



Safety timer module with delayed contacts at energizing

Main functions

- For safety applications up to SIL 3 / PL e
- Timed circuits through safety system with self-monitoring and redundancy
- Suitable to control safety interlocked devices
- 45 mm housing
- Output contacts:
 - 1 NO safety contact,
 - 2 NC auxiliary contacts,
- Supply voltages:
 - 24 Vac/dc, 120 Vac, 230 Vac

Utilization categories

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

Markings, quality marks and certificates:



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

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

Technical data

Housing

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

General data

SIL level (SIL CL): up to SIL 3 according to EN IEC 62061
Performance Level (PL): up to PL e according to EN ISO 13849-1
Safety category: upto cat. 4 according to EN ISO 13849-1 (dependent from the circuit structure) see page 7/34

Safety parameters:
Ambient temperature: -25°C...+55°C
Mechanical endurance: >10 millions of operations
Electrical endurance: >100.000 operations
Pollution degree: outside 3, inside 2
Rated impulse with stand voltage (Uimp): 2.5 kV
Rated insulation voltage (Ui): 250 V
Over-voltage category: II
Weight: 0,2 kg

Power supply

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

Max residual ripple in DC: 10%
Supply voltage tolerance: ±15% of Un
Rated power consumption AC: < 5 VA
Rated power consumption DC: < 2 W

Control circuit

Protection against short circuits: resistance PTC, I_h=0,5 A
Operating time of PTC: intervention > 100 ms, reset > 3 s
Operating time t_A: see "Code structure"
Releasing time in absence of power supply t_R: < 40 ms

In conformity with standards:
IEC 60947-1, EN 60947-5-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-5-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts: 1 NO safety contact,
2 NC auxiliary contacts,
forced guided contacts

Contacts type: silver alloy
Contacts material: 230/240 Vac; 300 Vdc
Max switching voltage:
Max switching current per contact: 6 A
Conventional free air thermal current I_{th}: 6 A
Max currents sum Σ I_{th}²: 36 A²
Min. current: 10 mA
Contacts resistance: ≤ 100 mΩ
Contact protection fuse: 6 A, F type

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

Code structure

CS FS-11V024-TF1

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

Kind of connection	
V	screw terminals
M	connector with screw terminals
X	connector with spring terminals

Operating time t _A	
TF0.5	fixed 0,5 s
TF1	fixed 1 s
TF3	fixed 3 s
TF10	fixed 10 s

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

Data type approved by UL

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

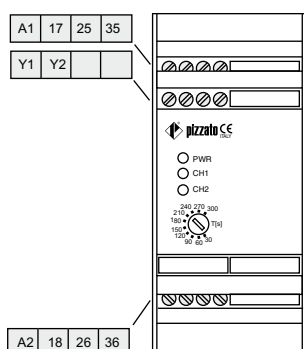
Rated power consumption AC: < 5 VA
Rated power consumption DC: < 2 W
Max switching voltage: 230 Vac
Max switching current per contact: 6 A
Utilization category: C300

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

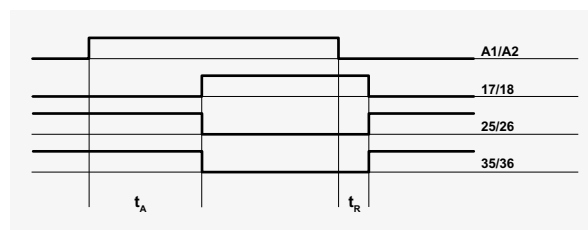


Safety module CS FS-1

Terminals layout



Operations diagram

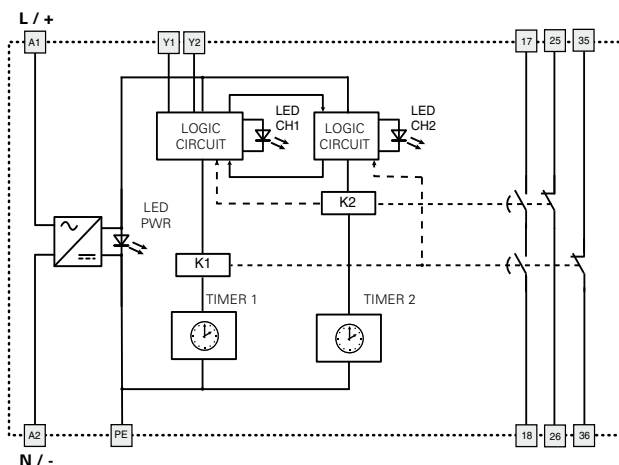


Legend:

t_A : Adjustable operating time (see "Code structure")

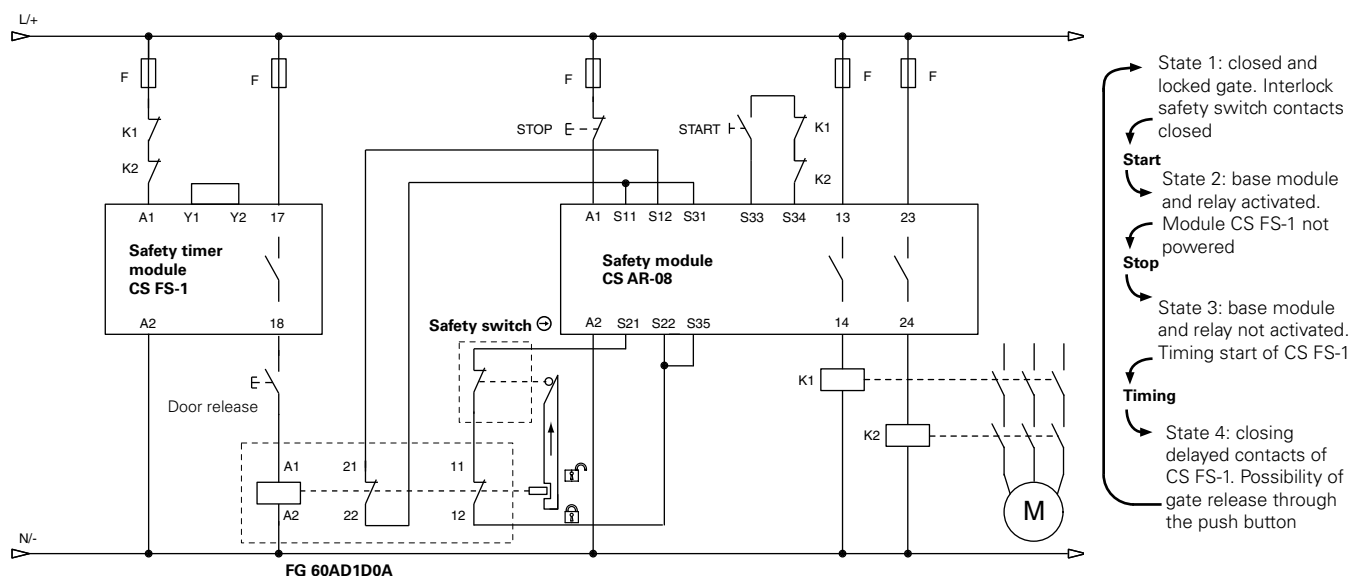
t_R : Releasing time in absence of power supply

Internal wiring diagram



Circuit structure

Control of a door-lock system with manual release



The diagram shown displays the operation principle of a typical circuit for the control of a door-lock system with door blocking when interlock safety switch is not energized, and manual release of the single doors.

In order to obtain the complete wiring diagram with different modalities of electrical blocking or with automatic door release, please contact our technical office.

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



Safety timer module with delayed contacts at energizing

Main functions

- For safety applications up to SIL 2 / PL d
- Timed circuits through safety system with self-monitoring and redundancy
- Suitable to control safety interlocked devices
- 45 mm housing
- Output contacts:
 - 1 NO safety contact,
 - 1 NC auxiliary contact,
 - 1 CO auxiliary contact,
- Supply voltages:
 - 24 Vdc, 120 Vac

Utilization categories

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

Ue (V) 230

Ie (A) 3

Direct current: DC13 (6 operations/minute)

Ue (V) 24

Ie (A) 4

Markings and quality marks:



Approval UL: E131787

Approval TÜV SÜD: Z10 10 09 75157 002

Approval GOST: POCC ITAB24.B04512

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

Technical data

Housing

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

Protection degree: IP40 (housing), IP20 (terminals)

Dimensions: see page 5/82 shape C

General data

SIL level (SIL CL): up to SIL 2 according to EN IEC 62061

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

Safety category: upto cat.3 according to EN ISO 13849-1

Safety parameters: see page 7/34

Ambient temperature: -25°C...+55°C

Mechanical endurance: >10 millions of operations

Electrical endurance: >100.000 operations

Pollution degree: outside 3, inside 2

Rated impulse with stand voltage (Uimp): 4 kV

Rated insulation voltage (Ui): 250 V

Over-voltage category: II

Weight: 0,2 kg

Power supply

Rated operating voltage (Un): 24 Vdc (A1-A2)

120 Vac; 50...60 Hz (B1-B2)

Max residual ripple in DC: 10%

Supply voltage tolerance: ±15% of Un

Rated power consumption AC: < 5 VA

Rated power consumption DC: < 2 W

Control circuit

Protection against short circuits: resistance PTC, I_h=0,5 A

Operating time of PTC: intervention > 100 ms, reset > 3 s

Operating time t_A: see "Code structure"

Releasing time in absence of power supply t_R: < 40 ms

In conformity with standards:

IEC 60947-1, EN 60947-5-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-5-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts:

- 1 NO safety contact,
- 1 NC auxiliary contact,
- 1 CO auxiliary contact,

forced guided contacts

silver alloy

Contacts type: 230/240 Vac; 300 Vdc

Contacts material: 6 A

Max switching voltage: 6 A

Max switching current per contact: 36 A²

Conventional free air thermal current I_{th}: 10 mA

Max currents sum Σ I_{th}²: ≤ 100 mΩ

Min. current: 6 A, F type

Contacts resistance: Type PNP

Contact protection fuse: 24 Vdc

Error signalling output (Y14): 10 mA

Rated operational voltage (Ue):

Rated operational current (Ie):

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

Code structure

CS FS-20VU24-TFxx

Operating time t _A	
0	Fixed time (see TFxx)
1	from 0,3 to 3 s, step 0,3 s
2	from 1 to 10 s, step 1 s
3	from 3 to 30 s, step 3 s
4	from 30 to 300 s, step 30 s

Kind of connection	
V	screw terminals
M	connector with screw terminals
X	connector with spring terminals

Operating time t _A	
TFxx	xx s (fixed time)

Supply voltage	
U24	24 Vdc ±15%
120	24 Vdc (A1-A2) ±15%
	120 Vac (B1-B2) ±15%

Data type approved by UL

Rated operating voltage (Un): 24 Vdc, 120 Vac; 50...60 Hz:
Rated power consumption AC: < 5 VA
Rated power consumption DC: < 2 W
Max switching voltage: 230 Vac
Max switching current per contact: 6 A
Utilization category: C300
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
- Terminal tightening torque of 5-7 Lb In.
- Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy.

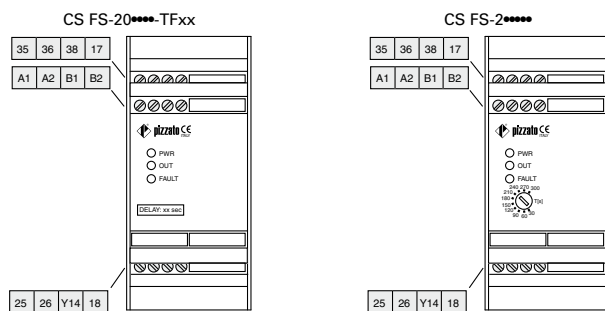
Data type approved by TÜV SÜD

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



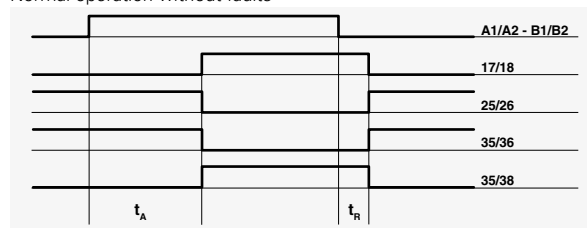
Safety module CS FS-2

Terminals layout



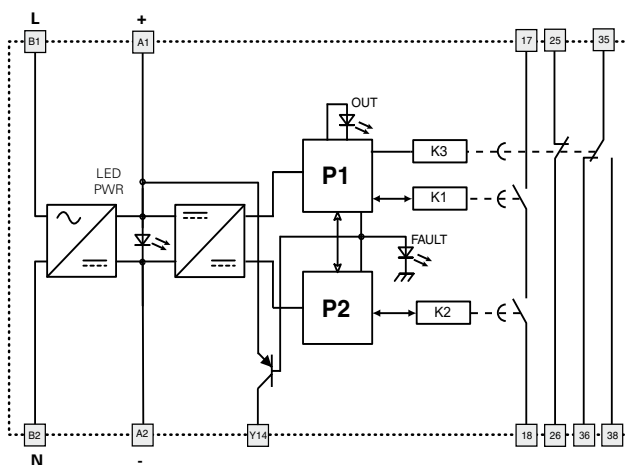
Operations diagram

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



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

Internal wiring diagram



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



Safety timer module with ON pulse function

Main functions

- For safety applications up to SIL 2 / PL d
- Timed circuits through safety system with self-monitoring and redundancy
- Suitable to control safety interlocked devices
- 45 mm housing
- Output contacts:
 - 1 NO safety contact,
 - 1 NC auxiliary contact,
 - 1 CO auxiliary contact,
- Supply voltages:
 - 24 Vdc, 120 Vac

Utilization categories

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

Markings and quality marks:

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

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

Technical data

Housing

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

General data

SIL level (SIL CL): up to SIL 2 according to EN IEC 62061
Performance Level (PL): up to PL d according to EN ISO 13849-1
Safety category: up to cat.3 according to EN ISO 13849-1
Safety parameters: see page 7/34
Ambient temperature: -25°C...+55°C
Mechanical endurance: >10 millions of operations
Electrical endurance: >100.000 operations
Pollution degree: outside 3, inside 2
Rated impulse with stand voltage (Uimp): 4 kV
Rated insulation voltage (Ui): 250 V
Over-voltage category: II
Weight: 0,2 kg

Power supply

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

Control circuit

Protection against short circuits: resistance PTC, Ih=0,5 A
Operating time of PTC: ng time t_A: see "Code structure"
Releasing time in absence of power supply t_R: < 40 ms
Start-up time t_S: < 200 ms

In conformity with standards:

IEC 60947-1, EN 60947-5-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-5-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts:
1 NO safety contact,
1 NC auxiliary contact,
1 CO auxiliary contact,
forced guided contacts
silver alloy
Contacts type:
Contacts material:
Max switching voltage:
Max switching current per contact:
Conventional free air thermal current Ith:
Max currents sum Σ Ith²:
Min. current:
Contacts resistance:
Contact protection fuse:
Error signalling output (Y14):
Rated operational voltage (Ue):
Rated operational current (Ie):
The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See page 5/51 - 5/61.

Code structure

CS FS-30VU24-TFxx

Releasing time t _A	
0	Fixed time (see TFxx)
1	from 0,3 to 3 s, step 0,3 s
2	from 1 to 10 s, step 1 s
3	from 1 to 30 s, step 3 s
4	from 30 to 300 s, step 30 s

Kind of connection	
V	screw terminals
M	connector with screw terminals
X	connector with spring terminals

Releasing time t _A	
TFxx	xx s (fixed time)

Supply voltage			
U24	24 Vdc	±15%	
120	24 Vdc (A1-A2)	±15%	
	120 Vac (B1-B2)	±15%	

Data type approved by UL

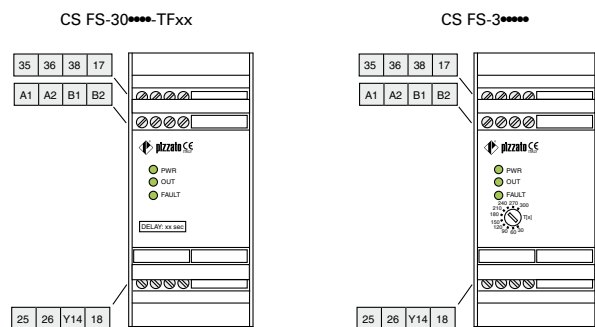
Rated operating voltage (Un): 24 Vdc, 120 Vac; 50...60 Hz:
Rated power consumption AC: < 5 VA
Rated power consumption DC: < 2 W
Max switching voltage: 230 Vac
Max switching current per contact: 6 A
Utilization category: C300
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.
- Terminal tightening torque of 5-7 Lb In.
- Only for 24 Vac/dc version, supply from remote class 2 source or limited voltage and limited energy.

Data type approved by TÜV SÜD

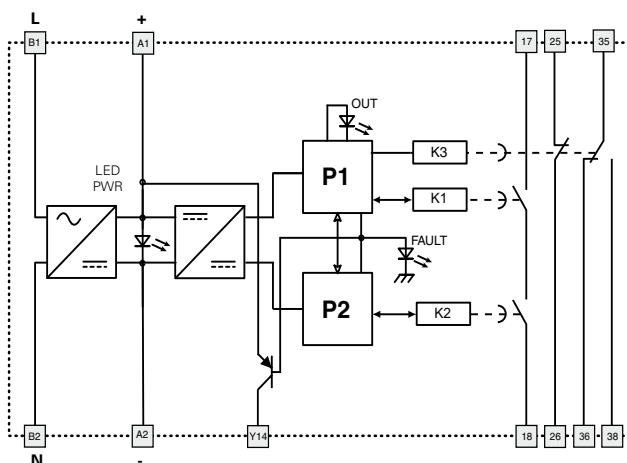
Rated operating voltage (Un): 24 Vdc; ± 15%, 120 Vac ± 15%
Rated power consumption: 5 VA max AC, 2 W max DC
Output switching current (max): 4 A
Output switching power (max): 1380 VA
Working temperature: -25 °C ... + 55°C
Storage temperature: -25 °C ... + 70°C
Protection degree: IP40 (housing), IP20 (terminals)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

Safety module CS FS-3

Terminals layout



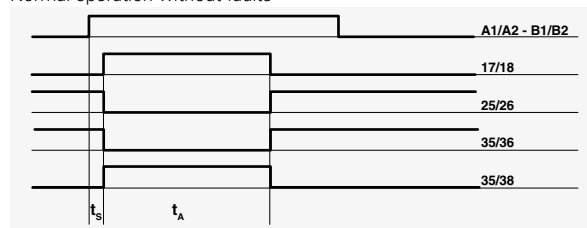
Internal wiring diagram



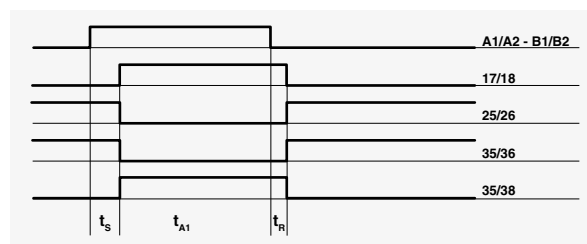
A1-A2: 24 Vdc
B1-B2: 120 Vac

Operations diagram

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



Operation without power supply



Legend:
 t_A : Adjustable releasing time (see "Code structure")
 t_{A1} : Releasing time if power supply is minor to t_A
 t_R : Releasing time in absence of power supply
 $t_{s'}$: Start-up time



Safety timer module with delayed contacts at opening of the input channels

Main functions

- For safety applications up to SIL 2 / PL d
- Timed circuits through safety system with self-monitoring and redundancy
- Suitable to control safety interlocked devices
- 45 mm housing
- Output contacts:
 - 1 NO safety contact,
 - 1 NC auxiliary contact,
 - 1 CO auxiliary contact,
- Supply voltages:
 - 24 Vdc, 120 Vac

Utilization categories

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

U_e (V) 230

I_e (A) 3

Direct current: DC13 (6 operations/minute)

U_e (V) 24

I_e (A) 4

Markings and quality marks:



Approval UL: E131787

Approval TÜV SÜD: Z10 10 09 75157 002

Approval GOST: POCC ITAB24.B04512

Complying with the requirements requested by:

Low Voltage Directive 2006/95/EC,

Machinery Directive 2006/42/EC,

Electromagnetic Compatibility 2004/108/EC

Technical data

Housing

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

Protection degree:

IP40 (housing), IP20 (terminals)

Dimensions:

see page 5/82 shape C

General data

SIL level (SIL CL):

up to SIL 2 according to EN IEC 62061

Performance Level (PL):

up to PL d according to EN ISO 13849-1

Safety category:

upto cat.3 according to EN ISO 13849-1

Safety parameters:

see page 7/34

Ambient temperature:

-25°C...+55°C

Mechanical endurance:

> 10 millions of operations

Electrical endurance:

> 100.000 operations

Pollution degree:

outside 3, inside 2

Rated impulse with stand voltage (U_{imp}):

4 kV

Rated insulation voltage (U_i):

250 V

Over-voltage category:

II

Weight:

0,2 kg

Power supply

Rated operating voltage (U_n):

24 Vdc (A1-A2)

120 Vac; 50...60 Hz (B1-B2)

Max residual ripple in DC:

10%

Supply voltage tolerance:

±15% of U_n

Rated power consumption AC:

< 5 VA

Rated power consumption DC:

< 2 W

Control circuit

Protection against short circuits:

resistance PTC, I_h=0,5 A

Operating time of PTC:

intervention > 100 ms, reset > 3 s

Releasing time t_A:

see "Code structure"

Releasing time in absence of power supply t_R:

< 40 ms

Input circuit

Max input resistance:

≤ 50 Ω

Input current:

< 8 mA

Activation time t_s:

< 40 ms

Minimum endurance of input signal t_{MIN}:

> 50 ms

In conformity with standards:

IEC 60947-1, EN 60947-5-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-5-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts:

1 NO safety contact,
1 NC auxiliary contact,
1 CO auxiliary contact,
forced guided contacts

Contacts type:

silver alloy

Contacts material:

230/240 Vac; 300 Vdc

Max switching voltage:

6 A

Max switching current per contact:

6 A

Conventional free air thermal current I_{th}:

36 A²

Max currents sum Σ I_{th}²:

10 mA

Min. current:

≤ 100 mΩ

Contacts resistance:

6 A, F type

Contact protection fuse:

Type PNP

Error signalling output (Y14):

24 Vdc

Rated operational voltage (U_e):

10 mA

Rated operational current (I_e):

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

Code structure

CS FS-50VU24-TFxx

Releasing time t_A

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

Releasing time t_A

TFxx xx s (fixed time)

Kind of connection

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

Supply voltage

U24	24 Vdc	±15%
120	24 Vdc (A1-A2)	±15%
	120 Vac (B1-B2)	±15%

Data type approved by UL

Rated operating voltage (U_n): 24 Vdc, 120 Vac; 50...60 Hz:

Rated power consumption AC: < 5 VA

Rated power consumption DC: < 2 W

Max switching voltage: 230 Vac

Max switching current per contact: 6 A

Utilization category: C300

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

- Terminal tightening torque of 5-7 Lb In.

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

Data type approved by TÜV SÜD

Rated operating voltage (U_n): 24 Vdc; ± 15%, 120 Vac ± 15%

Rated power consumption: 5 VA max AC, 2 W max DC

Output switching current (max): 4 A

Output switching power (max): 1380 VA

Working temperature: -25 °C ... + 55 °C

Storage temperature: -25 °C ... + 70 °C

Protection degree: IP40 (housing), IP20 (terminals)

Tested according to: 2006/42/EEC Machine Directive, EN ISO 13849-1:2008 (up to Cat. 4 PL e), EN 50178:1997, EN 60947-5-3/A1:2005,

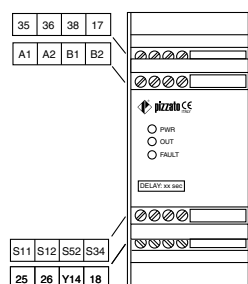
EN 61508-1:1998 (SIL 1-3), EN 61508-2:2000 (SIL 1-3), EN 61508-4:1998 (SIL 1-3), IEC 62061:2005 (SIL CL 3)



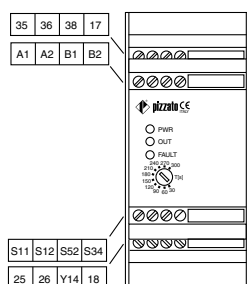
Safety module CS FS-5

Terminals layout

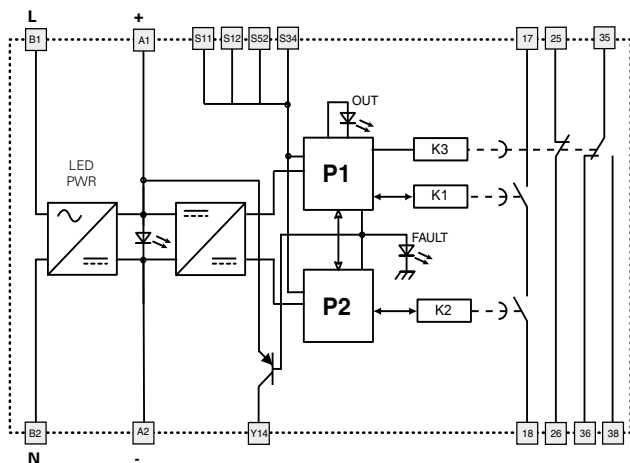
CS FS-50****-TFxx



CS FS-5****



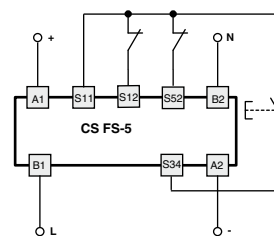
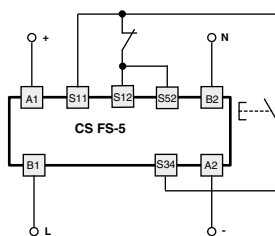
Internal wiring diagram



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

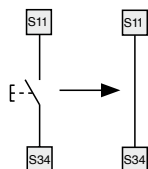
Inputs configuration

Gate monitoring	
Input configuration with manual start	
1 channel	2 channels



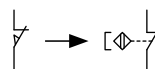
Automatic start

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



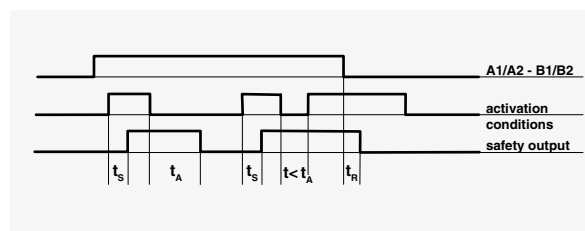
Gate monitoring and safety magnetic sensors.

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

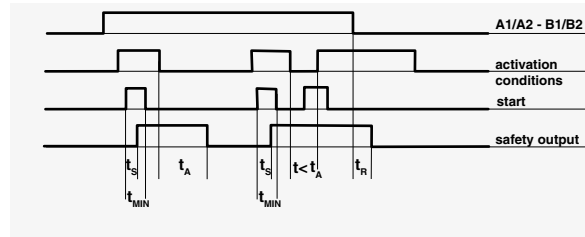


Operations diagram

Configuration with automatic start



Configuration with manual start



Legend:

- t_A : Adjustable releasing time (see "Code structure")
- t_R : Releasing time in absence of power supply
- t_s : Activation time
- t_{MIN} : Minimum endurance of input signal