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CODE AND SPECIFICATIONS SHEET

Intelligent Pressure Transmitter

EPR-N8

EPR-N8 Pressure Transmitter incorporates semiconductor sensors and a microcomputer and converts measured pressures to 4 to 20 mA DC signals with high accuracy.
EPR-N8 is suitable for measuring pressures of various types of process fluids such as gas, liquid and steam and also supports various installation environments such as explosion-prevented areas.

STANDARD SPECIFICATIONS

Model EPR-N8

Pressure range

Range Code	Measuring Span	Settable Range Limits
G20	19.6 kPa to 2 MPa	-101.3kPa≦LRV≦2MPa, -101.3 kPa≦URV≦2MPa
G100	98 kPa to 10 MPa	-101.3kPa≦LRV≦10MPa, -101.3 kPa≦URV≦10MPa
G500	4.9 to 50 MPa	-101.3kPa≦LRV≦50MPa, -101.3 kPa≦URV≦50MPa

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 condition

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

●Material Code:Standard, 316L

Range Code	Accuracy	
G20	±0.075%	X is 0.2MPa or higher
	±〔0.005+(0.07×0.2/X)〕%	X is less than 0.2MPa
G100	±0.075%	X is 1MPa or higher
	±〔0.005+(0.07×1/X)〕%	X is less than 1MPa
G500	±0.15%	

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.

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℃

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 Upper limit value of the configurable range (See Fig. 3 for negative pressure.)

Withstanding pressure 1.5 times the upper limit value of the configurable range

Site vibration Continuous vibration below 29.4m/s^2

Temperature characteristics (at -20 to 60℃)

●Material Code:Standard, 316L

Range Code	Temperature characteristics		
G20	Zero shift	±〔0.05+(0.3×T/50)〕%	X is 0.8MPa or higher
		±〔0.05+(0.15+0.15×0.8/X)×T/50〕%	X is less than 0.8MPa
	Total shift	±〔0.05+(0.55×T/50)〕%	X is 0.8MPa or higher
		±〔0.05+(0.4+0.15×0.8/X)×T/50〕%	X is less than 0.8MPa
G100	Zero shift	±〔0.05+(0.3×T/50)〕%	X is 4MPa or higher
		±〔0.05+(0.15+0.15×4/X)×T/50〕%	X is less than 4MPa
	Total shift	±〔0.05+(0.55×T/50)〕%	X is 4MPa or higher
		±〔0.05+(0.4+0.15×4/X)×T/50〕%	X is less than 4MPa
G500	Zero shift	±〔0.05+(0.3×T/50)〕%	X is 20MPa or higher
		±〔0.05+(0.15+0.15×20/X)×T/50〕%	X is less than 20MPa
	Total shift	±〔0.05+(0.55×T/50)〕%	X is 20MPa or higher
		±〔0.05+(0.4+0.15×20/X)×T/50〕%	X is less than 20MPa

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 (℃) is temperature variation width.

Long-term stability (zero point): ±0.1% / 1year (for the maximum span)
Material Code: Standard, 316L
Varied volume under the basic operable requirements (23±2℃, under atmospheric pressure)

Materials

Diaphragm	SUS316L
Sensor body	SUS316L
Sensor body flange	SCS14A(SUS316-equivalent casting) (Range Code G500: SUS316)
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

Wire connection G1/2

Check terminal Electric 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. 3.8kg (G20, G100)
Approx. 6.6kg (G500)

Mounting Use U-bolts 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℃ 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.
Silicone oil for sanitary purposes	Wetted parts temperature range: -20 to 120℃ (See Fig. 5 for negative pressure.)

Wetted parts finish Oil prohibitive or oil and water prohibitive finish

Pressure inlet (with adapter) Rc1/4, Rc1/2, 1/4NPT, 1/2NPT,
15A socket welding (socket screw-in type)

Wetted parts conditions

Vacuum type (Code:V)	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.)

Wetted parts materials

Material Code	Diaphragm	Sensor body wetted part	Sensor body flange
316L	SUS316L	SUS316L	SCS16A (SUS316L-equivalent)
HC316	Hastelloy C	SUS316L	SCS14A (SUS316-equivalent)
HC316L	Hastelloy C	SUS316L	SCS16A (SUS316L-equivalent)
HC	Hastelloy C	Hastelloy C	Hastelloy C
TA	Tantalum	Tantalum	Tantalum

＊Select a material considering the anti-corrosion characteristics.
Using a gold-plated diaphragm (Code: Z52) is recommended if there is any concern about the error caused by hydrogen permeation of the diaphragm due to hydrogen in the measured fluid, etc. (However, it is difficult for Z52 to completely prevent the error caused by hydrogen permeation.)

Note) For Material Code of HC and TA, Maximum operating pressure is 7.5 MPa. The pressure inlet is the side ejection. Specify the Code PV4 or BPV4.

Bolt material Sensor body flange bolt: SUS630

Accuracy

●Material Code:HC316, HC316L, HC, TA

Range Code	Accuracy	
G20	±0.15%	X is 0.3MPa or higher
	±〔0.1+(0.05×0.3/X)〕%	X is less than 0.3MPa
G100	±0.15%	X is 1.5MPa or higher
	±〔0.1+(0.05×1.5/X)〕%	X is less than 1.5MPa

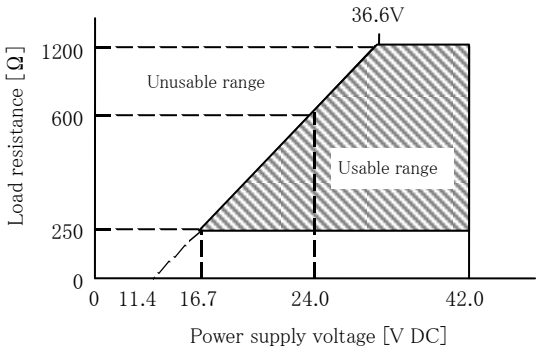
Note) Accuracy is the percentage to X.
X is the absolute value of URV, LRV or the biggest value of measured span. X's unit is MPa.

Temperature characteristics (at -20 to 60℃)

●Material Code:HC316, HC316L, HC, TA

Range Code	Temperature characteristics		
G20	Zero shift	±〔0.05+(0.4×T/50)〕%	X is 2MPa or higher
		±〔0.05+(0.2+0.2×2/X)×T/50〕%	X is less than 2MPa
	Total shift	±〔0.1+(0.6×T/50)〕%	X is 2MPa or higher
		±〔0.1+(0.3+0.3×2/X)×T/50〕%	X is less than 2MPa
G100	Zero shift	±〔0.05+(0.4×T/50)〕%	X is 7MPa or higher
		±〔0.05+(0.2+0.2×7/X)×T/50〕%	X is less than 7MPa
	Total shift	±〔0.1+(0.6×T/50)〕%	X is 7MPa or higher
		±〔0.1+(0.3+0.3×7/X)×T/50〕%	X is less than 7MPa

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 (℃) is temperature variation width.



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

Fig. 1 Power supply voltage / load resistance characteristics

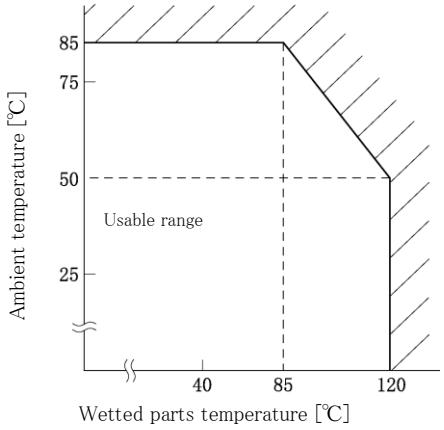


Fig. 2 Wetted parts temperatures and ambient temperature

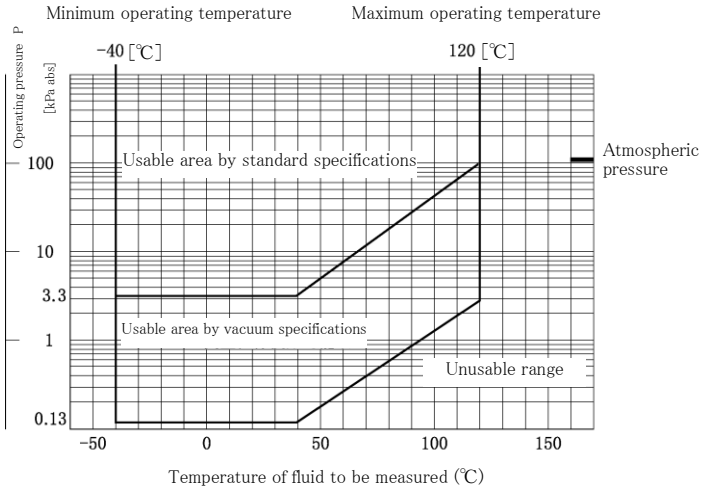


Fig. 3 Operating pressure and wetted parts temperature
(Standard / Vacuum type specifications)

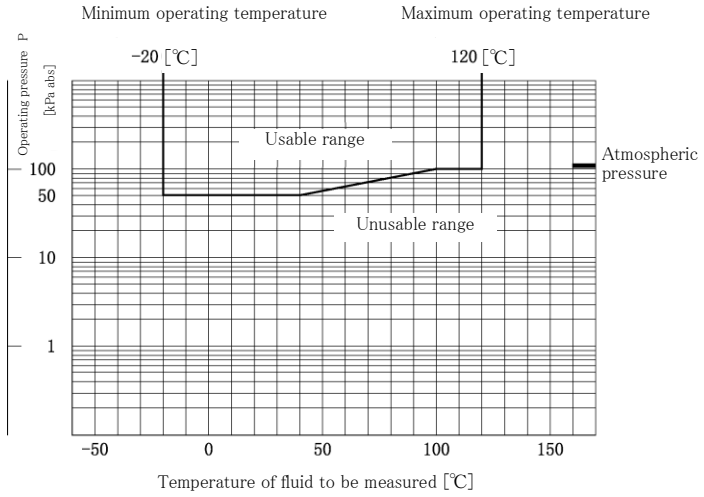


Fig. 4 Operating pressure and wetted parts temperature
(Sealed liquid：Fluorine oil)

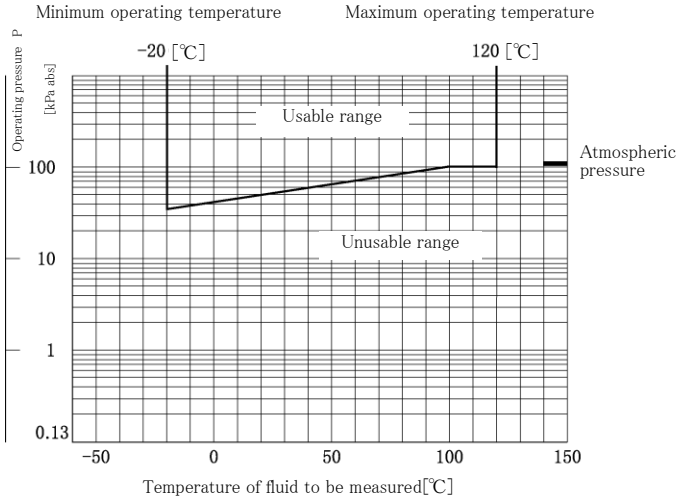
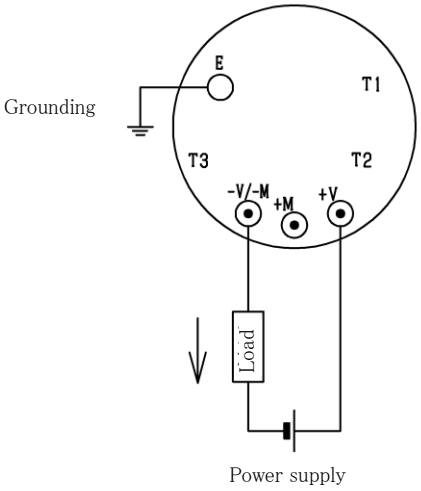


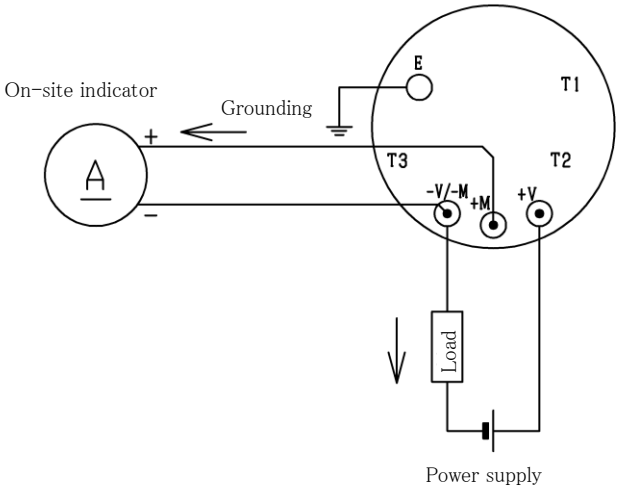
Fig. 5 Operating pressure and wetted parts temperature
(Sealed liquid：Sanitary Silicone oil)

EXTERNAL CONNECTING 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.

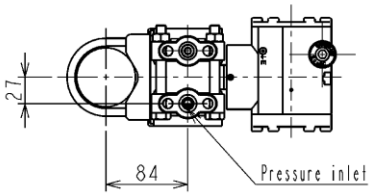
Note3) Grounding terminals on the transmitter are located inside the terminal box and outside the amplifier case.
You can use either of the groundings.

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

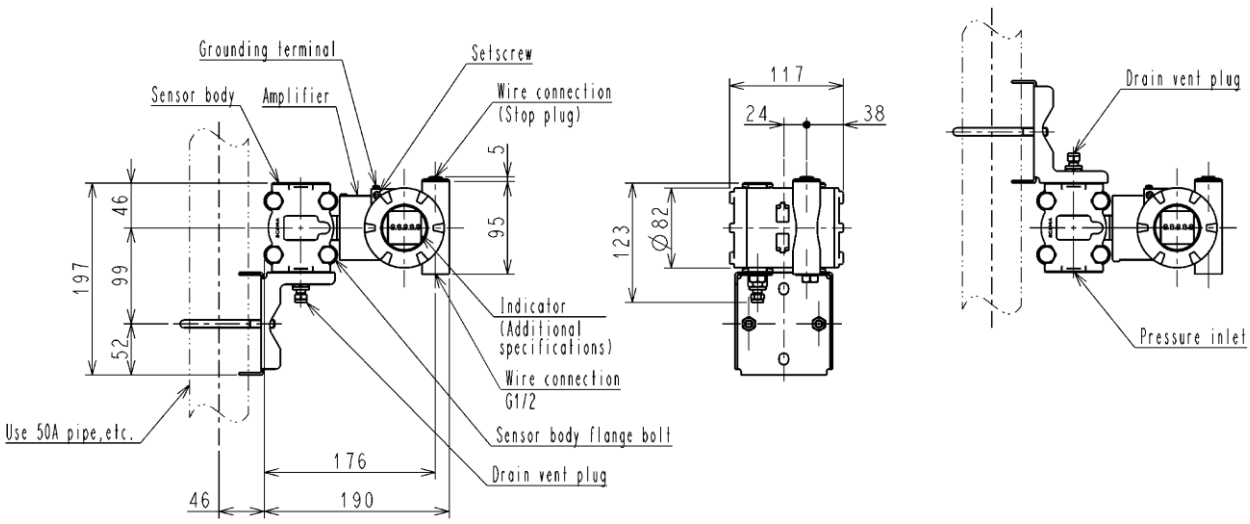
Note5) The resistance value needs to be 20Ω or less including wire resistance to connect an on-site indicator.

DIMENSIONS (Unit: mm)

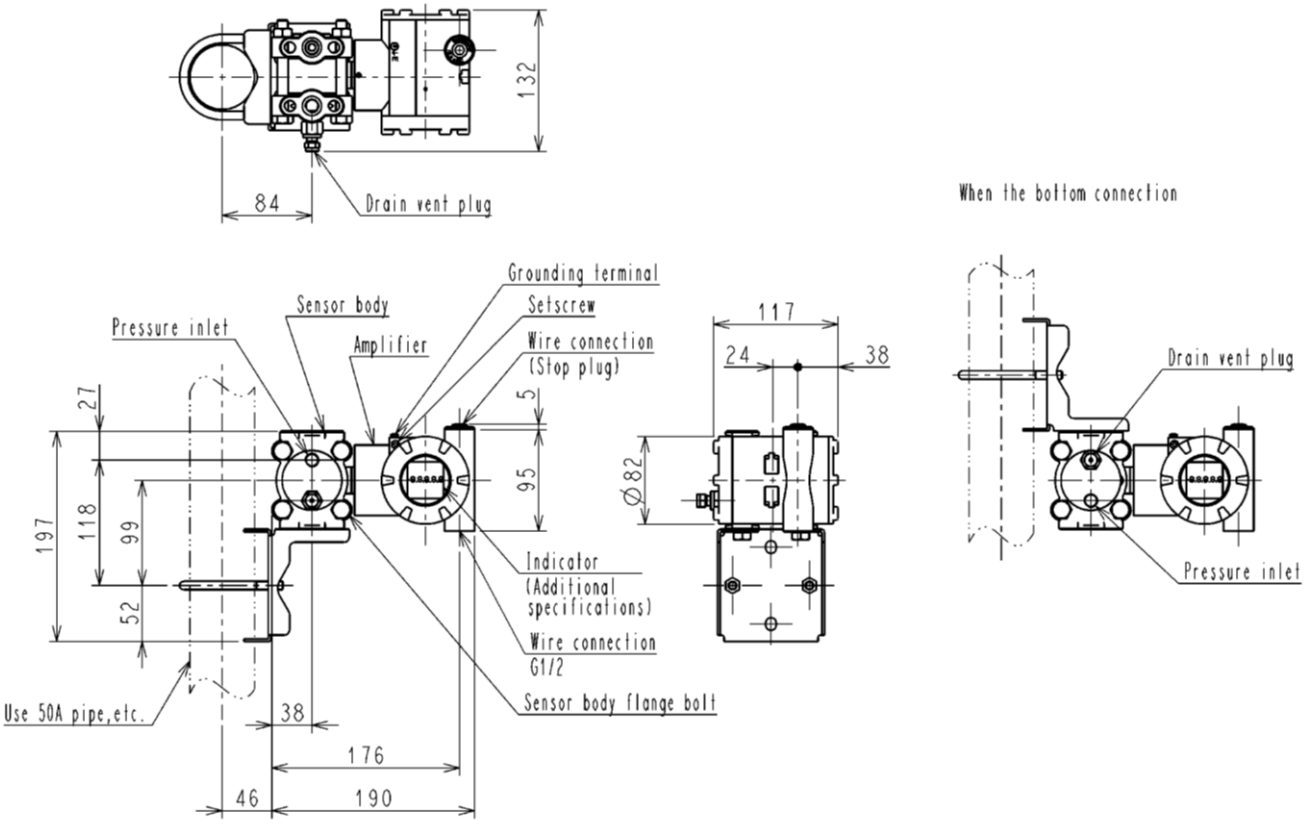
<Range Code:G20, G100>



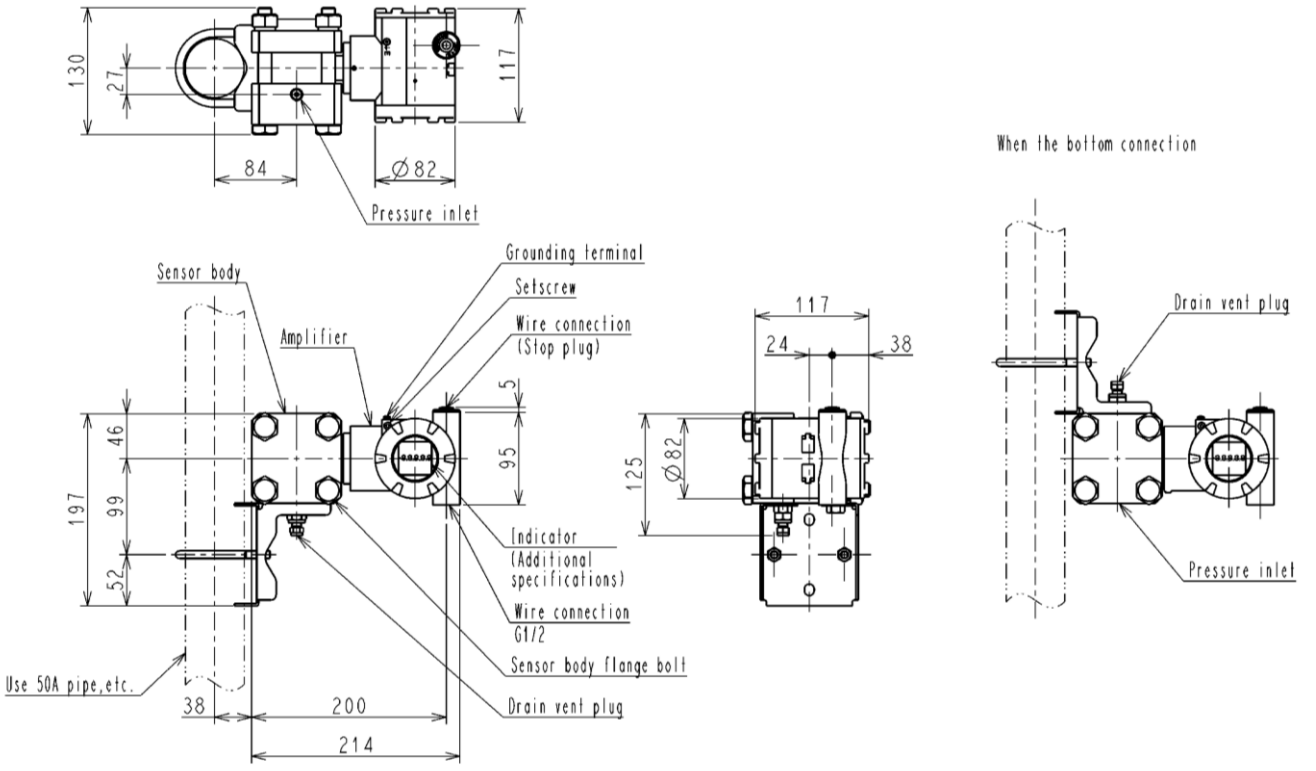
When the bottom connection



<Range Code：G20, G100 (Material Code：HC, TA)>



<Range Code：G500>



CODE TABLES

EPR-N8　Intelligent Pressure Transmitter

Model			
EPR-N8			
No.	Item	Code	Remarks
1	Range Code	G20	Measuring span 19.6kPa to 2MPa
		G100	Measuring span 98kPa to 10MPa
		G500	Measuring span 4.9 to 50MPa
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	Material	-	Diaphragm: SUS316L　Sensor body: SUS316L　Sensor body flange: SCS14A
		316L	Diaphragm: SUS316L　Sensor body: SUS316L　Sensor body flange: SCS14A
		HC316	Diaphragm: Hastelloy C　Sensor body: SUS316L　Sensor body flange: SCS14A
		HC316L	Diaphragm: Hastelloy C　Sensor body: SUS316L　Sensor body flange: SCS14A
		HC	Diaphragm: Hastelloy C　Sensor body wetted parts: Hastelloy C
		TA	Diaphragm: Tantalum　Sensor body wetted parts: Tantalum
8	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
9	Sealed liquid	-	Silicone oil
		FO	Fluorine oil
		100CS	Sanitary Silicone oil
10	Oil prohibition	-	No finish
		NL	Oil prohibitive finish
		NLW	Oil and water prohibitive finish
11	Pressure inlet	T0	Top connection Rc1/4　Material Codes HC,TA cannot be specified.
		R2	Top connection Rc1/2 with adapter　Material Codes HC,TA cannot be specified.
		N2	Top connection 1/2NPT with adapter　Material Codes HC,TA cannot be specified.
		N4	Top connection 1/4NPT with adapter　Material Codes HC,TA cannot be specified.
		S2	Top connection 15A pipe insertion welding with adapter (socket screw-in type) Material Codes HC,TA cannot be specified.
		PV4	Top connection at side Rc1/4　Material code HC,TA can be specified.
		B0	Bottom connection Rc1/4　Material Codes HC,TA cannot be specified.
		BR2	Bottom connection Rc1/2 with adapter　Material Codes HC,TA cannot be specified.
		BN2	Bottom connection 1/2NPT with adapter　Material Codes HC,TA cannot be specified.
		BN4	Bottom connection 1/4NPT with adapter　Material Codes HC,TA cannot be specified.
		BS2	Bottom connection 15A pipe insertion welding with adapter (socket screw-in type) Material Codes HC,TA cannot be specified.
		BPV4	Bottom connection at side Rc1/4　Material code HC,TA can be specified.
12	Wetted parts conditions	-	Standard
		V	Vacuum type

Example of Code description : EPR-N8-G20-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.