# **DP-1XPressure** Transmitter

**Operating** Manual



Version:202005

### **1. Product Overview**

DP-1x transmitter using imported silicon resistance pressure sensor as signal measuring element. Hirschmann Joint, Integrated Cable Type all use single chip solution. Using high integrated special sensor signal conditioning chip, digital circuit design, 1wire digital communication calibration, no

potentiometer, high accuracy, high stability. Hirschmann standard quick coupler, can choose digital tube or LCD field display, to realize the display ofvarious engineering quantities. Integrated Cable Type with high protection level, suitable for outdoor, diving and other complex site use. Sanitary

pressure transmitter flat diaphragm design, solves the problems of the common pressure transmitter that pressure hole can not be cleaned of dirt and impurities. It uses the advanced temperature

supplement and nonlinear correction techniques, suitable for hygiene-grade conditions such as food and pharmaceutical industries.

# 2. Technical Specification

### Measuring Range :

Gauge pressure (G): 0~2.5MPa, minimum 0-500Pa Sealed gauge pressure (S): 0-60MPa, minimum 0-3.5MPa Absolute pressure (A): 0-60MPa, minimum 0-2kPa Negative pressure: -0.1MPa-60MPa Micro melting pressure transmitter: 0.1~70MPa, minimum not less than 100KPa

**Measuring Accuracy :** 

0.5%FS 0.25%FS

#### Allowable Environment Temperature:

-40 $\sim$ 85°C, -20 $\sim$ 70°C (Display)

Allowable Medium Temperature:

-40°C~+105°C

Allowable Storage Temperature:

-40°C~+85°C

Temperature influence:

Better than 0.2%/10 °C

**Power Supply:** 

 $24V DC (12 \sim 30V)$ 

#### Output:

(4~20)mA Two line analog signal

#### RS485(MODBUS-RTU)

0-5VDC 0-10VDC Other voltage outputs can be customized

#### Long term stability:

Exceeding 0.2% FS annually

### **Process Connection Standard:**

M20 \* 1.5 or G1/2,  $\phi$  50 chuck (sanitary type), others can be customized

Micro melting pressure transmitter: M20 \* 1.5 material 17-4PH or G1/4 material 17-4PH

# 3. Appearance and dimension



### Hirschman Type



**Integrated Cable Type** 



### Flat Diaphragm Sanitary Type



Chuck Sanitary Type (Height of high temperature type will increase 35mm)

# 4. Wiring Instructions

Hirschman Joint

Туре

No.	(4-20)Output	RS485	Voltage output
1	Power supply +	Power supply +	Power supply +
2	Power supply - (current output)	Power supply -	Power supply - (common - ground)
3	N/A	А	Voltage output

Ground	grounded or N/A	В	grounded or N/A
terminal			

### Integrated Cable Type

color	(4-20) output	RS485	Voltage output
red	Power supply +	Power supply +	Power supply +
black	Power supply -(current output)	Power supply -	Power supply -
blue	N/A	Α	Voltage output
Brown (or white)	grounded or N/A	В	grounded or N/A

## 5. Menu description (Hirschman Joint Type)

After powering on, press the [S] first, then press the up key to enter the password setting Up key to modify numbers, down key to shift.

Customer mode menu password: 00006

Customer mode menu		Operation steps	Parameter Description
Unit	Unit	Enter with the S key	KPa; MPa; Pa; Bar;
		Up and down keys to select	mBar; PSI; °C; °F;
		units	kg/cm <sup>2</sup> ; atm; mmHg;
		Confirm and exit with the S	mH2O: m: cm: mm
		key	; V;mV;A; mA;
dot	Decimal point	Enter with the S key	
		Up and down keys for decimal	
		point shift	
		Confirm and exit with the S	
		key	
2Ero	Range-low	Enter with the S key	
		Up key to modify ; down key	
		shift	
		Confirm and exit with the S	
		key	
NEG	Range symbol	Enter with the S key	Range symbol -1.0
		Up and down keys to modify	Indicates that the range-
		symbols	low is negative
		Confirm and exit with the S	Range symbol 1.0
		key	Indicates that the range-
			low is positive
FULL	Range-high	Enter with the S key	
		Up key to modify ; down key	
		shift	

		Confirm and exit with the S	
		key	
bIa5	Deviation	Enter with the S key	
	compensation	Up key to modify ; down key	
		shift	
		Confirm and exit with the S	
		key	
5AuE	Save Settings	Enter with the S key	
		Up and down keys select	
		YES/NO	
		Confirm and exit with the S	
		key	
End	Exit menu	Press the S key to exit	

Note 1: -1.0 represents a negative range symbol; 1.0 represents a positive range symbol. Note 2: Reading parameters can compensate for the deviation between displayed values and actual quantities.

Example: If the displayed value is 10.05 and the zero point is set and corrected by - 0.05, the compensated displayed value will be 10.00.

Note 3: Modifying any parameter requires saving. Otherwise, it is invalid

### 6. 485 Communication Protocol

This instrument communication protocol complies with the MODBUS-RTU communication protocol, with 1 start bit, 8 data bits, and 1 stop bit.

The following instructions define assumed instrument parameters: instrument address set to 1, communication baud rate 9600, none parity, decimal point 1, unit MPa, instrument display value 500.0MPa. The address and data in the read instruction and write instruction are both high byte first and low byte second; CRC checks that low bytes come first and high bytes come last.

Read pressure value:

Command: 01 03 00 04 00 01 C5 CB

Instruction Description: 01 (Instrument Address) 03 (Read Command) 00 04 (Instrument Communication Address) 00 01 (Read a Parameter) C5 CB (CRC16 Verification Code) Response: 01 03 02 13 88 B5 12

Instruction Description: 01 (Instrument Address) 03 (Read Command) 02 (Number of bytes read) 13 88 (13 88 is a hexadecimal number with 13 high bytes and 88 low bytes converted to a decimal number of 5000) B5 12 (CRC16 checksum)

Read parameter values:

Command: 01 03 XX XX 00 01 CRC1 CRC2

Instruction Description: 01 (Instrument Address) 03 (Read Command) XX XX (Parameter Address Refer to Table 2) 00 01 (Read a Parameter) CRC1 CRC2 (CRC16 checksum: Low byte before high byte after)

Response: 01 03 02 XX XX CRC1 CRC2

Instruction Description: 01 (Instrument Address) 03 (Read Command) 02 (Number of bytes read) XX XX (Return Parameter Value: High Bit First, Low Bit Second) CRC1 CRC2 (CRC16 checksum: Low Byte First, High Byte Second)

#### Write parameter instructions

Command: 01 06 XX XX data1 data2 CRC1 CRC2 Instruction Description: 01 (Instrument Address) 06 (Write Command) XX XX (Parameter Address Refer to Table 2) data1 data2 (Parameters Written: High Byte First, Low Byte Second, Refer to Table 2) CRC1 CRC2 (CRC16 checksum: Low Byte First, High Byte Second) Response: 01 06 XX XX data1 data2 CRC1 CRC2 Instruction Description: 01 (Instrument Address) 06 (Write Command) XX XX

(Parameter Address Refer to Table 2) data1 data2 (Parameters Written: High Byte First, Low Byte Second, Refer to Table 2) CRC1 CRC2 (CRC16 checksum: Low Byte First, High Byte Second)

Name of Content		Address (Hex)	Data (data1 data2)
Parameters			
Addr	Transmission address	00 00	1~254
hand	Transmission board	00 01	2400 4800 9600
Daud	baud rate		14400 19200
Unit	Measuring Unit	00 02	0-m 1-kpa 2-Mpa 3-°C
Unit	-		4-L 5-bar 6-psi 7-Pa
	Number of decimal	00 03	Value Range: 0-4
Dot	places in measurement		
	data		
valua	Real time display	00 04	
value	value		
Zero	Zero	00 05	
Parity	Parity	00 06	0-None 1-0dd 2-Even
Loc	Password verification	00 0A	Password: 38 79

Writing parameter steps

1. Password verification, the address is 1F, the password is 38 79H, which means sending the command: 01 06 1F 38 79 7B EA

2. Write the parameters that need to be modified. For example, when modifying the address of the transmission board to 2, command: 01 06 00 00 02 08 0B

Note:

1.When writing parameters, password verification only needs to be done once. In the absence of power, other parameters can continue to be modified without further verification. After power failure, re verification is required before modifying parameters. 2.If the transmission address was written a false value, the address will become 1 automatically. If the baud rate was written a false value, the baud rate will become 9600 automatically.

485 Message: (unit: mm) 04 Address: 1-254 01 03 00 04 00 01 C5 CB 02 03 00 04 00 01 C5 F8 03 03 00 04 00 01 C4 29

04 03 00 04 00 01 C5 9E