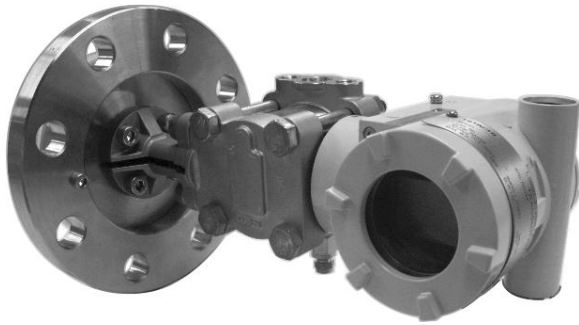


CS

CODE AND SPECIFICATIONS SHEET

Intelligent Liquid Level Transmitter

EDR-N8F



EDR-N8F Liquid Level Transmitter incorporates semiconductor sensors and a microcomputer and converts measured differential pressures to 4 to 20mA DC signals with high accuracy. EDR-N8F is suitable for measuring levels (water levels) and pressures of various types of process fluids (mainly liquid) and also supports various installation environments such as explosion-prevented areas.

STANDARD SPECIFICATIONS

Model EDR-N8F

Differential pressure range

| Range Code | Measuring Span | Settable Range Limits |
|------------|----------------|---|
| 8000 | 1.96 to 80kPa | $-80 \leq \text{LRV} \leq 80\text{kPa}$, $-80 \leq \text{URV} \leq 80\text{kPa}$ |
| 40000 | 19.6 to 400kPa | $-400 \leq \text{LRV} \leq 400\text{kPa}$, $-400 \leq \text{URV} \leq 400\text{kPa}$ |

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

●Material Code:Standard, 316L

| Range Code | Accuracy | |
|------------|----------------------------------|----------------------|
| 8000 | $\pm 0.15\%$ | X is 8kPa or higher |
| | $\pm [0.05+(0.1 \times 8/X)]\%$ | X is less than 8kPa |
| 40000 | $\pm 0.15\%$ | X is 40kPa or higher |
| | $\pm [0.05+(0.1 \times 40/X)]\%$ | X is less than 40kPa |

Note 1) 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.

Note 2) For square-root output, With zero-cut designation

Output 1.1% or less:

\pm (linear output accuracy \times 45)%

Output 1.1 to 50%:

\pm (linear output accuracy \times 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°C) |
|------------|-------------------------|
| | Sensor body |
| 8000 | Approx. 0.06s |
| 40000 | Approx. 0.03s |

*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 -40 to 85°C (Ambient temperature range varies depending on the wetted parts temperature. See Fig. 2.)

Wetted parts temperature range on high pressure side -40 to 180°C

Wetted parts temperature range on low pressure side -40 to 120°C

Maximum operating pressure

The highest or below operating pressure of flange (See Fig. 3 for negative pressure.)

Site vibration

Continuous vibration below 29.4m/s²

Temperature characteristics (at -20 to 60°C)

●Material Code:Standard, 316L

| Range Code | Temperature characteristics | |
|------------|-----------------------------|--|
| 8000 | Zero shift | $\pm[0.05+(0.5 \times T/50)]\%$ X is 20kPa or higher $\pm[0.05+(0.35+0.15 \times 20/X) \times T/50]\%$ X is less than 20kPa |
| | Total shift | $\pm[0.05+(0.8 \times T/50)]\%$ X is 20kPa or higher $\pm[0.05+(0.65+0.15 \times 20/X) \times T/50]\%$ X is less than 20kPa |
| 40000 | Zero shift | $\pm[0.05+(0.5 \times T/50)]\%$ X is 80kPa or higher $\pm[0.05+(0.35+0.15 \times 80/X) \times T/50]\%$ X is less than 80kPa |
| | Total shift | $\pm[0.05+(0.8 \times T/50)]\%$ X is 80kPa or higher $\pm[0.05+(0.65+0.15 \times 80/X) \times T/50]\%$ X is less than 80kPa |

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 (°C) is temperature variation width.

Static pressure characteristics (at 25°C)

●Material Code:Standard, 316L

| Range Code | Static pressure characteristics | |
|------------|---------------------------------|---|
| 8000 | Zero shift | $\pm[0.05+(0.05 \times P/2.5)]\%$ X is 40kPa or higher $\pm[0.05+(0.05 \times 40/X) \times P/2.5]\%$ X is less than 40kPa |
| | Total shift | $\pm[0.05+(1.95+0.1 \times 80/X) \times P/2.5]\%$ |
| 40000 | Zero shift | $\pm[0.05+(0.05 \times P/2.5)]\%$ X is 200kPa or higher $\pm[0.05+(0.05 \times 200/X) \times P/2.5]\%$ X is less than 200kPa |
| | Total shift | $\pm[0.05+(1.45+0.1 \times 400/X) \times P/2.5]\%$ |

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.

Materials

| | |
|---|-----------------------------------|
| Diaphragm on high pressure side | SUS316L |
| Wetted parts on high pressure side | SUS316 |
| Standard flange on high pressure side | SUS304 or SUSF304 |
| Diaphragm on low pressure side | SUS316L |
| Sensor body flange on low pressure side | SCS14A(SUS316-equivalent casting) |
| Sensor body flange bolt | SCM435 |
| Amplifier case | Aluminum alloy |

Sealed liquid Silicone oil
(Relative density: 0.955 at 25°C)

Process connection High pressure: JIS 10K 80A RF (similar flange)
Low pressure: Lower inlet Rc1/4 Without oval flange

Length of protruding part of flange 0mm

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. 10 kg

Mounting Directly mounted on tank

Accessories 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
Low pressure-side 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

Operating temperature range Ambient temperature range: -40 to 60°C
Wetted parts temperature range: -40 to 120°C

NEPSI explosionproof approval (Arranging)

Applicable Standard Explosionproof Ex d IIC 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

Flange standard

JIS 20K, ANSI 150, ANSI 300, JPI 150, JPI 300, etc.
Connection aperture: 80A(3B) 100A(4B)
(See Table Code for detail.)

Length of protruding part of flange

50mm, 100mm, 150mm

Diaphragm cover
(Only for aperture 80A(3B) without protruding part)

Material: FEP
(Operating pressure: Atmospheric pressure or higher, operating temperature: -10 to 120°C)
±0.5% is added to the accuracy when the diaphragm cover is used.

Sealed liquid

Fluorine oil Relative density:1.860 (at 20°C)
 Wetted parts temperature range:
 -20 to 120°C
 (See Fig. 4 for negative pressure.)
 Specify also the oil-prohibitive finish together for
 oxygen measurement.
 Use silicone oil for low pressure side.

Silicone oil for
 sanitary purposes Relative density:0.965 (at 25°C)
 Wetted parts temperature range:
 -20 to 150°C
 (See Fig. 5 for negative pressure.)
 Use silicone oil for low pressure side.

Propylene glycol Relative density:1.037 (at 25°C)
 Wetted parts temperature range:
 -20 to 150°C
 (Not available for negative pressure)
 Use silicone oil for low pressure side.

Wetted parts finish

Oil prohibitive or oil and water prohibitive finish

Low pressure inlet

Rc1/4, Rc1/2, 1/4NPT, 1/2NPT
 15A socket welding (socket screw-in type)
 8A socket welding (socket screw-in type)

Wetted parts conditions

Vacuum type Wetted parts temperature range:
 (Code:V) -40 to 180°C
 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 | High pressure side | | Low pressure side | |
|---------------|--------------------|-------------|-------------------|--------------------------------|
| | Diaphragm | Wetted part | Diaphragm | Wetted part |
| 316L | SUS316L | SUS316L | SUS316L | SCS16A (SUS316L-equivalent) |
| HC316 | Hastelloy C | Hastelloy C | SUS316L | SCS14A (SUS316-equivalent) |
| HC316L | Hastelloy C | Hastelloy C | SUS316L | SCS16A (SU316L-equivalent) |
| HC | Hastelloy C | Hastelloy C | Hastelloy C | Hastelloy C |
| TA | Tantalum | Tantalum | Tantalum | Tantalum |

- Note1) Select a material considering the anti-corrosion characteristics. Using gold-plated diaphragm (Code: Z52) or embedded with gold-plated diaphragm + hydrogen absorbing alloy (Code: Z72) 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 and Z72 to completely prevent the error caused by hydrogen permeation.)
- Note2) Material Code: HC, TA, the low pressure inlet is on the horizontal side with Rc1/4.
- Note3) Material Code: TA, only length of protruding part 0mm is available.

Bolt material Sensor body flange bolt :SUS630

Accuracy

●Material Code:HC316, HC316L, HC, TA

| Range Code | Accuracy | |
|------------|----------------------|-----------------------|
| 8000 | ±0.2% | X is 10kPa or higher |
| | ± [0.1+(0.1×10/X)]% | X is less than 10kPa |
| 40000 | ±0.2% | X is 100kPa or higher |
| | ± [0.1+(0.1×100/X)]% | X is less than 100kPa |

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 kPa.

Temperature characteristics (at -20 to 60°C)

●Material Code:HC316, HC316L, HC, TA

| Range Code | Temperature characteristics | |
|------------|-----------------------------|-------------------------------|
| 8000 | Zero shift | ±[0.1+(1.0×T/50)]% |
| | | X is 20kPa or higher |
| | | ±[0.1+(0.5+0.5×20/X)×T/50]% |
| | | X is less than 20kPa |
| 40000 | Total shift | ±[0.1+(1.5×T/50)]% |
| | | X is 20kPa or higher |
| | | ±[0.1+(0.75+0.75×20/X)×T/50]% |
| | | X is less than 20kPa |
| 8000 | Zero shift | ±[0.1+(1.0×T/50)]% |
| | | X is 80kPa or higher |
| | | ±[0.1+(0.5+0.5×80/X)×T/50]% |
| | | X is less than 80kPa |
| 40000 | Total shift | ±[0.1+(1.5×T/50)]% |
| | | X is 80kPa or higher |
| | | ±[0.1+(0.75+0.75×80/X)×T/50]% |
| | | X is less than 80kPa |

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 (°C) is temperature variation width.

Static pressure characteristics (at 25°C)

●Material Code:HC316, HC 316L, HC, TA

| Range Code | Static pressure characteristics | |
|------------|---------------------------------|-------------------------------|
| 8000 | Zero shift | ±[0.1+(0.1×P/2.5)]% |
| | | X is 40kPa or higher |
| | | ±[0.1+(0.1×40/X)×P/2.5]% |
| 40000 | Total shift | ±[0.1+(2.5+0.1×80/X)×P/2.5]% |
| | Zero shift | ±[0.1+(0.1×P/2.5)]% |
| | | X is 200kPa or higher |
| 40000 | Total shift | ±[0.1+(0.1×200/X)×P/2.5]% |
| | | X is less than 200kPa |
| | | ±[0.1+(2.0+0.1×400/X)×P/2.5]% |

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.

SMALL APERTURE FLANGE CONNECTION

Differential pressure range

| Range Code | Measuring Span | | Settable Range Limits |
|------------|----------------------------------|-----|-----------------------|
| 8000 | Aperture 25A(1B) 40A(1.5B) | | 8 to 80kPa |
| | Aperture 50A(2B) | E0 | 2 to 80kPa |
| | | E>0 | 8 to 80kPa |
| 40000 | Aperture 25A(1B) 40A(1.5B) | | 40 to 400kPa |
| | Aperture 50A(2B) | E0 | 20 to 400kPa |
| | | E>0 | 40 to 400kPa |

Accuracy

| Aperture | Accuracy | | Length of protruding part |
|---------------|---------------------|------------------------------|--|
| 25A (1B) | ±1.0% | | Only E0 (Protruding part not allowed) |
| 40A (1.5B) | ±0.5% | | E0 |
| | ±1.0% | | E>0 |
| 50A (2B) | Range Code 8000 | ±0.2% ± [0.1+(0.1×8/X)]% | X is 8kPa or higher X is less than 8kPa |
| | Range Code 40000 | ±0.2% ± [0.1+(0.1×40/X)]% | X is 40kPa or higher X is less than 40kPa |
| | ±0.5% | | E>0 |

Process connection

High pressure side: JIS 10K, 20K, 30K
ANSI 150, 300
JPI 150, 300

Connection aperture: 1B(25A),
1.5B(40A), 2B(50A)

Low pressure side: Rc1/4, Rc1/2, 1/4NPT,
1/2NPT (See Code table for detail.)

Flange length of protruding part

0mm, 50mm, 100mm, 150mm
(25A (1B) is only for 0 mm.)

Wetted parts conditions

Vacuum type
(Code:V)

Wetted parts temperature range:
-20 to 180°C

Sealed liquid is the same as the standard specifications.

(Operating pressure varies depending on the temperature. See Fig. 2 for proper usage.)

Diaphragm cover

(Only for aperture
50A(2B) without
protruding part)

Material: FEP

(Operating pressure: Atmospheric pressure or higher, operating temperature: -10 to 120°C)
±0.8% is added to the accuracy when the diaphragm cover is used.

Temperature characteristics

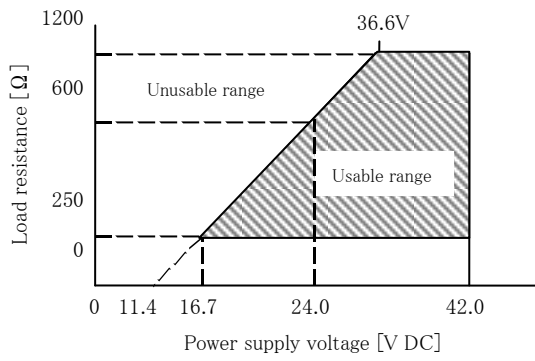
| Aperture | Temperature characteristics | Length of protruding part |
|---------------|-----------------------------------|---------------------------|
| 25A(1B) | Standard specifications x3 | Only E0 |
| 40A (1.5B) | Standard specifications x2 | E0 |
| | Standard specifications x3 | E>0 |
| 50A (2B) | Same with standard specifications | E0 |
| | Standard specifications x2 | E>0 |

Effect of wetted parts temperature difference (by 10°C)

| Aperture | Effect value | Length of protruding part |
|---------------|--------------|---------------------------|
| 25A(1B) | 0.7 kPa | Only E0 |
| 40A (1.5B) | 0.3 kPa | E0 |
| | 1.1 kPa | E>0 |
| 50A (2B) | 0.1 kPa | E0 |
| | 0.6 kPa | E>0 |

Static pressure characteristics

| Aperture | Static pressure characteristics | Length of protruding part |
|---------------|-----------------------------------|---------------------------|
| 25A(1B) | Standard specifications x3 | Only E0 |
| 40A (1.5B) | Standard specifications x2 | E0 |
| | Standard specifications x3 | E>0 |
| 50A (2B) | Same with standard specifications | E0 |
| | Standard specifications x2 | E>0 |



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

Fig. 1 Power supply voltage / load resistance characteristics

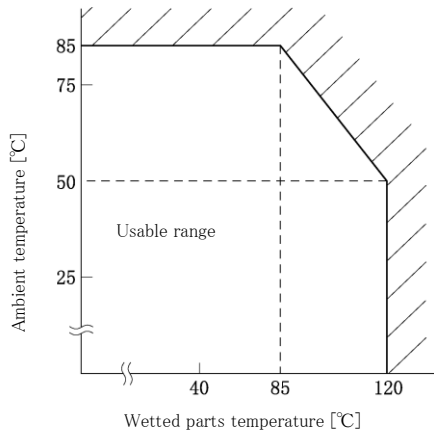


Fig. 2 Wetted parts temperature and ambient temperature [°C]

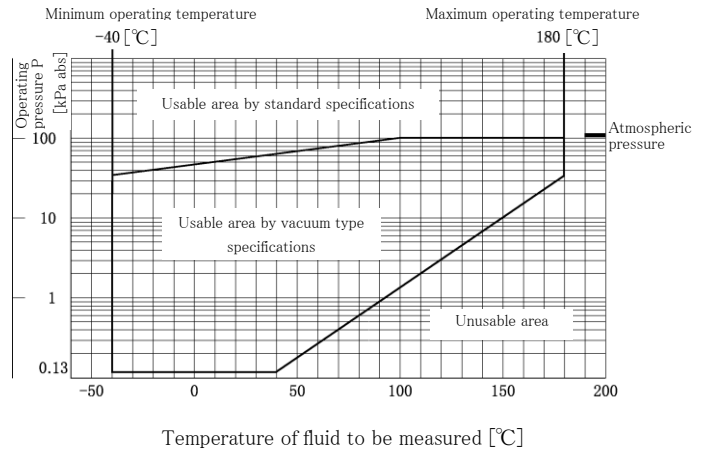


Fig. 3 Operating pressure and wetted parts temperature (Standard / Vacuum type specifications)

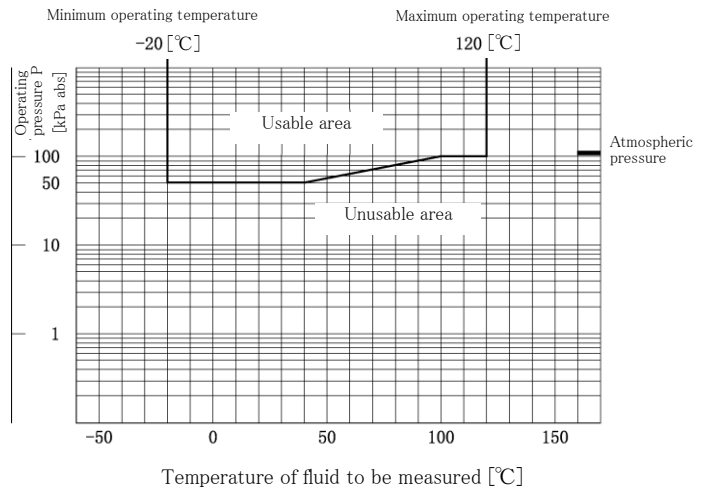


Fig. 4 Operating pressure and wetted parts temperature (Sealed liquid: Fluorite oil)

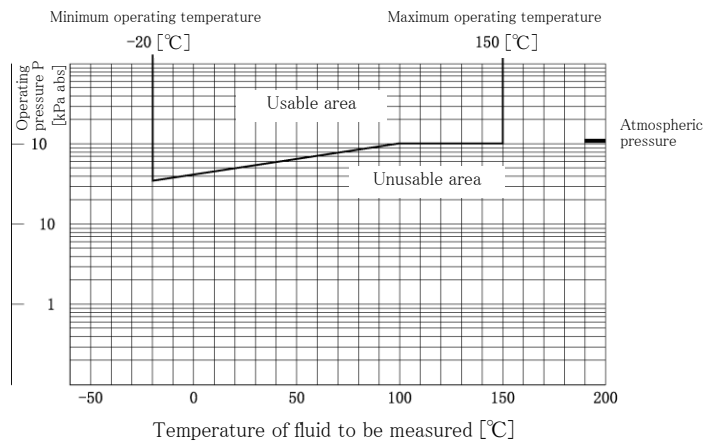
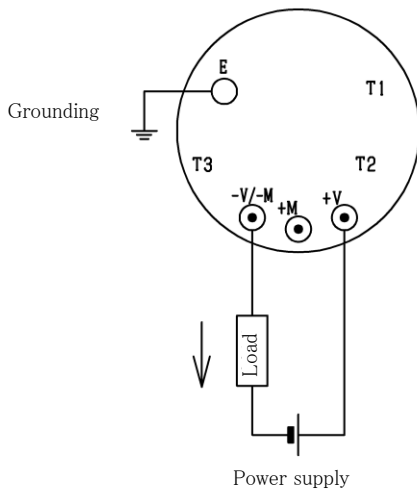


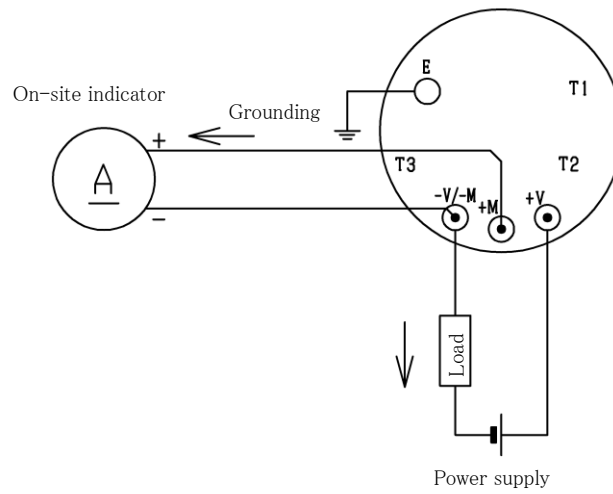
Fig. 5 Operating pressure and wetted parts temperature (Sealed liquid: Sanitary silicone oil)

EXTERNAL CONNECTION DRAWING

Without on-site indicator



Connected with on-site indicator



Note1) Perform Class D grounding work (ground resistance of $100\ \Omega$ 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.

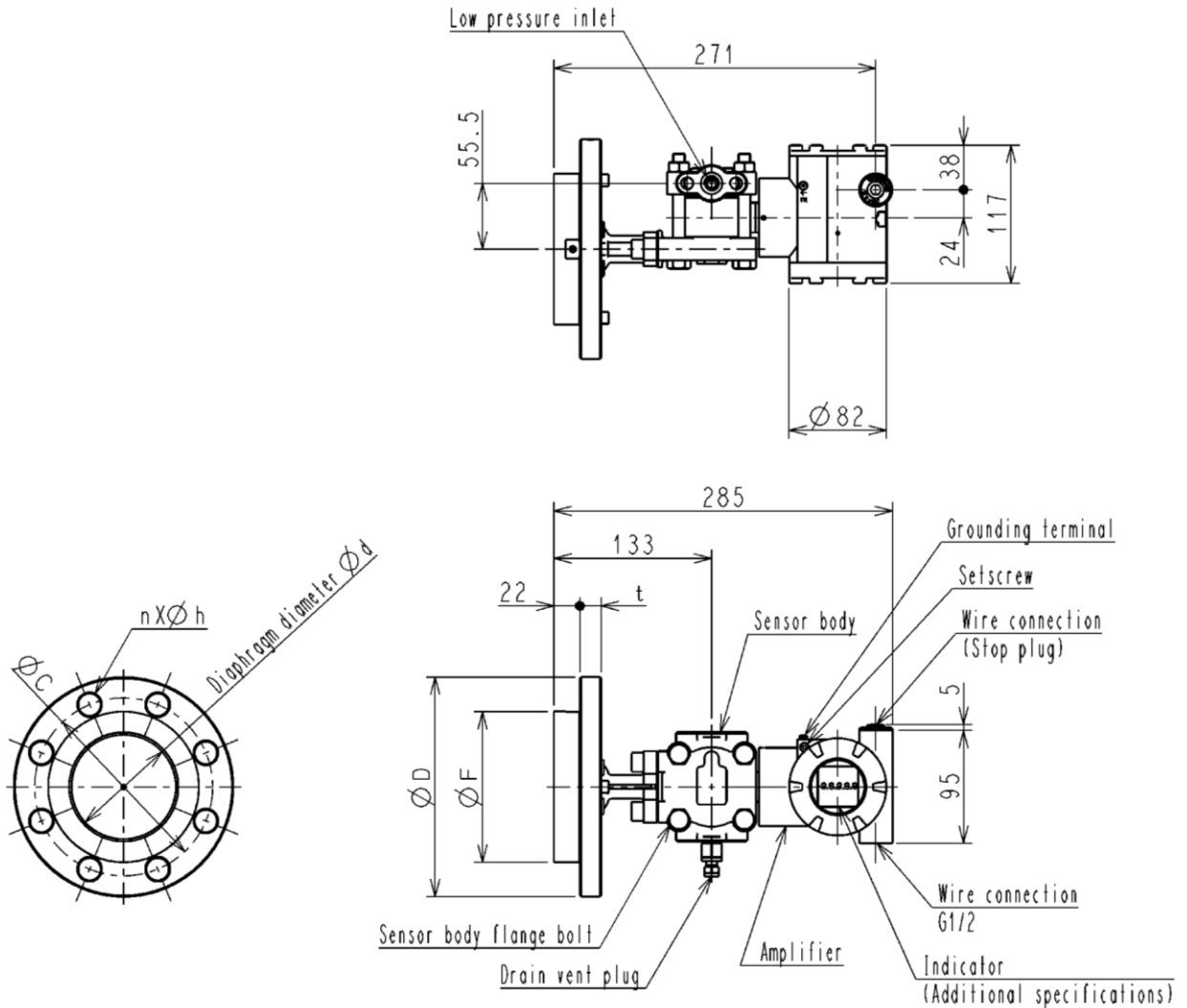
You can use either of the groundings.

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

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

DIMENSIONS (Unit: mm)

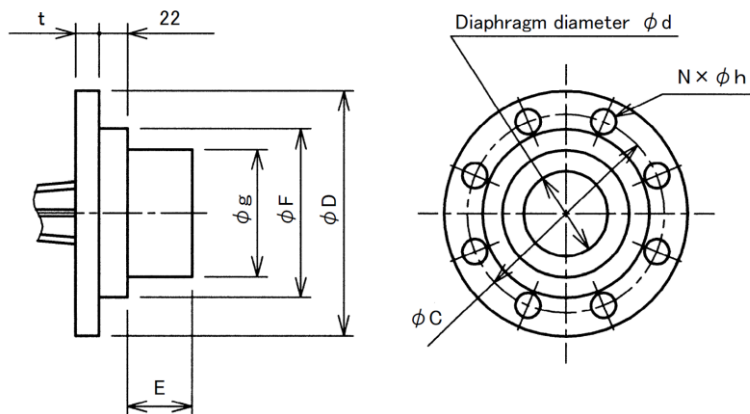
Without protruding part (E0)



With protruding part (E50, E100, E150)

Diaphragm diameter

| |
|------------------------|
| Protruding length E |
| 50 |
| 100 |
| 150 |



Without protruding part (E0)

| Flange standard (similar flange) | | φ D | φ F | φ d | φ C | n × φ h | t |
|----------------------------------|----------|-----|-----|-----|--------|---------|------|
| 25A | JIS10K | 125 | 63 | 30 | 90 | 4 × 19 | 14 |
| | JIS20K | 125 | 63 | 30 | 90 | 4 × 19 | 16 |
| | JIS30K | 130 | 63 | 30 | 95 | 4 × 19 | 20 |
| | JIS40K | 130 | 63 | 30 | 95 | 4 × 19 | 22 |
| | JIS63K | 140 | 63 | 30 | 100 | 4 × 23 | 27 |
| 40A | JIS10K | 140 | 80 | 42 | 105 | 4 × 19 | 16 |
| | JIS20K | 140 | 80 | 42 | 105 | 4 × 19 | 18 |
| | JIS30K | 160 | 80 | 42 | 120 | 4 × 23 | 22 |
| | JIS40K | 160 | 80 | 42 | 120 | 4 × 23 | 24 |
| | JIS63K | 175 | 80 | 42 | 130 | 4 × 25 | 32 |
| 50A | JIS10K | 155 | 98 | 64 | 120 | 4 × 19 | 16 |
| | JIS20K | 155 | 98 | 64 | 120 | 8 × 19 | 18 |
| | JIS30K | 165 | 98 | 64 | 130 | 8 × 19 | 22 |
| | JIS40K | 165 | 98 | 64 | 130 | 8 × 19 | 26 |
| | JIS63K | 185 | 98 | 64 | 145 | 8 × 23 | 34 |
| 80A | JIS10K | 185 | 127 | 88 | 150 | 8 × 19 | 18 |
| | JIS20K | 200 | 127 | 88 | 160 | 8 × 23 | 22 |
| | JIS30K | 210 | 127 | 88 | 170 | 8 × 23 | 28 |
| | JIS40K | 210 | 127 | 88 | 170 | 8 × 23 | 32 |
| | JIS63K | 230 | 127 | 88 | 185 | 8 × 25 | 40 |
| 100A | JIS10K | 210 | 154 | 88 | 175 | 8 × 19 | 18 |
| | JIS20K | 225 | 154 | 88 | 185 | 8 × 23 | 24 |
| | JIS30K | 240 | 154 | 88 | 195 | 8 × 25 | 32 |
| | JIS40K | 250 | 154 | 88 | 205 | 8 × 25 | 36 |
| | JIS63K | 270 | 154 | 88 | 220 | 8 × 27 | 44 |
| 25A (1B) | ANSI150 | 108 | 63 | 30 | 79.4 | 4 × 16 | 14.5 |
| | ANSI300 | 124 | 63 | 30 | 88.9 | 4 × 20 | 17.5 |
| | ANSI600 | 124 | 63 | 30 | 88.9 | 4 × 20 | 17.5 |
| | ANSI900 | 149 | 63 | 30 | 101.6 | 4 × 26 | 29 |
| | ANSI1500 | 149 | 63 | 30 | 101.6 | 4 × 26 | 29 |
| 40A (1.5B) | ANSI150 | 127 | 80 | 42 | 98.4 | 4 × 16 | 17.5 |
| | ANSI300 | 156 | 80 | 42 | 114.3 | 4 × 23 | 21 |
| | ANSI600 | 156 | 80 | 42 | 114.3 | 4 × 23 | 22.5 |
| | ANSI900 | 178 | 80 | 42 | 123.8 | 4 × 29 | 32 |
| | ANSI1500 | 178 | 80 | 42 | 123.8 | 4 × 29 | 32 |
| 50A (2B) | ANSI150 | 152 | 98 | 64 | 120.6 | 4 × 20 | 19.5 |
| | ANSI300 | 165 | 98 | 64 | 127 | 8 × 20 | 22.5 |
| | ANSI600 | 165 | 98 | 64 | 127 | 8 × 20 | 25.5 |
| | ANSI900 | 216 | 98 | 64 | 165.1 | 8 × 26 | 38.5 |
| | ANSI1500 | 216 | 98 | 64 | 165.1 | 8 × 26 | 38.5 |
| 80A (3B) | ANSI150 | 191 | 127 | 88 | 152.4 | 4 × 20 | 24 |
| | ANSI300 | 210 | 127 | 88 | 168.3 | 8 × 23 | 29 |
| | ANSI600 | 210 | 127 | 88 | 168.3 | 8 × 23 | 32 |
| | ANSI900 | 241 | 127 | 88 | 190.5 | 8 × 26 | 38.5 |
| | ANSI1500 | 267 | 127 | 88 | 203.2 | 8 × 32 | 48 |
| 100A (4B) | ANSI150 | 229 | 154 | 88 | 190.5 | 8 × 20 | 24 |
| | ANSI300 | 254 | 154 | 88 | 200 | 8 × 23 | 32 |
| | ANSI600 | 273 | 154 | 88 | 215.9 | 8 × 26 | 38.5 |
| | ANSI900 | 292 | 154 | 88 | 234.9 | 8 × 32 | 44.5 |
| | ANSI1500 | 311 | 154 | 88 | 241.3 | 8 × 35 | 54 |
| ANSI2500 | 356 | 154 | 88 | 273 | 8 × 42 | 76.5 | |

* JPI flange is the same size as ANSI flange.

* φ d is for diaphragm material of SUS316L

With protruding part (E50, E100, E150)

| Flange standard (similar flange) | | φ D | φ F | φ g | φ d | φ C | n × φ h | t |
|----------------------------------|----------|-----|-----|-----|-----|--------|---------|------|
| 40A | JIS10K | 140 | 80 | 37 | 30 | 105 | 4 × 19 | 16 |
| | JIS20K | 140 | 80 | 37 | 30 | 105 | 4 × 19 | 18 |
| | JIS30K | 160 | 80 | 37 | 30 | 120 | 4 × 23 | 22 |
| | JIS40K | 160 | 80 | 37 | 30 | 120 | 4 × 23 | 24 |
| | JIS63K | 175 | 80 | 37 | 30 | 130 | 4 × 25 | 32 |
| 50A | JIS10K | 155 | 98 | 48 | 42 | 120 | 4 × 19 | 16 |
| | JIS20K | 155 | 98 | 48 | 42 | 120 | 8 × 19 | 18 |
| | JIS30K | 165 | 98 | 48 | 42 | 130 | 8 × 19 | 22 |
| | JIS40K | 165 | 98 | 48 | 42 | 130 | 8 × 19 | 26 |
| | JIS63K | 185 | 98 | 48 | 42 | 145 | 8 × 23 | 34 |
| 80A | JIS10K | 185 | 127 | 72 | 64 | 150 | 8 × 19 | 18 |
| | JIS20K | 200 | 127 | 72 | 64 | 160 | 8 × 23 | 22 |
| | JIS30K | 210 | 127 | 72 | 64 | 170 | 8 × 23 | 28 |
| | JIS40K | 210 | 127 | 72 | 64 | 170 | 8 × 23 | 32 |
| | JIS63K | 230 | 127 | 72 | 64 | 185 | 8 × 25 | 40 |
| 100A | JIS10K | 210 | 154 | 96 | 88 | 175 | 8 × 19 | 18 |
| | JIS20K | 225 | 154 | 96 | 88 | 185 | 8 × 23 | 24 |
| | JIS30K | 240 | 154 | 96 | 88 | 195 | 8 × 25 | 32 |
| | JIS40K | 250 | 154 | 96 | 88 | 205 | 8 × 25 | 36 |
| | JIS63K | 270 | 154 | 96 | 88 | 220 | 8 × 27 | 44 |
| 40A (1.5B) | ANSI150 | 127 | 80 | 37 | 30 | 98.4 | 4 × 16 | 17.5 |
| | ANSI300 | 156 | 80 | 37 | 30 | 114.3 | 4 × 23 | 21 |
| | ANSI600 | 156 | 80 | 37 | 30 | 114.3 | 4 × 23 | 22.5 |
| | ANSI900 | 178 | 80 | 37 | 30 | 123.8 | 4 × 29 | 32 |
| | ANSI1500 | 178 | 80 | 37 | 30 | 123.8 | 4 × 29 | 32 |
| 50A (2B) | ANSI150 | 152 | 98 | 48 | 42 | 120.6 | 4 × 20 | 19.5 |
| | ANSI300 | 165 | 98 | 48 | 42 | 127 | 8 × 20 | 22.5 |
| | ANSI600 | 165 | 98 | 48 | 42 | 127 | 8 × 20 | 25.5 |
| | ANSI900 | 216 | 98 | 48 | 42 | 165.1 | 8 × 26 | 38.5 |
| | ANSI1500 | 216 | 98 | 48 | 42 | 165.1 | 8 × 26 | 38.5 |
| 80A (3B) | ANSI150 | 191 | 127 | 72 | 64 | 152.4 | 4 × 20 | 24 |
| | ANSI300 | 210 | 127 | 72 | 64 | 168.3 | 8 × 23 | 29 |
| | ANSI600 | 210 | 127 | 72 | 64 | 168.3 | 8 × 23 | 32 |
| | ANSI900 | 241 | 127 | 72 | 64 | 190.5 | 8 × 26 | 38.5 |
| | ANSI1500 | 267 | 127 | 72 | 64 | 203.2 | 8 × 32 | 48 |
| 100A (4B) | ANSI150 | 229 | 154 | 96 | 88 | 190.5 | 8 × 20 | 24 |
| | ANSI300 | 254 | 154 | 96 | 88 | 200 | 8 × 23 | 32 |
| | ANSI600 | 273 | 154 | 96 | 88 | 215.9 | 8 × 26 | 38.5 |
| | ANSI900 | 292 | 154 | 96 | 88 | 234.9 | 8 × 32 | 44.5 |
| | ANSI1500 | 311 | 154 | 96 | 88 | 241.3 | 8 × 35 | 54 |
| ANSI2500 | 356 | 154 | 96 | 88 | 273 | 8 × 42 | 76.5 | |

* JPI flange is the same size as ANSI flange.

* φ d is for diaphragm material of SUS316L

CODE TABLES

EDR-N8F Intelligent Liquid Level Transmitter

| Model | | EDR-N8F | | | |
|----------|--|----------------|--|--|---|
| No. | Item | Code | Remarks | | |
| 1 | Range code | 8000 | Measuring span 1.96 to 80kPa | | |
| | | 40000 | Measuring span 19.6 to 400kPa | | |
| 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 | JIS | 25J10 | Flange standard JIS 10K 25A RF-equivalent | Only E0 |
| | | | 25J20 | Flange standard JIS 20K 25A RF-equivalent | Only E0 |
| | | | 25J30 | Flange standard JIS 30K 25A RF-equivalent | Only E0 |
| | | | 25J40 | Flange standard JIS 40K 25A RF-equivalent | Only E0 |
| | | | 25J63 | Flange standard JIS 63K 25A RF-equivalent | Only E0 |
| | | | 40J10 | Flange standard JIS 10K 40A RF-equivalent | E0/E50 to E150 |
| | | | 40J20 | Flange standard JIS 20K 40A RF-equivalent | E0/E50 to E150 |
| | | | 40J30 | Flange standard JIS 30K 40A RF-equivalent | E0/E50 to E150 |
| | | | 40J40 | Flange standard JIS 40K 40A RF-equivalent | E0/E50 to E150 |
| | | | 40J63 | Flange standard JIS 63K 40A RF-equivalent | E0/E50 to E150 |
| | | | 50J10 | Flange standard JIS 10K 50A RF-equivalent | E0/E50 to E150 |
| | | | 50J20 | Flange standard JIS 20K 50A RF-equivalent | E0/E50 to E150 |
| | | | 50J30 | Flange standard JIS 30K 50A RF-equivalent | E0/E50 to E150 |
| | | | 50J40 | Flange standard JIS 40K 50A RF-equivalent | E0/E50 to E150 |
| | | | 50J63 | Flange standard JIS 63K 50A RF-equivalent | E0/E50 to E150 |
| | | | 80J10 | Flange standard JIS 10K 80A RF-equivalent | E0/E50 to E150 |
| | | | 80J20 | Flange standard JIS 20K 80A RF-equivalent | E0/E50 to E150 |
| | | | 80J30 | Flange standard JIS 30K 80A RF-equivalent | E0/E50 to E150 |
| | | | 80J40 | Flange standard JIS 40K 80A RF-equivalent | E0/E50 to E150 |
| | | | 80J63 | Flange standard JIS 63K 80A RF-equivalent | E0/E50 to E150 |
| | | | 100J10 | Flange standard JIS 10K 100A RF-equivalent | E0/E50 to E150 |
| | | | 100J20 | Flange standard JIS 20K 100A RF-equivalent | E0/E50 to E150 |
| | | | 100J30 | Flange standard JIS 30K 100A RF-equivalent | E0/E50 to E150 |
| | | | 100J40 | Flange standard JIS 40K 100A RF-equivalent | E0/E50 to E150 |
| | | | 100J63 | Flange standard JIS 63K 100A RF-equivalent | E0/E50 to E150 |
| | | | ANSI | 25A150 | Flange standard ANSI 150 1B RF-equivalent |
| | | 25A300 | | Flange standard ANSI 300 1B RF-equivalent | Only E0 |
| | | 25A400 | | Flange standard ANSI 400 1B RF-equivalent | Only E0 |
| | | 25A600 | | Flange standard ANSI 600 1B RF-equivalent | Only E0 |
| | | 25A900 | | Flange standard ANSI 900 1B RF-equivalent | Only E0 |
| | | 25A1500 | | Flange standard ANSI 1500 1B RF-equivalent | Only E0 |
| | | 25A2500 | | Flange standard ANSI 2500 1B RF-equivalent | Only E0 |
| | | 40A150 | | Flange standard ANSI 150 1.5B RF-equivalent | E0/E50 to E150 |
| | | 40A300 | | Flange standard ANSI 300 1.5B RF-equivalent | E0/E50 to E150 |
| | | 40A400 | | Flange standard ANSI 400 1.5B RF-equivalent | E0/E50 to E150 |
| | | 40A600 | | Flange standard ANSI 600 1.5B RF-equivalent | E0/E50 to E150 |
| | | 40A900 | | Flange standard ANSI 900 1.5B RF-equivalent | E0/E50 to E150 |
| | | 40A1500 | | Flange standard ANSI 1500 1.5B RF-equivalent | E0/E50 to E150 |
| | | 40A2500 | | Flange standard ANSI 2500 1.5B RF-equivalent | E0/E50 to E150 |
| | | 50A150 | | Flange standard ANSI 150 2B RF-equivalent | E0/E50 to E150 |
| | | 50A300 | | Flange standard ANSI 300 2B RF-equivalent | E0/E50 to E150 |
| | | 50A400 | | Flange standard ANSI 400 2B RF-equivalent | E0/E50 to E150 |
| | | 50A600 | | Flange standard ANSI 600 2B RF-equivalent | E0/E50 to E150 |
| | | 50A900 | | Flange standard ANSI 900 2B RF-equivalent | E0/E50 to E150 |
| | | 50A1500 | | Flange standard ANSI 1500 2B RF-equivalent | E0/E50 to E150 |
| | | 50A2500 | | Flange standard ANSI 2500 2B RF-equivalent | E0/E50 to E150 |
| | | 80A150 | | Flange standard ANSI 150 3B RF-equivalent | E0/E50 to E150 |
| | | 80A300 | | Flange standard ANSI 300 3B RF-equivalent | E0/E50 to E150 |
| | | 80A400 | | Flange standard ANSI 400 3B RF-equivalent | E0/E50 to E150 |
| | | 80A600 | | Flange standard ANSI 600 3B RF-equivalent | E0/E50 to E150 |
| | | 80A900 | | Flange standard ANSI 900 3B RF-equivalent | E0/E50 to E150 |
| | | 80A1500 | Flange standard ANSI 1500 3B RF-equivalent | E0/E50 to E150 | |
| 80A2500 | Flange standard ANSI 2500 3B RF-equivalent | E0/E50 to E150 | | | |
| 100A150 | Flange standard ANSI 150 4B RF-equivalent | E0/E50 to E150 | | | |
| 100A300 | Flange standard ANSI 300 4B RF-equivalent | E0/E50 to E150 | | | |
| 100A400 | Flange standard ANSI 400 4B RF-equivalent | E0/E50 to E150 | | | |
| 100A600 | Flange standard ANSI 600 4B RF-equivalent | E0/E50 to E150 | | | |
| 100A900 | Flange standard ANSI 900 4B RF-equivalent | E0/E50 to E150 | | | |
| 100A1500 | Flange standard ANSI 1500 4B RF-equivalent | E0/E50 to E150 | | | |
| 100A2500 | Flange standard ANSI 2500 4B RF-equivalent | E0/E50 to E150 | | | |

| | | | | | | | | |
|-----------|--|----------|---|-----------------|----------------|------|---------------|----------------|
| 7 | Flange standard | JPI | 25JP150 | Flange standard | JPI 150 | 1B | RF-equivalent | Only E0 |
| | | | 25JP300 | Flange standard | JPI 300 | 1B | RF-equivalent | Only E0 |
| | | | 25JP400 | Flange standard | JPI 400 | 1B | RF-equivalent | Only E0 |
| | | | 25JP600 | Flange standard | JPI 600 | 1B | RF-equivalent | Only E0 |
| | | | 25JP900 | Flange standard | JPI 900 | 1B | RF-equivalent | Only E0 |
| | | | 25JP1500 | Flange standard | JPI 1500 | 1B | RF-equivalent | Only E0 |
| | | | 25JP2500 | Flange standard | JPI 2500 | 1B | RF-equivalent | Only E0 |
| | | | 40JP150 | Flange standard | JPI 150 | 1.5B | RF-equivalent | E0/E50 to E150 |
| | | | 40JP300 | Flange standard | JPI 300 | 1.5B | RF-equivalent | E0/E50 to E150 |
| | | | 40JP400 | Flange standard | JPI 400 | 1.5B | RF-equivalent | E0/E50 to E150 |
| | | | 40JP600 | Flange standard | JPI 600 | 1.5B | RF-equivalent | E0/E50 to E150 |
| | | | 40JP900 | Flange standard | JPI 900 | 1.5B | RF-equivalent | E0/E50 to E150 |
| | | | 40JP1500 | Flange standard | JPI 1500 | 1.5B | RF-equivalent | E0/E50 to E150 |
| | | | 40JP2500 | Flange standard | JPI 2500 | 1.5B | RF-equivalent | E0/E50 to E150 |
| | | | 50JP150 | Flange standard | JPI 150 | 2B | RF-equivalent | E0/E50 to E150 |
| | | | 50JP300 | Flange standard | JPI 300 | 2B | RF-equivalent | E0/E50 to E150 |
| | | | 50JP400 | Flange standard | JPI 400 | 2B | RF-equivalent | E0/E50 to E150 |
| | | | 50JP600 | Flange standard | JPI 600 | 2B | RF-equivalent | E0/E50 to E150 |
| | | | 50JP900 | Flange standard | JPI 900 | 2B | RF-equivalent | E0/E50 to E150 |
| | | | 50JP1500 | Flange standard | JPI 1500 | 2B | RF-equivalent | E0/E50 to E150 |
| | | | 50JP2500 | Flange standard | JPI 2500 | 2B | RF-equivalent | E0/E50 to E150 |
| | | | 80JP150 | Flange standard | JPI 150 | 3B | RF-equivalent | E0/E50 to E150 |
| | | | 80JP300 | Flange standard | JPI 300 | 3B | RF-equivalent | E0/E50 to E150 |
| | | | 80JP400 | Flange standard | JPI 400 | 3B | RF-equivalent | E0/E50 to E150 |
| | | | 80JP600 | Flange standard | JPI 600 | 3B | RF-equivalent | E0/E50 to E150 |
| | | | 80JP900 | Flange standard | JPI 900 | 3B | RF-equivalent | E0/E50 to E150 |
| | | | 80JP1500 | Flange standard | JPI 1500 | 3B | RF-equivalent | E0/E50 to E150 |
| | | | 80JP2500 | Flange standard | JPI 2500 | 3B | RF-equivalent | E0/E50 to E150 |
| | | | 100JP150 | Flange standard | JPI 150 | 4B | RF-equivalent | E0/E50 to E150 |
| | | | 100JP300 | Flange standard | JPI 300 | 4B | RF-equivalent | E0/E50 to E150 |
| | | | 100JP400 | Flange standard | JPI 400 | 4B | RF-equivalent | E0/E50 to E150 |
| | | | 100JP600 | Flange standard | JPI 600 | 4B | RF-equivalent | E0/E50 to E150 |
| 100JP900 | Flange standard | JPI 900 | 4B | RF-equivalent | E0/E50 to E150 | | | |
| 100JP1500 | Flange standard | JPI 1500 | 4B | RF-equivalent | E0/E50 to E150 | | | |
| 100JP2500 | Flange standard | JPI 2500 | 4B | RF-equivalent | E0/E50 to E150 | | | |
| 8 | Protruding flange part and diaphragm cover | E0 | Length of protruding part 0 mm | | | | | |
| | | E50 | Length of protruding part 50 mm Apertures 25A, 1B cannot be used. | | | | | |
| | | E100 | Length of protruding part 100 mm Apertures 25A, 1B cannot be used. | | | | | |
| | | E150 | Length of protruding part 150 mm Apertures 25A, 1B cannot be used. | | | | | |
| | | E0TDS | Length of protruding part 0 mm with FEP diaphragm cover (operating pressure: atmospheric pressure or higher, operating temperature -10 to 120°C) Apertures 100A, 4B, 40A, 1.5B, 25A, 1B cannot be used. | | | | | |
| 9 | Material | — | High pressure side diaphragm:SUS316L High pressure side wetted part:SUS316 Low pressure side diaphragm:SUS316L Low pressure side wetted part:SUS316L Low pressure side flange:SCS14A | | | | | |
| | | 316L | High pressure side diaphragm:SUS316L High pressure side wetted part:SUS316L Low pressure side diaphragm:SUS316L Low pressure side wetted part:SUS316L Low pressure side flange:SCS16A | | | | | |
| | | HC316 | High pressure side diaphragm:Hastelloy C High pressure side wetted part:Hastelloy C Low pressure side diaphragm:SUS316L Low pressure side wetted part:SUS316L Low pressure side flange:SCS14A | | | | | |
| | | HC316L | High pressure side diaphragm:Hastelloy C High pressure side wetted part:Hastelloy C Low pressure side diaphragm:SUS316L Low pressure side wetted part:SUS316L Low pressure side flange:SCS16A | | | | | |
| | | TA316 | High pressure side diaphragm:Tantalum High pressure side wetted part:Tantalum Low pressure side diaphragm:SUS316L Low pressure side wetted part:SUS316L Low pressure side flange:SCS14A | | | | | |
| | | HC | High pressure side diaphragm:Hastelloy C High pressure side wetted part:Hastelloy C Low pressure side diaphragm:Hastelloy C Low pressure side wetted part:Hastelloy C | | | | | |
| | | TA | High pressure side diaphragm:Tantalum High pressure side wetted part:Tantalum Low pressure side diaphragm:Tantalum Low pressure side wetted part:Tantalum | | | | | |
| 10 | Bolt material | — | Sensor body flange bolt: SCM435 | | | | | |
| | | S630 | Sensor body flange bolt: SUS630 | | | | | |
| 11 | Sealed liquid | — | High pressure side :Silicone oil Low pressure side: Silicone oil | | | | | |
| | | FO | High pressure side :Fluorine oil Low pressure side: Silicone oil | | | | | |
| | | 100CS | High pressure side :Sanitary silicone oil Low pressure side: Silicone oil | | | | | |
| | | PG | High pressure side :Propylene glycol Low pressure side: Silicone oil | | | | | |
| 12 | Oil prohibition | — | No finish | | | | | |
| | | NL | Oil prohibitive finish | | | | | |
| | | NLW | Oil and water prohibitive finish | | | | | |
| 13 | Pressure inlet | B0 | Bottom connection Rc1/4 without oval flange Material Code HC,TA cannot be specified. | | | | | |
| | | BR2 | Bottom connection Rc1/2 with oval flange Material Code HC,TA cannot be specified. | | | | | |
| | | BR4 | Bottom connection Rc1/4 with oval flange Material Code HC,TA cannot be specified. | | | | | |
| | | BN2 | Bottom connection 1/2NPT with oval flange Material Code HC,TA cannot be specified. | | | | | |
| | | BN4 | Bottom connection 1/4NPT with oval flange Material Code HC,TA cannot be specified. | | | | | |
| | | BS2 | Bottom connection with oval flange 15A pipe insertion welding(socket screw-in type) Material Code HC,TA cannot be specified. | | | | | |
| | | BS4 | Bottom connection with oval flange 8A pipe insertion welding(socket screw-in type) Material Code HC,TA cannot be specified. | | | | | |
| | | BPV4 | Bottom connection at side Rc1/4 without oval flange Material Code HC,TA can be specified. | | | | | |
| | | T0 | Top connection Rc1/4 without oval flange Material Code HC,TA cannot be specified. | | | | | |
| | | R2 | Top connection Rc1/2 with oval flange Material Code HC,TA cannot be specified. | | | | | |
| | | R4 | Top connection Rc1/4 with oval flange Material Code HC,TA cannot be specified. | | | | | |
| | | N2 | Top connection 1/2NPT with oval flange Material Code HC,TA cannot be specified. | | | | | |
| | | N4 | Top connection 1/4NPT with oval flange Material Code HC,TA cannot be specified. | | | | | |
| | | S2 | Top connection with oval flange 15A pipe insertion welding(socket screw-in type) Material Code HC,TA cannot be specified. | | | | | |
| | | S4 | Top connection with oval flange 8A pipe insertion welding(socket screw-in type) Material Code HC,TA cannot be specified. | | | | | |
| | | PV4 | Top connection at side Rc1/4 without oval flange Material Code HC,TA can be specified. | | | | | |
| 14 | Wetted parts conditions | — | Standard | | | | | |
| | | V | Vacuum type | | | | | |

Example of Code description: EDR-N8F-8000-XC-M-80J10-E0-B0

CS·3253-801

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