

## 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
- IP67

### Magnetic controllers for safety functions

BERNSTEIN offers magnetic controllers for safety functions that fulfill performance level d according to EN 13849-1 and SIL 3 according to EN 61508 or rather EN 62061.

A safety system consists of the safety magnetic controllers and a coded transducer unit.

The anti-tamper security of the transducer unit is achieved by variable coding of the actuator magnets and magnetic switches.

Depending on the type of device, one or two coded transducer units (magnetic switch with corresponding magnet) of type:

- MAK-4236
- MAK-5236
- MAK-5336

can be connected to and monitored by the safety magnetic controllers.



MAK-4236-x with magnet TK-42-CD



MAK-5236-x with magnet TK-52-CD / 2



MAK-5336-x with magnet TK-43-CD

The safety magnetic controller processes the NC or NO contact signals coming from the coded magnetic switches. Thereby, it is possible to detect the opening of the safety guard (door, hatch, protective hood etc.) and to turn off the safety output. Thanks to the redundant evaluation, the magnetic controller is switched to the "safe state" should a fault or manipulation occur, or if the time difference is exceeded between the NC contact signal and the NO contact signal. An LED indicates that the safety magnetic controller is in the "safe state".

To ensure fault detection of the switch-off device, the MÜZ-102 offers the possibility to connect a return circuit. The system additionally features a NC contact for signalling purposes.

- Redundancy by NO and NC contacts
- Manipulation safety by coding
- Monitoring of the return circuit (depending on device type)

## Magnetic controllers for safety functions

TÜV certified

- EN ISO 13849-1 Performance Level d
- EN 61508 and EN 62061 SIL 3
- EN 60947-5-3 Single fault security S



## Coded transducer units

Magnetic switches

Type designation	MÜZ-102/D24-FL-DA	MÜZ-202/D24-FL
<b>Article number</b>	<b>6392701306</b>	<b>6392702307</b>
Max. number of connectable transducer units	1	2
Safety output, NO contact	●	●
Feedback circuit	●	-
Data output (NC contact)	●	-
<b>Technical data</b>		
Operating voltage	24 V DC	24 V DC
Operating current	60 mA	60 mA

Type designation	
<b>Article number</b>	
Cable length	

Type designation	
<b>Article number</b>	
Cable length	

Type designation	
<b>Article number</b>	
Cable length	

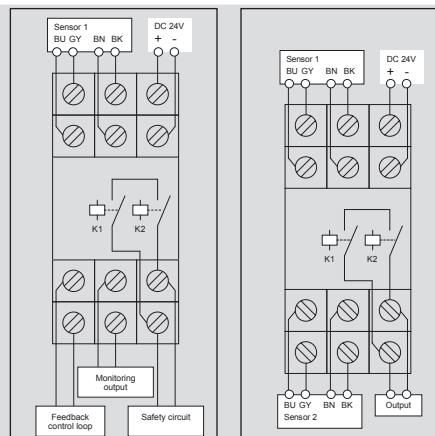
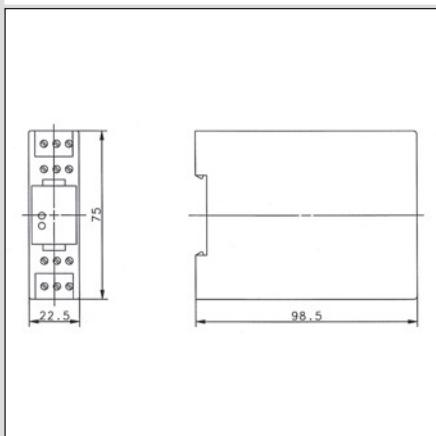
Type designation	
<b>Article number</b>	
Cable length	

<b>Switching capacity, safety output</b>		
Switching voltage	max	AC 250 V
Switching current	max	8 A
Switching power	max	1700 VA
LED: Hazard status/switching status		●/-
LED: Supply voltage/ON		●
Relay: Positive-action/standard		●/-

<b>Ambient conditions</b>		
Temperature range	min/max	0 °C/+55 °C
		32 °F/+131 °F
Protection class (to IEC 529, EN 60529)		IP20
Enclosure material		PC
Mounting system (DIN 50022)		TS 35
Type of connection: Terminal block		max. 2.5 mm <sup>2</sup>

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<b>Actuating magnet</b>		
Type designation		
<b>Article number</b>		
Use: safety magnetic controller		
<b>Article number</b>		



All dimensions in mm

Other types available on request.



MAK-4236-3 <b>6490642315</b> 3 m PVC cable	MAK-5236-3 <b>6490652316</b> 3 m PVC cable	MAK-5336-3 <b>6490653317</b> 3 m PVC cable
MAK-4236-6 <b>6490642302</b> 6 m PVC cable	MAK-5236-6 <b>6490652307</b> 6 m PVC cable	MAK-5336-6 <b>6490653311</b> 6 m PVC cable
MAK-4236-9 <b>6490642303</b> 9 m PVC cable	MAK-5236-9 <b>6490652308</b> 9 m PVC cable	MAK-5336-9 <b>6490653312</b> 9 m PVC cable
MAK-4236-STK <b>6490642305</b> 4-pin connector	MAK-5236-STK <b>6490652309</b> 4-pin connector	MAK-5336-STK <b>6490653313</b> 4-pin connector

-5 °C/+70 °C +23 °F/+158 °F	-5 °C/+70 °C +23 °F/+158 °F	-5 °C/+70 °C +23 °F/+158 °F
IP67	IP67	IP67
PA 6.6	PBT	PA 6.6
4 mm	3 mm	3 mm
14 mm	14 mm	14 mm

TK-42-CD <b>6402042310</b>	TK-52-CD/2 <b>6402052311</b>	TK-43-CD <b>6402043312</b>
<b>6392701306</b> <b>6392702307</b>	<b>6392701306</b> <b>6392702307</b>	<b>6392701306</b> <b>6392702307</b>

