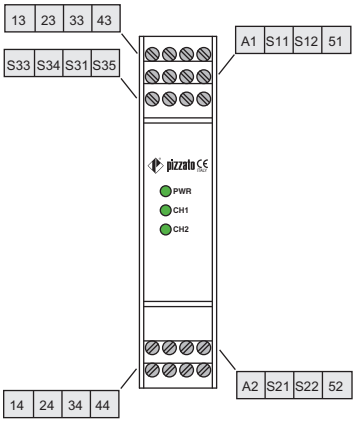
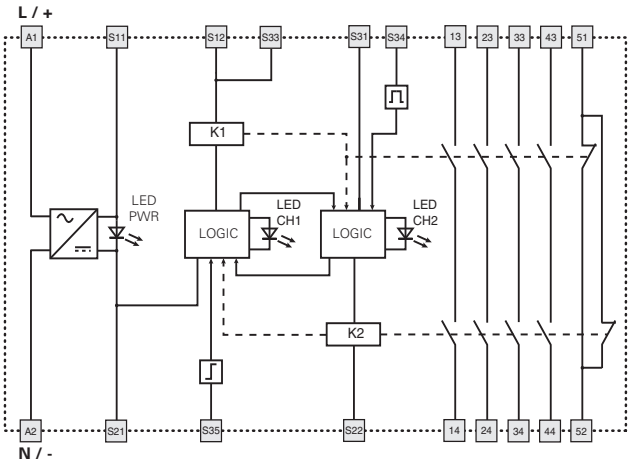
Safety module CS AR-07

Pin assignment

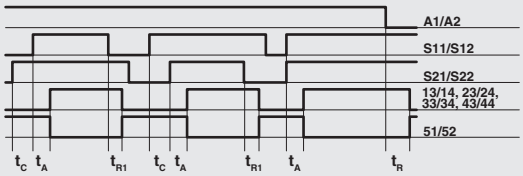


Internal wiring diagram

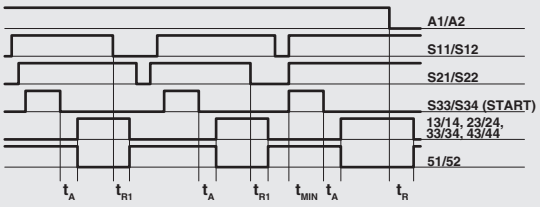


Function diagrams

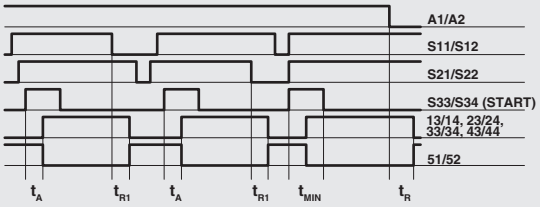
Configuration with automatic start



Configuration with monitored start



Configuration with manual start



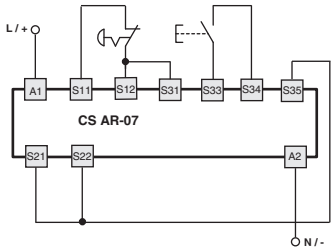
Legend:

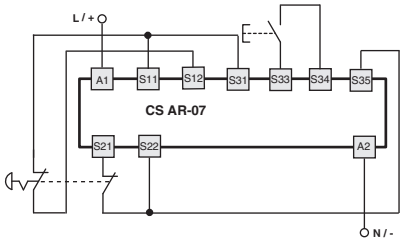
t_{MIN}:	Min. duration of start impulse	t_{R1}:	release time
t_c:	simultaneity time	t_R:	release time in absence of power supply
t_A:	response time		

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

Input configuration

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

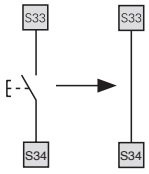




The diagram does not show the exact position of the terminals in the product

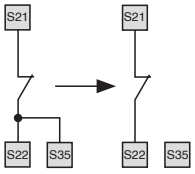
Automatic start

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



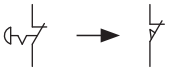
Monitored start

With regard to the indicated diagrams, remove the connection between the S22 and S35 terminals in order to activate the monitored start module.



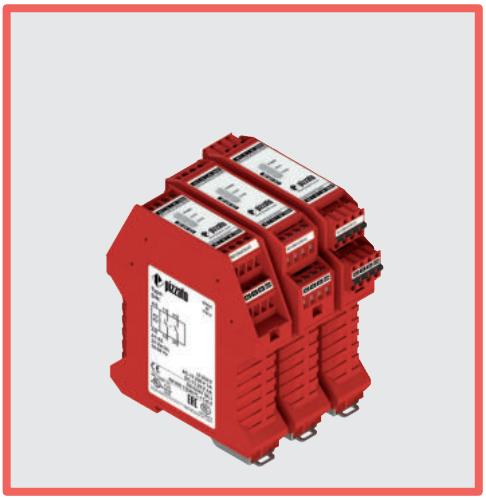
Movable guard monitoring

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



Application examples See page 365

Safety module **CS AR-08**



Module for emergency stops, end position monitoring for movable guards, OSSD semiconductor outputs and magnetic safety sensors

Main features

- For safety applications up to SIL CL 3/PL e
- Input with 1 or 2 channels
- Choice between automatic start, manual start or monitored start
- Can be connected to OSSD semiconductor outputs, to electromechanical contacts or to magnetic safety sensors
- Output contacts: 2 NO safety contacts
- Supply voltage: 12 Vdc, 24 Vac/dc, 120 Vac, 230 Vac
- Possibility of parallel reset of several modules

Utilization categories

Alternating current: AC15 (50…60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 oper. cycles/min.)
Ue (V) 24
Ie (A) 4

Quality marks:

EC type examination certificate: IMQ CP 432 DM
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 18 05 75157 018
EAC approval: RU C-IT.УТ03.B.00035/19

Compliance with the requirements of:

Machinery Directive 2006/42/EC,
EMC Directive 2014/30/EC,
RoHS Directive 2011/65/EU.

Technical data

Housing

Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94

Protection degree acc. to EN 60529:	IP40 (housing), IP20 (terminal strip)
Dimensions:	see page 415, design A

General data

SIL level (SIL CL) up to:	SIL CL 3 acc. to EN 62061
Performance Level (PL) up to:	PL e acc. to EN ISO 13849-1
Safety category up to:	cat. 4 acc. to EN ISO 13849-1
Safety parameters:	see page 481
Ambient temperature:	-25°C…+55°C
Mechanical endurance:	>10 million operating cycles
Electrical endurance:	>100,000 operating cycles
Pollution degree:	external 3, internal 2
Rated impulse withstand voltage (U_{imp}):	4 kV
Rated insulation voltage (U_i):	250 V
Overvoltage category:	II

Supply

Rated supply voltage (U_n):	12 Vdc 24 Vac/dc; 50…60 Hz 120 Vac; 50…60 Hz 230 Vac; 50…60 Hz
Max. DC residual ripple in DC:	10%
Supply voltage tolerance 24 Vac/dc, 120 Vac, 230 Vac:	±15% of U_n
Supply voltage tolerance 12 Vdc:	-10% … +15% of U_n
Power consumption AC:	< 5 VA
Power consumption DC:	< 2 W

Control circuit

Protection against short circuits:	PTC resistance, Ih=0.5 A
PTC times:	response time > 100 ms, release time > 3 s
Maximum resistance per input:	≤ 50 Ω (15 Ω)*
Current per input:	30 mA (70 mA)* (typical)
Min. duration of start impulse t_{MIN}:	> 100 ms
Response time t_A:	< 300 ms (220 ms)*
Release time t_{R1}:	< 20 ms (15 ms)*
Release time in absence of power supply t_R:	< 200 ms (50 ms)*
Simultaneity time t_C:	unlimited

* Version CS AR-08•U12

In compliance with standards:

EN 60204-1, EN ISO 13855, EN ISO 14118, EN ISO 12100, EN ISO 13850, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN 60947-5-3, EN 61508-1, EN 61508-2, EN 61508-4, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 No. 14, GB/T14048.5

Output circuit

Output contacts:	2 NO safety contacts,
Contact type:	forcibly guided
Material of the contacts:	gold-plated silver alloy
Maximum switching voltage:	230/240 Vac; 300 Vdc
Max. current per contact:	6 A
Conventional free air thermal current I_{th}:	6 A
Max. total current ΣI_{th}^2:	36 A^2
Minimum current:	10 mA
Contact resistance:	≤ 100 mΩ
External protection fuse:	4 A

The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See pages 355-364.

Features approved by UL

Rated supply voltage (U_n):	24 Vac/dc; 50…60 Hz, 120 Vac; 50…60 Hz 230 Vac; 50…60 Hz
Power consumption AC:	< 5 VA
Power consumption DC:	< 4 W

Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

Notes:
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.

- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

Features approved by TÜV SÜD

Rated supply voltage (U_n): 24 Vac/dc ± 15%,
120 Vac ± 15%, 230 Vac ± 15%
Power consumption: 5 VA max AC, 2 W max DC
Rated operating current (max.): 4 A
Maximum switching load (max.): 1380 VA
Ambient temperature: -25°C … +55°C
Storage temperature: -25 °C … + 70°C
Protection degree: IP40 (housing), IP20 (terminal strip)
In compliance with standards: 2006/42/EC Machinery Directive, EN ISO 13849-1:2015 (up to Cat. 4 PL e), EN 60947-5-3:2013, EN 61508-1:2010 (up to SIL 3), EN 61508-2:2010 (up to SIL 3), EN 61508-4:2010 (up to SIL 3), EN 62061:2005/A2:2015 (up to SIL CL 3)

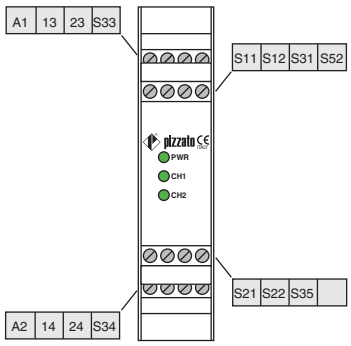
Code structure

CS AR-08V024

Connection type		Supply voltage	
V	Screw terminals	**U12**	12 Vdc
M	Connector with screw terminals	**024**	24 Vac/dc
X	Connector with spring terminals	**120**	120 Vac
		230	230 Vac

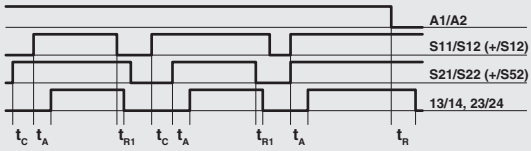
Safety module CS AR-08

Pin assignment

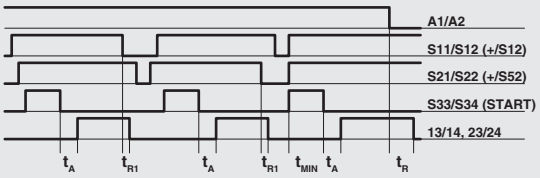


Function diagrams

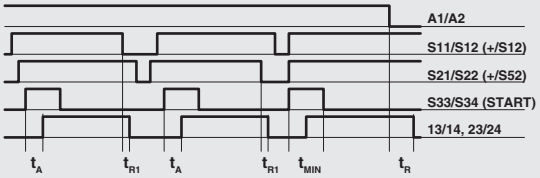
Configuration with automatic start



Configuration with monitored start



Configuration with manual start

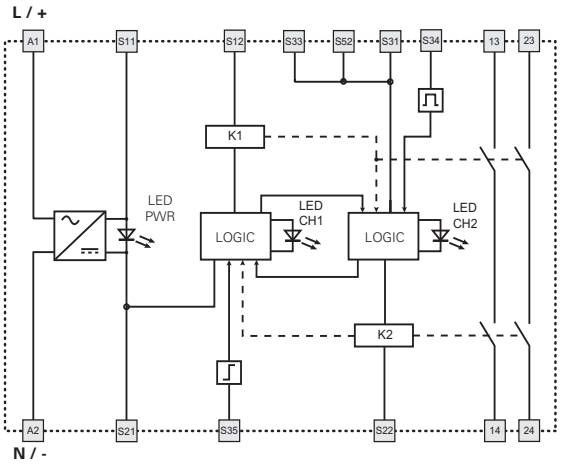


Legend:

t_{MIN}:	Min. duration of start impulse	t_{R1}:	release time
t_C:	simultaneity time	t_R:	release time in absence of power supply
t_A:	response time		

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

Internal wiring diagram

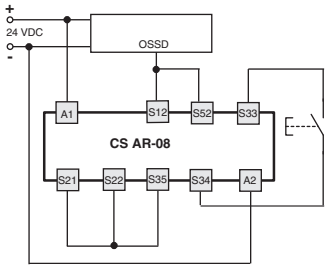


Input configuration

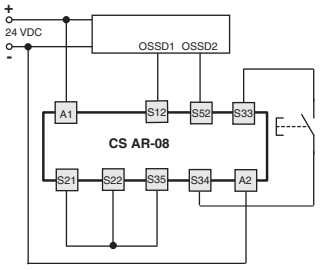
OSSD semiconductor outputs (e.g. ST, NS, NG series or light barriers)

Input configuration with manual start

1 channel



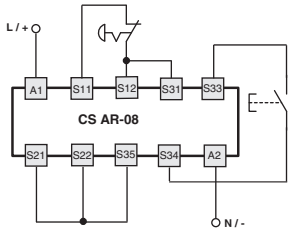
2 channels



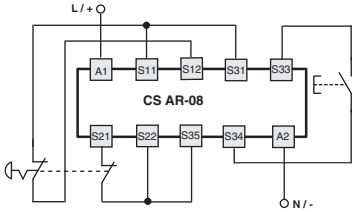
Emergency stop circuits

Input configuration with manual start

1 channel



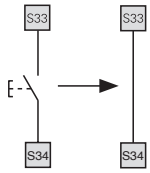
2 channels



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

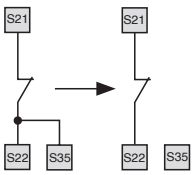
Automatic start

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



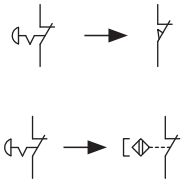
Monitored start

With regard to the indicated diagrams, remove the connection between the S22 and S35 terminals in order to activate the monitored start module.



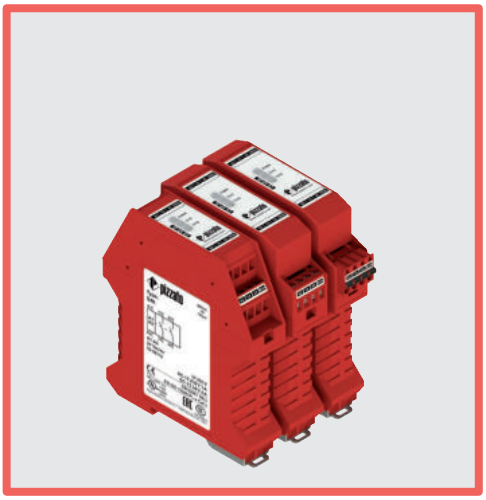
Monitoring of movable guards and magnetic safety sensors

The safety module can monitor emergency stop circuits, control circuits for movable guards as well as magnetic safety sensors. Replace the emergency stop contacts with switch contacts or sensor contacts.
The sensors can only be used in 2-channel configuration.



Application examples See page 365

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



Module for emergency stops and end position monitoring for movable guards

Main features

- For safety applications up to SIL CL 3/PL e
- Input with 1 or 2 channels
- Choice between automatic start, manual start (CS AR-20 only) or monitored start (CS AR-21 only)
- Reduced housing width of 22.5 mm
- 2 NO safety contacts
- Supply voltage: 24 Vac/dc, 120 Vac, 230 Vac

Utilization categories

Alternating current: AC15 (50…60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 oper. cycles/min.)
Ue (V) 24
Ie (A) 4

Quality marks:

EC type examination certificate: IMQ CP 432 DM
UL approval: E131787
CCC approval: 2021000305000107
EAC approval: RU C-IT.УТ03.B.00035/19

Compliance with the requirements of:

Machinery Directive 2006/42/EC,
EMC Directive 2014/30/EC,
RoHS Directive 2011/65/EU.

Technical data

Housing

Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94

Protection degree acc. to EN 60529:	IP40 (housing), IP20 (terminal strip)
Dimensions:	see page 415, design A

General data

SIL level (SIL CL) up to:	SIL CL 3 acc. to EN 62061
Performance Level (PL) up to:	PL e acc. to EN ISO 13849-1
Safety category up to:	cat. 3 acc. to EN ISO 13849-1
Safety parameters:	see page 481
Ambient temperature:	-25°C…+55°C
Mechanical endurance:	>10 million operating cycles
Electrical endurance:	>100,000 operating cycles
Pollution degree:	external 3, internal 2
Rated impulse withstand voltage (U_{imp}):	4 kV
Rated insulation voltage (U_i):	250 V
Overvoltage category:	II

Supply

Rated supply voltage (U_n):	24 Vac/dc; 50…60 Hz 120 Vac; 50…60 Hz 230 Vac; 50…60 Hz
Max. DC residual ripple in DC:	10%
Supply voltage tolerance:	±15% of U_n
Power consumption AC:	< 5 VA
Power consumption DC:	< 2 W

Control circuit

Protection against short circuits:	PTC resistance, Ih=0.5 A
PTC times:	response time > 100 ms, release time > 3 s
Maximum resistance per input:	≤ 50 Ω
Current per input:	70 mA (typical)
Min. duration of start impulse t_{MIN}:	> 100 ms
Response time t_A:	< 200 ms
Release time in absence of power supply t_R:	< 150 ms
Simultaneity time t_C:	unlimited

In compliance with standards:

EN 60204-1, EN ISO 13855, EN ISO 14118, EN ISO 12100, EN ISO 13850, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 No. 14, GB/T14048.5

Output circuit

Output contacts:	2 NO safety contacts
Contact type:	forcibly guided
Material of the contacts:	gold-plated silver alloy
Maximum switching voltage:	230/240 Vac; 300 Vdc
Max. current per contact:	6 A
Conventional free air thermal current I_{th}:	6 A
Max. total current Σ I_{th}^2:	36 A²
Minimum current:	10 mA
Contact resistance:	≤ 100 mΩ
External protection fuse:	4 A

The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See pages 355-364.

Code structure

CS AR-20V024

Start mode	
20	manual or automatic start
21	monitored start

Connection type	
V	Screw terminals
M	Connector with screw terminals
X	Connector with spring terminals

Supply voltage	
024	24 Vac/dc
120	120 Vac
230	230 Vac

Features approved by UL

Rated supply voltage (U_n):	24 Vac/dc; 50…60 Hz 120 Vac; 50…60 Hz 230 Vac; 50…60 Hz
Power consumption AC:	< 5 VA
Power consumption DC:	< 4 W

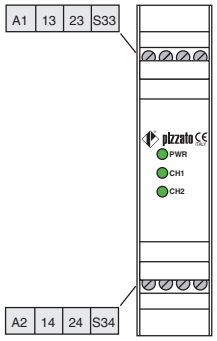
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

Notes:
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.

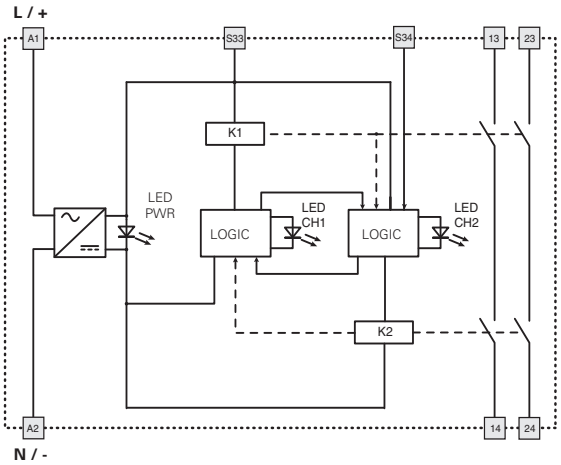
- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

Safety module CS AR-20 / CS AR-21

Pin assignment

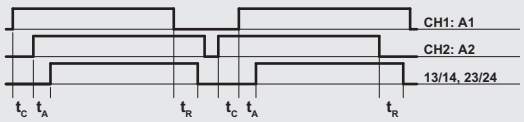


Internal wiring diagram

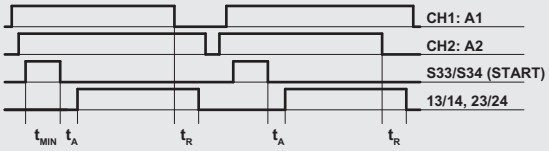


Function diagrams

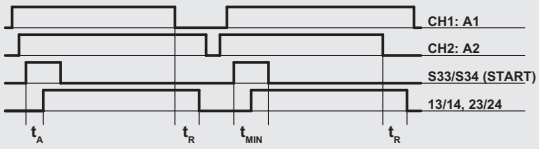
Configuration with automatic start (CS AR-20 only)



Configuration with monitored start (CS AR-21 only)



Configuration with manual start (CS AR-20 only)

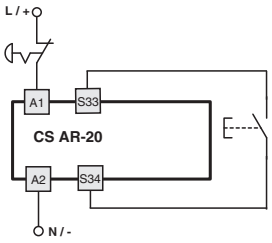


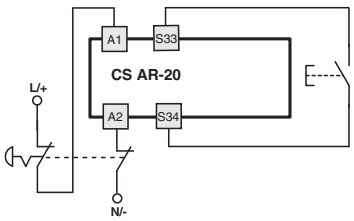
Legend:
t_{MIN}: Min. duration of start impulse
t_C: simultaneity time
t_A: response time
t_R: release time in absence of power supply

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

Input configuration

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

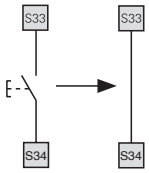




The diagram does not show the exact position of the terminals in the product

Automatic start

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



Monitored start

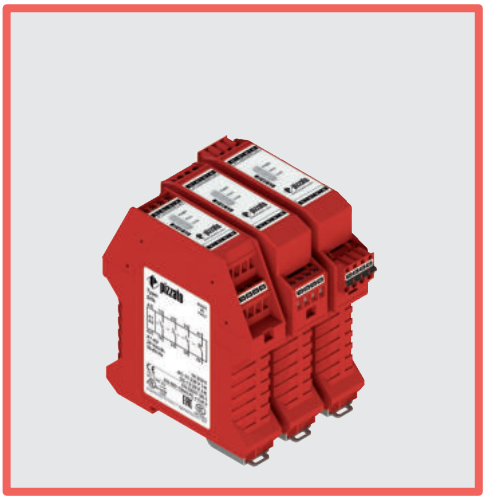
Use module CS AR-21 with the circuit diagrams for manual start.

Movable guard monitoring

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

Application examples See page 365

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



Module for emergency stops and end position monitoring for movable guards

Main features

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

Utilization categories

Alternating current: AC15 (50…60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 oper. cycles/min.)
Ue (V) 24
Ie (A) 4

Quality marks:

EC type examination certificate: IMQ CP 432 DM
UL approval: E131787
CCC approval: 2021000305000107
EAC approval: RU C-IT.УТ03.B.00035/19

Compliance with the requirements of:

Machinery Directive 2006/42/EC,
EMC Directive 2014/30/EC,
RoHS Directive 2011/65/EU.

Technical data

Housing

Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94

Protection degree acc. to EN 60529:	IP40 (housing), IP20 (terminal strip)
Dimensions:	see page 415, design A

General data

SIL level (SIL CL) up to:	SIL CL 3 acc. to EN 62061
Performance Level (PL) up to:	PL e acc. to EN ISO 13849-1
Safety category up to:	cat. 3 acc. to EN ISO 13849-1
Safety parameters:	see page 481
Ambient temperature:	-25°C…+55°C
Mechanical endurance:	>10 million operating cycles
Electrical endurance:	>100,000 operating cycles
Pollution degree:	external 3, internal 2
Rated impulse withstand voltage (U_{imp}):	4 kV
Rated insulation voltage (U_i):	250 V
Overvoltage category:	II

Supply

Rated supply voltage (U_n):	24 Vac/dc; 50…60 Hz 120 Vac; 50…60 Hz 230 Vac; 50…60 Hz
Max. DC residual ripple in DC:	10%
Supply voltage tolerance:	±15% of U_n
Power consumption AC:	< 5 VA
Power consumption DC:	< 2 W

Control circuit

Protection against short circuits:	PTC resistance, Ih=0.5 A
PTC times:	response time > 100 ms, release time > 3 s
Maximum resistance per input:	≤ 50 Ω
Current per input:	70 mA (typical)
Min. duration of start impulse t_{MIN}:	> 100 ms
Response time t_A:	< 50 ms
Release time in absence of power supply t_R:	< 75 ms
Simultaneity time t_C:	unlimited

In compliance with standards:

EN 60204-1, EN ISO 13855, EN ISO 14118, EN ISO 12100, EN ISO 13850, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 No. 14, GB/T14048.5

Output circuit

Output contacts:	3 NO safety contacts 1 NC auxiliary contact
Contact type:	forcibly guided
Material of the contacts:	gold-plated silver alloy
Maximum switching voltage:	230/240 Vac; 300 Vdc
Max. current per contact:	6 A
Conventional free air thermal current I_{th}:	6 A
Max. total current ΣI_{th}^2:	80 A^2
Minimum current:	10 mA
Contact resistance:	≤ 100 mΩ
External protection fuse:	4 A

The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See pages 355-364.

Code structure

CS AR-22V024

Start mode	
22	manual or automatic start
23	monitored start

Connection type	
V	Screw terminals
M	Connector with screw terminals
X	Connector with spring terminals

Supply voltage	
024	24 Vac/dc
120	120 Vac
230	230 Vac

Features approved by UL

Rated supply voltage (U_n):	24 Vac/dc; 50…60 Hz 120 Vac; 50…60 Hz 230 Vac; 50…60 Hz
Power consumption AC:	< 5 VA
Power consumption DC:	< 4 W

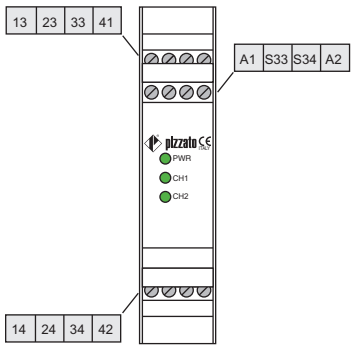
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

Notes:
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.

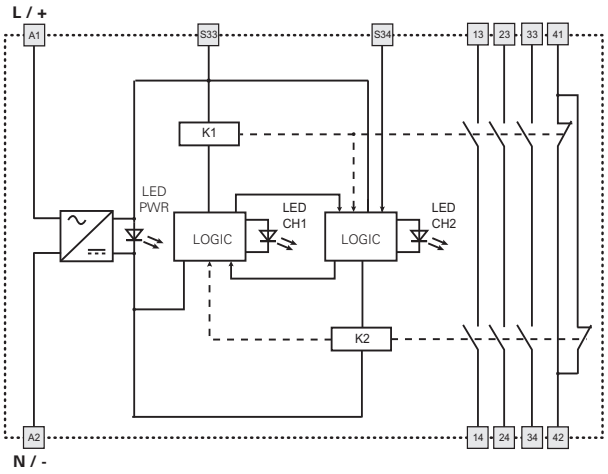
- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

Safety module CS AR-22 / CS AR-23

Pin assignment

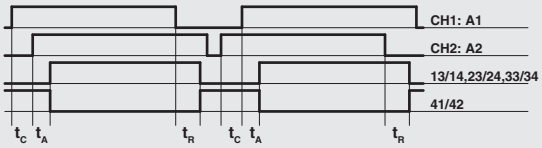


Internal wiring diagram

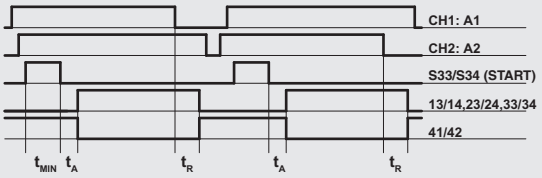


Function diagrams

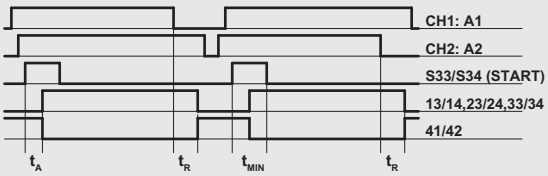
Configuration with automatic start (CS AR-22 only)



Configuration with monitored start (CS AR-23 only)



Configuration with manual start (CS AR-22 only)

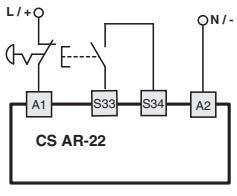


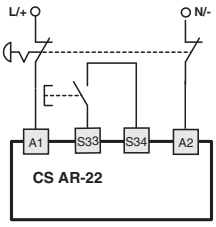
Legend:
t_{MIN}: Min. duration of start impulse
t_C: simultaneity time
t_A: response time
t_R: release time in absence of power supply

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

Input configuration

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

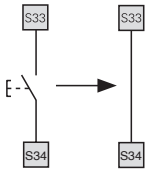




The diagram does not show the exact position of the terminals in the product

Automatic start

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

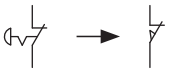


Monitored start

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

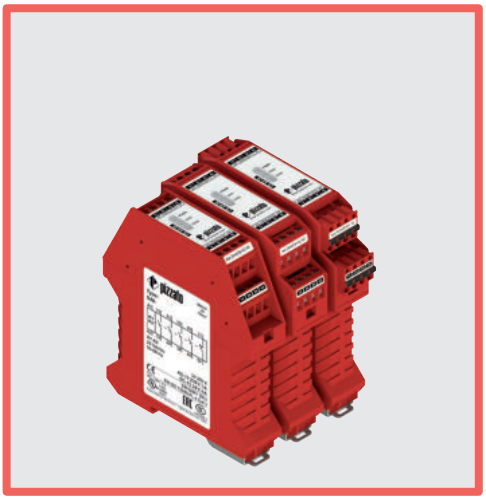
Movable guard monitoring

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



Application examples See page 365

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



Module for emergency stops and end position monitoring for movable guards

Main features

- For safety applications up to SIL CL 3/PL e
- Input with 1 or 2 channels
- Choice between automatic start, manual start (CS AR-24 only) or monitored start (CS AR-25 only)
- Reduced housing width of 22.5 mm
- 4 NO safety contacts
- 1 NC auxiliary contact
- Supply voltage: 24 Vac/dc

Utilization categories

Alternating current: AC15 (50…60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 oper. cycles/min.)
Ue (V) 24
Ie (A) 4

Quality marks:

EC type examination certificate: IMQ CP 432 DM
UL approval: E131787
CCC approval: 2021000305000107
EAC approval: RU C-IT.УТ03.B.00035/19

Compliance with the requirements of:

Machinery Directive 2006/42/EC,
EMC Directive 2014/30/EC,
RoHS Directive 2011/65/EU.

Technical data

Housing

Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94

Protection degree acc. to EN 60529:	IP40 (housing), IP20 (terminal strip)
Dimensions:	see page 415, design A

General data

SIL level (SIL CL) up to:	SIL CL 3 acc. to EN 62061
Performance Level (PL) up to:	PL e acc. to EN ISO 13849-1
Safety category up to:	cat. 3 acc. to EN ISO 13849-1
Safety parameters:	see page 481
Ambient temperature:	-25°C…+55°C
Mechanical endurance:	>10 million operating cycles
Electrical endurance:	>100,000 operating cycles
Pollution degree:	external 3, internal 2
Rated impulse withstand voltage (U_{imp}):	4 kV
Rated insulation voltage (U_i):	250 V
Overvoltage category:	II

Supply

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

Control circuit

Protection against short circuits:	PTC resistance, Ih=0.5 A
PTC times:	response time > 100 ms, release time > 3 s
Maximum resistance per input:	≤ 50 Ω
Current per input:	30 mA (typical)
Min. duration of start impulse t_{MIN}:	> 100 ms
Response time t_A:	< 85 ms
Release time t_{R1}:	< 40 ms
Release time in absence of power supply t_R:	< 170 ms
Simultaneity time t_C:	unlimited

In compliance with standards:

EN 60204-1, EN ISO 13855, EN ISO 14118, EN ISO 12100, EN ISO 13850, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 No. 14, GB/T14048.5

Output circuit

Output contacts:	4 NO safety contacts 1 NC auxiliary contact
Contact type:	forcibly guided
Material of the contacts:	gold-plated silver alloy
Maximum switching voltage:	230/240 Vac; 300 Vdc
Max. current per contact:	6 A
Conventional free air thermal current I_{th}:	6 A
Max. total current Σ I_{th}^2:	72 A²
Minimum current:	10 mA
Contact resistance:	≤ 100 mΩ
External protection fuse:	4 A

The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See pages 355-364.

Code structure

CS AR-24V024

Start mode	
24	manual or automatic start
25	monitored start

Connection type	
V	Screw terminals
M	Connector with screw terminals
X	Connector with spring terminals

Supply voltage	
024	24 Vac/dc

Features approved by UL

Rated supply voltage (U_n):	24 Vac/dc; 50…60 Hz
Power consumption AC:	< 5 VA
Power consumption DC:	< 4 W

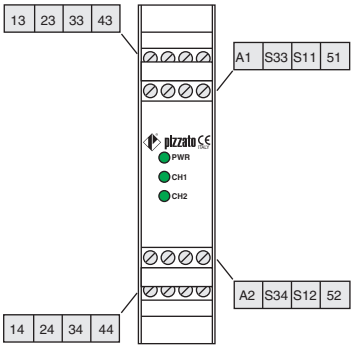
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

Notes:
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.

- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

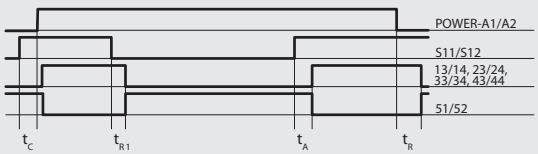
Safety module CS AR-24 / CS AR-25

Pin assignment

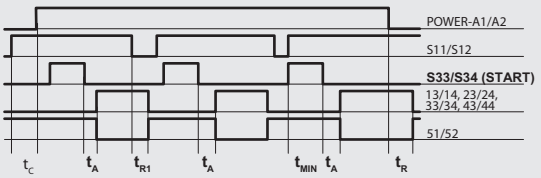


Function diagrams

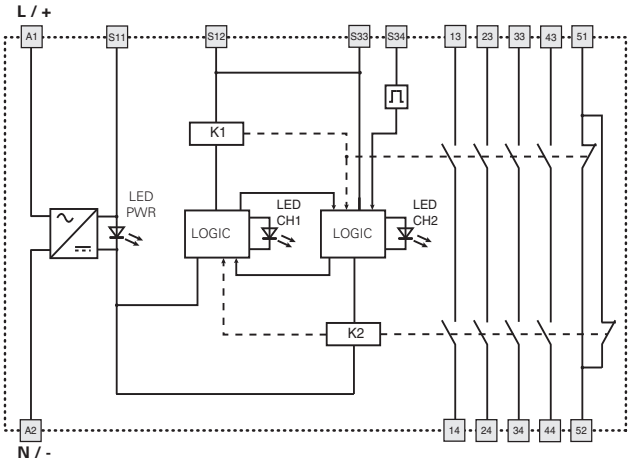
Configuration with automatic start (CS AR-24 only)



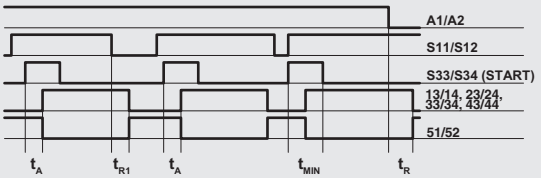
Configuration with monitored start (CS AR-25 only)



Internal wiring diagram



Configuration with manual start (CS AR-24 only)



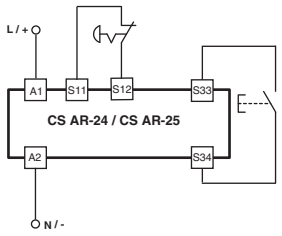
Legend:

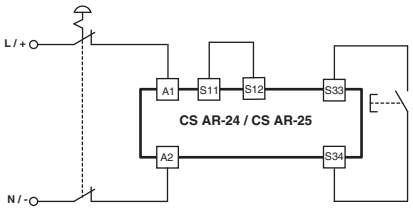
t_{MIN}:	Min. duration of start impulse	t_{R1}:	release time
t_C:	simultaneity time	t_R:	release time in absence of power supply
t_A:	response time		

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

Input configuration

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

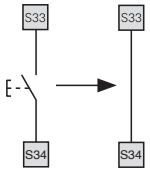




The diagram does not show the exact position of the terminals in the product

Automatic start

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

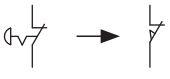


Monitored start

Use module CS AR-25 with the circuit diagrams for manual start.

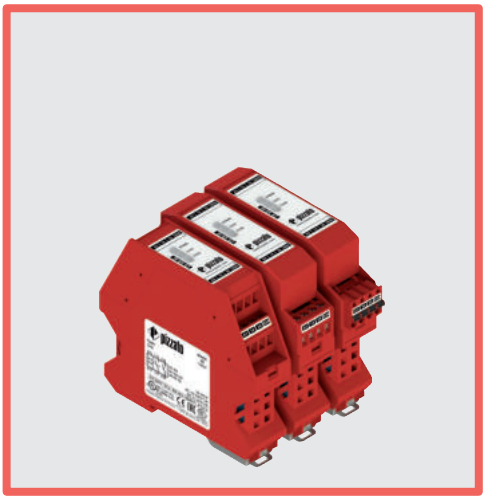
Movable guard monitoring

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



Application examples See page 365

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



Module for emergency stops and end position monitoring for movable guards

Main features

- For safety applications up to SIL CL 2/PL d
- Choice between automatic start, manual start (CS AR-40 only) or monitored start (CS AR-41 only)
- Reduced housing width of 22.5 mm
- 2 NO safety contacts
- Supply voltage: 24 Vac/dc

Utilization categories

Alternating current: AC15 (50…60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 oper. cycles/min.)
Ue (V) 24
Ie (A) 4

Quality marks:

EC type examination certificate: IMQ CP 432 DM
UL approval: E131787
CCC approval: 2021000305000107
EAC approval: RU C-IT.УТ03.B.00035/19

Compliance with the requirements of:

Machinery Directive 2006/42/EC,
EMC Directive 2014/30/EC,
RoHS Directive 2011/65/EU.

Technical data

Housing

Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94

Protection degree acc. to EN 60529:	IP40 (housing), IP20 (terminal strip)
Dimensions:	see page 415, design D

General data

SIL level (SIL CL) up to:	SIL CL 2 acc. to EN 62061
Performance Level (PL) up to:	PL d acc. to EN ISO 13849-1
Safety category up to:	cat. 2 acc. to EN ISO 13849-1
Safety parameters:	see page 481
Ambient temperature:	-25°C…+55°C
Mechanical endurance:	>10 million operating cycles
Electrical endurance:	>100,000 operating cycles
Pollution degree:	external 3, internal 2
Rated impulse withstand voltage (U_{imp}):	4 kV
Rated insulation voltage (U_i):	250 V
Overvoltage category:	II

Supply

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

Control circuit

Protection against short circuits:	PTC resistance, Ih=0.5 A
PTC times:	response time > 100 ms, release time > 3 s
Maximum resistance per input:	≤ 50 Ω
Current per input:	70 mA (typical)
Min. duration of start impulse t_{MIN}:	> 100 ms
Response time t_A:	< 50 ms
Release time in absence of power supply t_R:	< 150 ms
Simultaneity time t_C:	unlimited

In compliance with standards:

EN 60204-1, EN ISO 13855, EN ISO 14118, EN ISO 12100, EN ISO 13850, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 No. 14, GB/T14048.5

Output circuit

Output contacts:	2 NO safety contacts
Contact type:	forcibly guided
Material of the contacts:	silver alloy
Maximum switching voltage:	230/240 Vac; 300 Vdc
Max. current per contact:	6 A
Conventional free air thermal current I_{th}:	6 A
Max. total current ΣI_{th}^2:	36 A^2
Minimum current:	10 mA
Contact resistance:	≤ 100 mΩ
External protection fuse:	4 A

The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See pages 355-364.

Code structure

CS AR-40V024

Start mode	
40	manual or automatic start
41	monitored start

Connection type	
V	Screw terminals
M	Connector with screw terminals
X	Connector with spring terminals

Supply voltage	
024	24 Vac/dc

Features approved by UL

Rated supply voltage (U_n):	24 Vac/dc; 50…60 Hz
Power consumption AC:	< 5 VA
Power consumption DC:	< 4 W

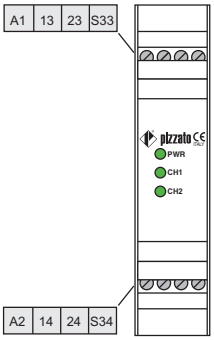
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

Notes:
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.

- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

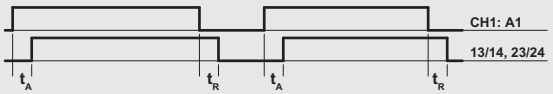
Safety module CS AR-40 / CS AR-41

Pin assignment

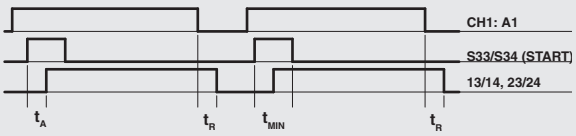


Function diagrams

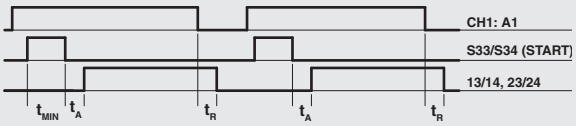
1-channel configuration with automatic start (CS AR-40 only)



1-channel configuration with manual start (CS AR-40 only)

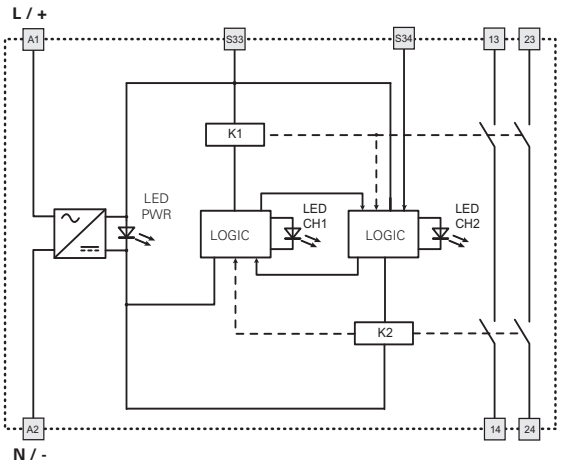


1-channel configuration with monitored start (CS AR-41 only)



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

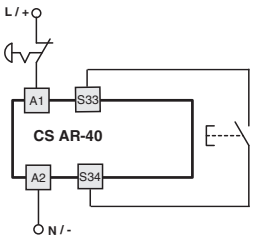
Internal wiring diagram



Input configuration

Emergency stop circuits

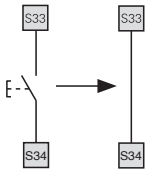
One channel input configuration with manual start



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

Automatic start

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



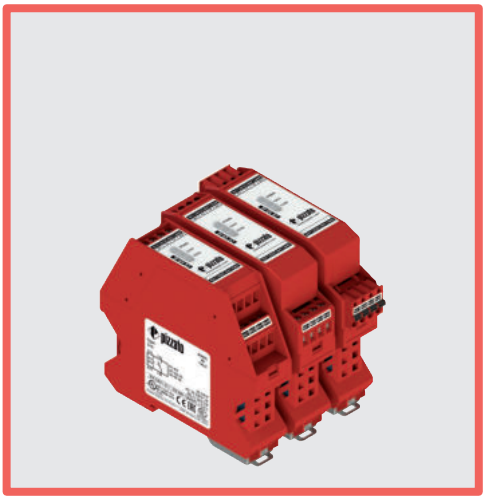
Monitored start

Use module CS AR-41 with the circuit diagrams for manual start.

Movable guard monitoring

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

Safety module **CS AR-46**



Module for emergency stop, end position monitoring for movable guards, and magnetic safety sensors and devices

Main features
- For safety applications up to SIL CL 1/PL c
- Reduced housing width of 22.5 mm
- 1 NO safety contact
- Supply voltage: 24 Vac/dc

Utilization categories
Alternating current: AC15 (50…60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 oper. cycles/min.)
Ue (V) 24
Ie (A) 4

Quality marks:

UL approval:	E131787
CCC approval:	2021000305000107
EAC approval:	RU C-IT.УТ03.B.00035/19

Compliance with the requirements of:
Machinery Directive 2006/42/EC,
EMC Directive 2014/30/EC,
RoHS Directive 2011/65/EU.

Technical data

Housing
Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94

Protection degree acc. to EN 60529:	IP40 (housing), IP20 (terminal strip)
Dimensions:	see page 415, design D

General data

SIL level (SIL CL) up to:	SIL CL 1 acc. to EN 62061
Performance Level (PL) up to:	PL c acc. to EN ISO 13849-1
Safety category up to:	cat. 1 acc. to EN ISO 13849-1
Safety parameters:	see page 481
Ambient temperature:	-25°C…+55°C
Mechanical endurance:	>10 million operating cycles
Electrical endurance:	>100,000 operating cycles
Pollution degree:	external 3, internal 2
Rated impulse withstand voltage (U_{imp}):	4 kV
Rated insulation voltage (U_i):	250 V
Overvoltage category:	II

Supply

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

Control circuit

Protection against short circuits:	PTC resistance, Ih=0.5 A
PTC times:	response time > 100 ms, release time > 3 s
Maximum resistance per input:	≤ 50 Ω
Current per input:	20 mA (typical)
Response time t_A:	< 20 ms
Release time t_{R1}:	< 20 ms
Release time in absence of power supply t_R:	< 100 ms
Simultaneity time t_C:	unlimited

In compliance with standards:
EN 60204-1, EN ISO 13855, EN ISO 14118, EN ISO 12100, EN ISO 13850, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 No. 14, GB/T14048.5

Output circuit

Output contacts:	1 NO safety contact
Material of the contacts:	silver alloy
Maximum switching voltage:	230/240 Vac; 300 Vdc
Max. current per contact:	6 A
Conventional free air thermal current I_{th}:	6 A
Minimum current:	10 mA
Contact resistance:	≤ 100 mΩ
External protection fuse:	4 A

The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See pages 355-364.

Code structure

CS AR-46V024

Connection type	
V	Screw terminals
M	Connector with screw terminals
X	Connector with spring terminals

Supply voltage	
024	24 Vac/dc

Features approved by UL

Rated supply voltage (U_n):	24 Vac/dc; 50…60 Hz
Power consumption AC:	< 5 VA
Power consumption DC:	< 4 W

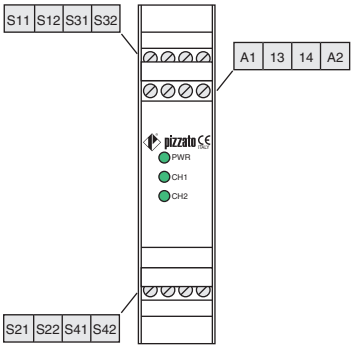
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

Notes:
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.

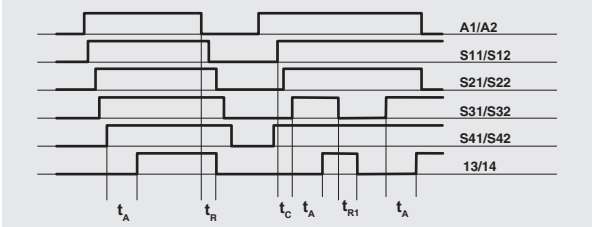
- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

Safety module CS AR-46

Pin assignment

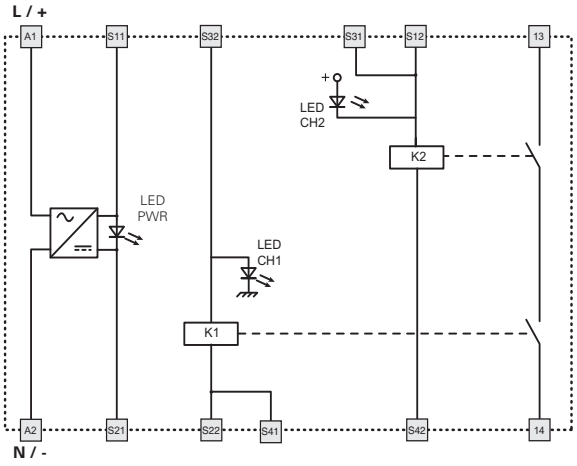


Function diagrams



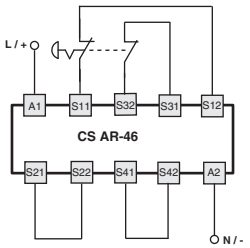
Legend:
t_C: simultaneity time
t_A: response time
t_{R1}: release time
t_R: release time in absence of power supply

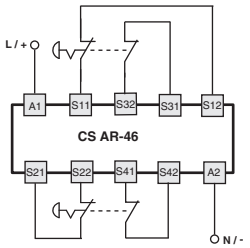
Internal wiring diagram

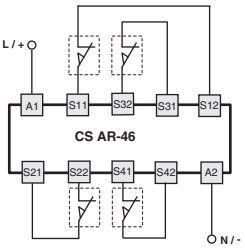


Input configuration

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

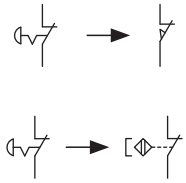




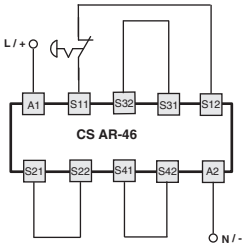


Monitoring of movable guards and magnetic safety sensors

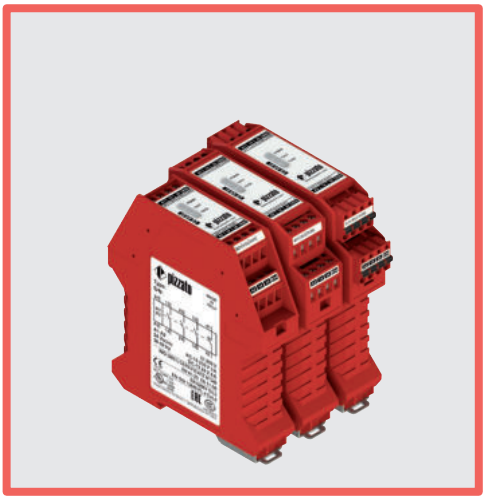
The safety module can monitor emergency stop circuits, control circuits for movable guards as well as magnetic safety sensors. Replace the emergency stop contacts with switch contacts or sensor contacts. **The sensors can only be used in 2-channel configuration.**



1 channel and 1 emergency stop button



Safety module **CS AR-91**



Module for emergency stops, end position monitoring for movable guards and magnetic safety sensors

Main features

- For safety applications up to SIL 3/PL e
- Choice between automatic start, manual start or monitored start
- Connection of input channels of opposite potentials
- Reduced housing width of 22.5 mm
- Output contacts:
  2 NO safety contacts, 1 NO opto-decoupled auxiliary contact
- Supply voltage: 24 Vac/dc
- Insensitive to voltage dips

Utilization categories

Alternating current: AC15 (50…60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 oper. cycles/min.)
Ue (V) 24
Ie (A) 4

Quality marks:

0051 0086

EU-type examination certificate: IMQ No. 340
(EN 81-20:2020; EN 81-50:2020)
EC type examination certificate: IMQ CP 432
DM (Machinery Directive)
UL approval: E131787
CCC approval: 2021000305000107
EAC approval: RU C-IT.УТ03.B.00035/19
Lift Regulations Safety Components Type Examination (Module B): BSI UKCA 772884

Compliance with the requirements of:

Machinery Directive 2006/42/EC,
EMC Directive 2014/30/EC,
RoHS Directive 2011/65/EU,
Lifts Directive 2014/33/EU

Technical data

Housing

Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94

Protection degree acc. to EN 60529:	IP40 (housing), IP20 (terminal strip)
Dimensions:	see page 415, design A

General data

SIL level (SIL CL) up to:	SIL CL 3 acc. to EN 62061
Performance Level (PL) up to:	PL e acc. to EN ISO 13849-1
Safety category up to:	cat. 4 acc. to EN ISO 13849-1
Safety parameters:	see page 481
Ambient temperature:	-25°C…+55°C
Mechanical endurance:	>10 million operating cycles
Electrical endurance:	>100,000 operating cycles
Pollution degree:	external 3, internal 2
Rated impulse withstand voltage (U_{imp}):	4 kV
Rated insulation voltage (U_i):	250 V
Overvoltage category:	II

Supply

Rated supply voltage (U_n):	24 Vac/dc; ±15%; 50…60 Hz
Max. DC residual ripple in DC:	10%
Power consumption AC:	< 5 VA
Power consumption DC:	< 2.5 W

Control circuit

Protection against short circuits:	PTC resistance, Ih=0.5 A
PTC response time:	response time > 100 ms, release time > 3 s
Maximum resistance per input:	≤ 50 Ω
Current per input:	< 40 mA
Min. duration of start impulse t_{MIN}:	> 50 ms
Response time t_A:	< 120 ms
Release time t_{R1}:	< 20 ms
Release time in absence of power supply t_R:	< 65 ms
Simultaneity time t_C:	unlimited
Response time starting from application of the supply:	< 300 ms

Auxiliary signalling circuit

Auxiliary output (Y43-Y44):	1NO opto-decoupled
Rated operating voltage (U_e):	24 Vdc
Rated operating current (I_e):	25 mA
Rated impulse withstand voltage (U_{imp}):	4 kV
Release time t_{R2}:	< 1 ms

In compliance with standards:

EN 60204-1, EN ISO 13855, EN ISO 14118, EN ISO 12100, EN ISO 13850, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 No. 14, GB/T14048.5

Output circuit

Output contacts:	2 NO safety contacts,
Contact type:	forcibly guided
Material of the contacts:	gold-plated silver alloy
Maximum switching voltage:	230/240 Vac; 300 Vdc
Max. current per contact:	6 A
Conventional free air thermal current I_{th}:	6 A
Max. total current ΣI_{th}^2:	36 A^2
Minimum current:	10 mA
Contact resistance:	≤ 100 mΩ
External protection fuse:	4 A type F

The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See pages 355-364.

Code structure

CS AR-91V024

Connection type	
V	Screw terminals
M	Connector with screw terminals
X	Connector with spring terminals

Supply voltage	
024	24 Vac/dc

Features approved by UL

Rated supply voltage (U_n):	24 Vac/dc; 50…60 Hz
Power consumption AC:	< 5 VA
Power consumption DC:	< 4 W

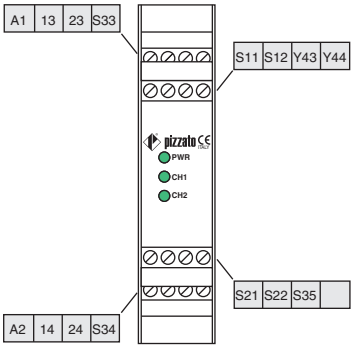
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

Notes:
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.

- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

Safety module CS AR-91

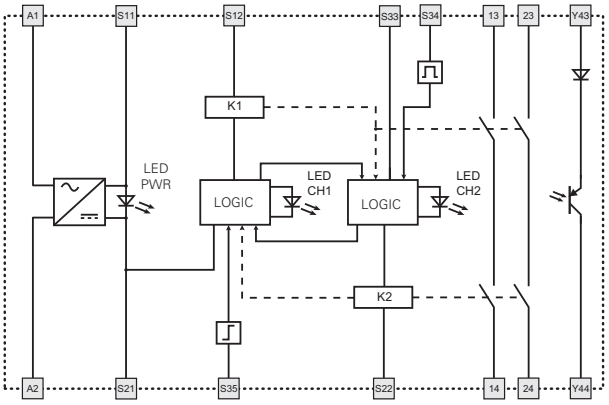
Pin assignment



Voltage dips, short interruptions and voltage variations

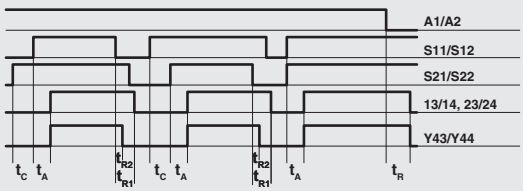
The CS AR-91 safety module has a built-in voltage drop sensor which serves to protect and safeguard the internal state of the safety relays, in the event of dips or short voltage interruptions. This is to prevent unwanted switching states in relation to the state of the inputs from occurring. When voltage is restored, the device continues to operate with a switching state that is consistent with the input signals. The safety module retains its normal function during voltage dips and brief interruptions; for longer voltage interruptions, the safety outputs open and reset themselves automatically during an automatic start if voltage is restored or – in the case of a manual or monitored start – require that the system be reset by the operator.

Internal wiring diagram

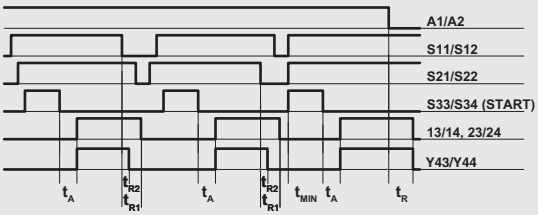


Function diagrams

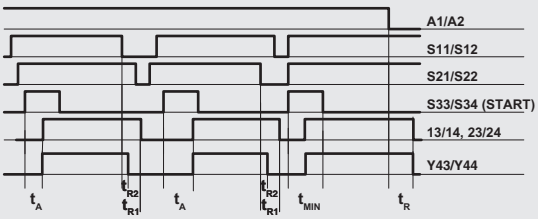
Configuration with automatic start



Configuration with monitored start



Configuration with manual start



Legend:

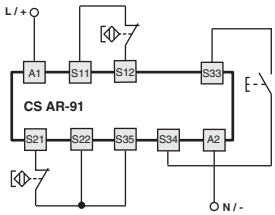
t_{MIN}:	Min. duration of start impulse	t_{R2}:	release time
t_c:	simultaneity time	t_{R1}:	release time
t_A:	response time	t_R:	release time in absence of power supply

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

Input configuration

Input configuration with magnetic sensors

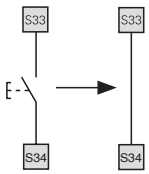
2 channels



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

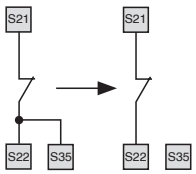
Automatic start

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



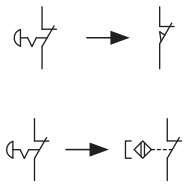
Monitored start

With regard to the indicated diagrams, remove the connection between the S22 and S35 terminals in order to activate the monitored start module.



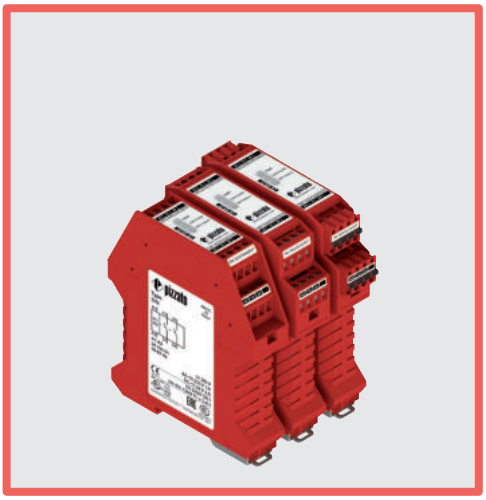
Monitoring of movable guards and magnetic safety sensors

The safety module can monitor emergency stop circuits, control circuits for movable guards as well as magnetic safety sensors. Replace the emergency stop contacts with switch contacts or sensor contacts.
The sensors can only be used in 2-channel configuration.



Application examples See page 365

Safety module **CS AR-51**



Module for emergency stops, end position monitoring for movable guards, safety mats and safety bumpers with 4-wire technology

Main features

- For safety applications up to SIL CL 3/PL e
- Input with 2 channels
- Choice between automatic start, manual start or monitored start
- Connection of input channels of opposite potentials
- Can be connected to electromechanical contacts, safety mats or safety bumpers with 4-wire technology
- Output contacts:
  2 NO safety contacts,
- Supply voltage:
  24 Vac/dc

Utilization categories

Alternating current: AC15 (50…60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 oper. cycles/min.)
Ue (V) 24
Ie (A) 4

Quality marks:

EC type examination certificate: IMQ CP 432 DM
UL approval: E131787
CCC approval: 2021000305000107
EAC approval: RU C-IT.УТ03.B.00035/19

Compliance with the requirements of:

Machinery Directive 2006/42/EC,
EMC Directive 2014/30/EC,
RoHS Directive 2011/65/EU.

Technical data

Housing

Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94

Protection degree acc. to EN 60529:	IP40 (housing), IP20 (terminal strip)
Dimensions:	see page 415, design A

General data

SIL level (SIL CL) up to:	SIL CL 3 acc. to EN 62061
Performance Level (PL) up to:	PL e acc. to EN ISO 13849-1
Safety category up to:	cat. 4 acc. to EN ISO 13849-1
Safety parameters:	see page 481
Ambient temperature:	-25°C…+55°C
Mechanical endurance:	>10 million operating cycles
Electrical endurance:	>100,000 operating cycles
Pollution degree:	external 3, internal 2
Rated impulse withstand voltage (U_{imp}):	4 kV
Rated insulation voltage (U_i):	250 V
Overvoltage category:	II

Supply

Rated supply voltage (U_n):	24 Vac/dc; 50…60 Hz
Max. DC residual ripple in DC:	10%
Supply voltage tolerance:	±15% of U_n
Power consumption AC:	< 5 VA
Power consumption DC:	< 2.5 W

Control circuit

Protection against short circuits:	PTC resistance, Ih=0.5 A
PTC times:	response time > 100 ms, release time > 3 s
Maximum resistance per input:	≤ 200 Ω
Current per input:	10 mA (typical)
Min. duration of start impulse t_{MIN}:	> 150 ms
Response time t_A:	< 120 ms
Release time t_{R1}:	< 15 ms
Release time in absence of power supply t_R:	< 120 ms
Simultaneity time t_C:	unlimited

In compliance with standards:

EN 60204-1, EN ISO 13855, EN ISO 14118, EN ISO 12100, EN ISO 13850, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 No. 14, GB/T14048.5

Output circuit

Output contacts:	2 NO safety contacts
Contact type:	forcibly guided
Material of the contacts:	gold-plated silver alloy
Maximum switching voltage:	230/240 Vac; 300 Vdc
Max. current per contact:	6 A
Conventional free air thermal current I_{th}:	6 A
Max. total current ΣI_{th}^2:	36 A²
Minimum current:	10 mA
Contact resistance:	≤ 100 mΩ
External protection fuse:	4 A

The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See pages 355-364.

Code structure

CS AR-51V024

Connection type	
V	Screw terminals
M	Connector with screw terminals
X	Connector with spring terminals

Supply voltage	
024	24 Vac/dc

Features approved by UL

Rated supply voltage (U_n):	24 Vac/dc; 50…60 Hz
Power consumption AC:	< 5 VA
Power consumption DC:	< 4 W

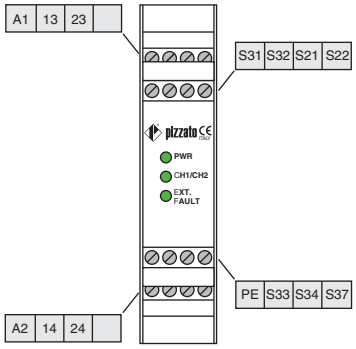
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

Notes:
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.

- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

Safety module CS AR-51

Pin assignment

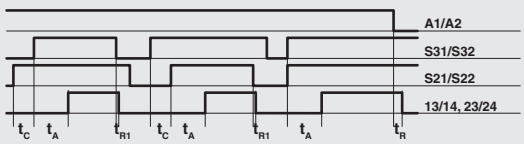


PE terminal connection
The PE terminal has to be connected to the equipotential circuit of machine protection if it is necessary.
This connection is made for functional reason, to reduce effects of an insulation fault on the machine operation.
In particular, ground faults in control circuits must not cause unwanted start-up or dangerous movements or prevent the machine from stopping.

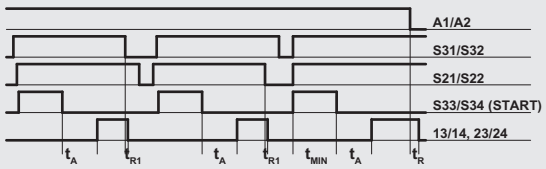
Function of "EXT. FAULT" LED
When a pressure is exerted on the surface of a safety bumper or safety mat, a short-circuit occurs between the two conductive elements, which constitute the apparatus and can be connected to the input channels of the safety module.
The signal thereby generated causes the EXT.FAULT LED to illuminate and signal the short-circuit and the opening of the output contacts, resulting in the blocking of the control circuit and causing the machine to switch to the safety setting. The EXT. FAULT LED does not switch on if the wires or internal connections of the safety mat or safety bumper are interrupted.

Function diagrams

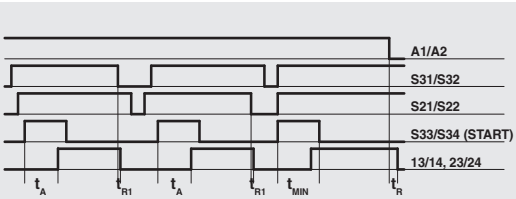
Configuration with automatic start



Configuration with monitored start

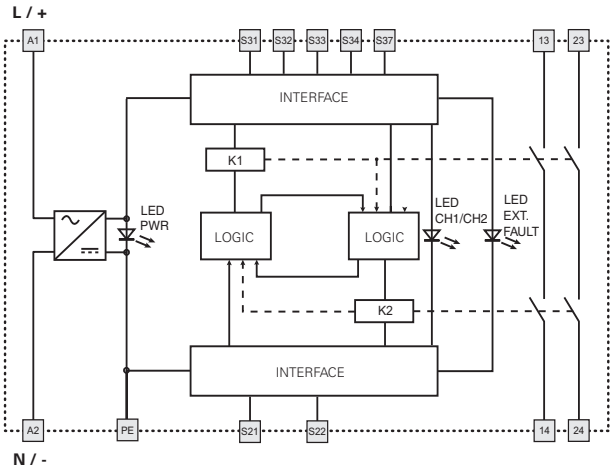


Configuration with manual start



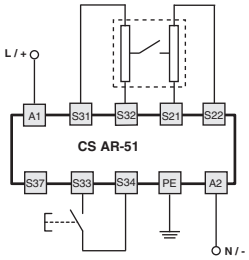
Legend:
t_{MIN}: Min. duration of start impulse
t_C: simultaneity time
t_A: response time
t_{R1}: release time
t_R: release time in absence of power supply

Internal wiring diagram

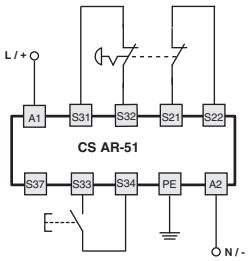


Input configuration

Safety mats and safety bumpers
Input configuration with manual start
2 channels



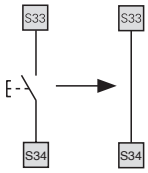
Emergency stop circuits
Input configuration with manual start
2 channels



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

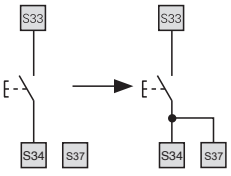
Automatic start

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



Monitored start

With regard to the indicated diagrams, establish the connection between S34 and S37 in order to activate the monitored start module.



Movable guard monitoring

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

Safety module **CS AT-0**

Module for emergency stops, end position monitoring for movable guards with delayed contacts at the opening of the input channels, OSSD semiconductor outputs and magnetic safety sensors

Main features

- For safety applications up to SIL CL 3/PL e
- Input with 1 or 2 channels
- Choice between automatic start, manual start or monitored start
- Connection of input channels of opposite potentials
- Can be connected to OSSD semiconductor outputs, to electromechanical contacts or to magnetic safety sensors
- Standard housing width of 45 mm
- 2 instantaneous NO safety contacts, 1 instantaneous NC auxiliary contact, 2 delayed NO safety contacts.
- Supply voltage: 24 Vac/dc, 120 Vac, 230 Vac

Utilization categories

Alternating current: AC15 (50…60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 oper. cycles/min.)
Ue (V) 24
Ie (A) 4

Quality marks:

EC type examination certificate: IMQ CP 432 DM
UL approval: E131787
CCC approval: 2021000305000107
EAC approval: RU C-IT.УТ03.B.00035/19

Compliance with the requirements of:

Machinery Directive 2006/42/EC, EMC Directive 2014/30/EC, RoHS Directive 2011/65/EU.

Technical data

Housing

Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94
Protection degree acc. to EN 60529: IP40 (housing), IP20 (terminal strip)
Dimensions: see page 415, design C

General data

SIL level (SIL CL) up to: SIL CL 3 acc. to EN 62061
Performance Level (PL) up to: PL e acc. to EN ISO 13849-1
Safety category up to: category 4 (instantaneous contacts), category 3 (delayed contacts) acc. to EN ISO 13849-1
Safety parameters: see page 481
Ambient temperature: -25°C…+55°C
Mechanical endurance: >10 million operating cycles
Electrical endurance: >100,000 operating cycles
Pollution degree: external 3, internal 2
Rated impulse withstand voltage (U_{imp}): 4 kV
Rated insulation voltage (U_i): 250 V
Overvoltage category: II

Supply

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

Control circuit

Protection against short circuits: PTC resistance, Ih=0.5 A
PTC times: response time > 100 ms, release time > 3 s
Maximum resistance per input: ≤ 50 Ω
Current per input: 40 mA (typical)
Min. duration of start impulse t_{MIN}: > 100 ms
Response time t_A: < 300 ms
Release time t_{R1}: < 25 ms
Release time in absence of power supply t_R: < 150 ms
Release time, delayed contacts t_{R2}: see "Code structure"
Simultaneity time t_C: unlimited

In compliance with standards:

EN 60204-1, EN ISO 13855, EN ISO 14118, EN ISO 12100, EN ISO 13850, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 No. 14, GB/T14048.5

Output circuit

Output contacts: 2 instantaneous NO safety contacts, 1 instantaneous NC auxiliary contact, 2 delayed NO safety contacts.
Contact type: forcibly guided
Material of the contacts: gold-plated silver alloy
Maximum switching voltage: 230/240 Vac; 300 Vdc
Max. current per contact: 6 A
Conventional free air thermal current I_{th}: 6 A
Max. total current ΣI_{th}^2: 72 (instant. contacts), 36 (del. contacts) A^2
Minimum current: 10 mA
Contact resistance: ≤ 100 mΩ
External protection fuse: 4 A

The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See pages 355-364.

Code structure

article: **CS AT-00V024-** options: **TFxx**

Release time, delayed contacts (t_{R2})	
0	Fixed time (see TF)
1	0.3 … 3 s, 0.3 s steps
2	1 … 10 s, 1 s steps
3	3 … 30 s, 3 s steps
4	30 … 300 s, 30 s steps

Release time, delayed contacts (t_{R2})	
TFxx	xx = s (fixed time)

Connection type	
V	Screw terminals
M	Connector with screw terminals
X	Connector with spring terminals

Supply voltage	
024	24 Vac/dc
120	120 Vac
230	230 Vac

Features approved by UL

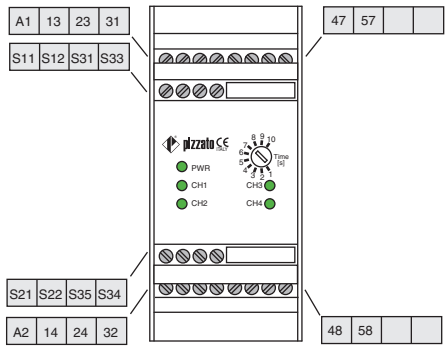
Rated supply voltage (U_n): 24 Vac/dc; 50…60 Hz
120 Vac; 50…60 Hz
230 Vac; 50…60 Hz
Power consumption AC: < 10 VA
Power consumption DC: < 4 W
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

Notes:
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.
- Surrounding air of 55°C.

- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.
- Air ambiant de 55°C.

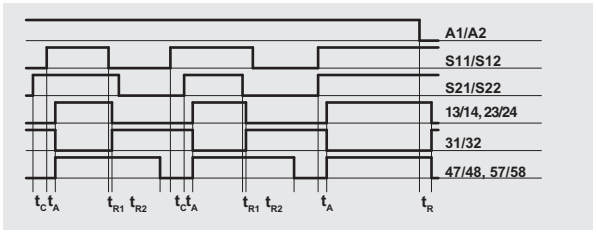
Safety module CS AT-0

Pin assignment

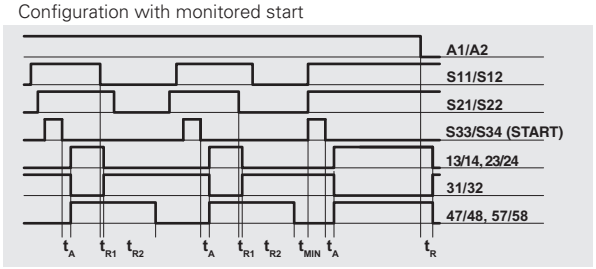


Function diagrams

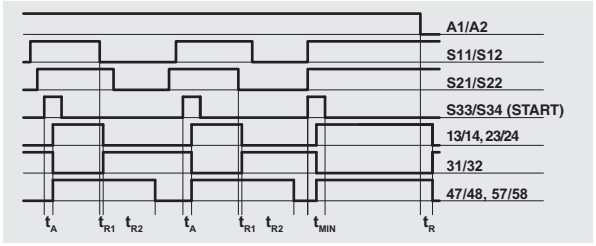
Configuration with automatic start



Configuration with monitored start



Configuration with manual start



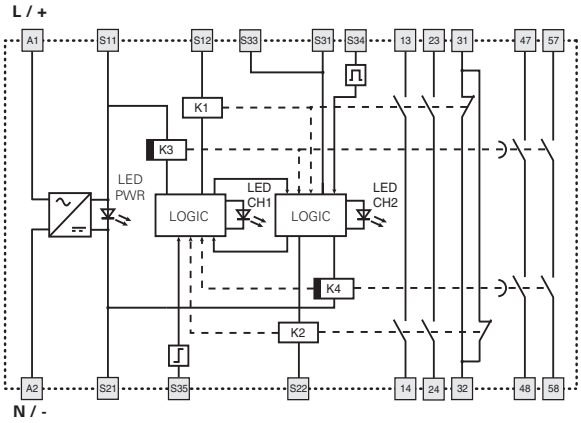
Legend:

t_{MIN}: Min. duration of start impulse
t_c: simultaneity time
t_A: response time
t_{R1}: release time
t_R: release time in absence of power supply
t_{R2}: release time, delayed contacts adjustable (see "Code structure")

Notes:

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

Internal wiring diagram

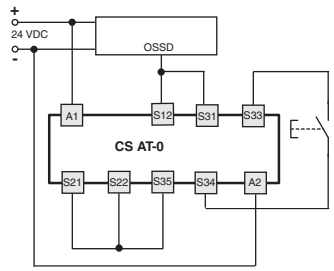


Input configuration

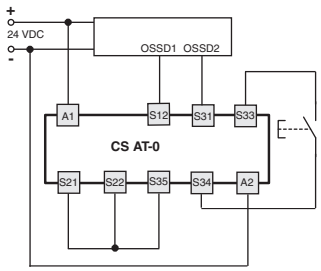
OSSD semiconductor outputs (e.g. ST, NS, NG series or light barriers)

Input configuration with manual start

1 channel



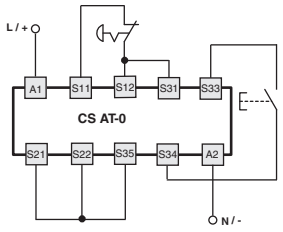
2 channels



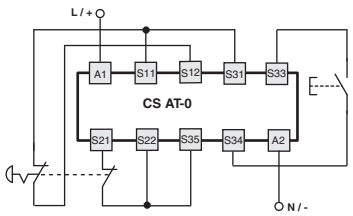
Emergency stop circuits

Input configuration with manual start

1 channel

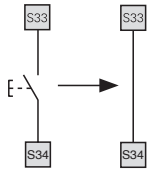


2 channels



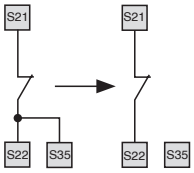
Automatic start

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



Monitored start

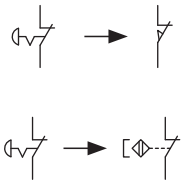
With regard to the indicated diagrams, remove the connection between the S22 and S35 terminals in order to activate the monitored start module.



Monitoring of movable guards and magnetic safety sensors

The safety module can monitor emergency stop circuits, control circuits for movable guards as well as magnetic safety sensors. Replace the emergency stop contacts with switch contacts or sensor contacts.

The sensors can only be used in 2-channel configuration.



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

Application examples See page 365

Safety module **CS AT-1**

Module for emergency stops, end position monitoring for movable guards with delayed contacts at the opening of the input channels, OSSD semiconductor outputs and magnetic safety sensors

Main features

- For safety applications up to SIL CL 3/PL e
- Input with 1 or 2 channels
- Choice between automatic start, manual start or monitored start
- Connection of input channels of opposite potentials
- Can be connected to OSSD semiconductor outputs, to electromechanical contacts or to magnetic safety sensors
- Standard housing width of 45 mm
- 3 instantaneous NO safety contacts, 2 delayed NO safety contacts.
- Supply voltage: 24 Vac/dc, 120 Vac, 230 Vac

Utilization categories

Alternating current: AC15 (50…60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 oper. cycles/min.)
Ue (V) 24
Ie (A) 4

Quality marks:

EC type examination certificate: IMQ CP 432 DM

UL approval:	E131787
CCC approval:	2021000305000107
EAC approval:	RU C-IT.УТ03.B.00035/19

Compliance with the requirements of:

Machinery Directive 2006/42/EC, EMC Directive 2014/30/EC, RoHS Directive 2011/65/EU.

Technical data

Housing

Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94

Protection degree acc. to EN 60529:	IP40 (housing), IP20 (terminal strip)
Dimensions:	see page 415, design C

General data

SIL level (SIL CL) up to:	SIL CL 3 acc. to EN 62061
Performance Level (PL) up to:	PL e acc. to EN ISO 13849-1
Safety category up to:	category 4 (instantaneous contacts), category 3 (delayed contacts) acc. to EN ISO 13849-1
Safety parameters:	see page 481
Ambient temperature:	-25°C…+55°C
Mechanical endurance:	>10 million operating cycles
Electrical endurance:	>100,000 operating cycles
Pollution degree:	external 3, internal 2
Rated impulse withstand voltage (U_{imp}):	4 kV
Rated insulation voltage (U_i):	250 V
Overvoltage category:	II

Supply

Rated supply voltage (U_n):	24 Vac/dc; 50…60 Hz 120 Vac; 50…60 Hz 230 Vac; 50…60 Hz
Max. DC residual ripple in DC:	10%
Supply voltage tolerance:	±15% of U_n
Power consumption AC:	< 10 VA
Power consumption DC:	< 5 W

Control circuit

Protection against short circuits:	PTC resistance, Ih=0.5 A
PTC times:	response time > 100 ms, release time > 3 s
Maximum resistance per input:	≤ 50 Ω
Current per input:	40 mA (typical)
Min. duration of start impulse t_{MIN}:	> 100 ms
Response time t_A:	< 300 ms
Release time t_{R1}:	< 25 ms
Release time in absence of power supply t_R:	< 150 ms
Release time, delayed contacts t_{R2}:	see "Code structure"
Simultaneity time t_C:	unlimited

In compliance with standards:

EN 60204-1, EN ISO 13855, EN ISO 14118, EN ISO 12100, EN ISO 13850, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 No. 14, GB/T14048.5

Output circuit

Output contacts:	3 instantaneous NO safety contacts, 2 delayed NO safety contacts.
Contact type:	forcibly guided
Material of the contacts:	gold-plated silver alloy
Maximum switching voltage:	230/240 Vac; 300 Vdc
Max. current per contact:	6 A
Conventional free air thermal current I_{th}:	6 A
Max. total current ΣI_{th}^2:	72 (instant. contacts), 36 (del. contacts) A^2
Minimum current:	10 mA
Contact resistance:	≤ 100 mΩ
External protection fuse:	4 A

The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See pages 355-364.

Code structure

article | options

CS AT-10V024-TFxx

Release time, delayed contacts (t_{R2})	
0	Fixed time (see TF)
1	0.3 … 3 s, 0.3 s steps
2	1 … 10 s, 1 s steps
3	3 … 30 s, 3 s steps
4	30 … 300 s, 30 s steps

Connection type	
V	Screw terminals
M	Connector with screw terminals
X	Connector with spring terminals

Supply voltage	
024	24 Vac/dc
120	120 Vac
230	230 Vac

Release time, delayed contacts (t_{R2})	
TFxx	xx = s (fixed time)

Features approved by UL

Rated supply voltage (U_n):	24 Vac/dc; 50…60 Hz 120 Vac; 50…60 Hz 230 Vac; 50…60 Hz
Power consumption AC:	< 10 VA
Power consumption DC:	< 4 W

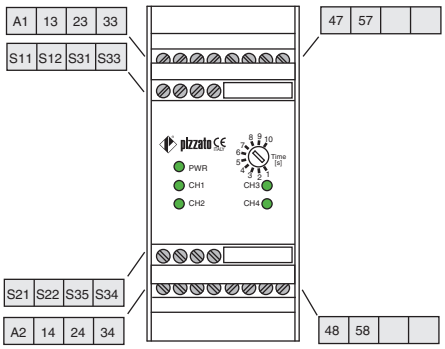
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

Notes:
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.
- Surrounding air of 55°C.

- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.
- Air ambiant de 55°C.

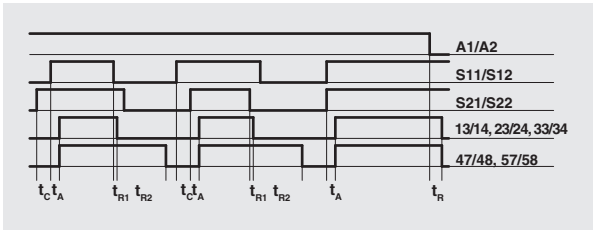
Safety module CS AT-1

Pin assignment

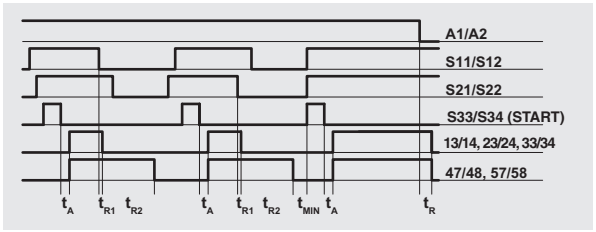


Function diagrams

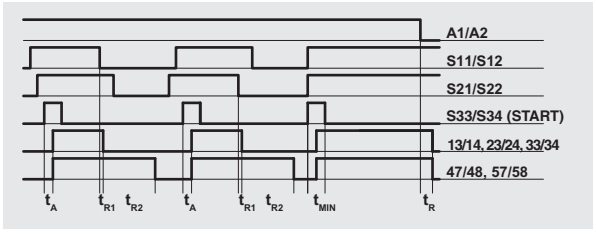
Configuration with automatic start



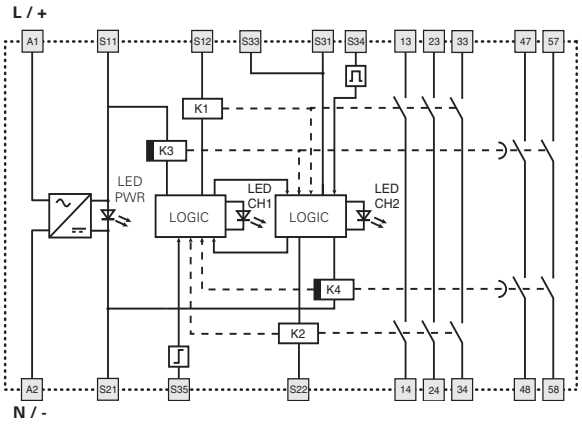
Configuration with monitored start



Configuration with manual start



Internal wiring diagram



Legend:

- t_{MIN}: Min. duration of start impulse
- t_C: simultaneity time
- t_A: response time
- t_{R1}: release time
- t_R: release time in absence of power supply
- t_{R2}: release time, delayed contacts adjustable (see "Code structure")

Notes:

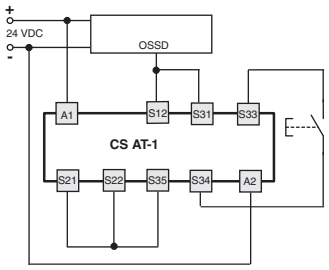
The configurations with one channel are obtained taking into consideration the S11/S12 input only. In this case it is necessary to consider time t_{R1} and t_{R2} referred to input S11/S12, time t_R referred to the supply, time t_A referred to input S11/S12 and to the start, and time t_{MIN} referred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

Input configuration

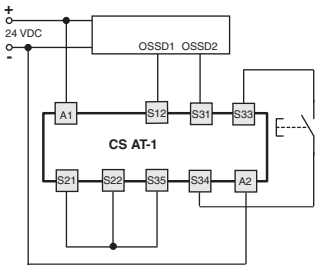
OSSD semiconductor outputs (e.g. ST, NS, NG series or light barriers)

Input configuration with manual start

1 channel



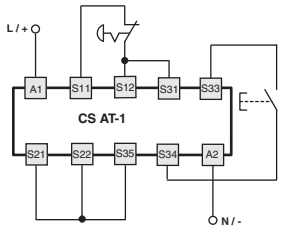
2 channels



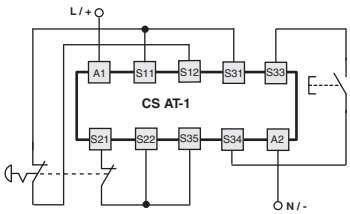
Emergency stop circuits

Input configuration with manual start

1 channel

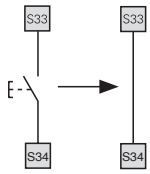


2 channels



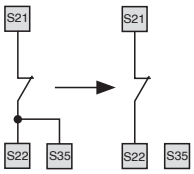
Automatic start

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



Monitored start

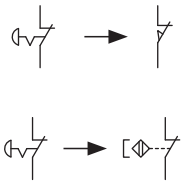
With regard to the indicated diagrams, remove the connection between the S22 and S35 terminals in order to activate the monitored start module.



Monitoring of movable guards and magnetic safety sensors

The safety module can monitor emergency stop circuits, control circuits for movable guards as well as magnetic safety sensors. Replace the emergency stop contacts with switch contacts or sensor contacts.

The sensors can only be used in 2-channel configuration.



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

Application examples See page 365

Safety module **CS AT-3**

Module for emergency stop and end position monitoring for movable guards with delayed contacts at the opening of the input channels and magnetic safety sensors

Main features

- For safety applications up to SIL CL 3/PL e
- Input with 1 or 2 channels
- Choice between automatic start, manual start or monitored start
- Can be connected to electromechanical contacts or to magnetic safety sensors
- 45 mm housing
- 2 instantaneous NO safety contacts, 1 delayed NO safety contact.
- Supply voltage: 24 Vac/dc

Utilization categories

Alternating current: AC15 (50…60 Hz)

Ue (V)	230
Ie (A)	3

Direct current: DC13 (6 oper. cycles/min.)

Ue (V)	24
Ie (A)	4

Quality marks:

EC type examination certificate: IMQ CP 432 DM

UL approval:	E131787
CCC approval:	2021000305000107
EAC approval:	RU C-IT.УТ03.B.00035/19

Compliance with the requirements of:

Machinery Directive 2006/42/EC, EMC Directive 2014/30/EC, RoHS Directive 2011/65/EU.

Technical data

Housing

Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94

Protection degree acc. to EN 60529:	IP40 (housing), IP20 (terminal strip)
Dimensions:	see page 415, design C

General data

SIL level (SIL CL) up to:	SIL CL 3 acc. to EN 62061
Performance Level (PL) up to:	PL e acc. to EN ISO 13849-1
Safety category up to:	category 4 (instantaneous contacts) category 3 (delayed contacts) acc. to EN ISO 13849-1
Safety parameters:	see page 481
Ambient temperature:	-25°C…+55°C
Mechanical endurance:	>10 million operating cycles
Electrical endurance:	>100,000 operating cycles
Pollution degree:	external 3, internal 2
Rated impulse withstand voltage (U_{imp}):	4 kV
Rated insulation voltage (U_i):	250 V
Overvoltage category:	II

Supply

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

Control circuit

Protection against short circuits:	PTC resistance, Ih=0.5 A
PTC times:	response time > 100 ms, release time > 3 s
Maximum resistance per input:	≤ 50 Ω
Current per input:	30 mA (typical)
Min. duration of start impulse t_{MIN}:	> 100 ms
Response time t_A:	< 120 ms
Release time t_{R1}:	< 20 ms
Release time in absence of power supply t_R:	< 200 ms
Release time, delayed contacts t_{R2}:	see "Code structure"
Simultaneity time t_C:	unlimited

In compliance with standards:

EN 60204-1, EN ISO 13855, EN ISO 14118, EN ISO 12100, EN ISO 13850, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 No. 14, GB/T14048.5

Output circuit

Output contacts:	2 instantaneous NO safety contacts, 1 delayed NO safety contact.
Contact type:	forcibly guided
Material of the contacts:	gold-plated silver alloy
Maximum switching voltage:	230/240 Vac; 300 Vdc
Max. current per contact:	6 A
Conventional free air thermal current I_{th}:	6 A
Max. total current ΣI_{th}^2:	36 A^2
Minimum current:	10 mA
Contact resistance:	≤ 100 mΩ
External protection fuse:	4 A

The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See pages 355-364.

Code structure

article | options

CS AT-30V024-TFxx

Release time, delayed contacts (t_{R2})	
0	Fixed time (see TF)
1	0.3 … 3 s, 0.3 s steps
2	1 … 10 s, 1 s steps
3	3 … 30 s, 3 s steps
4	30 … 300 s, 30 s steps

Connection type	
V	Screw terminals
M	Connector with screw terminals
X	Connector with spring terminals

Supply voltage	
024	24 Vac/dc

Release time, delayed contacts (t_{R2})	
TFxx	xx = s (fixed time)

Features approved by UL

Rated supply voltage (U_n):	24 Vac/dc; 50…60 Hz
Power consumption AC:	< 10 VA
Power consumption DC:	< 4 W

Electrical ratings:

- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

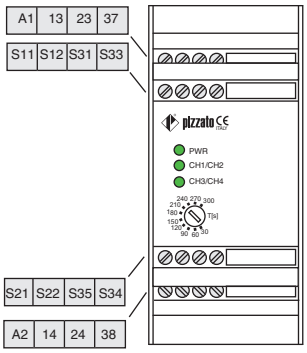
Notes:

- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.
- Surrounding air of 55°C.

- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.
- Air ambiant de 55°C.

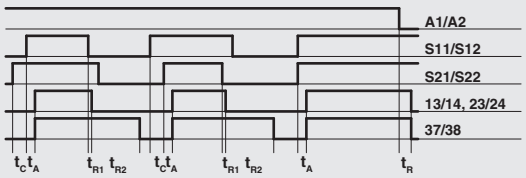
Safety module CS AT-3

Pin assignment

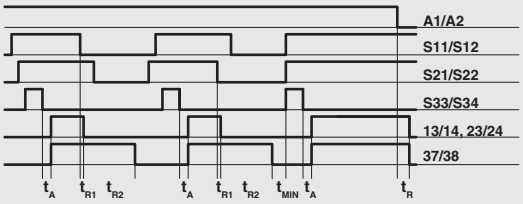


Function diagrams

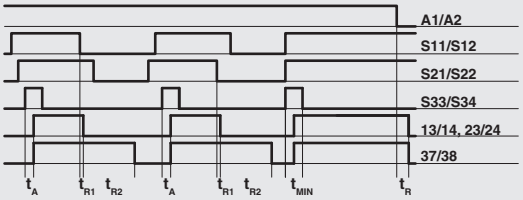
Configuration with automatic start



Configuration with monitored start



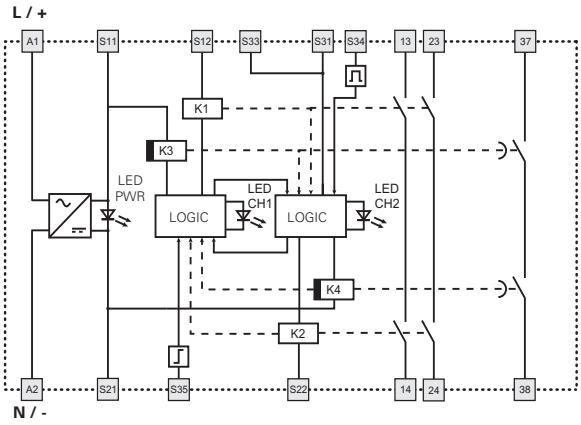
Configuration with manual start



Legend:
- t_{MIN}: Min. duration of start impulse
- t_C: simultaneity time
- t_A: response time
- t_{R1}: release time
- t_R: release time in absence of power supply
- t_{R2}: release time, delayed contacts adjustable (see "Code structure")

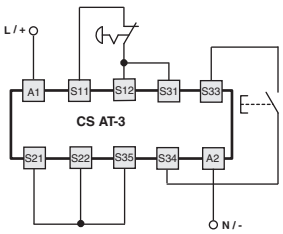
Notes:
The configurations with one channel are obtained taking into consideration the S11/S12 input only. In this case it is necessary to consider times t_{R1} and t_{R2} referred to input S11/S12, time t_R referred to the supply, time t_A referred to input S11/S12 and to the start, and time t_{MIN}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

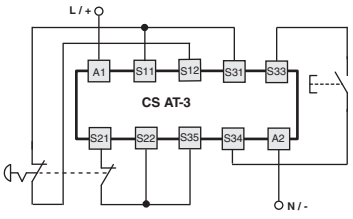
Internal wiring diagram



Input configuration

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

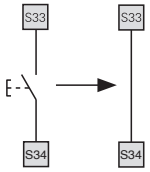




The diagram does not show the exact position of the terminals in the product

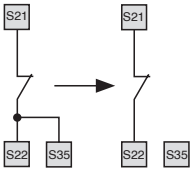
Automatic start

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



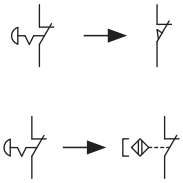
Monitored start

With regard to the indicated diagrams, remove the connection between the S22 and S35 terminals in order to activate the monitored start module.



Monitoring of movable guards and magnetic safety sensors

The safety module can monitor emergency stop circuits, control circuits for movable guards as well as magnetic safety sensors. Replace the emergency stop contacts with switch contacts or sensor contacts. **The sensors can only be used in 2-channel configuration.**



Application examples See page 365

Safety module **CS FS-1**

Safety timer module with delayed contacts at energizing

Main features

- For safety applications up to SIL CL 3/PL e
- Timing circuits by means of safety system with self-monitoring and redundancy
- Release command for interlocked safety devices
- 45 mm housing
- Output contacts:
  1 NO safety contact,
  2 NC auxiliary contacts
- Supply voltage:
  24 Vac/dc, 120 Vac, 230 Vac

Utilization categories

Alternating current: AC15 (50…60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 oper. cycles/min.)
Ue (V) 24
Ie (A) 4

Quality marks:

EC type examination certificate: IMQ CP 432 DM
UL approval: E131787
CCC approval: 2021000305000107
EAC approval: RU C-IT.УТ03.B.00035/19

Compliance with the requirements of:
Machinery Directive 2006/42/EC, EMC Directive 2014/30/EC, RoHS Directive 2011/65/EU.

Technical data

Housing
Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94
Protection degree acc. to EN 60529: IP40 (housing), IP20 (terminal strip)
Dimensions: see page 415, design C

General data
SIL level (SIL CL) up to: SIL CL 3 acc. to EN 62061
Performance Level (PL) up to: PL e acc. to EN ISO 13849-1
Safety category up to: cat. 4 acc. to EN ISO 13849-1 (depending on circuit structure)
Safety parameters: see page 481
Ambient temperature: -25°C…+55°C
Mechanical endurance: >10 million operating cycles
Electrical endurance: >100,000 operating cycles
Pollution degree: external 3, internal 2
Rated impulse withstand voltage (U_{imp}): 4 kV
Rated insulation voltage (U_i): 250 V
Overvoltage category: II

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

Control circuit
Protection against short circuits: PTC resistance, Ih=0.5 A
PTC times: response time > 100 ms, release time > 3 s
Response time t_A: see "Code structure"
Release time in absence of power supply t_R: < 60 ms

In compliance with standards:
EN 60204-1, EN ISO 14118, EN ISO 12100, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 No. 14, GB/T14048.5

Output circuit
Output contacts: 1 NO safety contact, 2 NC auxiliary contacts
Contact type: forcibly guided
Material of the contacts: silver alloy
Maximum switching voltage: 230/240 Vac; 300 Vdc
Max. current per contact: 6 A
Conventional free air thermal current I_{th}: 6 A
Max. total current ΣI_{th}^2: 36 A^2
Minimum current: 10 mA
Contact resistance: ≤ 100 mΩ
External protection fuse: 4 A

The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See pages 355-364.

Code structure

article: **CS FS-11V024-**
options: **TFxx**

Response time (t_A)	
0	Fixed time (see Tfx)
1	0.3 … 3 s, 0.3 s steps
2	1 … 10 s, 1 s steps
3	3 … 30 s, 3 s steps
4	30 … 300 s, 30 s steps

Response time (t_A)	
TFxx	xx = s (fixed time)

Connection type	
V	Screw terminals
M	Connector with screw terminals
X	Connector with spring terminals

Supply voltage	
024	24 Vac/dc
120	120 Vac
230	230 Vac

Features approved by UL

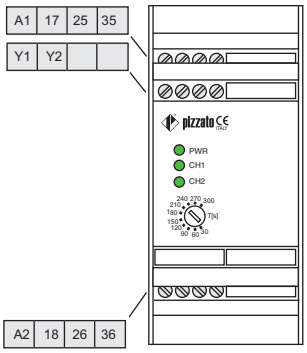
Rated supply voltage (U_n): 24 Vac/dc; 50…60 Hz
120 Vac; 50…60 Hz
230 Vac; 50…60 Hz
Power consumption AC: < 5 VA
Power consumption DC: < 2 W
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

Notes:
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.

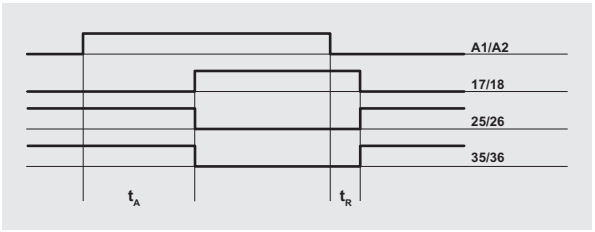
- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

Safety module CS FS-1

Pin assignment

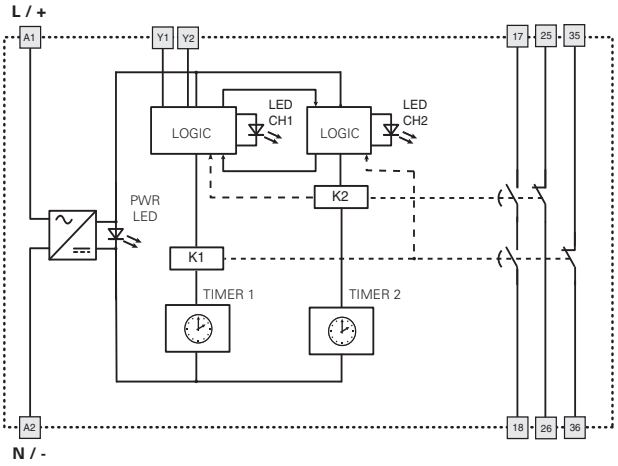


Function diagram



Legend:
t_A: adjustable response time (see "Code structure")
t_R: release time in absence of power supply

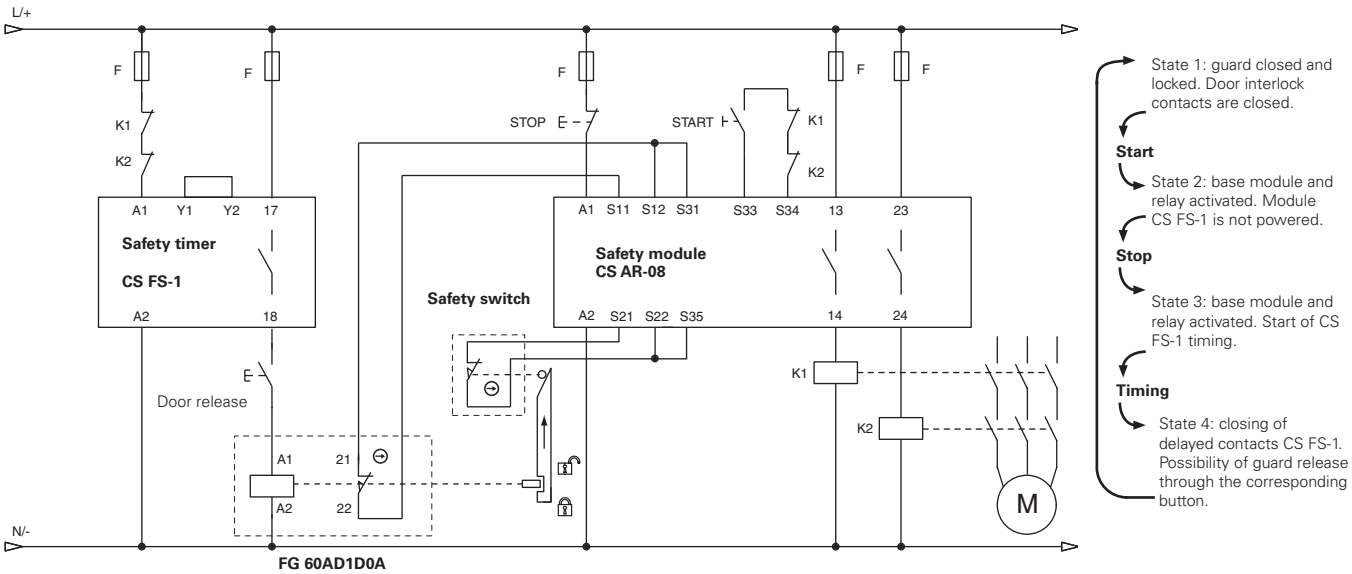
Internal wiring diagram



Y1-Y2: optional feedback inputs from any external contactors which are directly controlled by the module.

Circuit structure

Monitoring of a door-lock system with manual release



FG 60AD1D0A

The diagram illustrates the operating principle of a typical circuit for monitoring a door-lock system with interlock in the de-energised state and manual release of the individual doors.

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

Safety module **CS FS-2**

Safety timer module with delayed contacts at energizing

Main features

- For safety applications up to SIL CL 2/PL d
- Timing circuits by means of safety system with self-monitoring and redundancy
- Release command for interlocked safety devices
- 45 mm housing
- Output contacts:
  1 NO safety contact, 1 NC auxiliary contact, 1 CO auxiliary contact
- Supply voltage:
  24 Vdc, 120 Vac

Utilization categories
Alternating current: AC15 (50…60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 oper. cycles/min.)
Ue (V) 24
Ie (A) 4

Quality marks:

EC type examination certificate: M6A 075157 0017
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0016
EAC approval: RU C-IT.УТ03.B.00035/19
UKCA approval: UK-MAC000074 i01

Compliance with the requirements of:
Machinery Directive 2006/42/EC, EMC Directive 2014/30/EC, RoHS Directive 2011/65/EU.

Technical data

Housing
Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94
Protection degree acc. to EN 60529: IP40 (housing), IP20 (terminal strip)
Dimensions: see page 415, design C

General data
SIL level (SIL CL) up to: SIL CL 2 acc. to EN 62061
Performance Level (PL) up to: PL d acc. to EN ISO 13849-1
Safety category up to: cat. 3 acc. to EN ISO 13849-1
Safety parameters: see page 481
Ambient temperature: -25°C…+55°C
Mechanical endurance: >10 million operating cycles
Electrical endurance: >100,000 operating cycles
Pollution degree: external 3, internal 2
Rated impulse withstand voltage (U_{imp}): 4 kV
Rated insulation voltage (U_i): 250 V
Overvoltage category: II

Supply
Rated supply voltage (U_n): 24 Vdc (A1-A2)
120 Vac; 50…60 Hz (B1-B2)
Max. DC residual ripple in DC: 10%
Supply voltage tolerance: ±15% of U_n
Power consumption AC: < 5 VA
Power consumption DC: < 2 W

Control circuit
Protection against short circuits: PTC resistance, Ih=0.5 A
PTC times: response time > 100 ms, release time > 3 s
Response time t_A: see "Code structure"
Release time in absence of power supply t_R: < 100 ms

In compliance with standards:
EN 60204-1, EN ISO 14118, EN ISO 12100, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 No. 14, GB/T14048.5

Output circuit
Output contacts: 1 NO safety contact, 1 NC auxiliary contact, 1 CO auxiliary contact,
Contact type: forcibly guided
Material of the contacts: silver alloy
Maximum switching voltage: 230/240 Vac; 300 Vdc
Max. current per contact: 6 A
Conventional free air thermal current I_{th}: 6 A
Max. total current ΣI_{th}^2: 36 A^2
Minimum current: 10 mA
Contact resistance: ≤ 100 mΩ
External protection fuse: 4 A
Error signal output (Y14): Type: PNP
Rated operating voltage (U_e): 24 Vdc
Rated operating current (Ie): 10 mA

The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See pages 355-364.

Code structure

article: **CS FS-20VU24-**
options: **TFxx**

Response time (t_A)	
0	Fixed time (see Tfx)
1	0.3 … 3 s, 0.3 s steps
2	1 … 10 s, 1 s steps
3	3 … 30 s, 3 s steps
4	30 … 300 s, 30 s steps

Response time (t_A)	
TFxx	xx = s (fixed time)

Connection type	
V	Screw terminals
M	Connector with screw terminals
X	Connector with spring terminals

Supply voltage	
U24	24 Vdc
120	24 Vdc (A1-A2) 120 Vac (B1-B2)

Features approved by UL

Rated supply voltage (U_n): 24 Vdc; 120 Vac; 50…60 Hz
Power consumption AC: < 5 VA
Power consumption DC: < 2 W
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

Notes:
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.

- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

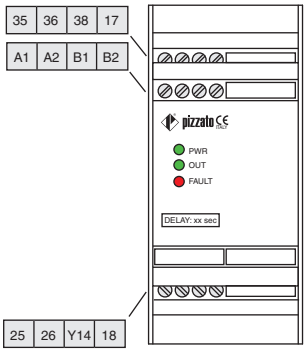
Features approved by TÜV SÜD

Rated supply voltage (U_n): 24 Vdc; ± 15%, 120 Vac ± 15%
Power consumption: 5 VA max AC, 2 W max DC
Rated operating current (max.): 4 A
Maximum switching load (max.): 1380 VA
Ambient temperature: -25°C … + 55°C
Storage temperature: -25°C … + 70°C
Protection degree: IP40 (housing), IP20 (terminal strip)
In compliance with standards: 2006/42/EC Machinery Directive, EN ISO 13849-1:2015 (up to Cat. 3 PL d), EN 61508-1:2010 (SIL 2), EN 61508-2:2010 (SIL 2), EN 61508-3:2010 (SIL 2), EN IEC 62061:2021.

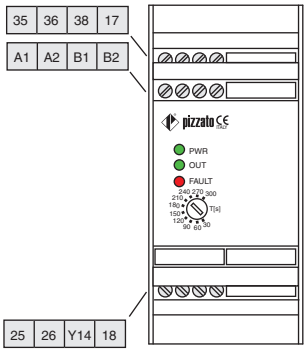
Safety module CS FS-2

Pin assignment

CS FS-20••••-TFxx

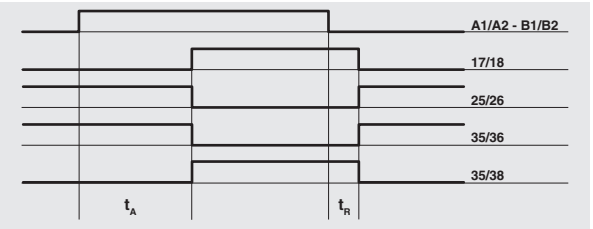


CS FS-2•••••



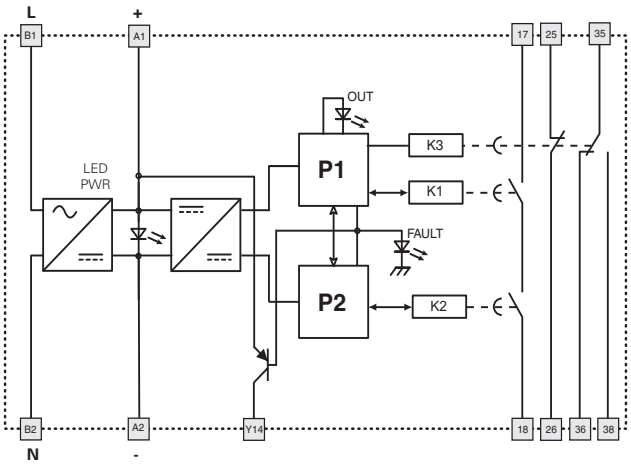
Function diagram

CS FS-2••••• Delay on
Normal operation without faults



Legend:
t_A: adjustable response time (see "Code structure")
t_R: release time in absence of power supply

Internal wiring diagram



A1-A2: 24 Vdc
B1-B2: 120 Vac

Y14: auxiliary output, activated when the module enters fault state.

Safety module **CS FS-3**

Safety timer modules with response delay

Main features

- For safety applications up to SIL CL 2/PL d
- Timing circuits by means of safety system with self-monitoring and redundancy
- Release command for interlocked safety devices
- 45 mm housing
- Output contacts:
  1 NO safety contact, 1 NC auxiliary contact, 1 CO auxiliary contact
- Supply voltage:
  24 Vdc, 120 Vac

Utilization categories
Alternating current: AC15 (50…60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 oper. cycles/min.)
Ue (V) 24
Ie (A) 4

Quality marks:

EC type examination certificate: M6A 075157 0017
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0016
EAC approval: RU C-IT.УТ03.B.00035/19
UKCA approval: UK-MAC000074 i01

Compliance with the requirements of:
Machinery Directive 2006/42/EC,
EMC Directive 2014/30/EC,
RoHS Directive 2011/65/EU.

Technical data

Housing
Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94
Protection degree acc. to EN 60529: IP40 (housing), IP20 (terminal strip)
Dimensions: see page 415, design C

General data
SIL level (SIL CL) up to: SIL CL 2 acc. to EN 62061
Performance Level (PL) up to: PL d acc. to EN ISO 13849-1
Safety category up to: cat. 3 acc. to EN ISO 13849-1
Safety parameters: see page 481
Ambient temperature: -25°C…+55°C
Mechanical endurance: >10 million operating cycles
Electrical endurance: >100,000 operating cycles
Pollution degree: external 3, internal 2
Rated impulse withstand voltage (U_{imp}): 4 kV
Rated insulation voltage (U_i): 250 V
Overvoltage category: II

Supply
Rated supply voltage (U_n): 24 Vdc (A1-A2)
120 Vac; 50…60 Hz (B1-B2)
Max. DC residual ripple in DC: 10%
Supply voltage tolerance: ±15% of U_n
Power consumption AC: < 5 VA
Power consumption DC: < 2 W

Control circuit
Protection against short circuits: PTC resistance, Ih=0.5 A
PTC times: response time > 100 ms, release time > 3 s
Release time t_A: see "Code structure"
Release time in absence of power supply t_R: < 100 ms
Start-up time t_S: < 200 ms

In compliance with standards:
EN 60204-1, EN ISO 14118, EN ISO 12100, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 No. 14, GB/T14048.5

Output circuit
Output contacts: 1 NO safety contact, 1 NC auxiliary contact, 1 CO auxiliary contact,
Contact type: forcibly guided
Material of the contacts: silver alloy
Maximum switching voltage: 230/240 Vac; 300 Vdc
Max. current per contact: 6 A
Conventional free air thermal current I_{th}: 6 A
Max. total current ΣI_{th}^2: 36 A^2
Minimum current: 10 mA
Contact resistance: ≤ 100 mΩ
External protection fuse: 4 A
Error signal output (Y14): Type: PNP
Rated operating voltage (U_e): 24 Vdc
Rated operating current (I_e): 10 mA

The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See pages 355-364.

Code structure

article: **CS FS-30VU24-**
options: **TFxx**

Release time (t_A)	
0	Fixed time (see Tfx)
1	0.3 … 3 s, 0.3 s steps
2	1 … 10 s, 1 s steps
3	3 … 30 s, 3 s steps
4	30 … 300 s, 30 s steps

Release time (t_A)	
TFxx	xx = s (fixed time)

Connection type	
V	Screw terminals
M	Connector with screw terminals
X	Connector with spring terminals

Supply voltage	
U24	24 Vdc
120	24 Vdc (A1-A2) 120 Vac (B1-B2)

Features approved by UL

Rated supply voltage (U_n): 24 Vdc; 120 Vac; 50…60 Hz
Power consumption AC: < 5 VA
Power consumption DC: < 2 W
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

Notes:
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.

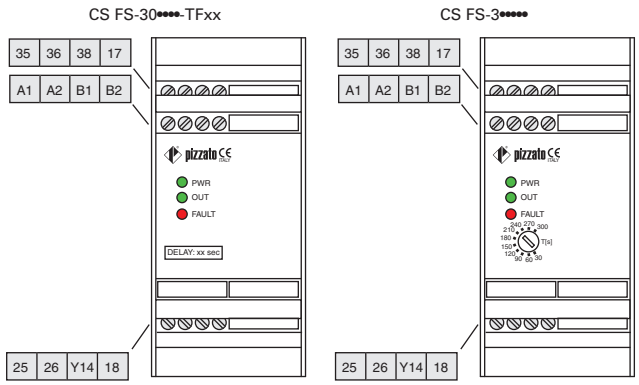
- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

Features approved by TÜV SÜD

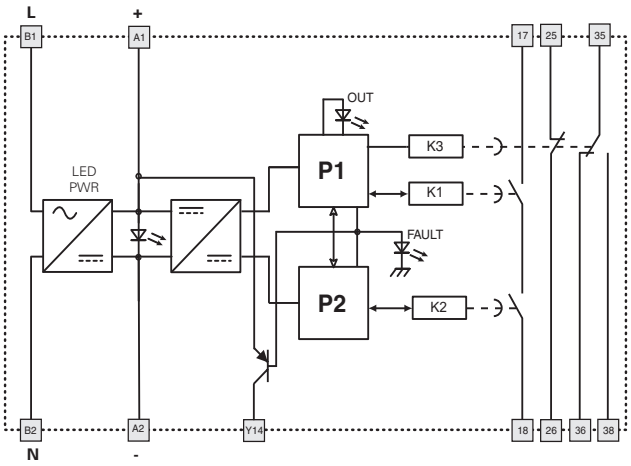
Rated supply voltage (U_n): 24 Vdc; ± 15%, 120 Vac ± 15%
Power consumption: 5 VA max AC, 2 W max DC
Rated operating current (max.): 4 A
Maximum switching load (max.): 1380 VA
Ambient temperature: -25°C … + 55°C
Storage temperature: -25°C … + 70°C
Protection degree: IP40 (housing), IP20 (terminal strip)
In compliance with standards: 2006/42/EC Machinery Directive, EN ISO 13849-1:2015 (up to Cat. 3 PL d), EN 61508-1:2010 (SIL 2), EN 61508-2:2010 (SIL 2), EN 61508-3:2010 (SIL 2), EN IEC 62061:2021.

Safety module CS FS-3

Pin assignment



Internal wiring diagram

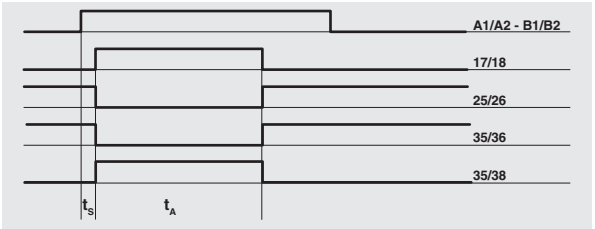


A1-A2: 24 Vdc
B1-B2: 120 Vac

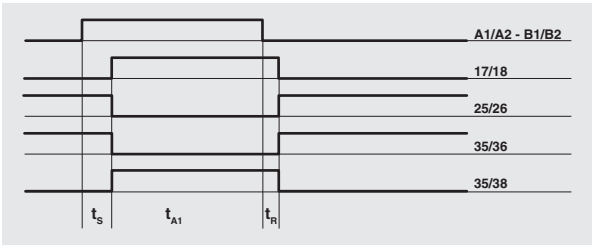
Y14: auxiliary output, activated when the module enters fault state.

Function diagram

CS FS-3••••• Delay off
Normal operation without faults



Operation without power supply



Legend:
t_A: release time (see "Code structure")
t_{A1}: release time if duration of power supply is less than t_A
t_R: release time in absence of power supply
t_S: start-up time

Safety module **CS FS-5**

Safety timer module with delayed contacts upon opening of the inputs

Main features

- For safety applications up to SIL CL 2/PL d
- Timing circuits by means of safety system with self-monitoring and redundancy
- Release command for interlocked safety devices
- 45 mm housing
- Output contacts:
  1 NO safety contact, 1 NC auxiliary contact, 1 CO auxiliary contact,
- Supply voltage:
  24 Vdc, 120 Vac

Utilization categories
Alternating current: AC15 (50…60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 oper. cycles/min.)
Ue (V) 24
Ie (A) 4

Quality marks:

EC type examination certificate: M6A 075157 0017
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0016
EAC approval: RU C-IT.УТ03.B.00035/19
UKCA approval: UK-MAC000074 i01

Compliance with the requirements of:
Machinery Directive 2006/42/EC,
EMC Directive 2014/30/EC,
RoHS Directive 2011/65/EU.

Technical data

Housing
Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94
Protection degree acc. to EN 60529: IP40 (housing), IP20 (terminal strip)
Dimensions: see page 415, design C

General data
SIL level (SIL CL) up to: SIL CL 2 acc. to EN 62061
Performance Level (PL) up to: PL d acc. to EN ISO 13849-1
Safety category up to: cat. 3 acc. to EN ISO 13849-1
Safety parameters: see page 481
Ambient temperature: -25°C…+55°C
Mechanical endurance: >10 million operating cycles
Electrical endurance: >100,000 operating cycles
Pollution degree: external 3, internal 2
Rated impulse withstand voltage (U_{imp}): 4 kV
Rated insulation voltage (U_i): 250 V
Overvoltage category: II

Supply
Rated supply voltage (U_n): 24 Vdc (A1-A2)
120 Vac; 50…60 Hz (B1-B2)
Max. DC residual ripple in DC: 10%
Supply voltage tolerance: ±15% of U_n
Power consumption AC: < 5 VA
Power consumption DC: < 2 W

Control circuit
Protection against short circuits: PTC resistance, Ih=0.5 A
PTC times: response time > 100 ms, release time > 3 s
Release time t_A: see "Code structure"
Release time in absence of power supply t_R: < 100 ms

Input circuit
Maximum resistance per input: ≤ 50 Ω
Current per input: < 8 mA
Response time t_S: < 150 ms
Min. duration input signal t_{MIN}: > 100 ms

In compliance with standards:
EN 60204-1, EN ISO 14118, EN ISO 12100, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 No. 14, GB/T14048.5

Output circuit
Output contacts: 1 NO safety contact, 1 NC auxiliary contact, 1 CO auxiliary contact,
Contact type: forcibly guided
Material of the contacts: silver alloy
Maximum switching voltage: 230/240 Vac; 300 Vdc
Max. current per contact: 6 A
Conventional free air thermal current I_{th}: 6 A
Max. total current ΣI_{th}^2: 36 A²
Minimum current: 10 mA
Contact resistance: ≤ 100 mΩ
External protection fuse: 4 A
Error signal output (Y14): Type: PNP
Rated operating voltage (U_e): 24 Vdc
Rated operating current (I_e): 10 mA

The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See pages 355-364.

Code structure

article: **CS FS-50VU24-**
options: **TFxx**

Release time (t_A)	
0	Fixed time (see Tfx)
1	0.3 … 3 s, 0.3 s steps
2	1 … 10 s, 1 s steps
3	3 … 30 s, 3 s steps
4	30 … 300 s, 30 s steps

Release time (t_A)	
TFxx	xx = s (fixed time)

Connection type	
V	Screw terminals
M	Connector with screw terminals
X	Connector with spring terminals

Supply voltage	
U24	24 Vdc
120	24 Vdc (A1-A2) 120 Vac (B1-B2)

Features approved by UL

Rated supply voltage (U_n): 24 Vdc; 120 Vac; 50…60 Hz
Power consumption AC: < 5 VA
Power consumption DC: < 2 W
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

Notes:
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.

- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

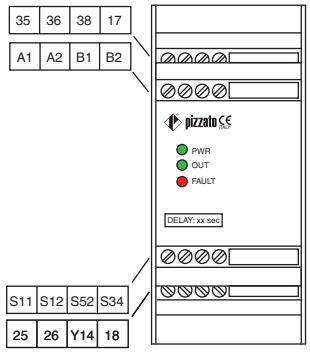
Features approved by TÜV SÜD

Rated supply voltage (U_n): 24 Vdc; ± 15%, 120 Vac ± 15%
Power consumption: 5 VA max AC, 2 W max DC
Rated operating current (max.): 4 A
Maximum switching load (max.): 1380 VA
Ambient temperature: -25°C … + 55°C
Storage temperature: -25°C … + 70°C
Protection degree: IP40 (housing), IP20 (terminal strip)
In compliance with standards: 2006/42/EC Machinery Directive, EN ISO 13849-1:2015 (up to Cat. 3 PL d), EN 61508-1:2010 (SIL 2), EN 61508-2:2010 (SIL 2), EN 61508-3:2010 (SIL 2), EN IEC 62061:2021.

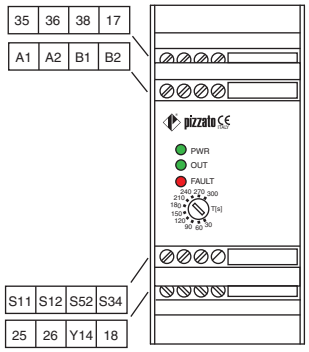
Safety module CS FS-5

Pin assignment

CS FS-50••••-TFxx

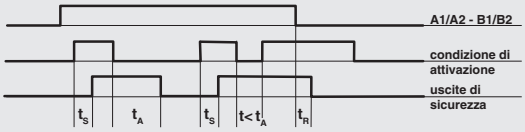


CS FS-5•••••

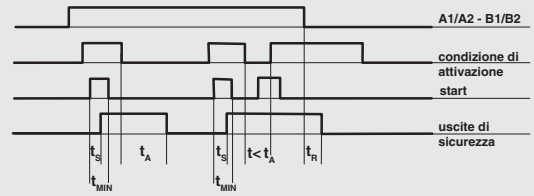


Function diagram

Configuration with automatic start

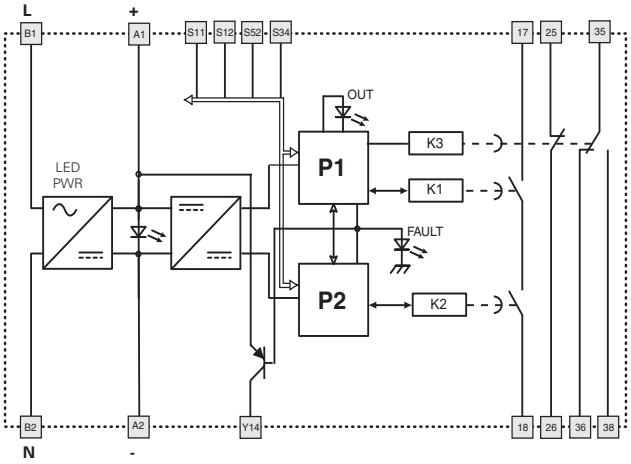


Configuration with manual start



Legend:
t_A: release time (see "Code structure")
t_R: release time in absence of power supply
t_S: response time
t_{MIN}: min. duration input signal

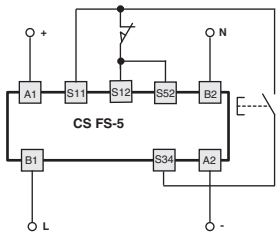
Internal wiring diagram

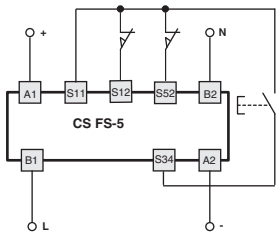


A1-A2: 24 Vdc
B1-B2: 120 Vac
Y14: auxiliary output, activated when the module enters fault state.

Input configuration

Movable guard monitoring	
Input configuration with manual start	
1 channel	2 channels

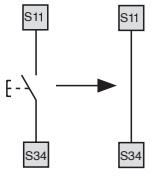




The diagram does not show the exact position of the terminals in the product

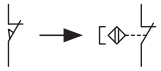
Automatic start

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

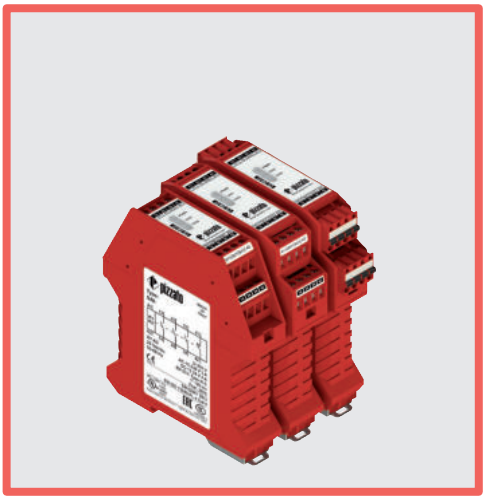


Monitoring of movable guards and magnetic safety sensors

The safety module can monitor control circuits for movable guards as well as magnetic safety sensors. To do this, the switch contacts must be replaced with sensors.
The sensors can only be used in 2-channel configuration.



Safety module **CS DM-01**



Two-hand control device according to EN ISO 13851: type III C or safety module with synchronism control

Main features

- For safety applications up to SIL CL 3/PL e
- Two-channel inputs for two-hand control device or movable guards
- Connection of input channels of opposite potentials
- Reduced housing width of 22.5 mm
- 3 NO safety contacts, 1 NC auxiliary contact
- Supply voltage: 24 Vac/dc, 120 Vac, 230 Vac

Utilization categories

Alternating current: AC15 (50…60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 oper. cycles/min.)
Ue (V) 24
Ie (A) 4

Quality marks:

EC type examination certificate: IMQ BP 210 DM
UL approval: E131787
CCC approval: 2021000305000107
EAC approval: RU C-IT.УТ03.B.00035/19

Compliance with the requirements of:

Machinery Directive 2006/42/EC,
EMC Directive 2014/30/EC,
RoHS Directive 2011/65/EU.

Technical data

Housing

Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94

Protection degree acc. to EN 60529:	IP40 (housing), IP20 (terminal strip)
Dimensions:	see page 415, design A

General data

SIL level (SIL CL) up to:	SIL CL 3 acc. to EN 62061
Performance Level (PL) up to:	PL e acc. to EN ISO 13849-1
Safety category up to:	cat. 4 acc. to EN ISO 13849-1
Type of two-hand control device:	EN ISO 13851: type III C
Safety parameters:	see page 481
Ambient temperature:	-25°C…+55°C
Mechanical endurance:	>10 million operating cycles
Electrical endurance:	>100,000 operating cycles
Pollution degree:	external 3, internal 2
Rated impulse withstand voltage (U_{imp}):	4 kV
Rated insulation voltage (U_i):	250 V
Overvoltage category:	II

Supply

Rated supply voltage (U_n):	24 Vac/dc; 50…60 Hz 120 Vac; 50…60 Hz 230 Vac; 50…60 Hz
Max. DC residual ripple in DC:	10%
Supply voltage tolerance:	±15% of U_n
Power consumption AC:	< 5 VA
Power consumption DC:	< 2 W

Control circuit

Protection against short circuits:	PTC resistance, Ih=0.5 A
PTC times:	response time > 100 ms, release time > 3 s
Maximum resistance per input:	≤ 50 Ω
Current per input:	30 mA (typical)
Response time t_A:	< 50 ms
Release time t_{R1}:	< 20 ms
Release time in absence of power supply t_R:	< 90 ms
Time range for synchronised actuation t_{SN}:	< 0.5 s

In compliance with standards:

EN 60204-1, EN ISO 14118, EN ISO 12100, EN ISO 13851, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 No. 14, GB/T14048.5

Output circuit

Output contacts:	3 NO safety contacts, 1 NC auxiliary contact
Contact type:	forcibly guided
Material of the contacts:	gold-plated silver alloy
Maximum switching voltage:	230/240 Vac; 300 Vdc
Max. current per contact:	6 A
Conventional free air thermal current I_{th}:	6 A
Max. total current Σ I_{th}^2:	64 A^2
Minimum current:	10 mA
Contact resistance:	≤ 100 mΩ
External protection fuse:	4 A

The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See pages 355-364.

Code structure

CS DM-01V024

Connection type	
V	Screw terminals
M	Connector with screw terminals
X	Connector with spring terminals

Supply voltage	
024	24 Vac/dc
120	120 Vac
230	230 Vac

Features approved by UL

Rated supply voltage (U_n):	24 Vac/dc; 50…60 Hz 120 Vac; 50…60 Hz 230 Vac; 50…60 Hz
Power consumption AC:	< 5 VA
Power consumption DC:	< 2 W

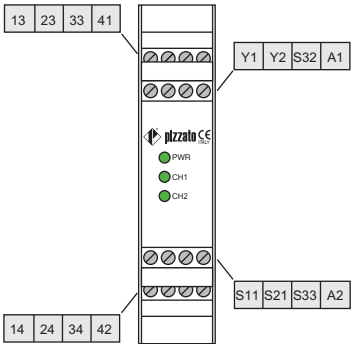
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

Notes:
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.

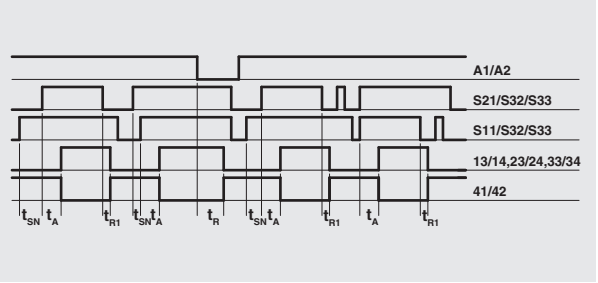
- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

Safety module CS DM-01

Pin assignment

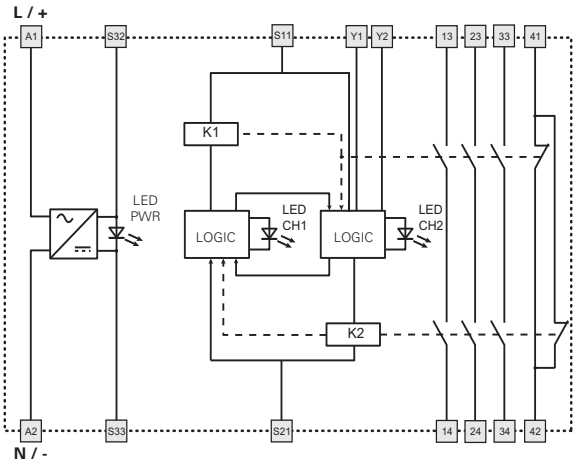


Function diagram



Legend:
t_{SN}: time range for synchronised actuation
t_A: response time
t_{R1}: release time
t_R: release time in absence of power supply

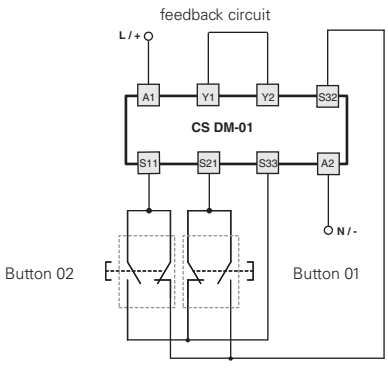
Internal wiring diagram



Application example on page 368.

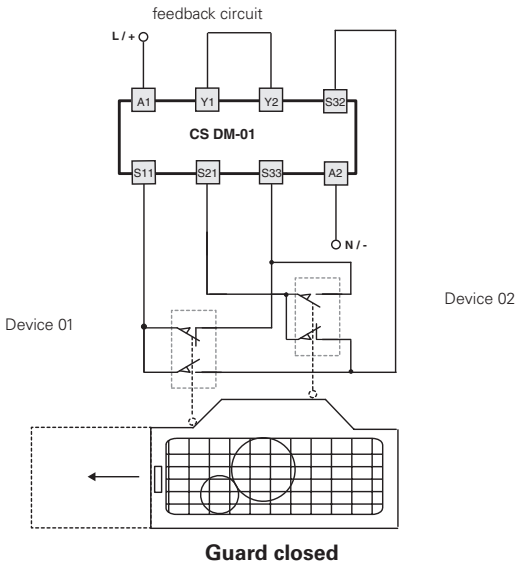
Input configuration

Circuit with two-hand control device type III C according to EN ISO 13851

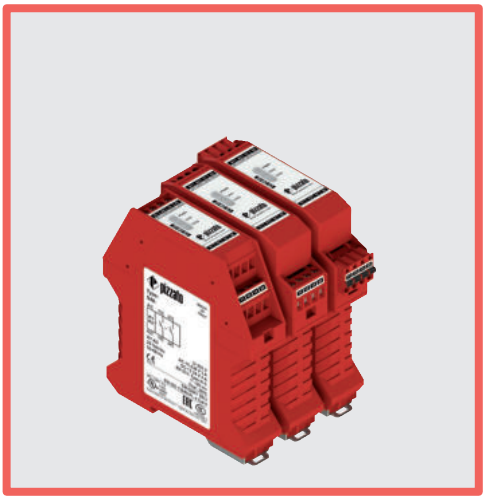


The diagram does not show the exact position of the terminals in the product

Movable guard monitoring with automatic start and simultaneity between channels < 0.5 s (safety category 4)



Safety module **CS DM-02**



Two-hand control device according to EN ISO 13851: type III C or safety module with synchronism control

Main features

- For safety applications up to SIL CL 3/PL e
- Two-channel inputs for two-hand control device or movable guards
- Connection of input channels of opposite potentials
- Reduced housing width of 22.5 mm
- 2 NO safety contacts
- Supply voltage: 24 Vac/dc, 120 Vac, 230 Vac

Utilization categories

Alternating current: AC15 (50…60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 oper. cycles/min.)
Ue (V) 24
Ie (A) 4

Quality marks:

EC type examination certificate: IMQ BP 210 DM
UL approval: E131787
CCC approval: 2021000305000107
EAC approval: RU C-IT.УТ03.B.00035/19

Compliance with the requirements of:

Machinery Directive 2006/42/EC,
EMC Directive 2014/30/EC,
RoHS Directive 2011/65/EU.

Technical data

Housing

Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94

Protection degree acc. to EN 60529:	IP40 (housing), IP20 (terminal strip)
Dimensions:	see page 415, design A

General data

SIL level (SIL CL) up to:	SIL CL 3 acc. to EN 62061
Performance Level (PL) up to:	PL e acc. to EN ISO 13849-1
Safety category up to:	cat. 4 acc. to EN ISO 13849-1
Type of two-hand control device:	EN ISO 13851: type III C
Safety parameters:	see page 481
Ambient temperature:	-25°C…+55°C
Mechanical endurance:	>10 million operating cycles
Electrical endurance:	>100,000 operating cycles
Pollution degree:	external 3, internal 2
Rated impulse withstand voltage (U_{imp}):	4 kV
Rated insulation voltage (U_i):	250 V
Overvoltage category:	II

Supply

Rated supply voltage (U_n):	24 Vac/dc; 50…60 Hz 120 Vac; 50…60 Hz 230 Vac; 50…60 Hz
Max. DC residual ripple in DC:	10%
Supply voltage tolerance:	±15% of U_n
Power consumption AC:	< 5 VA
Power consumption DC:	< 2 W

Control circuit

Protection against short circuits:	PTC resistance, Ih=0.5 A
PTC times:	response time > 100 ms, release time > 3 s
Maximum resistance per input:	≤ 50 Ω
Current per input:	30 mA (typical)
Response time t_A:	< 30 ms
Release time t_{R1}:	< 25 ms
Release time in absence of power supply t_R:	< 90 ms
Time range for synchronised actuation t_{SN}:	< 0.5 s

In compliance with standards:

EN 60204-1, EN ISO 14118, EN ISO 12100, EN ISO 13851, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 No. 14, GB/T14048.5

Output circuit

Output contacts:	2 NO safety contacts
Contact type:	forcibly guided
Material of the contacts:	gold-plated silver alloy
Maximum switching voltage:	230/240 Vac; 300 Vdc
Max. current per contact:	6 A
Conventional free air thermal current I_{th}:	6 A
Max. total current ΣI_{th}^2:	36 A^2
Minimum current:	10 mA
Contact resistance:	≤ 100 mΩ
External protection fuse:	4 A

The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See pages 355-364.

Code structure

CS DM-02V024

Connection type		Supply voltage	
V	Screw terminals	**024**	24 Vac/dc
M	Connector with screw terminals	**120**	120 Vac
X	Connector with spring terminals	**230**	230 Vac

Features approved by UL

Rated supply voltage (U_n):	24 Vac/dc; 50…60 Hz 120 Vac; 50…60 Hz 230 Vac; 50…60 Hz
Power consumption AC:	< 5 VA
Power consumption DC:	< 2 W

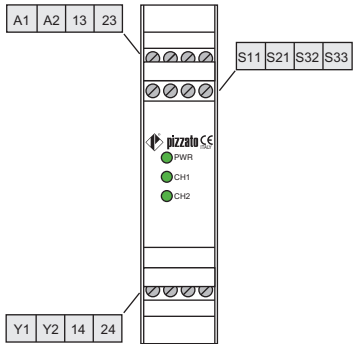
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

Notes:
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.

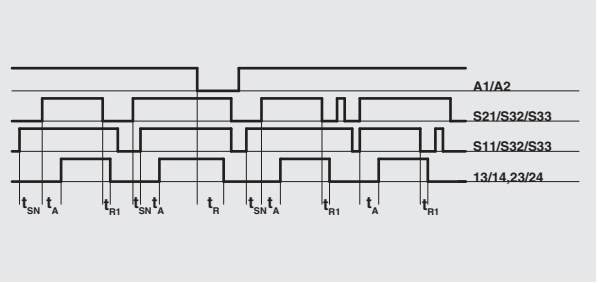
- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

Safety module CS DM-02

Pin assignment

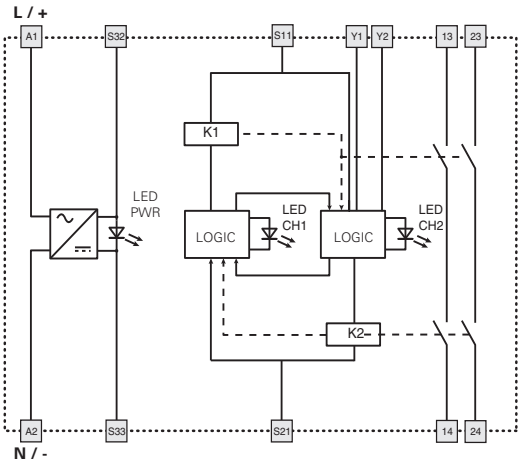


Function diagram



Legend:
t_{SN}: time range for synchronised actuation
t_A: response time
t_{R1}: release time
t_R: release time in absence of power supply

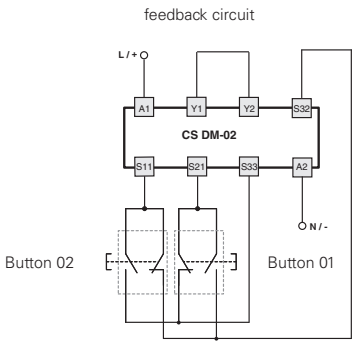
Internal wiring diagram



Application example on page 368.

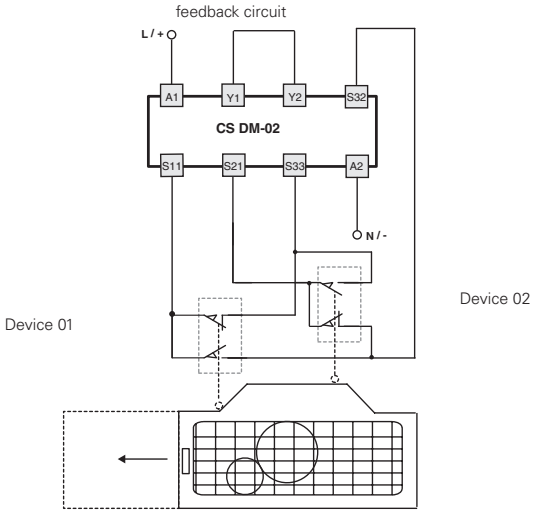
Input configuration

Circuit with two-hand control device type III C according to EN ISO 13851



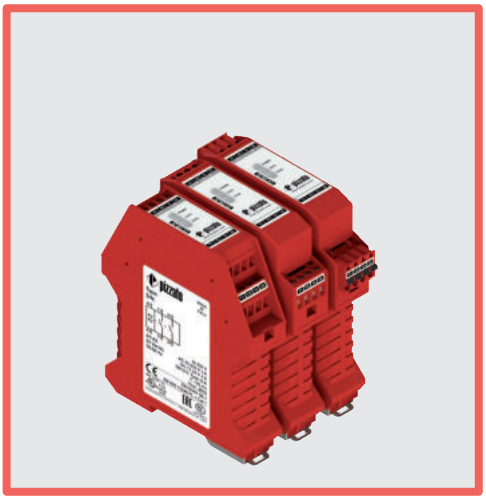
The diagram does not show the exact position of the terminals in the product

Movable guard monitoring with automatic start and simultaneity between channels < 0.5 s (safety category 4)



Guard closed

Safety module **CS DM-20**



Two-hand control device according to EN ISO 13851: type III C or safety module with synchronism control

Main features

- For safety applications up to SIL CL 1/PL c
- Two-channel inputs for two-hand control device or movable guards
- Connection of input channels of opposite potentials
- Reduced housing width of 22.5 mm
- 2 NO safety contacts,
- Supply voltage: 24 Vac/dc, 120 Vac, 230 Vac

Utilization categories

Alternating current: AC15 (50…60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 oper. cycles/min.)
Ue (V) 24
Ie (A) 4

Quality marks:

UL approval:	E131787
CCC approval:	2021000305000107
EAC approval:	RU C-IT.УТ03.B.00035/19

Compliance with the requirements of:

Machinery Directive 2006/42/EC,
EMC Directive 2014/30/EC,
RoHS Directive 2011/65/EU.

Technical data

Housing

Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94

Protection degree acc. to EN 60529:	IP40 (housing), IP20 (terminal strip)
Dimensions:	see page 415, design A

General data

SIL level (SIL CL) up to:	SIL CL 1 acc. to EN 62061
Performance Level (PL) up to:	PL c acc. to EN ISO 13849-1
Type of two-hand control device:	EN ISO 13851: type III A
Safety parameters:	see page 481
Ambient temperature:	-25°C…+55°C
Mechanical endurance:	>10 million operating cycles
Electrical endurance:	>100,000 operating cycles
Pollution degree:	external 3, internal 2
Rated impulse withstand voltage (U_{imp}):	4 kV
Rated insulation voltage (U_i):	250 V
Overvoltage category:	II

Supply

Rated supply voltage (U_n):	24 Vac/dc; 50…60 Hz 120 Vac; 50…60 Hz 230 Vac; 50…60 Hz
Max. DC residual ripple in DC:	10%
Supply voltage tolerance:	±15% of U_n
Power consumption AC:	< 5 VA
Power consumption DC:	< 2 W

Control circuit

Protection against short circuits:	PTC resistance, Ih=0.5 A
PTC times:	response time > 100 ms, release time > 3 s
Maximum resistance per input:	≤ 100 Ω
Current per input:	32 mA (typical)
Response time t_A:	< 20 ms
Release time t_{R1}:	< 20 ms
Release time in absence of power supply t_R:	< 250 ms
Time range for synchronised actuation t_{SN}:	< 0.5 s

In compliance with standards:

EN 60204-1, EN ISO 14118, EN ISO 12100, EN ISO 13851, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 No. 14, GB/T14048.5

Output circuit

Output contacts:	2 NO safety contacts
Contact type:	forcibly guided
Material of the contacts:	gold-plated silver alloy
Maximum switching voltage:	230/240 Vac; 300 Vdc
Max. current per contact:	6 A
Conventional free air thermal current I_{th}:	6 A
Max. total current ΣI_{th}^2:	36 A^2
Minimum current:	10 mA
Contact resistance:	≤ 100 mΩ
External protection fuse:	4 A

The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See pages 355-364.

Code structure

CS DM-20V024

Connection type		Supply voltage	
V	Screw terminals	**024**	24 Vac/dc
M	Connector with screw terminals	**120**	120 Vac
X	Connector with spring terminals	**230**	230 Vac

Features approved by UL

Rated supply voltage (U_n):	24 Vac/dc; 50…60 Hz 120 Vac; 50…60 Hz 230 Vac; 50…60 Hz
Power consumption AC:	< 5 VA
Power consumption DC:	< 2 W

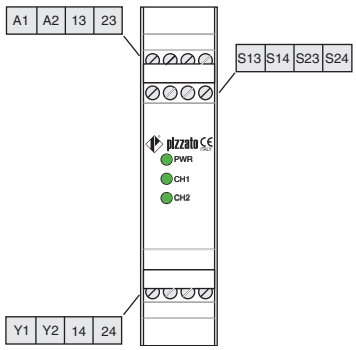
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

Notes:
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.

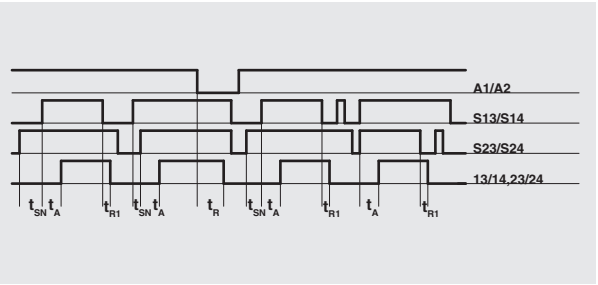
- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

Safety module CS DM-20

Pin assignment

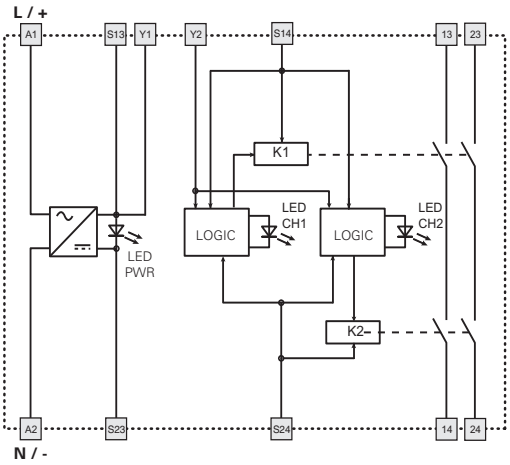


Function diagram



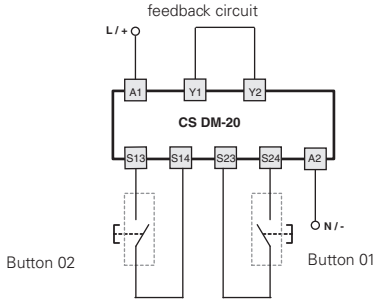
Legend:
t_{SN}: time range for synchronised actuation
t_A: response time
t_{R1}: release time
t_R: release time in absence of power supply

Internal wiring diagram



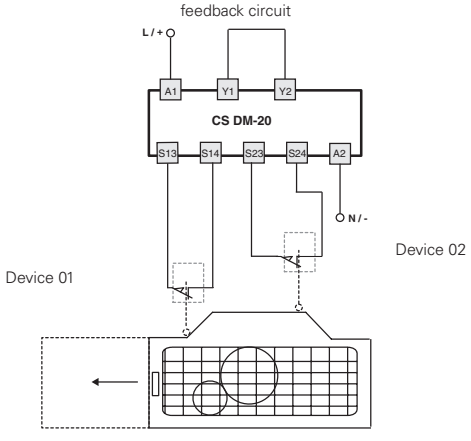
Input configuration

Circuit with two-hand control device type III A according to EN ISO 13851



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

Movable guard monitoring with automatic start and simultaneity between channels < 0.5 s



Guard closed

Safety module **CS AM-01**

Safety modules for motor standstill monitoring

Main features

- For safety applications up to SIL CL 2/PL d
- Select from 10 different residual voltages on motor standstill
- Galvanic separation between control circuit and measurement circuit
- 45 mm housing
- 2 NO safety contacts
  1 NC auxiliary contact
- 2 semiconductor outputs:
  - 1 signalling output for failure state
  - 1 signalling output for switching state of safety relays
- Possibility to connect single-phase or three-phase motors to measuring circuits
- Supply voltages: 24 … 230 Vac/dc

Utilization categories

Alternating current: AC15 (50…60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 oper. cycles/min.)
Ue (V) 24
Ie (A) 4

Quality marks:

EC type examination certificate: IMQ CS 487 DM
UL approval: E131787
CCC approval: 2021000305000107
EAC approval: RU C-IT.УТ03.B.00035/19

Compliance with the requirements of:

Machinery Directive 2006/42/EC,
EMC Directive 2014/30/EC,
RoHS Directive 2011/65/EU.

Technical data

Housing

Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94

Protection degree acc. to EN 60529:	IP40 (housing), IP20 (terminal strip)
Dimensions:	see page 415, design C

General data

SIL level (SIL CL) up to:	SIL CL 2 acc. to EN 62061
Performance Level (PL) up to:	PL d acc. to EN ISO 13849-1
Safety category up to:	cat. 3 acc. to EN ISO 13849-1
Safety parameters:	see page 481
Ambient temperature:	-25°C…+55°C
Mechanical endurance:	>10 million operating cycles
Electrical endurance:	>100,000 operating cycles
Pollution degree:	external 3, internal 2
Rated impulse withstand voltage (U_{imp}):	4 kV
Rated insulation voltage (U_i):	250 V
Overvoltage category:	II

Supply

Rated supply voltage (U_n):	24 … 230 Vac/dc; 50…60 Hz
Max. DC residual ripple in DC:	10%
Supply voltage tolerance:	±15% of U_n
Power consumption AC:	< 6 VA
Power consumption DC:	< 2 W

Input circuit

Voltage between terminals L1-L2-L3:	0 … 690 V
Frequency:	0 … 3 kHz
Input impedance:	>1 MΩ
Started motor threshold voltage:	from 20 mV to 500 mV adjustable in 10 increments
Stopped motor threshold voltage:	half the motor threshold voltage with motor in operation
Maximum input impedance Y1-Y2:	< 20 Ω
Current in START Y1-Y2 circuit:	70 mA (typical)
RESET input voltage:	24 Vdc ± 20%
RESET input current:	10 mA (typical)

Control circuit

Response time t_A:	< 3 s
Release time t_{R1}:	< 200 ms
Release time in absence of power supply t_R:	< 3 s
Simultaneity time t_{C1}, t_{C2}:	3 s
Test:	Self-test upon activation of the supply voltage and after activation of the RESET input.
Test duration:	2.5 s (During the test, the voltage in the measurement circuits must be less than the threshold voltage of the motor while at a standstill)

In compliance with standards:

EN 60204-1, EN ISO 14118, EN ISO 12100, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 No. 14, GB/T14048.5

Output circuit

Output contacts:	2 NO safety contacts, 1 NC auxiliary contact
Contact type:	forcibly guided
Material of the contacts:	gold-plated silver alloy
Maximum switching voltage:	230/240 Vac; 300 Vdc
Max. current per contact:	6 A
Conventional free air thermal current I_{th}:	6 A
Max. total current ΣI_{th}^2:	36 A²
Minimum current:	10 mA
Contact resistance:	≤ 100 mΩ
External protection fuse:	4 A
Semiconductor outputs:	PNP outputs galvanically separated, overvoltage and short-circuit protected
Switching voltage:	24 Vdc
Switching current:	50 mA
External supply voltage:	24 Vdc ±20%

The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See pages 355-364.

Code structure

article: **CS AM-01VE01-** options: **TC00UR1**

Connection type	
V	Screw terminals
M	Connector with screw terminals
X	Connector with spring terminals

Simultaneity time (t_C)	
	3s (standard)
TC00	infinite at standstill (t_C)
TA00	infinite on startup and standstill(t_C)
TD0	infinite on standstill and minimum activation time (t_A)

Threshold voltage for motor at standstill	
	20-500 mV (standard)
UR1	45-750 mV

Features approved by UL

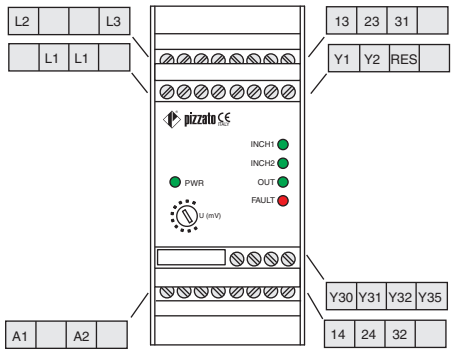
Rated supply voltage (U_n):	24 ... 230 Vac/dc; 50 … 60 Hz
Power consumption AC:	< 9 VA
Power consumption DC:	< 2 W
Relay output:	
Electrical ratings:	230/240 Vac 6 A general use C300 pilot duty
Semiconductor output:	24 Vdc, 50 mA
Motor input:	up to 600 V

Notes:
- For use in pollution degree 2 environment
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.

- Pour une utilisation dans un environnement de degré de pollution 2.
- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.

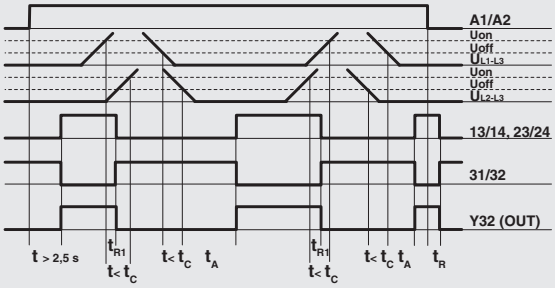
Safety module CS AM-0

Pin assignment

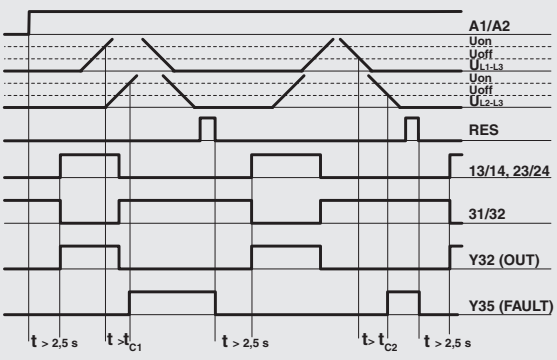


Function diagrams

Normal operation

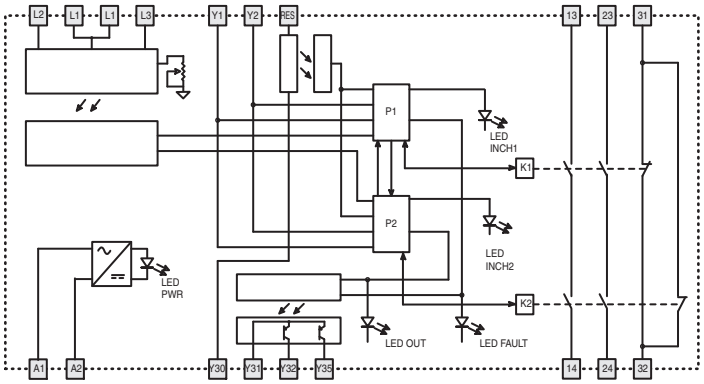


Reset (RES) operation



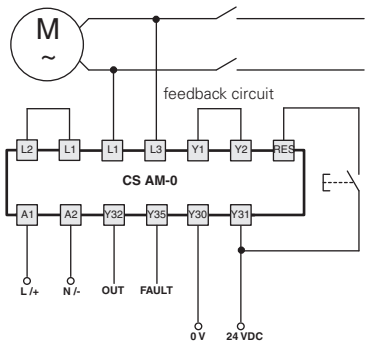
Legend:
$t_{C1, C2}$: Simultaneity time
t_A: response time
t_{R1}: release time
t_R: release time in absence of power supply

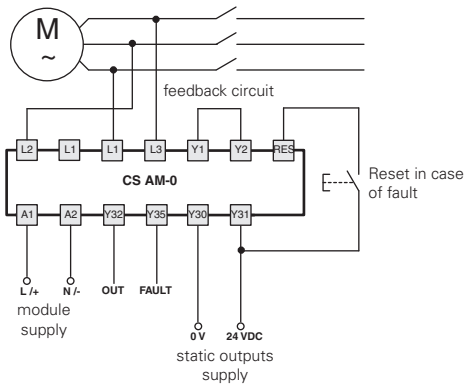
Internal wiring diagram



Input configuration

Single-phase motor	Three-phase motor

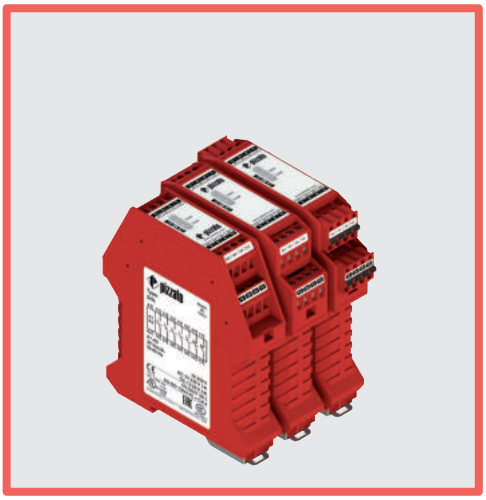




In case of star/delta starting, connect the module to the ends of a single winding
For dc motors connect + with L1 and - with L3.
For single-phase connections, connect the phase with L1 and the neutral with L3.
The diagram does not show the exact position of the terminals in the product

Application example on page 367.

CS ME-01 expansion module



Expansion module with output contacts

Main features

- For safety applications up to SIL CL 3/PL e
- Possibility of control with one or two channels
- Connection of input channels of opposite potentials
- Reduced housing width of 22.5 mm
- Output contacts:
  5 NO safety contacts,
  1 NC auxiliary contact,
  1 NC feedback contact
- Supply voltage: 24 Vac/dc

Utilization categories

Alternating current: AC15 (50…60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 oper. cycles/min.)
Ue (V) 24
Ie (A) 4

Quality marks and certificates:

EC type examination certificate: IMQ CP 432 DM
UL approval: E131787
CCC approval: 2021000305000107
EAC approval: RU C-IT.УТ03.B.00035/19

Compliance with the requirements of:

Machinery Directive 2006/42/EC,
EMC Directive 2014/30/EC,
RoHS Directive 2011/65/EU.

Technical data

Housing

Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94

Protection degree acc. to EN 60529:	IP40 (housing), IP20 (terminal strip)
Dimensions:	see page 415, design A

General data

SIL level (SIL CL) up to:	SIL CL 3 acc. to EN 62061
Performance Level (PL) up to:	PL e acc. to EN ISO 13849-1
Safety category up to:	cat. 4 acc. to EN ISO 13849-1 (see base module category)
Safety parameters:	see page 481
Ambient temperature:	-25°C…+55°C
Mechanical endurance:	>10 million operating cycles
Electrical endurance:	>100,000 operating cycles
Pollution degree:	external 3, internal 2
Rated impulse withstand voltage (U_{imp}):	4 kV
Rated insulation voltage (U_i):	250 V
Overvoltage category:	II

Supply

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

Control circuit

Protection against short circuits:	PTC resistance, Ih=0.5 A
PTC times:	response time > 100 ms, release time > 3 s
Maximum resistance per input:	≤ 50 Ω
Response time t_A:	< 40 ms
Release time in absence of power supply t_R:	< 50 ms

In compliance with standards:

EN 60204-1, EN ISO 13855, EN ISO 14118, EN ISO 12100, EN ISO 13850, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 No. 14

Output circuit

Output contacts:	5 NO safety contacts, 1 NC auxiliary contact, 1 NC feedback contact
Contact type:	forcibly guided
Material of the contacts:	gold-plated silver alloy
Maximum switching voltage:	230/240 Vac; 300 Vdc
Max. current per contact:	6 A
Conventional free air thermal current I_{th}:	6 A
Max. total current ΣI_{th}^2:	72 A^2
Minimum current:	10 mA
Contact resistance:	≤ 100 mΩ
External protection fuse:	4 A

Code structure

CS ME-01V024

Connection type	
V	Screw terminals
M	Connector with screw terminals
X	Connector with spring terminals

Supply voltage	
024	24 Vac/dc

Features approved by UL

Rated supply voltage (U_n):	24 Vac/dc; 50…60 Hz
Power consumption AC:	< 5 VA
Power consumption DC:	< 2 W

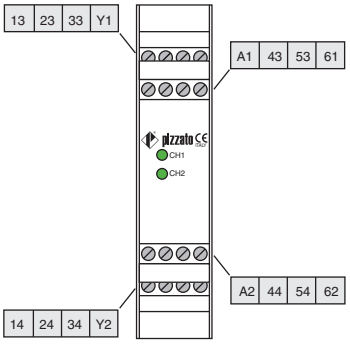
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

Notes:
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.

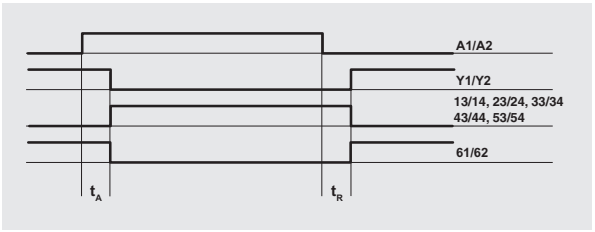
- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

CS ME-01 expansion module

Pin assignment

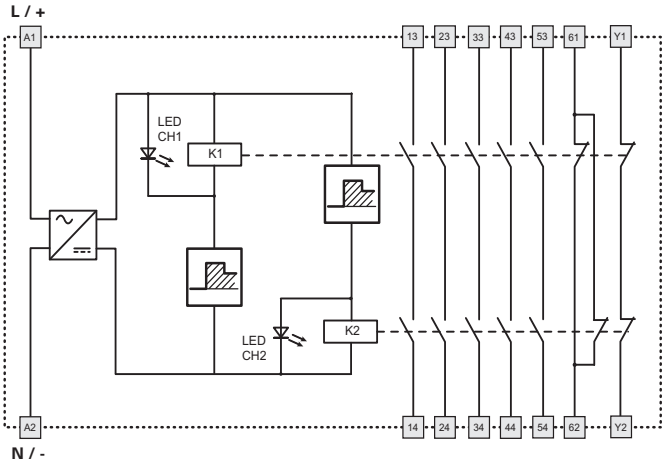


Function diagram



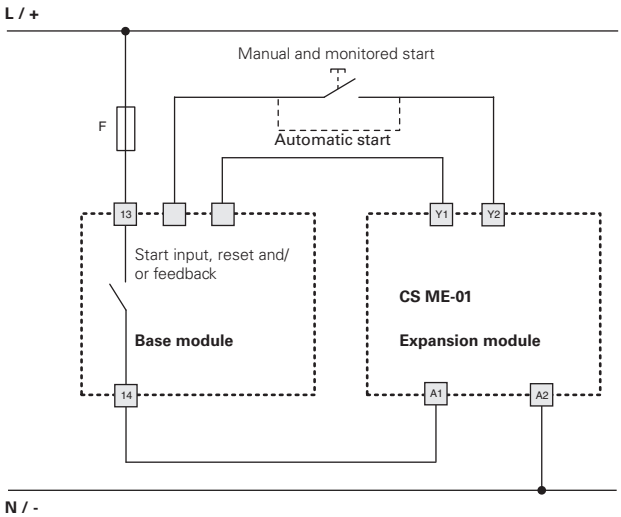
Legend:
t_A: response time
t_R: release time in absence of power supply

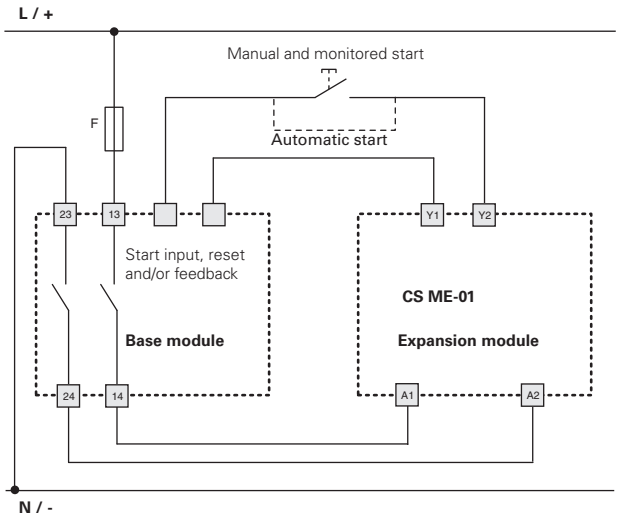
Internal wiring diagram



Input configuration

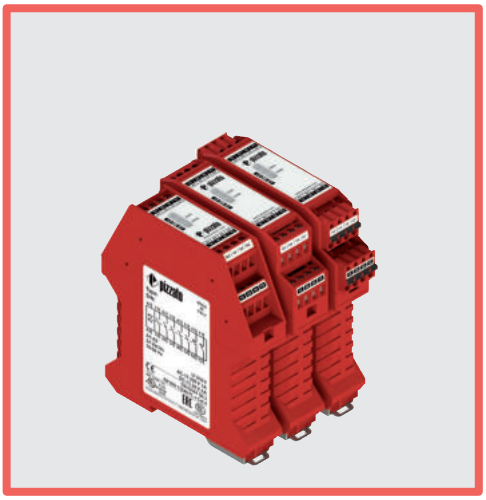
Single channel control	Double channel control





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

CS ME-02 expansion module



Expansion module with output contacts

Main features

- For safety applications up to SIL CL 3/PL e
- Possibility of control with one or two channels
- Connection of input channels of opposite potentials
- Reduced housing width of 22.5 mm
- Output contacts:
  4 NO safety contacts,
  2 NC auxiliary contacts,
  1 NC feedback contact
- Supply voltage: 24 Vdc

Utilization categories

Alternating current: AC15 (50…60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 oper. cycles/min.)
Ue (V) 24
Ie (A) 4

Quality marks:

EC type examination certificate: IMQ CP 432 DM
UL approval: E131787
CCC approval: 2021000305000107
EAC approval: RU C-IT.УТ03.B.00035/19

Compliance with the requirements of:

Machinery Directive 2006/42/EC,
EMC Directive 2014/30/EC,
RoHS Directive 2011/65/EU.

Technical data

Housing

Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94

Protection degree acc. to EN 60529:	IP40 (housing), IP20 (terminal strip)
Dimensions:	see page 415, design A

General data

SIL level (SIL CL) up to:	SIL CL 3 acc. to EN 62061
Performance Level (PL) up to:	PL e acc. to EN ISO 13849-1
Safety category up to:	cat. 4 acc. to EN ISO 13849-1 (see base module category)
Safety parameters:	see page 481
Ambient temperature:	-25°C…+55°C
Mechanical endurance:	>10 million operating cycles
Electrical endurance:	>100,000 operating cycles
Pollution degree:	external 3, internal 2
Rated impulse withstand voltage (U_{imp}):	4 kV
Rated insulation voltage (U_i):	250 V
Overvoltage category:	II

Supply

Rated supply voltage (U_n):	24 Vdc
Max. DC residual ripple in DC:	10%
Supply voltage tolerance:	±15% of U_n
Power consumption DC:	< 2 W

Control circuit

Protection against short circuits:	PTC resistance, Ih=0.5 A
PTC times:	response time > 100 ms, release time > 3 s
Maximum resistance per input:	≤ 50 Ω
Response time t_A:	< 100 ms
Release time in absence of power supply t_R:	< 60 ms

In compliance with standards:

EN 60204-1, EN ISO 13855, EN ISO 14118, EN ISO 12100, EN ISO 13850, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 No. 14, GB/T14048.5

Output circuit

Output contacts:	4 NO safety contacts, 2 NC auxiliary contacts, 1 NC feedback contact
Contact type:	forcibly guided
Material of the contacts:	gold-plated silver alloy
Maximum switching voltage:	230/240 Vac; 300 Vdc
Max. current per contact:	6 A
Conventional free air thermal current I_{th}:	6 A
Max. total current ΣI_{th}^2:	64 A^2
Minimum current:	10 mA
Contact resistance:	≤ 100 mΩ
External protection fuse:	4 A

Code structure

CS ME-02VU24

Connection type	
V	Screw terminals
M	Connector with screw terminals
X	Connector with spring terminals

Supply voltage	
U24	24 Vdc

Features approved by UL

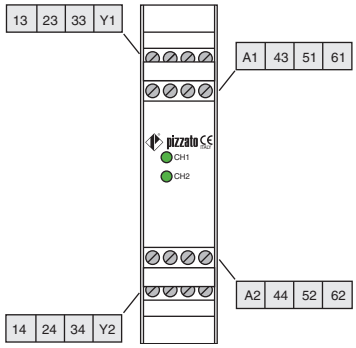
Rated supply voltage (U_n): 24 Vdc
Power consumption DC: < 2 W
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

Notes:
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.

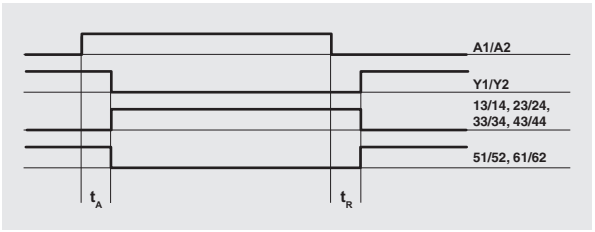
- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

CS ME-02 expansion module

Pin assignment

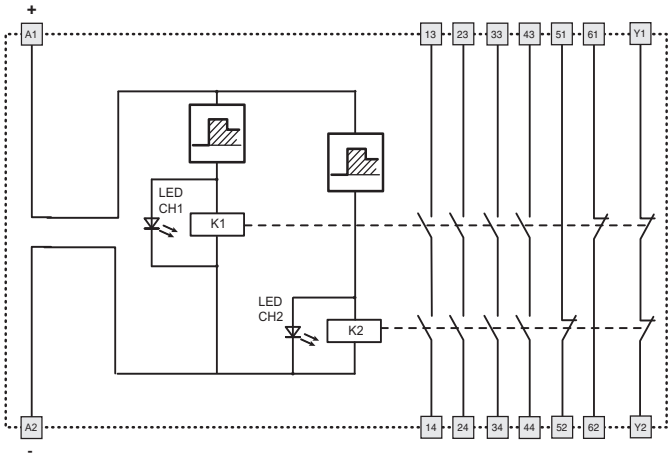


Function diagram



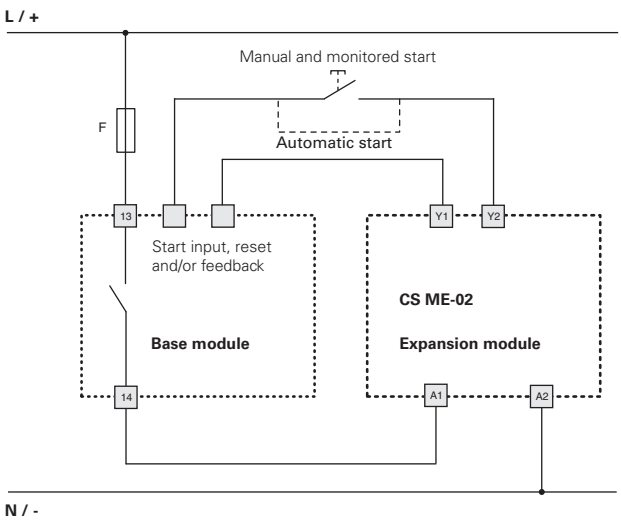
Legend:
t_A: response time
t_R: release time in absence of power supply

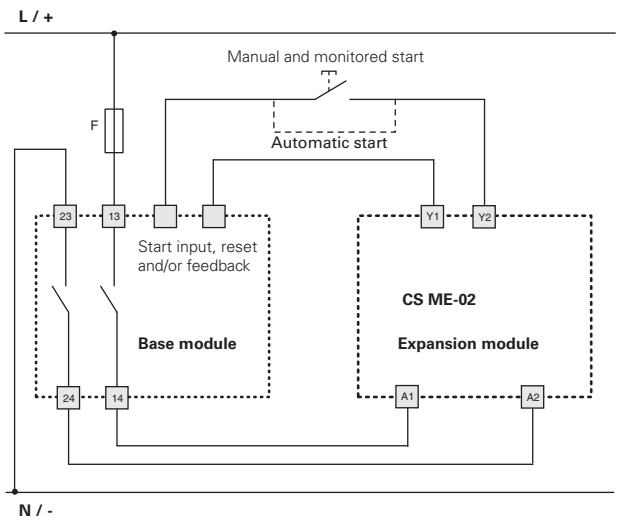
Internal wiring diagram



Input configuration

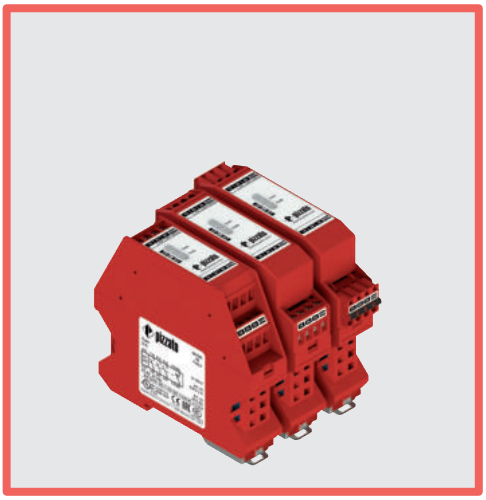
Single channel control	Double channel control





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

CS ME-03 expansion module



Expansion module with output contacts

Main features

- For safety applications up to SIL CL 3/PL e
- Module for OSSD semiconductor outputs
- 2 OSSD inputs
- Reduced housing width of 22.5 mm
- Output contacts:
  3 NO safety contacts,
  1 NC feedback contact/EDM
- Supply voltage: 24 Vdc

Utilization categories

Alternating current: AC15 (50…60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 oper. cycles/min.)
Ue (V) 24
Ie (A) 4

Quality marks:

EC type examination certificate: IMQ CP 432 DM
UL approval: E131787
CCC approval: 2021000305000107
EAC approval: RU C-IT.УТ03.B.00035/19

Compliance with the requirements of:

Machinery Directive 2006/42/EC,
EMC Directive 2014/30/EC,
RoHS Directive 2011/65/EU.

Technical data

Housing

Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94

Protection degree acc. to EN 60529:	IP40 (housing), IP20 (terminal strip)
Dimensions:	see page 415, design D

General data

SIL level (SIL CL) up to:	SIL CL 3 acc. to EN 62061
Performance Level (PL) up to:	PL e acc. to EN ISO 13849-1
Safety category up to:	cat. 4 acc. to EN ISO 13849-1 (dependent on semiconductor outputs)
Safety parameters:	see page 481
Ambient temperature:	-25°C…+55°C
Mechanical endurance:	>10 million operating cycles
Electrical endurance:	>100,000 operating cycles
Pollution degree:	external 3, internal 2
Rated impulse withstand voltage (U_{imp}):	4 kV
Rated insulation voltage (U_i):	250 V
Overvoltage category:	II

Supply

Rated supply voltage (U_n):	24 Vdc
Max. DC residual ripple in DC:	10%
Supply voltage tolerance:	±15% of U_n
Power consumption DC:	< 2 W
Consumption at start:	< 3 W

Control circuit

Response time t_A:	< 40 ms
Release time t_{R1}:	< 20 ms

In compliance with standards:

EN 60204-1, EN ISO 13855, EN ISO 14118, EN ISO 12100, EN ISO 13850, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 No. 14, GB/T14048.5

Output circuit

Output contacts:	3 NO safety contacts, 1 NC feedback contact
Contact type:	forcibly guided
Material of the contacts:	gold-plated silver alloy
Maximum switching voltage:	230/240 Vac; 300 Vdc
Max. current per contact:	6 A
Conventional free air thermal current I_{th}:	6 A
Max. total current ΣI_{th}^2:	36 A^2
Minimum current:	10 mA
Contact resistance:	≤ 100 mΩ
External protection fuse:	4 A

Code structure

CS ME-03VU24

Connection type		Supply voltage	
V	Screw terminals	**U24**	24 Vdc
M	Connector with screw terminals		
X	Connector with spring terminals		

Features approved by UL

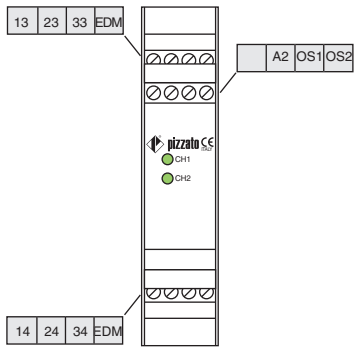
Rated supply voltage (U_n): 24 Vdc
Power consumption DC: < 2 W
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

Notes:
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.

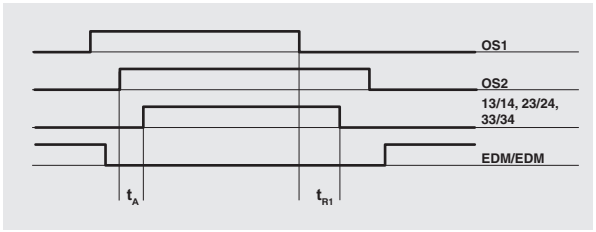
- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

CS ME-03 expansion module

Pin assignment

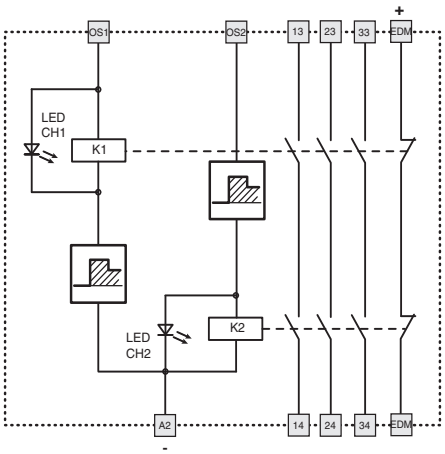


Function diagram



Legend:
t_A: response time
t_{R1}: release time

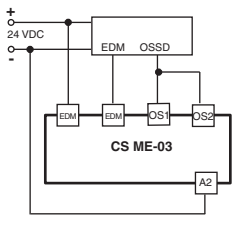
Internal wiring diagram

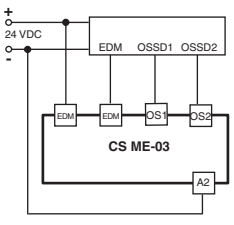


Application example on page 367.

Input configuration

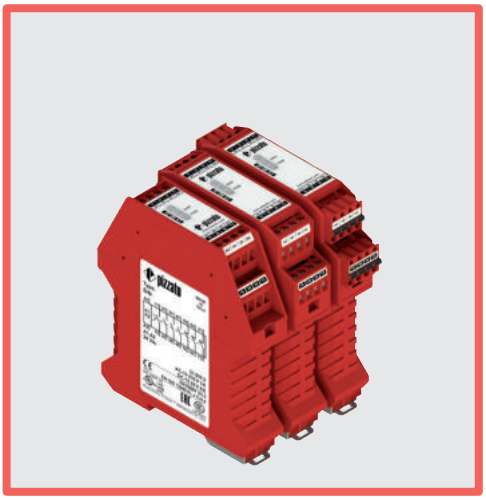
OSSD semiconductor outputs (e.g. ST, NS, NG series or light barriers)	
1 channel	2 channels





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

CS ME-20 expansion module



Expansion module with delayed output contacts at de-energizing

Main features
- For safety applications up to SIL CL 3/PL e
- Possibility of control with one or two channels
- 4 delay times 0.5 - 1 - 2 and 3 s
- Reduced housing width of 22.5 mm
- Output contacts:
  4 NO safety contacts,
  2 NC auxiliary contacts,
  1 NC feedback contact
- Supply voltage: 24 Vdc

Utilization categories
Alternating current: AC15 (50…60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 oper. cycles/min.)
Ue (V) 24
Ie (A) 4

Quality marks:

EC type examination certificate: IMQ CP 432 DM
UL approval: E131787
CCC approval: 2021000305000107
EAC approval: RU C-IT.УТ03.B.00035/19

Compliance with the requirements of:
Machinery Directive 2006/42/EC,
EMC Directive 2014/30/EC,
RoHS Directive 2011/65/EU.

Technical data

Housing
Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94
Protection degree acc. to EN 60529: IP40 (housing), IP20 (terminal strip)
Dimensions: see page 415, design A

General data
SIL level (SIL CL) up to: SIL CL 3 acc. to EN 62061
Performance Level (PL) up to: PL e acc. to EN ISO 13849-1
Safety category up to: cat. 4 acc. to EN ISO 13849-1 (see base module category)
Safety parameters: see page 481
Ambient temperature: -25°C…+55°C
Mechanical endurance: >10 million operating cycles
Electrical endurance: >100,000 operating cycles
Pollution degree: external 3, internal 2
Rated impulse withstand voltage (U_{imp}): 4 kV
Rated insulation voltage (U_i): 250 V
Overvoltage category: II

Supply
Rated supply voltage (U_n): 24 Vdc
Max. DC residual ripple in DC: 10%
Supply voltage tolerance: ±15% of U_n
Power consumption DC: < 2 W

Control circuit
Maximum resistance per input: ≤ 50 Ω
Response time t_A: < 120 ms
Release time in absence of power supply t_R: see Code structure

In compliance with standards:
EN 60204-1, EN ISO 13855, EN ISO 14118, EN ISO 12100, EN ISO 13850, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 No. 14, GB/T14048.5

Output circuit
Output contacts: 4 NO safety contacts, 2 NC auxiliary contacts, 1 NC feedback contact
Contact type: forcibly guided
Material of the contacts: gold-plated silver alloy
Maximum switching voltage: 230/240 Vac; 300 Vdc
Max. current per contact: 6 A
Conventional free air thermal current I_{th}: 6 A
Max. total current ΣI_{th}^2: 64 A^2
Minimum current: 10 mA
Contact resistance: ≤ 100 mΩ
External protection fuse: 4 A

Code structure

CS ME-20VU24-TF1

Connection type	
V	Screw terminals
M	Connector with screw terminals
X	Connector with spring terminals

Release time in absence of power supply (t_R)	
TF0.5	0.5 s fixed time
TF1	1 s fixed time
TF2	2 s fixed time
TF3	3 s fixed time

Features approved by UL

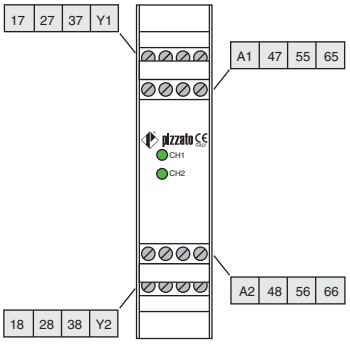
Rated supply voltage (U_n): 24 Vdc
Power consumption DC: < 2 W
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

Notes:
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.

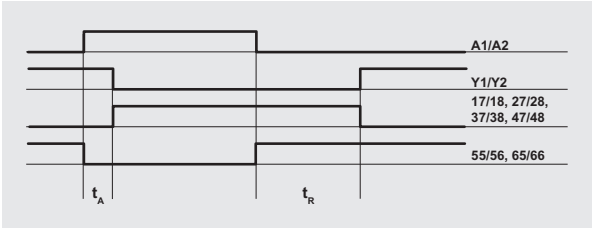
- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

CS ME-20 expansion module

Pin assignment

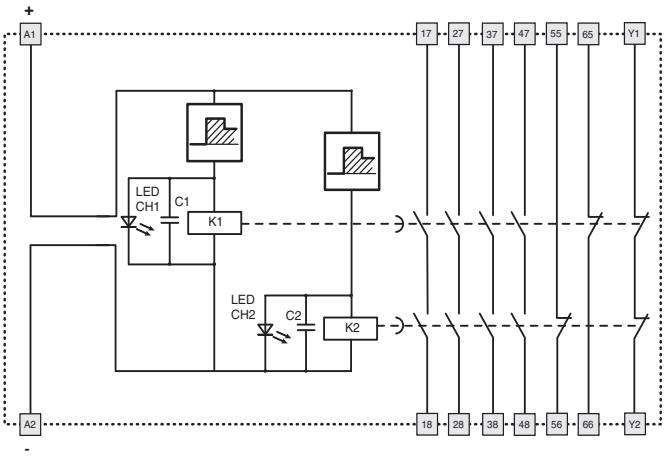


Function diagram



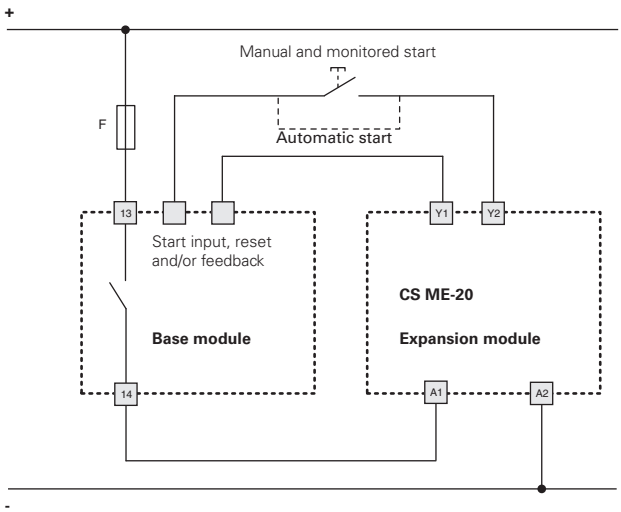
Legend:
t_A: response time
t_R: release time in absence of power supply (see "Code structure")

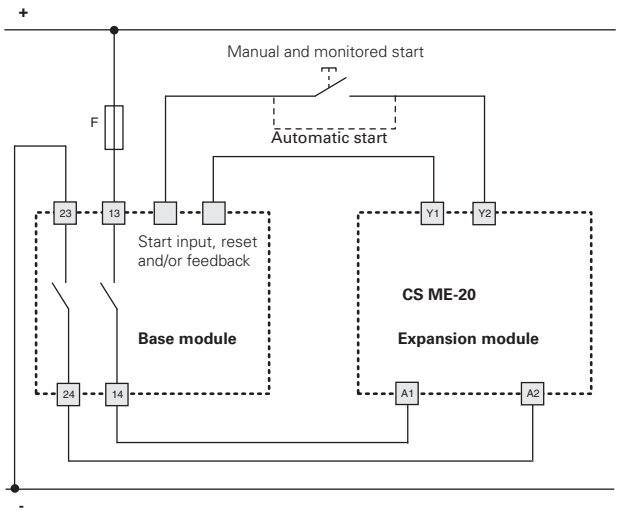
Internal wiring diagram



Input configuration

Single channel control	Double channel control





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

CS ME-31 expansion module

Expansion module with delayed output contacts at de-energizing

Main features
- For safety applications up to SIL CL 3/PL e
- Possibility of control with one or two channels
- Adjustable delay time
- 45 mm housing
- Output contacts:
  4 NO safety contacts,
  2 NC auxiliary contacts,
  1 NC feedback contact
- Supply voltage: 24 Vdc

Utilization categories
Alternating current: AC15 (50…60 Hz)
Ue (V) 230
Ie (A) 3
Direct current: DC13 (6 oper. cycles/min.)
Ue (V) 24
Ie (A) 4

Quality marks:

EC type examination certificate: IMQ CP 432 DM
UL approval: E131787
CCC approval: 2021000305000107
EAC approval: RU C-IT.УТ03.B.00035/19

Compliance with the requirements of:
Machinery Directive 2006/42/EC,
EMC Directive 2014/30/EC,
RoHS Directive 2011/65/EU.

Technical data

Housing
Polyamide housing PA 66, self-extinguishing V0 acc. to UL 94
Protection degree acc. to EN 60529: IP40 (housing), IP20 (terminal strip)
Dimensions: see page 415, design C

General data
SIL level (SIL CL) up to: SIL CL 3 acc. to EN 62061
Performance Level (PL) up to: PL e acc. to EN ISO 13849-1
Safety category up to: cat. 4 acc. to EN ISO 13849-1 (see base module category)
Safety parameters: see page 481
Ambient temperature: -25°C…+55°C
Mechanical endurance: >10 million operating cycles
Electrical endurance: >100,000 operating cycles
Pollution degree: external 3, internal 2
Rated impulse withstand voltage (U_{imp}): 4 kV
Rated insulation voltage (U_i): 250 V
Overvoltage category: II

Supply
Rated supply voltage (U_n): 24 Vdc
Max. DC residual ripple in DC: 10%
Supply voltage tolerance: ±15% of U_n
Power consumption DC: < 2 W

Control circuit
Maximum resistance per input: ≤ 50 Ω
Response time t_A: < 200 ms
Release time in absence of power supply t_R: see Code structure

In compliance with standards:
EN 60204-1, EN ISO 13855, EN ISO 14118, EN ISO 12100, EN ISO 13850, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61326-1, EN 60664-1, EN 60947-1, EN IEC 63000, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 No. 14, GB/T14048.5

Output circuit
Output contacts: 4 NO safety contacts, 2 NC auxiliary contacts, 1 NC feedback contact
Contact type: forcibly guided
Material of the contacts: gold-plated silver alloy
Maximum switching voltage: 230/240 Vac; 300 Vdc
Max. current per contact: 6 A
Conventional free air thermal current I_{th}: 6 A
Max. total current ΣI_{th}^2: 64 A²
Minimum current: 10 mA
Contact resistance: ≤ 100 mΩ
External protection fuse: 4 A

Code structure

CS ME-31VU24-TS12

Connection type		Release time in absence of power supply (t_R)	
V	Screw terminals	**TS12**	Adjustable time, 1 … 12 s, 1 s steps
M	Connector with screw terminals		
X	Connector with spring terminals		

Features approved by UL

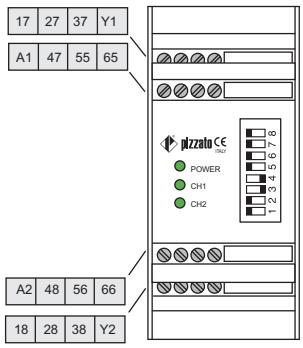
Rated supply voltage (U_n): 24 Vdc
Power consumption DC: < 2 W
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

Notes:
- Use 60 or 75°C copper (Cu) conductor and wire size No. 30-12 AWG, stranded or solid.
- The terminal tightening torque of 5-7 lb in.
- Only for 24 Vac/dc versions: supply from remote Class 2 source or limited voltage limited energy.

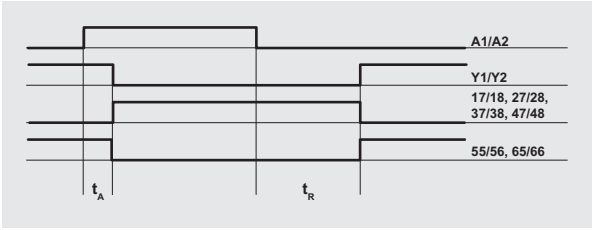
- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

CS ME-31 expansion module

Pin assignment

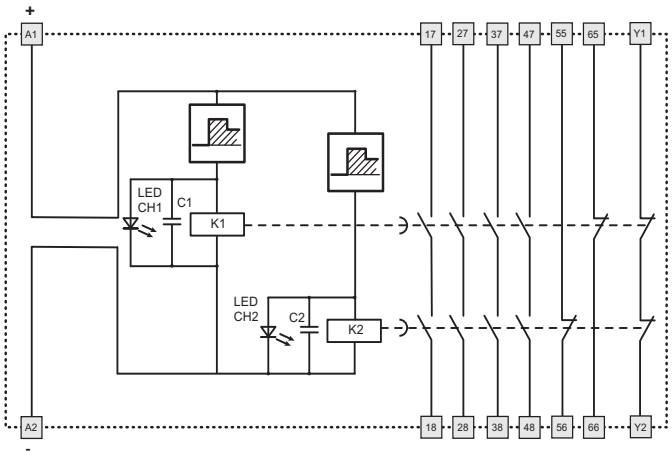


Function diagram



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

Internal wiring diagram

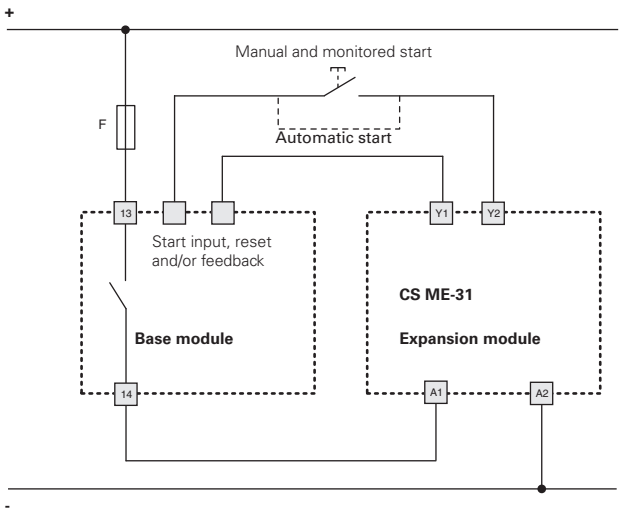


Release time selection t_R

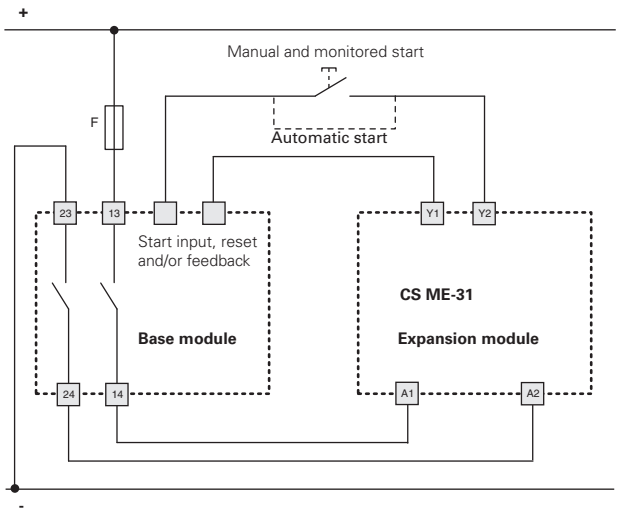
DIP SWITCH	t_R (s)
ON / OFF	1
ON / OFF	2
ON / OFF	3
ON / OFF	4
ON / OFF	5
ON / OFF	6
ON / OFF	7
ON / OFF	8
ON / OFF	9
ON / OFF	10
ON / OFF	11
ON / OFF	12

Input configuration

Single channel control

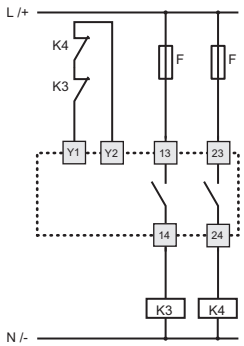


Double channel control



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

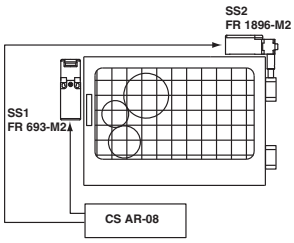
External contactors for increasing the number and the load capacity of the contacts

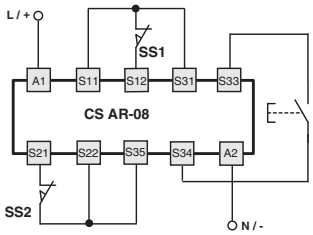


If necessary the number and the load capacity of output contacts can be increased by using expansion modules or contactors with forcibly guided contacts. For control of the external contactors, a NC contact of each relay is connected to the safety module feedback circuit between the start button terminals.

The following installation examples make use of the CS AR-08•••• module. For the use of other modules, see features, compatibility and internal wiring diagram of each single module.

Application examples: monitoring of movable guards, up to category 4 according to EN ISO 13849-1

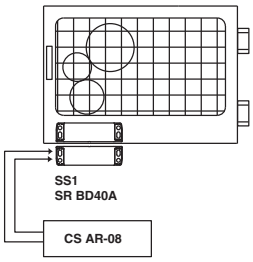


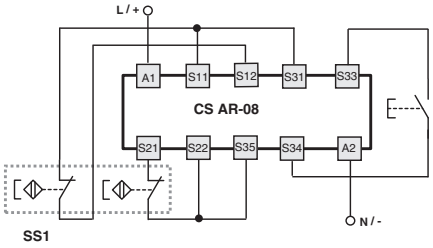


Compatible modules
CS AR-01•••• CS AR-02••••
CS AR-04•••• CS AR-05••••
CS AR-06•••• CS AR-07••••
CS AR-08•••• CS AT-0•••••
CS AT-1••••• CS AT-3•••••
CS AR-91•024

Monitoring of one movable guard through two switches with different technology. System in safety category 4.

Application examples: monitoring of safety magnetic sensors, up to category 4 according to EN ISO 13849-1

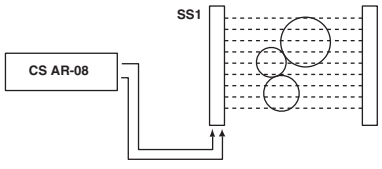


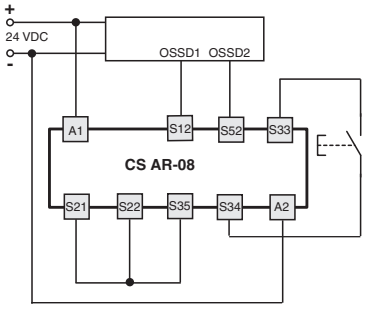


Compatible modules
CS AR-01•E02 CS AR-02•E02
CS AR-04•024 CS AR-05••••
CS AR-06•••• CS AR-08••••
CS AT-0••••• CS AT-1•••••
CS AT-3••••• CS AR-91•024

Monitoring of one movable guard through one coded magnetic sensor. System in safety category 4.

Application examples: light barrier monitoring, up to category 4 according to EN ISO 13849-1

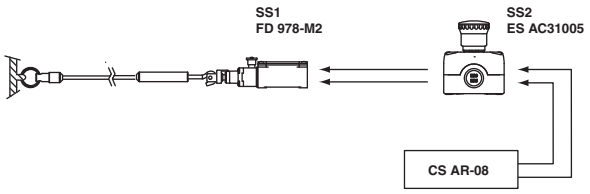


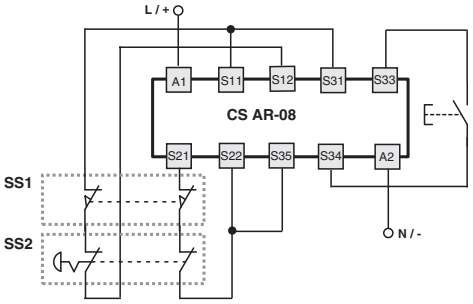


Compatible modules
CS AR-05•••• CS AR-06••••
CS AR-08•••• CS AT-0•••••
CS AT-1•••••

Semiconductor outputs (e.g. light barriers) with two OSSD outputs. System in safety category 2 or 4 according to the barrier.

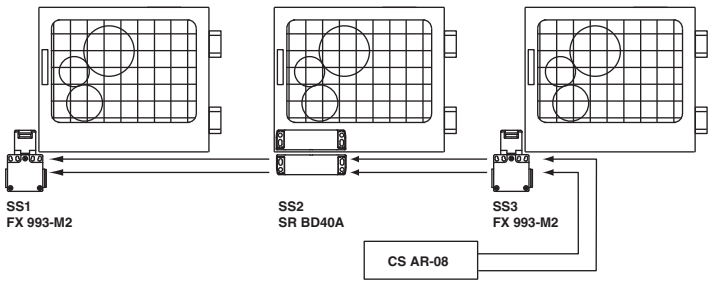
Application examples: monitoring of a switch and a button for emergency stop, up to cat. 3 according to EN ISO 13849-1

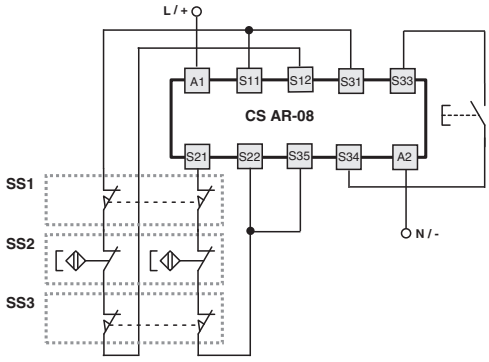




Compatible modules
CS AR-01•••• CS AR-02•••• CS AR-04•••• CS AR-05••••
CS AR-06•••• CS AR-07•••• CS AR-08•••• CS AR-20••••
CS AR-21•••• CS AR-22•••• CS AR-23•••• CS AR-24••••
CS AR-25•••• CS AT-0••••• CS AT-1••••• CS AT-3•••••
CS AR-91•024

Application examples: monitoring of a series of switches and magnetic sensors, up to cat. 3 according to EN ISO 13849-1



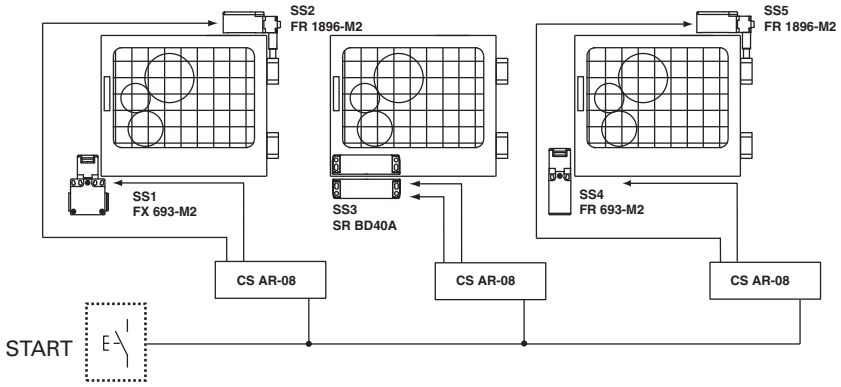


Compatible modules
CS AR-01•E02 CS AR-02•E02 CS AR-04•024 CS AR-05••••
CS AR-06•••• CS AR-08•••• CS AT-0••••• CS AT-1•••••
CS AT-3••••• CS AR-91•024

Monitoring of several guards through switches and magnetic sensors. System in category 3. For the calculation of the diagnostic coverage, see ISO TR24119.

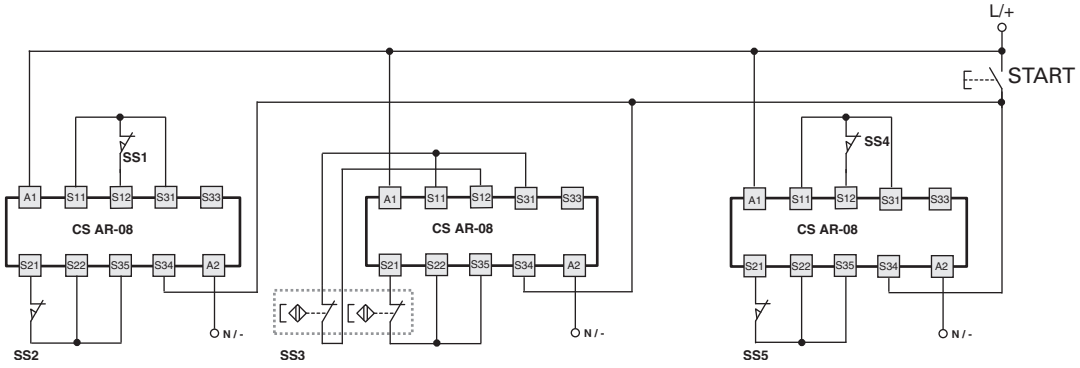
- The use of just one switch per guard requires that it be possible to exclude the possibility of mechanical breakage of the switch during the risk assessment.
- The sensor must have two channels and be coded.
- If available, verify the provisions of the Type C standard for your own machine.

Application examples: possibility of parallel module reset, up to category 4 according to EN ISO 13849-1

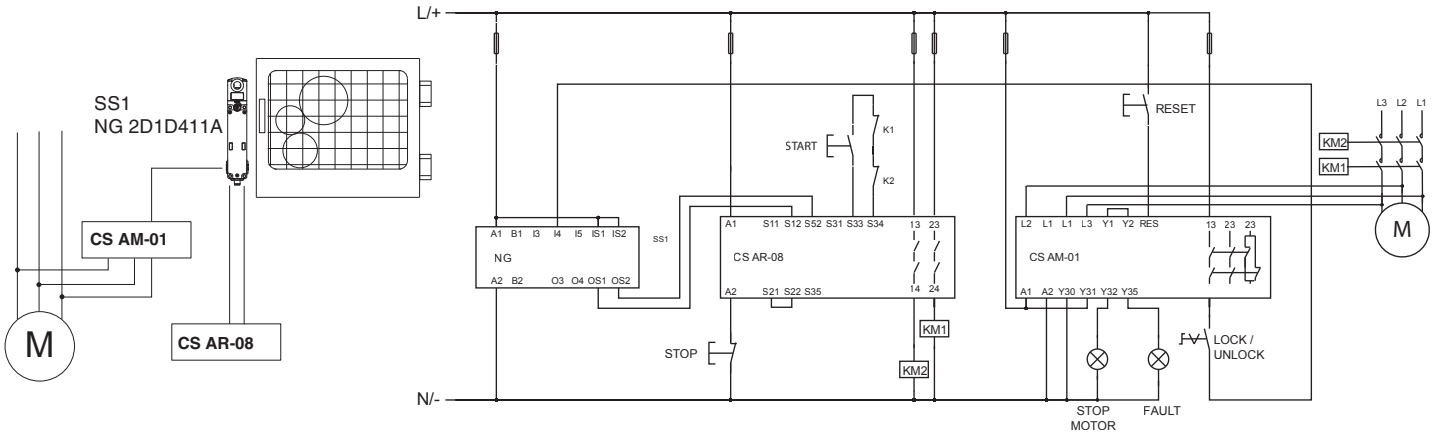


Monitoring of several guards through different technologies. System in safety category 4. The example shows the possibility of a contemporaneous reset of several modules via a single contact of a button.

Compatible modules
CS AR-04•024 CS AR-05•024 CS AR-06•024
CS AR-08•024 CS AR-91•024

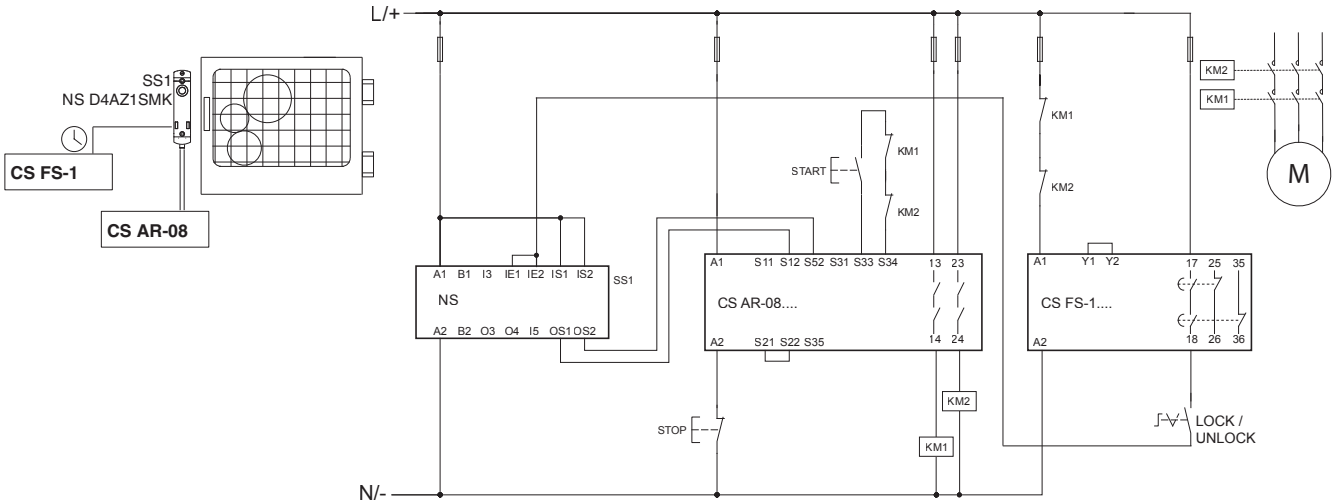


Movable guard monitoring in category 4 up to PL e acc. to EN ISO 13849-1
Guard interlock in category 2 up to PL d acc. to EN ISO 13849-1



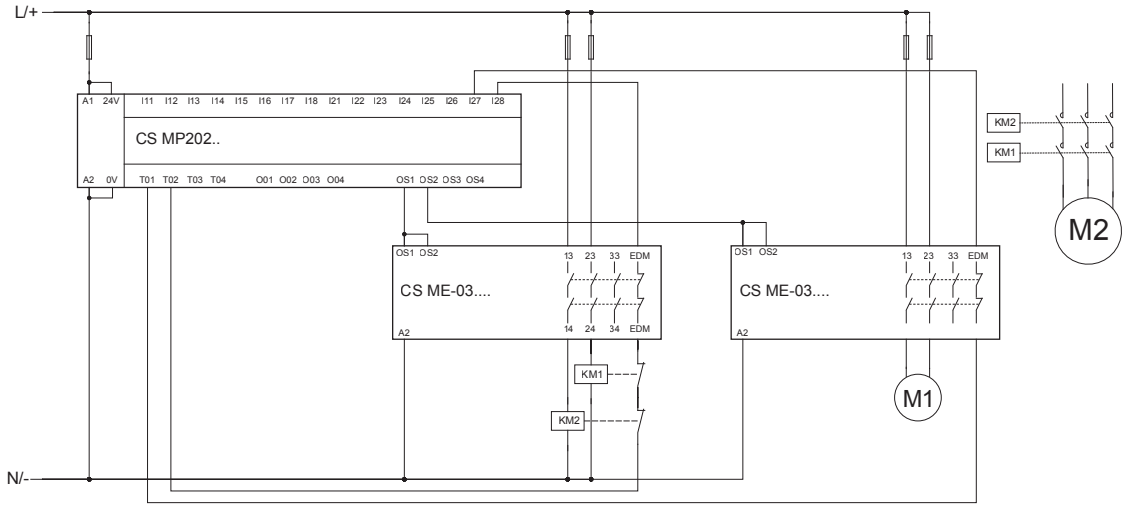
Guard monitoring and interlock by means of interlocking device with RFID technology in category 4, PL e and SIL3.
Release command enabled by the safety module for standstill monitoring.

Movable guard monitoring in category 4 up to PL e acc. to EN ISO 13849-1
Guard interlock in category 2 up to PL d acc. to EN ISO 13849-1



Guard monitoring and interlock by means of interlocking device with RFID technology in category 4, PL e and SIL3.
Release command enabled by the safety timer.

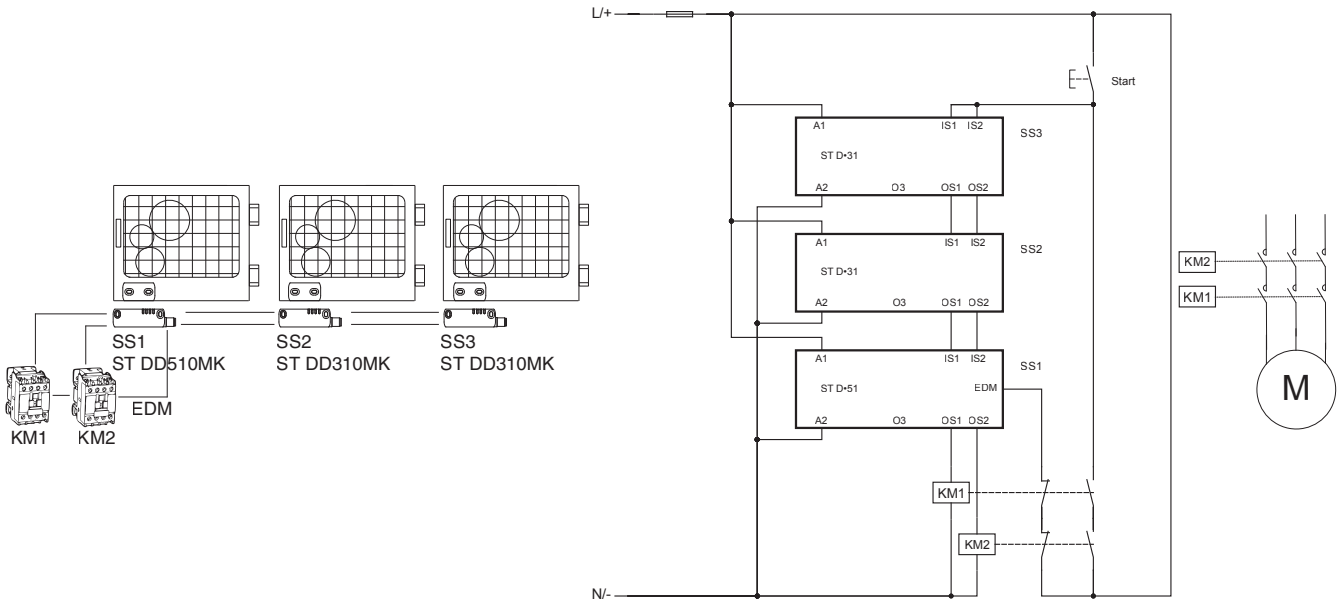
Connection of two expansion modules to the PNP safety outputs of a programmable module of the GEMNIS series



The circuit diagram only shows the connection of the expansion modules; the connection of inputs and other outputs was intentionally omitted.
Note: Motor M1 with load according to the utilisation categories of the contacts of the CS ME-03 module.
Note: The connection between OS1 of module CS MP-202 and inputs OS1 and OS2 of module CS ME-03 can be regarded as fault-excluded since both are located in the same housing. See table D.4, item D.2.4 of EN ISO 13849-2.

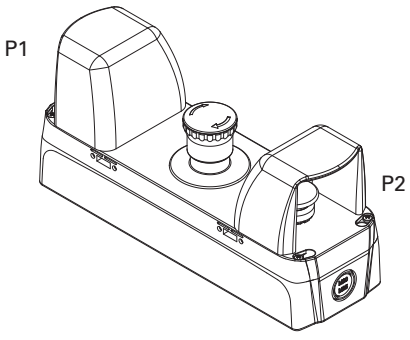
Note: The NC contacts of KM1 and KM2 are mechanically guided (EN 60947-4-1, Annex F)

Monitoring of guards by means of sensors with RFID technology in series connection

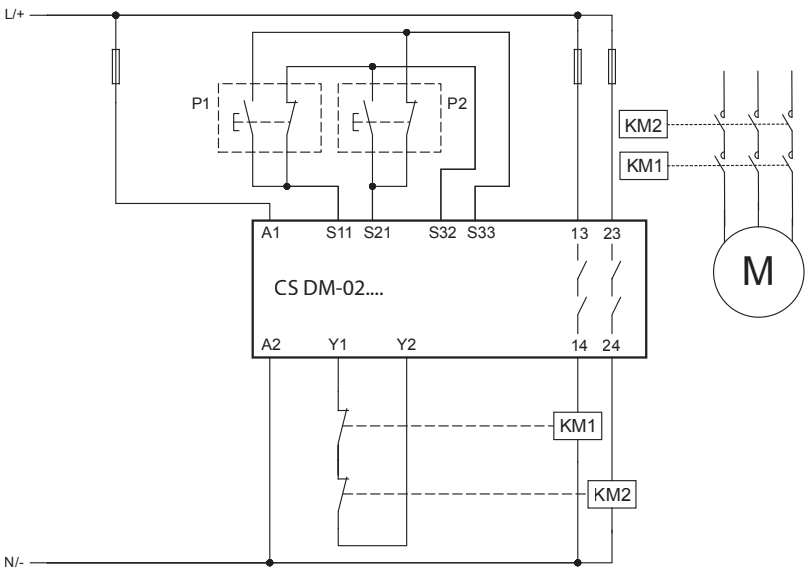


Direct monitoring of the status of the contactors via the EDM input of the last sensor in the series connection

Category IIIC two-hand control acc. to EN ISO 13851



EA AC37041



CS MP programmable multifunction safety modules

Introduction

GEMNIS

A **Gemnis** series module is a programmable safety device, which allows several safety functions to be carried out simultaneously. This product series has been developed specifically to meet the needs of machinery manufacturers for machines with a low to average number of safety functions. As an indication, these modules can manage small applications which are equivalent to the functions carried out by 3 to 4 traditional electromechanical safety modules, up to circuits with dozens of inputs.

Gemnis series safety modules can implement safety circuits with a safety category of up to SIL 3 acc. to EN 62061, PL e and category 4 acc. to EN ISO 13849-1.

The **Gemnis** series of safety modules has been updated to **version 12** which introduces new functions and improved hardware- and software-level performance. This update considerably increases the application potential of these products.

The **Gemnis Studio** program is a graphic development environment for the creation, simulation and debugging of programs that are uploaded to the corresponding modules of the Gemnis family.

This software is licensed to users wishing to program these modules, subject to prior registration at **www.gemnis.com**.

You can download the latest **Gemnis Studio** software version (**Gemnis Studio 12**) from the site, which will allow you to program both current, **Gemnis K12**-designated modules, as well as previous ones.

General features of safety modules

Gemnis series modules can manage all of the following safety device types:

- Mechanical safety switches
- Switches with solenoid for guard interlock
- Magnetic safety sensors
- Safety light barriers or optical safety sensors (category 4)
- Safety sensors
- Mushroom buttons for emergency stop
- Rope switches for emergency stop
- Safety mats or safety bumpers with 4-wire technology
- Category IIIA or IIIC two-hand controls
- Safety selector switches
- Enabling devices
- 4-20 mA analogue sensors
- 0-4 kHz frequency signals
- Dual-beam muting systems

This modules are also equipped with functionality allowing you to also implement:

- Safety timers;
- Detection of various types of faults in safety devices or their connections;
- Monitoring of the module's internal temperature limit values;
- Status communication via USB port or the SERIAL function block.

Finally, Gemnis series modules can:

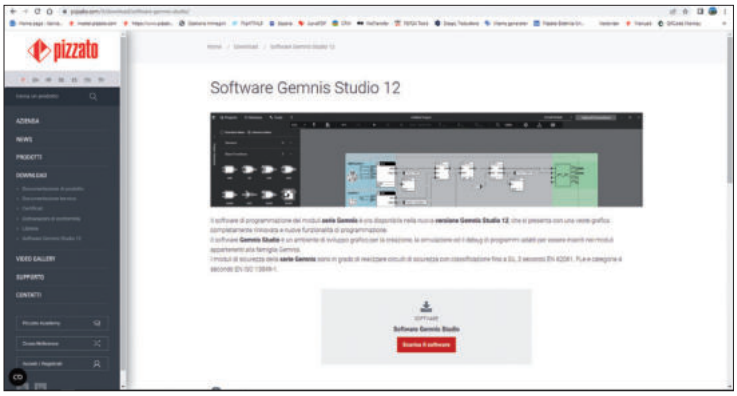
- Manage up to eight different electronic safety outputs or four relay outputs;
- Manage various signalling outputs (not safety-related);
- Status information and data settings via the USB communication port.

Gemnis design safety modules can implement safety circuits with up to SIL CL3 acc. to EN ISO 62061, PL e and category 4 acc. to EN ISO 13849-1.

Website

This product line is supported online via the **www.gemnis.com** website, where you can:

- download the Gemnis Studio installation package (following registration);
- download support files;
- get the most up to date version of the instruction manual;
- get examples and other support information which will be added over time;
- watch videos illustrating Gemnis Studio program operation.



Hardware structure of the modules

Gemnis design modules are created with increased flexibility - even at the hardware level. These products are made up of various electronic circuit boards which are sold in various combinations, but which are always contained in a single housing and with one unique product code.

The Gemnis series modules have a general redundant and self monitoring type structure, they are controlled by a pair of processors which simultaneously run the application program and constantly monitor their operation and system integrity in parallel.

Each module is supplied in a single housing, of the minimum width required to house the boards which make up the module. 45 mm to 90 mm wide housings are available. The customer does not need to worry therefore about wiring the various parts.

The USB port integrated within the module is used for programming and debugging of the Gemnis Studio software module. Once a module is programmed, you can also use the USB port for communicating with a PC installed on the machine, and for the exchange of information relating to the module state.

The main hardware innovations introduced to version 12 by the safety module update are the following:

- ability to manage programs up to 4 times larger;
- new module configurations available (see following table).

Module	Inputs type I	Inputs type J	Inputs type C	Inputs type F	Test signals T	OS safety outputs	O signalling outputs	Port	Width (mm)	Page
CS MP201M0	8	-	-	-	8	3NO	4	USB	45	375
CS MP202M0	16	-	-	-	4	4 PNP	4	USB	45	376
CS MP203M0	12	-	-	-	4	3NO + 1NO	4	USB	45	377
CS MP204M0	12	-	-	-	4	3NO	4	USB	45	378
CS MP205M0	4	4	-	4	4	4 PNP	4	USB	45	379
CS MP206M0	8	-	-	-	4	4 PNP	12	USB	45	380
CS MP207M0	4	-	2	-	4	4 PNP	4	USB	45	381
CS MP208M0	16	-	-	-	4	8 PNP	-	USB	45	382
CS MP301M0	24	-	-	-	8	3NO	4	USB	67,5	383
CS MP302M0	24	-	-	-	12	4 PNP	4	USB	67,5	384
CS MP303M0	32	-	-	-	4	4 PNP	4	USB	67,5	385
CS MP304M0	28	-	-	-	4	3NO + 1NO	4	USB	67,5	386
CS MP305M0	24	-	-	-	4	4 PNP	12	USB	67,5	387
CS MP306M0	20	-	-	-	4	3NO + 1NO	12	USB	67,5	388
CS MP307M0	8	4	2	4	4	4 PNP	4	USB	67,5	389
CS MP308M0	24	-	-	-	4	8 PNP	8	USB	67,5	390
CS MP309M0	32	-	-	-	4	8 PNP	-	USB	67,5	391
CS MP310M0	8	8	-	8	4	4 PNP	4	USB	67,5	392
CS MP311M0	20	-	2	-	4	4 PNP	4	USB	67,5	393
CS MP312M0	16	4	-	4	8	8 PNP	-	USB	67,5	394
CS MP401M0	40	-	-	-	4	4 PNP	12	USB	90	395
CS MP402M0	32	-	-	-	12	8 PNP	8	USB	90	396
CS MP403M0	40	-	-	-	4	8 PNP	8	USB	90	397
CS MP406M0	32	-	-	-	4	4 PNP	20	USB	90	398

I = Digital inputs
J = Digital inputs, decoupled
C = Inputs for 4-20 mA analogue signals
F = Inputs for 0 … 4 kHz frequency signals

T = Test signals
OS = OSSD safety outputs (PNP)
nn = Relay safety outputs
O = signalling outputs (PNP)

CS MP programmable multifunction safety modules

Software Gemnis Studio

Gemnis Studio is software designed to allow users to program modules belonging to the Gemnis family. This software has a graphical interface to visually display, in a natural and intuitive way, the assembly of operations that the application program will execute, once loaded to the module. Gemnis Studio allows you to attach supporting information and useful notes to the configuration information, for overall understanding of the program. Gemnis Studio also allows you to check correct application program operation prior to sending it to the module via the simulation.

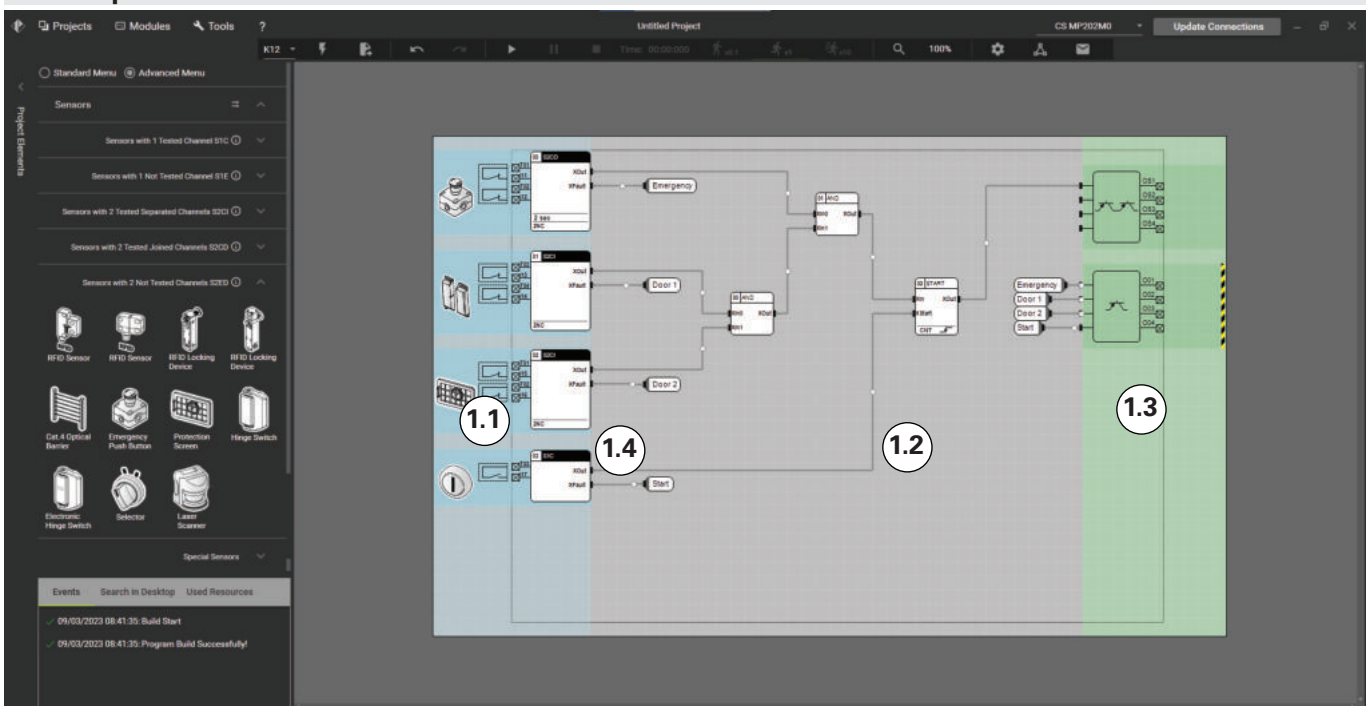
Finally, Gemnis Studio allows you to carry out monitoring and detection operations, and to graphically represent the state of an active operational device in real time.

New release 12 available

In the latest version Gemnis Studio 12 the following new features have been introduced:

- Completely updated graphical user interface with collapsible side panels that contain sensors and function blocks as well as the possibility to switch between a light or dark display scheme;
- New remote support management;
- New function blocks for performing mathematical functions that are very useful for applications with frequency inputs for speed control or with current inputs for analogue sensors;
- Option of disabling the test pulses of the PNP safety outputs.

Desktop



The Gemnis Studio software has been designed with the objective of making Gemnis series module operation as immediate and visual as possible. With this aim, we decided to create a work environment – the Desktop – where, as far as possible, the user can amass all the information required to actually "view" and not just "imagine" the behaviour of the project under development. This is the reason we have made room for graphical object representations, of the physical characteristics of the module in use, and immediate interaction, by means of simulation, with the created program.

The desktop is the main user work area, the zone where the flow and processing to be applied to the data detected by the module are defined using the graphical program interface.

The desktop is divided into three parts:

1.1) the sensor zone
1.2) the functional block zone
1.3) the output zone

In the sensor zone (1.1) the user indicates the external device types connected to the module terminals, and all the parameters needed to define them.

In the output zone (1.3) all the output devices present in the selected module (relays, transistors etc.) are immediately shown.

In the function block zone (1.2) the user will enter all the logical functions needed to process the flow of data coming from the sensors, and will proceed to make the connections to transfer this data between the objects in the desktop and finally to the outputs.

The desktop includes a dotted box (1.4) which represents the area "occupied by the module", or, everything enclosed within the physical module, from terminals to code. The area outside this box, meanwhile, is occupied by images of the physical devices external to the module (switches, buttons, etc.), illustrating their expected internal structure and any description.

At the user's request, the desktop content is compiled and, provided there are no errors, it is translated into the application program. If a module is connected to the computer, you can immediately transfer the application program to it, and thereby check its effective operation in the field.

Otherwise it is possible to simulate application program operation directly on the desktop, by interacting with the sensors and evaluating their effects graphically.

Project

The collection of information required to configure a module and describe its activities is called a "Project". Using Gemnis Studio, the user can assemble the textual and graphical information required to elaborate and comment the functions which will be carried out by the program, once installed on a Gemnis line module.

Printing

Gemnis Studio can generate a Connection Report, which includes all connections to the module terminals, and a user Program Report, allowing you to print the Application Program.

Password

The password gives the option of protecting a module's interaction capacity, and the ability to modify the project file.

Sensors

The sensor zone indicates the external device types which can be connected to the module terminals, and all the parameters needed to define them.

Each sensor created displays a view of the internal contact configuration and of how the contacts are connected to the module terminals, a box with the associated safety function, and the parameters selected for the function.

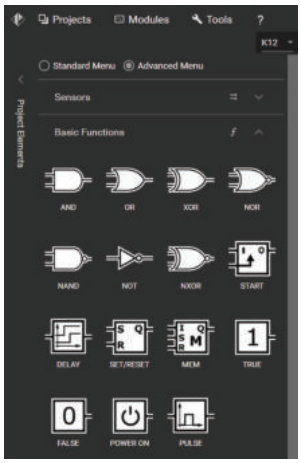
From the sensor panel, you can select a sensor using the mouse and drag it into the dedicated desktop area.

A full list of the available sensors is shown on the side.

Sensor list

Sensor type	Diagram	Examples
Sensor with 1 not testable channel		
Sensor with 2 not testable channels, with interdependent signals		
Sensor with 1 tested channel		
Sensor with 2 independent tested channels		
Sensor with 2 dependent tested channels		
Sensor with 2 always-closed tested channels, short circuit permitted between the channels		
Sensor with 2 tested channels which can be crossed		
Sensor with 2 tested channels which cannot be crossed		
Sensor with 2 to 8 tested channels which cannot be crossed and which may only be active one at a time		
Sensor with 2 tested channels which cannot be crossed and which must follow a very precise activation/deactivation sequence made up of three states: rest, work, stop		
Dual temperature sensor integrated in module		
Monitoring of a pair of analogue sensors with 4-20 mA output in both 2-wire and 3-wire versions		
Monitoring of a pair of signals with frequencies up to 4 KHz		

Function blocks



The function blocks represent all the logic functions required to process the data flow between sensors and outputs.

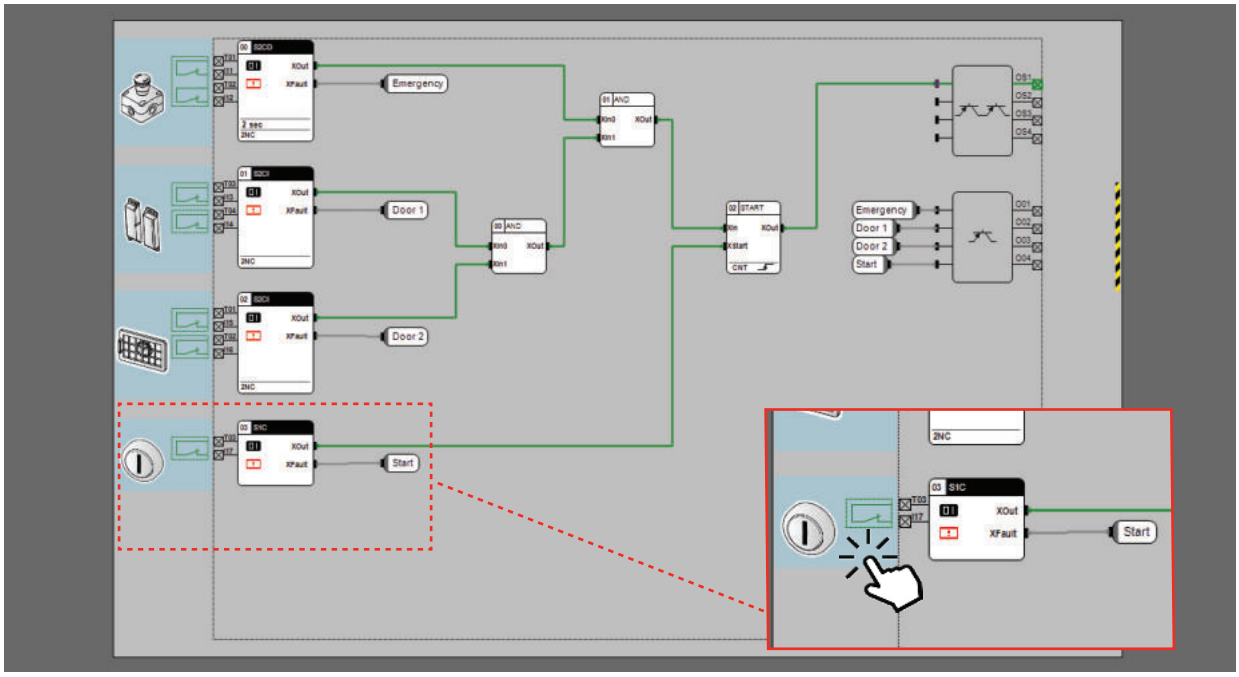
From the function block panel, a block can be selected using the mouse and dragged into the dedicated desktop area.

A full list of the available function blocks is shown on the side.

List of available function blocks

- AND — Basic Boolean function
- OR — Basic Boolean function
- XOR — Basic Boolean function
- NOR — Basic Boolean function
- NAND — Basic Boolean function
- NOT — Basic Boolean function
- NXOR — Basic Boolean function
- START — Control function
- MEM — Generic memory function
- DELAY — Returns a signal of type Delay Off or Delay On
- SET/RESET — Basic logical memory function
- POWER ON — Active signal at first execution cycle
- PULSE — Returns a signal of type Delay Off on the preselected input edge
- CLOCK — Generates pulses at pre-established fixed intervals
- ERROR — Puts the module into Error State
- LKTBL — Conversion table between data of the same type
- GEQ/EQU/LEQ — Carries out a numerical comparison between two values of type B or W and displays the result in Boolean format (X)
- MESSAGE — Transmits a message on the USB and COM ports
- COUNTER — Pulse counter
- COUNTER — Pulse counter
- TRIGGER — Detects the edge, either rising or falling, of an input signal
- FILTER — Filters a signal from interference for a duration lower than set time
- LDC — Upstream function block for monitoring of a door-locking system
- WAVE — Generates a waveform with variable period and ON time
- MUTE2 — Upstream function block for monitoring of a 2-beam muting system
- WTOB — Converts data from W format to B format
- TRUE / FALSE — Basic Boolean function
- MUL — Mathematical multiplication function
- EDM — External device monitoring
- SERIAL — Dialog between safety module and external PLC to monitor the state of sensors, logic blocks or general inputs connected to the module
- SUM — Calculates the mathematic addition between two values
- ADIFF — Calculates the mathematic absolute difference between two values
- AVG — Calculates the mathematic average between two values
- BTST — Sends the value of the bit in the position predetermined by the input data to the XOut output bit

Simulation



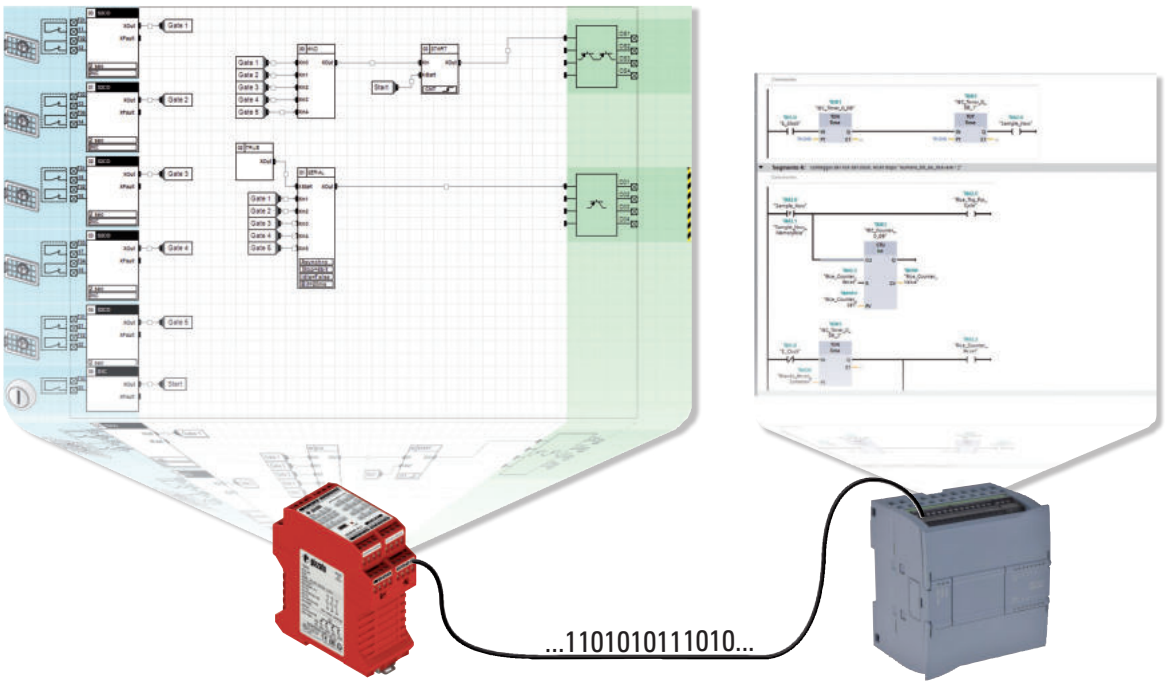
Gemnis Studio is equipped with a useful simulation environment, which allows you to carry out tests on your application program under development and check its correct operation before you install it in a module. To run an application program simulation during the development phase, simply press the Start button on the toolbar at the top of the desktop. If the application program cannot be compiled, the simulation will not run.
Upon start of the simulation phase, the desktop and the way you interact with it change. During this phase you can simulate module operation by interacting with the sensors and simulating real world conditions or operations. Clicking on the sensors will make them execute, in sequence, the standard events for each sensor. Each of these interactions modifies the state of the sensor output variables which, via the connectors, will become the input variables of the function blocks, which will evaluate them and so on, until the data arrives at the outputs that will or will not activate. This simulates exactly what will happen in the module.
Transmission of the information via the connectors is visible via colour change of the connectors.

Monitor

You can monitor operation of one or more Gemnis modules in real time using the Monitor function.
You can observe the overall operation state of the module and various data relating to the program being executed, including a list of most recently saved programs. The execution status of the program as well as the status of the module inputs and outputs can be viewed in real time. In Gemnis Studio 12 the video data update has been made faster and graphical pan & zoom functions are also available for the analysis of large projects.

SERIAL function block

With the SERIAL function block it is therefore possible to export "bit" type information from a Gemnis safety module (typically the open or closed state of the guard, but also the locked or unlocked state of the guard, or results of logical combinations between other GEMNIS STUDIO function blocks) using a maximum of 2 cables and 2 module outputs.



Transmission parameters

The function block allows a wide range of transmission parameters to be set:

- number of bits to be transmitted (2 to 32): any digital signal, including function block outputs;
- 2 types of transmission: synchronous (uses two outputs: signal and clock) or asynchronous (one self-synchronizing output, bit with Manchester coding);
- adjustable bit duration from 10 to 500 ms;
- IDLE status of the output cable (0, 1);
- number of fill bits between two consecutive transmissions (2 to 10);
- max. transmission speed: 100 bit/s in synchronous transmission, 50 bit/s in asynchronous transmission.

Advantages for the user

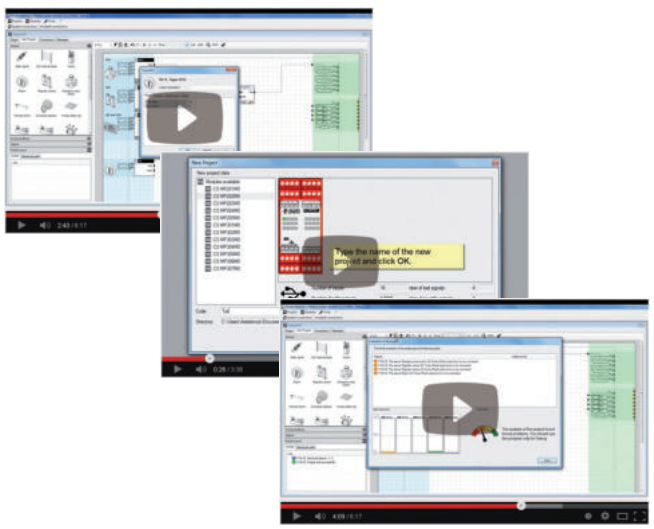
- The new SERIAL function block can be **used on all Gemnis modules**, even on previously purchased ones;
- **No hardware upgrade costs**;
- Simply download the latest **release of Gemnis Studio 12.5.1.0**;
- Less outputs occupied in the module: 1 single output for transmitting up to 32 bits;
- Less wiring: only 1 or 2 wires required;
- No need for a PC with USB connection to the safety module;
- The pulse sequence can be decoded with any type of PLC.

Technical support

Pizzato Elettrica provides technical support free of charge to users who have registered on the website and downloaded Gemnis Studio.
The information requested must be relevant to the functionality of the module. We do not provide a consulting service based on the customer's application.

Online support

The site www.gemnis.com contains video tutorials illustrating Gemnis Studio program operation.



CS MP201M0 programmable multifunction safety module

Main features

- For safety applications up to SIL CL 3/PL e
- Supply voltage: 24 Vdc
- Gemnis Studio for easy and intuitive programming and program simulation
- Large selection of logical blocks for the management of external devices and programs
- Custom configured versions available on request

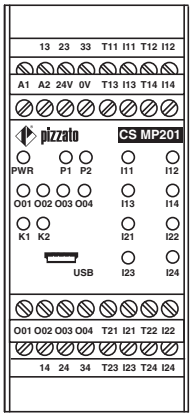
General data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
$MTTF_D$	135	
PFH_D	1.44E-09	
Mission time	20 years	
System response time	< 40 ms	
Dimensions (HxLxW)	111.5x45x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	8	399 part 6
Test outputs (Tx)	8	400 part 10
Semiconductor signalling output circuits (Ox)	4	400 part 11
Safety relay circuits	3NO	400 part 14

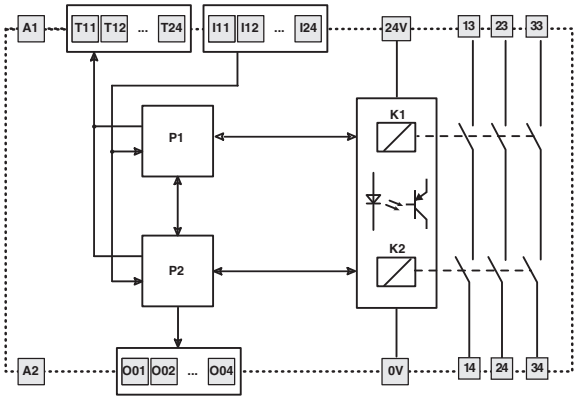
Quality marks:

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
EAC approval: RU C-IT.УТ03.B.00035/19

Pin assignment



Internal wiring diagram



Code structure

CS MP201M0

Connection type	
M	Connector with screw terminals
X	Connector with spring terminals

CS MP202M0 programmable multifunction safety module

Main features

- For safety applications up to SIL CL 3/PL e
- Supply voltage: 24 Vdc
- Gemnis Studio for easy and intuitive programming and program simulation
- Large selection of logical blocks for the management of external devices and programs
- Custom configured versions available on request

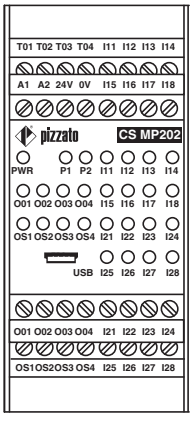
General data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
$MTTF_D$	614	
PFH_D	1.32E-09	
Mission time	20 years	
System response time	< 30 ms	
Dimensions (HxLxW)	111.5x45x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	16	399 part 6
Test outputs (Tx)	4	400 part 10
Semiconductor signalling output circuits (Ox)	4	400 part 11
Semiconductor safety output circuits (OSx)	4 PNP	400 part 12

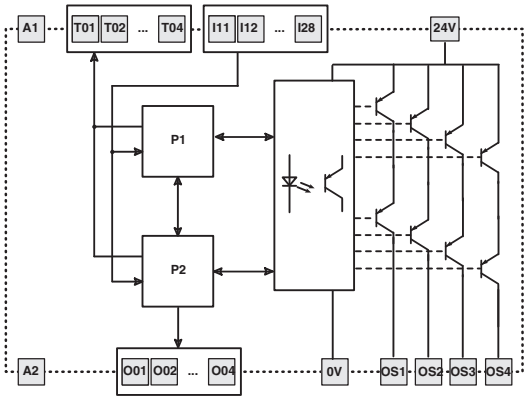
Quality marks:

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
EAC approval: RU C-IT.УТ03.B.00035/19

Pin assignment



Internal wiring diagram



Code structure

CS MP202M0

Connection type	
M	Connector with screw terminals
X	Connector with spring terminals

CS MP203M0 programmable multifunction safety module

Main features

- For safety applications up to SIL CL 3/PL e
- Supply voltage: 24 Vdc
- Gemnis Studio for easy and intuitive programming and program simulation
- Large selection of logical blocks for the management of external devices and programs
- Custom configured versions available on request

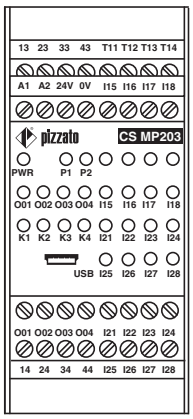
General data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
$MTTF_D$	103	
PFH_D	1.61E-09	
Mission time	20 years	
System response time	< 40 ms	
Dimensions (HxLxW)	111.5x45x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	12	399 part 6
Test outputs (Tx)	4	400 part 10
Semiconductor signalling output circuits (Ox)	4	400 part 11
Safety relay circuits	3NO+1NO	400 part 14

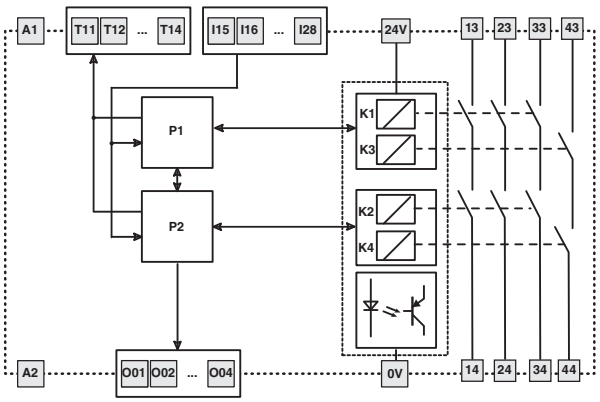
Quality marks:

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
EAC approval: RU C-IT.УТ03.B.00035/19

Pin assignment



Internal wiring diagram



Code structure

CS MP203M0

Connection type	
M	Connector with screw terminals
X	Connector with spring terminals

CS MP204M0 programmable multifunction safety module

Main features

- For safety applications up to SIL CL 3/PL e
- Supply voltage: 24 Vdc
- Gemnis Studio for easy and intuitive programming and program simulation
- Large selection of logical blocks for the management of external devices and programs
- Custom configured versions available on request

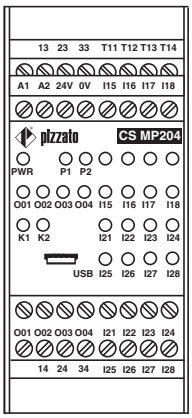
General data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
$MTTF_D$	134	
PFH_D	1.52E-09	
Mission time	20 years	
System response time	< 40 ms	
Dimensions (HxLxW)	111.5x45x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	12	399 part 6
Test outputs (Tx)	4	400 part 10
Semiconductor signalling output circuits (Ox)	4	400 part 11
Safety relay circuits	3NO	400 part 14

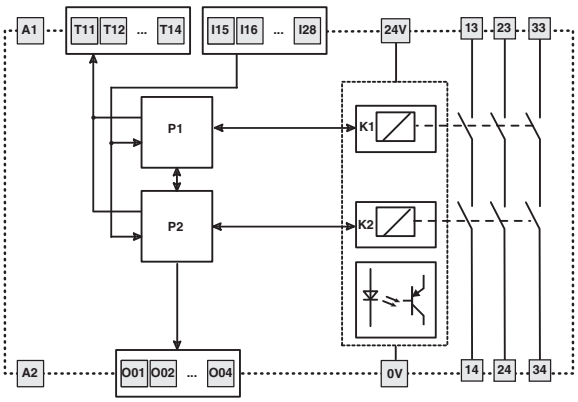
Quality marks:

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
EAC approval: RU C-IT.УТ03.B.00035/19

Pin assignment



Internal wiring diagram



Code structure

CS MP204M0

Connection type	
M	Connector with screw terminals
X	Connector with spring terminals

CS MP205M0 programmable multifunction safety module

Main features

- For safety applications up to SIL CL 3/PL e
- Supply voltage: 24 Vdc
- Gemnis Studio for easy and intuitive programming and program simulation
- Large selection of logical blocks for the management of external devices and programs
- Custom configured versions available on request

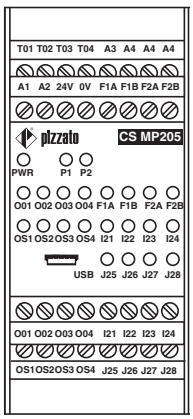
Quality marks:

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
EAC approval: RU C-IT.YT03.B.00035/19

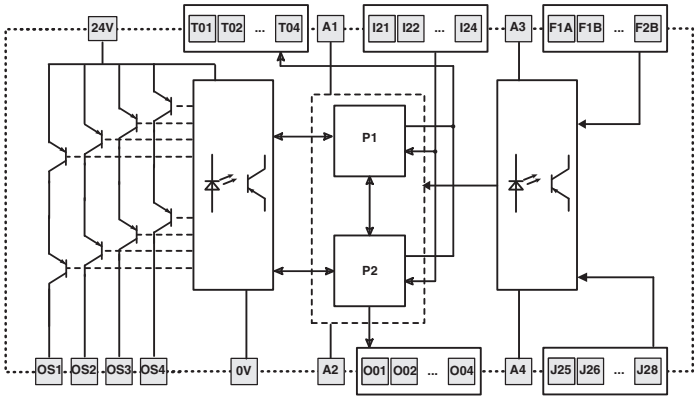
General data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
$MTTF_D$	373	
PFH_D	2.19E-09	
Mission time	20 years	
System response time	< 30 ms	
Dimensions (HxLxW)	111.5x45x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	4	399 part 6
Decoupled digital inputs (Jx)	4	399 part 7
Inputs for frequency signals from 0 to 4 kHz (Fx)	4	400 part 9
Test outputs (Tx)	4	400 part 10
Semiconductor signalling output circuits (Ox)	4	400 part 11
Semiconductor safety output circuits (OSx)	4 PNP	400 part 12

Pin assignment



Internal wiring diagram



Code structure

CS MP205M0

Connection type	
M	Connector with screw terminals
X	Connector with spring terminals

CS MP206M0 programmable multifunction safety module

Main features

- For safety applications up to SIL CL 3/PL e
- Supply voltage: 24 Vdc
- Gemnis Studio for easy and intuitive programming and program simulation
- Large selection of logical blocks for the management of external devices and programs
- Custom configured versions available on request

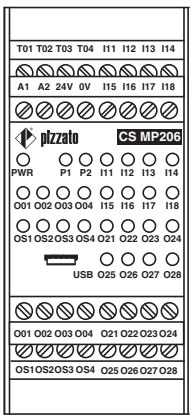
General data

Parameter:	Value:	Page:
SIL CL acc. to EN IEC 62061	up to SIL CL 3	
Performance Level (PL) acc. to EN ISO 13849-1	up to PL e	
Safety category acc. to EN ISO 13849-1	up to cat. 4	
$MTTF_D$	3314	
PFH_D	1.09E-09	
Mission time	20 years	
System response time	< 30 ms	
Dimensions (HxLxW)	111.5x45x99 mm	
Housing data		399 part 1
Environmental data		399 part 2
Supply		399 part 3
In compliance with standards		399 part 4
Programming software	Gemnis Studio	399 part 5
USB port	Yes	
Safety inputs (Ix)	8	399 part 6
Test outputs (Tx)	4	400 part 10
Semiconductor signalling output circuits (Ox)	12	400 part 11
Semiconductor safety output circuits (OSx)	4 PNP	400 part 12

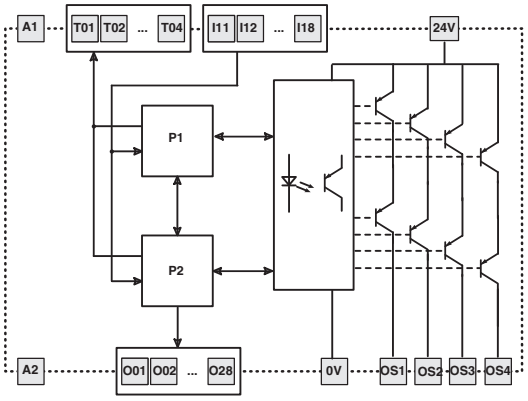
Quality marks:

EC type examination certificate: M6A 075157 0032
UL approval: E131787
CCC approval: 2021000305000107
TÜV SÜD approval: Z10 075157 0031
EAC approval: RU C-IT.УТ03.B.00035/19

Pin assignment



Internal wiring diagram



Code structure

CS MP206M0

Connection type	
M	Connector with screw terminals
X	Connector with spring terminals