Модуль безопасности CS AR-94

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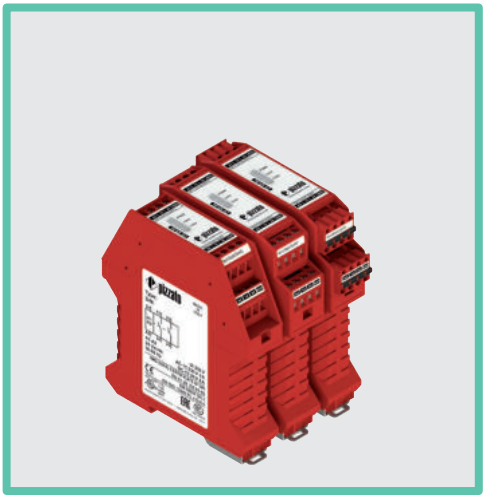
CS AR-94 safety module



Module for floor levelling operations in lifts compliant to EN 81

Main features

- For safety applications up to SIL 3/PL e
- Choice between automatic start, manual start or monitored start
- Connection of input channels of opposite potentials
- Reduced housing width of 22.5 mm
- Output contacts: 2 NO safety contacts
- Supply voltage: 24 Vac/dc, 12 Vdc
- Insensitive to voltage dips

Utilization categories

Alternating current: AC15 (50...60 Hz)
U_e (V) 230
I_e (A) 3
Direct current: DC13 (6 oper. cycles/min.)
U_e (V) 24
I_e (A) 4

Quality marks:

EU-type examination certificate: IMQ no. 340
(EN 81-20/50:2020)
EC type examination certificate: IMQ CP 432 DM
(Machinery Directive)
UL approval: E131787
EAC approval: RU C-IT.УТ03.B.00035/19
CCC approval: 2021000305000107
UKCA approval: 772884
UKCA-type examination certificate: 772883

Compliance with the requirements of:

Machinery Directive 2006/42/EC,
EMC Directive 2014/30/EU,
Lift Directive 2014/33/EU,
RoHS Directive 2011/65/EU.

Technical data

Housing

Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94

Protection degree acc. to EN 60529:	IP40 (housing), IP20 (terminal strip)
Dimensions:	see page 147, design A

General data

SIL level (SIL CL):	up to SIL 3 acc. to EN IEC 62061
Performance Level (PL):	Up to PL e acc. to EN ISO 13849-1
Safety category:	Up to category 4 acc. to EN ISO 13849-1
$MTTF_D$:	227 years
DC:	High
PFH_D:	1.13 E-10
Ambient temperature:	-25°C … +55°C
Mechanical endurance:	>10 million operating cycles
Electrical endurance:	>100,000 operating cycles
Pollution degree:	external 3, internal 2
Impulse withstand voltage (U_{imp}):	4 kV
Rated insulation voltage (U_i):	250 V
Overvoltage category:	II

Supply

Rated supply voltage (U_n):	24 Vac/dc; ± 15%; 50 … 60 Hz 12 Vdc; -10% … +15%
Max. DC residual ripple in DC:	10%
Power consumption AC:	< 5 VA
Power consumption DC:	< 2 W

Control circuit

Protection against short circuits:	PTC resistance, Ih=0.5 A
PTC response time:	Response time > 100 ms, release time > 3 s
Maximum resistance per input:	≤ 25 Ω (24 Vac/dc), ≤15 Ω (12 Vdc)
Current per input:	< 35 mA (24 Vac/dc), 65 mA (12 Vdc)
Min. duration of start impulse t_{MIN}:	> 300 ms
Response time t_A:	< 130 ms
Release time t_{R1}:	< 20 ms
Release time in absence of power supply t_R:	< 120 ms (24 Vac/dc), 70 ms (12 Vdc)
Simultaneity time t_C:	unlimited
Response time starting from application of the supply:	< 200 ms (24 Vac/dc), 400 ms (12 Vdc)

In compliance with standards:

EN 60204-1, EN ISO 13855, EN ISO 14118, EN ISO 12100, EN ISO 13850, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, EN 81-20, EN 81-50, UL 508, CSA C22.2 no. 14, GB/T14048.5-2017.

Output circuit

Output contacts:	2 NO safety contacts,
Contact type:	forcibly guided
Material of the contacts:	gold-plated silver alloy
Maximum switching voltage:	230/240 Vac; 300 Vdc
Max. current per contact:	6 A
Conventional free air thermal current I_{th}:	6 A
Max. total current ΣI_{th}^2:	36 A^2
Minimum current:	10 mA
Contact resistance:	≤ 100 mΩ
External protection fuse:	4 A type F

The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See the paragraph on the CS ME series expansion modules in the General Safety Catalogue.

Code structure

CS AR-94V024

Connection type	
V	Screw terminals
M	Connector with screw terminals
X	Connector with spring terminals

Supply voltage	
024	24 Vac/dc
U12	12 Vdc

Features approved by UL

Rated supply voltage (U_n):	24 Vac/dc; 50…60 Hz
Power consumption AC:	< 5 VA
Power consumption DC:	< 4 W

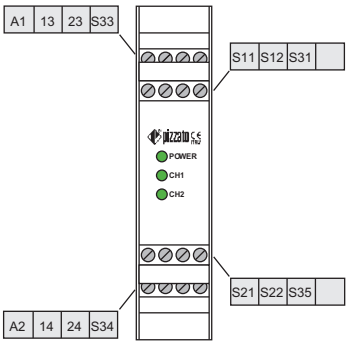
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

Notes:
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.

- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

CS AR-94 safety module

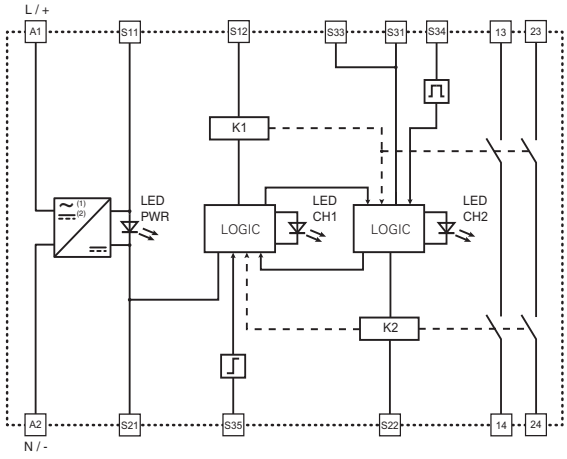
Pin assignment



Voltage dips, short interruptions and voltage variations

The CS AR-94 safety module has a built-in voltage drop sensor which serves to protect and safeguard the internal state of the safety relays, in the event of dips or short voltage interruptions. This is to prevent unwanted switching states in relation to the state of the inputs from occurring. When voltage is restored, the device continues to operate with a switching state that is consistent with the input signals. The safety module retains its normal function during voltage dips and brief interruptions; for longer voltage interruptions, the safety outputs open and reset themselves automatically during an automatic start if voltage is restored or – in the case of a manual or monitored start – require that the system be reset by the operator.

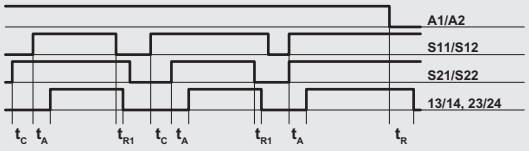
Internal wiring diagram



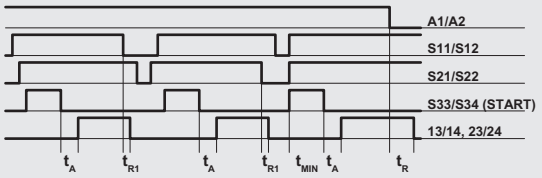
(1) articles CS AR-94•024 (2) articles CS AR-94•U12

Function diagrams

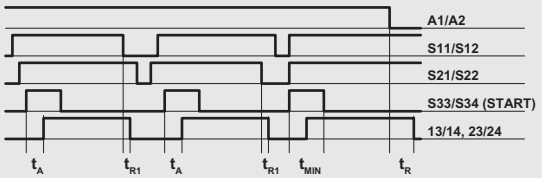
Configuration with automatic start



Configuration with monitored start



Configuration with manual start



Legend:

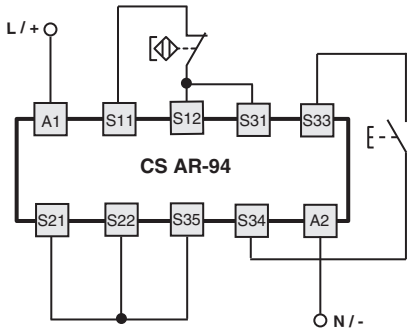
t_{MIN}:	Min. duration of start impulse	t_{R1}:	release time
t_C:	simultaneity time	t_R:	release time in absence of power supply
t_A:	response time		

Notes:
The configurations with one channel are obtained taking into consideration the S11/S12 input only. In this case it is necessary to consider time t_{R1} referred to input S11/S12, time t_R referred to the supply, time t_A referred to input S11/S12 and to the start, and time t_{MIN} referred to the start.

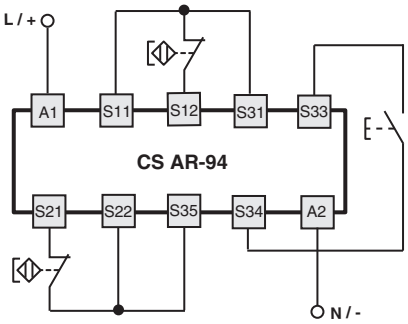
Input configuration

Input configuration with magnetic sensors

1 channel

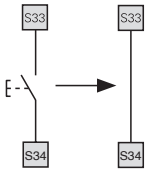


2 channels



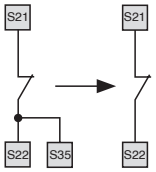
Automatic start

With regard to the indicated diagrams, bridge the start button between S33 and S34 in order to activate the automatic start module.



Monitored start

With regard to the indicated diagrams, remove the connection between the S22 and S35 terminals in order to activate the monitored start module.



Electromechanical switches

The safety module can control both magnetic sensors and electromechanical switches. Replace the sensor contacts with switch contacts.

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