

# TPS20 Series

## Features

- 4-20mA analog signal (2-wire) transmission by measuring pressure of gas, liquid, and vapor
- High accuracy(±0.3% F.S.) with stainless steel diaphragm for various measurement
- Various model for installation environments
  - : Head type, DIN connector type, Connector cable type
- Built-in zero-point, span adjustment (Head type)



Please read "Caution for your safety" in operation manual before using this unit.

CE



[Head type] [DIN connector type] [Connector cable type]

## Ordering information

TPS20 — G 1 1 F8 (0 to 5kgf/cm<sup>2</sup>)

①                      ②                      ③                      ④                      ⑤                      ⑥

| Item                  | Description |                                   |                            |
|-----------------------|-------------|-----------------------------------|----------------------------|
| ①Item                 | TPS20       | Pressure Transmitter              |                            |
| ②Measurement pressure | G           | Gauge pressure                    |                            |
|                       | A           | Absolute pressure                 |                            |
| ③Connector            | 1           | Head type                         |                            |
|                       | 2           | DIN connector type                |                            |
|                       | 3           | Connector cable type              |                            |
| ④Pressure range       |             | Gauge pressure                    | Absolute pressure          |
|                       | 1           | 0 to 0.2kgf/cm <sup>2</sup>       | —                          |
|                       | 2           | 0 to 0.5kgf/cm <sup>2</sup>       | —                          |
|                       | 3           | 0 to 1kgf/cm <sup>2</sup>         | 0 to 1kgf/cm <sup>2</sup>  |
|                       | 4           | 0 to 2kgf/cm <sup>2</sup>         | 0 to 2kgf/cm <sup>2</sup>  |
|                       | 5           | 0 to 7kgf/cm <sup>2</sup>         | 0 to 7kgf/cm <sup>2</sup>  |
|                       | 6           | 0 to 10kgf/cm <sup>2</sup>        | 0 to 10kgf/cm <sup>2</sup> |
|                       | 7           | 0 to 20kgf/cm <sup>2</sup>        | 0 to 20kgf/cm <sup>2</sup> |
|                       | 8           | 0 to 20kgf/cm <sup>2</sup>        | 0 to 20kgf/cm <sup>2</sup> |
|                       | 9           | 0 to 70kgf/cm <sup>2</sup>        | —                          |
|                       | A           | 0 to 100kgf/cm <sup>2</sup>       | —                          |
|                       | C           | 0 to 200kgf/cm <sup>2</sup>       | —                          |
|                       | F           | 0 to 200kgf/cm <sup>2</sup>       | —                          |
|                       | H           | 0 to 350kgf/cm <sup>2</sup>       | —                          |
|                       | M           | -760mmHg to 0kgf/cm <sup>2</sup>  | —                          |
|                       | O           | -760mmHg to 1kgf/cm <sup>2</sup>  | —                          |
|                       | Q           | -760mmHg to 7kgf/cm <sup>2</sup>  | —                          |
|                       | V           | -760mmHg to 10kgf/cm <sup>2</sup> | —                          |
|                       | X           | -760mmHg to 20kgf/cm <sup>2</sup> | —                          |
|                       | Y           | -760mmHg to 35kgf/cm <sup>2</sup> | —                          |
| Z                     | Others      | —                                 |                            |
| ⑤Pressure port        | P2          | PT 1/2 (with adapter)             |                            |
|                       | P8          | PT 3/8 (with adapter)             |                            |
|                       | F8          | PF 3/8 (Standard)                 |                            |
|                       | ZZ          | Others                            |                            |
| ⑥User pressure range  |             | User pressure range <sup>※1</sup> |                            |

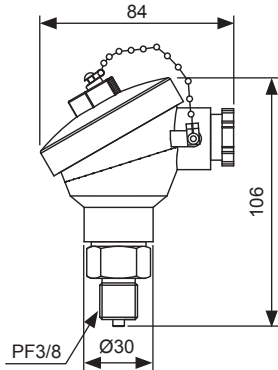
※1: Write the desired pressure range and it is the default of user pressure range.(③ Select "Z" at pressure range)

# Pressure Transmitter

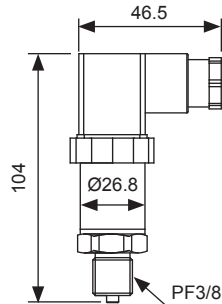
## Dimensions

(unit:mm)

### • Head type

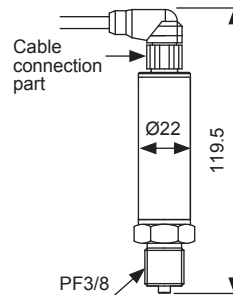


### • DIN connector type

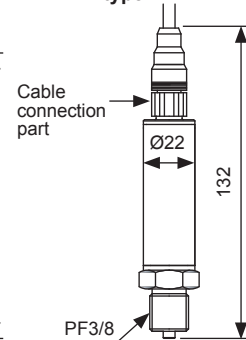


### • Connector cable type

#### • L type



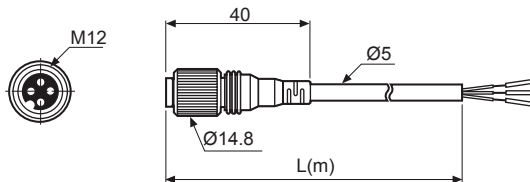
#### • I type



※ The standard pressure port for above is PF 3/8.

## Cable(sold separately)

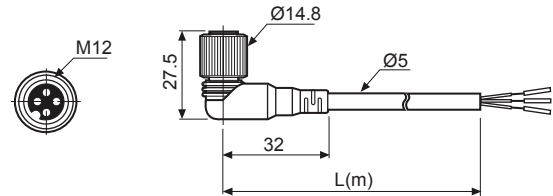
### • CID3-2 / CID3-5



| Model  | L(m) | Material |
|--------|------|----------|
| CID3-2 | 2    | PVC      |
| CID3-5 | 5    |          |

### • CLD3-2 / CLD3-5

(unit: mm)

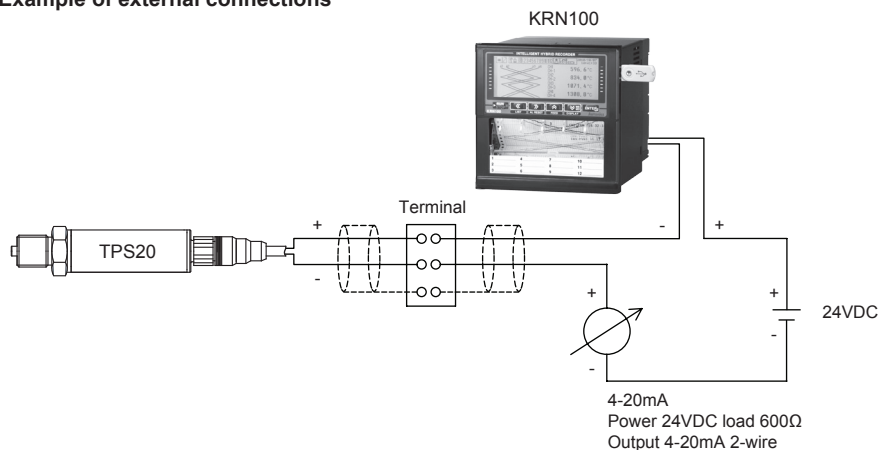


| Model  | L(m) | Material |
|--------|------|----------|
| CID3-2 | 2    | PVC      |
| CID3-5 | 5    |          |

## Connections

| Head type |     | DIN connector type |     |          | Connector cable type |     |          |
|-----------|-----|--------------------|-----|----------|----------------------|-----|----------|
|           | Pin |                    | Pin | Function |                      | Pin | Function |
|           | +   |                    | 1   | +        |                      | 1   | +        |
|           | -   |                    | 2   | -        |                      | 2   | N·C      |
|           |     |                    | 3   | N·C      |                      | 3   | F.G.     |
|           |     |                    | ⊕   | F.G.     |                      | 4   | -        |

### • Example of external connections



- A. Recorder
- B. Indicator
- C. Converter
- D. Controller
- E. Thyristor unit
- F. Pressure transmitter
- G. Temp. transmitter
- H. Accessories

- TPS20
- KT-302H
- PTF30

# TPS20 Series

## Specifications

|                             |                                                                                                                                                                         |                                                     |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| Series                      | TPS20                                                                                                                                                                   |                                                     |
| Measured materials          | Vapor, Liquid, Fluid (except corrosive environment of SUS316)                                                                                                           |                                                     |
| Measurement range           | -760mmHg to 0 to 30kg/cm <sup>2</sup> (compound pressure)<br>0 to 0.2 to 350kg/cm <sup>2</sup> (gauge pressure)<br>0 to 1.0 to 35kg/cm <sup>2</sup> (absolute pressure) |                                                     |
| Allowable over pressure     | 300% of max. span                                                                                                                                                       |                                                     |
| Electrical characteristics  | Power                                                                                                                                                                   | 15-35VDC                                            |
|                             | Output                                                                                                                                                                  | 4-20mA                                              |
|                             | Load resistance                                                                                                                                                         | Min. 600Ω                                           |
|                             | Power consumption                                                                                                                                                       | 0.5W                                                |
| Accuracy                    | Linearity                                                                                                                                                               | ±0.3% F.S. (-10 to 50°C)<br>±0.5% F.S. (50 to 70°C) |
|                             | Hysteresis                                                                                                                                                              | ±0.3% F.S.                                          |
| Temperature characteristics | ZERO                                                                                                                                                                    | ±0.03% F.S.                                         |
|                             | SPAN                                                                                                                                                                    | ±0.03% F.S. (at 25°C)                               |
| Response time               | Max. 100ms                                                                                                                                                              |                                                     |
| Pressure port               | PF 3/8(standard), PT 3/8, PT 1/2                                                                                                                                        |                                                     |
| Environment                 | Ambient temperature                                                                                                                                                     | -10 to 70°C                                         |
|                             | Ambient humidity                                                                                                                                                        | 5 to 95% RH                                         |
| Materials                   | Sealing : SUS316, O-ring : fluoro rubber, Diaphragm : SUS316, Connection : SUS316                                                                                       |                                                     |
| Case structure              | Drip-proof structure                                                                                                                                                    |                                                     |
| Approval                    | CE                                                                                                                                                                      |                                                     |
| Unit weight                 | Approx. 320g (based on head type)                                                                                                                                       |                                                     |

※ F.S.(Full Scale): It is rated pressure range.

※ Environment resistance is rated at no freezing or condensation.

## Troubleshooting

| Error                          | Troubleshooting                                                                                                                                                                        |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No outputs                     | Do you supply the power?<br>Do you wire (+, -) it correctly?<br>Is the connection part poor?                                                                                           |
| Abnormally fluctuating output  | Is power supplied properly?<br>Is pressure supplied correctly?<br>Is there error in pressure line?                                                                                     |
| Out of zero point output value | Is power supplied properly?<br>Is the load resistive value of a receiver over 600Ω?<br>Is the measuring point and transmission distance proper?<br>Is line resistance big? (max. 600Ω) |

## Proper usage

### ■ Caution for using

- When installing this unit on pipe line, use the hexagon part of connections not to turn this unit with a pipe wrench. Do not use this unit with strong vibrations.
- This unit is manufactured with precisely. If you drop or shock this unit, it may lose the function. Please treat this unit carefully.
- Store this unit at the place without moisture, dust, and vibration.
- This product which does not have drive part at sensing part does not need to repair it. Even though inside of pressure pipe is normally clean, it needs to take maintenance once a year as belows.
  - ① Check the broken status of outside.
  - ② Check the pressure slot, cleanliness inside, and corrosion state.
  - ③ Short each terminal and check the insulation resistance between the case and power. (at 100VDC, over 10MΩ)
  - ④ Check zero, span adjustment and linearity by pressure standards.
- When removing a sensor for maintenance, follow the belows.
  - ① Replace an O-ring which is used once.
  - ② Be sure that diaphragm part is not damaged.
- In case of head type for connecting the power, use a crimp terminal(M3.5, min. 7.2mm).
- The connection of this unit should be separated from the power line and high voltage line in order to prevent inductive noise.
- Install a power switch or a circuit breaker to supply or cut off the power.
- Switch or circuit breaker should be installed nearby users for convenient control.
- Do not use this unit near the high frequency instruments (high frequency welding machine & sewing machine, large capacity SCR controller).
- This unit cannot be repaired due to disassembled structure.
- This unit is fixed with bolt and nut at the both sides of case. Do not press excessive load (approx. 300kg/cm<sup>2</sup>), or it may cause damage to this unit.
- Tighten the cable connection part firmly not to enter water to the cable.
- Installation environment
  - ① Indoor / Outdoor
  - ② Altitude max. 2,000m
  - ③ Pollution Degree 2
  - ④ Installation Category II

|                                |
|--------------------------------|
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| <b>F. Pressure transmitter</b> |
| G. Temp. transmitter           |
| H. Accessories                 |

|              |
|--------------|
| <b>TPS20</b> |
| KT-302H      |
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