

CS-iTRF-02 Trash can overflow monitoring terminal

Operation Manual

(CS-iTRF-02-SS)

(REV:A)

Revision history

Date	Version	Content	Person
2018/6/12	A	First release	

	Prepared by	Review	Standardization	Approve
Sign				
Date				

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CS-iTRF-02 Trash can overflow monitoring terminal

Operation manual

1 Overview

1.1 Product introduction

The trash can overflow monitoring terminal is installed on the top of the trash can. The real-time monitoring and management of the state of the trash can is realized by periodically detecting the distance of the debris in the trash can from the surface of the probe.

The terminal products are divided into a single barrel trash overflow monitoring terminal (Image 1) and a double barrel trash overflow monitoring terminal (Image 2). They all provide two communication methods, LoRaWAN and NB-IoT. The terminal is powered by battery and has the characteristics of convenient installation, long battery life, high detection accuracy and stable operation.

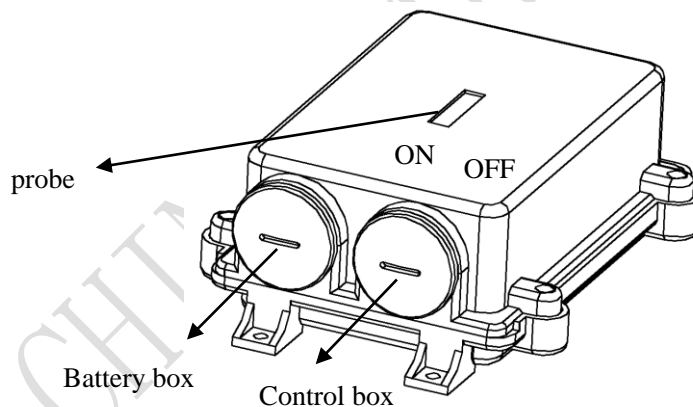


Image 1 Single barrel trash can overflow monitoring terminal

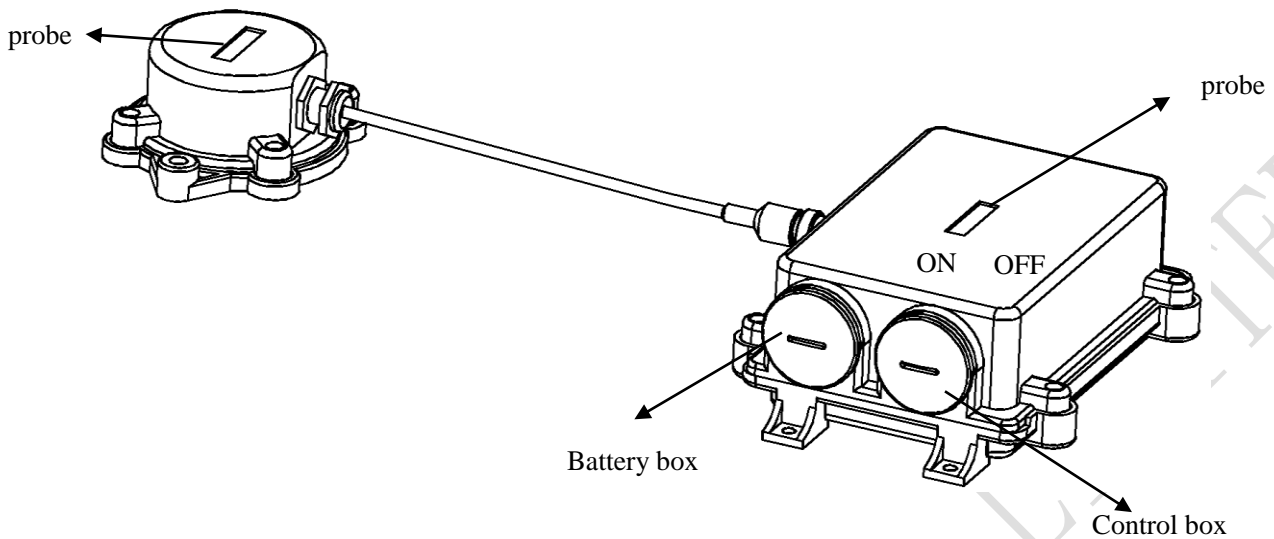


Image 2 Double barrel trash can overflow monitoring terminal

1.2 Working principle

The trash can overflow monitoring terminal is installed at the top of the trash can. The terminal measures the distance of the debris in the trash can from the terminal through the infrared sensor. Trigger an alarm when the distance is less than the set alarm value, the alarm information is sent to the monitoring center via the wireless network. The terminal supports intervals for setting the time for reporting timing, alarm time and alarm depth threshold. When the garbage bin depth does not reach the alarm value, the terminal sends the report message at a time interval; when the garbage bin depth reaches the alarm value, the terminal sends the report message immediately.

2 Technical parameters

2.1 Main parameters

The main technical indicators of the trash can overflow monitoring terminal are shown in Table 1.

Table 1 Main parameters

Name	Parameters	Remarks
Working frequency	433MHz/470MHz/868MHz/915MHz/923MHz	LoRaWAN
	B1/B3/B5/B8/B20/B28	NB-IoT
Type	Class A	LoRaWAN
Antenna port	FPC antenna	
Configuring serial port settings	9600,n,8,1	Open the product cover,you can use the configuration serial port for product configuration.
Working voltage	Li-ion battery ER26500M (3.6V)	
Battery lifespan	3-5 years	
Max current	<200mA	
Sleep current	<10.0μA	
Protection grade	IP65	
Lens Material	ABS Fire Retardant	
Working temperature	(-25~+85)°C	NB-IOT(Consumer SIM Card)
	(-40~+85)°C	LORAWAN/ NB-IOT(Industrial SIM Card)
Storage temperature	(-40~+85)°C	
Measuring distance	10cm~80cm	
Measuring accuracy	±3cm	10cm~60cm
	±10cm	60cm~80cm

2.2 Dimension

- a) The external dimensions of the single barrel trash can overflow monitoring terminal are shown in image3.

- b) The external dimensions of the double barrel trash can overflow monitoring terminal are shown in image 4.

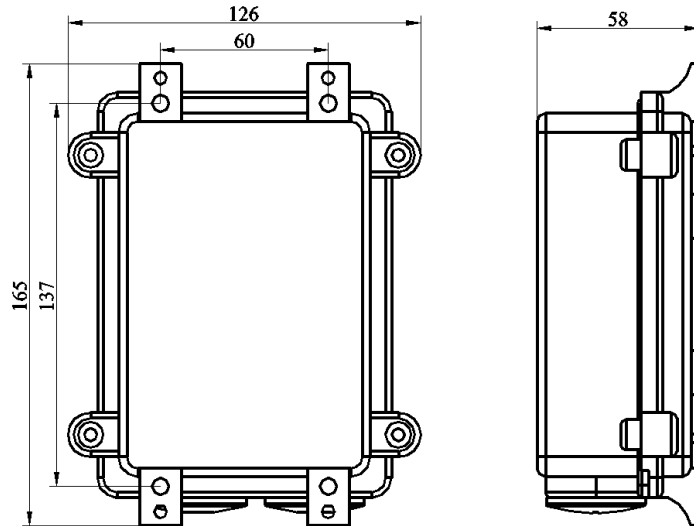


Image3 Dimensions of the single barrel trash can overflow monitoring terminal

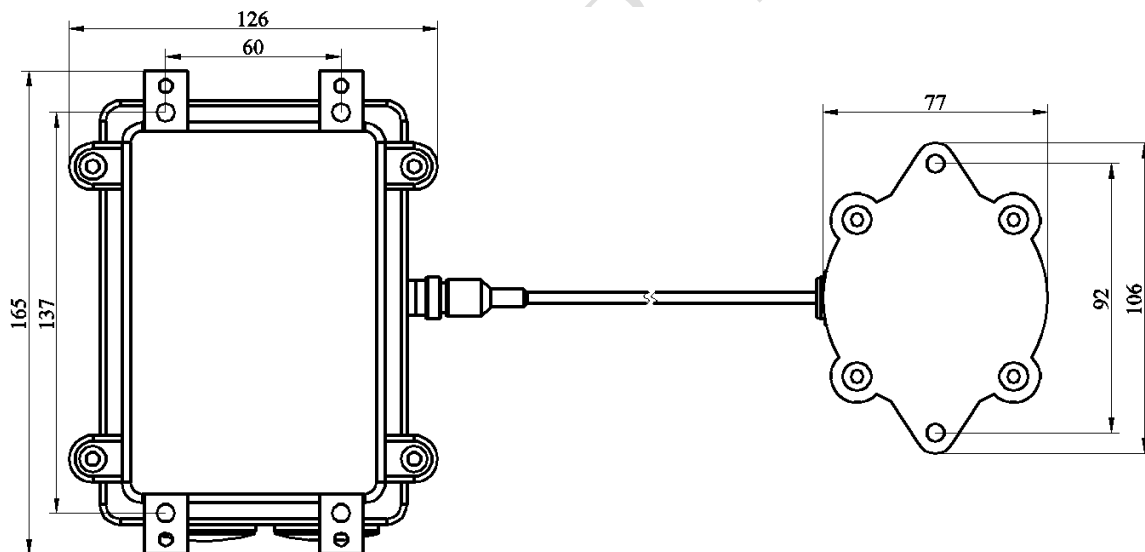


Image4 Dimensions of the double barrel trash can overflow monitoring terminal

3 Operation manual

3.1 SIM Card installation

For the NB-IOT Devices, users could complete the SIM Card installation by themselves. Users should firstly open the sensor cover and put inside the SIM Card, then tight the screw to ensure its water-proof performance.

3.2 Terminal power supply

Battery Model:ER26500M

Installation steps

- a) Open the Control box (as shown in Image 1, Image 2);
- b) toggle the handle of the toggle switch to ON;
- c) After the switch is turned on, cover the lid of the Control box. When closing the Control box cover, make sure that the sealing strip is loaded. If the seal is missing, it will affect the waterproof performance of the terminal.

3.3 Network Access Description

3.4 Network Access Description for LORAWAN

LORAWAN Model supports both OTAA and ABP. We could setting the Network Access codes as our default setting as per the users' required Configuration based on the provided data. On the other hand, the users also could setting the access codes independently with their own data.

We could provide the relative configuration documents help to complete the setting in case users want complete the network connection by their own.

The DEVEUI Code would be printed on the enclosure of the sensor for connection use.

3.4.1 Network Access Description for NB-IOT

The EMEI code will be printed on the shell of the sensor, could be used directly when accessing certain platforms. The device supports UDP & COAP communication protocols, and compatible with China Telecom Internet of Things Open Platform, we would provide codec plug in if need to connect the platform.

Communication protocol

The protocol could be provide from supplier.

4 Installation methods

4.1 Installation for single barrel trash can

A) Firstly, Align the lens of the sensor with the center of the trashcan liner, and then drill the hole at the corresponding position directly above the liner of the trash can to proceed the installation.

B) Drill four holes with the size $\Phi 4.5$ right above the trashcan(as show image 5), with the distance

137mm*60mm as image 6 show, the nut size is M4*10.

C)Make sure that the lens is aligned with the center of the trashcan liner, and keep the lens level.

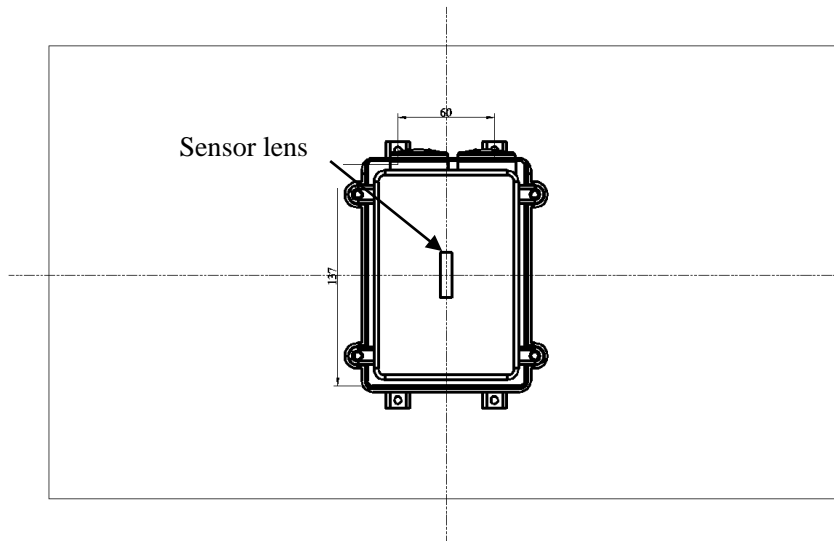


Image5 single barrel trash can overflow monitoring terminal installation diagram a)

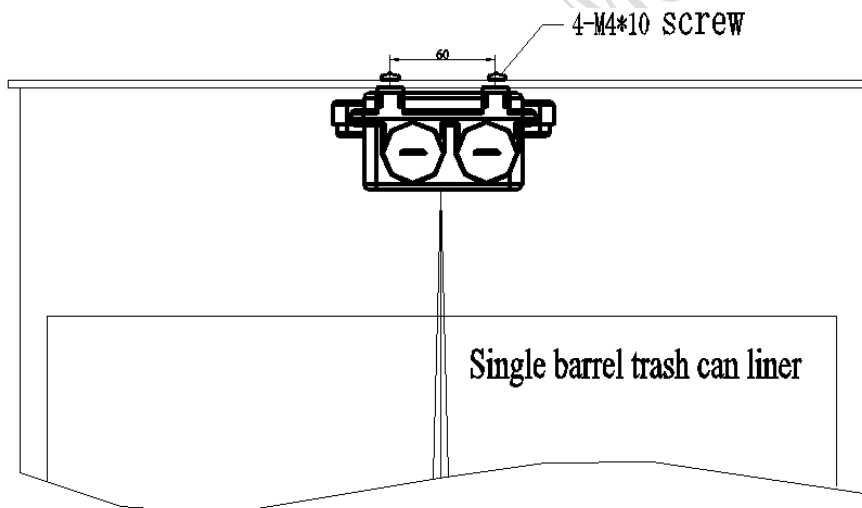


Image6 single barrel trash can overflow monitoring terminal installation diagram b)

4.2 Installation for double barrel trash cans

A)Align the lens of the two sensors with the center of the trashcan liner, put the control box at the central position above the can top, and then drill the holes at the corresponding position directly above the liner of the trash can to proceed the installation.

B)Drill six holes with the size $\Phi 4.5$ right above the trashcan as show image 7, the hole distance of the control box is 137mm*60mm ,the holes distance of sensor is 92mm,the nut size is M4*10.

C)Make sure that the lens is aligned with the center of the trashcan liner, and keep the lens level.

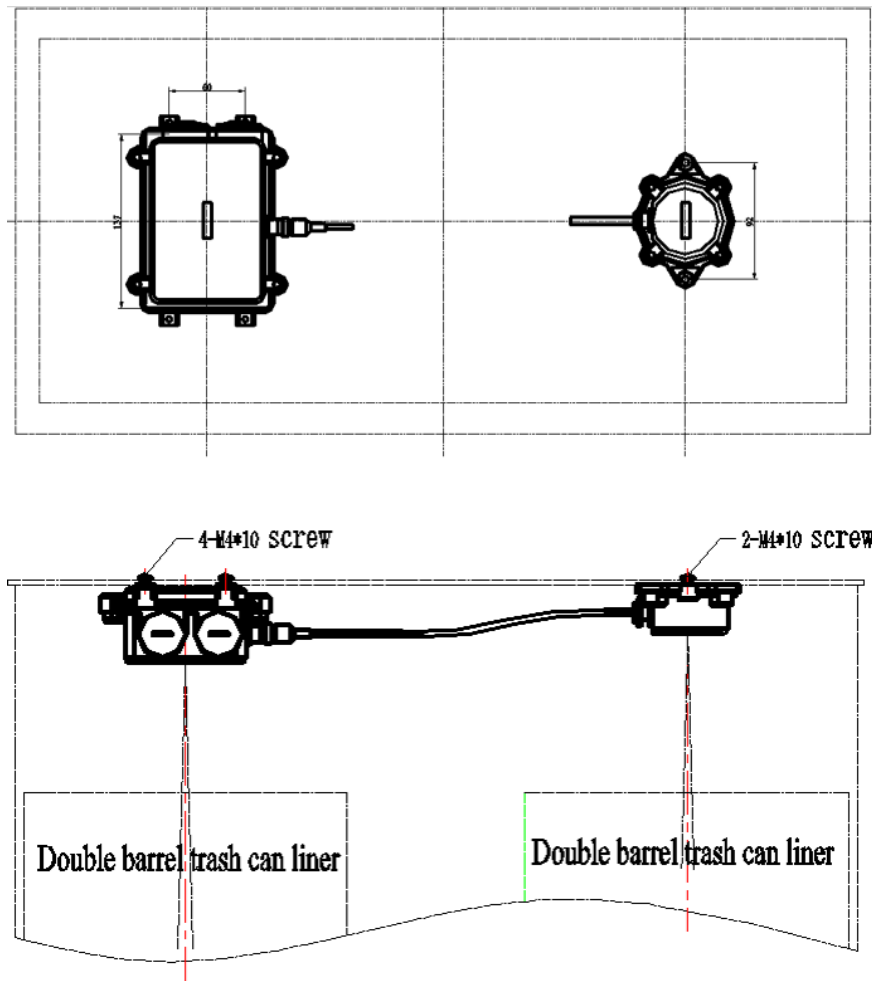


Image7 Double barrel trash can overflow monitoring terminal installation diagram

5 Model Selection Guide

Model No.				
CS-iTRF-02				
↓	Transfer Method			
	LW	LoRaWAN		
	NB	NB-IoT		
	↓	↓	Frequency	
			B1	NB-IOT transfer model
			B3	NB-IOT transfer model
			B5	NB-IOT transfer model
			B8	NB-IOT transfer model
			B20	NB-IOT transfer model
			G	B1/B3/ B5/ B8/B20 (NB-IOT transfer model)
			EU433	433MHz (LORAWAN transfer model)
			CN470	470MHz (LORAWAN transfer model)
			EU868	868MHz (LORAWAN transfer model)
			US915	915MHz (LORAWAN transfer model)
			AS923	923MHz (LORAWAN transfer model)
↓	↓	↓	type	
			S	Single Can
			D	Double Cans
CS-iTRF-02	NB	B8	S	

Examples:

CS-iTRF-02_NB_B8_S means NBIOT transfer model, B8 band , Single barrel trash can.

CS-iTRF-02_LW_868_D means LORAWAN transfer model, 868MHZ Frequency, double barrel trash can.

Note:

Our company can provide Industrial SIM Card and Consumer SIM Card. If the product is required to be equipped with SIM Card, please indicate the type of SIM Card when purchasing.

Please refer to Table 1 in Section 2.1 for the operating temperature range of Industrial SIM Card and Consumer SIM Card.

6 Attachment

- a) USB to UART-TTL adapter is used for self-configuration settings only.
- b) Battery model No is ER26500M. The sensor is prepared with battery as default setting. Extra need should be marked on the purchase contract.

Accessories can be selected according to Table 1.

Table#1 Accessories selection guide

Model	Description	Remarks
PL2303TA	USB to UART-TTL adapter. This is not necessary if the customer won't configure the sensor by themselves.	
ER26500M	Battery model ER26500+SPC550. If you need a battery, please specify when purchasing.	

7 Notice

7.1 Device net-connection failed

- a) Check if node module is registered in the server
- b) Check the battery voltage to exclude the low-voltage condition.
- c) Other problems please contact manufacturer for technical support

7.2 Cleaning and maintains

The cleaner should clean the surface of the sensor regularly to prevent dust and other stains from sticking to the lens surface and causing false alarms.

7.3 Detection inaccuracy

- a) Check whether the battery voltage is lower than 3.3V.
- b) Check whether the surface of probe is dirty.
- c) Check whether it is out of the measurement range(less than 10cm or greater than 80cm)

8 Statement

Chinastar reserves the right to modify the specifications and contents of this manual, and is subject to change without prior notice. Due to product updates, some details of this document may not match the product, please refer to the actual product.

Chinastar reverses the right to interpret this document.

XI'AN CHINASTAR M&C LIMITED