

# Cognosos PCA-10015 Radio Module

## User's Manual

The PCA-10015 Radio Module is a small, battery powered 433MHz UHF transceiver with a integrated sensors. This module is extremely low power and is used to create end devices that operate on Cognosos' RadioCloud® radio networks. The baseline application for the end products includes asset tracking and sensor network applications. In use, a combination of events trigger the module to gather and relay sensor data to a Cognosos' RadioCloud® radio network.

The PCA-10015 module offers several methods of UHF communication including long-range and short-range communication modes. Each communication mode is internally limited for compliance with the associated FCC/IC regulations. The end application may use the various transmission modes to communicate operational events, to provide event-based alerts or for system interrogation and maintenance. The PCA-10015 is a versatile transceiver module that enables communication with other devices compatible with RadioCloud® radio protocols.

### **Product Models:**

For compatibility with multiple end product designs, the PCA-10015 module comes in several variants, with the only difference being the direction the LEDs face or population of the optional serial port connector. Contact Cognosos at [www.cognosos.com](http://www.cognosos.com) for more detailed information.

### **Operational Modes**

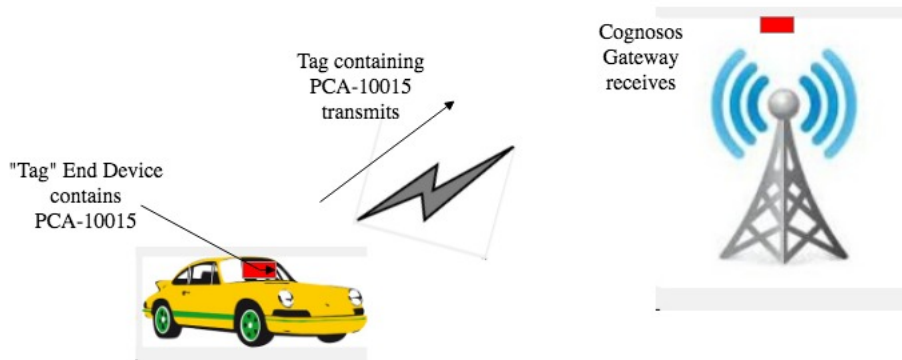
Tracker Tag – This is the default mode of the PCA-10015. Without further input, the unit will default to operation in this mode.

Storage Mode – The PCA-10015 in tracker tag mode will sleep if the rounded antenna end of the product is held vertically upwards. This mode is useful for transport and storage to minimize battery life.

Host Control Mode – Specific models include a serial port connector which can be used to send unique messages via the radio control modes. Host Control is used to create Cognosos' RadioCloud® network elements. All radio communication is controlled by the integrated radio subsystem to ensure compliance with regulatory requirements.

## System Operation

# PCA-10015 Tracking Mode

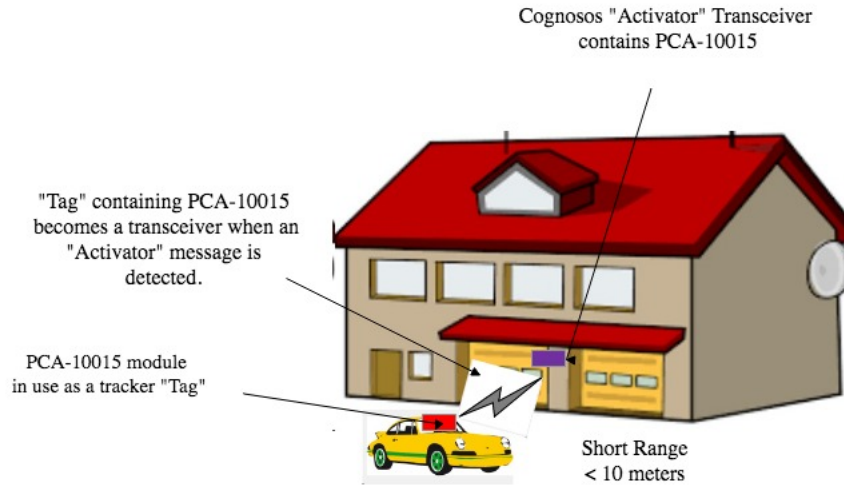


PCA-10015 can be used for asset tracking applications:

- 1) Asset movement is detected by PCA-10015 sensors.
- 2) The PCA-10015 monitors for additional RadioCloud sensor events.
- 3) The PCA-10015 sensors detects movement events and the module transmits control messages to the Gateway indicating these events. This message includes ID and sensor data.
- 4) If the PCA-10015 does not move for a period of time (1 day), it transmits a control message to the Gateway indicating the event that the PCA-10015 has not changed location.

# PCA-10015

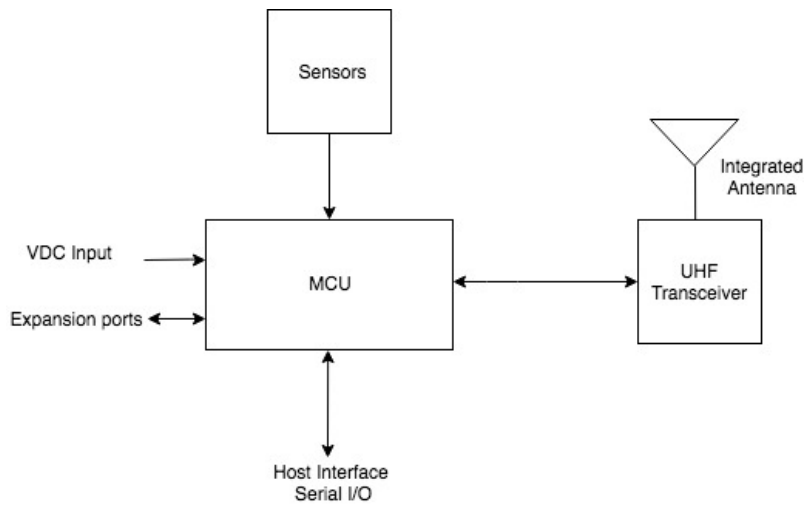
## Activator / Maintenance Mode



PCA-10015 functions as multiple RadioCloud network elements:

- 1) "Activator" PCA-10015 uses RadioCloud short range mode
- 2) "Tag" PCA-10015 listens for special short range transmissions from "Activator" PCA-10015.
- 3) Upon reception, "Tag" PCA-10015" enters short range connection mode.
- 5) "Activator" PCA-10015 commands/controls the "Tag" PCA-10015 to perform RadioCloud event based operations and system maintenance.

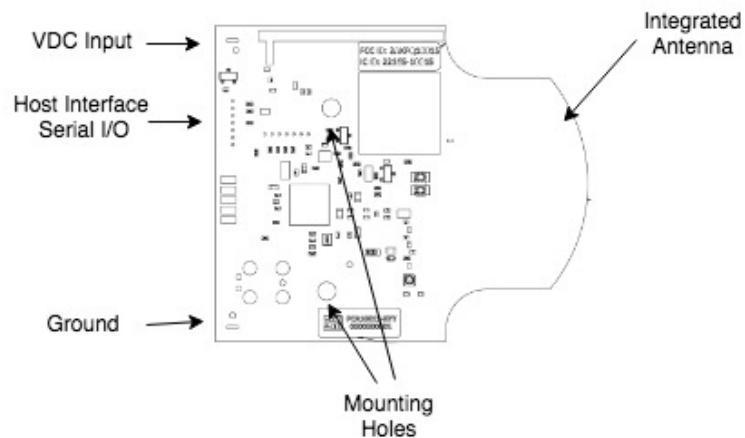
## PCA-10015 Functional Block Diagram



### Host Integration:

The PCA-10015 module is typically integrated into a host device. When connecting to a host device, the following connections are made:

### PCA-10015 Module Connections



**Power:** To power the module, apply 2.0-3.8 VDC across the VDC input and ground terminals. The module is protected against reverse voltage connection.

**Mounting:** Two size 4 screw holes are provided for module mounting.

Antennas: All antennas are integrated on the PCA-10015 module. For maximum performance, care should be taken to avoid metal in the area of the antennas.

Host Interface: For applications utilizing host interface control, data can be transmitted to Cognosco RadioCloud® networks using any of the radio operating modes. The PCA-10015 module ensures that all transmissions are compliant with regulatory rules and the RadioCloud® radio protocol. The serial port connector is only installed on the certain models. Serial port command protocols are Cognosco proprietary. Please contact your Cognosco representative for more information.

Expansion Port: This optional port is provided for additional sensor I/O. It is only available on specific models. Contact Cognosco for details.

FCC and IC Labeling Requirements: When the PCA-10015 module is used in a host product, the host product is required to display “Contains FCC ID: 2AKFQ10015” and “Contains IC: 22165-10015” respectively to comply with FCC and IC rules. These marking must be on the outside of the unit in 4-point font minimum.

## **Regulatory**

Warning: Changes or modifications to this device not expressly approved by Cognosco Inc. could void the user's authority to operate the equipment.

FCC ID: 2AKFQ10015

IC: 22165-10015

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 UNDESIRE OPERATION.

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.

Radio/broadcast products shall comply with the requirements to include required notices and/or statements to the user of the product for each unit of the product offered for sale. The required notices shall comply with the following requirements:

- The notices shall be as specified in the applicable RSS regulation(s) to the product.

- These notices shall be shown in a conspicuous location in the user manual for the product, or to be displayed on the product - variable formats are acceptable for providing the notices (i.e. in paper form, CD, DVD, or insert with download link on the company's website).
- If more than one notice is required for multiple product versions, the product version to which each notice pertains should be identified.
- The suppliers of radio equipment shall provide the notices and/or statements in both English and French.
- In cases where the user notifications are only available in one language (English or French) at the time of the certification process, the applicant shall provide a declaration in writing that the user notices and/or statements to the user of the product will be in both English and French when the product is for sale and/or lease in Canada.

This device complies with Industry Canada licence-exempt RSS standard(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.

Le present appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisee aux deux conditions suivantes : (1) /'appa reil ne do it pas produire de brouif/age , et (2 ) /'ut ilisateu r de /'appare il doit accepter tout brouif/age radioe lectrique sub i, meme si le brouif/age est susceptible d'en compromettre le fonctionnement.

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