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 3/PL e
- Inputs: 2 channels, which can be connected to electromechanical contacts or for two-hand control
- Connection of input channels of opposite potentials
- Outputs: relay, 3NO safety, 1NC signalling
- Supply voltage: 24 Vac/dc, 120 Vac, 230 Vac

Quality marks:

EC type examination certificate: IMQ BP 210 DM
UL approval: E131787
CCC approval: 2024010305656748
EAC approval: RU Д-IT.PA07.B.37848/24

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

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

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 135, design A

General data

Safety Integrity Level (SIL) up to:	Maximum SIL 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 151
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

Power 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 > 100 ms, reset > 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

Output circuit

Output contacts:	3 NO safety contacts, 1 NC auxiliary contact
Contact type:	forcibly guided
Material of the contacts:	silver alloy
Maximum switching voltage:	230/240 Vac; 300 Vdc
Utilization categories for output contacts:	AC-15 (50 ... 60 Hz), 230 V / 3 A DC-13 (6 oper. cycles/min.), 24 V / 4 A
Maximum conventional free air thermal current per branch 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

The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See pages 75-84.

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

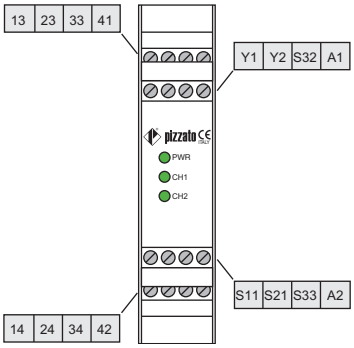
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

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.

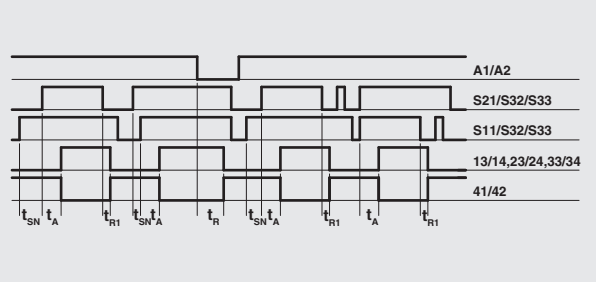
- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

Safety module CS DM-01

Pin assignment

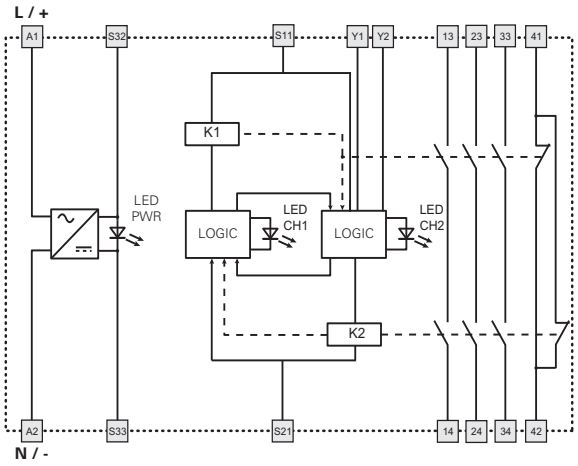


Function diagram



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

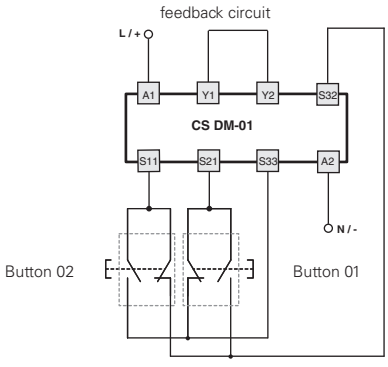
Internal wiring diagram



Application example on page 88.

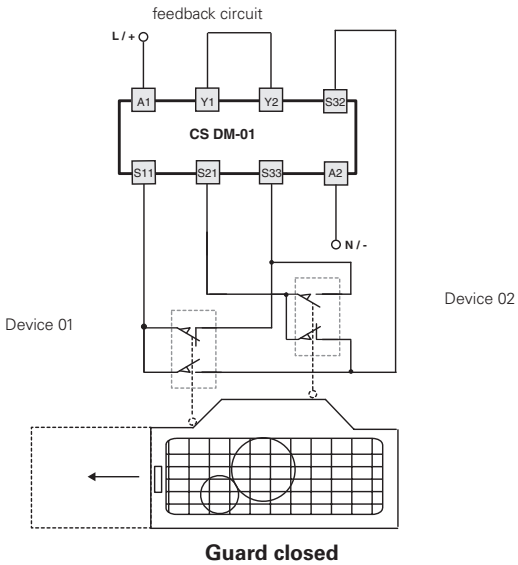
Input configuration

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



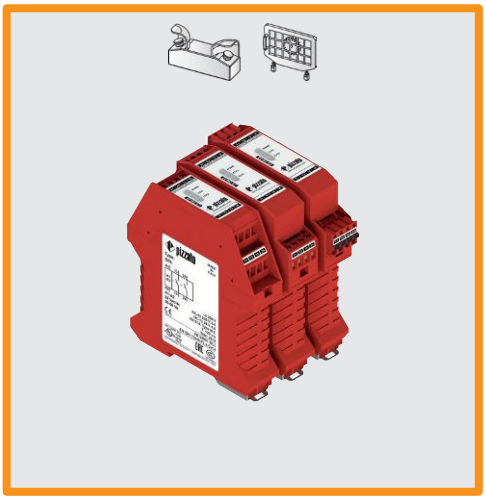
The diagram does not show the exact position of the terminals in the product

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



Guard closed

Safety module **CS DM-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 3/PL e
- Inputs: 2 channels, which can be connected to electromechanical contacts or for two-hand control
- Connection of input channels of opposite potentials
- Outputs: relay, 2NO safety
- Supply voltage: 24 Vac/dc, 120 Vac, 230 Vac

Quality marks:

EC type examination certificate: IMQ BP 210 DM
UL approval: E131787
CCC approval: 2024010305656748
EAC approval: RU Д-IT.PA07.B.37848/24

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

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

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 135, design A

General data

Safety Integrity Level (SIL) up to:	Maximum SIL 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 151
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

Power 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 > 100 ms, reset > 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

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
Utilization categories for output contacts:	AC-15 (50 ... 60 Hz), 230 V / 3 A DC-13 (6 oper. cycles/min.), 24 V / 4 A
Maximum conventional free air thermal current per branch 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 75-84.

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

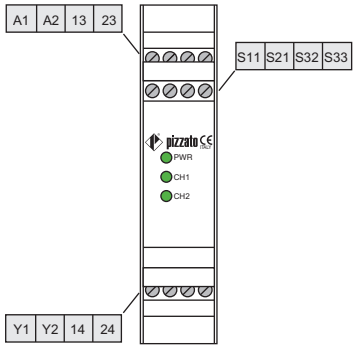
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

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.

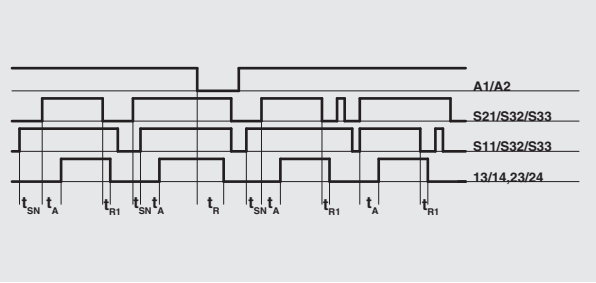
- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

Safety module CS DM-02

Pin assignment

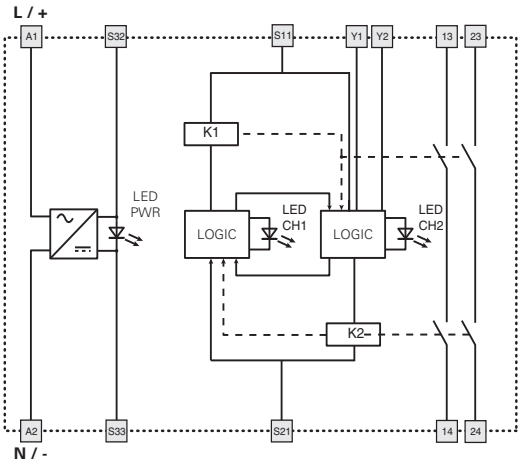


Function diagram



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

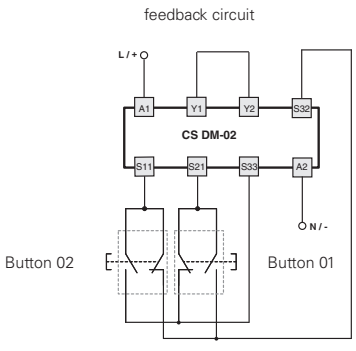


Application example on page 88.

Internal wiring diagram

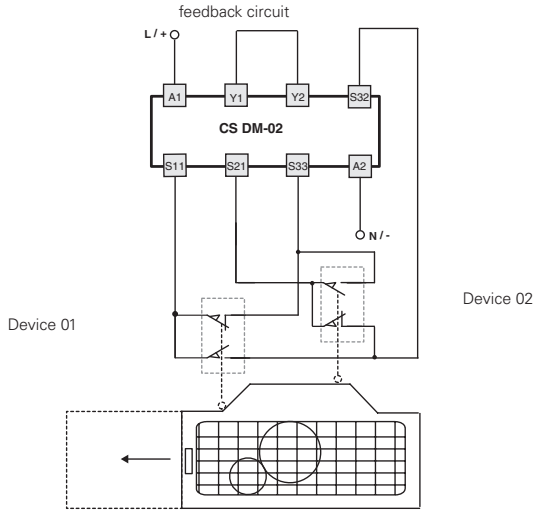
Input configuration

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



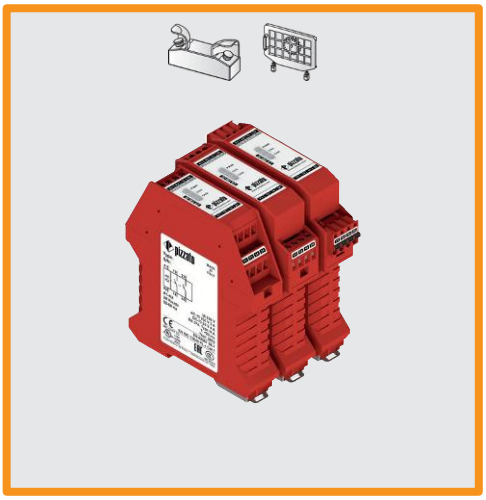
The diagram does not show the exact position of the terminals in the product

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 1/PL c
- Inputs: 2 channels, which can be connected to electromechanical contacts or for two-hand control
- Connection of input channels of opposite potentials
- Outputs: relay, 2NO safety
- Supply voltage: 24 Vac/dc, 120 Vac, 230 Vac

Quality marks:

UL approval:	E131787
CCC approval:	2024010305656748
EAC approval:	RU Д-IT.PA07.B.37848/24

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

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

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 135, design A

General data

Safety Integrity Level (SIL) up to:	Maximum SIL 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 151
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

Power 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 > 100 ms, reset > 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:	< 200 ms
Time range for synchronised actuation t_{SN}:	< 0.5 s

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
Utilization categories for output contacts:	AC-15 (50 ... 60 Hz), 230 V / 3 A DC-13 (6 oper. cycles/min.), 24 V / 4 A
Maximum conventional free air thermal current per branch 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 75-84.

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

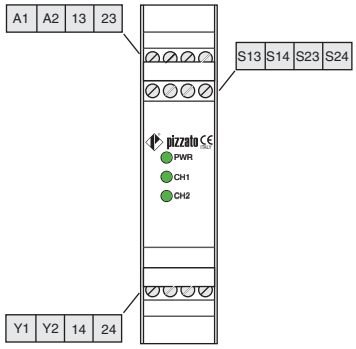
Electrical ratings:
- NO contacts: 230/240 Vac, 6 A general use, C300 pilot duty
- NC contacts: 230/240 Vac, 6 A resistive, B300 pilot duty

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.

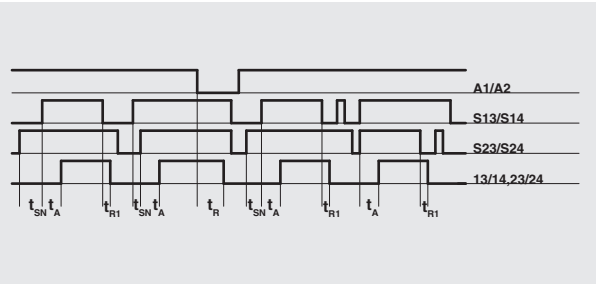
- Utiliser des conducteurs en cuivre (Cu) 60 ou 75°C rigides ou flexibles de section 30-12 AWG.
- Couple de serrage des bornes de 5-7 Lb In.
- Seulement pour les versions 24 Vac/dc, alimenter avec sources de classes 2 ou avec tension limitée et énergie limitée.

Safety module CS DM-20

Pin assignment

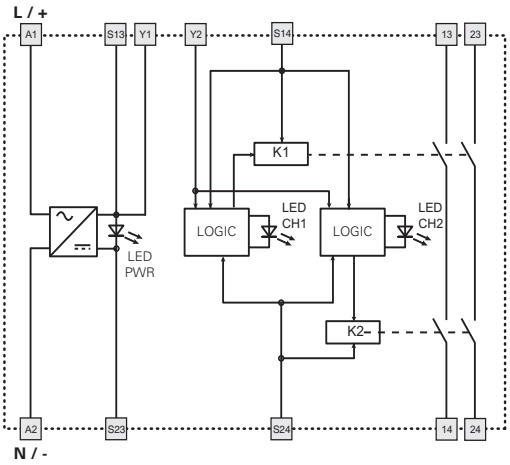


Function diagram



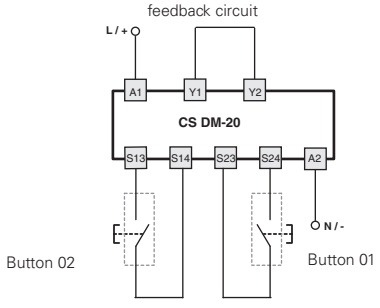
Legend:
t_{SN}: Time range for synchronised actuation
t_A: Response time
t_{R1}: Release time
t_R: Release time in absence of power supply

Internal wiring diagram



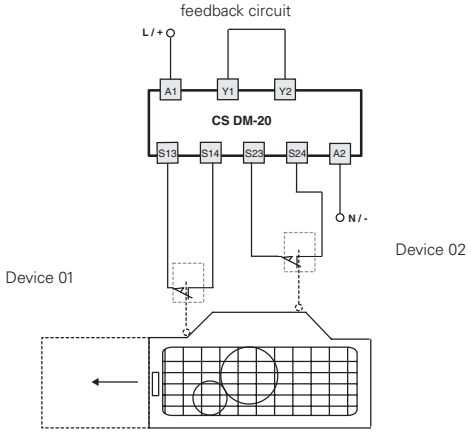
Input configuration

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