ZAXDP31 Intelligent Single-crystal Silicon DP Transmitter

◆Summary

The ZAXDP series intelligent pressure/differential pressure transmitters feature a central sensing unit utilizing advanced high-precision silicon pressure and differential pressure sensor technology. The sensors are positioned at the top of the metal housing, maintaining mechanical and thermal isolation from the medium contact surface. Integrated glass-sintered sensor leads ensure robust electrical insulation from the metal substrate, enhancing circuit flexibility and transient voltage protection capabilities. With platinum-grade accuracy of ±0.05% and unidirectional overpressure capacity up to 25MPa, the transmitters demonstrate exceptional static pressure performance. Their static pressure error is optimally controlled within ±0.05%/10MPa, while temperature influence remains minimal at ±0.04%/10K.

The instrument employs a modular design centered on a microprocessor with advanced digital isolation technology, ensuring exceptional interference resistance and operational stability. Utilizing the Hart protocol for communication, it enables remote operation via a Hart controller or computer equipped with Hart software, allowing flexible configuration of measurement parameters. The system incorporates digital compensation technology and built-in temperature sensors to calibrate transmitters, significantly improving measurement accuracy while minimizing temperature drift. This design delivers long-term stability and high reliability. Its user-friendly one-touch reset function meets safety requirements in hazardous environments. The intuitive quick menu streamlines operations and enables comprehensive parameter configuration, substantially enhancing the transmitter's overall performance.

◆Advantage

◇Advanced single-crystal silicon pressure sensor technology and packaging process.

◇The modular design with microprocessor as the core and advanced digital isolation technology as the auxiliary makes the instrument have high anti-interference and stability

◇A high-performance 24-bit ADC delivers high precision

◇Innovative dual compensation technology achieves true 0.05 high precision

◆Functional Parameter

Range	Please select a range code within rated range. Adjustable range within rated range
Zero Point Settings	The zero point and range can be adjusted to any value within the measurement range of the meter, provided that the calibrated range is greater than or equal to the minimum range.
Installation Position Affects	Keep installation position perpendicular to the diaphragm do not cause zero drift. However, if the installation position deviates from the diaphragm by more than 90°, a zero drift of <0.4kPa may occur. It can be corrected by adjusting the zero point and no effect to full range measurement.
output	Two-wire 4-20mA HART system compliant with NAMIR NE43 standards, linear or square root output are optional.
Output limit	Imin=3.9mA , Imax=21.0mA
Warning	If the sensor or circuit fails, The automatic diagnostic function outputs 3.9 or 21 mA.
Alarm current	Low mA mode: 3.9 mA/High mA mode:21mA. Default mode:High mA mode
Response time	The amplifier component has a damping constant of 0.1s; the sensor's response time constant ranges from 0.1 to 1.6 s, depending on the range and range ratio. Additional adjustable response time constant is available from 0 to 100s.
Warm Up time	<15s

◆Performance Parameter

Measuring medium: gas, vapor, liquid

Uncertainty: ±0.05%, ±0.075%, ±0. 1% (including linearity, hysteresis, and repeatability from zero)

Stability: ±0. 1%/3 years

Temperature effect: ≤±0.04%URL/10℃

Static pressure effect: ±0.05%/10MPa

Power supply: 10 to 36V DC (recommended 24V DC)

Power supply influence: ±0.001% /10V (10-36V DC), negligible
Referable accuracy for range adjustment: When TD> 10 (where TD = maximum range/ adjustment range), the output accuracy is ±(0.075 × TD)%. The square root output accuracy is 1.5 times of the aforementioned linear reference accuracy.

Ambient temperature: -40℃ ~ 85℃

Measuring medium temperature: -40℃ ~ 120℃

Storage temperature: -40℃ ~ 105℃

Display: LCD, OLED

Display module temperature: -20℃ to 70℃ (LCD) and-40℃ to 80℃ (OLED)

◆Overload and Static Pressure

	Range	Overload (negative end)	Overload (positive end)	Bilateral hydrostatic pressure
A	1 KPa	16MPa	16MPa	40MPa
B	6 KPa	16MPa	16MPa	40MPa
C	40KPa	25MPa	25MPa	40MPa
D	400KPa	25MPa	25MPa	40MPa
E	4MPa	25MPa	25MPa	40MPa

◆Electromagnetic Compatibility (EMC)

A. Radio Frequency Radiation Test

Test Field Strength	Frequency range	EUT set	Direction of polarization	Detection result
3V/m	80-1000 MHz	Upright	Horizontal polarization	The memory data of the test sample remains unchanged
			Vertical polarization	The memory data of the test sample remains unchanged

B. Power Frequency Magnetic Field Immunity Test

Magnetic field intensity	Result
400A/m（X、Y、Z）	The memory data of the test sample remains unchanged

◆Physical parameters

Diaphragm: 316L stainless steel, Hastelloy C, Titanium, Tantalum ,Gold plating, 316L diaphragm coated with Teflon

Process Flange: Stainless Steel 304,316L

Nuts and Bolts: Galvanized Carbon Seel, Stainless Steel

Filling Liquid: Silicone Oil, Fluorine Oil, High Temperature Silicone Oil, etc

Seal O-ring: Nitrile Rubber, Fluororubber, Polytetrafluoroethylene

Transmitter housing: Aluminum alloy, with epoxy resin coating

Housing O-ring: Nitrile Rubber

Plate: Stainless Steel 304

Weight: 2.8kg (Note: No installation bracket, process connection)
Protection:IP65/IP67
Explosion-proof Rating: Ex d IIC T6, Ex ia IIC T6

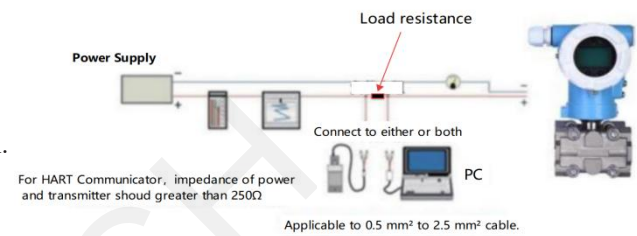
◆Installation

Power and Load Conditions

Power Supply is 24V, R ≤ (Us-10V)/Imax Ω, Imax = 21 mA.

Min&Max Power Supply:10- 36VDC.

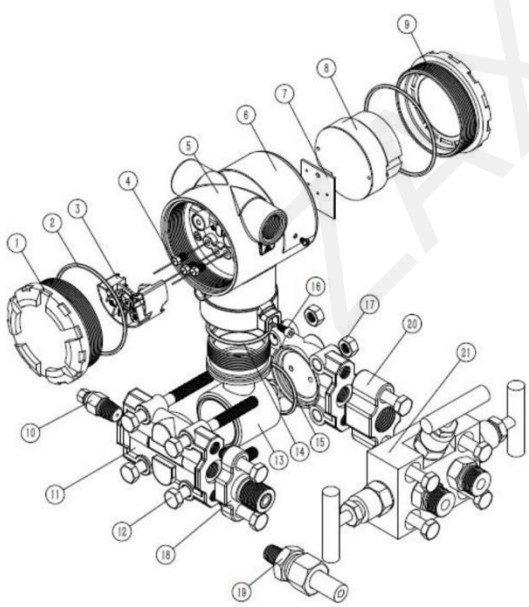
Digital Communication Load Range: 250 to 600 Ω



Process Connection

NPT1/4", M10, UNF7/16

◆Breakdown Drawing

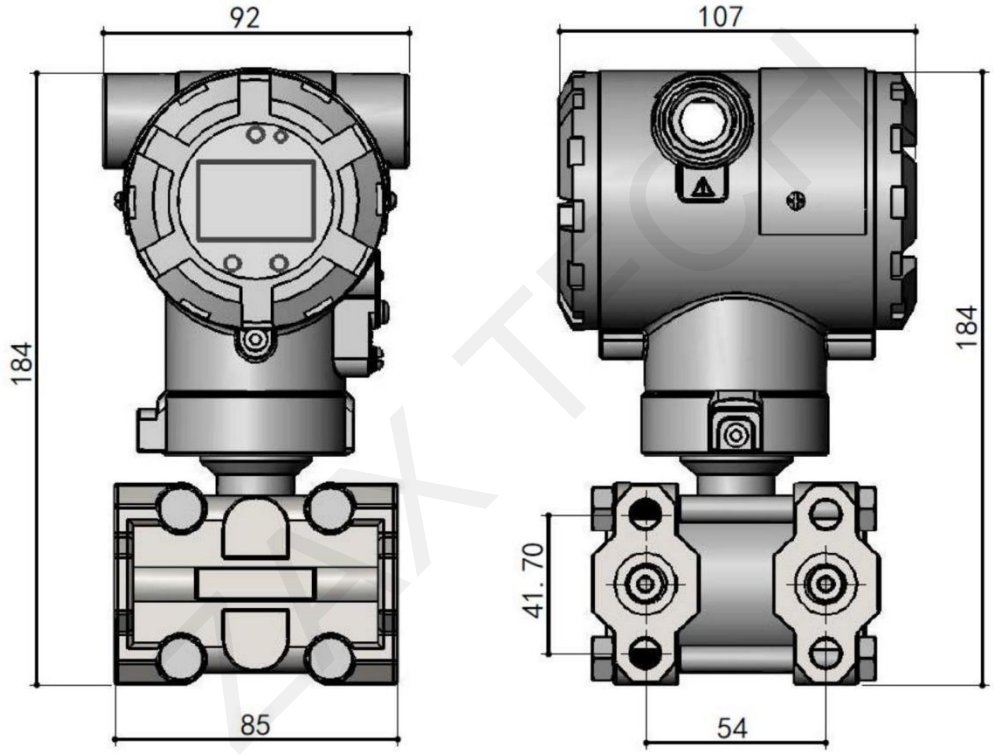


01	Rear Cover	02	Rear Cover Seal
03	Terminals	04	Feedthru Capacitor
05	Enclosure	06	Plate
07	Anti-interference board	08	Circuit Module
09	Display end Cap	10	Drainage vent
11	Clamp Module	12	M8 screw
13	Sensor	14	Shell Seal O-ringe
15	Sensor Seal O-ringe	16	Shell locking nut
17	M8 nut	18	T-joint (optional)
19	Welded pipe joint (optional)	20	Freedom Flange (optional)
21	Three Way Manifold (optional)		

◆Rated Range and Recommended Measuring Range

Range code	Rated Range (kPa)	Measuring Range (kPa)	Accuracy / Stability
A	-1 ~ 1	0 ~ 0.2 ~ 1	±0.075%F.S/ ±0.1%
B	-6 ~ 6	0 ~ 1 ~ 6	
C	-40 ~ 40	0 ~ 6 ~ 40	
D	-100 ~ 100	0 ~ 40 ~ 100	
E	-100 ~ 400	0 ~ 100 ~ 400	
F	-100 ~ 4000	0 ~ 400 ~ 4000	

◆Dimension



◆ZAXD31 Intelligent Monocrystalline Silicon Differential Pressure Transmitter Selection Guide

Model	Code	Parameter Description		
ZAXDP31	A	Flameproof Exd IIC T6		
	C	Intrinsically safety Exia IIC T6		
	W	Na		
	DP	Differential Pressure Transmitter		
Range	1	0～0.2～1KPa		
	2	0～1 ～6KPa		
	3	0 ～6～40KPa		
	4	0～40～100KPa		
	5	0 ～ 100 ～400KPa		
	6	0～400～4000KPa		
Output	S1	4～20mA		
	S2	4～20mA+Hart		
Accuracy	J1	±0.2%		
	J2	±0.1%		
	J3	±0.075%		
	J4	±0.05%		
Display	X1	LCD		
	X2	OLED (Temperature Tolerate to Min -40℃)		
Fill Fluid	G1	Silicone Oil		
	G2	Fluorocarbon Oil		
Material		Flange Joint	Drainage Vent	Diaphragm
	21	304 stainless steel	304 stainless steel	316L stainless steel
	22	316 stainless steel	316 stainless steel	316L stainless steel
	23	316 stainless steel	316 stainless steel	Hastelloy C
	24	316 stainless steel	316 stainless steel	Monel
	25	316 stainless steel	316 stainless steel	Tantalum

	26	Hastelloy C	Hastelloy C	Hastelloy C
	27	Hastelloy C	Hastelloy C	Tantalum
	28	Monel	Monel	Monel
	29	304 stainless steel	304 stainless steel	Gold Plating
Process Connection	Y1	NPT1/4 Female		
	Y2	NPT1/2 Female		
	Y3	M20*1.5 Male		
	Y4	Three-way Manifold		
Electrical Connection	D1	M20*1.5 (Standard)		
	D2	1/2NPT		
Mounting Bracket	B1	No Mounting Bracket		
	B2	Pipe Fitting Bend Bracket		
	B3	Pipe Fitting Flat Bracket		
	B4	Vertical Bracket		
Caliberation Range				
Example of Selection	ZXDP31-ADP3S2J4X1G121Y1D1B3 0～10KPa			

Selection notes:

1. Before selecting the model, users should clarify the temperature, corrosiveness, density, measurement range, explosion-proof requirement etc.

2. Confirm whether the medium is prone to crystallization or viscous.