

### Module for emergency stops, end position monitoring for movable guards, OSSD semiconductor outputs 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 OSSD semiconductor outputs, 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<sub>e</sub> (V) 230

I<sub>e</sub> (A) 3

Direct current: DC13 (6 oper. cycles/min.)

U<sub>e</sub> (V) 24

I<sub>e</sub> (A) 4

#### Quality marks:



EC type examination certificate: IMQ CP 432 DM

UL approval: E131787

CCC approval: 2013010305640211

TÜV SÜD approval: Z10 18 05 75157 018

EAC approval: RU C-IT.YT03.B.00035/19

#### Compliance with the requirements of:

Machinery Directive 2006/42/EC,

EMC Directive 2014/30/EC,

RoHS Directive 2011/65/EU.

#### Code structure

## CS AR-08V024

Connection type	
<b>V</b>	Screw terminals
<b>M</b>	Connector with screw terminals
<b>X</b>	Connector with spring terminals

Supply voltage	
<b>U12</b>	12 Vdc
<b>024</b>	24 Vac/dc
<b>120</b>	120 Vac
<b>230</b>	230 Vac

#### 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 317, design A

##### General data

SIL level (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 375

Ambient temperature:

-25°C...+55°C

Mechanical endurance:

>10 million operating cycles

Electrical endurance:

>100,000 operating cycles

Pollution degree:

external 3, internal 2

Rated impulse withstand voltage (U<sub>imp</sub>):

4 kV

Rated insulation voltage (U<sub>i</sub>):

250 V

Overvoltage category:

II

##### Supply

Rated supply voltage (U<sub>n</sub>):

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<sub>n</sub>

24 Vac/dc, 120 Vac, 230 Vac:

Supply voltage tolerance 12 Vdc:

-10% ... +15% of U<sub>n</sub>

Power consumption AC:

< 5 VA

Power consumption DC:

< 2 W

##### Control circuit

Protection against short circuits:

PTC resistance, I<sub>h</sub>=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<sub>MIN</sub>:

> 200 ms (100 ms)\*

Response time t<sub>A</sub>:

< 150 ms ( 220 ms)\*

Release time t<sub>R1</sub>:

< 20 ms (15 ms)\*

Release time in absence of power supply t<sub>R2</sub>:

< 200 ms (50 ms)\*

Simultaneity time t<sub>c</sub>:

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 60947-5-3, EN 61508-1, EN 61508-2, EN 61508-4, EN 50581, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 n° 14-95, 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<sub>th</sub>:

6 A

Max. total current Σ I<sub>th</sub><sup>2</sup>:

36 A<sup>2</sup>

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 pages 263-272.

#### Features approved by UL

Rated supply voltage (U<sub>n</sub>): 24 Vac/dc; 50...60 Hz, 120 Vac; 50...60 Hz  
230 Vac; 50...60 Hz

Power consumption AC: < 5 VA

Power consumption DC: < 4 W

Electrical ratings: 230/240 Vac, 6 A general use, C300 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.

#### Features approved by TÜV SÜD

Rated supply voltage (U<sub>n</sub>): 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/EC Machinery Directive,

EN ISO 13849-1:2015 (fino a Cat. 4 PL e), EN 60947-5-3:2013,

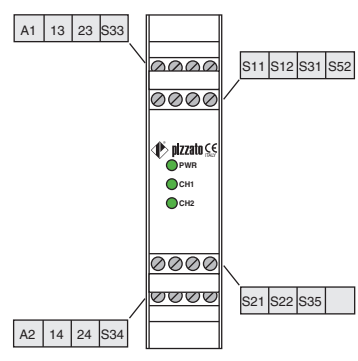
EN 61508-1:2010 (fino a SIL 3), EN 61508-2:2010 (fino a SIL 3),

EN 61508-4:2010 (fino a SIL 3), EN 62061:2005/A2:2015 (fino a SIL CL 3)



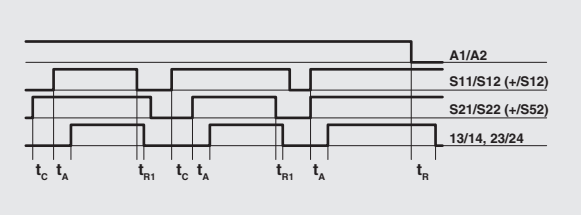
# Safety module CS AR-08

## Pin assignment

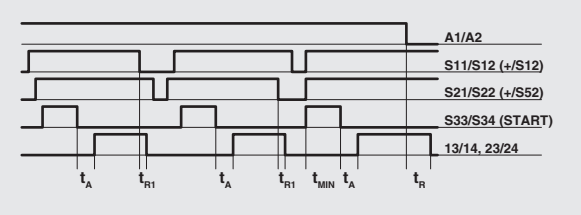


## Function diagrams

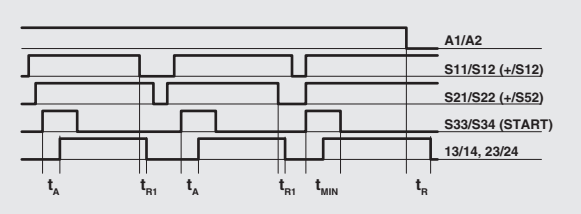
Configuration with automatic start



Configuration with monitored start



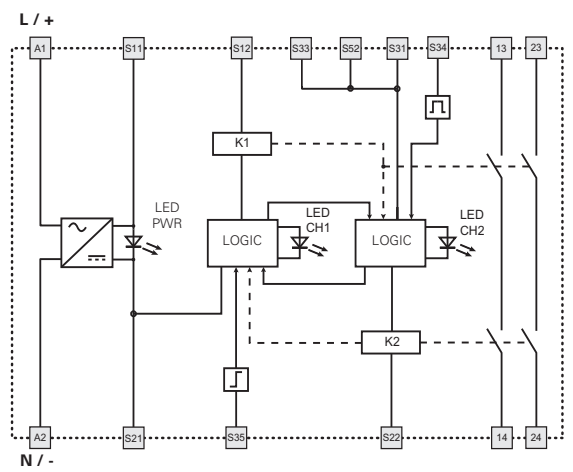
Configuration with manual start



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  $t_c$  referred to the supply, time  $t_A$  referred to input CH1 and to the start, and time  $t_{MIN}$  referred to the start.

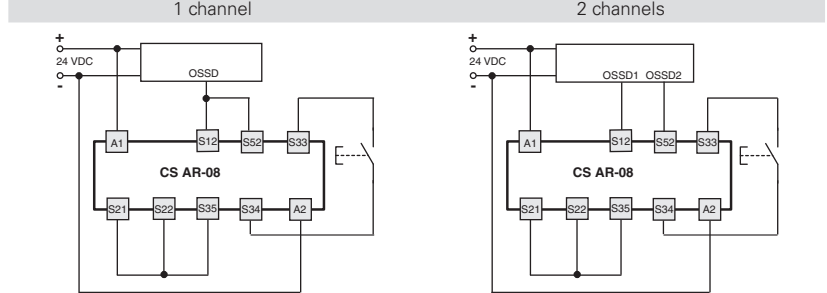
## Internal block diagram



## Input configuration

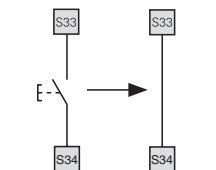
### OSSD semiconductor outputs (e.g. ST, NS, NG series or light barriers)

#### Input configuration with manual start



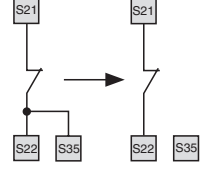
### Automatic start

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



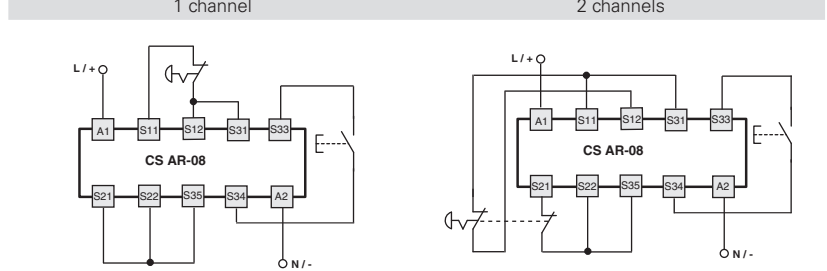
### Monitored start

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



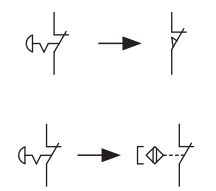
### Emergency stop circuits

#### 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