CS-iTLLS-05 Wireless Level Sensor

User's Manual

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Revision history

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CS-iTLLS-05 Wireless Level Sensor User's Manual

1 Overview

1.1 Product Introduction

The wireless level sensor is monitoring device for liquid level in water towers, ponds, water tanks, fuel tanks, underpasses and underpass tunnels. It can monitor the liquid level in real time and report the data to the management platform via the wireless network. When the liquid level is higher or lower than the alarm value or the safe range, it triggers an alarm. The management personnel can notice the alarm and deal with it at the first time, thereby facilitating maintenance and avoiding the loss of lives and property.

The wireless liquid level sensor powered by external electricity is suitable for a variety of applications.
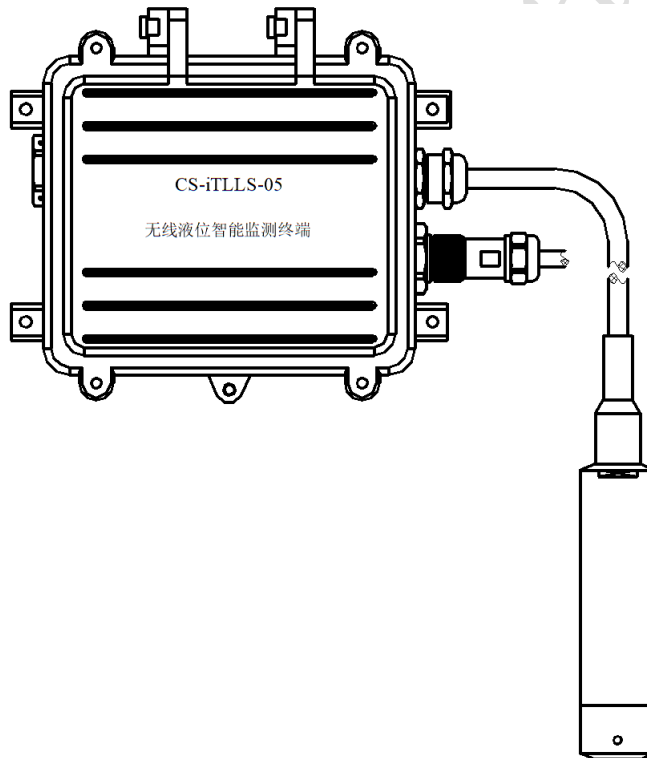
Figure#1 Wireless Level Sensor

1.2 Working principle

The wireless liquid level sensor uses a pressure sensor to periodically collect the current liquid level height. When the liquid level height is higher or lower than the alarm threshold (configurable), the alarm will be triggered and sent to the management platform through the

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wireless network.

    The level sampling time, the interval report time, the alarm reporting time, and the alarm threshold can be configured by the users.

2 Technical indicator

2.1 Main technical parameters

    The main technical indicators are shown in Table 1

<p align="center">Table#1 Main technical parameters</p>

Item	Technical Parameters	Remarks
Frequency	850MHz/900MHz/1800MHz/1900MHz	GSM/GPRS
	434MHz/470MHz/868MHz/915MHz	LoRaWAN
	B1/B3/B5/B8/B20	NB-IoT
Voltage	DC12V/ DC24V	External Power supply
	Lithium Battery：ER26500M（3.6V）	Built-in, non-rechargable
Battery Life	＞ 6 years	Standing-by
Sleeping Current	＜50μ A	Battery Powered
Maximum Current	＜200mA	GSM/GPRS @ DC12V supply
	＜30mA	LoRaWAN @ DC12V supply
	＜35mA	NB-IoT @ DC12V supply
Level Range	0 ~ 5m	Configurable
Accuracy	±0.5% F.S	
Protection level	IP65	
Housing Material	ABS	
Working Temperature	(-20～+70)℃	
Storage Temperature	(-40～+85)℃	

2.2 Dimensions

    The dimensions of the wireless liquid level sensor are shown in Figure 2.
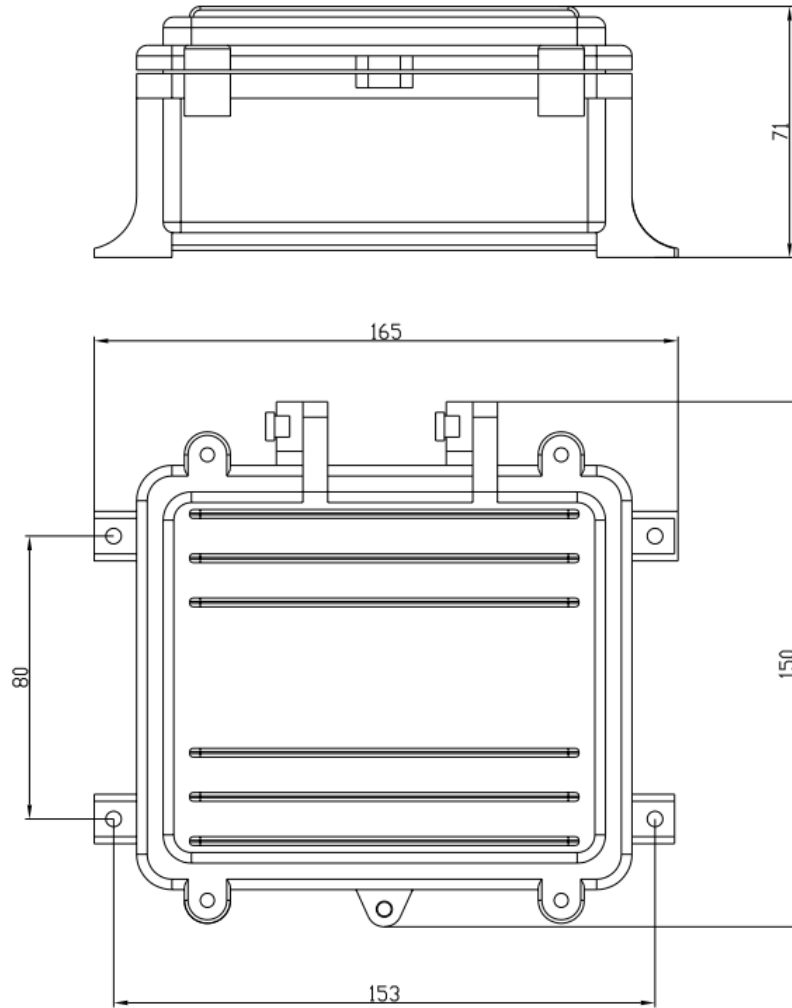
Figure#2 Dimension of housing (unit: mm)

3 Instructions for use

3.1 Installing the SIM Card

For GSM/GPRS and NB-IoT communication modes, users can install SIM cards by themselves. When installing the SIM, please open the product cover and put the SIM card into the SIM card holder. Before tightening the cover screws,confirm that the sealing strip is in right position to ensure the waterproof performance of the housing.

3.2 Installing the battery

Battery type：ER26500M

Installation steps:

a) Unscrew and take the outer cover off to open the battery case;

b）Turn the switch S1 to OFF;

c）Confirm that the battery polarity is correct and install the battery;

Figure#3 Inside view of the housing

d）Turn the toggle switch S1 to ON.

e）Before tightening the cover screws,confirm that the sealing strip is in right position to ensure the waterproof performance of the housing.

3.3 Networking Instructions

3.3.1 GPRS networking Instructions

The GPRS device uses TCP/IP protocol. Users can configure the IP and port number through the serial port. For the configuration details, please refer to related documents.

3.3.2 LoRaWAN Networking Instructions

LORAWAN device supports OTAA and ABP network access. The network access parameters, either the default parameters or the user's parameters, can be written into the device before delivery.

If the user chooses to configure the network access, please ask for the configuration documentation from the manufacturer.

The DEVEUI is printed on the housing.

3.3.3 NB-IoT Networking Instructions

The IMEI is printed on the housing. The device supports UDP and COAP communication protocols. It is compatible with China Telecom's IoT open platform, and can provide codec plug-ins for platform docking if needed.

3.4 Communication Protocol

Communication protocol is available from the manufacturer.

3.5 Working status indicator light

The wireless liquid level sensor has two indicator lights on the housing, in which the red one is the external power indicator, the yellow is the working status indicator. The working status indicator is shown in Table 2:

Table#1 Working status indicator

LED Indicator	Working Status
OFF	Module working mode: Turn-off mode Sleeping mode
100msON/800msOFF(Slow Flashing)	Networking failure
100msON/10sOFF(Quick Flashing)	Normal working mode

4 Installation method

The wireless liquid level sensor uses the submersible pressure sensor. In most applications, please just fix the housing by 4-M4 screws and put the pressure sensor into the liquid. To fix the pressure sensor in special applications, please refer to the following instructions.

Select a stainless steel tube φ30mm inner diameter with 2500mm length, and cut a groove at the bottom as shown in Figure 4 :
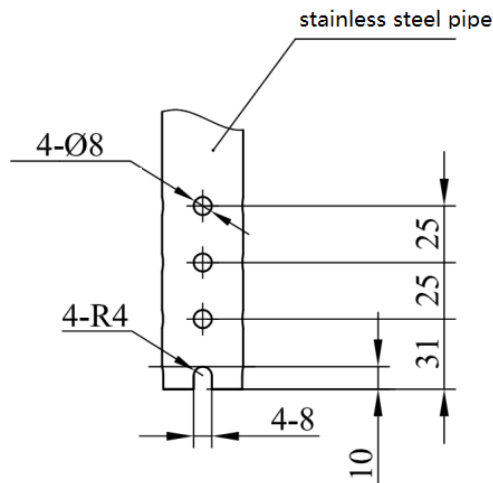
Figure#4 Stainless steel pipe

As shown in Figure 5, fix the stainless steel tube onto the vertical wall above the liquid level, and adjust the position of the cable holder to make the pressure sensor 50cm or more lower than the liquid level. Lock the cable holder into the fixed stainless steel pipe, and fix the housing on the wall or other appropriate position with 4-M4 screws.
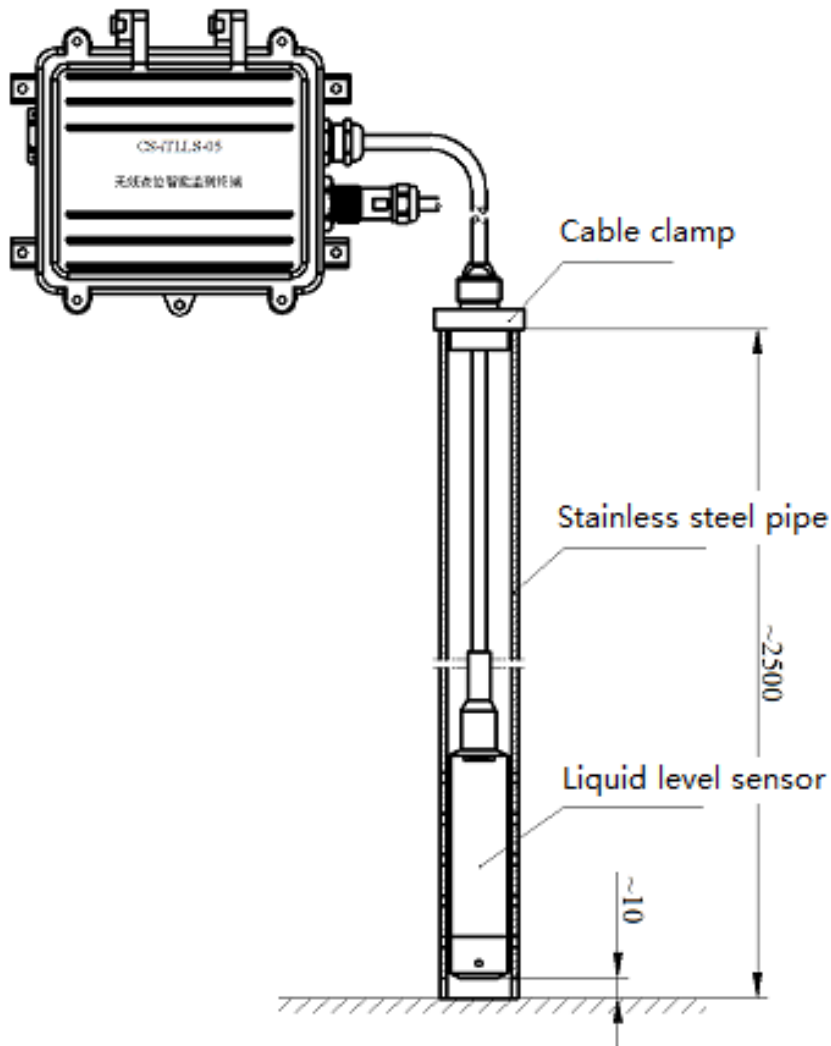
Figure#5 Installation Instructions

5 Selection Guide

Model				
CS-iTLLS-05				
	Communication Mode			
	GM	GSM (developing) Not Ready		
	GS	GPRS (developing) Not Ready		
	LW	LoRaWAN		
	NB	NB-IoT		
		Frequency		
		2G	GPRS Communication	
		4G	GPRS Communication	
		B1	NB-IOT Communication	
		B3	NB-IOT Communication	
		B5	NB-IOT Communication	
		B8	NB-IOT Communication	
		B20	NB-IOT Communication	
		BG	B1/B3/ B5/ B8/B20 (NB-IOT Communication)	
		EU434	434MHz (LORAWAN or LORA Communication)	
		CN470	470MHz (LORAWAN or LORA Communication)	
		EU868	868MHz (LORAWAN or LORA Communication)	
		US915	915MHz (LORAWAN or LORA Communication)	
		*	Please specify if any special frequency.	
			Type	
			Range of Measuring Range	Unit: mm
CS-iTLLS-05	NB	B8	5000	

Example:

CS-iTLLS-05_NB_B8_5000 : NB-IOT out，B8 Frequency,5m liquid deep.

CS-iTLLS-05_LW_CN470_5000 : LORAWAN out，470MHz Frequency，5m liquid deep.

6 Accessories

Item	Accessories	Selection Information
1	AC-DC(24V) Power adapter.	Optional, Water-proof, 24VDC.
2	USB to UART-TTL adapter	Optional.
3	Battery: ER26500M	Battery is excluded in the package. Please specify if it's needed.
4	Stainless Steel Tube	Optional.

7 Notes

7.1 If the networking fails, please take the following steps.

a) Please check the power supply;

b) Please make sure the SIM card fee has been paid;

c) Please check if the wireless module has been registered in the server.

d) Please turn on the power again to check if there is a reboot message.

e) Please contact with the manufacturer for any other questions.

7.2 Missed reporting

If any missed reports, please take the following steps.

a) Please ensure the SIM is functioning and properly installed.

b) Please ensure the network service is available and stable, no signal jams.

c) Other special circumstances, please consult to the manufacturer.

8 Statement

The company reserves the right to modify the specifications and contents of this manual, and is subject to change without prior notice. Due to product updates, if details of this document may not match the product, please refer to the real product. The right to interpret this document belongs to the company.