Bourdon tube pressure gauges for chemical applications with electrical contact type D4

Benefits

- Measuring system fully welded to housing
- Robust mechatronical pressure gauge
- Up to three switching contacts
- Tightness-tested with helium
- GOSSTANDART-certified

Application

For corrosive gaseous and liquid media which are not highly viscous and do not crystallise; suitable for corrosive environments.

Technical specifications

Type
D4

Nominal size
100

Accuracy class (EN 837-1/6)
1,0

Ranges (EN 837-1/5)
See ordering table

Application area
Static load

≤ 600 bar:	Full scale value
> 600 bar:	¾ x full scale value

Dynamic load

≤ 600 bar:	0.9 x full scale value
> 600 bar:	⅔ x full scale value

Short-term

≤ 600 bar:	1.3 x full scale value
> 600 bar:	Full scale value

Inductive contact (IK)
Magnetic spring contact (MK)

Minimum range* (in bar) at nominal size
Contact

IK Single:	1 bar
IK dual:	1 bar
MK Single:	1.6 bar
MK dual:	1.6 bar

Operating temperature range

Medium:	Max. 150 °C
Ambient:	-20/+60 °C

Temperature performance
Indication error when the temperature of the measuring system deviates from the normal temperature of 20 °C:
of full scale value

Degree of protection
IP54 (EN 60529)

Standard version

Connection
Stainless steel 316 Ti/316 L, bottom

Electrical connection
Junction box

Measuring element
Bourdon tube, stainless steel 316 Ti/316 L

≤ 60 bar:	"C" type tube
> 60 bar:	Helical tube

Movement
Stainless steel

Dial
Aluminium, white
Scaling black

Pointer
Aluminium, black

Housing
Stainless steel 304, with blow-out

Bayonet type bezel
Stainless steel 304

Window
Plastic (Makrolon)

Supply voltage
DC 5 – 25 V

Current input
≥ 2.1 mA

Operating temperature range
-20/+70 °C

Supply voltage
Max. AC/DC 250 V
Max. 1 A
Max. 0.6 A

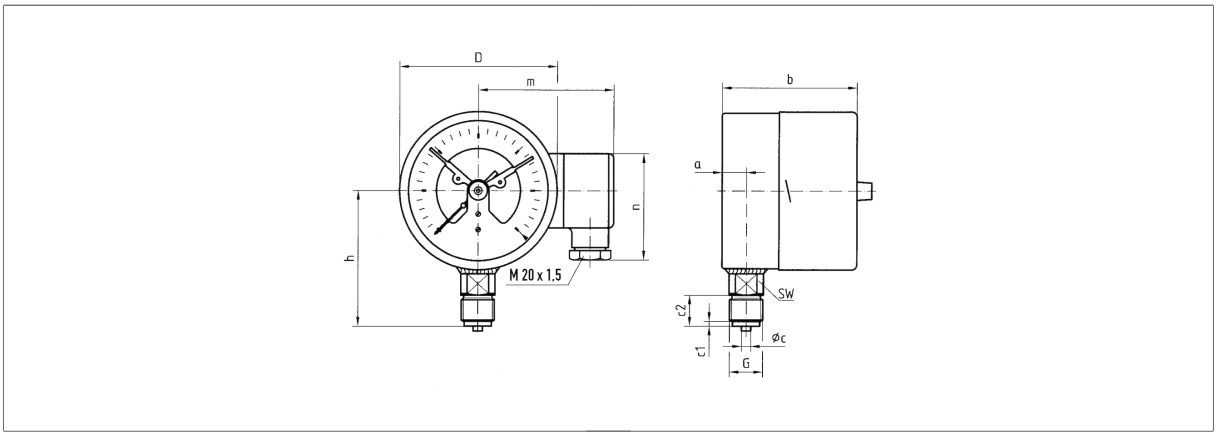
Switch rating
Max. 50 VA, max. 30 W

Operating temperature range
-20/+70 °C

Options

- Back flange
- 3-hole fixing, panel mounting bezel
- Damping screw
- Special scales
- Other process connections

Technical drawings



Dimensions (mm)

NG	a	b	b1	∅c	c1	c2	D	G	h	m	n	SW
100	15,6	87	90,5	6	3	20	101,5	G½B	86	92	72	22
160	17,5	97	100	6	3	20	161,5	G½B	116	122	72	22

Versions

RF100Ch IK1 D402

	Housing ∅	Connection	Alignment	Housing	Accuracy class	Range	Type	Part no.
	100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/0 bar	RF100Ch IK1 D402	87701402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+0.6 bar	RF100Ch IK1 D402	87702402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+1.5 bar	RF100Ch IK1 D402	87703402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+3 bar	RF100Ch IK1 D402	87704402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+5 bar	RF100Ch IK1 D402	87705402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+9 bar	RF100Ch IK1 D402	87706402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+15 bar	RF100Ch IK1 D402	87707402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/0.6 bar	RF100Ch IK1 D402	87709402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/1 bar	RF100Ch IK1 D402	87710402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/1.6 bar	RF100Ch IK1 D402	87711402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/2.5 bar	RF100Ch IK1 D402	87712402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/4 bar	RF100Ch IK1 D402	87713402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/6 bar	RF100Ch IK1 D402	87714402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/10 bar	RF100Ch IK1 D402	87715402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/16 bar	RF100Ch IK1 D402	87716402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/25 bar	RF100Ch IK1 D402	87717402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/40 bar	RF100Ch IK1 D402	87718402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/60 bar	RF100Ch IK1 D402	87719402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/100 bar	RF100Ch IK1 D402	87720402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/160 bar	RF100Ch IK1 D402	87721402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/250 bar	RF100Ch IK1 D402	87722402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/400 bar	RF100Ch IK1 D402	87723402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/600 bar	RF100Ch IK1 D402	87724402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/1,000 bar	RF100Ch IK1 D402	87725402

Blue part no. = in-stock items

RF100Ch IK2 D402

	Housing ∅	Connection	Alignment	Housing	Accuracy class	Range	Type	Part no.
	100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/0 bar	RF100Ch IK2 D402	87751402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+0.6 bar	RF100Ch IK2 D402	87752402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+1.5 bar	RF100Ch IK2 D402	87753402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+3 bar	RF100Ch IK2 D402	87754402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+5 bar	RF100Ch IK2 D402	87755402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+9 bar	RF100Ch IK2 D402	87756402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+15 bar	RF100Ch IK2 D402	87757402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/0.6 bar	RF100Ch IK2 D402	87759402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/1 bar	RF100Ch IK2 D402	87760402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/1.6 bar	RF100Ch IK2 D402	87761402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/2.5 bar	RF100Ch IK2 D402	87762402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/4 bar	RF100Ch IK2 D402	87763402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/6 bar	RF100Ch IK2 D402	87764402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/10 bar	RF100Ch IK2 D402	87765402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/16 bar	RF100Ch IK2 D402	87766402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/25 bar	RF100Ch IK2 D402	87767402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/40 bar	RF100Ch IK2 D402	87768402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/60 bar	RF100Ch IK2 D402	87769402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/100 bar	RF100Ch IK2 D402	87770402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/160 bar	RF100Ch IK2 D402	87771402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/250 bar	RF100Ch IK2 D402	87772402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/400 bar	RF100Ch IK2 D402	87773402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/600 bar	RF100Ch IK2 D402	87774402
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/1,000 bar	RF100Ch IK2 D402	87775402

Blue part no. = in-stock items

RF100Ch MK1 D402

Housing ∅	Connection	Alignment	Housing	Accuracy class	Range	Type	Part no.
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+0.6 bar	RF100Ch MK1 D402	87602402
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+1.5 bar	RF100Ch MK1 D402	87603402
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+3 bar	RF100Ch MK1 D402	87604402
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+5 bar	RF100Ch MK1 D402	87605402
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+9 bar	RF100Ch MK1 D402	87606402
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+15 bar	RF100Ch MK1 D402	87607402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/1.6 bar	RF100Ch MK1 D402	87611402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/2.5 bar	RF100Ch MK1 D402	87612402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/4 bar	RF100Ch MK1 D402	87613402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/6 bar	RF100Ch MK1 D402	87614402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/10 bar	RF100Ch MK1 D402	87615402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/16 bar	RF100Ch MK1 D402	87616402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/25 bar	RF100Ch MK1 D402	87617402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/40 bar	RF100Ch MK1 D402	87618402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/60 bar	RF100Ch MK1 D402	87619402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/100 bar	RF100Ch MK1 D402	87620402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/160 bar	RF100Ch MK1 D402	87621402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/250 bar	RF100Ch MK1 D402	87622402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/400 bar	RF100Ch MK1 D402	87623402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/600 bar	RF100Ch MK1 D402	87624402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/1,000 bar	RF100Ch MK1 D402	87625402

Blue part no. = in-stock items

RF100Ch MK2 D402

Housing ∅	Connection	Alignment	Housing	Accuracy class	Range	Type	Part no.
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+0.6 bar	RF100Ch MK2 D402	87652402
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+1.5 bar	RF100Ch MK2 D402	87653402
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+3 bar	RF100Ch MK2 D402	87654402
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+5 bar	RF100Ch MK2 D402	87655402

Blue part no. = in-stock items

Housing ∅	Connection	Alignment	Housing	Accuracy class	Range	Type	Part no.
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+9 bar	RF100Ch MK2 D402	87656402
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+15 bar	RF100Ch MK2 D402	87657402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/1.6 bar	RF100Ch MK2 D402	87661402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/2.5 bar	RF100Ch MK2 D402	87662402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/4 bar	RF100Ch MK2 D402	87663402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/6 bar	RF100Ch MK2 D402	87664402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/10 bar	RF100Ch MK2 D402	87665402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/16 bar	RF100Ch MK2 D402	87666402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/25 bar	RF100Ch MK2 D402	87667402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/40 bar	RF100Ch MK2 D402	87668402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/60 bar	RF100Ch MK2 D402	87669402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/100 bar	RF100Ch MK2 D402	87670402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/160 bar	RF100Ch MK2 D402	87671402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/250 bar	RF100Ch MK2 D402	87672402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/400 bar	RF100Ch MK2 D402	87673402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/600 bar	RF100Ch MK2 D402	87674402
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/1,000 bar	RF100Ch MK2 D402	87675402

Blue part no. = in-stock items

Bourdon tube pressure gauges for industrial applications with electrical contact type D4

Benefits

- Robust stainless steel housing
- Excellent readability
- Up to three switching contacts
- Available with MK, EK, IK

Application

For gaseous and liquid media which are not highly viscous, do not crystallise and do not attack copper alloys.

Technical specifications

Type
D4

Nominal size
100

Accuracy class (EN 837-1/6)
1,0

Ranges (EN 837-1/5)
See ordering table

Application area
Static load

≤ 600 bar:	Full scale value
> 600 bar:	¾ x full scale value

Dynamic load

≤ 600 bar:	0.9 x full scale value
> 600 bar:	⅔ x full scale value

Short-term

≤ 600 bar:	1.3 x full scale value
> 600 bar:	Full scale value

Inductive contact (IK)
Magnetic spring contact (MK)

Minimum range* (in bar) at nominal size
Contact

IK Single:	1 bar
IK dual:	1 bar
MK Single:	1.6 bar
MK dual:	1.6 bar

Operating temperature range

Medium:	Max. 60 °C
Ambient:	-20/+60 °C

Temperature performance
Indication error when the temperature of the measuring system deviates from the normal temperature of 20 °C:
of full scale value

Degree of protection
IP54 (EN 60529)

Standard version

Connection
Brass, bottom

Electrical connection
Cable gland M12 x 1.5
Cable 1 m

Measuring element
Bourdon tube

≤ 60 bar:	"C" type tube, Copper alloy
> 60 bar:	Helical tube, stainless steel 316 Ti/316 L

Movement
Brass

Dial
Aluminium, white
Scaling black

Pointer
Aluminium, black

Housing
Stainless steel 304, with blow-out

Bayonet type bezel
Stainless steel 304

Window
Plastic (Makrolon)

Supply voltage
DC 5 – 25 V

Current input
≥ 2.1 mA

Operating temperature range
-20/+70 °C

Supply voltage
Max. AC/DC 250 V
Max. 1 A
Max. 0.6 A

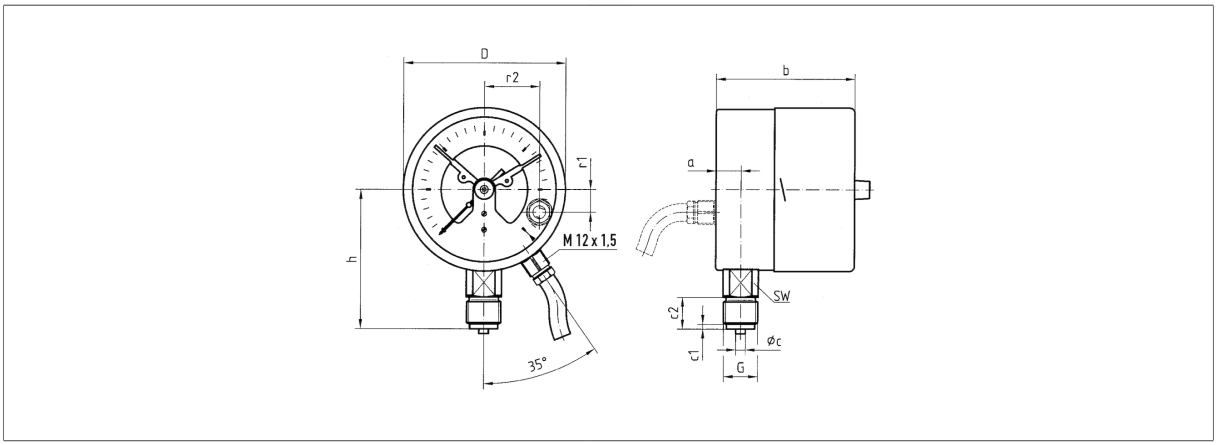
Switch rating
Max. 50 VA, max. 30 W

Operating temperature range
-20/+70 °C

Options

- Back flange
- 3-hole fixing, panel mounting bezel
- Damping screw
- Junction box
- Special scales
- Other process connections

Technical drawings



Dimensions (mm)

NG	a	b	b1	∅C	c1	c2	D	G	h	r1	r2	SW
100	15,6	87	90,5	6	3	20	101,5	G½B	86	14	34,5	22
160	17,5	97	100	6	3	20	161,5	G½B	116	14	34,5	22

Versions

RF100I IK1 D401

Housing ∅	Connection	Alignment	Housing	Accuracy class	Range	Type	Part no.
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/0 bar	RF100I IK1 D401	87701401
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+0.6 bar	RF100I IK1 D401	87702401
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+1.5 bar	RF100I IK1 D401	87703401
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+3 bar	RF100I IK1 D401	87704401
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+5 bar	RF100I IK1 D401	87705401
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+9 bar	RF100I IK1 D401	87706401
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+15 bar	RF100I IK1 D401	87707401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/0.6 bar	RF100I IK1 D401	87709401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/1 bar	RF100I IK1 D401	87710401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/1.6 bar	RF100I IK1 D401	87711401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/2.5 bar	RF100I IK1 D401	87712401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/4 bar	RF100I IK1 D401	87713401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/6 bar	RF100I IK1 D401	87714401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/10 bar	RF100I IK1 D401	87715401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/16 bar	RF100I IK1 D401	87716401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/25 bar	RF100I IK1 D401	87717401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/40 bar	RF100I IK1 D401	87718401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/60 bar	RF100I IK1 D401	87719401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/100 bar	RF100I IK1 D401	87720401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/160 bar	RF100I IK1 D401	87721401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/250 bar	RF100I IK1 D401	87722401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/400 bar	RF100I IK1 D401	87723401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/600 bar	RF100I IK1 D401	87724401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/1,000 bar	RF100I IK1 D401	87725401

Blue part no. = in-stock items

RF100I IK2 D401

Housing ∅	Connection	Alignment	Housing	Accuracy class	Range	Type	Part no.
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/0 bar	RF100I IK2 D401	87751401
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+0.6 bar	RF100I IK2 D401	87752401
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+1.5 bar	RF100I IK2 D401	87753401
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+3 bar	RF100I IK2 D401	87754401
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+5 bar	RF100I IK2 D401	87755401
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+9 bar	RF100I IK2 D401	87756401
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+15 bar	RF100I IK2 D401	87757401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/0.6 bar	RF100I IK2 D401	87759401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/1 bar	RF100I IK2 D401	87760401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/1.6 bar	RF100I IK2 D401	87761401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/2.5 bar	RF100I IK2 D401	87762401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/4 bar	RF100I IK2 D401	87763401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/6 bar	RF100I IK2 D401	87764401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/10 bar	RF100I IK2 D401	87765401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/16 bar	RF100I IK2 D401	87766401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/25 bar	RF100I IK2 D401	87767401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/40 bar	RF100I IK2 D401	87768401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/60 bar	RF100I IK2 D401	87769401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/100 bar	RF100I IK2 D401	87770401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/160 bar	RF100I IK2 D401	87771401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/250 bar	RF100I IK2 D401	87772401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/400 bar	RF100I IK2 D401	87773401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/600 bar	RF100I IK2 D401	87774401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/1,000 bar	RF100I IK2 D401	87775401

Blue part no. = in-stock items

RF100I MK1 D401

	Housing ∅	Connection	Alignment	Housing	Accuracy class	Range	Type	Part no.
	100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+0.6 bar	RF100I MK1 D401	87602401
	100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+1.5 bar	RF100I MK1 D401	87603401
	100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+3 bar	RF100I MK1 D401	87604401
	100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+5 bar	RF100I MK1 D401	87605401
	100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+9 bar	RF100I MK1 D401	87606401
	100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+15 bar	RF100I MK1 D401	87607401
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/1.6 bar	RF100I MK1 D401	87611401
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/2.5 bar	RF100I MK1 D401	87612401
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/4 bar	RF100I MK1 D401	87613401
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/6 bar	RF100I MK1 D401	87614401
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/10 bar	RF100I MK1 D401	87615401
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/16 bar	RF100I MK1 D401	87616401
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/25 bar	RF100I MK1 D401	87617401
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/40 bar	RF100I MK1 D401	87618401
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/60 bar	RF100I MK1 D401	87619401
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/100 bar	RF100I MK1 D401	87620401
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/160 bar	RF100I MK1 D401	87621401
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/250 bar	RF100I MK1 D401	87622401
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/400 bar	RF100I MK1 D401	87623401
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/600 bar	RF100I MK1 D401	87624401
	100 mm	G½B	Bottom	Stainless steel 304	1,0	0/1,000 bar	RF100I MK1 D401	87625401

Blue part no. = in-stock items

RF100I MK2 D401

	Housing ∅	Connection	Alignment	Housing	Accuracy class	Range	Type	Part no.
	100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+0.6 bar	RF100I MK2 D401	87652401
	100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+1.5 bar	RF100I MK2 D401	87653401
	100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+3 bar	RF100I MK2 D401	87654401
	100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+5 bar	RF100I MK2 D401	87655401

Blue part no. = in-stock items

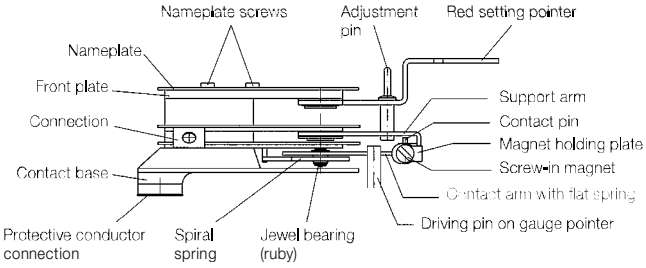
Housing ∅	Connection	Alignment	Housing	Accuracy class	Range	Type	Part no.
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+9 bar	RF100I MK2 D401	87656401
100 mm	G½B	Bottom	Stainless steel 304	1,0	-1/+15 bar	RF100I MK2 D401	87657401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/1.6 bar	RF100I MK2 D401	87661401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/2.5 bar	RF100I MK2 D401	87662401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/4 bar	RF100I MK2 D401	87663401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/6 bar	RF100I MK2 D401	87664401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/10 bar	RF100I MK2 D401	87665401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/16 bar	RF100I MK2 D401	87666401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/25 bar	RF100I MK2 D401	87667401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/40 bar	RF100I MK2 D401	87668401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/60 bar	RF100I MK2 D401	87669401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/100 bar	RF100I MK2 D401	87670401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/160 bar	RF100I MK2 D401	87671401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/250 bar	RF100I MK2 D401	87672401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/400 bar	RF100I MK2 D401	87673401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/600 bar	RF100I MK2 D401	87674401
100 mm	G½B	Bottom	Stainless steel 304	1,0	0/1,000 bar	RF100I MK2 D401	87675401

Blue part no. = in-stock items

Electrical contacts electromechanical

Precision contact system

Sectional view



Magnetic spring contact

Electrical contacts (electromechanical magnetic spring contacts) in measuring devices with pointers are auxiliary electrical switches which open or close electrical circuits at set limit values by means of a contact arm which is moved in accordance with the indicated value. They consist of:

- An adjustable red setting pointer
- A support arm which is connected to the setting pointer and which holds the contact pin
- A contact arm which is moved by the gauge pointer and which carries the second contact pin

A contact adjustment lock in the window of the gauge allows the user to adjust the setting pointer to the value at which the device is to switch. The gauge pointer can move beyond the adjusted setting pointer after the contact has been made (however, the contact remains active).

Two types of electromechanical contacts are available: magnetic spring contacts and sliding contacts (which are not described in detail here).

Principle of operation

Magnetic spring contacts have a permanent magnet screwed to the setting pointer at the contact support arm. To close the circuit, the contact pin of the moving contact arm is attracted by the magnet so that the contact snaps closed. When the circuit opens, the magnet attracts the contact arm until the resetting force of the measuring element overcomes the effective force of the magnet so that the contact snaps open.

The snap action reduces arcing between the contacts, thus allowing for greater switch ratings. Due to the increased contact force, this type of contact is also less sensitive to vibrations. Furthermore, the contact stability is increased by greater contacting pressure.

Application

Magnetic spring contacts can be used under almost any type of operating condition. They can also be integrated into devices with filling. In order to prevent switching errors (particularly in the case of greater inductive switch ratings or considerable system vibration or in gauges with filling) we recommend installing our pulse-controlled series MSR contact protection relays.

Technical specifications

Supply voltage
Max. 250 V

Making current and breaking current
Max. 1.0 A

Continuous current
Max. 0.6 A

Switch rating
Max. 30 W 50 VA (no filling)
Max. 15 W 20 VA (with filling)

Contact material
Ag80 Ni20 Au 10 µ
(extra charge for special materials)

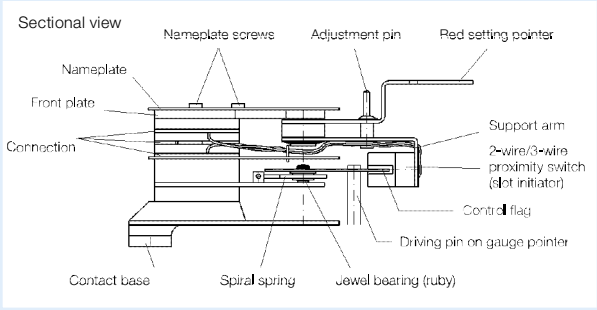
Switching accuracy
Approx. 2–5 % of full scale value

Operating temperature range
-20/+70 °C or corresponding to the respective gauges

Adjustment range
5–95 % measuring range of gauge

Electrical contacts electronic

1



Electronic contact

Electronic contacts have non-contact electrical displacement pick-ups (proximity sensors).
They consist of:

- An adjustable red setting pointer
- A support arm which is connected to the setting pointer and which carries the control head (initiator) with the completely encapsulated electronics
- A control flag which is moved by the gauge pointer

A contact adjustment lock in the window of the gauge allows the user to adjust the setting pointer to the value at which the device is to switch. The gauge pointer can move beyond the adjusted setting pointer after the contact has been made (however, the contact remains active).

Principle of operation

The proximity switches used in the electronic contacts are simple 2-wire or 3-wire DC voltage switches. Due to the slot design, the proximity switches are also referred to as slot initiators. The electromagnetic field is concentrated between 2 opposing coils. The switch is activated when the aluminium control flag moved by the gauge pointer reaches the gap between the two coils (slot). The signal is generated without a delay, according to the motion of the gauge pointer.

The switching behaviour of the PNP switches used in these contacts is usually defined as a normally open contact, i.e.: Control flag in the slot initiator

- Contact closed
- Output active

Control flag not in the slot initiator

- Contact open
- Output not active

Application

Due to non-contact switching, the high switching accuracy and the long service life, electronic contacts with PNP output are ideal for any type of industrial application.
The use of these contacts is particularly advantageous in applications with liquid-filled measuring instruments, at low voltages (DC 10-30 V) and low DC loads ≤ 100 mA), e.g.

- For PLC signal input
- To control opto-isolators
- For other electronic evaluation units

Version

Standard electronic contacts are shipped with a 3-wire initiator type Si2-K08-AP6.
The contacts are also available with the 2-wire initiator Si2-K08-AG6.

Technical specifications

Supply voltage
DC 10–30 V

Switching current
≤ 100 mA

Switching accuracy
Approx. 0.5 % of full scale value

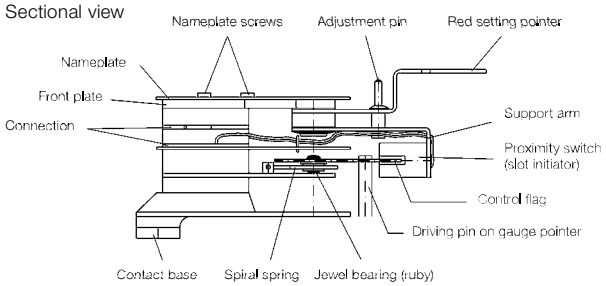
Operating temperature range
-25/+70 °C or corresponding to the respective gauges

Adjustment range
5–95 % measuring range of gauge

Electrical contacts inductive

Precision contact system

Sectional view



Inductive contact

Inductive contacts have non-contact proximity sensors as per EN 60947-5-6 / NAMUR worksheet NA 001. They consist of:

- An adjustable red setting pointer
- A support arm which is connected to the setting pointer and which carries the control head (initiator) with the completely encapsulated electronics
- A control flag which is moved by the gauge pointer

A contact adjustment lock in the window of the gauge allows the user to adjust the setting pointer to the value at which the device is to switch. The gauge pointer can move beyond the adjusted setting pointer after the contact has been made (however, the contact remains active).

Principle of operation

Inductive contacts are used together with an isolating switching amplifier. The switching amplifier supplies the control head with direct voltage. As soon as the control flag reaches the control head, the internal resistance in the control head increases (high-resistance initiator). This causes the current to change which is used to control the switching amplifier. The amplifier converts the input signal into a binary output signal. Therefore, the switching function of inductive contacts is not only determined by the slot initiator, but also by the switching amplifier.

Application

Due to non-contact switching, the high switching accuracy and the long service life, inductive contacts are ideal for industrial applications and should be used in liquid filled pressure gauge. Inductive contacts are particularly recommended when the switching function must be extremely reliable or when the switching frequency is high. The electronics are fully encapsulated so that this type of contact is also suitable for corrosive environments.

If suitable isolating switching amplifiers (such as KFA6-SR2-Ex) are used, the system will have the type of protection "intrinsic safety i". It is marked Ex II 1G Ex ia IIC T6 and is approved for use in hazardous areas, zones 1 and 2 together with an isolating switching amplifier. The isolation switching amplifier must always be installed outside of the hazardous area.
For standard industrial applications that do not require EX protection or that require only low EX protection (zone 2), we recommend our cost-efficient multifunctional series MSR-I relays.

Version

Inductive contacts are shipped with a 2-wire initiator type Si2-K08-Y1.

Technical specifications

Nominal voltage
≈ DC 8 V = (Ri 1 kOhm)

Supply voltage
5–25 V

Current input
≥ 2.1 mA (active area free)
≤ 1.2 mA (active area covered)

Switching accuracy
Approx. 0.5 % of full scale value

Operating temperature range
-20/+70 °C
or corresponding to the respective gauges

Adjustment range
5–95 % measuring range of gauge

Option
Contact systems with safety integrity level SIL 2

SIL
Protect your process!

Switching functions and definitions

1

Figure 1

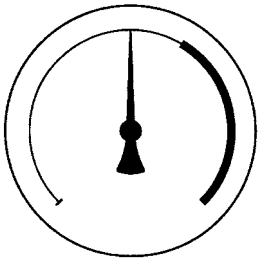


Figure 2

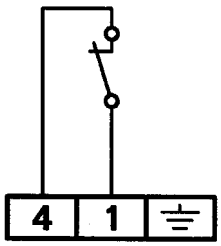
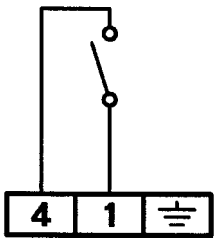


Figure 3



Definition of switching function

1 = Contact closes clockwise when the setpoint is reached
2 = Contact opens clockwise when the setpoint is reached
W = 1 contact opens and 1 contact closes at the same time (changeover contact)

The switching function of a contact is always specified in terms of a clockwise movement of the pointer. If the gauge pointer moves counterclockwise, the switching function is inverted!
If several contacts are fitted to a gauge, the contact closest to the left start value or end value of the scale is defined as the first contact. This also applies to vacuum ranges!

Optimisation of the switching performance

Application-related specifications, such as the operating behaviour of the contact (e.g. contact switches with increasing or decreasing pressure), the switching point or the speed of pressure changes, help to optimise contact adjustment to achieve a more accurate switching performance.

Selection table switching functions

The selection tables on the following pages show the switching functions of single, double and the most common triple contacts (with switching scheme and wiring diagram).
This allows you to quickly and easily find the correct contact designation for the required switching function.

Description of switching scheme

Figure 1:
- Thin line means: contact open, circuit open
- Thick line means: contact closed, circuit closed

Description wiring diagram

Figure 2:
- Contact closed
- Circuit closed

Figure 3:
- Contact open
- Circuit open

Definition of the contact type

MK = magnetic spring contact
SK = sliding contact
EK = electronic contact
IK = inductive contact

Depending on the type of the pressure gauge, up to 4 contacts can be installed per gauge. The number of contacts is indicated by means of a figure (1-4) after the contact type designation.

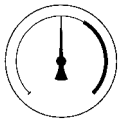
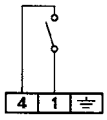
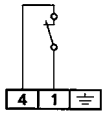
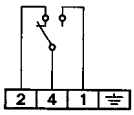
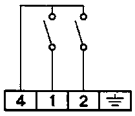
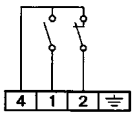
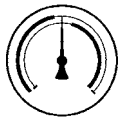
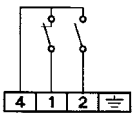
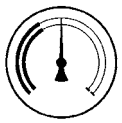
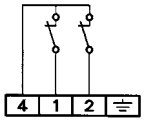
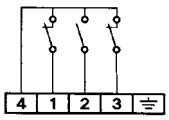
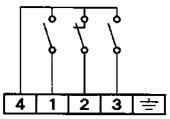
Example: MK 2.12
- Magnetic spring contact
- 2 contacts
- Contact 1 closes
- Contact 2 opens

Definition of complete gauge

The code for the contact is appended to the type designation of the measuring instrument.

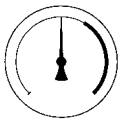
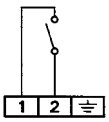
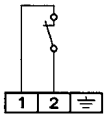
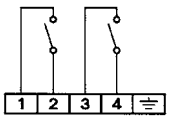
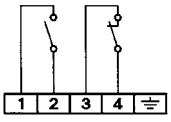
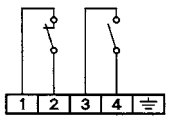
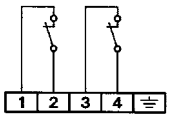
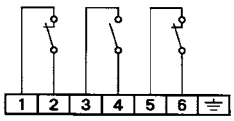
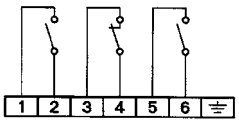
Example:
RF100Ch IK1.2
- Bourdon tube pressure gauge,
- NG 100,
- Gauge for chemical applications,
- Inductive contact,
- 1 contact,
- Contact opens

Switching functions of electrical contacts (electromechanical)

Switching scheme	Wiring diagram	Switching function (pointer moves clockwise)	Contact type	
			Magnetic spring contact	Sliding contact
Single contact				
		Contact closes	MK1.1	SK1.1
		Contact opens	MK1.2	SK1.2
		Contact switches over, i.e. 1 contact opens 1 contact closes	MK1.W	SK1.W
Double contact				
		Contact 1 closes Contact 2 closes	MK2.11	SK2.11
		Contact 1 closes Contact 2 opens	MK2.12	SK2.12
		Contact 1 opens Contact 2 closes	MK2.21	SK2.21
		Contact 1 opens Contact 2 opens	MK2.22	SK2.22
Triple contact				
		Contact 1 opens Contact 2 closes Contact 3 opens	MK3.212	SK3.212
		Contact 1 closes Contact 2 opens Contact 3 closes	MK3.121	SK3.121

Switching functions of inductive electrical contacts

1

Switching scheme	Wiring diagram	Switching function	When the setpoint is exceeded, the gauge pointer moves the control flag ...	Contact type
		Pointer moves clockwise		**Inductive contact**
Single contact				
		Contact closes	out of the control head	IK1.1
		Contact opens	into the control head	IK1.2
Double contact				
		Contact 1 closes Contact 2 closes	of the 1st and 2nd contact out of the control head	IK2.11
		Contact 1 closes Contact 2 opens	of contact 1 out of the control head of contact 2 into the control head	IK2.12
		Contact 1 opens Contact 2 closes	of contact 1 into the control head of contact 2 out of the control head	IK2.21
		Contact 1 opens Contact 2 opens	of the 1st and the 2nd contact into the control head	IK2.22
Triple contact				
		Contact 1 opens Contact 2 closes Contact 3 opens	of the 1st and the 3rd contact into the control head of contact 2 out of the control head	IK3.212
		Contact 1 closes Contact 2 opens Contact 3 closes	of the 1st and the 3rd contact out of the control head of contact 2 into the control head	IK3.121