

RSA-TDPA Differential Pressure Transmitter



Applications & Features

- Apply high accuracy MEMS sensor and digital technologies, can measure positive, negative or differential pressure. RSA-TDPA is suitable for wall mount, RSA-TDPA -F is suitable for flush mount
- It can measure system pressure of fan, blower, filter, furnace draft and orifice plate and can apply to various clean room, biological safety cabinet, clean bench, ducts collection, medical or pharmaceutical machine, etc.
- Multiple ranges, engineering units and outputs
- Good performance with accuracy of 1.0% and range as low as 25Pa
- Function keys: zero calibrate, unit select, response time set, etc
- Field upgradable LCD display module and multiple ranges selection

Specifications

Medium: non-combustible, non-corrosive air, insensitive to moisture, dust, condensation and oil

Working Temp.: -20~70°C

Medium Temp.: 0~60°C

Temp. Compensation: 0~50°C

Working Pressure: overload 10xFS, burst 15xFS

Accuracy: $\pm 1.0\%FS(\pm 2.0\%FS@25Pa \text{ range})$

Long term stability: $\pm 0.5\%FS/\text{Year}$

Thermal effect: $<0.05\%FS/^{\circ}C$ (zero), $<0.08\%FS/^{\circ}C$ (FS)

Response Time: 0.5~30s, can be set by keys

Process Connection: 5mm ID tubing

Display: 5 digits LCD, display area 44x18mm, with unit indication, field upgradable

Output: 0~10V, 4~20mA (2 wires), RS485 selectable

Output Load: $\leq 500\Omega$ (current), $\geq 2k\Omega$ (voltage)

Power: Voltage: 16~28VAC/ 16~35VDC

Current: 18.5~35VDC ($R_L=500\Omega$); 8.5~35VDC ($R_L=0\Omega$)

Units: 5 units, selected by keys

Zero set: easy to reset by external key

Materials: ABS (housing) & PC (cover)

Protection: IP54

Weight: 165g

Approval: CE

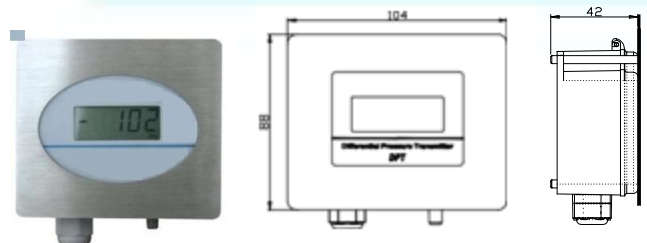
Accessories: LCD display module (model RSA-TDPA -LCD), including 1 LCD module and 1 panel film, and flush mount panel (model RSA-TDPA -A), can be ordered separately

Models

Model	RSA-TDPA RSA-TDPA -F			DP transmitter Flush Mount DP Transmitter
Range		X		Range selection
Output			1 2 8	0-10V 4-20mA(2 wires) RS485/Modbus
Display			0 1	N/A LCD

RSA-TDPA-F Flush Mount Differential Pressure Transmitter

It's the combination of RSA-TDPA (with LCD) and flush mount panel (model RSA-TDPA -A). The specifications are the same as RSA-TDPA. And the model is RSA-TDPA -F xx1(with LCD). It's good for flush mount in clean room or equipment with no dust and easy to clean 316 brushed stainless steel panel, with the size W104xH88xT1.5 and flush mount opening size W93 xH79xD42(mm).



Measuring Ranges

Code	Unit & Range & Display Resolution					
	Pa	Pa	kPa	in w.c.	mm w.c.	mbar
0	0-25	25.00	0.025	0.100	2.500	0.250
1	0-60/125	60.00	0.060	0.250	6.000	0.600
		125.0	0.125	0.500	12.00	1.250
3	0-250/500/1000	250.0	0.250	1.000	25.00	2.500
		500.0	0.500	2.000	50.00	5.000
		1000	1.000	4.000	100.0	10.00
6	0-2500	2500	2.500	10.00	250.0	25.00
7	0-5000	5000	5.000	20.00	500.0	50.00
8	0-10000	10000	10.00	40.00	1000	100.0

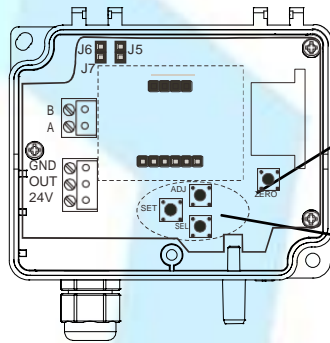
1. Code 1 and 3 have multiple ranges which could be jumper selected.

2. Set the 5 engineering units by button keys and the related LCD indicator will be on.

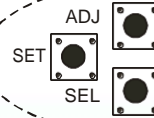
3. For zero center models, add "Z" at the end of the model. For example, RSA-TDPA 1**Z, means the range is -30.0-30.0/-62.5-0-62.5pa. Only ranges 1~6 have this selection.

Connection:

Different models have different electrical connections. Refer to the table as below (x means for any models).



Note: The ZERO button can be operated outside the front cover. It's for resetting zero point. Other buttons and jumpers are on PCB, customers need to open the front cover to operate them.



Terminal:

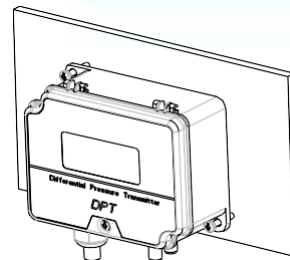
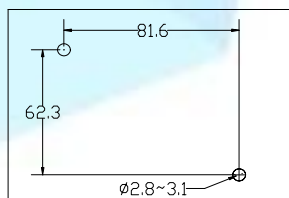
Models	Connections					
RSA-TDPA X1X	Terminal	24V	GND	OUT		
	Signal	Power+	Power-	0-10V		
RSA-TDPA X2X	Terminal	24V	OUT			
	Signal	Power+	4-20mA			
RSA-TDPA X8X	Terminal	24V	GND	OUT	B	A
	Signal	Power+	Power-	N/A	B/Z	A/Y

RSA-TDPA1XX and RSA-TDPA3XX Range Jumpers Setting(J5, J6, J7) :

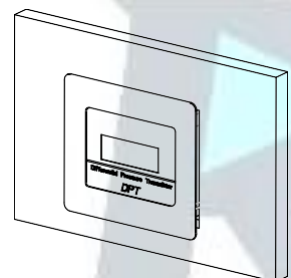
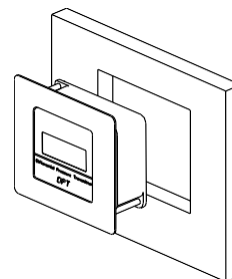
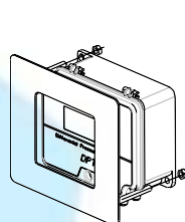
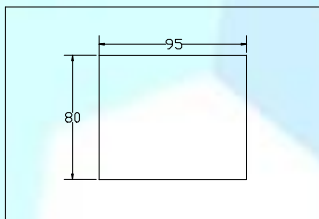
Models	Jumpers				Remark
RSA-TDPA 1XX	Range	J5	J6	J7	√: ON (Connected)
	0-60Pa			√	
	0-125Pa	√			
RSA-TDPA 3XX	0-250Pa			√	
	0-500Pa	√			
	0-1000Pa		√		

Surface Mounting:

It can be installed by surface mount and connected high(+) and low(-) pressures with accessories.



Flush Mounting:



- (1) Cut a 95(W)×80(H)mm rectangular hole on the wall.
- (2) Assemble the panel with the transmitter as shown above. Connect the tubes (be careful of the high(+)/low(-) ports) and the electrical terminals, then coat some glue on the back of the stainless steel installation panel, insert the transmitter body into the hole and paste the panel with the wall properly.

Zero reset & Calibration:

According to different environment and sensor's characteristics, for long term of using, the sensor's accuracy may be drift. The transmitter should be zero reset after initial installed to meet the specified accuracy, and be zero reset periodically in every 6-12 months' using. It is recommended to be "zero reset" after the initial 7 days continuous working.

Zero reset: keep the high (+) / low (-) pressure ports unconnected in stable air, or directly connect them, press the button "ZERO" for 5s to perform "zero reset". It means "remove the zero drift of the transmitter in order to improve the accuracy". It is recommended that this operation could be done periodically.

Initial zero reset: when initial power on, it should be zero reset after fully warm-up and stable, to meet the specified accuracy.

Long term zero drift & reset: It may have long term zero drift after continuous working; customers can reset it periodically.

Re-calibration & zero reset: when re-calibration needed, zero reset should be done first. A qualified standard manometer is needed for re-calibration operation. Please follow the operation procedures below.

Attention:

It should be power OFF during installing and wiring. When using 24 VAC, it is strongly recommended to power the unit with independent transformer. If sharing a 24 VAC transformer with other equipments such as controllers, transmitters or actuators, please make sure the terminals 24 V and GND are connected correctly. Otherwise, it may reduce serious damages.

Warranty:

- It has limited warranty for eighteen (18) months after the production date.
- It does not extend to any unit that has been subjected to misuse or accident.
- It is, in any event, strictly limited to the replacement or repair of the product itself.

RSA-TDPA Differential Pressure Transmitter - Operation Instruction

Button definition:

"SET": Set/Confirm/Save; "SEL": Bit Select/Decrease; "ADJ": Adjust/Increase; "Zero": Zero Reset

Zero reset: keep the high (+) / low (-) pressure ports unconnected in stable air, or directly connect the two, press the button "Zero" 5s to reset the actual "zero point". It means "remove the zero drift of the transmitter in order to improve the accuracy". It is recommended that this operation could be done periodically.

Operation instruction:

1. "P810": Reset

SET→SEL/ADJ→P810→SET

User can restore the factory default set. Input "P810", "Pret" will blink, press button SET, all factory default set will restore.

2. "P075": Set the response time (Default set: 0.7s, available range: 0.5-30.0s)

SET→SEL/ADJ→P075→SET→SEL/ADJ→XXX→SET. (XXX means set time).

3. "P083": Check LED display function, it will display the 4 digits one by one.

SET→SEL/ADJ→P083→SET

4. "P081": Set Engineering Unit (Default set: 1, for engineering unit Pa, available ranges: 1-5)

SET→SEL/ADJ→P081→SET→SEL/ADJ→XXX→SET (XXX means the code of engineering unit), then the relevant LED on.
(Index: 1: Pa; 2: kPa; 3: mbar; 4: mmW.C.; 5: inW.C.)

5. "P485": Set RS485 address (Default set: 1, available ranges 1~255, but recommend 1~30)

SET→SEL/ADJ→P485→SET→SEL/ADJ→XXX→SET (XXX means RS485 address) **Note**

: Refer to the communication data table

6. "P484": Set RS485 RTU Mode (Default set: 1, available 1 or 2)

SET→SEL/ADJ→P484→SET→SEL/ADJ→XXX→SET (XXX means RTU Mode index)

Index: 1: 9600-N-8-1; 2: 9600-N-8-2.

Calibration by user:

Even though the product can be re-calibrated by user, it should be operated very carefully. The calibration is already finished in factory. It may be out of accuracy or even damaged after un-properly re-calibrated.

There are sets of parameters can be re-calibrated by user. Current outputs at both zero (4mA) and full range (20mA) or voltage outputs at both zero (0V) and full range (10V). All calibrated data will be stored and kept in the flash memory even power supply is fail. But the factory default sets are always kept and can be restored any time.

7. "P271": Re-calibrate analog output, include zero and full range

SET→SEL/ADJ→P271→SET→SEL/ADJ→"key"→SET→SEL/ADJ→Waitjump→SEL/ADJ→SET

"Key" is calibration password: 1021.

Calibration method : Enter P271 and password, connect the transmitter with standard meter. At this time the LED will alternatedisplay “ZEro” and “ FULL”. During “ FULL” display period(last about 25s), press SEL/ADJ to adjust the output become 10V or 20mA. During “ZEro” display period(last about 25s), pressSEL/ADJ to adjust the output become 0V or 4mA, then press SET to finish. If adjust to the limit, it will display"Err".

System Error signal:

- Err 1 Keys input operation code is wrong
- Err 2 Input data is not available
- Err 3 Modbusattempt to write read only register error
- Err 4 Modbus CRC checkerror
- Err 6 Password Key input error

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