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**JUMO Instrument Co. Ltd.**

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## Multi-range pressure and differential pressure transmitter

### Type 402005

#### Applications

- Ventilation
- Air conditioning
- Clean-room technology
- Flue draft mechanisms
- Filter monitoring

#### Brief description

This transmitter has a piezoresistive pressure sensor and can be used to measure differential pressure in non-aggressive gases.

Differential pressure measurement is used, for example, in clean rooms. Permanent overpressure protects the process against dust penetration.

The multi-range pressure and differential pressure transmitter is a many-faceted, microprocessor-controlled measuring instrument. Apart from the varied range of applications, DIP switches (dual in-line package) are used to choose between standardized output signals (current or voltage signal) and each of four different measuring ranges in the hecto-pascal range. Adjustable damping is incorporated for widely fluctuating pressures. A connector system allows an LCD display to be added-on, to display the pressure on-site.



Type 402005

#### Customer benefits

##### • Versatile and economic

A 9-way DIP switch with a strikingly simple configuration is used to select the measuring range, the output and the damping.

This multi-faceted measuring instrument combines numerous functions, thus limiting the number of variations required, and as a result, reducing prices to a minimum and shortening delivery times. Because the measuring system is wear-free, operation is almost maintenance-free.

##### • Compact and uncomplicated

Small but effective. The compact size of this measuring instrument makes it easy to install and saves space at the same time. Time is also saved on start-up, thanks to an uncomplicated DIP switch.

#### Key features

- 4 measuring ranges, adjustable within two basic measuring ranges:  
Basic range 1:  
2.5 hPa, 5 hPa, 7.5 hPa, 10 hPa  
Basic range 2:  
25 hPa, 50 hPa, 75 hPa, 100 hPa
- Output signal: 0 - 10 V DC and 0(4) - 20 mA, adjustable
- Damping is adjustable for widely fluctuating pressures
- LCD display connection option

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## Technical data

### General

|  |  |
|--|--|
| <b>Reference conditions</b>                                  | DIN 16086 and EN 60770   |
| <b>Sensor</b><br>Principle of measurement                    | Silicon sensor (piezoresistive)  |
| <b>Location</b><br>Mounting location<br>Calibration location | Device standing vertically, process connection on bottom<br>Device standing vertically, process connection on bottom |

### Measuring range

|                   |                                      |    |     |     |     |
|-------------------|--------------------------------------|----|-----|-----|-----|
| Basic range 1     | The measuring ranges start at 0 hPa. |    |     |     |     |
| Measuring range   | 2.5                                  | 5  | 7.5 | 10  | hPa |
| Overload capacity | 680                                  |    |     |     | hPa |
| Bursting pressure | 2000                                 |    |     |     | hPa |
| Basic range 2     | The measuring ranges start at 0 hPa. |    |     |     |     |
| Measuring range   | 25                                   | 50 | 75  | 100 | hPa |
| Overload capacity | 680                                  |    |     |     | hPa |
| Bursting pressure | 2000                                 |    |     |     | hPa |

### Output

|   |   |
|---|---|
| <b>Analog output</b><br>Output 409  | 0 - 10 V DC, 3 wires<br>0 - 20 mA, 3 wires<br>4 - 20 mA, 3 wires  |
| <b>Damping</b>  | 10 ms; 0.5 s; 2 s; 4 s  |
| <b>Burden</b><br>Voltage<br>0 to 10 V DC, 3 wires<br>Current<br>0(4) - 20 mA, 3 wires | $R_L \geq 2 \text{ k}\Omega$<br>from 14 to 18 V supply voltage $R_L \leq 300 \Omega$<br>above 18 V supply voltage $R_L \leq 500 \Omega$ |

### Mechanical properties

|  |                                |
|--|--------------------------------|
| <b>Parts in contact with the media</b><br>Material | PU, glass, FeNiCo, Au, Al, PEI |
| <b>Enclosure</b><br>Dimensions                     | 86 x 56 x 40 mm (H x W x D)    |
| <b>Weight</b>                                      | 200 g                          |

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## Ambient conditions

|   |                         |
|---|-------------------------|
| <b>Permissible temperatures</b>         |                         |
| Medium                                  | 10 to 50 °C             |
| Environment                             | 10 to 50 °C             |
| Storage                                 | -10 to +70 °C           |
| <b>Permissible relative humidity</b>    | 80% relative humidity   |
| <b>Permissible mechanical loading</b>   |                         |
| Vibration resistance                    | on request              |
| Shock resistance <sup>a</sup>           | 100 g for 6 ms          |
| <b>Electromagnetic compatibility</b>    |                         |
| Interference emission <sup>b</sup>      | Class B                 |
| Interference immunity <sup>c</sup>      | Industrial requirements |
| <b>Enclosure protection<sup>a</sup></b> | IP54                    |

<sup>a</sup> EN 60068-2-27

<sup>b</sup> EN 61000-6-3

<sup>c</sup> EN 61000-6-2

<sup>d</sup> EN 60529

## Accuracy

|  |   |
|--|---|
| <b>Linearity<sup>a</sup></b>           | ± 2 % of the set measuring range                    |
| <b>Long-term stability<sup>b</sup></b> | ± 2 % of the set measuring range per year (typical) |

<sup>a</sup> Linearity based on limit point setting

<sup>b</sup> with reference conditions to EN 61298-1

## Auxiliary power

|   |                              |
|---|------------------------------|
| <b>Supply voltage U<sub>B</sub><sup>a</sup></b> | 14 - 38 V DC, 12 - 31 V AC   |
| <b>Power consumption</b>                        | approx. 20 mA (without load) |
| <b>Reverse polarity protection</b>              | YES                          |
| <b>Circuit</b>                                  | SELV                         |

<sup>a</sup> Residual ripple: Peak voltages must **not** exceed or fall below the values specified for the supply voltage!

## Connection diagram

| Connection                               |                            | Terminal assignment            |               |
|--|----------------------------|--------------------------------|---------------|
|  |                            |                                |               |
| Screw terminal                           |                            |                                |               |
| <b>0(4) - 20 mA, 3 wires, output 409</b> |                            |                                |               |
| Supply voltage                           | 14 - 38 V DC, 12 - 31 V AC | U <sub>B</sub><br>0 V/S-<br>S+ | 3<br>2/4<br>1 |
| <b>0 - 10 V DC, 3 wires, output 409</b>  |                            |                                |               |
| Supply voltage                           | 14 - 38 V DC, 12 - 31 V AC | U <sub>B</sub><br>0 V/S-<br>S+ | 3<br>2/4<br>1 |

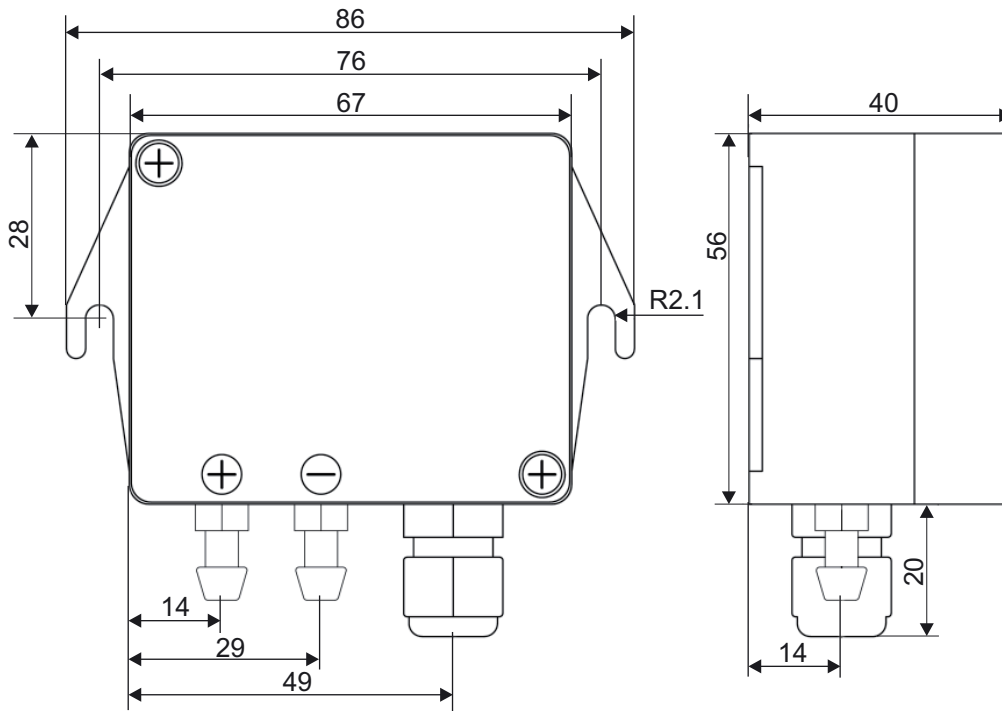
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## Dimensions



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## Order details

|            |   |
|------------|---|
| 402005/000 | <b>(1) Basic type</b><br>Multi-range pressure and differential pressure transmitter   |
|            | <b>(2) Relative pressure measuring range</b><br><b>Overpressure</b>                   |
| 441        | 0 - 2.5 hPa, 0 - 5 hPa, 0 - 7.5 hPa, 0 - 10 hPa                                       |
| 442        | 0 - 25 hPa, 0 - 50 hPa, 0 - 75 hPa, 0 - 100 hPa                                       |
|            | <b>(3) Output</b>   |
| 409        | 0(4) - 20 mA / DC 0 - 10 V3 wires (switchable)  |
|            | <b>(4) Process connection</b>   |
| 294        | Tube connection $\varnothing$ 6.6 mm x 10 mm (for flexible tubing $\varnothing$ 6 mm) |
|            | <b>(5) Extra codes</b>  |
| 000        | none  |

|                      |            |   |     |   |     |   |     |   |     |
|----------------------|------------|---|-----|---|-----|---|-----|---|-----|
| <b>Order code</b>    | (1)        | - | (2) | - | (3) | - | (4) | / | (5) |
| <b>Order example</b> | 402005/000 | - | 441 | - | 409 | - | 294 | / | 000 |

## Stock instruments

Delivery in 3 working days after receipt of order

| Type                   | Version   | Sales No.   |
|------------------------|---|-------------|
| 402005/000-441-409-294 | 0 - 2.5 hPa, 0 - 5 hPa, 0 - 7.5 hPa, 0 - 10 hPa | 40/00561200 |
| 402005/000-442-409-294 | 0 - 25 hPa, 0 - 50 hPa, 0 - 75 hPa, 0 - 100 hPa | 40/00550210 |

## Accessories

Delivery in 3 working days after receipt of order

| Item                    | Sales No.   |
|-------------------------|-------------|
| Connectable LCD display | 40/00550211 |