



Module for emergency stop and gate monitoring

Main functions

- Single or dual channel input circuit
- Choice between automatic start, manual start (CS AR-20 only) or monitored start (CS AR-21 only)
- Connection of the input channels to opposite potentials
- Small 22,5 mm housing
- 2 NO safety contacts
- Supply voltages:
24 VAC/DC, 120 VAC, 230 VAC

Utilization categories

Alternate current: AC15 (50...60 Hz)

U_e (V) 230

I_e (A) 3

Direct current: DC13 (6 operations/minute)

U_e (V) 24

I_e (A) 6

Markings, quality marks and certificates:



Approval UL: E131787

Complying with the requirements requested by:

Low Voltage Directive 2006/95/EC,

Machinery Directive 2006/42/EC,

Electromagnetic Compatibility 2004/108/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94)

Protection degree:

IP40 (housing), IP20 (terminals)

Dimensions:

see page 4/141, shape A

General data

Safety category:

category 3 according to EN 954-1

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 (U_{imp}):

4 kV

Rated insulation voltage (U_i):

250 V

Over-voltage category:

III

Weight:

0,2 Kg

Power supply

Rated operating voltage (U_n):

24 VAC/DC; 50...60 Hz

120 VAC; 50...60 Hz

230 VAC; 50...60 Hz

Max residual ripple in DC:

10%

Supply voltage tolerance:

±15% of U_n

Rated power consumption AC:

< 5 VA

Rated power consumption DC:

< 2 W

Control circuit

Protection against short circuits:

resistance PTC, I_h=0,5 A

Operating time of PTC:

intervention > 100 ms, reset > 3 s

Max input resistance:

≤ 50 Ω

Current for each input:

30 mA

Min. period of start impulse t_{MIN}:

100 ms

Operating time t_A:

50 ms

Releasing time in absence of power supply t_R:

70 ms

Simultaneity time t_C:

infinite

In conformity with standards:

IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts:

2 NO safety contacts

Contacts type:

forced guided contacts

Contacts material:

silver alloy, gold plated

Max switching voltage:

230/240 VAC; 300 VDC

Max switching current per contact:

6 A

Conventional free air thermal current I_{th}:

6 A

Contacts resistance:

≤ 100 mΩ

Contact protection fuse:

6 A

The number and the load capacity of output contacts can

be increased by using expansion modules or contactors: see page 4/135 - 4/139

Code structure

CS AR-20V024

Kind of start

20	manual or automatic start
21	monitored start

Kind of connection

V	screw terminals
M	connector with screw terminals
X	connector with spring terminals

Supply voltage

024	24 VAC/DC	±15%
120	120 VAC	±15%
230	230 VAC	±15%

Items available on stock

CS AR-20V024

Data type approved by UL

Rated operating voltage (U_n): 24 VAC/DC; 50...60 Hz
120 VAC; 50...60 Hz
230 VAC; 50...60 Hz

Rated power consumption AC: < 5 VA

Rated power consumption DC: < 2 W

Max switching voltage: 230 VAC

Max switching current per contact: 6 A

Utilization category C300

Notes:

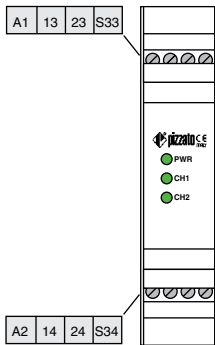
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.

- Terminal tightening torque of 5-7 Lb-In.

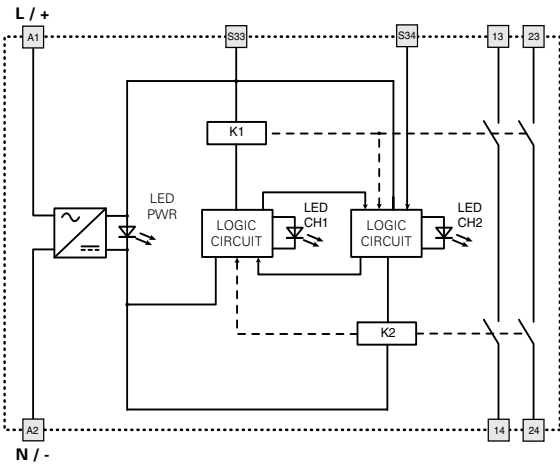
- Only for 24 VAC/DC version, supply from remote class 2 source or limited voltage and limited energy.

Safety module CS AR-20 / CS AR-21

Terminals layout

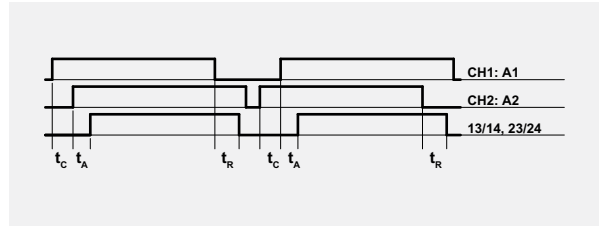


Internal wiring diagram

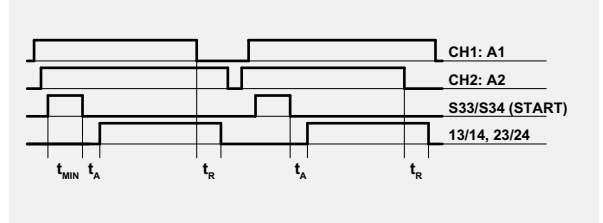


Operation diagrams

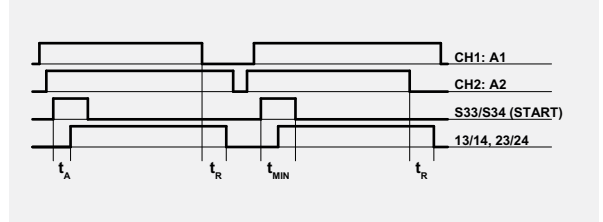
Configuration with automatic start (CS AR-20 only)



Configuration with monitored start (CS AR-21 only)



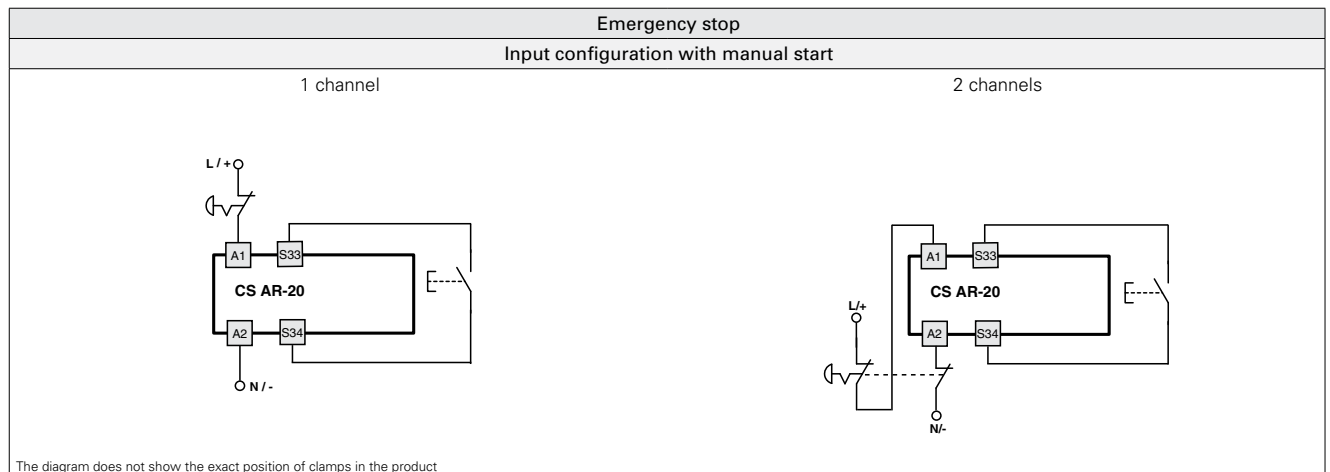
Configuration with manual start (CS AR-20 only)



Legend:
 t_{MIN} : Min. period of start impulse
 t_c : Simultaneity time
 t_A : Operating time
 t_R : Releasing time in absence of power supply

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

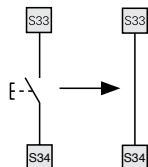
Inputs configuration



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

Automatic start

As regards the indicated diagrams, in order to activate the module with the automatic start, it is necessary to short the start button between S33 and S34 terminals.



Monitored start

Use the CS AR-21 module following the diagram for the manual start.

Gate monitoring

The safety module can control both emergency stop circuits and gate monitoring circuits, replacing the emergency stop contacts with switches contacts.

