



Module for emergency stops, end position monitoring for movable guards, semiconductor outputs (e.g. light barriers) and magnetic safety sensors

Main features

- For safety applications up to SIL CL 3/PL e
- Input with 1 or 2 channels
- Choice between automatic start, manual start or monitored start
- Can be connected to semiconductor outputs (e.g. light barriers), to electromechanical contacts or to magnetic safety sensors
- Output contacts:
2 NO safety contacts
- Supply voltage:
12 Vdc, 24 Vac/dc, 120 Vac, 230 Vac
- Possibility of parallel reset of several modules

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:



EC type examination certificate: IMQ CP 432 DM

UL approval: E131787

CCC approval: 2013010305640211 TÜV

SÜD approval: Z10 10 09 75157 002

EAC approval: RU C-IT.AD35.B.00454

Compliance with the requirements of:

Low Voltage Directive 2014/35/EU,

Machinery Directive 2006/42/EC,

EMC Directive 2014/30/EU

Code structure

CS AR-08V024

Connection type	Supply voltage
V Screw terminals	U12 12 Vdc
M Connector with screw terminals	024 24 Vac/dc
X Connector with spring terminals	120 120 Vac
	230 230 Vac

Stock items

CS AR-08V024

Technical data

Housing

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

Protection degree:

IP40 (housing), IP20 (terminal strip)

Dimensions:

see page 295, design A

General data

SIL CL:

up to SIL CL 3 acc. to EN 62061

Performance Level (PL):

up to PL e acc. to EN ISO 13849-1

Safety category:

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

Safety parameters:

see page 349

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

Oversvoltage category:

II

Weight:

0.3 kg

Supply

Rated supply voltage (U_n):

12 Vdc
24 Vac/dc; 50...60 Hz
120 Vac; 50...60 Hz
230 Vac; 50...60 Hz

Max. DC residual ripple in DC:

10%

Supply voltage tolerance

±15% of U_n

24 Vac/dc, 120 Vac, 230 Vac:

Supply voltage tolerance 12 Vdc:

-10% ... +15% of U_n

Power consumption AC:

< 5 VA

Power consumption DC:

< 2 W

Control circuit

Protection against short circuits:

PTC resistance, I_h=0.5 A

PTC times:

Response time > 100 ms, release time > 3 s

Maximum resistance per input:

≤ 50 Ω (15 Ω)*

Current per input:

30 mA (70 mA)* (typical)

Min. duration of start impulse t_{MIN}:

> 200 ms (100 ms)*

Response time t_A:

< 150 ms (220 ms)*

Release time t_{R1}:

< 20 ms (15 ms)*

Release time in absence of power supply t_{R2}:

< 150 ms (50 ms)*

Simultaneity time t_C:

unlimited

* Version CS AR-08•U12

In compliance 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 61326-1, EN 60664-1, EN 60947-1, EN ISO 13849-1,

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

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 Σ I_{th}²:

36 A²

Minimum current:

10 mA

Contact resistance:

≤ 100 mΩ

External protection fuse:

4 A

The number and the load capacity of output contacts can be increased by using expansion modules or contactors. see page 241-250.

Features approved by UL

Rated supply voltage (U_n): 24 Vac/dc, 50...60 Hz, 120 Vac;

50...60 Hz: 230 Vac; 50...60 Hz

Power consumption AC: < 5 VA

Power consumption DC: < 2 W

Maximum switching voltage: 230 Vac

Max. current per contact: 6 A

Utilization category: C300

- Use 60 or 75 °C copper (Cu) conductors, rigid or flexible, wire size 30-12 AWG.

- Tightening torque for terminal screws of 5-7 lb in.

- Only for 24 Vac/dc versions: power supply only with class 2 sources or with limited voltage and energy. (Supply from Remote Class 2 Source or limited voltage limited energy).

Features approved by TÜV SÜD

Rated supply voltage (U_n): 24 Vac/dc, ± 15%, 120 Vac ± 15%,

230 Vac ± 15%

Power consumption: 5 VA max AC, 2 W max DC

Rated operating current (max.): 4 A

Maximum switching load (max.): 1380 VA

Ambient temperature: -25°C ... +55°C

Storage temperature: -25 °C ... + 70°C

Protection degree: IP40 (housing), IP20 (terminal strip)

In compliance with standards: 2006/42/EEC Machine Directive,

EN ISO 13849-1 (up to cat. 4 PL e), EN 50178:1997, EN 60947-5-3/

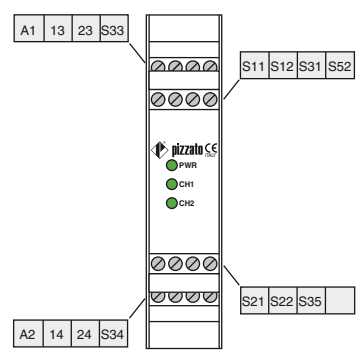
A1:2005, EN 61508-1:1998 (SIL CL 1-3), EN 61508-2:2000 (SIL CL

1-3), EN 61508-4:1998 (SIL CL 1-3), IEC 62061:2005 (SIL CL 3)



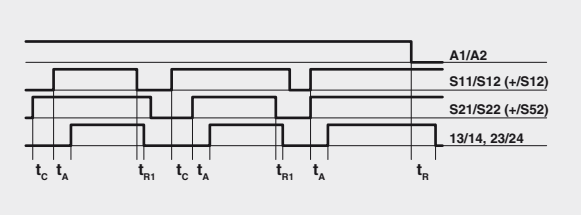
Safety module CS AR-08

Pin assignment

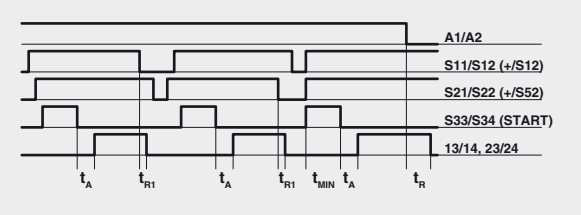


Function diagrams

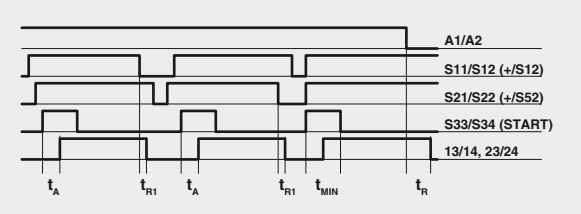
Configuration with automatic start



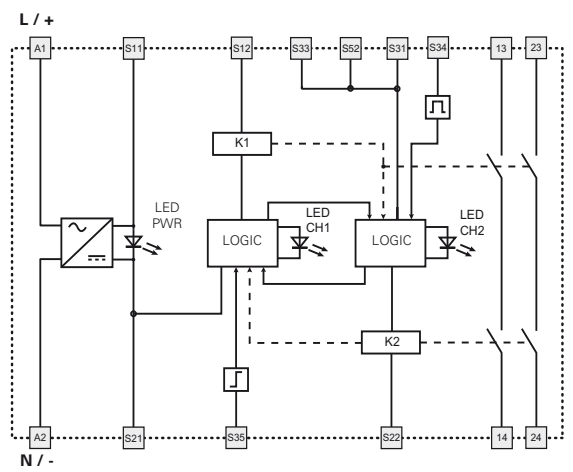
Configuration with monitored start



Configuration with manual start



Internal block diagram



Legend:

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

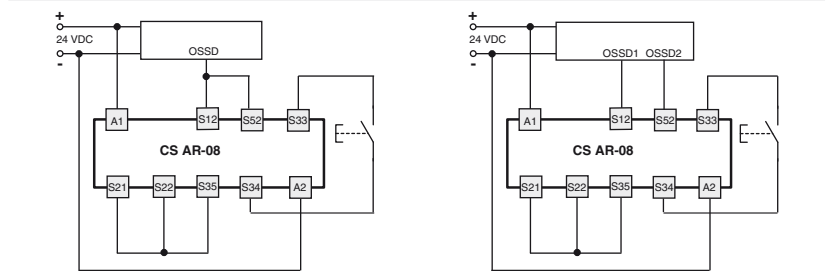
Notes:

The configurations with one channel are obtained taking into consideration the CH1 input only. In this case it is necessary to consider time t_{R1} referred to input CH1, time t_A referred to the supply, time t_A referred to input CH1 and to the start, and time t_{MIN} referred to the start.

Input configuration

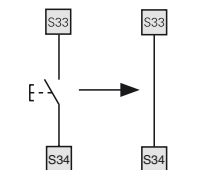
Semiconductor outputs (e.g. light barriers)

Input configuration with manual start



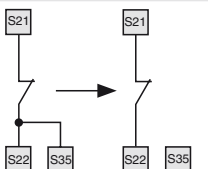
Automatic start

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



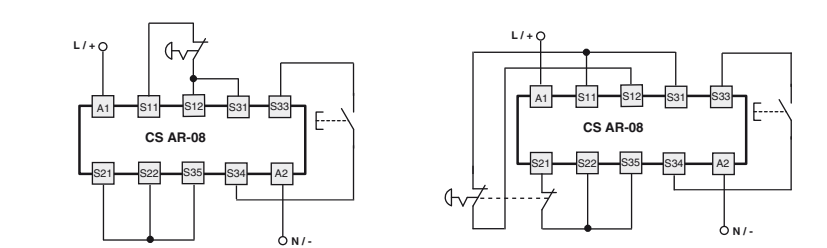
Monitored start

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



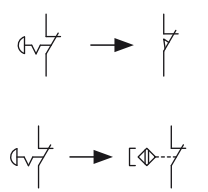
Emergency stop circuits

Input configuration with manual start



Monitoring of movable guards and magnetic safety sensors

The safety module can monitor emergency stop circuits, control circuits for movable guards as well as magnetic safety sensors. Replace the emergency stop contacts with switch contacts or sensor contacts. The sensors can only be used in 2-channel configuration.



The diagram does not show the exact position of the terminals in the product

Items with code on green background are stock items

Application examples See page 251