TxADP12

Differential Pressure Transmitter
Product operation instruction

TxADP12 Differential Pressure Transmitter is a new differential pressure transmitter launched by our company. It combines the flexibility of a multi-range sensor with the high performance of a single-range sensor, making it an ideal product for industrial applications. The differential pressure transmitter has a variety of optional pressure ranges and units built-in, and can be easily adjusted on-site through the built-in DIP switch, adopting IP65 rated housing with stainless steel conduit fittings for easy routing, suitable for heating, ventilation and air conditioning (HVAC), energy management systems, VAV and fan control, environmental pollution control, static piping and clean room pressure, fume hood control, oven pressurization and furnace ventilation control and other fields.

1.MODEL SELECTION TABLE

TxADP12 X O X X

Accuracy
C : ±1.0%F.S.

Range
4 -1000 ~ 1000Pa
6 -10000 ~ 10000Pa
2 : -100 ~ 100Pa

Output type
AV: 4~20mA & 0~10VDC(simultaneous output)
A : 4~20mA (two-wired)(without backlight)
10 0~10V (3-wired)
V5 0~5V (3-wired)
RS RS-485 communication
SW: RS-485 communication (with isolation)

2 with display
: No display

2.TRANSMITTER FUNCTION

Response time		0.5s,1s,2s,4s
Resolution	TxADP122	1Pa,0.1 mmH_2O,0.01mbar,0.004 inH_2O,
	TxADP124	0.007mmHG,0.001KPa
	TxADP126	0.1Pa,0.01 mmH_2O,0.01mbar
Zero calibration		Manual key zero calibration

3.TECHNICAL SPECIFICATIONS

Range	TxADP124 -1,000 ~ +1,000Pa Min 0 ~+100Pa TxADP126 -10,000 ~ +10,000Pa Min 0 ~+1000Pa TxADP122 -100 ~ +100Pa Min 0 ~+10Pa		
Accuracy	±1.0% FS		
Pressure unit	Pa,Kpa, mmH_2O,mbar,mmHG, inH_2O		
Output signal	0~10V&4~20mA 0~5/10V	4~20mA	Rs485
Power supply	12~30VDC/24VAC±20%	12~30VDC (Non-polar)	9~30VDC
Power consumption	≤1.5W		
Medium	Air or neutral gas		
Overvoltage allowed	10KPa (TxAD124) / 80KPa(TxADP126) / 5KPa (TxADP122)		
Working temperature	-20~+70℃		
Compensated temperature	-10~+60℃		
Storage temperature	-40~+70℃		
Stability	Typical: ±2%FS/year (TxADP122) Typical: ±0.25%FS/year		

4.DETAILED FUNCTION

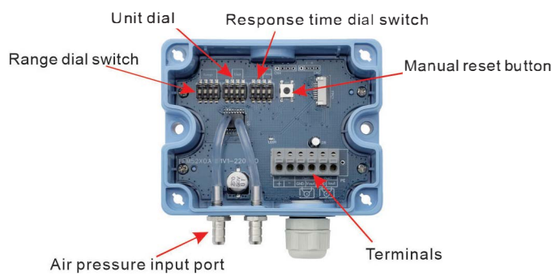


Image 1 TxADP12X-XAVC internal circuit

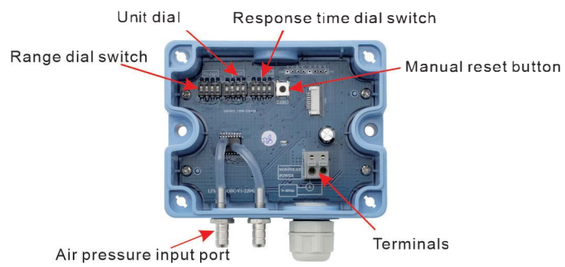


Image 2 TxADP12X-XAC internal circuit

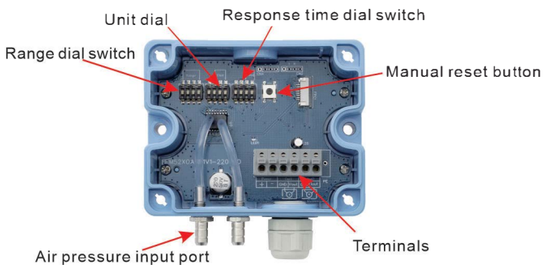


Image 3 TxADP12X-V10(V5)C internal circuit

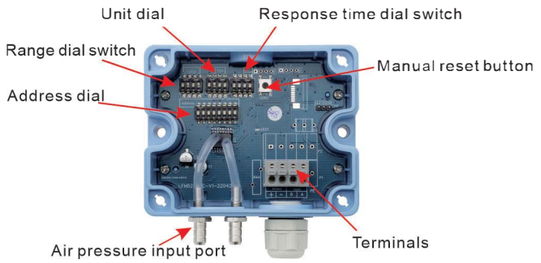


Image 4 TxADP12X-XRS(RSW)C internal circuit

5.DAIL SWITCH

1.RANGE SETTING

Range dial combination		Pa	mmH_2O	mbar	inH_2O	mmHG	KPa
1 2 3 4	TxADP122	10.0	1.00	0.100	/	/	/
	TxADP124	100	10.0	1.00	0.40	0.75	0.100
	TxADP126	1,000	100.0	10.00	4.00	7.50	1.000
1 2 3 4	TxADP122	25.0	2.50	0.250	/	/	/
	TxADP124	250	25.0	2.50	1.00	1.87	0.250
	TxADP126	2,500	250.0	25.00	10.00	18.75	2.500
1 2 3 4	TxADP122	50.0	5.00	0.500	/	/	/
	TxADP124	500	50.0	5.00	2.00	3.750	0.500
	TxADP126	5,000	500.0	50.00	20.00	37.50	5.000
1 2 3 4	TxADP122	75.0	7.50	0.750	/	/	/
	TxADP124	750	75.0	7.50	3.00	5.62	0.750
	TxADP126	7,500	750.0	75.00	30.00	56.20	7.500
1 2 3 4	TxADP122	100.0	10.00	1.000	/	/	/
	TxADP124	1,000	100.0	10.0	4.00	7.50	1.000
	TxADP126	10,000	1,000.0	100.00	40.00	75.00	10.000

Range setting (example: blue shading means setting the range to 0 ~ 1000Pa).

2.RANGE CENTER SETTING

Set 1 digit of the range dail switch according to the prompts in the figure below.

1 2 3 4

1 Step range setting remains unchanged

The range (0~1000Pa) set in step 1 becomes bidirectional, the zero point is in the middle, and it is actually changed to -500~+500Pa.

2.1 Full-scale centering setting: the bidirectional maximum range is dialed according to the table below.

		Pa	mmH_2O	mBar	inH_2O	mmHG	Kpa
1 2 3 4	TxADP122	±100.0	±10.00	±1.000	/	/	/
	TxADP124	±1000	±100.0	±10.0	±4.00	±7.50	±1.000
	TxADP126	±10000	±1000.0	±100.00	±40.00	±75.00	±10 000

3.UNITS AND AUTO-ZERO SETTINGS

Please turn the dial switch to the corresponding position according to the figure below.

Unit	Pa	mmH_2O	mbar	inH_2O	mmHG	KPa
Switch Position	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Auto clear		1 2 3 4 Do not start automatic reset at boot (default)		1 2 3 4 Start auto reset		

Note: When automatic zeroing is turned on, please ensure that there is no differential pressure at the positive and negative air inlets when powering on (the automatic zeroing data will not be saved).

4.MANUAL RESET

Open the panel and short press the manual reset button to reset.
(Please manually reset it when there is no differential pressure between the positive and negative air inlets.)

5.RESPONSE TIME AND COMMUNICATION BAUD RATE SETTINGS

Response time The dail switch sets the response time; the second digit is the communication baud rate setting (only for RS-485 type), please set according to the following figure.

Time	0.5s	1s	2s	4s
Dail Switch Position	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Baud rate Setting	1 2 3 4 Baud rate: 9600		1 2 3 4 Baud rate: 19200	

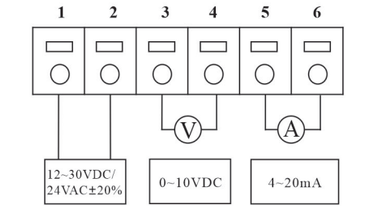
6.ADDRESS SETTING (ONLY FOR RS-485 TYPE)

ON
1 2 3 4 5 6 7 8
1 2 4 8 16 32 64 128
ADDRESS

Dial to the ON side, then add the subscript ADDRESS column correspondingly. The dialing address is 1+4 +128=133 (0x85H);

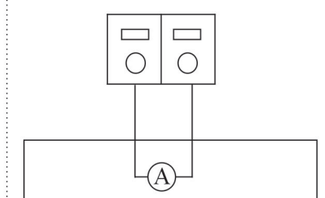
Note: Only when the dial code address is 0, the device ID address can be modified by software.

6. CONNECTION METHOD

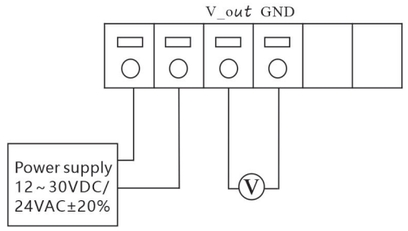


1. Power +　　2. Power -
3. Output signal ground GND　4. Voltage output signalV_out
5. Output signal ground GND　6. Current output signal I_out

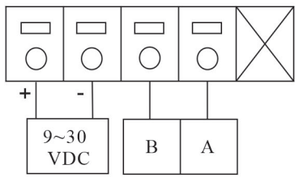
4~20mA &0~10VDC six-wired



4~20mA two-wired non-polar



0~5/10VDC three wired



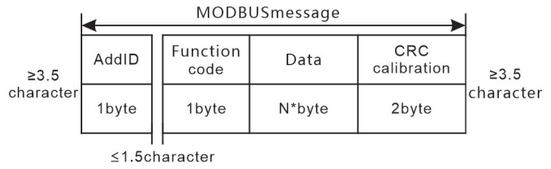
RS-485 four wired

7.COMMUNICATION PROTOCOL (ONLY FOR RS-485 TYPE)

This communication protocol is implemented in accordance with the ModBus RTU standard protocol, which can realize remote one-to-many signal acquisition through the 485 bus.

1.CHARACTER FORMAT

Start：1Bit
Data：8Bit
Parity：None
Stop：1Bit
Baud Rate：9600bps、19200bps



2. COMMUNICATION PROTOCOL

2.1 Slave ID Address

The default value of the slave ID address is 0x01, which can be modified through the address register, see (Register Reference Table) for details.

2.2 Read holding register (function code 0x03)

The host can read the slave register data through this function, and can read one or more registers at the same time.

Communication code example:

Host Order:	01	03	00 01	00 01	D5 CA
	Slave ID	Function code	Register Initial address	Read the number of registers	CRC calibration
Slave Respond:	01	03	02	03 E8	D8 FA
	Slave ID	Function code	Data length	Data	CRC calibration

2.3 Write a single register (function code 0x06)

The host can use this function to write the slave register data, and can only operate on a single register.

Host Order:	01	06	00 06	04 D2	EB 56
	Slave ID	Function code	Register Initial address	Written the number of registers	CRC calibration
Slave Respond:	01	06	00 06	04 D2	EB 56
	Slave ID	Function code	Register Initial address	Written the number of registers	CRC calibration

2.4 Broadcast write register (function code 0x06)

The host can use this function to write register data to all slaves on the bus, and the slave ID addresses are unified as 0x00. The slave does not respond.

Host Order:	00	06	00 05	00 01	E8 1B
	Slave ID	Function code	Register Initial address	Written the number of registers	CRC calibration

No response from slave

Note: This function will perform group operation on all slaves on the bus, please use it with caution.

3.REGISTER REFERENCE TABLE

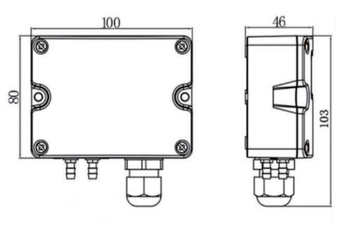
Register Address	Register definition	Read and write	Specific function description
0x0001	Pressure value	Only read	The pressure value of ADP122is read value/10 :(When reading the value 0xFC18 is-100.0Pa); The pressure value of ADP124/126 is the reading value;(When the reading value ≥0x8000,the pressure value is negative)
0x0002	Unit	Read and write	1 =Pa 2=mmH_2O 3=mbar 4= i nH$_2$O 5=mmHG 7=KPa (0=Dial code setting Default: 0)
0x0003	Response time	Read and write	1=0.5s 2=1s 3=2s 4=4s 0=DIP setting Default: 0
0x0004	Baud rate	Read and write	1=9600bps 2=19200bps 0=Dial code setting Default: 0
0x0005	Slave ID	Read and write	0x01 ~ 0xFF can be set, 0x00 is the broadcast address Default: 0x01 (can be set when the address dial is 0)
0x0006	Clear	Only write	Write 1234 (0x04D2) for clearing operation, the read value is the pressure value

4.EXCEPTION CODE ANALYSIS TABLE

Exception code	Reason	Solution
0x02	Register address exception or error	Check the starting address of the read register against the register address reference table to see if it is readable it is readable
0x03	Wrong value written to register	Check if the value written to the register is in the list against the register address reference table

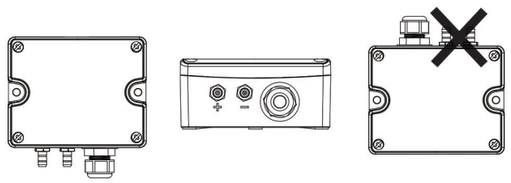
8.MECHANICAL PARAMETERS

Housing material: industrial plastic, flame retardant grade UL94-V0, protection grade IP65
Pressure port: metal barb port, Ø 6.2 mm
Cable gland: cable diameter up to Ø 8 mm
Weight: 200g

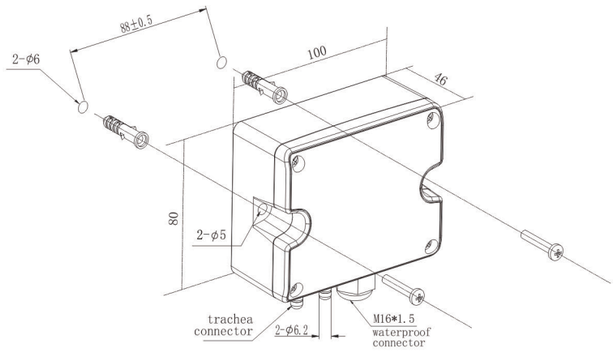


9. INSTALLATION METHOD

Please pay attention to the installation position and direction when installing.



First, drill Ø6mm holes with a depth of 40mm at two places 88mm away from the wall.
Place the plastic expansion tube (the self-tapping screw and expansion tube are provided with the goods).
The nail (ST4.5*45) is fixed on the wall through the fixing hole of the differential pressure gauge.



10.COMMON PROBLEMS AND SOLUTIONS

1. The displayed range or unit does not match the setting.
① If the DIP switch is not in place, restart after power off and redial.
2. There is no change in the pressure display or output value after pressure raise (mostly displayed as 0 or FULL *) or the change is inaccurate.
① Whether the loading pressure exceeds the burst pressure and directly damages the pressure core;
② Whether the medium used is corrosive or not compatible with the applicable medium (existing differential pressure transmitters requires non-corrosive gases);
③ Check whether the intake hose is blocked by foreign objects (particulate matter or water column) or leaks;
④ Whether the ambient temperature exceeds the compensation temperature range (differential pressure transmitter temperature Compensation range - 10~60℃);
⑤ Whether there is a mis operation of clearing after pressure raise, if yes, confirm that there is no input pressure, and then reset to zero again;
3. The pressure display value is normal, there is no output analog quantity or the analog quantity output is inaccurate.
① Check whether the output line connection is normal;
② For three-wire output, it is necessary to check whether the common ground of the transmitter and the control instrument is normal. (i. e. the ground wire must be connected);
③ Check whether the load resistor is properly selected.
4. The zero point pressure value has a slight drift.
① Perform the zero clearing operation after the drift is stable. If the above methods cannot eliminate the fault, please contact the manufacturer!

*Display-FULL/FULL means that the current pressure value exceeds the upper and lower limits of the transmitter's range!