Hitachi High-Tech
HITACHI

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CODE AND SPECIFICATIONS SHEET

Absolute Pressure Transmitter

EDR-N7A

EDR-N7A is intelligent transmitter equipped with semiconductor sensers and micro processors.

STANDARD SPECIFICATIONS

Model EDR-N7A

Pressure range

Range Code	Measuring Span	Settable Range Limits
200 H200	0.6～27kPa [abs.]	0≦LRV≦27kPa abs., 0≦URV≦27kPa abs.
1000 H1000	7～133kPa [abs.]	0≦LRV≦133kPa abs., 0≦URV≦133kPa abs.
6000 H6000	107～800kPa [abs.]	0≦LRV≦800kPa abs., 0≦URV≦800kPa abs.

Note) URV is the input pressure to give 100% (20mA DC) output.
LRV is the input pressure to give 0% (4mA DC) output.

Output signal 4 to 20mA DC

Power supply voltage 11.4 to 42.0V DC

Allowable load resistance 600Ω (at 24VDC power supply voltage)

Communication line condition

Power supply voltage 16.7 to 42.0V DC

Load resistance 250Ω to 1.2kΩ
(Refer to fig.1-3 for the relation between power supply voltage and load resistance)

Accuarcy

Range Code	Accuracy	
200	±0.2%	X is more than 5.4kPa abs.
H200	±[0.1+(0.1×5.4/X)]%	X is less than 5.4kPa abs.
1000	±0.2%	X is more than 13.3kPa abs.
H1000	±[0.1+(0.1×13.3/X)]%	X is less than 13.3kPa abs.
6000 H6000	±0.2%	

Note) Accuracy is percent value against X, and X is the largest value among absolute value of URV, LRV and measuring span. Unit is kPa abs.

Zelo adjustment Externally adjustable within ± 100% of measurement span.

Accidental burn out Can select any one among burn up, burn down and without burn out.

Dead time Approx. 0.4sec

Damping time constant (Amplifier time constant) Adjustable from 0.2 to 102.4sec(0.1sec increment) electrically by the DCR or the HART® communicator.

Time constant Transmitter time constant equals sum of damping time constant (amplifier time constant) and dead time.

Storage temperature limits -40 to 85℃

Operating humidity limits 5 to 100%RH

Operating temperature limits

Ambient temperature limits
-20 to 85℃ (See Fig.2)

Wetted parts temperature limits
-20 to 120℃

Working pressure limits The upper limit value of settable range limits.
(see Fig.3 for working range of negative pressure)

Over pressure limits 0.98MPa

Site vibration Less than 29.4m/s^{2}continuous vibration

Temperature effect (at -20 to 60℃)

Range Code	Temperature Effect		
200 H200	Zero shift	±[0.05+(0.4×T/50)]%	X is more than 5.4kPa abs.
		±[0.05+(0.25+0.15×5.4/X)×T/50]%	X is less than 5.4kPa abs.
	Overall shift	±[0.05+(0.7×T/50)]%	X is more than 5.4kPa abs.
		±[0.05+(0.55+0.15×5.4/X)×T/50]%	X is less than 5.4kPa abs.
1000 H1000	Zero shift	±[0.05+(0.4×T/50)]%	X is more than 27kPa abs.
		±[0.05+(0.25+0.15×27/X)×T/50]%	X is less than 27kPa abs.
	Overall shift	±[0.05+(0.7×T/50)]%	X is more than 27kPa abs.
		±[0.05+(0.55+0.15×27/X)×T/50]%	X is less than 27kPa abs.
6000 H6000	Zero shift	±[0.05+(0.4×T/50)]%	X is more than 220kPa abs.
		±[0.05+(0.25+0.15×220/X)×T/50]%	X is less than 220kPa abs.
	Overall shift	±[0.05+(0.7×T/50)]%	X is more than 220kPa abs.
		±[0.05+(0.55+0.15×220/X)×T/50]%	X is less than 220kPa abs.

Note) Temperature effect is percent value against X, X is the largest value among absolute value of URV, LRV and measuring span, and unit is kPa abs.
T is temperature variation width(℃).

Materials

Diaphragm	Hastelloy C
Wetted parts other than diaphragm	SUS316
Amplifier case	Aluminiumu vibration
Mounting plate	SPCC (acid resistant coating)
U bolt	SUS304

Filled liquid Silicone oil

Process connection Bottom connection Rc1/2

Electrical connection G1/2

Check terminal With output check terminal (output voltage 40～200mV DC)

Certifucations Degree of protection JIS C 0920IP67

Surge absorber Built-in transmitter
Surge capacity : 1,000A (8/20 μ s)
Impulse test voltage :15,000V (1.2/50 μ s)

Finish Light gray amplifier case (acid resistant coating)

Weight Approx. 2.8kg

Installation On 2-inch pipe with U bolt.

Accesories 2-inch pipe mounting bracket and U-bolt
Zero adjustment magnet.

ADDITIONAL SPECIFICATION

Communication method HART® protocol

Structure

TIIS Ex explosion proof type
Flameproof
Exdo II CT4
Exdo II CT4X
Note) X is for operating condition (as below)
With meter : Abnormality code is displayed on meter to alert winking, so it is no need to build external alarm display system.
Without meter : it is necessary to build external alarm display system, output exceeds 21mA
Ambient temperature limits : -20 to 55℃
Wetted parts temperature limits: -20 to 100℃
Electrical connection
X-RCAC type pressure resistant packing fixture must be used for using pressure resistant oil filled explosion proof type products. (also applicable to use SXBM-16B made by Shimada Electric Co., Ltd.)

FM explosion proof type
Explosion proof CLI,DIV 1,GPS B,C&D
Dust-ignition proof CL Ⅱ/Ⅲ,GPS E,F&G
Temperature Code T4
NEMA 4X
Ambient temperature limits : -40 to 60℃
Wetted parts temperature limits: -40 to 120℃

Indicator Digital indicator 4.5 figures display (0 to 100% scale standard)
(Can set to arbitrary scale within the range of -17,500 to 17,500)
Scale plates for various units to be sticked are supplied.

Wetted parts matelial

Diaphragm	Wetted Parts
SUS316L	SUS316
SUS316L	SUS316L
Hastelloy C	SUS316L
Hastelloy C	Hastelloy C
Tantalum	SUS316
Tantalum	SUS316L
Tantalum	Tantalum
SUS316L (with gold plate)	SUS316

※ Material shall be selected considering corrosion resistance. In case hydrogen is present in measuring fluid, it is possible hydrogen transmission can be generated through diaphragm.
If corrosion resistance is not so important, we recommend SUS316L or SUS316 with gold plating because hydrogen transmission value of these materials is relatively low. (But it is difficult to prevent hydrogen transmission completely even if diaphragm of SUS316L with gold plating is applied).

Note) In case that Hastelloy C or Tantalum is used for wetted parts, process connection is fitted on side plane, so specify code PV4 pr BPV4.

Wetted parts finish No oil finish or no-oil and no water finish

Process connection Rc1/2, Rc1/4, 1/2NPT, 1/4NPT.
(with adapter) 15A socket welding (socket screw-in type)

Replace fitting	Metal fittings for renewal of old type Hitachi transmitter are supplied
Steam jacket	To be attached to the sensor body. (Steam temperature shall be set to get liquid contact temperature less than 120℃. But less than 100℃ for explosion proof type)
Drain vent plug	Thermal insulation type

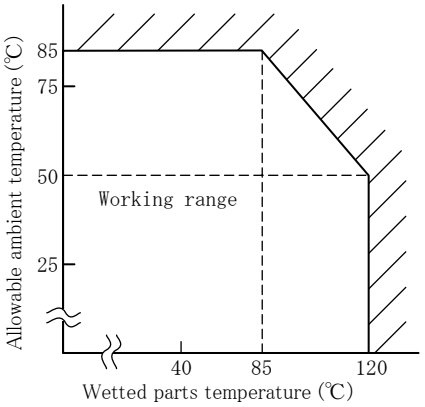
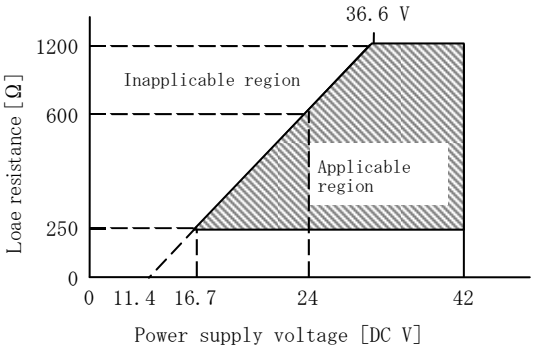


Fig.2 Wetted parts temperature and allowable ambient temperature



A minimum load resistance of 250Ω shall be required to communicate by connecting to communicator.

Fig.1 Supply voltage / load resistance property of transmitter

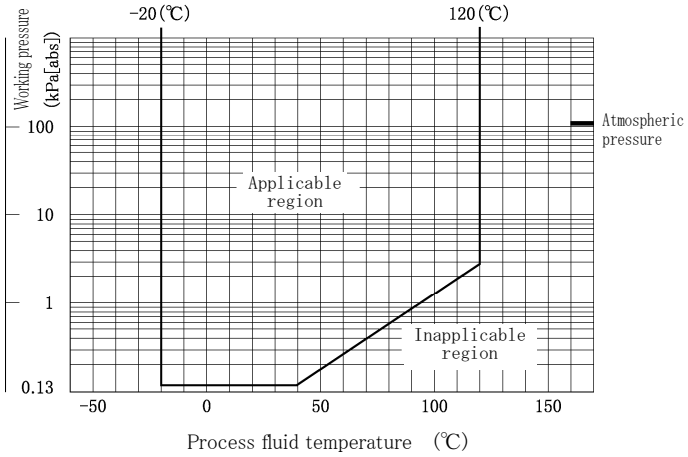
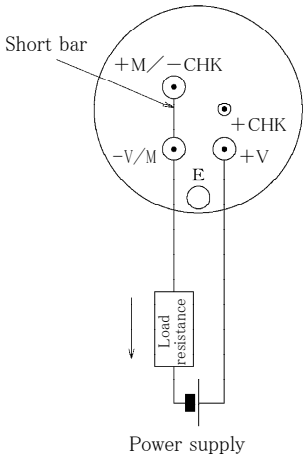


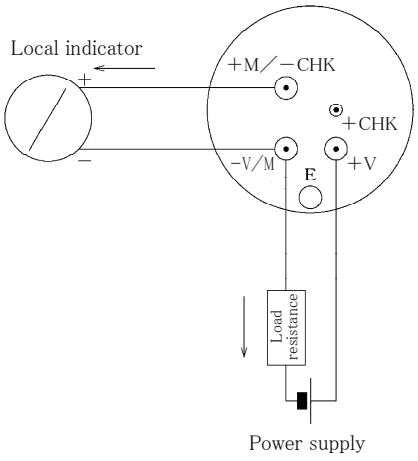
Fig.3 Working pressure and process fluid temperature

EXTERNAL CONNECTION

Without local indicator



With local indicator connected



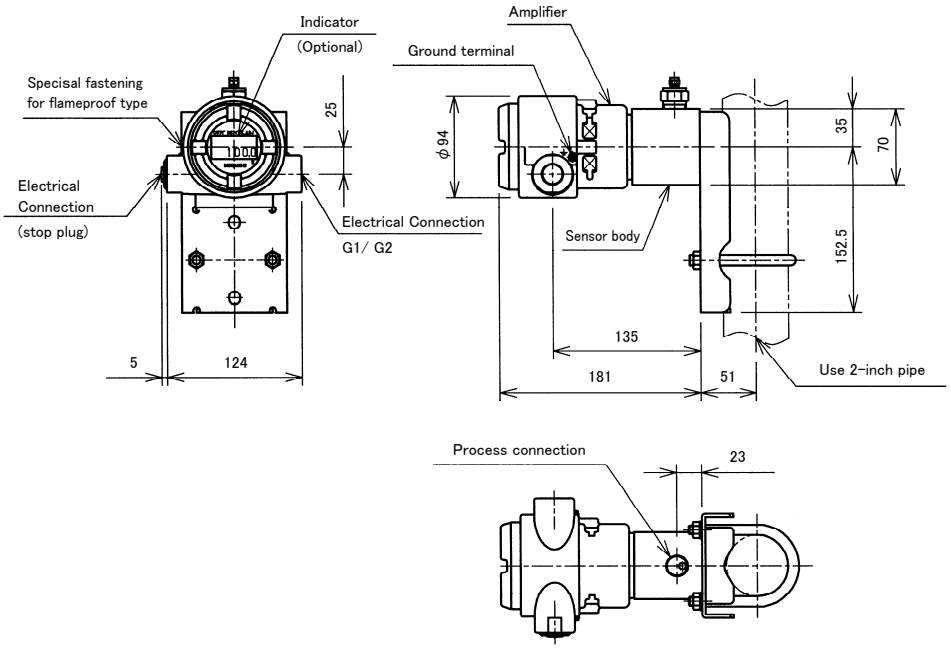
Notes:

(1) Grounding shall be done according to class D grounding practice (grounding resistance less than 100Ω)

(2) Grounding shall be done at one point either transmitter side or receiver instrument side. Give attention to avoid grounding at two points.

(3) Grounding terminals on transmitter side are furnished inside of terminal box and outside of amplifier case. Either of them can be utilized.

DIMENSIONS (Unit : mm)



CODE TABLES

No. Item	1	2～8	Description
Model	Renge code	Option code	
EDR-N7A			Water - proof, diaphragm material; Hastelloy C, wetted parts other than deaphragm, SUS316,
	200		bottom process connection ; Rc 1/2 (without adapter),
	1000		U-bolt material, SUS304, without indicator
	6000		
	H200		HART®communication type
	H1000		
	H6000		
		— □ — □	Select a necessary code alone among thouse in the option code table below.

OPTION CODE

No.	Item	Code	Description
2	Adjustable range	C( )	Enter adjustable range and unit in parenthesis.
3	Certification	XC	TIIS Explosion proof approval
		FM	FM explosion proof approval
4	Indicator	M	Digital indicator
		MJ( )	Digital indicator and actual scale display Fill in ( ) with scale and unit mark
5	Wetted parts material	HC316L	Diaghragm : Hastelloy C, Wetted parts other than diaphragm : SUS316L
		HC	Diaghragm : Hastelloy C, Wetted parts other than diaphragm : Hastelloy C Process connection code PV4 or BPV4 should be specified
		TA316	Diaghragm : Hastelloy C, Wetted parts other than diaphragm : Hard PVC
		TA316L	Diaghragm : Tantalum, Wetted parts other than diaphragm : SUS316L
		TA	Diaghragm : Tantalum, Wetted parts other than diaphragm : Tantalum Process connection code PV4 or BPV4 should be specified
		316L316	Diaphragm : SUS316L, Wetted parts other than diaphragm : SUS316
		316L	Diaphragm : SUS316L, Wetted parts other than diaphragm : SUS316L
		AU316	Diaphragm ; SUS316L with gold plate, Wetted parts other than diaphragm ; SUS316
6	oil	NL	oil finish
		NLW	oil and dehydrating finish
7	Process connections	BR4	Bottom connection Rc1/4(with adapter)
		BN2	Bottom connection 1/2 - 14NPT(with adapter)
		BN4	Bottom connection 1/4 - 18NPT(with adapter)
		BS2	Bottom connection 1/2-inch pipe insertion welding(with adapter)
		BPV4	Bottom connection at side Rc1/4(without oval flange)
		T0	Top connection Rc1/2(without adapter)
		R4	Top connection Rc1/4(with adapter)
		N2	Top connection 1/2 - 14NPT(with adapter)
		N4	Top connection 1/4 - 18NPT(with adapter)
		S2	Top connection 1/2-inch pipe insertion welding(with adapter)
		PV4	Top connection at side Rc1/4(with oval flange)
8	Steam jacket	ST	With steam jachet
		STP	With steam jacket, drain/vent plug for winterizing type
		P	Drain/vent plug winterizing type

Note) Please select the material of the diaphragm in consideration of corrosion resistance.
Hastelloy C might generate the hydrogen permeation by the galvanizing steel pipe piping and the water quality, etc., and cause the output shift and the transformation of the diaphragm.
Please select small SUS316L of the hydrogen permeation when there is no problem in corrosion resistance.

- HART® is a registered trademark of the HART Communication Foundation
- Be sure to read the User's Manual to ensure correct, safe use.
- Some specifications and design are subject to change with or without notice for improvement of quality and performance.

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