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ARAD TECHNOLOGIES PIT_Unit X Allegro Cellular Radio Module

Specifications

- Model: PIT_Unit X
- Contains FCC ID: P27-TPM540
- Antenna Gain: 0dBi
- LTE Cat-M1, Power Class 3 (Pout = 23dBm)
- Typical Sensitivity TIS = -100dBm
- Typical TRP = +20dBm
- Software-based radio allowing support of extra bands for worldwide operation (B2, 4, 12)

Product Usage Instructions

- The Allegro cellular PIT_Unit X is designed for automated water meter reading.
- It can read water consumption data from residential and commercial water meters equipped with an Encoder or Solid-State Register.
- The device uses CAT-M cellular / LoRaWAN radio for relaying water consumption data to the utility.
- The device has an antenna gain of 0dBi, LTE Cat-M1, Power Class 3, typical sensitivity TIS of -100 dBm, and typical TRP of +20dBm.
- It supports extra bands for worldwide operation.
- The Allegro Cellular PIT_Unit X module is a battery endpoint for automatic water meter reading.
- It records water consumption data and transmits it via radio on a daily basis.

- The standard working mode transmits detailed information like Consumption, Flow, and Meter Alarms.

Introduction

- The Allegro cellular PIT_Unit X is a battery-operated radio module designed for automated water meter reading.
- The Allegro cellular is capable of reading water consumption data from residential and commercial water meters equipped with an Encoder or Solid-State Register.
- It uses CAT-M cellular / LoRaWAN radio for relaying water consumption data to the utility.

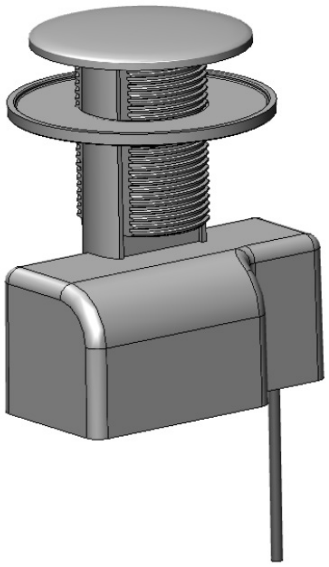


Figure 1 – Allegro Cellular PIT_Unit X Module

Electrical Characteristics

Battery:

- Battery type: D size Lithium-Thionyl Chloride
- Nominal voltage: 3.6 V
- Capacity: 19Ah

DC Characteristics:

- Operating voltage range: 3.0 V – 3.6 V

- Typical Sleep Current: 10 uA

Radio Characteristics:

- RF/Antenna (Cellular and LoRaWAN):
  - Typical Antenna Gain: 0dBi
  - LTE Cat-M1, Power Class 3 (Pout = 23dBm)
  - Typical Sensitivity TIS = -100dBm
  - Typical TRP = +20dBm
  - Software-based radio allowing support of extra bands for worldwide operation (B2, 4, 12)
- RF / Antenna BLE
  - Typical Antenna Gain: 2.5dBi
  - Typical TRP = +6dBm
  - Typical Sensitivity TIS = -96dBm
  - Tx/Rx supporting: Bluetooth® 5.4 specification, IEEE 802.15.4-2011
- SIM Interface: eSIM
- Protocol Stack Cat-M1:
  - 3GPP Rel. 13
  - Half-duplex
  - Channel bandwidth 1.4MHz
  - LTE carrier bandwidth 1.4 / 3 / 5 / 10 / 15 / 20 MHz
  - Up to 375kbit/s uplink, 300 kbit/s downlink
  - Extended Coverage Mode A
  - PSM (Power Save Mode)
  - I-DRX (Idle Mode Discontinuous Reception)
  - C-DRX (Connected Mode Discontinuous Reception)
  - Idle mode mobility
  - Connected mode mobility
  - eDRX (Extended Discontinuous Reception)
- Protocol Stack LoRaWAN:
  - US915 RF Region (ISM)
  - Based on LoRaWAN 1.0.3 and up
  - Class A,C

Functional Description

- The Allegro Cellular PIT_Unit X module is a battery endpoint for the application of automatic water meter reading. The primary function of the module is to record consumption of a water meter from an Encoder register.
- The Allegro unit stores the meter reading in an internal log and pushes the data via the radio on a daily basis.
- The standard working mode transmits daily 24-hourly meter reads, which include high-level detailed information like Consumption, Flow, Meter Alarms …

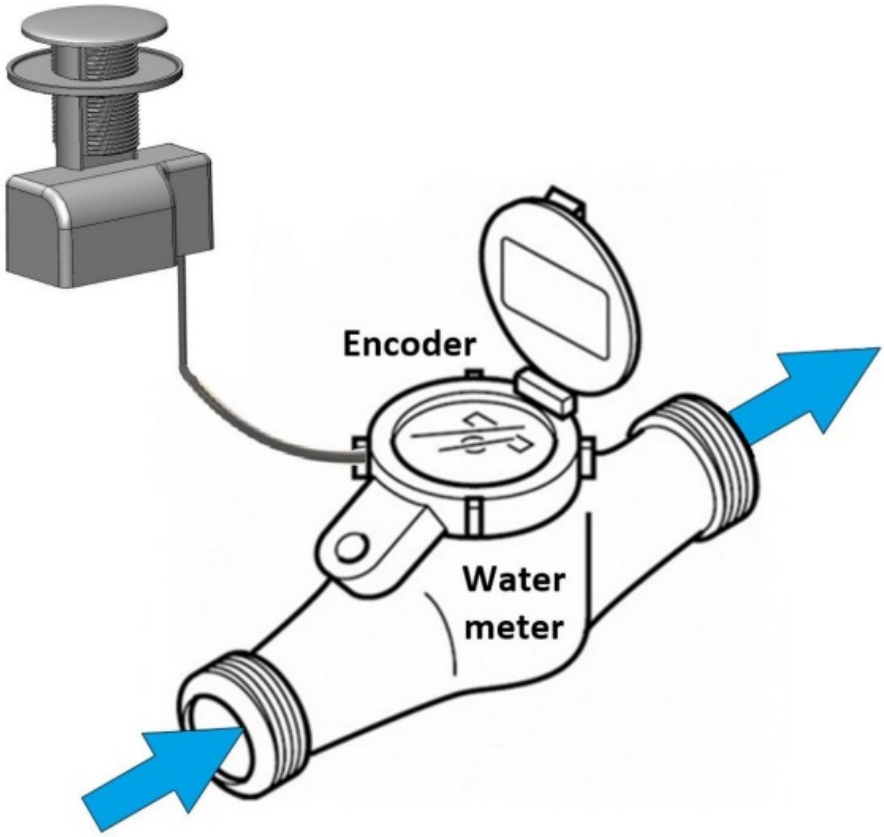


Figure 2 – Operation setup illustration.

Installation

- Remove the PIT lid, Figure 3.

Figure 3

- Install the PIT booster Module into the Pit Lid, Figure 4.

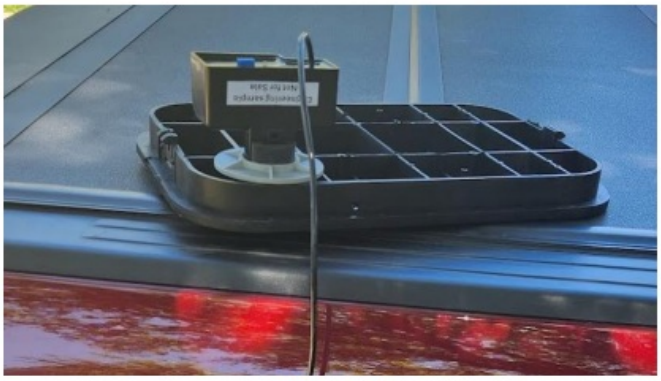


Figure 4

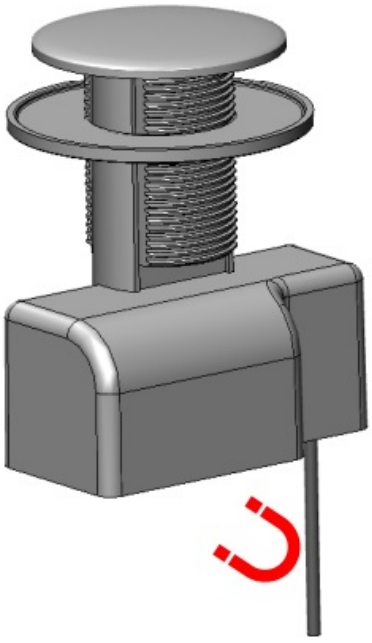
- Connect PIT_Unit X module cable to the water meter inside the Pit-Set, make sure both arrows are located in front of each other and tightly together, Figure 5.

Figure 5

Pay attention!

PIT_Unit X module may come with a variety of cables, plugs. In case of bare wire, connect the wires according to the Meter manufacturer’s guidance

- Place a magnet on the PIT_Unit X module bottoms as illustrated



- The LED will indicate (Figure 6) the process as described below.
- When the magnet is sensed LED blinks several times slowly.

Figure 6

- When the LED starts to blink fast (~after 10 seconds) magnet should be removed.
- After the PIT Booster Module is magnet activated, it will automatically be ready to transmit based on the production schedule configuration.
- Close the Pit Lid

FCC STATEMENT

CAUTION

This device complies with part 15 of the FCC Rules. The User and the Installer should be aware that changes and modifications to the equipment not expressly approved by Master Meter could void warranty and the user's authority to operate the equipment. Professionally trained personnel should install the equipment. The antenna used for this

transmitter must be installed to normally provide a minimum separation distance of at least 20 cm from all persons and must not be colocated or operating in conjunction with any other antenna or transmitter.

ATTENTION

This equipment has been tested and found to comply with the limits for a Class B digital device, under 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 following the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in an 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 to 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.

Industry Canada (IC) Compliance Notice

This device complies with FCC Rules Part 15 and with Industry Canada license-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.Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be chosen so that the equivalent Isotropically radiated power (EIRP) is not more than that necessary for successful communication.

- This Class B digital apparatus complies with Canadian ICES-003.
- Cet appareil numerique de la classe B est conforme a la norme NMB-003 du Canada.

CONTACT

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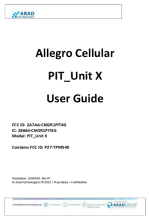
FAQ

- **Q:** Can the Allegro cellular PIT_Unit X be used with all types of water meters?
- **A:** The Allegro cellular PIT_Unit X is designed to work with water meters equipped with an Encoder or Solid-State Register. It may not be compatible with all types of water meters.
- **Q:** What is the range of the radio transmission for the Allegro cellular PIT_Unit X?
- **A**: The radio transmission range can vary based on environmental factors but typically provides reliable communication within a certain distance from the water meter.

Documents / Resources

	ARAD TECHNOLOGIES PIT_Unit X Allegro Cellular Radio Module [pdf] User Guide PIT_Unit X, PIT_Unit X Allegro Cellular Radio Module, Allegro Cellular Radio Module, Cellular Radio Module, Radio Module

References

- User Manual

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Allegro Cellular Radio Module, ARAD TECHNOLOGIES, Cellular Radio Module, PIT_Unit X, PIT_Unit X Allegro Cellular Radio Module, Radio Module

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