

CS

CODE AND SPECIFICATIONS SHEET

Intelligent Sanitary Pressure Transmitter with Remote-Sealed Diaphragm EPR-N8SD



EPR-N8SD Sanitary Pressure Transmitter incorporates semiconductor sensors and microcomputer and converts measured differential pressures in to 4 to 20mA DC signals with high accuracy. EPR-N8SD is suitable for measuring pressures of food processes and uses sanitary silicon oil for the sealed liquid and propylene glycol can also be selected.

STANDARD SPECIFICATIONS

Model EPR-N8SD

Pressure range

Range Code	Measuring Span	Settable Range Limits
G20	98kPa to 1MPa	$-0.1 \leq \text{LRV} \leq 1\text{MPa}$, $-0.1 \leq \text{URV} \leq 1\text{MPa}$

Note) URV is the input differential pressure to give 100% output (20mA DC)

LRV is the input differential pressure to give 0% output (4mA DC)

Output signal	4 to 20mA DC
Output signal range	3.6 to 21.6mA DC (-2.5 to 110%)
Power supply voltage	11.4 to 42.0V DC
Allowable load resistance	600 Ω (at 24V DC power supply voltage)
Communication protocol	Hitachi communication
Communication line conditions	
Power supply voltage	16.7 to 42.0V DC
Load resistance	250 to 1.2k Ω
	See Fig. 1 for the relationship between power supply voltage and load resistance.
External adjustment /configuration	Zero point adjustment ($\pm 100\%$ of measured span), LRV and URV adjustment and configuration and damping time constant are configurable (however, only with indicator and when the function is enabled).
Burn-out at error	Burn-up, burn-down or no burn-out can be selected. (No burn-out is configured at shipment.)

Accuracy

Range Code	Accuracy
G20	$\pm 0.2\%$ X is 0.2MPa or higher $\pm [0.1 + (0.1 \times 0.2/X)]\%$ X is less than 0.2MPa

Note) Accuracy and temperature characteristics are the percentages to X. X is the absolute value of URV, LRV or the biggest value of measured span. X's unit is MPa.

T (°C) is temperature variation width.

Response time

Dead time	0.15s (Minimum)
Damping time constant (Amplifier time constant)	Electrically configurable from 0.1 to 102.4s (at 0.1s step) by using a communicator.
	• Response time is the sum of time constants of the Sensor body and damping time constant (amplifier time constant) and dead time.

Storage temperature range -40 to 85°C

Operating humidity range 0 to 100% RH

Operating temperature range

Ambient temperature range -10 to 60°C

Wetted parts temperature range -20 to 150°C

Maximum operating pressure 1.0MPa (See Fig. 2 for negative pressure.)

Site vibration Continuous vibration below 29.4 m/s²

Temperature characteristics

Range Code	Temperature characteristics
G20	Zero shift $\pm [0.05 + (0.15 + 0.15 \times 1.6/X) \times T/50]\%$ Total shift $\pm [0.05 + (0.4 + 0.15 \times 1.6/X) \times T/50]\%$

Note) Temperature characteristic is the percentage to X. X is the absolute value of URV, LRV or the biggest value of measured span. X's unit is MPa.

T (°C) is temperature variation width.

Effect of wetted parts temperature difference 0.05kPa (10°C varied)

Materials

Diaphragm	SUS316L
Wetted parts other than diaphragm	SUS316
Capillary	SUS316 (polyethylene-covered)
Sensor body flange bolt	SCM435
Amplifier case	Aluminum alloy
Mounting plate	SPCC (anti-acid painting)
U-bolt	SUS304

Sealed liquid Silicon oil (Relative density: 0.965, at 25°C)

Process connection	IDF4S Clamp connection
Length of protruding part of flange	0mm
Capillary length	5m
Wire connection	G1/2
Check terminal	Current output (Ampere meter is required for measurement.)
Protection grade	JIS C 0920 IP67
Surge absorber	Incorporated into the power input circuit Surge tolerance:1,000A (8/20 μ s) Impact test voltage:15,000V (1.2/50 μ s)
Oil prohibition	Oil-prohibitive finish
Color	Light gray (anti-acid painting)
Weight	Approx. 10kg
Mounting	Use U-bolt for 50A pipe, etc.
Accessories	A set of 50A pipe mounting plate and U-bolts, External adjustment/configuration magnet

ADDITIONAL SPECIFICATIONS

Communication protocol	HART communication
TIIS flameproof, Oil-immersion	
Applicable Standard	Exdo II CT4 X ^{Note)} Available for use at Zone1, Zone2 groups of hazardous place. Note) If the indicator is not equipped, please construct an external alarm indication system by scaling out of the output signal.
Operating temperature range	Ambient temperature range: -20 to 55°C Wetted parts temperature range: -20 to 100°C
Wire connection	Please use X-EXRCA pressure proof packing brackets (or EXPC-16B by Shimada Electric Co.,Ltd).
FM explosionproof approval (Arranging)	
Applicable Standard	Explosionproof CLI, DIV 1, GPS B, C&D Dust-ignition proof CL II / III, GPS E, F&G Temperature Code T4
Applicable Standard	Explosionproof CLI, DIV 1, GPS B, C&D Dust-ignition proof CL II / III, GPS E, F&G Temperature Code T4
NEPSI explosionproof approval (Arranging)	
Applicable Standard	Explosionproof Ex d II C T4
Operating temperature range	Ambient temperature range: -40 to 60°C Wetted parts temperature range: -40 to 120°C
Indicator	Digital indicator Indication 5 digits, unit 7 digits, bar graph Indication items Individual enable/disable indication of the following items: Automatic switching when selecting the items Differential pressure%, Differential pressure value, Actual scale of differential pressure, Static pressure%, Static pressure value Actual scale Unit is selected from pressure, flow volume, height or discretionary configuration. Configuration range: -99,999 to 99,999 Ambient temperature range: -20 to 85°C

Process connection	IDF2S clamp connection (Protruding part length of only 0mm) IDF3S clamp connection
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Aperture	Accuracy
IDF2S	$\pm 0.5\%$
IDF3S	$\pm 0.2\%$ (for $X \geq 0.2\text{MPa}$) $\pm 0.3\%$ (for $X < 0.2\text{MPa}$)

Note) Accuracy is the percentage to X. X is the absolute value of URV, LRV or the biggest value of measured span. X's unit is MPa.

Aperture	Effect value
	Wetted parts temperature difference ($\pm 10^\circ\text{C}$ varied)
IDF2S	$\pm 0.39\text{kPa}$
IDF3S	$\pm 0.10\text{kPa}$

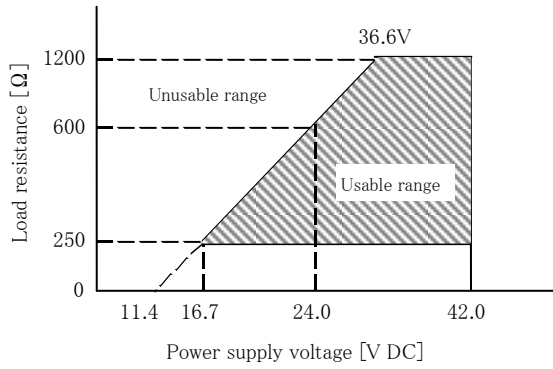
Length of protruding part of flange	52mm
Capillary length	1 to 4m (Unit: 1m)

Wetted parts materials	
Diaphragm	SUS316L
Other wet part	SUS316

Sealed liquid	
Propylene glycol	Wetted parts temperature range: -20 to 150°C Relative density: 1.037 (at 25°C) (Not available for negative pressure.)

Wetted parts condition	
Vacuum type (Code:V)	Wetted parts temperature: -20 to 150°C Sealed liquid is the same as the standard specifications. (Operation pressure varies depending on the temperature. See Fig. 2 for proper usage.)

Bolt material	Sensor body flange bolt: SUS304, SUS630
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The minimum load resistance of 250 Ω is required to communicate by connecting the communicator

Fig. 1 Power supply voltage / load resistance characteristics

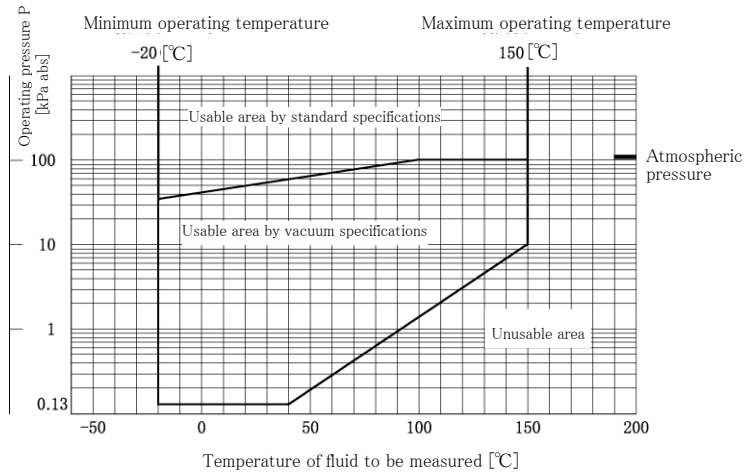
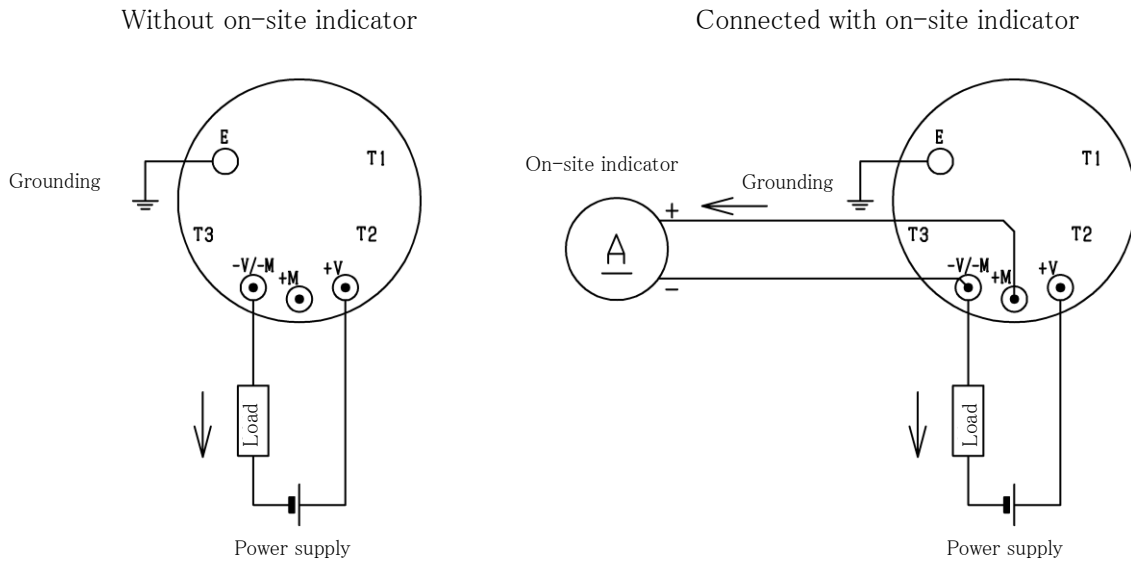


Fig. 2 Operating pressure and wetted parts temperature (Standard / Vacuum type specifications)

EXTERNAL CONNECTION DRAWING



Note1) Perform Class D grounding work (ground resistance of 100 Ω or less) for grounding.

Note2) Ground either the transmitter or the receiving instrument. Be careful not to be dual-grounded.

Note3) Grounding terminals on the transmitter are located inside the terminal box and outside the amplifier case.

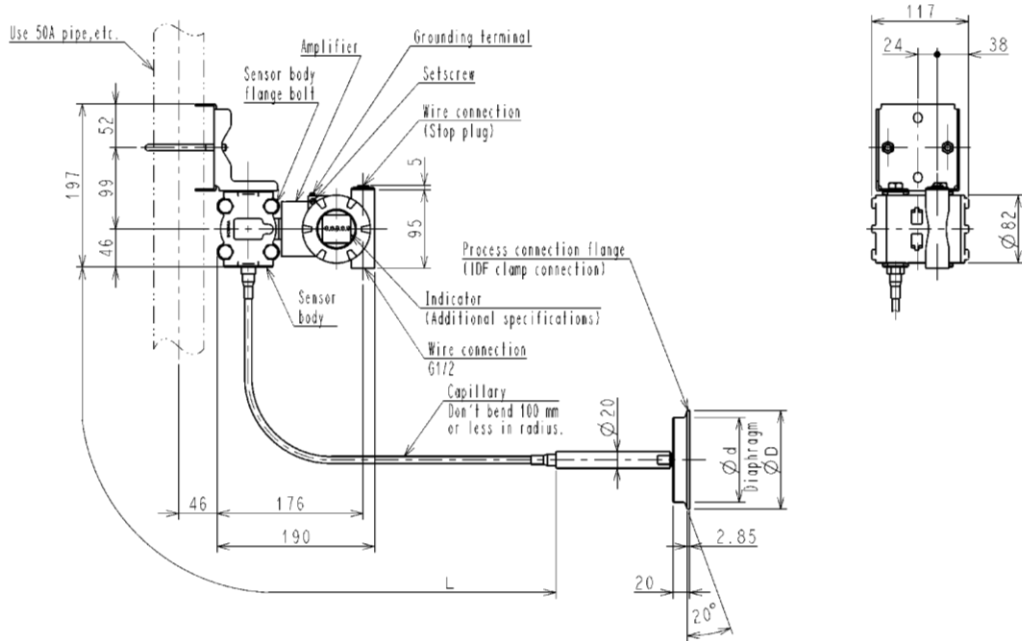
You can use either of the groundings.

Note4) T1, T2 and T3 terminals are not connected.

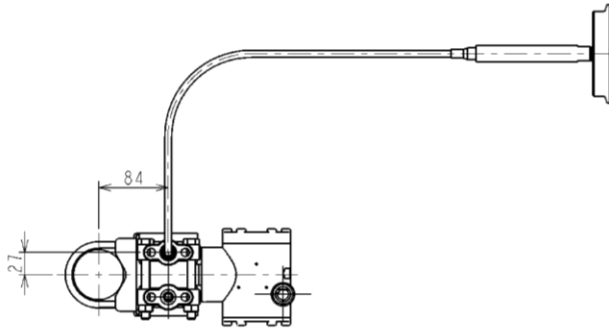
Note5) The resistance value needs to be 20 Ω or less including wire resistance to connect an on-site indicator.

OUTLINE DRAWING (Unit: mm)

Without protruding part (E0)

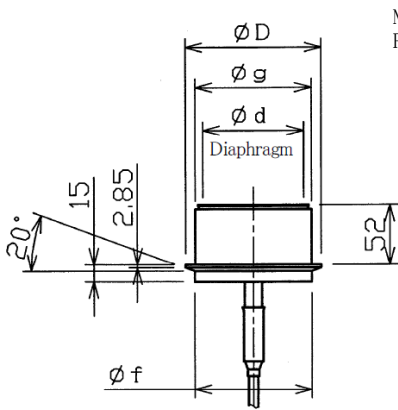


Capillary length L (m)
1
2
3
4
5

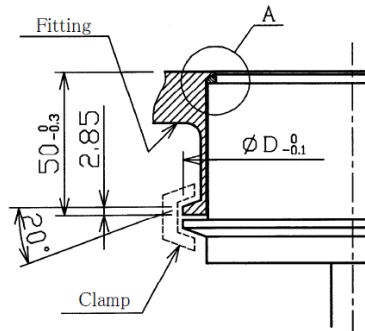


Aperture	ϕD	ϕd
IDF 2 S	64	42
IDF 3 S	91	64
IDF 4 S	119	88

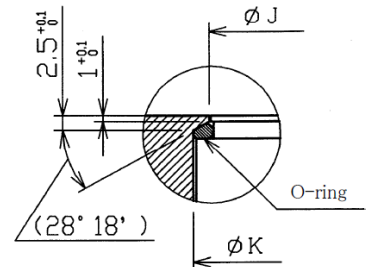
With protruding part



Mounting shape
Please prepare the following shape for the mounting part.



Magnification of the part A



Aperture	ϕD	ϕg	ϕd	ϕf	ϕJ	ϕK	O-ring
IDF 3S	91	76.1	64	76.7	$70.8^{+0.1}_0$	$76.5^{+0.1}_0$	G70
IDF 4S	119	101.6	88	102.5	$96.4^{+0.1}_0$	$102^{+0.1}_0$	G95

CODE TABLES

EPR-N8SD Intelligent Sanitary Pressure Transmitter

Model		EPR-N8SD	
No.	Item	Code	Remarks
1	Range Code	G20	Measuring span 98 kPa to 1 MPa
2	Communication	-	Hitachi communication
		H	HART communication
3	Functional safety	-	None
4	Adjustment range	-	Adjust between 0 and Maximum range
		C()	Describe adjustment range and unit sign in ()
5	Certification	-	None
		XC	TIIS flameproof, Oil-immersion
		FM	FM explosionproof approval (Arranging)
		NEPSI	NEPSI explosionproof approval (Arranging)
6	Indicator	-	None
		M	With digital indicator (Indication 0 to 100%)
		MJ()	With digital indicator, describe indication scale and unit sign in actual scale indication ()
7	Flange standard	IDF2	IDF2S clamp connection
		IDF3	IDF3S clamp connection
		IDF4	IDF4S clamp connection
8	Protruding part of flange	E0	Protruding part length 0 mm
		E50	Protruding part length 52 mm For apertures 3S, 4S
9	Capillary length	1	Capillary length 1 m
		2	Capillary length 2 m
		3	Capillary length 3 m
		4	Capillary length 4 m
		5	Capillary length 5 m
10	Material	-	Diaphragm: SUS316L Wetted parts: SUS316
		316L	Diaphragm: SUS316L Wetted parts: SUS316L
11	Bolt/mounting plate material	-	Sensor body flange bolt: SCM435 Mounting plate: SPCC U-bolt: SUS304
		S304	Sensor body flange bolt: SUS304 Mounting plate: SUS304 U-bolt: SUS304
12	Sealed liquid	-	Sanitary silicone oil
		PG	Propylene glycol
13	Wetted parts conditions	-	Standard
		V	Vacuum type

Example of Code description: EPR-N8SD-G20-XC-M-IDF3-E0-5

- HART® is a registered trademark of the Field Comm Group.
- Please read the "Instruction Manual" carefully before use.
- Appearance and specifications are subject to change partially for improvement.