



Monitor safely and efficiently safety doors and stop plants

Electronic safety sensors and mechanical emergency stopping devices in series circuits

Safety for man and machine

In dangerous situations plant and machinery needs to be stopped safely to protect man and machine. To achieve this, emergency stopping devices are used. For safe and cost-effective installation, BERNSTEIN offers the possibility to integrate emergency stopping devices into the series circuit of the electronic safety sensor CSMS. Thanks to this solution (approved by TÜV), the cost of material and labour for the installation is reduced.

➤ INFO: The contactless safety sensor CSMS

- **Safety series connection** with max. 32 CSMS up to **PL e / SIL 3 (category 4)**
- **Reduction in cost** – no additional external monitoring is needed
- **Flexible application** – a manual and automatic start is possible with the same CSMS
- **Guaranteed future** – the CSMS fulfils the requirement of ISO 14119 (successor to EN 1088) regarding an individual coding (high-level coding)
- **Economic system installation** due to the **simple and fast installation** with M12 plug technology
- **Time saving** – error free installation
- **Time saving** – the system status is displayed on the **diagnosis interface**
- **Reduction in costs** – no door or hood guides are necessary



Simply scan the QR code and experience the CSMS online

Contactless safety sensor and emergency stopping devices

For monitoring movable safety guards, BERNSTEIN offers contactless safety sensors.

The **CSMS safety sensors** based on RFID are contactless and fulfil the highest requirement (high-level coding) of protection against manipulation of ISO 14119. They are used individually or in serial connection with max. 32 CSMS up to PL e / SIL 3 (category 4).

According to the Machinery Directive, machines and plants need to be stopped in case of emergency. Amongst others, mechanical emergency stopping devices are used for the shutdown. This requires a separate safety relay, additional wiring to the control

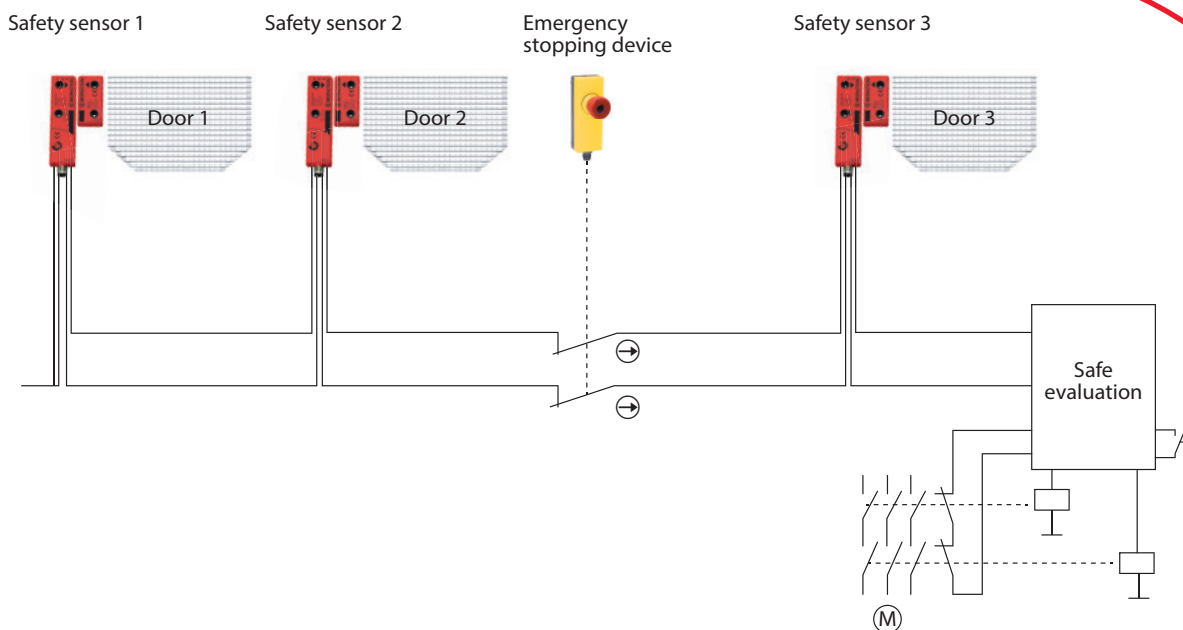
cabinet, fixing material and sufficient space in the switch cabinet.

Sorting, sawing, drilling, milling, turning, labelling and packaging

If a plant consists of several machines, the effort for the installation of emergency stopping devices can be a real challenge. Depending on the size of the plant, distance to the control cabinet and number of emergency stopping devices, the costs for material and installation can put in question its efficient use.

Combine CSMS safety sensors and emergency stopping device in series circuits

Monitor three doors electronically – in the series circuit of an emergency stopping device. It does not work?
 With BERNSTEIN, it works: ❶ Analyse every risk ❷ Integrate emergency stopping device ❸ Reduce costs



Application example

Requirements

- Recourse to a risk analysis of the final application that covers an **error masking**
- Compliance with all necessary measures and requirements of ISO 13849-1, ISO 14119 and ISO 13850 for the integration of the CSMS and the emergency stopping device (according to EN 60947- 5-5) as well as for all further parts of the safety function
- Validation according to ISO 13849-2

➤ INFO: Error masking

An error masking is existent if an error has been covered or masked by another error.

Results evaluation of the risk analysis

No error masking possible

PL e, cat 4 can be achieved for the emergency stopping function

Error masking possible

The reason for the error masking is determined, as well as the measures that can be carried out to reach the required **PL_r**, (e.g. protected lines (piped) to and from the emergency stopping device or separately installed lines).



**Switch systems –
Economy meets safety**



**Sensor systems –
Compact intelligence**



**Enclosure systems –
Function and design**

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