

The CS series safety modules have been studied with clear aims of safety and reliability for the product. The design, development and production of these units have been faced with the passion for quality that distinguishes Pizzato Elettrica, adding further controls where possible. Maximum safety is the basic principle for this range of products.

During the design phase of these products, principles of over-sizing were adopted, and the circuit schemes have been checked by independent third party institutes. Also the selection of the components used has been made with accurate quality aims, and the basic parts, such as relays with forced guided contacts, have been chosen among the best brands existing. The production phase itself, completely developed within the company Pizzato Elettrica, is supervised with a functional testing on 100% of the production. Every single piece produced

Product code	Supply voltages	Safety category			Output contacts			Housing thickness
		2	3	4	instantaneous	delayed	feedback.	
Safety modules for emergency stop and gate monitoring								
CS AR-01	24 VAC/DC; 120 VAC; 230 VAC	■	■	■	**2 NO+ 1 NC**	-	-	22,5 x 114 mm
CS AR-02	24 VAC/DC; 120 VAC; 230 VAC	■	■	■	**3 NO**	-	-	22,5 x 114 mm
CS AR-04	24 VAC/DC; 120 VAC; 230 VAC	■	■	■	**3 NO + 1 NC**	-	-	22,5 x 114 mm
CS AR-05	24 VAC/DC; 120 VAC; 230 VAC	■	■	■	**3 NO + 1 NC**	-	-	22,5 x 114 mm
CS AR-06	24 VAC/DC; 120 VAC; 230 VAC	■	■	■	**3 NO + 1 NC**	-	-	22,5 x 114 mm
CS AR-07	24 VAC/DC	■	■	■	**4 NO + 1 NC**	-	-	22,5 x 129 mm
CS AR-08	24 VAC/DC; 120 VAC; 230 VAC	■	■	■	**2 NO**	-	-	22,5 x 114 mm
CS AR-20	24 VAC/DC; 120 VAC; 230 VAC	■	■	-	**2 NO**	-	-	22,5 x 114 mm
CS AR-21	24 VAC/DC; 120 VAC; 230 VAC	■	■	-	**2 NO**	-	-	22,5 x 114 mm
CS AR-22	24 VAC/DC	■	■	-	**3 NO + 1 NC**	-	-	22,5 x 114 mm
CS AR-23	24 VAC/DC	■	■	-	**3 NO + 1 NC**	-	-	22,5 x 114 mm
CS AR-40	24 VAC/DC	■	-	-	**2 NO**	-	-	22,5 x 91 mm
CS AR-41	24 VAC/DC	■	-	-	**2 NO**	-	-	22,5 x 91 mm
CS AR-51	24 VAC/DC	■	■	■	**2 NO**	-	-	22,5 x 114 mm
Safety modules for emergency stop and gate monitoring with delayed contacts at the opening of the input channels								
CS AT-0③	24 VAC/DC; 120 VAC; 230 VAC	■	■	■ (②)	**2 NO + 1 NC**	**2 NO**	-	45 x 114 mm
CS AT-1③	24 VAC/DC; 120 VAC; 230 VAC	■	■	■ (②)	**3 NO**	**2 NO**	-	45 x 114 mm
CS AT-2③	24 VAC/DC	■	■	■ (②)	**2 NO**	**1 NO**	-	22,5 x 114 mm
Safety timer module with delayed contacts at energizing								
CS FS-0③	24 VAC/DC; 120 VAC; 230 VAC	①	①	①	-	**1 NO + 2 NC**	-	22,5 x 114 mm
Safety modules for bimanual controls or synchronism check								
CS DM-01	24 VAC/DC; 120 VAC; 230 VAC	III C according to EN 574			**3 NO + 1 NC**	-	-	22,5 x 114 mm
Expansion modules with instantaneous contacts or delayed contacts at de-energizing								
CS ME-01	24 VAC/DC	①	①	①	**5 NO + 1 NC**	-	**1 NC**	22,5 x 114 mm
CS ME-20VU24-⑤	24 VDC	①	①	①	-	**4 NO + 2 NC**	**1 NC**	22,5 x 114 mm
CS ME-30VU24-⑥	24 VDC	①	①	①	-	**4 NO + 2 NC**	**1 NC**	45 x 114 mm
CS ME-31VU24-TS12	24 VDC					**4 NO + 2 NC**	**1 NC**	45 x 114 mm

■ Available with this product
- Not available with this product
① Dependent from the base module
② Safety category 4 for instantaneous contacts, category 3 for delayed contacts

③ Delayed contacts releasing time

0	fixed time (see products pages)
1	from 0,3 to 3 s, step 0,3 s
2	from 1 to 10 s, step 1 s
3	from 3 to 30 s, step 3 s
4	from 30 to 300 s, step 30 s

④ Kind of connection

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

⑤ Releasing time in absence of power supply

TF0.5	0,5 s fixed time
TF1	1 s fixed time
TF2	2 s fixed time
TF3	3 s fixed time

⑥ Releasing time in absence of power supply

TF1	1 s fixed time
...	.....
TF12	12 s fixed time



is verified in a computerised testing station that prints the safety module label, identified from a unique serial number, only when the product passes every test.

Pizzato Elettrica has improved also the more practical aspects, using compact housings and with LED signals of the operation state of the modules. Particular attention has been paid to the connection possibilities, allowing the customer to choose between fixed clamps or plug-in connectors and screw or spring terminals. Finally, the range of products provides different supply tensions with a wide tolerance on nominal values to avoid any problem in the less industrialised countries.

Product code	Autom. or manual start	Monitored start	Opposite potentials inputs	Equipotential inputs	Type of inputs (⑦)				Kind of connection (④)			Page
									V	M	X	
CS AR-01	■	■	■	-	■	-	-	-	■	■	■	pag. 4/103
CS AR-02	■	■	■	-	■	-	-	-	■	■	■	pag. 4/105
CS AR-04	■	■	■	-	■	-	-	-	■	■	■	pag. 4/107
CS AR-05	■	-	■	■	■	■	■	-	■	■	■	pag. 4/109
CS AR-06	-	■	■	■	■	■	■	-	■	■	■	pag. 4/109
CS AR-07	■	■	■	-	■	-	-	-	-	■	■	pag. 4/111
CS AR-08	■	■	■	■	■	■	■	-	■	■	■	pag. 4/113
CS AR-20	■	-	■	-	■	-	-	-	■	■	■	pag. 4/117
CS AR-21	-	■	■	-	■	-	-	-	■	■	■	pag. 4/117
CS AR-22	■	-	■	-	■	-	-	-	■	■	■	pag. 4/119
CS AR-23	-	■	■	-	■	-	-	-	■	■	■	pag. 4/119
CS AR-40	■	-	-	-	■	-	-	-	■	■	■	pag. 4/121
CS AR-41	-	■	-	-	■	-	-	-	■	■	■	pag. 4/121
CS AR-51	■	■	■	-	■	-	-	■	■	■	■	pag. 4/123
CS AT-0③	■	■	■	-	■	-	-		■	■	■	pag. 4/125
CS AT-1③	■	■	■	-	■	-	-		■	■	■	pag. 4/127
CS AT-2③	■	■	■	-	■	-	-		■	■	■	pag. 4/129
CS FS-0③	-	-	①	-	■	-	-		■	■	■	pag. 4/131
CS DM-01	-	-	■	-	■	-	-		■	■	■	pag. 4/133
CS ME-01	-	-	①	①	■	-	-		■	■	■	pag. 4/135
CS ME-20VU24-⑤	-	-	①	①	■	-	-		■	■	■	pag. 4/137
CS ME-30VU24-⑥	-	-	①	①	■	-	-		■	■	■	pag. 4/139
CS ME-31VU24-TS12	-	-	①	①	■	-	-		■	■	■	pag. 4/139

⑦ Type of inputs

- Electromechanical contacts
- Electrosensible devices with PNP output
- Safety magnetic sensor
- Safety mats and bumpers with 4 wires technology



Module for emergency stop and gate monitoring

Main functions
- 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:
  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) 6

Markings, quality marks and certificates:

Approval UL: E131787

Complying with the requirements requested by:
Low Voltage Directive 2006/95/EC,
Machinery Directive 2006/42/EC,
Electromagnetic Compatibility 2004/108/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94)	
Protection degree:	IP40 (housing), IP20 (terminals)
Dimensions:	see page 4/141, shape A

General data

Safety category:	category 4 according to EN 954-1
Ambient temperature:	-25°C...+55°C
Mechanical endurance:	>10 millions of operations
Electrical endurance:	>100.000 operations
Pollution degree:	outside 3, inside 2
Rated impulse with stand voltage (Uimp):	4 KV
Rated insulation voltage (Ui):	250 V
Over-voltage category:	III
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, 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_{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 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts:	2 NO safety c ontacts, 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
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A
The number and the load capacity of output contacts can be increased by using expansion modules or contactors:	see page 4/135 - 4/139

Code structure

CS AR-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%

Items available on stock

CS AR-01V024

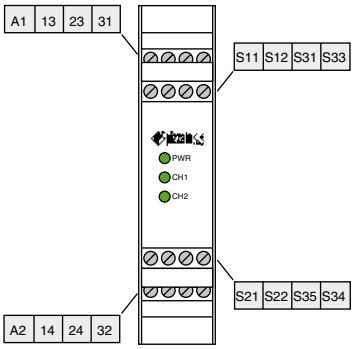
Data type approved by UL

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

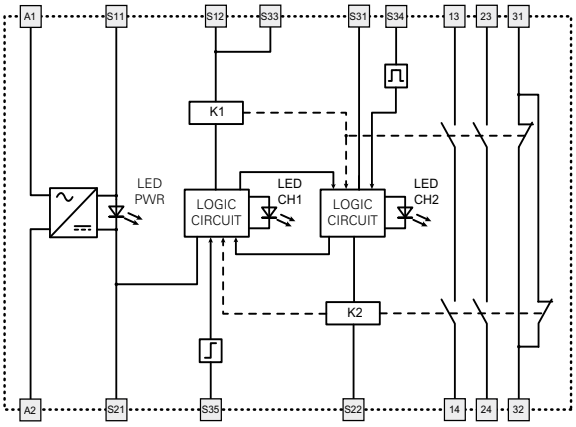
Notes:
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
- Terminal tightening torque of 5-7 Lb-In.
- Only for 24 VAC/DC version, supply from remote class 2 source or limited voltage and limited energy.

Safety module CS AR-01

Terminals layout

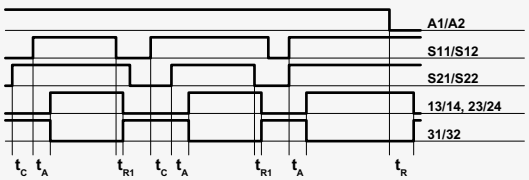


Internal wiring diagram

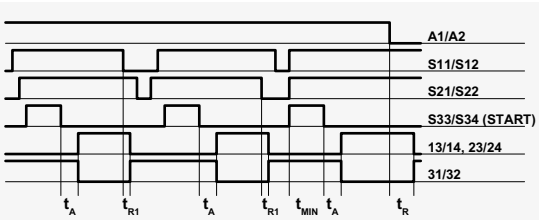


Operation diagrams

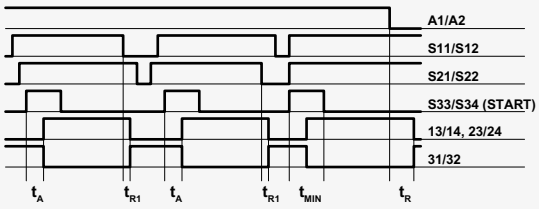
Configuration with automatic start



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

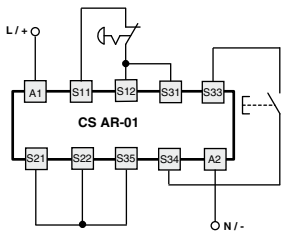
Note:
The configurations with one channel are obtained taking into consideration only the S11/S12 input. In this case it is necessary to consider the t_{R1} time referred to S11/S12 input, the t_R time referred to the supply, the t_A time referred to S11/S12 input and to the start, and the t_{MIN} time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

Inputs configuration

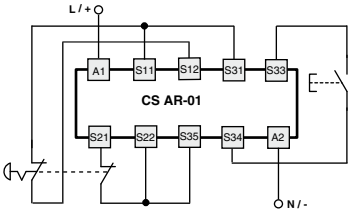
Emergency stop

Input configuration with manual start

1 channel



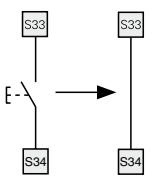
2 channels



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

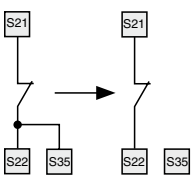
Automatic start

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.



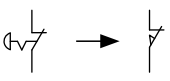
Monitored start

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.





Module for emergency stop and gate monitoring

Main functions
- 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: 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) 6

Markings, quality marks and certificates:

Approval UL: E131787

Complying with the requirements requested by:
Low Voltage Directive 2006/95/EC,
Machinery Directive 2006/42/EC,
Electromagnetic Compatibility 2004/108/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94)	
Protection degree:	IP40 (housing), IP20 (terminals)
Dimensions:	see page 4/141, shape A

General data

Safety category:	category 4 according to EN 954-1
Ambient temperature:	-25°C...+55°C
Mechanical endurance:	>10 millions of operations
Electrical endurance:	>100.000 operations
Pollution degree:	outside 3, inside 2
Rated impulse with stand voltage (Uimp):	4 KV
Rated insulation voltage (Ui):	250 V
Over-voltage category:	III
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, 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_{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 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts:	3 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
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A
The number and the load capacity of output contacts can be increased by using expansion modules or contactors:	see page 4/135 - 4/139

Code structure

CS AR-02V024

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%

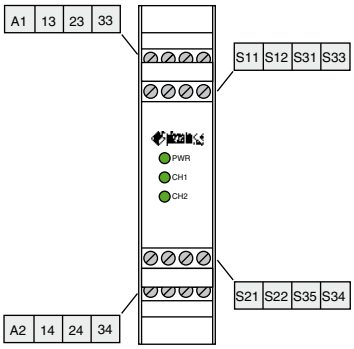
Data type approved by UL

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

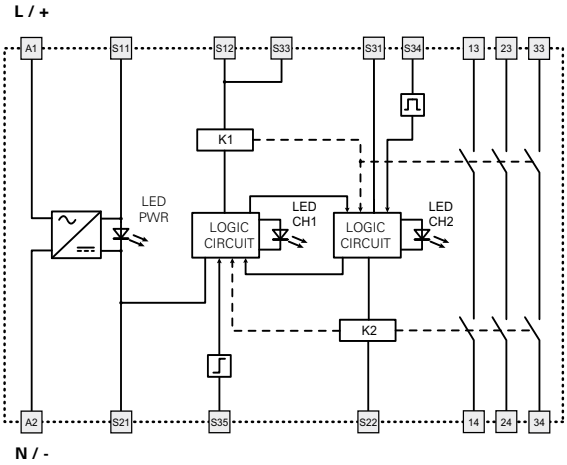
Notes:
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
- Terminal tightening torque of 5-7 Lb-In.
- Only for 24 VAC/DC version, supply from remote class 2 source or limited voltage and limited energy.

Safety module CS AR-02

Terminals layout

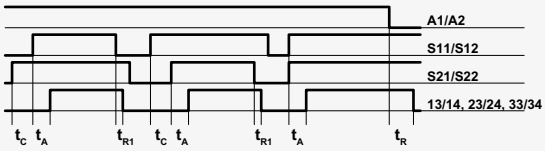


Internal wiring diagram

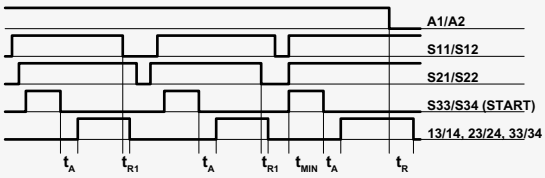


Operation diagrams

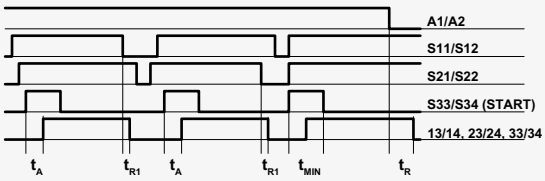
Configuration with automatic start



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

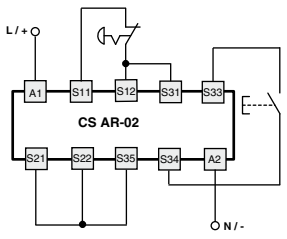
Note:
The configurations with one channel are obtained taking into consideration only the S11/S12 input. In this case it is necessary to consider the t_{R1} time referred to S11/S12 input, the t_R time referred to the supply, the t_A time referred to S11/S12 input and to the start, and the t_{MIN} time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

Inputs configuration

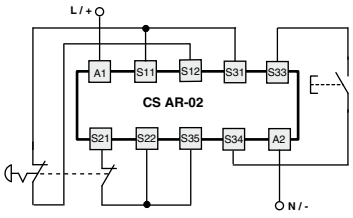
Emergency stop

Input configuration with manual start

1 channel



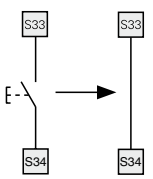
2 channels



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

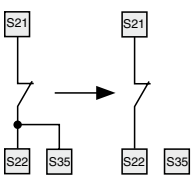
Automatic start

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.



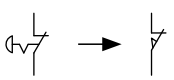
Monitored start

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.





Module for emergency stop and gate monitoring

Main functions
- 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) 6

Markings, quality marks and certificates:
Approval UL: E131787

Complying with the requirements requested by:
Low Voltage Directive 2006/95/EC,
Machinery Directive 2006/42/EC,
Electromagnetic Compatibility 2004/108/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94)	
Protection degree:	IP40 (housing), IP20 (terminals)
Dimensions:	see page 4/141, shape A

General data

Safety category:	category 4 according to EN 954-1
Ambient temperature:	-25°C...+55°C
Mechanical endurance:	>10 millions of operations
Electrical endurance:	>100.000 operations
Pollution degree:	outside 3, inside 2
Rated impulse with stand voltage (Uimp):	4 KV
Rated insulation voltage (Ui):	250 V
Over-voltage category:	III
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, 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_{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 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts:	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
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A
The number and the load capacity of output contacts can be increased by using expansion modules or contactors:	see page 4/135 - 4/139

Code structure

CS AR-04V024

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-04V024

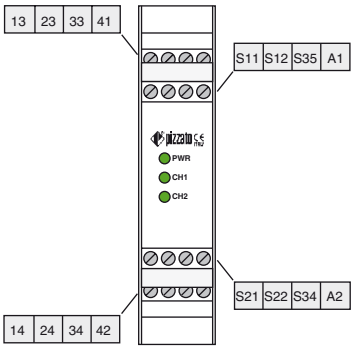
Data type approved by UL

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

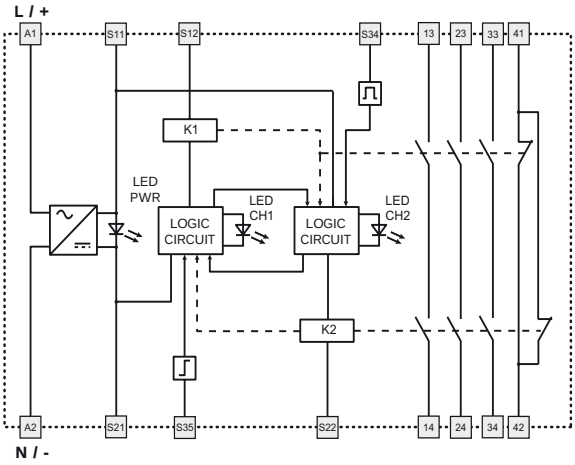
Notes:
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
- Terminal tightening torque of 5-7 Lb-In.
- Only for 24 VAC/DC version, supply from remote class 2 source or limited voltage and limited energy.

Safety module CS AR-04

Terminals layout

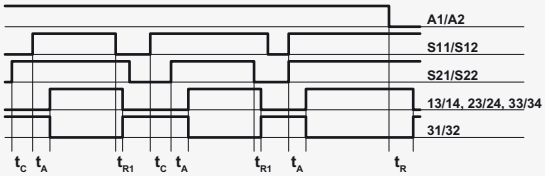


Internal wiring diagram

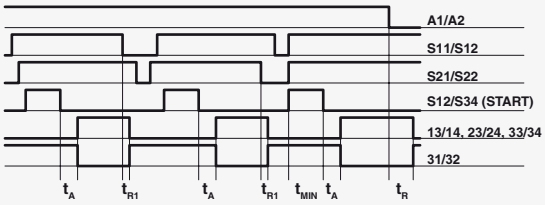


Operation diagrams

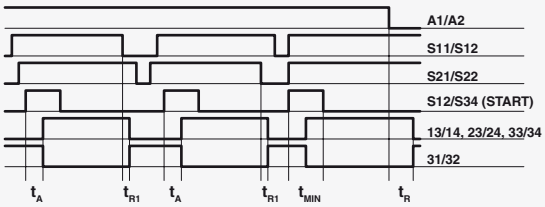
Configuration with automatic start



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

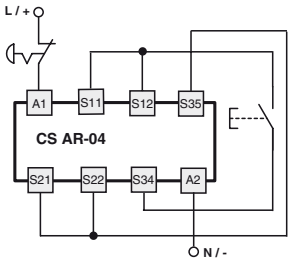
Note:
The configurations with one channel are obtained taking into consideration only the S11/S12 input to the supply. In this case it is necessary to consider the t_{R1} time referred to S11/S12 input, the t_R time referred to the supply, the t_A time referred to S11/S12 input, to the start and to the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

Inputs configuration

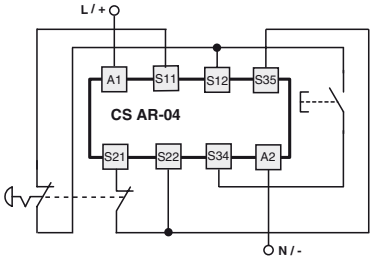
Emergency stop

Input configuration with manual start

1 channel



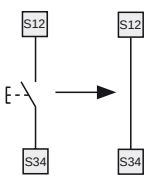
2 channels



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

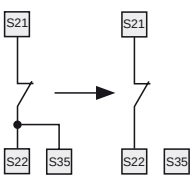
Automatic start

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

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, Electro-sensitive protection devices (ESPE) and magnetic safety sensor

Main functions
- 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 ESPE, 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) 6

Markings, quality marks and certificates:

Approval UL: E131787

Complying with the requirements requested by:
Low Voltage Directive 2006/95/EC,
Machinery Directive 2006/42/EC,
Electromagnetic Compatibility 2004/108/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94)	
Protection degree:	IP40 (housing), IP20 (terminals)
Dimensions:	see page 4/141, shape A

General data

Safety category:	category 4 according to EN 954-1
Ambient temperature:	-25°C...+55°C
Mechanical endurance:	>10 millions of operations
Electrical endurance:	>100.000 operations
Pollution degree:	outside 3, inside 2
Rated impulse with stand voltage (Uimp):	4 KV
Rated insulation voltage (Ui):	250 V
Over-voltage category:	III
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, 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}:	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 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts:	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
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A
The number and the load capacity of output contacts can be increased by using expansion modules or contactors:	see page 4/135 - 4/139

Code structure

CS AR-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%

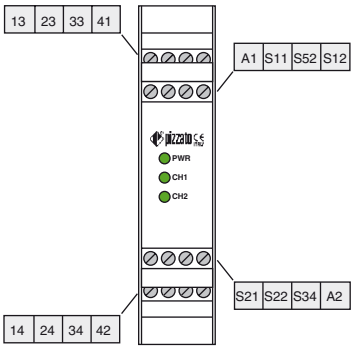
Data type approved by UL

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

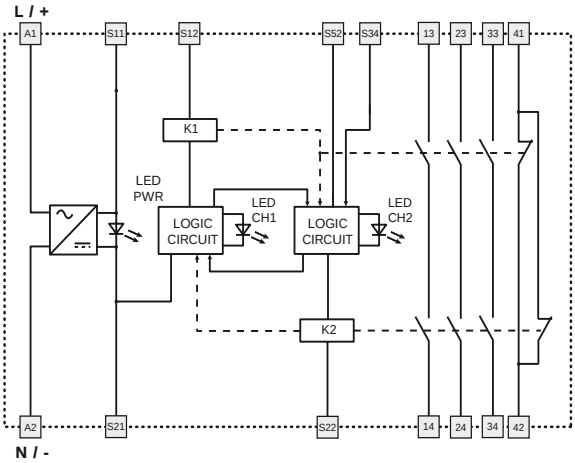
Notes:
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
- Terminal tightening torque of 5-7 Lb-In.
- Only for 24 VAC/DC version, supply from remote class 2 source or limited voltage and limited energy.

Safety module CS AR-05-06

Terminals layout

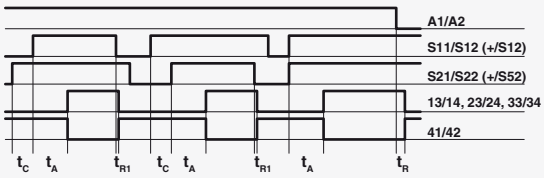


Internal wiring diagram

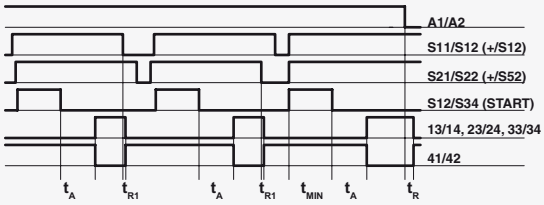


Operation diagrams

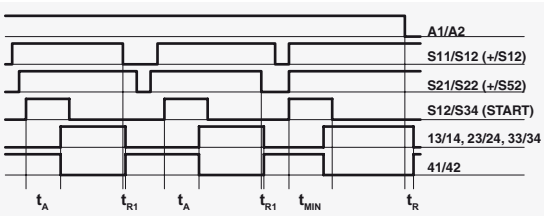
Configuration with automatic start



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

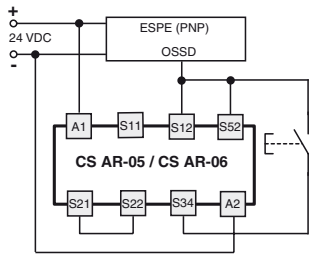
Note:
The configurations with one channel are obtained taking into consideration only the CH1 input. In this case it is necessary to consider the t_{R1} time referred to CH1 input, the t_R time referred to the supply, the t_A time referred to CH1 input and to the start, and the t_{MIN} time referred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

Inputs configuration

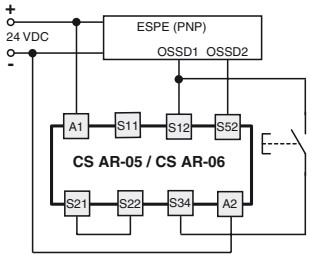
Electro-sensitive protection devices ESPE

Input configuration with manual start

1 channel



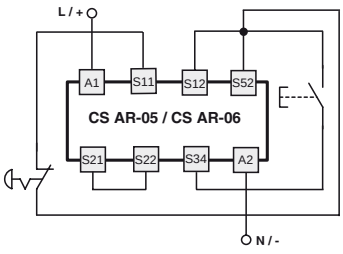
2 channels



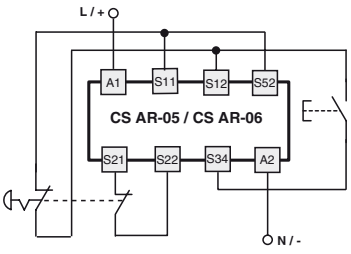
Emergency stop

Input configuration with manual start

1 channel



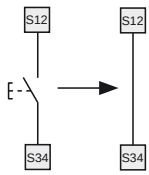
2 channels



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

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.

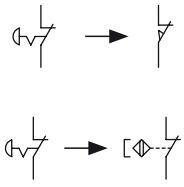


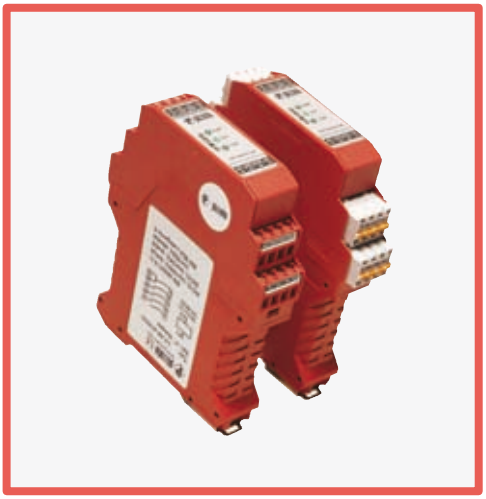
Monitored start

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.





Module for emergency stop and gate monitoring

Main functions
- 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) 6

Markings, quality marks and certificates:

Approval UL: E131787

Complying with the requirements requested by:
Low Voltage Directive 2006/95/EC,
Machinery Directive 2006/42/EC,
Electromagnetic Compatibility 2004/108/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94)	
Protection degree:	IP40 (housing), IP20 (terminals)
Dimensions:	see page 4/141, shape B

General data

Safety category:	category 4 according to EN 954-1
Ambient temperature:	-25°C...+55°C
Mechanical endurance:	>10 millions of operations
Electrical endurance:	>100.000 operations
Pollution degree:	outside 3, inside 2
Rated impulse with stand voltage (Uimp):	4 KV
Rated insulation voltage (Ui):	250 V
Over-voltage category:	III
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 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts:	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; 220 VDC
Max switching current per contact:	6 A
Conventional free air thermal current Ith:	6 A
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A
The number and the load capacity of output contacts can be increased by using expansion modules or contactors:	see page 4/135 - 4/139

Code structure

CS AR-07M024

Kind of connection		Supply voltage		
M	connector with screw terminals	**024**	24 VAC/DC	±15%
X	connector with spring terminals			

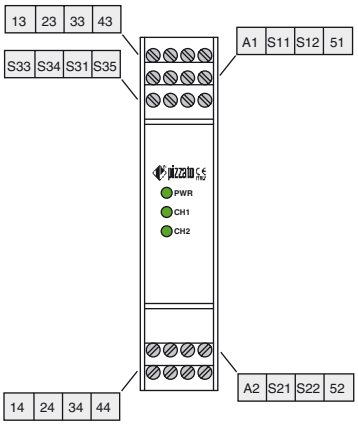
Data type approved by UL

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

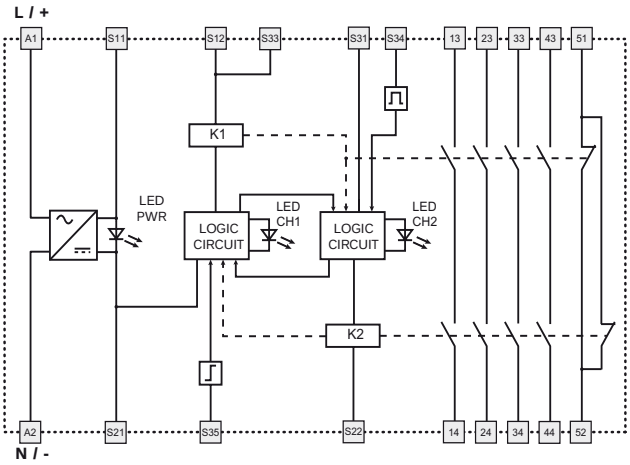
Notes:
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
- Terminal tightening torque of 5-7 Lb-In.
- Only for 24 VAC/DC version, supply from remote class 2 source or limited voltage and limited energy.

Safety module CS AR-07

Terminals layout

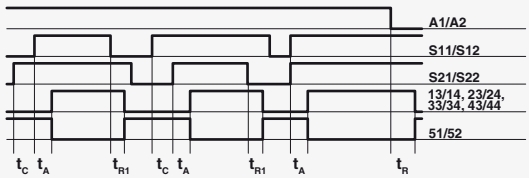


Internal wiring diagram

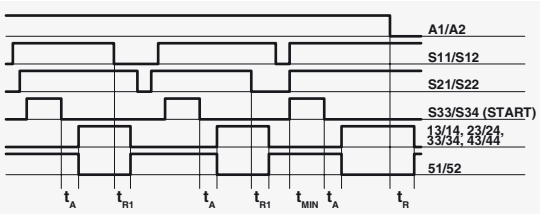


Operation diagrams

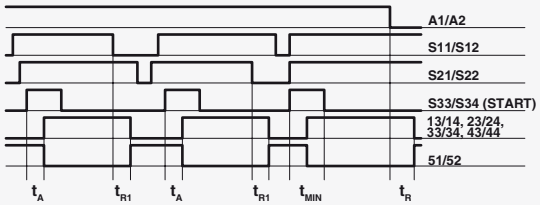
Configuration with automatic start



Configuration with monitored start



Configuration with manual start



Legend:

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

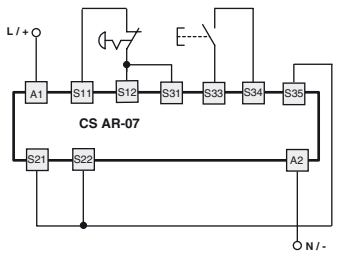
Note:
The configurations with one channel are obtained taking into consideration only the S11/S12 input. In this case it is necessary to consider the t_{R1} time referred to S11/S12 input, the t_R time referred to the supply, the t_A time referred to S11/S12 input and to the start, and the t_{MIN} time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

Inputs configuration

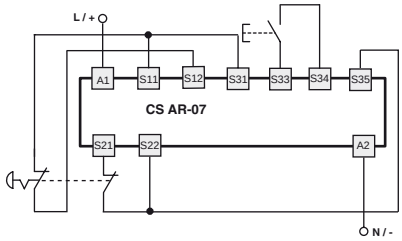
Emergency stop

Input configuration with manual start

1 channel



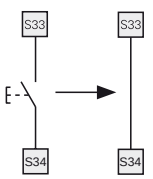
2 channels



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

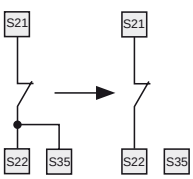
Automatic start

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.





Module for emergency stop, gate monitoring, Electro-sensitive protection devices (ESPE) and magnetic safety sensor

Main functions
- Single or dual channel input circuit
- Choice between automatic start, manual start or monitored start
- Connectible to ESPE, 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) 6

Markings, quality marks and certificates:

Approval UL: E131787

Complying with the requirements requested by:
Low Voltage Directive 2006/95/EC,
Machinery Directive 2006/42/EC,
Electromagnetic Compatibility 2004/108/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94)	
Protection degree:	IP40 (housing), IP20 (terminals)
Dimensions:	see page 4/141, shape A

General data

Safety category:	category 4 according to EN 954-1
Ambient temperature:	-25°C...+55°C
Mechanical endurance:	>10 millions of operations
Electrical endurance:	>100.000 operations
Pollution degree:	outside 3, inside 2
Rated impulse with stand voltage (Uimp):	4 KV
Rated insulation voltage (Ui):	250 V
Over-voltage category:	III
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, 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}:	200 ms
Operating time t_A:	150 ms
Releasing time t_{R1}:	20 ms
Releasing time in absence of power supply t_R:	150 ms
Simultaneity time t_C:	infinite

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

Output circuit

Output contacts:	2 NO safety contacts,
Contacts type:	forced guided contacts
Contacts material:	silver alloy, gold plated
Max switching voltage:	230/240 VAC; 300 VDC
Max switching current per contact:	6 A
Conventional free air thermal current Ith:	6 A
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A
The number and the load capacity of output contacts can be increased by using expansion modules or contactors:	see page 4/135 - 4/139

Code structure

CS AR-08V024

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-08V024

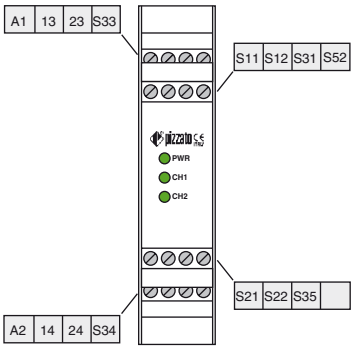
Data type approved by UL

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

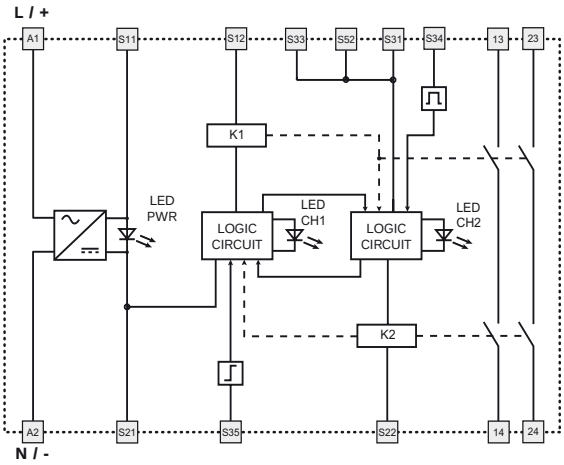
Notes:
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
- Terminal tightening torque of 5-7 Lb-In.
- Only for 24 VAC/DC version, supply from remote class 2 source or limited voltage and limited energy.

Safety module CS AR-08

Terminals layout

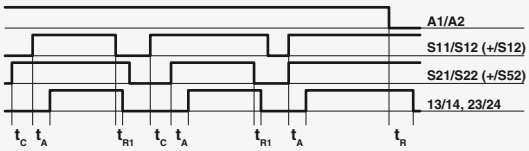


Internal wiring diagram

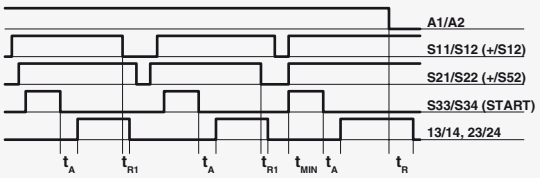


Operation diagrams

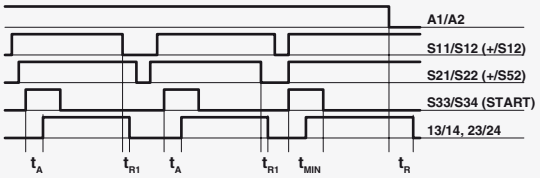
Configuration with automatic start



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

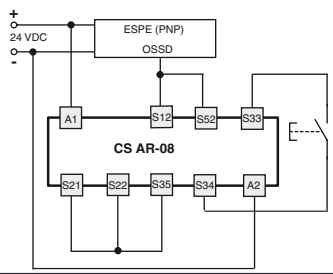
Note:
The configurations with one channel are obtained taking into consideration only the CH1 input. In this case it is necessary to consider the t_{R1} time referred to CH1 input, the t_R time referred to the supply, the t_A time referred to CH1 input and to the start, and the t_{MIN} time referred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

Inputs configuration

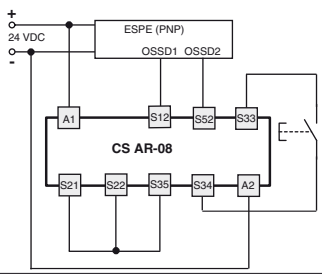
Electro-sensitive protection devices ESPE

Input configuration with manual start

1 channel



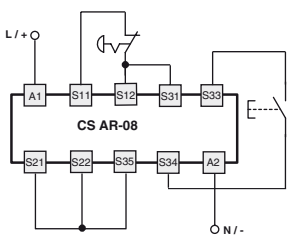
2 channels



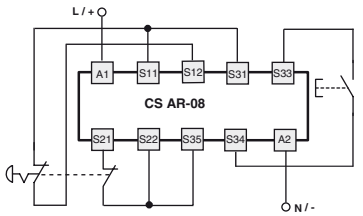
Emergency stop

Input configuration with manual start

1 channel



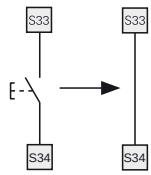
2 channels



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

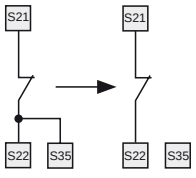
Automatic start

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.



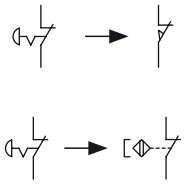
Monitored start

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.

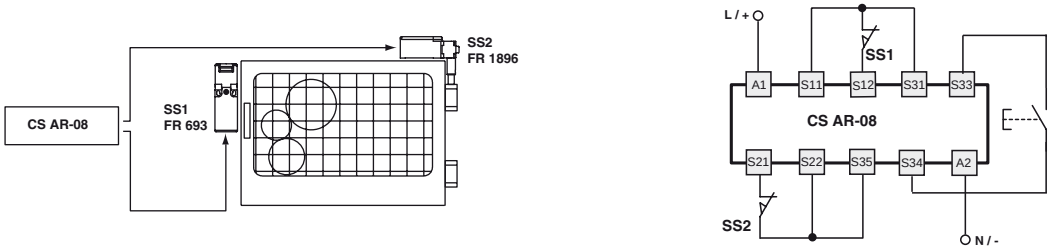


Gate monitoring and safety magnetic sensors.

The safety module can control both emergency stop circuits, gate monitoring circuits or safety magnetic sensors. Replace the emergency stop contacts with switches contacts or with the sensors contacts.



Application examples: safety gates monitoring, safety category 4



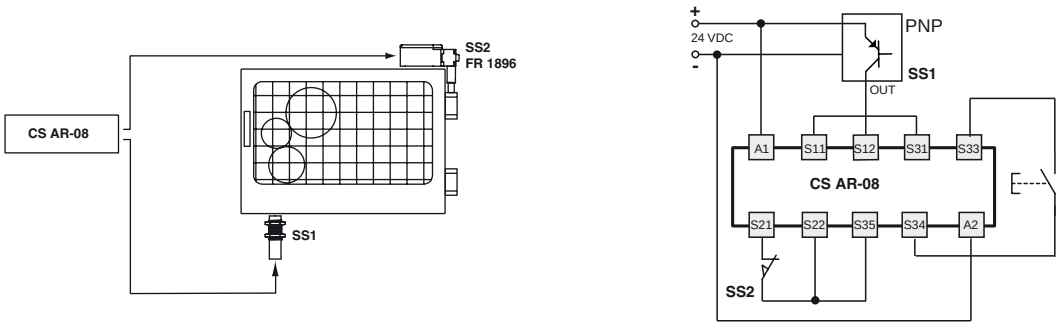
Safety gate monitoring through two switches with different technology. System in safety category 4

Application examples: light barrier monitoring, safety category 4



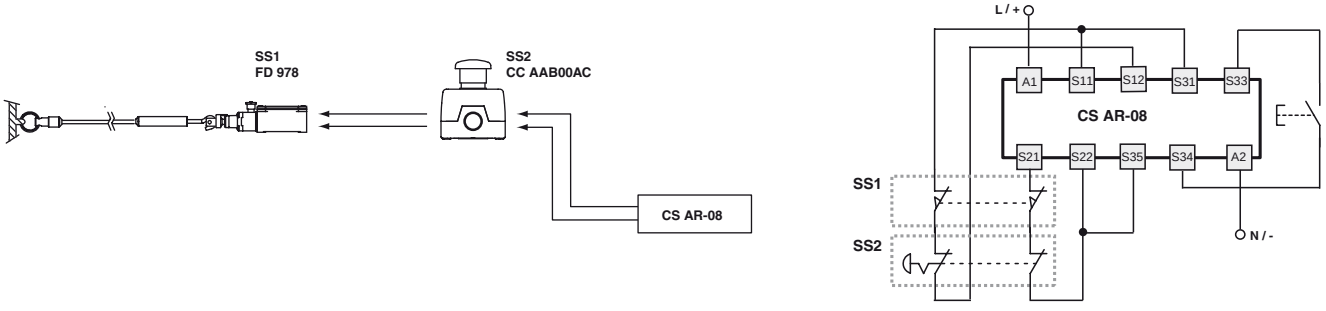
Electro-sensible barrier monitoring (ESPE) with two outputs OSSD. System in safety category 2 or 4 according to the barrier.

Application examples: guard monitoring in mixed technology, sensor + switch, safety category 4

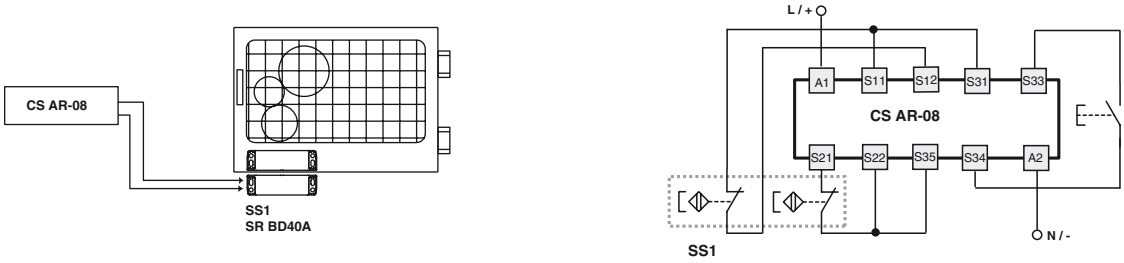


Safety gate monitoring through one switch and one inductive sensor. The positive opening of the switch is required. System in safety category 4.

Application examples: switch and emergency push button monitoring, safety category 3

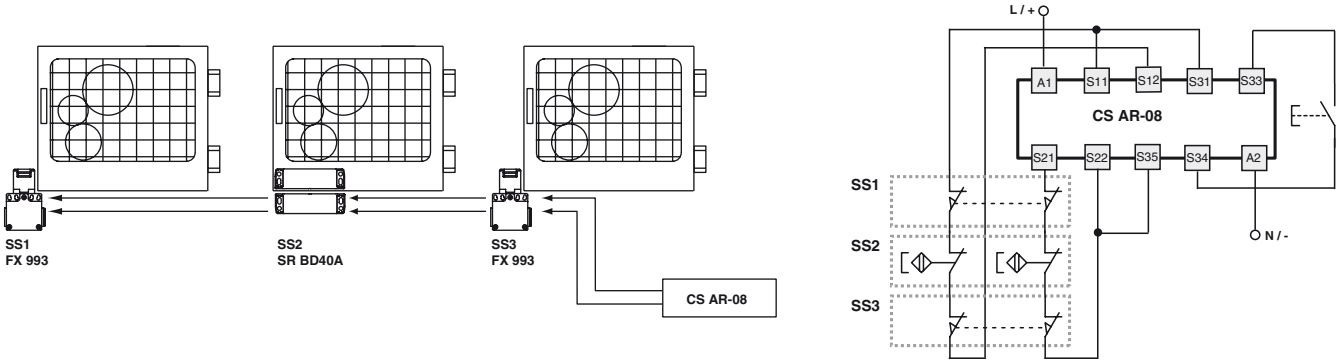


Application examples: safety magnetic sensors monitoring, safety category 4



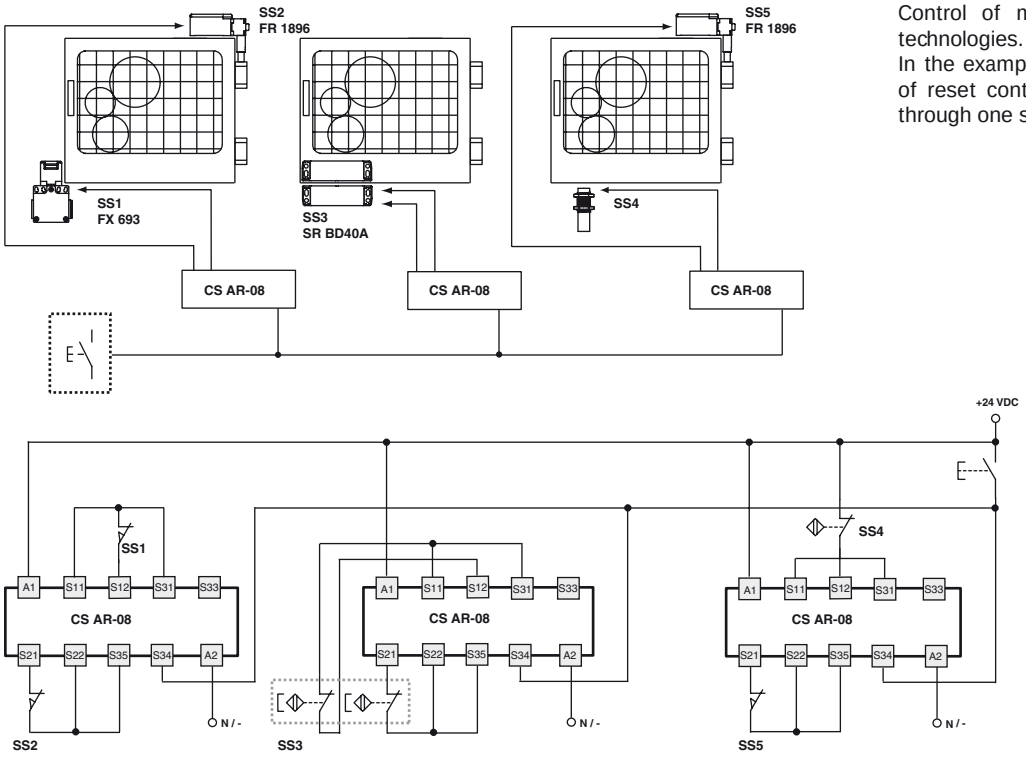
Safety gate monitoring through one coded magnetic sensor. System in safety category 4.

Application examples: series of switches and magnetic sensors monitoring, safety category 3



Control of more guards through switches and magnetic sensors. System in category 3.
- The use of one single switch for guard requires that in the risk analysis stage it would be possible to exclude the mechanical breaking of same
- The sensor must have double coded channel.
- Verify possible requirements of the type C standard concerning own machinery.

Application examples: possibility of parallel modules reset, safety category 4



Control of more guards through different technologies. System in safety category 4. In the example is pointed out the possibility of reset contemporaneously more modules through one single button contact.



Module for emergency stop and gate monitoring

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

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

Markings, quality marks and certificates:

Approval UL: E131787

Complying with the requirements requested by:
Low Voltage Directive 2006/95/EC,
Machinery Directive 2006/42/EC,
Electromagnetic Compatibility 2004/108/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94)	
Protection degree:	IP40 (housing), IP20 (terminals)
Dimensions:	see page 4/141, shape A

General data

Safety category:	category 3 according to EN 954-1
Ambient temperature:	-25°C...+55°C
Mechanical endurance:	>10 millions of operations
Electrical endurance:	>100.000 operations
Pollution degree:	outside 3, inside 2
Rated impulse with stand voltage (Uimp):	4 KV
Rated insulation voltage (Ui):	250 V
Over-voltage category:	III
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:	30 mA
Min. period of start impulse t_{MIN}:	100 ms
Operating time t_A:	50 ms
Releasing time in absence of power supply t_R:	70 ms
Simultaneity time t_C:	infinite

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

Output circuit

Output contacts:	2 NO safety contacts
Contacts type:	forced guided contacts
Contacts material:	silver alloy, gold plated
Max switching voltage:	230/240 VAC; 300 VDC
Max switching current per contact:	6 A
Conventional free air thermal current Ith:	6 A
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A
The number and the load capacity of output contacts can be increased by using expansion modules or contactors:	see page 4/135 - 4/139

Code structure

CS AR-20V024

Kind of start

20	manual or automatic start
21	monitored start

Kind of connection

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

Supply voltage

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

Items available on stock

CS AR-20V024

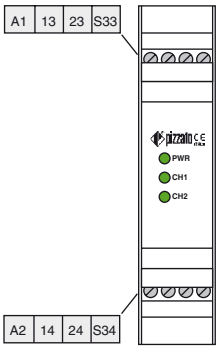
Data type approved by UL

Rated operating voltage (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

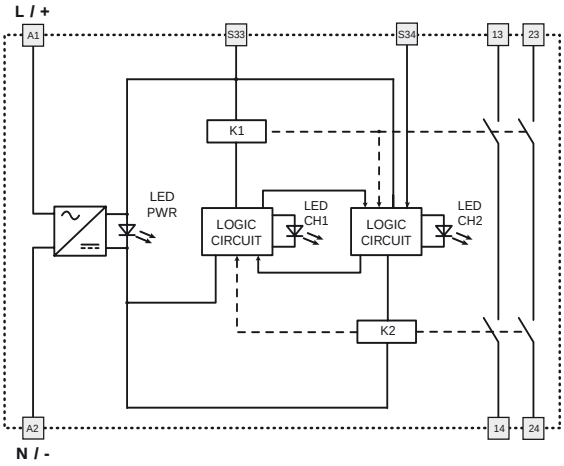
Notes:
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
- Terminal tightening torque of 5-7 Lb-In.
- Only for 24 VAC/DC version, supply from remote class 2 source or limited voltage and limited energy.

Safety module CS AR-20 / CS AR-21

Terminals layout

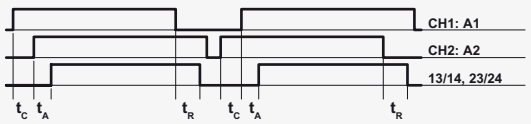


Internal wiring diagram

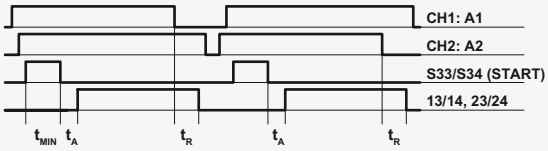


Operation diagrams

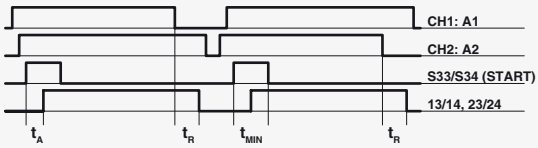
Configuration with automatic start (CS AR-20 only)



Configuration with monitored start (CS AR-21 only)



Configuration with manual start (CS AR-20 only)



Legend:

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

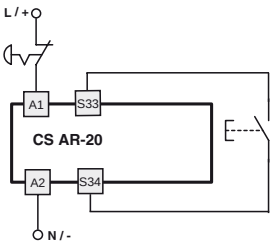
Note:
The configurations with one channel are obtained taking into consideration only the CH1:A1 input. In this case it is necessary to consider the t_R referred to CH1: A1 input , the t_A time referred to CH1:A1 input and to the start, and the t_{MIN} time referred to the start.

Inputs configuration

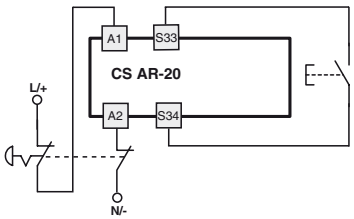
Emergency stop

Input configuration with manual start

1 channel



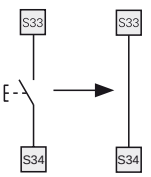
2 channels



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 contacts.





Module for emergency stop and gate monitoring

Main functions
- Single or dual channel input circuit
- Choice between automatic start, manual start (CS AR-22 only) or monitored start (CS AR-23 only)
- Connection of the input channels to opposite potentials
- Small 22,5 mm housing
- 3 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) 6

Markings, quality marks and certificates:

Approval UL: E131787

Complying with the requirements requested by:
Low Voltage Directive 2006/95/EC,
Machinery Directive 2006/42/EC,
Electromagnetic Compatibility 2004/108/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94)	
Protection degree:	IP40 (housing), IP20 (terminals)
Dimensions:	see page 4/141, shape A

General data

Safety category:	category 3 according to EN 954-1
Ambient temperature:	-25°C...+55°C
Mechanical endurance:	>10 millions of operations
Electrical endurance:	>100.000 operations
Pollution degree:	outside 3, inside 2
Rated impulse with stand voltage (Uimp):	4 KV
Rated insulation voltage (Ui):	250 V
Over-voltage category:	III
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 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 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts:	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
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A
The number and the load capacity of output contacts can be increased by using expansion modules or contactors:	see page 4/135 - 4/139

Code structure

CS AR-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%

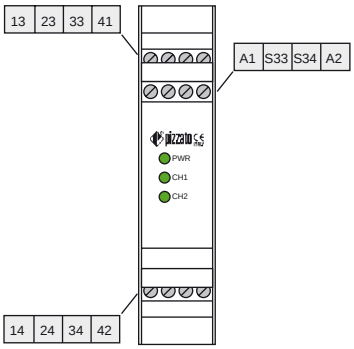
Data type approved by UL

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

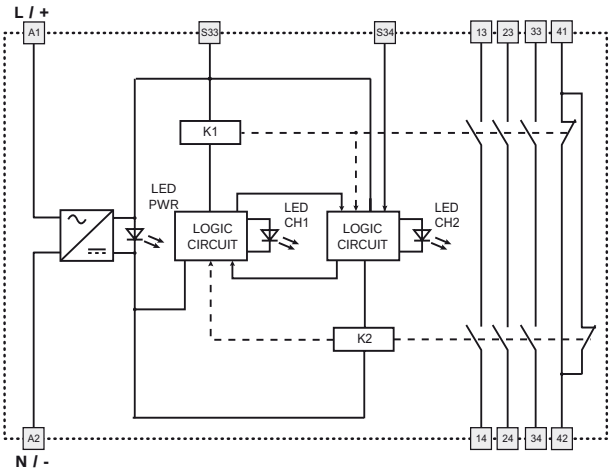
Notes:
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
- Terminal tightening torque of 5-7 Lb-In.
- Only for 24 VAC/DC version, supply from remote class 2 source or limited voltage and limited energy.

Safety module CS AR-22 / CS AR-23

Terminals layout

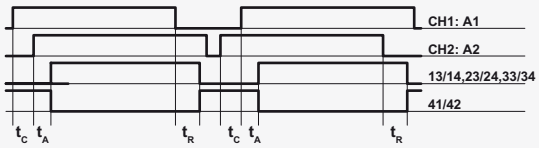


Internal wiring diagram

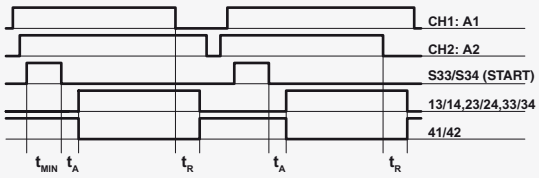


Operation diagrams

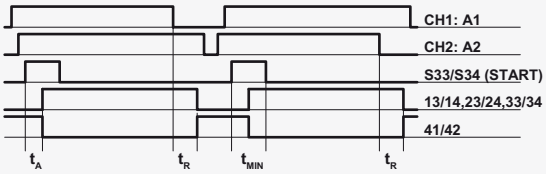
Configuration with automatic start (CS AR-22 only)



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

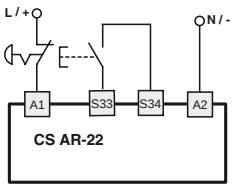
Note:
The configurations with one channel are obtained taking into consideration only the CH1:A1 input. In this case it is necessary to consider the t_R referred to CH1: A1 input , the t_A time referred to CH1:A1 input and to the start, and the t_{MIN} time referred to the start.

Inputs configuration

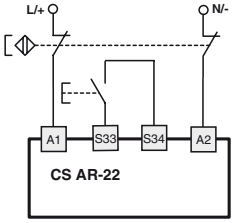
Emergency stop

Input configuration with manual start

1 channel



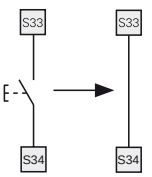
2 channels



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.





Module for emergency stop and gate monitoring

Main functions
- 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) 6

Markings, quality marks and certificates:

Approval UL: E131787

Complying with the requirements requested by:
Low Voltage Directive 2006/95/EC,
Machinery Directive 2006/42/EC,
Electromagnetic Compatibility 2004/108/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94)	
Protection degree:	IP40 (housing), IP20 (terminals)
Dimensions:	see page 4/142, shape D

General data

Safety category:	category 2 according to EN 954-1
Ambient temperature:	-25°C...+55°C
Mechanical endurance:	>10 millions of operations
Electrical endurance:	>100.000 operations
Pollution degree:	outside 3, inside 2
Rated impulse with stand voltage (Uimp):	4 KV
Rated insulation voltage (Ui):	250 V
Over-voltage category:	III
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:	+10% ... -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 t_{MIN}:	100 ms
Operating time t_A:	50 ms
Releasing time in absence of power supply t_R:	50 ms
Simultaneity time t_C:	infinite

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

Output circuit

Output contacts:	2 NO safety contacts
Contacts type:	forced guided contacts
Contacts material:	silver alloy
Max switching voltage:	230/240 VAC; 300 VDC
Max switching current per contact:	6 A
Conventional free air thermal current Ith:	6 A
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A
The number and the load capacity of output contacts can be increased by using expansion modules or contactors:	see page 4/135 - 4/139

Code structure

CS AR-40V024

Kind of start

40	manual or automatic start
41	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%

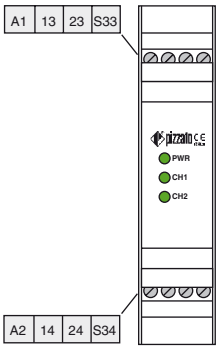
Data type approved by UL

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

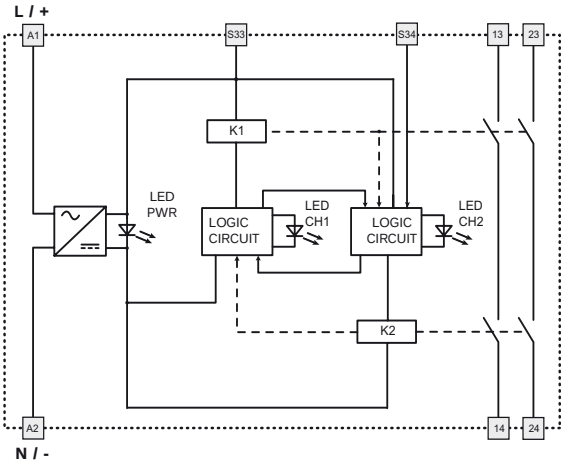
Notes:
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
- Terminal tightening torque of 5-7 Lb-In.
- Only for 24 VAC/DC version, supply from remote class 2 source or limited voltage and limited energy.

Safety module CS AR-40 / CS AR-41

Terminals layout

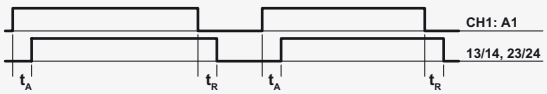


Internal wiring diagram

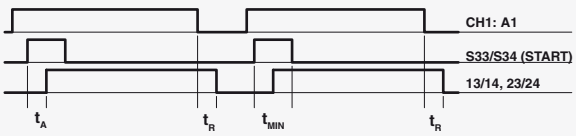


Operation diagrams

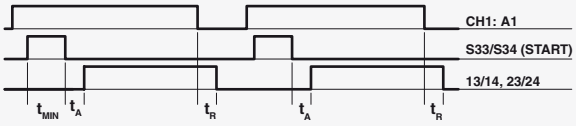
Configuration with automatic start (CS AR-40 only)



Configuration with monitored start (CS AR-40 only)



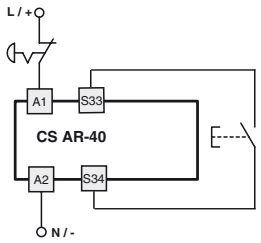
Configuration with manual start (CS AR-41 only)



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

Inputs configuration

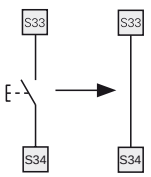
Emergency stop
Input configuration with manual start



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.

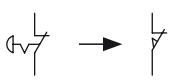


Monitored start

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.





Module for emergency stop, gate monitoring, safety mats and bumpers with 4 wires technology

Main functions
- Dual channel input circuit
- Choice between automatic start, manual start or monitored start
- Connectible to electromechanical contacts, to safety mats or to safe edges
- Output contacts:
  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) 6

Markings, quality marks and certificates:

Approval UL: E131787

Complying with the requirements requested by:
Low Voltage Directive 2006/95/EC,
Machinery Directive 2006/42/EC,
Electromagnetic Compatibility 2004/108/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94)	
Protection degree:	IP40 (housing), IP20 (terminals)
Dimensions:	see page 4/141, shape A

General data

Safety category:	category 4 according to EN 954-1
Ambient temperature:	-25°C...+55°C
Mechanical endurance:	>10 millions of operations
Electrical endurance:	>100.000 operations
Pollution degree:	outside 3, inside 2
Rated impulse with stand voltage (Uimp):	4 KV
Rated insulation voltage (Ui):	250 V
Over-voltage category:	III
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:	≤ 200 Ω
Current for each input:	10 mA
Min. period of start impulse t_{MIN}:	150 ms
Operating time t_A:	120 ms
Releasing time t_{R1}:	< 10 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 60947-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts:	2 NO safety contacts
Contacts type:	forced guided contacts
Contacts material:	silver alloy, gold plated
Max switching voltage:	230/240 VAC; 300 VDC
Max switching current per contact:	6 A
Conventional free air thermal current Ith:	6 A
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A
The number and the load capacity of output contacts can be increased by using expansion modules or contactors:	see page 4/135 - 4/139

Code structure

CS AR-51V024

Kind of connection

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

Supply voltage

024	24 VAC/DC	±15%

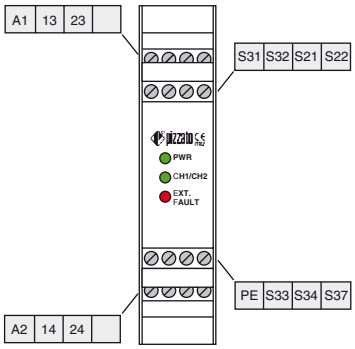
Data type approved by UL

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-51

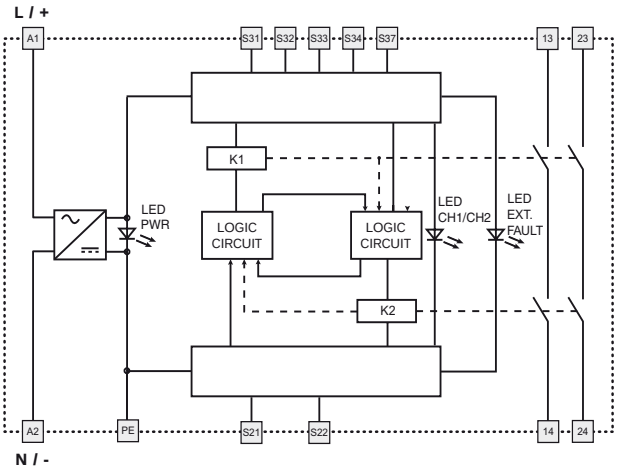
Terminals layout



PE terminal connection
The PE terminal has to be connected to the equipotential circuit of machine protection if it is necessary.
This connection is made for functional reason, to reduce effects of an insulation fault on the machine operation.
In particular, faults towards ground on control circuits must not cause an unwanted starting, either dangerous movements or obstruct the machine stop.

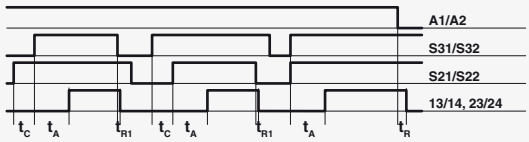
"EXT. FAULT" LED function
When a pressure is exerted on surfaces of a bumper or a safety mat or a bumper, we obtain a short-circuit between the two conductive elements which form the device and are connected to the entry channels of the safety module.
The produced signal cause the LED EXT.FAULT lighting to signal the short-circuit between channels and the output contacts opening, which produce the block of the control circuit and the safety setting of the machine. The EXT.FAULT LED does not activate in the case of wires or internal connection interruption of safety mat or bumper.

Internal wiring diagram

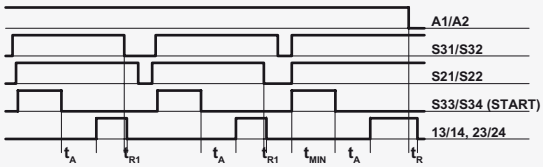


Operation diagrams

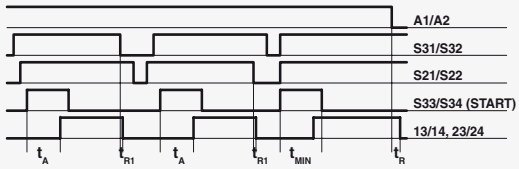
Configuration with automatic start



Configuration with monitored start



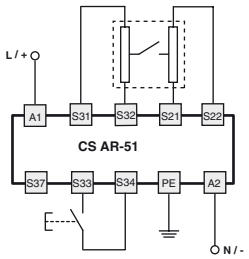
Configuration with manual start



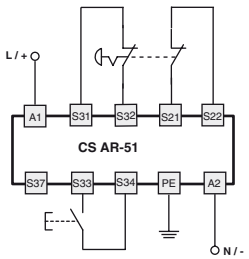
Legend:
t_{MIN}: Min. period of start impulse
t_C: Simultaneity time
t_A: Operating time
t_{R1}: Releasing time
t_R: Releasing time in absence of power supply

Inputs configuration

Safety mats and safe edges
Input configuration with manual start
2 channels



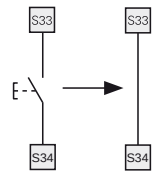
Emergency stop
Input configuration with manual start
2 channels



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

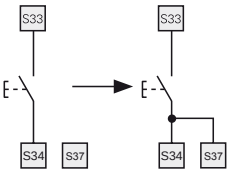
Automatic start

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 add the connection between S34 and S37 terminals.



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 and gate monitoring with delayed contacts at the opening of the input channels

Main functions
- Single or dual channel input circuit
- Choice between automatic start, manual start or monitored start
- Connection of the input channels to opposite potentials
- 45 mm housing
- 2 NO safety instantaneous contacts, 1 NC auxiliary instantaneous contact, 2 NO safety delayed 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) 6

Markings, quality marks and certificates:

Approval UL: E131787

Complying with the requirements requested by:
Low Voltage Directive 2006/95/EC,
Machinery Directive 2006/42/EC,
Electromagnetic Compatibility 2004/108/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94)	
Protection degree:	IP40 (housing), IP20 (terminals)
Dimensions:	see page 4/142, shape C

General data

Safety category according to EN 954-1:	category 4 (instantaneous contacts) category 3 (delayed contacts)
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:	III
Weight:	0,45 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:	< 10 VA
Rated power consumption DC:	< 5 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_{R1}:	20 ms
Releasing time in absence of power supply t_R:	70 ms
Releasing time delayed contacts t_{R2}:	see “Code structure”
Simultaneity time t_C:	infinite

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

Output circuit

Output contacts:	2 NO safety instantaneous contacts, 1 NC auxiliary instantaneous contact, 2 NO safety delayed 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
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A
The number and the load capacity of output contacts can be increased by using expansion modules or contactors:	see page 4/135 - 4/139

Code structure

CS AT-00V024-TF1

Releasing time delayed contacts (t_{R2})

0	Fixed time (see TF)
1	from 0,3 to 3 s, step 0,3 s
2	from 1 to 10 s, step 1 s
3	from 3 to 30 s, step 3 s
4	from 30 to 300 s, step 30 s

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%

Releasing time delayed contacts (t_{R2})

TF0.5	fixed 0,5 s
TF1	fixed 1 s
TF3	fixed 3 s
...	.....

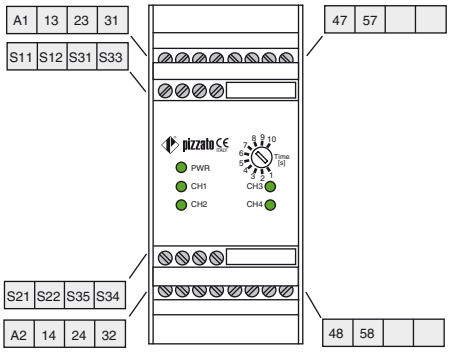
Data type approved by UL

Rated operating voltage (Un):	24 VAC/DC; 50...60 Hz 120 VAC; 50...60 Hz 230 VAC; 50...60 Hz
Rated power consumption AC:	< 10 VA
Rated power consumption DC:	< 5 W
Max switching voltage:	230 VAC
Max switching current per contact:	6 A
Utilization category	C300

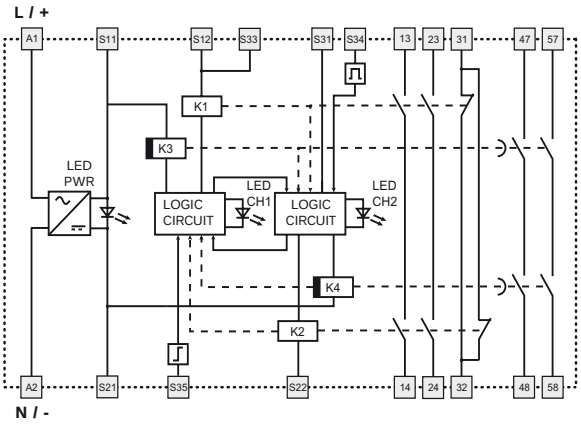
Notes:
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
- Terminal tightening torque of 5-7 Lb-In.
- Only for 24 VAC/DC version, supply from remote class 2 source or limited voltage and limited energy.
- Surrounding air of 55 °C.

Safety module CS AT-0

Terminals layout

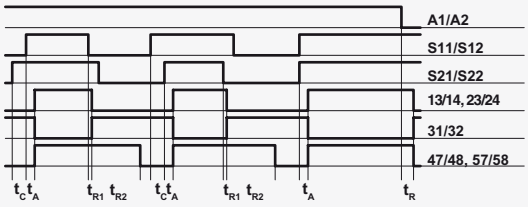


Internal wiring diagram

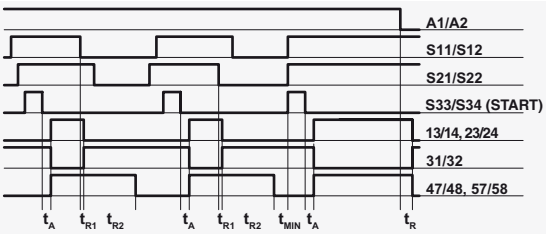


Operation diagrams

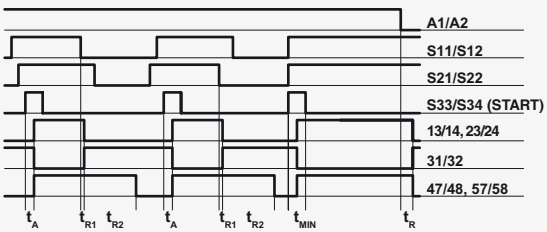
Configuration with automatic start



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
- t_{R2}: Adjustable releasing time delayed contacts (see “Code structure”)

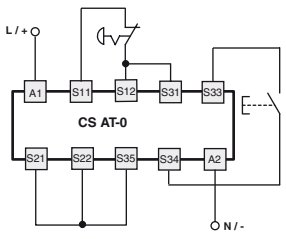
Note:
The configurations with one channel are obtained taking into consideration only the S11/S12 input. In this case it is necessary to consider the t_{R1} and t_{R2} time referred to S11/S12 input, the t_R time referred to the supply, the t_A time referred to S11/S12 input and to the start, and the t_{MIN} time referred to the start.

Inputs configuration

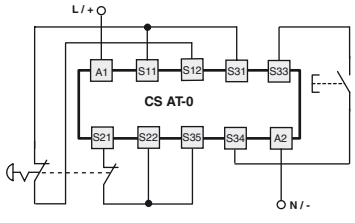
Emergency stop

Input configuration with manual start

1 channel



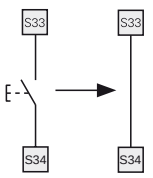
2 channels



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

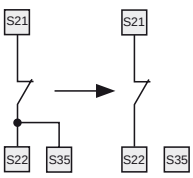
Automatic start

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.





Module for emergency stop and gate monitoring with delayed contacts at the opening of the input channels

Main functions
- Single or dual channel input circuit
- Choice between automatic start, manual start or monitored start
- Connection of the input channels to opposite potentials
- 45 mm housing
- 3 NO safety instantaneous contacts, 2 NO safety delayed 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) 6

Markings, quality marks and certificates:

Approval UL: E131787

Complying with the requirements requested by:
Low Voltage Directive 2006/95/EC,
Machinery Directive 2006/42/EC,
Electromagnetic Compatibility 2004/108/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94)	
Protection degree:	IP40 (housing), IP20 (terminals)
Dimensions:	see page 4/142, shape C

General data

Safety category according to EN 954-1:	category 4 (instantaneous contacts) category 3 (delayed contacts)
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:	III
Weight:	0,5 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:	< 10 VA
Rated power consumption DC:	< 5 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_{R1}:	20 ms
Releasing time in absence of power supply t_R:	70 ms
Releasing time delayed contacts t_{R2}:	see “Code structure”
Simultaneity time t_C:	infinite

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

Output circuit

Output contacts:	3 NO safety instantaneous contacts, 2 NO safety delayed 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
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A
The number and the load capacity of output contacts can be increased by using expansion modules or contactors:	see page 4/135 - 4/139

Code structure

CS AT-10V024-TF1

Releasing time delayed contacts (t_{R2})

0	Fixed time (see TF)
1	from 0,3 to 3 s, step 0,3 s
2	from 1 to 10 s, step 1 s
3	from 3 to 30 s, step 3 s
4	from 30 to 300 s, step 30 s

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%

Releasing time delayed contacts (t_{R2})

TF0.5	fixed 0,5 s
TF1	fixed 1 s
TF3	fixed 3 s
...	.....

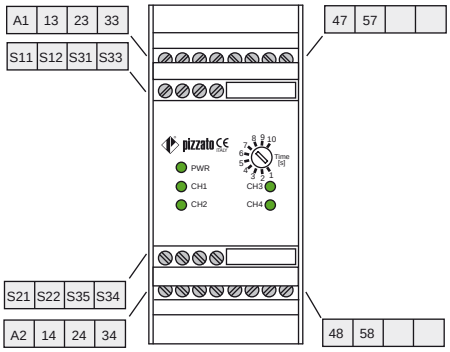
Data type approved by UL

Rated operating voltage (Un):	24 VAC/DC; 50...60 Hz 120 VAC; 50...60 Hz 230 VAC; 50...60 Hz
Rated power consumption AC:	< 10 VA
Rated power consumption DC:	< 5 W
Max switching voltage:	230 VAC
Max switching current per contact:	6 A
Utilization category	C300

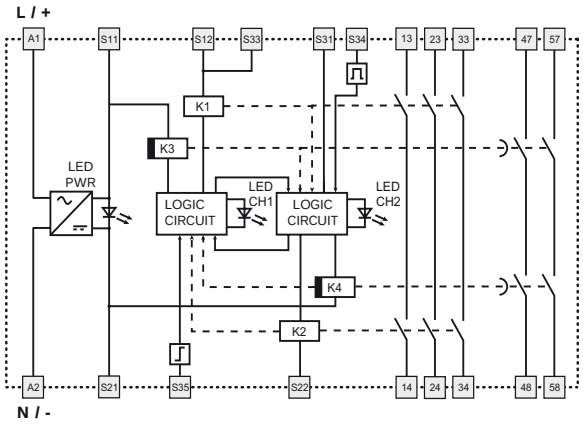
Note:
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
- Terminal tightening torque of 5-7 Lb-In.
- Only for 24 VAC/DC version, supply from remote class 2 source or limited voltage and limited energy.
- Surrounding air of 55 °C.

Safety module CS AT-1

Terminals layout

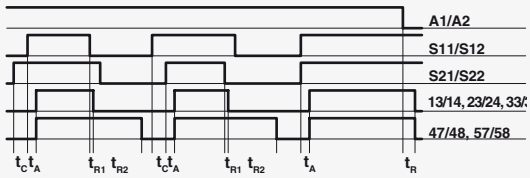


Internal wiring diagram

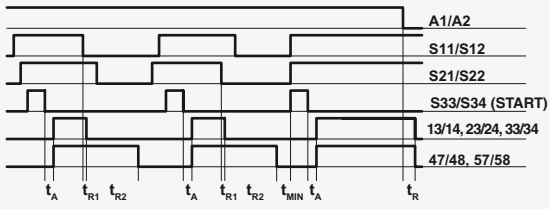


Operation diagrams

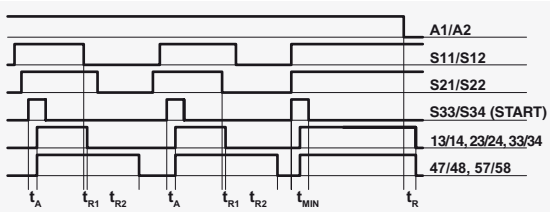
Configuration with automatic start



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
- t_{R2}: Adjustable releasing time delayed contacts (see "Code structure")

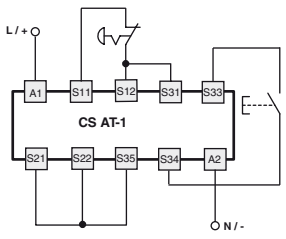
Note:
The configurations with one channel are obtained taking into consideration only the S11/S12 input. In this case it is necessary to consider the t_{R1} and t_{R2} time referred to S11/S12 input, the t_R time referred to the supply, the t_A time referred to S11/S12 input and to the start, and the t_{MIN} time referred to the start.

Inputs configuration

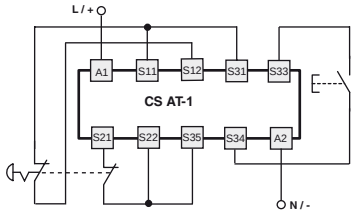
Emergency stop

Input configuration with manual start

1 channel



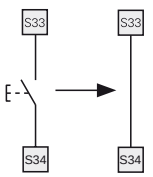
2 channels



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

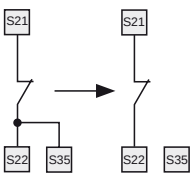
Automatic start

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.



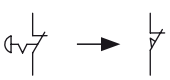
Monitored start

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.





Module for emergency stop and gate monitoring with delayed contacts at the opening of the input channels

Main functions
- Single or dual channel input circuit
- Choice between automatic start, manual start or monitored start
- Connection of the input channels to opposite potentials
- 22,5 mm housing
- 2 NO safety instantaneous contacts, 1 NO safety delayed 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) 6

Markings, quality marks and certificates:

Approval UL: E131787

Complying with the requirements requested by:
Low Voltage Directive 2006/95/EC,
Machinery Directive 2006/42/EC,
Electromagnetic Compatibility 2004/108/EC

Technical data

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

Protection degree:	IP40 (housing), IP20 (terminals)
Dimensions:	see page 4/142, shape A

General data

Safety category according to EN 954-1:	category 4 (instantaneous contacts) category 3 (delayed contacts)
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:	III
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:	< 10 VA
Rated power consumption DC:	< 5 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}:	15 ms
Releasing time in absence of power supply t_R:	100 ms
Releasing time delayed contacts t_{R2}:	see “Code structure”
Simultaneity time t_C:	infinite

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

Output circuit

Output contacts:	2 NO safety instantaneous contacts, 1 NO safety delayed 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
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A
The number and the load capacity of output contacts can be increased by using expansion modules or contactors:	see page 4/135 - 4/139

Code structure

CS AT-20V024-TF1

Releasing time delayed contacts (t_{R2})

0	Fixed time (see TF)
1	from 0,3 to 3 s, step 0,3 s
2	from 1 to 10 s, step 1 s
3	from 3 to 30 s, step 3 s
4	from 30 to 300 s, step 30 s

Kind of connection

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

Supply voltage

024	24 VAC/DC	±15%

Releasing time delayed contacts (t_{R2})

TF0.5	fixed 0,5 s
TF1	fixed 1 s
TF3	fixed 3 s
...	.....

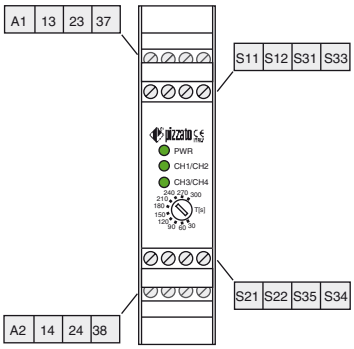
Data type approved by UL

Rated operating voltage (Un):	24 VAC/DC; 50...60 Hz
Rated power consumption AC:	< 10 VA
Rated power consumption DC:	< 5 W
Max switching voltage:	230 VAC
Max switching current per contact:	6 A
Utilization category	C300

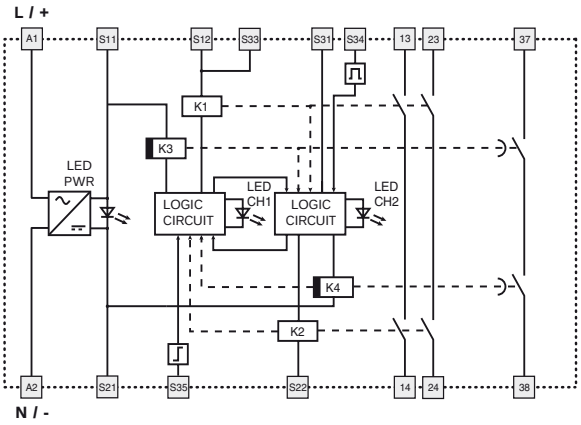
Notes:
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
- Terminal tightening torque of 5-7 Lb-In.
- Only for 24 VAC/DC version, supply from remote class 2 source or limited voltage and limited energy.
- Surrounding air of 55 °C.

Safety module CS AT-2

Terminals layout

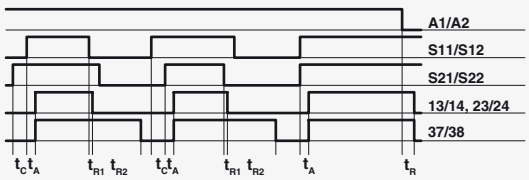


Internal wiring diagram

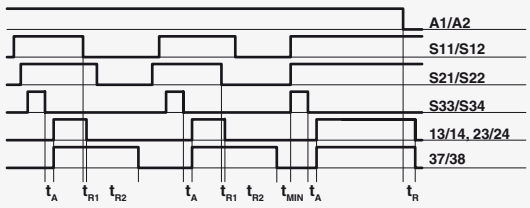


Operation diagrams

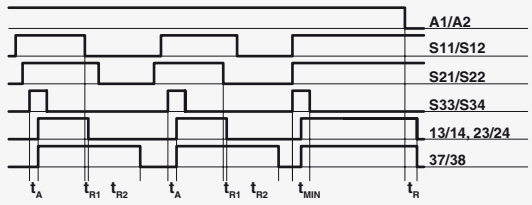
Configuration with automatic start



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
- t_{R2}: Adjustable releasing time delayed contacts (see “Code structure”)

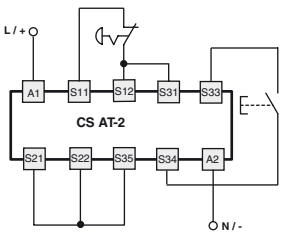
Note:
The configurations with one channel are obtained taking into consideration only the S11/S12 input. In this case it is necessary to consider the t_{R1} and t_{R2} times referred to S11/S12 input, the t_R time referred to the supply, the t_A time referred to S11/S12 input and to the start, and the t_{MIN} time referred to the start.

Inputs configuration

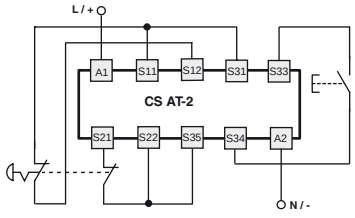
Emergency stop

Input configuration with manual start

1 channel



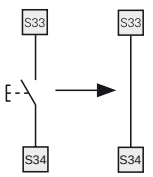
2 channels



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

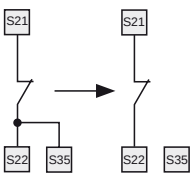
Automatic start

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.





Safety timer module with delayed contacts at energizing

Main functions
- Timed circuits through safety system with self-monitoring and redundancy
- Suitable to control safety interlocked devices
- Small 22,5 mm housing
- Output contacts:
  1 NO safety contact,
  2 NC auxiliary 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) 6

Markings, quality marks and certificates:

Approval UL: E131787

Complying with the requirements requested by:
Low Voltage Directive 2006/95/EC,
Machinery Directive 2006/42/EC,
Electromagnetic Compatibility 2004/108/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94)	
Protection degree:	IP40 (housing), IP20 (terminals)
Dimensions:	see page 4/141, shape A

General data

Safety category:	up to category 4 according to EN 954-1 (dependent from the circuit structure)
Ambient temperature:	from -25°C to +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:	III
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
Operating time t_A:	see “Code structure”
Releasing time in absence of power supply t_R:	40 ms

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

Output circuit

Output contacts:	1 NO safety contact, 2 NC auxiliary 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
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A
The number and the load capacity of output contacts can be increased by using expansion modules or contactors:	see page 4/135 - 4/139

Code structure

CS FS-01V024-TF1

Operating time t_A

0	Fixed time (see TFx)
1	from 0,3 to 3 s, step 0,3 s
2	from 1 to 10 s, step 1 s
3	from 3 to 30 s, step 3 s
4	from 30 to 300 s, step 30 s

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%

Operating time t_A

TF0.5	fixed 0,5 s
TF1	fixed 1 s
TF3	fixed 3 s
TF10	fixed 10 s

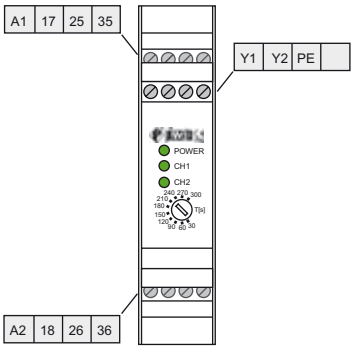
Data type approved by UL

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

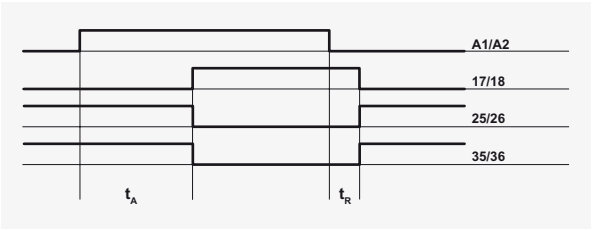
Note:
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
- Terminal tightening torque of 5-7 Lb-In.
- Only for 24 VAC/DC version, supply from remote class 2 source or limited voltage and limited energy.
- Surrounding air of 55 °C.

Safety module CS FS-0

Terminals layout

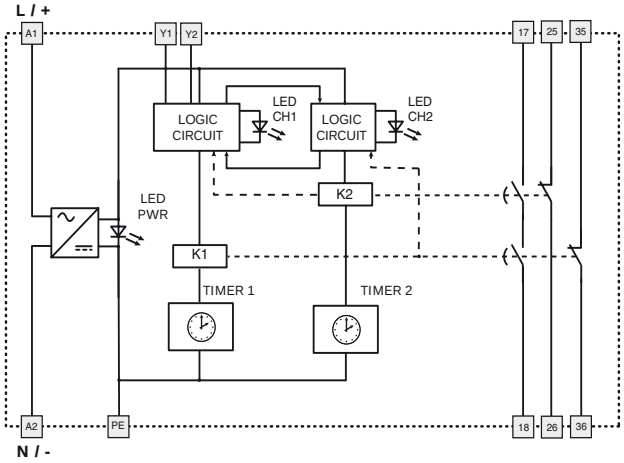


Operations diagram



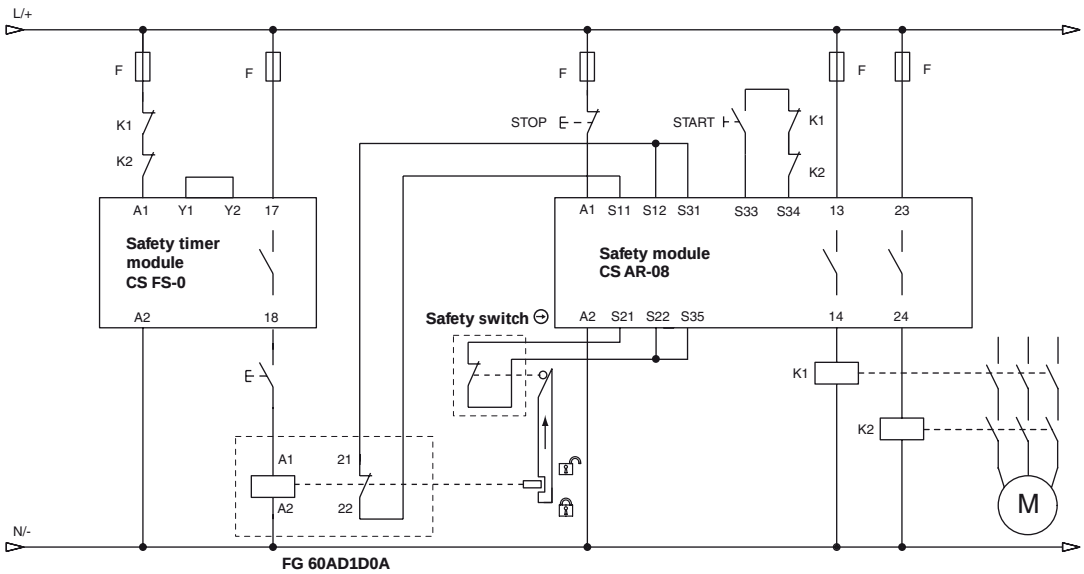
Legend:
t_A: Adjustable operating time (see "Code structure")
t_R: Releasing time in absence of power supply

Internal wiring diagram



Circuit structure

Control of a door-lock system with manual release



State 1: closed and locked gate. Interlock safety switch contacts closed

Start

State 2: base module and relay activated. Module CS FS-0 not powered

Stop

State 3: base module and relay not activated. Timing start of CS FS-0

Timing

State 4: closing delayed contacts of CS FS-0. Possibility of gate release through the push button

The diagram shown displays the operation principle of a typical circuit for the control of a door-lock system with door blocking when interlock safety switch is not energized, and manual release of the single doors.
In order to obtain the complete wiring diagram with different modalities of electrical blocking or with automatic door release, please contact our technical office.

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



Bimanual control device according to EN 574 type III C or safety module with synchronism control

Main functions
- Input circuit with 2 channels for bimanual control device or safety gate
- Connection of the input channels to opposite potentials
- 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) 6

Markings, quality marks and certificates:

Approval UL: E131787
Certificate CE type n°: IMQ BP 210 DM

Complying with the requirements requested by:
Low Voltage Directive 2006/95/EC,
Machinery Directive 2006/42/EC,
Electromagnetic Compatibility 2004/108/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94)	
Protection degree:	IP40 (housing), IP20 (terminals)
Dimensions:	see page 4/141, shape A

General data

Safety category:	category 4 according to EN 954-1
Device type for bimanual control:	EN 574: type III C
Ambient temperature:	from -25°C to +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:	III
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, 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
Operating time t_A:	50 ms
Releasing time t_{R1}:	20 ms
Releasing time in absence of power supply t_R:	70 ms
Time range for synchronized control t_S:	< 0,5 s

In conformity with standards:
IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN 574, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts:	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
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A
The number and the load capacity of output contacts can be increased by using expansion modules or contactors:	see page 4/135 - 4/139

Code structure

CS DM-01V024

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 DM-01V024

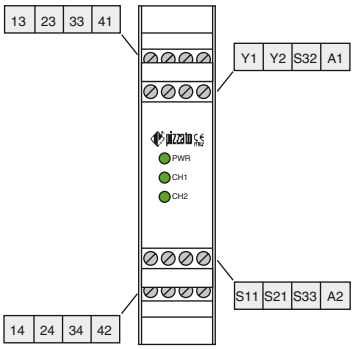
Data type approved by UL

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

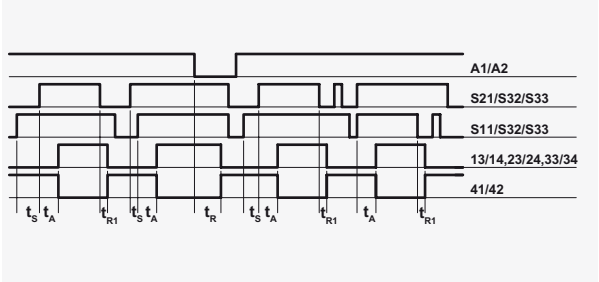
Notes:
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
- Terminal tightening torque of 5-7 Lb-In.
- Only for 24 VAC/DC version, supply from remote class 2 source or limited voltage and limited energy.

Safety module CS DM-01

Terminals layout

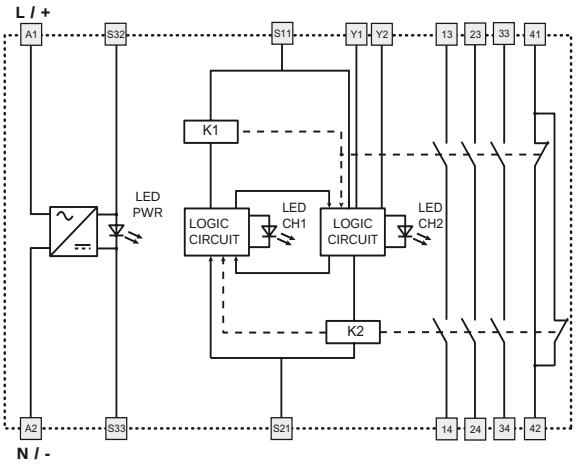


Operations diagram

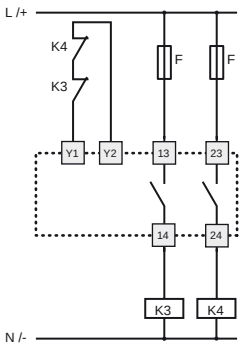


Legend:
t_S: Time range for synchronized control
t_A: Operating time
t_{R1}: Releasing time
t_R: Releasing time in absence of power supply

Internal wiring diagram



Increase the number and the load capacity of the contacts

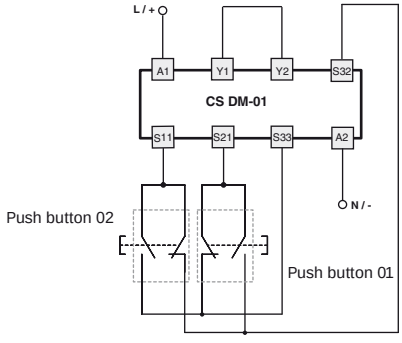


Feedback circuit
for external contactors

If necessary the number and the load capacity of output contacts can be increased by using expansion modules or contactors with forced guided contacts. For control of the external contactors, a NC contact of each relay is connected to the feedback circuit of the safety module.

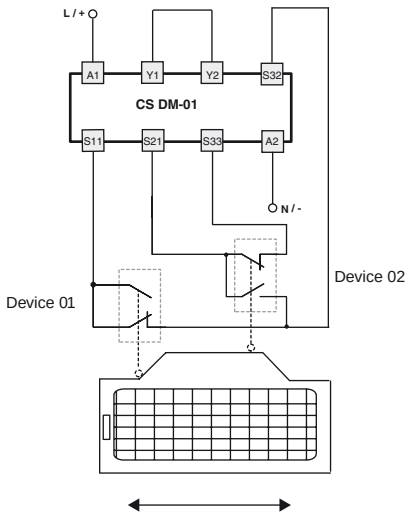
Inputs configuration

Bimanual control device type III C according to EN 574



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

Safety gate monitoring with automatic start wiring and simultaneity between channels < 0,5 s (safety category 4)



Expansion module **CS ME-01**, up to category 4 according to EN 954-1



Expansion modules for output contacts

Main functions
- Possibility of control with 1 or 2 channels
- Connection of the input channels to opposite potentials
- Small 22,5 mm housing
- Output contacts:
  5 NO safety contacts,
  1 NC auxiliary contact,
  1 NC feedback 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) 6

Markings, quality marks and certificates:

Approval UL: E131787

Complying with the requirements requested by:
Low Voltage Directive 2006/95/EC,
Machinery Directive 2006/42/EC,
Electromagnetic Compatibility 2004/108/EC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94)	
Protection degree:	IP40 (housing), IP20 (terminals)
Dimensions:	see page 4/141, shape A

General data

Safety category:	up to category 4 according to EN 954-1 (dependent on the base module)
Ambient temperature:	from -25°C to +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:	III
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
Operating time t_A:	40 ms
Releasing time in absence of power supply t_R:	40 ms
Simultaneity time t_C:	infinite

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

Output circuit

Output contacts:	5 NO safety contacts, 1 NC auxiliary contact, 1 NC feedback 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
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A

Code structure

CS ME-01V024

Kind of connection

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

Supply voltage

024	24 VAC/DC	±15%

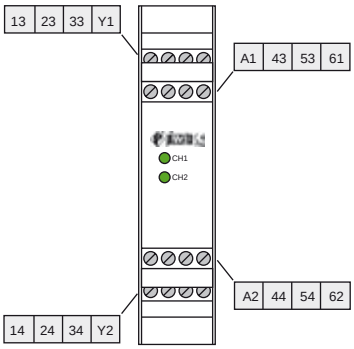
Data type approved by UL

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

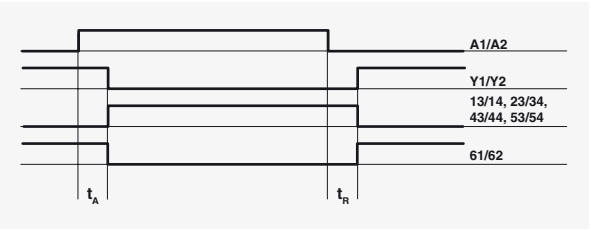
Notes:
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
- Terminal tightening torque of 5-7 Lb-In.
- Only for 24 VAC/DC version, supply from remote class 2 source or limited voltage and limited energy.

Expansion module CS ME-01

Terminals layout

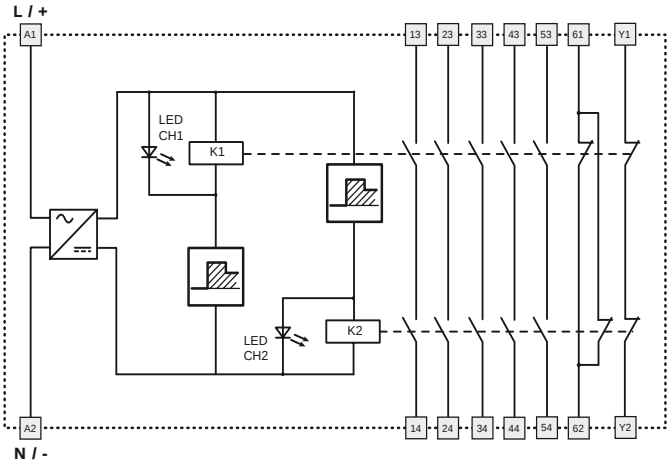


Operations diagram



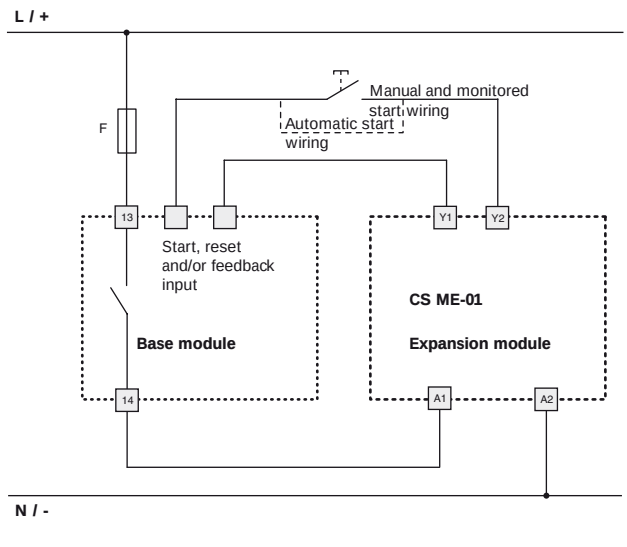
Legend:
t_A: Operating time
t_R: Releasing time in absence of power supply

Internal wiring diagram



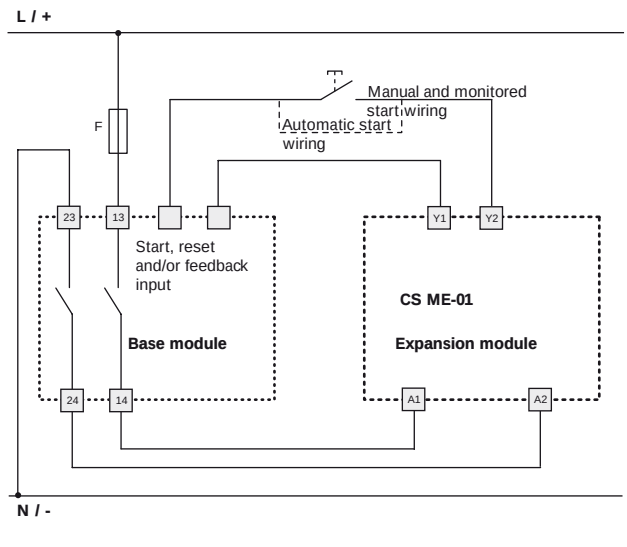
Inputs configuration

1 channel control



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

2 channels control





Expansion module with delayed contacts at de-energizing

Main functions
- 4 delayed time 0,5 - 1 - 2 and 3 s
- Possibility of control with 1 or 2 channels
- Small 22,5 mm housing
- Output contacts:
  4 NO safety contacts,
  2 NC auxiliary contact,
  1 NC feedback contact
- Supply voltages: 24 VDC

Technical data

Housing

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94)	
Protection degree:	IP40 (housing), IP20 (terminals)
Dimensions:	see page 4/141, shape A

General data

Safety category:	up to category 4 according to EN 954-1 (dependent on the base module)
Ambient temperature:	from -25°C to +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:	III
Weight:	0,2 Kg

Power supply

Rated operating voltage (Un):	24 VDC
Max residual ripple in DC:	10%
Supply voltage tolerance:	±15% of Un
Rated power consumption DC:	< 2 W

Control circuit

Max input resistance:	≤ 50 Ω
Operating time t_A:	< 100 ms
Releasing time in absence of power supply t_R:	see Code structure

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) 6

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

Markings, quality marks and certificates:

Approval UL: E131787

Output circuit

Output contacts:	4 NO safety contacts, 2 NC auxiliary contact, 1 NC feedback 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
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A

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 ME-20VU24-TF1

Kind of connection

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

Releasing time on de-energisation (t_R)

TF05	fixed 0,5 s
TF1	fixed 1 s
TF2	fixed 2 s
TF3	fixed 3 s

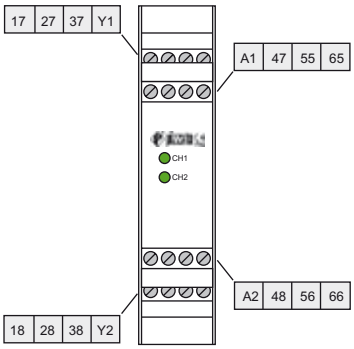
Data type approved by UL

Rated operating voltage (Un):	24 VDC
Rated power consumption DC:	< 2 W
Max switching voltage:	230 VAC
Max switching current per contact:	6 A
Utilization category	C300

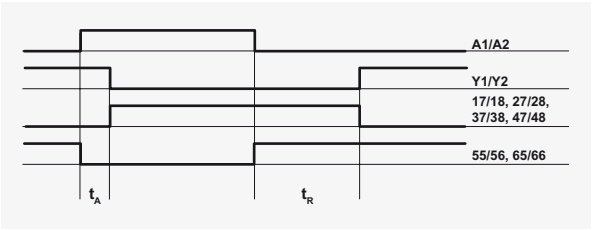
Notes:
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
- Terminal tightening torque of 5-7 Lb-In.
- Supply from remote class 2 source or limited voltage and limited energy.

Expansion module CS ME-20

Terminals layout

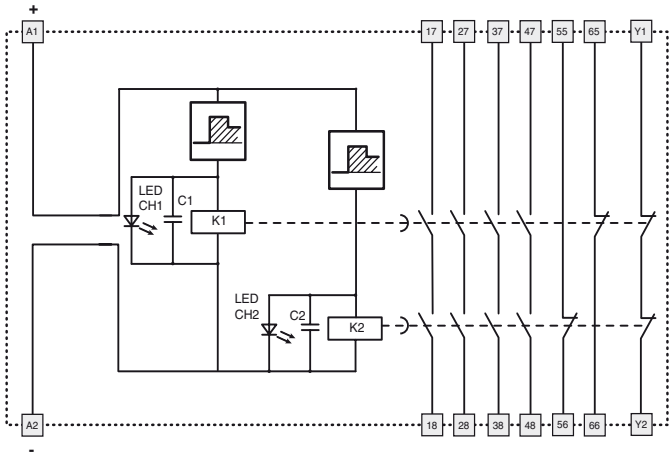


Operations diagram



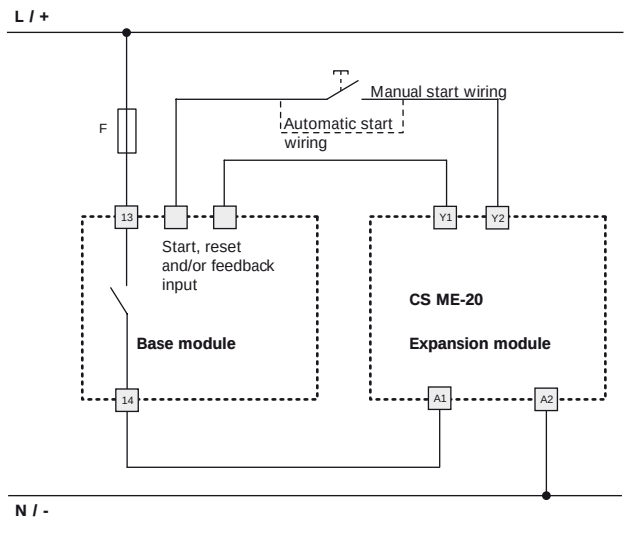
Legend:
t_A: Operating time
t_R: Releasing time in absence of power supply (see “Code structure”)

Internal wiring diagram



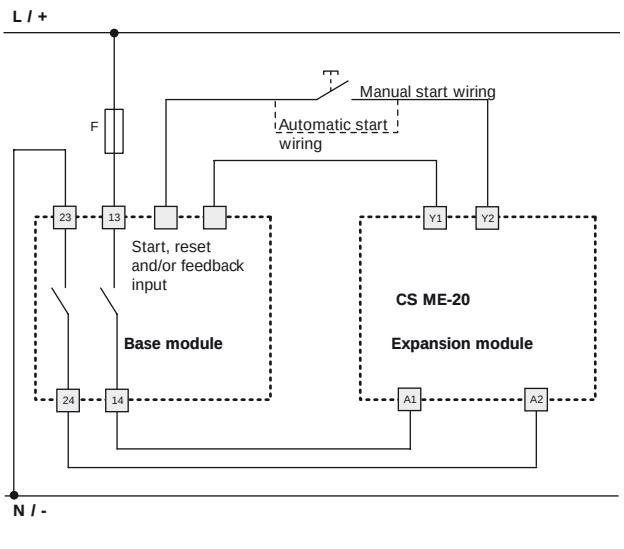
Inputs configuration

1 channel control



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

2 channels control





Expansion module with delayed contacts at de-energizing

Main functions
- Fixed or adjustable delayed time
- Possibility of control with 1 or 2 channels
- 45 mm housing
- Output contacts:
  4 NO safety contacts,
  2 NC auxiliary contact,
  1 NC feedback contact
- Supply voltages: 24 VDC

Technical data

Housing

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

Protection degree:	IP40 (housing), IP20 (terminals)
Dimensions:	see page 4/142, shape C

General data

Safety category:	up to category 4 according to EN 954-1 (dependent on the base module)
Ambient temperature:	from -25°C to +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:	III
Weight:	0,4 Kg

Power supply

Rated operating voltage (Un):	24 VDC
Max residual ripple in DC:	10%
Supply voltage tolerance:	±15% of Un
Rated power consumption DC:	< 2 W

Control circuit

Max input resistance:	≤ 50 Ω
Operating time t_A:	< 200 ms
Releasing time in absence of power supply t_R:	see Code structure

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) 6

In conformity with standards:

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

Markings, quality marks and certificates:

Approval UL: E131787

Output circuit

Output contacts:	4 NO safety contacts, 2 NC auxiliary contact, 1 NC feedback 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
Contacts resistance:	≤ 100 mΩ
Contact protection fuse:	6 A

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 ME-30VU24-TF1

Fixed or adjustable time

0	Fixed time
1	Adjustable time

Kind of connection

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

Releasing time on de-energisation (t_R)

TF1	fixed 1 s (CS ME-30 only)
...	.....
TF12	fixed 12 s (CS ME-30 only)
TS12	from 1 to 12 s, step 1 s (CS ME-31 only)

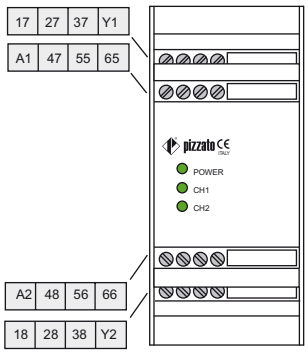
Data type approved by UL

Rated operating voltage (Un):	24 VDC
Rated power consumption DC:	< 2 W
Max switching voltage:	230 VAC
Max switching current per contact:	6 A
Utilization category	C300

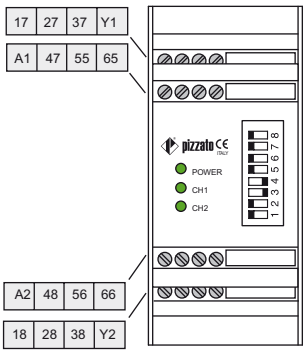
Notes:
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
- Terminal tightening torque of 5-7 Lb-In.
- Supply from remote class 2 source or limited voltage and limited energy.

Expansion module CS ME-30 / CS ME-31

Terminals layout

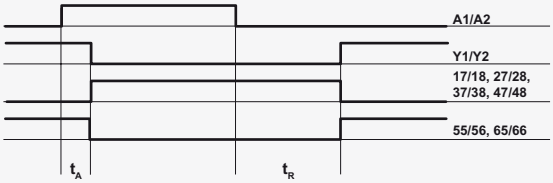


CS ME-30



CS ME-31

Operations diagram

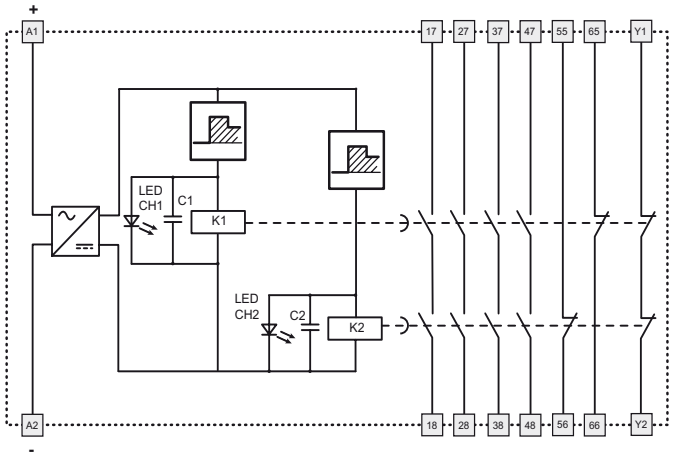


Legend:
t_A: Operating time
t_R: Releasing time in absence of power supply (see "Code structure")

Release time selection t_R (CS ME-31 only)

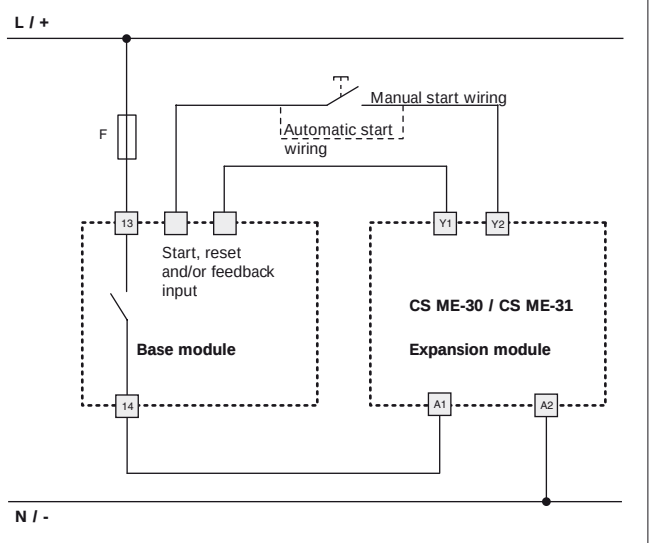
DIP SWITCH	t_R (s)
ON / OFF	1
ON / OFF	2
ON / OFF	3
ON / OFF	4
ON / OFF	5
ON / OFF	6
ON / OFF	7
ON / OFF	8
ON / OFF	9
ON / OFF	10
ON / OFF	11
ON / OFF	12

Internal wiring diagram



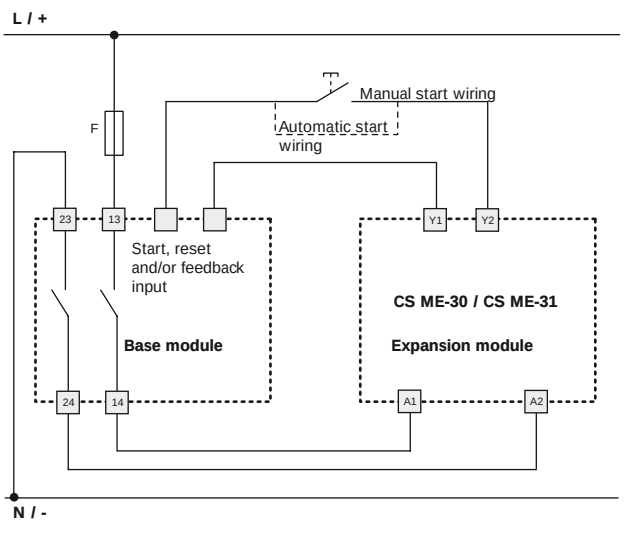
Inputs configuration

1 channel control



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

2 channels control

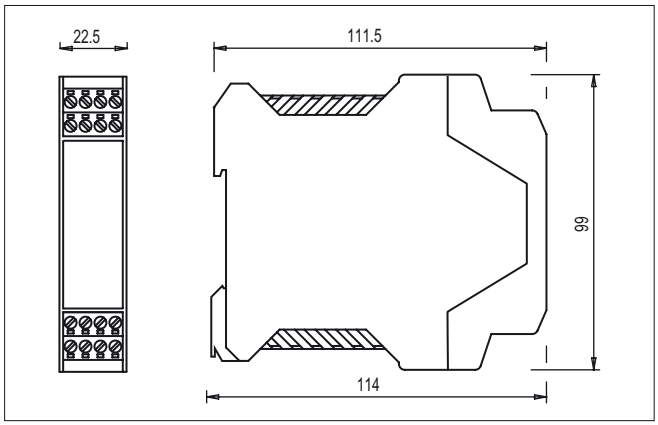


Shape A, 22,5 mm thickness housing

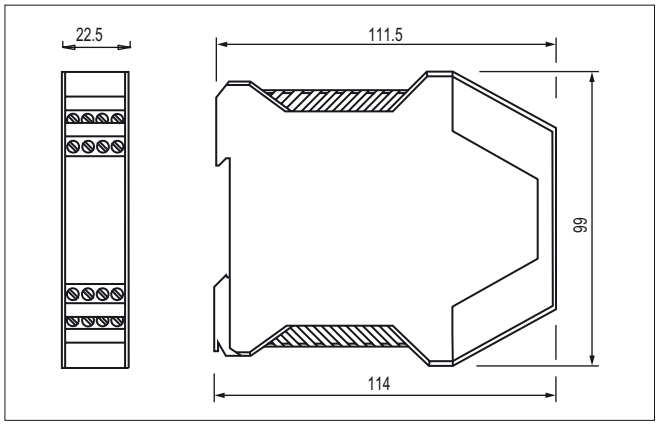
Connection data

Terminals driving torque:	0,5...0,6 Nm
Cross section of the conductors:	0,2...2,5 mm²
	24...12 AWG

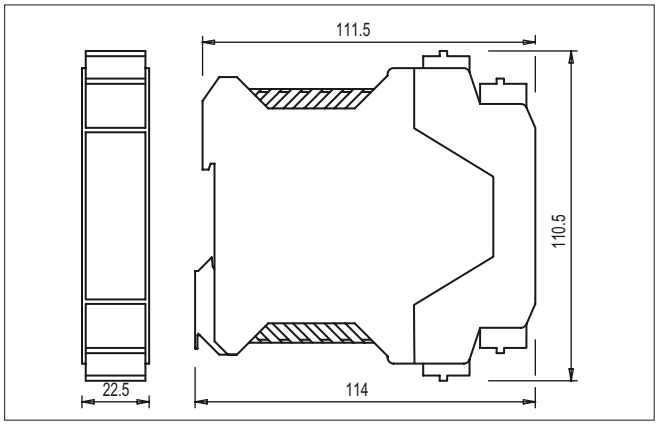
Installation
Snap mounting on DIN-rail



Connector with screw terminals



Screw terminals



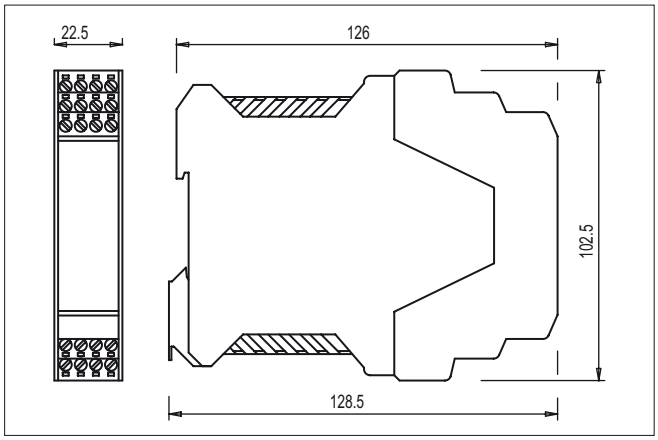
Connector with spring terminals

Shape B, 22,5 mm thickness housing

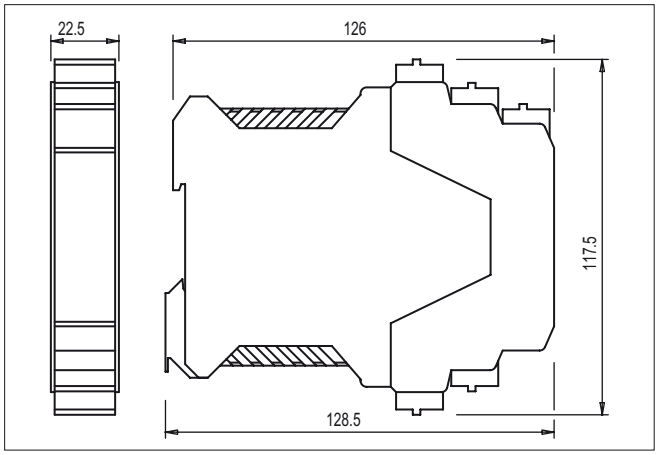
Connection data

Terminals driving torque:	0,5...0,6 Nm
Cross section of the conductors:	0,2...2,5 mm²
	24...12 AWG

Installation
Snap mounting on DIN-rail



Connector with screw terminals

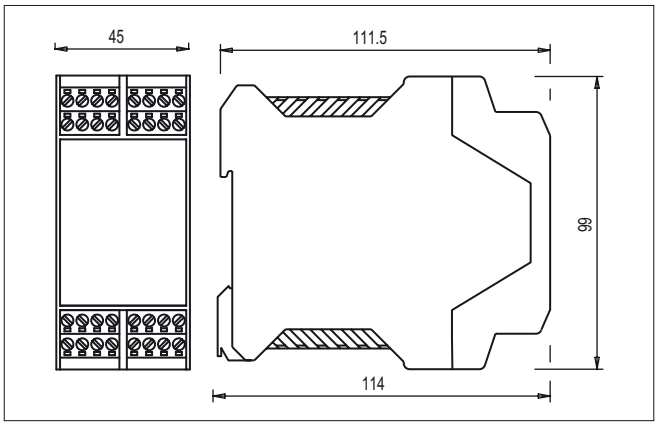


Connector with spring terminals

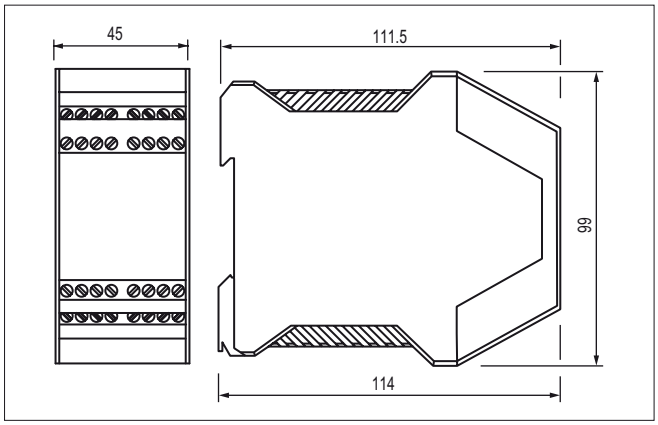
Shape C, 45 mm thickness housing

Connection data
Terminals driving torque: 0,5...0,6 Nm
Cross section of the conductors: 0,2...2,5 mm²
24...12 AWG

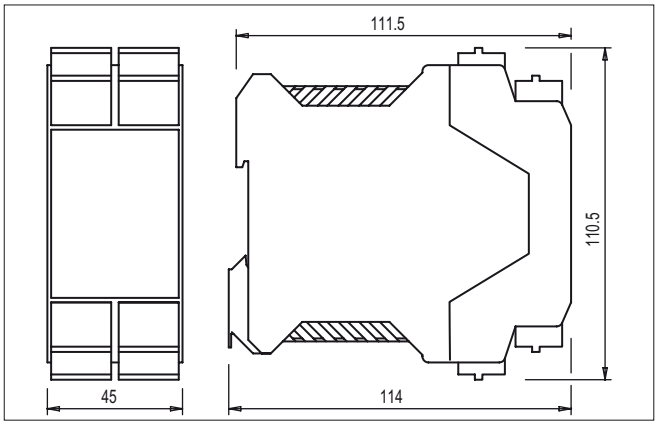
Installation
Snap mounting on DIN-rail



Connector with screw terminals



Screw terminals

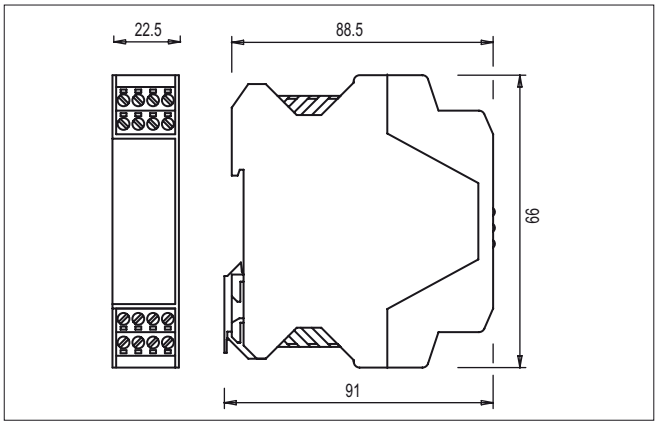


Connector with spring terminals

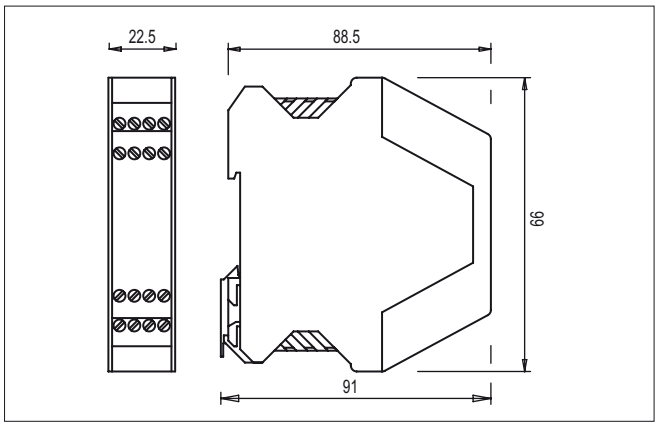
Shape D, 22,5 mm thickness housing

Connection data
Terminals driving torque: 0,5...0,6 Nm
Cross section of the conductors: 0,2...2,5 mm²
24...12 AWG

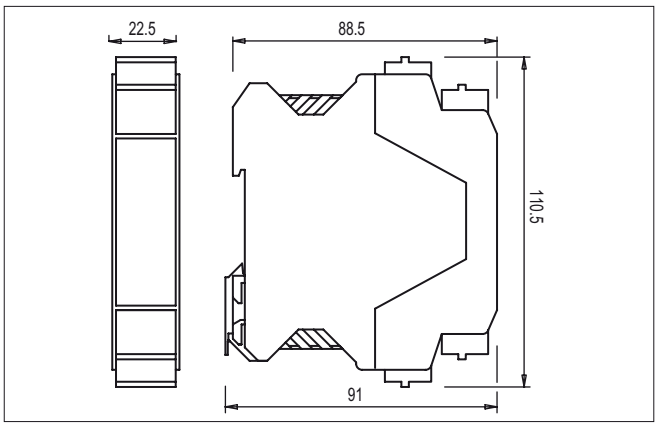
Installation
Snap mounting on DIN-rail



Connector with screw terminals



Screw terminals



Connector with spring terminals