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CS
CODE AND SPECIFICATIONS SHEET

Intelligent Differential Pressure Transmitter (High Accuracy Type)
EDR-N8E

EDR-N8E Differential Pressure Transmitter incorporates semiconductor sensors and a microcomputer and converts measured differential pressures to 4 to 20mA DC signals with high accuracy.
EDR-N8E is suitable for measuring flow volumes, levels (water levels) and pressures of various types of process fluids such as gas, liquid and steam and also supports various installation environments such as explosion-proof areas.
EDR-N8E, by adopting semiconductor composite sensors, is capable of pressure measurement and communication and output.

STANDARD SPECIFICATIONS

Model EDR-N8E

Differential pressure range

Range Code	Measuring Span	Settable Range Limits
8000	0.8 to 80kPa	−80≦LRV≦80kPa, −80≦URV≦80kPa
40000	20 to 400kPa	−400≦LRV≦400kPa, −400≦URV≦400kPa

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 250Ω 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	±0.04%	X is 8kPa or higher
	±[0.002+(0.038×8/X)]%	X is less than 8kPa
40000	±0.04%	X is 40kPa or higher
	±[0.002+(0.038×40/X)]%	X is less than 40kPa

Note1) Accuracy 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.

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	Time constant (at 25 ℃)
	Sensor body
8000	Approx. 0.05s
40000	Approx. 0.03s

・Response time is the sum of time constants of the Sensor body and damping time constant (amplifier time constant) and waste time.
・For possible pressure pulsation, please use the fixed electric damper (approx. 1s) (Code: Z25). At this time, inserting a capillary of φ1 internal diameter (1m or longer length) is recommended.

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)

Wetted parts temperature range -40 to 120℃

Maximum operating pressure

Range Code	Maximum operating pressure
8000	15MPa
40000	15MPa

Note) See Fig. 3 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+(0.2×T/50)]%	X is 30kPa or higher
	±[0.05+(0.15+0.05×30/X)×T/50]%	X is less than 30kPa
	Total shift ±[0.05+(0.45×T/50)]%	X is 30kPa or higher
	±[0.05+(0.4+0.05×30/X)×T/50]%	X is less than 30kPa
40000	Zero shift ±[0.05+(0.2×T/50)]%	X is 160kPa or higher
	±[0.05+(0.15+0.05×160/X)×T/50]%	X is less than 160kPa
	Total shift ±[0.05+(0.45×T/50)]%	X is 160kPa or higher
	±[0.05+(0.4+0.05×160/X)×T/50]%	X is less than 160kPa

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 kPa.
T (℃) is temperature variation width.

Static pressure characteristics (at 25℃)

Range Code	Static pressure characteristics	
8000	Zero shift ±[0.05+(0.05×P/10)]%	X is 40kPa or higher
	±[0.05+(0.05×40/X)×P/10]%	X is less than 40kPa
	Total shift ±[0.05+(0.3+0.1×80/X)×P/10]%	
40000	Zero shift ±[0.05+(0.05×P/10)]%	X is 200kPa or higher
	±[0.05+(0.05×200/X)×P/10]%	X is less than 200kPa
	Total shift ±[0.05+(0.3+0.1×400/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) ±0.5%
(when the maximum operating pressure is applied)
(for the maxumun span)

Long-term stability (zero point) ±0.1% / 10 years (for the maximum span)
Varied volume under the basic operation conditions (23±2℃, under atmospheric pressure)

Materials

Diaphgram	SUS316L
Sensor body	SUS316L
Sensor body flange	SCS14A(SUS316-equivalent casting)
Sensor body flange bolt	SCM435
Sensor body flange O-ring	EPDM
Amplifier case	Aluminum alloy
Mounting plate	SPCC (anti-acid painting)
U-bolt	SUS304

Sealed liquid Silicone 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. 4.0kg

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

Static pressure measurement (Absolute pressure measurement)

Output form: Composite converter EDBM500MA is displayed with that indicator

Measuring span: 0.5 to 5MPa abs.

Accuracy

±0.2%	X is 1MPa or higher
±0.2×(1/X)%	X is less than 1MPa

Temperature characteristics

Zero shift	±[0.05+(1.0×T/50)]%	X is 2MPa or higher
	±[0.05+(0.5+0.5×2/X)×T/50]%	X is less than 2MPa
Total shift	±[0.05+(2.5×T/50)]%	X is 2MPa or higher
	±[0.05+(2.0+0.5×2/X)×T/50]%	X is less than 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 (℃) is temperature variation width.

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℃

Sealed liquid

Fluorine oil — Wetted parts temperature range: -20 to 120℃ (See Fig. 4 for negative pressure.)
Specify also the oil-prohibitive finish together for oxygen measurement.

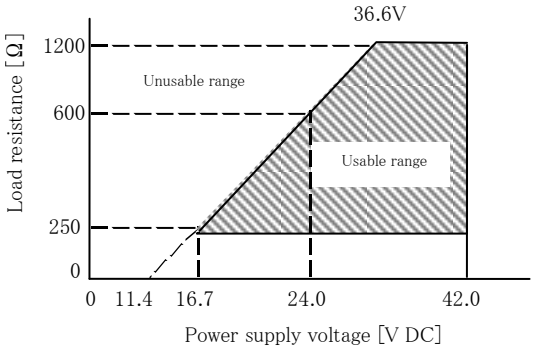
Wetted parts finish — Oil prohibitive or oil and water prohibitive finish

Pressure inlet (with oval flange) — Rc 1/4, Rc1/2, 1/4 NPT, 1/2 NPT, 15 A socket welded (socket screw-in type)

Wetted parts conditions

Vacuum type — Wetted parts temperature range: -40 to 120℃
Sealed liquid is the same as the standard specifications.
(Operating pressure varies depending on the temperature. See Fig. 3 for proper usage.)

Bolt material — Sensor body flange bolt : SUS304,SUS630 (SUS304 MAX operating pressure is 1/2 of the standard product.)



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

Fig. 1 Power supply voltage / load resistance characteristics

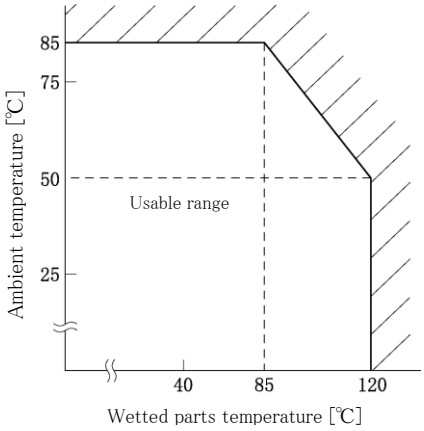


Fig.2 Wetted parts temperature and ambient temperature

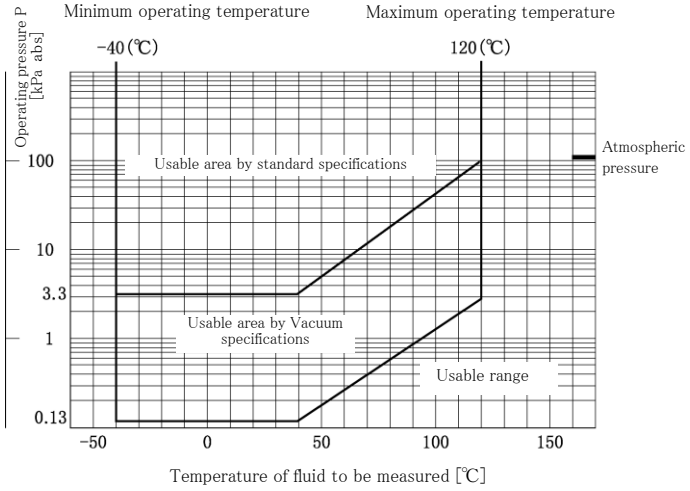


Fig. 3 Operating pressure and wetted parts temperature (Standard / Vacuum type specifications)

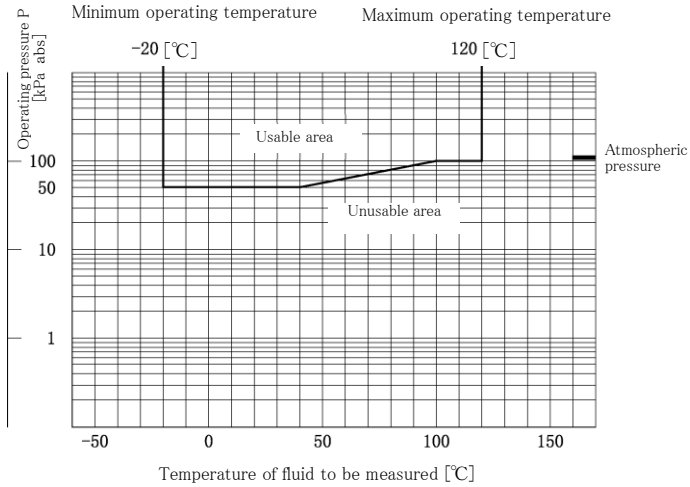
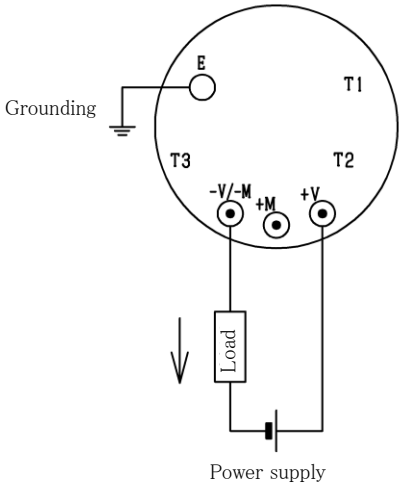


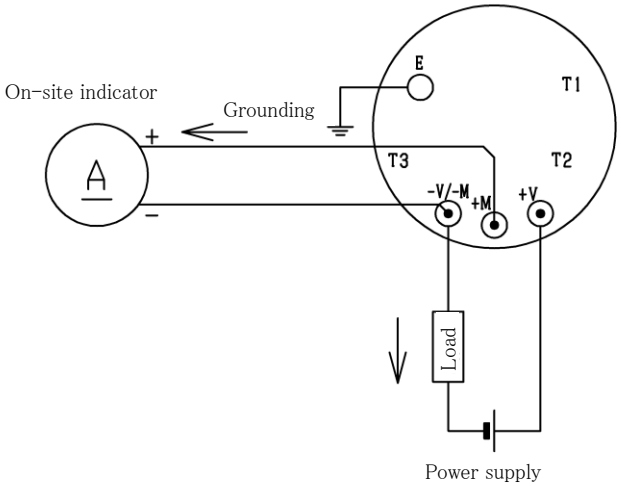
Fig. 4 Operating pressure and wetted parts temperature (Sealed liquid : Fluorine oil)

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.

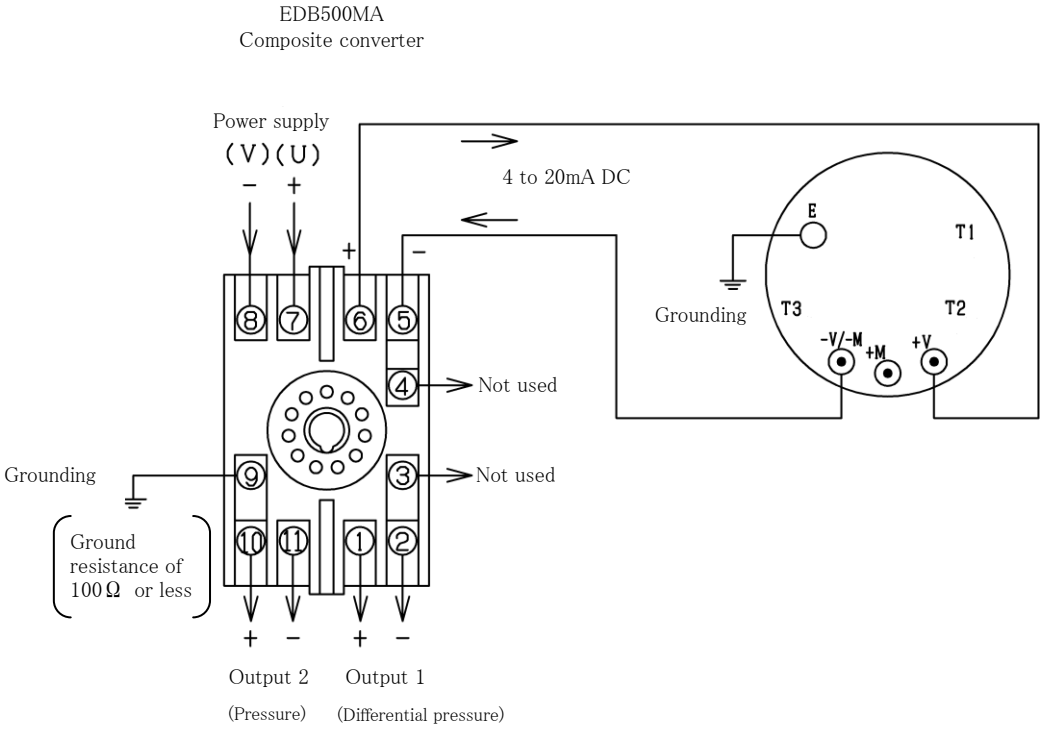
Note2) Ground either the transmitter or the receiving instrument. Be careful not to be dual-grounded.

Note3) Grounding terminals on the transmitter are located inside the terminal box and outside the amplifier case.
You can use either of the groundings.

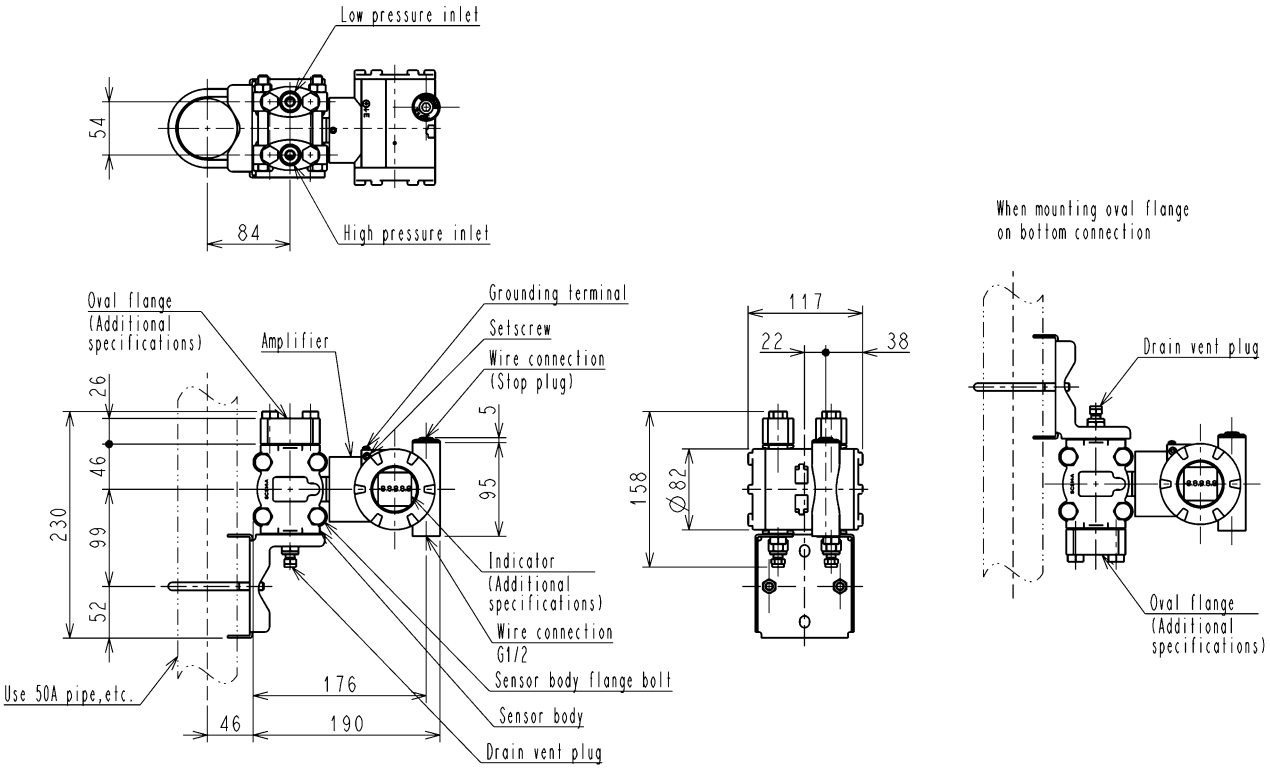
Note4) T1, T2 and T3 terminals are not connected.

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

Connected with EDB500MA



DIMENSIONS (Unit : mm)



CODE TABLES

EDR-N8E Intelligent Differential Pressure Transmitter (High Accuracy Type)

Model			
EDR-N8E			
No.	Item	Code	Remarks
1	Range Code	8000	Measuring span 0.8 to 80kPa
		40000	Measuring span 20 to 400kPa
2	Communication	–	Hitachi communication
		H	HART communication
3	Functional safety	–	None
4	Adjustment range	–	Adjust within 0 to 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
		S304	Sensor body flange bolt:SUS304 Mounting plate:SUS304 U-bolt:SUS304 (Maximum operating pressure is 1/2 of the standard.)
		S630	Sensor body flange bolt:SUS630 Mounting plate:SUS304 U-bolt:SUS304
8	Sealed liquid	–	Silicone oil
		FO	Fluorine oil
9	Oil prohibition	–	No finish
		NL	Oil prohibitive finish
		NLW	Oil and water prohibitive finish
10	Pressure inlet	T0	Top connection Rc1/4 without oval flange
		R2	Top connection Rc1/2 with oval flange
		R4	Top connection Rc1/4 with oval flange
		N2	Top connection 1/2NPT with oval flange
		N4	Top connection 1/4NPT with oval flange
		S2	Top connection 15A pipe insertion welding with oval flange (socket screw-in type)
		B0	Bottom connection Rc1/4 without oval flange
		BR2	Bottom connection Rc1/2 with oval flange
		BR4	Bottom connection Rc1/4 with oval flange
		BN2	Bottom connection 1/2NPT with oval flange
		BN4	Bottom connection 1/4NPT with oval flange
		BS2	Bottom connection 15A pipe insertion welding with oval flange (socket screw-in type)
11	Wetted parts conditions	–	Standard
		V	Vacuum type

Example of Code description:EDR-N8E-8000-XC-M-R2

●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.