

# An instruction manual

## CYZ65 Intelligent Hygienic Pressure Transmitter



### Typical application

- ▲ medical technology
- ▲ Pharmaceutical industry
- ▲ Food and beverage industry



## 1. Overview

### 1.1 Safety guidance

This operational manual contains important information on how to use the transmitter correctly. The installation personnel of the transmitter should read this manual carefully before operation. In case of further explanation or special questions, which cannot be addressed in this manual, please contact our company for assistance on necessary information.

Please pay attention to the warning signs on the manual! Do not use crystallized or solidified measure medium, to avoid damaging of the sensor.

The operator must strictly follow the safety instructions and user's manual during operation. Furthermore, the operator should comply with the occupational safety rules, the accident prevention guidelines, the national standards and engineering specifications as well.

Please keep this manual in a safe place near the transmitter for easy access.

The copyright of this operational manual is protected. This version of operational manual was edited according to the functions of corresponding products, the product functions and operation procedures are described as complete as possible. If there is any error, please don't hesitate to contact us. The company is not responsible, in regard of any fault description or its possible consequences.

- The right to modify the technical parameters is retained -

### 1.2 Icon description

⚠ **Danger!** - Hazard that may result in death or serious injury.

⚠ **Warning!** - Potential hazard that may result in death or serious injury.

⚠ **Cautious!** - Potential hazard that may cause minor injury.

! **Reminder!** - Potential hazard that may result in personal injury.

🔧 **Tips!** - Tips and information for smooth operation of the equipment.

### 1.3 Manual user

Warning! This manual is suitable for technicians.

### 1.4 Limit of liability

⚠ The company will not be held responsible nor provide any warranty service, in case of transmitter damages caused by failure to follow the instruction manual, inappropriate use, self-modification or destruction.

### 1.5 Instructions for use

The pressure transmitter CYZ65 series is suitable for pressure measurement in liquid or gas and process industries. Operators are responsible for checking whether the equipment is suitable for operating conditions. If you have any questions, please contact our sales department to ensure the correct application of the transmitter. The Company shall not bear any responsibility for the influence caused by improper selection.

The purchased model is suitable for certain gas or liquid medium as described in the measurement samples. The user must ensure the compatibility of contact media and transmitter.

⚠ **Warning!**  
Inappropriate use may lead to danger!

## 2. Product overview

CYZ65 series pressure transmitters adopt OEM pressure sensor with stainless steel diaphragm as signal measuring element. After automatic testing by computer, temperature compensation of zero point and sensitivity in wide temperature range is carried out by laser resistance adjustment technology. The amplification circuit is located in the stainless steel case, which converts the sensor signal into standard output signal, giving full play to the technical advantages of the sensor, so that the CYZ65 series pressure transmitter has excellent performance. It is easy to clean, anti-interference, small temperature drift, high stability, and has high measurement accuracy. It is an ideal pressure measuring instrument in pharmaceutical, food and other industries.

## 3. Working principle

The pressure sensors diffuses a wheatstone electric bridge on mono-crystalline silicon, and stressed by the measuring media (liquid or gas) to cause change of the bridge wall resistance value (piezoresistive effect). In result, a differential voltage signal will be generated, which converts the signal corresponding to the range into standard analog signal (as shown in Figure 3-1) or digital signal.

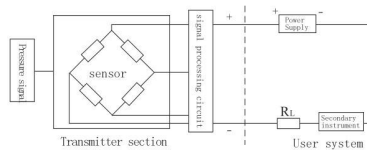


Figure 3-1

## 4. Product Features

- Using diaphragm isolation technology
- Integrated chip, wide range of supplied voltage
- Easy installation, Easy to clean up, Intrinsically safe explosion-proof HART protocol
- Frequency cutoff design, strong anti-interference ability, lightning protection
- Current limiting, voltage limiting, reverse connection protection (limiting current output)
- High accuracy, good stability, fast response

## 5. Technical parameters

Measuring media :	Liquid or gas (compatible with contact media)
Overall material:	Diaphragm 316L stainless (contacted) Process connection 304 stainless (contacted) Casing Die cast aluminum
Rating Range :	0~100kPa~10MPa (See Range Selection Table for details) The adjustment range must be greater than one tenth of the rated range.
Pressure mode :	Gauge pressure
Output signal :	4~20mA HART communication
Supply voltage :	12~36VDC Normal 15~36VDC Normal (with display)
Accuracy class :	0.1%FS (range ≥ 100kPa customized) 0.25%FS (range ≥ 100kPa customized) 0.5%FS (10kPa ≤ range < 100kPa default) Device display accuracy class of 0.5, LCD Display
Working conditions :	contact media temperature -40~130℃ Ambient temperature -40~85℃ Ambient humidity 0%~95%RH (no condensation, no condensing)
Temperature compensation :	-10~70℃ (accuracy of 0.25% FS, 0.5% FS, 1% FS) -40~80℃ (accuracy of 0.1% FS)
Seismic performance :	10g (20...2000Hz)
Overload capacity :	200% full scale
Response frequency :	analog signal output ≤ 500Hz
Stability :	± 0.1% FS/year
Temperature drift :	± 0.01% FS/℃ (within the temperature compensate range)
Overall weight :	≈ 1500g
Protection level :	IP65
Note: The above protection level refers to the level	
Power range :	Current type ≤ 0.02Us (W) Note: Us = Supplied voltage
Load characteristics :	Current type load ≤ { (Us-7.5) ÷ 0.02 (Us = supply voltage) } Ω

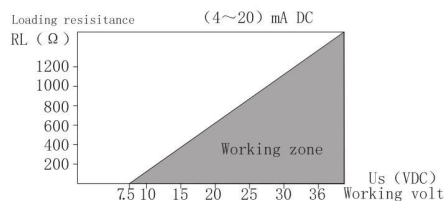


Figure 5-1

## 6. Dimensions

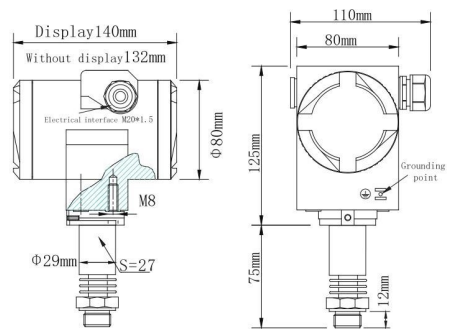


Figure 6-1 Threaded connection

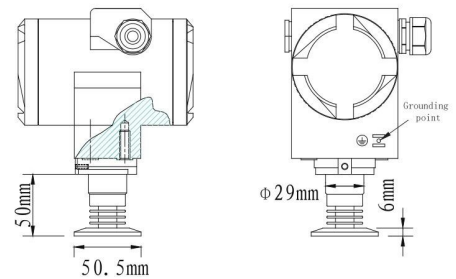


Figure 6-2 Tri-Clamp

## 7. Installation and precautions

### ⚠ Warning!

- Installed without pressure nor power supply.

### ⚠ Warning!

- Transmitter should be installed by technician who read and understood this operational manual.

### ⚠ Danger!

- The transmitter uses diffused silicon oil-filled core, which may cause explosions if in-properly handled. Do not measure oxygen for sake of he safety.

### ⚠ Danger!

- This product is not explosion-proof, using in explosive area may cause serious injury and significant loss.

### ⚠ Warning!

- It is prohibited to measure media that is not compatible with the transmitter.

- Please check if the package is in good order when receiving the product, confirm the transmitter model and specifications.

- To avoid the damage of diaphragm, please unpack the package and protective cap before starting the equipment. Please keep the protective cap of the product. When the equipment is dismantled, please put on a protective cap for the pressure interface immediately. Be extra careful when handling unprotected diaphragms, because unprotected diaphragms are very sensitive and easily damaged.

- Handle with care, do not throw, do not force during installation of transmitter.

- Vertical installation is applicable when pressure is below 0.03MPa (except for gas), to avoid affecting the measurement accuracy. Others can be installed at any angle. In case the interface size does not match, it is allowed to make connecting adaptor.

- The pressure interface should be installed upward (for gas discharge).

- If the pressure interface is upward or lateral when the transmitter is installed, it is necessary to ensure that there is no liquid flowing in the equipment shell, otherwise moisture and dirt will block the air outlet near the electrical connection, or even cause equipment failure. It is necessary to ensure that there is no dust and dirt residue on the edge of threaded connection of electrical connection.

- It is recommended to install at minor temperature gradient variations zone.

- It is recommended to adopt lightning protection and over voltage protection facility between power distribution box or power supply and the transmitter, for the fact that there will be danger if the transmitter is installed in a harsh area.

- While measuring steam or other high temperature media, please ensure the media temperature is not higher than the maximum work temperature of transmitter. If necessary, it is required to install a cooling device.

- Install a pressure cutoff valve between the transmitter and media, to inspect and avoid interference with measurement accuracy caused by pressure port clogging.

- During the installation, use a wrench to tighten the transmitter from the hexagonal nut at the bottom, to avoid wire disconnection caused by direct rotation of the upper part of the device.

- This product is a light current device, it must be laid separately from high current cables during wiring, and comply with relevant national wiring standard (GB/T50312-2016).

- Ensure that the power supply voltage meets the requirement of the transmitter. And make sure the maximum voltage of the pressure source is within the range of the transmitter.

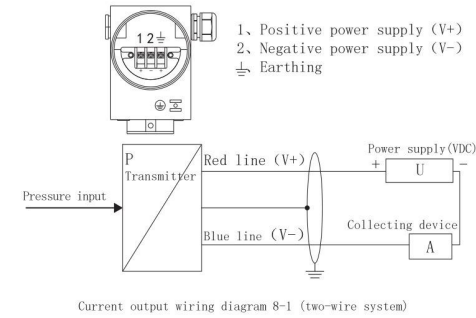
- Increase pressure and reduce pressure very slowly during the pressure measurement, to avoid instantaneous high voltage or low voltage.

### ⚠ Warning!

- Make sure the pressure source and power are disconnected before disassembling the transmitter, to avoid accidents in result of media ejection.

- Do not disassemble during usage, and do not touch the diaphragm, to avoid damage of the product.

8.wiring installation



- Representing the shielded wire, all marked grounding points must be effectively grounded.
- The transmitter casing defaults to be ground, all field devices are required to be effectively grounded.
- Only the current output has reverse connection protection (no damage but does not work), current limiting and voltage limiting protection. Reversed connection of all other output signals can cause damage to the transmitter.
- Users should ensure that the diameter of the cable used is within the allowable range of the jacket. In addition, it is necessary to ensure that the cable is firmly and seamless installed in the jacket. The clamping diameter of the crimping cap is 3-9 mm.
- Be sure to tighten the thread lock mother to ensure the protection level.

9. Instrument display instructions

- 9.1.Change LCD Display**  
When normal display, hold down the S key for a long time to switch between current, main variable and percentage, and let go when needed; at this time, it may show jump every 3 seconds, and when unnecessary variable appears, repeat the above operation once.
- 9.2.Change unit**  
Normal display, long press Z key, 5 0 on the screen flicker in turn. Wait for the rightmost flicker, let go, press S key, change the number to "00002", press M key once, LCD left lower corner shows the number "2".  
Every time the S key is pressed, the unit in the lower right corner is switched to another one until the required unit appears and saved by pressing the M key.
- 9.3.Change range**  
Normal display, long press Z key, 5 digits 0 on the screen flicker in turn. Wait for the rightmost flicker, let go, press S key, change the number to "00003", press M key once, LCD left lower corner shows the number "3".  
Press S key once, the left arrow flickers, press Z key to shift, press S key to change the number. When flickering at the rightmost position, press the Z key, the decimal point is all bright, and press S to select the decimal point position. Press M key after input, save data and automatically switch to the upper limit of range. (Note: If you do not need to adjust the lower limit, you can directly press the M key to skip after entering "3" and directly enter "4". At this time, the lower left corner of the liquid crystal shows "4", repeat the above operation, change the number and press the M key to save.

9.4.Modified damping

Normal display, long press Z key, screen 5 digits 0 flicker in turn. When the right-most flicker is released, press the S key, change the number to "00005", press the M key once, and the number "5" is displayed in the lower left corner of the liquid crystal.  
Press S key once, the left arrow flickers, press Z key to shift, press S key to change the number. When flickering at the rightmost position, press the Z key, the decimal point is all bright, and press S to select the decimal point position. After input, press M key, save data and switch to menu 6 automatically.

9.5.Zero-setting of principal variable

Normal display, long press Z key, screen 5 digits 0 flicker in turn. When the rightmost flickers, release your hand, press the S key, change the number to "00006", press the M key once, and the number "6" is displayed in the lower left corner of the liquid crystal.  
Press S key, the lower right corner shows the switch between "NO" and "YES". When "YES" is displayed, press M key to complete zero adjustment.  
Shortcut key: Press the M + Z key at the same time and hold it for 5 seconds when it is displayed normally. The lower left corner of LCD shows the number "6", the other operations are the same as above.

9.6.Output function

Normal display, long press Z key, screen 5 digits 0 flicker in turn. When the rightmost flickers, release your hand, press S key, change the number to "00008", press M key once, and the number "8" is displayed in the lower left corner of LCD.  
Press the S key, and the lower right corner shows the switch between "LIN Linearity" and "SQRT Current Prescription". Press the M key when the required function appears.

9.7.Calibration upper and lower limits

Normal display, long press Z key, screen 5 digits 0 flicker in turn. When the right-most flicker is released, press the S key, change the number to "00009", press the M key once, and the number "9" is displayed in the lower left corner of the liquid crystal.  
Press the S key once, the left arrow flickers, enters the calibration, adds the corresponding pressure, presses the Z key to shift, presses the S key to change the number, when the rightmost flickers, presses the Z key, the decimal point is fully bright, presses the S to select the decimal point position, presses the M key after the input, saves the data and switches to the upper limit of the calibration range.  
At this time, the lower left corner of the liquid crystal shows "10", add the corresponding pressure, repeat the above operation, input the pressure value and press M key to save.  
Note: This function requires that menus 9 and 10 must be calibrated at the same time! And the upper and lower limits can't be the same pressure!

9.8.Arbitrary point migration

After adjusting "10", enter automatically. Refer to 9/10 items to set the data mode, set the value needed to migrate to (current pressure value) on the screen, press M key, and save the data.

Note 1: Any menu in 2-3-4-5-6 will switch to the next menu every time the M key is pressed. If there are any changes, it will be saved at the same time. The next menu of menu 8 is 0, which means the normal display state. If there is no key operation at this time, it will automatically exit the adjustment state after 3 seconds and start the normal display. If there is a key operation in 3 seconds, repeat the menu of 2-3-4-5-6.  
Note 2: Input of 05678, or 5678. 0 instrument in damping can be restored to factory condition.  
Note 3: Menu 9-10-11 needs professionals to operate, so it is no longer within the circle mentioned above, but can only be accessed through "00009".

10.Specification selection

CYYZ61 Intelligent hygiene transmitter selection table									
CYYZ	Pressure transmitter								
	Code	Transmitter type							
	05	Intelligent hygiene (default connectionless)							
		Code	With or without display						
		X	Without display						
		P	Display						
			Code	Range					
				See range selection table attached					
			Code	Signal output					
			0401	4-20mA communication					
			02	Custom					
			Code	Connection type					
			14	M20*1.5 External thread					
			19	G1/2 External thread					
			35	Clamp (50.5)					
			44	Custom					
			Code	Accuracy level					
			S	0.1%FS Customization (range ≥100kPa)					
			B	0.25%FS Regular (range ≥100kPa)					
			C	0.5%FS Regular (10kPa ≤ range <100kPa)					
			Code	Supply voltage					
			G	12-36VDC Regular					
			G2	15-36VDC Regular (with display)					
			02	Custom					
			Code	Custom					
			B	Other custom requirements					
			No	Regular					
CYYZ	05	X	12	0401	14	B	G2	Example of selection	
For example: CYYZ61-X-12-0401-14-B-G2 (Intelligent Hygienic Pressure Transmitter, Display, Range 0-1 MPa, 4-20 mA HART Communication, Connection M20*1.5, Accuracy 0.25, Power Supply 15-36 VDC)									

Range Selection Schedule							
Code	Range	Code	Range	Code	Range	Code	Range
04	▲0~10kPa	05	▲0~20kPa	06	▲0~50kPa	07	0~100kPa
08	0~200kPa	09	0~0.4MPa	10	0~0.6MPa	11	0~0.8MPa
12	0~1MPa	13	0~1.6MPa	14	0~2.5MPa	15	0~4MPa
16	0~6MPa	17	0~10MPa	67	Custom		
▲ accuracy level 0.5; no mark accuracy level default 0.25, level 0.1 can be customized.							

11.Initial start

- Warning!**  
a)Before starting, it is a must to check if the transmitter is installed correctly, and if there is any obvious damage.
- Warning!**  
b)The transmitter must be operated by professional technicians who read and understood this operating manual.
- Warning!**  
c)The transmitter is only suitable for working conditions that meet the technical requirements!

12.After sales service

- a)The company is responsible for all the maintenance costs during the warranty period, after inspected by the technician of the company and confirmed there is quality failure.
- Warning!**  
b)Please clean the residual media before returning, especially substances that is harmful to human health, such as corrosive, toxic, carcinogenic or radioactive substances;
- c)Please keep the warranty card and certificate in a safe place, and return with the product when there is need of repairing;
- d)If there is any faulty with the transmitter, please contact our after-sales service. If you need to send the transmitter back to the company for repair after confirming the problem. Please attach the following information:  
Description of the site environment;  
Fault phenomenon;  
Delivery address and contact information;

12.1Common fault analysis and elimination

Fault phenomenon	Cause analysis	Elimination method
• The transmitter has no output signal.	• The transmitter is not powered. • Fault connection	• Supply power to transmitter correctly according to the wiring diagram.
• Output irregular jumps when the pressure is constant	• The transmitter is not grounded • Strong RF interference on site • No shielded cable applied	• Use shielded cable and ground the shield • The transmitter is properly connected to the earth
• The corresponding output value is incorrect when transmitter is not connected to pressure media	• The transmitter is not operating in required environment	• Move the transmitter to the specified environment or take action to ensure that the environment meets the requirements
• The transmitter output does not match with the measured pressure	• The supply voltage is incorrect • The external load is too large	• Whether it is within the power supply range • Adjust the external load

If the fault phenomenon does not fall within the above range, please contact our after-sales.

12.2 Calibration

Zero and full-scale drift may occur during the use of the transmitter. If the above phenomenon occurs after long time use, it is recommended to send the transmitter back to us for calibration to ensure high accuracy.

13. Transportation and storage

The transmitter should be kept in a sturdy cardboard box (large device requires a wooden box), free move in the box is not allowed, be careful when handling, do not handle with roughly. Store area should meet the following conditions:

- a) Protect from rain and moisture.
- b) Free from mechanical shock or shock.
- c) Temperature range -20 ~ 55 ° C.
- d) The relative humidity is not more than 80%.
- e) No corrosive gas in the environment.

14.Unpacking precautions

- a) After unpacking, check the packing list to confirm if the documents and accessories are complete.  
The packed documents are:  
A copy of the instruction manual.  
A product certificate.  
A warranty card.  
b) Observe if there is any damage caused during transportation, for proper following up.  
c) We hope that the user can safely keep the "warranty card", please don't misplace it, otherwise you can't return to the factory for free repair!

15. Instructions for ordering

- Warning!**  
When purchasing the pressure transmitter, the user should select the appropriate model to make sure it meets specifications of the contact media ,such as the pressure , temperature , protection level and environmental conditions