

**JUMO GmbH & Co. KG**  
 Delivery address: Mackenrodtstraße 14  
 36039 Fulda, Germany  
 Postal address: 36035 Fulda, Germany  
 Phone: +49 661 6003-0  
 Fax: +49 661 6003-607  
 E-mail: mail@jumo.net  
 Internet: www.jumo.net

**JUMO Instrument Co. Ltd.**  
 JUMO House  
 Temple Bank, Riverway  
 Harlow, Essex CM20 2DY, UK  
 Phone: +44 1279 635533  
 Fax: +44 1279 635262  
 E-mail: sales@jumo.co.uk  
 Internet: www.jumo.co.uk

**JUMO Process Control, Inc.**  
 8 Technology Boulevard  
 Canastota, NY 13032, USA  
 Phone: 315-697-5866  
 1-800-554-JUMO  
 Fax: 315-697-5867  
 E-mail: info.us@jumo.net  
 Internet: www.jumousa.com



# JUMO dTRANS p20 Ex d

## Process pressure transmitter with explosion-proof enclosure

### Brief description

The JUMO dTRANS p20 Ex d pressure transmitter with a HART® interface combines maximum precision with simple operation. It is used to measure the relative or absolute pressures of gases, vapors and liquids. The integrated LCD shows measurements and device data. The explosion-proof pressure transmitter can be mounted in Zone 0.

The enclosure and sensors are made from high-quality stainless steel. Various front-flush process connections are available for applications to meet hygiene requirements, including the EHEDG-certified PEKA connection system (see data sheet 409711).

It is also possible to connect remote seals for special process engineering applications (see data sheets 409772 to 409784).

The transmitter is programmable, making it readily adaptable to a variety of different measurement tasks. A user-friendly setup program is available as an accessory, for operation via the interfaces. A rotary knob ensures highly convenient and fast local, manual operation.

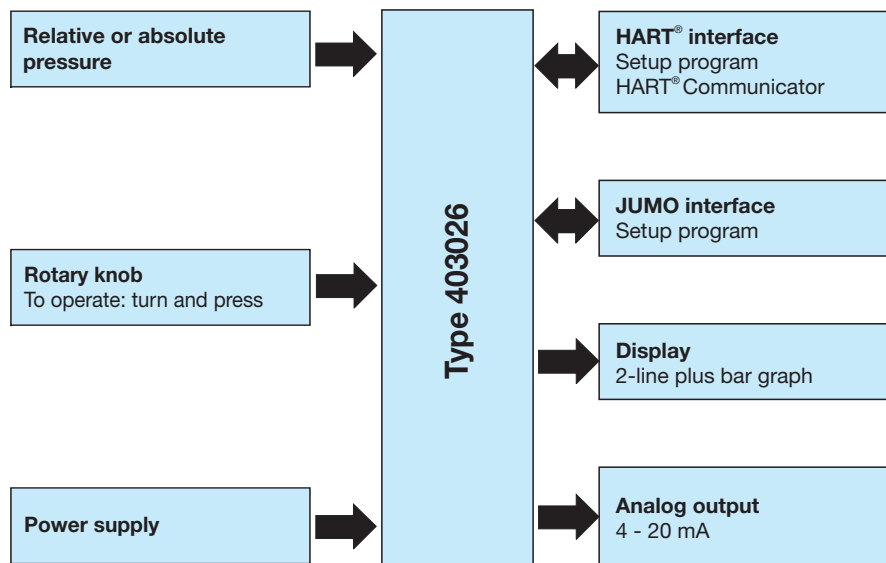
For the "Ex ia" explosion protection version, see data sheet 403025.

For the differential pressure version, see data sheets 403022 and 403023.



Typ 403026

### Block diagram



### Key features

- Stainless steel enclosure
- HART® interface
- Ex d explosion protection (gas and dust) according to ATEX, INMETRO and GOST-R
- 0.05 % linearity
- Turn Down 1:50
- Rotary knob for ease of operation
- Setup program
- LCD display with bar graph
- Display scaling with a choice of measurement units
- Display of sensor temperature
- Display of minimum and maximum pressures
- Current sensor function

### Approvals/marks of conformity (see Technical data)



**JUMO GmbH & Co. KG**  
 Delivery address: Mackenrodtstraße 14  
 36039 Fulda, Germany  
 Postal address: 36035 Fulda, Germany  
 Phone: +49 661 6003-0  
 Fax: +49 661 6003-607  
 E-mail: mail@jumo.net  
 Internet: www.jumo.net

**JUMO Instrument Co. Ltd.**  
 JUMO House  
 Temple Bank, Riverway  
 Harlow, Essex CM20 2DY, UK  
 Phone: +44 1279 635533  
 Fax: +44 1279 635262  
 E-mail: sales@jumo.co.uk  
 Internet: www.jumo.co.uk

**JUMO Process Control, Inc.**  
 8 Technology Boulevard  
 Canastota, NY 13032, USA  
 Phone: 315-697-5866  
 1-800-554-JUMO  
 Fax: 315-697-5867  
 E-mail: info.us@jumo.net  
 Internet: www.jumousa.com



## Technical data

### General

<b>Reference conditions</b>	DIN 16086, DIN EN 60770 and DIN IEC 770/5.3
<b>Sensor system</b> Pressure transfer medium For measuring system filling medium 0 For measuring system filling medium 1 Permissible load change	Silicon sensor with stainless steel separating diaphragm  Without transfer medium Silicon oil, FDA-compliant > 10 million
<b>Location</b> Mounting position Calibration position Position-dependent zero point offset	Any Device standing vertically, process connection on bottom ≤ 1 mbar; Zero point correction possible locally or via setup
<b>Display</b> Alignment Size Color	LCD, two-line with bar graph Display unit can be rotated 90° at a time Housing can be rotated ±160° Display field 22 × 35 mm/font size 7 mm/5 digits Black
<b>Measurement unit display options</b> Input pressure Measurement value Output current Sensor temperature	mH <sub>2</sub> O, inH <sub>2</sub> O, inHg, ftH <sub>2</sub> O, mmH <sub>2</sub> O, mmHg, psi, bar, mbar, kg/cm <sup>2</sup> , kPa, Torr, MPa % or scaled with a freely adjustable measurement unit mA °C; °F
<b>Additional display data</b>	Minimum pressure, maximum pressure, error, overrange, underrange, operating hours, device parameters
<b>Operation</b> Local Setup program	With rotary knob and LCD Via interface
<b>Interface</b> Standard For output 410 (4 – 20 mA with HART®)	JUMO interface <sup>a</sup> , socket on front of instrument JUMO interface <sup>a</sup> and HART® interface

<sup>a</sup> The JUMO interface must not be used for instruments with ATEX Ex ia explosion protection! These instruments can be operated by the rotary knob or via the HART® interface.

### Input

<b>Relative pressure</b>					
Nominal measuring range	-600 to 600 mbar rel.	-1 to 4 bar rel.	-1 to 25 bar rel.	-1 to 100 bar rel.	-1 to 600 bar rel.
Overload capacity	6 bar	30 bar	150 bar	300 bar	1200 bar
Bursting pressure	12 bar	60 bar	250 bar	400 bar	2000 bar
<b>Absolute pressure</b>					
Nominal measuring range	0 to 0.6 bar abs.	0 to 4 bar abs.	0 to 25 bar abs.	0 to 100 bar abs.	
Overload capacity	6 bar	30 bar	150 bar	300 bar	
Bursting pressure	12 bar	60 bar	250 bar	400 bar	

### Output

<b>Analog output</b> For output 405 For output 410 Step response time T63 Damping	4 to 20 mA, two wire 4 to 20 mA, two wire with HART® ≤ 190 ms without damping adjustable, 0 to 100 s
---	---

**JUMO GmbH & Co. KG**  
 Delivery address: Mackenrodtstraße 14  
 36039 Fulda, Germany  
 Postal address: 36035 Fulda, Germany  
 Phone: +49 661 6003-0  
 Fax: +49 661 6003-607  
 E-mail: mail@jumo.net  
 Internet: www.jumo.net

**JUMO Instrument Co. Ltd.**  
 JUMO House  
 Temple Bank, Riverway  
 Harlow, Essex CM20 2DY, UK  
 Phone: +44 1279 635533  
 Fax: +44 1279 635262  
 E-mail: sales@jumo.co.uk  
 Internet: www.jumo.co.uk

**JUMO Process Control, Inc.**  
 8 Technology Boulevard  
 Canastota, NY 13032, USA  
 Phone: 315-697-5866  
 1-800-554-JUMO  
 Fax: 315-697-5867  
 E-mail: info.us@jumo.net  
 Internet: www.jumousa.com



<b>Burden</b>	
For output 405 (4 to 20 mA)	Burden $\leq (U_B - 11,5 \text{ V}) / 0,022 \text{ A}$
For output 410 (4 to 20 mA with HART®)	Burden $\leq (U_B - 11,5 \text{ V}) / 0,022 \text{ A}$ ; additional: min. 250 $\Omega$ , max. 1100 $\Omega$

**Power supply**

<b>Power supply</b>	11.5 - 36 V DC
---------------------	----------------

**Mechanical properties**

<b>Process connection</b>	
Material	Stainless steel 316L
for nominal measuring range 416	Stainless steel 1.4542
Surface	Ra $\leq 0.8 \mu\text{m}$
Process seal	
For process connection 512 and 571	FPM
For process connection 652	FPM
For process connection 997 (JUMO PEKA)	FDA-compliant: FPM, VMQ, EPDM also available, see data sheet 409711
For all other process connections	Without a seal
<b>Messmembrane</b>	
Material	Stainless steel 316L
Surface	Ra $\leq 0.8 \mu\text{m}$
<b>Housing</b>	
Housing material	Precision casting 1.4408
Cover material	Precision casting 1.4408, FPM seal
Control knob material	
For operation 0 (without control knob)	-
For operation 1 (with control knob)	PA
<b>Explosion protection</b>	EC type examination certificate SEV 10 ATEX 0127 (in progress) II 1/2G Ex d IIC T6 - T4 Ga/Gb II 1/2D Ex t IIIC T105 °C Da/Db
<b>Weight</b>	approx. 1600 g

**Ambient conditions**

<b>Permissible temperatures</b>					
Operation	Version	Category	Max. medium temperature	Ambient temperature <sup>a</sup>	Extended environment temperature (extra code 681) <sup>a, b</sup>
	II 1/2G Ex d	T6	+70 °C	-40 to +60 °C	-50 to +60 °C
		T5	+85 °C	-40 to +70 °C	-50 to +70 °C
		T4	+115 °C	-40 to +85 °C	-50 to +85 °C
	II 1/2D Ex d	T105 °C	+100 °C	-40 to +85 °C	-50 to +85 °C
Storage	-40 to +85 °C				
<b>Permissible relative humidity</b>					
Operation	100% incl. condensation on instrument outer sleeve				
Storage	90% without condensation				
<b>Permissible mechanical loading</b>					
Vibration performance	2 g, 10 to 500 Hz to EN 60770-3				
Shock resistance	15 g for 6 ms to IEC 60068-2-27				
<b>Electromagnetic compatibility</b>					
Interference emission	Class B				
Interference resistance	Industrial				

**JUMO GmbH & Co. KG**  
 Delivery address: Mackenrodtstraße 14  
 36039 Fulda, Germany  
 Postal address: 36035 Fulda, Germany  
 Phone: +49 661 6003-0  
 Fax: +49 661 6003-607  
 E-mail: mail@jumo.net  
 Internet: www.jumo.net

**JUMO Instrument Co. Ltd.**  
 JUMO House  
 Temple Bank, Riverway  
 Harlow, Essex CM20 2DY, UK  
 Phone: +44 1279 635533  
 Fax: +44 1279 635262  
 E-mail: sales@jumo.co.uk  
 Internet: www.jumo.co.uk

**JUMO Process Control, Inc.**  
 8 Technology Boulevard  
 Canastota, NY 13032, USA  
 Phone: 315-697-5866  
 1-800-554-JUMO  
 Fax: 315-697-5867  
 E-mail: info.us@jumo.net  
 Internet: www.jumousa.com



<b>Protection</b>	IP66 to EN 60529
-------------------	------------------

- <sup>a</sup> Restricted function below -20 °C: stationary use, increased danger of broken cable, display does not function.  
<sup>b</sup> In the range of -40 to -50 °C, the cover with the instrument viewing pane must also be protected against mechanical shock and impact.  
 For details please contact JUMO.

**Accuracy**

<b>Relative pressure</b>					
Nominal measuring range	-600 to 600 mbar rel.	-1 to 4 bar rel.	-1 to 25 bar rel.	-1 to 100 bar rel.	-1 to 600 bar rel.
Factory setting for measuring range	0 to 600 mbar	0 to 4 bar	0 to 25 bar	0 to 100 bar	0 to 600 bar
Minimum span	60 mbar	0.1 bar	0.5 bar	5 bar	30 bar
Turndown ratio (r)	$r \leq 20$	$r \leq 50$	$r \leq 52$	$r \leq 20$	
Linearity for a linear characteristic as % of the set span	0.1 % for $r \leq 10$		0.05 % for $r \leq 10$		
	$r \times 0.01$ % for $10 \leq r \leq 20$	$r \times 0.005$ % for $10 \leq r \leq 50$	$r \times 0.005$ % for $10 \leq r \leq 52$	$r \times 0.005$ % for $10 \leq r \leq 20$	
Accuracy at 20 °C as % of the set span	0.2 % for $r \leq 10$		0.1 % for $r \leq 10$		
	$r \times 0.02$ % for $10 \leq r \leq 20$	$r \times 0.01$ % for $10 \leq r \leq 50$	$r \times 0.01$ % for $10 \leq r \leq 52$	$r \times 0.01$ % for $10 \leq r \leq 20$	
Accuracy at -40 to +85 °C as % of the set span	0.3% for $r \leq 10^a$		0.2% for $r \leq 10$		
	$r \times 0.03$ % for $10 \leq r \leq 20^a$	$r \times 0.02$ % for $10 \leq r \leq 50$	$r \times 0.02$ % for $10 \leq r \leq 52$	$r \times 0.02$ % for $10 \leq r \leq 20$	
Long-term stability as % of the nominal measuring range	0.1 %/year				

<sup>a</sup> Only to -30 °C.

<b>Absolute pressure</b>				
Nominal measuring range	0 to 0.6 bar abs.	0 to 4 bar abs.	0 to 25 bar abs.	0 to 100 bar abs.
Factory setting for measuring range	0 to 600 mbar	0 to 4 bar	0 to 25 bar	0 to 100 bar
Minimum span	60 mbar	0.1 bar	0.5 bar	5 bar
Turndown ratio (r)	$r \leq 10$	$r \leq 40$	$r \leq 50$	$r \leq 20$
Linearity for a linear characteristic as % of the set span	0.1 % for $r \leq 5$		0.05 % for $r \leq 10$	
	$r \times 0.02$ % for $5 \leq r \leq 10$	$r \times 0.005$ % for $10 \leq r \leq 40$	$r \times 0.005$ % for $10 \leq r \leq 50$	$r \times 0.005$ % for $10 \leq r \leq 20$
Accuracy at 20 °C as % of the set span	0.2 % for $r \leq 5$		0.1% for $r \leq 10$	
	$r \times 0.04$ % for $5 \leq r \leq 10$	$r \times 0.01$ % for $10 \leq r \leq 40$	$r \times 0.01$ % for $10 \leq r \leq 50$	$r \times 0.01$ % for $10 \leq r \leq 20$
Accuracy at -40 to +85 °C as % of the set span	0.3 % for $r \leq 5^a$ <sup>1</sup>		0.2% for $r \leq 10$	
	$r \times 0.06$ % for $5 \leq r \leq 10$ <sup>1</sup>	$r \times 0.02$ % for $10 \leq r \leq 40$	$r \times 0.02$ % for $10 \leq r \leq 50$	$r \times 0.02$ % for $10 \leq r \leq 20$
Long-term stability as % of the nominal measuring range	0.1 %/year			

<sup>a</sup> Only to -30 °C.

**Approvals/marks of conformity**

Mark of conformity	Testing laboratory	Certificate/certification number	Test basis	Valid for
ATEX	electrosuisse	SEV 09 ATEX 0138 X	Directive 94/9/EG	ATEX Ex ia
EHEDG	TUM MAK	03/2006	Document No.8	Process connection 997 (JUMO PEKA)
INMETRO				
GOST-R				

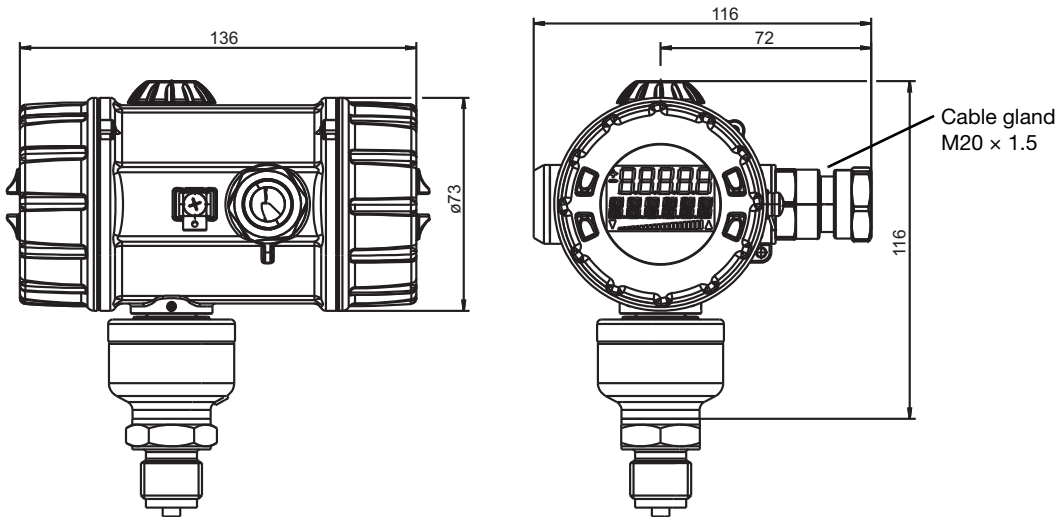
**JUMO GmbH & Co. KG**  
 Delivery address: Mackenrodtstraße 14  
 36039 Fulda, Germany  
 Postal address: 36035 Fulda, Germany  
 Phone: +49 661 6003-0  
 Fax: +49 661 6003-607  
 E-mail: mail@jumo.net  
 Internet: www.jumo.net

**JUMO Instrument Co. Ltd.**  
 JUMO House  
 Temple Bank, Riverway  
 Harlow, Essex CM20 2DY, UK  
 Phone: +44 1279 635533  
 Fax: +44 1279 635262  
 E-mail: sales@jumo.co.uk  
 Internet: www.jumo.co.uk

**JUMO Process Control, Inc.**  
 8 Technology Boulevard  
 Canastota, NY 13032, USA  
 Phone: 315-697-5866  
 1-800-554-JUMO  
 Fax: 315-697-5867  
 E-mail: info.us@jumo.net  
 Internet: www.jumousa.com

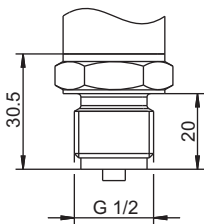


**Dimensions**

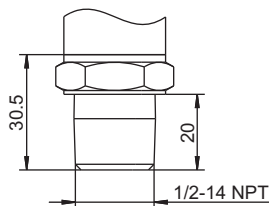


**Process connections**

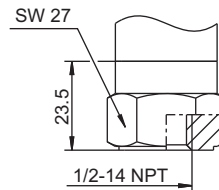
504  
(G 1/2)



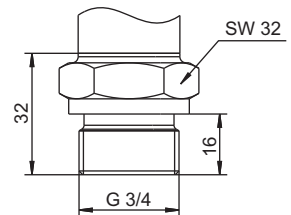
512  
(1/2 - 14 NPT)



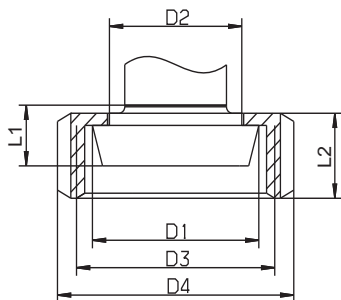
564  
(1/2 - 14 NPT internal)



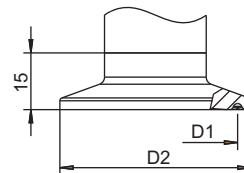
571  
(G 3/4)



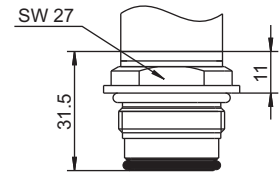
604 and 606  
(tapered adapter with groove union nut to DIN 11851)



613 and 616  
(Clamp to DIN 32676)



997  
(JUMO PEKA)



**Dimensions of process connections 604, 606, 613 and 616**

Conn.	DN	D1	D2	D3	D4	L1	L2
604	25	ø 44	ø 35	Rd 52x1/6"	ø 63	15	21
606	40	ø 56	ø 48	Rd 65x1/6"	ø 78		
613	25	ø 43.5	ø 50.5				
616	50	ø 56.5	ø 64				

**JUMO GmbH & Co. KG**  
 Delivery address: Mackenrodtstraße 14  
 36039 Fulda, Germany  
 Postal address: 36035 Fulda, Germany  
 Phone: +49 661 6003-0  
 Fax: +49 661 6003-607  
 E-mail: mail@jumo.net  
 Internet: www.jumo.net

**JUMO Instrument Co. Ltd.**  
 JUMO House  
 Temple Bank, Riverway  
 Harlow, Essex CM20 2DY, UK  
 Phone: +44 1279 635533  
 Fax: +44 1279 635262  
 E-mail: sales@jumo.co.uk  
 Internet: www.jumo.co.uk

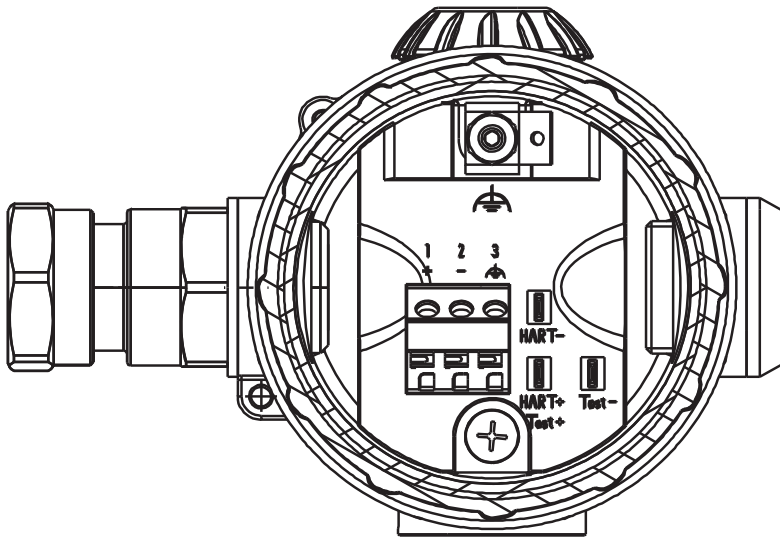
**JUMO Process Control, Inc.**  
 8 Technology Boulevard  
 Canastota, NY 13032, USA  
 Phone: 315-697-5866  
 1-800-554-JUMO  
 Fax: 315-697-5867  
 E-mail: info.us@jumo.net  
 Internet: www.jumousa.com



## Electrical connection

Connection		Terminal assignment
Power supply 11.5 - 36 V DC		1 L+ 2 L-
Output 4 - 20 mA, two wires Impressed current 4 - 20 mA in power supply		1 L+ 2 L-
Current output test connection Inherent resistance of ammeter $\leq 10 \Omega$		TEST + TEST -
HART® test connection The burden must be present!		HART + HART -
Functional ground		3
Grounding or equipotential bonding		outside, on the enclosure

## Cable gland



**JUMO GmbH & Co. KG**

Delivery address: Mackenrodtstraße 14  
36039 Fulda, Germany  
Postal address: 36035 Fulda, Germany  
Phone: +49 661 6003-0  
Fax: +49 661 6003-607  
E-mail: mail@jumo.net  
Internet: www.jumo.net

**JUMO Instrument Co. Ltd.**

JUMO House  
Temple Bank, Riverway  
Harlow, Essex CM20 2DY, UK  
Phone: +44 1279 635533  
Fax: +44 1279 635262  
E-mail: sales@jumo.co.uk  
Internet: www.jumo.co.uk

**JUMO Process Control, Inc.**

8 Technology Boulevard  
Canastota, NY 13032, USA  
Phone: 315-697-5866  
1-800-554-JUMO  
Fax: 315-697-5867  
E-mail: info.us@jumo.net  
Internet: www.jumousa.com

**Order details**

	<b>(1) Basic type</b>
403026	JUMO dTRANS p20 Ex d
	<b>(2) Basic type extension</b>
0	None
9	Special design
	<b>(3) Display</b>
0	Without display
1	With display
	<b>(4) Operation</b>
0	Without control knob
1	With control knob
	<b>(5) Nominal measuring range of input</b>
450	-600 to +600 mbar relative pressure
487	0 to +0.6 bar absolute pressure
491	0 to +4 bar absolute pressure
495	0 to +25 bar absolute pressure
507	0 to +100 bar absolute pressure <sup>a</sup>
513	-1 to +4 bar relative pressure
514	-1 to +25 bar relative pressure
515	-1 to +100 bar relative pressure <sup>a</sup>
516	-1 to +600 bar relative pressure <sup>b</sup>
	<b>(6) Output</b>
410	4 to 20mA, two wire with HART®
	<b>(7) Process connection</b>
504	G 1/2 to EN 837
512	1/2 - 14 NPT to DIN 837
564	1/2 - 14 NPT internal
571	G 3/4 front-flush to DIN 837
583	M20( × 1.5) with tap
604	Tapered adapter with groove union nut DN 25 to DIN 11851 (milk cone)
606	Tapered adapter with groove union nut DN 40 to DIN 11851 (milk cone)
613	Clamp DN 25/32/40 to DIN 32676
616	Clamp DN 50 to DIN 32676/2" ISO 2852
997	JUMO PEKA with EHEDG approval
998	Suitable for connecting to a diaphragm seal
	<b>(8) Process connection material</b>
20	CrNi (stainless steel)
82	NiMo
99	Special process connection material
	<b>(9) Measuring system filling medium</b>
00	Without filling medium
01	Silicon oil
	<b>(10) Extra codes</b>
000	None
100	Customized setting <sup>c</sup>
226	With GOST R approval
227	With INMETRO approval
374	Material inspection certificate 3.1 DIN EN 10204 Material
452	Parts in contact with the medium are electropolished, surface roughness Ra ≤ 0.8 µm
591	Throttle in pressure channel

**JUMO GmbH & Co. KG**

Delivery address: Mackenrodtstraße 14  
36039 Fulda, Germany  
Postal address: 36035 Fulda, Germany  
Phone: +49 661 6003-0  
Fax: +49 661 6003-607  
E-mail: mail@jumo.net  
Internet: www.jumo.net

**JUMO Instrument Co. Ltd.**

JUMO House  
Temple Bank, Riverway  
Harlow, Essex CM20 2DY, UK  
Phone: +44 1279 635533  
Fax: +44 1279 635262  
E-mail: sales@jumo.co.uk  
Internet: www.jumo.co.uk

**JUMO Process Control, Inc.**

8 Technology Boulevard  
Canastota, NY 13032, USA  
Phone: 315-697-5866  
1-800-554-JUMO  
Fax: 315-697-5867  
E-mail: info.us@jumo.net  
Internet: www.jumousa.com



624	Free of oil and grease
630	Enlarged pressure channel
634	With TAG number
681	Extended permissible environment temperature

<sup>a</sup> This inputs specified above are not available with process connections 604, 606, 613, 616.

<sup>b</sup> This input is not available with process connections 571, 604, 606, 613, 616, 997.

<sup>c</sup> Please specify required setting in plain text. For factory setting, see Accuracy section.

Order code      (1)      (2)      (3)      (4)      (5)      (6)      (7)      (8)      (9)      (10) , ...  
 Order example      403026 / 0 - 1 - 1 - 514 - 405 - 504 - 20 - 1 / 000

**Zubehör**

Article	Part no.
PC interface with USB/TTL converter <sup>a</sup>	00456352
HART® modem USB <sup>b</sup>	00443447
Manifolds (409706)	
JUMO PEKA - Process connection adapter with EHEDG approval (409711)	
Pressure separator with milk pipe fitting DIN 11851 (409772)	
Pressure separator with clamp connection (409774)	
Pressure separator with DRD flange or Varivent connection (409776)	
Pressure separator with ISS connection or SMS connection or RJT connection and slotted ring nut (409778)	
Diaphragm chemical seals 4MDV-10 (409780)	
Pressure separator with male thread ISO 228/1 or ANSI B 1.201 (409782)	
Pressure separator with flange connection EN 1092-1 with sealing lip Form B1 (409784)	
Pressure separator with flange connection to ANSI B 16.5 with sealing lip Form RF (409786)	

<sup>a</sup> The PC interface cable is the connection between the JUMO interface of the differential pressure transmitter and the USB interface of a PC.

<sup>b</sup> The HART® modem is the connection between the HART® interface of the differential pressure transmitter and the USB interface of a PC.

**Software**

Article	Part no.
JUMO Setup dTRANS p20 series	00537577