

Description

The dual channel leakage transmitter is a leakage detection device designed by our company specifically for monitoring waterless environments in important places, which facilitates real-time detection of leakage in the scene. When the leakage rope detects a leak, it can be immediately activated. By using RS485 communication to issue alarms and output switch signals through linked relays, the relays can autonomously choose the default on/off mode, making it easy to match different external devices! This product can be used as a standalone leak detection alarm unit or can be RS485 connected to other integrated acquisition hosts using the standard ModBus RTU protocol for convenient unified management. This device adopts a dual detection method, which can be equipped with dual leakage detection ropes or dual detection probes at the same time. It can also distinguish which channel is causing the alarm through the MODBUS-RTU protocol, and also has dual detection capabilities. The dual relay output corresponding to the leakage detection greatly saves users' deployment costs. This product can monitor dual channel leakage detection ropes up to 1000 meters in length. Suitable for real-time leak detection in important places such as computer room base stations, warehouses, libraries, museums, and industrial sites. It can also be used for air treatment equipment, refrigeration units, liquid containers, pump tanks, and other needs. Equipment for monitoring leaks.



Highlights

- RS485 communication, standard ModBus RTU protocol
- Equipped with switch output (normally open/normally closed)
- Intelligent one click mute (adjustable sound duration)
- Sensitivity adjustable (local button/remote RS485 adjustment)
- Using industrial grade components
- DC9-30V wide voltage input
- Rail mounted and wall mounted installation
- Can be paired with various leak detection ropes and leak detection probes
- Equipped with power supply, alarm, and fault indicator lights
- Built in isolation power supply, isolation chip, dual isolation of power signal, ensuring stable and long-lasting operation of the device
- Alarm methods: relay, sound alarm, RS485 alarm, TFT color screen display alarm
- The device is equipped with a TFT color screen, which can visually view the water leakage status and equipment status.
- The maximum length of the dual detection cable for this product can be extended to 1000 meters.
- Support local key settings for baud rate and address code, convenient and fast, no need to set software, greatly improving work efficiency
- Delay alarm can be set, and the duration can be freely set

Specifications

Power supply voltage	DC9-30V
Standby power consumption	≤50mA(DC24V)
Alarm power consumption	≤70mA(DC24V)
Product Power	Maximum power of 1.5W
Display mode	TFT display screen, indicator lights
Operating temperature of transmitter circuit	-20℃ ~ +80℃
Working humidity of transmitter circuit	5% RH~95% RH (non condensing)
Measuring medium	Liquid with conductivity
Output signal	RS485 communication/dual relay (normally open/ normally closed)
Communication protocol	RS485 output (Modbus RTU standard protocol)
Network Configuration	RS485 dual line network, baud rate optional, factory default is 9600, optional addresses are 001 to 252, factory default address 5

Measurement accuracy	100%
Sensitivity	Button adjustment/remote adjustment
Transmitter status	Normal/Alarm/Disconnected
Installation method	Standard 35DIN rail mounted or wall mounted installation
Housing dimensions	74 x 34 x 88mm
Relay carrying capacity	DC30V 3A /AC250V 3A AC contactors must be added to control 220V/380V, otherwise burning out the equipment is not covered by the warranty

Equipment selection

TEM					Company Code
	-WT				Leakage transmitter
		-51			Non positioning dual channel water immersion
			-2		Non positioning water leakage detection rope (conventional)
			-1		Non positioning water leakage detection rope (with shielding)
			-4D		Non positional oil leakage detection rope
			-2A		Non positioning acid and alkali resistant detection rope
			-8BP		Non positioning flat leakage detection tape
				(X)M	Required length/meter

TEM-SC-2(Non positioning water leakage detection cable - regular model)

Feature: The patented design of the spiral structure of the cable not only reduces environmental electromagnetic interference and lowers false alarm rates, but also greatly improves the strength and service life of the cable.

The induction line adopts a two core wire design and is suitable for any leakage detection system with conductive liquids. It can be matched with our company's non positioning series leakage controller and other domestic and foreign brands' non positioning leakage detection systems (regional detection systems).

The induction line is equipped with a unique waterproof structure plastic plug, which facilitates cascading and expanding the detection range. There are various length specifications to choose from to meet the needs of various detection ranges.

Appearance:



TEM-SC-1(Non positioning water leakage detection cable - shielded)

Feature: Compared to TEM-SC-2 (non positioning water leakage detection rope - conventional), SC-1 cable has added a nylon sheath design for the wire, which has anti false alarm, anti-static, anti-interference and other properties. For example, the direct water leakage detection rope can directly contact metal or the environment is relatively humid, which can be used in harsh and complex environmental detection places.

The cable has strong flexibility and can be installed in complex, curved pipelines and other on-site environments.

Appearance:



TEM-SC-4D(Non positional oil leakage detection cable)

Feature: Distributed sensing

The oil leakage detection sensing cable can provide distributed leak detection and localization for various scenarios that require oil leakage monitoring. There are multiple lengths of cables to choose from, and they can be provided as needed Possible wider coverage.

Advanced technology Hongsmat adopts radiation crosslinking and conductive polymer technology to give TEM-SC-4D sensing cable mechanical strength and chemical corrosion resistance. The core wire of the cable consists of two sensing wires, one alarm signal wire, and one continuous wire. The core is wrapped in a conductive polymer sheath and surrounded by a fluorinated polymer woven fabric. This sturdy structure enables the cable to work reliably in the most demanding environments. At room temperature of 25 °C, diesel testing takes 20-50 minutes, gasoline testing takes 5-15 minutes, and oil testing takes 10-15 hours.

Applicable scenarios: chemical industry, oil depots, energy storage, railways, ships, etc

Appearance:



TEM-SC-2A(Non positioning acid and alkali resistant detection cable)

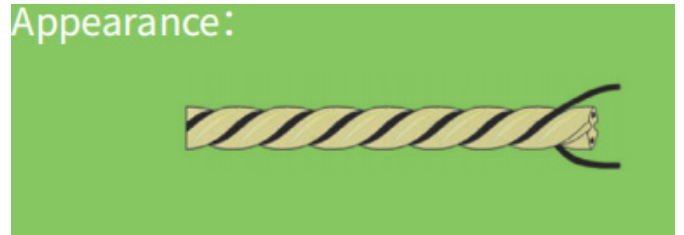
Feature:

The non positioning acid-base sensing line can detect acid-base liquids appearing at any position of the cable, and is suitable for various places where there is a risk of acid-base liquid leakage.

The induction line is made up of two lightweight high-density polyethylene wires pressed around a spiral axis. Compared with the parallel structure of the induction line, the spiral structure can reduce environmental electromagnetic interference and false alarm rate.

The cable has an automatic recovery function and can be reused.

Appearance:



TEM-SC-8BP(Non positioning flat leakage detection tape)

Feature:

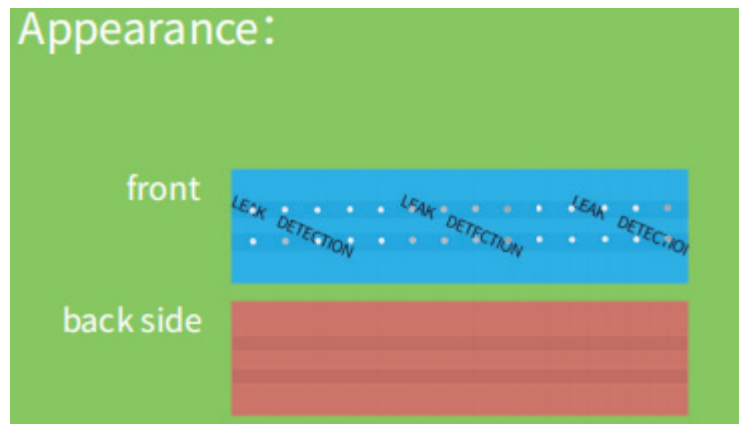
Product high sensitivity

The ultra-thin water leakage sensing cable has the characteristic of high sensitivity. It can quickly respond to liquid leakage situations and issue alarms in a very short period of time. This high sensitivity makes it sensitive. Cables should be able to detect and address potential safety hazards in a timely manner before they develop into serious problems. The product has strong anti-interference ability. The ultra-thin water leakage sensing cable adopts special materials and structural design, with strong anti-interference ability. It can effectively resist external factors such as environmental electromagnetic interference and electrostatic interference, ensuring the stability and reliability of the cable. The product is easy to install and maintain.

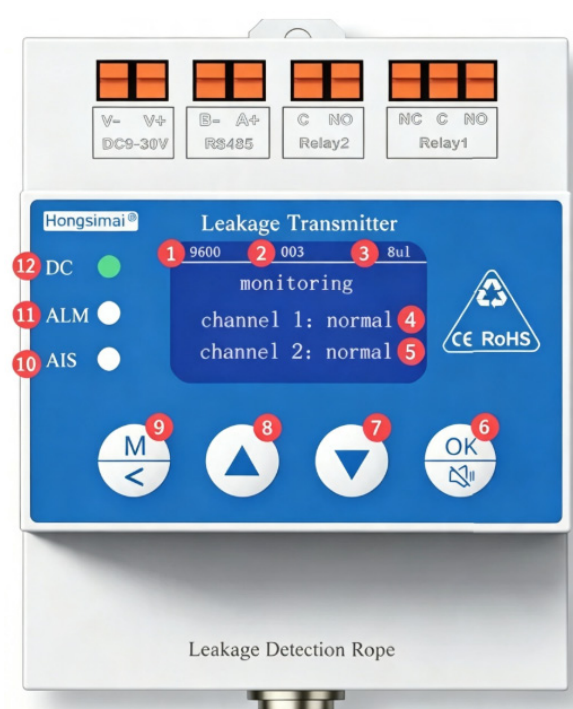
The installation and maintenance of ultra-thin water leakage sensing cables are very convenient. The back comes with 3M double-sided tape and features a connector design that is easy to disassemble and connect, making the installation process simpler and faster.

Applicable scenarios: Semiconductor enterprises, communication rooms, industrial plants, energy storage, industrial pipe galleries, underground garages, rail transit, etc

Appearance:



Equipment diagram+wiring instructions



Wiring instructions (identification)

Label 1	Instructions
9-30VDC V+	positive power terminal
9-30VDC V-	negative terminal of power supply
RS485 A+	RS485 signal line A+
RS485 B-	RS485 signal line B-

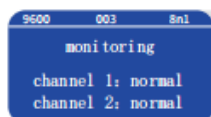
Label 1	Instructions
Relay 2 C	Public end COM
Relay 2 NO	Normally open NO
Relay 1 NC	Normally closed NC
Relay 1 C	Public end COM
Relay 1 NO	Normally open NO

1. Baud rate display: 2400, 4800, 9600, 14400, 19200, 38400, 115200;
2. Device address display: 001-252;
3. Inspection type display:
 - a) 8n1: 8-bit without verification;
 - b) 8o1: 8-bit odd parity check;
 - c) 8e1: 8-bit even parity check;
4. Check the status display of channel 1: normal, disconnected, alarm;
5. Check the status display of two channels: normal, disconnected, and alarm;
6. Confirm/Mute
 - a) The homepage displays the page, and when an alarm occurs, short press to eliminate the alarm sound;
 - b) On the parameter setting page, short press to enter the selected setting item;
7. Below (▼)
 - a) On the parameter settings page, short press to move down and select options;
 - b) When setting parameter items, short press to set parameters minus 1, long press to set parameters minus 10;
8. Above (▲)
 - a) On the parameter settings page, short press to move up the selection options;
 - b) When setting parameter items, short press to set the parameter and add 1, long press to add 10;
9. Menu/Return
 - a) Homepage display page, short press to enter parameter settings page; Parameter settings page, long press to return to the previous level;
10. The yellow light indicates a disconnected state;
11. The red light indicates a water immersion alarm status;
12. Green indicates the power indicator light;
13. Leakage detection rope (aviation joint)

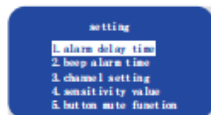
Description of Display Panel Icons

Screen display

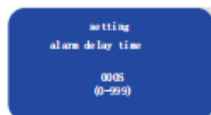
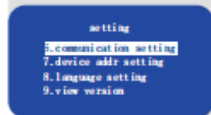
Functional Description



Main interface: Normal status



Short press (M) to enter the parameter setting interface

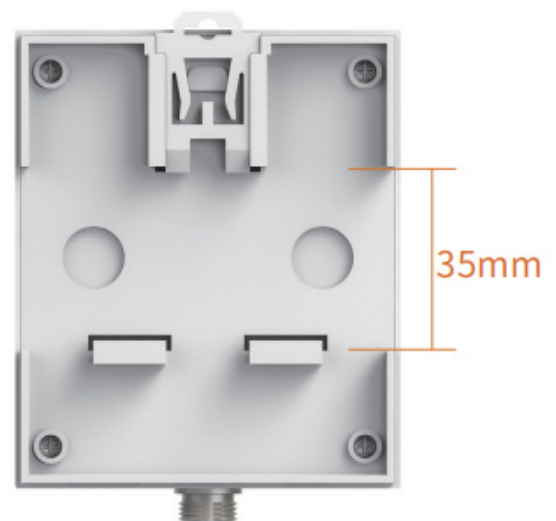
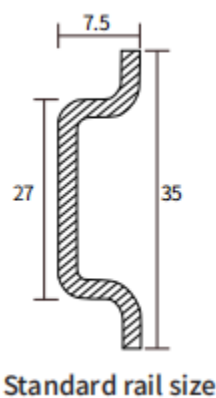


Short press (OK) to enter the interface for setting delay alarm time.
(When a leak is detected, how long will the alarm be delayed?)

setting buz alarm time 9995 (0-999)	Enter the setting buzzer alarm duration interface (duration of buzzer sound during a single alarm)
setting channel setting channel 1:on channel 2:on	Enter the detection channel setting interface (you can set the switch to detect only one or two channels with a single switch)
setting sensitivity value 94 (700-999)	Enter the sensitivity setting interface (different sensitivities can be set according to the range value)
setting communication setting 9600 8n1	Enter the communication settings interface (you can set the baud rate and parity check method)
setting device addr setting 003 (1-252)	Enter the device address code setting interface (address codes can be set to 001-252)
setting language setting English	Enter the Chinese English conversion settings interface (supports English version)

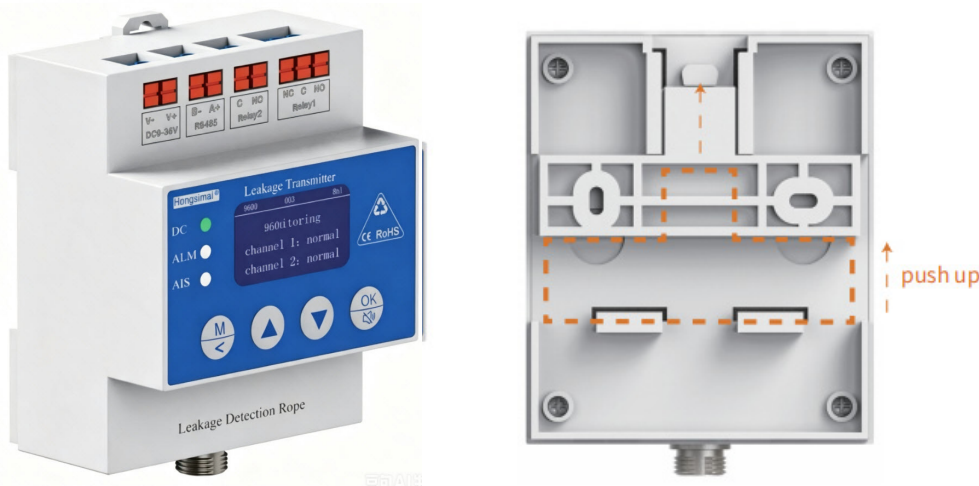
Equipment installation

Method 1: Installation diagram of 35min guide rail



Method 2: Wall mounted installation diagram

1. First, fix the accessories to the wall with screws
2. Then hang the device onto the accessory



Installation precautions

8. Installation precautions

8.1 Installation of transmitter

8.1.1 The installation site should be a location that is easy to conduct regular inspections and maintenance, and away from sources of vibration, harmful gases, and strong induction.

8.1.2 Transmitters are generally installed in monitoring boxes, walls, and monitoring rooms under static electricity floors, and are connected through lead wires and induction wires.

The installation position of the transmitter is generally determined based on the following conditions:

- ① Power supply - there is a power supply pipe passing through, which facilitates the connection of power to the transmitter
- ② Query - The installation location is conspicuous or appropriate, making it convenient for users to query
- ③ Transmission - to the upper computer software or alarm device within their respective effective transmission distances to ensure signal stability.

8.2. The sensing characteristics of water leakage detection cables are largely related to the on-site environment.

In order to operate normally for a long time, the following requirements must be met:

8.2.1 The decoration can only be carried out after the floor is cleaned and hygienic.

8.2.2 The leakage rope should be tightly attached to the installation plane to ensure maximum contact with the leaked liquid, and fixed with the special accessories provided in the plan. The termination end should be connected to complete the entire detection circuit.

8.2.3 During the laying process of the leaking rope, avoid contact with metal objects, keep it dry and clean, and avoid being covered by cement and dust.

8.2.4 The four core wires of the lead out line face the controller in one section, and the waterproof joint (female head) faces the direction of the detection area.

8.2.5 The waterproof joint (male head) of the leaking rope should face the direction of the lead out wire (female head).

During the docking process of the leakage rope, pay attention to the order of the male and female joint pins, align them with the hole position, gently insert them, and then lock the screw ring clockwise.

8.2.7 The area where the leaking rope is laid should avoid static electricity interference.

8.2.8 Leakage ropes are not allowed to overlap or come into contact in the laying area.

played distance alarm positioning will be incorrect

8.2.9 Leakage ropes should not be soaked in dirty water or other chemicals for a long time

When installing the leakage rope on the ceiling, it is necessary to consider using an accumulation tank to prevent damage to the equipment below from leakage during the time from alarm to handling the danger.

When the leaking rope is fixed with a metal fixing seat, the entire fixing seat can be coated with insulating paint, wrapped with insulating tape or other insulating materials to block direct contact between the metal fixing seat and the induction line.

8.2.12 The length setting of the leaking rope should match the actual length, otherwise the distance alarm positioning will be incorrect

ModBus RTU communication protocol

Register Address

Register address	PLC or configuration address	Content	Operation	Definition Description
00 00H	40001(decimal)	Alarm status	Read-only	When the following bit is 1 Bit0: Monitoring 1 channel alarm Bit1: Monitor 2 alarm channels Bit2: Monitor 1 line disconnection Bit3: Monitoring 2 line disconnections
00 01H	40002(decimal)	Delay alarm time	Read and write	0-999(Unit: seconds)
00 02H	40003(decimal)	Beep alarm time	Read and write	0-999(Unit: seconds)
00 03H	40004(decimal)	Enable detection of the number of channels	Read and write	When the following bit is 1 Bit0: Monitor the activation of channel 1 Bit1: Monitoring 2 channels enabled
00 04H	40005(decimal)	Sensitivity	Read and write	700-999
00 05H	40006(decimal)	One click mute function	Read and write	0: One click mute function turned off 1: One click mute function enabled
00 06H	40007(decimal)	Device address	Read and write	001-252
00 07H	40008(decimal)	Baud rate	Read and write	1: 2400 5: 19200 2: 4800 6: 38400 3: 9600 7: 152000 4: 14400
00 08H	40009(decimal)	Verification type	Read and write	0: No verification 1: odd parity 2: even parity

Use command to query

1, Query the alarm status of device address 0x01 (all codes below are in hexadecimal)
query frame

Address code	Function code	Register address	Read quantity	Low bit of verification code	High bit of verification code
01	03	00 00	00 01	84	0A

Response frame: Monitoring 1 channel is normal, monitoring 2 channels are disconnected

Address code	Function code	Data volume	Data	Low bit of verification code	High bit of verification code
01	03	02	00 08	B9	82

2, Query the delayed alarm time for device address 0x01 (all codes below are in hexadecimal)
query frame

Address code	Function code	Register address	Read quantity	Low bit of verification code	High bit of verification code
01	03	00 01	00 01	D5	CA

Response frame: Delay alarm time is 0

Address code	Function code	Data volume	Data	Low bit of verification code	High bit of verification code
01	03	02	00 00	B8	44

3, Query the beep alarm time for device address 0x01 (all codes below are in hexadecimal)
query frame

Address code	Function code	Register address	Read quantity	Low bit of verification code	High bit of verification code
01	03	00 02	00 01	24	4E

Response frame: Delay alarm time is 1

Address code	Function code	Data volume	Data	Low bit of verification code	High bit of verification code
01	03	02	00 01	79	84

4, Query the number of detection channels with device address 0x01 (all codes below are in hexadecimal)
query frame

Address code	Function code	Register address	Read quantity	Low bit of verification code	High bit of verification code
01	03	00 03	00 01	75	8E

Response frame: Both detection channels 1 and 2 are enabled

Address code	Function code	Data volume	Data	Low bit of verification code	High bit of verification code
01	03	02	00 03	F8	45

5, Query the sensitivity of device address 0x01 (all codes below are in hexadecimal)
query frame

Address code	Function code	Register address	Read quantity	Low bit of verification code	High bit of verification code
01	03	00 04	00 01	C4	4F

Response frame: Sensitivity of 800

Address code	Function code	Data volume	Data	Low bit of verification code	High bit of verification code
01	03	02	03 20	B9	6C

6, Query the one click mute function for device address 0x01 (all codes below are in hexadecimal)
query frame

Address code	Function code	Register address	Read quantity	Low bit of verification code	High bit of verification code
01	03	00 05	00 01	94	0B

Response frame: One click mute function enabled

Address code	Function code	Data volume	Data	Low bit of verification code	High bit of verification code
01	03	02	00 01	79	84

7. Retrieve the device address with 0x01 (all codes below are in hexadecimal)

query frame

Address code	Function code	Register address	Read quantity	Low bit of verification code	High bit of verification code
01	03	00 06	00 01	64	0B

Response frame: Device address is 1

Address code	Function code	Data volume	Data	Low bit of verification code	High bit of verification code
01	03	02	00 01	79	84

8. Query the baud rate of device address 0x01 (all codes below are in hexadecimal)

query frame

Address code	Function code	Register address	Read quantity	Low bit of verification code	High bit of verification code
01	03	00 07	00 01	35	CB

Response frame: baud rate of 9600

Address code	Function code	Data volume	Data	Low bit of verification code	High bit of verification code
01	03	02	00 03	F8	45

9. Query the verification type for device address 0x01 (all codes below are in hexadecimal)

query frame

Address code	Function code	Register address	Read quantity	Low bit of verification code	High bit of verification code
01	03	00 08	00 01	05	C8

Response frame: Check type is no check

Address code	Function code	Data volume	Data	Low bit of verification code	High bit of verification code
01	03	02	00 00	B8	44

9.3 Setting function (if the response frame is the same as the setting frame, it means the setting is successful)

1. Set the delay alarm time for device address 0x01 to 3 (all codes below are in hexadecimal)

Set frame

Address code	Function code	Register address	Write data	Low bit of verification code	High bit of verification code
01	06	00 01	00 03	98	0B

2. Set the buzzer alarm time for device address 0x01 to 5 (all codes below are in hexadecimal)

Set frame

Address code	Function code	Register address	Write data	Low bit of verification code	High bit of verification code
01	06	00 02	00 05	E8	09

3. Set the number of detection channels for device address 0x01 to 1 closed and 2 open (all codes below are in hexadecimal)

Set frame

Address code	Function code	Register address	Write data	Low bit of verification code	High bit of verification code
01	06	00 03	00 02	F8	0B

4. Set the sensitivity of the device address to 0x01 to 800 (all codes below are in hexadecimal)

Set frame

Address code	Function code	Register address	Write data	Low bit of verification code	High bit of verification code
01	06	00 04	03 20	C9	23

5. Enable the one click mute function with device address 0x01 (all codes below are in hexadecimal)

Set frame

Address code	Function code	Register address	Write data	Low bit of verification code	High bit of verification code
01	06	00 05	00 01	58	0B

6. Set the device address to 0x01 and the device address to 3 (all codes below are in hexadecimal)

Set frame

Address code	Function code	Register address	Write data	Low bit of verification code	High bit of verification code
01	06	00 06	00 03	29	CA

7. Set the baud rate for device address 0x01 to 9600 (all codes below are in hexadecimal)

Set frame

Address code	Function code	Register address	Write data	Low bit of verification code	High bit of verification code
01	06	00 07	00 03	78	0A

8. Set the parity type for device address 0x01 to odd parity (all codes below are in hexadecimal)

Set frame

Address code	Function code	Register address	Write data	Low bit of verification code	High bit of verification code
01	06	00 08	00 01	C9	C8

System diagram display

RS485 Simplified Topology Diagram

