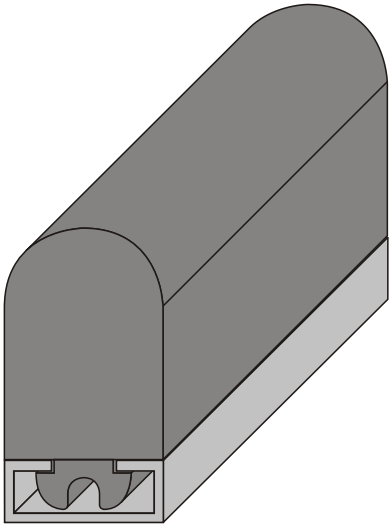


Mounting and System Description for *SSZ*-Safety-Switching-Rails

SSZ-Safety-Switching-Rails

Further *SSZ* Products:

- Safety Bumpers
- Safety Mats
- Floor Switches
- Protection of shelving alleys PSA/P
- Protection of Fork-lift trucks PSA/S
- Special devices and developments

SSZ-Safety-Switching-Rails

Application

SSZ-safety rails are press- and cutplaces protections with integrated sensor element and can only be used with controller Type ***SSZ-AE-N***, ***SSZ-SS-N***, ***SSZ-SQ-N*** and ***SSZ-SQP-N***.
SSZ-safety rails protect the dangerous working areas on machines and plants and prevent injuries or damage or reduce them to a minimum.
SSZ-safety rails can be used where short slowing-down distances (braking distances) have to be protected.
The safety rail/controller fulfils the requirements stage 2 (***SSZ-AE-N***) or the requirement stage 3 according to DIN V 31006T.2, safety of machines, switching rails.

Areas of Application

- for computer controlled devices
- for driverless floor conveying vehicles
- for dangerous areas within machines and units
- for protecting crushing points and cutting points and many more.

Types

4 types of ***SSZ***-safety rails are available:

1. Type 05 (height 24 mm/ width 25 mm)
2. Type 06 (height 39 mm/ width 25 mm)
3. Type 08 (height 60 mm/ width 35 mm)
4. Type 10 (height 74 mm/ width 35 mm)

Note

- the depth (direction of operation) of the ***SSZ***-safety rails must be longer than the slowing-down path of the units to be protected.
- the controllers are only allowed to be used in rooms with a minimum protection acc. to IP 54.
- the systems have to be checked by the user at least once per day to ensure that they function perfectly.
- the valid safety regulations and accident prevention regulations must be observed by the user.
- the controller can only be used in voltage circuits that comply with at least the same safety standards.

SSZ-Safety-Switching-Rails

Safety Category

The ***SSZ***-controller type ***SSZ-SS-N***, ***SSZ-SQ-N*** and ***SSZ-SQP-N*** apply with the safety category 3.
The ***SSZ***-controller type ***SSZ-AE-N*** applies with the safety category 2.

Approvals

The ***SSZ***-safety components are approved according to to the above named safety categories for accident prevention.
The according "Baumusterprüfung" is held by the TÜV Hannover/ Sachsen-Anhalt e.V.

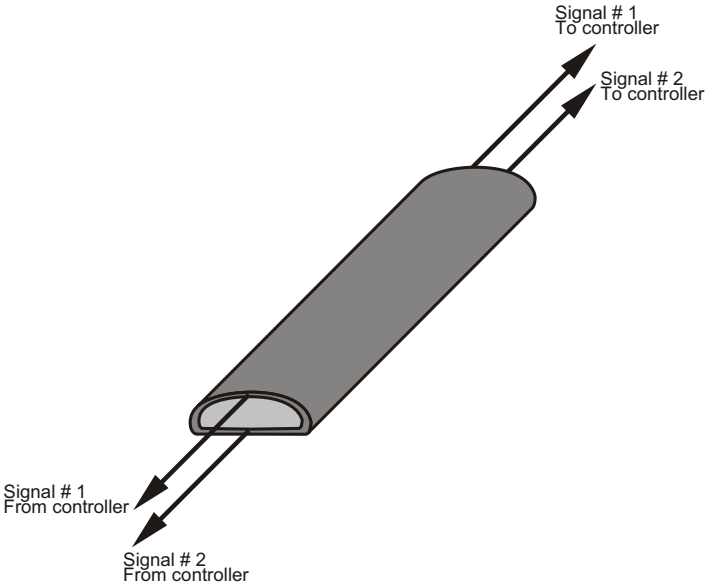
Important Note

The user has to take relevant measures to prevent independent starting after power cuts and starting an emergency stop facility acc. to VDE 0113 T1, 1986, para. 5.5.1.2.

SSZ-Safety-Switching-Rails

Like all ***SSZ***-safety components, ***SSZ***-safety rails are constructed in a 4 wire system to ensure the highest safety standards.

The sensor element which is integrated into the ***SSZ***-safety rail, conducts 2 signals that are produced by the controller via the sensing area.



These signals are fed back to the controller via the 1x4 wire or 2x2 wire connection cable.
When the rail is actuated, the signal conducting contact areas touch each other whereby the signals change. This changing of the signals is transmitted to the output relais K1 and K2 in the controller. Hereby the relais contacts open.
This means that the emergency stop circuit of the machine in which the contacts are included, is interrupted and the dangerous movement is prevented.

SSZ-Safety-Switching-Rails

If there is any interruption (cable break etc.) in an individual wire in the connection cable or the signal transmitter, the controller no longer receives an appropriate signal. This is indicated by the extinction of one of the two yellow diodes.
By this the output relais K1 and K2 decline and the emergency stop circuit of the machine is opened.
At a crush-closing or the cutoff of the connection cable these two output relais also decline.

The switching condition of the relais is displayed via light emmitting diodes (LED) on the controller. The function of the LEDs is shown in the following table.

Name of the LED	Colour	Function
Ub	red	operating voltage
RDY (K1)	yellow	signal on clamp 5
ON (K1)	green	relais K1 tightened
OFF (K1)	red	relais K1 declined
RDY (K2)	yellow	signal on clamp 6
ON (K2)	green	relais K2 tightened
OFF (K2)	red	relais K2 declined

The ***SSZ***-safety rail as well as its connection cable are permanently controlled through this wiring and with the assistance of the controller.

SSZ-Safety-Switching-Rails

The ***SSZ***-safety rail is mounted to the appropriate part of the machine by the supplied aluminium C-profile.
The controller must be installed in the controlling housing, switch cabinet or the appropriate installation point.

After the safety rail connection cables have been laid, these are connected to the controller.
The connection cable is fitted with wire marking and additional colour codes.

Clamp on controller	Wire No./colour 1x4 wire	Wire No./colour 2x2 wire
3	3/ green	3/ white
4	4/ brown	4/ brown
5	5/ yellow	5/ white
6	6/ white	6/ brown

The wires labelled 3/4/5 and 6 definately must match clamps 3/4/5 and 6 on the controller to ensure correct functioning.
The output contacts of relais K1, N.O. 13/14 or 23/24 must be connected in series with N.O. contacts 33/34 of relais K2 (on the type ***SSZ-AE-N*** contacts 11/14 K1 and 21/24 K2) so that a possible fault (sintering by overloading etc.) can be detected.
These contacts that are connected in series must now be included in the emergency stop circuit of the machine.
As long as the safety-rail is not activated these contacts and therefore the emergency stop circuit is closed.
The ***SSZ-SQ-N*** and ***SSZ-SQP-N*** controller are self locking units. This means that after actuating the safety rail, the relais remain declined until an acknowledgement has been given via an external potential-free reset button.
The reset button is connected to the clamps S1 and S2.

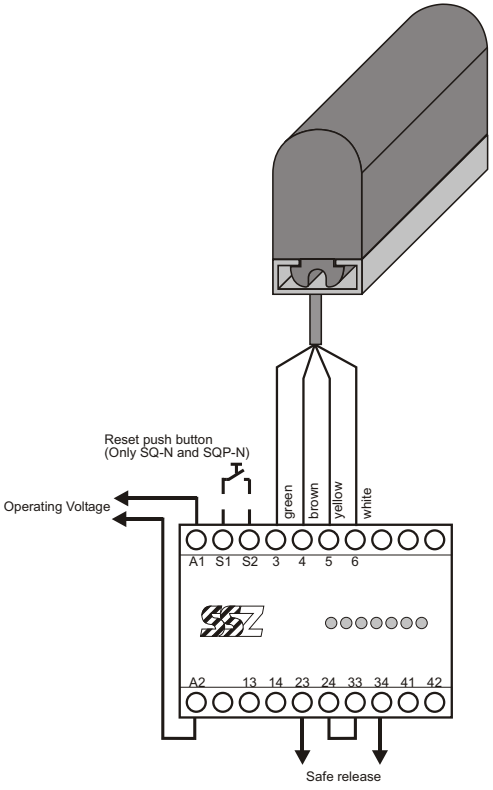
SSZ-Safety-Switching-Rails

The reset of the controller is done by falling edge. This means that the output relais do not resume working condition and the contacts do not close until the contact of the reset button has been opened.
Through this measure a by-pass off the reset button is impossible.

At last the operating voltage should be connected to the clamps A1 and A2.

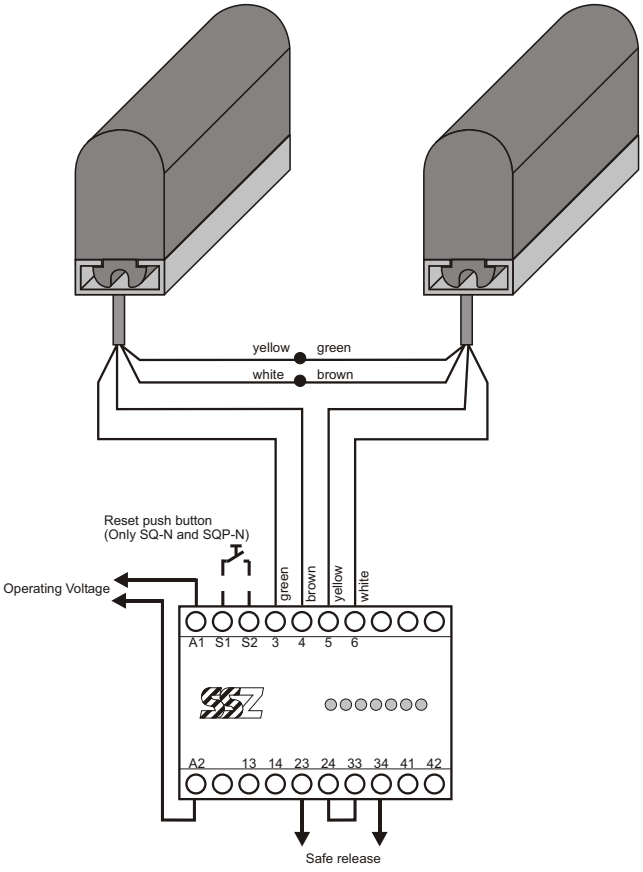
After this the ***SSZ***-safety rail should be checked by several activations.

Connection of a ***SSZ***-safety rail to a controller:



SSZ-Safety-Switching-Rails

If two or more ***SSZ***-safety rails are connected to a controller they have to be connected in series.
Please pay attention to the following connection diagram and the tables on the following page.



SSZ-Safety-Switching-Rails

Table for connecting two SSZ-safety-switching-rails:

1 x 4 wire connection cable

	Wire no./ colour	Connect to
Rail #1	3/ green	Controller clamp 3
	4/ brown	Controller clamp 4
	5/ yellow	Rail #2 wire 3/ green
	6/ white	Rail #2 wire 4/ brown
Rail #2	5/ yellow	Controller clamp 5
	6/ white	Controller clamp 6

2 x 2 wire connection cable

	Wire no./ colour	Connect to
Rail #1	3/ white	Controller clamp 3
	4/ brown	Controller clamp 4
	5/ white	Rail #2 wire 3/ white
	6/ brown	Rail #2 wire 4/ brown
Rail #2	5/ white	Controller clamp 5
	6/ brown	Controller clamp 6

SSZ-Safety-Switching-Rails

The function test of the ***SSZ-***safety-switching-rail:

The ***SSZ-***safety-switching-rail can be tested with help of multi gage or an electric resistance meter.
For a function test the rail has to be disconnected from the controller and other connected safety components.
The measuring points and results are listed in the following table:

Connection point	Measuring range	Measuring result
Wire 3/ Wire 4 Wires 5/ 6 open	20 M Ohms	
Wire 3/ Wire 4 Wires 5/ 6 shorted	400 K Ohms	<280 K Ohms
Wire 3/ Wire 5	200 K Ohms	<140 K Ohms
Wire 4/ Wire 6	200 K Ohms	<140 K Ohms

The resistance between wire 3 and wire 5 should have approximately same value as the resistance between wire 4 and wire 6.