

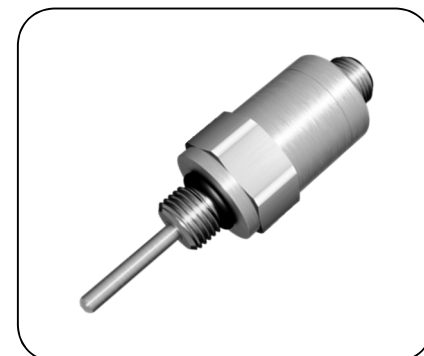
# Pressure and Temperature Integrated Transmitter: PSP Series

## RS485 Modbus RTU Output Signal



### ■ Features

1. 2-in-1 pressure & temperature sensing
2. RS485 Modbus RTU digital output
3. Rugged design for industrial applications
4. Gauge and absolute pressure options available upon request
5. High accuracy in pressure and temperature measurement
6. Custom pressure connection (ISO, NPT, BSP, etc.) and sensor materials



### ■ Recommended Applications

1. Liquid cooling systems for coolant or refrigerant monitoring
2. Industrial facilities including machine rooms and machinery manufacturing
3. Environmental monitoring and process control in energy and water treatment

### ■ Part Number Code

|                           |                                        |                       |          |                   |                                |                      |          |                              |                               |                          |         |                        |    |    |    |
|---------------------------|----------------------------------------|-----------------------|----------|-------------------|--------------------------------|----------------------|----------|------------------------------|-------------------------------|--------------------------|---------|------------------------|----|----|----|
| 1                         | 2                                      | 3                     | 4        | 5                 | 6                              | 7                    | 8        | 9                            | 10                            | 11                       | 12      | 13                     | 14 | 15 | 16 |
| <b>Product Type</b>       |                                        | <b>Pressure Range</b> |          | <b>Technology</b> |                                | <b>Pressure Type</b> |          | <b>Output Type</b>           |                               | <b>Electrical Output</b> |         | <b>Optional Suffix</b> |    |    |    |
| PSP                       | THINKING Pressure & Temperature Sensor | 501                   | 500 KPa  | 4                 | Piezoresistive Sensing Element | A                    | Absolute | R                            | RS485 Modbus RTU              | D                        | Digital | S0001 to S9999         |    |    |    |
|                           |                                        | 102                   | 1000 KPa |                   |                                | G                    | Gauge    |                              |                               |                          |         |                        |    |    |    |
|                           |                                        | 152                   | 1500 KPa |                   |                                |                      |          |                              |                               |                          |         |                        |    |    |    |
|                           |                                        | 202                   | 2000 KPa |                   |                                |                      |          |                              |                               |                          |         |                        |    |    |    |
|                           |                                        | 352                   | 3500 KPa |                   |                                |                      |          |                              |                               |                          |         |                        |    |    |    |
|                           |                                        | 402                   | 4000 KPa |                   |                                |                      |          |                              |                               |                          |         |                        |    |    |    |
| <b>Pressure Port Type</b> |                                        |                       |          |                   |                                |                      |          | <b>Output Connector Type</b> |                               |                          |         |                        |    |    |    |
| 1                         | M12 x 1.25, Male                       |                       |          |                   |                                |                      |          | 3                            | M12 Metric Circular Connector |                          |         |                        |    |    |    |
| 2                         | M10 x 1.0, Male                        |                       |          |                   |                                |                      |          |                              |                               |                          |         |                        |    |    |    |
| 3                         | G3/8"-19, BSPP, Male                   |                       |          |                   |                                |                      |          |                              |                               |                          |         |                        |    |    |    |
| 5                         | G1/4", BS5380, Male                    |                       |          |                   |                                |                      |          |                              |                               |                          |         |                        |    |    |    |
| 6                         | G1/8", Male                            |                       |          |                   |                                |                      |          |                              |                               |                          |         |                        |    |    |    |
| 7                         | G1/4", ISO 1179 / DIN 3852, Male       |                       |          |                   |                                |                      |          |                              |                               |                          |         |                        |    |    |    |

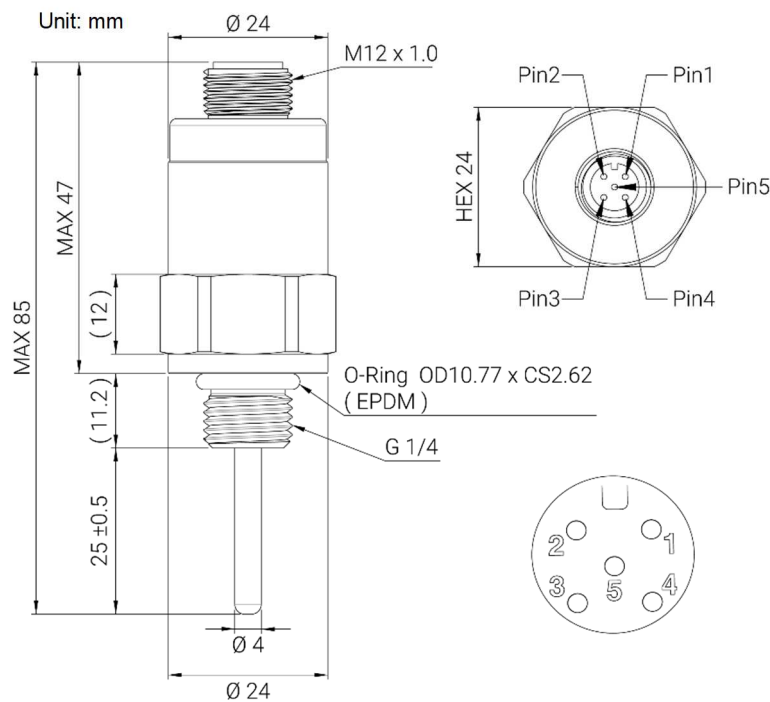
# Pressure and Temperature Integrated Transmitter: PSP Series

## RS485 Modbus RTU Output Signal



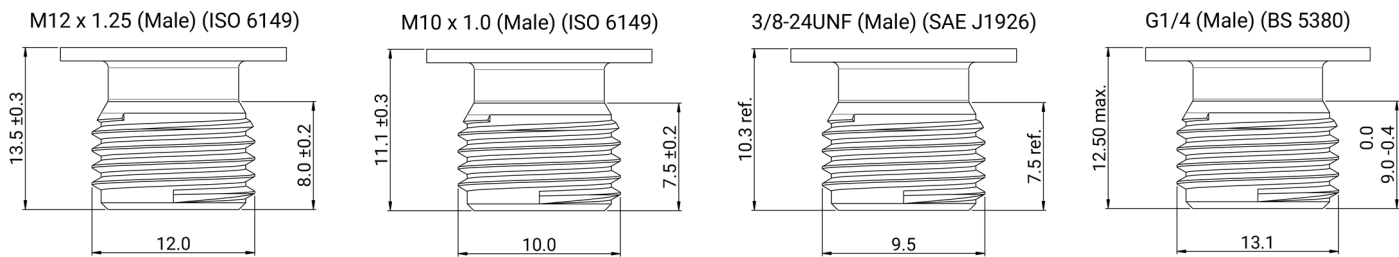
### Structure and Dimensions

- Pressure and Temperature Integrated Transmitter
- Pin Assignment



| Pin # | Assignment  |
|-------|-------------|
| Pin 1 | Vsupply (+) |
| Pin 2 | RS485A      |
| Pin 3 | Vsupply (-) |
| Pin 4 | RS485B      |
| Pin 5 | N.C.        |

### Pressure Port Type



# Pressure and Temperature Integrated Transmitter: PSP Series



## RS485 Modbus RTU Output Signal

### ■ Electrical Characteristics

| Pressure                             | Specifications                                 |
|--------------------------------------|------------------------------------------------|
| Pressure Range                       | 0 - 1000 KPa G/A (Up to 4000 KPa upon request) |
| Output                               | RS485 Modbus RTU                               |
| Accuracy                             | ±0.5% F.S. @ 25°C                              |
| Response Time                        | 15 ms                                          |
| Proof Pressure                       | 2X (Max. Operating Pressure)                   |
| Burst Pressure                       | 3X (Max. Operating Pressure)                   |
| Temperature                          | Specifications                                 |
| Output                               | RS485 Modbus RTU                               |
| Accuracy                             | ±0.3°C (Measuring range upon request)          |
| Electrical data                      | Specifications                                 |
| Excitation (Vexc)                    | 24 VDC                                         |
| Operating Current                    | 70 mA max                                      |
| Electrical Connection                | M12 Metric Circular Connector                  |
| Short Circuit Protection             | Yes                                            |
| Reverse Polarity Protection (Note 1) | Yes                                            |
| High Voltage Protection              | 36V max                                        |

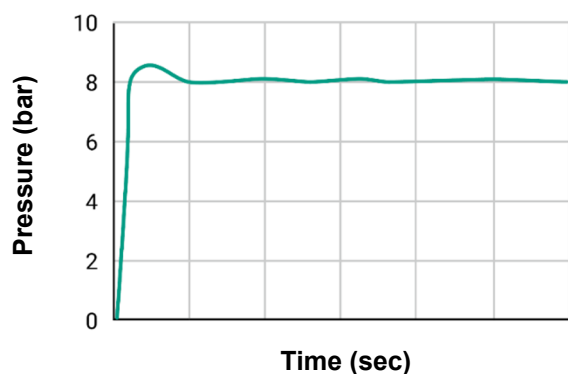
\* Unless otherwise specified, all parameters are measured at 25°C, 60%RH.

\* Note 1: Overvoltage and reverse polarity protect by internal supply voltage limiter.

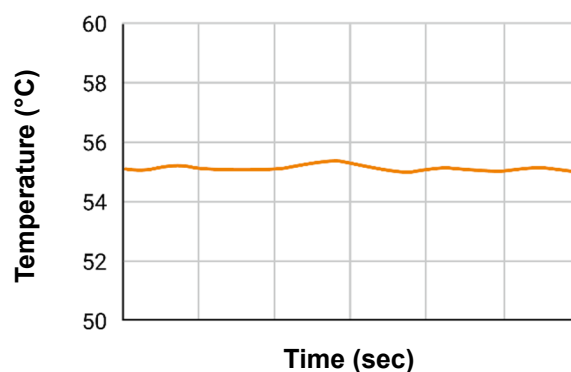
### ■ Operating Environment

- Operating Temperature Range: -20°C ~ +125°C
- Storage Temperature Range: -20°C ~ +125°C
- Proof Pressure: 2X (Max. Operating Pressure)
- Burst Pressure: 3X (Max. Operating Pressure)
- Ingress Protection Rating: IP67

Real-time Pressure Monitoring



Real-time Temperature Monitoring



# Pressure and Temperature Integrated Transmitter: PSP Series



## RS485 Modbus RTU Output Signal

### ■ RS485 Modbus RTU Protocol

#### ● Register Map (Data Format: Little-Endian)

| Description      | Item Code              | Attribute         | Register Address | Function Explanation                     |
|------------------|------------------------|-------------------|------------------|------------------------------------------|
| Pressure         | Single precision FP    | All: Read only    | 30000            | Pressure value                           |
| Temperature      | Single precision FP    | All: Read only    | 30002            | Temperature value                        |
| RS485 Address    | Unsigned short integer | All: Read / write | 40024            | 1~247                                    |
| RS485 Baud Rate  | Unsigned short integer | All: Read / write | 40025            | 1~n. Refer to the baud rate definition   |
| RS485 Parity     | Unsigned short integer | All: Read / write | 40026            | 0: None, 1:Odd, 2: Even                  |
| Pressure Unit    | Unsigned short integer | All: Read / write | 40027            | Refer to the pressure unit definition    |
| Temperature Unit | Unsigned short integer | All: Read / write | 40028            | Refer to the temperature unit definition |

#### ● RS485 Baud Rate Definition

|     |      |      |      |      |       |       |
|-----|------|------|------|------|-------|-------|
| 1   | 2    | 3    | 4    | 5    | 6     | 7     |
| 300 | 1200 | 2400 | 4800 | 9600 | 14400 | 19200 |

#### ● Pressure Unit Definition

|      |      |                    |                    |      |       |                    |     |
|------|------|--------------------|--------------------|------|-------|--------------------|-----|
| 1    | 2    | 3                  | 4                  | 5    | 6     | 7                  | 8   |
| MPa  | kPa  | hPa                | Pa                 | bar  | mbar  | Kg/cm <sup>2</sup> | psi |
| 9    | 10   | 11                 | 12                 | 13   | 14    | 15                 | -   |
| mmHg | inHg | mmH <sub>2</sub> O | inH <sub>2</sub> O | Torr | mTorr | atm                | -   |

#### ● Temperature Unit Definition

|   |   |   |
|---|---|---|
| 1 | 2 | 3 |
| C | F | K |

### ■ Mounting Torque

Suggested installation torque: 15 ± 1 N\*m for G1/4; for other sizes, depending on demand.