



### Module for emergency stops and end position monitoring for movable guards

#### Main features

- For safety applications up to SIL CL 3/PL e
- Input with 1 or 2 channels
- Choice between automatic start, manual start (CS AR-22 only) or monitored start (CS AR-23 only)
- Reduced housing width of 22.5 mm
- 3 NO safety contacts, 1 NC auxiliary contact
- Supply voltage: 24 Vac/dc, 120 Vac, 230 Vac

#### 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 and certificates:



EC type examination certificate: IMQ CP 432 DM

UL approval: E131787

CCC approval: 2013010305640211

EAC approval: RU C-IT.AQ35.B.00454

#### Compliance with the requirements of:

Low Voltage Directive 2014/35/EU,

Machinery Directive 2006/42/EC,

EMC Directive 2014/30/EU

#### 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. 3 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<sub>imp</sub>):

4 kV

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

250 V

Overvoltage category:

II

Weight:

0.2 kg

##### Supply

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

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>

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

Current per input:

70 mA (typical)

Min. duration of start impulse t<sub>MIN</sub>:

> 100 ms

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

< 50 ms

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

< 75 ms

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

unlimited

##### 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:

3 NO safety contacts

1 NC auxiliary contact

forcibly guided

Contact type:

gold-plated silver alloy

Material of the contacts:

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>:

80 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 page 241-250.

#### Code structure

## CS AR-22V024

##### Start mode

**22** manual or automatic start

**23** monitored start

##### Connection type

**V** Screw terminals

**M** Connector with screw terminals

**X** Connector with spring terminals

##### Supply voltage

**024** 24 Vac/dc

**120** 120 Vac

**230** 230 Vac

#### Stock items

CS AR-22V024

#### 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

< 5 VA

Power consumption AC:

Power consumption DC:

Maximum switching voltage:

Max. current per contact:

Utilization category

230 Vac

6 A

C300

Notes:

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

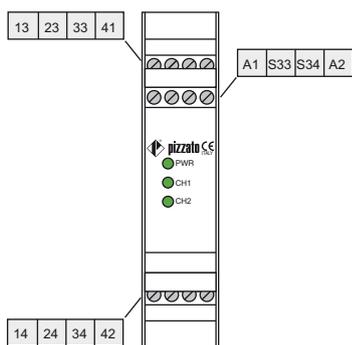
- Tightening torque for terminal screws of 5-7 lb in.

- 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).

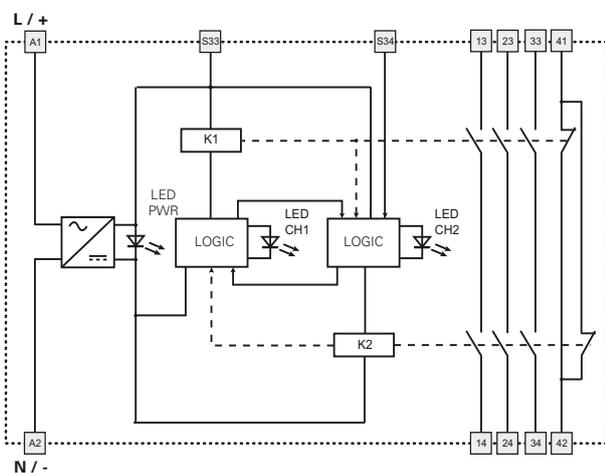


### Safety module CS AR-22 / CS AR-23

#### Pin assignment

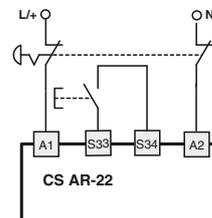
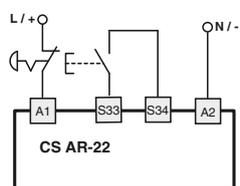


#### Internal block diagram



#### Input configuration

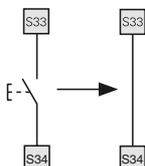
Emergency stop circuits	
Input configuration with manual start	
1 channel	2 channels



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

#### Automatic start

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

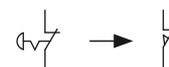


#### Monitored start

Use module CS AR-23 with the circuit diagrams for manual start.

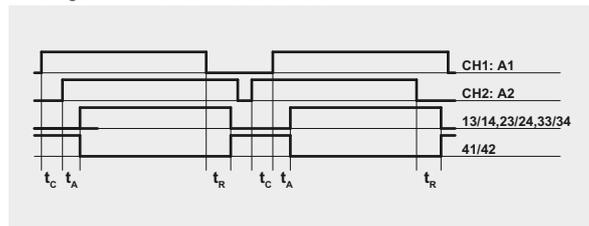
#### Movable guard monitoring

The safety module can monitor emergency stop circuits and control circuits for movable guards. Replace the emergency stop contacts with the switch contacts.

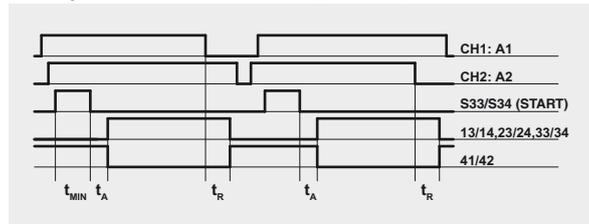


#### Function diagrams

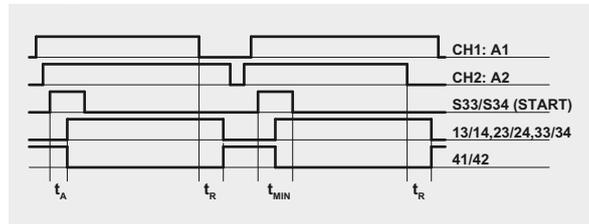
Configuration with automatic start (CS AR-22)



Configuration with monitored start (CS AR-23)



Configuration with manual start (CS AR-22)



Legend:

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

Notes:

The configurations with one channel are obtained taking into consideration the CH1:A1 input only. In this case it is necessary to consider time  $t_R$  referred to input CH1:A1, time  $t_A$  referred to input CH1:A1 and to the start, and time  $t_{MIN}$  referred to the start.