

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 optoisolated
- Supply voltages: 24 Vac/dc
- •Brief power failure insensitiveness

Utilization categories

Alternating current: AC15 (50...60 Hz) Ue (V) 230 le (A) 3 Direct current: DC13 (6 op. cycles/minute) Ue (V) 24 le (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 Certificaten.236 (Machinery Directive) Approval UL: E131787 Approval EAC: RU C-IT ДМ94.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

Code structure

CS AR-91V024

Kind of connection

screw terminals v

М connector with screw terminals

connector with spring terminals Х

Supply voltage 024 24 Vac/dc

Data type approved by UL

Rated operating voltage (Un): Rated power consumption AC Rated power consumption DC: Max switching voltage: Max switching current per contact: Utilization category

24 Vac/dc; 50...60 Hz < 5 VA < 2.5 W 230 Vac

6 A

C300

Notes: Votes: - 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.

Technical data

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Housing Made of polyamide PA 6.6 self-extinguishing, c Protection degree: Dimensions:	lass V0 (UL94) IP40 (housing), IP20 (terminals) see page 108
General data SIL level (SIL CL): Performance Level (PL): Safety category: MTTFd: DC: PFHd: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:	up to SIL 3 according to EN IEC 62061 up to PL e according to EN ISO 13849-1 up to cat. 4 according to EN ISO 13849-1 227 years High 1.18×10^{-10} $-25^{\circ}C+55^{\circ}C$ > 10 millions of operations > 100.000 operations outside 3, inside 2 4 kV 250 V II 0.2 kg
Power supply Rated operating voltage (Un): Max residual ripple in DC: Rated power consumption AC: Rated power consumption DC:	24 Vac/dc; ±15%; 5060 Hz 10% < 5 VA < 2.5W
$\label{eq:constraint} \begin{array}{l} \textbf{Control circuit} \\ Protection against short circuits: \\ Operating time of PTC: \\ Max input resistance: \\ Current for each input: \\ Min. period of start impulse t_{MIN}: \\ Operating time t_{A}: \\ Releasing time t_{Ri}: \\ Releasing time t_{Ri}: \\ Releasing time in absence of power supply t_{R}: \\ Simultaneity time t_c: \\ Operating time on energisation \end{array}$	resistance PTC, Ih=0.5 A intervention > 100 ms, reset > 3 s \leq 50 Ω < 40 mA > 50 ms < 120 ms < 15 ms < 65 ms infinite < 300 ms
Auxiliary signalling circuit Auxiliary Output (Y43-Y44): Rated operational voltage (Ue): Rated operational current (Ie): Rated impulse withstand voltage (Uimp): Reaction time t _{en} :	1NO opto-isolated 24 Vdc 25 mA 4 kV < 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: Contacts type: Contacts material: Max switching voltage: Max switching current per contact: Conventional free air thermal current Ith: Max currents sum Σ Ith²: Min. current: Contacts resistance: Contact protection fuse:

forced guided contacts silver alloy, gold plated 230/240 Vac; 300 Vdc 6 A 6 A 36 A² 10 mA ≤ 100 mΩ 4 A, F type

2 safety NO contacts,



8

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.



Inputs configuration





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.



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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

F



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

8

- 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) Ue (V) 230 le (A) Direct current: DC13 (6 op. cycles/minute) Ue (V) 24 le (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 Certificaten.236 (Machinery Directive) Approval UL: E131787 Approval EAC: RU C-IT ДМ94.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

Code structure

CS AR-93V024

Kind of connection

- v screw terminals
- connector with screw terminals М
- **X** connector with spring terminals

Supply voltage 024 24 Vac/dc

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94) Protection degree: IP40 (housing), IP20 (terminals) Dimensions: see page 110

up to SIL 3 according to EN IEC 62061

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

227 years

1.34x 10⁻¹⁰

-25°C...+55°C

>10 millions of operations

24 Vac/dc; ±15%; 50...60 Hz

>100.000 operations

outside 3, inside 2

High

 $4 \, \text{kV}$

Ш

250 V

0.2 kg

10%

< 5 VA

< 2.5 W

General data

SIL level (SIL CL): Performance Level (PL): Safety category: MTTFd. DC: PFHd: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:

Power supply

Rated operating voltage (Un): Max residual ripple in DC: Rated power consumption AC: Rated power consumption DC:

Control circuit

Protection against short circuits: resistance PTC, Ih=0.5 A Operating time of PTC: intervention > 100 ms, reset > 3 s < 50 O Max input resistance: Current for each input: < 35 mA Min. period of start impulse ${\rm t_{_{MIN}}}$ > 50 ms Operating time t₄: <130 ms Releasing time t_{R1}: < 20 ms < 60 ms Releasing time in absence of power supply t_R: Simultaneity time tc: 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 nº 14-95

Output circuit

Output contacts: Contacts type:

Contacts material: Max switching voltage: Max switching current per contact: Conventional free air thermal current Ith: Max currents sum Σ Ith²: Min. current: Contacts resistance: Contact protection fuse:

3 NO safety contacts 1 NC auxiliary contact. forced guided contacts silver alloy, gold plated 230/240 Vac; 300 Vdc 6 A 6 A 36 A² 10 mA ≤ 100 mΩ 4 A, F type

Data type approved by UL

Rated operating voltage (Un): Rated power consumption AC Rated power consumption DC: Max switching voltage: Max switching current per contact: Utilization category

24 Vac/dc; 50...60 Hz < 5 VA

< 2 W 230 Vac 6 A 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-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.



Inputs configuration





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.



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



Safety position switches FP 945-S6

S33

S34

F

S33

S34







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 le (A) Direct current: DC13 (6 op. cycles/minute) Ue (V) 24 le (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 Certificaten.236 (Machinery Directive) Approval UL: E131787 Approval EAC: RU C-IT ДМ94.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

Code structure

CS AR-94V024

Kind of connection

V screw terminals

М connector with screw terminals

X connector with spring terminals

Technical data

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Made of polyamide PA 6.6 self-extinguishing, c Protection degree: Dimensions:	lass V0 (UL94) IP40 (housing), IP20 (terminals) 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 x 10 ⁻⁹ (24 Vac/dc)
	1.13 x 10 ⁻¹⁰ (12 Vdc)
Ambient temperature:	-25°C+55°C
Iviecnanical endurance:	> 10 millions of operations
Dellution degrae:	> 100.000 operations
Pollution degree.	
Rated insulation voltage (Uli):	4 KV 250 V
Overvoltage category:	230 V
Weight:	0.2 kg
Power supply	
Rated operating voltage (Un):	24 Vac/dc; ±15%; 5060 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, Ih=0.5 A
Operating time of PTC:	intervention > 100 ms, reset > 3 s
Max input resistance:	\leq 25 Ω (24 Vac/dc), \leq 15 Ω (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)

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

Supply voltage

024 24 Vac/dc

U12 12 Vdc

Output contacts: Contacts type: Contacts material: Max switching voltage: Max switching current per contact: Conventional free air thermal current Ith: Max currents sum Σ Ith²: Min. current: Contacts resistance: Contact protection fuse:

2 safety NO contacts, forced guided contacts silver alloy, gold plated 230/240 Vac; 300 Vdc 6 A 6 A 36 A² 10 mA ≤ 100 mΩ 4 A, F type

Data type approved by UL

Rated operating voltage (Un): Rated power consumption AC Rated power consumption DC: Max switching voltage: Max switching current per contact: Utilization category

24 Vac/dc; 50...60 Hz < 5 VA

< 2 W230 Vac 6 A 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 - i limited exercts. 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.



Inputs configuration





S33

S34

F

S33

S34

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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.



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





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

Main functions

8

- For safety applications up to SIL 3 / PL e
- Choice between automatic start, manual
- start or monitored startConnection 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) Ue (V) 230 Ie (A) 3 Direct current: DC13 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*) Type Examination Certificaten.236 (Machinery Directive) Approval UL: E131787 Approval EAC: RU C-IT ДМ94.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 up to cat. 4 according to EN ISO 13849-1 Safety category: MTTFd. 213 years DC: High PFHd: 5.42 x 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 (Uimp): 4 kV Rated insulation voltage (Ui): 250 V Over-voltage category: Ш Weight: 0.2 kg

Power supply

Rated operating voltage (Un): Max residual ripple in DC: Rated power consumption AC: Rated power consumption DC:

Control circuit

Protection against short circuits: Operating time of PTC: Max input resistance: Current for each input: Min. period of start impulse t_{MIN} : Operating time t_{A} : Releasing time t_{R1} : Releasing time in absence of power supply t_{R} : Simultaneity time t_{c} : Operating time on energisation

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

2 safety NO contacts, forced guided contacts silver alloy, gold plated 230/240 Vac; 300 Vdc 6 A 6 A 36 A² 10 mA ≤ 100 mΩ 4 A, F type

24 Vac/dc; ±15%; 50...60 Hz

resistance PTC, Ih=0.5 A

intervention > 100 ms, reset > 3 s

10%

< 5 VA

< 2 W

≤25Ω

< 35 mA

> 300 ms

< 60 ms

< 20 ms

< 100 ms

< 200 ms

infinite

Code structure

CS AR-95<u>V024</u>

Kind of connection

V screw terminals

M connector with screw terminals

X connector with spring terminals

Supply voltage

024 Vac/dc

Data type approved by UL

Rated operating voltage (Un): Rated power consumption AC: Rated power consumption DC: Max switching voltage: Max switching current per contact: Utilization category 24 Vac/dc; 50...60 Hz < 5 VA

< 2 W 230 Vac 6 A 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.



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 fail-ure 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.



Inputs configuration





S33

S34

F

S33

S34

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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

