BERNSTEIN
safe solutions



Electronic Magnetic Switches

Detection, measurement and switching
with ‘magneto-resistive’ or ‘hall’ elements

Reliable, accurate and contact-free - electronic m

Thanks to their special properties, electronic magnetic switches with magneto-resistive or Hall elements are ideal for use in many different applications. They can be used for position, angle and/or speed recording and are insensitive to shock, impacts, vibrations and wear. High switching frequencies, long sensing ranges, a broad temperature range and very good repeatability are other advantages of this technology and in many cases make them the technically superior alternative to electromechanical reed contacts.

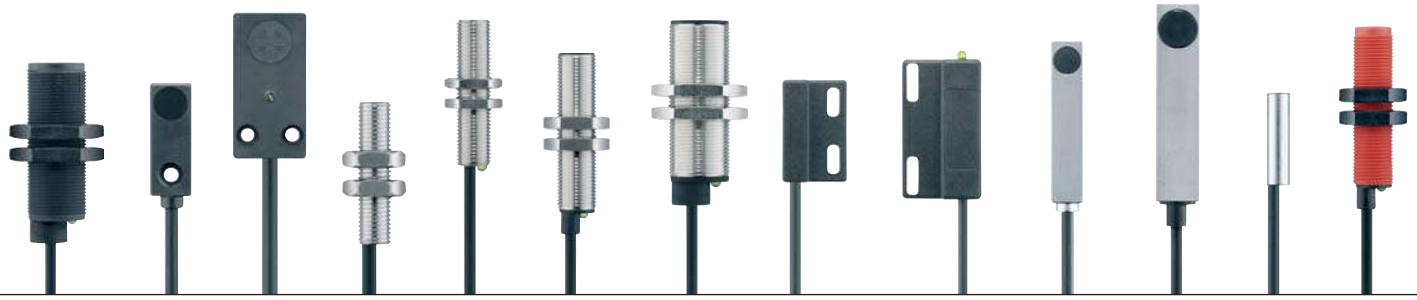


The fact that many non-ferrous metals allow magnetic fields to pass unhindered also extends the area of use for magnetic switches. This allows the sensor to be encapsulated with pressure resistance in a sturdy metal casing. However, it can also be installed concealed, for example in pipes or behind non-magnetic metal surfaces.

The advantages of electronic magnetic switches over electro-mechanical reed contacts

- Reliable and insensitive to vibration
- Bounce-free switching
- Unlimited service life
- High repeat accuracy
- Rapid response times
- High sensitivity
- Temperature-stable

Select from the Bernstein range magnetic switches the sensor and the technical principle that best meet your needs: Hall sensors with minimum circuitry, standard Hall sensors with integrated sensor electronics or magneto-resistive sensors. In round, rectangular or threaded designs, in plastic, brass, brass/plastic or stainless encapsulation.



Basic technology, Hall sensors

Type of housing	Series	Output	Material	Part number	Designation	Technical Data
Ø 6,5 mm x 25 mm	D 06	NO contact	Stainless	636.2670.001	MEN-D06NS/H10-K2	NPN output
M 8 x 1 mm x 32 mm	M 8	NO contact	Brass	636.2660.002	MEM-M08NS/H10-K2	Ub: 4,5 – 24 V DC
M 10 x 1 mm x 40 mm	M 10	NO contact	Brass*	636.2661.003	MEM-M10NS/H10-K2	Imax: 25 mA
M 12 x 1 mm x 46 mm	M 12	NO contact	Brass	636.2662.004	MEM-M12NS/H10-K2	Sensing range 17 mm/unipolar**
M 12 x 1 mm x 46 mm	T 12	NO contact	Plastic	636.2662.005	MEK-M12NS/H10-K2	magnetic sensitivity 10 mT
M 18 x 1 mm x 46 mm	M 18	NO contact	Brass	636.2663.006	MEM-M18NS/H10-K2	Switching frequency 20 kHz
M 18 x 1 mm x 46 mm	T 18	NO contact	Plastic	636.2663.007	MEK-M18NS/H10-K2	-25 °Celsius to +70 °Celsius
27 x 10 x 5,5 mm	E 27	NO contact	Plastic	636.2693.010	MEK-E27NS/H10-K2	Protection IP 67
8 x 8 x 40 mm	Q 08	NO contact	Brass	636.2680.012	MEM-Q08NS/H10-K2	
12 x 12 x 55 mm	Q 12	NO contact	Brass	636.2655.013	MEM-Q12NS/H10-K2	
50 x 25 x 10 mm	E 50	NO contact	Plastic	636.2690.011	MEK-E50NS/H10-K2	
28 x 18 x 6,5 mm	MA-11	NO contact	Plastic	636.2611.008	MEK-E29NS/H10-K2	
45 x 25 x 9 mm	MA-45	NO contact	Plastic	636.2645.009	MEK-E45NS/H10-K2	

* also in the front area

** referred to magnet T 62

agnetic switches from Bernstein

Basic technology, Hall sensors

Modular system, consisting of an encapsulated Hall element with EMC protective circuit. This means that even these sensors fulfil the requirements of EN-60947-5-2 for non-mechanical magnetic proximity switches. Sensors of various designs are available for a wide variety of applications.

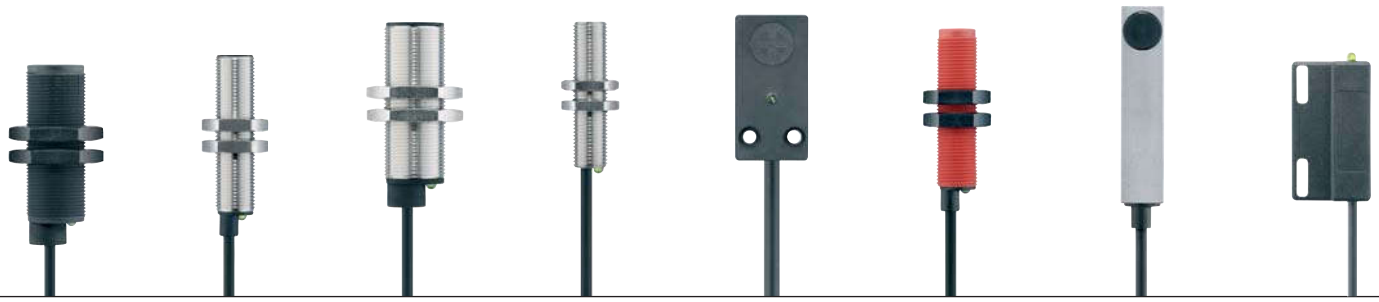


- Output circuit NPN, NO contact
- Voltage range 4.5 – 24 V DC
- Reverse polarity protected
- Switching frequencies up to 20 kHz
- Design diameter 6 mm to 50 x 25 x 10 mm
- Unipolar design

Standard range, Hall sensors

Unlike the Bernstein basic Hall sensors, the functionality and modularity have been increased in these Hall sensors by integrating full sensor electronics. Here too, Bernstein offers a complete modular system that can be adapted to suit your needs.

- Output circuit PNP, NC or NO contact
- Voltage range 10 - 39 V DC
- Output current 400 mA, short-circuit protected
- Reverse polarity protected
- Switching frequencies up to 1.5 kHz
- Design diameter M 10 to 50 x 25 x 10 mm
- Unipolar design



Standard range, Hall sensors

Type of housing	Series	Output	Material	Part number	Designation	Technical Data
M 10 x 1 mm x 40 mm	M 10	NO contact	Brass*	637.2261.085	MEM-M10PS/H10-KL2	PNP output
M 10 x 1 mm x 40 mm	M 10	NC contact	Brass*	637.2161.086	MEM-M10PÖ/H10-KL2	Ub: 10 – 39 V DC
M 12 x 1 mm x 46 mm	M 12	NO contact	Brass	637.2262.090	MEM-M12PS/H10-KL2	Imax: 400 mA
M 12 x 1 mm x 46 mm	M 12	NC contact	Brass	637.2162.092	MEM-M12PÖ/H10-KL2	Sensing range 17 mm/unipolar**
M 12 x 1 mm x 46 mm	T 12	NO contact	Plastic	637.2262.089	MEK-M12PS/H10-KL2	magnetic sensitivity 10 mT
M 12 x 1 mm x 46 mm	T 12	NC contact	Plastic	637.2162.091	MEK-M12PÖ/H10-KL2	Switching frequency 1.5 kHz
M 18 x 1 mm x 46 mm	M 18	NO contact	Brass	637.2263.098	MEM-M18PS/H10-KL2	Switching state LED
M 18 x 1 mm x 46 mm	M 18	NC contact	Brass	637.2163.100	MEM-M18PÖ/H10-KL2	-25 °Celsius to +70 °Celsius
M 18 x 1 mm x 46 mm	T 18	NO contact	Plastic	637.2263.097	MEK-M18PS/H10-KL2	Protection IP 67
M 18 x 1 mm x 46 mm	T 18	NC contact	Plastic	637.2163.099	MEK-M18PÖ/H10-KL2	
12 x 12 x 55 mm	Q 12	NO contact	Brass	637.2255.083	MEM-Q12PS/H10-KL2	
12 x 12 x 55 mm	Q 12	NC contact	Brass	637.2155.084	MEM-Q12PÖ/H10-KL2	
50 x 25 x 10 mm	E 50	NO contact	Plastic	637.2290.081	MEK-E50PS/H10-KL2	
50 x 25 x 10 mm	E 50	NC contact	Plastic	637.2190.082	MEK-E50PÖ/H10-KL2	
45 x 25 x 9 mm	MA-45	NO contact	Plastic	637.2245.079	MEK-E45PS/H10-KL2	
45 x 25 x 9 mm	MA-45	NC contact	Plastic	637.2145.080	MEK-E45PÖ/H10-KL2	

* also in the front area

** referred to magnet T 62

Standard range, magneto-resistive

Magneto-resistive sensors are more sensitive than sensors with the Hall effect by a factor of 10. Not only can they be very small, they can also detect especially low field strengths.

At the same time, they stand out by virtue of their high measuring accuracy even at high ambient temperatures, their particularly high degree of reliability and by the fact that they occupy little space. The principle by which they are designed also means that they are independent of polarity, which means that the magnet does not have to be mounted with pole orientation. With the corresponding encapsulation, Bernstein magneto-resistive sensors have proved effective even in demanding environments such as elevator construction or agricultural technology.

- Output circuit PNP, NC or NO contact
- Very high sensitivity (up to sensing range 60 mm)
- Voltage range 10 – 39 V DC/10 – 30 V DC
- Output current 400 mA/200 mA, short-circuit protected
- Reverse polarity protected
- Independent of polarity
- Switching frequencies up to 1.5 kHz
- Design diameter 6 mm to M 18

Sensing ranges for electronic magnetic sensors

Since the sensing range of magnetic sensors is influenced by the combination of sensor and magnet, they can only be looked at as a complete system. The following provides an overview of the expected sensing ranges (Sn) when various magnets from the Bernstein range are used.

Magnet	Dimensions	Part number	Sn with Hall sensor	Sn with magneto-resistive Sensors
T 75	Ø 5 mm	630.1175.057	5 mm	10 mm
T 06	Ø 6 mm	630.1106.065	5 mm	15 mm
T 61	Ø 20 mm	630.1261.035	10 mm	35 mm
T 62	Ø 23 mm	630.1262.039	17 mm	45 mm
T 67	Ø 20 mm	630.1167.054	15 mm	40 mm
T 69	Ø 31 mm	630.1269.031	20 mm	60 mm



Standard range, magneto-resistive

Type of housing	Series	Output	Material	Part number	Designation	Technical Data
M 10 x 1 mm x 40 mm	M 10	NO contact	Brass*	637.3261.087	MEM-M10PS/M01-KL2	PNP output
M 10 x 1 mm x 40 mm	M 10	NC contact	Brass*	637.3161.088	MEM-M10PÖ/M01-KL2	NO or NC contact
M 12 x 1 mm x 46 mm	M 12	NO contact	Brass	637.3262.094	MEM-M12PS/M01-KL2	Ub: 10 – 39 V DC
M 12 x 1 mm x 46 mm	M 12	NC contact	Brass	637.3162.096	MEM-M12PÖ/M01-KL2	Imax: 400 mA
M 12 x 1 mm x 46 mm	T 12	NO contact	Plastic	637.3262.093	MEK-M12PS/M01-KL2	Sensing range 45 mm/omnipolar**
M 12 x 1 mm x 46 mm	T 12	NC contact	Plastic	637.3162.095	MEK-M12PÖ/M01-KL2	magnetic sensitivity 1.0 mT
M 18 x 1 mm x 46 mm	M 18	NO contact	Brass	637.3263.102	MEM-M18PS/M01-KL2	Switching frequency 1.5 kHz
M 18 x 1 mm x 46 mm	M 18	NC contact	Brass	637.3163.104	MEM-M18PÖ/M01-KL2	Switching state LED
M 18 x 1 mm x 46 mm	T 18	NO contact	Plastic	637.3263.101	MEK-M18PS/M01-KL2	-25 °Celsius to +70 °Celsius
M 18 x 1 mm x 46 mm	T 18	NC contact	Plastic	637.3163.103	MEK-M18PÖ/M01-KL2	Protection IP 67
Ø 6,5 mm x 25 mm	D 06	NO contact	Stainless	637.3270.105	MEN-D06PS/M02-K2	Ub: 10 – 30V DC
8 x 8 x 40 mm	Q 08	NO contact	Brass	637.3280.106	MEM-Q08PS/M02-K2	Imax: 200 mA
M 8 x 1 mm x 32 mm	M 8	NO contact	Brass	637.3260.107	MEM-M08PS-M02-K2	no LED

* also in the front area

** referred to magnet T 62



Other sensors and switches in the Bernstein range

Inductive sensors



- Micro-sensors
  ∅ 3 mm to ∅ 6,5 mm
  Sensing ranges 0,6 mm to 1,5 mm



- Rectangular designs
  5 x 5 mm to 68 x 30 x 15 mm
  Sensing ranges 1 mm to 8 mm

Optoelectronic sensors



- Threaded designs
  One-way systems, reflection light scanners, reflection light barriers M 12 x 1 to M 30 x 1,5



- Rectangular designs
  One-way systems, reflection light scanners, reflection light barriers 12 x 12 mm to 88 x 63 x 24 mm

Float switches



- Miniature and adjustable versions with 1 – 3 switching points

Capacitive sensors



- Threaded designs
  M 12 x 1 to M 32 x 1,5
  Sensing ranges from 2 mm to 30 mm



- Round designs
  ∅ 20 mm to ∅ 34 mm
  Sensing ranges from 15 mm to 30 mm

Magnetic switches



- Electro-mechanical reed contact versions
  ∅ 6 mm to 88 x 13 x 25 mm

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