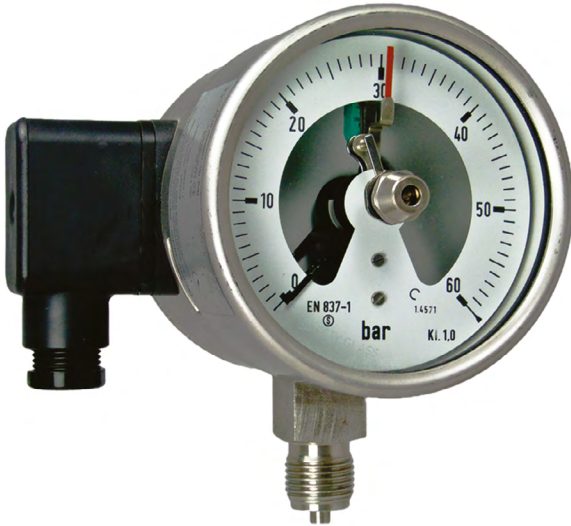




# KM-100N

## Contact Pressure Gauge



## Features

- / Brass and chemical versions
- / Nominal size 4" (100 mm)
- / Optional vibration attenuation
- / Up to 4 inductive or snap action contacts
- / All levels of pressure -1...2500 bar as per DIN
- / Negative pressure ranges

## Description:

Contact pressure gauges are suited for controlling and regulating processes by means of excess processing pressure. In this, the switching contacts open or close depending on the indicator position in the pressure gauge. If the medium to be monitored does not tend to crystallize or harden, pressures from -1 bar up to 2500 bar can be displayed and monitored easily. In critical situations, optionally the pressure gauge is equipped with a diaphragm seal for the pressure. In KM-100N with oil filling, possible excess pressure pulsations or mechanical vibrations are subdued. This extends the life span and the quality of legibility in the devices significantly. Snap-action contacts are used under rough industrial conditions while switching high currents. In case of excess or below par electrical switching load at the contacts, we recommend using a protective relay for the contacts such as Profimess MSR<sub>x</sub>. On the other hand, touch less engaging of inductive contacts facilitates precise setting for the switching point and has no effect on the pressure measurement system. By using these contacts even applications in the hazardous areas can be covered. For controlling the inductive switching contacts, always a separate control device is necessary which normally has a control power circuit as per NAMUR.

## Application:

The KM-100N series contact Bourdon pressure gauges is used in the whole industry. As against a simple pressure switch, they possess the major advantage of enabling visual inspection of the excess process pressure even if the power supply is interrupted due to power outage or cable failure. Snap-action contacts are engaged without potential, thus allowing the user maximum freedom to select the evaluator unit. The KM-100N is supplied with a standard G1/2"-male, however, optionally many other special type connections are feasible, assuring compatibility to a variety of processes.



## Versions:

**Movement:** The process connection, the pressure gauge's tubular spring and the indicator element are available as brass or also fully stainless steel versions where the latter is recommended for applications with hostile media.

**Oil filling:** In case of pulsations or vibrations in the plants the KM-100N with polybutene oil filling can be ordered by which indicator trembling can be attenuated and thus extend the life span of the movement.

**Process connection:** The KM-100N has a standard G1/2"-male connection. Optionally, many other thread types can be manufactured as special versions. Position of the connection is either in the vertical to bottom direction or excentrically towards back.

**Contact type:** The choice can be a snap-action contact or an inductive contact.

Snap-action contacts are electromechanical alarm contacts that make or break electric circuits. A magnetic snap-action contact is a mechanical contact with a make/break capacity up to 30 W / 50 VA (without oil filling).

The signal output will be retarded or advanced and analog to the movement of the instrument pointer. Instruments with magnetic snap-action contacts can be used for all operating conditions, also with liquid-filled instruments.

Inductive alarm sensor contacts are inductive contacts to DIN 19234 resp. NAMUR. They are certified for use in hazardous areas of zone 1 and zone 2. The signal output is instantaneous and analog to the movement of the instrument pointer. Liquid filling in the instrument is possible.

Optionally, for the inductive contacts an integrated amplifier is available that is mounted directly into the housing of slit initiators.

This has a PNP- transistor output and can connect directly to small outputs, for example, in SP controls.

**No. of contacts:** Up to four contacts can be used. The use of a change-over-contact is considered as a double contact.

**Contact function:** It must be specified if the power circuit is expected to be contacted at increasing pressure (1 = NO-contact) or broken at increasing pressure (2 = NC-contact). In the case of snap-action contact the power circuit is broken or contacted mechanically, where as in inductive contacts the electrical resistance in the coils changes. Thereby, in the case of a NO-contact the current in the control circuit is set on "HIGH" state while it shifts to "LOW" as a NC-contact.

**Operating range:** Various DIN op. ranges from -1. . . +2500 bar are available. Please contact us for special operating ranges.

## El. Specs magnet-spring Cont.:

<b>Nominal voltage /</b>	U <sub>eff</sub> min: 24 V U <sub>eff</sub> max: 250 V
<b>Current rating /</b>	inrush current: 1.0 A breaking current: 1.0 A continuous: 0.6 A
<b>Load capacity /</b>	P <sub>min</sub> : 0.4 W / 0.4 VA without oil filling: P <sub>max</sub> : 30 W / 50 VA with polybutene filling: P <sub>max</sub> : 20 W / 20 VA
<b>Set-point accuracy /</b>	max. 4 contacts
<b>Accuracy of switching /</b>	2-5% FS
<b>Creep and air distances /</b>	acc. to DIN VDE 0110 Part 1 and 2 (degree of contamination 3)
<b>Voltage testing /</b>	
Circuit/ earth connection:	2000 VAC 1 min (DIN VDE 0660 part 200)
Circuit/Circuit:	2000 VAC 1 min (DIN VDE 0660 part 200)
<b>Circuit /</b>	In snap-action contacts, a single wire is used for all contacts as the common return line. In case of 3 contacts, consequently 4 pins and shielding are connected. Optionally, contact sets can be supplied with circuits separate according to contacts.
<b>Contact arm bearing /</b>	ruby bearing jewel
<b>Contact material /</b>	silver-nickel (Ag80 Ni20) 10 µm gold plated
<b>No. of contacts /</b>	max. 4 contacts, change-over-contacts will be counted as a double contact.
<b>Contact function /</b>	NO-contact and/or NC-contact and/or change-over-contact
<b>Electrical connection /</b>	Cable box, on the right side provided with 6 screw clamps +ground, cable gland M20x1.5 going downwards. Optionally, the cable box can be supplied with rear mounting instead of on the side.



**Loads for magnet-spring contact /**

Voltage		ohmic load			
		dry gauges		filled gauges	
V DC	V AC	mA DC	mA AC	mA DC	mA AC
220	230	100	120	65	90
110	110	200	240	130	180
48	48	300	450	190	330
24	24	400	600	250	450

Voltage		inductive load	
		dry gauges	filled gauges
V AC	cos phi > 0,7	mA AC	mA AC
230		65	40
110		130	85
48		200	130
24		250	150

\*Preferred contact rating with ohmic load; but at least 24 VDC / 20 mA

## El. Specs Inductive contact:

- Operating voltage /** 5...25 VDC
- Nominal voltage /** 8 VDC (Ri ≈ 1k)
- Current consumption: /** active surface free: ≥ 3 mA  
active surface damped: ≤ 1 mA
- Accuracy /** < 0.5% FS
- Contact arm bearing /** ruby bearing jewel
- No. of contacts /** max. 4 contacts
- Contact function /** NO-contact and/or NC-contact
- Electrical connection /** Cable box, on the right side provided with 6 screw clamps +ground, cable gland M20x1.5 going downwards. Optionally, the cable box can be supplied with rear mounting instead of on the side.

## Front ring:

	3-hole Front ring	rear edge	3-rimmed-Front ring
KM-100N.1.1.1.	OK	OK	-
KM-100N.1.1.2.	OK	OK	OK
KM-100N.1.2.1.	OK	OK	-
KM-100N.1.2.2.	OK	OK	OK
KM-100N.2.1.1.	OK	OK	-
KM-100N.2.1.2.	OK	OK	OK
KM-100N.2.2.1.	OK	OK	-
KM-100N.2.2.2.	OK	OK	OK

## Technical Specifications:

- Accuracy /** pressure gauge quality class 1.0 <sup>2)</sup>
- Protection class /** KM-100N.x.1... - IP54 as per EN 60529  
KM-100N.x.2... - IP65 as per EN 60529
- Plug /** PUR
- Damping /** polybutene filling
- Options /** separate circuits (for snap-action contact, standard for inductive contact), special type scales with customer's logo, other process connections

**Pressure /**

	steady	dynamic	burst
KM-100N.x.x..	1.00 x ME	0.90 x ME	1.30 x ME

**Temperature /**

Manometer	max. Media temp.
KM-100N.1.1..	+ 80°C
KM-100N.2.1..	+ 100°C (temporary 120°C)
KM-100N.1.2..	+ 80°C
KM-100N.2.2..	+ 100°C

**Contacts /**

Contact	max. Ambient temp.
magnet spring	- 20... + 140°C
inductive	- 25... + 100°C

**Temperature error, T<sub>Ref</sub> 20°C /**

rising: + 0.3% FS / 10K
falling: - 0.3% FS / 10K

**Material /**

Material	Housing	Window
KM-100N.1.1.x.	st. steel	instrument glass
KM-100N.1.2.x.	st. steel	laminated safety glass
KM-100N.2.x.x.	st. steel	laminated safety glass

Material	Sensor element	Dial
KM-100N.1.x..	up to 100 bar, CuSn8 - 2.1030, soft-soldered from 100 bar, st. steel - 1.4404, hard-soldered	white aluminium, black scale and lettering as per EN 837-1
KM-100N.1.2.x.	st. steel 1.4404	white aluminium, black scale and lettering as per EN 837-1

Material	Motion work	Pointer
KM-100N.1.1.x.	Bottom and cover-parts from brass, moving parts argentan	black aluminium (KM-100N.1.1 plastic)
KM-100N.2.x..	st. steel	black aluminium

<sup>2)</sup> The addition of mechanical electric contacts affects the accuracy of instruments and corresponds to the DIN 16085, thus amounts to a max. of 50% of the pressure gauge accuracy quality class.



# Ordering Codes:

<b>Order no.</b>	<b>KM-100N.</b>	<b>2.</b>	<b>1.</b>	<b>1.</b>	<b>1.</b>	<b>1.</b>	<b>2.</b>	<b>[0][0][2][1]</b>	<b>D</b>
<b>Contact Pressure Gauge</b>									
<b>Version /</b> 1 = brass movement 2 = fully stainless steel chemical version									
<b>Oil filling /</b> 1 = no oil filling 2 = with polybutene filling for cutting vibrations									
<b>Process connection /</b> 1 = G1/2 B at the bottom 2 = G1/2 B excentrically at the back									
<b>Fastening rim (see table) /</b> 0 = none 1 = 3 hole front ring 2 = rear edge for wall-mounting 3 = 3 rimmed front ring with clamp									
<b>Contact type /</b> 1 = snap-action contact 2 = inductive contact									
<b>No. of contacts /</b> 1 = one contact 2 = two contacts 3 = three contacts 4 = four contacts									
<b>Contact function (1 = NO-contact, 2 = NC-Contact, 3 = change-over-contact (only for snap-action contact)) /</b> [ ][ ][ ] = contact sequence for incrementing pressure, e.g. [0][1][1][2]									
<b>Operating range /</b> A = 0...0.6 bar B = 0...1 bar C = 0...1.6 bar D = 0...2.5 bar E = 0...4 bar F = 0...6 bar G = 0...10 bar H = 0...16 bar I = 0...25 bar J = 0...40 bar K = 0...60 bar L = 0...100 bar M = 0...160 bar N = 0...250 bar O = 0...400 bar P = 0...600 bar Q = 0...1000 bar R = 0...1600 bar <sup>1)</sup> R2 = 0...2500 bar <sup>1)</sup> S = -1...0 bar T = -1...+0.6 bar U = -1...+1.5 bar V = -1...+3 bar W = -1...+5 bar X = -1...+9 bar Y = -1...+15 bar									

<sup>1</sup>only possible for chemical version (KM-100N.2.x.x)