



Safety modules for the lift automatic floor levelling operation according to EN 81

Main functions

- For safety applications up to SIL 3 / PL e
- Choice between automatic start, manual start or monitored start
- Connection of the input channels to opposite potentials
- Small 22.5 mm housing
- Output contacts:
2 safety NO contacts, 1 auxiliary NO opto-isolated
- Supply voltages: 24 Vac/dc
- Brief power failure insensitiveness

Utilization categories

Alternating current: AC15 (50...60 Hz)

Ue (V) 230

Ie (A) 3

Direct current: DC13 (6 op. cycles/minute)

Ue (V) 24

Ie (A) 4

Markings, quality marks and certificates:



Certificate Of Compliance IMQ n. 340 (EN 81-20:2014;
EN 81-50:2014; EN 81-1:1998+A3:2009; EN 81-2:1998+A3:2009)

EC type Examination Certificate: IMQ CP 432 DM
(Machinery Directive)

Type Examination Certificate n.236
(Machinery Directive)

Approval UL: E131787

Approval EAC: RU C-IT DM94.B.01024

Approval CCC: 2013010305640211

Complying with the requirements requested by:

Low Voltage Directive 2006/95/EC,

Machinery Directive 2006/42/EC,

EMC Directive 2014/30/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94)

Protection degree:

IP40 (housing), IP20 (terminals)

Dimensions:

see page 108

General data

SIL level (SIL CL):

up to SIL 3 according to EN IEC 62061

Performance Level (PL):

up to PL e according to EN ISO 13849-1

Safety category:

up to cat. 4 according to EN ISO 13849-1

MTTFd:

227 years

DC:

High

PFHd:

1.18×10^{-10}

Ambient temperature:

-25°C...+55°C

Mechanical endurance:

> 10 millions of operations

Electrical endurance:

> 100.000 operations

Pollution degree:

outside 3, inside 2

Rated impulse with stand voltage (Uimp):

4 kV

Rated insulation voltage (Ui):

250 V

Over-voltage category:

II

Weight:

0.2 kg

Power supply

Rated operating voltage (Un):

24 Vac/dc; $\pm 15\%$; 50...60 Hz

Max residual ripple in DC:

10%

Rated power consumption AC:

< 5 VA

Rated power consumption DC:

< 2.5W

Control circuit

Protection against short circuits:

resistance PTC, $I_h=0.5 A$

Operating time of PTC:

intervention > 100 ms, reset > 3 s

Max input resistance:

$\leq 50 \Omega$

Current for each input:

< 40 mA

Min. period of start impulse t_{MIN} :

> 50 ms

Operating time t_A :

< 120 ms

Releasing time t_{R1} :

< 15 ms

Releasing time in absence of power supply t_R :

< 65 ms

Simultaneity time t_c :

infinite

Operating time on energisation

< 300 ms

Auxiliary signalling circuit

Auxiliary Output (Y43-Y44):

1NO opto-isolated

Rated operational voltage (Ue):

24 Vdc

Rated operational current (Ie):

25 mA

Rated impulse withstand voltage (Uimp):

4 kV

Reaction time t_{R2} :

< 1 ms

In conformity with standards:

EN 60204-1, EN ISO 13855, EN 1037, EN ISO 12100, EN ISO 13850, EN 60529,
EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN ISO 13849-1,
EN ISO 13849-2, EN 62061, EN 81-20, EN 81-50, UL 508, CSA C22.2 n° 14-95

Output circuit

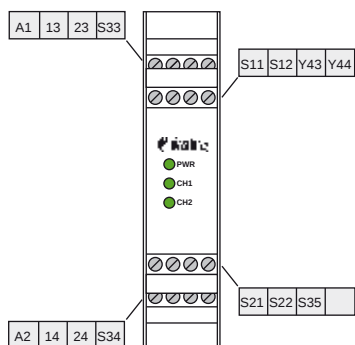
Output contacts:

2 safety NO contacts,

Contacts type

Safety module CS AR-91

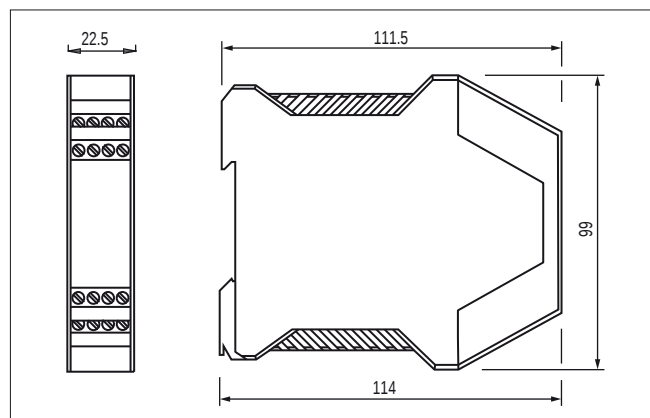
Terminals layout



Brief power failure and supply voltage variation

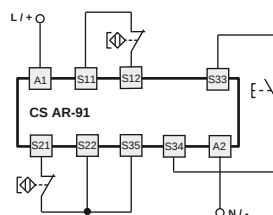
The CS AR-91 safety module has a voltage drop sensor inside which provides the protection and safety of the safety relays internal state in case of brief power failure, in order to avoid unwanted switching state as to the inputs state. Once the input voltage is reset the equipment always restarts correctly and coherently with the inputs state. When a brief power failure occurs the safety module keeps its standard performance. If the power failure lasts longer the safety outputs open and they will reset with the automatic start after the voltage is back while in case of manual or monitored start the system must be reset by the operator.

Dimensions



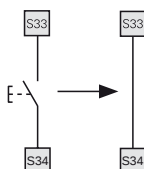
Inputs configuration

Emergency stop
Input configuration with magnetic sensors
2 channels



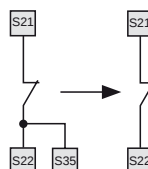
Automatic start

As regards the indicated diagrams, in order to activate the module with the automatic start, you have to bypass the start button between S33 and S34 terminals.



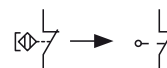
Monitored start

As regards the indicated diagrams, in order to activate the module with the monitored start, you have to remove the connection between S22 and S35 terminals.

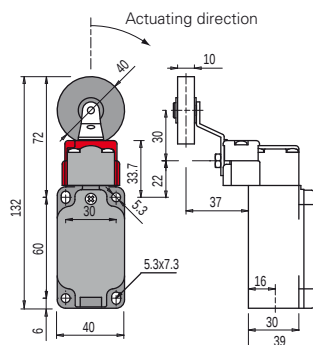


Electromechanical switches

The safety module can control both magnetic sensors and electromechanical switches, replacing the sensors contacts with switches contacts.



Safety position switches FP 945-S6



Article

FP 945-S6

Description

Safety switch with rotating lever and rubber roller for unidirectional actuating towards right. Actuated by a suitable cam, it can be used for automatic floor levelling operations. For further information please contact the technical office. Technical data on page 25.

Contacts

2NO





Safety modules for the lift automatic floor levelling operation according to EN 81

Main functions

- For safety applications up to SIL 3 / PL e
- Choice between automatic start, manual start or monitored start
- Connection of the input channels to opposite potentials
- Small 22.5 mm housing
- Output contacts:
3 NO safety contacts. 1 NC auxiliary contact.
- Supply voltages: 24 Vac/dc
- Brief power failure insensitiveness

Utilization categories

Alternating current: AC15 (50...60 Hz)

U_e (V) 230

I_e (A) 3

Direct current: DC13 (6 op. cycles/minute)

U_e (V) 24

I_e (A) 4

Markings, quality marks and certificates:



Certificate Of Compliance IMQ n. 340 (EN 81-20:2014;

EN 81-50:2014; EN 81-1:1998+A3:2009; EN 81-2:1998+A3:2009)

EC type Examination Certificate: IMQ CP 432 DM
(Machinery Directive)

Type Examination Certificate n.236
(Machinery Directive)

Approval UL: E131787

Approval EAC: RU C-IT DM94.B.01024

Approval CCC: 2013010305640211

Complying with the requirements requested by:

Low Voltage Directive 2006/95/EC,

Machinery Directive 2006/42/EC,

EMC Directive 2014/30/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94)

Protection degree:

IP40 (housing), IP20 (terminals)

Dimensions:

see page 110

General data

SIL level (SIL CL):

up to SIL 3 according to EN IEC 62061

Performance Level (PL):

up to PL e according to EN ISO 13849-1

Safety category:

up to cat. 4 according to EN ISO 13849-1

MTTFd:

227 years

DC:

High

PFHd:

1.34×10^{-10}

Ambient temperature:

-25°C...+55°C

Mechanical endurance:

> 10 millions of operations

Electrical endurance:

> 100.000 operations

Pollution degree:

outside 3, inside 2

Rated impulse with stand voltage (U_{imp}):

4 kV

Rated insulation voltage (U_i):

250 V

Over-voltage category:

II

Weight:

0.2 kg

Power supply

Rated operating voltage (U_n):

24 Vac/dc; $\pm 15\%$; 50...60 Hz

Max residual ripple in DC:

10%

Rated power consumption AC:

< 5 VA

Rated power consumption DC:

< 2.5 W

Control circuit

Protection against short circuits:

resistance PTC, I_h=0.5 A

Operating time of PTC:

intervention > 100 ms, reset > 3 s

Max input resistance:

$\leq 50 \Omega$

Current for each input:

< 35 mA

Min. period of start impulse t_{MIN}:

> 50 ms

Operating time t_A:

< 130 ms

Releasing time t_{R1}:

< 20 ms

Releasing time in absence of power supply t_R:

< 60 ms

Simultaneity time t_c:

infinite

Operating time on energisation

< 300 ms

In conformity with standards:

EN 60204-1, EN ISO 13855, EN 1037, EN ISO 12100, EN ISO 13850, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN ISO 13849-1, EN ISO 13849-2, EN 62061, EN 81-20, EN 81-50, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts:

3 NO safety contacts

1 NC auxiliary contact.

Contacts type:

forced guided contacts

Contacts material:

silver alloy, gold plated

Max switching voltage:

230/240 Vac; 300 Vdc

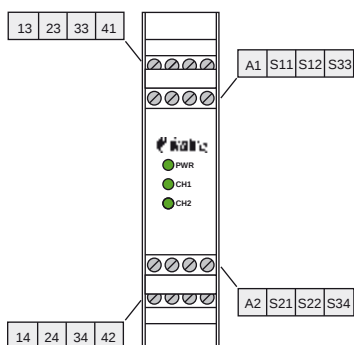
Max switching current per contact:

6 A

Conventional free air thermal current I_{th}:

Safety module CS AR-93

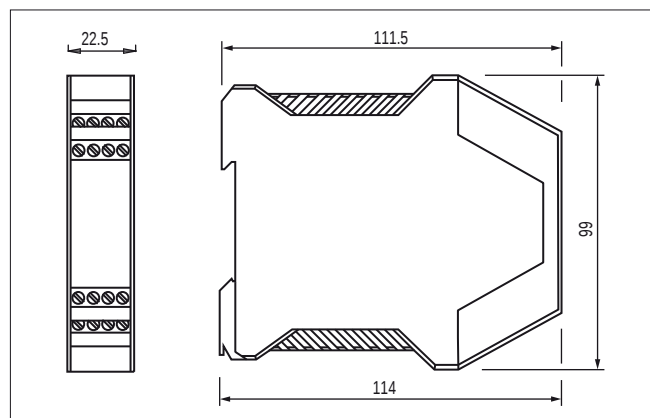
Terminals layout



Brief power failure and supply voltage variation

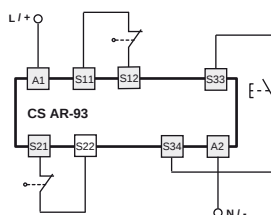
The CS AR-93 safety module has a voltage drop sensor inside which provides the protection and safety of the safety relays internal state in case of brief power failure, in order to avoid unwanted switching state as to the inputs state. Once the input voltage is reset the equipment always restarts correctly and coherently with the inputs state. When a brief power failure occurs the safety module keeps its standard performance. If the power failure lasts longer the safety outputs open and they will reset with the automatic start after the voltage is back while in case of manual or monitored start the system must be reset by the operator.

Dimensions



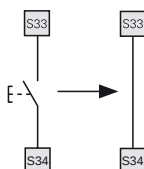
Inputs configuration

Emergency stop
Input configuration with magnetic sensors
2 channels



Automatic start

As regards the indicated diagrams, in order to activate the module with the automatic start, you have to bypass the start button between S33 and S34 terminals.

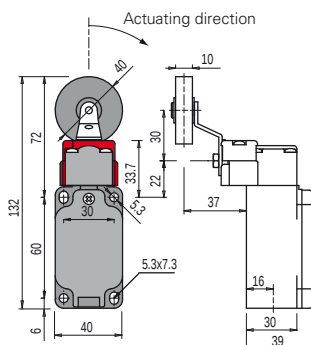


Electromechanical switches

The safety module can control both magnetic sensors and electromechanical switches, replacing the sensors contacts with switches contacts.



Safety position switches FP 945-S6



Article

FP 945-S6

Description

Safety switch with rotating lever and rubber roller for unidirectional actuating towards right. Actuated by a suitable cam, it can be used for automatic floor levelling operations. For further information please contact the technical office. Technical data on page 25.

Contacts

2NO





Safety modules for the lift automatic floor levelling operation according to EN 81

Main functions

- For safety applications up to SIL 3 / PL e
- Choice between automatic start, manual start or monitored start
- Connection of the input channels to opposite potentials
- Small 22.5 mm housing
- Output contacts: 2 safety NO contacts
- Supply voltages: 24 Vac/dc, 12 Vdc
- Brief power failure insensitiveness

Utilization categories

Alternating current: AC15 (50...60 Hz)

Ue (V) 230

Ie (A) 3

Direct current: DC13 (6 op. cycles/minute)

Ue (V) 24

Ie (A) 4

Markings, quality marks and certificates:



Certificate Of Compliance IMQ n. 340 (EN 81-20:2014;

EN 81-50:2014; EN 81-1:1998+A3:2009; EN 81-2:1998+A3:2009)

EC type Examination Certificate: IMQ CP 432 DM (Machinery Directive)

Type Examination Certificate n.236 (Machinery Directive)

Approval UL: E131787

Approval EAC: RU C-IT DM94.B.01024

Approval CCC: 2013010305640211

Complying with the requirements requested by:

Low Voltage Directive 2006/95/EC,

Machinery Directive 2006/42/EC,

EMC Directive 2014/30/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94)

Protection degree:

IP40 (housing), IP20 (terminals)

Dimensions:

see page 112

General data

SIL level (SIL CL):

up to SIL 3 according to EN IEC 62061

Performance Level (PL):

up to PL e according to EN ISO 13849-1

Safety category:

up to cat. 4 according to EN ISO 13849-1

MTTFd:

213 years (24 Vac/dc)

227 years (12 Vdc)

DC:

High

PFHd:

5.62×10^{-9} (24 Vac/dc)

1.13×10^{-10} (12 Vdc)

Ambient temperature:

-25°C...+55°C

Mechanical endurance:

>10 millions of operations

Electrical endurance:

>100.000 operations

Pollution degree:

outside 3, inside 2

Rated impulse with stand voltage (Uimp):

4 kV

Rated insulation voltage (Ui):

250 V

Over-voltage category:

II

Weight:

0.2 kg

Power supply

Rated operating voltage (Un):

24 Vac/dc; $\pm 15\%$; 50...60 Hz

12 Vdc; -10% ... +15%

Max residual ripple in DC:

10%

Rated power consumption AC:

< 5 VA

Rated power consumption DC:

< 2 W

Control circuit

Protection against short circuits:

resistance PTC, $I_h=0.5$ A

Operating time of PTC:

intervention > 100 ms, reset > 3 s

Max input resistance:

$\leq 25 \Omega$ (24 Vac/dc), $\leq 15 \Omega$ (12 Vdc)

Current for each input:

< 35 mA (24 Vac/dc), 65 mA (12 Vdc)

Min. period of start impulse t_{MIN} :

> 300 ms

Operating time t_A :

< 60 ms

Releasing time t_{R1} :

< 20 ms

Releasing time in absence of power supply t_R :

< 120 ms (24 Vac/dc), 70 ms (12 Vdc)

Simultaneity time t_C :

infinite

Operating time on energisation

< 200 ms (24 Vac/dc), 400 ms (12 Vdc)

In conformity with standards:

EN 60204-1, EN ISO 13855, EN 1037, EN ISO 12100, EN ISO 13850, EN 60529,

EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN ISO 13849-1,

EN ISO 13849-2, EN 62061, EN 81-20, EN 81-50, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts:

2 safety NO contacts,

Contacts type:

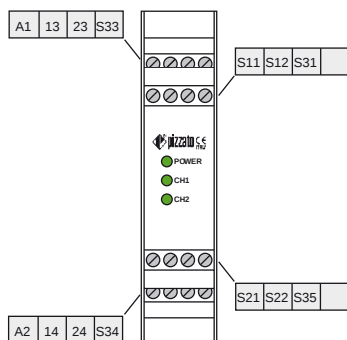
forced guided contacts

Contacts material:

silver alloy, gold plated

Safety module CS AR-94

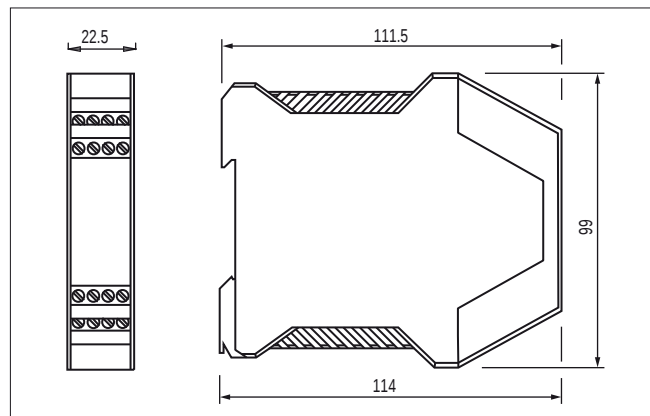
Terminals layout



Brief power failure and supply voltage variation

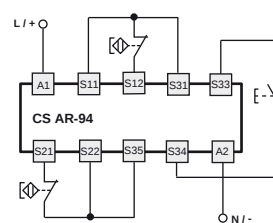
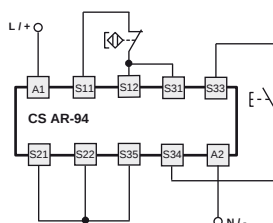
The CS AR-94 safety module has a voltage drop sensor inside which provides the protection and safety of the safety relays internal state in case of brief power failure, in order to avoid unwanted switching state as to the inputs state. Once the input voltage is reset the equipment always restarts correctly and coherently with the inputs state. When a brief power failure occurs the safety module keeps its standard performance. If the power failure lasts longer the safety outputs open and they will reset with the automatic start after the voltage is back while in case of manual or monitored start the system must be reset by the operator.

Dimensions



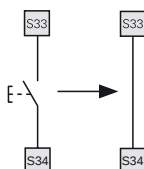
Inputs configuration

Emergency stop	
Input configuration with magnetic sensors	
1 channel	2 channels



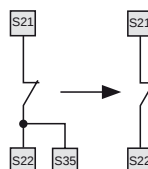
Automatic start

As regards the indicated diagrams, in order to activate the module with the automatic start, you have to bypass the start button between S33 and S34 terminals.



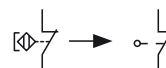
Monitored start

As regards the indicated diagrams, in order to activate the module with the monitored start, you have to remove the connection between S22 and S35 terminals.

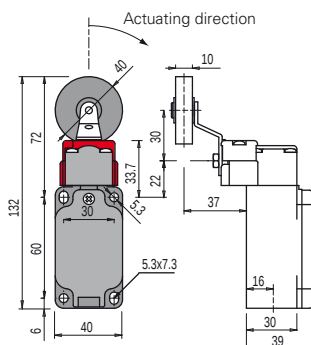


Electromechanical switches

The safety module can control both magnetic sensors and electromechanical switches, replacing the sensors contacts with switches contacts.



Safety position switches FP 945-S6



Article

FP 945-S6

Contacts

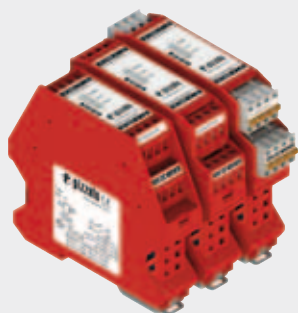
2NO

Description

Safety switch with rotating lever and rubber roller for unidirectional actuating towards right. Actuated by a suitable cam, it can be used for automatic floor levelling operations.

For further information please contact the technical office.
Technical data on page 25.





Safety modules for the lift automatic floor levelling operation according to EN 81

Main functions

- For safety applications up to SIL 3 / PL e
- Choice between automatic start, manual start or monitored start
- Connection of the input channels to opposite potentials
- Small 22.5 x 88.5h mm housing
- Output contacts:
2 safety NO contacts
- Supply voltages: 24 Vac/dc
- Brief power failure insensitiveness

Utilization categories

Alternate current: AC15 (50...60 Hz)

U_e (V) 230

I_e (A) 3

Direct current: DC13

U_e (V) 24

I_e (A) 4

Markings, quality marks and certificates:



Certificate Of Compliance IMQ n. 340 (EN 81-20:2014;

EN 81-50:2014; EN 81-1:1998+A3:2009; EN 81-2:1998+A3:2009)

Type Examination Certificaten.236

(Machinery Directive)

Approval UL: E131787

Approval EAC: RU C-IT DM94.B.01024

Approval CCC: 2013010305640211

Complying with the requirements requested by:

Low Voltage Directive 2006/95/EC,

Machinery Directive 2006/42/EC,

EMC Directive 2014/30/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94)

Protection degree:

IP40 (housing), IP20 (terminals)

Dimensions:

see page 114

General data

SIL level (SIL CL):

up to SIL 3 according to EN IEC 62061

Performance Level (PL):

up to PL e according to EN ISO 13849-1

Safety category:

up to cat. 4 according to EN ISO 13849-1

MTTFd:

213 years

DC:

High

PFHd:

5.42×10^{-9}

Ambient temperature:

-25°C...+55°C

Mechanical endurance:

>10 millions of operations

Electrical endurance:

>100.000 operations

Pollution degree:

outside 3, inside 2

Rated impulse with stand voltage (U_{imp}):

4 kV

Rated insulation voltage (U_i):

250 V

Over-voltage category:

II

Weight:

0.2 kg

Power supply

Rated operating voltage (U_n):

24 Vac/dc; $\pm 15\%$; 50...60 Hz

Max residual ripple in DC:

10%

Rated power consumption AC:

< 5 VA

Rated power consumption DC:

< 2 W

Control circuit

Protection against short circuits:

resistance PTC, I_h=0.5 A

Operating time of PTC:

intervention > 100 ms, reset > 3 s

Max input resistance:

$\leq 25 \Omega$

Current for each input:

< 35 mA

Min. period of start impulse t_{MIN}:

> 300 ms

Operating time t_A:

< 60 ms

Releasing time t_{R1}:

< 20 ms

Releasing time in absence of power supply t_R:

< 100 ms

Simultaneity time t_C:

infinite

Operating time on energisation

< 200 ms

In conformity with standards:

EN 60204-1, EN ISO 13855, EN 1037, EN ISO 12100, EN ISO 13850, EN 60529,

EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-1, EN ISO 13849-1,

EN ISO 13849-2, EN 62061, EN 81-20, EN 81-50, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts:

2 safety NO contacts,

Contacts type:

forced guided contacts

Contacts material:

silver alloy, gold plated

Max switching voltage:

230/240 Vac; 300 Vdc

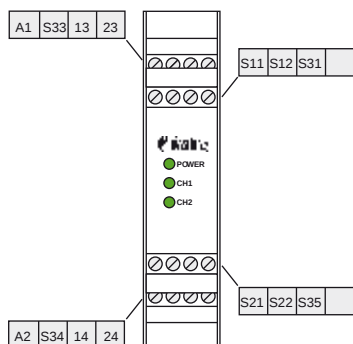
Max switching current per contact:

6 A

Conventional free air thermal current I_{th}:

Safety module CS AR-95

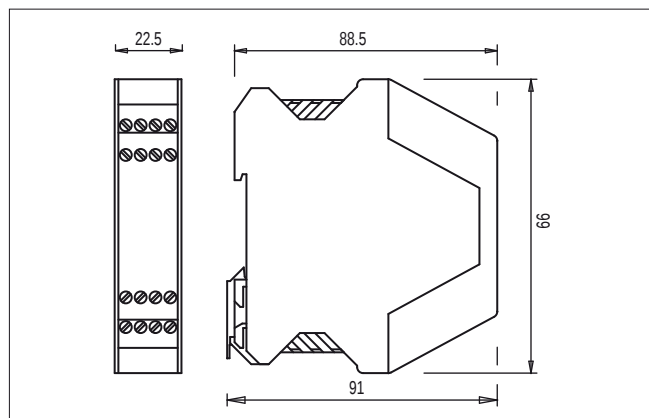
Terminals layout



Brief power failure and supply voltage variation

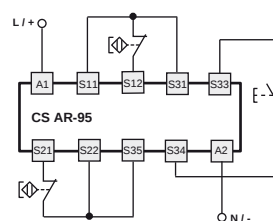
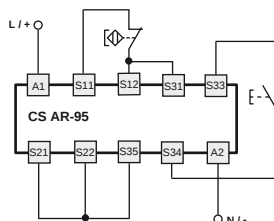
The CS AR-95 safety module has a voltage drop sensor inside which provides the protection and safety of the safety relays internal state in case of brief power failure, in order to avoid unwanted switching state as to the inputs state. Once the input voltage is reset the equipment always restarts correctly and coherently with the inputs state. When a brief power failure occurs the safety module keeps its standard performance. If the power failure lasts longer the safety outputs open and they will reset with the automatic start after the voltage is back while in case of manual or monitored start the system must be reset by the operator.

Dimensions



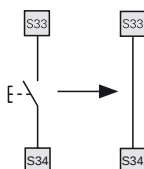
Inputs configuration

Emergency stop	
Input configuration with magnetic sensors	
1 channel	2 channels



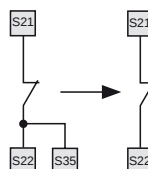
Automatic start

As regards the indicated diagrams, in order to activate the module with the automatic start, you have to bypass the start button between S33 and S34 terminals.



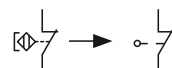
Monitored start

As regards the indicated diagrams, in order to activate the module with the monitored start, you have to remove the connection between S22 and S35 terminals.

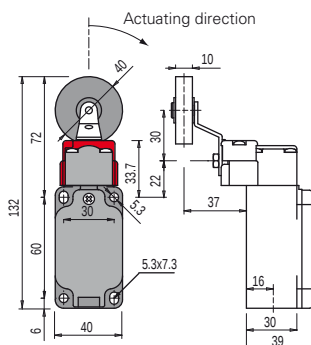


Electromechanical switches

The safety module can control both magnetic sensors and electromechanical switches, replacing the sensors contacts with switches contacts.



Safety position switches FP 945-S6



Article

FP 945-S6

Contacts

2NO

Description

Safety switch with rotating lever and rubber roller for unidirectional actuating towards right. Actuated by a suitable cam, it can be used for automatic floor levelling operations.

For further information please contact the technical office.
Technical data on page 25.

