

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

The contactless 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 contactless safety technology:

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

## Safety sensors CSMS

The CSMS can directly be 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
Operating principle	elektro-magnetic, RFID	magnetic, Reed
Safety parameters	PL e, SIL3	PL d, SIL 3
Safety outputs	electrical outputs	mechanical contacts
Can be switched in series	yes, when a constant safety level is guaranteed	yes, with falling safety level
Evaluation unit required	no	yes
Actuator coding	high	low
Sensing distance	13 mm	3–4 mm
Diagnostic interface	via LED and electronically	no
Mechanical sensitivity	low	very high
Approach possibility of the actuator	4	1
Safety outputs	2	1
Return circuit evaluation	yes	partially (depending on the evaluation unit)
Start button monitoring	yes	partially (depending on the evaluation unit)