



# Level probe

## JUMO dTRANS p90

### Type 402090

#### General application

The level probe type dTRANS p90 is used to measure hydrostatic levels in liquids. It is suitable for very simple applications that do not make any demands on overvoltage protection (lightning protection). Applications include level measurement in wells, boreholes, wastewater plants, vessels, watercourses, ponds and lakes.



#### Technical data

##### Reference conditions

to DIN 16 086 and IEC 770/5.3

##### Ranges

see order details

##### Overload limit

ranges  
0 – 6 bar 3 x full scale

##### Bursting pressure

ranges 0 – 6 bar ≤ 4 x full scale

##### Wetted components

normally: stainless steel,  
Mat. Ref. 1.4571 /1.4435

##### Output

0 – 20 mA  
3-wire burden ≤ (U<sub>B</sub>-12 V) / 0.02A  
4 – 20 mA  
2-wire burden ≤ (U<sub>B</sub>-10 V) / 0.02A  
4 – 20 mA  
3-wire burden ≤ (U<sub>B</sub>-12 V) / 0.02A  
0.5 – 4.5 V burden ≥ 50 kΩ  
1 – 6 V burden ≥ 10 kΩ  
0 – 10 V burden ≥ 10 kΩ

##### Burden error

< 0.5% max.

##### Zero offset

≤ 0.3% of full scale

##### Thermal hysteresis

≤ ± 0.5% of full scale  
(within compensated temperature range)  
≤ ± 1% for the ranges  
0 – 250 mbar  
0 – 400 mbar  
0 – 600 mbar

##### Ambient temperature error

within the range 0 to +50°C  
(compensated temperature range)  
for ranges 250 and 400 mbar  
zero: ≤ 0.03%/°C typical,  
≤ 0.05%/°C max.

span: ≤ 0.02%/°C typical,  
≤ 0.04%/°C max.

for ranges from 600 mbar  
zero: ≤ 0.02%/°C typical,  
≤ 0.04%/°C max.

span: ≤ 0.02%/°C typical,  
≤ 0.04%/°C max.

##### Deviation from characteristic

≤ 0.5% of full scale  
(limit setting)

##### Hysteresis

≤ 0.1% of full scale

##### Repeatability

≤ 0.05% of full scale

##### Response time

with current output (output 402, 405 or 406):  
≤ 3 msec max.  
with voltage output (output 412, 415, 418 or 420):  
≤ 10 msec max.

##### Stability per year

≤ 0.5% of full scale

##### Supply voltage

10 – 30 V DC (output 4 – 20 mA and 1 – 6 V)  
5 V DC (output 0.5 – 4.5 V)  
11.5 – 30 V DC (output 0 – 10 V)  
11.5 – 30 V DC (output 0(4) – 20 mA)

Ripple: the voltage peaks must not go above or below the values specified for the supply  
max. current consumption approx. 25 mA

##### Supply voltage error

≤ 0.02% per V  
(nominal supply voltage 24 V DC)  
ratiometric with supply voltage  
5 V DC (±0.5 V)

##### Permissible ambient temperature

0 – 50°C

##### Storage temperature

-20 to +80°C

##### Permissible temperature of medium

0 – 50°C

##### Electromagnetic compatibility

EN 61 326  
emitted interference: Class B  
immunity to interference: to industrial requirements

##### Mechanical shock

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

##### Mechanical vibration

(to IEC 68-2-6)  
max. 20 g at 15-2000 Hz

##### Protection

immersible up to 60 m  
IP68 to EN 60 529

##### Housing

st. steel, Mat. Ref. 1.4301

##### Pressure connection

see order details

##### Electrical connection

6-core screened cable, with internal pressure equilibration tubing. Core diameter 0.25 mm<sup>2</sup>. Minimum bending radius of cable: 120 mm (fixed installation). Can be used to 250 m depth without additional strain relief.







##### Nominal position

any

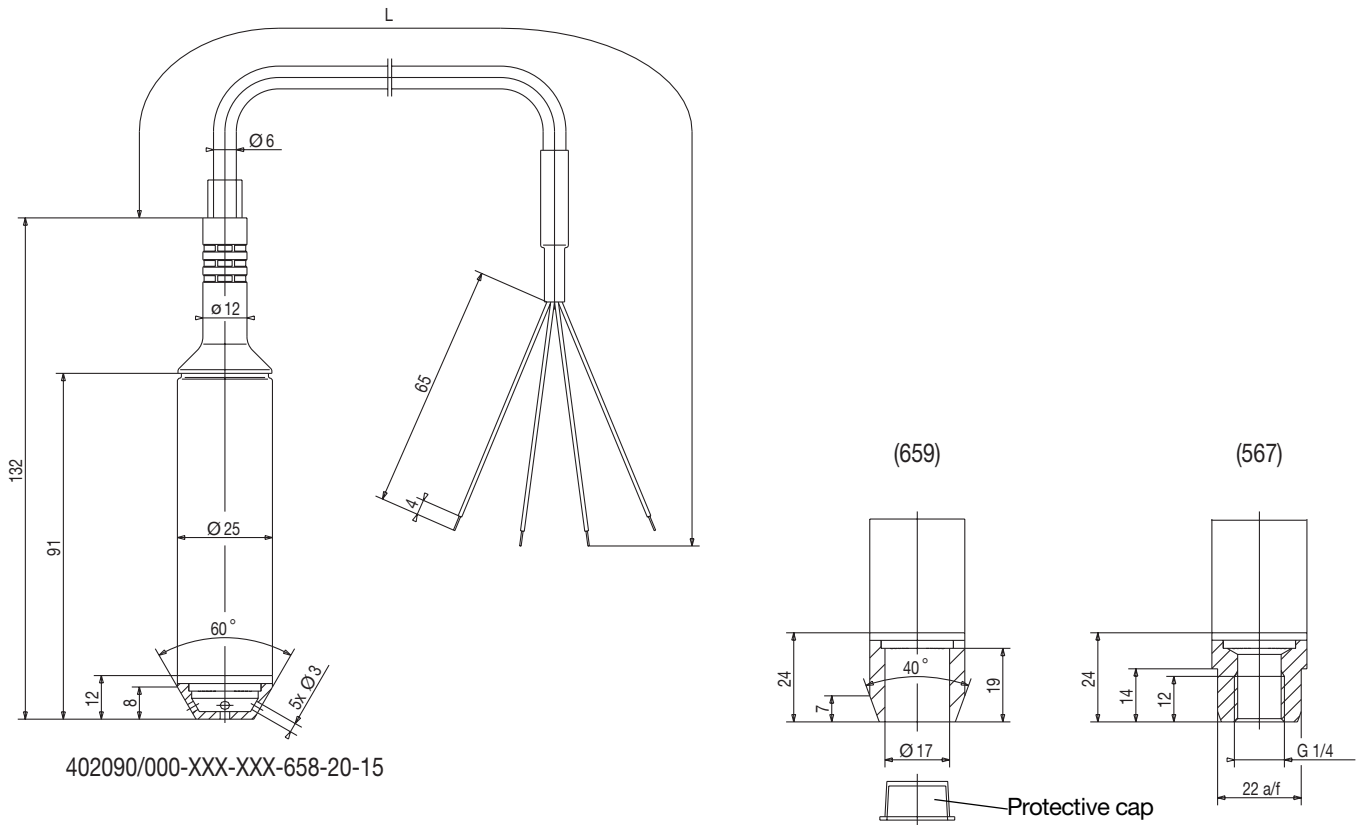
##### Weight

200 g (without cable)

### Electrical connection

Connection		Terminal assignment	
			Cable
Supply 10 – 30 V DC		L+ L-	white gray
Output 4 – 20 mA 2-wire		+ -	white gray
Output 1 – 10 V 3-wire		+ -	yellow gray
Output 1 – 5(6) V Output 0.5 – 4.5 V 3-wire		+ -	yellow gray
Output 0(4) – 20 mA 3-wire		+ -	yellow gray
Screen			black

### Dimensions



## Order details

### Basic type

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| **Basic type extensions**

| /000 none

| /999 special version

| | **Input**

| | 451 0 — 0.25 bar gauge pressure

| | 452 0 — 0.4 bar gauge pressure

| | 453 0 — 0.6 bar gauge pressure

| | 454 0 — 1.0 bar gauge pressure

| | 455 0 — 1.6 bar gauge pressure

| | 456 0 — 2.5 bar gauge pressure

| | 457 0 — 4 bar gauge pressure

| | 458 0 — 6 bar gauge pressure

| | 999 special range

| | | **Output**

| | | 402 0 — 20 mA 3-wire

| | | 405 4 — 20 mA 2-wire

| | | 406 4 — 20 mA 3-wire

| | | 412 0.5 — 4.5 V 3-wire

| | | 415 0 — 10 V 3-wire

| | | 418 1 — 5 V 3-wire

| | | 420 1 — 6 V 3-wire

| | | | **Process connection (not front-flush)**

| | | | 567 G 1/4 internal

| | | | 658 connection closed at bottom

| | | | 659 connection open at bottom

| | | | **Material of process connection**

| | | | | 20 stainless steel

| | | | | **Electrical connection**

| | | | | 15 PE-LD standard cable (normally) suitable for use in water (drinking water, lake water, waste water and similar)

| | | | | | **Cable length "L"**

| | | | | | 005 5 m cable

| | | | | | 010 10 m cable

| | | | | | 020 20 m cable

| | | | | | 030 30 m cable

| | | | | | 040 40 m cable

| | | | | | 050 50 m cable

| | | | | | 060 60 m cable

| | | | | | 070 70 m cable

| | | | | | |

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