

Product information

Ccyl1 micro differential pressure pressure transmitter



Ccyl1 micro differential pressure transmitter can meet the general field requirements. Air damping is installed inside, which can effectively prevent the spike caused by the unstable fluctuation of pulse air pressure and improve the comprehensive stability of the sensor.

Range: - 10 ~ 0 ~ 10KPA

Output: 4 ~ 20mA, RS485, 0 ~ 5VDC, 0 ~ 10VDC, 1 ~ 5VDC

Power supply: 9 ~ 36VDC, 12 ~ 36VDC

Accuracy: 0.5% FS, 1% FS

In addition, we can also provide customized products to meet the application needs of customers in a short time according to their applications.

Typical application

- ▲ Industrial equipment
- ▲ HVAC
- ▲ Planting and breeding
- ▲ Building automation
- ▲ Environmental protection systemII

Instructions

Ccyl1 micro differential pressure transmitter is suitable for differential pressure measurement of dry gas. 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 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 could result in minor injury.

👉 Reminder! - A potentially hazardous situation that could result in personal injury.

⚠ Tips! - Tips and information to ensure trouble free operation of the equipment.

User

⚠ Warning! This information is applicable to technicia

Product features

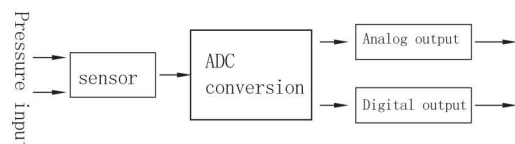
- a) Integrated chip, wide voltage power supply
- b) Frequency cut-off design, strong anti-interference ability and lightning protection
- c) Current limiting, voltage limiting and reverse connection protection (current limiting output)
- d) High accuracy and good stability
- e) Human correction of zero point

Product overview

Ccyl1 micro differential pressure transmitter adopts piezoresistive pressure sensor chip, and uses the film resistance on the substrate to conduct zero point correction, zero point temperature compensation and sensitivity compensation. The high-performance and stable silicon chip package makes it high in static pressure resistance, anti-interference, stability and reliability. Therefore, the product can be applied to the differential pressure field combination of various gas measurements. It is an ideal micro differential pressure measuring instrument in the field of industrial automation.

working principle

The differential pressure sensor is a piezoresistive pressure sensor chip, which combines the pressure sensor and the signal conditioning ASIC in one package, so that it has the characteristics of high stability and small error. The signal corresponding to the measuring range is converted into a standard analog signal or a digital signal through a special amplifier.



Technical parameter

Measuring medium: gas (compatible with contact material and humidity < 90rh%, no condensation)

Measuring range: - 10 ~ 0 ~ 10KPA

Pressure type: differential pressure

Temperature compensation: - 10 ~ 60 °C

Medium temperature: - 40 ~ 100 °C

On time: 400ms

Accuracy grade: 0.5% FS (range ≥ 1kPa) 1% FS (range < 1kPa)

Response frequency: analog signal output ≤ 20Hz, digital signal output ≤ 5Hz

Stability performance: ± 0.3% FS / year (range ≥ 1kPa)
± 0.5% FS / year (range < 1kPa)

Temperature drift: ± 0.03% FS / °C (within the temperature compensation range)

Durability: 10x10 times (cycle times from lower range to upper range)

Overall weight: ≈ 200g

Protection grade: IP54

Output power supply

output \ power supply	9~36VDC	12~36VDC
4~20mA	√	√
RS485	√	√
0~10VDC	×	√
0~5VDC	√	×
1~5VDC	√	×

Maximum power

output \ power	≤0.02Us(W)	≤0.015Us(W)
4~20mA	√	
RS485		√
0~10VDC		√
0~5VDC		√
1~5VDC		√

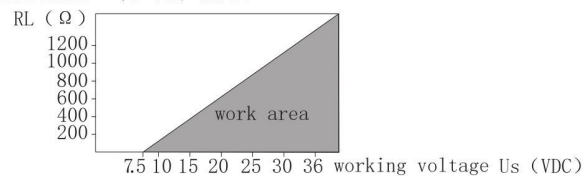
Note: US = supply voltage.

Load characteristics

Voltage type: ≥10kΩ

Current type: Load ≤ {(us-7.5) ÷ 0.02} Ω (US = supply voltage)

Load resistance (4~20) mA DC



Environment condition

Ambient temperature: -40~85°C
 Ambient humidity: 0% ~ 95% RH (no condensation and condensation)

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.

Static pressure and blasting

Range	Maximum static pressure at single end	Single end burst pressure
±1kPa	±10kPa	20kPa
±5kPa	±33kPa	41kPa
±10kPa	±82kPa	103kPa

⚠ Tips! Note: maximum static pressure at single end, maximum pressure at single end;
 ⚠ DANGER! Note: single end burst pressure, damage or conduction.

Overall material

Shell: LY12 aluminum
 Diaphragm: silicon chip (contact with the measured medium)
 Impulse pipe: silica gel (contact with the measured medium)
 Φ 6 quick connector: copper nickel plating (contact with the measured medium)
 Φ 8 pagoda mouth: LY12 aluminum (contact with the measured medium)
 Seal: nitrile rubber

Mechanical stability

Seismic performance: 10g (20.. 2000Hz) in accordance with iec60068-2-6 standard
 Impact resistance: 500g / 1ms, conforming to iec60068-2-27 standard

Electrical protection

Short circuit protection: permanent

Reverse pole protection: no damage, but does not work

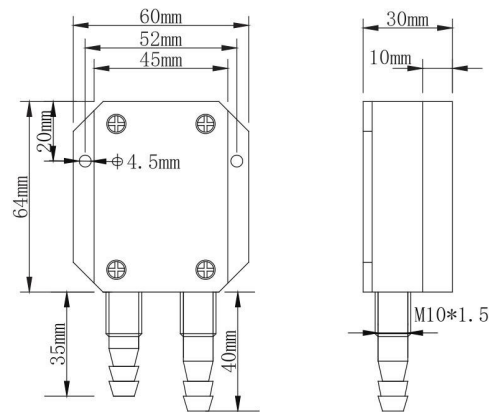
Insulation resistance: $\geq 100\text{m } \Omega$, 500VDC

Insulation strength: 500VAC

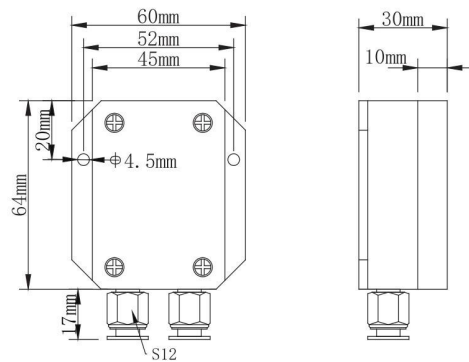
Output limit

	Output minimum	Maximum output
4-20mA	4mA	20mA
RS485	0	2000
0~5VDC	0VDC	5VDC
0~10VDC	0VDC	10VDC
1~5VDC	1VDC	5VDC

Outline and dimension



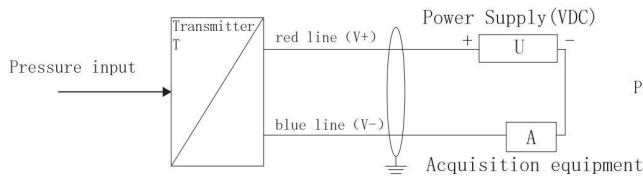
Φ (8) interface dimension drawing of pagoda mouth



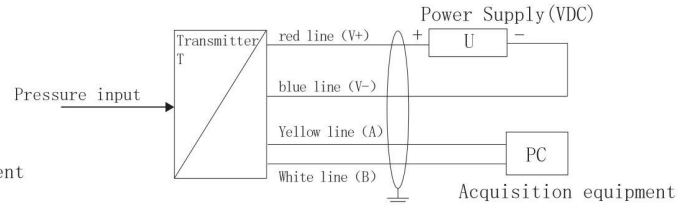
Φ (6) dimension drawing of quick interface

Wiring diagram

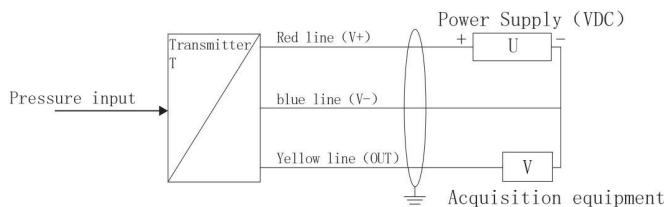
Current output wiring diagram (two-wire system)





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



Voltage output wiring diagram (three wire system)



 Represents shielded wire, and all marked grounding points must be effectively grounded. It is recommended to select shielded twisted pair signal cable for the best effect. In order to avoid grounding loop, the shielding layer adopts single end grounding, insulated floating grounding at the end of pressure transmitter and grounding at the end of control cabinet.

 The transmitter shell is grounded by default, so the field equipment shall be effectively grounded. If the field equipment cannot be grounded, the marked grounding point shall 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 (distance up to 1000m). Up to 32 channels)
- 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 (kPa, Pa...)
- e) Resolution: 0.05%
- f) Output data: 0... 2000 (customized for other ranges)
- g) Response frequency: $\leq 5\text{Hz}$
- h) Response speed: $\geq 10\text{ms}$

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)
Return from machine	Address	03	02*CN	S_HN , S_LN	CRC0 CRC1

Communication examples

0-1kpa sensor communication equipment address is set to 01, i.e. [address] = 01 (address range 01-254); At this time, crc0 = 84, crc1 = 0A. Then the sending and returning data are as follows:

send out: 01 03 00 00 00 01 84 0A

return: 01 03 02 02 AC B9 59

02ac is hexadecimal and converted to decimal 684;

Data output: 0-2000 corresponds to 0-1kpa, so the current differential pressure is $p = 1 * 684 / 2000 = 0.342\text{kpa}$

Calculation formula: $(\text{upper range} - \text{lower range}) \div 2000 * \text{current data} + \text{lower range} = \text{current pressure value}$

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 03 02 00 01 50 50

Then: the device address 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)
Return from machine	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 to 01 06 00 0f 00 09 79 CF

Then the original address 01 is successfully changed to 09. The modified address can be modified offline or online. After completion, it can work directly without power on again.

Parameter selection

CCY	Differential pressure transmitter						
	Code	Transmitter type					
	11	Micro differential pressure type (default 1m connecting wire)					
		Code	Range				
		69	0~100Pa				
		70	0~200Pa				
		71	0~500Pa				
		01	0~1kPa				
		02	0~2kPa				
		03	0~5kPa				
		04	0~10kPa				
		72	±100Pa				
		73	±200Pa				
		74	±500Pa				
		36	±1kPa				
		37	±2kPa				
		38	±5kPa				
		39	±10kPa				
		67	customized				
		Code	signal output				
		A1	4-20mA two-wire system				
		RS	RS485 communication interface, standard Modbus communication protocol, four wire system				
		V5	0 ~ 5VDC three wire system				
		V10	0 ~ 10VDC three wire system				
		V4	1 ~ 5VDC three wire system				
		DZ	customized				
		Code	Connection mode:				
		B	Φ 8 pagoda nozzle (8mm diameter hose can be connected)				
		K	Φ 6 quick connector (6mm diameter hose can be connected)				
		44	customized				
		Code	Accuracy class				
		C	0.5% FS (range ≥ 1kPa)				
		D	1% FS (range < 1kPa)				
		Code	Supply voltage				
		G	12-36VDC				
		G5	9-36VDC				
		DZ	customized				
		Code	customized				
		D	Other customization requirements				
		No	routine				
CCY	11	69	A1	B	D	G	Model selection examples

For example: ccyl1-69-a1-b-d-g (ccyl1 micro differential pressure transmitter, differential pressure range 0-100pa, output 4-20mA, connection Φ 8 pagoda mouth, accuracy level 1, power supply 12-36vdc)

Ordering instructions

⚠ Warning!

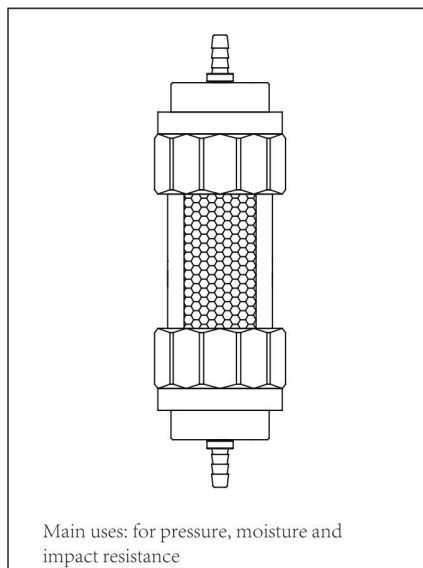
When ordering the transmitter, users should pay attention to selecting appropriate specifications according to the pressure, temperature and environmental conditions of the medium.

ordering information

Model / range / output signal / supply voltage / Customization

Accessories (to be purchased separately)

GL filter



For more information, please scan the code
Go to the official website for