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CS
CODE AND SPECIFICATIONS SHEET

Intelligent Differential Pressure Transmitter for High Working Pressure

EDR-N8H

EDR-N8H Differential Pressure Transmitter incorporates semiconductor sensors and a microcomputer and converts measured differential pressures to 4 to 20mA DC signals with high accuracy.
EDR-N8H is suitable for measuring flow volumes, levels (water levels) and pressures of various process fluid including gas, liquid and steam and also supports various installation environments including explosion-prevented areas.
EDR-N8H, by adopting semiconductor composite sensors, is capable of pressure measurement and communication and output.

STANDARD SPECIFICATIONS

Model EDR-N8H

Differential pressure range

Range Code	Measuring Span	Settable Range Limits
8000	2 to 80kPa	-80≦LRV≦80kPa, -80≦URV≦80kPa
40000	20 to 400kPa	-400≦LRV≦400kPa, -400≦URV≦400kPa
100000	400 to 1000kPa	-1000≦LRV≦1000kPa, -1000≦URV≦1000kPa

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 600Ω (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 1.2kΩ

See Fig. 1 for the relationship between power supply voltage and load resistance.

External adjustment /configuration Zero point adjustment (±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	
8000	±0.075%	X is 8kPa or higher
	±〔0.002+(0.073×8/X)〕%	X is less than 8kPa
40000	±0.075%	X is 40kPa or higher
	±〔0.002+(0.073×40/X)〕%	X is less than 40kPa
100000	±0.2%	

Note1) 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 kPa.

Note2) For square-root output, With zero-cut designation
Output 1.1% or less:
± (linear output accuracy × 45)%
Output 1.1 to 50%:
± (linear output accuracy × 50 / square-root output %) %
Output 50% or higher: Same as linear output
*It is possible to select whether getting the outputs under the zero-cut point zero, or the zero-cut point from an arbitrary straight line or proportional outputs through communication.
Without zero-cut designation
Output 20% or less: Straight line at 0 to 20% point
Output 20% or higher: Same as the above "With zero-cut designation".

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.

Sensor body time constant

Range Code	Sensor body time constant (at 25℃)	Fixed electric damper Time constant
8000	Approx. 0.1s	Approx. 1s
40000	Approx. 0.1s	Approx. 1s
100000	Approx. 0.1s	Approx. 1s

・Response time is the sum of time constants of the Sensor body and damping time constant (amplifier time constant) and dead time.
・For possible pressure pulsation, specify fixed electrical damper (approx. 1s), inserting a capillary of φ1 internal diameter (1m or longer length) is recommended at the same time.

Storage temperature range −40 to 85℃

Operating humidity range 0 to 100%RH

Operating temperature range

Ambient temperature range	−40 to 85℃ (See Fig. 2) (−10 to 60℃ for Range Code 100000)
Wetted parts temperature range	−40 to 120℃ (−10 to100℃ for Range Code 100000)

Maximum operating pressure 45MPa
(Not available for negative pressure.)

Site vibration Continuous vibration below 29.4m/s^2

Temperature characteristics (at −20 to 60℃)

Range Code	Temperature characteristics	
8000	Zero shift ±[0.05+(0.3×T/50)]%	X is 32kPa or higher
	±[0.05+(0.15+0.15×32/X)×T/50]%	X is less than 32kPa
	Total shift ±[0.05+(0.55×T/50)]%	X is 32kPa or higher
	±[0.05+(0.4+0.15×32/X)×T/50]%	X is less than 32kPa
40000	Zero shift ±[0.05+(0.3×T/50)]%	X is 160kPa or higher
	±[0.05+(0.15+0.15×160/X)×T/50]%	X is less than 160kPa
	Total shift ±[0.05+(0.55×T/50)]%	X is 160kPa or higher
	±[0.05+(0.4+0.15×160/X)×T/50]%	X is less than 160kPa
100000	Zero shift ±[0.05+(0.3×T/50)]%	
	Time shift ±[0.05+(0.55×T/50)]%	

Note) Temperature characteristic is the percentage to the X.
X is the absolute value of URV, LRV or the biggest value of measured span. X's unit is kPa.
T (℃) is temperature variation width.

Static pressure characteristics (at 25 ℃)

Range Code	Static pressure characteristics	
8000	Zero shift ±[0.05+(0.15×P/10)]%	X is 40kPa or higher
	±[0.05+(0.15×40/X)×P/10]%	X is less than 40kPa
	Total shift ±[0.05+(1.95+0.15×80/X)×P/10]%	
40000	Zero shift ±[0.05+(0.15×P/10)]%	X is 200kPa or higher
	±[0.05+(0.15×200/X)×P/10]%	X is less than 200kPa
	Total shift ±[0.05+(1.45+0.15×400/X)×P/10]%	
100000	Zero shift ±[0.05+(0.15×P/10)]%	X is 500kPa or higher
	±[0.05+(0.15×500/X)×P/10]%	X is less than 500kPa
	Total shift ±[0.05+(1.45+0.15×1000/X)×P/10]%	

Note) Static pressure 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 kPa.
P is a static pressure. P's unit is MPa.

Overpressure characteristics (zero point) ±5% (when the applied operating pressure is the maximum)
(for the maximum span)

Long-term stability (zero point) ±0.1% / 1 year (for the maximum span)
Varied volume under basic operable conditions (23 ± 2℃, under atmospheric pressure)

Materials

Diaphragm	SUS316L
Sensor body	SUS316L
Sensor body flange	SCS14A(SUS316-equivalent casting)
Sesor body flange bolt	SCM435
System flange gasket	Polytetrafluoroethylene (PTFE) resin
Amplifier case	Aluminum alloy
Mounting plate	SPCC (anti-acid painting)
U-bolt	SUS304

Sealed liquid Silicon oil

Pressure inlet Upper inlet Rc1/4 without oval flange

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 μs)
Impact test voltage:15,000V (1.2/50 μs)

Color Light gray (anti-acid painting)

Weight Approx. 12kg

Mounting Use U-bolts for 50A pipes, 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℃ Wetted parts temperature range:−20 to 100℃
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
Operating temperature range	Ambient temperature range: −40 to 60℃ Wetted parts temperature range: −40 to 120℃

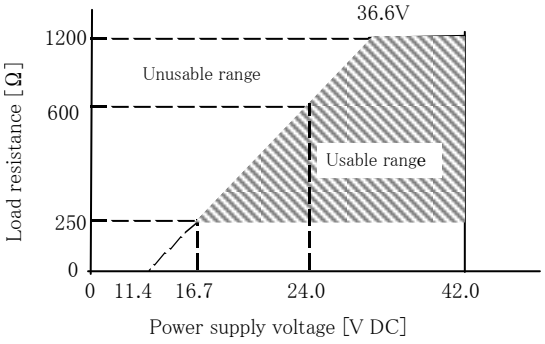
NEPSI explosionproof approval (Arranging)

Applicable Standard	Explosionproof Ex d ⅡC T4
Operating temperature range	Ambient temperature range: −40 to 60℃ Wetted parts temperature range: −40 to 120℃

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℃

Wetted parts finish Oil prohibitive or oil and water prohibitive finish

Bolt material Sensor body flange bolt:SUS630



The minimum load resistance of 250Ω is required to communicate by connecting the communicator

Fig. 1 Power supply voltage / load resistance characteristics

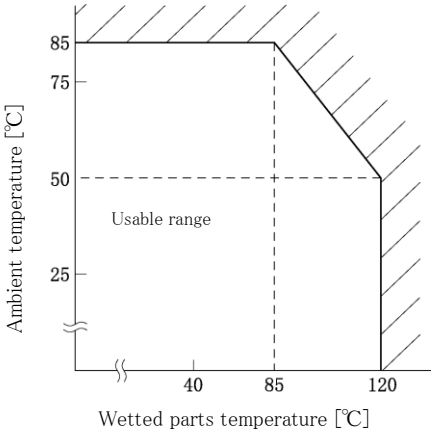
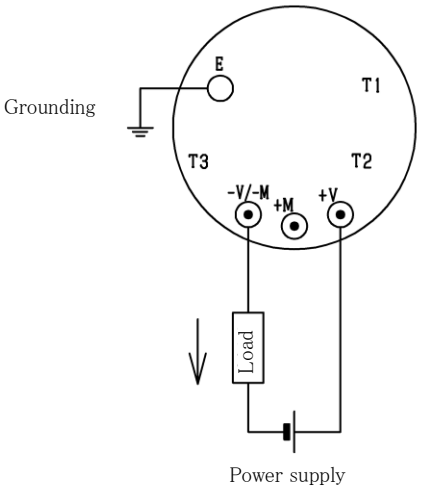


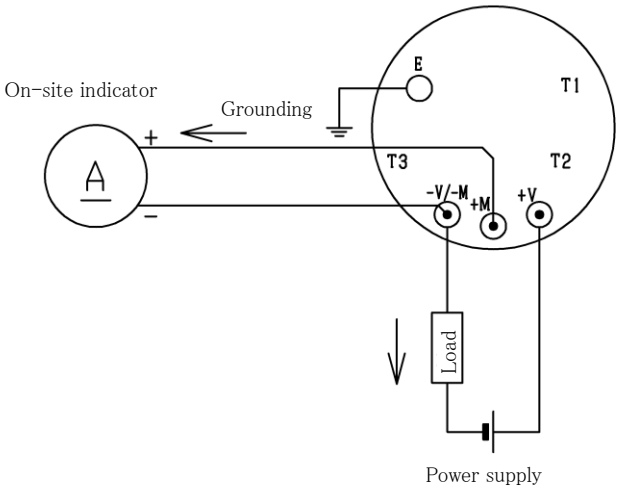
Fig. 2 Wetted parts temperatures and ambient temperature

EXTERNAL CONNECTION DRAWING

Without on-site indicator



Connected with on-site indicator



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

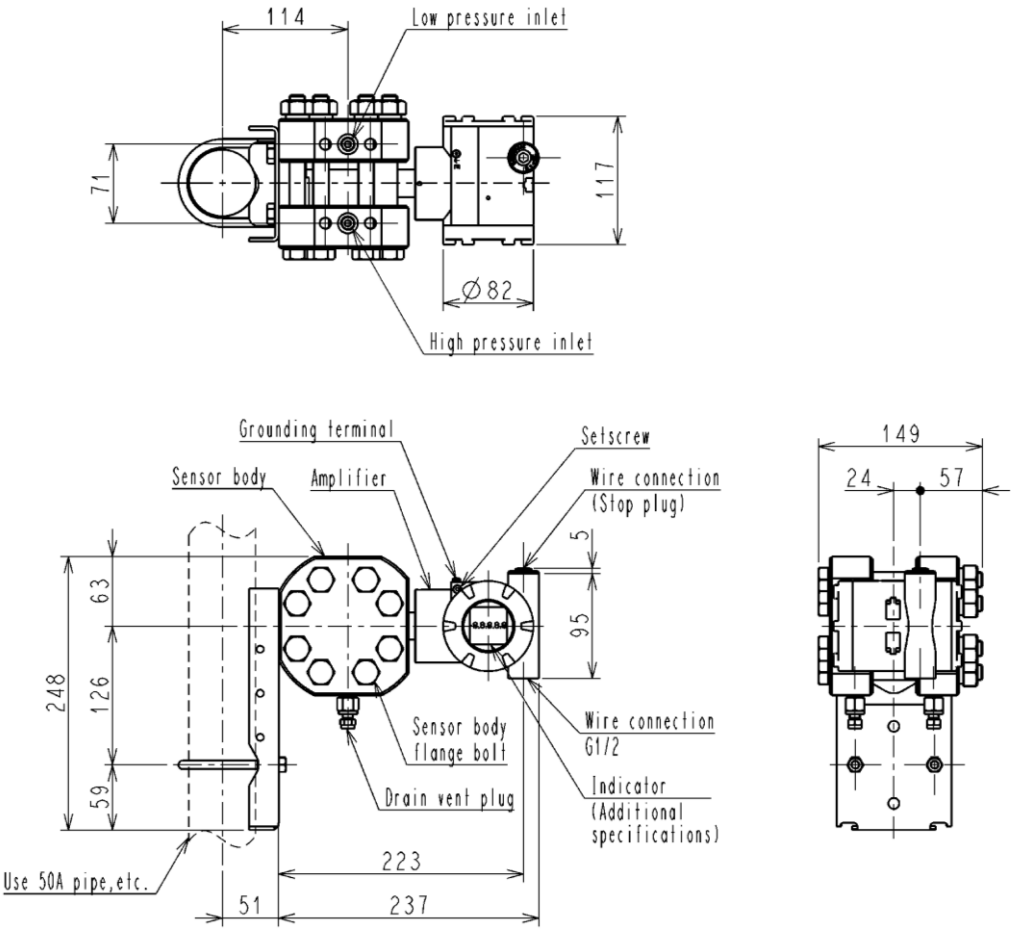
Note2) Ground either the transmitter or the receiving instrument. Be careful not to be dual-grounded.

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 20Ω or less including wire resistance to connect an on-site indicator.

DIMENSIONS (Unit : mm)



CODE TABLES

EDR-N8H Intelligent Differential Pressure Transmitter for High Working Pressure

Model			
EDR-N8H			
No.	Item	Code	Remarks
1	Range Code	8000	Measuring span 2 to 80kPa
		40000	Measuring span 20 to 400kPa
		100000	Measuring span 400 to 1000kPa
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	Bolt /mounting plate material	–	Sensor body flange bolt: SCM435 Mounting plate: SPCC U-bolt: SUS304
		S630	Sensor body flange bolt: SUS630 Mounting plate: SUS304 U-bolt: SUS304
8	Oil prohibition	–	No finish
		NL	Oil prohibitive finish
		NLW	Oil and water prohibitive finish
9	Pressure inlet	T0	Top connection Rc1/4 without oval flange
		B0	Bottom connection Rc1/4 without oval flange

Example of Code description: EDR-N8H-8000-XC-M-T0

●HART® is a registerd trademark of the Field Comm Group.

●Please read the "Instruction Manual" carefully before use.

●Appearance and specifications are subject to change partially for improvement.