

Magnetic Switches 1008

Magnetic Switches 1008

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Instructions for instrument selection in the catalogue

So that the customer gets the best equipment solution according to his requirements, we recommend this simple procedure using the following pages:

- Define the dimension of the interface (mounting possibilities)
- Find out the operating conditions, min. and max. operating temperature and the ambient temperature concerning the resistance of the housing material.
- With the size of the fitting and material of the housing, a guide specification can be selected on pages 154 to 159.
- The full and final specification can now be generated by reference to the „type key“ on pages 160 to 161.
- With the type description and the technical operating conditions a price quotation can be made or the instrument can be ordered.
- Specification of the requested approval.

Magnetic Switches 1008

Description and function

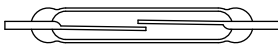
A magnetic switch contact consists of two flat contact tongues which are sealed in a glass tube filled with protective gas. When approached by a permanent magnet, the overlapping contact tongue ends attract each other and spring into contact.

When the permanent magnet is removed, the contact tongues demagnetize immediately and return to their rest positions as quickly as lightening. The air gap between the contact end is only 0.2-0.3mm and the mass of the contact tongues to

be moved and their elastic force are very small. Therefore, a magnetic switch switches almost inertia-lessly and it can be referred to as a "quasi-electronic component".

Contact functions

Normally open



If a permanent magnet (a north pole red or a south pole blue) is placed near the actuating zone of the magnetic switch, the contact tongues of the built in protective gas contact are magnetized and attract each other.

Change over



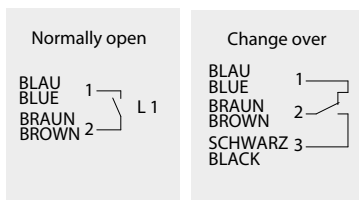
A change over contact has one movable and two static contact tongues. When there is no magnetic field, the movable contact tongue rests on the static home contact (normally closed) by means of its elastic force. When approached by an actuating magnet the contact tongue is attracted by the working contact (normally open).

Bistable

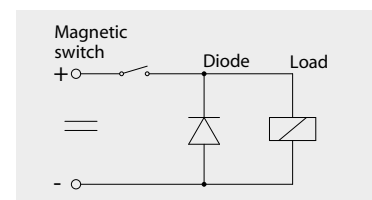
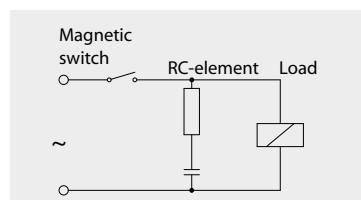


By means of a polarizing magnet, a contact tongue is magnetized with a south pole field in such a way that when a permanent magnet (north pole red) is placed in its proximity the magnetic switch contact closes and opens again when a permanent magnet (south pole blue) is placed in its proximity.

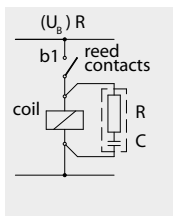
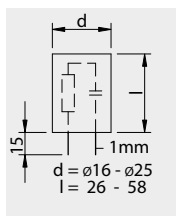
Connection diagrams



Contact protection measures



RC-networks for inductive-load contact protection



For reed contacts from 10 - 40 VA			
Capacity	Resistor	Voltage	Type
0.33µF	100 Ohm	24 V~	A3 / 24
0.33µF	470 Ohm	110 V~	A3 / 110
0.33µF	1000 Ohm	220 V~	A3 / 220
0.47µF	100 Ohm	24 V~	A4 / 24
0.47µF	470 Ohm	110 V~	A4 / 110
0.47µF	1000 Ohm	220 V~	A4 / 220

For reed contacts from 40 - 100 VA			
Capacity	Resistor	Voltage	Type
0.33µF	100 Ohm	24 V~	B3 / 24
0.33µF	470 Ohm	110 V~	B3 / 110
0.33µF	820 Ohm	220 V~	B3 / 220
0.47µF	100 Ohm	24 V~	B4 / 24
0.47µF	470 Ohm	110 V~	B4 / 110
0.47µF	820 Ohm	220 V~	B4 / 220

Operation of the magnetic switch with permanent magnets is completely free of wear and tear, as the magnetic field does not become worn out. As the contact tongues are extremely soft, fatigue fractures do not appear even after 3×10^9 switching operations. However, the switching contacts are very sensitive to high current load. The electrical life can be raised by contact protection measures.

Magnetic Switches 1008

Description and function

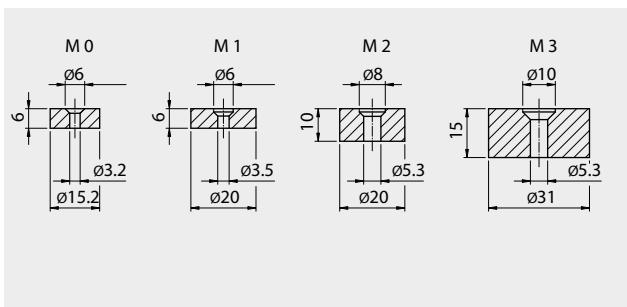
Advantages

- Magnetic switches operate impeccably under extreme environmental influences, e.g. dirt, moisture, gases, dust, shavings, etc.
- Stable switching point, reproducible switching point exactness 0.01mm
- Operable from several directions
- Installation independent of position
- Bistable models can store signals even in the event of power failure and are particularly suited for extremely long strokes
- Designs for temperatures from -30°C to +200°C
- Particularly priceworthy component for automation
- Available with different approvals

Application

- Magnetic switches are mainly used:
- As pulse generators for revolution, stroke and footage or meter counters, electro-mechanical counters
 - Running and stationary monitoring of machines
 - As floor switches in elevators
 - For resonant conveyors and sieves
 - At filling end weighing machines
 - For the indication of end position of power cylinders in pneumatics
 - In apparatus engineering for position indication of slides, flaps and valves
 - For controlling machine tools
 - For level control of fluids
 - On textile machines, printing machines, etc.

Actuation magnets



Actuation distance

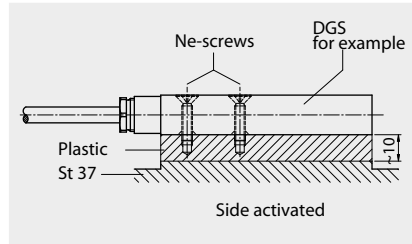
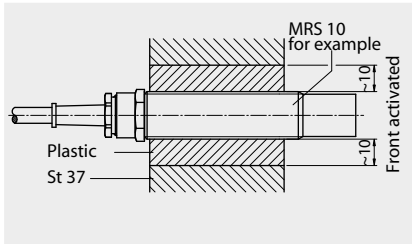
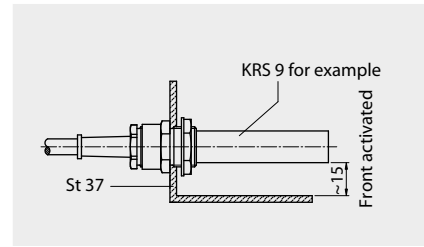
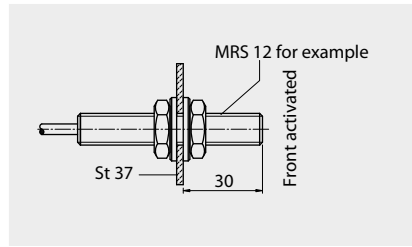
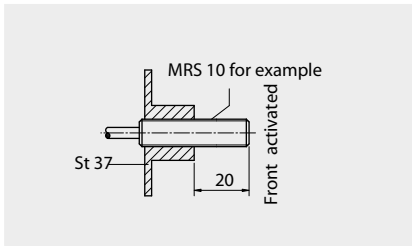
The largest spacing is achieved, when the permanent magnets are secured directly to iron with nonferrous metal screws. With an iron base the magnetic field is focused and has in this way a larger range. When permanent magnets are placed together with smaller spacings than 50 to 60mm, then the polarity must continually change (north-south-north-south pole...) so that the magnetic field is interrupted between the permanent magnets.

Actuation distance in mm

Magn. Switches Type	Magnets				Front activated	Side activated
	M0	M1	M2	M3		
MS-L40	~8	~12	~19	~40	X	
VS-L40	~8	~12	~19	~40	X	
MS-L55	~8	~12	~19	~40	X	
VS-L55	~8	~12	~19	~40	X	
MRS 9	~3	~6	~10	~27	X	
KRS 9	~3	~6	~10	~27	X	
KRU 9	~5	~9	~14	~30	X	
KWU 9	~4	~7	~11	~26	X	
GMS 9	~3	~6	~10	~22		X
GMU 9	~3	~5	~8	~19		X
GMSM 16	~17	~25	~32	~60	X	
GMUM 16	~10	~16	~23	~50	X	
MRS 10	~4	~7	~11	~28	X	
MRU 10	~10	~16	~19	~38	X	
MRS 12	~4	~7	~11	~27	X	
MRU 12	~3	~6	~10	~28	X	
MRS 20	~2	~4	~7	~24	X	
MRU 20	~3	~6	~10	~26	X	
GMS 18	~6	~10	~15	~35	X	
GMU 18	~5	~8	~12	~26	X	
GMUM 18	~13	~19	~27	~55	X	
DRS	~5	~7	~11	~27	X	

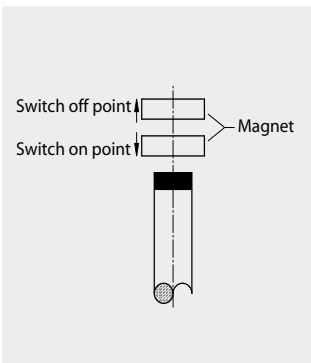
Magn. Switches Type	Magnets				Front activated	Side activated
	M0	M1	M2	M3		
DRU	~3	~5	~9	~17	X	
DRSM	~14	~20	~28	~58	X	
DRUM	~8	~15	~20	~45		X
DWU	~5	~8	~13	~30	X	
DGS	~3	~5	~9	~21		X
FKS-AL	~4	~7	~11	~27	X	
FKSM-AL	~17	~24	~30	~55	X	
FLS-AL	~5	~7	~11	~27	X	
FLU-AL	~3	~5	~9	~17	X	
FLSM-AL	~14	~20	~28	~55	X	
FLUM-AL	~8	~15	~20	~45		X
FWU-AL	~5	~8	~13	~30	X	
FGMS-AL	~3	~5	~9	~21		X
EVS-L70	~3	~6	~10	~27	X	
EVU-L70	~5	~9	~14	~30	X	
EVS-L100	~3	~6	~10	~22	X	
KRS 16-Ex	~4	~7	~11	~27		X
KRU 16-Ex	~4	~6	~11	~27		X
KWU 16-Ex	~4	~6	~10	~28		X
TRS 18	~4	~7	~11	~27	X	
TRSM 18	~21	~28	~36	~60	X	

Magnetic Switches 1008 Mounting



If there is a possibility that vigorous shocks could crop up, it is advisable to secure the magnetic switch with flexible rubber. In an axial direction, there is the least sensitivity against shocks and vibrations.

Switching hysteresis



The extent of the switching hysteresis (stroke of the actuating magnet) is dependent on the size of the actuating magnet and the magnetic shunt via the iron content of the surroundings. In the case of most magnetic switches it amounts to approximately 2 to 5mm stroke of the actuating magnet.

Switching point accuracy

The reproducible switch point accuracy of a magnetic switches is extremely high in constant conditions and lies at 0.01mm. When barium ferrite magnets are used as actuating magnets the switch point shifts depending on ambient temperature changes, as the magnetic field becomes stronger with lower temperatures and weaker with higher temperatures.

Magnetic Switches 1008

Certificates / Approvals

Certificates



SCHWEIZERISCHER VEREIN FÜR QUALITÄTS- UND MANAGEMENTSYSTEME

Certified according to ISO 9000 rev. 2000



SWISS TECHNICAL SERVICES AG

Approval as production factory, welding examination and procedure qualification incl. restamping certificate for the production of pressure tanks according to SVTI-regulation 501, 201

Approvals

The company Heinrich Kübler AG can manufacture magnetic switches to most national and industrial approvals. Therefore a wide range of instruments with approvals requirements can be produced acc.to customer's requests.



SOCIETE NATIONALE DE CERTIFICATION ET D'HOMOLOGATION (ATEX)

Approval for the production of magnetic switches acc. to EU-Directive 94/9/EG



GERMANISCHER LLOYD (Building of ships)

Approval for the production of magnetic switches according to GL-regulations



BUREAU VERITAS (Building of ships)

Approval for the production of magnetic switches according to BV-regulations



REGISTRO ITALIANO NAVALE (Building of ships)

Approval for the production of magnetic switches acc. to RINA-regulations

Magnetic Switches 1008 Approvals

As an innovative manufacturer of instruments for level control, we can offer to our customers systems according to different directives. The types of approval, applications and limits of use can be taken from the following specifications.

Approvals

Ex

A large number of magnetic switches from our standard range, or to customer requests, can be built according to the EU-Directive 94/9/EG with the protection types EEx ia IIC T3 to T6, EExm or dust Ex/D. By the combination of the instruments with the type key the catalogue shows with the Ex hexagonal logo which components can be used for Ex-instruments.

Ambient temperatures:

EEx ia-instruments

T3	180 °C
T4	130 °C
T5	95 °C
T6	80 °C

EExm-instruments

T4	130 °C
T5	95 °C
T6	80 °C

Electrical limiting values:

EEx ia-instruments

I_i	$\leq 100 \text{ mA}$
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By circuits acc. to R and N the electrical limiting values vary.

GL / BV / RINA

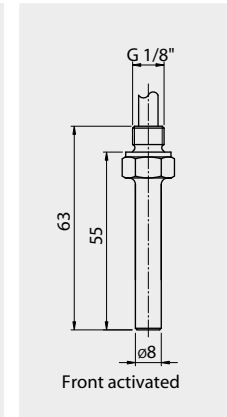
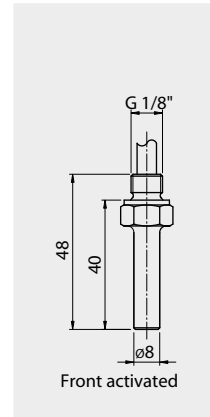
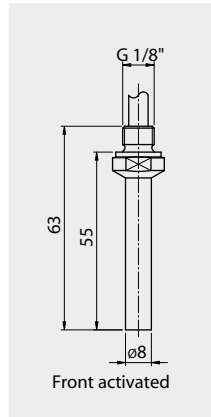
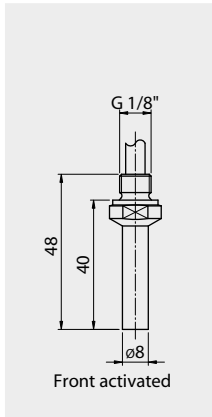
Magnetic switches for use in shipping can be manufactured to GL (Germanischer Lloyd), BV (Bureau Veritas) or RINA (Registro Italiano Navale) standards in large variety of design possibilities complete with controllers.

Magnetic Switches 1008

Stainless steel, Brass and Polyamide glass fibre reinforced

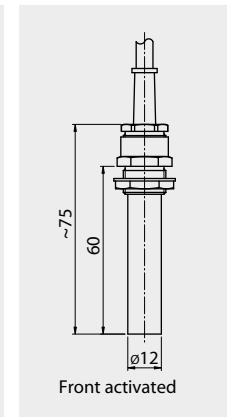
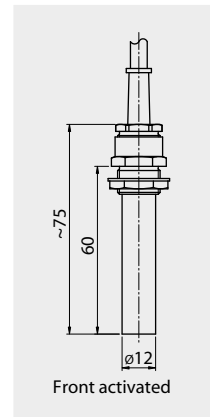
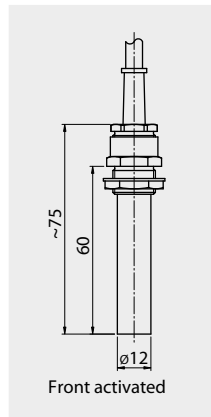
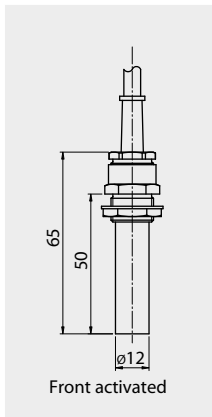
Technical data
Housing material:
Mounting thread:
Switching function:
Switching action:
Contact material:
Switching capacity:
Switching frequency:
Switching hysteresis:
Ambient temperature:
Protection rating:
Other cables:

MS - L40 - ..	MS - L55 - ..	VS - L40 - ..	VS - L55 - ..
Brass G1/8"	Brass G1/8"	Stainless steel G1/8"	Stainless steel G1/8"
Normally open	Normally open	Normally open	Normally open
Monostable	Monostable	Monostable	Monostable
Rhodium	Rhodium	Rhodium	Rhodium
10 VA	10 VA	10 VA	10 VA
230 V / 0.5 A	230 V / 0.5 A	230 V / 0.5 A	230 V / 0.5 A
1000 / sec.	1000 / sec.	1000 / sec.	1000 / sec.
ca. 5 mm	ca. 5 mm	ca. 5 mm	ca. 5 mm
-15 °C .. +80 °C PVC	-15 °C .. +80 °C PVC	-15 °C .. +80 °C PVC	-15 °C .. +80 °C PVC
-30 °C .. +180 °C Sil	-30 °C .. +180 °C Sil	-30 °C .. +180 °C Sil	-30 °C .. +180 °C Sil
IP54	IP54	IP54	IP54
See type key	See type key	See type key	See type key



Technical data
Housing material:
Mounting thread:
Switching function:
Switching action:
Contact material:
Switching capacity:
Switching frequency:
Switching hysteresis:
Ambient temperature:
Protection rating:
Connection cable:

MRS9 - ..	KRS9 - ..	KRU9 - ..	KWU9 - ..
Polyamide gfv. PG9	Polyamide gfv. PG9	Polyamide gfv. PG9	Polyamide gfv. PG9
Normally open	Normally open	Change over	Change over
Monostable	Monostable	Monostable	Monostable
Rhodium	Rhodium	Rhodium	Wolfram
10 VA	10 VA	30 VA	30 VA
230 V / 0.5 A	230 V / 0.5 A	230 V / 0.5 A	230 V / 0.5 A
1000 / sec.	300 / sec.	300 / sec.	100 / sec.
ca. 5 mm	ca. 5 mm	ca. 5 mm	ca. 2-3 mm
-15 °C ... +80 °C	-15 °C ... +80 °C	-15 °C ... +80 °C	-10 °C ... +80 °C
IP65	IP65	IP65	IP65
PVC	PVC	PVC	PVC



Type combination see type key Magnetic Switch

Magnetic Switches 1008

Brass and Polyamide glass fibre reinforced

Technical data
Housing material:
Mounting thread:
Switching function:
Switching action:
Contact material:
Switching capacity:
Switching frequency:
Switching hysteresis:
Ambient temperature:
Protection rating:
Connection cable:

	GMS9 - ..	GMU9 - ..	GMSM16 - ..	GMUM16 - ..
Housing material:	Polyamide gfv. PG9	Polyamide gfv. PG9	Polyamide gfv. PG16	Polyamide gfv. PG16
Mounting thread:	PG9	PG9	PG16	PG16
Switching function:	Normally open	Change over	Normally open	Change over
Switching action:	Monostable	Monostable	Bistable	Bistable
Contact material:	Rhodium	Rhodium	Rhodium	Rhodium
Switching capacity:	100 VA	30 VA	100 VA	30 VA
	230 V / 2 A	230 V / 0.5 A	230 V / 2 A	230 V / 0.5 A
Switching frequency:	300 / sec.	300 / sec.	1000 / sec.	1000 / sec.
Switching hysteresis:	ca. 3-5 mm	ca. 3-5 mm	-	-
Ambient temperature:	-15 °C ... +80 °C	-15 °C ... +80 °C	-15 °C ... +80 °C	-15 °C ... +80 °C
Protection rating:	IP65	IP65	IP65	IP65
Connection cable:	PVC	PVC	PVC	PVC

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Technical data
Housing material:
Mounting thread:
Switching function:
Switching action:
Contact material:
Switching capacity:
Switching frequency:
Switching hysteresis:
Ambient temperature:
Protection rating:
Other cables:

	MRS10 - ..	MRU10 - ..	MRS12 - ..	MRU12 - ..
Housing material:	Brass	Brass	Brass	Brass
Mounting thread:	M10 x 1mm	M10 x 1mm	M12 x 1mm	M12 x 1mm
Switching function:	Normally open	Change over	Normally open	Change over
Switching action:	Monostable	Monostable	Monostable	Monostable
Contact material:	Rhodium	Rhodium	Rhodium	Rhodium
Switching capacity:	30 VA	10 VA	10 VA	30 VA
	230 V / 0.5 A	230 V / 0.5 A	230 V / 0.5 A	230 V / 0.5 A
Switching frequency:	1000 / sec.	1000 / sec.	300 / sec.	300 / sec.
Switching hysteresis:	ca. 5 mm	ca. 5 mm	ca. 5 mm	ca. 5 mm
Ambient temperature:	-15 °C .. +80 °C PVC	-15 °C .. +80 °C PVC	-15 °C .. +80 °C PVC	-15 °C .. +80 °C PVC
	-30 °C .. +180 °C Sil	-30 °C .. +180 °C Sil	-30 °C .. +180 °C Sil	-30 °C .. +180 °C Sil
Protection rating:	IP54	IP54	IP54	IP54
Other cables:	See type key	See type key	See type key	See type key

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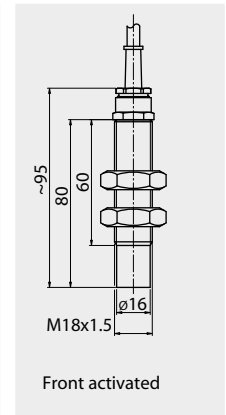
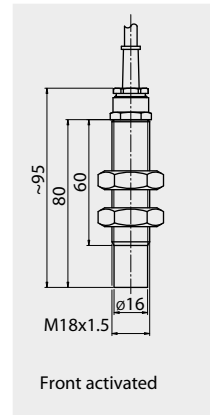
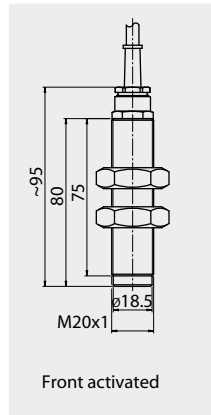
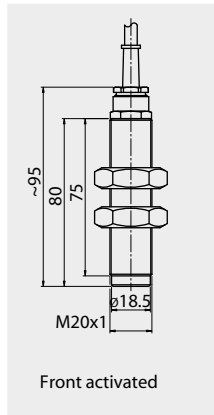
Type combination see type key Magnetic Switch

Magnetic Switches 1008

Brass and Polyamide glass fibre reinforced

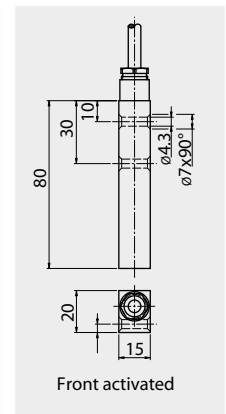
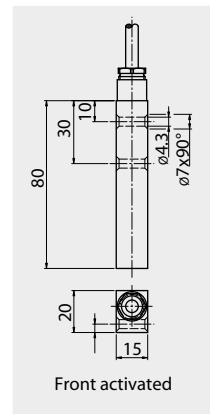
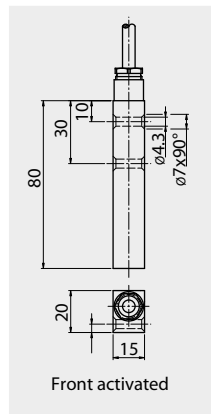
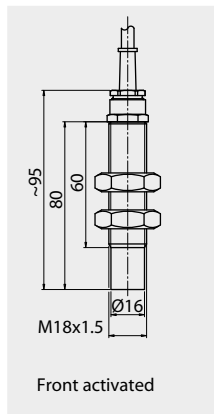
Technical data
Housing material:
Mounting thread:
Switching function:
Switching action:
Contact material:
Switching capacity:
Switching frequency:
Switching hysteresis:
Ambient temperature:
Protection rating:
Other cables:

MRS20 - ..	MRU20 - ..	GMS18 - ..	GMU18 - ..
Brass	Brass	Polyamide	Polyamide
M20x1	M20x1	M18x1.5	M18x1.5
Normally open	Change over	Normally open	Change over
Monostable	Monostable	Monostable	Monostable
Rhodium	Rhodium	Rhodium	Rhodium
10 VA	30 VA	10 VA	30 VA
230 V / 0.5 A	230 V / 0.5 A	230 V / 0.5 A	230 V / 0.5 A
1000 / sec.	1000 / sec.	1000 / sec.	1000 / sec.
ca. 3-5 mm	ca. 3-5 mm	ca. 5 mm	ca. 5 mm
-15 °C .. +80 °C PVC	-15 °C .. +80 °C PVC	-15 °C ... +80 °C	-15 °C ... +80 °C
-30 °C .. +180 °C Sil	-30 °C .. +180 °C Sil		
IP65	IP65	IP65	IP65
See type key	See type key	PVC	PVC



Technical data
Housing material:
Mounting thread:
Switching function:
Switching action:
Contact material:
Switching capacity:
Switching frequency:
Switching hysteresis:
Ambient temperature:
Protection rating:
Connection cable:

GMUM18 - ..	DRS - ..	DRU - ..	DRSM - ..
Polyamide	Polyamide gfv.	Polyamide gfv.	Polyamide gfv.
M18x1.5			
Change over	Normally open	Change over	Normally open
Bistable	Monostable	Monostable	Bistable
Rhodium	Rhodium	Rhodium	Rhodium
30 VA	10 VA	30 VA	100 VA
230 V / 0.5 A	230 V / 0.5 A	230 V / 0.5 A	230 V / 2 A
1000 / sec.	1000 / sec.	1000 / sec.	1000 / sec.
-	ca. 5 mm	ca. 5 mm	-
-15 °C ... +80 °C	-15 °C ... +80 °C	-15 °C ... +80 °C	-15 °C ... +80 °C
IP65	IP55	IP55	IP55
PVC	PVC	PVC	PVC



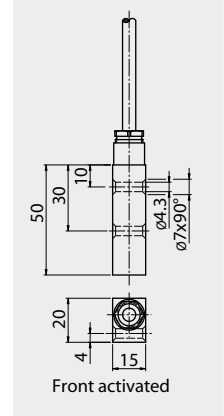
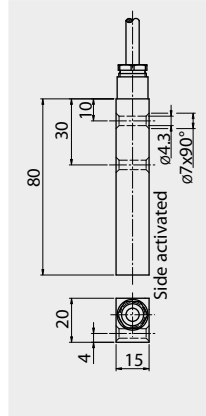
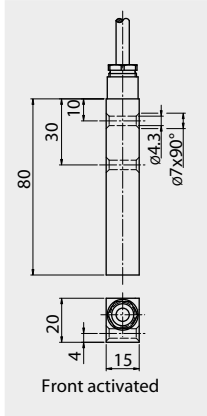
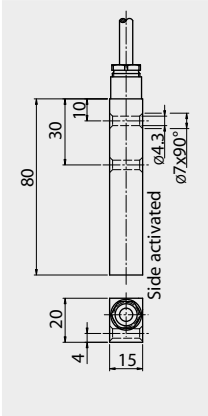
Type combination see type key Magnetic Switch

Magnetic Switches 1008

Aluminium and Polyamide glass fibre reinforced

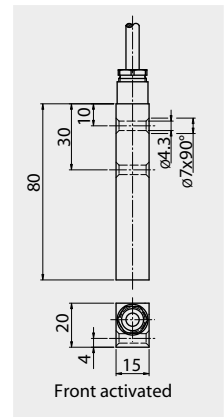
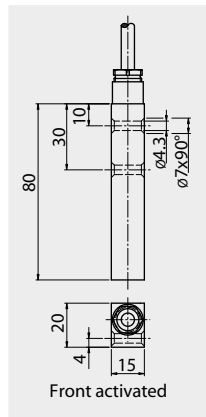
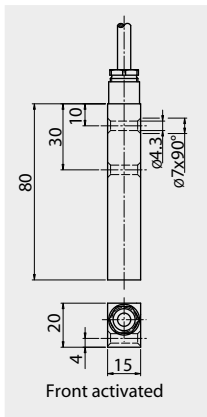
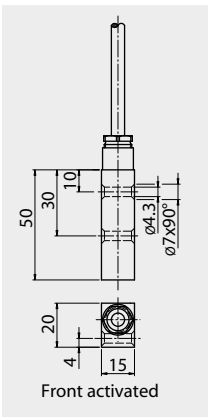
Technical data
Housing material:
Mounting thread:
Switching function:
Switching action:
Contact material:
Switching capacity:
Switching frequency:
Switching hysteresis:
Ambient temperature:
Protection rating:
Other cables:

DRUM - ..	DWU - ..	DGS - ..	FKS - AL - ..
Polyamide gfv.	Polyamide gfv.	Polyamide gfv.	Aluminium
-	-	-	-
Change over	Change over	Normally open	Normally open
Bistable	Monostable	Monostable	Monostable
Rhodium	Wolfram	Rhodium	Rhodium
30 VA	30 VA	100 VA	100 VA
230 V / 0.5 A	230 V / 0.5 A	230 V / 2 A	230 V / 1 A
300 / sec.	100 / sec.	300 / sec.	1000 / sec.
-	ca. 2-3 mm	ca. 3-4 mm	ca. 5 mm
-15 °C .. +80 °C PVC	-15 °C .. +80 °C PVC	-15 °C .. +80 °C PVC	-15 °C .. +80 °C PVC
IP55	IP55	IP55	IP55
See type key	See type key	See type key	See type key



Technical data
Housing material:
Mounting thread:
Switching function:
Switching action:
Contact material:
Switching capacity:
Switching frequency:
Switching hysteresis:
Ambient temperature:
Protection rating:
Other cables:

FKSM - AL - ..	FLS - AL - ..	FLU - AL - ..	FLSM - AL - ..
Aluminium	Aluminium	Aluminium	Aluminium
-	-	-	-
Normally open	Normally open	Change over	Normally open
Bistable	Monostable	Monostable	Bistable
Rhodium	Rhodium	Rhodium	Rhodium
100 VA	10 VA	30 VA	100 VA
230 V / 1 A	230 V / 0.5 A	230 V / 0.5 A	230 V / 2 A
1000 / sec.	300 / sec.	300 / sec.	300 / sec.
-	ca. 5 mm	ca. 5 mm	-
-15 °C .. +80 °C PVC	-15 °C .. +80 °C PVC	-15 °C .. +80 °C PVC	-15 °C .. +80 °C PVC
IP55	IP55	IP55	IP55
See type key	See type key	See type key	See type key



Type combination see type key Magnetic Switch

Magnetic Switches 1008

Aluminium and Stainless steel

Technical data	FLUM - AL - ..	FWU - AL - ..	FGMS - AL - ..
Housing material:	Aluminium	Aluminium	Aluminium
Mounting thread:	-	-	-
Switching function:	Change over	Normally open	Normally open
Switching action:	Bistable	Monostable	Monostable
Contact material:	Rhodium	Wolfram	Rhodium
Switching capacity:	30 VA	30 VA	30 VA
	230 V / 0.5 A	230 V / 0.5 A	230 V / 0.5 A
	300 / sec.	100 / sec.	300 / sec.
Switching frequency:	-	ca. 2-3 mm	ca. 3-4 mm
Switching hysteresis:	-	-15 °C .. +80 °C PVC	-15 °C .. +80 °C PVC
Ambient temperature:	IP55	IP55	IP55
Protection rating:	See type key	See type key	See type key
Other cables:			

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Technical data	EVU - L70 - ..	EVS - L70 - ..	EVS - L. - ..
Housing material:	Stainless steel	Stainless steel	Stainless steel
Mounting thread:	R3/8"	R3/8"	R3/8"
Switching function:	Change over	Normally open	Normally open
Switching action:	Monostable	Monostable	Monostable
Contact material:	Rhodium	Rhodium	Rhodium
Switching capacity:	30 VA	10 VA	10 VA
	230 V / 0.5 A	230 V / 0.5 A	230 V / 0.5 A
	300 / sec.	300 / sec.	300 / sec.
	ca. 5 mm	ca. 3-4 mm	ca. 5 mm
Switching frequency:	-15 °C .. +80 °C PVC	-15 °C .. +80 °C PVC	-15 °C .. +80 °C PVC
Switching hysteresis:	-30 °C .. +180 °C Sil	-30 °C .. +180 °C Sil	-30 °C .. +180 °C Sil
Ambient temperature:	IP55	IP55	IP55
Protection rating:	See type key	See type key	See Type key
Other cables:			

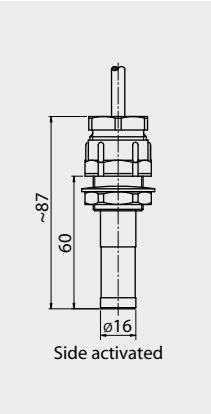
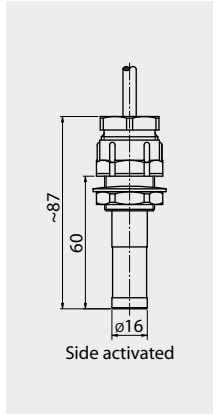
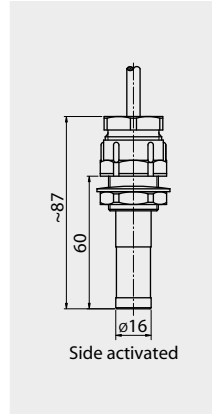
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Type combination see type key Magnetic Switch

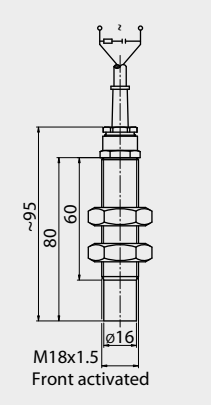
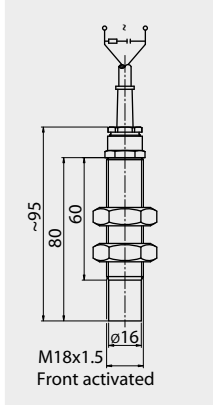
Magnetic Switches 1008

Polyethylene and Polyamide with contactless, electronic output

Technical data	KRS16 - ... - Ex	KRU16 - ... - Ex	KWU16 - ... - Ex
Housing material:	Polyethylene	Polyethylene	Polyethylene
Mounting thread:	PG16	PG16	PG16
Switching function:	Normally open	Change over	Change over
Switching action:	Monostable	Monostable	Monostable
Contact material:	Rhodium	Rhodium	Wolfram
Switching capacity:	10 VA	30 VA	30 VA
Switching frequency:	230 V / 0.5 A	230 V / 0.5 A	230 V / 0.5 A
Switching hysteresis:	300 / sec.	300 / sec.	100 / sec.
Ambient temperature:	ca. 5 mm	ca. 5 mm	ca. 1-2 mm
Protection rating:	-5 °C ... +40 °C	-10 °C ... +40 °C	-10 °C ... +40 °C
Connection cable:	IP55	IP55	IP55
	PVC	PVC	PVC

 <p>~87 60 ø16 Side activated</p>	 <p>~87 60 ø16 Side activated</p>	 <p>~87 60 ø16 Side activated</p>
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Technical data	TRS18 - ..	TRSM18 - ..
Housing material:	Polyamide	Polyamide
Mounting thread:	M18x1.5	M18x1.5
Switching function:	Normally open	Normally open
Switching action:	Monostable	Bistable
Contact material:	Contactless	Contactless
Switching capacity:	100 VA	100 VA
Switching frequency:	250 V / 1 A	250 V / 1 A
Switching hysteresis:	100 / sec.	100 / sec.
Ambient temperature:	-	-
Protection rating:	-15 °C ... +50 °C	-15 °C ... +50 °C
Connection cable:	IP55	IP55
	PVC	PVC

 <p>~95 80 60 ø16 M18x1.5 Front activated</p>	 <p>~95 80 60 ø16 M18x1.5 Front activated</p>
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Type combination see type key Magnetic Switch

Magnetic Switches 1008

Type key

Code 1	Key 1	Standard designs	ATEX
	MS - L40 - MS - L55 - MRS10 - MRS12 - MRS20 - MRU10 - MRU12 - MRU20 -	Brass housing with G1/8" thread Brass housing with G1/8" thread Brass housing with thread M10 Brass housing with thread M12 Brass housing with thread M20 Brass housing with thread M10 Brass housing with thread M12 Brass housing with thread M20	
	VS - L40 - VS - L55 - EVS - L70 - EVS - L100 - EVU - L70 - EVU - L100 -	Stainless steel housing with G1/8" thread, housing length L=40 mm Stainless steel housing with G1/8" thread, housing length L=55 mm Stainless steel housing with G3/8" thread, housing length L=70 mm Stainless steel housing with G3/8" thread, housing length L=100 mm Stainless steel housing with G3/8" thread, housing length L=70 mm Stainless steel housing with G3/8" thread, housing length L=100 mm	     
	GMS9 - GMS18 - GMU9 - GMU18 - GMSM16 - GMUM16 - GMUM18 -	Polyamide housing with PG9 screwed connection Polyamide housing with thread M18 Polyamide housing with PG9 screwed connection Polyamide housing with thread M18 Polyamide housing with PG16 screwed connection Polyamide housing with PG16 screwed connection Polyamide housing with thread M18	
	TRS18 - TRSM18 -	Polyamide housing with thread M18 Polyamide housing with thread M18	
	KWU9 - KWU16 -	Polyamide housing with PG9 screwed connection Polyethylene housing with PG16 screwed connection	
	KRS9 - KRS16 - KRU9 - KRU16 -	Polyamide housing with PG9 screwed connection Polyethylene housing with PG16 screwed connection Polyamide housing with PG9 screwed connection Polyethylene housing with PG16 screwed connection	 
	DRS - DRSM - DRU - DRUM -	Polyamide housing with two holes Polyamide housing with two holes Polyamide housing with two holes Polyamide housing with two holes	   

Type combination

Code	1	2	3
Key	1	1	1
Example	EVS - L70 -	5PVC -	Ex

Magnetic Switches 1008

Type key

FGMS - AL -	Aluminium housing with two holes		
FKS - AL -	Aluminium housing with two holes		
FKSM - AL -	Aluminium housing with two holes		
FLS - AL -	Aluminium housing with two holes		
FLSM - AL -	Aluminium housing with two holes		
FLU - AL -	Aluminium housing with two holes		
FLUM - AL -	Aluminium housing with two holes		
FLUM - V -	Aluminium housing with two holes		
FWU - AL -	Aluminium housing with two holes		
DGS -	Polyamide housing with two holes		
DWU -	Polyamide housing with two holes		
Options			
... / N	Namur circuit according to EX 60947		
... / R	With 22 Ohm protective resistor (EExd)		
Code 2	Key 1	Cable / length of cable in m	ATEX
.. PVC -	.. Polyvinylchloride PVC (PVC-grey)		
.. PVC-blau -	.. Polyvinylchloride PVC (PVC-blue)		
.. SIL -	.. Silicone		
.. PUR -	.. Pur (partly oil resisting)		
.. FEP -	.. Teflon		
.. Radox -	.. Radox		
...	.. Various		
Options			
... / CY	Shielded cable		
... / ÖL	Oil resisting cable		
Code 3	Key 1	Approvals and Options	ATEX
Ex	Intrinsically safe design acc. to EExia		
Ex/D	Intrinsically safe design acc. to EExia with dust Ex		
EExd/D	Explosion proof design acc. to EExd with dust Ex		
GL	Germanischer Lloyd		
BV	Bureau Veritas		
RINA	Registro Italiano Navale		

Type combination

Code	1	2	3
Key	1	1	1
Example	EVS - L70 -	5PVC -	Ex

Magnetic Switches 1008

Cable / Materials

Cable	Min. / Max. temperature [°C]	Material	Max. leads	Thickness of lead
... PVC -	-20 °C / +80 °C	Polyvinylchloride	12	0.25 - 0.75
... PVC-blau -	-20 °C / +80 °C	Polyvinylchloride	7	0.75
... Sil -	-60 °C / +180 °C	Silicone	12	0.25 - 0.75
... PUR -	-40 °C / +80 °C	Polyurethane	10	0.25 - 0.75
... FEP -	-100 °C / +200 °C	Fluorethylenpropylene	4	0.25 - 0.5
... Radox -	-35 °C / +120 °C	Radox	10	0.5 - 0.75
... Lit -	-5 °C / +70 °C -65 °C / +200 °C	Insulated stranded wires PVC Insulated stranded wires FEP	1 1	0.5 0.5
... NiLit -	-60 °C / +450 °C	Insulated nickel stranded wires with glass insulation	1	0.5

Options

... / CY	Shielded cable
... / ÖL	Oil resisting cable

Material design temperatures	Material	Temperature min.	Temperature max.
V	Stainless steel	- 196 °C	+ 400 °C
Ti	Titanium	- 10 °C	+ 300 °C
H	Alloy / Ni Mo	- 196 °C	+ 400 °C
EEC	Stainless steel E-CTFE coated	- 78 °C	+ 150 °C
PFA	Stainless steel PFA coated	- 100 °C	+ 250 °C
P	Polyvinylchloride PVC	- 15 °C	+ 60 °C
PP	Polypropylene PP	- 5 °C	+ 100 °C
PF	Polyvinylidenfluoride PVDF	- 5 °C	+ 150 °C
PA	Polyamide PA	- 40 °C	+ 110 °C
M	Brass	- 196 °C	+ 250 °C
AL	Aluminium	- 196 °C	+ 150 °C