BASIC FUNCTIONS

1. Display function:

Display pressure and pressure unit, available as Pa, mmH_2O, inWC, mmHG, daPa, kPa, hPa, mbar。

2. FUnction settings:

Precision calibration is through the circuit board by pushing the button. Taking -1000pa to 1000pa as an example, when the button activated, the sensor will enter into the precision calibration status. Input the pressure supply to -1000 Pa and push the button to save the -1000Pa pressure value. Then validating the setting for each additional 500pa. If the next value smaller than the previous one, the validation is invalid and will display "Err" without saving the value. Usually, we set the pressure range with professional machines and workers before shipment, customers are not encouraged to set the pressure.

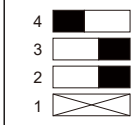
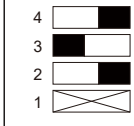
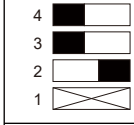
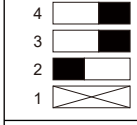
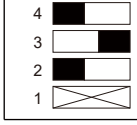
3, Manual zeroing:

Push the auto zero manual button for resetting. (If any deviation of pressure value or output, please reset the transmitter parallel with the installation)

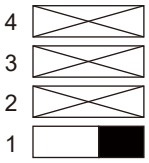
DIAL-UP SWITCH SWTTING

1. Range setting:

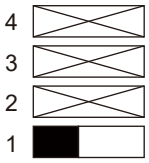
Set the pressure range by the pressure range switch. (The range is correlated to the output. For example, 0~100pa carries with the corresponding 4～20mA and 0～5VDC/0～10VDC.)

	Unit / Model	Pa	mmH_2O	mbar	inWG	mmHG	daPa	kPa	hPa
	TWM116	10.0	1.00	0.100	/	/	1.00	/	0.100
	TWM110	100	10.0	1.00	0.40	0.75	10.0	0.100	1.00
	TWM112	1,000	100.0	10.00	4.00	7.50	100	1.000	10.00
	TWM116	25.0	2.50	0.250	/	/	2.50	/	0.250
	TWM110	250	25.0	2.50	1.00	1.87	25.0	0.250	2.50
	TWM112	2,500	250.0	25.00	10.00	18.75	250.0	2.500	25.00
	TWM116	50.0	5.00	0.500	/	/	5.00	/	0.500
	TWM110	500	50.0	5.00	2.00	3.750	50.0	0.500	5.00
	TWM112	5,000	500.0	50.00	20.00	37.50	500.0	5.000	50.00
	TWM116	75.0	7.50	0.750	/	/	7.50	/	0.750
	TWM110	750	75.0	7.50	3.00	5.62	75.0	0.750	7.50
	TWM112	7,500	750.0	75.00	30.00	56.20	750.0	7.500	75.00
	TWM116	100.0	10.00	1.000	/	/	10.00	/	1.000
	TWM110	1,000	100.0	10.0	4.00	7.50	100.0	1.000	10.00
	TWM112	10,000	1,000.0	100.00	40.00	75.00	1,000.0	10.000	100.00

■ Full range/Central zero (take 0~1,000 Pa as an example)
To set the type of measuring range by adjusting the pressure range switch as indicated.



Full range:
0 ... 1000 Pa

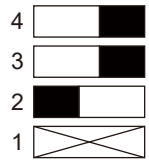
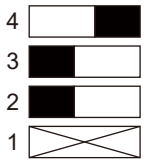
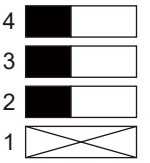
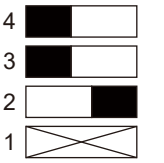
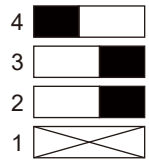
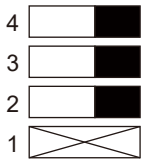
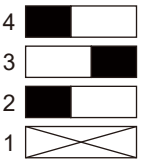
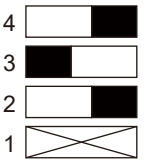


Central zero
(compound):
-500 Pa ... 500 Pa

※ Note:
Please follow carefully the combinations above the Dial-up switch. If the combination is wrongly done, the following message will appear on the display as "Err". In that case, you have to unplug the transmitter, place the Dial-up switches correctly and then power the transmitter up.

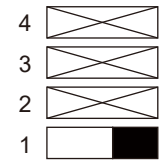
2. Unit setting

Set the pressure unit by adjusting the dial up switches referring to following combination

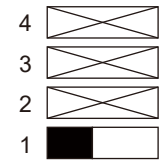
Pressure unit	Pa	mmH_2O	mbar	inWG
Combination				
Pressure unit	mmHG	daPa	kPa	hPa
Combination				

3. Auto zero function setting

Dial the switch 1 to activate or deactivate the auto zero function when powering up(the transmitter will be auto zeroed when activate this switch and vise versa)



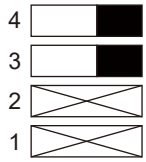
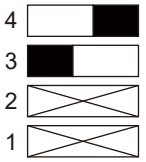
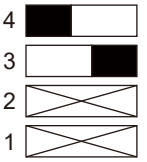
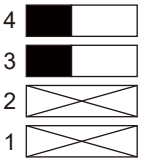
Deactivate auto
zero switch



Active auto
zero switch

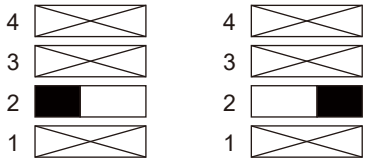
4. Response time

Set the response time by adjusting the time response dial up switches referring to following combination

Response time	0.5 s	1 s	2 s	4 s
Combination				

5. RS485 model setting:

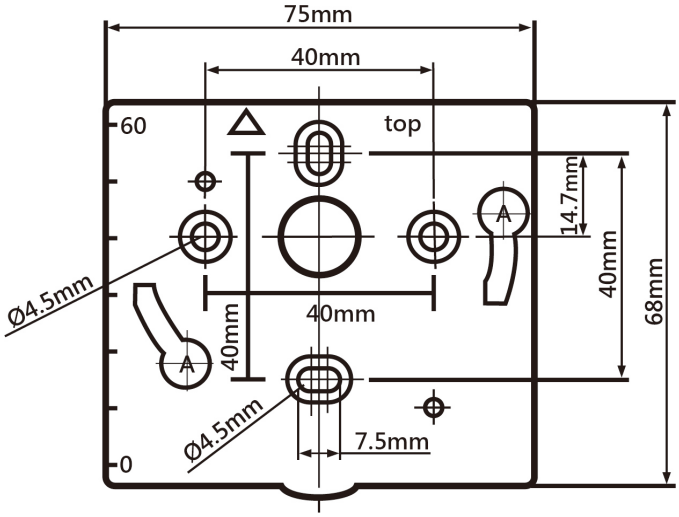
We included the RS-485 communication function in time response dial up switches. By dial up the switch 1 and 2 in following combination to change the baud rate either in 19200 or 9600(Only workable for RS485 differential transmitter)



※ In the Figure 4 there are a set of resistor jump which could be connected for reducing signal interference when the communication distance above 300 meters.

MOUNTING

To mount the transmitter, mount the ABS plate on the wall (drilling: Ø 6mm, depth 30 mm, scr ews and pins a resupplied) Insert the transmitter on the fixing plate (see A on the drawing) Rotate the housing in clockwise direction until you hear a 'click' which confirms that the transmitter is correct-ly installed.



MAITENANCE

Please avoid any aggressive solvent and protect the transmitter and its probes from any cleaning product containing formalin, that may be used for cleaning rooms and ducts.

ACCESSORIES

PVC tube, 2 pressure connectors, ABS mounting plate

FAQS

- **The display range or units do not tally with the Settings.**
  ① dial the code switch is not in place, the electricity to restart the redial later.

- **Pressure pressure showed no change or the output value (display of 0 or FULL), or change is not allowed.**
  ① whether the load pressure over blasting pressure directly blunt bad core body;
  ② whether there is corrosive or use media. And the purchased product applicable medium exist discrepancy (existing micro differential pressure transmitter are for no corrosive gas);
  ③ check whether there is any foreign bodies blocked on inlet hose (particulate matter or water) or leakage;
  ④ using the environment temperature is beyond compensation temperature range (micro differential pressure transmitter temperature compensation range -10 … 60℃);
  ⑤ with and without the pressure to zero wrong operation, such as there is no input in determining the state of stress under the reset again;
  ⑥ have corrosive Settings button of wrong operation (Settings button to prevent wrong operation mechanism, namely the set point pressure value must be increasing from small to big to finally set up successful, needs to be in high precision pressure source under the calibration set, don't recommend customer to calibration, such as the deviation caused by the calibration operation, must be returned to the factory heavy school).

- **Pressure normal value, no output analog or analog output is not allowed.**
  ① check the output line connection is normal;
  ② three wire system output is to detect transducer with control instrument is normal (i.e., ground wire must be connected to);
  ③ check the load resistance to choose proper.

- **The zero pressure value drift slightly.**
  ① clear operation after drift stability.

COMMUNICATION PROTOCOL

The protocol runs on the RS485 hardware platform, which can realize remote one-to-many control and signal acquisition through 485 bus. The communication protocol follows the ModBus RTU standard protocol.

1. Communication format

Start：1Bit, Parity：None, Stop：1Bit

Baud Rate：9600 bps、19200 bps

In RTU mode, the interval between two characters must be less than 1.5 characters; otherwise, the packet frame is considered incomplete and the receiving station discards the packet frame. The interval between two packet frames must be at least 3.5 characters.

2. Communication protocol

2.1 Slave address

Slave address is the number of each slave. The default value on the local device is 0x01. You can change the value by changing the register value in the range of 0x01 to 0xFF, where 0x00 is the broadcast receiving address.

2.2 Read hold register (function code 0x03)

The host can read the register data of the slave device through this function. It can read one or more registers at the same time. Sequence format:

The host sends a read request sequence					
Slave address	function code = 0x03	Register start address	Number of read registers	CRC LOW	CRC HIGH
8Bit	8Bit	16Bit	16Bit	8Bit	8Bit
Slave normal response sequence					
Slave address	function code = 0x03	Data bytes n	data	CRC LOW	CRC HIGH
8Bit	8Bit	8Bit	N * 8Bit	8Bit	8Bit
Slave error response sequence					
Slave address	Errror code = 0x83	Exception code = 0x02 or 0x03		CRC LOW	CRC HIGH
8Bit	8Bit	8Bit		8Bit	8Bit

2.3 Write a single register (function code 0x06)

The host can write the data of the slave register through this function, and can only operate a single register. Sequence format:

Slave address	function code = 0x06	Register address	Write register value	CRC LOW	CRC HIGH
8Bit	8Bit	16Bit	16Bit	8Bit	8Bit
Slave error response sequence					
Slave address	Error code = 0x86	Exception code = 0x02 OR 0x03		CRC LOW	CRC HIGH
8Bit	8Bit	8Bit		8Bit	8Bit

2.4 Broadcast writing register (function code 0x06)
The host can use this function to write register data to all slave device on the bus. The address of slave device is 0x00. The slave does not answer. Sequence format:

The host sends a sequence of write registers					
Slave address = 0x00	Function code = 0x06	Register address	Write register value	CRC Low	CRC High
8Bit	8Bit	16Bit	16Bit	8Bit	8Bit
There is no response from the slave					

Note: In addition to performing group operations on all slave device on the bus, this function can also be used to directly change the address of slave device without knowing the ID address of slave device. Therefore, use this function with caution to avoid the situation that all slave device addresses on the bus are changed to the same address.

3. Register address reference table

Register address	Register definition	Read-write mode	Function description
0x0001	Pressure value	Read only	When Pressure output range 0~30 MPa，The resolution is 0.01MPa。Example read value 0x0000= 0.00MPa、0x03E8 = 10.00MPa、0x07D0 = 20.00MPa
0x0002	Low alarm	readability	Write alarm point 20 00=20MPa，00 00=0MPa，Read the value to the current alarm point
0x0004	Baud rate	readability	1=9600bps 2=19200bps default：1
0x0005	address	readability	Can set 0x01~0xFF，0x00 Is the broadcast receiving address default：0x01
0x0006	Set Zero	readability	Write 1234 (0x04D2) to clear zero and read the pressure value
0x0007	High alarm	readability	Write to Alarm point 20 00=20MPa, 00 00=0MPa and read value to current alarm point

Note: The alarm is flashing. The high value of alarm should be greater than the low value.

4. Exception code parsing

0x02	The register address is abnormal or incorrect
0x03	The value written to the register is abnormal or incorrect