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# Differential Pressure Transmitter

## JUMO MIDAS DP10

Type 401050

### Brief description

This differential pressure transmitter measures the pressure in liquid and gaseous media. The difference between the two pressures is converted into an analog output signal. The piezo-resistive silicon sensor is built into a stainless steel housing.



Type 401050/000-xxx-xxx-xxx-xx-xxx-61

### Technical data

Unless further specified, all the following percentage values refer to the measurement span.

#### Reference conditions

as per DIN 16 086 and EN 60 770

#### Measuring ranges

Meas. range	Max. system pressure <sup>2</sup>	Max. overload on both sides <sup>2</sup>	Max. single-sided overload		Bursting pressure	Overall error <sup>3</sup> (% of full scale)	Long-term stability (per annum)
			+ side	- side			
0 to +0.4 bar	5 bar	7.5 bar	7.5 bar	5 bar	≥ 60 bar	≤ 2.5% <sup>4</sup>	≤ 0.6%
0 to +0.6 bar						≤ 2.5% <sup>4</sup>	
0 to +1 bar						≤ 2.3% <sup>4</sup>	
0 to +1.6 bar	10 bar	15 bar	15 bar	10 bar	≥ 60 bar	≤ 2.0% <sup>4</sup>	≤ 0.6%
0 to +2.5 bar						≤ 2.0% <sup>4</sup>	
0 to +4 bar	30 bar <sup>1</sup>	45 bar	15 bar	10 bar	≥ 60 bar	≤ 1.8% <sup>4</sup>	≤ 0.4%
0 to +6 bar			25 bar			≤ 1.8% <sup>4</sup>	
0 to +10 bar			30 bar			≤ 1.5% <sup>4</sup>	
0 to +16 bar			30 bar			≤ 1.5% <sup>4</sup>	

#### Parts in contact with medium<sup>5</sup>

stainless steel, Mat. Ref. 1.4571  
 stainless steel, Mat. Ref. 1.4435  
 stainless steel, Mat. Ref. 1.4305  
 plastic, PBT GF30 or  
 plastic, POM GF40  
 seal: FPM

#### Output

4 – 20 mA 2-wire  
 burden ≤ (U<sub>B</sub>-10 V) / 0.02A  
 0.5 – 4.5 V ratiometric  
 burden ≥ 20 kΩ

#### Burden error

< 0.5%

#### Zero offset

≤ 0.3%

#### Thermal hysteresis

(within the compensated range -15 to +85°C)  
 for meas. ranges ≤ 0.6 bar: ≤ ± 1%  
 for meas. ranges > 0.6 bar: ≤ ± 0.5%

#### Step response

for current output ≤ 3 msec  
 for voltage output ≤ 10 msec

#### Supply voltage

10 – 30 V DC (for 4 – 20 mA output)  
 5 V DC ± 0.5 V (for 0.5 – 4.5 V output)  
 Ripple: the voltage peaks must not go outside the limits specified for the supply.

Max. current drawn: 25 mA

#### Supply voltage error

≤ 0.02% per V for 4 – 20 mA output  
 ratiometric for 0.5 – 4.5 V output

#### Operating temperature

ambient: -20 to +80°C  
 medium: -15 to +100°C<sup>6</sup>  
 storage: -50 to +100°C

#### Electromagnetic compatibility (EMC)

as per EN 61 326  
 interference emission: Class B  
 interference immunity: to industrial requirements

<sup>1</sup> Maximum ambient temperature +60°C

<sup>2</sup> For simultaneous pressure on both + and - sides

<sup>3</sup> The total error includes errors due to linearity, hysteresis, reproducibility and temperature drift over the range from -15 to +85°C.

<sup>4</sup> of full scale

<sup>5</sup> The customer must test the compatibility with the medium being measured.

<sup>6</sup> If the medium is water at temperatures above 50°C, then pipes or hoses must be used to separate the transmitter from the process. E. g. for water at 85°C, at least 200 mm long (depending on the ambient temperature).

® Bayer Material Science

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**Mechanical shock**

(to IEC 68-2-27)  
 100 g/1msec

**Mechanical vibration**

(to IEC 68-2-6)  
 ≤ 20 g for 15 — 2000 Hz

**Enclosure protection**

(to EN 60 529)  
 with round connector M12 x 1: IP67  
 with bayonet to DIN 72585: IP67

**Process connection**

2 x G1/8 internal thread  
 adapters for pipes and hoses: see order details

**Electrical connection**

round connector M12 x 1  
 for 4 — 20 mA output signal

bayonet connector DIN 72585  
 for 0.5 — 4.5 V output signal

**Operating position**

unrestricted  
 (deviations from the nominal operating position can cause an error of up to 2 mbar)

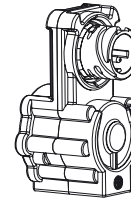
**Weight**

180 g  
 (approx. 220 g with mounting bracket)

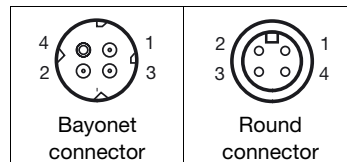
**Fixing options**

- 3 holes on housing bottom
- mounting bracket (accessory)
- on measurement lines (e.g. 6 x 1 pipe)

**Nominal position**



**Electrical connection**

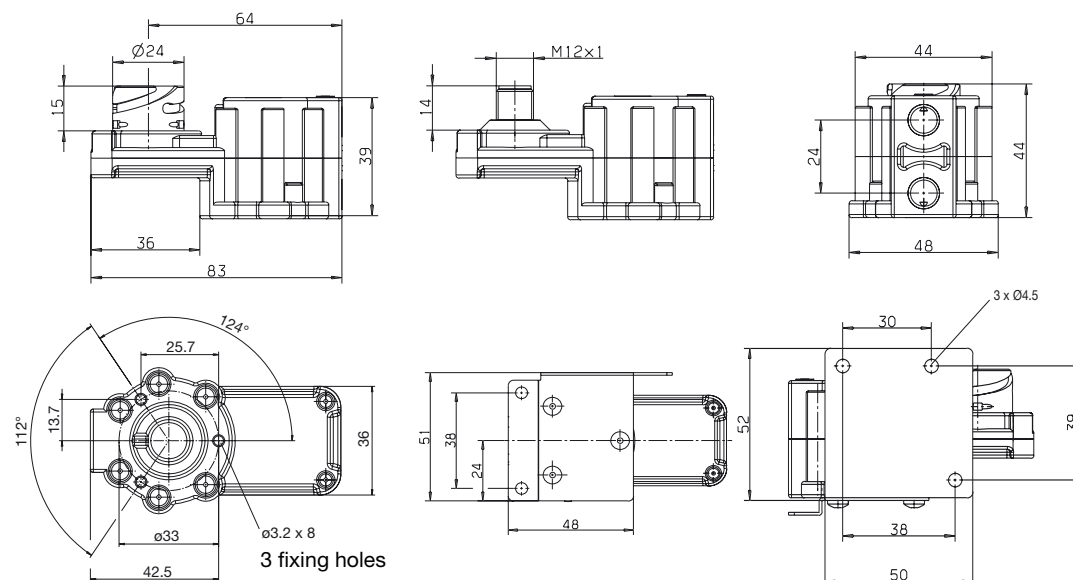


**Accessories**

Screws K40 x 8 for mounting the differential pressure transmitter

Voltage output			
Supply voltage 5 V DC ±0.5 V		1 L+ 2 L-	
Output 0.5 — 4.5 V		2 - 3 +	
Current output			
Supply voltage 10 — 30 V DC			1 + 3 -
Output 4 — 20 mA (2-wire)			1 + 3 -

**Dimensions**



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## Order details

- 401050 (1) **Basic type** Differential pressure transmitter JUMO MIDAS DP 10  
 /000 (2) **Basic type extensions** none  
 /999 special version  
 452 (3) **Input for differential pressure** 0 – 0.4 bar  
 453 0 – 0.6 bar  
 454 0 – 1.0 bar  
 455 0 – 1.6 bar  
 456 0 – 2.5 bar  
 457 0 – 4 bar  
 458 0 – 6 bar  
 459 0 – 10 bar  
 460 0 – 16 bar  
 999 special measuring range  
 405 (4) **Output** 4 to 20 mA 2-wire  
 412 0.5 to 4.5 V 3-wire  
 305 (5) **Process connection** screwed pipe joint, 6mm dia., stainless steel 1.4571 / FPM  
 306 screwed pipe joint, 6mm dia., brass / PA  
 593 2 x G 1/8 to EN 837  
 68 (6) **Housing material** PBT  
 69 POM  
 601 (7) **Seal material** FPM  
 36 (8) **Electrical connection** with round connector M 12 x 1<sup>1</sup>  
 53 bayonet connector to DIN 72585<sup>2</sup>  
 000 (9) **Extra codes** none

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(8)
Order code	<input type="text"/>	/ <input type="text"/>	- <input type="text"/>	- <input type="text"/>	- <input type="text"/>	- <input type="text"/>	- <input type="text"/>	- <input type="text"/>	/ <input type="text"/>
Order example	401050	/ 000	- 454	- 405	- 593	- 68	- 601	- 36	/ 000

## Accessories

### Designation

Mounting bracket  
 4-pole straight connector M12 x 1 with 2m PVC cable  
 4-pole angled connector M12x1 with 2m PVC cable

### Sales No.

40/00448193  
 40/00404585  
 40/00409334

<sup>1</sup> only with output 405

<sup>2</sup> only with output 412