

HNP30-B

INTELLIGENT HIGH-PRECISION SINGLE CRYSTAL SILICON DIFFERENTIAL PRESSURE TRANSMITTER



PRODUCT DESCRIPTION

HNP30-B series intelligent pressure / differential pressure transmitter, the central sensing unit adopts the world's leading high-precision silicon pressure, differential pressure sensor technology and packaging process, monocrystalline silicon pressure, differential pressure sensor is located in the metal body at the top, away from the media contact surface, to achieve mechanical isolation and thermal isolation.

The glass sintered sensor leads achieve high strength electrical insulation with the metal substrate, improving the flexibility of the electronic circuit and the ability to withstand transient voltage protection.

Platinum level accuracy of $\pm 0.05\%$, unidirectional overpressure up to 25MPa, excellent static pressure performance, static pressure error can be optimally controlled within $\pm 0.05\%/10\text{MPa}$, the temperature effect of the change is very small, the optimum can be controlled in $\pm 0.04\%/10\text{K}$.

In the circuit design of the microprocessor as the core and assisted by advanced digital isolation technology modular design, so that the instrument has a very high anti-interference and stability.

Using Hart protocol for communication, can be operated remotely through Hart hand manipulator or computer with Hart software installed to complete the measurement information configuration, while using digital compensation technology, and through the built-in temperature sensor to compensate for the transmitter, improve the measurement accuracy, reduce the temperature drift, with good long-term stability, reliability and other characteristics.

The most humanised design of external one-key zero function meets the safety operation requirements of hazardous occasions. The shortcut menu is convenient for operation and can complete all the parameter settings, which comprehensively improves the performance of the transmitter.

PRODUCT ADVANTAGE

- Advanced monocrystalline silicon pressure sensor technology and packaging technology, carefully developed a leading international technology of ultra-high performance pressure, level transmitter.
- Microprocessor as the core and assisted by advanced digital isolation technology modular design, so that the instrument has a high degree of anti-interference and stability.
- Powerful 24-bit ADC to achieve high accuracy.
- Innovative double compensation technology is really 0.075 high accuracy.

FUNCTIONAL PARAMETERS

NAME	SPECIFICATION
Range Limit	Within the upper and lower limits of the range, it can be adjusted arbitrarily It is recommended to select the range code with the lowest possible range ratio in order to optimise performance
Zero Setting	Zero and range can be adjusted to any value within the measurement range of the table, as long as: calibration range $\geq$ minimum range

Mounting position effects	Changes in mounting position perpendicular to the diaphragm surface will not cause zero drift, if the mounting position is changed by more than 90° to the diaphragm surface, a zero effect within <0.4kPa will occur, which can be corrected by adjusting the zero, with no range effect.
Outputs	2-wire 4-20mA, compliant with NAMIR NE43 specification, superimposed digital signals (Hart protocol) with selectable linear or square root outputs.
Output Signal Limits	I _{min} =3.9mA ,I _{max} =21.0mA
Fault Warning	If there is a sensor or circuit failure, the auto-diagnostic function automatically outputs 3.9 or 21.0mA (user preset).
Alarm Current	Low alarm mode (minimum): 3.9mA
High alarm mode (max)	21mA
Alarm current default setting	High Alarm Mode
Response time	Amplifier component damping constant of 0.1s; sensor time constant of 0.1 ~ 1.6s, depending on the range and range ratio of the additional adjustable time constant for: 0 ~ 100s
Warm-up time	<15s

PERFORMANCE PARAMETERS

NAME	SPECIFICATION
Measuring medium	Gas, vapour, liquid
Inaccuracy	±0.05%, ±0.075%, ±0.1% (including linearity, return and repeatability from zero)
Stability	±0.1%/3 years
Ambient temperature effects	≤±0.04%URL/10°C
Power supply	10 to 36V DC (24V DC recommended)
Power supply influence	±0.001% /10V (10 to 36V DC), negligible
Reference Accuracy for Ranging	If TD>10 (TD= Maximum range / Adjustment range) then: ±(0.075×TD)%
Ambient temperature	-40°C ~85°C
Measuring medium temperature	-40°C ~120°C
Storage temperature	-40°C ~105°C
Display	LCD, OLED
The display shows the module temperature	-20°C ~70°C (LCD), -40°C ~80°C (OLED)

PHYSICAL PARAMETER

NAME	SPECIFICATION
Measuring diaphragms	Stainless steel 316L
Diaphragms	Stainless steel 316L, Hastelloy C
Process flanges	Stainless Steel 304, 316L
Nuts and Bolts	Carbon steel galvanised, stainless steel
Filling Fluid	Silicone oil, fluorine oil, high temperature silicone oil, etc.
Seals	Nitrile rubber, fluorine rubber, PTFE
Transmitter housings	Aluminium alloy with epoxy coated exterior
Housing Seal	Nitrile rubber
Nameplate	Stainless steel 304
Weight	2.8kg (without: mounting bracket, process connection)
Housing protection class	IP67
Explosion protection class	Exd II CT6 、 Exia II CT6

ELECTROMAGNETIC COMPATIBILITY (EMC)

A.RADIOFREQUENCY RADIATION TEST

Test Site Strength	3V/m
Frequency Range	80MHz
	1GHz
EUT Placement	Positive
Polarisation Direction	Horizontally polarised
	Vertical Polarisation
Test Result	No change in sample memory data
	No change in sample memory data

B.INDUSTRIAL FREQUENCY MAGNETIC FIELD IMMUNITY TEST

Magnetic Field Strength	Detection Results
400A/m (X、Y、Z)	No change in the memory data of the test samples

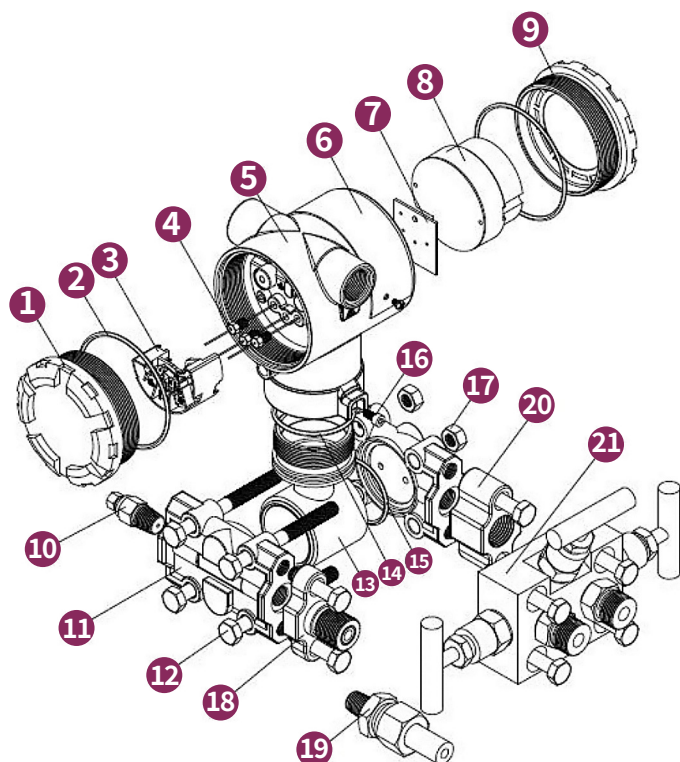
OVERLOAD AND STATIC PRESSURE

	Range	Unilateral Overload (Negative)	Unilateral Overload (Positive)	Bilateral Static Pressure
A	1KPa	16MPa	16MPa	40MPa
B	6KPa	16MPa	16MPa	40MPa
C	40KPa	25MPa	25MPa	40MPa
D	400KPa	25MPa	25MPa	40MPa
E	4MPa	25MPa	25MPa	40MPa

SCALE AND RANGE

Range Code	Measuring Range (KPa)	Measuring Range (KPa)	Accuracy/Stability
A	-1~1	0~0.2~1	Range $\pm 0.075\%$ F.S / Maximum error of $\pm 0.1\%$ of range per year
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	

TYPICAL PRODUCT ASSEMBLY DECOMPOSITION DIAGRAM



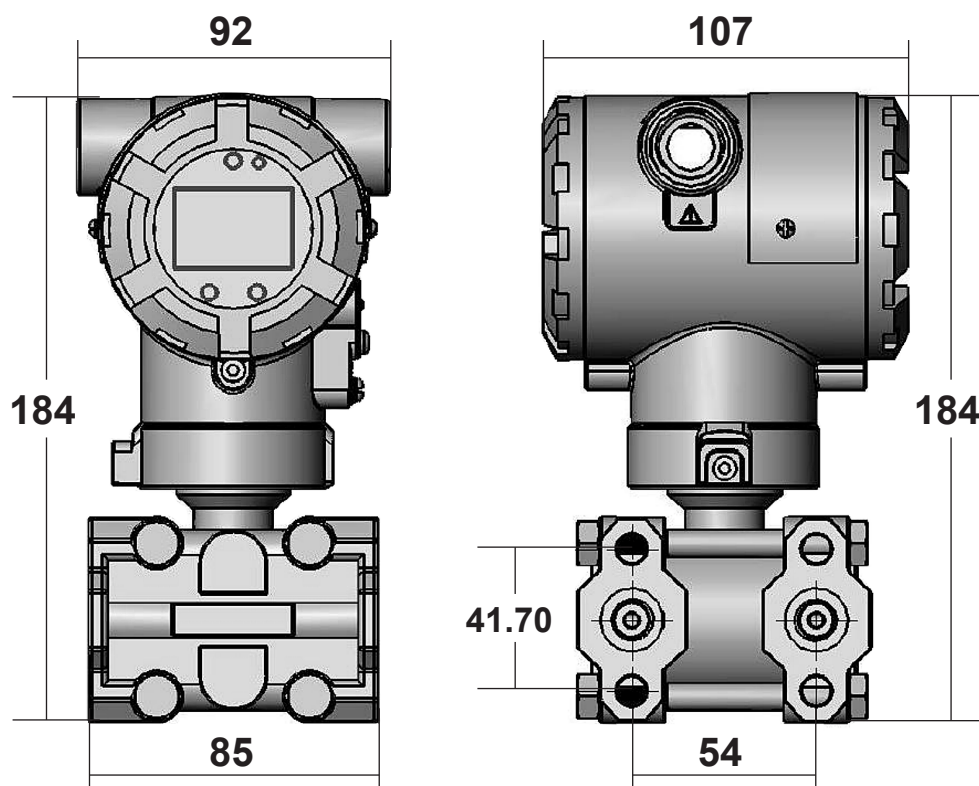
01	Rear cover
02	End Cap Seal
03	Wiring Terminal
04	Threaded Capacitor
05	Housing
06	Labelling
07	Anti-jamming board
08	Circuit header
09	Display End Cap
10	Air and liquid venting valve
11	Clamping Plate
12	M8 screws
13	Sensor
14	Housing seal
15	Sensor Seal
16	Housing Locking Top Wire
17	M8 nut
18	T-joint (optional)
19	Welded pipe joints (optional)
20	Waist flange (optional)
21	Integrated three-valve manifold(optional)

PRODUCT SIZE(MM)

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- High Precision
- High stability

- High performance
- Anti-interference



INSTALLATION

POWER AND LOAD CONDITIONS

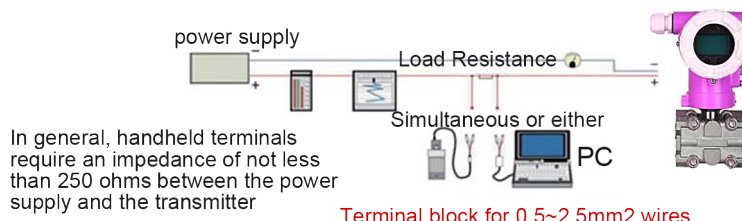
Power supply voltage:

24V, $R \leq (U_s - 10V) / I_{max} \Omega$ where $I_{max} = 21mA$

Maximum supply voltage: **36VDC**

Minimum supply voltage: **10VDC**

Digital communication load range: **250~600Ω**



PROCESS CONNECTIONS

Process connection flanges are available with NPT1/4 and M10 or UNF7/16 female threads.

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INTELLIGENT HIGH-PRECISION MONOCRYSTALLINE SILICON DIFFERENTIAL PRESSURE TRANSMITTER

NAME	CODE	CODE DESCRIPTION
Explosion Proof Selection	Y	Flame-proof type, explosion-proof grade Exd II CT6
	V	Intrinsically safe, explosion-proof grade Exia II CT6
	W	No explosion-proof
Measuring 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
	X	Customizable
Output Signal	M	4~20mA
	MH	4~20mA+Hart
Accuracy Class	1	±0.2%
	2	±0.1%
	3	±0.075%
	4	±0.05%

Structural Material		Flange Connector	Air Vent/Drain Valve	Isolation Diaphragms
	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 alloy
	25	316 Stainless Steel	316 Stainless Steel	Tantalum
	26	Hastelloy C	Hastelloy C	Hastelloy C
	27	Hastelloy C	Hastelloy C	Tantalum
	28	Monel alloy	Monel alloy	Monel alloy
	29	304 Stainless Steel	304 Stainless Steel	Diaphragm gold plating
Display		L	LCD	
		O	OLED (Low Temperature Resistance -40°C)	
Filling Fluid		G	Silicone oil	
		F	Fluorine oil	
Pilot Pressure Method		1	NPT1/4 lead-in fitting and rear welded lead-in tube Φ14	
		2	NPT1/2 Tapered Pipe Female Waist Flange	
		3	Butyl male connector M20*1.5	
		4	Integrated three-valve manifold	
Electrical Connection		A	M20*1.5(standard)	
		B	1/2NPT female thread	
Mounting Accessories		0	Without mounting bracket	
		1	Tube mounted curved bracket	
		2	Tube Mounted Flat Bracket	
		3	Plate mounted curved bracket	

SELECTION ATTENTION:

1. Users should be clear before the selection of the measured medium temperature corrosivity, density measurement range, whether explosion-proof, whether the need to prohibit oil treatment.
2. Confirm that the medium is easy to crystallise or viscous whether the membrane box flange connection.

SELECTION TABLE FOR INTELLIGENT HIGH PRECISION MONOCRYSTALLINE SILICON PRESSURE/ABSOLUTE PRESSURE TRANSMITTERS

NAME	CODE	CODE DESCRIPTION	
Explosion Proof Selection	Y	Flame-proof type, explosion-proof grade Exd II CT6	
	V	Intrinsically safe, explosion-proof grade Exia II CT6	
	W	No explosion-proof	
Product type	G	Intelligent pressure transmitter	
	A	Intelligent absolute pressure transmitter	
Measuring Range		Pressure transmitter	Absolute pressure transmitter
	1	0~0.2~1KPa	0~6~40KPa
	2	0~1~6KPa	0~40~250KPa
	3	0~6~40KPa	0~250~2000KPa
	4	0~40~100KPa	
	5	0~100~400KPa	
	6	0~400~4000KPa	
	X	Customized	
Output Signal	M	4~20mA	
	MH	4~20mA+Hart	
Accuracy Class	1	±0.2%	
	2	±0.1%	
	3	±0.075%	
	4	±0.05%	
Display	L	LCD	
	O	OLED (Low Temperature Resistance -40°C)	
Filling Fluid	G	Silicone oil	
	F	Fluorine oil	
Pilot Pressure Method	1	NPT1/4 lead-in fitting and rear welded lead-in tube Φ14	
	2	NPT1/2 Tapered Pipe Female Waist Flange	
	3	Butyl male connector M20*1.5	
	4	Integrated three-valve manifold	

Structural Material		Flange Connector	Air Vent/Drain Valve	Isolation Diaphragms
	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 alloy
	25	316 Stainless Steel	316 Stainless Steel	Tantalum
	26	Hastelloy C	Hastelloy C	Hastelloy C
	27	Hastelloy C	Hastelloy C	Tantalum
	28	Monel alloy	Monel alloy	Monel alloy
	29	304 Stainless Steel	304 Stainless Steel	Diaphragm gold plating
Electrical Connection		A	M20*1.5(standard)	
		B	1/2NPT female thread	
Mounting Accessories		0	Without mounting bracket	
		1	Tube mounted curved bracket	
		2	Tube Mounted Flat Bracket	
		3	Plate mounted curved bracket	

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Intelligent

Monocrystalline silicon

High-precision

