사용 설명서

차압전송기
일반형KC-8000D, 방폭형DMP305X

(주)골든룰

(주)골든룰

인천광역시 연수구 송도미래로30 (스마트밸리 A동 1805호)
Tel : 032-817-1240(代) Fax : 032-817-1250
E-mail : hhm617@hanmail.net
http://www.goldenrules.co.kr

Safety precautions

⚠ Pressure / differential pressure transmitter should be installed by professional engineers or qualified technical personnel, product specifications and important information provided on the label should be carefully read before installation and wiring operations.

⚠ Pressure / differential pressure transmitter is powered by an external power supply, the power supply circuit should comply with energy-limiting circuit by relevant standards, and pay attention to the high voltage circuits there may exist.

⚠ The maximum static pressure overload has been stated on the product label, the process maximum pressure should not exceed the full span of sensor.

⚠ Using pressure / differential pressure transmitter in hazardous areas, installation, use and maintenance should also comply with the operation manual and relevant requirements of national standards.

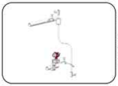
⚠ Attention please! Disassemble the instruments under the condition of normal atmospheric pressure only.

Product usage

Pipeline pressure measurement-pressure transmitter

For high-temperature steam measuring, more than half-tube cooling water should be pre-injected in the condenser. After the steam pipes are stable, slowly open the shut-off valve to start measuring.

Pipeline pressure measurement-differential pressure transmitter



For high-temperature steam measuring, cooling water should be pre-injected into the guided pipe . After the steam pipes are stable, slowly open the shut-off valve to start measuring.

Differential pressure measurement

Differential pressure transmitter is used for differential pressure measuring, especially suitable for micro pressure measurement of hydrostatic pressure such as filter and equipment leakage test and improving accuracy.

Steam flow measurement

Guiding pressure tube uptilt 45°, the installation location should be lower than the process pipeline. Isolation tank and multiple shut-off valves should be increased, cooling liquid should pre-injected into the guiding pressure tube, and open the drain/vent valve periodically, clear the residual gas and liquid in the guiding pressure tube to ensure accuracy.

Liquid flow measurement

Guiding pressure tube tilt down 45 °,the installation location should be lower than the process pipeline. Isolation tank and multiple shut-off valves should be increased, open the drain/vent valve periodically, clear the residual gas and liquid in the guiding pressure tube to ensure accuracy.

Air flow measurement

Guiding pressure tube uptilt 45°, the installation location should be lower than the process pipeline. Isolation tank and multiple shut-off valves should be increased, open the drain/vent valve periodically, clear the residual gas and liquid in the guiding pressure tube to ensure accuracy.

Sealed container level measurement

For sealed container level measurement, isolation tank and multiple shut-off valves should be increased, open the drain/vent valve periodically, clear the residual gas and liquid in the guiding pressure tube to ensure accuracy.

Open container level measurement-single flange level transmitter

For open container level measurement, media compatibility should be considered, install on location where the liquid level and temperature changes stably to improve accuracy.

Sealed container level measurement-single flange level transmitter

Single flange diaphragm system used for sealed container level measurement, Isolation tank and multiple shut-off valves should be increased, open the drain/vent valve periodically, clear the residual gas and liquid in the guiding pressure tube to ensure accuracy.

⚠ **Media in process pipeline or guiding pressure tube may be effected by the surrounding environment, and may freeze. So anti-freezing measurements are needed.**

Install pressure transmitter

Pressure transmitter- Installation

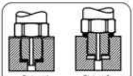
Direct installation Bracket installation

Differential pressure transmitter-bracket installation

Pipe mounting bent bracket Plate mounting bent bracket Pipe mounting flat braket

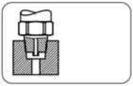
Process connection

Straight thread connection


Picture 1 Picture 2

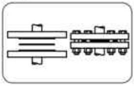
Picture 1: The length of pressure transmitter thread should be longer than the depth of the thread to ensure the seal of head face gasket is effective.
Picture 2: The length of pressure transmitter thread should be shorter than the depth of the thread to ensure the seal of root gasket is effective.

Taper thread connection



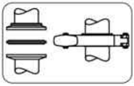
Sealing with teflon tape or sealant glue. When thread lock hard, there is a small part space.

Flange connection



Choose gasket according to medium features and temperature range, pay attention to the bolt balance lock.

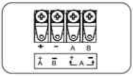
Clamp connection



Choose gaskets which meet the health standards, to avoid excessive locking clamp and squeeze gasket and diaphragm and cause measuring error.

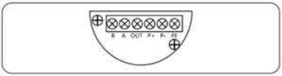
Electrical connection

Module terminals- four terminals



Lable	Two wires	Three wires	Four wires
+	Power+	Power+	Power+
-	Power-	Power-	Power-
A		Signal+	Signal+
B			Signal-

Module terminals- six terminals (Only for Modbus-RTU/RS485)



Lable	P+	P-	A	B	OUT	**PE
Modbus-RTU/RS485	Power+	Power-	A+	B-		Housing
Five wires	Power+	Power-	A+	B-	*Signal+	Housing ground

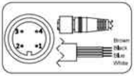
*Singal: 4-20mA
**PE: Housing ground terminals, please operate according to users' demands.

Aviation plug(M12*1 - 4 pins)

Lable	Two wires	Three wires	Four wires	Modbus-TRU/RS485
1	Power+	Power+	Power+	Power+
2			Signal-	B-
3		Signal+	Signal+	A+
4	Power-	Power-	Power-	Power-

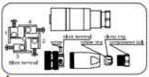
Electrical connection accessories

Aviation plug (with cable)



Lable	Two wires	Three wires	Four wires	Modbus-TRU/RS485
1/brown	Power+	Power+	Power+	Power+
2/white			Signal-	B-
3/blue		Signal+	Signal+	A+
4/black	Power-	Power-	Power-	Power-

Aviation plug (without cable)

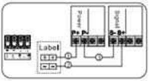


Lable	Two wires	Three wires	Four wires	Modbus-TRU/RS485
1	Power+	Power+	Power+	Power+
2			Signal-	B-
3		Signal+	Signal+	A+
4	Power-	Power-	Power-	Power-

⚠ **Please refer to the label for specific signal outline type.**

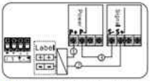
Signal connection

4-20mA two wires(module terminals-four terminals)



① Power supply+ is connected with transmitter terminals+
② Signal+ is connected with transmitter terminals-
③ Signal- is connected with power supply-

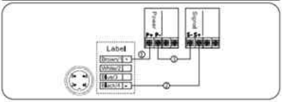
4-20mA two wires, intrinsic safety(module terminals-four terminals)



① Power supply+ is connected with transmitter terminals+
② Signal+ is connected with transmitter terminals-
③ Signal- is connected with power supply-

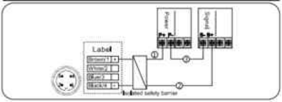
⚠ **Please note that the wiring should refer to the installation information provided by the safety barrier manufacturer.**

4-20mA two wires (aviation plug with cable)



① Power supply+ is connected with transmitter terminal 1/brown cable
② Signal+ is connected with transmitter terminals 4/black cable
③ Signal- is connected with power supply-

4-20mA two wires, intrinsic safety(aviation plug with cable)



① Power supply+ is connected with transmitter terminal 1/brown cable
② Signal+ is connected with transmitter terminals 4/black cable
③ Signal- is connected with power supply-

⚠ **Please note that the wiring should refer to the installation information provided by the safety barrier manufacturer.**

Power supply

Independent linear direct current power supply is suggested to be adopted for the power supply of pressure transmitter, over large resistive load will result in a large pressure drop, so it requires to calculate the all-in resistance of signal cable, display meter and other record and display equipment, to ensure the voltage provided to the pressure transmitter accord with normal operating requirements.

- Standard current signal output: 12-30VDC,
- Current signal output with HART: 16.5-55VDC,
- Current signal output with intrinsic safety : 12-30VDC,
- Modbus-RTU/RS485 signal output: 5VDC/9-30VDC,
- 0.5-4.5VDC voltage signal output: 5VDC/6-15VDC.

Grounding

- Shielded twisted pair signal cable is the best, in order to avoid ground loops, Shielded layer adopts single-grounding, insulated floating at the side of pressure transmitter, and grounding at the control cabinet.
- Transient built-in module is only valid in the case of well-grounded, stainless steel housing and internal ground terminals is used for direct grounding.

Cable protection system

Standard protection system

In order to avoid the liquid flowing along with the cable to flow into the terminal box or result in waterproof joint effusion, an U-shaped ring needs to be configured between pull box and pressure transmitter as the picture shows, and please ensure the U-shaped bottom is under the pressure transmitter. Considering the maintenance and replacement, enough cable length needs to be reserved.

Explosion-proof tube protection system

⚠ Using explosion-proof pressure transmitters in dangerous situations, metal explosion-proof tube should be used to connect the cable into the threading box, and lead to safe zone.

Intrinsic safety type

⚠ When choose intrinsic safety pressure transmitter, as the power, signal connection, grounding and transient solutions are different provided by the intrinsic safety and isolated safety barrier suppliers, please pay attention to the connection of signal line.

Field adjustment

With LCD buttons, terminal box external buttons or software as HART protocol, it is convenient for range adjustment. For detailed operation, please refer to instructions of display, HART protocol and so on.

Zero point adjustment

- Please make an adjustment after installation because the mounting position will affect zero setting.
- The vessel is absolutely empty (No pressure or medium on the measuring diaphragm, the vessel connect to the atmospheric air)
- Power connection please refer to "Keys operation manual-keyboard shortcuts-PV=0"
- Please set PV=0 after three weeks of installation to ensure the best accuracy
- Set PV=0 each year.

⚠ **Zero point adjustment is only avalible for gauge pressure transmitter**

Full span adjustment

- Fill the vessel with medium (fill to the required level)
- The static pressure value should be within the minimum and the maximum pressure range.
- Power connection please refer to "Keys operation manual-keyboard shortcuts-full span adjustment"

Factory resets

- Please refer to "Keys operation manual-keyboard shortcuts-factory resets"

Maintenance

Requires no maintenance

External cleaning

Please notice the following when cleaning:

- Use washing agent which will not damage to the instruments
- Prevent the process diaphragm from mechanical damage, eg: the mechanical damage caused by sharp objects.
- Mechanical cleaning of metal diaphragm(technical and refence) is prohibited.
- Do not point the nozzles to the diaphragm directly when doing internal cleaning by pressure washer.

Transportation / storage

- Do not store at outside
- Keep dry and dust-free
- Do not expose to the corrosive medium
- Avoid solar radiation
- Avoid mechanical shock and vibration
- Storage temperature: -40~85℃
- Maximum relative humidity: 95%

EMC statement

- EMC equipment instructions 2014/30/EU.
- CE mark suggests the instruments are in line with EU standards
- Users need to ensure the whole equipment conform to all the applicable standards.

Retransport

- Keep clean of the pressure transmitter. Stay away from any dangerous medium!
- Please adopt proper package to avoid damage in transportation.

Exceptions

- When measurement signal appears abnormal, please make sure whether it is the process pressure abnormal or measuring system error, or installation environment impact or pressure transmitter abnormal, then analyze the reasons and take corresponding measures.
- No signal output, process pressure changes but no corresponding output signal change or their changes do not correspond, the pressure transmitter may abnormal, it needs to check whether the power supply polarity or circuit cut, voltage, power and load resistance meets the normal working requirements, it also needs to check whether there is leakage and pressure impulse line blockage and shut-off valve does not open and so on.
- The output signal error is large or outside the normal range, it needs to check whether the supply voltage, power consumption, and load resistance meets the normal working requirements of pressure transmitters, measuring range settings, adjust the correct calibration. It also needs to check whether there is pressure leakage and guiding pressure tube blockage, shut-off valve does not open and whether is rapid temperature fluctuations in the installations.

Depot repair

Please finish the following steps before the depot repair:

- Removal of all the residues which would be harmful to human health, such as inflammable, poisonous, cancerigenic and radioactive substances.

Do not return the instruments if can not ensure the dangerous residues are removed, eg: the dangerous residues permeate into cracks or spread to the plastic.

Discard disposal

- The instrument is not restrained of WEEE instruction 2002/96/EG and laws of relevant countries.
- Please pass the instrument to specialized recycling companies other than local recycling points.

스팀&가스 질량유량계 & 기타계측기
전문 제조기업

(주)골든룰

(주)골든룰

인천광역시 연수구 송도미래로30 (스마트밸리 A동 1805호)
Tel : 032-817-1240(代) Fax : 032-817-1250
E-mail : hhm617@hanmail.net
http://www.goldenrules.co.kr