

KS32

LoRaWAN Sensor

Standardized Device Manual



VERSION
当前版本

DOCUMENT
Device Manual

Product Description

KS32 is a LoRaWAN-based dry contact collector for communication, the product provides 6 Dry contact interfaces, triggers internal level reversal when the dry contact state changes, KS32 triggers interruption to realize real-time collection of the dry contact change state and uploads the dry contact state and count value to LoRaWAN's NS server through LoRaWAN gateway.

KS32 based on LoRaWireless technology, supports standard LoRaWANNetworking communication has the characteristics of long communication distance and low power consumption.

Product built-in 4*2700mAh large-capacity lithium battery, life up to 6 years.

In addition, product support with ManThink/third-party LoRaWAN The gateway is combined with the third-party IoT platform of ThinkLink, Chirp stack, and TTN to realize the monitoring and management of dry-contact switches.

KS32 has a high protection level of IP65, which can adapt to the harsh outdoor environment and can be widely used in the management needs of smart industries, smart buildings and other scenarios.

Main features

- IP65 protection level
- Support 6 ports Dry contact
- Battery powered, 10800mAh high performance lithium battery, battery life up to 6 years
- Support ThinkLink/ChirpStack/TTN platform docking
- Support US902,AU915,AS923,EU868,EU433,CN470 LoRaWAN standards

Specifications

Performance Parameters

Item	Value
INTERFACE	
connect Type	PG7
Number of dry contact interfaces	6
Number of grounding wires	2
Display	None

Item	Value
WIRELESS PARAMETERS	
Protocol	Standard LoRaWAN®Agreement
Regional Standards	CN470/EU433/EU868/AS923/AU915/Us902
Transmit power	Maximum Support 22dBm (can be changed)
Receiving sensitivity	-142dBm(SF=12,BW=125kHz)
Working mode	OTAA/ABP Class A

Item	Value
AGREEMENT /CONFIGURATION	
Test/Trigger mode	The magnet 2 seconds trigger heartbeat data 6 Seconds trigger into the network
Configuration	By NS issue instruction

Item	Value
PHYSICAL CHARACTERISTICS	
Power supply mode	4 x 2700 mAh ER14505 lithium battery
Sleep current	<5uA (25 °C at room temperature)
Emission current	<110mA (22dBm transmit power)
Battery life	6 years (15-minute reporting cycle, 25 °C at room temperature)
Working Temperature	-40°C ~85°C
Relative humidity	≤95% (no condensation)
Protection level	IP65

Item	Value
Material & Color	ABS + PC, White
Dimensions	120mm * 72mm * 28mm
Installation method	Wall Hanging

Dimensions and Interfaces

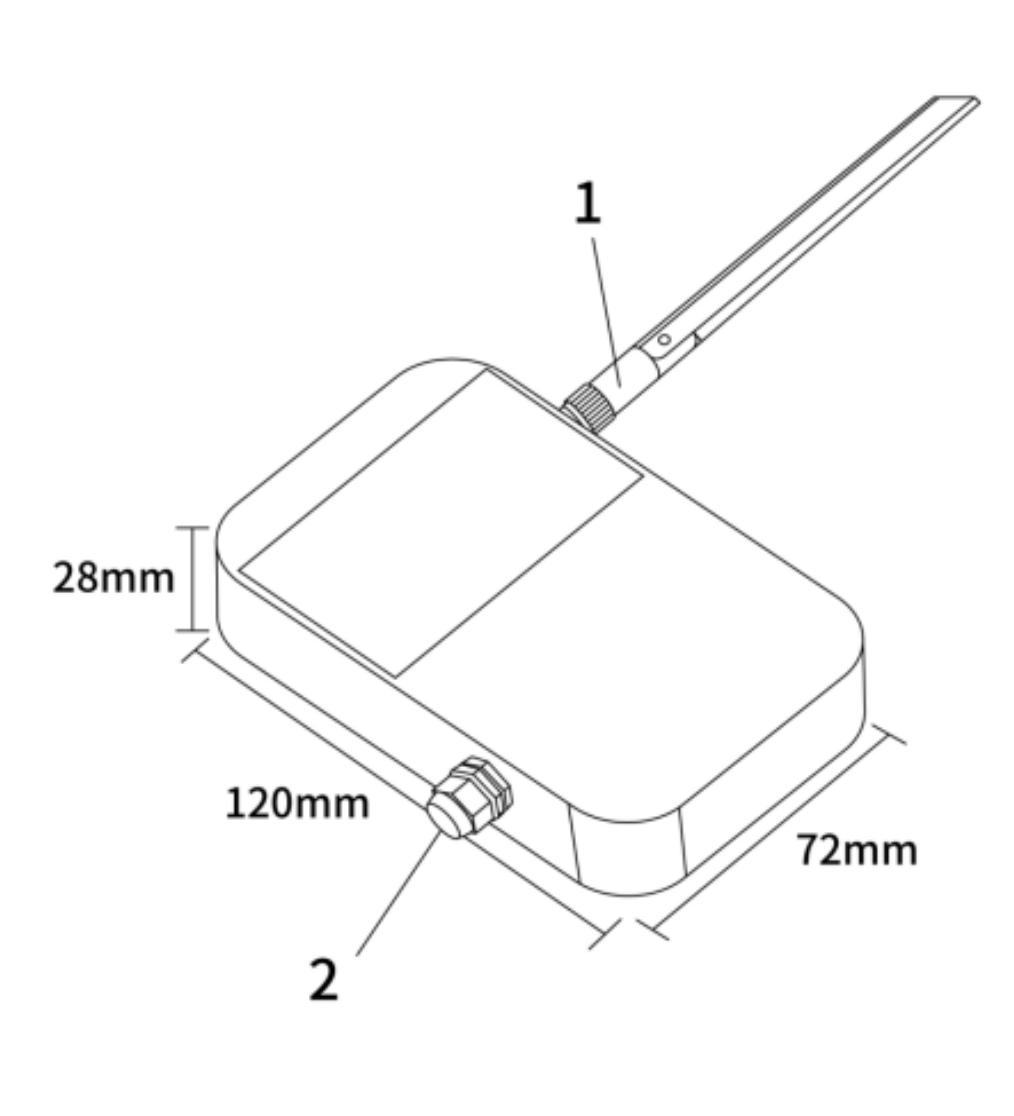


Figure Dimensions and Interfaces

Number	Interface Description	Specific Details
1	LoRa Antenna interface	Inner hole outer screw, according to different LoRaWAN standard match

Number	Interface Description	Specific Details
2	Wiring Port	PG7 waterproof connector 2 GND,6 DI input interface, a total of 8 leads

Model List

Model example

KS328-A1-AS923-N

Model component breakdown

- **KS328: product series and RF band.**
 - KS32 identifies a second-generation IP65 dry-contact input module.
 - 8 identifies the 800 MHz-and-above RF version for EU868, AS923, AU915 and US902.
 - Other band option: 4 identifies the 400 MHz RF version for EU433 and CN470.
- **-A1: acquisition interface and power configuration.**
 - A identifies six digital inputs (6DI).
 - 1 identifies a built-in 10800 mAh battery.
- **-AS923: LoRaWAN regional standard.**
 - AS923 means that the device supports the LoRaWAN AS923 regional parameters.
 - Other regional codes are CN470, EU433, EU868, AU915 and US902; US902 denotes the LoRaWAN US915 (902–928 MHz) regional parameters.
- **-N: default version.**
 - N identifies the default version.
 - Other values are reserved for customized or special versions.

Complete model meaning

The complete meaning of KS328-A1-AS923-N is:

This is a second-generation IP65 dry-contact input module in the 800 MHz-and-above RF class. It provides six digital inputs, includes a 10800 mAh battery, supports the LoRaWAN AS923 regional standard, and uses the default final version code N.

Instructions for use

Network topology

KS32 is a standard LoRaWAN device and needs LoRaWAN network support to work properly. You can use the LoRaWAN gateway of ManThink or a third-party LoRaWAN gateway with the support of LoRaWAN NS.

KS32 supports accessing standard LoRaWAN networks such as ThinkLink, Chirp stack, and TTN. You can use the ThinkLink configuration model to implement business functions, card view presentation, and other business logic.

The LoRaWAN network topology is as follows:

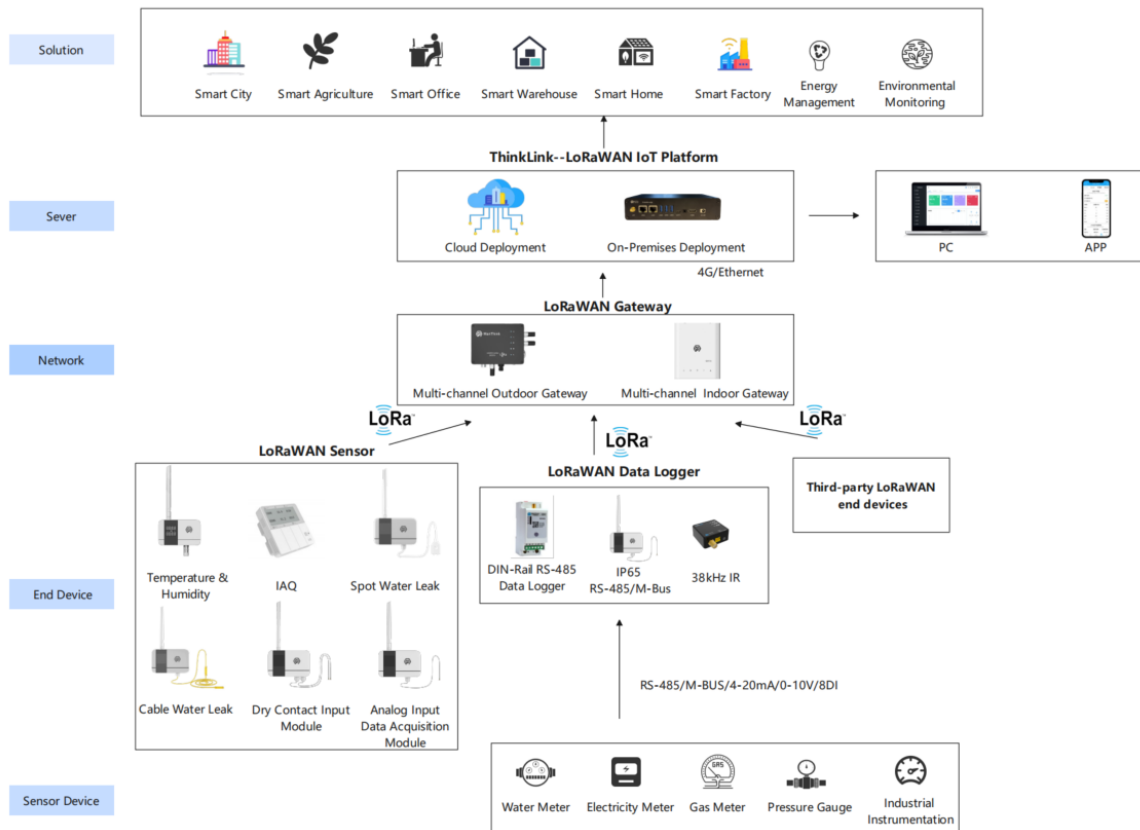


Figure Network topology

Working mode

Periodic Upload and trigger Upload

- [x] KS32 has 6 DI interfaces. KS32 monitors the Accessed DI signals in real time. When the state of any DI interface changes, it will record the number of

- overturms and send a packet of data to the state of the DI interface.
- [x] When no trigger event occurs, KS32 periodically reports the status and count values of six DI interfaces
 - [x] The Upload cycle of KS32 is set according to the heartbeat cycle address.

Note: KS32 can only be connected to dry contacts**.

Communication Test

Use a magnet to stick the location of QR code on KS32 to trigger 2S-4S, which can trigger a packet of upstream measurement data.

Network access

Use a magnet to stick the location of QR code on KS32 to trigger 6s-8s, which can trigger a packet of network access data.

Installation and fixing

- Use the drill to fix the back plate to the Wall (keep the back plate Arrow Up)

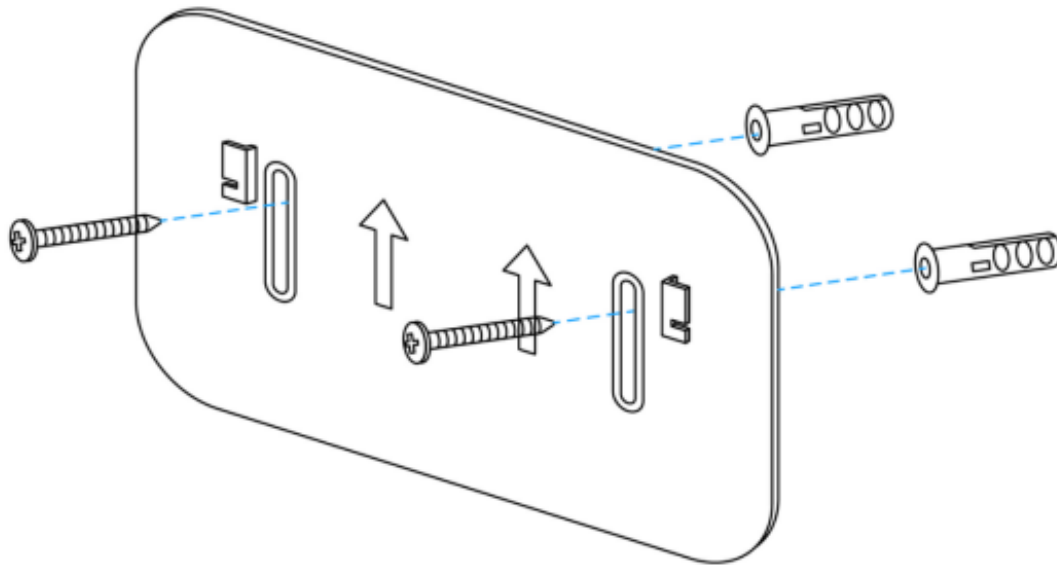


Figure Installation and fixing

- Hatch the product on the back plate (slide down after aligning the groove on the back of the sensor with the convex part of the back plate)

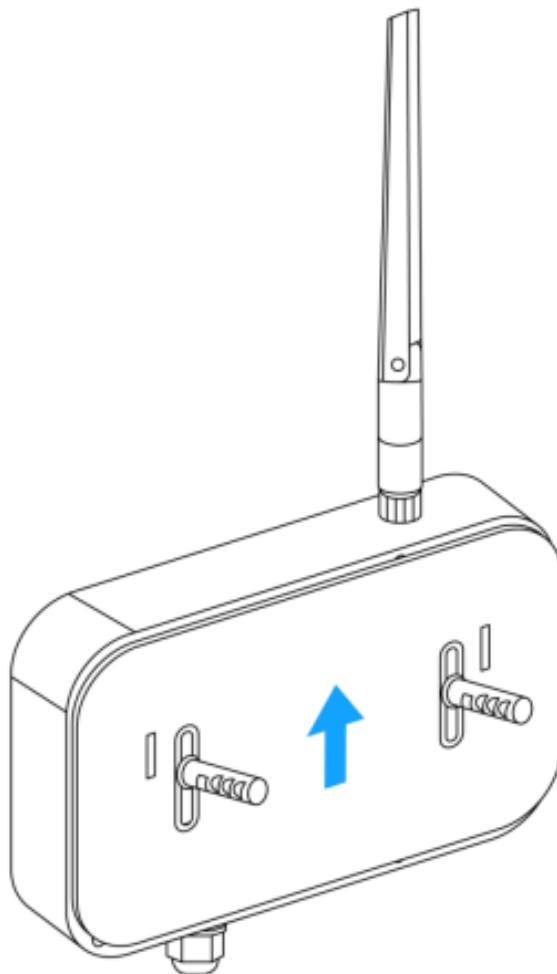


Figure Installation and fixing

Communication Protocol

According to the standard

Reference: PTL-D01 ManThink Technology IoT Terminal Application Layer General Protocol V1.5

Data Items and Identifiers

- LoRaWAN port number = 15

KS32 supports only one data format, for example:

82 24 1A FF00AE 0D000000 D1000000 52000000 52000000 1C000000 28000000 69000000
F4000000

Numb er	Data Item	Example	Start Address	Length	Description
1	Version number	0x82	0	1 byte	Fixed at 0x82
2	Control word	0x24	1	1 byte	Fixed at 0x24
3	Identifier	0x1A	2	1 byte	Fixed at 0x1A
4	DI status	0xFF	3	1 byte	See the bit mapping and values below
5	Fault status	0x00	4	1 byte	0x00: normal; 0x01: ferroelectric-memory fault
6	Battery voltage	0xAE	5	1 byte	Actual value = sample $\times$ 1.6 / 254 + 2 V
7	Port 1 count	0x0000000D	6	4 bytes	Unsigned 32-bit little-endian integer
8	Port 2 count	0x000000D1	10	4 bytes	Unsigned 32-bit little-endian integer
9	Port 3 count	0x00000052	14	4 bytes	Unsigned 32-bit little-endian integer
10	Port 4 count	0x00000052	18	4 bytes	Unsigned 32-bit little-endian integer
11	Port 5 count	0x0000001C	22	4 bytes	Unsigned 32-bit little-endian integer
12	Port 6 count	0x00000028	26	4 bytes	Unsigned 32-bit little-endian integer
13	Port 7 count	0x00000069	30	4 bytes	Unsigned 32-bit little-endian integer
14	Port 8 count	0x000000F4	34	4 bytes	Unsigned 32-bit little-endian integer

DI status bit mapping

Bit	DI input	0	1
bit0	DI1	Closed	Open
bit1	DI2	Closed	Open
bit2	DI3	Closed	Open
bit3	DI4	Closed	Open
bit4	DI5	Closed	Open
bit5	DI6	Closed	Open
bit6	DI7	Closed	Open
bit7	DI8	Closed	Open

ThinkLink reference model

Sign in to [ThinkLink](#), search for KS32 in the model menu, and add the device with the KS32 template.

Parameter Modification

Parameter changes follow *PTL-D01 ManThink Technology IoT Terminal Application Layer General Protocol V1.5*.

Configuration parameter address table

Number	Data Item	Default Value	Start Address	Length	Description
1	Reset	Write only	9	1 byte	Write 0x01
2	Upload interval	900	40	4 bytes	Unit: seconds
3	Trigger-uplink enable	1	90	1 byte	See the value table below
4	Firmware version	1	91	1 byte	Firmware version
5	Wake-up protection threshold	5	92–93	2 bytes	Little-endian, unit: seconds
6	Throttle protection window	5	94–95	2 bytes	Little-endian, unit: seconds
7	Minimum pulse width	0	96–97	2 bytes	Little-endian, unit: ms
8	Maximum pulse width	200	98–99	2 bytes	Little-endian, unit: ms
9	Base-counter verification value	0xFAFA	100	2 bytes	Must be written as 0xFAFA when changing a base counter
10	Channel 1 base counter	0	102	4 bytes	Metering base counter for channel 1
11	Channel 2 base counter	0	106	4 bytes	Metering base counter for channel 2
12	Channel 3 base counter	0	110	4 bytes	Metering base counter for channel 3
13	Channel 4 base counter	0	114	4 bytes	Metering base counter for channel 4
14	Channel 5 base counter	0	118	4 bytes	Metering base counter for channel 5
15	Channel 6 base counter	0	122	4 bytes	Metering base counter for channel 6

Trigger-uplink enable values

Value	Behavior when a DI input level changes
0x00	Increment the counter only; do not send an uplink packet
0x01	Send one uplink packet immediately when any DI input level changes

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