

**Two-hand control device according to EN 574: 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)

U<sub>e</sub> (V) 230

I<sub>e</sub> (A) 3

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

U<sub>e</sub> (V) 24

I<sub>e</sub> (A) 4

#### Quality marks:



EC type examination certificate: IMQ BP 210 DM

UL approval: E131787

CCC approval: 2013010305640211

EAC approval: RU C-IT.AД35.B.00454

#### 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 317, 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 574: type III C

Safety parameters:

see page 375

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<sub>imp</sub>):

4 kV

Rated insulation voltage (U<sub>i</sub>):

250 V

Overvoltage category:

II

##### Supply

Rated supply voltage (U<sub>n</sub>):

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<sub>n</sub>

Power consumption AC:

< 5 VA

Power consumption DC:

< 2 W

##### Control circuit

Protection against short circuits:

PTC resistance, I<sub>h</sub>=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<sub>A</sub>:

< 50 ms

Release time t<sub>R1</sub>:

< 20 ms

Release time in absence of power supply t<sub>R2</sub>:

< 70 ms

Time range for synchronised actuation t<sub>SN</sub>:

< 0.5 s

#### In compliance with standards:

EN 60204-1, EN ISO 13855, EN 1037, 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 50581, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 n° 14-95, GB/T14048.5-2017

##### 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<sub>th</sub>:

6 A

Max. total current Σ I<sub>th</sub><sup>2</sup>:

64 A<sup>2</sup>

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 263-272.

#### Code structure

## CS DM-01V024

Connection type	
<b>V</b>	Screw terminals
<b>M</b>	Connector with screw terminals
<b>X</b>	Connector with spring terminals

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

#### Features approved by UL

Rated supply voltage (U <sub>n</sub> ):	24 Vac/dc; 50...60 Hz
	120 Vac; 50...60 Hz
	230 Vac; 50...60 Hz
Power consumption AC:	< 5 VA
	< 2 W
Power consumption DC:	< 2 W
Electrical ratings:	230/240 Vac
	6 A general use C300 pilot duty

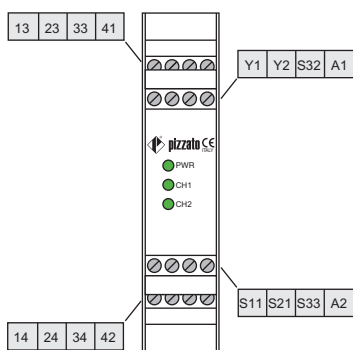
#### Notes:

- 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.

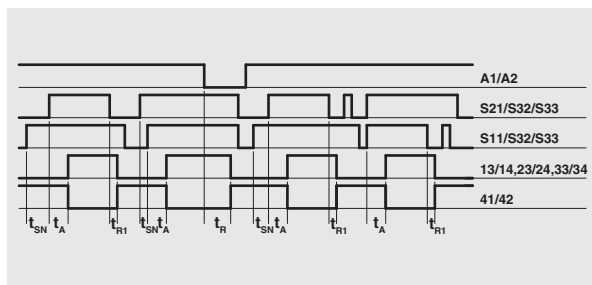


### Safety module CS DM-01

#### Pin assignment

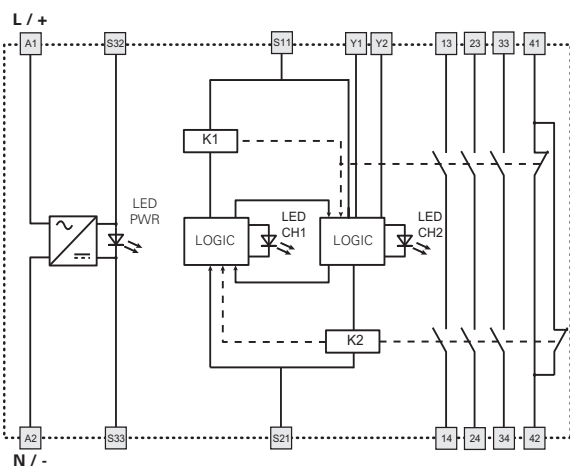


#### Function diagram



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 block diagram

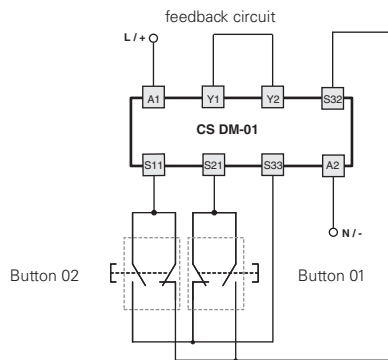


Application example on page 276.

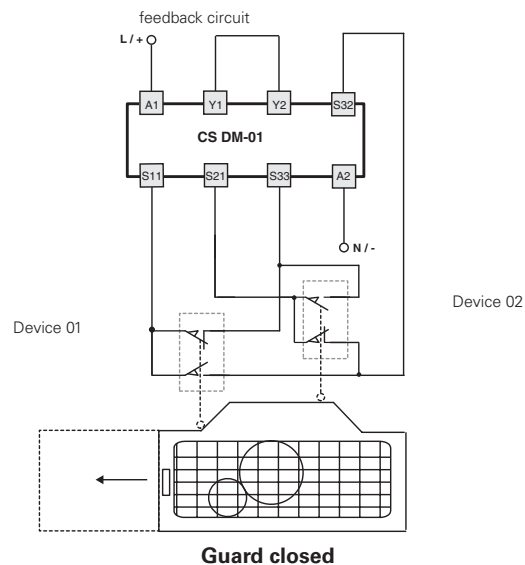
#### Input configuration

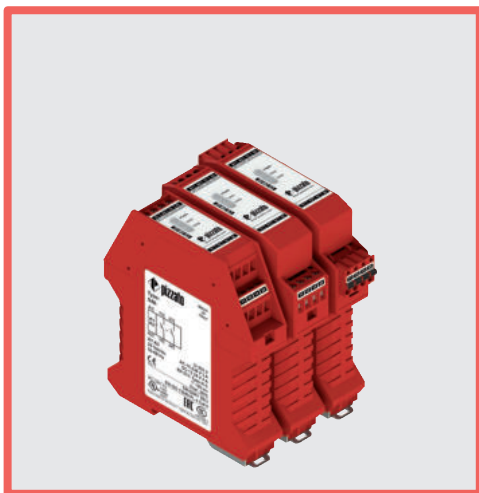
Circuit with two-hand control device type III C according to EN 574

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



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





### Two-hand control device according to EN 574: 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)

U<sub>e</sub> (V) 230

I<sub>e</sub> (A) 3

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

U<sub>e</sub> (V) 24

I<sub>e</sub> (A) 4

#### Quality marks:



EC type examination certificate: IMQ BP 210 DM

UL approval: E131787

CCC approval: 2013010305640211

EAC approval: RU C-IT.AQ35.B.00454

#### 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 317, 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 574: type III C

Safety parameters:

see page 375

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<sub>imp</sub>):

4 kV

Rated insulation voltage (U<sub>i</sub>):

250 V

Overvoltage category:

II

#### Supply

Rated supply voltage (U<sub>n</sub>):

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<sub>n</sub>

Power consumption AC:

< 5 VA

Power consumption DC:

< 2 W

#### Control circuit

Protection against short circuits:

PTC resistance, I<sub>h</sub>=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<sub>A</sub>:

< 30 ms

Release time t<sub>R1</sub>:

< 25 ms

Release time in absence of power supply t<sub>R2</sub>:

< 90 ms

Time range for synchronised actuation t<sub>SN</sub>:

< 0.5 s

#### In compliance with standards:

EN 60204-1, EN ISO 13855, EN 1037, 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 50581, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 n° 14-95, GB/T14048.5-2017

#### 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<sub>th</sub>:

6 A

Max. total current Σ I<sub>th</sub><sup>2</sup>:

36 A<sup>2</sup>

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 263-272.

### Code structure

## CS DM-02V024

Connection type	
<b>V</b>	Screw terminals
<b>M</b>	Connector with screw terminals
<b>X</b>	Connector with spring terminals

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

### Features approved by UL

Rated supply voltage (U <sub>n</sub> ):	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:	230/240 Vac 6 A general use C300 pilot duty

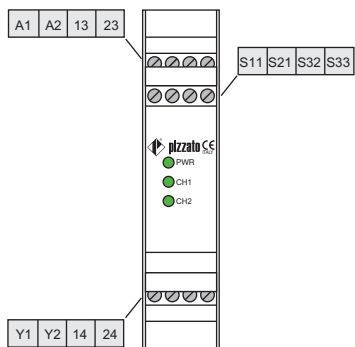
#### Notes:

- 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.

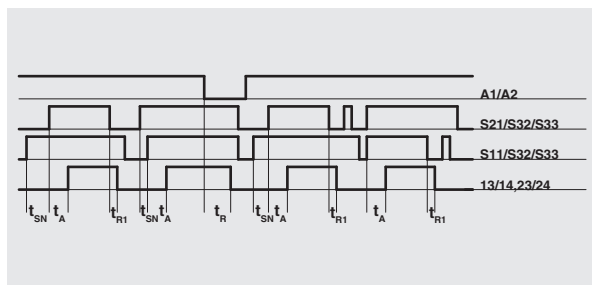


# Safety module CS DM-02

## Pin assignment

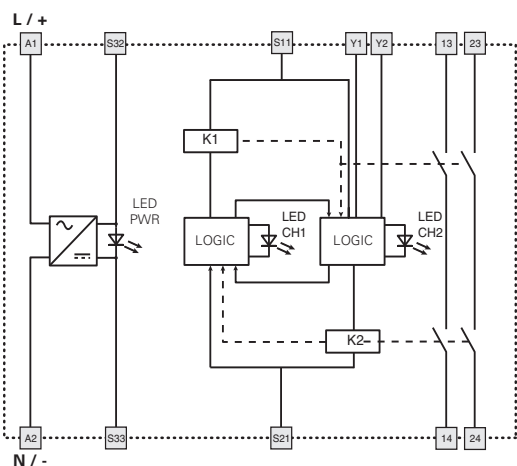


## Function diagram



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 block diagram

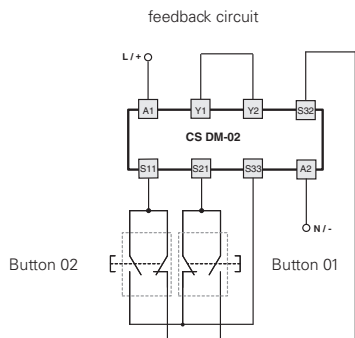


Application example on page 276.

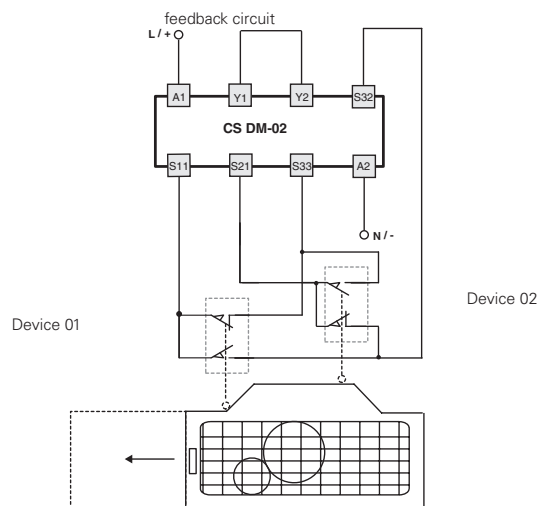
## Input configuration

Circuit with two-hand control device type III C according to EN 574

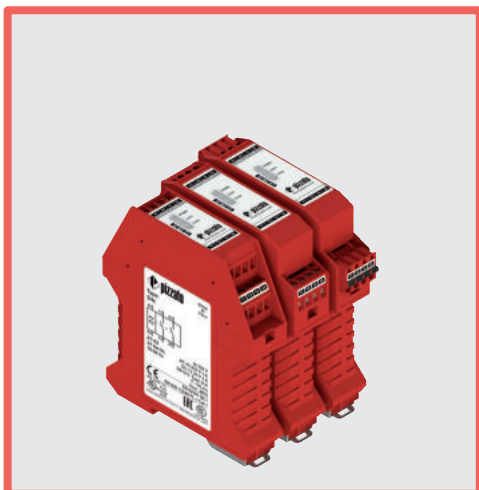
Movable guard monitoring with automatic start and simultaneity between channels < 0.5 s (safety category 4)



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



Guard closed



### Two-hand control device according to EN 574: type III A 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)

U<sub>e</sub> (V) 230

I<sub>e</sub> (A) 3

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

U<sub>e</sub> (V) 24

I<sub>e</sub> (A) 4

#### Quality marks:



UL approval: E131787

CCC approval: 2013010305640211

EAC approval: RU C-IT.AД35.B.00454

#### 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 317, 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

Safety category up to:

cat. 1 acc. to EN ISO 13849-1

Type of two-hand control device:

EN 574: type III A

Safety parameters:

see page 375

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<sub>imp</sub>):

4 kV

Rated insulation voltage (U<sub>i</sub>):

250 V

Overvoltage category:

II

#### Supply

Rated supply voltage (U<sub>n</sub>):

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<sub>n</sub>

Power consumption AC:

< 5 VA

Power consumption DC:

< 2 W

#### Control circuit

Protection against short circuits:

PTC resistance, I<sub>h</sub>=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<sub>A</sub>:

< 12 ms

Release time t<sub>R</sub>:

< 10 ms

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

< 200 ms

Time range for synchronised actuation t<sub>SN</sub>:

< 0.5 s

#### In compliance with standards:

EN 60204-1, EN ISO 13855, EN 1037, 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 50581, EN ISO 13849-1, EN ISO 13849-2, EN 62061, UL 508, CSA C22.2 n° 14-95, GB/T 14048.5-2017

#### 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<sub>th</sub>:

6 A

Max. total current Σ I<sub>th</sub><sup>2</sup>:

36 A<sup>2</sup>

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 263-272.

### Code structure

## CS DM-20V024

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 <sub>n</sub> ):	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:	230/240 Vac 6 A general use C300 pilot duty

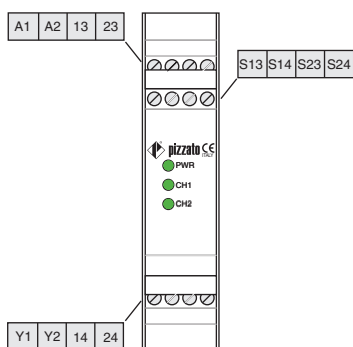
#### Notes:

- 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.

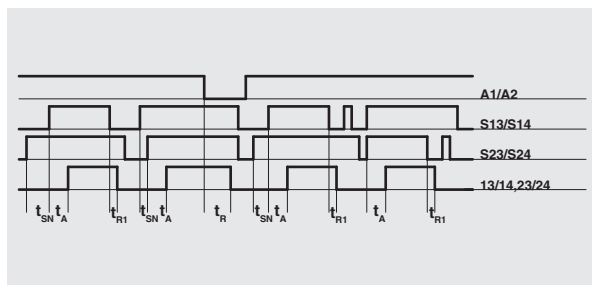


### Safety module CS DM-20

#### Pin assignment

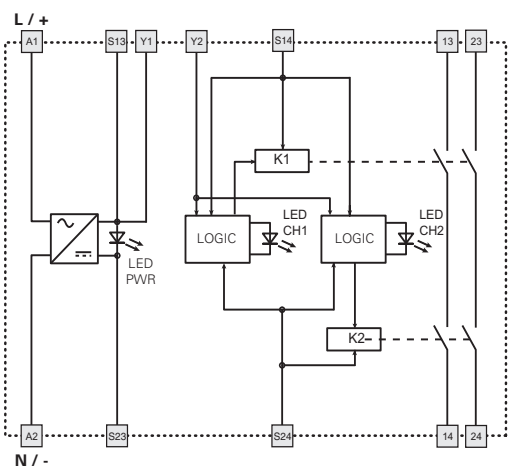


#### Function diagram



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

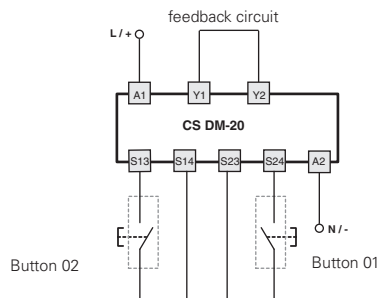
#### Internal block diagram



#### Input configuration

Circuit with two-hand control device type III A according to EN 574

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



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

