

JUMO GmbH & Co. KG

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JUMO Instrument Co. Ltd.

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JUMO Process Control, Inc.

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JUMO dTRANS p02

Pressure transmitter

 II 1/2G Ex ia IIC T6 Ga/Gb

General application

The pressure transmitter Type JUMO dTRANS p02 is used to measure the gauge (relative) and absolute pressures of corrosive and non-corrosive gases, vapours and liquids. The measuring device for the pressure transmitter is a piezo-resistive element or thin-film strain gauge. The output signal is a proportional DC current which is linearly proportional to the input pressure. In the version "with Ex protection Ex II 1/2G Ex ia IIC T6 Ga/Gb", the pressure transmitter can be mounted within the hazardous Zone 1, for connection to Zone 0. For special applications, e.g. for measuring highly viscous media, the JUMO dTRANS p02 is available with flush pressure connections in various styles. Suitable pressure connections are also available for applications involving media temperatures of up to 200 °C.

The display visualises

- the pressure in 13 different units, measurement in % or scaled with a freely adjustable dimensional unit, output current in mA
- the sensor temperature in °C
- measurement error, out-of-range measurement
- minimum and maximum pressures (peak-reading indicator)
- pressure and sensor temperature can be displayed simultaneously (on two lines)

The operating keys can be used to set

- start and end of range with pressure input
- start and end of range without pressure input (blind setting)
- damping or time constant
- current generator function
- output signal on error
- key inhibit
- reset minimum and maximum measured value (peak-reading indicator)
- density correction for different media being measured
- display of the temperature of the medium, in °C or °F

The pressure transmitter JUMO dTRANS p02 can also be operated using a HART® communicator or a PC in connection with a HART® modem and the JUMO setup program running under Windows®.



Type 404385

Approvals/marks of conformity



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Technical data

Explosion protection

(only with typ 404385/1)

 II 1/2G Ex ia IIC T6 Ga/Gb
PTB 98 ATEX 2194

The supply must be intrinsically safe and must not exceed the following maximum values:

$U_i = DC 30V$

$I_i = 100mA$

$P_i = 750mW$

Reference conditions

to DIN 16086 and IEC 770/5.3

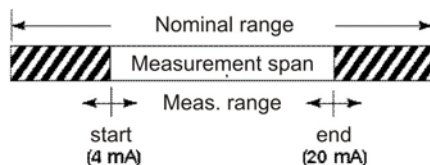
Nominal ranges

see ordering details

Range setting

The measurement range can be set from the transmitter keys, by using the setup program or a HART® communicator as described below:

Start and end of range can be continuously adjusted within the nominal range. The span should not be less than 10 % of the nominal range.



Units that can be visualised

Input pressure:

in mH_2O , inH_2O , $inHg$, ftH_2O , mmH_2O , $mmHg$, psi , bar , $mbar$, kg/cm^2 , kPa , $Torr$, MPa

Measurement:

in %, or scaled with a freely adjustable dimensional unit

Output current:

in mA

Additional displays

Indication of the sensor temperature, minimum pressure, maximum pressure, indication of overrange and on error

Density correction

adjustable within the range from 0.100 to 5.000 kg/dm^3

Overload limit

to DIN 16086

-1 bar and 4x full scale or

-1 bar and 2x full scale with ranges ≥ 100 bar

Bursting pressure

to DIN 16086

10x full scale; 2 000 bar max.

Parts in contact with the medium

standard:

stainless steel, mat. ref. 1.4435, 1.4571

optional:

NiMo, mat. ref. 2.4819

for range ≥ 100 bar:

stainless steel, mat. ref. 1.4571, 1.4542

Pressure connection

see ordering details

Output

4 to 20mA max. burden ($U_B - 11.5V$)/22mA

burden with HART® 1100 Ω max., 250 Ω min.

with HART® protocol V 5.3.

Complies with the guidelines of the HCF (HART® Communication Foundation)

Burden error

< 0.1 %

Zero offset/adjustment accuracy

≤ 0.01 mA

Ambient temperature error

within range -20 to +85 °C

(compensated temperature range)

zero: 0.005 %/°C typical,

0.01 %/°C max.

span: 0.005 %/°C typical,

0.01 %/°C max.

Deviation from characteristic

for limit setting:

not exceeding 0.1 % of full scale of nominal range; to DIN 16086

Hysteresis

For nominal ranges ≥ 100 bar

≤ 0.05 % of full scale; to DIN 16086

For nominal ranges ≤ 25 bar

≤ 0.02 % of full scale; to DIN 16086

Repeatability

For nominal ranges ≥ 100 bar

≤ 0.05 % of full scale; to DIN 16086

For nominal ranges ≤ 25 bar

≤ 0.02 % of full scale; to DIN 16086

Response time

approx. 150msec, without damping

Damping

adjustable 0 to 100 s

Stability per year

≤ 0.1 % of full scale (for nominal range with reference conditions to IEC 770)

Supply

DC 11,5 to 36 V for type 404385/0

DC 11,5 to 30 V for type 404385/1

DC 11,5 to 36 V for type 404385/4

Supply units for output signal transmission with or without HART® communication, in intrinsically safe version, see Data Sheet 404757.

Note: At least DC 17 V (250 Ω) for communication via HART® protocol.

Supply voltage error

≤ 0.1 % of full scale per 10 V change (nominal supply voltage DC 24 V)

Permitted temperature of medium

-40 to +120 °C for type 404385/0

-40 to +120 °C for type 404385/1

-40 to +200 °C for type 404385/4

Permitted ambient temperature

to DIN 16086

-40 to +85 °C for type 404385/0

-40 to +60 °C for type 404385/1

-40 to +85 °C for type 404385/4

(the LCD display cannot be read at temperatures below -20 °C)

Storage temperature

-40 to +85 °C

Electromagnetic compatibility

to EN 61326

Mechanical shock

50 g/11 msec

Mechanical vibrations

5 g max. at 10 to 2000 Hz

Protection

with connecting cable

IP65 to EN 60529

Isolation resistance

100 M Ω ; DC 50 V

Breakdown strength

≥ 500 V_{eff}.

Housing

aluminium die-casting GDAI Si 12

Climatic conditions

≤ 80 % rel. humidity annual mean, with condensation

Electrical connection

clamping case with screw cover, 2-pole and earth terminal, plastic cable gland M20 x 1.5 for cable cross-section 6 to 12 mm

Nominal position

factory set upright vertical

(pressure connection below)

operating position is unrestricted

Weight

approx. 1.3 kg

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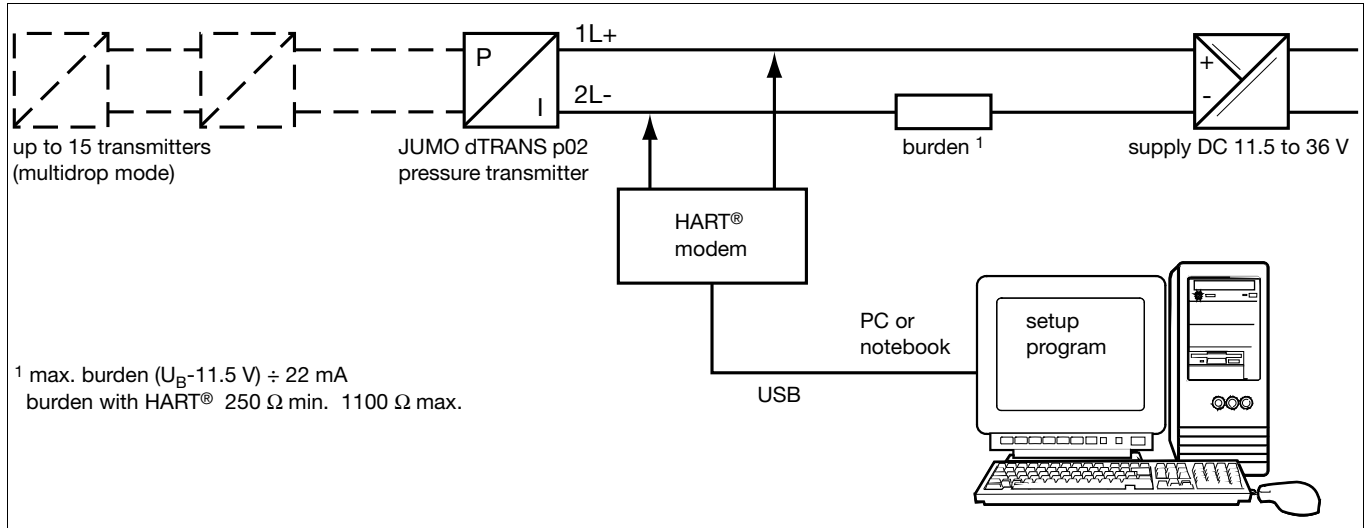
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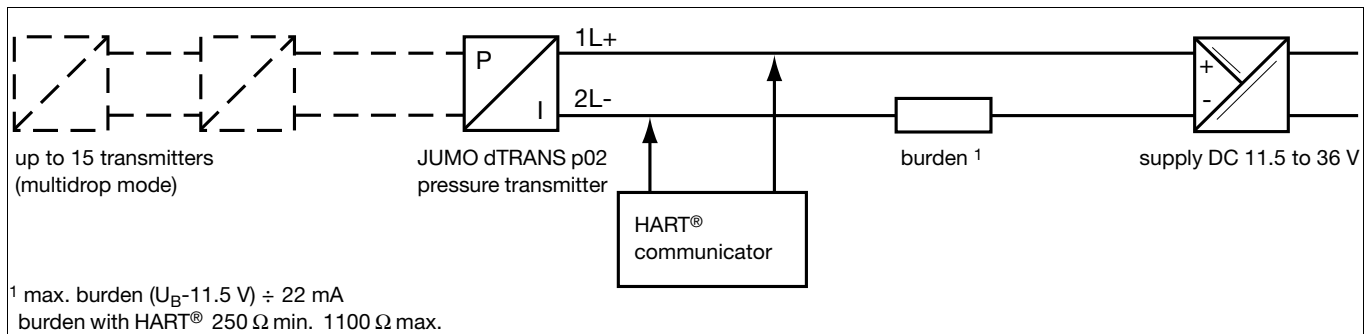


HART® communication

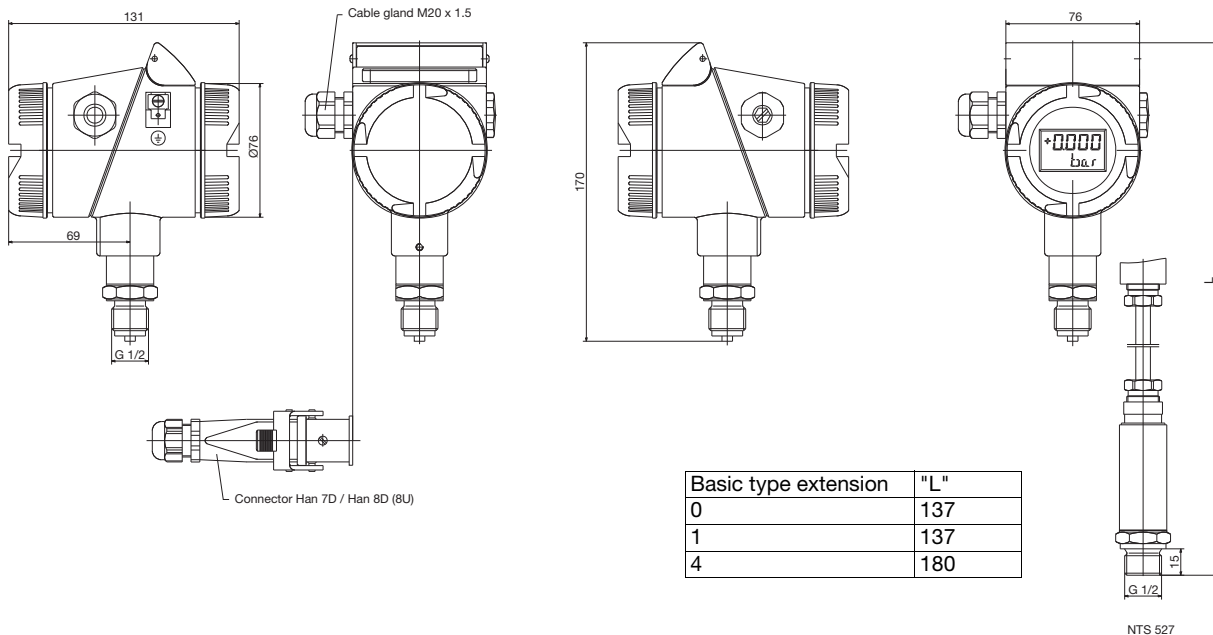
between PC and transmitter



between HART® communicator and transmitter



Dimensions



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Front-flush pressure connections

DN DIN32676	DN (inch)	Nominal Size ISO 2852	Storlek SMS 3017	D ₁	D ₂	NTS
25	1.5" 1"	25	25	ø43.5	ø50.5	613
40	2"	51 40	51	ø56.5	ø64	616

DN	D ₁	D ₂	D ₃	D ₄	L ₁	L ₂	NTS
25	ø44	ø35	RD 52x1/6	ø63	15	21	604
40	ø56	ø48	RD 65x1/6	ø78			606

Pressure connections, not front-flush

Electrical connection

Connection	Terminals
Supply DC 11.5 to 36 V DC 11.5 to 30 V for intrinsically safe version	1 L+ 2 L-
Output 4 to 20 mA 2-wire	1 L+ proportional current 4 to 20 mA 2 L- in supply
Test connection Current output	internal resistance of the ammeter ≤ 10 Ω TEST + TEST -
Test connection HART®	TEST + HART®
Potential equilibration (for intrinsically safe circuit)	
Screen	
Warning: Ground the device! (Pressure connection and screen)	

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**Order details**

(1) Basic type	
404385/0	JUMO dTRANS p02 - Pressure transmitter
404385/1	JUMO dTRANS p02 - Pressure transmitter with Ex protection Ex II 1/2 G Ex ia IIC T6 Ga/Gb
404385/4	JUMO dTRANS p02 - Pressure transmitter for increased temperature of medium up to 200 °C ^a
(2) Nominal range input	
414	-100 to +100 mbar gauge pressure
453	-0,6 to +0,6 bar gauge pressure
457	-1 to +4 bar gauge pressure
461	-1 to +25 bar gauge pressure
464	-1 to +100 bar gauge pressure ^b
468	-1 to +600 bar gauge pressure ^b
487	0 to +0,6 bar absolute pressure
491	0 to 4 bar absolute pressure
495	0 to 25 bar absolute pressure
(3) Output	
405	4 to 20 mA with HART [®] protocol
(4) Process connection	
504	1/2" pipe to EN 837
512	1/2-14 NPT to EN 837
564	1/2-14 NPT internal
571	3/4" pipe flush to EN 837 ^a
583	M20 (× 1,5) with tap
604	Taper connection with slotted nut DN 25 to DIN 11851 ^c
606	Taper connection with slotted nut DN 40 to DIN 11851 ^c
613	Clamp connection DN 25 to DIN 32676 ^c
616	Clamp connection DN 50 to DIN 32676 ^c
997	JUMO PEKA ^d
(5) Material for process connection	
20	CrNi (stainless steel)
82	NiMo
(6) Electrical connection	
06	Screw terminals
99	Special connection ^e
(7) Filling medium for measuring system	
0	None
1	Silicone oil
(8) Extra code	
000	None
452	Parts in contact with the medium electro-polished, surface roughness Ra ≤ 0.8 µm

^a Measuring instruments for increased measuring material temperatures are not available with nominal ranges 464 and 468; they are only available with process connections 571, 604, 613, and without protection class Ex ia IIC.

^b Measuring instruments with nominal ranges 464 and 468 are available with process connections 504, 512, 564 and 997.

A filling of measuring systems with silicone oil is not possible.

^c The a. m. process connections are not suitable for protection class Ex ia IIC.

^d Suitable process connection adapter, see data sheet 409711.

^e Please specify in plain text.

Order code	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)							
	<input type="text"/>	-	<input type="text"/>	-	<input type="text"/>	-	<input type="text"/>	-	<input type="text"/>	/	<input type="text"/>				
Order example	404385/0	-	453	-	405	-	613	-	20	-	06	-	1	/	000

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Accessories

Type	Part no.
Setup program for all instruments in the JUMO dTRANS p02 series	00365072
HART® modem USB	00443447
Ex-i Power supply/input isolating amplifier	00577948
2-valve manifold, PN 420, DN 5, version 1/2-NPT or 1/2-NPT	00561605
2-valve manifold, PN 420, DN 5, version 1/2-NPT or G 1/2	00550362

	Data Sheet
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