Product information

Cyw19 absolute pressure input liquid level transmitter

Cyw19 absolute pressure input liquid level transmitter adopts absolute pressure measurement process inside, and the internal cavity is completely isolated from the outside. It avoids the transmitter damage caused by internal condensation and cavity filling caused by the field use environment. It is suitable for harsh liquid level measurement sites.
Range: 0 ~ 0.2 ~ 2MPa (a)
Output: 4 ~ 20mA, RS485
Power supply: 9 ~ 36VDC
In addition, we can also provide customized products that meet the application needs of customers in a short time according to their applications.

Typical applications

▲Urban sewage well survey
▲Liquid level measurement of underground pipe network
▲Water level measurement of vessels and storage systems
▲water cycle

Instructions

This input liquid level transmitter is designed to continuously measure the change of liquid level. The operator is responsible for checking whether the equipment is suitable for the working conditions of the application. If you have any questions, please contact our sales department to ensure the correct application of the transmitter. The company will not bear any responsibility for the impact caused by improper model selection.
The user must ensure that the measured medium is compatible with the contact material of the transmitter.
⚠ Warning!
Improper use will lead to danger!

Icon description

⚠ Danger! - A dangerous situation that could result in death or serious injury.
⚠ Warning! - A potentially hazardous situation that could result in death or serious injury.
! Be careful! - A potentially hazardous situation that may result in minor injury.
☞ Reminder! - A potentially hazardous situation that may cause personal injury.
⚠ Tips! - Tips and information to ensure trouble free operation of the equipment.
User
⚠ Warning! This information is applicable to technicians.

Product features

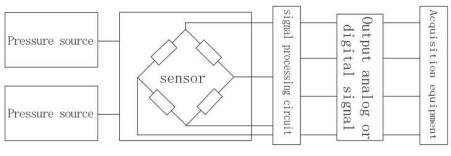
a) Diaphragm isolation technology using diffused silicon pressure sensor
b) Cable connection, direct use, easy installation
c) The amplifier circuit adopts integrated chip and wide voltage supply
d) Anti blocking and anti scaling
e) Lightning protection, frequency cut-off interference design, strong anti-interference ability
f) Wiring reverse and overvoltage protection, current limiting protection
g) Good stability, anti condensation, anti liquid filling

Product overview

This liquid level transmitter adopts OEM pressure sensor with stainless steel isolation diaphragm as the signal measuring element, with internal sealing treatment and external laser welding process, so that it has the function of anti condensation in the cavity. After computer automatic test, the zero point and sensitivity temperature compensation in a wide temperature range are carried out with laser resistance adjustment process. It has anti-interference, small temperature drift, high stability and high measurement accuracy. It is an ideal liquid level measuring instrument in the field of industrial automation.

Working principle

The sensor spreads a Wheatstone bridge on the monocrystalline silicon chip, and the pressure of the measured medium (gas or liquid) changes the resistance value of the bridge wall (piezoresistive effect), generating a differential voltage signal. This signal is transformed into a standard analog signal (as shown in the figure below) or a digital signal through a special amplifier.



Technical parameter

Measuring medium: liquid or gas (compatible with contact materials)
range ＜ 10KPA (non conductor, non corrosive, non explosive gas, humidity ≤ 90%rh, no condensation).
Pressure range: -100kpa ~ 0 ~ 100MPa (see range selection table for details)
Pressure mode: gauge pressure, absolute pressure and negative pressure
Medium temperature: -40 ~ 85 ℃
Stability: ± 0.1% fs/ year
Temperature drift: ± 0.01%fs/ ℃ (within the temperature compensation range)
± 0.05%fs/ ℃ (outside the temperature compensation range)
Protection grade: IP66
Display form: LCD
Durability: $10X10^{6}$cycles (cycles from lower range to upper range)
Overall weight: ≈ 5.5kg

Protocol parameters

Network system: NB IOT
Upload information: data, battery power, signal strength
Sending interval: 15min ~ 24h/ time (2h/ time by default)
Sending time: ≈ 12s/ time
Transmission power consumption: ≈ 0.5ma/ time
Acquisition frequency: 1 ~ 30 times in the transmission interval (30 times by default)
Acquisition time: ≈ 1s/ time
Acquisition power consumption: ≈ 0.002ma/ time

Battery parameters

Working power supply: 3.6V 19ah
Battery life: depends on acquisition and transmission frequency (ignoring environmental and time factors)
Annual SLEEP power consumption is 0.7ah
For example:the transmission interval is 1H,the acquisition frequency is 30 times, and the battery life is≤3.3 years
For example:the transmission interval is 2h,the acquisition frequency is 30 times, and the battery life is≤6 years

Accuracy class

Range	Standard configuration (temperature compensation -10 ~ 70 ℃)	Optional (temperature compensation -40 ~ 80 ℃)
Range≥100kPa	0.25%FS	0.1%FS
10kPa≤Range＜100kPa	0.5%FS	0.25%FS
Range＜10kPa	1%FS	0.5%FS

Note: reference conditions: temperature 15 ~ 25 ℃, atmospheric pressure 86 ~ 106kpa, humidity 45 ~ 75%RH.

environment condition

Ambient temperature: -40 ~ 85 ℃
Ambient humidity: 0% ~ 95%rh (no condensation and condensation)

Environment condition

Ambient temperature: -40 ~ 85 ℃

Electromagnetic compatibility(EMC)

Serial number	Test items	Basic standards	Test conditions	Performance level
1	Radiated interference (enclosure)	GB/T 9254/CISPR22	30MHz-1000MHz	qualified
2	Conducted interference (DC power port)	GB/T 9254/CISPR22	0.15MHz-30MHz	qualified
3	Electrostatic discharge (ESD)	GB/T 17626.2/IEC61000-4-2	4kV(触点), 8kV (空气)	B(Note 2)
4	Radio frequency electromagnetic field immunity	GB/T 17626.3/IEC61000-4-3	10V/m(80MHz-1GHz)	A(Note 1)
5	Power frequency magnetic field immunity	GB/T 17626.8/IEC61000-4-8	30A/m	A(Note 1)
6	Electrical fast transient burst immunity	GB/T 17626.4/IEC61000-4-4	2kV(5/50ns, 100kHz)	B(Note 2)
7	Surge immunity	GB/T 17626.5/IEC61000-4-5	500V(Between lines) 1kV(Between ground wires)(1.2us/50us)	B(Note 2)
8	Immunity to conducted interference induced by RF field	GB/T 17626.6/IEC61000-4-6	3V(150kHz-80MHz)	A(Note 1)

Note 1: when the performance grade is a, the performance is normal within the limits of the technical specifications.
Note 2: when the performance level is level B, the function or performance is temporarily reduced or lost, but can be recovered by itself, and the actual operation status, storage and data will not change.

Overall material

Diaphragm: 316L stainless steel (contact with the measured medium)

Shell: 304 stainless steel (contact with the measured medium)

Seal: nitrile rubber (contact with the measured medium)

Cable: Polyurethane Φ 5 shielded cable (contact with the measured medium)

Mechanical stability

Seismic performance: 10g (20... 2000Hz) in line with iec60068-2-6 standard

Impact resistance: 500g/ms, complying with iec60068-2-27 standard

Electrical protection

Short circuit protection: permanent

Reverse pole protection: no damage, but it does not work

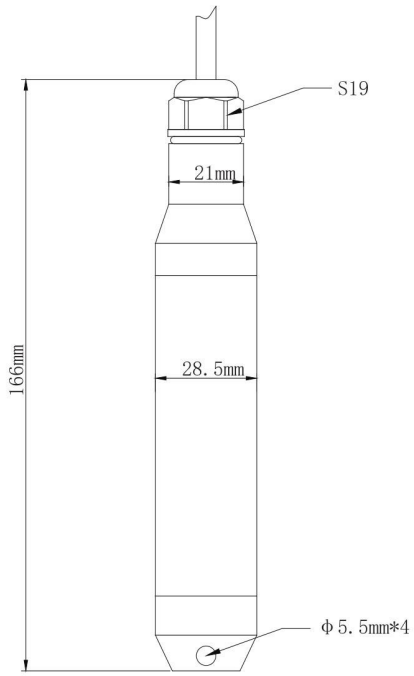
Insulation resistance: ≥ 100m Ω, 500VDC

Insulation strength: 500VAC

Output limit

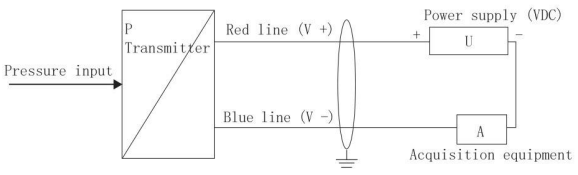
	Output minimum	Maximum output
4-20mA	4mA	20mA

Shape and dimension

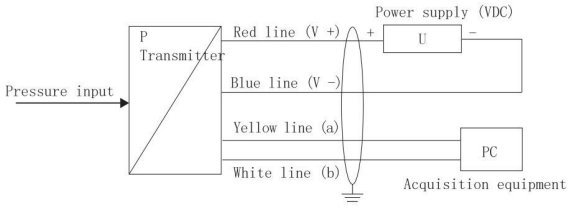


Wiring diagram

Current output wiring diagram (two-wire system)



RS485 (digital signal) output wiring diagram (four wire system)



Represents shielded wire, and all marked grounding points must be effectively grounded.

Protocol description (limited to RS485 signal output, the address is 01 by default, and the data is hexadecimal)

Basic technical parameters of transmitter

This protocol complies with Modbus communication protocol and adopts the centralized RTU mode in Modbus protocol RS485 half duplex working mode

a) Output signal: RS485 (the distance can be up to 1000m. 32 channels at most)
b) Standard Modbus RTU protocol (03 function reads data, 06 function writes setting data)
c) Data format: 9600, N, 8,1 (9600bps, no verification, 8 data bits, 1 stop bit)
d) Measuring range: 0-x (MPa, kPa...)
e) Resolution: 0.05%
f) Output data: 0... 2000 (customized for other ranges)
g) Response frequency: ≤ 5Hz
h) Response speed: ≥ 10m

Modbus RTU read data 03 command description

	Device address	Function code	Data address	Number of read data	16crc code (low front high rear)
Host command	Address	03	00 00	CN	CRC0 CRC1
	Device address	Function code	Data byte	Sensor data	16crc code (low front high rear)
Host command	Address	03	02*CN	S_HN ,S_LN	CRC0 CRC1

Communication examples

The address of 0-0.6mpa sensor communication equipment is set to 01, that is [address]=01 (address range 01-254);
At this time, crc0=84, crc1=0a.
Then the data sent and returned are as follows:
Send: 01 03 00 00 01 840a
Return: 010302 AC B9 59
02ac is hexadecimal, converted to decimal 684;
Data output: 0-2000 corresponds to 0-0.6mpa, so the current pressure is p=0.6*684/2000=0.2052mpa
Calculation formula: (upper range lower range) ÷ 2000 * current data + lower range = current pressure value

Query example

Reading the current device address can only be completed independently by a single offline sensor
Send FF 03 00 0f 00 01 A1 D7
Return to FF 030200015050
Then: the address of this device is 01 (hexadecimal)

Detailed description of Modbus RTU write 06 command

	Device address	Function code	Data address	new address	16crc code (low front high rear)
Host command	Address	06	00 0F	H L	CRC0 CRC1
	Device address	Function code	Data address	new address	16crc code (low front high rear)
Host command	Address	06	00 0F	H L	CRC0 CRC1

Modification example

If the 01 address is changed to 09 address:
Send 01 06 00 0f 00 09 79 CF return 01 06 00 0f 00 09 79 CF
Then the original address 01 is changed to 09 successfully. The modified address can be modified offline or online. After completion, it can work directly without power on again.

Parameter selection

CYW	Liquid level transmitter
Code	Transmitter type
19	Absolute pressure input type

Code	Measuring range
32	0～0.2MPa(A)
33	0～0.5MPa(A)
34	0～1MPa (A)
85	0～1.5MPa(A)
35	0～2MPa (A)
67	customized

Code	Cable length
BX	(BX) x: is the cable length

Code	signal output
A1	4-20mA Two wire system
RS	RS485 communication interface (standard Modbus RTU protocol) four wire system
DZ	customized

Code	Accuracy class
S	0.1%FS (customized)
B	0.25%FS (general)

Code	Supply voltage
G5	9-36VDC
DZ	customized

Code	customized
D	Other customization requirements
No	routine

CYW	19	32	B7	A1	B	G5	Example of model selection

For example: cyw19-32-b7-a1-b-g5 (absolute pressure input liquid level transmitter, range 0.2MPa (a), cable 7m, output 4-20mA, accuracy 0.25, power supply 9-36vdc).

Ordering instructions

⚠ Warning!

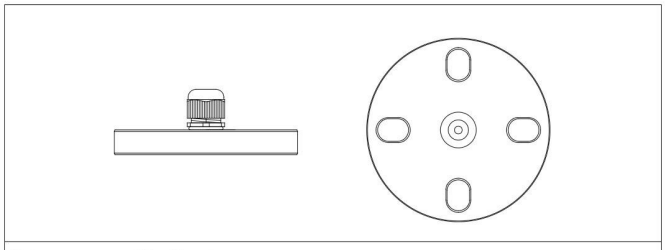
When ordering the transmitter, users should pay attention to selecting the appropriate specification according to the temperature of the medium and environmental conditions.

ordering information

Model / range / cable length / output signal / accuracy level / power supply voltage / Customization

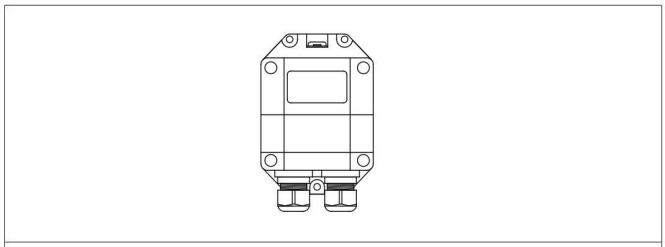
Accessories (to be purchased separately)

Cable fixing flange-fl03



Main purpose: cable fixation

Conversion box Zfh



Main uses: offsetting atmospheric pressure, converting output

Please scan the code for more information
Go to the official website to get