

## SF<sub>6</sub> GAS DENSITY MONITOR MODEL : P590 SERIES

# WISE®

### SERVICE INTENDED

Gas density monitoring of closed SF<sub>6</sub> tank (for Transformer)

### NOMINAL DIAMETER

100mm

### ACCURACY

±1% at ambient temperature +20°C  
±2.5% at ambient temperature -20°C / +60°C  
and Calibration Pressure as Reference isochore

### SCALE RANGE(MPa, bar)

-0.1~0.1MPa to -0.1~2MPa  
at SF<sub>6</sub> Gas Pressure +20°C

### PERMISSIBLE TEMPERATURE

Ambient : -30°C ~ +70°C  
Storage : -20°C ~ +60°C

### HIGH VOLTAGE TEST

2KV, 50Hz / Wiring Versus Case

### DEGREE OF PROTECTION

IP67



### ELECTRICAL CONNECTION

Cable Box with Pg - gland Pg 13.5  
Connection Cross - Section Max. 2.5mm<sup>2</sup>

## Standard Features

### PRESSURE CONNECTION

Stainless Steel ( 316SS )  
Threaded entry, radial or back

### ELEMENT

Stainless Steel ( 316SS )  
10MPa<C Type Bourdon Tube  
10MPa≥Helical Type Bourdon Tube

### CASE & BEZEL RING

Stainless Steel ( 304SS )  
Bayonet Type

### WINDOW

Safety Glass

### MOVEMENT

Stainless Steel ( 304SS )  
Bimetal Link ( Temperature Compensation )

### DIAL

White Aluminium with Red, Yellow and Green  
Graduations

### POINTER

Aluminium alloy, Black painted

### PROCESS CONNECTION

G1/2" A

### HELIUM LEAK RATE

Tested to confirm leakage rates of less than  
10<sup>-8</sup> mbar • L/sec

# ORDERING INFORMATION

**BASE MODEL**

**P590 : SF<sub>6</sub> GAS DENSITY MONITOR**

**CONTACT**

- 1 : Single Contact
- 2 : Double Contact ( Common Circuit )
- 3 : Double Contact ( Separated Circuit )
- 4 : Triple Contact ( Common Circuit )
- 5 : Triple Contact ( Separated Circuit )

**MOUNTING TYPE (Refer to Mounting type & Dimension)**

- A : Bottom Connection, Direct
- B : Bottom Connection, Case mounting Plate
- G : Lower Back Connection, Direct
- L : Lower back Connection, 4 Hole Bracket

**ACCURACY**

3 : ±1.0% of Full Scale at Ambient Temperature +20°C

**CONNECTION TYPE**

- B : G 1/2" B
- C : G 1/2" A

**UNIT**

- H : bar
- I : MPa

**RANGE**

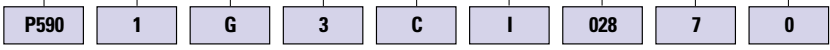
- 027 : -0.1~0.15MPa
- 028 : -0.1~2MPa
- 29 : -0.1~0.3MPa
- 030 : -0.1~0.4MPa
- 031 : -0.1~0.6MPa
- 032 : -0.1~0.9MPa
- 000 : Special Range

**PRESSURE CONNECTION MAT'L & DIALS**

Z : 316SS & 5 Colors

**OPTIONS**

- 0 : None
- 1 : Liquid filled case

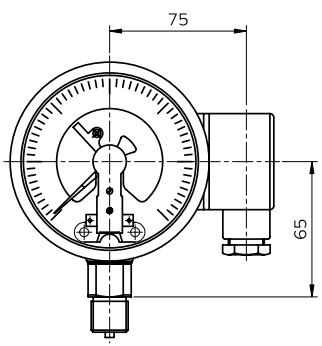


**SAMPLE MODEL NUMBER**

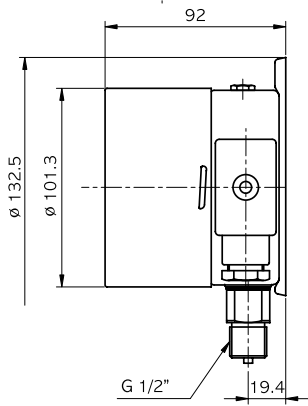
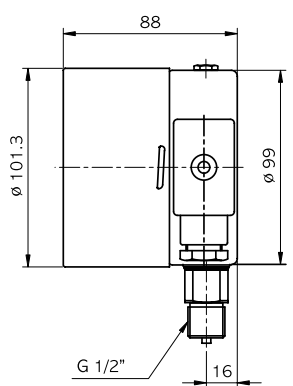
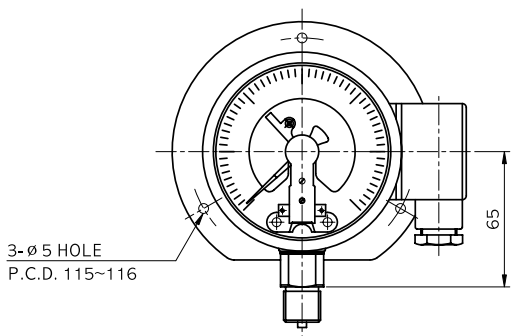
Example : Model P590 Density monitor, Single, low back connection, 1.0 Class G 1/2 A, Mpa, -0.1 ~ 0.2, 316SS & 5 Colors

**P590 : TYPE OF MOUNTING**

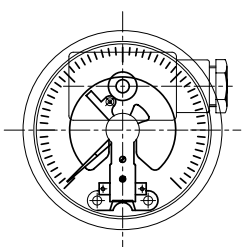
CODE A



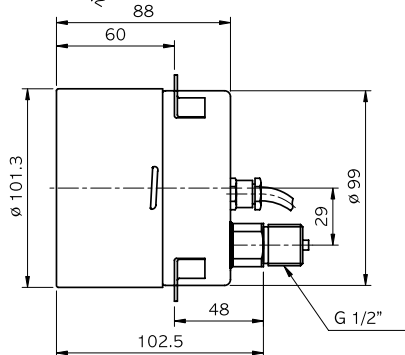
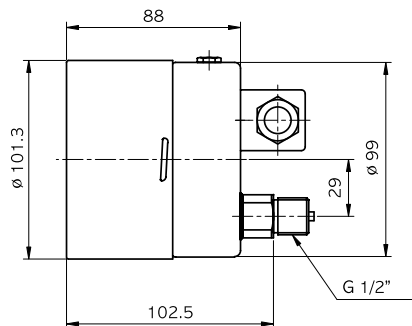
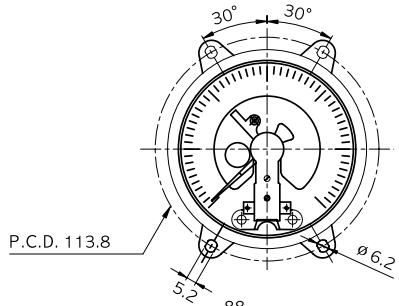
CODE B



CODE G



CODE L



## CONTACT FUNCTION TABLE

CODE	Wiring Scheme	Contact Function			Wiebrock Code No.	
		Ps2	Ps1	Ps3		
<b>Single Contact</b>						
1	Low alarm - Normally close					S/M-2
<b>Double Contact - Common Circuit</b>						
2	1st Low alarm - Normally close 2nd Low alarm - Normally close					S/M-22
<b>Double Contact - Separated Circuit</b>						
3	1st Low alarm - Normally close 2nd Low alarm - Normally close					S/M-S22
<b>Triple Contact - Common Circuit</b>						
4	1st Low alarm - Normally close 2nd Low alarm - Normally close 3rd High alarm - Normally open					S/M-221
<b>Triple Contact - Separated Circuit</b>						
5	1st Low alarm - Normally close 2nd Low alarm - Normally close 3rd High alarm - Normally open					S/M-S221

# SNAP - ACTION CONTACTS

## General

Electromechanical limit switches in pointer type measuring instruments are auxiliary current switches which open or close electrical circuits at set limit values by means of a contact arm which is moved by the actual value pointer.

The snap action contact is a mechanical contact for switching capacities up to 300W 50VA max.

Contact making will be delayed and or advanced in relation to the movement of the actual value pointer.

To closed the circuit, the contact pin of the movable contact arm is attracted in a jump by the permanent magnet fastened to the supporting arm shortly before the set value has been reached.

Due to the retention force of the magnet, snap action contacts are more resistant against shock and vibration.

The switching safety is increased by the increased contact pressure.

When the circuit is opened, the magnet keeps the contact arm in its place until the restoring force of the measuring element exceeds the magnetic force, and the contact opens in a jump.

## Specifications

<b>Maximum contact rating with non-inductive (ohmic) load</b>	Electric contacts type pressure gauge model P590 series	
	dry gauges	liquid filled gauges
<b>Maximum voltage</b>	250V	250V
<b>Current ratings:</b>		
<b>Make ratings</b>	1,0 A	1.0 A
<b>Break ratings</b>	1,0 A	1.0 A
<b>Continuos load</b>	0,6 A	0.6 A
<b>Maximum load</b>	30W 50VA	20W 20VA
<b>Material of contact points</b>	Silver-Nickel Alloy (80% Ag / 20%Ni / 10µm) gold-plated	
<b>Ambient operating temperature</b>	-20°C...+70°C	
<b>Max. no. of contacts</b>	2	
<b>Voltage test</b>	Circuit / protective earth conductor - 2000 vac 1 minute	
	Circuit /circuit - 2000 vac 1 minute	

## Recommended contact ratings with ohmic and inductive load

<b>Voltage (DIN IEC 38) DC / AC</b>	Electric contacts type pressure gauge model P590 series					
	dry gauges			liquid filled gauges		
	ohmic load		inductive load	ohmic load		inductive load
	DC	AC		DC	AC	
			cos φ > 0.7			cos φ > 0.7
<b>V</b>	mA	mA	mA	mA	mA	mA
<b>220 / 230</b>	100	120	65	65	90	40
<b>110 / 110</b>	200	240	130	130	180	85
<b>48 / 48</b>	300	450	200	190	330	130
<b>24 /24</b>	400	600	250	250	450	150

In order to ensure a high **switching reliability** of the contacts the **switching voltage should not be below 24V**, also taking environmental influences in the long term into account.

## CONVERSION TABLE

PRESSURE CONVERSION CHART								
PSI	ATM	kg/cm <sup>2</sup>	in.H <sub>2</sub> O	mmHg	in.Hg	kPa	Bar	mmH <sub>2</sub> O
1	0.068046	0.070307	27.7276	51.715	2.03602	6.895	0.06895	704.28104
14.696	1	1.0332	407.484	760	29.921	101.325	1.01325	10350.0936
14.2233	0.96784	1	394.38	735.559	28.959	98.096	0.98067	10000
0.036092	0.002454	0.00253	1	1.8651	0.07343	0.249	0.00249	25.4
0.019336	0.001315	0.001359	0.53616	1	0.03937	0.1333	0.001333	13.618464
0.491154	0.0033421	0.03453	13.6185	25.4	1	3.3864	0.033864	345.9099
0.145	0.00987	0.010197	4.0186	7.5006	0.2953	1	0.01	102.07244
14.5038	0.98692	1.01972	402.156	750.062	29.53	100	1	10214.7624
0.00142	0.000097	0.0001	0.03937	0.0734	0.0029	0.0098	0.000098	1

VOLUME CONVERSION CHART							
GALLON (U.S)	CUBIC FEET	CUBIC INCHES	BARRELS (OIL)	CUBIC CM	CUBIC METER	LITER	IMP. GALLON
1	0.1337	231	0.02381	3785	0.003785	3.785	0.8327
7.481	1	1728	0.1781	28320	0.02832	28.32	6.229
0.004329	0.000578	1	0.000103	16.39	0.000016	0.01639	0.003605
42	5.615	9702	1	159000	0.159	158.94	34.97
0.000264	0.000035	0.06102	0.000006	1	0.000001	0.001	0.00022
264.17	35.3144	61023	6.2906	1000000	1	1000	220.1
0.264	0.0353	61.03	0.0629	1000	0.001	1	0.22
1.201	0.1606	277.4	0.0286	4546	0.004546	4.546	1

MASS CONVERSION CHART							
lb.	oz.	kg	gm	gal H <sub>2</sub> O (32F)	long ton	metric tonne	ton
1	16	0.4536	453.6	0.1198	0.000446	0.000453	0.0005
0.0625	1	0.02835	28.35	0.00749	0.000027	0.000028	0.000031
2.205	35.27	1	1000	0.2642	0.009839	0.001	0.001102
0.002205	0.03527	0.001	1	0.000264	0.000000	0.000001	0.000001
8.345	133.5	3.785	3785	1	0.003726	0.003786	0.004171
2240	35840	1016.4	1016363	268.352	1	1.016	1.12
2204.6	35273	1000	1000000	264.11	0.9842	1	1.1023
2000	32000	907.03	909090.9	239.7	0.892857	0.907194	1

DENSITY CONVERSION CHART			
lb/ft <sup>3</sup>	gm/cm <sup>3</sup>	kg/m <sup>3</sup>	lb/in <sup>3</sup>
1	0.016018	16.0184	0.000578
62.43	1	1000	0.03613
0.06243	0.001	1	0.000036
1728	27.68	27679.8	1