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Pressure transmitter dTRANS p02 DELTA

Type 404382



Application

The dTRANS p02 DELTA pressure transmitter measures the pressure and differential pressure in both corrosive and non-corrosive gases, vapours and liquids. The pressure transmitter uses the piezo-resistive effect to make the measurement. The output signal is a DC current which is linearly proportional to the input pressure. For through-flow measurements it is possible to set up the output signal to be proportional to the square-root of the input pressure.
For special applications, i.e. measuring highly viscous substances, JUMO dTRANS p02 DELTA can be supplied with additional pressure separators in various styles.

The display can indicate:
- ❑ Pressure in 13 different dimensional units, or in %
- ❑ Output current in mA
- ❑ Sensor temperature in °C
- ❑ Measurement error, measurement out of range
- ❑ Minimum and maximum pressure (drag-pointer function)

The operating keys can be used to set up:
- ❑ Start and end of measurement range, with pressure applied
- ❑ Start and end of measurement range, without pressure applied (blind setting)
- ❑ Damping, time constant
- ❑ Current-source function
- ❑ Output signal in event of error
- ❑ Inhibit keys
- ❑ Reset min. and max. measurement (drag-pointer function)
- ❑ Square-root characteristic (adjustable starting point) or linear

The JUMO dTRANS p02 pressure transmitter can also be operated through a HART® communicator, or (via a HART® modem) through a PC using the JUMO setup program running under Windows® .

Accessories

Setup program
Sales no. 40/00365072.
The setup program for JUMO dTRANS p02 has been implemented in accordance with the VDI/VDE 2187 user interface. Together with the HART® modem it enables a comfortable operation and parameterization of the pressure transmitter from a PC.

HART® modem
Sales no. 40/00345666
The HART® modem provides the connection between a JUMO dTRANS p02 pressure transmitter and a PC serial interface.

Fixing for wall mounting
Sales no. 40/00314729

3-fold valve block
Sales no. 40/00308191
to DIN 19213, in stainless steel

Technical data

Reference conditions
to DIN 16086 and IEC 770/5.3

Nominal input range
see ordering details

Range setting
The measurement range can be set up from the keys on the pressure transmitter, from a PC with a setup program, or with the aid of a HART® communicator, as follows:
Start and end of the measurement range can be adjusted continuously to any level within the **nominal measurement range**. The measurement span should not exceed 10% of the nominal measurement range.

Displayable units:
mH_2O, inH_2O, inHg, ftH_2O, mmH_2O, mmHg, psi, bar, mbar, kg/cm^2, kPa, Torr, MPa.
The display can also be changed over to % or mA.

Additional indications:
Display of sensor temperature, minimum pressure, maximum pressure.
Indication of out-of-range and error conditions.

Overload limit
PN 160
option: PN 420

Parts in contact with medium
as standard:
stainless steel, Mat. Ref. 1.4401, 1.4401
flange: st. steel, Mat. Ref. 1.4408
O-ring: FPM (Viton®)
option: see ordering details

Pressure (process) connection
internal thread 1/4-18 NPT with flange connection to DIN 19 213 and 4 mounting threads M10
option: mounting thread $^7/_{16}$-20 UNF or M12 (with PN 420)

Output
4 — 20 mA, burden ≤ (U_B-11.5 V) / 0.022 A
burden with HART®:
max. 1100 Ω, min. 250 Ω
with HART® protocol V 5.3.
Conforms to the directives of the HCF (HART® Communication Foundation)

Characteristic
linear or square-root. The changeover point from linear to square-root is adjustable (factory setting is linear up to 9.4%).

Burden error
< 0.1%

Zero offset / adjustment accuracy
≤ 0.01 mA

Static pressure error
zero: ≤ 0.015%/10 bar
span: ≤ 0.020%/10 bar

Ambient temperature drift
within the 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
limit point adjustment:
≤ 0.1% of full scale of nominal measurement range, to DIN 16086

Hysteresis
≤ 0.02% of full scale, to DIN 16086

Repeatability
≤ 0.02% of full scale, to DIN 16086

Response time
approx. 150 msec, without damping

Damping
adjustable from 0 to 150 sec

Stability per year
≤ 0.1% of full scale (for nominal range under reference conditions, in accordance with IEC 770)

Supply voltage
11.5 — 36 V DC
Supply units for output signal transmission with/without HART® communication, see Data Sheet 40.4756.

Note:
Minimum 17 V DC (250 Ω) for communication using HART® protocol.

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

Permissible ambient temperature
-40 to +85°C; to DIN 16086
(the LCD display cannot be read at temperatures below -20°C)

Storage temperature
-45 to +85°C

Permissible medium temperature
-40 to +100°C
(-40 to +85°C with halogenized filling oil)

Electromagnetic compatibility
Electrostatic discharge:
IEC 1000-4-2 / EN 61000-4-2
±4kV contact and ±8kV air discharge
±6kV contact discharge to NAMUR
Electromagnetic fields:
IEC 1000-4-3 / EN 61000-4-3
frequency range:80 — 1,000MHz,
test field strength:
10V/m, 80% AM (1KHz)
ENV 50204
900MHz ±5MHz, 10V/m,
50% PM (200Hz)
Transient interference (burst):
IEC 1000-4-4 / EN 61000-4-4
± 2kV, 1min. via capacitive coupling
Immunity to voltage pulses:
IEC 1000-4-5 / EN 61000-4-5
±1kV symmetrical, ±2kV asymmetrical
Immunity to conductor-borne interference, induced by high-frequency fields:
IEC 1000-4-6 / ENV 50141
frequency range 0.15 — 80MHz,
test voltage 10V, 80% AM (1kHz)
frequency range 0.009 — 80MHz
to NAMUR
The pressure transmitter fulfils all the requirements of EN 50081, EN 50082, EN 55011, EN 55022 (CE mark) for use in industrial areas.
Interference emission
EN 55011, Class B,
measurement distance 10m
frequency range 30 — 230MHz dBµV/m;
230 — 1000MHz dBµV/m quasi-peak value

Mechanical shock
50g/11msec

Mechanical vibration
max. 5g over 10 — 2000Hz

Protection
with connecting cable
IP65 to EN 60529

Insulation resistance
100 MΩ; 50 V DC

Breakdown strength
≥ 500 $V_{eff.}$

Housing
Aluminium die-casting GDAlSi12

Flange screws
steel, yellow-chromed
option: stainless steel

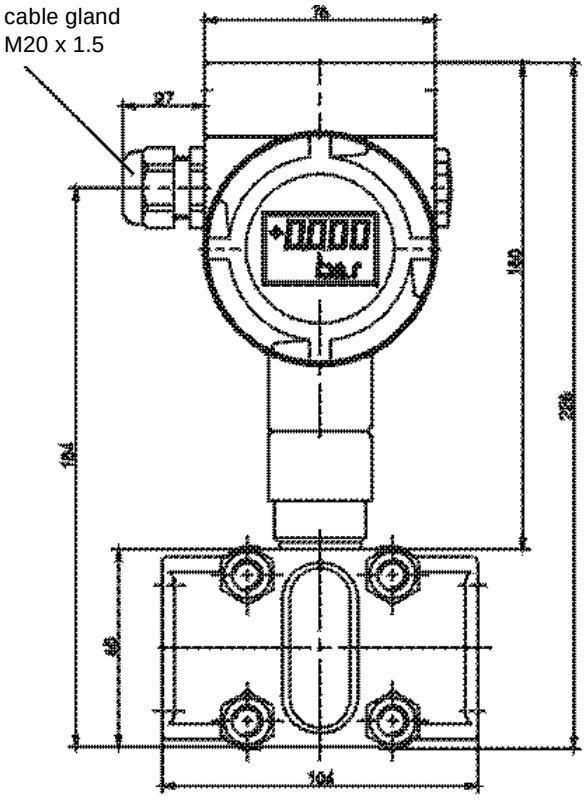
Climatic conditions
≤ 80% rel. humidity with condensation, annual mean

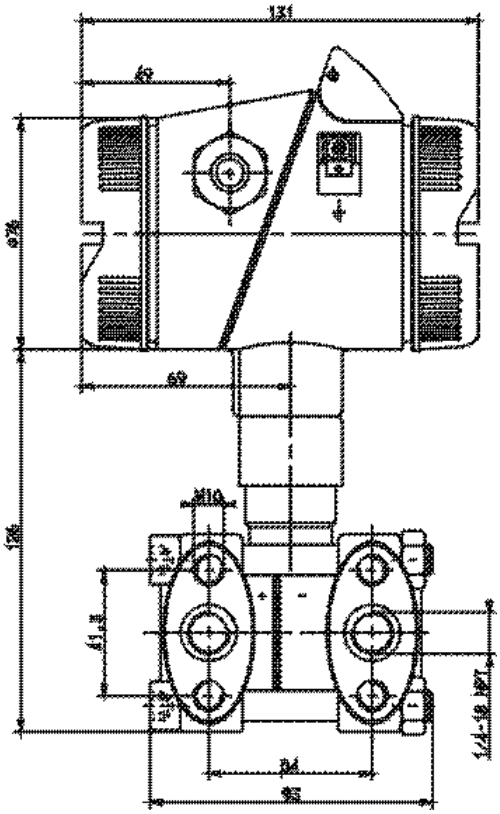
Electrical connection
clamping case with screw cover, 2-pole and earthing terminal, plastic cable gland M20 x 1.5 for cable diameters from 6 to 12 mm

Nominal position
factory setting: standing vertically (pressure cell below)
operating position: any

Weight
3.9 kg

Dimensions



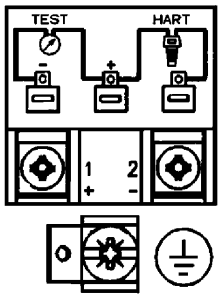


Electrical connection

Connection for		Pin assignment
Supply voltage 11.5 — 36 V DC		1 L+ 2 L-
Output 4 — 20 mA 2-wire		proportional current 4 — 20 mA in supply
Test connection for current output	internal resistance of ammeter ≤ 10 Ω	TEST + TEST -
Test connection for HART®		TEST + HART®
Potential equilibration (for intrinsically-safe circuit)		
Screen		

Caution:
Earth the instrument!
(at the pressure connection
and/or ⏚ or screen)

Connections



Ordering details

Basic type

404382 Pressure transmitter dTRANS p02 DELTA

Basic type extensions

0 none

5 increased pressure rating PN 420

Nominal input range

413 -60 to +60 mbar relative (gauge) pressure

451 -250 to +250 mbar relative (gauge) pressure

455 -1 to +1 bar relative (gauge) pressure

457 -1 to +4 bar relative (gauge) pressure

461 -1 to +25 bar relative (gauge) pressure

Output

405 4 — 20 mA with HART® protocol

Process connection

511 2 x pressure connection 1/4-18 NPT, DIN 837

999 suitable for connection to diaphragm-type pressure separators

Material of process connection

20 stainless steel, Mat. Ref. 1.4401, 1.4404, flange Mat. Ref. 1.4408

82 Hastelloy® C276 + Mat. Ref. 2.4819, flange Mat. Ref. 1.4408

80 Tantalum, flange, stainless steel Mat. Ref. 1.4408

83 Monel, Mat. Ref. 2.4360, flange, stainless steel Mat. Ref. 1.4408

Fastening thread

113 M10 (normal)

117 M12 (PN 420)

152 7/16-20 UNF

Seals

601 FPM (Viton®)

603 PTFE (Teflon®, suitable for comestibles)

604 FFPM (Kalrez®)

Meas. system filling medium

1 silicone oil

2 halogenized filling oil for oxygen applications

Flange screws

1 steel, yellow-chromed

2 stainless steel

404382	/		-		-	405	-		-		-		-		-		-		**Ordering code**

Factory setting:

Please define the measurement range and dimensional unit to be set in plain text