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 CM 20 2TT, 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-JUMO
1-800-554-JUMO
Fax: 315-697-5867
e-mail: info@jumo.us
Internet: www.jumo.us

JUMO dTRANS p02
Pressure transmitter

Type 404385

Ex II 1/2G EEx ia IIC T4-T6

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 EEx ia IIC T4-T6", 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®.

Accessories

Setup program
Sales No. 40/00365072
The setup program for all instruments in the JUMO dTRANS p02 series has been created according to the VDI/VDE 2187 user interface. In conjunction with the HART® modem, the program enables convenient operation and parameter setting of the pressure transmitter from a PC.

HART® modem
Sales No. 40/00345666
The HART® modem is used to link the JUMO dTRANS p02 pressure transmitter to the serial interface of a PC.

Pressure separator
for adaptation to special situations where the usual pressure connections cannot be used. See Data Sheets 40.9770 to 40.9786.

Isolated supply for Ex applications, HART®-capable
Sales No. 40/00389710,
See Data Sheet 40.4757

Technical data

Explosion protection
(only with basic type extension 1)

⟨Ex⟩ II 1/2GD EEx ia IIC T4-T6
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 16 086 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 then 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/cm², 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/dm³

Overload limit
to DIN 16 086
-1bar and 4 x full scale or
-1bar and 2 x full scale with ranges ≥ 100bar

Bursting pressure
to DIN 16 086
10 x full scale; 2 000bar max.

Parts in contact with the medium
standard:
stainless steel, Mat. Ref. 1.4435, 1.4571
for range ≥ 100bar
stainless steel, Mat. Ref. 1.4571, 1.4542

Pressure connection
see ordering details

Output
4 — 20mA max. burden (U_B – 11.5V) / 22mA
burden with HART® 1100Ω max., 250Ω 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
≤ 0.01mA

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 16 086

Hysteresis
For nominal ranges ≥100bar
≤ 0.05% of full scale; to DIN 16 086
For nominal ranges ≤ 25bar
≤ 0.02% of full scale; to DIN 16 086

Repeatability
For nominal ranges ≥100bar
≤ 0.05% of full scale; to DIN 16 086
For nominal ranges ≤ 25bar
≤ 0.02% of full scale; to DIN 16 086

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
11.5 — 36V DC
11.5 — 30V DC (for intrinsically safe version)
Supply units for output signal transmission with or without HART® communication, in intrinsically safe version, see Data Sheet 40.4757.

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

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

Permitted ambient temperature
-40 to +85°C; to DIN 16 086
(the LCD display cannot be read at temperatures below -20°C)
With version EX II 1/2G EEX ia IIC T4-T6:
+60°C

Storage temperature
-40 to +85°C

Permitted temperature of medium
-40 to +120°C for the standard version
-40 to +200°C for basic type extension 4

Electromagnetic compatibility
to EN 61326

Mechanical shock
50g/11msec

Mechanical vibrations
5g max. at 10 — 2000Hz

Protection
with connecting cable
IP65 to EN 60 529

Isolation resistance
100MΩ; 50V DC

Breakdown strength
≥ 500$V_{eff.}$

Housing
aluminium die-casting GDAlSi12

Climatic conditions
≤ 80% rel. humidity annual mean, with condensation

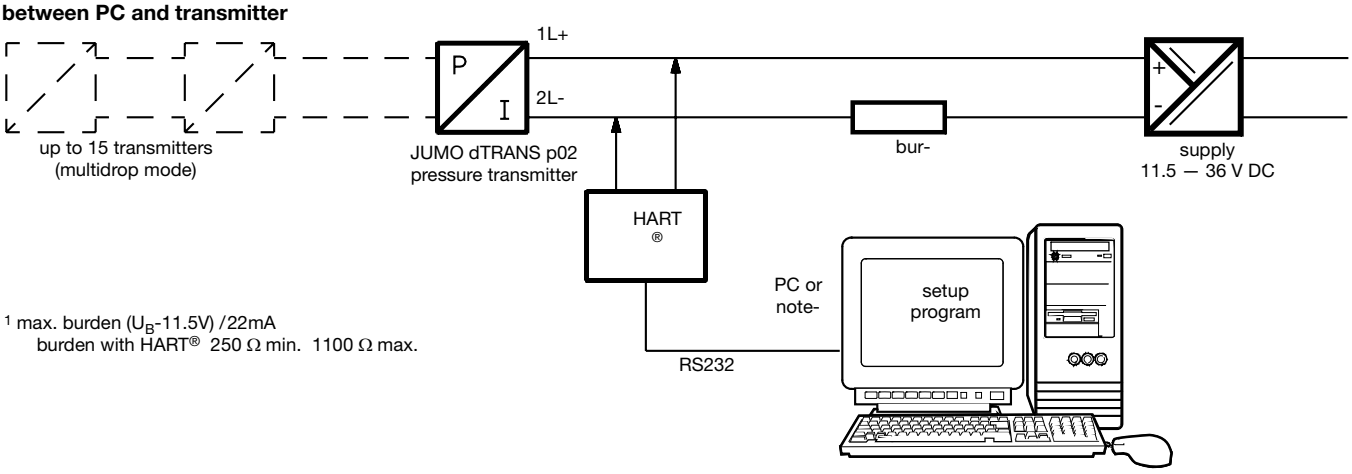
Electrical connection
clamping case with screw cover, 2-pole and earth terminal, plastic cable gland M20 x 1.5 for cable cross-section 6 to 12mm

Nominal position
factory set upright vertical
(pressure connection below)
operating position is unrestricted

Weight
approx. 1.3kg

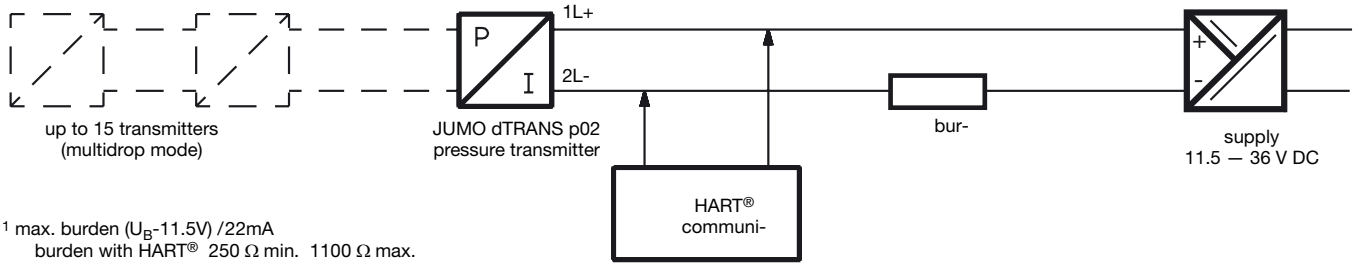
HART® communication

between PC and transmitter



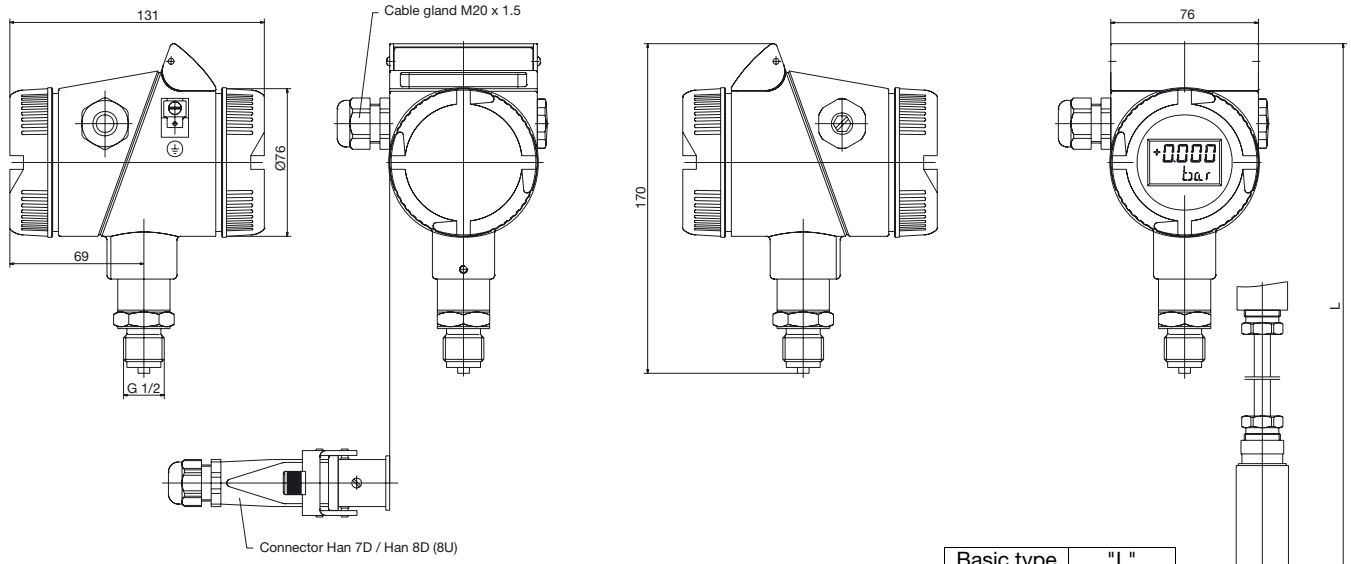
[1] max. burden (U_B-11.5V) /22mA
burden with HART® 250 Ω min. 1100 Ω max.

between HART® communicator and transmitter



[1] max. burden (U_B-11.5V) /22mA
burden with HART® 250 Ω min. 1100 Ω max.

Dimensions

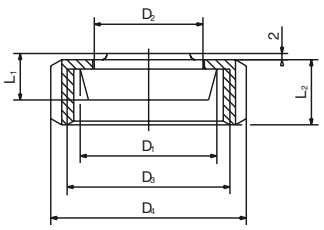


Basic type extension	"L"
0	137
1	137
4	180

NTS 527

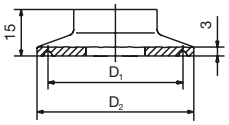
Front-flush pressure connections

604 / 606
taper connection with slotted nut
to DIN 11 851



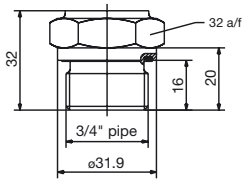
DN	D_1	D_2	D_3	D_4	L_1	L_2	NTS
25	ø44	ø35	RD 52x1/6	ø63	15	21	604
40	ø56	ø48	RD 65x1/6	ø78			606

613 / 616
to DIN 32 676

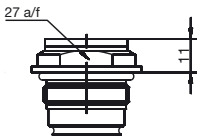


DN DIN32676	DN (inch)	Nominal Size ISO 2852	Storlek SMS 3017	D_1	D_2	NTS
25	1.5" 1"	25	25	ø43.5	ø50.5	613
50	2"	51 40	51	ø56.5	ø64	616

571

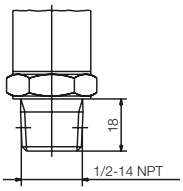


997
Suitable for the
JUMO PEKA adapter system
see ata sheet 40.9711

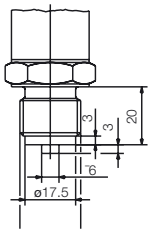


Pressure connections, not Front-flush

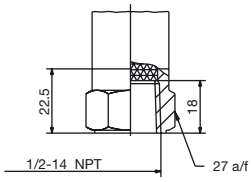
512



504



564

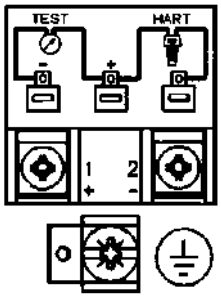


Electrical connection

Connection		Terminals	
Supply 11.5 — 36 V 11.5 — 30 V DC for intrinsically safe version		1 L+ 2 L–	
Output 4 — 20 mA 2-wire		1 L+ 2 L–	proportional current 4 — 20 mA 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:
Earth the instrument!
(Pressure connection and screen)

Termination



Ordering details

Basic type

404385 JUMO dTRANS p02 pressure transmitter with sensor element in piezo-resistive or thin-film technology

Basic type extensions

0 none
1 with **Ex** protection Ex II 1/2G EEx ia IIC T4-T6
4 for increased temperature of medium up to 200•C[1] (for process connections 571, 604, 606, 613 and 616 only)[1, 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
468 -1 to +600 bar gauge pressure
487 -0 to +0.6 bar absolute pressure
491 -0 to +4 bar absolute pressure
495 -0 to +25 bar absolute pressure

Output

405 4 — 20 mA with HART® protocol

Process connection

504 1/2" pipe to EN 837
512 1/2-14 NPT to DIN 837
564 1/2-14 NPT internal
571 3/4" pipe flush to DIN 837[1]
604 taper connection with slotted nut DN25 to DIN 11 851[1,2]
606 taper connection with slotted nut DN40 to DIN 11 851[1,2]
613 clamp connection DN 25 to DIN 32 676 [1,2]
616 clamp connection DN 50 to DIN 32 676 [1,2]
997 JUMO PEKA [3]

Material for process connection

20 stainless steel, Mat. Ref. 1.4401
82 Hastelloy C276, Mat. Ref. 2.4819
99 special material for process connection

Electrical connection

06 screw terminals
99 special electrical connection

Filling medium for measuring system

0 none (only with input for nominal range 464 and 468)
1 Silicone oil [1]

404385 / [ ] - [ ] - 405 - [ ] - [ ] - [ ] - [ ] **Ordering code**

Factory setting:
please specify the range to be set and the unit in plain text!

---

[1] not for nominal range –1 to 100 bar and –1 to 600 bar gauge pressure
[2] not for protection EEX ia II C
[3] suitable process connection adapter, see data sheet 40.9711