

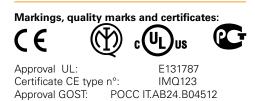
#### Module for emergency stop, gate monitoring and magnetic safety sensor (CS AR-01•E02 only)

#### 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 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 4



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-01V024**

#### Kind of connection

- v screw terminals
- connector with screw terminals м
- Х connector with spring terminals

Supply voltage				
024	24 Vac/dc	<b>±</b> 15%		
120	120 Vac	<b>±</b> 15%		
230	230 Vac	<b>±</b> 15%		
E02	10 30 Vdc			

#### **Technical data**

#### Housing

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

up to SIL 3 according to EN IEC 62061

up to PL e according to EN ISO 13849-1 uptocat.4accordingtoENISO13849-1

see page 7/34

-25°C...+55°C

4 kV

250 V

0,3 kg

10 ... 30 Vdc

24 Vac/dc; 50...60 Hz 120 Vac; 50...60 Hz

2 NO safety contacts,

Ш

outside 3, inside 2

>10 millions of operations >100.000 operations

### General data

SIL level (SIL CL): Performance Level (PL): Safety category: Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:

#### **Power supply**

Rated operating voltage (Un):

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 < 30 mA Current for each input: Min. period of start impulse t<sub>MIN</sub>: > 100 ms Operating time t<sub>A</sub>: < 50 ms Releasing time  $t_{R1}^{A}$ : Releasing time in absence of power supply  $t_{R2}$ : < 20 ms < 70 ms Simultaneity time t<sub>c</sub>: 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 NC auxiliary contact forced guided contacts Contacts type: 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  $\Sigma$  Ith<sup>2</sup>: 72 A<sup>2</sup> 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.

#### Items available on stock

#### CS AR-01V024

#### Data type approved by UL

Rated operating voltage (Un):

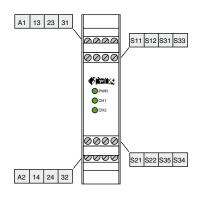
Rated power consumption AC:
Rated power consumption DC:
Max switching voltage:
Max switching current per contact:
Utilization category

24 Vac/dc; 50...60 Hz 120 Vac; 50...60 Hz 230 Vac; 50...60 Hz < 5 VA < 2 W 230 Vac 6 A C300

Voles.
 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

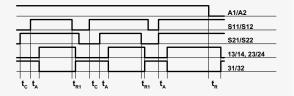
and limited energy

#### **Terminals layout**

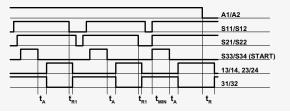


#### **Operation diagrams**

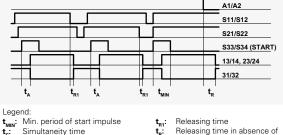
Configuration with automatic start



Configuration with monitored start



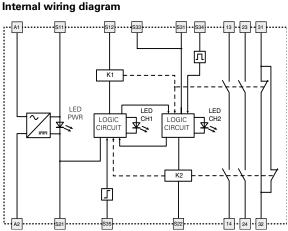
Configuration with manual start



t<sub>MIN</sub>: t<sub>c</sub>: t<sub>A</sub>: Simultaneity time Operating time 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  $t_n$  time referred to S11/S12 input, the  $t_n$  time referred to the supply, the  $t_A$  time referred to S11/S12 input and to the start, and the  $\mathbf{t}_{_{\rm MIN}}$  time referred to the start.



#### Inputs configuration

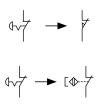
Emergency stop Input configuration with manual start

2 channels

L/+ CS AR-01 ſŀ ΔN/.

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

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



Application example See page 5/61

L/+ 1 S31 S33 S11 CS AR-01 S35

S33

S34

E-

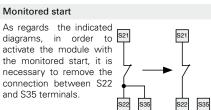
The diagram does not show the exact position of clamps in the product

1 channel

S33

S34

and S35 terminals. S22



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.



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

#### Main functions

**5A** 

- 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 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 4

Markings, quality marks and certificates:

C E Approval UL:

Approval GOST:



E131787 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

up to SIL 3 according to EN IEC 62061

up to PL e according to EN ISO 13849-1 uptocat.4accordingtoENISO13849-1

see page 7/34

-25°C...+55°C

4 kV

Ш

250 V

0,3 kg

10 ... 30 Vdc 24 Vac/dc; 50...60 Hz 120 Vac; 50...60 Hz

>10 millions of operations

>100.000 operations

outside 3, inside 2

SIL level (SIL CL): Performance Level (PL): Safety category: Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:

#### **Power supply**

Rated operating voltage (Un):

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

#### **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<sub>MIN</sub>: > 100 ms < 50 ms Operating time t<sub>4</sub>: Releasing time t<sub>B1</sub>: < 20 ms Releasing time in absence of power supply t<sub>p</sub>: < 70 ms Simultaneity time t<sub>c</sub>: 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 nº 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  $\Sigma$  Ith<sup>2</sup>: 72 A<sup>2</sup> 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.

and limited energy.

#### **Code structure**

**CS AR-02V024** 

#### Kind of connection

- v screw terminals
- connector with screw terminals м
- Х connector with spring terminals

Supply voltage				
024	24 Vac/dc	<b>±</b> 15%		
120	120 Vac	<b>±</b> 15%		
230	230 Vac	<b>±</b> 15%		
E02	10 30 Vdc			

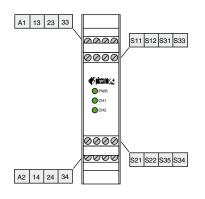
#### Data type approved by UL

Rated operating voltage (Un): Rated power consumption AC: Rated power consumption DC: Max switching voltage: Max switching current per contact: Utilization category

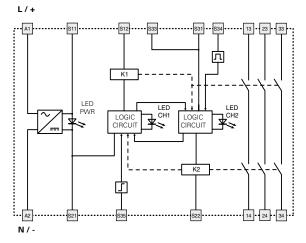
24 Vac/dc; 50...60 Hz 120 Vac; 50...60 Hz 230 Vac; 50...60 Hz < 5 VA < 2 W 230 Vac 6 A C300

# Voles. - 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

#### **Terminals layout**



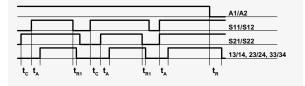
#### Internal wiring diagram



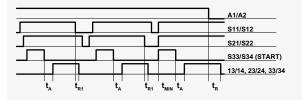
#### Inputs configuration

#### **Operation diagrams**

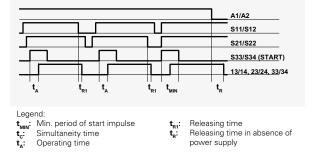
Configuration with automatic start



Configuration with monitored start

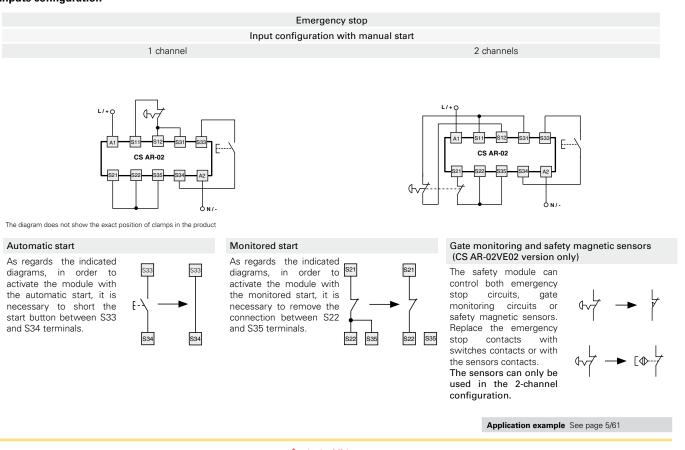


Configuration with manual start



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  $t_{\rm m}$  time referred to S11/S12 input, the  $t_{\rm m}$  time referred to the supply, the  $t_{\rm A}$  time referred to S11/S12 input and to the start, and the  $t_{\rm max}$  time referred to the start.



General Catalog 2013-2014



#### 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 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 4

Markings, quality marks and certificates:

 $(\epsilon)$ Approval UL:

Approval GOST:

US C F131787 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-04V024**

#### Kind of connection

- v screw terminals
- connector with screw terminals м
- **X** connector with spring terminals

Supply voltage				
024	24 Vac/dc	<b>±</b> 15%		
120	120 Vac	<b>±</b> 15%		
230	230 Vac	<b>±</b> 15%		

#### **Technical data**

#### Housing

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

up to SIL 3 according to EN IEC 62061

up to PL e according to EN ISO 13849-1 uptocat.4accordingtoENISO13849-1

see page 7/34

-25°C...+55°C

4 kV

Ш

250 V

0,3 kg

>10 millions of operations

>100.000 operations

24 Vac/dc: 50...60 Hz 120 Vac; 50...60 Hz

3 NO safety contacts

outside 3, inside 2

### General data

SIL level (SIL CL): Performance Level (PL): Safety category: Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:

#### Power supply

Rated operating voltage (Un):

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 ≤ 50 Ω Max input resistance: Current for each input: < 30 mA Min. period of start impulse t\_MIN > 100 ms Operating time  $t_{A}$ : < 50 ms Releasing time  $t_{R1}$ . Releasing time in absence of power supply  $t_{R1}$ . < 20 ms < 70 ms Simultaneity time t<sub>c</sub>: 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 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  $\Sigma$  Ith<sup>2</sup>: 64 A<sup>2</sup> Min. current: 10 mA Contacts resistance: < 100 mO 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.

#### Items available on stock

#### CS AR-04V024

#### Data type approved by UL

Rated operating voltage (Un):

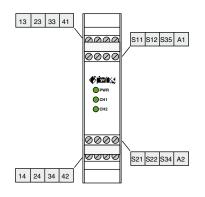
Rated power consumption AC:
Rated power consumption DC:
Max switching voltage:
Max switching current per contact:
Utilization category

24 Vac/dc; 50...60 Hz 120 Vac; 50...60 Hz 230 Vac; 50...60 Hz < 5 VA < 2 W 230 Vac 6 A C300

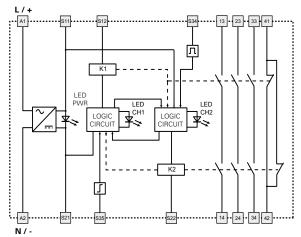
 Voles.
 Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
 Terminal tightening torque of 5-7 Lb In.
 Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy.



#### **Terminals layout**



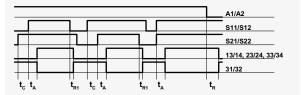
#### Internal wiring diagram



#### Inputs configuration

**Operation diagrams** 

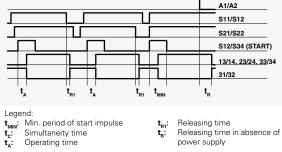
Configuration with automatic start



Configuration with monitored start



Configuration with manual start



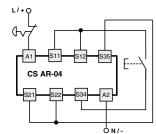
Releasing time Releasing time in absence of power supply

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  $t_n$  time referred to S11/S12 input, the  $t_n$  time referred to the supply, the  $t_n$  time referred to S11/S12 input, to the start and to the  ${\bf t}_{\rm MIN}$  time.

#### Emergency stop Input configuration with manual start

2 channels

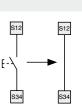


1 channel

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

#### Automatic start

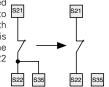
As regards the indicated diagrams, in order to activate the module with the automatic start, it is necessary to short the start button between S12 and S34 terminals.



As regards the indicated

Monitored start

diagrams, in order to S21 activate the module with the monitored start, it is necessary to remove the connection between S22 and S35 terminals.

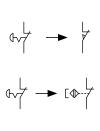


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L/+ **CS AR-04** δN/-

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

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



Application example See page 5/61





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 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A)

Markings, quality marks and certificates:

(F Approval UL: Approval GOST:

E131787 POCC IT.AB24.B04512

C)

US

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-05V024**

#### Kind of start

- 05 manual or automatic start
- 06 monitored start

#### Kind of connection

- ν screw terminals
- connector with screw terminals М
- **X** connector with spring terminals

# **Technical data**

#### Housing

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

up to SIL 3 according to EN IEC 62061

up to PL e according to EN ISO 13849-1 uptocat.4accordingtoENISO13849-1

see page 7/34

-25°C...+55°C

4 kV

Ш

250 V

0,3 kg

>10 millions of operations

>100.000 operations

24 Vac/dc; 50...60 Hz

120 Vac; 50...60 Hz

outside 3, inside 2

## General data

SIL level (SIL CL): Performance Level (PL): Safety category: Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:

#### Power supply

Rated operating voltage (Un):

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<sub>MIN</sub>: > 250 ms Operating time  $t_{A}$ : < 200 ms < 15 ms Releasing time t<sub>R1</sub>: Releasing time in absence of power supply t<sub>n</sub>: < 70 ms Simultaneity time t<sub>c</sub>: 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 nº 14-95

#### **Output circuit** Output contacts:

Supply voltage

024 24 Vac/dc

120 120 Vac

230 230 Vac

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 Ith: 6 A Max currents sum  $\Sigma$  Ith<sup>2</sup>: 64 A<sup>2</sup> 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.

#### Items available on stock

#### CS AR-05V024

#### Data type approved by UL

Rated operating voltage (Un):

Rated power consumption AC: Rated power consumption DC: Max switching voltage: Max switching current per contact: Utilization category

24 Vac/dc; 50...60 Hz 120 Vac; 50...60 Hz 230 Vac; 50...60 Hz < 5 VA < 2 W 230 Vac 6 A C300

Voles. - 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.

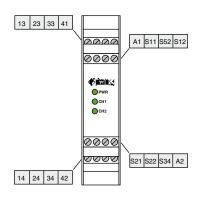


+15%

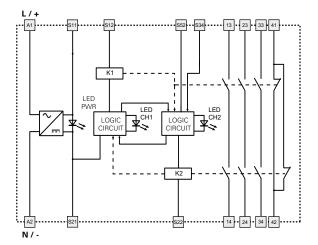
±15%

**±**15%

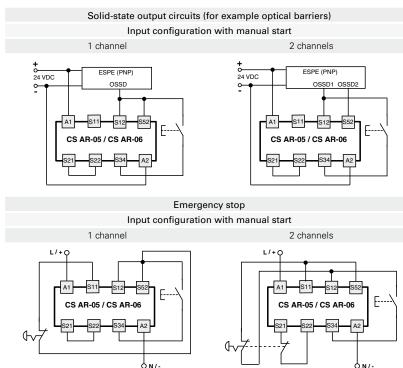
#### **Terminals layout**



#### Internal wiring diagram



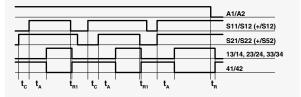
#### Inputs configuration



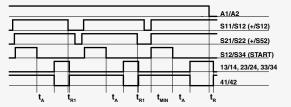
The diagram does not show the exact position of clamps in the product

#### **Operation diagrams**

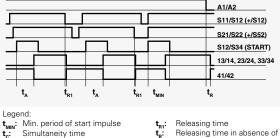
Configuration with automatic start (CS AR-05 only)



Configuration with monitored start (CS AR-06 only)



Configuration with manual start (CS AR-05 only)



t<sub>min</sub>: t<sub>c</sub>: t<sub>A</sub>: Simultaneity time Operating time

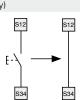
Releasing time in absence of power supply

Note:

The configurations with one channel are obtained taking into consideration only the CH1 input. In this case it is necessary to consider the  $t_{n}$  time referred to CH1 input, the  $t_{n}$  time referred to the supply, the  $t_{a}$  time referred to CH1 input and to the start, and the  ${\boldsymbol{t}}_{\text{MIN}}$  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.

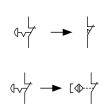


### Monitored start

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.



Application example See page 5/61



#### 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 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 4

Markings, quality marks and certificates:

US C

Approval UL: E131787 Approval GOST:

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-07M024**

Kind of connection

- M connector with screw terminals
- **X** connector with spring terminals

#### Housing

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

up to SIL 3 according to EN IEC 62061

up to PL e according to EN ISO 13849-1

uptocat.4accordingtoENISO13849-1

see page 7/34

-25°C...+55°C

4 kV 250 V

0,3 kg

Ш

>10 millions of operations

>100.000 operations

outside 3, inside 2

### General data

SIL level (SIL CL): Performance Level (PL): Safety category: Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:

#### **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  $t_{\Delta}$ : < 70 ms < 40 ms Releasing time t<sub>R1</sub>: Releasing time in absence of power supply t<sub>n</sub>: < 80 ms Simultaneity time t<sub>c</sub>: 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 nº 14-95

#### Output circuit Output contacts:

Supply voltage

024 24 Vac/dc

Contacts type: Contacts material: Max switching voltage: Max switching current per contact: 6 A Conventional free air thermal current lth: 6 A Max currents sum  $\Sigma$  Ith<sup>2</sup>: 72 A<sup>2</sup> Min. current: 10 mA Contacts resistance: Contact protection fuse:

4 NO safety contacts 1 NC auxiliary contact forced guided contacts silver alloy, gold plated 230/240 Vac; 220 Vdc ≤ 100 mΩ 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.

#### Items available on stock

#### CS AR-07M024

### Data type approved by UL

Rated operating voltage (Un): Rated power consumption AC Rated power consumption DC: Max switching voltage: Max switching current per contact: Utilization category

24 Vac/dc; 50...60 Hz < 5 VA < 2 W 230 Vac 6 A C300

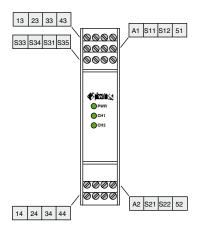
 Voles.
 Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
 Terminal tightening torque of 5-7 Lb In.
 Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy

**5A** 

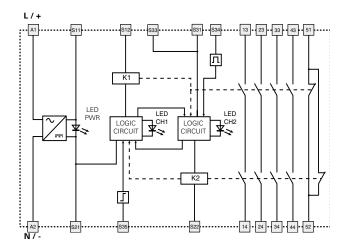
+15%



#### **Terminals layout**

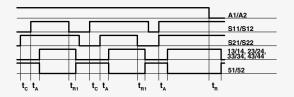


#### Internal wiring diagram

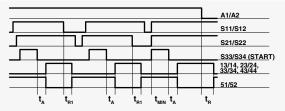


#### **Operation diagrams**

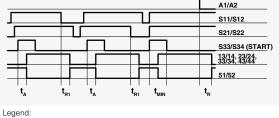
Configuration with automatic start



Configuration with monitored start



Configuration with manual start

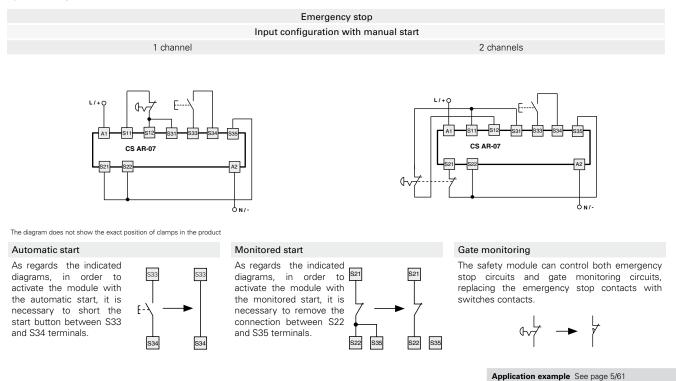


t<sub>R</sub>: Releasing time
t<sub>R</sub>: Releasing time in absence of
power supply

#### 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  $t_m$  time referred to S11/S12 input, the  $t_m$  time referred to the supply, the  $t_A$  time referred to S11/S12 input and to the start, and the  $t_{\rm MIN}$  time referred to the start.

#### Inputs configuration





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 circuitChoice 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
- V screw terminals
- M connector with screw terminals
- **X** connector with spring terminals

#### 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

G	Ì	e	n	е	ra	ı	d	ĺ	ľ	ta	

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 uptocat.4accordingtoENISO13849-1 Safety category: 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: Ш Weight: 0,3 kg

#### **Power supply**

Rated operating voltage (Un):

120 Vac; 50...60 Hz 230 Vac; 50...60 Hz Max residual ripple in DC: 10% ±15% of Un Supply voltage tolerance: Rated power consumption AC: < 5 VARated power consumption DC: < 2 W **Control circuit** resistance PTC, Ih=0,5 A Protection against short circuits: Operating time of PTC: intervention > 100 ms, reset > 3 s  $\leq 50 \Omega (15 \Omega)^*$ Max input resistance: Current for each input: < 30 mA (70 mA)\* Min. period of start impulse t<sub>MIN</sub>: > 200 ms (100 ms)\* Operating time t<sub>4</sub>: < 150 ms ( 220 ms)\* Releasing time t<sub>R1</sub> < 20 ms (15 ms)\*

12 Vdc

24 Vac/dc; 50...60 Hz

Releasing time  $t_{R1}$ : Releasing time in absence of power supply  $t_{R}$ : Simultaneity time  $t_{c}$ :

\* 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**

Supply voltage

**U12** 12 Vdc

024 24 Vac/dc

120 120 Vac

230 230 Vac

Output contacts: Contacts type: Contacts material: Max switching voltage: Max switching current per contact: Conventional free air thermal current lth: Max currents sum  $\Sigma$  lth<sup>2</sup>: Min. current: Contacts resistance: Contact protection fuse: The number and the last caracity of output contacts of 2 NO safety contacts, forced guided contacts silver alloy, gold plated 230/240 Vac; 300 Vdc 6 A 6 A 36  $A^2$ 10 mA  $\leq$  100 m $\Omega$ 4 A

< 150 ms (50 ms)\*

infinite

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.

#### Data type approved by UL

Rated operating voltage (Un): 24 Vac/dc; 50...60 Hz, 120 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 operating voltage (Un): 24 Nac/dc; ± 15%, 120 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), EC 62061:2005 (SIL CL 3)

5/15



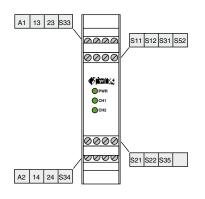
-10% ... 15%

+15%

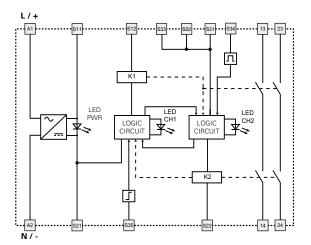
±15%

+15%

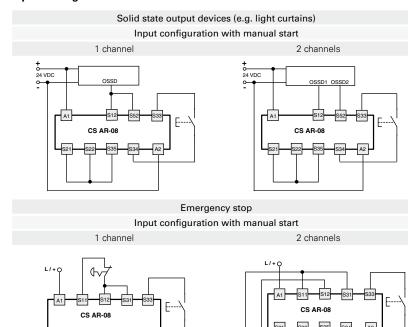
#### **Terminals layout**



#### Internal wiring diagram



#### Inputs configuration



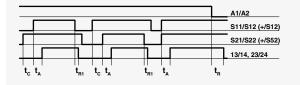
ſ

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

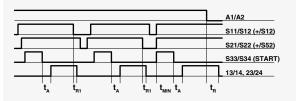
ΔN/

#### **Operation diagrams**

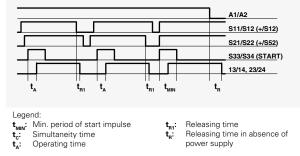
Configuration with automatic start



Configuration with monitored start



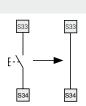
Configuration with manual start



Note: The configurations with one channel are obtained taking into consideration only the CH1 input. In this case it is necessary to consider the  $\mathbf{t}_{nt}$  time referred to CH1 input, the  $\mathbf{t}_n$  time referred to the supply, the  $\mathbf{t}_n$  time referred to CH1 input and to the start, and the  $\mathbf{t}_{mt}$  time referred to the start.

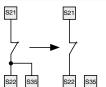
#### Automatic start

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.



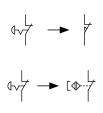
#### Monitored start

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.

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



Application example See page 5/61

S21 S22

6N/



#### 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 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 4

Markings, quality marks and certificates:

C F

US C

Approval UL: Approval GOST: E131787 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-20V024**

### Kind of start

- 20 manual or automatic start
- 21 monitored start

#### Kind of connection

- ν screw terminals
- connector with screw terminals М
- **X** connector with spring terminals

# **Technical data**

#### Housing

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

#### General data

SIL level (SIL CL): Performance Level (PL): Safety category: Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:

#### Power supply

Rated operating voltage (Un):

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

#### **Control circuit**

Protection against short circuits: Operating time of PTC: Max input resistance: Current for each input: Min. period of start impulse t<sub>MIN</sub>: Operating time t<sub>4</sub>: Releasing time in absence of power supply t<sub>p</sub>: Simultaneity time t<sub>c</sub>:

resistance PTC, Ih=0,5 A intervention > 100 ms, reset > 3 s ≤ 50 Ω < 70 mA > 100 ms  $< 50 \, \text{ms}$ < 70 ms infinite

up to SIL 3 according to EN IEC 62061

up to PL e according to EN ISO 13849-1 uptocat.3accordingtoENISO13849-1

see page 7/34

-25°C...+55°C

4 kV

Ш

250 V

0,2 kg

>10 millions of operations

>100.000 operations

24 Vac/dc; 50...60 Hz

2 NO safety contacts

forced guided contacts

120 Vac; 50...60 Hz

outside 3, inside 2

#### 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 nº 14-95

#### **Output circuit** Output contacts: Contacts type: 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 lth: 6 A Max currents sum  $\Sigma$  Ith<sup>2</sup>: 36 A<sup>2</sup> 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.

Items available on stock

#### CS AR-20V024

Data type approved by UL

Rated operating voltage (Un):

Rated power consumption AC:
Rated power consumption DC:
Max switching voltage:
Max switching current per contact:
Utilization category

24 Vac/dc; 50...60 Hz 120 Vac; 50...60 Hz 230 Vac; 50...60 Hz < 5 VA < 2 W 230 Vac 6 A C300

Voles. - 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.

+15%

±15%

**±**15%

Supply voltage

024 24 Vac/dc

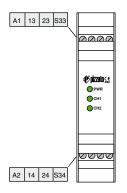
120 120 Vac

230 230 Vac

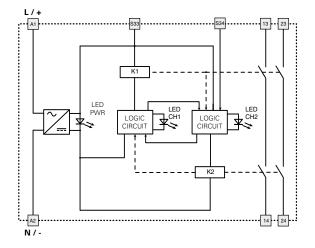


# Safety module CS AR-20 / CS AR-21

#### **Terminals layout**



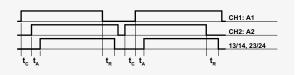
#### Internal wiring diagram



#### Inputs configuration

#### **Operation diagrams**

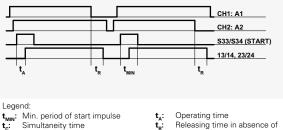
Configuration with automatic start (CS AR-20 only)



Configuration with monitored start (CS AR-21 only)



Configuration with manual start (CS AR-20 only)

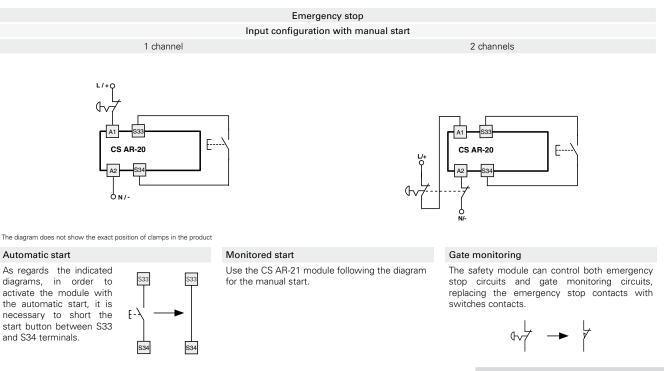


 $t_{\text{MIN}}$ : Min. period of start impulse  $t_{c}$ : Simultaneity time

Operating time 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  $\mathbf{t}_{\mathbf{r}}$  referred to CH1:A1 input , the  $\mathbf{t}_{\mathbf{t}}$  time referred to CH1:A1 input and to the start, and the  $\mathbf{t}_{\mathbf{MIN}}$  time referred to the start.



Application example See page 5/61

**Technical data** 

Protection degree: Dimensions:

Performance Level (PL):

General data SIL level (SIL CL):

Safety category:

Pollution dearee:

Power supply

**Control circuit** 

Weight:

Safety parameters:

Ambient temperature:

Mechanical endurance: Electrical endurance:

Over-voltage category:

Rated insulation voltage (Ui):

Rated operating voltage (Un):

Max residual ripple in DC:

Supply voltage tolerance:

Operating time of PTC:

Max input resistance:

Current for each input:

Operating time t<sub>4</sub>:

Output circuit Output contacts:

Contacts type:

Min. current:

Contacts material:

Max switching voltage:

Max currents sum  $\Sigma$  Ith<sup>2</sup>:

Contact protection fuse:

Contacts resistance:

Max switching current per contact:

contactors See page See page 5/51 - 5/61.

Conventional free air thermal current lth:

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

Rated power consumption AC:

Rated power consumption DC:

Protection against short circuits:

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

In conformity with standards:

Releasing time in absence of power supply t<sub>p</sub>:

IEC 61508, EN 13849-1, UL 508, CSA C22.2 nº 14-95

Rated impulse with stand voltage (Uimp):

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

IP40 (housing), IP20 (terminals)

up to SIL 3 according to EN IEC 62061

up to PL e according to EN ISO 13849-1

uptocat.3accordingtoENISO13849-1

see page 5/81, shape A

>10 millions of operations

>100.000 operations outside 3, inside 2

24 Vac/dc; 50...60 Hz

resistance PTC, Ih=0,5 A

3 NO safety contacts,

1 NC auxiliary contact

forced guided contacts silver alloy, gold plated

230/240 Vac; 300 Vdc

intervention > 100 ms, reset > 3 s

120 Vac; 50...60 Hz 230 Vac; 50...60 Hz

see page 7/34

-25°C...+55°C

4 kV

250 V

0,2 kg

10%

< 5 VA

< 2 W

≤ 50 Ω

< 70 mA

> 100 ms

 $< 50 \, \text{ms}$ 

< 60 ms

infinite

IEC 60947-1, EN 60947-5-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999,

EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-5-1, EN 62061,

EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529,

±15% of Un

Ш

Housing



#### Module for emergency stop and gate monitoring

#### Main functions

**5A** 

- 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 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 4

Markings, quality marks and certificates:

C E Approval UL:



F131787 POCC IT.AB24.B04512 Approval GOST:

Complying with the requirements requested by: Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC,

C

# Electromagnetic Compatibility 2004/108/EC

#### **Code structure**

# **CS AR-22V024**

K	ina	ot	start

- 22 manual or automatic start
- 23 monitored start

#### Kind of connection

- ν screw terminals
- connector with screw terminals М
- **X** connector with spring terminals

Supply voltage				
024	24 Vac/dc	<b>±</b> 15%		
120	120 Vac	<b>±</b> 15%		
230	230 Vac	<b>±</b> 15%		

### Items available on stock

6 A

6 A

80 A<sup>2</sup>

10 mA

< 100 mO

6 A, F type

CS AR-22V024

The number and the load capacity of output contacts can be increased by using expansion modules or

### Data type approved by UL

Rated operating voltage (Un):

HzRated power consumption AC: Rated power consumption DC: Max switching voltage: Max switching current per contact: Utilization category

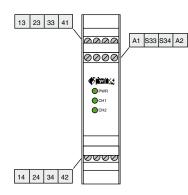
24 Vac/dc: 50...60 Hz 120 Vac; 50...60 Hz 230 Vac; 50...60 < 5 VA < 2 W 230 Vac 6 A C300

Voles. - 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

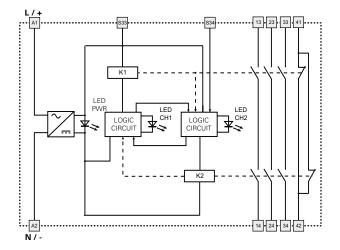


## Safety module CS AR-22 / CS AR-23

#### **Terminals layout**



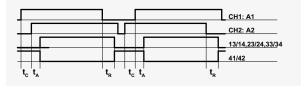
### Internal wiring diagram



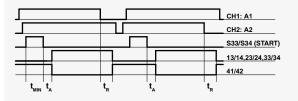
#### Inputs configuration

#### **Operation diagrams**

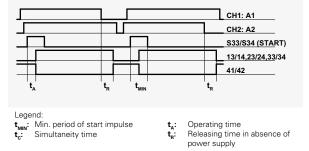
Configuration with automatic start (CS AR-22 only)



Configuration with monitored start (CS AR-23 only)

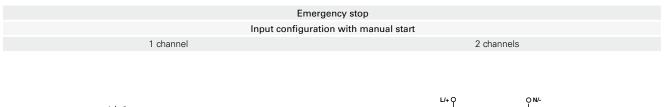


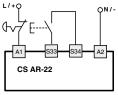
Configuration with manual start (CS AR-22 only)



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  $t_{\rm R}$  referred to CH1:A1 input , the  $t_{\rm A}$  time referred to CH1:A1 input and to the start, and the  $t_{\rm MIN}$  time referred to the start.

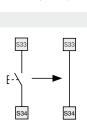




The diagram does not show the exact position of clamps in the product

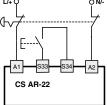
#### Automatic start

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-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.



Application example See page 5/61





#### 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 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 4

Markings, quality marks and certificates:

C F

Approval UL: Approval GOST:

E131787 POCC IT.AB24.B04512

Complying with the requirements requested by: Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC,

# US C

Electromagnetic Compatibility 2004/108/EC

# **Technical data**

### Housing

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

up to SIL 3 according to EN IEC 62061

up to PL e according to EN ISO 13849-1

uptocat.3accordingtoENISO13849-1

see page 7/34

-25°C...+55°C

4 kV

Ш

250 V

0,3 kg

>10 millions of operations

>100.000 operations

outside 3, inside 2

#### General data

SIL level (SIL CL): Performance Level (PL): Safety category: Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:

#### 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**

resistance PTC, Ih=0,5 A Protection against short circuits: 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<sub>MIN</sub> > 100 ms Operating time  $t_A$ : < 70 ms Releasing time t<sub>B1</sub>: < 40 ms Releasing time in absence of power supply t<sub>n</sub>: < 80 ms Simultaneity time t<sub>c</sub>: 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 230/240 Vac; 300 Vdc Max switching voltage: Max switching current per contact: 6 A Conventional free air thermal current Ith: 6 A Max currents sum  $\Sigma$  Ith<sup>2</sup>: 72 A<sup>2</sup> 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-24V024**

### Kind of start

- 24 manual or automatic start
- 25 monitored start

#### Kind of connection

- ν screw terminals
- connector with screw terminals М
- **X** connector with spring terminals

Supply voltage 024 24 Vac/dc +15%

# Data type approved by UL

Rated operating voltage (Un): Rated power consumption AC Rated power consumption DC: Max switching voltage: Max switching current per contact: Utilization category

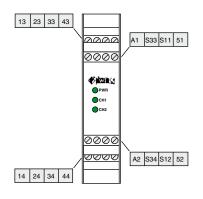
24 Vac/dc; 50...60 Hz < 5 VA < 2 W 230 Vac 6 A C300

 Voles.
 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



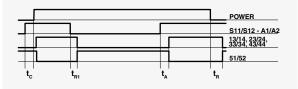
# Safety module CS AR-24 / CS AR-25

#### **Terminals layout**

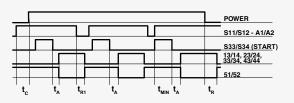


### **Operation diagrams**

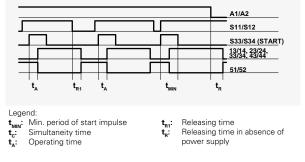
Configuration with automatic start (CS AR-24 only)



Configuration with monitored start (CS AR-25 only)



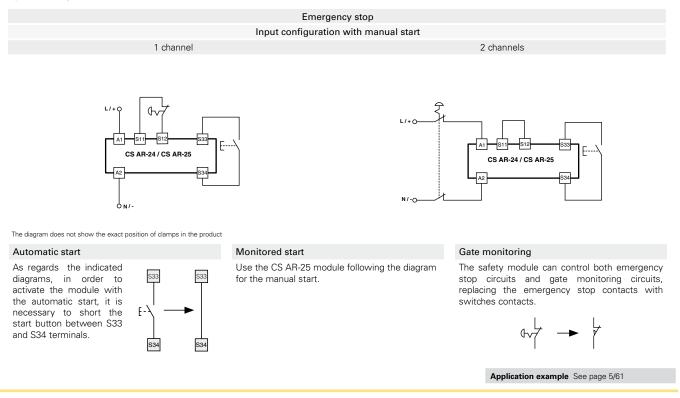
Configuration with manual start (CS AR-24 only)



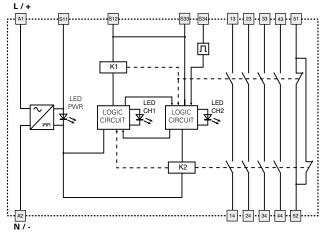
#### Note:

The configurations with one channel are obtained taking into consideration only the S11/S12 input. In this case it is necessary to consider the  $\mathbf{t}_{\mathbf{n}}$  time referred to S11/S12 input, the  $\mathbf{t}_{\mathbf{n}}$  time referred to S11/S12 input. and to the start, and the  ${\bf t}_{\rm MIN}$  time referred to the start.

#### Inputs configuration



## Internal wiring diagram





#### 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 le (A) 3 Direct current: DC13 (6 operations/minute) Ue (V) 24 le (A) 4

Markings, quality marks and certificates:

C E



Approval UL: E131787 Approval GOST:

Complying with the requirements requested by: Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC,

# POCC IT.AB24.B04512

Electromagnetic Compatibility 2004/108/EC

# **Technical data**

#### Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94) IP40 (housing), IP20 (terminals) Protection degree: Dimensions: see page 5/82, shape D

#### General data

SIL level (SIL CL): Performance Level (PL): Safety category: Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:

#### Power supply

Rated operating voltage (Un): Max residual ripple in DC: Supply voltage tolerance: Rated power consumption AC: Rated power consumption DC:

#### **Control circuit**

Protection against short circuits: Operating time of PTC: Max input resistance: Current for each input: Min. period of start impulse t<sub>MIN</sub>: Operating time t<sub>4</sub>: Releasing time in absence of power supply t<sub>p</sub>: Simultaneity time t<sub>c</sub>:

resistance PTC, Ih=0,5 A intervention > 100 ms, reset > 3 s ≤ 50 Ω < 70 mA > 100 ms < 50 ms < 50 ms

up to SIL 2 according to EN IEC 62061

up to PL d according to EN ISO 13849-1

uptocat.2accordingtoENISO13849-1

see page 7/34

-25°C...+55°C

4 kV

Ш

250 V

0,2 kg

10%

< 5 VA

< 2 W

infinite

±15% of Un

>10 millions of operations

>100.000 operations

24 Vac/dc; 50...60 Hz

outside 3, inside 2

#### 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 nº 14-95

#### **Output circuit**

Output contacts: 2 NO safety contacts Contacts type: forced guided contacts Contacts material: silver allov 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  $\Sigma$  Ith<sup>2</sup>: 36 A<sup>2</sup> 10 mA Min current: 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-40V024**

#### Kind of start

- 40 manual or automatic start
- 41 monitored start

#### Kind of connection

- ν screw terminals
- connector with screw terminals М
- **X** connector with spring terminals

Supply voltage 024 24 Vac/dc +15%

# Data type approved by UL

Rated operating voltage (Un): Rated power consumption AC Rated power consumption DC: Max switching voltage: Max switching current per contact: Utilization category

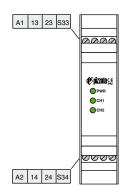
24 Vac/dc; 50...60 Hz < 5 VA < 2 W 230 Vac 6 A C300

 Voles.
 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



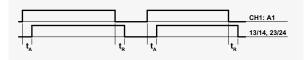
## Safety module CS AR-40 / CS AR-41

#### **Terminals layout**

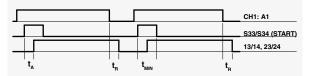


#### **Operation diagrams**

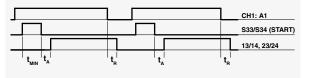
Configuration with automatic start (CS AR-40 only)



Configuration with manual start (CS AR-40 only)

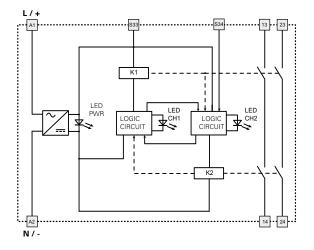


Configuration with monitored start (CS AR-41 only)

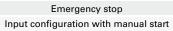


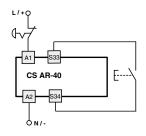
 $\begin{array}{l} \begin{array}{c} -\text{cyond:} \\ \textbf{t}_{\text{MN}} & \text{Min. period of start impulse} \\ \textbf{t}_{\textbf{A}} & \text{Operating time} \\ \textbf{t}_{\textbf{R}} & \text{Releasing time} \end{array}$ Operating time Releasing time in absence of power supply

#### Internal wiring diagram



#### Inputs configuration

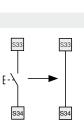




The diagram does not show the exact position of clamps in the product

#### 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-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.





#### 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:

CE



Approval UL: Approval GOST:

E131787 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 5/82, shape D

#### General data

SIL level (SIL CL): Performance Level (PL): Safety category: Safety parameters: Ambient temperature: Mechanical endurance: Electrical endurance: Pollution degree: Rated impulse with stand voltage (Uimp): Rated insulation voltage (Ui): Over-voltage category: Weight:

#### **Power supply**

Rated operating voltage (Un): Max residual ripple in DC: Supply voltage tolerance: Rated power consumption AC: Rated power consumption DC:

#### Control circuit

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

up to SIL 1 according to EN IEC 62061

up to PL c according to EN ISO 13849-1

uptocat.1 according to ENISO 13849-1

see page 7/34

-25°C...+55°C

4 kV

250 V

0,2 kg

10%

< 5 VA

< 2 W

±15% of Un

Ш

>10 millions of operations

>100.000 operations

24 Vac/dc; 50...60 Hz

outside 3, inside 2

#### 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:1Contacts material:siMax switching voltage:2Max switching current per contact:6Conventional free air thermal current Ith:6Min. current:10Contacts resistance:≤Contact protection fuse:6The number and the load capacity of output contacts can be in

1 NO safety contacts silver alloy 230/240 Vac; 300 Vdc 6 A 6 A 10 mA  $\leq$  100 m $\Omega$ 6 A, F type

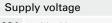
The number and the load capacity of output contacts can be increased by using expansion modules or contactors See page See page 5/51 - 5/61.

#### **Code structure**

**CS AR-46V024** 

Kind of connection

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



024 24 Vac/dc ±15%

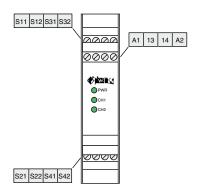
#### Data type approved by UL

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

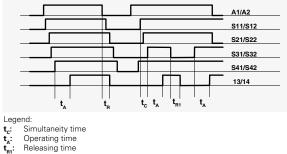
Notes: - Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG. - Terminal tightening torque of 5-7 Lb In. - Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy.

# **5**A

### **Terminals layout**

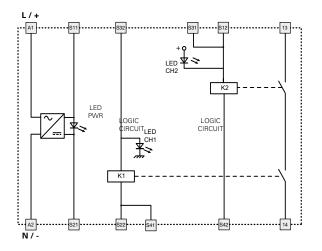






t<sub>R1</sub>: t<sub>R</sub>: Releasing time in absence of power supply

#### 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 L/+C L/+0 ſ S11 S32 S32 A1 A1 S11 S32 A1 CS AR-46 CS AR-46 CS AR-46 S21 S22 S41 S42 ſ

#### 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.

