Friendcom IDUV915-LRW Inductive Sensor Endpoint User Manual

Contents

Friendcom IDUV915-LRW Inductive Sensor Endpoint

About the Product

The IDUV915-LRW Inductive Sensor Endpoint is a model name FC-725 product manufactured by Friendcom CO., LTD. It is a LoRaWAN Terminal Series version 1.2 device used for detecting and measuring the presence of metallic objects using inductive sensing technology. The device is designed to be connected with customers' applications.

Product Features

- Inductive sensing technology for detecting metallic objects
- LoRaWAN communication protocol for long-range wireless connectivity
- Low power consumption for extended battery life
- Compact and lightweight design for easy installation

Product Usage Instructions

The IDUV915-LRW Inductive Sensor Endpoint is intended for use by system engineers (SEs), application engineers, and test engineers. Before using the device, please refer to the following documents:

- Friendcom_IDUV915-LRW_Inductive_Sensor_Endpoint_Terminal_Datasheet
- Friendcom_IDUV915-LRW_Inductive_Sensor_Endpoint_Configuration_Guide

To use the device, follow the steps below:

1. Install the device according to the instructions provided in the configuration guide.
2. Connect the device to your application using the appropriate communication protocol.
3. Power on the device and wait for it to establish a connection with your application.
4. The device will detect the presence of metallic objects and
   send data to your application using the LoRaWAN protocol.

If you encounter any issues or require technical support, please contact Friendcom Technology Co., Ltd. using the

contact information provided in the user manual.

Friendcom has always been committed to technological innovation. Our aim is to provide customers with timely and comprehensive service. For any assistance, please contact our Shenzhen headquarters:

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About This Document

Scope
Scope of this document is to present features and application of Friendcom IDUV915-LRW Inductive Sensor Endpoint(Model name FC-725).

Audience
This document is intended for system engineers (SEs), application engineers, and test engineers.

Related Documents

- Friendcom_IDUV915-LRW_Inductive_Sensor_Endpoint_Terminal_Datasheet
- Friendcom_IDUV915-LRW_Inductive_Sensor_Endpoint_Configuration_Guide

Conventions

Symbol	Indication
	This warning symbol means danger. You are in a situation that could cause fatal device damage or even bodily damage.
	Means reader be careful. In this situation, you might perform an action that could result in module or product damages.
	Means note or tips for readers to use the module.

History

1.0	2021-01	Initial draft
1.1	2021-03	Modify the power consumption
1.2	2021-04	Modify the product name

Introduction

This document describes the technical parameters and key functions which are connected with customers' applications, and it can help customers quickly understand the data format, features, as well as other related information of IDUV915-LRW Inductive Sensor Endpoint.

Product Concept

General Description

IDUV915-LRW Inductive Sensor Endpoint is a data acquisition and transmission terminal, which is widely used in the intelligent construction of water meters, gas meters, and heat meters. It can realize data collection, data storage management, abnormal warning and wireless communication functions. IDUV915-LRW based on a high performance LoRaWAN module, it supports standard wireless LoRaWAN protocol. IDUV915-LRW built-in high-performance non-magnetic metering module, can detect rotating metal target in meters to measure the volume of flow. It is completely diamagnetic and has strong anti-interference. With pre-installed long-life battery and built-in antenna, the IDUV915-LRW has the characteristics of simple deployment, high reliability, low power consumption and long transmission distance.

Key Features

The following shows the key features of IDUV915-LRW.

- Immunity of magnet interference.
- Supports a range of event alarms including:battery life, reverse flow, Disassemble etc.
- **Waterproof**: IP67.
- Suitable to workin harsh environment.
- Long range wireless data transmission.
- Multi-band support, EU433, CN470, EU868, US915, AU915, IN865, etc.
- Pre-installed long-life battery and built-in antenna.
- Air wireless configuration.
- Firmware upgrade by FOTA.

- Average life 10 years*.

NOTE
Lifetime depends from the device location and reporting interval.

Curve freezing function introduction
The IDUV915-LRW also supports more flexible data collection point configuration. Compared to the traditional recording method, the curve freezing function can help users record the usage of each time period of the day and report the data. In order to meet this demand, the IDUV915-LRW program will average 96 time points in a day, and the interval between time points It is 15 minutes, as shown in the table below

Bit31	Bit30	Bit29	Bit28	Bit27	Bit26	Bit25	Bit24	Bit23	Bit22	Bit21	Bit20	Bit19	Bit18	Bit17	Bit16
0:00	0:15	0:30	0:45	1:00	1:15	1:30	1:45	2:00	2:15	2:30	2:45	3:00	3:15	3:30	3:45
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Bit15	Bit14	Bit13	Bit12	Bit11	Bit10	Bit9	Bit8	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
4:00	4:15	4:30	4:45	5:00	5:15	5:30	5:45	6:00	6:15	6:30	6:45	7:00	7:15	7:30	7:45
1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0
FFFF8888															

Bit31	Bit30	Bit29	Bit28	Bit27	Bit26	Bit25	Bit24	Bit23	Bit22	Bit21	Bit20	Bit19	Bit18	Bit17	Bit16
8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45	10:00	10:15	10:30	10:45	11:00	11:15	11:30	11:45
1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0
Bit15	Bit14	Bit13	Bit12	Bit11	Bit10	Bit9	Bit8	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
12:00	12:15	12:30	12:45	13:00	13:15	13:30	13:45	14:00	14:15	14:30	14:45	15:00	15:15	15:30	15:45
1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0
88888888															

Bit31	Bit30	Bit29	Bit28	Bit27	Bit26	Bit25	Bit24	Bit23	Bit22	Bit21	Bit20	Bit19	Bit18	Bit17	Bit16
16:00	16:15	16:30	16:45	17:00	17:15	17:30	17:45	18:00	18:15	18:30	18:45	19:00	19:15	19:30	19:45
1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0
Bit15	Bit14	Bit13	Bit12	Bit11	Bit10	Bit9	Bit8	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
20:00	20:15	20:30	20:45	21:00	21:15	21:30	21:45	22:00	22:15	22:30	22:45	23:00	23:15	23:30	23:45
1	0	0	0	1	0	0	0	1	0	0	0	1	1	1	1
8888888F															

Chosen	39		Mask	FFFF88888888888888888888F		AT Command	AT+UAT0=FFFF88888888888888888888F

Curve reporting function has two reporting frame format, one is the default curve reporting frame, its acquisition point settings such as Table 2-1. (4 am to 11 pm every 1hour. 11 pm to 4 am every 15 minutes) The other is the user-defined curve reporting frame. The user can set any desired data collection plan by modifying the 12-byte mask. The mask corresponding to the above figure is FFFF88888888888888888F. The mask can be obtained through the separately provided data collection schedule.

NOTE
Due to the limitation of the data length of the reported frame, a maximum of 77 data collection points are currently supported. If the collection point set by the user exceeds 77, the mask and AT command will not be displayed.

Specifications

The following table describes the specifications of IDUV915-LRW

Dimension	92mm (L) x 63mm(W) x 48.5 mm (H)
Weight	70g (The weight of packing material is not included)
Battery Life	Average life 10 years
Communication range	Up to 15km (In visibility conditions)
Radio Characteristics	Tx Power: Max. 20dBm Rx Sensitivity: < -138dBm
Power Consumption	Average 8.5uA @ absence of water flow Average 11.5uA @ presence of water flow
MAC Layer	LoRaWAN ®
IP Rating	IP67
Working Bands	EU433, CN470, EU868, US915, AU915, IN865, etc.
Operating Temperature	-40°C to +70°C (Industrial Grade)

Operating humidity	5%RH to 95%RH
Antenna Option	Build-in Antenna
Power Supply	Pre-installed long-life battery, 2.6V to 3.7V
Configuration	Over-the-air
Upgrade	FOTA
Environmental Compliance	RoHS, REACH
Certification	CE, FCC, LoRa Alliance*

Means for features and certifications in planning

Safety Recommendations
Ensure that this product is used in compliant with the requirements of the country and the environment, the following safety precautions must be observed during all phases of the operation, such as usage, service or repair of wireless pulse acquisition products. If not so, Friendcom assumes no liability for customers' failure to comply with these precautions

Full attention must be given to driving at all times in order to reduce the risk of an accident. Using the terminal while driving causes distraction and can lead to an accident. Please comply with laws and regulations restricting the use of wireless devices while driving.

Wireless devices may cause interference on sensitive medical equipment, so please be aware of the restrictions on the use of wireless devices when in hospitals, clinics or other healthcare facilities.

The wireless terminal contains a transmitter and receiver. RF interference can occur if it is used close to other electric equipment.

Do not use this product at any places with a risk of fire or potentially explosive atmospheres such as gasoline stations, oil refineries, etc.

Data Format and Setting Command

Data Format of Reporting

IDUV915-LRW actively reports data according to the set period. The format of reported data frame can be set to four types: short format, long format, default curve and custom curve. The information reported in the four formats is different, as follows: Short data frame format:

Name	Byte	Note
Frame header	1	Fixed 0x56
Frame number and status	1	Bit 4- Bit 7: Frame number Bit 3: Downlink command successful reply mark,0 means no reply, 1 means the last command issued by the server was successfully executed. Bit 2: Open the lid detection mark, 0 means the shell is normal, 1 means the shell is abnormal.This bit is cleared after the cover is re-closed. Bit 1: Reverse flow identification, 0 means no reverse flow, 1 means there is reverse flow.This bit is cleared after any report is successful. Bit 0: Low voltage alarm flag, 0 means normal, 1 means abnormal
Reverse pulse number	4	BCD code, unit L, current reverse cumulative count.
Data area	4	BCD code Unit L, current cumulative number
Checksum	1	Accumulate sum, the cumulative sum of one byte of data from the frame header to the check

Long data frame format

Name	Byte	Note
Frame header	1	Fixed 0x55
Frame number	1	Data frame accumulator, value range 0 to 255, cyclic accumulation

Address field	4	BCD code, unit L, current reverse cumulative count.

Function code	1	Fixed 0x01
Data area	4	BCD code, unit L, current cumulative number
Freeze data on previous day	4	BCD code, unit L
Clock	6	Format is Year, month, day, hour, minute
Battery voltage	1	Current battery voltage, the actual voltage value needs to be divided by 10
Status byte	1	Bit 4-Bit 7: Reserved. Bit 3: Downlink command successful reply mark,0 means no reply, 1 means the last command issued by the server was successfully executed. Bit 2: Open the lid detection mark, 0 means the shell is normal, 1 means the shell is abnormal.This bit is cleared after the cover is re-closed. Bit 1: Reverse flow identification, 0 means no reverse flow, 1 means there is reverse flow.This bit is cleared after any report is successful. Bit 0: Low voltage alarm flag, 0 means normal, 1 means abnormal
Checksum	1	Accumulate sum, the cumulative sum of one byte of data from the frame header to the check
Terminator	1	Fixed 0x16

Default curve frame format

Default curve report frame			
Data field	Field length	Example	Example data description
Start fixed at 0x57	1	0x57	Fixed HEX0x57
Timestamp	3	0x210303	March 03, 2021 (BCD code)
0:00 Freeze data	3	0x003039	0:00 frozen to 12345.6 cubic meters (HEX)
0:15	1	0x01	0:00-0:15 increased by 0.1 cubic(HEX)
0:30	1	0x02	0:15-0:30 increased by 0.2 cubic (HEX)
0:45	1	0x03	0:30-0:45 increased by 0.3 cubic(HEX)
1:00	1	0x04	0:45-1:00 increased by 0.4 cubic(HEX)
1:15	1	0x05	–
1:30	1	0x06	–
1:45	1	0x07	–
2:00	1	0x08	–
2:15	1	0x09	–
2:30	1	0x0A	–
2:45	1	0x0B	–
3:00	1	0x0C	–
3:15	1	0x0D	–
3:30	1	0x0E	–
3:45	1	0x0F	–
4:00	1	0x10	3:45-4:00 increased by 1.6 cubic(HEX)
5:00	1	0x11	4:00-5:00 increased by 1.7 cubic(HEX)
6:00	1	0x12	–
7:00	1	0x13	–
8:00	1	0x14	–
9:00	1	0x15	–
10:00	1	0x16	–
11:00	1	0x17	–
12:00	1	0x18	–
13:00	1	0x19	–
14:00	1	0x1A	–
15:00	1	0x1B	

16:00	1	0x1C	–
17:00	1	0x1D	–
18:00	1	0x1E	–
19:00	1	0x1F	–
20:00	1	0x01	–
21:00	1	0x02	–
22:00	1	0x03	–
23:00	1	0x04	22:00-23:00 increased by 0.4 cubic(HEX)
23:15	1	0x05	23:00-23:15 increased by 0.5 cubic(HEX)
23:30	1	0x06	–
23:45	1	0x07	–
Status byte	1	0x02	The definition is the same as short frame status byte
Checksum plus mask CR C8 sum	1	0xB4	Checksum 0xF5+mask CRC8 0xBF
Terminator	1	0x16	Fixed HEX0x16

Custom curve frame format:

Custom curve report frame		
Data field	Field length	Example
Start fixed at 0x57	1	0x58
Timestamp	3	210304
0:00 Freeze data	3	123456
customize	1	0x01
customize	1	0x02
customize	1	0x03
customize	1	0x04
customize	1	0x05
customize	1	0x06
customize	1	0x07
customize	1	0x08
customize	1	0x09
customize	1	0x0A
customize	1	0x0B
customize	1	0x0C
customize	1	0x0D
customize	1	0x0E
customize	1	0x0F
customize	1	0x10
customize	1	0x11
customize	1	0x12
customize	1	0x13

customize	1	0x14
customize	1	0x15
customize	1	0x16
customize	1	0x17
customize	1	0x18
customize	1	0x19
customize	1	0x1A
customize	1	0x1B
customize	1	0x1C
customize	1	0x1D
customize	1	0x1E
customize	1	0x1F
customize	1	0x01
customize	1	0x02
customize	1	0x03
customize	1	0x04
customize	1	0x05
customize	1	0x06
customize	1	0x07
Status byte	1	0x02
Checksum plus mask CRC8 sum	1	0xF7+mask CRC8
Terminator	1	0x16

Setting Command
Parameters of IDUV915-LRW can be set and read by AT command, the format of commands is shown in the following table

Command	**Note**	**Ack (Success)**	**Ack (Fail ure)**
AT+JOINMODE=0	Set OTAA mode	OK	Error
AT+APPEUI=xxxxxxxxxxxxx xxxxxxx	Set APPEUI e.g. AT+APPEUI=1122334455667788	OK	Error

AT+APPKEY=xxxxxxxxxxxxxxxxxxxxxxxxxxxx	Set APPKEY e.g. AT+APPKEY=11223344556677889900112233445566	OK	Error
AT+JOINMODE=1	Set ABP mode	OK	Error
AT+NWKSKEY=xxxxxxxxxxxxxxxxxxxxxxxxxxxx	Set NWKSKEY e.g. AT+NWKSKEY=11223344556677889900112233445566	OK	Error
AT+APPSKEY=xxxxxxxxxxxxxxxxxxxxxxxxxxxx	Set APPSKEY e.g. AT+APPSKEY=11223344556677889900112233445566	OK	Error
AT+URAM=F300,04	Read the current number of pulses e.g. [<- 11:07:16.259] AT+URAM=F300,04 [-> 11:07:16.324] +URAM:F300,04,12345678 Indicates that the current pulse is 0x78563412, that is, the low byte is before the high byte is after	+URAM:F300,04 ,12345678	Error
AT+URAM=F300,04,39300000	Write current pulse number Current number of pulses = current meter reading * pulse constant (the result retains the integer part) e.g. The current meter reading is 123.456 cubic meters and the pulse constant is 100, so the number of pulses should be 12345. The writing is also in accordance with the low byte first and the high byte after, for example, write 12345, 12345 = 0x00003039; [<- 11:12:08.076]	OK	Error

	AT+URAM=F300,04,39300000 [-> 11:12:08.135] OK		

AT+URAM=F304,04	Read the reporting period e.g. [<- 11:13:33.539] AT+URAM=F304,04 [-> 11:13:33.604] +URAM:F304,04,A0050000 Indicates that the reporting period is 0x000005A0, that is, the low byte is before the high byte, and the reporting period is in minutes .	+URAM:F304,04 ,A0050000	Error
AT+URAM=F304,04,a0050000	Write reporting period	OK	Error
AT+URAM=F308,02	Read pulse constant e.g. [<- 11:16:50.579] AT+URAM=F308,02 [-> 11:16:50.644] +URAM:F308,02,0A00 Indicates that the current pulse is 0x000A, that is, the low byte is before the high byte, The pulse constant represents the number of pulses equal to 1 cubic meter, and the range is 1-2000	+URAM:F308,02 ,0A00	Error
AT+URAM=F308,02,0a00	Write pulse constant	OK	Error
AT+URAM=F30E,04	Read device address e.g. [<- 11:19:40.364] AT+URAM=F30E,04 [-> 11:19:40.425] +URAM:F30E,04,12345678 Indicates that the current device address is 0x12 0x34 0x56 0x78	+URAM:F30E,04 ,12345678	Error
AT+URAM=F30E,04,12345678	Write device address	OK	Error
AT+URAM=F30A,01	Read power output e.g. [<- 11:24:38.124] AT+URAM=F30A,01 [-> 11:24:38.185] +URAM:F30A,01,00 00 means currently closed 01 means currently open	+URAM:F30A,01 ,00	Error
AT+URAM=F30A,01,00	Write power output off	OK	Error
AT+URAM=F30A,01,01	Write power output on	OK	Error

AT+URAM=F30B,01	Read up and down configuration e.g. [<- 11:24:38.124] AT+URAM=F30B,01 [-> 11:24:38.185] +URAM:F30B,01,00 00 means currently closed 01 means currently open	+URAM:F30B,01 ,00	Error
AT+URAM=F30B,01,00	Write up and down configuration Close	OK	Error
AT+URAM=F30B,01,01	Write up and down configuration open	OK	Error
AT+URAM=F30C,01	Read measurement mode e.g. [<- 11:24:38.124] AT+URAM=F30C,01 [-> 11:24:38.185] +URAM:F30B,01,00 00 means single pulse mode 01 means double pulse mode	+URAM:F30B,01 ,00	Error
AT+URAM=F30C,01,00	Write measurement mode Set single pulse	OK	Error
AT+URAM=F30C,01,01	Write measurement mode Set double pulse	OK	Error

AT+URAM=F30D,01	Read frame format e.g. [<- 11:24:38.124] AT+URAM=F30D,01 [-> 11:24:38.185] +URAM:F30D,01,00 00 means short frame format 01 means long frame format Note: If the transmission fails, the module will use the short frame format for a retransmission;	+URAM:F30D,01 ,00	Error
AT+URAM=F30D,01,00	Write frame format: Set short frame mode	OK	Error
AT+URAM=F30D,01,01	Write frame format: Set long frame mode	OK	Error
AT+URAM=F30D,01,02	Write frame format: Set default curve reporting mode	OK	Error
AT+URAM=F30D,01,03	Write frame format: Set Custom Curve Reporting mode	OK	Error

AT+SAVE	Save and apply parameters; Save RF parameters; Save the table parameters, and use the current time as the starting time of the reporting period.	OK	Error
AT+UAT0?	This command can be used to query the data collection plan mask. e.g. [<- 15:26:42.991] AT+UAT0? [-> 15:26:43.059]	will return the current mask	Error

	+UAT0:39,BF,FFFF8888888888888888F Among them, 39 indicates that 39 collection poi nts have been selected, and BF indicates that t he CRC8 of the mask is 0xBF, and this value participates in the calculation of the check field of the curve report frame.		
	This command can be used to set the data		
	collection plan mask.		
AT+UAT0=[12-byte mask]	e.g. [<- 15:40:29.965]	OK	Error
	AT+UAT0=FFFF888888888888F888888F		
	[-> 15:40:30.028] OK		
	his command can be used to query the frozen		
	area data.		
	e.g. 1		
	[<- 15:49:22.452] AT+UAT1?		
	[-> 15:49:22.507] +UAT1: No data available		
	If no data is returned, it means that there is no		
	data to be reported.		
	e.g. 2	Return the latest	
AT+UAT1?	[<- 15:56:18.812] AT+UAT1? [-> 15:56:18.956]	data to be reported in the	Error
	+UAT1:00,Not,012103170004D20000C00000	frozen area	
	C00000C00000C00000C00000C00000C000		
	00C00000C00000C00000C000000000002A8		
	DD9		
	00: Indicates that the data is in block number		
	00		
	Not: indicates that the data is in a state to be		
	reported		

	Setting command:AT+UAT1=[block area		
	code], block area code 00-0F		
	e.g. 1		
	[<- 16:18:46.649] AT+UAT1=00		

	[-> 16:18:46.795]		
	+UAT1:00,OK,002103170004D20000C00000		
	C00000C00000C00000C00000C00000C000		
	00C00000C00000C00000C000000000002A8		
	D03		
	00: Indicates that the data is in block number		
	00		
	OK: indicates that the data has been		
AT+UAT1=[block area code]	successfully reported The format of the frozen area data is as	Return frozen ar ea data	Error
	follows:		
	·Status: 1 byte, 00 means reported, 01 means		
	to be reported		
	·Date BCD code: 3 bytes, such as 20 21 03 15		
	·Acquisition point 0 data: 3 bytes, the		
	definition is the same as the custom curve		
	report frame		
	·Acquisition point 1-N data: 1 byte, coding		
	rules are the same as custom curve reporting		
	frame		
	·Collection points: 1 byte, which is N		
	This command can be used to query the		
	reporting time		
	e.g. 1		
	[<- 16:22:41.418] AT+UAT2?		
	[-> 16:22:41.495] +UAT2: Alarm 3 17:00:00,		
	Upload 08:15:00 + 11min	return the curren t	
AT+UAT2?	3 17:00:00: Indicates that the alarm timer	alarm time and	Error
	value is 17:00:00 on the 3rd of the week	reported time	
	08:15:00: Indicates that the reporting time is		
	08:15:00 every day		

	+ 11min: indicates that the random delay in		
	reporting is 11 minutes		
AT+UAT2=hh:mm	This command can be used to set the reporting time e.g. 1 [<- 16:45:53.584] AT+UAT2=09:15	OK	Error

	[-> 16:45:53.624] OK		
	Query current time		
	e.g. 1		
AT+RTC?	[<- 17:48:44.455] AT+RTC? [-> 17:48:44.511] + RTC:2021-03-17	OK	Error
	17:48:44OK		

Parameters Configuration

Parameters Configuration
Before using the IDUV915-LRW, we need to configure some parameters, such as initial index, RTC real-time clock, upload frame type, AppKEY and other LoRaWAN information. For detailed operation steps, users can refer to Friendcom IDUV915-LRW Configuration Guide Manual.

Wireless Configuration Mode
Plug the wireless USB adapter FC-714-USB into your computer and install the correct driver to configure the product wirelessly.

Entering Configuration Mode
IDUV915-LRW terminal can be activated by magnet to enter configuration mode. The reed switch inside the product is triggered by the magnet to put the product into the configuration mode, and then the configuration command must be sent within 30 seconds. If the product does not detect the configuration command in 30 seconds, the configuration mode will be exited. Once the command is received, the product will keep in configuration mode for another 30 seconds. The trigger position is shown in the figure below.

The time that magnet triggers the reed switch to connect (the duration from connect to the break) and the corresponding functions are shown in the following table:

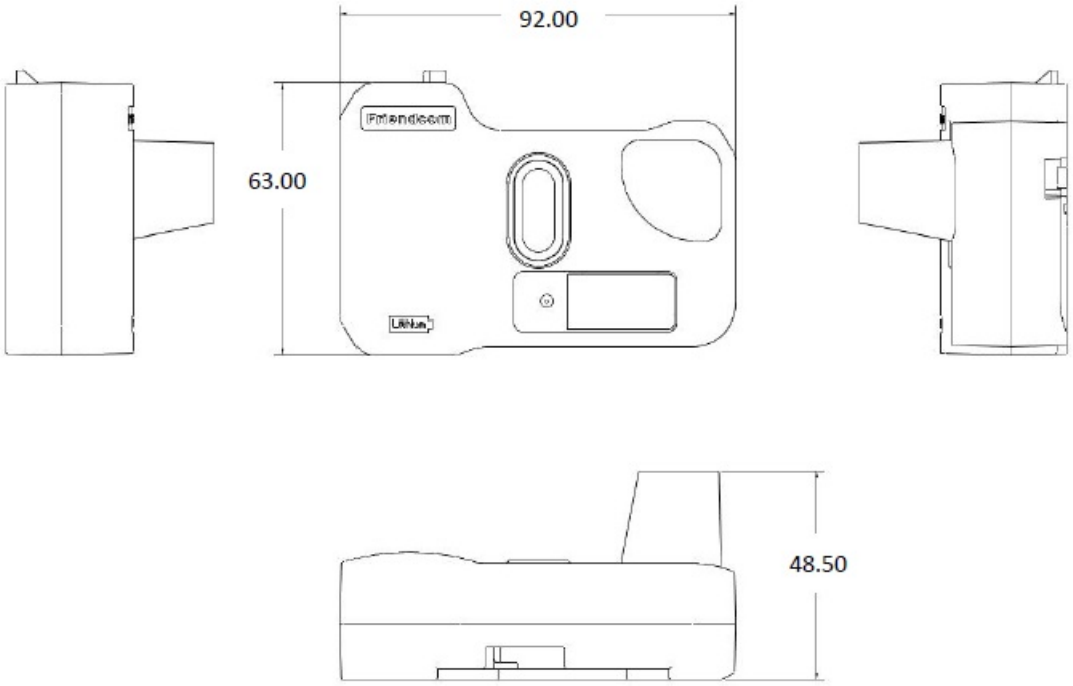
Magnet hold time	Features	Remarks
2s-4s	Report data once	Typically 3s
4s-9s	Configuration mode	Typically 5s
9s-15s	Reset	Typically 12s
>15s	No response	Close magnet detecting function 60s

- When the product exits the configuration mode, basing on whether the user has sent a network access command (AT + JOIN) and whether the current mode is OTAA, it will automatically join the network if both are satisfied. The network access result can be verified by triggering whether the data report is successful.
- The parameters can be set through AT command, for detailed command information, please refer to section 3.2.

Dimensions and Installation Instructions

Dimensions

The dimensions of IDUV915-LRW is show blew (unit mm).



Installation

IDUV915-LRW use clasp and screw installation, Installation method:

1. The module is fixed on the water meter with clasp
2. Strengthened with screw.
3. Put on the anti-disassembly plug.

Transportantion and Storage

Storage: -5C to 55C, non-corrosive gases.

Less than 4 layers stacked and pay attention to shockproof during transportation.

FCC 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.

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

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.

To comply with RF exposure requirements, a minimum separation distance of 20cm must be maintained between the user's body and the device.

Documents / Resources

	Friendcom IDUV915-LRW Inductive Sensor Endpoint [pdf] User Manual FC-725, IDUV915-LRW, IDUV915-LRW Inductive Sensor Endpoint, Inductive Sensor Endpoint, Sensor Endpoint

References

- Smart Metering Solution Provider | Wireless Connectivity Solution Provider