

## Differential pressure gauge with integrated working pressure indicator with or without microswitch

Nominal sizes ND 100

Accuracy class 2.5



### Description

Differential pressure measuring instruments of this product family are primarily built for the monitoring of low-differential pressures with high demands on one-sided overload and static pressure and consider the resultant requirements, such as those be required in the gas-, water system and ventilation and their requirements.

These measuring instruments are suitable for liquid and gaseous media in so far as these are not aggressive or highly viscous and do not crystallise.

The robust aluminum housing and shatter-proof window ensure a long product life span even under difficult environmental conditions.

Differential pressure measuring instruments with electric microswitches are suitable for controlling and regulating process sequences by means of the given process pressure.

Differential pressure transmitters are used everywhere, where signal transmission is required, while a differential pressure must be displayed on site.

### Function:

The robust, compact measuring system comprises a diaphragm, which is loaded on both sides by springs which determine the measuring ranges.

The applied differential pressure leads to a proportional deflection of the diaphragm, which is transferred by a plunger to the movement in the indicated case and to the leaf springs of the micro-switches in case of the switch version. The adjustment of the switch point is made by the adjustment screws accessible from the front.

Often in these applications beside the differential pressure is relevant as well the current operating pressure. Therefore, a working pressure indication is included as standard.

### Features

- o Long life by robust aluminium housing, compression springs made of high grade stainless steel and shatter proof viewing window
- o High accuracy up to 1.6% possible
- o Low measuring range from 0 ... 250 mbar
- o Static pressure and overloading up to 25 bar
- o Contact device for up to two microswitches or as transmitter
- o Fastening bracket for wall mounting
- o Compact version, easy fitting

### Ranges


0 ... 250 mbar up to 0 ... 10 bar

### Applications

Water and wastewater industry,  
Pressure vessels, process heat technology,  
Heating, air conditioning and ventilation technology  
Mechanical and plant engineering  
Fire extinguishing systems,  
Marine Boilers

Model: P2591

## Technical data

Model	P2591		Options
Nominal size	100		
Design			
Integrated working pressure indication	with		
Contact	without	micro switch	Option: Device with transmitter possible (with angle connector 6-pin + PE)
Number of contacts	without	1-2	
Accuracy	Differential pressure indication: ≤ 2.5 % of full scale Working pressure indication: ≤4% of span		Differential pressure display: 1.6 % on request <u>For devices without micro switch:</u> only possible with factory-turned-set switching points for display measurements: 0..1 bar to 0..10 bar (switching direction specify)
Differential pressure measuring ranges	0 ... 250 mbar to 0 ... 10 bar		
Working pressure indication	0 ... 25 bar		without, 0...10 bar, 0...16 bar
Static working pressure	max. 25 bar		
Overload	Either side max. 25		
Application range	Steady load: up to full scale value Alternating load: up to 0,9 full scale value		
Case	Aluminium, EN AC-AI Si9Cu3(Fe), black lacquered		
Mounting	Wall mounting with available mounting links		Panel mounting flange (available in 2 versions: stainless steel or stainless steel, black lacquered)
Window	Plastic		
Movement	Cu-alloy, wear parts: nickel silver		
Dial	Aluminium white, scale black		
Pointer	Difference- and working pressure gauge: Al., black		
Zero adjustment for differential pressure indication	Via screw in the dial		
Media chamber (wetted)	Aluminium, EN AC-AI Si9Cu3(Fe), black lacquered		EN AC-AI Si9Cu3(Fe), HART-COAT- surface protection
Measuring elements (wetted)	Difference pressure: Compression springs, ss 1.4301 Diaphragm and seals: FPM / FKM Working pressure: bourdon tube from Cu-alloy		Diaphragm and seals: NBR
Transmission parts (wetted)	Stainless steel 1.4301, 1.4305, 1.4310, FPM/FKM		NBR possible
Pressure connection	brass		Other connections for female- and male threads on request
- Position - Thread 1)	bottom, in-line, center distance 26 mm 2 x G1/4 female		Compression fittings with ferrule or clamp ring for pipe diameters: ø6, ø8 and ø10 mm
Specifications	without		4-way valve manifold of Cu-alloy or stainless steel, (1 x pressure compensating valve, 2 x shut-off valve, 1 x valve for purging and ventilating)
Temperature - Medium - Media	Tmin. -10°C, Tmax. 90°C Tmin. -10°C, Tmax. 70°C		
Protection	IP 65 acc. to EN 60 529 / IEC 529		
weight (kg)	1.3 kg	1.4 kg	
Electrical connection	without	Cable gland M20 x 1.5 with 1 m free cable	Cable terminal box or cable gland M20 x 1.5 with 1 m free cable ( <u>Not</u> for instruments with transmitter) Angle connector: 6-pin + PE (for all instruments with electrical connection possible)

- 1) Gauge mounting pressure entries identified ⊕ high pressure and ⊖ low-pressure.  
Attachment via rigid test lead or wall mounting, with the housing existing mounting bracket

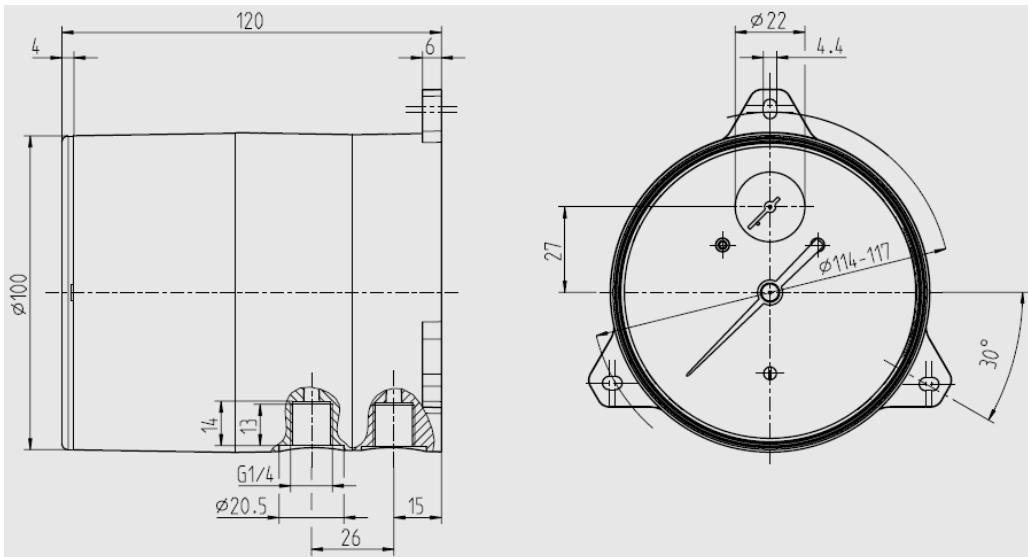
## Version with micro-switch (single and / or double changeover contact)

Electrical connection:	Electrical data :		
	<b>Contact function</b>	<b>1 way – change 5.3</b>	<b>2 way – change 5.3.3</b>
	Load data	AC: alternating current	DC: direct current
	U max.	250 V	30 V
	I max.	5 A	0.4 A
	P max.	250 VA	10 W
	Switching hysteresis	max. 5% of full scale value (Option: max. 2.5%)	
	Setting range	10% up to 100% of full scale value	
	Switch point setting	From the outside at assistant scale by means of adjustment screw(s)	
	Electrical connection	Cable gland M 20 x 1.5 with 1m free cable	

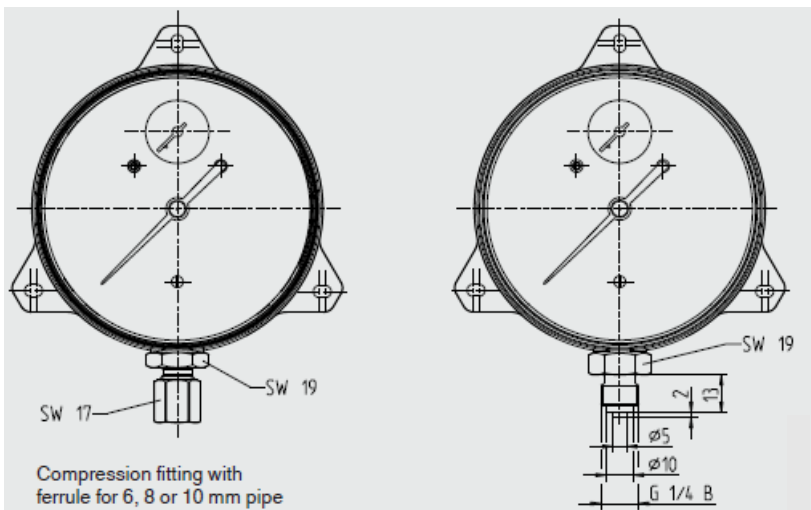
Pin assignment

## Dimensions

### standard version

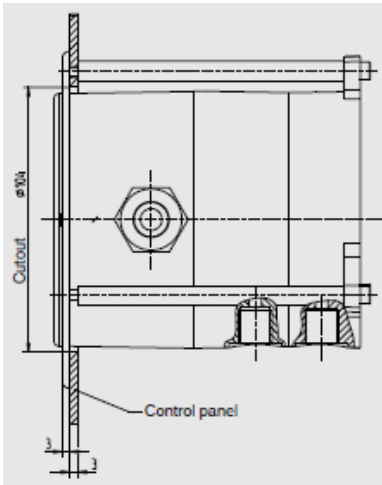


### Different connection versions

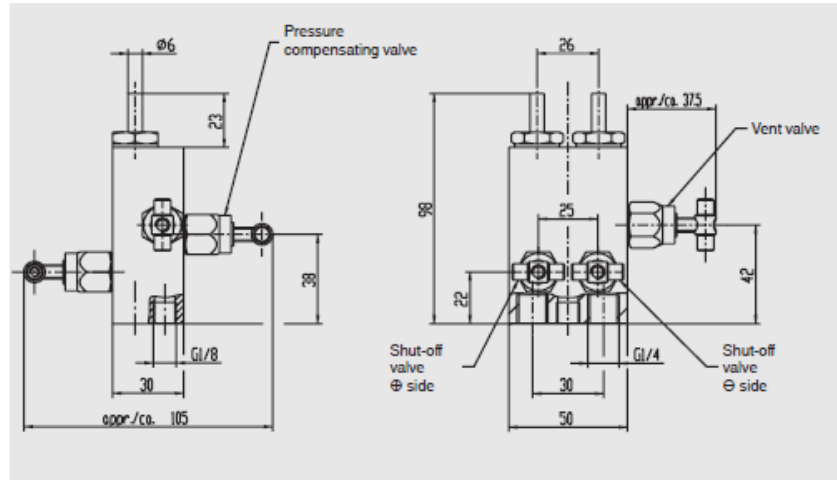


## Options:

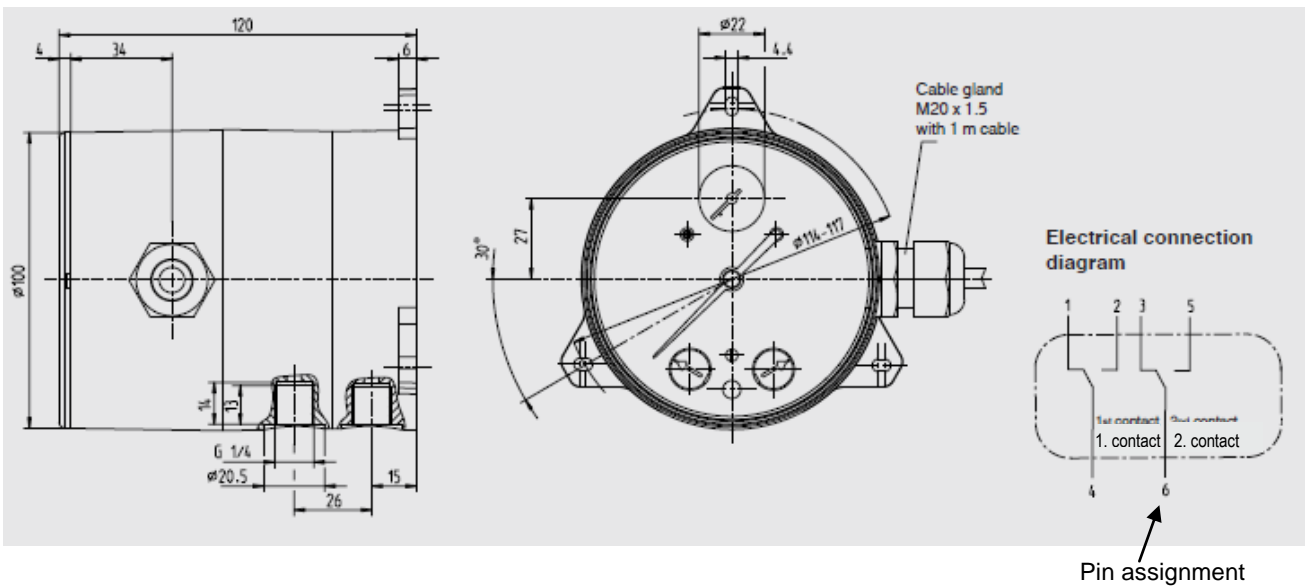
### Panel mounting front flange



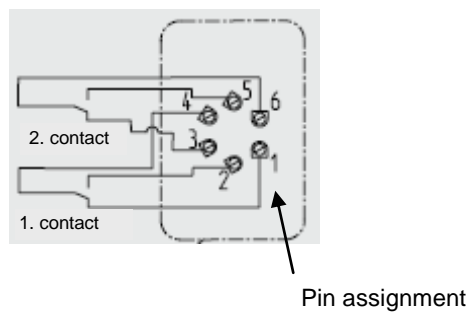
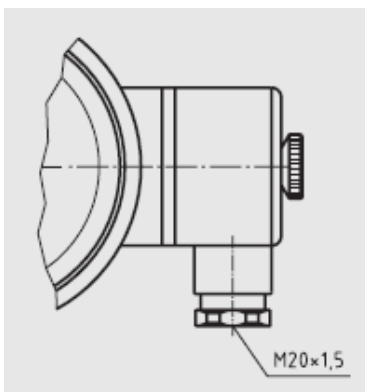
### 4-way manifold



### Version micro-switch, with cable gland M20 x 1.5 and 1m cable




### Electrical connection diagram for connection via cable box:

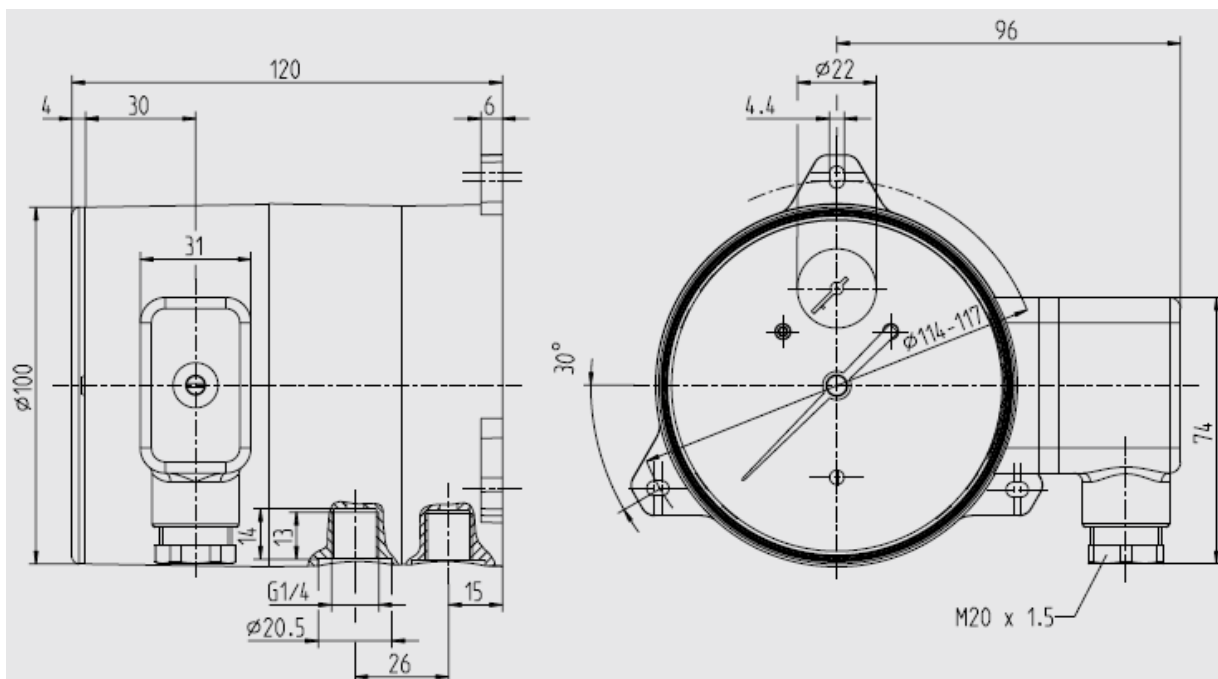


# Version Transmitter:

## Electrical Data

Model	P2591	Options
Nominal size	100	
Design		
	transmitter	
Electrical connection	Angle connector, 180 ° rotatable, max. 1.5 mm <sup>2</sup> , wire protection Cable screw M20 x 1.5, incl. strain relief, connection cable: outside diameter 7 - 13 mm, conductor cross section: 0.14 ... 1.5 mm <sup>2</sup> temperature resistance up to 70°C	
Output signal	4 ... 20 mA, 2-wire, passiv, acc. to NAMUR NE 43 0 ... 20 mA, 3-wire; 0 ... 10 V, 3-wire	
Power supply	12 < U <sub>B</sub> ≤ 30 VDC - Influence of power supply - ≤ 0.1 % of full scale value/10 V - Permissible residual ripple - ≤ 10 % stainless steel	
Permissible max. load	$R_A \leq (U_B - 12 \text{ V}) / 0.02 \text{ A}$ with R <sub>A</sub> in Ohm und U <sub>B</sub> in Volt, but max. 600 Ω	
Influence of load	≤ 0.1 % of full scale value	
Electrical zero point	By bridging the terminals 5 and 6 (see page 6)	
- long-term stability	< 0.3 % of full scale value/a	
- electrical output signal	≤ 2.5 % of span (option: ≤ 1.6 %)	
Deviation from characteristic	≤ 2.5 % of span (Option: ≤ 1.6 %) limit point adjustment	
Electrical protection	Angle connector: IP 65 acc. to EN 60629 / IEC 60629	
EMV-guideline	2004/108/EG EN 61326 Emission (class B) and immunity according to EN 61 326-1 8 (industrial area)	

## Dimension

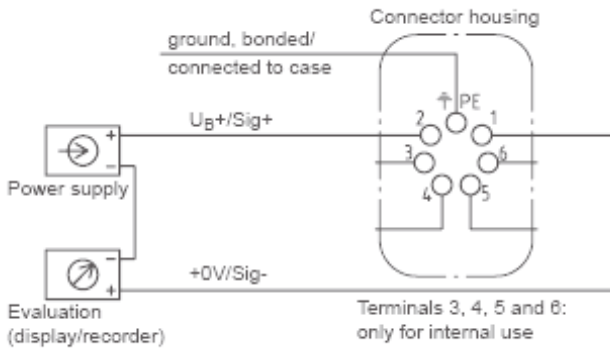


# Terminal assignment

Terminals 1 and 2 are the terminals for the signal output and for the power supply. The terminal marked with PE (protective earth) is connected internally to the housing. The connections 3 to 6 or 4 to 6 (for the 3-wire version), must remain free and must not be used as connection points (also see chapter: "Technical data").

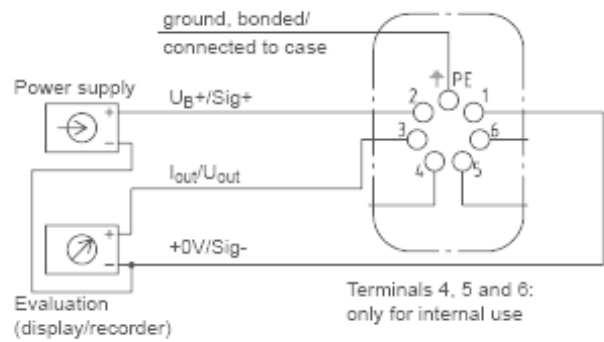
## 2-wire-design

i.e. 4 ... 20 mA



## 3-wire-design

i.e. 0 ... 20 mA / 0 ... 10 V



An unregulated DC voltage, with a residual ripple of max. 10 % peak-to-peak in the range of the indicated supply voltage limits, is sufficient as a power supply. Make sure that the supply voltage applied exceeds the maximum required voltage by at least the value of the voltage drop across the external display or evaluation devices; i.e. the transmitter can operate using a non-stabilised supply voltage within the given limits, so long as the voltage available to the transmitter does not fall below 12 V, or below 14 V for the Ex-version.

## Certificates<sup>2)</sup>:

- 2.2 certificate acc. to EN 10204 (e.g. production according to prior art, indication accuracy)
- 3.1 inspection certificate acc. to DIN 55350 part 18.4.2.2 (e.g. indication accuracy)

<sup>2)</sup> See also on our tecsis website: [www.tecsis.de](http://www.tecsis.de)