

REMOTE SEAL TYPE DIFFERENTIAL PRESSURE TRANSMITTER

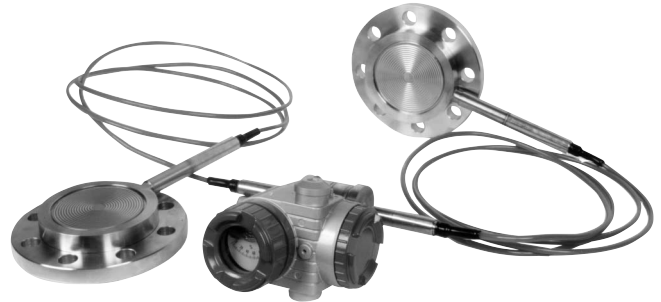
DATA SHEET

FKD...4

The FCX-AII differential pressure transmitter accurately measures differential pressure, liquid level or gauge pressure and transmits a proportional 4 to 20mA signal. The transmitter utilizes a unique micromachined capacitance silicon sensor with state-of-the-art microprocessor technology to provide exceptional performance and functionality. Totally welded construction of the seals assures excellent reliability in high temperature and highly corrosive process conditions.

FEATURES

- High accuracy**
0.2% accuracy for all calibrated spans is a standard feature for all DP models covering 0.32kPa {3.2mbar} range to 500kPa {5bar} high differential pressure range. 0.1% accuracy is available as option. Fuji's micro-capacitance silicon sensor assures this accuracy for all elevated or suppressed calibration ranges without additional adjustment.
- Minimum environmental influence**
The "Advanced Floating Cell" design which protects the pressure sensor against changes in temperature, static pressure, and overpressure substantially reduces total measurement error in actual field applications.
- Fuji/HART® bilingual communications protocol and FOUNDATION™ fieldbus and Profibus™ compatibility**
FCX-AII series transmitter offers bilingual communications to speak both Fuji proprietary protocol and HART®. Any HART® compatible devices can communicate with FCX-AII. Further, by upgrading electronics FOUNDATION™ fieldbus and Profibus™ are also available.
- Application flexibility**
Various options that render the FCX-AII suitable for almost any process applications include:
 - Analog indicator at either the electronics side or terminal side
 - Full range of hazardous area approvals
 - Built-in RFI filter and lightning arrester
 - 5-digit LCD meter with engineering unit
 - Stainless steel electronics housing
 - Wide selection of materials
 - High temperature, high vacuum seals
- Programmable output Linearization Function**
In addition to Linear and Square Root, output signal can be freely programmable. (Up to 14 compensated points at approximation.)
- Burnout current flexibility (Under Scale: 3.2 to 3.8mA, Over Scale: 20.8 to 21.6mA)**
Burnout signal level is adjustable using Model FXW Hand Held Communicator (HHC) to comply with NAMUR NE43.
- Dry calibration without reference pressure**
Thanks to the best combination of unique construction of mechanical parts (Sensor unit) and high performance electronics circuit (Electronics unit), reliability of dry calibration without reference pressure is at equal level as wet calibration.



SPECIFICATIONS

Functional specifications

Service: Liquid, gas, or vapour
Static pressure, span, and range limit:

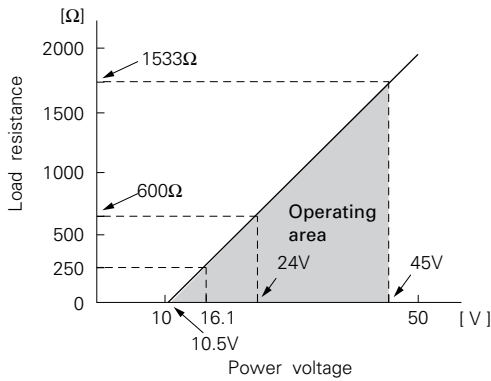
| Type | Static pressure | Span limit [kPa] (m bar) | | Range limit [kPa] (m bar) |
|--------|---------------------|--------------------------|-----------------|---------------------------|
| | | Min. | Max. | |
| FKD□□3 | Up to flange rating | 0.32 { 3.2 } | 32 { 320 } | +/- 32 {+/- 320} |
| FKD□□5 | | 1.3 { 13 } | 130 { 1300 } | +/- 130 {+/- 1300} |
| FKD□□6 | | 5 { 50 } | 500 { 5000 } | +/- 500 {+/- 5000} |

Remark : To minimize environmental influence, span should be greater than 1/40 of the max. span in most applications.

- Lower limit of static pressure (vacuum limit),
Silicone fill sensor: See Fig. 1
Fluorinated fill sensor: Atmospheric pressure
- The maximum span of each sensor can be converted to different units using factors as below.
1MPa=10³kPa=10bar=10.19716kgf/cm²
=145.0377psi
1kPa=10mbar=101.976mmH₂O=4.01463H₂O

Overrange limit: To maximum static pressure limit
Output signal: 4 to 20mA DC (linear or square root) with digital signal superimposed on the 4 to 20mA signal
Power supply: Transmitter operates on 10.5V to 45V DC at transmitter terminals.
10.5V to 32V DC for the units with optional arrester.

Load limitations: see figure below



Note: For communication with HHC⁽¹⁾ (Model: FXW), min. of 250Ω is required.

Hazardous locations:

| Authorities | Flameproof |
|-------------------|---|
| ATEX | Ex II 2 GD EEx d IIC T6 IP66/67 T85°C Tamb = -40°C to +65°C EEx d IIC T5 IP66/67 T100°C Tamb = -40°C to +85°C |
| Factory Mutual | Class I Div.1 Groups B, C, D T6 Type 4X Class II III Div.1 Groups E, F, G T6 Type 4X Tamb max = +60°C |
| CSA | Class I Div.1 Groups C, D Class II Div.1 Groups E, F, G Class III Div.1 Note) "Seal Not Required" enclosure is allowed. |
| TIIS | Ex do IIB+H ₂ T4 Tamb max = +55°C Maximum process temp. = +120°C |
| IECEX Scheme /SAA | Ex d IIC T5 IP66/67 pending Tamb = -40°C to +85°C Ex d IIC T6 IP66/67 pending Tamb = -40°C to +65°C |

| Authorities | Intrinsic safety | | | | | | | | | | | | | | | | | | | | | |
|-------------------|---|----------------|--|------|-----------|------------|--|-----------|---------------|----------------|-------------|---------------|----------------|-------------|---------------|----------------|-----------|---------------|----------------|---|-------|----------------|
| ATEX | Ex II 1 GD EEx ia IIC T5 Tamb = -40°C to +40°C EEx ia IIC T4 Tamb = -40°C to +80°C Entity Parameters: Ui=28V, li=93.3mA, Pi=0.66W, Ci=27nF (Without Arrester), Ci=34.2nF (With Arrester), Li=1.134mH | | | | | | | | | | | | | | | | | | | | | |
| Factory Mutual | Class I II III Div.1 Groups A, B, C, D, E, F, G T4 Entity Type 4X <table border="1"> <thead> <tr> <th colspan="2">Model code</th> <th>Tamb</th> </tr> <tr> <th>9th digit</th> <th>13th digit</th> <th></th> </tr> </thead> <tbody> <tr> <td>A,B,C,D,J</td> <td>Y,G,H,J,S,T,K</td> <td>-40°C to +85°C</td> </tr> <tr> <td>L,P,M,1,2,3</td> <td>Y,G,H,J,S,T,K</td> <td>-20°C to +80°C</td> </tr> <tr> <td>Q,S,N,4,5,6</td> <td>Y,G,H,J,S,T,K</td> <td>-20°C to +60°C</td> </tr> <tr> <td>E,F,G,H,K</td> <td>Y,G,H,J,S,T,K</td> <td>-40°C to +60°C</td> </tr> <tr> <td>-</td> <td>W,A,D</td> <td>-10°C to +60°C</td> </tr> </tbody> </table> Entity Parameters: Vmax=42.4V, Imax=113mA, Pi=1W, Ci=34.2nF, Li=1.134mH | Model code | | Tamb | 9th digit | 13th digit | | A,B,C,D,J | Y,G,H,J,S,T,K | -40°C to +85°C | L,P,M,1,2,3 | Y,G,H,J,S,T,K | -20°C to +80°C | Q,S,N,4,5,6 | Y,G,H,J,S,T,K | -20°C to +60°C | E,F,G,H,K | Y,G,H,J,S,T,K | -40°C to +60°C | - | W,A,D | -10°C to +60°C |
| Model code | | Tamb | | | | | | | | | | | | | | | | | | | | |
| 9th digit | 13th digit | | | | | | | | | | | | | | | | | | | | | |
| A,B,C,D,J | Y,G,H,J,S,T,K | -40°C to +85°C | | | | | | | | | | | | | | | | | | | | |
| L,P,M,1,2,3 | Y,G,H,J,S,T,K | -20°C to +80°C | | | | | | | | | | | | | | | | | | | | |
| Q,S,N,4,5,6 | Y,G,H,J,S,T,K | -20°C to +60°C | | | | | | | | | | | | | | | | | | | | |
| E,F,G,H,K | Y,G,H,J,S,T,K | -40°C to +60°C | | | | | | | | | | | | | | | | | | | | |
| - | W,A,D | -10°C to +60°C | | | | | | | | | | | | | | | | | | | | |
| CSA | Class I Div.1 Groups A, B, C, D Class II Div.1 Groups E, F, G Class III Div.1 Temp Code T4 Tamb max = +40°C Temp Code T3C Tamb max = +85°C Entity Parameters: Vmax=28V, Imax=93mA, Ci=27nF (Without Arrester), Ci=34.2nF (With Arrester), Li=1.4mH | | | | | | | | | | | | | | | | | | | | | |
| TIIS | Ex ia IIC T4 Tamb max = +60°C Entity Parameters: Ui=28V, li=94.3mA, Pi=0.66W, Ci=32.6nF, Li=1.134mH | | | | | | | | | | | | | | | | | | | | | |
| IECEX Scheme /SAA | Ex ia IIC T4 IP66/67 Tamb = -40°C to +70°C Ex ia IIC T5 IP66/67 Tamb = -40°C to +50°C Entity Parameters: Ui=28V, li=93.3mA, Pi=0.66W, Ci=0.033μF, Li=1.034mH | | | | | | | | | | | | | | | | | | | | | |

| Authorities | Type n Nonincendive | | | | | | | | | | | | | | | | | | | | |
|-------------------|---|----------------|--|------|-----------|------------|-----------|---------------|----------------|-------------|---------------|----------------|-------------|---------------|----------------|-----------|---------------|----------------|---|-------|----------------|
| ATEX | Ex II 3 GD EEx nL IIC T5 Tamb = -40°C to +40°C EEx nL IIC T4 Tamb = -40°C to +80°C Specific Parameters: Model without arrester: Ui=42.4V, Ii=113mA, Pi=1W, Ci=27nF, Li=1.134mH Model with arrester: Ui=32V, Ii=113mA, Pi=1W, Ci=34.2nF, Li=1.134mH EEx nAL IIC T5 Tamb = -40°C to +40°C EEx nAL IIC T4 Tamb = -40°C to +80°C Specific Parameters: Model without arrester: Umax=42.4V, Imax=113mA, Pmax=1W Model with arrester: Umax=32V, Imax=113mA, Pmax=1W | | | | | | | | | | | | | | | | | | | | |
| Factory Mutual | Class I II III Div.2 Groups A, B, C, D, F, G T4 Entity Type 4X <table border="1"> <thead> <tr> <th colspan="2">Model code</th> <th rowspan="2">Tamb</th> </tr> <tr> <th>9th digit</th> <th>13th digit</th> </tr> </thead> <tbody> <tr> <td>A,B,C,D,J</td> <td>Y,G,H,J,S,T,K</td> <td>-40°C to +85°C</td> </tr> <tr> <td>L,P,M,1,2,3</td> <td>Y,G,H,J,S,T,K</td> <td>-20°C to +80°C</td> </tr> <tr> <td>Q,S,N,4,5,6</td> <td>Y,G,H,J,S,T,K</td> <td>-20°C to +60°C</td> </tr> <tr> <td>E,F,G,H,K</td> <td>Y,G,H,J,S,T,K</td> <td>-40°C to +60°C</td> </tr> <tr> <td>-</td> <td>W,A,D</td> <td>-10°C to +60°C</td> </tr> </tbody> </table> | Model code | | Tamb | 9th digit | 13th digit | A,B,C,D,J | Y,G,H,J,S,T,K | -40°C to +85°C | L,P,M,1,2,3 | Y,G,H,J,S,T,K | -20°C to +80°C | Q,S,N,4,5,6 | Y,G,H,J,S,T,K | -20°C to +60°C | E,F,G,H,K | Y,G,H,J,S,T,K | -40°C to +60°C | - | W,A,D | -10°C to +60°C |
| Model code | | Tamb | | | | | | | | | | | | | | | | | | | |
| 9th digit | 13th digit | | | | | | | | | | | | | | | | | | | | |
| A,B,C,D,J | Y,G,H,J,S,T,K | -40°C to +85°C | | | | | | | | | | | | | | | | | | | |
| L,P,M,1,2,3 | Y,G,H,J,S,T,K | -20°C to +80°C | | | | | | | | | | | | | | | | | | | |
| Q,S,N,4,5,6 | Y,G,H,J,S,T,K | -20°C to +60°C | | | | | | | | | | | | | | | | | | | |
| E,F,G,H,K | Y,G,H,J,S,T,K | -40°C to +60°C | | | | | | | | | | | | | | | | | | | |
| - | W,A,D | -10°C to +60°C | | | | | | | | | | | | | | | | | | | |
| CSA | Class I Div.2 Groups A, B, C, D Class II Div.2 Groups E, F, G Class III Div.2 Temp Code T4 Tamb max = +40°C Temp Code T3C Tamb max = +85°C Entity Parameters: Vmax=28V, Ci=27nF (Without Arrester), Ci=34.2nF (With Arrester), Li=1.4mH | | | | | | | | | | | | | | | | | | | | |
| TIIS | - | | | | | | | | | | | | | | | | | | | | |
| IECEX Scheme /SAA | - | | | | | | | | | | | | | | | | | | | | |

Zero/span adjustment:

Zero and span are adjustable from the HHC⁽¹⁾. Zero and span are also adjustable externally from the adjustment screw (span adjustment is not available with 9th digit code "L, P, M, Q, S, N").

Damping:

Adjustable from HHC or local adjustment unit with LCD display. The time constant is adjustable between 0.12 to 32 seconds.

Zero elevation/suppression:

-100% to +100% of URL

Normal/reverse action:

Selectable from HHC⁽¹⁾

Indication:

Analog indicator or 5-digit LCD meter, as specified.

Burnout direction: Selectable from HHC⁽¹⁾

If self-diagnostic detect transmitter failure, the analog signal will be driven to either "Output Hold", "Output Overscale" or "Output Underscale" modes.

"Output Hold":

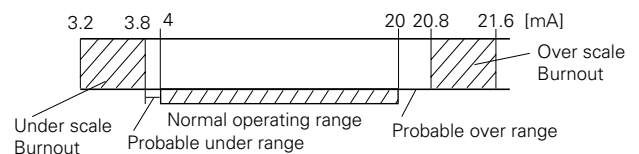
Output signal is hold as the value just before failure happens.

"Output Overscale":

Adjustable within the range 20.8mA to 21.6mA from HHC⁽¹⁾

"Output Underscale":

Adjustable within the range 3.2mA to 3.8mA from HHC⁽¹⁾



Loop-check output:

Transmitter can be configured to provide constant signal 3.8mA through 21.6mA by HHC⁽¹⁾.

Temperature limit:

Ambient: -40 to +85°C

- (-20 to +80°C for LCD indicator)
- (-40 to +60°C for arrester option)
- (-10 to +60°C for fluorinated oil fill transmitter)
- (-10 to +85°C for silicone oil "H", "S", "K")
- (+20 to +85°C for silicone oil "J", "T")

For explosionproof units (flameproof or intrinsic safety), ambient temperature must be within the limits specified in each standard.

Process:

| Fill fluid | Code in the 13th digit of "Code symbols" | Process temperature | Lower limit of static press. |
|-----------------|--|---------------------|---------------------------------|
| Fluorinated oil | W, A and D | -20 to 120°C | Atmospheric pressure |
| Silicone oil | H | -15 to 250°C | 2.7kPa abs (20mmHg abs) |
| | J | 85 to 300°C | |
| | Y and G | -40 to 120°C | |
| | S | -15 to 250°C | |
| | T | 85 to 300°C | 0.13kPa abs (1mmHg abs) or more |
| | K | -15 to 200°C | |

Storage: -40 to +90°C

Humidity limit: 0 to 100% RH

Communication: With HHC⁽¹⁾ (Model FXW, consult Data Sheet No. EDS8-47), following information can be remotely displayed or reconfigured.

Note: HHC's version must be more than 6.0 (or FXW □□□□1-□3), for FCX-A II.

| Items | Display | Set |
|----------------------|-------------|-----|
| Tag No. | v | v |
| Model No. | v | v |
| Serial No. | v | — |
| Engineering unit | v | v |
| Range limit | v | — |
| Measuring range | v | v |
| Damping | v | v |
| Output mode | Linear | v |
| | Square root | v |
| Burnout direction | v | v |
| Calibration | v | v |
| Output adjust | — | v |
| Data | v | — |
| Self diagnoses | v | — |
| Printer | — | — |
| External switch lock | v | v |
| Transmitter display | v | v |
| Linearize | v | v |
| Rerange | v | v |

(Note) (1) HHC: Hand Held Communicator

Programmable output linearization function:

Output signal can be characterized with
"14 points linear approximation function"
from HHC⁽¹⁾.

EMC Conformity: EN61326 C€

(Note) (1) HHC: Hand Held Communicator

Performance specifications

Reference conditions, silicone oil fill, 316SS isolating diaphragms,
4 to 20mA analog output in linear mode.

Accuracy rating: (including linearity, hysteresis, and re-
peatability)

(Standard)

For spans greater than 1/10 of URL: 0.2% of span

For spans below 1/10 of URL:

$$\pm \left(0.1 + 0.1 \frac{0.1 \times \text{URL}}{\text{Span}} \right) \% \text{ of span}$$

(Option) (Code; 21th digit H,K)

For spans greater than 1/10 of URL: 0.1% of span

For spans below 1/10 of URL:

$$\pm \left(0.05 + 0.05 \frac{0.1 \times \text{URL}}{\text{Span}} \right) \% \text{ of span}$$

Stability: ±0.2% of upper range limit (URL) for 3
years.

Temperature effect (*):

Effects per 28°C change between the lim-
its of -40°C and +85°C

(Standard) Zero shift: ±0.35% of URL

Total effect: ±0.5% of URL

(Option) (Code; 21th digit J,K)

Zero shift: ±0.3% of URL

Total effect: ±0.4% of URL

Note: * Excluding effect by temperature difference
between the seals.

Static pressure effect:

Zero shift; 0.2% of URL for flange rating
pressure

Span shift: - 0.2% of calibrated span for
flange rating pressure

Overrange effect: Zero shift; 0.1% of URL for flange rating
pressure

Supply voltage effect:

Less than 0.005% fo calibrated span per
1V

RFI effect: Less than 0.2% of URL for the frequen-
cies of 20 to 1000MHz and field strength
30 V/m when electronics covers on.

(Classification: 2-abc: 0.2% span per
SAMA PMC 33.1)

Update period: 120 msec *)

Step response: (without electrical damping)

| Range code | Time constant (*) | Dead time (*) |
|------------|-------------------|---------------|
| "3" | 2 s | 0.2 s |
| "5" | 1.7 s | |
| "6" | 1.7 s | |

*) Faster response is available as option (maximum
update rate: 25 times per second).

Dielectric strength:

500V AC, 50/60Hz 1 min., between circuit
and earth.

Insulation resistance:

More than 100MΩ at 500V DC.

Turn-on time: 4 sec.

Internal resistance for external field indicator:

12Ω or less

Physical specifications**Electrical connections:**

G1/2, 1/2-14 NPT, Pg13.5, or M20 × 1.5 con-
duit, as specified.

And 1-conduit or 2-conduit, as specified.

Process connections:

JIS, ANSI, or DIN raised face flanges.

JIS: 10K80A, 10K100A, 30K80A, or
30K100A

ANSI: 150LB 3", 150LB 4", 300LB 3", or
300LB 4"

DIN: PN40 DN80 or PN16 DN100

See OUTLINE DIAGRAM for detailed di-
mensions.

Diaphragm extension:

0, 50, 100, 150, or 200mm as specified.

(See model code. Extended diaphragm is
available only with 316L stainless steel or
Hastelloy-C diaphragm)

Process-wetted parts material:

Diaphragm: 316L stainless steel, Hastelloy-
C,

Monel, Tantalum, Titanium or
Zirconium

Flange face: 316 stainless steel, Hastelloy-
C lining

Monel lining, or Tantalum lin-
ing

Extension: 316 stainless steel or Hastelloy-
C

Non-wetted parts material:

Electronics housing: Low copper die-cast
aluminum alloy finished with epoxy/
polyurethane double coating (stan-
dard), or 316 stainless steel (SCS14 per
JIS G5121), as specified.

Capillary: In case of 11th code "D, E, F, L,
M, N, P", PVC armored stainless steel.
In case of 13th code "Q, R, S, T, V, W,
X", stainless steel armored stainless
steel.

Mounting flange: 304 stainless steel or
carbon steel

Fill fluid: Silicone oil (standard) or fluori-
nated oil

Mounting bracket: 304 stainless steel

Environmental protection:

IEC IP67 and NEMA 6/6P

Mounting:

On 60.5mm (JIS 50A) pipe using mount-
ing bracket, direct wall mounting

Mass {weight):

Transmitter approximately 15kg without
options.

Add; 0.5kg for mounting bracket

0.8kg for indicator option

4.5kg for stainless steel housing
option

1.5kg per 50mm extension of diaphragm

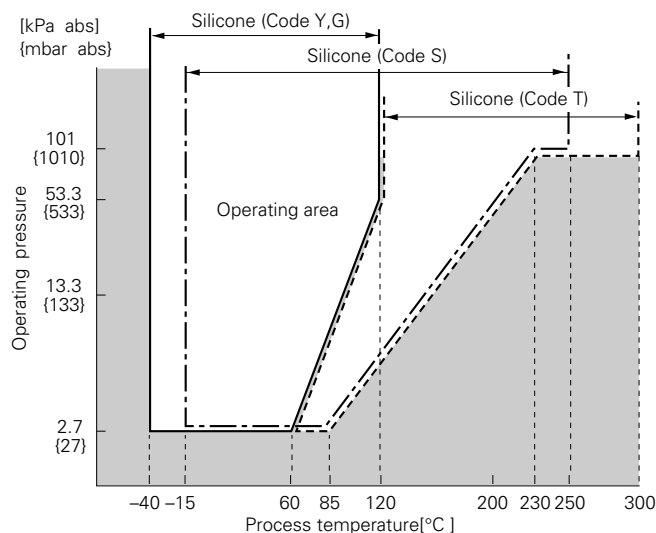


Fig. 1 Relation between process temperature and operating pressure

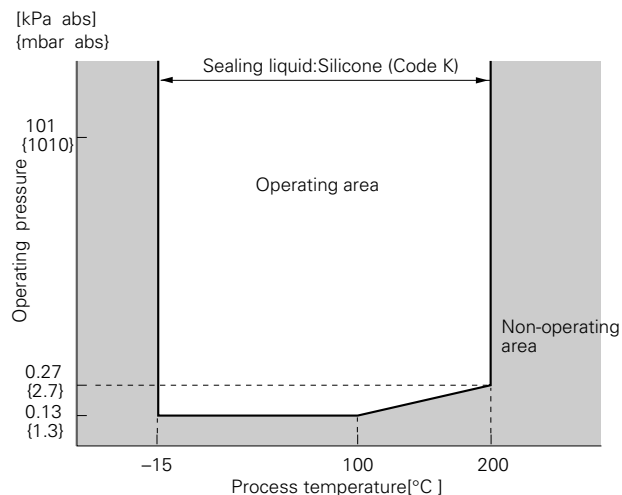


Fig. 2 Relation between process temperature and operating pressure

Optional features

Indicator: A plug-in analog indicator (2.5% accuracy) can be housed in the electronics compartment or in the terminal box of the housing.

An optional 5-digit LCD meter with engineering unit is also available.

Local adjustment unit with LCD display:

An optional 5-digit LCD meter with Zero/ Span adjustment function, loop-check function and damping adjustment function, is available.

Arrester: A built-in arrester protects the electronics from lightning surges.

Lightning surge immunity:
4kV (1.2 × 50µs)

Oxygen service: Special cleaning procedures are followed throughout the process to maintain all process wetted parts oil-free.

The fill fluid is fluorinated oil.

Chlorine service: Oil-free procedures as above. Includes fluorinated oil for fill.

Degreasing: Process-wetted parts are cleaned, but the fill fluid is standard silicone oil. Not for use on oxygen or chlorine measurement.

Vacuum service: Special silicone oil and filling procedure are applied.

See Fig. 1, Fig. 2.

Optional tag plate:

An extra stainless steel tag for customer tag data is wired to the transmitter.

Coating of cell: Cell's surface is finished with epoxy/polyurethane double coating. Specify if environment is extremely corrosive.

ACCESSORIES

Hand-held communicator:

(Model FXW, refer to Data Sheet No. EDS 8-47)

Z/S board:

Parts No.=ZZPFCX4-A070

When Z/S board is mounted on the FCX-AII amplifier unit, external adjustment screw will be available for zero and span adjustment.

CODE SYMBOLS

| Digit | Description | Note | Digit No. of code | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|--|-------------------|-----------------------|----------------------|---------------------|---|----|-----|-----|-----|-------------|-------------|----|----|-----|-----|-----|--|---------------------|---|-------|---|----------|---|----------|---|-----------|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 21 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | <Conduit connection> G 1/2 (x1) 1/2-14NPT (x1) Pg13.5 (x1) M20 x 1.5 (x1) G 1/2 (x2) 1/2-14NPT (x2) Pg13.5 (x2) M20 x 1.5 (x2) | Combination with 12th digit code "C, E, P, Q" are not available. | F | K | D | | | | | | | | | | | | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | <Flange> Mounting flange Flange size and rating 304 stainless steel JIS 10K 80A JIS 10K 100A JIS 30K 80A JIS 30K 100A ANSI/JPI 150LB 3" ANSI/JPI 150LB 4" ANSI/JPI 300LB 3" ANSI/JPI 300LB 4" DIN PN16/40 DN80 DIN PN16 DN100 JIS 20K 80A ANSI/JPI 600LB 3B Carbon steel JIS 10K 80A JIS 10K 100A JIS 30K 80A JIS 30K 100A ANSI/JPI 150LB 3" ANSI/JPI 150LB 4" ANSI/JPI 300LB 3" ANSI/JPI 300LB 4" DIN PN16/40 DN80 DIN PN16 DN100 316 stainless steel JIS 10K 80A ANSI/JPI 150LB 3B ANSI/JPI 150LB 4B ANSI/JPI 300LB 3B ANSI/JPI 300LB 4B ANSI/JPI 600LB 3B None (wafer type) 3 inch wafer 4 inch wafer | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 0.32.... 32 {3.2.... 320} 1.3..... 130 {13..... 1300} 5..... 500 {50..... 5000} | Note 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | <Material/diaphragm extension> <table border="1"> <thead> <tr> <th>Diaphragm</th> <th>Flange face</th> <th>Diaph. extension [mm]</th> </tr> </thead> <tbody> <tr> <td rowspan="5">316L stainless steel</td> <td rowspan="5">316 stainless steel</td> <td>0</td> </tr> <tr> <td>50</td> </tr> <tr> <td>100</td> </tr> <tr> <td>150</td> </tr> <tr> <td>200</td> </tr> <tr> <td rowspan="5">Hastelloy-C</td> <td rowspan="5">Hastelloy-C</td> <td>0</td> </tr> <tr> <td>50</td> </tr> <tr> <td>100</td> </tr> <tr> <td>150</td> </tr> <tr> <td>200</td> </tr> <tr> <td rowspan="5">316L stainless +Au coating Monel Tantalum Titanium Zirconium</td> <td>316 stainless stell</td> <td>0</td> </tr> <tr> <td>Monel</td> <td>0</td> </tr> <tr> <td>Tantalum</td> <td>0</td> </tr> <tr> <td>Titanium</td> <td>0</td> </tr> <tr> <td>Zirconium</td> <td>0</td> </tr> </tbody> </table> | Diaphragm | Flange face | Diaph. extension [mm] | 316L stainless steel | 316 stainless steel | 0 | 50 | 100 | 150 | 200 | Hastelloy-C | Hastelloy-C | 0 | 50 | 100 | 150 | 200 | 316L stainless +Au coating Monel Tantalum Titanium Zirconium | 316 stainless stell | 0 | Monel | 0 | Tantalum | 0 | Titanium | 0 | Zirconium | 0 | Note 2 Note 3 | | | | | | | | | | | | | | | | | | | | | |
| Diaphragm | Flange face | Diaph. extension [mm] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 316L stainless steel | 316 stainless steel | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 150 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 200 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hastelloy-C | Hastelloy-C | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 150 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 200 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 316L stainless +Au coating Monel Tantalum Titanium Zirconium | 316 stainless stell | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Monel | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Tantalum | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Titanium | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Zirconium | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Note 1: (*1) 100: 1 turn down is possible, but should be used at a span greater than 1/40 of the maximum span for better performance.

Note 2: (*2) Available for 13th digit code "S", "T", "K" and 5th digit code "1", "3", "5", "7", "B", "D", "F", "H", "K", "Q", "U", "W".

Note 3: (*3) Available for 6th code "2", "3" and 5th code "0", "2", "4", "6", "8", "A", "C", "E", "G", "J", "P", "M", "R", "S", "T", "W".

| Digit | Description | Note | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 21 | Digit No. of code | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------|---|--|---|--------------------|---|---|---|-------|---------------------|-----|------|--------|----|----|---------------------|-----|------|--------|-------------------|---|--|--------------------------------------|------|--------|---|---|---------------------|-----|------|--------|---|---|---------------------|-----|------|--------|---|---|---------------------|-----|------|--------|---|----|---------------------|-----|------|--------|---|-----|---------------------|-----------------|------|--------|---|---|---------------------|-----------------|------|--------|---|---|---------------------|-----------------|------|--------|---|---|---------------------|-----------------|------|--------|---|---|---------------------|-----------------|------|--------|---|---|---------------------|-----------------|------|--------|---|----|---------------------|-----------------|------|--------|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | F | K | D | | | | | 4 | - | | | | | | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | <Indicator and arrester> <u>Indicator</u> None Analog, 0 to 100% linear scale Analog, 0 to 100% sq. root scale Analog, custom scale Analog, double scale (linear and sq. root) None Analog, 0 to 100% linear scale Analog, 0 to 100% sq. root scale Analog, custom scale Analog, double scale (linear and sq. root) None Digital, 0 to 100% Digital, custom scale Digital, 0 to 100% square root Digital, 0 to 100% Digital, custom scale Digital, 0 to 100% square root Digital, 0 to 100% (Local adjustment unit with LCD display) Digital, custom scale (Local adjustment unit with LCD display) Digital, 0 to 100% square root (Local adjustment unit with LCD display) Digital, 0 to 100% (Local adjustment unit with LCD display) Digital, custom scale (Local adjustment unit with LCD display) Digital, 0 to 100% square root (Local adjustment unit with LCD display) None None None None None Yes Yes Yes Yes Yes None None None Yes Yes Yes None None None Yes Yes Yes None None | <u>Arrester</u> None None None None None Yes Yes Yes Yes Yes None None None Yes Yes Yes Yes Yes None None None Yes Yes Yes None None None Yes Yes Yes None None None Yes Yes Yes None None | | | | | | | | | | | | | | | | | | | Z/S board attached. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | <Approvals for hazardous locations> None (for ordinary locations) TIIS, Flameproof (Conduit seal) TIIS, Flameproof (Cable gland seal) FM, Flameproof (or explosionproof) CSA, Flameproof (or explosionproof) ATEX, Flameproof IECEX Scheme/SAA, Flameproof (Approval pending) TIIS, Intrinsic safety FM, Intrinsic safety and nonincendive CSA, Intrinsic safety and nonincendive ATEX, Intrinsic safety ATEX, Type n IECEX Scheme/SAA, Intrinsic safety FM, Combined of Flameproof and Intrinsic safety | (Available for 4th digit code "A", "S") (Available for 4th digit code "A", "S") (Available for 4th digit code "B", "T") (Available for 4th digit code "B", "T") | | | | | | | | | | | | | | | | | | | A B C D E X R G H J K P T V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | <Capillary and mounting bracket> <table border="1"> <thead> <tr> <th>Capillary</th> <th>Mounting bracket</th> <th>armor of capillary</th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>1.5 m</td> <td>304 Stainless steel</td> <td>PVC</td> <td>(*4)</td> <td>Note 4</td> <td>D</td> </tr> <tr> <td>3</td> <td>304 Stainless steel</td> <td>PVC</td> <td>(*4)</td> <td>Note 4</td> <td>E</td> </tr> <tr> <td>5</td> <td>304 Stainless steel</td> <td>PVC</td> <td>(*4)</td> <td>Note 4</td> <td>L</td> </tr> <tr> <td>6</td> <td>304 Stainless steel</td> <td>PVC</td> <td>(*4)</td> <td>Note 4</td> <td>F</td> </tr> <tr> <td>7</td> <td>304 Stainless steel</td> <td>PVC</td> <td>(*4)</td> <td>Note 4</td> <td>M</td> </tr> <tr> <td>8</td> <td>304 Stainless steel</td> <td>PVC</td> <td>(*4)</td> <td>Note 4</td> <td>N</td> </tr> <tr> <td>10</td> <td>304 Stainless steel</td> <td>PVC</td> <td>(*4)</td> <td>Note 4</td> <td>P</td> </tr> <tr> <td>1.5</td> <td>304 Stainless steel</td> <td>Stainless steel</td> <td>(*5)</td> <td>Note 5</td> <td>Q</td> </tr> <tr> <td>3</td> <td>304 Stainless steel</td> <td>Stainless steel</td> <td>(*5)</td> <td>Note 5</td> <td>R</td> </tr> <tr> <td>5</td> <td>304 Stainless steel</td> <td>Stainless steel</td> <td>(*5)</td> <td>Note 5</td> <td>S</td> </tr> <tr> <td>6</td> <td>304 Stainless steel</td> <td>Stainless steel</td> <td>(*5)</td> <td>Note 5</td> <td>T</td> </tr> <tr> <td>7</td> <td>304 Stainless steel</td> <td>Stainless steel</td> <td>(*4)</td> <td>Note 4</td> <td>V</td> </tr> <tr> <td>8</td> <td>304 Stainless steel</td> <td>Stainless steel</td> <td>(*4)</td> <td>Note 4</td> <td>W</td> </tr> <tr> <td>10</td> <td>304 Stainless steel</td> <td>Stainless steel</td> <td>(*4)</td> <td>Note 4</td> <td>X</td> </tr> </tbody> </table> | Capillary | Mounting bracket | armor of capillary | | | | 1.5 m | 304 Stainless steel | PVC | (*4) | Note 4 | D | 3 | 304 Stainless steel | PVC | (*4) | Note 4 | E | 5 | 304 Stainless steel | PVC | (*4) | Note 4 | L | 6 | 304 Stainless steel | PVC | (*4) | Note 4 | F | 7 | 304 Stainless steel | PVC | (*4) | Note 4 | M | 8 | 304 Stainless steel | PVC | (*4) | Note 4 | N | 10 | 304 Stainless steel | PVC | (*4) | Note 4 | P | 1.5 | 304 Stainless steel | Stainless steel | (*5) | Note 5 | Q | 3 | 304 Stainless steel | Stainless steel | (*5) | Note 5 | R | 5 | 304 Stainless steel | Stainless steel | (*5) | Note 5 | S | 6 | 304 Stainless steel | Stainless steel | (*5) | Note 5 | T | 7 | 304 Stainless steel | Stainless steel | (*4) | Note 4 | V | 8 | 304 Stainless steel | Stainless steel | (*4) | Note 4 | W | 10 | 304 Stainless steel | Stainless steel | (*4) | Note 4 | X | | | | | | | | | | | | | | | | | | | |
| Capillary | Mounting bracket | armor of capillary | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.5 m | 304 Stainless steel | PVC | (*4) | Note 4 | D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 304 Stainless steel | PVC | (*4) | Note 4 | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 304 Stainless steel | PVC | (*4) | Note 4 | L | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 304 Stainless steel | PVC | (*4) | Note 4 | F | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 304 Stainless steel | PVC | (*4) | Note 4 | M | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 304 Stainless steel | PVC | (*4) | Note 4 | N | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 304 Stainless steel | PVC | (*4) | Note 4 | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.5 | 304 Stainless steel | Stainless steel | (*5) | Note 5 | Q | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 304 Stainless steel | Stainless steel | (*5) | Note 5 | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 304 Stainless steel | Stainless steel | (*5) | Note 5 | S | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 304 Stainless steel | Stainless steel | (*5) | Note 5 | T | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 304 Stainless steel | Stainless steel | (*4) | Note 4 | V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 304 Stainless steel | Stainless steel | (*4) | Note 4 | W | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 304 Stainless steel | Stainless steel | (*4) | Note 4 | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | <Options> Extra SS tag plate None Yes None Yes None Yes None Yes | Stainless steel elec. housing None None Yes Yes None Yes None Yes | Coating of cell None None None None Yes Yes Yes Yes | | | | | | | | | | | | | | | | | | | Y B C E M N P Q | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Note 4: (*4) Available for 13th digit code "Y, W, G, A, D".

Inquire about in case of 13th other code.

Note 5: (*5) Available for all 13th digit code.

Note 6: (*6) Customer tag number can be engraved on standard stainless steel name plate. If extra tag plate is required, select "Yes".

| Digit | Description | Note | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 21 |
|-------|--|--|--------|---|---|---|---|---|---|---|---|----|----|----|----|--------|----|---------------------------------|
| 13 | <Special applications and fill fluid> Treatment Standard Standard Degreasing Oxygen service Chlorine service High temp. 250°C High temp. 300°C High temp. and vacuum (250°C) High temp. and vacuum (300°C) High temp. and high vacuum | Fill fluid Silicone oil Fluorinated oil Silicone oil Fluorinated oil (7th digit code "V", "A", "B", "C", "D" and "J") Fluorinated oil (7th digit code "H", "F", "G", "K", "L" and "T") Silicone oil 7th digit code "V", "A", "B", "C", "D", "H", "F", "G", "K" and "L" Silicone oil } (*7) Silicone oil } Silicone oil } 7th digit code "V", "A", "B", "C", and "D" Silicone oil } | Note 7 | F | K | D | | | 4 | | | | | | | | 0 | |
| 14 | <Teflon membrane> None Yes (Available for 5th digit code "0", "2", "4", "6", "8", "A", "C", "E", "G", "J", "P", "M", "R", "S", "T", "U", "X" and 7th digit code "V", "H", "M", "T", "P", "R". Not available for the 13th digit code "H", "J", "S", "T", "K".) | | | | | | | | | | | | | | | Y C | | |
| 21 | <Other options> (*8) High accuracy type Low temperature effect type H+J Instruction manual unattached High accuracy type Low temperature effect type T+U | Instruction manual attached Instruction manual attached Instruction manual attached Instruction manual unattached Instruction manual unattached Instruction manual unattached | Note 8 | | | | | | | | | | | | | | | H J K L T U V |

Note 7: (*7) Treatment; Standard
 Note 8: (*8) If other option is not necessary, 21st digit code is blank.
 In case of 21st digit code is blank, instruction manual attached.

The product conforms to the requirements of the Electromagnetic compatibility Directive 94/9/EC as detailed within the technical construction file number TN513035. The applicable standards used to demonstrate compliance are :

EMI (Emission) EN61326 : 1997
Class A (standard for Industrial Location)

| Frequency range MHz | Limits | Reference standard |
|---------------------|--|-------------------------|
| 30 to 230 | 40dB ($\mu\text{V}/\text{m}$) quasi peak, measured at 10m distance | CISPR16-1 and CISPR16-2 |
| 230 to 1000 | 47dB ($\mu\text{V}/\text{m}$) quasi peak, measured at 10m distance | |

EMI (Immunity) EN61326: 1997
Annex A (standard for Industrial Location)

| Phenomenon | Test value | Basic standard | Performance criteria |
|--------------------------------------|---|----------------|----------------------|
| Electrostatic discharge | 4kV (Contact) 8kV (Air) | EN61000-4-2 | B |
| Electromagnetic field | 80 to 1000MHz 10V/m 80%AM (1kHz) | EN61000-4-3 | A |
| Rated power frequency magnetic field | 30A/m 50Hz | EN61000-4-8 | A |
| Burst | 2kV 5kHz | EN61000-4-4 | B |
| Surge | 1.2 μs /50 μs 1kV (Line to line) 2kV (Line to ground) | EN61000-4-5 | B |
| Conducted RF | 0.15 to 80MHz 3V 80%AM (1kHz) | EN61000-4-6 | A |

Note) Definition of performance criteria

A: During testing, normal performance within the specification limits.

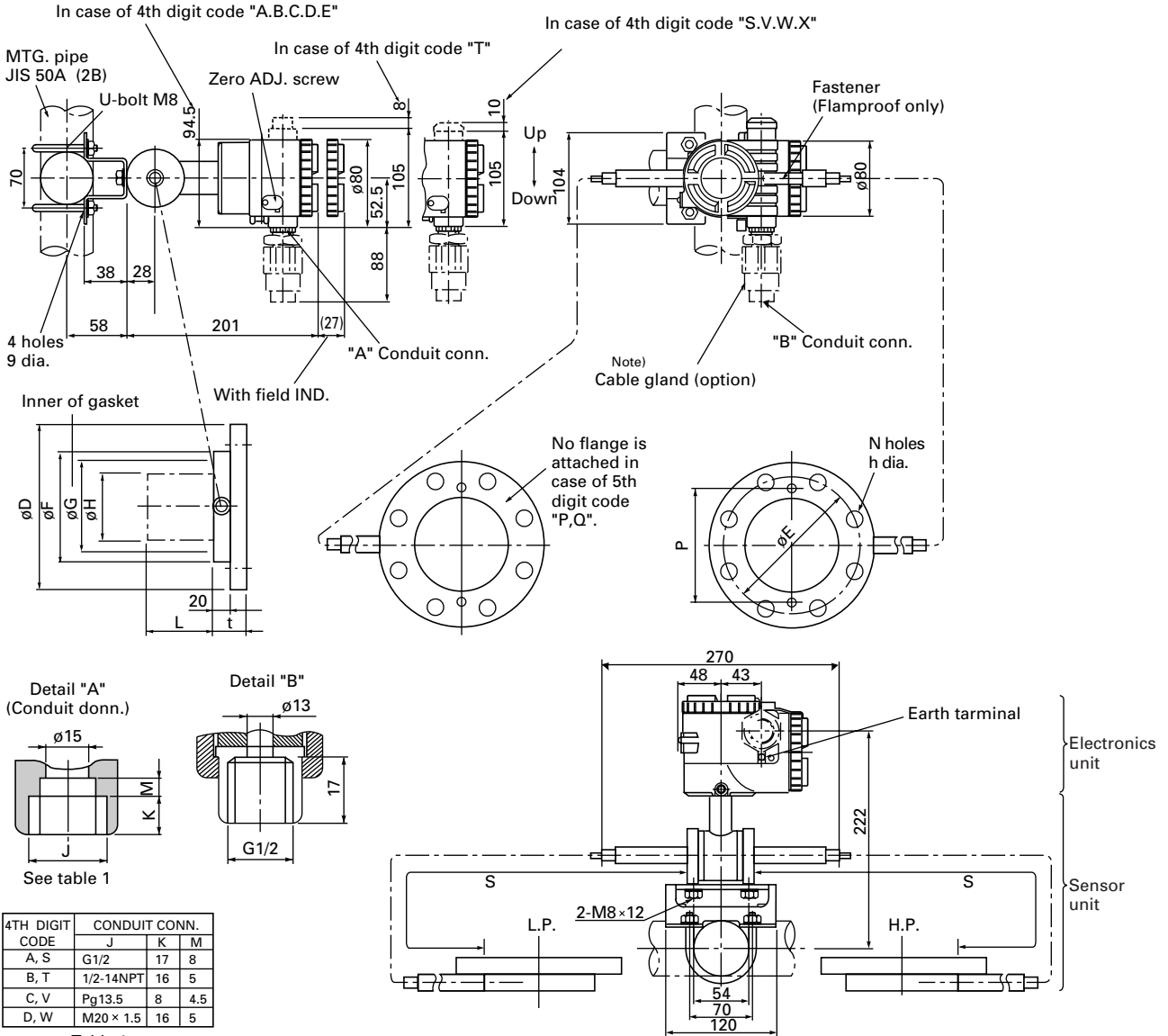
B: During testing, temporary degradation, or loss of function or performance which is self-recovering.

ORDERING INFORMATION

When ordering this instrument, specify:

1. CODE SYMBOLS
2. Measuring range
3. Output orientation (burnout direction) when abnormality is occurred in the transmitter.
 Hold / Overscale (21.6mA) / Underscale (3.2mA)
 Unless otherwise specified, output hold function is supplied.
4. Output mode (linear or square root output)
 Unless otherwise specified, output mode is linear.
5. Indication method (indicated value and unit) in case of the actual scale (code D, H, P, S on 9th digit).
6. Tag No. (up to 26 alphanumerical characters), if required.

OUTLINE DIAGRAM (Unit:mm)



| 5TH DIGIT OF THE CODE SYMBOLS | φD | φE | φF | φG | φH | t | P | N-φh | (FLANGE) |
|-------------------------------|-----|-------|-----|-----|----|----|-----|------|----------------|
| 0, A, S | 185 | 150 | 126 | 100 | 73 | 38 | 116 | 8-19 | JIS-10K-80A |
| M | 200 | 160 | 126 | 100 | 73 | 42 | 116 | 8-23 | JIS-20K-80A |
| 2, C | 210 | 170 | 126 | 100 | 73 | 48 | 116 | 8-23 | JIS-30K-80A |
| 1, B | 210 | 175 | 151 | 103 | 96 | 38 | 141 | 8-19 | JIS-10K-100A |
| 3, D | 240 | 195 | 151 | 103 | 96 | 52 | 141 | 8-25 | JIS-30K-100A |
| 4, E, T | 191 | 152.5 | 126 | 100 | 73 | 44 | 116 | 4-20 | ANSI 150LB 3B |
| 6, G, V | 210 | 168 | 126 | 100 | 73 | 49 | 116 | 8-23 | ANSI 300LB 3B |
| R, X | 210 | 168 | 126 | 100 | 73 | 52 | 116 | 8-23 | ANSI 600LB 3B |
| 5, F, U | 229 | 190.5 | 151 | 103 | 96 | 44 | 141 | 8-20 | ANSI 150LB 4B |
| 7, H, W | 254 | 200 | 151 | 103 | 96 | 52 | 141 | 8-23 | ANSI 300LB 4B |
| 8, J | 200 | 160 | 126 | 100 | 73 | 44 | 116 | 8-18 | DIN PN40 DN80 |
| 9, K | 220 | 180 | 151 | 103 | 96 | 40 | 141 | 8-18 | DIN PN16 DN100 |

| 7TH DIGIT CODE | L | MASS. APPROX. (kg) |
|---------------------|-----|--------------------|
| V, J, H, M, T, P, R | 0 | 14~19.5 |
| A, F | 50 | 15~30.5 |
| B, G | 100 | 15.5~31 |
| C, K | 150 | 16~31.5 |
| D, L | 200 | 16.5~32 |

| 11TH DIGIT CODE | S (m) | 11TH DIGIT CODE | S (m) |
|-----------------|-------|-----------------|-------|
| D, Q | 1.5 | M, V | 7 |
| E, R | 3 | N, W | 8 |
| L, S | 5 | P, X | 10 |
| F, T | 6 | | |

Note) Cable gland is supplied in case of flameproof packing type.
φ11 cable is suitable.

⚠ Caution on Safety

*Before using this product, be sure to read its instruction manual in advance.

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