



### 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)

$U_e$  (V) 230

$I_e$  (A) 3

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

$U_e$  (V) 24

$I_e$  (A) 4

#### Quality marks:



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

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

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

Type Examination Certificaten.236 (Machinery Directive)

Approval UL: E131787

Approval EAC: RU C-IT.AД35.B.00454

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

Lift Directive 2014/33/EU

#### Technical data

##### Housing

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

Protection degree:

IP40 (housing), IP20 (terminals)

Dimensions:

see page 120

##### 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

MTTF<sub>D</sub>:

213 years (24 Vac/dc)

227 years (12 Vdc)

DC:

High

PFH<sub>D</sub>:

$5.62 \times 10^{-9}$  (24 Vac/dc)

$1.13 \times 10^{-10}$  (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 ( $U_{imp}$ ):

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

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

Max switching voltage:

230/240 Vac; 300 Vdc

Max switching current per contact:

6 A

Conventional free air thermal current  $I_{th}$ :

6 A

Max currents sum  $\Sigma I_{th}^2$ :

36 A<sup>2</sup>

Min. current:

10 mA

Contacts resistance:

$\leq 100$  m $\Omega$

Contact protection fuse:

4 A, F type

#### Code structure

## CS AR-94V024

Kind of connection	
<b>V</b>	screw terminals
<b>M</b>	connector with screw terminals
<b>X</b>	connector with spring terminals

Supply voltage	
<b>024</b>	24 Vac/dc
<b>U12</b>	12 Vdc

#### Data type approved by UL

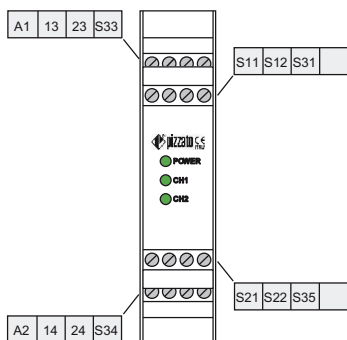
Rated operating voltage ( $U_n$ ):	24 Vac/dc; 50...60 Hz
Rated power consumption AC:	< 5 VA
Rated power consumption DC:	< 2 W
Max switching voltage:	230 Vac
Max switching current per contact:	6 A
Utilization category	C300

#### Notes:

- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
- Terminal tightening torque of 5-7 Lb-In.
- Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy.

## Safety module CS AR-94

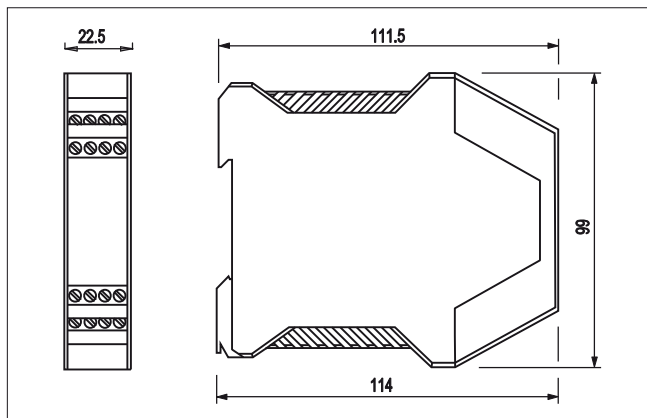
### Terminals layout



### Brief power failure and supply voltage variation

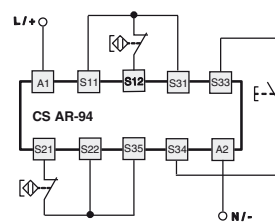
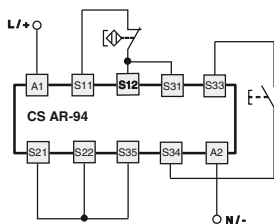
The CS AR-94 safety module has a voltage drop sensor inside which provides the protection and safety of the safety relays internal state in case of brief power failure, in order to avoid unwanted switching state as to the inputs state. Once the input voltage is reset the equipment always restarts correctly 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



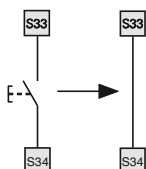
### Inputs configuration

Emergency stop	
Input configuration with magnetic sensors	
1 channel	2 channels



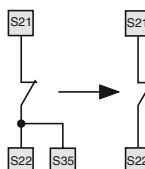
### Automatic start

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.

