

Catalogue

2020

Safir

Analog electronic module
Pressure transmitters



Manometr-Kharkiv

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pressure level flow



Pressure transmitters

Safir

Analog electronic module



Features

- Reference accuracy, % FS
 - 0.25
 - 0.5
- Turndown up to 1 :16
- Output 4 – 20 mA, 0 – 5 mA (increasing or decreasing)
- Nuclear qualified
- Explosion protection
 - Explosion proof d
- Special design for severe environment modeling LOCA
 - max ambient temperature 150 °C
 - max ambient pressure 5 bar (absolute)
 - steam-gas mixture
- Mean time before failure 490 000 hours (25 °C), 410 000 hours (40 °C)
- Warranty period 60 months, Inter calibration period 24 months
- Ingress Protection Rating IP66/67; Ip66 due to EN 60529

Controls & Functions

- External zero adjustment screw
- Configuration by jumpers
- Functions
 - Zero point adjustment within ± 2.7 5% of output range
 - Upper range value adjustment within ± 5% of output range
 - Predefined range selection
 - Output function selection

Industries

- Nuclear power plants
- Thermal power stations
- Metallurgy
- Oil & Gas production
- Pipelines
- Refinery & Chemicals
- Machinery

Applications

- Process management
- Systems important for safety
- Custody transfer and Flow measurement

Pressure ranges

Predefined pressure ranges (PPR) are formed from the set (1.0, 1.6, 2.5, 4.0, 6.3) by decimal shifting to left or right. These values may be used with the following physical units: kPa (MPa), kgf/m² (kgf/cm²), mbar (bar).

The table below represents pressure ranges for particular model number.

	Model numbers	40.0	63.0	100.0	160.0	250.0	400.0	630.0	1.0	1.6	2.5	4.0	6.3	10.0	16.0	25.0	40.0	63.0	100.0	160.0	250.0	400.0	630.0	1.0	1.6	2.5	4.0	6.3	10.0	16.0	25.0	40.0	63.0	100.0
		Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa		
absolute	2030																																	
	2040																																	
	2050, 2051																																	
gauge	2101																																	
	2110																																	
	2115																																	
	2120																																	
	2130																																	
	2140																																	
	2150, 2151																																	
	2160, 2161																																	
	2170																																	
gauge (neg.)	2171, 2172																																	
	2201																																	
	2210																																	
	2215																																	
	2220																																	
	2230																																	
gauge (neg./pos.)	2240																																	
	2301																																	
	2310																																	
	2315																																	
	2320																																	
	2330																																	
differential	2340																																	
	2350, 2351																																	
	2401																																	
	2410																																	
	2415																																	
	2420, 2424																																	
hydrostatic	2430, 2434																																	
	2440, 2444																																	
	2450, 2454																																	
	2460, 2464																																	
	2520																																	
	2530, 2536, 2537																																	
	2540, 2547																																	

Notes:

- Span limits (min and max) are indicated.
- LRV equals to '0' for absolute, gauge, differential and hydrostatic pressure transmitters
- Transmitters might be supplied being configured at PPR or user specified ranges with the following limitations:
 - URV should be algebraically greater than LRV, except Gauge (negative) transmitter for which "pressure axis" is reversed
 - URV shouldn't be more than URL for the model number
 - Span shouldn't be less than minimal one for the model number
- Transmitters with model numbers xx01 should be used for gases only with LRV = 0

LRL – lower range limit
 LRV – lower range value
 URL – upper range limit
 URV – upper range value

flow level pressure



Accuracy

Here after all the metrological characteristics are expressed as output deviation relative to output range.

Reference accuracy, % (includes hysteresis, linearity, and repeatability)

Model numbers	URV or Turndown	0.25	0.5
2x01	0.1 kPa < URV	0.25	0.25
	URV ≤ 0.1 kPa	0.5	0.5
others	1 ≤ TD ≤ 10	0.25	0.5
	10 < TD ≤ 16	0.5	0.5

Ambient temperature effect (per 10 °C, ref. temp. 23 °C)

Ref. accuracy	Zero point effect, %	URVe ect, %
0.25	0.08 · (1+0,5 URL/URV)	0.12
0.5	0.15 · (1+0,5 URL/URV)	0.20

Note: Actual reference accuracy equals to sum of zero point effect and URV effect.

Static pressure effect

Model numbers	Static pressure, MPa	%	per
2401	0 ≤ ≤ 0.25	0.4 × TD	0.1 MPa
2410	0 ≤ ≤ 2.5	0.32 × TD	1 MPa
	2.5 < ≤ 4	0.2 × TD	1 MPa
2420	0 < ≤ 10	0.04 × TD	1 MPa
	10 < ≤ 25	0.025 × TD	1 MPa
2430, 2440,	0 ≤ ≤ 10	0.035 × TD	1 MPa
2450	10 < ≤ 25	0.02 × TD	1 MPa
2434, 2444, 2454, 2464	0 ≤ ≤ 40	0.02 × TD	1 MPa
2520, 2530,	0 ≤ ≤ 2.5	0.32 × TD	1 MPa
2540	2.5 < ≤ 4	0.2 × TD	1 MPa

Power supply effect, %	0.005	per 1 V
Output variations, %	0.5 lyl	0.06 to 5 Hz
Magnetic field effect	≤ lyl acc.	400 A/m at 50 Hz
Vibration effect, %	1.0 × TD	for 2x01, 2x10
	0.1 × TD	other model numbers
Response time, s	1.6	for 2x01, 2x10
	0.4	other model numbers

TD = URL / URV (turndown)

Operating conditions

Ambient temperature & humidity (should be specified in ordering form)

UHL3.1*(+5...+50)	t (+5...+50) °C, h 95±3 % at 35 °C	condensation not permissible
UHL3.1*(+5...+80)	t (+5...+80) °C, h 95±3 % at 35 °C	
U2*(-30...+50)	t (-30...+50) °C, h 95±3 % at 35 °C	
U2*(-40...+50)	t (-40...+50) °C, h 95±3 % at 35 °C	
T3**	t (-5...+80) °C, h 100 % at 35 °C	condensation permissible

Max process temperature 120 °C

Static pressure limits (differential or hydrostatic pressure)

Model numbers	MPa						
2401	0.16	0.25					
2410, 2520, 2530, 2540			1.6	2.5	4		
2420, 2430, 2440, 2450						10	25
2434, 2444, 2454							32 40
2460						10	25
2464							32

Overpressure

Absolute pressure	1.25 of URL
Gauge pressure	1.5 of URL
Differential & Hydrostatic pressure	1.5 of static pressure from high pressure side

Permissible vibrations	
Frequency 1...9 Hz, amplitude, mm	7.5
Frequency 9...150 Hz, acceleration, m/s ²	20.0
Directions	X,Y,Z

Mechanical Shock	
Peak acceleration, m/s ²	70
Impulse duration, ms	50
Form	half-wave
Rate, 1/s	0.1
Directions	X,Y,Z

EMC

Interference type	Test level	Additional error, %
Electrostatic discharge IEC-61000-4-2	4	0.1
Radio-frequency electromagnetic field IEC 61000-4-3	3	1.0
Fast transient/ Burst immunity IEC 61000-4-4	4, 3*	1.0
Surge immunity IEC 61000-4-5		
line-to-line	3	
line-to-ground	4, 2*	**
Long & Short term magnetic fields	5	0.1
Pulse magnetic field immunity IEC 61000-4-9	5	0.1

* for model numbers 2537, 2547

** restoration time not more than 20 ms

EM Interference for equipment class A due to EN 55022

Interference voltage on power supply lines		
Frequency, MHz	Interference voltage [dB µV]	
	Quasi peak value	Average value
From 0.15 to 0.50	79	66
From 0.5 to 30.0	73	60

Emission limits		
Frequency, MHz	Distance, m	Interference MF=Intensity [dB µV/m]
From 30 to 230	10	40
From 230 to 1000	10	47

flow

level

pressure



Nuclear qualification

This section applies to nuclear grade transmitters only (option -N in model designation).

Transmitters can be used in the I&C systems as components with safety classes 2, 3, 4 as per NP 306.2.141, involved in performing the functions, classified as A, B, C categories according to IEC 61226.

Seismic resistance

seismic category I

due to norm 306. 2.208 (SNRIU)

degree according to the MSK-64 scale

8

elevation upon zero point not more than

70 m

	Frequency, Hz									
	0.5	1	2	3	4	5	6	10	15	30
Acceleration amplitude (vertical), m/s ²	19.2	38.4	48.8	48.8	48.8	48.8	48.8	48.8	38.4	16.0
Acceleration amplitude (horizontal), m/s ²	13.4	26.9	34.2	34.2	34.2	34.2	34.2	34.2	26.9	11.2

Additional error under seismic disturbance, %

	Pressure range			
	0.16 to 2.5 kPa	2.5 to 10.0 kPa	10 to 250 kPa	0.4 to 100 MPa
Vertical	3 x TD	1.0 x TD	0.3 x TD	0.25 x TD
Horizontal	10 x TD	1.0 x TD	0.3 x TD	0.25 x TD

Analog Transmitter for Harsh Environment Safir Ns

1. Resistant to harsh environment conditions caused by the consequences of breaking the line from the process equipment to the transmitters with a loss of coolant (LOCA-accident).

LOCA test profile

Reference conditions

	Frequency, Hz		
Ambient temperature, °C	150	125	115
Barometric pressure, kPa	510	260	176
Humidity	Steam-gas mixture		
Duration, hours	0.5	3	

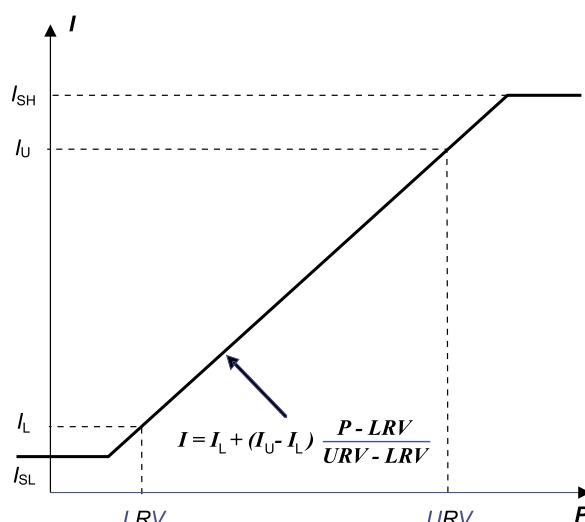
2. Resistance to continuous ionizing γ -radiation.

Modes of radiation exposure

Absorbed doze of γ -radiation, Gy/h	Exposure duration, h	Integrated doze, kGy
$2 \cdot 10^3$	65	130
$10 \cdot 10^3$	19.5	195
Total integrated doze		325



flow level pressure



Current Ranges:
 I_L – lower
 I_U – upper

Saturation Values:
 I_{SL} – low
 I_{SH} – high

	4-20 mA	0-5 mA
I_{SL}	3.75 mA	-0.05 ... -0.15 mA
I_{SH}	23.5 mA	5.5 ... 5.7 mA

Wiring

Power supply voltage

- (36 ± 0.72) V for transmitter with 0...5 (5...0) mA output
- 15 ... 42 V for transmitter with 4...20 (20...4) mA output, power supply minimal voltage U_{PS} is calculated as

$$U_{PS} = I_{MAX} \cdot R_L + U_{MIN}, \text{ where}$$

R_L – overall load resistance, including control/measuring device, wire etc.
 I_{MAX} – maximal output (20 mA)
 U_{MIN} – 15 V, minimal voltage for transmitter without load.

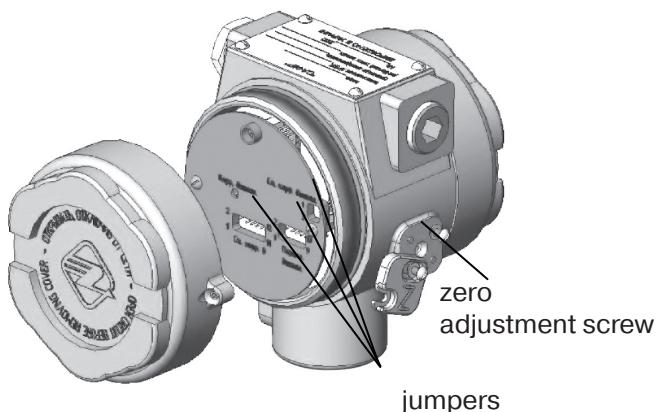
Power consumption of transmitter powered with 36 V:

- 1.4 W for transmitter with 0...5 (5...0) mA output
- 0.8 W for transmitter with 4...20 (20...4) mA output

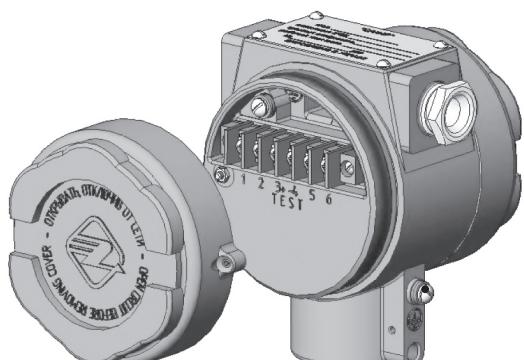
Explosion Protection Type, Output, Loop Type, and Load

Explosion protection type	Output, mA	Loop type	Load, &
Without explosion protection	4-20 20-4	2- or 4-wire	$R_L \leq (U_{PS} - U_{MIN}) / I_{MAX}$
Explosionproof	0-5 5-0	4-wire	from 50 to 2500

Electronic module

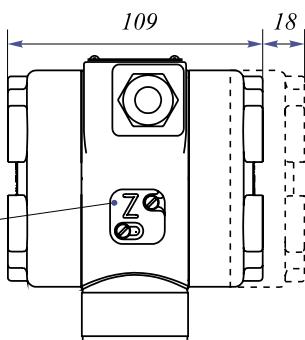
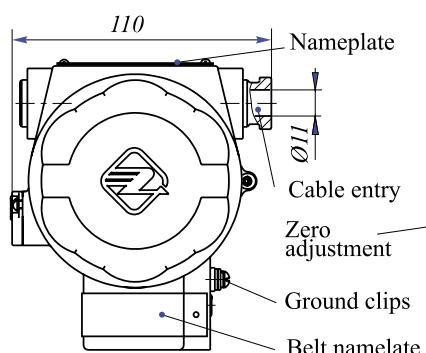


View from control board side

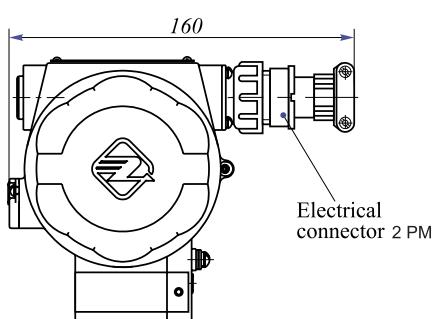


View from terminal connectors side

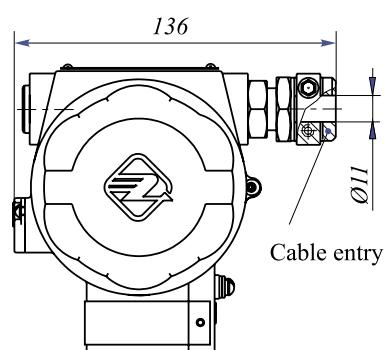
Electronic module dimensions, mm



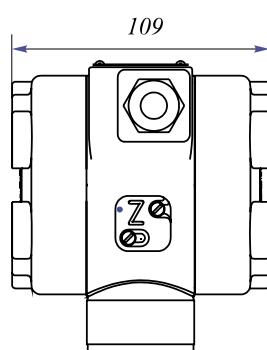
Electronic module. General purpose and intrinsically safe type



Transmitter with electrical connector 2PM



Explosionproof type transmitters



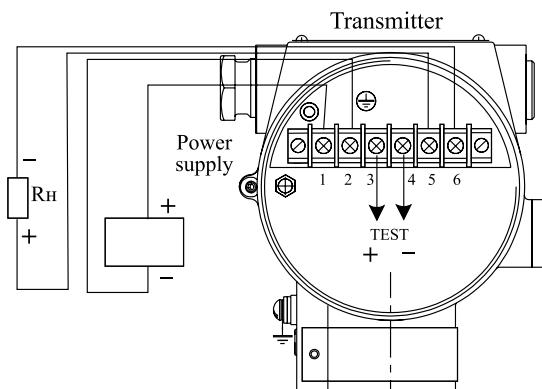
flow level

pressure

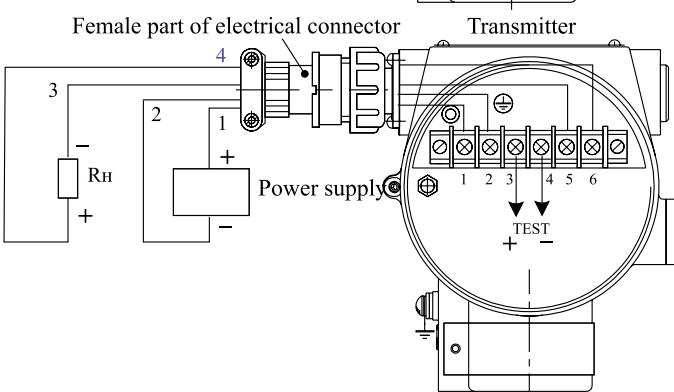


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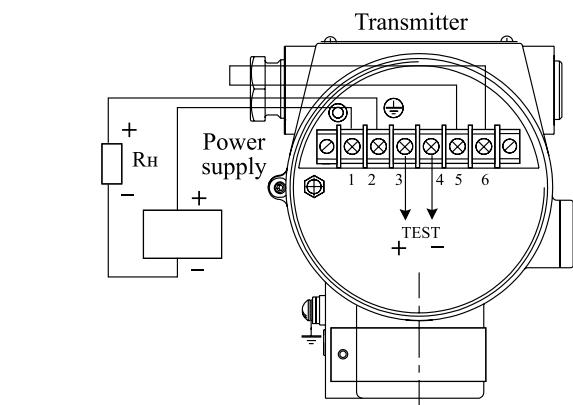


Transmitter with cable entry

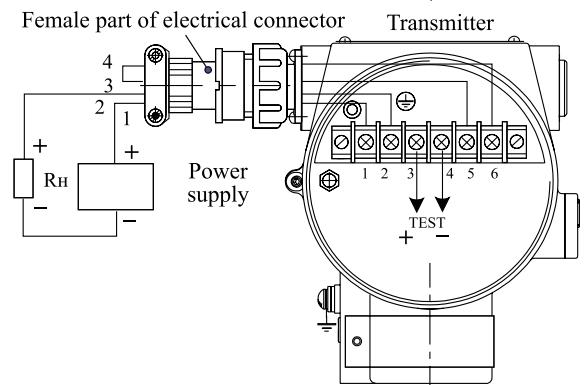


Transmitter with electrical connector

Four-Wire Loop Diagram (5-0 mA or 4-20 mA)



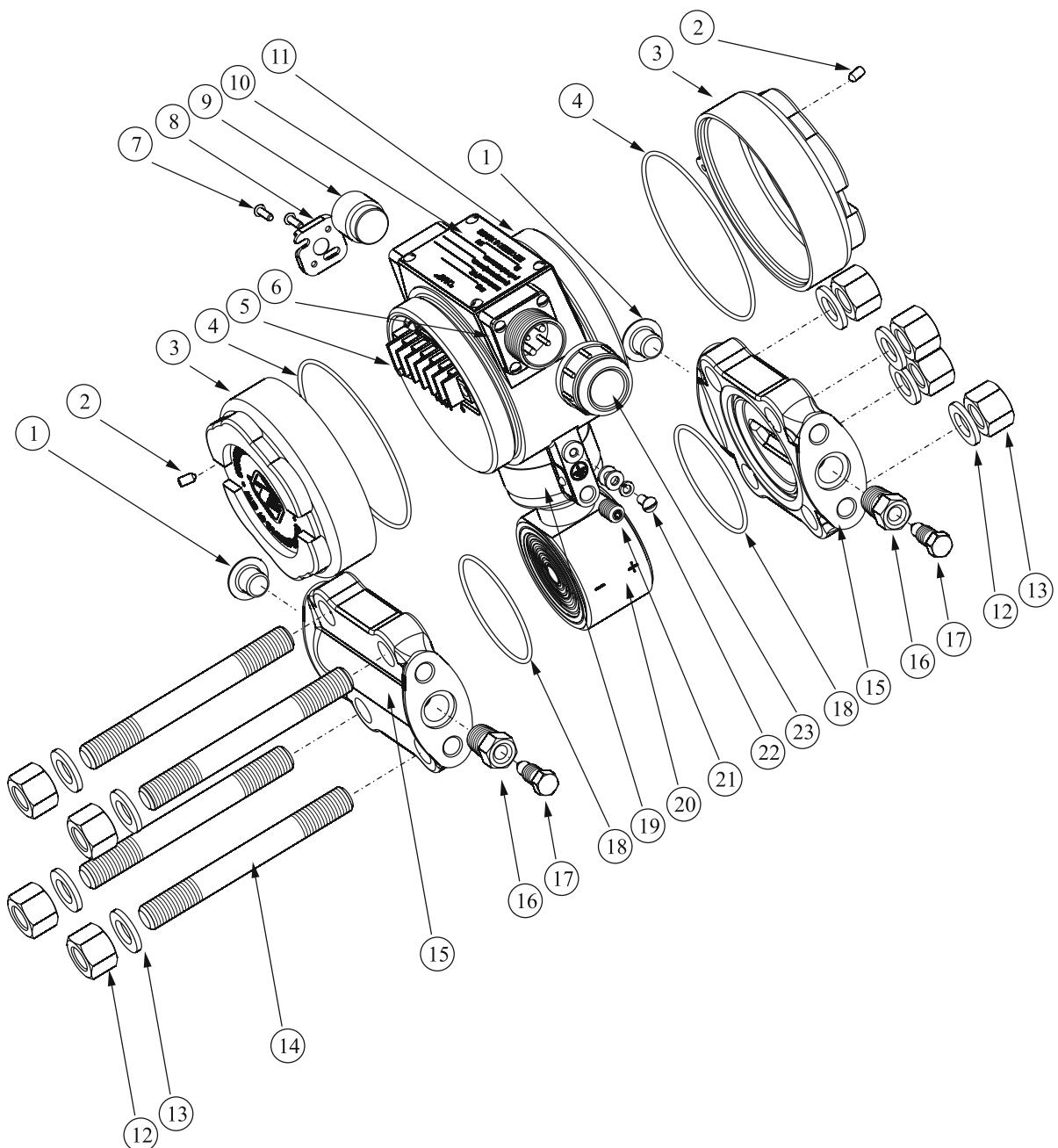
Transmitter with cable entry



Transmitter with electrical connector

Two-Wire Loop Diagram (4-20 mA)

Typical design of differential pressure transmitter



1	Cap for process connection port	13	Process ange gaskets
2	Fixing screw for enclosure cap	14	Process ange screws
3	Enclosure cap	15	Process ange
4	Electronic module O-Ring	16	Sealing screw
5	Terminal connectors	17	Drain / vent valve
6	Electrical connector (optional)	18	Process ange O-Ring
7	Zero screw cover bolts	19	Belt nameplate
8	Zero screw cover	20	Sensor module
9	Blank conduit	21	Fixing screw for housing
10	Upper nameplate	22	Grounding hole with bolt, gaskets andasher
11	Electronics housing	23	Electrical connector cap
12	Process ange nuts		



Ordering information

For better quotation processing please follow the specified options order. Separate options with “-“.

Safir	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
-------	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----

1	Explosion protection type (if required) Intrinsically Safe Explosionproof	IS EP
2	Model number	2XXX
3	Nuclear service transmitter (optional): Basic design Special design	N Ns
4	Extra burn-in 360 h	XB
5	Wetted parts materials code See Table 15 Attn: check the availability for particular model number	02, 03, 04, 11, 12
6	Electronic module housing made of stainless steel (by default – aluminium alloy)	SH
7	Ambient conditions code temp. (+5...+50) °C, humidity* 95±3 % at 35 °C temp. (+5...+80) °C, humidity* 95±3 % at 35 °C temp. (-30...+50) °C, humidity* 95±3 % at 35 °C temp. (-40...+50) °C, humidity* 95±3 % at 35 °C temp. (-5...+80) °C, humidity** 100 % at 35 °C * condensation not permissible ** condensation permissible	UHL3.1*(+5..+50) UHL3.1*(+5..+80) U2*(-30..+50) U2*(-40..+50) T3**(-5..+80)
8	Reference accuracy code (see p. 6)	0.25, 0.5
9	Pressure ranges with units (see table on p. 5 with notes) *) Mpa, kgs/m ² , bar, mbar	XXX kPa *
10	Maximum allowable static pressure in MPa (for models 24xx и 25xx, see p. 7)	XX MPa
11	Output signal code 0...5 mA 5...0 mA 4...20 mA 20...4 mA	05 50 42 24
12	Mounting kit code (optional)	NXX
13	Nominal diameter DN (for models 25xx) DN 50 DN 65 DN 80	50 65 80
14	Electrical connector (if required)	C
15	Maximum and minimum limits during turndown (if required)	(XXX; XXX)
16	when ordering transmitters 20x0, 21xx, 2230, 2240, 2330...2350, 2xx1 with connecting to process thread, other than M20x1.5: - with inch pipe thread G1/2» - with conical inch thread K1/2» (Other thread types available upon request)	G1/2 K1/2
17	Additional options are possible (transmitter with cable cut, additional mounting parts, custom parts)	upon request

Wetted parts materials

Code	Diaphragm Material	Wetted parts		O-Ring/ gasket material	Model numbers
		Material	Marking		
02	Stainless steel 12H18N10T	Stainless steel 12X18H10T	15	NBR or Fluoroelastomer SKF-26NM	All except 2151, 2161, 2171, 2351, 2x10, 2x01
	Alloy 36NHTU				2x10, 2x01
03	Stainless steel 12X18H10T	Stainless steel 12X18H10T	15	Fluoropolymer F4	2430, 2440, 2450, 24x4, 2x15, 2x20, 25x0
04	Hastelloy C-276				All except 2xx1, 2x10, 2x15, 25x0
11	Titanium alloy	Stainless steel 12X18H10T	15	–	2151, 2161, 2171, 2351
12	Titanium alloy	Titanium alloy	62	–	2151, 2161, 2171, 2351

Notes:

1. Stainless steel 12H18N10T in accordance with GOST 5632-72 (C < 0.12 %, Cr 17 -19 %, Ni 9 – 11 %Ti, Fe), equivalent to AISI 316L or AISI 304L.
2. Alloy 36NHTU in accordance with GOST 10994-74 (Ni 35-37 %, Cr 11.5-13 %, Ti 2.7-3.2 %, Al 0.9 – 1.2 %, Fe 43.6 – 48.8 %, Si, Mn), equivalent to Invar 36.
3. Hastelloy in accordance with EN 2.4819.
4. Titanium alloy VT9 in accordance with GOST 19807-91 (Ni, Al 5.8 – 7.0 %, Mo 2.8 – 3.8 %, Zr 1.0 – 2.0 %, Si 0.2 – 0.35 %, Fe 0.25 %).
5. Fluoropolymer F4 (PTFE) in accordance with GOST 10007-72.

Weights

Model numbers	Electron.housing of aluminum alloy Weight, kg, less than	Electron.housing of stainless steel Weight, kg, less than
2030, 2130, 2230, 2330	1.9	3.6
2040, 2050	1.7	3.4
2140, 2150, 2160, 2170, 2240, 2340, 2350	1.8	3.5
2172	2.3	4.0
2151, 2161, 2171, 2351	1.6	3.3
2110, 2210, 2310	5.4	7.1
2120, 2220, 2320	4.1	5.8
2101, 2201, 2301	4.3	6.0
2401	8.8	10.5
2410	6.2	7.9
2420, 2430, 2434, 2440, 2444, 2450, 2454, 2460, 2464	4.4	6.1
2520, 2530, 2540, 2550 with DN 50	8.0	9.7
2520, 2530, 2540, 2550 with DN 80	11.0	12.7
2536	3.0 up to 5.0 *	4.7 up to 6.7 *
2537, 2547	4.7 up to 8.0 *	6.4 up to 9.7 *

* Depends on the length of submersible part

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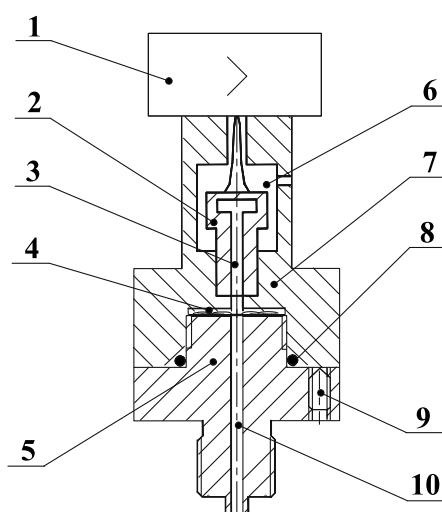


Model numbers

2030, 2040, 2050
2130, 2140, 2150, 2160, 2170
2230, 2240
2330, 2340, 2350

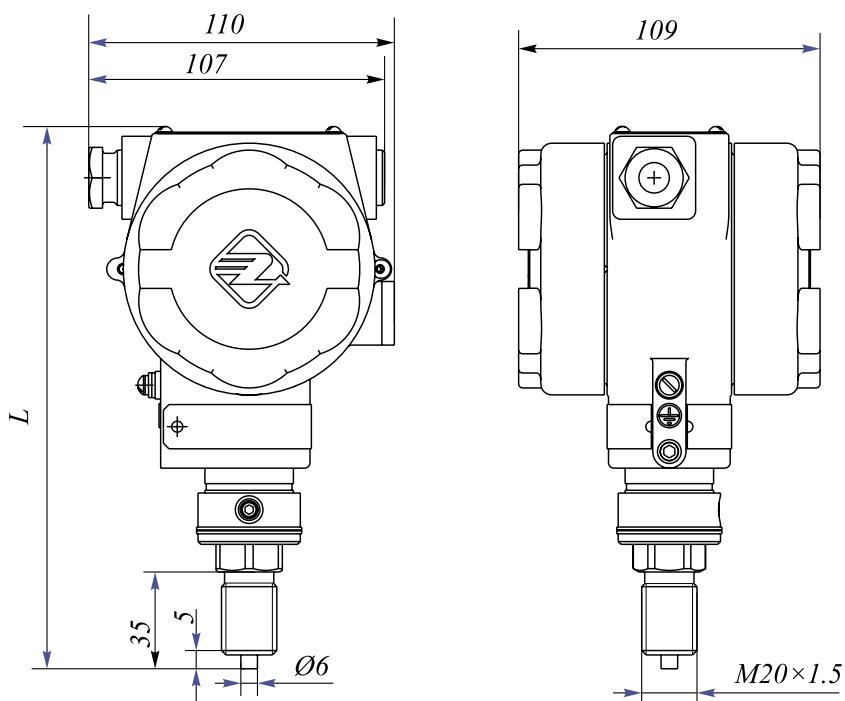
Pressure type	Model numbers	Pressure ranges				Min. Up. Limit, kPa	Max. Upper Limit, kPa
		from		to			
Absolute	2030	0...4	kPa	0...63	kPa	4	63
	2040	0...25	kPa	0...400	kPa	25	400
	2050	0...100	kPa	0...1.6	MPa	100	1 600
Gauge	2130	0...4	kPa	0...63	kPa	4	63
	2140	0...25	kPa	0...400	kPa	25	400
	2150	0...100	kPa	0...1.6	MPa	100	1 600
	2160	0...1.6	MPa	0...25	MPa	1 600	25 000
	2170	0...4	MPa	0...63	MPa	4 000	63 000
Gauge (neg.)	2230	0...-4	kPa	0...-63	kPa	4	-63
	2240	0...-25	kPa	0...-100	kPa	25	-100
Gauge (neg./pos.)	2330	-2...2	kPa	-31.5...31.5	kPa	4	31.5
	2340	-12.5...12.5	kPa	-100...300	kPa	25	300
	2350	-100...60	kPa	-0.1...1.5	MPa	160	1 500

Measuring unit diagram



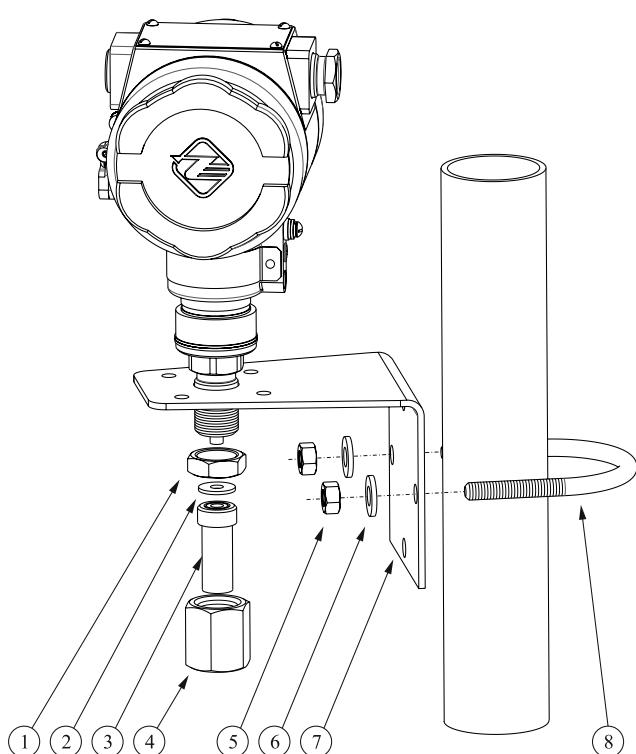
1. Electronic module
2. Diaphragm type silicon sensor
3. Inner cavity with filling liquid
4. Diaphragm seal
5. Process nipple
6. Cavity (vacuum for absolute pressure)
7. Measuring unit body
8. Gasket
9. Stop screw
10. Pressure port

Dimensions



Model number	$L(\max)$, mm
2030, 2040, 2050	220
2130, 2140, 2150, 2160, 2170, 2230, 2240, 2330, 2340, 2350	214

Typical mounting



1. Nut M20
2. Copper Gasket
3. Nipple Type 1
4. Connection Nut
5. Nut M8
6. Washer 8
7. Mounting Bracket Type 3
8. U-bolt

Dimensions in mm

flow level pressure



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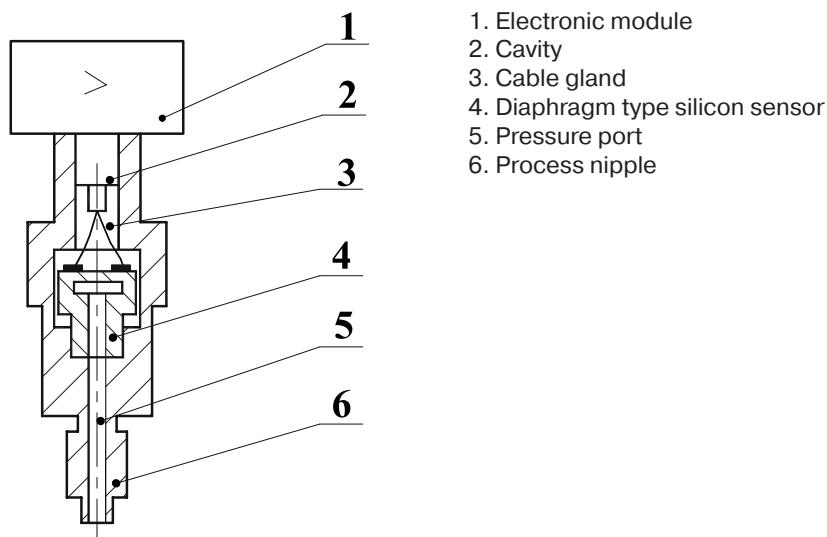


Model numbers

2151, 2161, 2171
2351

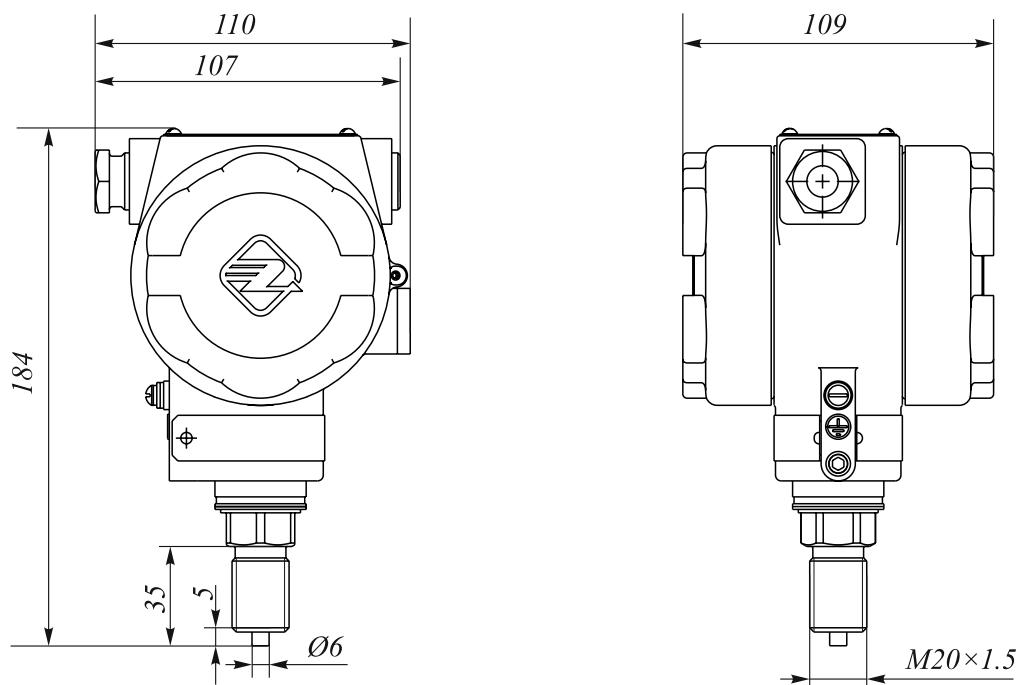
Pressure type	Model numbers	Pressure ranges		Min. Up. Limit, kPa	Max. Upper Limit, kPa		
		from	to				
Gauge	2151	0...100	kPa	0...1.6	MPa	100	1 600
	2161	0...1.6	MPa	0...25	MPa	1 600	25 000
	2171	0...6.3	MPa	0...100	MPa	6 300	100 000
Gauge (neg./pos.)	2351	-100...60	kPa	-0.1...1.5	MPa	160	1 500

Measuring unit diagram

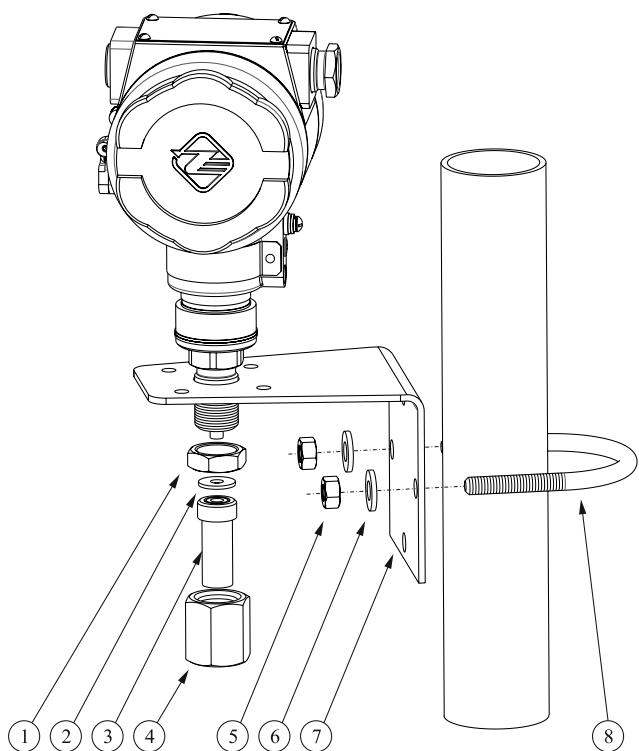


1. Electronic module
2. Cavity
3. Cable gland
4. Diaphragm type silicon sensor
5. Pressure port
6. Process nipple

Dimensions



Typical mounting



1. Nut M20
2. Copper Gasket
3. Nipple Type 1
4. Connection Nut
5. Nut M8
6. Washer 8
7. Mounting Bracket Type 3
8. U-bolt

Dimensions in mm

flow level pressure



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Safir analog

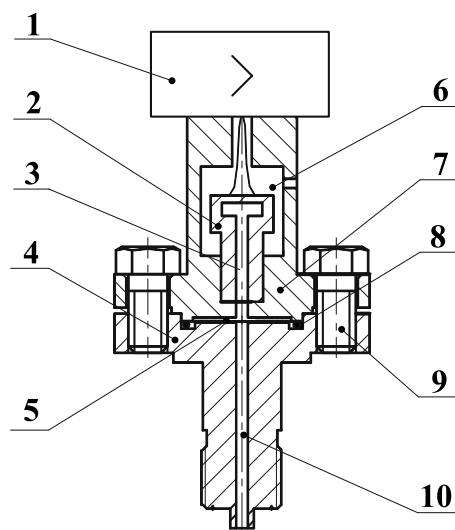


Номер модели

2172

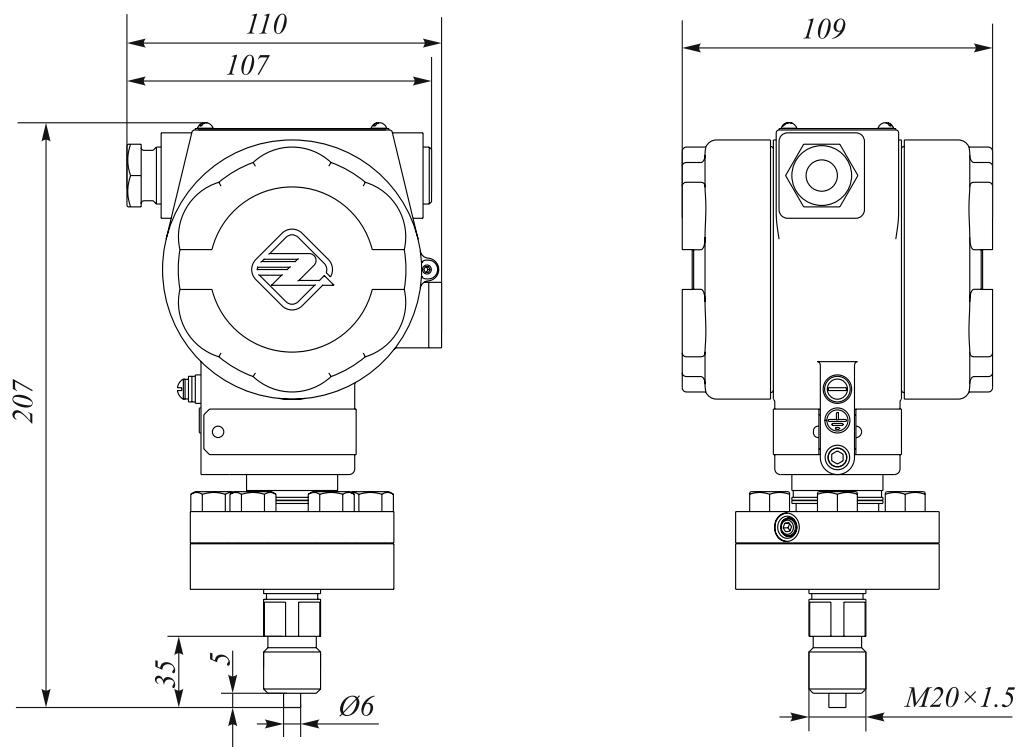
Pressure type	Model numbers	Pressure ranges		Min. Limit, MPa	Upper Limit, MPa	Max. Up. Limit, Mpa
		from	to			
Gauge	5172	0...6.3	MPa	0...100	MPa	6.3

Measuring unit diagram



1. Electronic module
2. Diaphragm type sensor (silicon-on-sapphire)
3. Inner cavity with filling liquid
4. Flange
5. Diaphragm seal
6. Cavity (atmospheric pressure)
7. Body
8. Gasket
9. Bolts
10. Pressure port

Dimensions



Dimensions in mm

• pressure level flow

21



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Safir analog



Model numbers

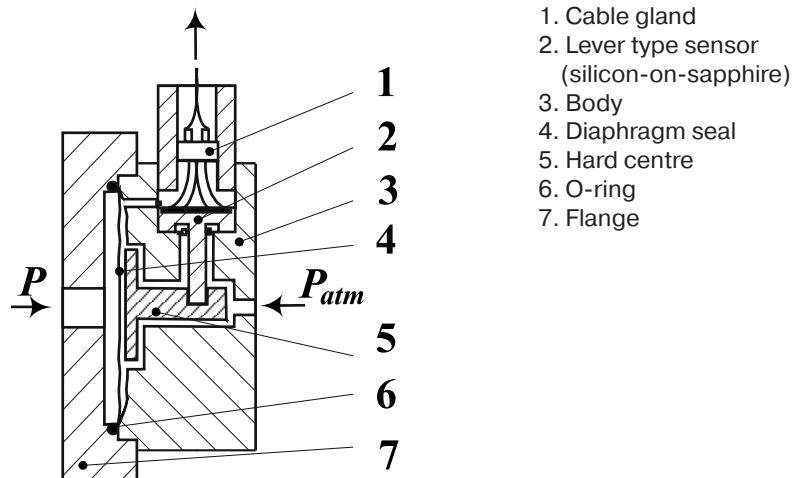
2101

2201

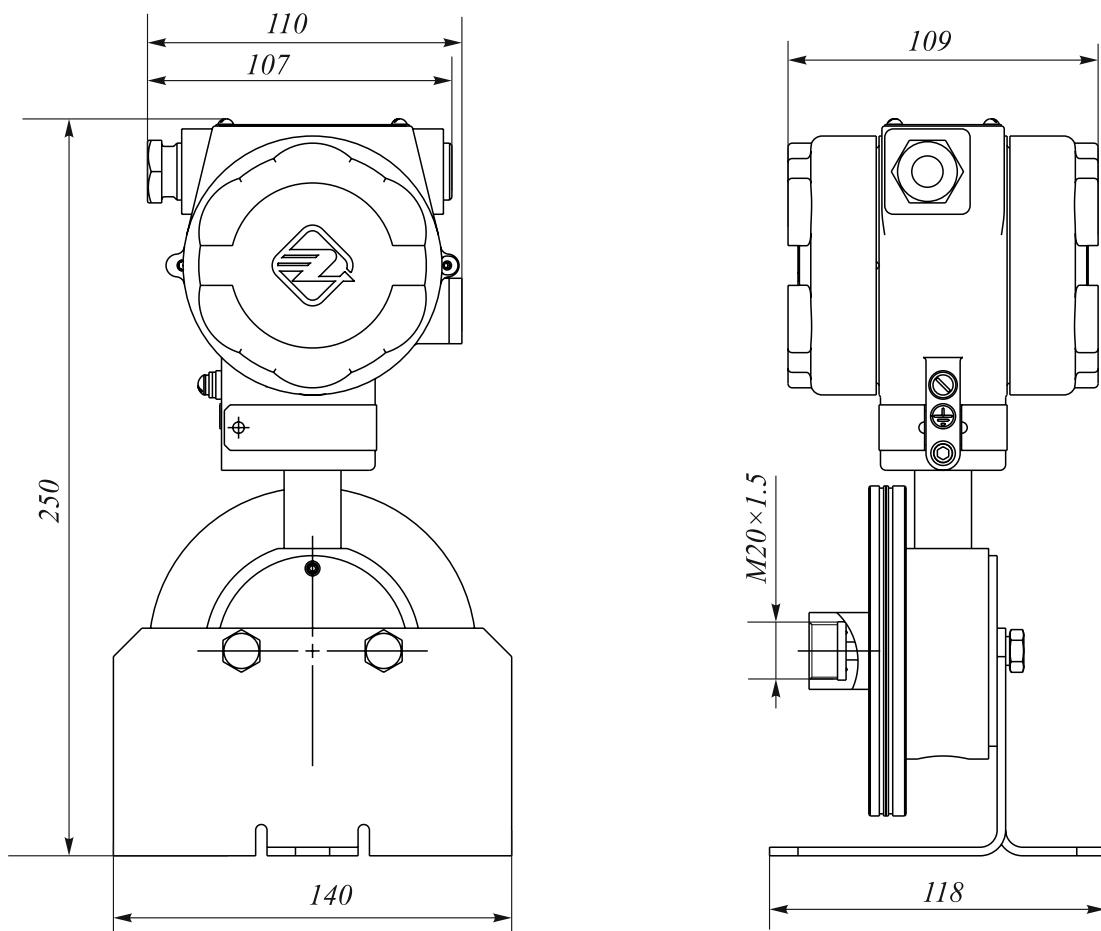
2301

Pressure type	Model numbers	Pressure ranges				Min. Up. Limit, kPa	Max. Upper Limit, kPa
		from	to				
Gauge	2101	0...0.063	kPa	0...0.4	kPa	0.063	0.4
Gauge (neg.)	2201	0...-0.063	kPa	0...-0.4	kPa	0.063	-0.4
Gauge (neg./pos.)	2301	-0.0315...0.0315	kPa	-0.2...0.2	kPa	0.063	0.2

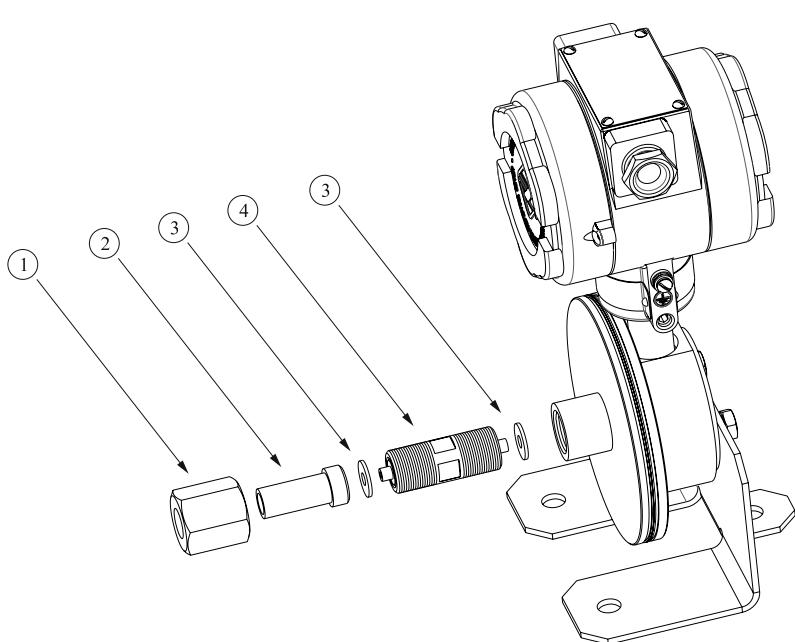
Measuring unit diagram



Dimensions



Typical mounting



- 1. Connection Nut
- 2. Nipple Type 1
- 3. Gasket
- 4. Nipple M20x1.5

Dimensions in mm

flow level pressure



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Safir analog

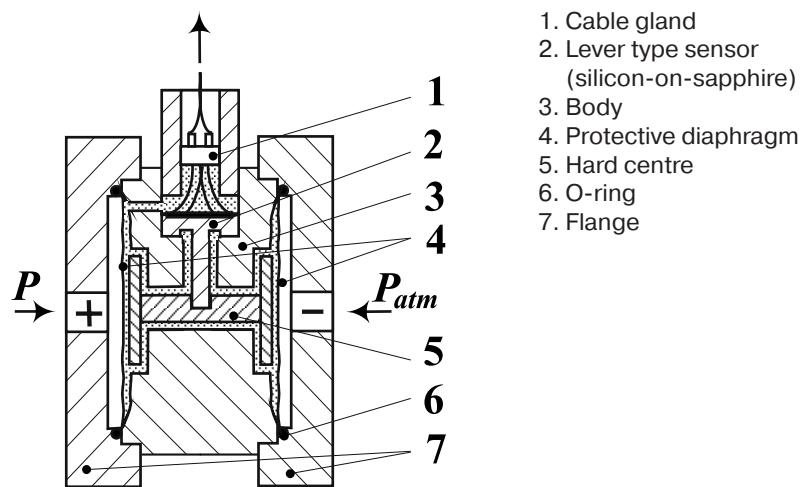


Model numbers

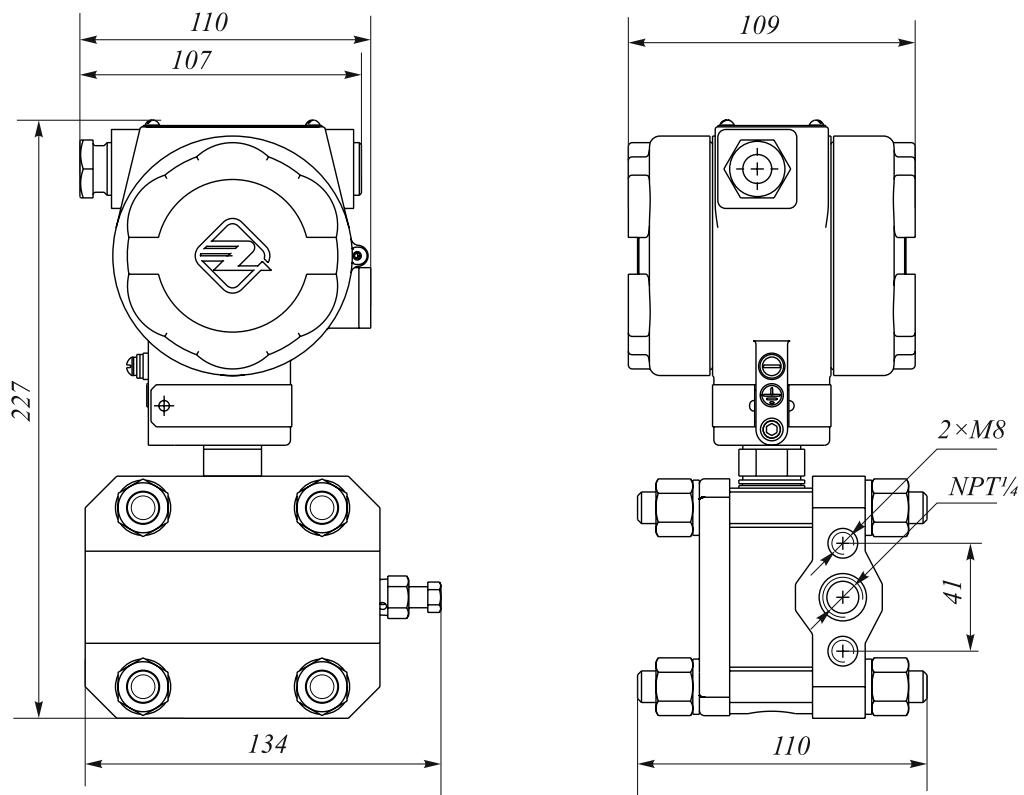
2110
2210
2310

Pressure type	Model numbers	Pressure ranges				Min Up. Limit, kPa	Max. Up. Limit, kPa
		from	to				
Gauge	2110	0...0.25	kPa	0...4	kPa	0.25	4
Gauge (neg.)	2210	0...-0.25	kPa	0...-4	kPa	0.25	-4
Gauge (neg./pos.)	2310	-0.0125...0.0125	kPa	-2...2	kPa	0.25	2

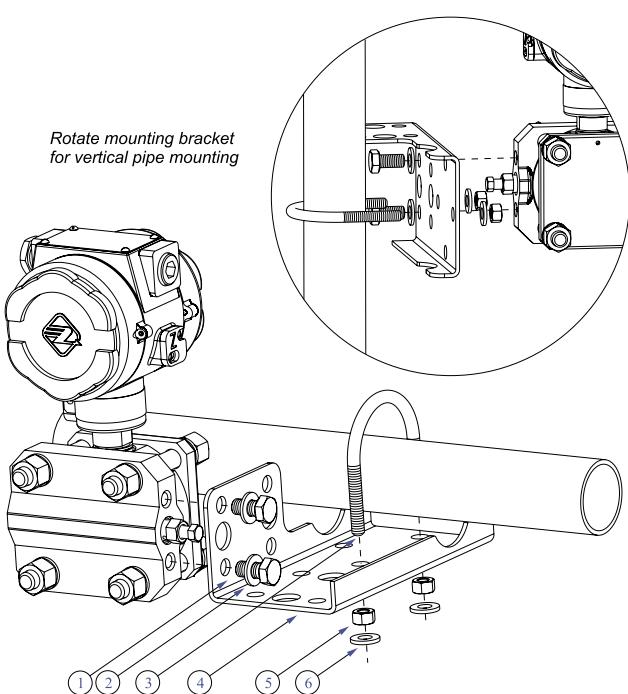
Measuring unit diagram



Dimensions



Typical mounting



1. Bolt M10x14
2. Washer 10
3. U-bolt
4. Mounting Bracket Type 1
5. Nut M8
6. Washer 8

Dimensions in mm

flow level pressure



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Safir analog

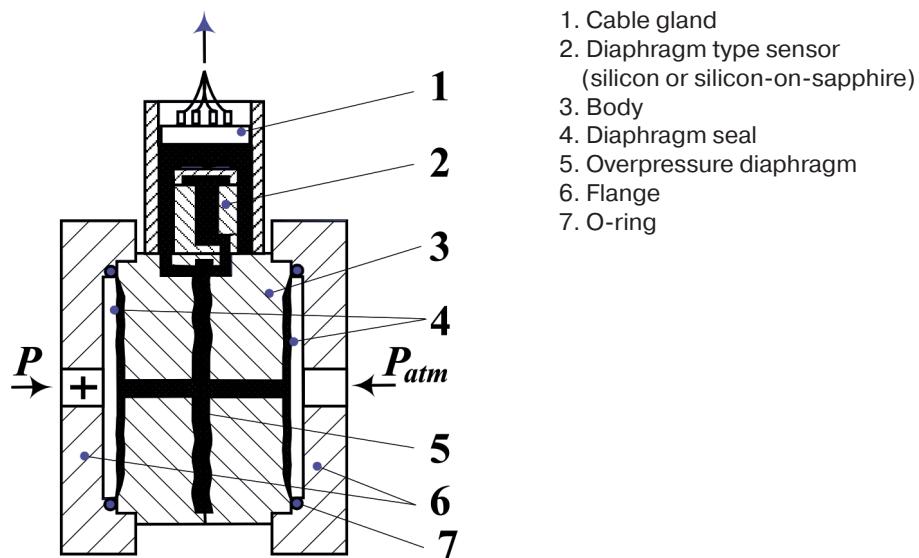


Model numbers

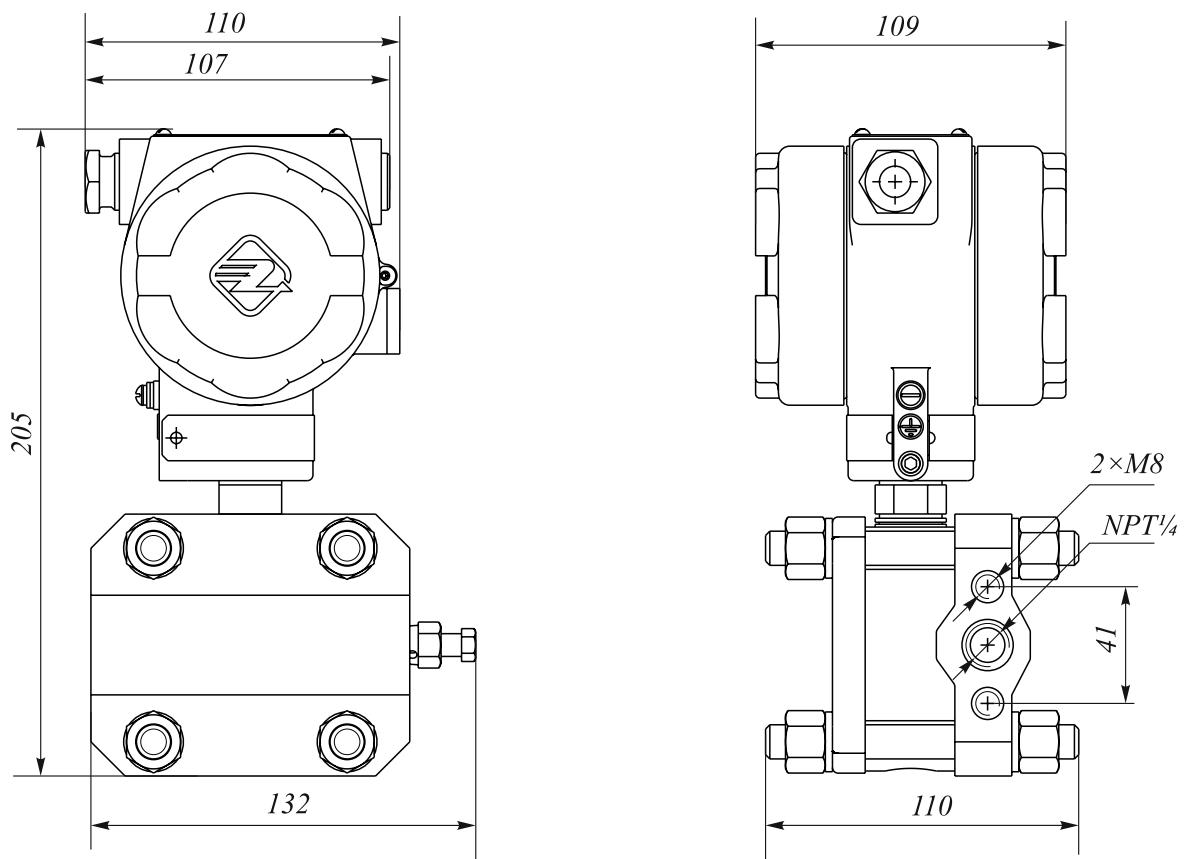
2120
2220
2320

Pressure type	Model numbers	Pressure ranges			Min Up. Limit, kPa	Max Up. Limit, kPa	
		from	to				
Gauge	2120	0...1.6	kPa	0...25	kPa	1.6	25
Gauge (neg.)	2220	0...1.6	kPa	0...25	kPa	1.6	-25
Gauge (neg./pos.)	2320	-0.8...0.8	kPa	-12.5...12.5	kPa	1.6	12.5

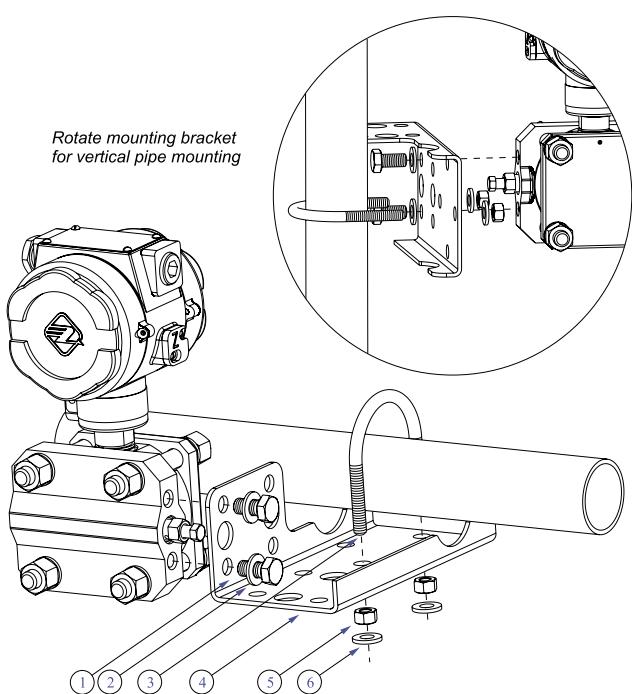
Measuring unit diagram



Dimensions



Typical mounting



1. Bolt M10x14
2. Washer 10
3. U-bolt
4. Mounting Bracket Type 1
5. Nut M8
6. Washer

Dimensions in mm

flow level pressure



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Safir analog

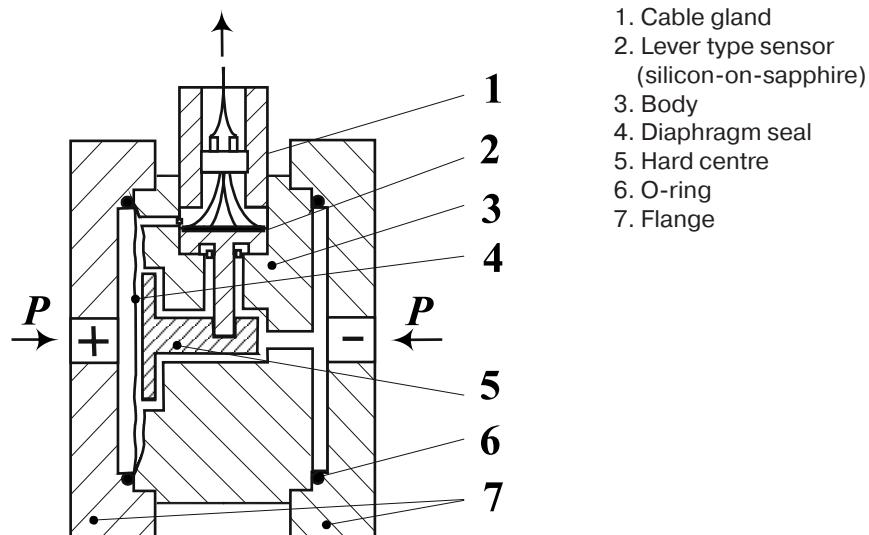


Model numbers

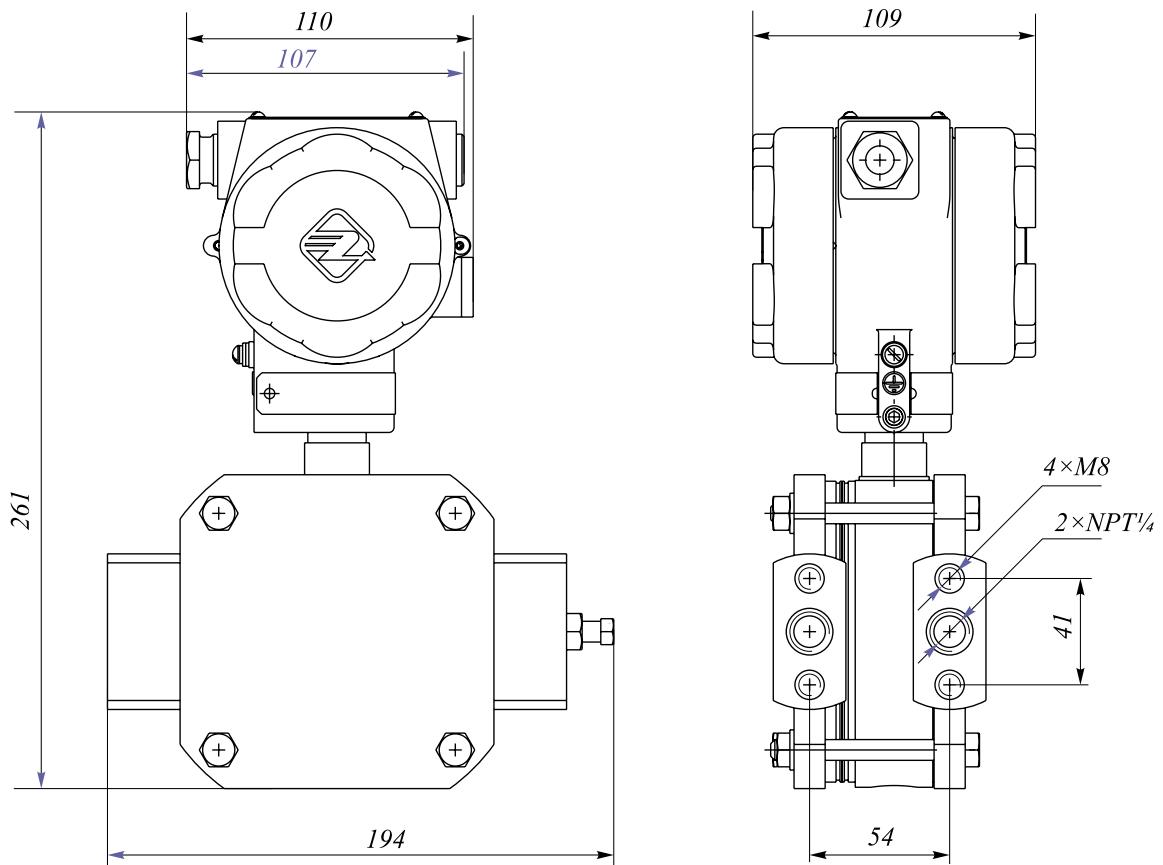
2401

Pressure type	Model numbers	Pressure ranges		Min. Up.Lim., kPa	Max. Up.Lim., kPa	Static pressure, MPa								
		from	to			0.16	0.25	1.6	2.5	4	10	25	32	40
Differential	2401	0...0.1	kPa	0...1	kPa	0.1	1	+	+					

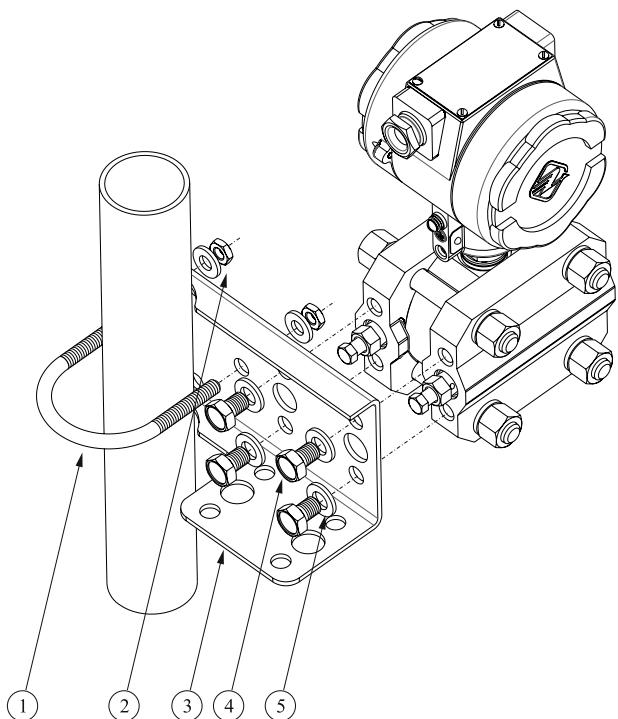
Measuring unit diagram



Dimensions



Typical mounting



1. U-bolt
2. Nut M8 with Washer 8
3. Mounting Bracket Type 1
4. Bolt M10x14
5. Washer 10

Dimensions in mm



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Safir analog

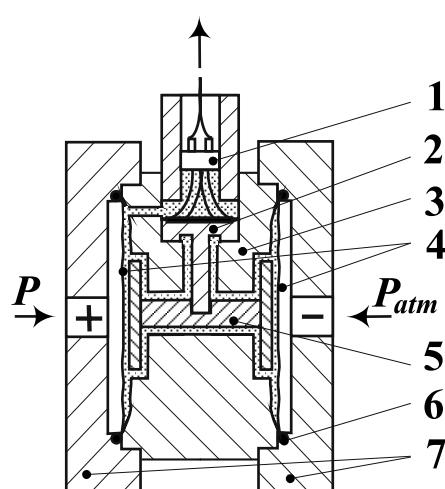


Model numbers

2410

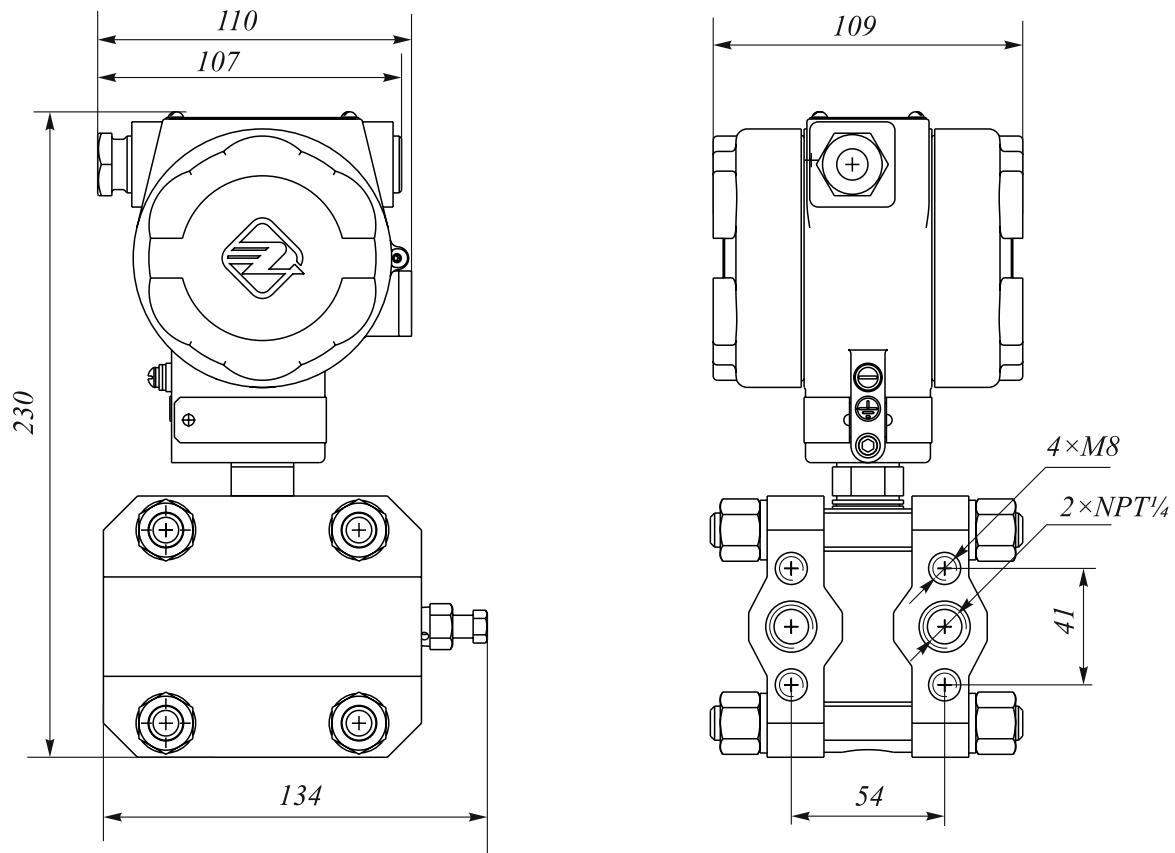
Вид давления	Model numbers	Pressure ranges		Min. Up.Lim .. kPa	Max. Up.Lim .. kPa	Static pressure, MPa							
		from	to			0.16	0.25	1.6	2.5	4	10	25	32
Differential	2410	0...0.25	kPa	0...4	kPa	0.25	4	+ +	+ +				

Measuring unit diagram

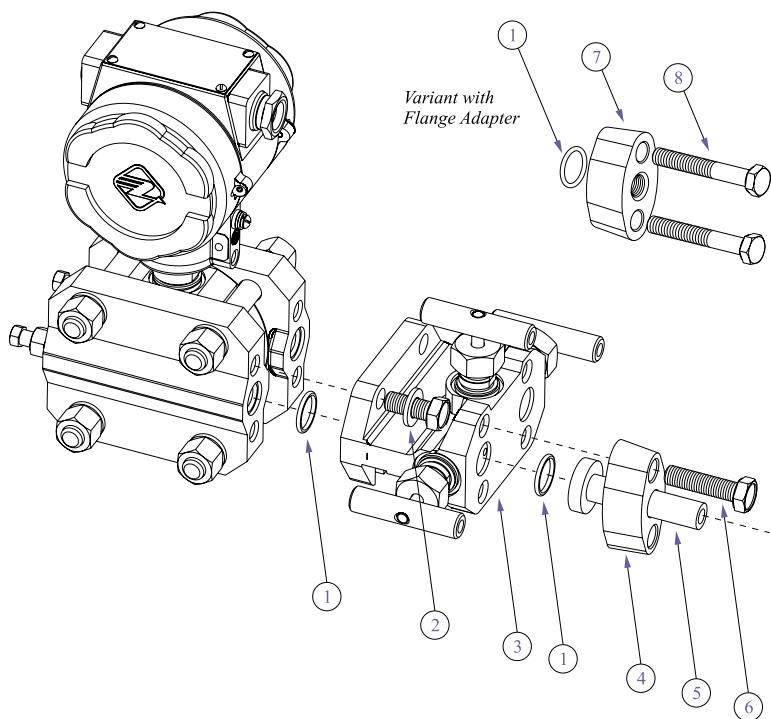


1. Cable gland
2. Lever type sensor (silicon-on-sapphire)
3. Body
4. Diaphragm seal
5. Hard centre
6. O-ring
7. Flange

Dimensions



Typical mounting



- Note:**
Multiple parts are shown by sample.

Dimensions in mm

flow level pressure



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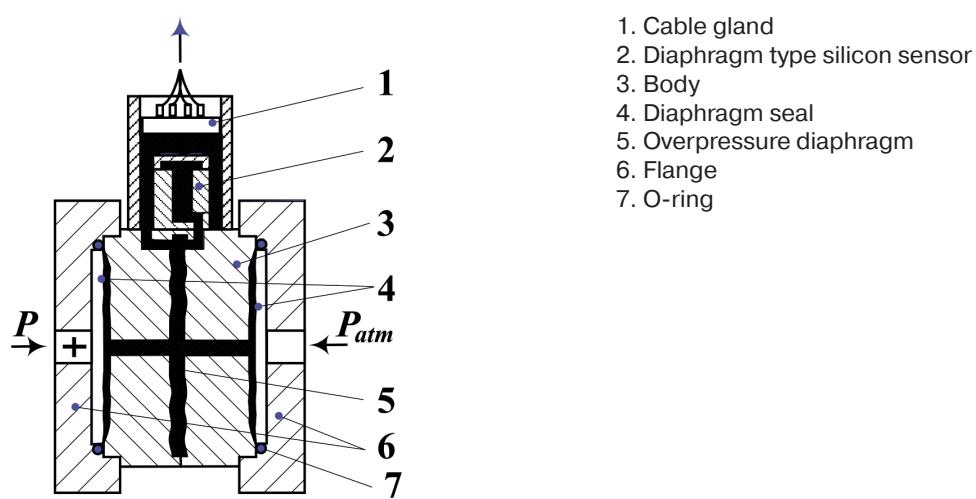


Model numbers

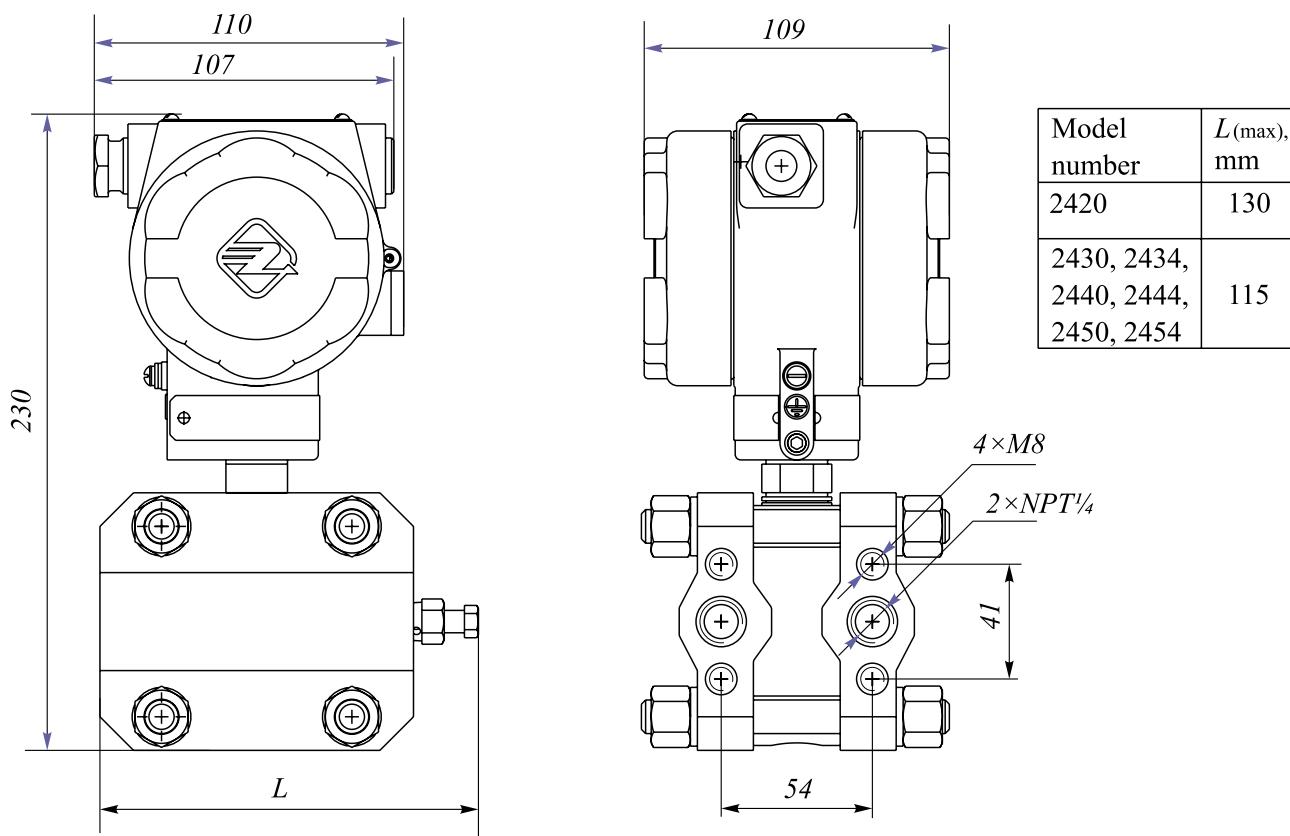
2420,
2430, 2434,
2440, 2444,
2450, 2454

Вид давления	Model numbers	Pressure ranges		Min. Up.Lim., kPa	Max. Up.Lim., kPa	Static pressure, MPa							
		from	to			0.16	0.25	1.6	2.5	4	10	25	32
Differential	2420	0...1.6 kPa	0...25 kPa	1.6	25					+	+	+	
	2424	0...1.6 kPa	0...25 kPa	1.6	25							+	+
	2430	0...4 kPa	0...63 kPa	4	63					+	+		
	2434	0...4 kPa	0...63 kPa	4	63							+	+
	2440	0...25 kPa	0...400 kPa	25	400					+	+		
	2444	0...25 kPa	0...400 kPa	25	400							+	+
	2450	0...100 kPa	0...1.6 MPa	100	1 600					+	+		
	2454	0...100 kPa	0...1.6 MPa	100	1 600							+	+

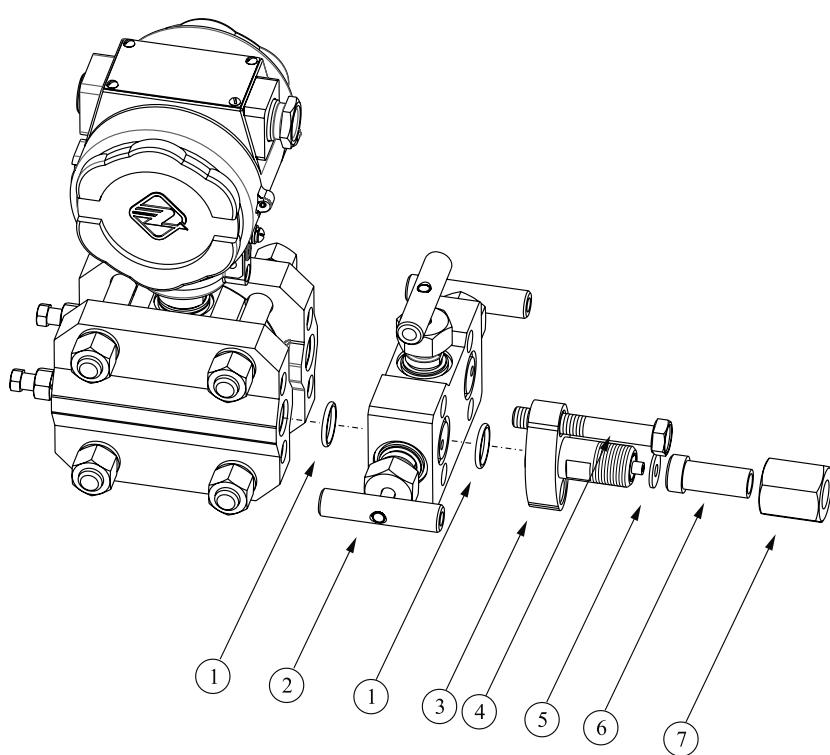
Measuring unit diagram



Dimensions



Typical mounting



1. Gasket Fluorine Rubber
2. 3-valve Manifold Coplanar
3. Flange with Nipple
4. Bolt M10x55
5. Copper Gasket
6. Nipple Type 2
7. Connection Nut

Note:
Multiple parts are shown by sample.

Dimensions in mm

flow level pressure



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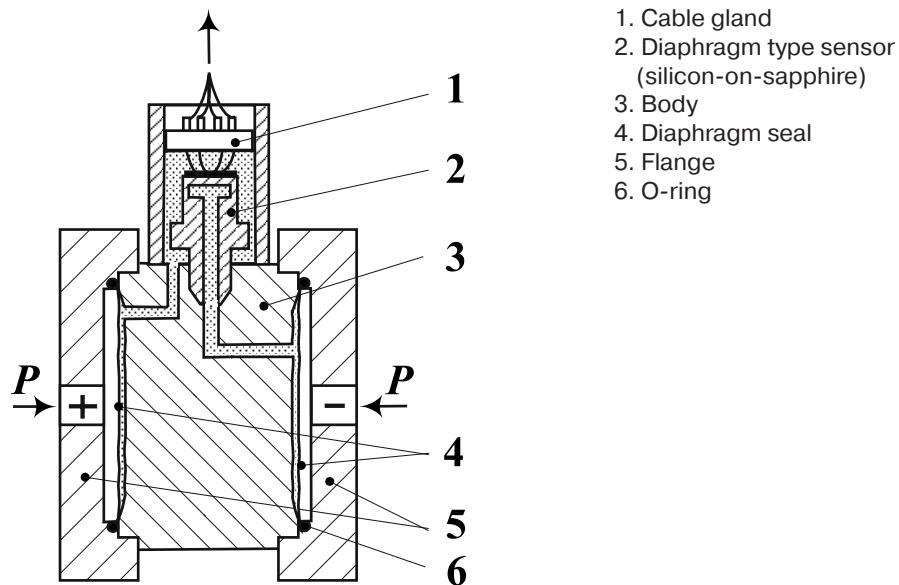


Model numbers

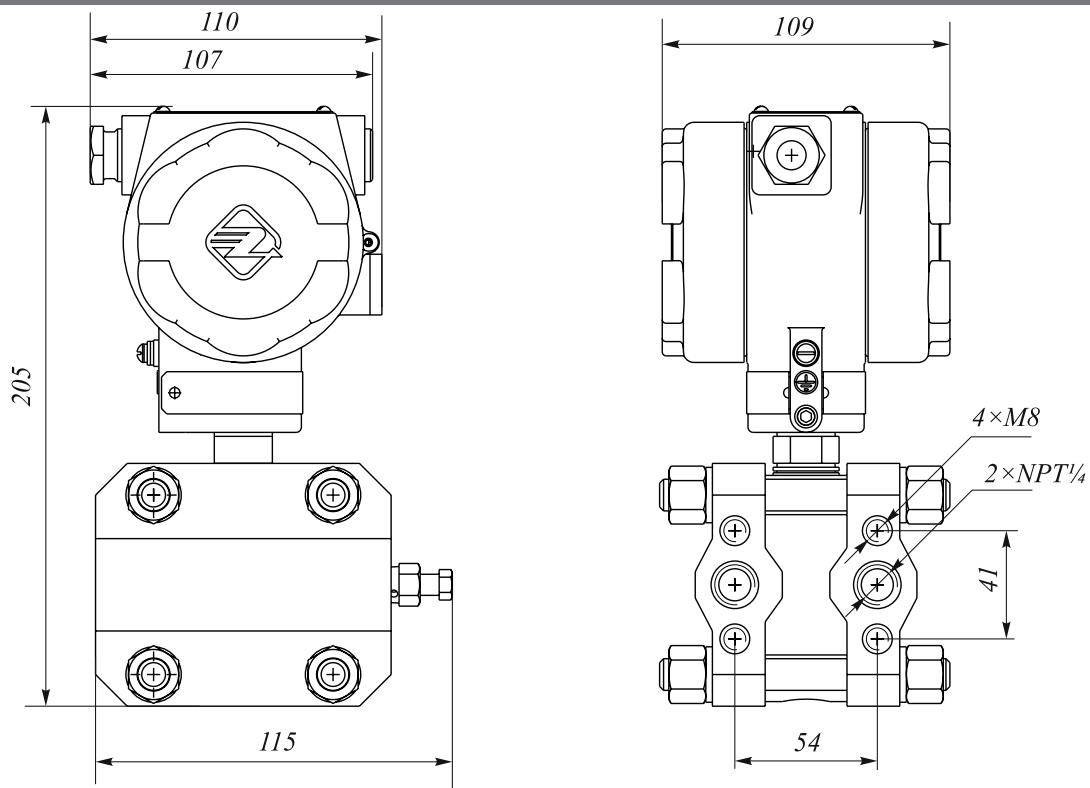
2460, 2464

Pressure type	Model numbers	Pressure ranges		Min. Up.Lim., kPa	Max. Up.Lim., kPa	Static pressure, MPa								
		from	to			0.16	0.25	1.6	2.5	4	10	25	32	40
Differential	2460	0...1	MPa	0...16	MPa	1 000	16 000					+	+	
Differential	2464	0...1	MPa	0...16	MPa	1 000	16 000					+	+	

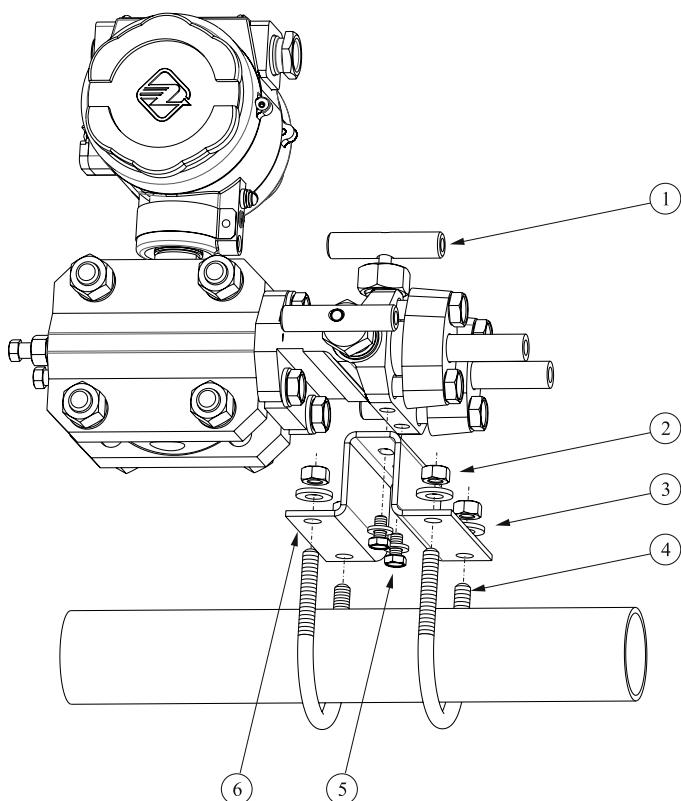
Measuring unit diagram



Dimensions



Typical mounting



1. 3-Valve H-type Manifold (assembled)
2. Nut M8
3. Washer 8
4. U-bolt
5. Bolt M8 with Washer 8
6. Mounting Bracket Type 2

Dimensions in mm

flow level pressure



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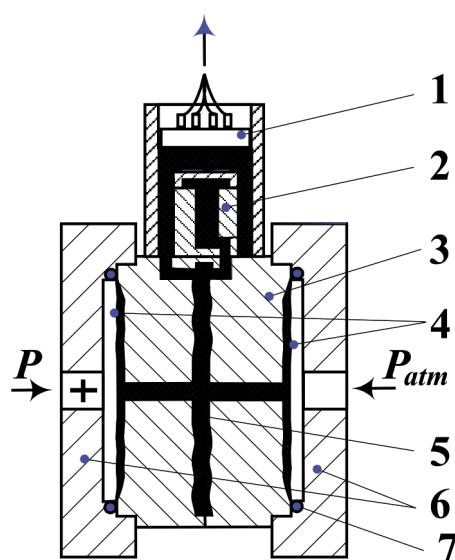


Model numbers

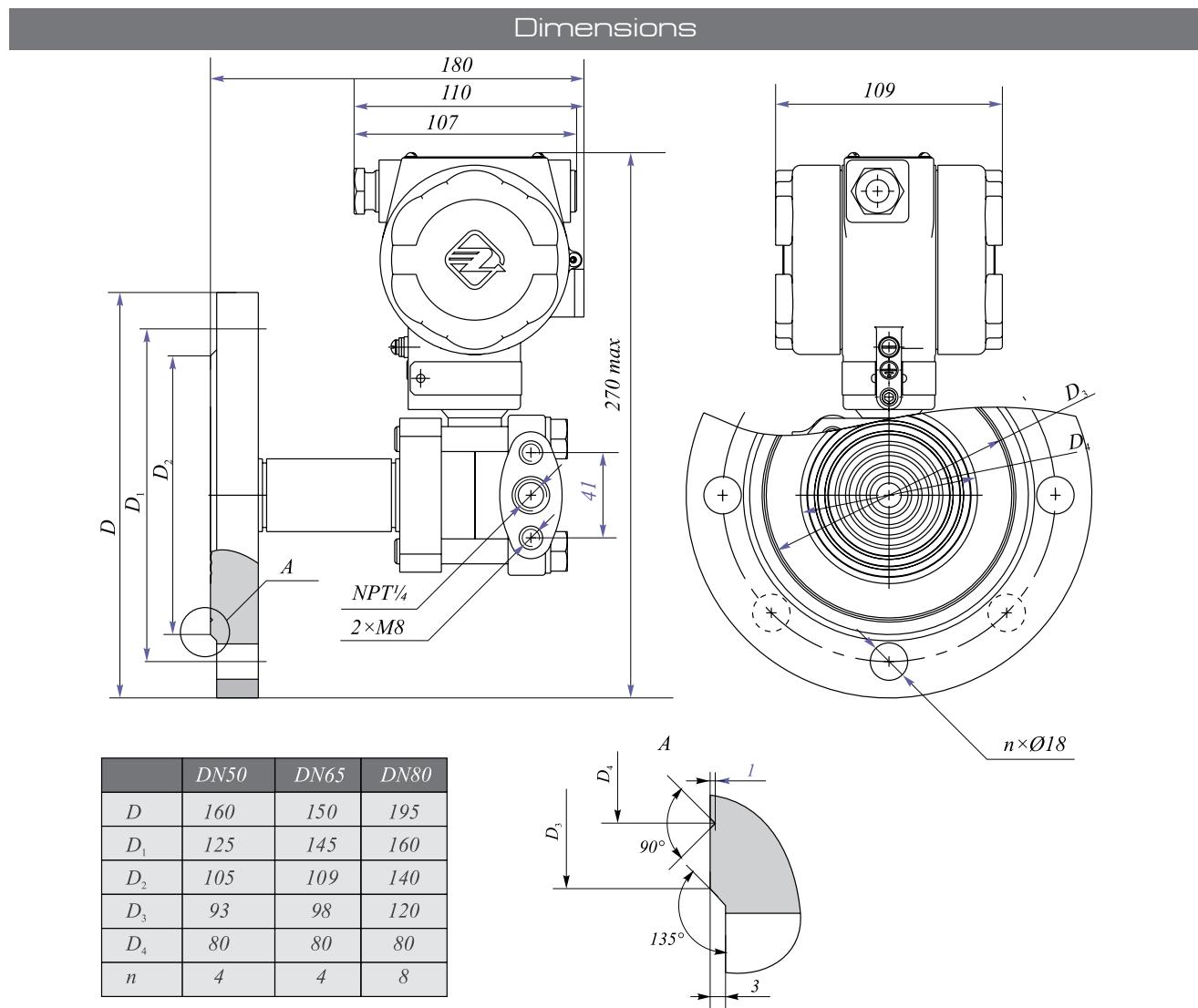
2520, 2530, 2540

Вид давления	Model numbers	Pressure ranges		Min. Up.Lim., kPa	Max. Up.Lim., kPa	Static pressure, MPa								
		from	to			0.16	0.25	1.6	2.5	4	10	25	32	40
Hydrostatic	2520	0...1.6 kPa	0...25 kPa	1.6	25			+	+	+				
	2530	0...4 kPa	0...63 kPa	4	63			+	+	+				
	2540	0...25 kPa	0...400 kPa	25	400			+	+	+				

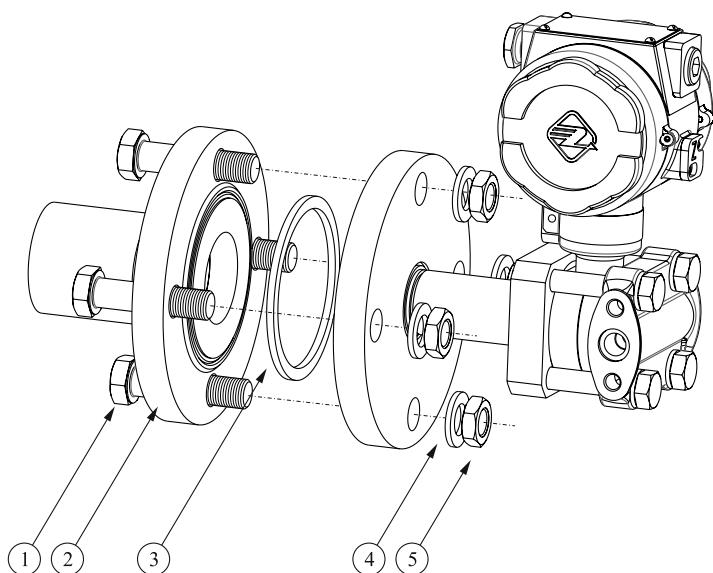
Measuring unit diagram



1. Cable gland
2. Diaphragm type silicon sensor
3. Body
4. Diaphragm seal
5. Overpressure diaphragm
6. Flange
7. O-ring



Typical mounting



1. Bolt M16 (recommended)
2. Vessel Flange
3. Gasket
4. Washer 16
5. Nut M16

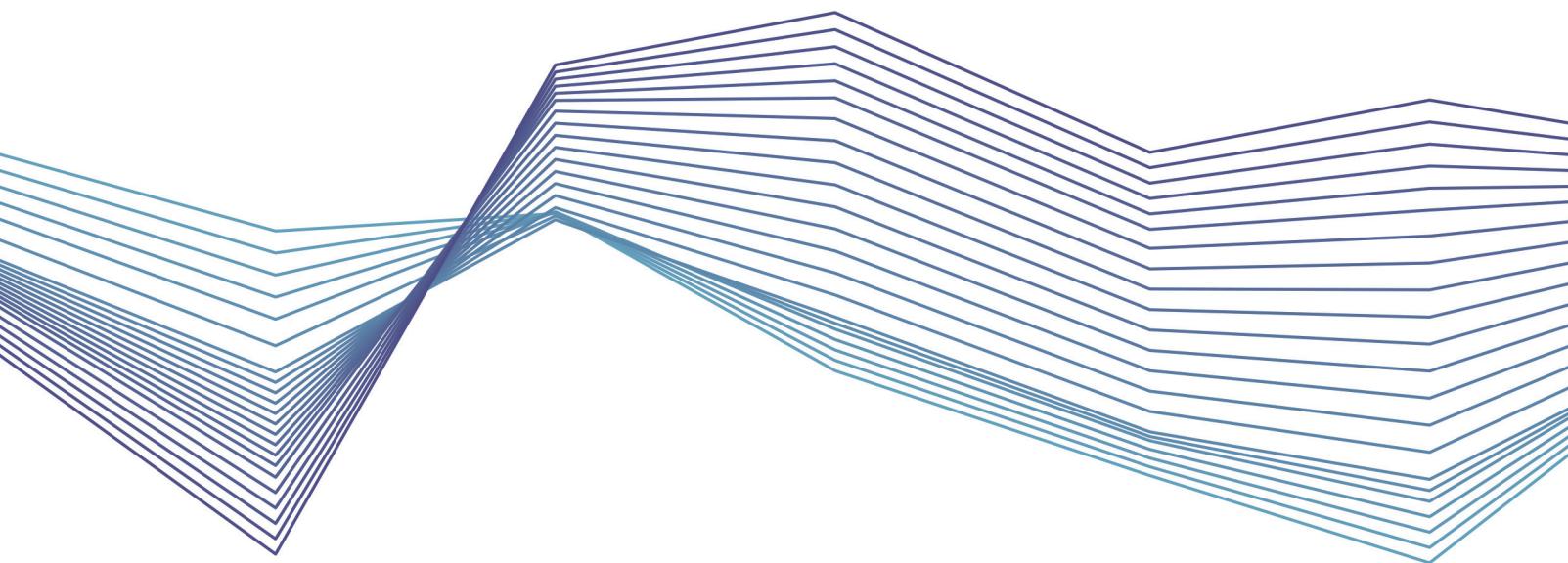
Dimensions in mm

pressure level flow



**Manometr
Kharkiv**

Safir analog



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