; <math>T_{amb} = 23\text{ °C}</math></p>

## 5 Frequency Bands

<p>RF</p> <ol style="list-style-type: none"> <li>1. Internal Antenna (Piece of Metal on the PCB)</li> <li>2. External Antenna (Fraka Connector)</li> </ol>	<p>Receiver ONLY            Center Frequency: 433.92 MHz            Accuracy <math>\pm 40</math> kHz            Sensitivity: -105 dBm</p> <p><b>Information Below applies just for External Antenna</b></p> <p>The External Antenna is being supply for the RF HUB a 50 ohms load at 5V @ 10mA.</p>
<p>LF Antennas</p>	<p>Transmitter ONLY            125 kHz            Frequency Range: 125kHz +/- 500Hz            Maximum RF Output Power (W): NA            Modulations:            ASK (OOK)</p> <p>Channel Spacing: NA            Number of channels: 1            Channel bandwidth: NA            1App current into the ferrite.            Inductance @ 125kHz – 125uH Q            Factor Q &gt; 50            Resonant Frequency &gt; 800kHz            Operating Voltage = &lt; 650Vpp</p>

## 6 Technical Specifications

### 6.1 Modulations

RF (Receiver) 433.92 MHz	2.4Kbps ASK Manchester
LF (Transmitter) 125 kHz	19.2 Kbps FSK Manchester



## FCC Regulatory notices

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

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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

### **Class B device notice**

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

### **RF exposure safety**

This product is a radio transmitter and receiver usable beyond a distance of 20 cm.

The antenna must be installed and operated with minimum distance of 20 cm between the radiator and your body.

It is designed not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

### **Supplier's Declaration of Conformity 47 CFR § 2.1077 Compliance Information.**

Unique Identifier: FI2-TR433UDB

#### Responsible Party – U.S. Contact Information

STRATTEC SECURITY CORPORATION  
3333 WEST GOOD HOPE ROAD  
MILWAUKEE, WI 53209 U.S.A.  
Abdel Salah / Director of Engineering  
414-247-3333 / asalah@strattec.com

## **ISED Regulatory notices**

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

This device complies 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; and (2) This device must accept any interference, including interference that may cause undesired operation of the device.

### **RF exposure safety**

This product is a radio transmitter and receiver usable beyond a distance of 20 cm.

The antenna must be installed and operated with minimum distance of 20 cm between the radiator and your body.

It is designed not to exceed the emission limits for exposure to radio frequency (RF) energy set by the ISED.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

### **CAN ICES-3 (B)/NMB-3 (B)**

This Class B digital apparatus complies with Canadian ICES-003