



Module for emergency stop, gate monitoring and magnetic safety sensor (CS AR-01•E02 only)

- Main functions**
- For safety applications up to SIL 3 / PL e
 - Single or dual channel input circuit
 - Choice between automatic start, manual start or monitored start
 - Connection of the input channels to opposite potentials
 - Small 22,5 mm housing
 - Output contacts:
2 NO safety contacts,
1 NC auxiliary contact
 - Supply voltages:
10 ... 30 Vdc, 24 Vac/dc, 120 Vac, 230 Vac

Utilization categories
Alternate current: AC15 (50...60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 operations/minute)
Ue (V) 24
Ie (A) 4

Markings, quality marks and certificates:



Approval UL: E131787
Certificate CE type n°: IMQ123
Approval GOST: POCC IT.AB24.B04512

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 5/81, shape A

General data
SIL level (SIL CL): up to SIL 3 according to EN IEC 62061
Performance Level (PL): up to PL e according to EN ISO 13849-1
Safety category: upto cat. 4 according to EN ISO 13849-1
Safety parameters: see page 7/34
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 (Uimp): 4 kV
Rated insulation voltage (Ui): 250 V
Over-voltage category: II
Weight: 0,3 kg

Power supply
Rated operating voltage (Un): 10 ... 30 Vdc
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 Un
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 t_{R1}: < 20 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 60947-5-1, 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, EN 60947-5-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit
Output contacts: 2 NO safety contacts,
1 NC auxiliary contact
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
Max currents sum Σ I_{th}²: 72 A²
Min. current: 10 mA
Contacts resistance: ≤ 100 mΩ
Contact protection fuse: 6 A, F type
The number and the load capacity of output contacts can be increased by using expansion modules or contactors See page 5/51 - 5/61.

Code structure

CS AR-01V024

Kind of connection	Supply voltage
V screw terminals	024 24 Vac/dc ±15%
M connector with screw terminals	120 120 Vac ±15%
X connector with spring terminals	230 230 Vac ±15%
	E02 10 ... 30 Vdc

Items available on stock

CS AR-01V024

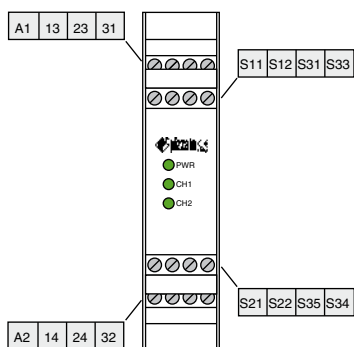
Data type approved by UL

Rated operating voltage (Un): 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

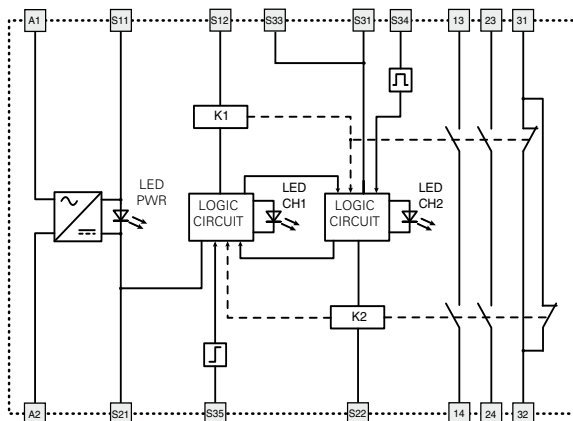
Notes:
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
- Terminal tightening torque of 5-7 Lb In.
- Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy.

Safety module CS AR-01

Terminals layout

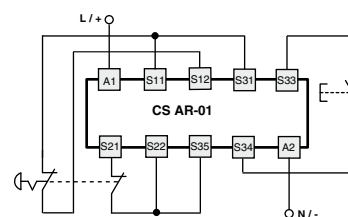
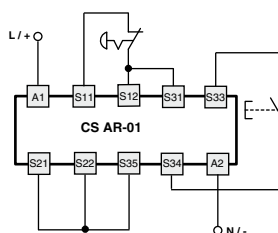


Internal wiring diagram



Inputs configuration

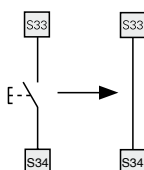
Emergency stop	
Input configuration with manual start	
1 channel	2 channels



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

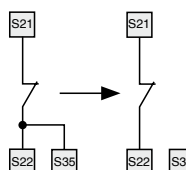
Automatic start

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.



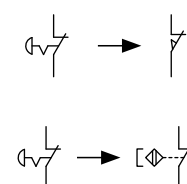
Monitored start

As regards the indicated diagrams, in order to activate the module with the monitored start, it is necessary to remove the connection between S22 and S35 terminals.



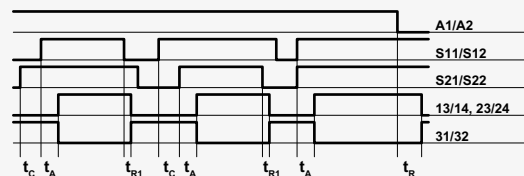
Gate monitoring and safety magnetic sensors (CS AR-01VE02 version only)

The safety module can control both emergency stop circuits, gate monitoring circuits or safety magnetic sensors. Replace the emergency stop contacts with switches contacts or with the sensors contacts. The sensors can only be used in the 2-channel configuration.

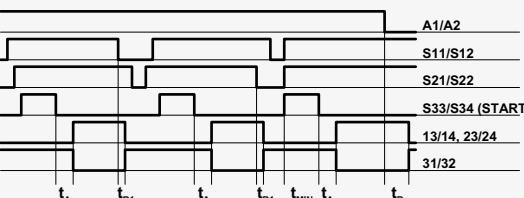


Operation diagrams

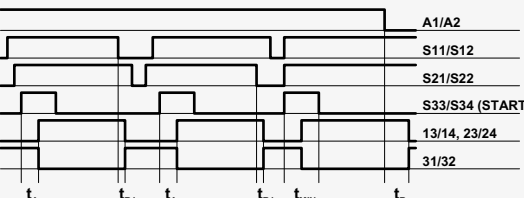
Configuration with automatic start



Configuration with monitored start



Configuration with manual start



Legend:

t_{MIN} : Min. period of start impulse
 t_c : Simultaneity time
 t_A : Operating time
 t_{R1} : Releasing time
 t_R : Releasing time in absence of power supply

Note:

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



Module for emergency stop, gate monitoring and magnetic safety sensor (CS AR-02•E02 only)

- Main functions**
- For safety applications up to SIL 3 / PL e
 - Single or dual channel input circuit
 - Choice between automatic start, manual start or monitored start
 - Connection of the input channels to opposite potentials
 - Small 22,5 mm housing
 - Output contacts:
3 NO safety contacts
 - Supply voltages:
10 ... 30 Vdc, 24 Vac/dc, 120 Vac, 230 Vac

Utilization categories
Alternate current: AC15 (50...60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 operations/minute)
Ue (V) 24
Ie (A) 4

Markings, quality marks and certificates:


Approval UL: E131787
Approval GOST: POCC ITAB24.B04512


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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 5/81, shape A

General data
SIL level (SIL CL): up to SIL 3 according to EN IEC 62061
Performance Level (PL): up to PL e according to EN ISO 13849-1
Safety category: upto cat. 4 according to EN ISO 13849-1
Safety parameters: see page 7/34
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 (Uimp): 4 kV
Rated insulation voltage (Ui): 250 V
Over-voltage category: II
Weight: 0,3 kg

Power supply
Rated operating voltage (Un): 10 ... 30 Vdc
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 Un
Rated power consumption AC: < 5 VA
Rated power consumption DC: < 2 W

Control circuit
Protection against short circuits: resistance PTC, Ih=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 t_R: < 20 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 60947-5-1, 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, EN 60947-5-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit
Output contacts: 3 NO safety c ontacts,
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 Ith: 6 A
Max currents sum Σ Ith²: 72 A²
Min. current: 10 mA
Contacts resistance: ≤ 100 mΩ
Contact protection fuse: 6 A, F type
The number and the load capacity of output contacts can be increased by using expansion modules or contactors See page See page 5/51 - 5/61.

Code structure

CS AR-02V024

Kind of connection	Supply voltage
V screw terminals	024 24 Vac/dc ±15%
M connector with screw terminals	120 120 Vac ±15%
X connector with spring terminals	230 230 Vac ±15%
	E02 10 ... 30 Vdc

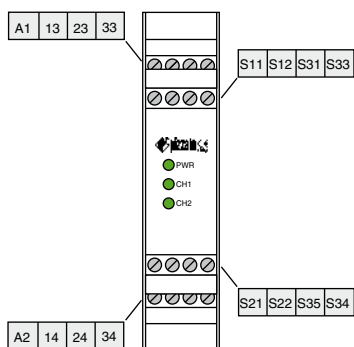
Data type approved by UL

Rated operating voltage (Un): 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

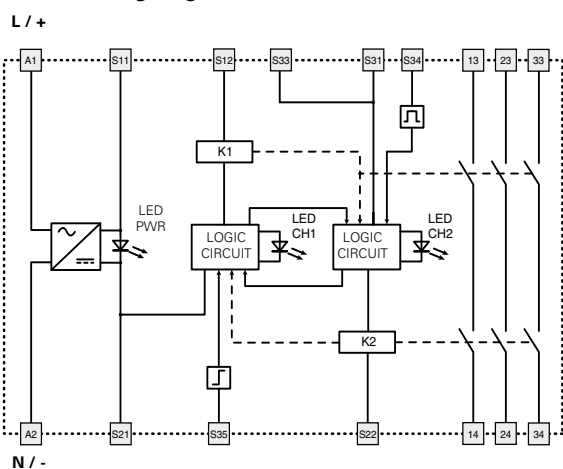
Notes:
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
- Terminal tightening torque of 5-7 Lb In.
- Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy.

Safety module CS AR-02

Terminals layout

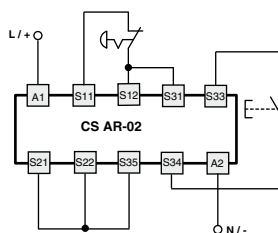


Internal wiring diagram

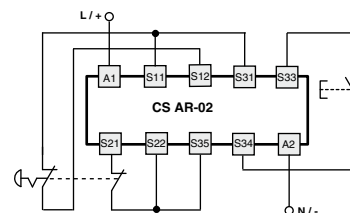


Inputs configuration

Emergency stop	
Input configuration with manual start	
1 channel	2 channels

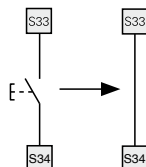


The diagram does not show the exact position of clamps in the product



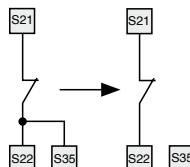
Automatic start

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.



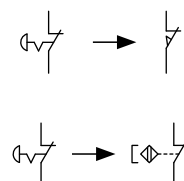
Monitored start

As regards the indicated diagrams, in order to activate the module with the monitored start, it is necessary to remove the connection between S22 and S35 terminals.



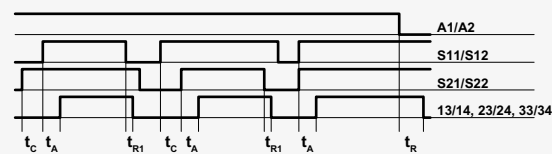
Gate monitoring and safety magnetic sensors (CS AR-02VE02 version only)

The safety module can control both emergency stop circuits, gate monitoring circuits or safety magnetic sensors. Replace the emergency stop contacts with switches contacts or with the sensors contacts. The sensors can only be used in the 2-channel configuration.

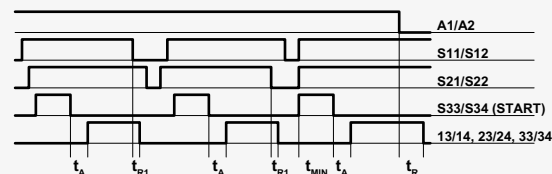


Operation diagrams

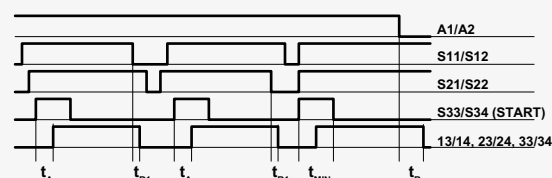
Configuration with automatic start



Configuration with monitored start



Configuration with manual start



Legend:

t_{MIN} : Min. period of start impulse
 t_{c} : Simultaneity time
 t_A : Operating time
 t_{R1} : Releasing time
 t_{R2} : Releasing time in absence of power supply

Note:

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



Module for emergency stop, gate monitoring and magnetic safety sensor (CS AR-04•024 only)

- Main functions**
- For safety applications up to SIL 3 / PL e
 - Single or dual channel input circuit
 - Choice between automatic start, manual start or monitored start
 - Connection of the input channels to opposite potentials
 - Small 22,5 mm housing
 - Output contacts:
 - 3 NO safety contacts,
 - 1 NC auxiliary contact
 - Supply voltages:
 - 24 Vac/dc, 120 Vac, 230 Vac

Utilization categories

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

Ue (V) 230

Ie (A) 3

Direct current: DC13 (6 operations/minute)

Ue (V) 24

Ie (A) 4

Markings, quality marks and certificates:

Approval UL: E131787

Approval GOST: POCC IT.AB24.B04512

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 5/81, shape A

General data

SIL level (SIL CL): up to SIL 3 according to EN IEC 62061

Performance Level (PL): up to PL e according to EN ISO 13849-1

Safety category: up to cat. 4 according to EN ISO 13849-1

Safety parameters: see page 7/34

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 (Uimp): 4 kV

Rated insulation voltage (Ui): 250 V

Over-voltage category: II

Weight: 0,3 kg

Power supply

Rated operating voltage (Un): 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 Un

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 t_{R1}: < 20 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 60947-5-1, 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, EN 60947-5-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts: 3 NO safety contacts

1 NC auxiliary contact

forced guided contacts

silver alloy, gold plated

230/240 Vac; 300 Vdc

6 A

Contacts type: 6 A

Contacts material: 64 A²

Max switching voltage: 10 mA

Max switching current per contact: ≤ 100 mΩ

Conventional free air thermal current I_{th}: 6 A, F type

Max currents sum Σ I_{th}²:

Min. current:

Contacts resistance:

Contact protection fuse:

The number and the load capacity of output contacts can be increased by using expansion modules or contactors See page See page 5/51 - 5/61.

Code structure

CS AR-04V024

Kind of connection	Supply voltage
V screw terminals	024 24 Vac/dc ±15%
M connector with screw terminals	120 120 Vac ±15%
X connector with spring terminals	230 230 Vac ±15%

Items available on stock

CS AR-04V024

Data type approved by UL

Rated operating voltage (Un): 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

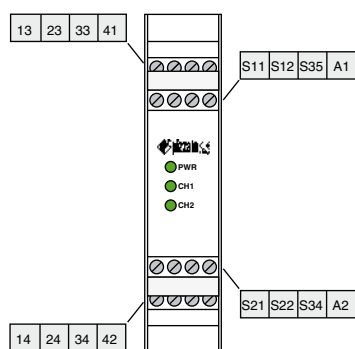
Notes:

- 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.

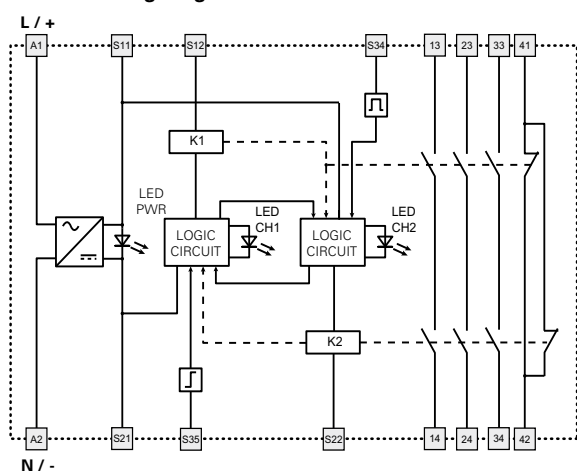


Safety module CS AR-04

Terminals layout

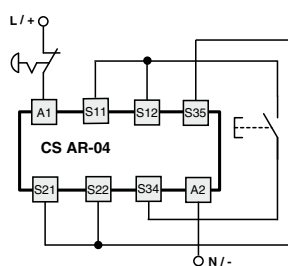


Internal wiring diagram



Inputs configuration

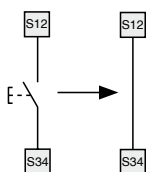
Emergency stop	
Input configuration with manual start	
1 channel	2 channels



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

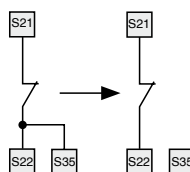
Automatic start

As regards the indicated diagrams, in order to activate the module with the automatic start, it is necessary to short the start button between S12 and S34 terminals.



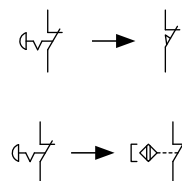
Monitored start

As regards the indicated diagrams, in order to activate the module with the monitored start, it is necessary to remove the connection between S22 and S35 terminals.



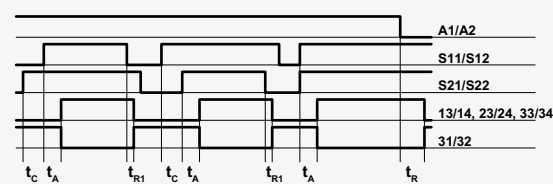
Gate monitoring and safety magnetic sensors (CS AR-04V024 version only)

The safety module can control both emergency stop circuits, gate monitoring circuits or safety magnetic sensors. Replace the emergency stop contacts with switches contacts or with the sensors contacts. The sensors can only be used in the 2-channel configuration.

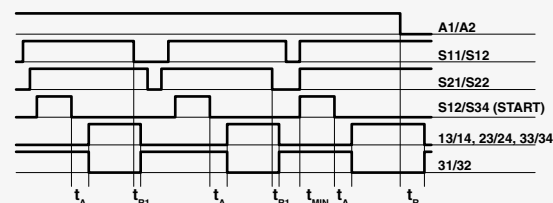


Operation diagrams

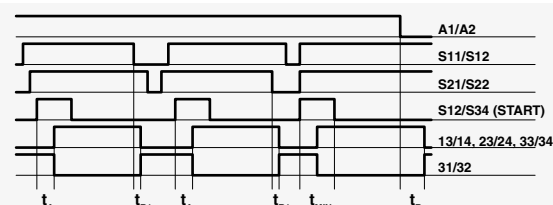
Configuration with automatic start



Configuration with monitored start



Configuration with manual start



Legend:

t_{MIN} : Min. period of start impulse
 t_c : Simultaneity time
 t_A : Operating time
 t_{R1} : Releasing time
 t_R : Releasing time in absence of power supply

Note:

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



Module for emergency stop, gate monitoring, solid-state output circuits (for example optical barriers) and magnetic safety sensor

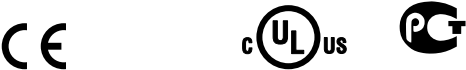
Main functions

- For safety applications up to SIL 3 / PL e
- Single or dual channel input circuit
- Choice between automatic start, manual start (CS AR-05 only) or monitored start (CS AR-06 only)
- Connectible to solid-state output circuits (for example optical barriers), to electromechanical contacts or to magnetic safety sensor
- Output contacts:
3 NO safety contacts,
1 NC auxiliary contact
- Supply voltages: 24 Vac/dc, 120 Vac, 230 Vac

Utilization categories

Alternate current: AC15 (50...60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 operations/minute)
Ue (V) 24
Ie (A) 4

Markings, quality marks and certificates:



Approval UL: E131787
Approval GOST: POCC IT.AB24.B04512

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 5/81, shape A

General data

SIL level (SIL CL): up to SIL 3 according to EN IEC 62061
Performance Level (PL): up to PL e according to EN ISO 13849-1
Safety category: up to cat. 4 according to EN ISO 13849-1
Safety parameters: see page 7/34
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 (Uimp): 4 kV
Rated insulation voltage (Ui): 250 V
Over-voltage category: II
Weight: 0,3 kg

Power supply

Rated operating voltage (Un): 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 Un
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}: > 250 ms
Operating time t_A: < 200 ms
Releasing time t_{R1}: < 15 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 60947-5-1, 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, EN 60947-5-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts: 3 NO safety contacts
1 NC auxiliary contact
forced guided contacts
Contacts type: silver alloy, gold plated
Contacts material: 230/240 Vac; 300 Vdc
Max switching voltage: 6 A
Max switching current per contact: 6 A
Conventional free air thermal current I_{th}: 64 A²
Max currents sum Σ I_{th}²: 10 mA
Min. current: ≤ 100 mΩ
Contacts resistance: 6 A, F type
Contact protection fuse:
The number and the load capacity of output contacts can be increased by using expansion modules or contactors See page 5/51 - 5/61.

Code structure

CS AR-05V024

Kind of start

- 05 manual or automatic start
06 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-05V024

Data type approved by UL

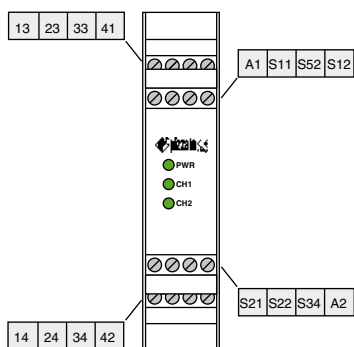
Rated operating voltage (Un): 24 Vac/dc; 50...60 Hz
120 Vac; 50...60 Hz
230 Vac; 50...60 Hz
Rated power consumption AC: < 5 VA
Rated power consumption DC: < 2 W
Max switching voltage: 230 Vac
Max switching current per contact: 6 A
Utilization category: C300

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.

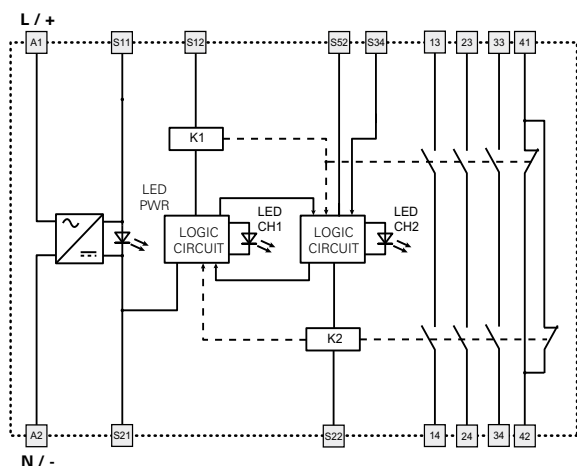


Safety module CS AR-05-06

Terminals layout



Internal wiring diagram

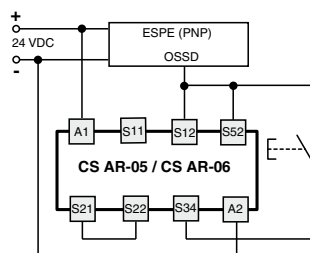


Inputs configuration

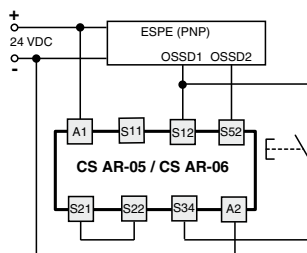
Solid-state output circuits (for example optical barriers)

Input configuration with manual start

1 channel



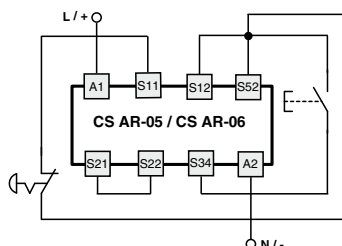
2 channels



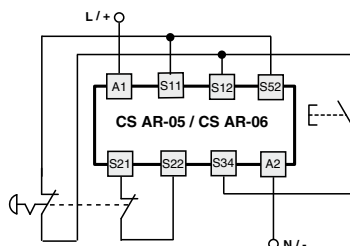
Emergency stop

Input configuration with manual start

1 channel



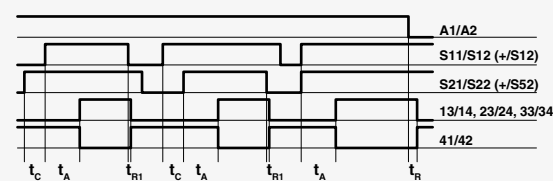
2 channels



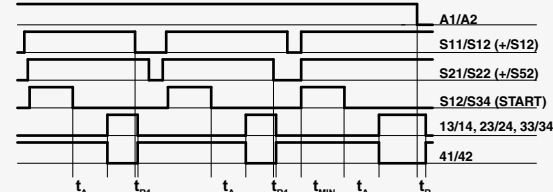
The diagram does not show the exact position of clamps in the product

Operation diagrams

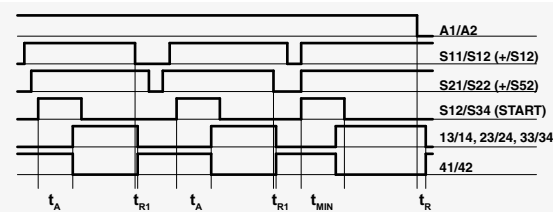
Configuration with automatic start (CS AR-05 only)



Configuration with monitored start (CS AR-06 only)



Configuration with manual start (CS AR-05 only)



Legend:

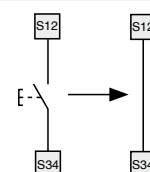
t_{MIN} : Min. period of start impulse
 t_C : Simultaneity time
 t_A : Operating time
 t_{R1} : Releasing time
 t_R : Releasing time in absence of power supply

Note:

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

Automatic start (CS AR-05 only)

As regards the indicated diagrams, in order to activate the module with the automatic start, it is necessary to short the start button between S12 and S34 terminals.

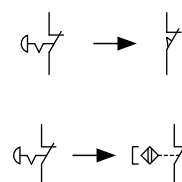


Monitored start

Use the CS AR-06 module following the diagram for the manual start.

Gate monitoring and safety magnetic sensors

The safety module can control both emergency stop circuits, gate monitoring circuits or safety magnetic sensors. Replace the emergency stop contacts with switches contacts or with the sensors contacts. The sensors can only be used in the 2-channel configuration.





Module for emergency stop and gate monitoring

- Main functions**
- For safety applications up to SIL 3 / PL e
 - Single or dual channel input circuit
 - Choice between automatic start, manual start or monitored start
 - Connection of the input channels to opposite potentials
 - Small 22,5 mm housing
 - Output contacts:
4 NO safety contacts,
1 NC auxiliary contact
 - Supply voltages:
24 Vac/dc

Utilization categories

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

Ue (V) 230

Ie (A) 3

Direct current: DC13 (6 operations/minute)

Ue (V) 24

Ie (A) 4

Markings, quality marks and certificates:


Approval UL: E131787
Approval GOST: POCC IT.AB24.B04512





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 5/81, shape B

General data

SIL level (SIL CL): up to SIL 3 according to EN IEC 62061

Performance Level (PL): up to PL e according to EN ISO 13849-1

Safety category: up to cat. 4 according to EN ISO 13849-1

Safety parameters: see page 7/34

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 (Uimp): 4 kV

Rated insulation voltage (Ui): 250 V

Over-voltage category: II

Weight: 0,3 kg

Power supply

Rated operating voltage (Un): 24 Vac/dc; 50...60 Hz

Max residual ripple in DC: 10%

Supply voltage tolerance: ±15% of Un

Rated power consumption AC: < 5 VA

Rated power consumption DC: < 2 W

Control circuit

Protection against short circuits: resistance PTC, Ih=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: < 70 ms

Releasing time t_{R1}: < 40 ms

Releasing time in absence of power supply t_R: < 80 ms

Simultaneity time t_c: infinite

In conformity with standards:

IEC 60947-1, EN 60947-5-1, 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, EN 60947-5-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts: 4 NO safety contacts
1 NC auxiliary contact
forced guided contacts

Contacts type: silver alloy, gold plated

Contacts material: 230/240 Vac; 220 Vdc

Max switching voltage: 6 A

Max switching current per contact: 6 A

Conventional free air thermal current Ith: 72 A²

Max currents sum Σ Ith²: 10 mA

Min. current: ≤ 100 mΩ

Contacts resistance: 6 A, F type

Contact protection fuse: The number and the load capacity of output contacts can be increased by using expansion modules or contactors See page 5/51 - 5/61.

Code structure

CS AR-07M024

Kind of connection		Supply voltage	
M	connector with screw terminals	024	24 Vac/dc ±15%
X	connector with spring terminals		

Items available on stock

CS AR-07M024

Data type approved by UL

Rated operating voltage (Un): 24 Vac/dc; 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

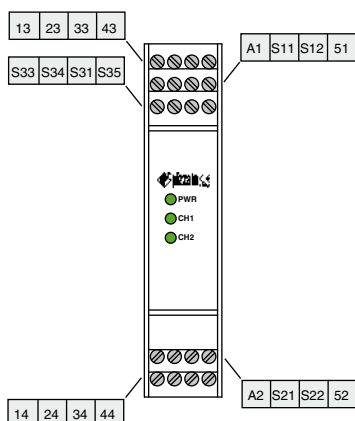
Notes:

- 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.

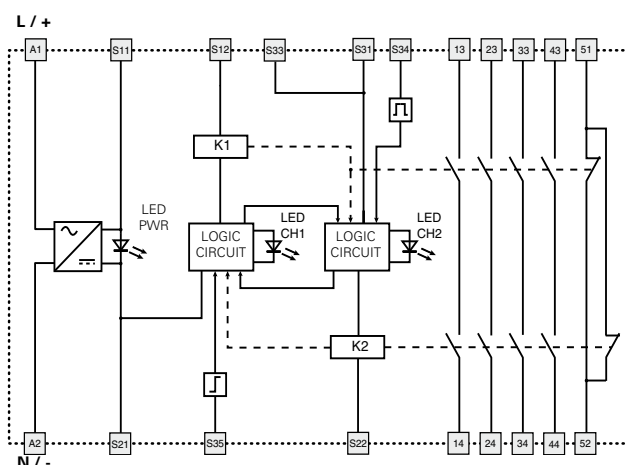


Safety module CS AR-07

Terminals layout

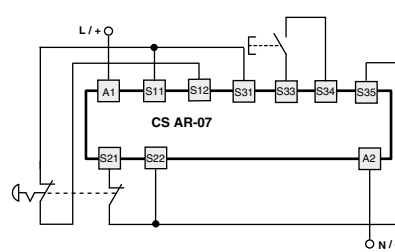
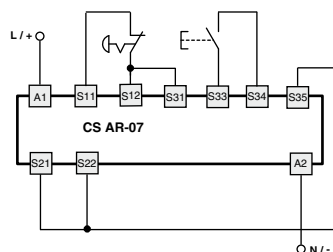


Internal wiring diagram



Inputs configuration

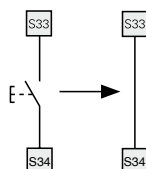
Emergency stop	
Input configuration with manual start	
1 channel	2 channels



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

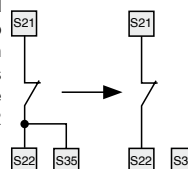
Automatic start

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.



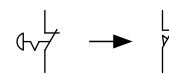
Monitored start

As regards the indicated diagrams, in order to activate the module with the monitored start, it is necessary to remove the connection between S22 and S35 terminals.



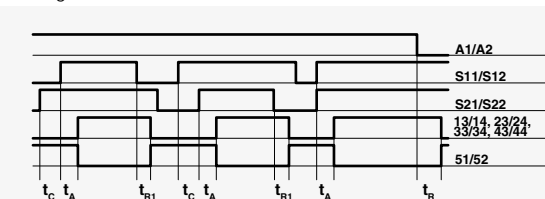
Gate monitoring

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



Operation diagrams

Configuration with automatic start



Configuration with monitored start



Configuration with manual start



Legend:

t_{MIN} : Min. period of start impulse
 t_C : Simultaneity time
 t_A : Operating time
 t_{R1} : Releasing time
 t_R : Releasing time in absence of power supply

Note:

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



Module for emergency stop, gate monitoring, solid state output devices and magnetic safety sensor

Main functions

- For safety applications up to SIL 3 / PL e
- Single or dual channel input circuit
- Choice between automatic start, manual start or monitored start
- Connectable to solid-state output circuits (for example optical barriers), to electromechanical contacts or to magnetic safety sensor
- Output contacts:
2 NO safety contacts,
- Supply voltages:
24 Vac/dc, 120 Vac, 230 Vac
- Possibility of parallel modules reset

Utilization categories

Alternate current: AC15 (50...60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 operations/minute)
Ue (V) 24
Ie (A) 4

Markings and quality marks:



Approval UL: E131787
Approval TÜV SÜD: Z10 10 09 75157 002
Approval GOST: POCC IT.AB24.B04512

Complying with the requirements requested by:

Low Voltage Directive 2006/95/EC,
Machinery Directive 2006/42/EC,
Electromagnetic Compatibility 2004/108/EC

Code structure

CS AR-08V024

Kind of connection		Supply voltage		
V	screw terminals	U12	12 Vdc	-10% ... 15%
M	connector with screw terminals	024	24 Vac/dc	±15%
X	connector with spring terminals	120	120 Vac	±15%
		230	230 Vac	±15%

Items available on stock

CS AR-08V024

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94)
Protection degree: IP40 (housing), IP20 (terminals)
Dimensions: see page 5/81, shape A

General data

SIL level (SIL CL): up to SIL 3 according to EN IEC 62061
Performance Level (PL): up to PL e according to EN ISO 13849-1
Safety category: up to cat. 4 according to EN ISO 13849-1
Safety parameters: see page 7/34
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 (Uimp): 4 kV
Rated insulation voltage (Ui): 250 V
Over-voltage category: II
Weight: 0,3 kg

Power supply

Rated operating voltage (Un): 12 Vdc
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 Un
Rated power consumption AC: < 5 VA
Rated power consumption DC: < 2 W

Control circuit

Protection against short circuits: resistance PTC, Ih=0,5 A
Operating time of PTC: intervention > 100 ms, reset > 3 s
Max input resistance: ≤ 50 Ω (15 Ω)*
Current for each input: < 30 mA (70 mA)*
Min. period of start impulse tMIN: > 200 ms (100 ms)*
Operating time tA: < 150 ms (220 ms)*
Releasing time tRI: < 20 ms (15 ms)*
Releasing time in absence of power supply tR: < 150 ms (50 ms)*
Simultaneity time tC: infinite

* version CS AR-08•U12

In conformity with standards:

IEC 60947-1, EN 60947-5-1, 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, EN 60947-5-1, EN 62061, EN 13849-1, 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 Ith: 6 A
Max currents sum Σ Ith²: 36 A²
Min. current: 10 mA
Contacts resistance: ≤ 100 mΩ
Contact protection fuse: 4 A

The number and the load capacity of output contacts can be increased by using expansion modules or contactors See page 5/51 - 5/61.

Data type approved by UL

Rated operating voltage (Un): 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
- 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.

Data type approved by TÜV SÜD

Rated operating voltage (Un): 24 Vac/dc; ± 15%, 120 Vac ± 15%, 230 Vac ± 15%
Rated power consumption: 5 VA max AC, 2 W max DC
Output switching current (max): 4 A
Output switching power (max): 1380 VA
Working temperature: -25 °C ... + 55°C
Storage temperature: -25 °C ... + 70°C
Protection degree: IP40 (housing), IP20 (terminals)
Tested according to: 2006/42/EEC Machine Directive, EN ISO 13849-1:2008 (up to Cat. 4 PL e), EN 50178:1997, EN 60947-5-3/A1:2005, EN 61508-1:1998 (SIL 1-3), EN 61508-2:2000 (SIL 1-3), EN 61508-4:1998 (SIL 1-3), IEC 62061:2005 (SIL CL 3)



Module for emergency stop and gate monitoring

Main functions

- For safety applications up to SIL 3 / PL e
- Single or dual channel input circuit
- Choice between automatic start, manual start (CS AR-20 only) or monitored start (CS AR-21 only)
- 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)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 operations/minute)
Ue (V) 24
Ie (A) 4

Markings, quality marks and certificates:

Approval UL: E131787

Approval GOST: POCC ITAB24.B04512

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 5/81, shape A

General data

SIL level (SIL CL): up to SIL 3 according to EN IEC 62061
Performance Level (PL): up to PL e according to EN ISO 13849-1
Safety category: up to cat.3 according to EN ISO 13849-1
Safety parameters: see page 7/34
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 (Uimp): 4 kV
Rated insulation voltage (Ui): 250 V
Over-voltage category: II
Weight: 0,2 kg

Power supply

Rated operating voltage (Un): 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 Un
Rated power consumption AC: < 5 VA
Rated power consumption DC: < 2 W

Control circuit

Protection against short circuits: resistance PTC, Ih=0,5 A
Operating time of PTC: intervention > 100 ms, reset > 3 s
Max input resistance: ≤ 50 Ω
Current for each input: < 70 mA
Min. period of start impulse tMIN: > 100 ms
Operating time tA: < 50 ms
Releasing time in absence of power supply tR: < 70 ms
Simultaneity time tC: infinite

In conformity with standards:

IEC 60947-1, EN 60947-5-1, 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, EN 60947-5-1, EN 62061, EN 13849-1, 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 Ith: 6 A
Max currents sum Σ Ith²: 36 A²
Min. current: 10 mA
Contacts resistance: ≤ 100 mΩ
Contact protection fuse: 6 A, F type
The number and the load capacity of output contacts can be increased by using expansion modules or contactors See page 5/51 - 5/61.

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

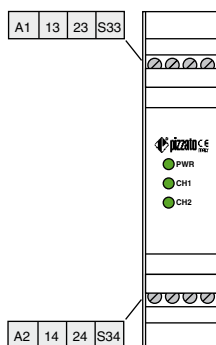
Rated operating voltage (Un): 24 Vac/dc; 50...60 Hz
120 Vac; 50...60 Hz
230 Vac; 50...60 Hz
Rated power consumption AC: < 5 VA
Rated power consumption DC: < 2 W
Max switching voltage: 230 Vac
Max switching current per contact: 6 A
Utilization category: C300

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.

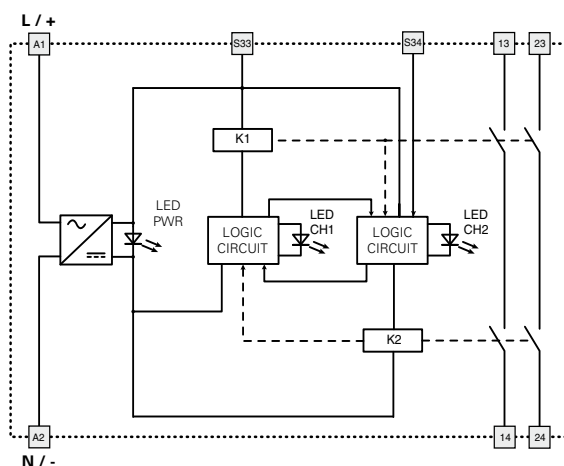


Safety module CS AR-20 / CS AR-21

Terminals layout

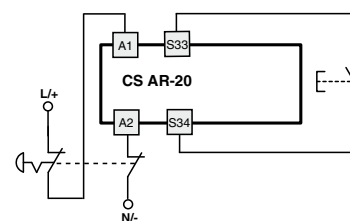
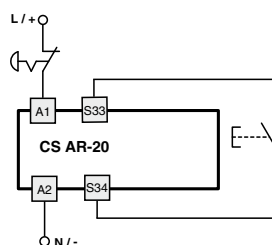


Internal wiring diagram



Inputs configuration

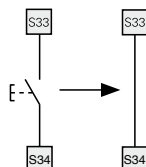
Emergency stop	
Input configuration with manual start	
1 channel	2 channels



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.

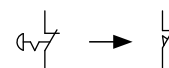


Monitored start

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

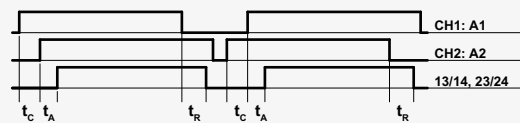
Gate monitoring

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

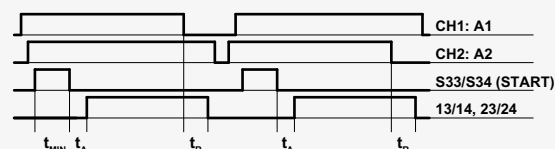


Operation diagrams

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.



Module for emergency stop and gate monitoring

Main functions

- For safety applications up to SIL 3 / PL e
- Single or dual channel input circuit
- Choice between automatic start, manual start (CS AR-22 only) or monitored start (CS AR-23 only)
- Small 22,5 mm housing
- 3 NO safety contacts, 1 NC auxiliary contact
- Supply voltages: 24 Vac/dc, 120 Vac, 230 Vac

Utilization categories

Alternate current: AC15 (50...60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 operations/minute)
Ue (V) 24
Ie (A) 4

Markings, quality marks and certificates:

Approval UL: E131787

Approval GOST: POCC IT.AB24.B04512

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 5/81, shape A

General data

SIL level (SIL CL): up to SIL 3 according to EN IEC 62061
Performance Level (PL): up to PL e according to EN ISO 13849-1
Safety category: upto cat. 3 according to EN ISO 13849-1
Safety parameters: see page 7/34
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 (Uimp): 4 kV
Rated insulation voltage (Ui): 250 V
Over-voltage category: II
Weight: 0,2 kg

Power supply

Rated operating voltage (Un): 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 Un
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: < 70 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: < 60 ms
Simultaneity time t_C: infinite

In conformity with standards:

IEC 60947-1, EN 60947-5-1, 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, EN 60947-5-1, EN 62061, IEC 61508, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts: 3 NO safety contacts, 1 NC auxiliary contact
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
Max currents sum Σ I_{th}²: 80 A²
Min. current: 10 mA
Contacts resistance: ≤ 100 mΩ
Contact protection fuse: 6 A, F type
The number and the load capacity of output contacts can be increased by using expansion modules or contactors See page 5/51 - 5/61.

Code structure

CS AR-22V024

Kind of start	
22	manual or automatic start
23	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-22V024

Data type approved by UL

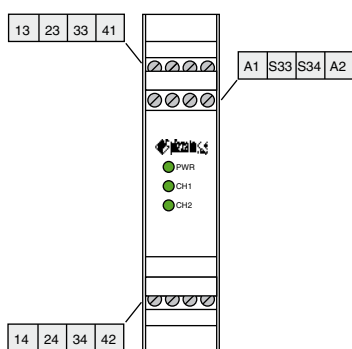
Rated operating voltage (Un): 24 Vac/dc; 50...60 Hz
120 Vac; 50...60 Hz
230 Vac; 50...60 Hz
HzRated power consumption AC: < 5 VA
Rated power consumption DC: < 2 W
Max switching voltage: 230 Vac
Max switching current per contact: 6 A
Utilization category C300

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.

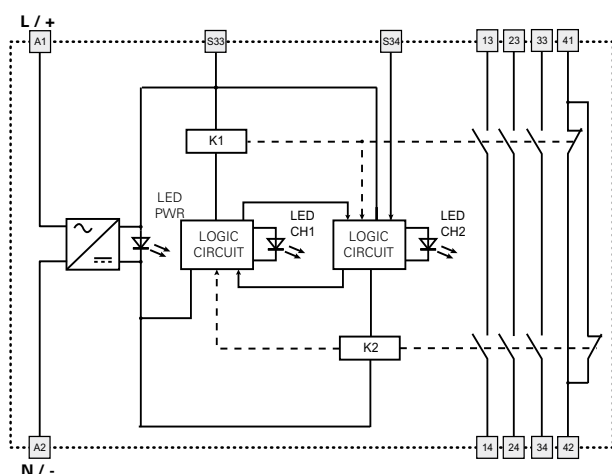


Safety module CS AR-22 / CS AR-23

Terminals layout

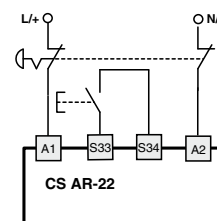
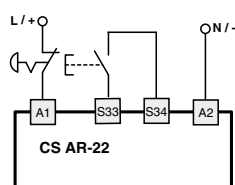


Internal wiring diagram



Inputs configuration

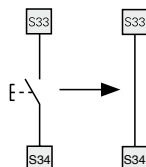
Emergency stop	
Input configuration with manual start	
1 channel	2 channels



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.

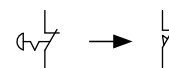


Monitored start

Use the CS AR-23 module following the diagram for the manual start.

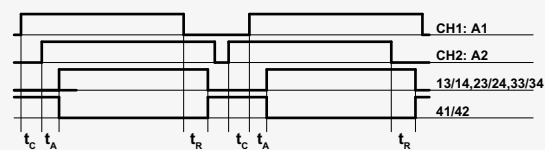
Gate monitoring

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

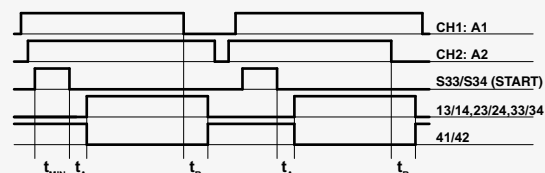


Operation diagrams

Configuration with automatic start (CS AR-22 only)



Configuration with monitored start (CS AR-23 only)



Configuration with manual start (CS AR-22 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_A 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.



Module for emergency stop and gate monitoring

Main functions

- For safety applications up to SIL 3 / PL e
- Single or dual channel input circuit
- Choice between automatic start, manual start (CS AR-24 only) or monitored start (CS AR-25 only)
- Small 22,5 mm housing
- 4 NO safety contacts
- 1 NC auxiliary contact
- Supply voltage: 24 Vac/dc

Utilization categories

Alternate current: AC15 (50...60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 operations/minute)
Ue (V) 24
Ie (A) 4

Markings, quality marks and certificates:



Approval UL: E131787
Approval GOST: POCC IT.AB24.B04512

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 5/81, shape A

General data

SIL level (SIL CL): up to SIL 3 according to EN IEC 62061
Performance Level (PL): up to PL e according to EN ISO 13849-1
Safety category: upto cat.3 according to EN ISO 13849-1
Safety parameters: see page 7/34
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 (Uimp): 4 kV
Rated insulation voltage (Ui): 250 V
Over-voltage category: II
Weight: 0,3 kg

Power supply

Rated operating voltage (Un): 24 Vac/dc; 50...60 Hz
Max residual ripple in DC: 10%
Supply voltage tolerance: ±15% of Un
Rated power consumption AC: < 5 VA
Rated power consumption DC: < 2 W

Control circuit

Protection against short circuits: resistance PTC, Ih=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: < 70 ms
Releasing time t_{RI}: < 40 ms
Releasing time in absence of power supply t_R: < 80 ms
Simultaneity time t_C: infinite

In conformity with standards:
IEC 60947-1, EN 60947-5-1, 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, EN 60947-5-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts: 4 NO safety contacts
1 NC auxiliary contact
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 Ith: 6 A
Max currents sum Σ Ith²: 72 A²
Min. current: 10 mA
Contacts resistance: ≤ 100 mΩ
Contact protection fuse: 6 A, F type
The number and the load capacity of output contacts can be increased by using expansion modules or contactors See page 5/51 - 5/61.

Code structure

CS AR-24V024

Kind of start		Supply voltage	
24	manual or automatic start	024	24 Vac/dc ±15%
25	monitored start		
Kind of connection			
V	screw terminals		
M	connector with screw terminals		
X	connector with spring terminals		

Data type approved by UL

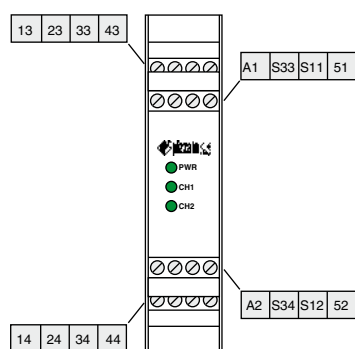
Rated operating voltage (Un): 24 Vac/dc; 50...60 Hz
Rated power consumption AC: < 5 VA
Rated power consumption DC: < 2 W
Max switching voltage: 230 Vac
Max switching current per contact: 6 A
Utilization category: C300

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.

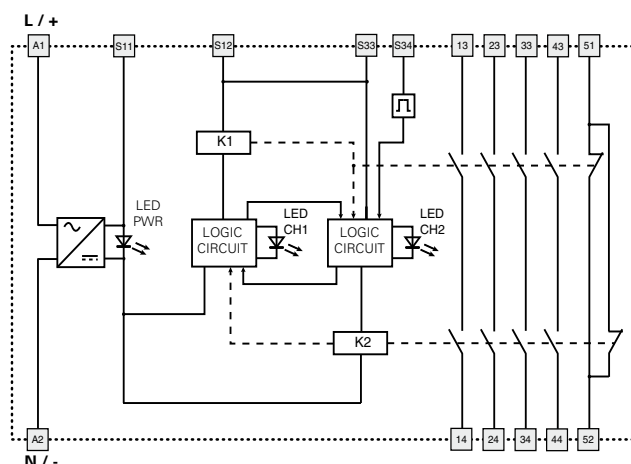


Safety module CS AR-24 / CS AR-25

Terminals layout

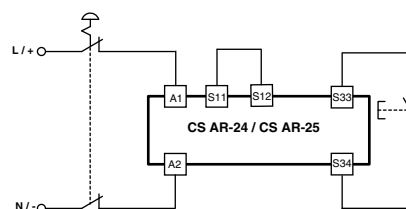
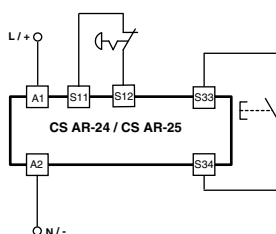


Internal wiring diagram



Inputs configuration

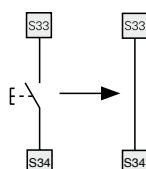
Emergency stop	
Input configuration with manual start	
1 channel	2 channels



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.

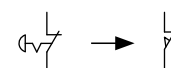


Monitored start

Use the CS AR-25 module following the diagram for the manual start.

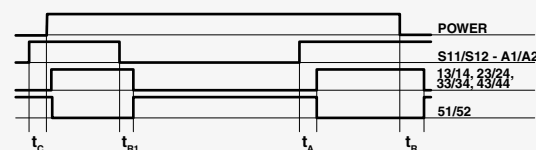
Gate monitoring

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

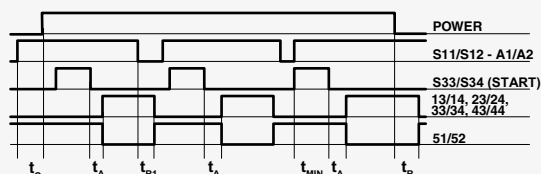


Operation diagrams

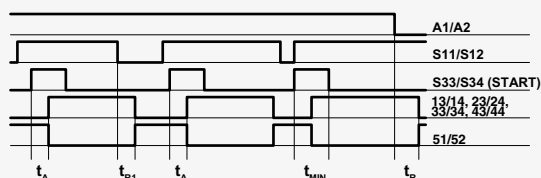
Configuration with automatic start (CS AR-24 only)



Configuration with monitored start (CS AR-25 only)



Configuration with manual start (CS AR-24 only)



Legend:

t_{MIN} : Min. period of start impulse
 t_c : Simultaneity time
 t_A : Operating time
 t_{R1} : Releasing time
 t_R : Releasing time in absence of power supply

Note:

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



Module for emergency stop and gate monitoring

Main functions

- For safety applications up to SIL 2 / PL d
- Choice between automatic start, manual start (CS AR-40 only) or monitored start (CS AR-41 only)
- Small 22,5 mm housing
- 2 NO safety contacts
- Supply voltages: 24 Vac/dc

Utilization categories

Alternate current: AC15 (50...60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 operations/minute)
Ue (V) 24
Ie (A) 4

Markings, quality marks and certificates:

Approval UL: E131787

Approval GOST: POCC ITAB24.B04512

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 5/82, shape D

General data

SIL level (SIL CL): up to SIL 2 according to EN IEC 62061
Performance Level (PL): up to PL d according to EN ISO 13849-1
Safety category: upto cat.2 according to EN ISO 13849-1
Safety parameters: see page 7/34
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 (Uimp): 4 kV
Rated insulation voltage (Ui): 250 V
Over-voltage category: II
Weight: 0,2 kg

Power supply

Rated operating voltage (Un): 24 Vac/dc; 50...60 Hz
Max residual ripple in DC: 10%
Supply voltage tolerance: ±15% of Un
Rated power consumption AC: < 5 VA
Rated power consumption DC: < 2 W

Control circuit

Protection against short circuits: resistance PTC, Ih=0,5 A
Operating time of PTC: intervention > 100 ms, reset > 3 s
Max input resistance: ≤ 50 Ω
Current for each input: < 70 mA
Min. period of start impulse tMIN: > 100 ms
Operating time tA: < 50 ms
Releasing time in absence of power supply tR: < 50 ms
Simultaneity time tC: infinite

In conformity with standards:

IEC 60947-1, EN 60947-5-1, 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, EN 60947-5-1, EN 62061, EN 13849-1, 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
Max switching voltage: 230/240 Vac; 300 Vdc
Max switching current per contact: 6 A
Conventional free air thermal current Ith: 6 A
Max currents sum Σ Ith²: 36 A²
Min. current: 10 mA
Contacts resistance: ≤ 100 mΩ
Contact protection fuse: 6 A, F type
The number and the load capacity of output contacts can be increased by using expansion modules or contactors See page 5/51 - 5/61.

Code structure

CS AR-40V024

Kind of start		Supply voltage	
40	manual or automatic start	024	24 Vac/dc ±15%
41	monitored start		
Kind of connection			
V	screw terminals		
M	connector with screw terminals		
X	connector with spring terminals		

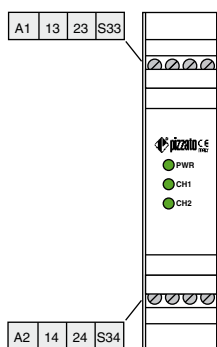
Data type approved by UL

Rated operating voltage (Un): 24 Vac/dc; 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

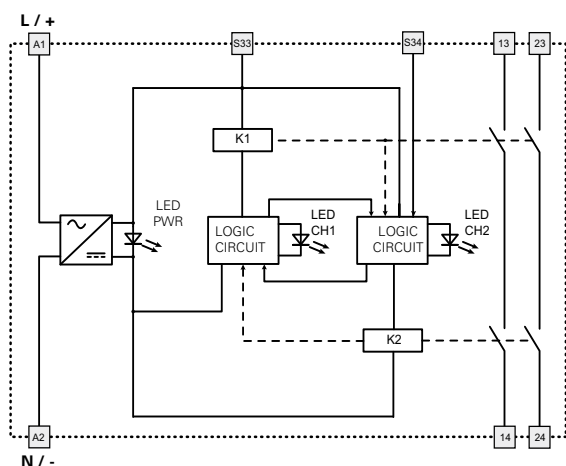
Notes:
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
- Terminal tightening torque of 5-7 Lb In.
- Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy.

Safety module CS AR-40 / CS AR-41

Terminals layout

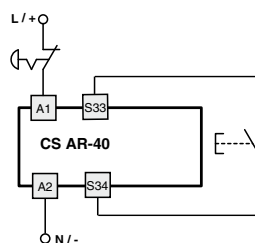


Internal wiring diagram



Inputs configuration

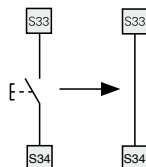
Emergency stop
Input configuration with manual start



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.

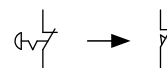


Monitored start

Use the CS AR-41 module following the diagram for the manual start.

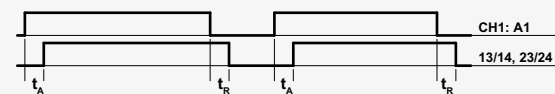
Gate monitoring

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

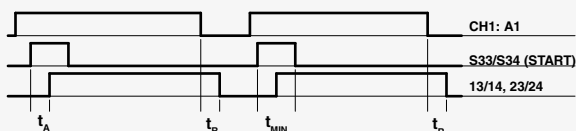


Operation diagrams

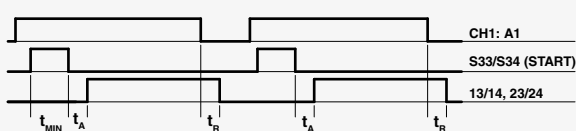
Configuration with automatic start (CS AR-40 only)



Configuration with manual start (CS AR-40 only)



Configuration with monitored start (CS AR-41 only)



Legend:

t_{MIN} : Min. period of start impulse

t_A : Operating time

t_R : Releasing time in absence of power supply



Module for emergency stop, gate monitoring and magnetic safety sensor

- Main functions**
- For safety applications up to SIL 1 / PL c
 - Small 22,5 mm housing
 - 1 NO safety contacts
 - Supply voltages: 24 Vac/dc

Utilization categories
Alternate current: AC15 (50...60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 operations/minute)
Ue (V) 24
Ie (A) 4

Markings, quality marks and certificates:

Approval UL: E131787
Approval GOST: POCC ITAB24.B04512

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 5/82, shape D

General data
SIL level (SIL CL): up to SIL 1 according to EN IEC 62061
Performance Level (PL): up to PL c according to EN ISO 13849-1
Safety category: upto cat. 1 according to EN ISO 13849-1
Safety parameters: see page 7/34
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 (Uimp): 4 kV
Rated insulation voltage (Ui): 250 V
Over-voltage category: II
Weight: 0,2 kg

Power supply
Rated operating voltage (Un): 24 Vac/dc; 50...60 Hz
Max residual ripple in DC: 10%
Supply voltage tolerance: ±15% of Un
Rated power consumption AC: < 5 VA
Rated power consumption DC: < 2 W

Control circuit
Protection against short circuits: resistance PTC, Ih=0,5 A
Operating time of PTC: intervention > 100 ms, reset > 3 s
Max input resistance: ≤ 50 Ω
Current for each input: < 20 mA
Operating time t_A: <15 ms
Releasing time t_{R1}: < 20 ms
Releasing time in absence of power supply t_R: < 100 ms
Simultaneity time t_C: infinite

In conformity with standards:
IEC 60947-1, EN 60947-5-1, 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, EN 60947-5-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit
Output contacts: 1 NO safety contacts
Contacts material: silver alloy
Max switching voltage: 230/240 Vac; 300 Vdc
Max switching current per contact: 6 A
Conventional free air thermal current Ith: 6 A
Min. current: 10 mA
Contacts resistance: ≤ 100 mΩ
Contact protection fuse: 6 A, F type
The number and the load capacity of output contacts can be increased by using expansion modules or contactors See page 5/51 - 5/61.

Code structure

CS AR-46V024

Kind of connection		Supply voltage	
V	screw terminals	024	24 Vac/dc ±15%
M	connector with screw terminals		
X	connector with spring terminals		

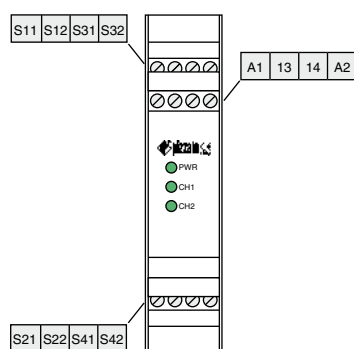
Data type approved by UL
Rated operating voltage (Un): 24 Vac/dc; 50...60 Hz
Rated power consumption AC: < 5 VA
Rated power consumption DC: < 2 W
Max switching voltage: 230 Vac
Max switching current per contact: 6 A
Utilization category: C300

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.

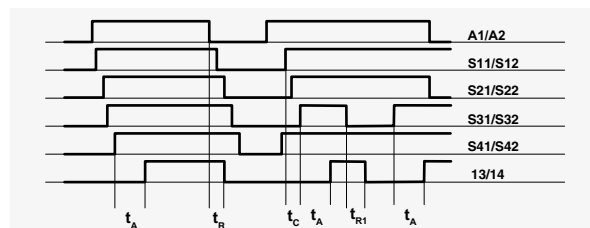


Safety module CS AR-46

Terminals layout



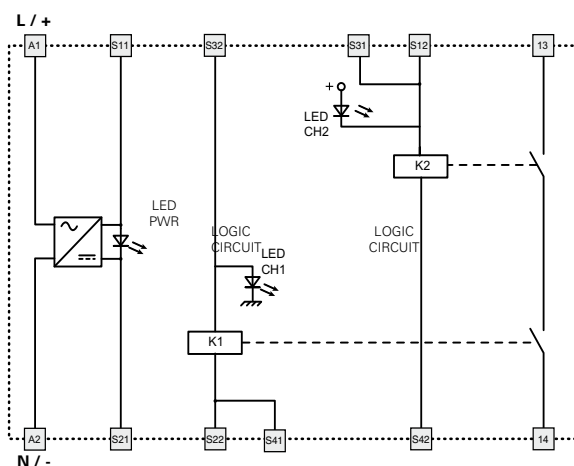
Operation diagrams



Legend:

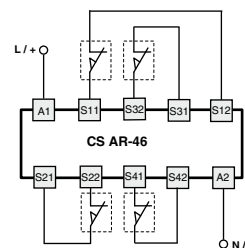
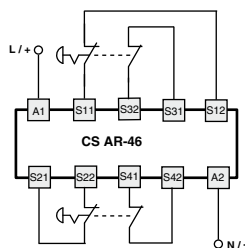
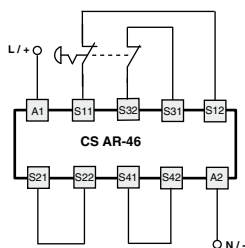
- t_C : Simultaneity time
- t_A : Operating time
- t_{R1} : Releasing time
- $t_{R''}$: Releasing time in absence of power supply

Internal wiring diagram



Inputs configuration

Emergency stop		
Input configuration with automatic start		
2 channels and 1 emergency stop button	2 channels and 2 emergency stop buttons	2 channels and 4 position switches



Gate monitoring and safety magnetic sensors.

The safety module can control both emergency stop circuits, gate monitoring circuits or safety magnetic sensors. Replace the emergency stop contacts with switches contacts or with the sensors contacts. The sensors can only be used in the 2-channel configuration.

