

To complement the extensive range of mechanical safety switches offered by BERNSTEIN, a new series of non-contact safety switches is now available. These safety sensors ensure that safety doors and protective guards remain closed when danger is present.

**The non-contact safety technology offers the following advantages:**

- Wear-free actuating
- Very easy to clean
- No actuator, therefore:
  - No mechanical damage possible
  - No hazards or restrictions caused by protruding actuator
- Switching function not affected by contaminants

BERNSTEIN offers two different technologies in the field of non-contact safety technology:

- Safety sensors on magnetic basis, MAK series
- Safety sensors on RFID basis, CSMS series

## Safety sensors CSMS

The CSMS can be directly connected to contactors or to an evaluation unit (dependent on the respective model). The RRS version integrates an evaluation of a return circuit and start button with direct connection to contactors. With the CSMS, PL e and SIL 3 is achieved. This is the case with only one CSMS and also with series circuits with up to 32 sensors the case.



**Product features**

- Performance Level e
- Up to 32 series circuits without leaving the PL e
- Power supply 24 V DC
- High coding level corresponding to the draft DIN EN ISO 14119
- No need of any additional external monitoring (dep. on the type)
- Connection of return circuit and start button possible (dep. on the type)
- Output current up to 250 mA per safety output
- Large diagnostic possibility
- 3 LEDs for status information of the CSMS
- Switching distance: 13 mm
- Dimensions: 110 mm x 30 mm x 15 mm
- IP 67

## Safety sensors MAK

To achieve a PL or SIL value with the MAK safety sensors, it is necessary to connect them to a safety evaluation unit. The magnetic safety sensors are dual channel versions. The evaluation unit (BERNSTEIN designation: MÜZ) monitors the correct switching of the two MAK channels and a defined time window in which the two channels must switch.

With the combination of MAK and MÜZ, a PL d and a SIL 3 can be reached. Besides the 3 different types of magnetic safety switches, BERNSTEIN also offers two different evaluation units.



**Product features**

- Performance Level d
- Redundancy with NO and NC contacts
- Switching distance: 6 mm
- IP 67

**Comparison CSMS – MAK**

Product characteristics	CSMS	MAK
<b>Operating principle</b>	electro-magnetic, RFID	magnetic, Reed
<b>Safety parameters</b>	PL e, SIL3	PL d, SIL 3
<b>Safety outputs</b>	electrical outputs	mechanical contacts
<b>Can be switched in series</b>	yes, when a constant safety level is guaranteed	yes, with falling safety level
<b>Evaluation unit required</b>	no	yes
<b>Actuator coding</b>	high	low
<b>Diagnostic interface</b>	via LED and electronically	no
<b>Mechanical sensitivity</b>	low	very high
<b>Approach possibility of the actuator</b>	4	1
<b>Safety outputs</b>	2	1
<b>Return circuit evaluation</b>	yes	partially (depending on the evaluation unit)
<b>Start button monitoring</b>	yes	partially (depending on the evaluation unit)