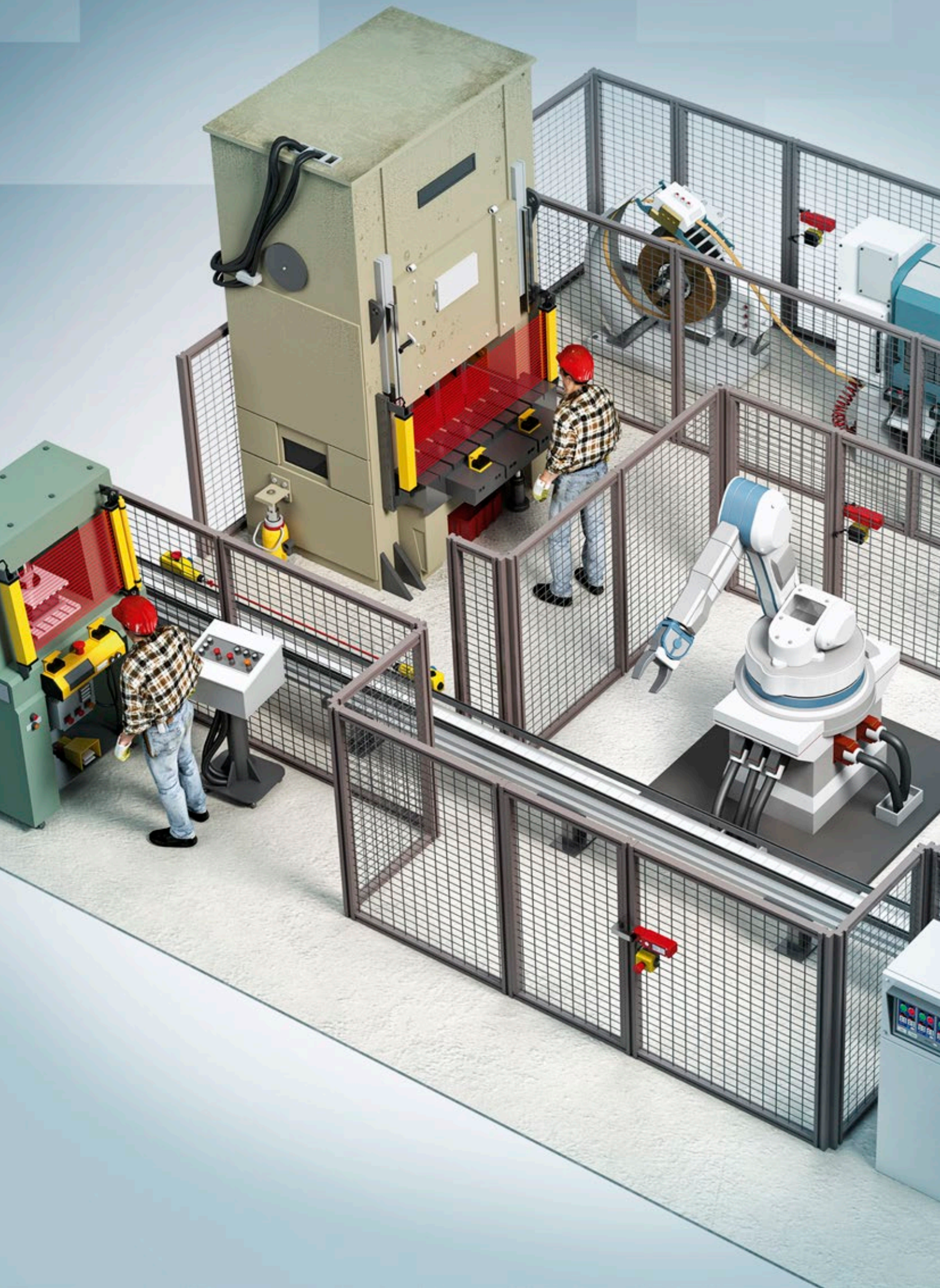


# SAFETY SOLUTIONS

High performance and reliability to improve your production process



Motors | Automation | Energy | Transmission & Distribution | Coatings



# Safety Solutions

## Summary

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## THE COMPLETE SOLUTION FOR SAFE OPERATION OF EQUIPMENT AND MACHINERY

Investing in machinery and equipment safety is essential to increase industry efficiency and productivity. You can rely on WEG Safety Line products to help with that process.

Developed to comply with national and international safety standards, the Safety Line offers standalone solutions or solutions that are integrated in to safety systems, reducing accident risks and ensuring protection for operators and machines, which increases the reliability of your production processes.





## Benefits



Guaranteed safety



Simple use



International certification

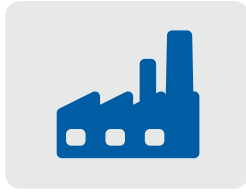


Flexibility

# Applications



Conformation to safety standards



Wide range of industrial applications



Zero-force electronic push-buttons



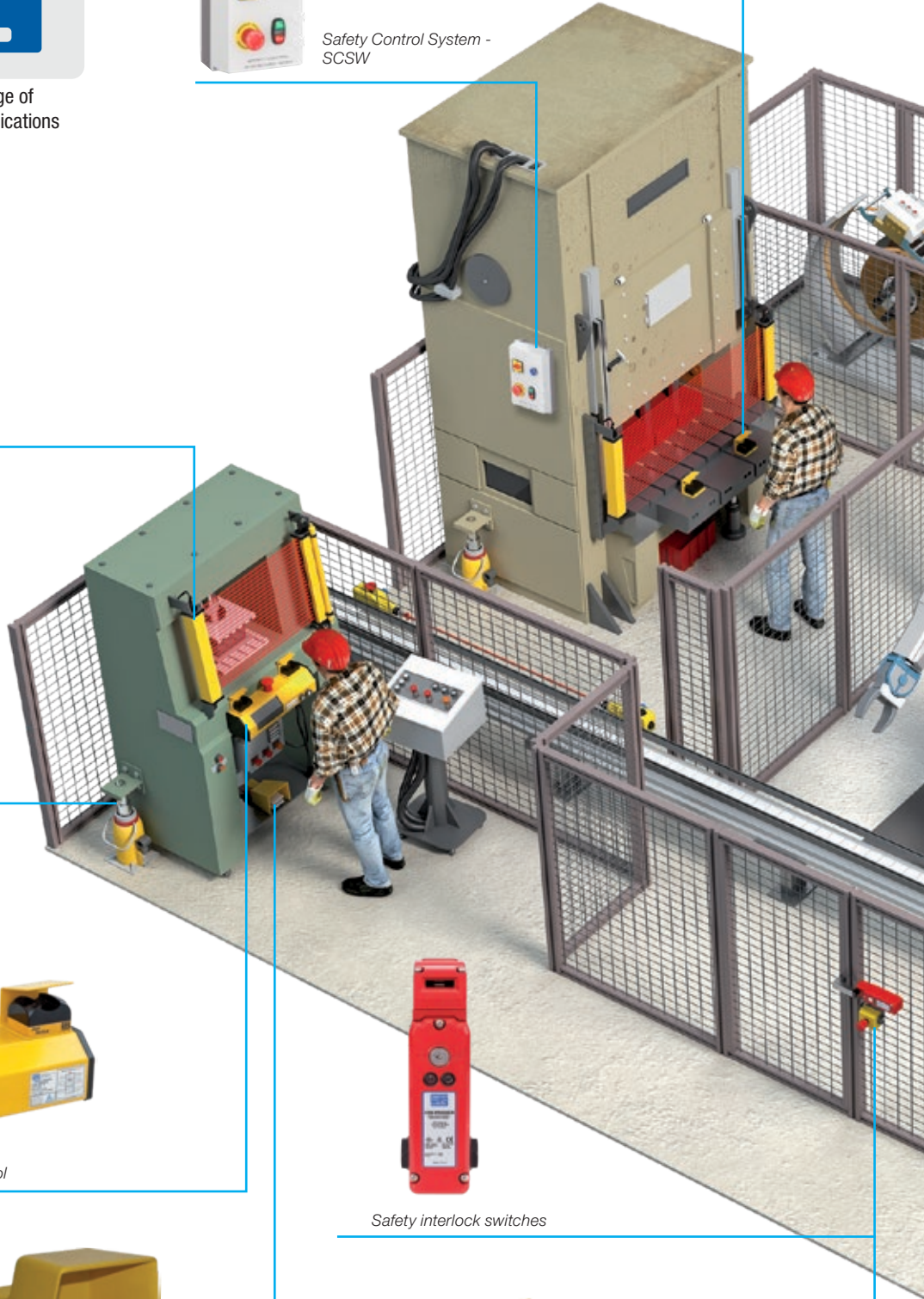
Safety Control System - SCSW



Safety light screens



Safety blocks for presses



Two-hand control



3-stage safety foot switch



Safety interlock switches



Emergency-stop push-button with monitored contact



Limit switches



Magnetic safety switch with radio frequency



Magnetic sensors with safety function



Rope pull emergency stop switch



Compact Switch-disconnectors



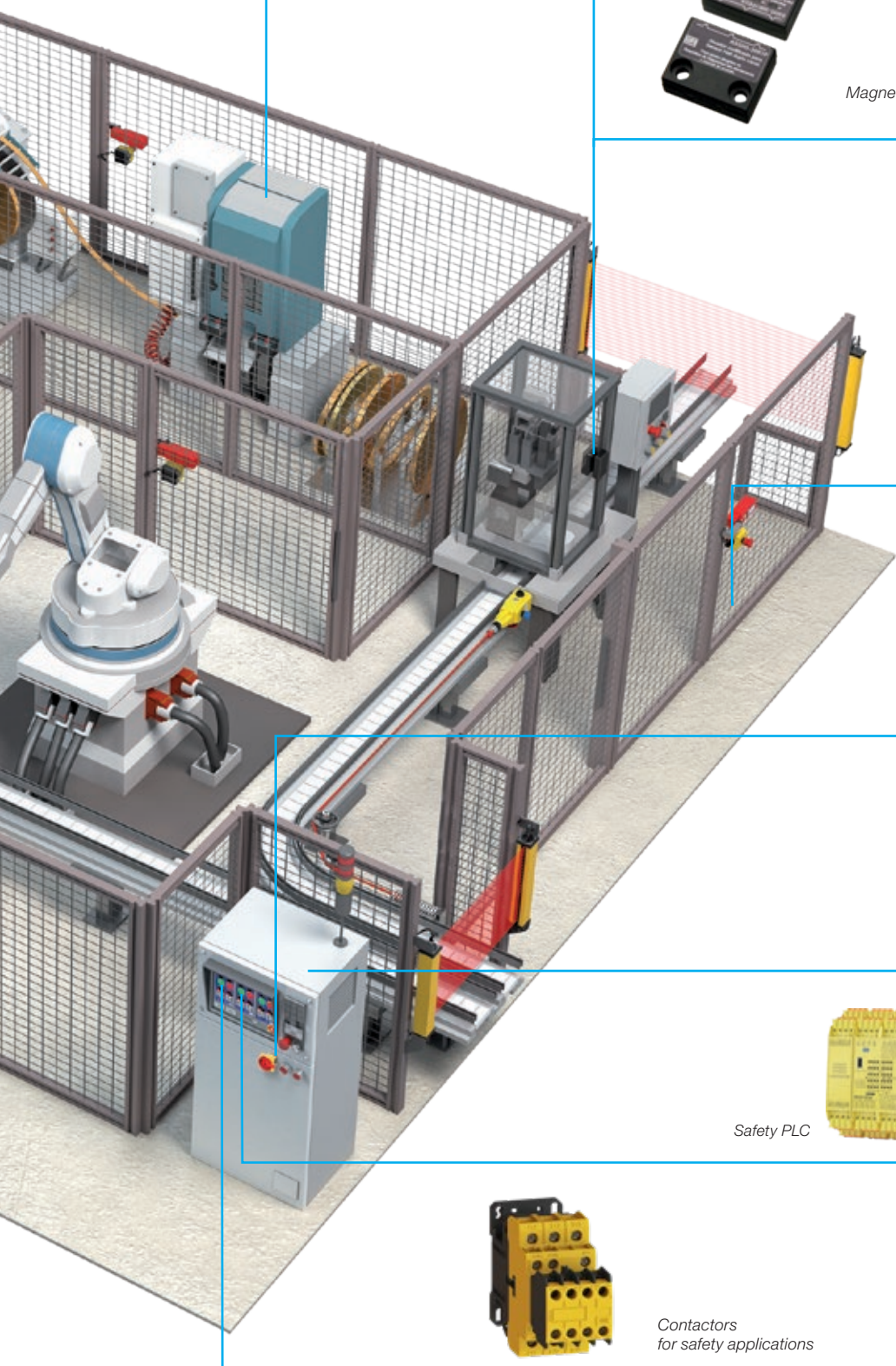
Safety relays



Safety PLC



Contactors for safety applications





## Light Screen Plex

The built in monitoring system of the LSP light curtain will detect any failures and make a diagnosis, this will allow the system to take action and prevent accidents from occurring.

The LSP's programmable blank can be set up to allow a certain amount of beams to remain activated without detecting a fail, this function can be "fixed" (selected beams can be activated without a fail) or "floating" (where the activated beams can move through the LSP).

### Technical Data

Mounting	With angle bracket		
Vibration damping	With special butyl rubber pads		
Protective height	200 to 1,600 mm (100 mm expansion module)		
Range	LSP14 xxx	0.2 ~ 5 m	
	LSP29 xxx	0.2 ~ 7 m	
Beams spacing	10 mm - LSP14 / 20 mm LSP29		
Minimum object detection size	14 mm - LSP14 / 29 mm LSP29		
Ambient light immunity	1,500 lux (IEC 61496-2)		
Immune to EMI	IEC 61000		
Compatible with electromagnetic radiation (EMC)	IEC 61000		
Safety category	SIL 3 (IEC 61508) / PLe (ISO 13849-1) / Cat 4		
Power supply	24 V dc (-10% / +15%) SELV/PELV		
Maximum power consumption	2.5 W		
Output signal switching devices	Two solid-state outputs with PNP logic - NC		
Maximum output current	150 mA		
Maximum OFF STATE voltage	1.5 V		
Maximum OFF STATE current	1.5 mA		
Light indication	Power supply	(Green)	
	Synchronism	(Yellow)	
	Output state	ON STATE	(Green)
		OFF STATE	(Red)
		FAULT	(Flashing red)
	Programming	Blue	
	Off	Default operating mode	
	Solid ON	Programming in progress	
Flashing	Blanking programmed		
	The number of flashes indicates the number of programmed beams (1, 2 or 3)		
Operating temperature	-10 °C...+50 °C and 95% of humidity. IEC 61496-1		
Storage temperature	-20 °C...+70 °C and 95% of humidity. IEC 61496-1		
Environmental rating	IP65. IEC 60529		
Applicable standards	Directives	72/73 EWG	
		89/336/EEC	
		98/37/EC	
	Standards	IEC 61508 ISO 13849-1 IEC 61496-1 and IEC 61496-2, Safety of Machinery - Electro Sensitive Protective Equipment	



### Safety Levels

Model	B10	PFHd	MTTFd (years)	DC	Service life
LIGHT SCREEN LSP14-200	-	2.95E-08	164.61	94.13%	20 years
LIGHT SCREEN LSP14-300	-	3.21E-08	147.06	94.13%	20 years
LIGHT SCREEN LSP14-400	-	3.47E-08	132.89	94.13%	20 years
LIGHT SCREEN LSP14-500	-	3.73E-08	121.21	94.13%	20 years
LIGHT SCREEN LSP14-600	-	4.00E-08	111.42	94.13%	20 years
LIGHT SCREEN LSP14-700	-	4.26E-08	103.09	94.13%	20 years
LIGHT SCREEN LSP14-800	-	4.52E-08	95.92	94.13%	20 years
LIGHT SCREEN LSP29-200	-	2.95E-08	164.61	94.13%	20 years
LIGHT SCREEN LSP29-300	-	2.95E-08	164.61	94.13%	20 years
LIGHT SCREEN LSP29-400	-	2.95E-08	164.61	94.13%	20 years
LIGHT SCREEN LSP29-500	-	3.21E-08	147.06	94.13%	20 years

Model	B10	PFHd	MTTFd (years)	DC	Service life
LIGHT SCREEN LSP29-600	-	3.21E-08	147.06	94.13%	20 years
LIGHT SCREEN LSP29-700	-	3.47E-08	132.89	94.13%	20 years
LIGHT SCREEN LSP29-800	-	3.47E-08	132.89	94.13%	20 years
LIGHT SCREEN LSP29-900	-	3.73E-08	121.21	94.13%	20 years
LIGHT SCREEN LSP29-1000	-	3.73E-08	121.21	94.13%	20 years
LIGHT SCREEN LSP29-1100	-	4.00E-08	111.42	94.13%	20 years
LIGHT SCREEN LSP29-1200	-	4.00E-08	111.42	94.13%	20 years
LIGHT SCREEN LSP29-1300	-	4.26E-08	103.09	94.13%	20 years
LIGHT SCREEN LSP29-1400	-	4.26E-08	103.09	94.13%	20 years
LIGHT SCREEN LSP29-1500	-	4.52E-08	95.92	94.13%	20 years
LIGHT SCREEN LSP29-1600	-	4.52E-08	95.92	94.13%	20 years

### Composition

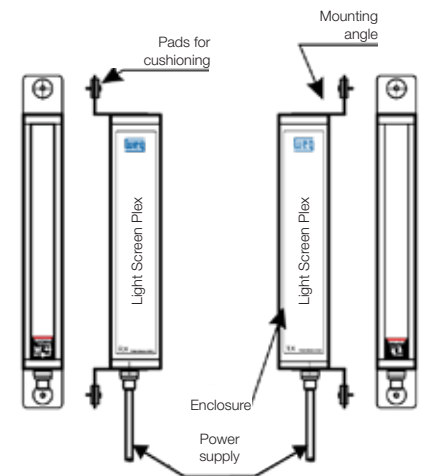
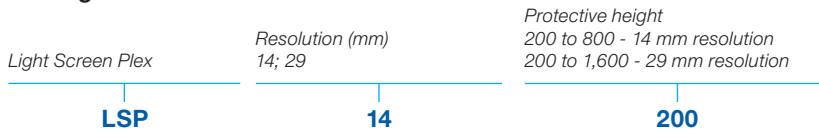
#### Transmitter and Receiver

Profiles and corners are manufactured in aluminum with epoxy paint coating, caps injected nylon with fiberglass for greater mechanical resistance.

#### Pads for Cushioning

Mounted on the angle brackets to isolate the enclosures from blows and vibrations

#### Coding



### Specifications

Reference	Protective height (mm)	Power supply	Resolution (mm)
LSP14-200	200	24 V dc	14
LSP14-300	300		
LSP14-400	400		
LSP14-500	500		
LSP14-600	600		
LSP14-700	700		
LSP14-800	800		
LSP29-200	200		
LSP29-300	300		
LSP29-400	400		
LSP29-500	500		
LSP29-600	600		
LSP29-700	700		
LSP29-800	800		
LSP29-900	900		
LSP29-1000	1,000		
LSP29-1100	1,100		
LSP29-1200	1,200		
LSP29-1300	1,300		
LSP29-1400	1,400		
LSP29-1500	1,500		
LSP29-1600	1,600		

Note: wait for the sales release.

### Cables

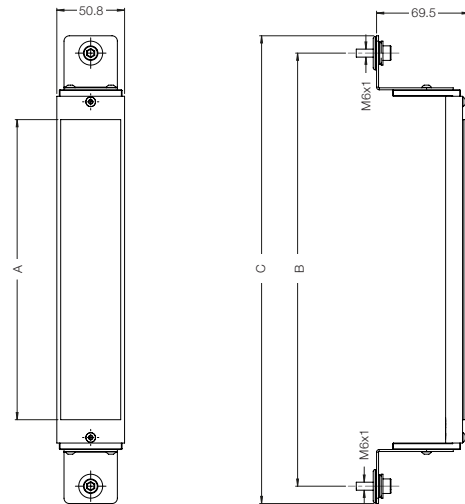
Reference	Length (m)	Function
M12-5V/5	5	Transmitter/receiver cable
M12-5V/10	10	

Note: included in the LSP14 or LSP29 reference: one pair of safety light screen. The transmitter and receiver cables and the safety relay are not included. For each pair of LSP14/LSP29 light screen, two 5-way cables (one for the transmitter and one for the receiver) + one CPLS-D301 safety relay are required.

**Accessories**

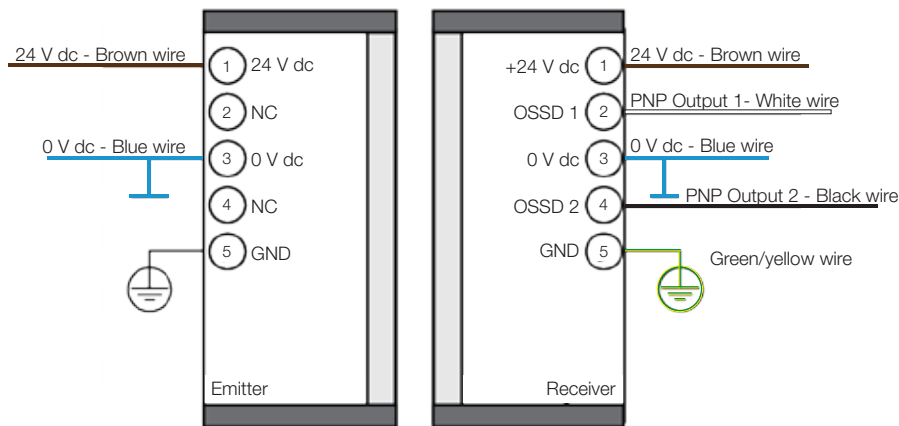
**Mirrors**

Reference	Light screen plex <sup>1)</sup>	Dimensions (mm)		
		A	B	C
LSPM-200	LSP14/29-200	225	325	350
LSPM-300	LSP14/29-300	325	425	450
LSPM-400	LSP14/29-400	425	525	550
LSPM-500	LSP14/29-500	525	625	650
LSPM-600	LSP14/29-600	625	725	750
LSPM-700	LSP14/29-700	725	825	850
LSPM-800	LSP14/29-800	825	925	950
LSPM-900	LSP29-900	925	1,025	1,050
LSPM-1000	LSP29-1000	1,025	1,125	1,150
LSPM-1100	LSP29-1100	1,125	1,225	1,250
LSPM-1200	LSP29-1200	1,225	1,325	1,350
LSPM-1300	LSP29-1300	1,325	1,425	1,450
LSPM-1400	LSP29-1400	1,425	1,525	1,550
LSPM-1500	LSP29-1500	1,525	1,625	1,650
LSPM-1600	LSP29-1600	1,625	1,725	1,750

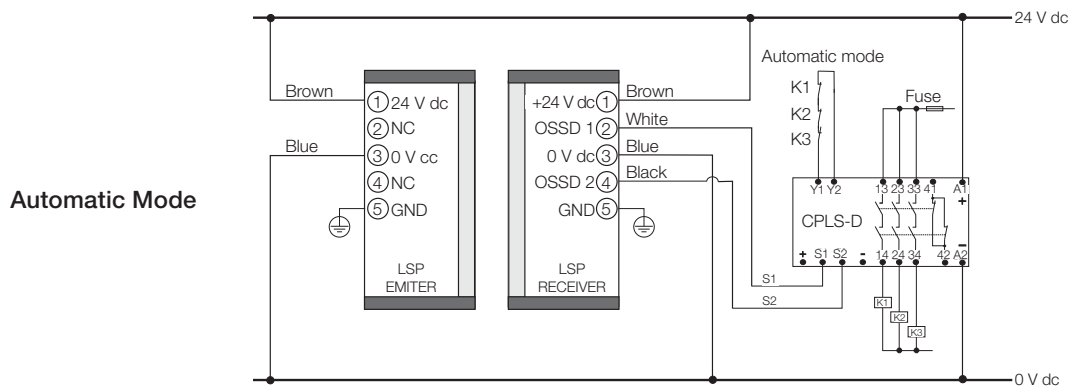


Note: 1) Exclusive to LSP light screen.

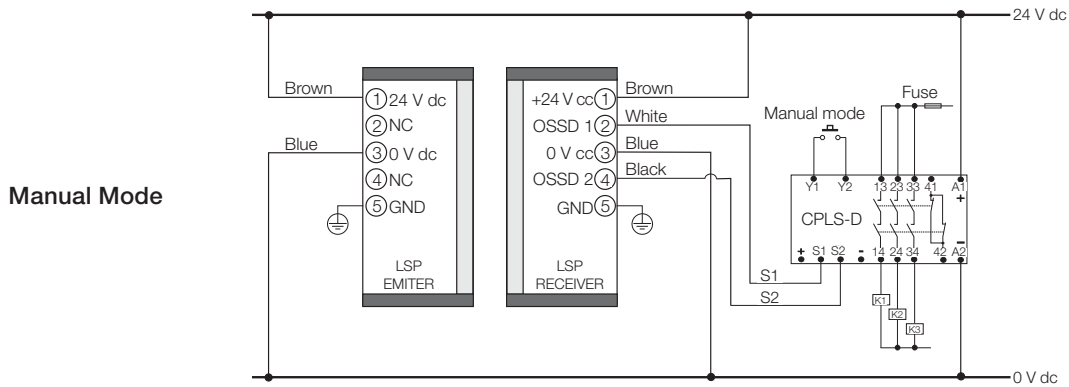
**Typical Wiring Diagrams**



**Example of LSP Connection with CPLS-D Safety Relay**

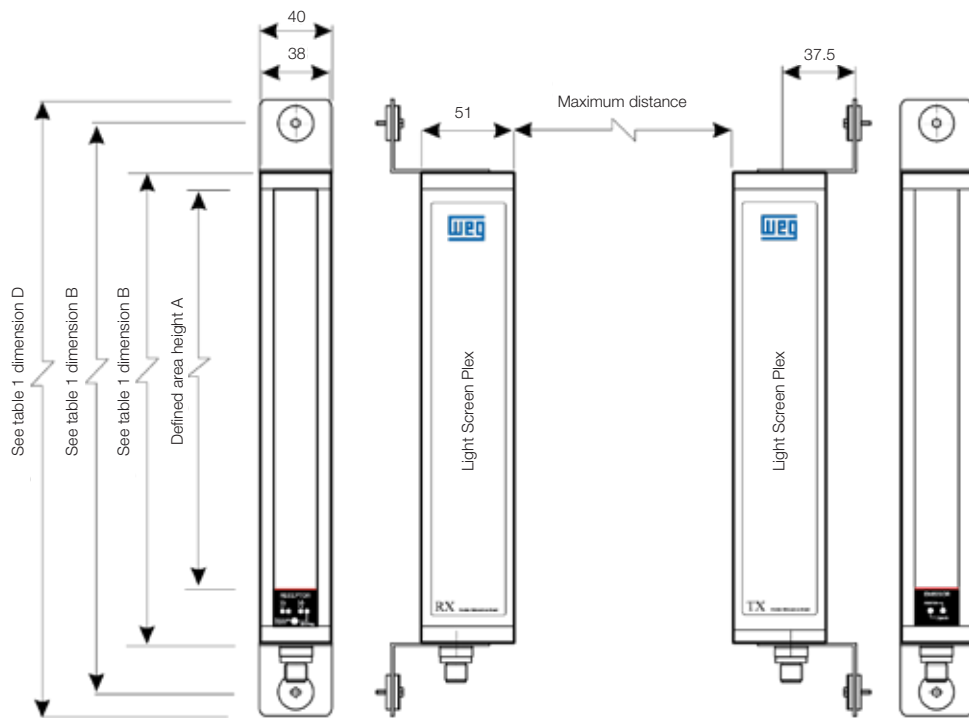


### Example of LSP Connection with CPLS-D Safety Relay



Note: dimensions in mm.

### Dimensions



Model	Dimension A	Dimension B	Dimension C	Dimension D
LSPXX-200	200	245	300	326
LSPXX-300	300	345	400	426
LSPXX-400	400	445	500	526
LSPXX-500	500	545	600	626
LSPXX-600	600	645	700	726
LSPXX-700	700	745	800	826
LSPXX-800	800	845	900	926
LSPXX-900	900	945	1,000	1,026
LSPXX-1000	1,000	1,045	1,100	1,126
LSPXX-1100	1,100	1,145	1,200	1,226
LSPXX-1200	1,200	1,245	1,300	1,326
LSPXX-1300	1,300	1,345	1,400	1,426
LSPXX-1400	1,400	1,445	1,500	1,526
LSPXX-1500	1,500	1,545	1,600	1,626
LSPXX-1600	1,600	1,645	1,700	1,726

Note: XX is the LSP resolution, which can be 14 mm or 29 mm.



## Magnetic Sensors with Safety Function

WEG magnetic sensors with safety function are designed to monitor guards, doors, gates or the like.

The line has two models, SSH5 and SSM5, with default 10-30 V dc supply voltage, which is directly interconnected to the safety relay, without the need for an external power supply. In order to ensure safety, the SSH5 and SSM5 magnetic sensors can only operate together with their respective ASSH5 / ASSM5 factory-coded actuator, interconnected to WEG safety relays models CP-D / CPA-D / CPW22 / CPW17 or similar products so as to avoid possible faults.

### Specifications

Reference <sup>1)</sup>	Description	Model	Size	Power supply	Output				
					Monitoring	Safety contacts	Contacts contacts <sup>2)</sup>	Connection type	Cable output
SSH5-30R1P2A-S	Magnetic sensors with safety function	H5 Hall effect type	30R	10-30 V dc	Dual channel	2NO	-	2 m cable	Center
SSH5-30R1P2AL								2 m cable	Side
SSH5-30R1P4A <sup>3)</sup>								2 m cable	Center
SSH5-30R1P4AL <sup>3)</sup>								2 m cable	Side
ASSH5-30R1P	Coded actuator for magnetic sensor			-		-	-	-	-
SSM5-30R1P2A	Magnetic sensors with safety function	M5 <sup>2)</sup>	30R	Not applicable	Dual channel	2NO	-	2 m cable	Center
SSM5-30R3P2A								Connector	Center
SSM5-30R1P2AL								2 m cable	Side
SSM5-30R3P2AL								Connector	Side
ASSM5-30R1P	Coded actuator for magnetic sensor			-		-	-	-	-
SSM5-30R1P201	Magnetic sensors with safety function	M5 <sup>2)</sup>	30R	Not applicable	Dual channel	2NO	1NC	2 m cable	Center
SSM5-30R1P201L								2 m cable	Side
ASSM5-30R1P	Coded actuator for magnetic sensor			-		-	-	-	-

### Technical Data

Technical specifications	H5 model - hall effect type	Technical specifications	M5 model
Power supply	19 ~ 33 V dc	Maximum switching voltages	5 to 60 V dc or 5 to 25 V ac
Maximum consumption current	$I_{max} = 77 \text{ mA}$ (2.5 W)	Maximum consumption current	-
Maximum ripple in the power supply	5% V dc	Output	Dual channel 2NO + 1NC
Capacity of the contacts	40 V dc / 67 mA	Capacity of the contacts	100 mA - 3W for NO and 10 mA for NC
Switching on distance	8 mm	Switching on distance	5 mm
Maximum switching off distance	16 mm	Maximum switching off distance	15 mm
Operating temperature	-10 +55 °C	Operating temperature	-10 +55 °C
Electrical lifespan	10 <sup>8</sup> operations	Electrical lifespan	10 <sup>7</sup> operations
Protection rating	IP67	Protection rating	IP67
Housing material	Polyamide - PA / ABS	Housing material	Polyamide - PA
Standards	IEC 60947-5-1, -5-3; IEC 61000-6-2; IEC 61000-4-6, 2006/42 (machine directive), NBR 14153; IEC 60204; EN ISO 13849-1, PL <sup>e</sup> <sup>1)</sup> , IEC 62061 SIL3 <sup>1)</sup>	Standards	IEC 60947-5-1, -5-3; IEC 61000-6-2; IEC 61000-4-6, 2006/42 (machine directive), NBR 14153; IEC 60204; EN ISO 13849-1, PL <sup>e</sup> <sup>1)</sup> , IEC 62061 SIL3 <sup>1)</sup>
Safety levels	-	Safety levels	b10.....- MTTFd.....65 years DC.....99% Service life.....20 years
Mounting	With screws	Mounting	With screws

Notes: 1) For the magnetic sensor with safety function to reach the safety level PL<sup>e</sup> / SIL 3, it is necessary to use the sensor together with the coded actuator interconnected to WEG CP-D / CPA-D / CPW22 or CPW17 safety relays or similar products.

2) The SSH5 models must be directly interconnected to the safety relay.

3) 10 mA capacity for external signaling only.

## Accessories

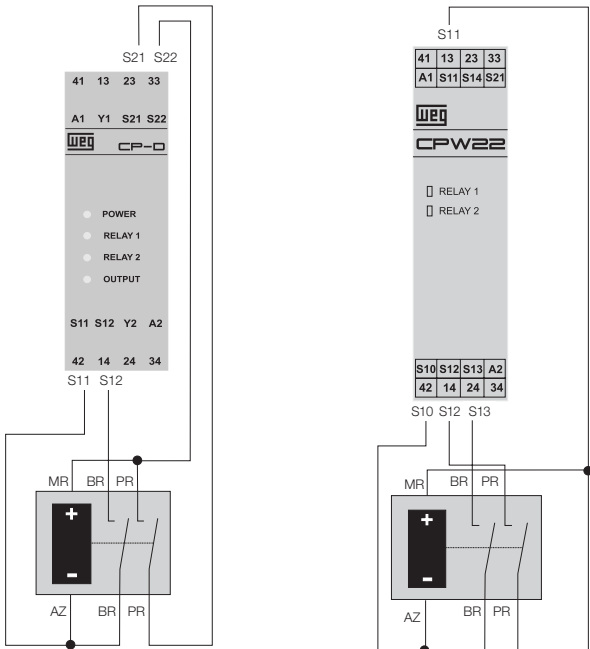
### Cables for SSH5 or SSM5 Magnetic Sensors

Reference	Model	Pinout	Connection type	Length	Output type
M8-4V/3	M8	4 pins	Straight	3 m	-

Note: use only with the output with connector version.

### Wiring Diagram

#### SSH5 Sensor - Hall Effect Magnetic Type

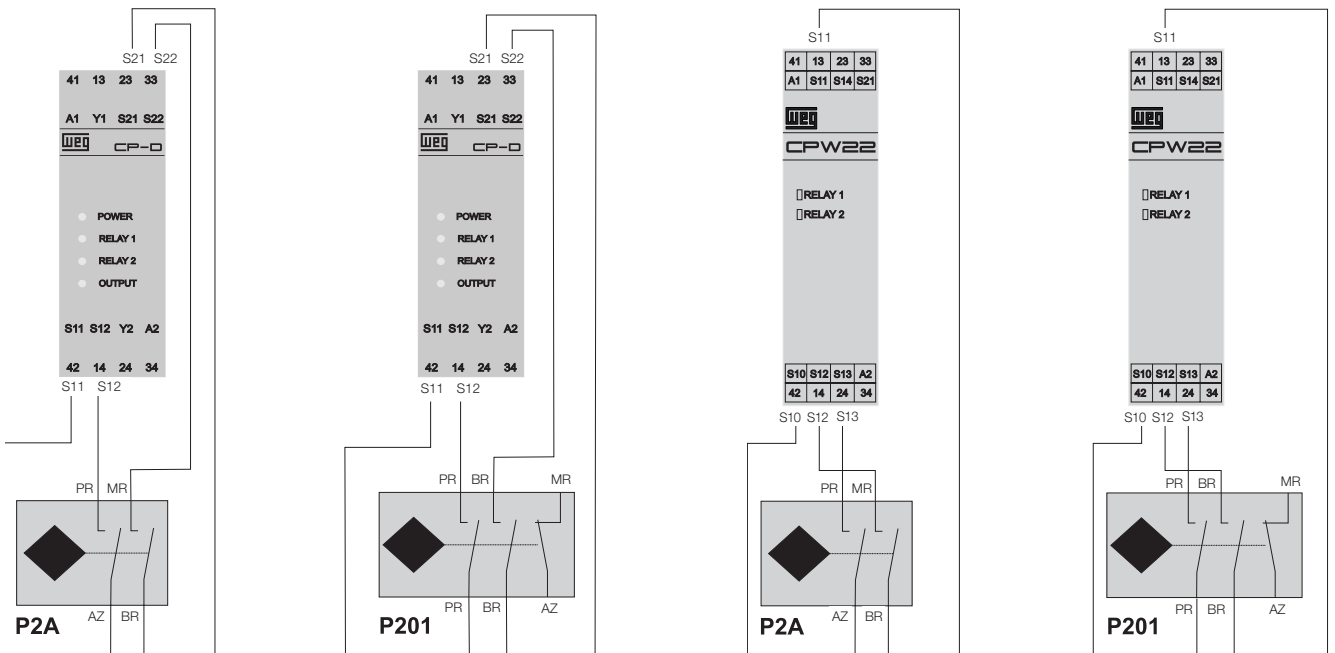


Connection example with the CP-D emergency stop relay

Connection example with the CPW22 emergency stop relay

Note: for interconnection with other models of safety relays, refer to the relay manual.

#### SSM5 Sensor - Standard Magnetic Type



Connection example with the CP-D emergency stop relay

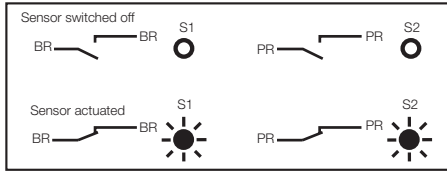
Connection example with the CPW22 emergency stop relay

Note: for interconnection with other models of safety relays, refer to the relay manual.

**Function Table and Output Description**

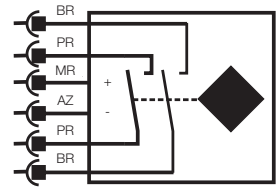
**SSH5 Sensor - Hall Effect Magnetic Type**

**Function Table**



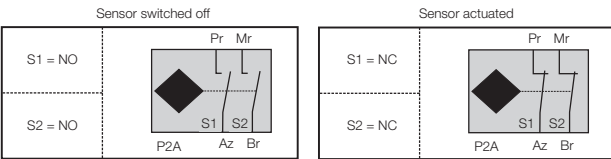
**Output description**

PR- PR	Output 1 - NO
BR- BR	Output 2 - NO
MR + AZ -	24 V dc power supply



**SSM5 Sensor - Standard Magnetic Type**

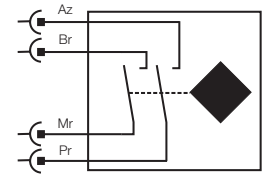
**Function Table - P2A**



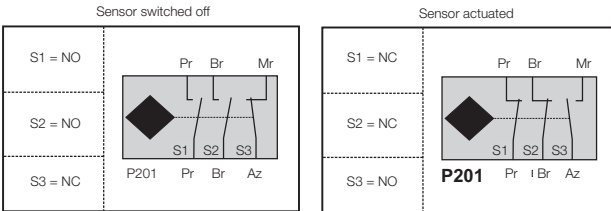
**Output description**

Pr - Az	Output 1 - NO <sup>1)</sup>
Mr - Br	Output 2 - NO <sup>1)</sup>

Note: 1) When the sensor is away from the actuator.



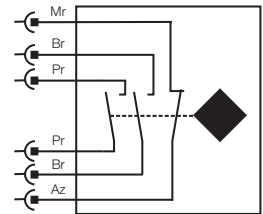
**Function Table - P201**



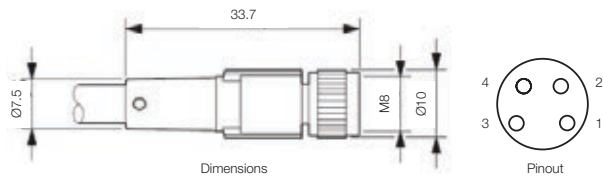
**Output description**

Pr - Pr	Output 1 - NO <sup>1)</sup>
Br - Br	Output 2 - NO <sup>1)</sup>
Mr - Az	Output 3 - NC <sup>1)</sup>

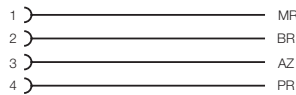
Note: 1) Sensor switched off.



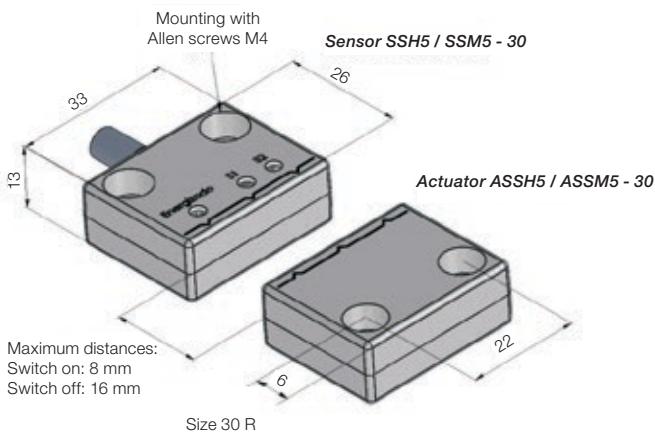
**Connections**



Wiring diagram



**Dimensions**



Note: dimensions in millimeters (mm).



## Magnetic Sensors with Safety Function - RFID

The magnetic sensor with the RFID safety function has been developed to provide a high functional safety level, providing coded protection intended to avoid attempts to tamper with the safety system.

The sensor coding is magnetically actuated and via radio frequency (RFID), simultaneous operation is required to allow the switch to operate safely.

The SSF5 cannot be actuated with a second actuator, even a similar one. It is only possible to actuate the sensor with its specific coded actuator supplied in the set (1 for 32 million possible combinations).

The magnetic sensor with the RFID safety function must be connected to a WEG CP-D/CPA-D safety relay or similar product, complying with ISO 13849-1, and it can reach up to category 4 / PLe.

### Main Characteristics

- Certification TÜV
- Category 4 / PLe / SIL 3
- Single-code coded switch: it only works with the actuator provided in the set
- The RFID system provides high protection level and avoids tampering with the safety system
- It can be used with CP-D and CPA-D safety relays, with no need for special relays
- It has no moving parts: long service life, shock and vibration resistant
- Rugged plastic housing with IP67 protection rating, allowing its use in any type of environment

### Specifications

Reference	Description	Model	Size	Power supply	Output				Cable output
					Monitoring	Safety contacts	Auxiliary contacts	Connection type	
SSF5-50R1P2A0U	Sensor + RFID magnetic safety actuator	SSF5	50R	24 V dc	Dual channel	2 NC	-	Connector	Center
SSF5-50R1P2A2U								2 m cable	
SSF5-50R1P2A10U								10 m cable	

Notes: 1) The reference above includes sensor plus actuator. The sensor only works with its respective actuator.

2) For the SSF5 sensor to reach the safety level PLe / SIL 3, it is necessary to use the sensor together with the coded actuator interconnected to WEG CP-D / CPA-D / CPW22 or CPW17 safety relays or similar products.

3) The model with connector must be used with the cables indicated in the table below.

### Accessories

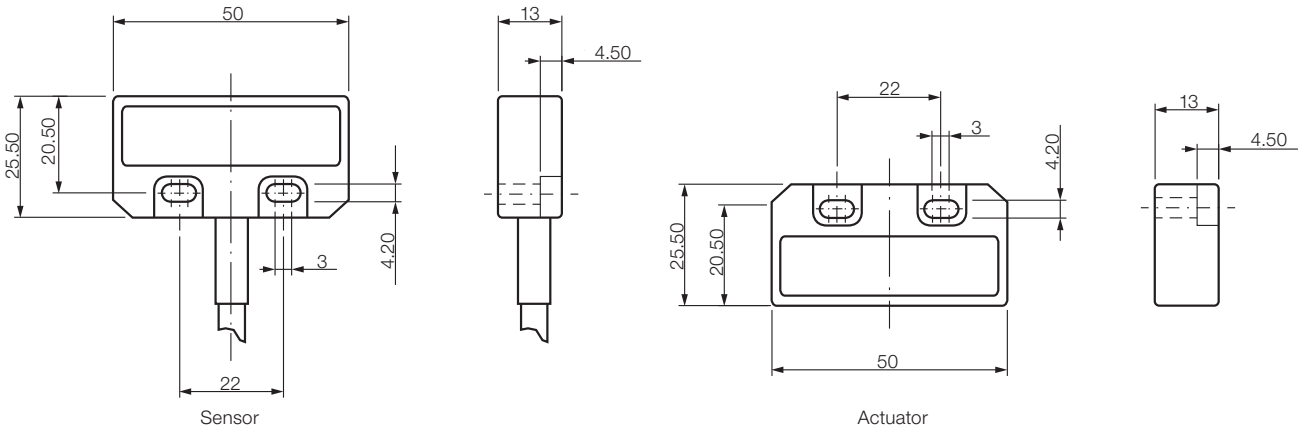
#### Power Cables for RFID Sensors

Reference	Model	Pinout	Connection type	Length	Output type
M12-8V/5	M12	8 pins	Straight	5 m	-
M12-8V/10	M12	8 pins	Straight	10 m	-

Note: use only with the RFID sensor in the output with connector version.



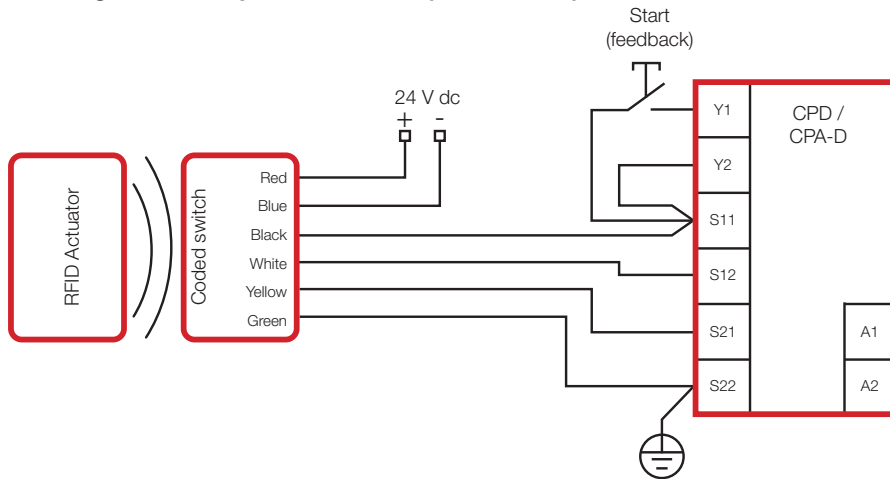
**Dimensions**



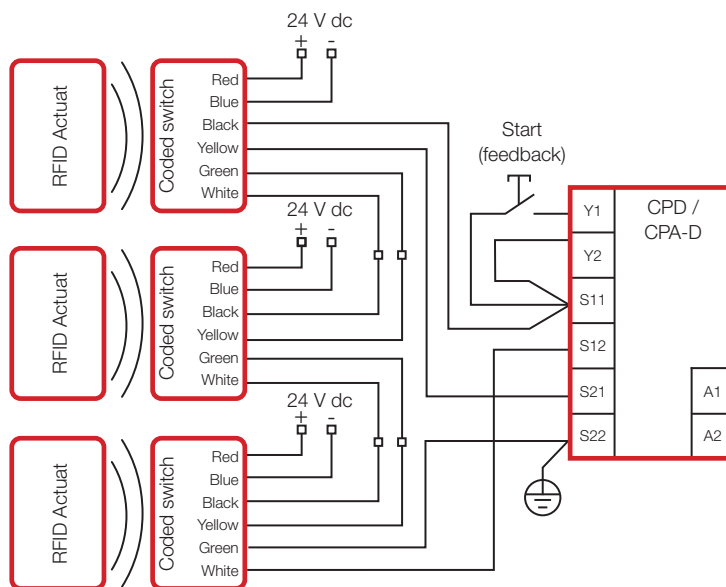
Note: dimensions in millimeters (mm).

**Cable Output Wiring Examples**

**Connection with Single Sensor up to PLe / Cat.4 (ISO 13849-1)**



**Connection with Multiple Sensors up to PLd / Cat.3 (ISO 13849-1)**

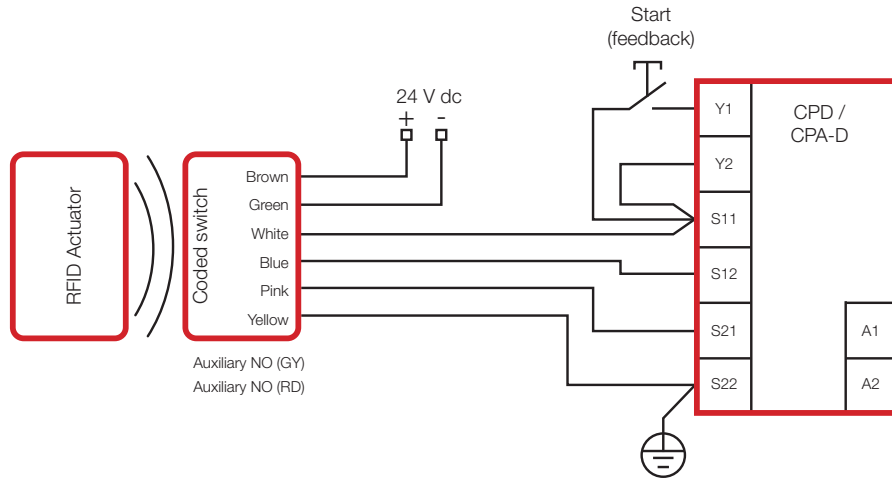


Note: models with 2 m or 5 m cable.

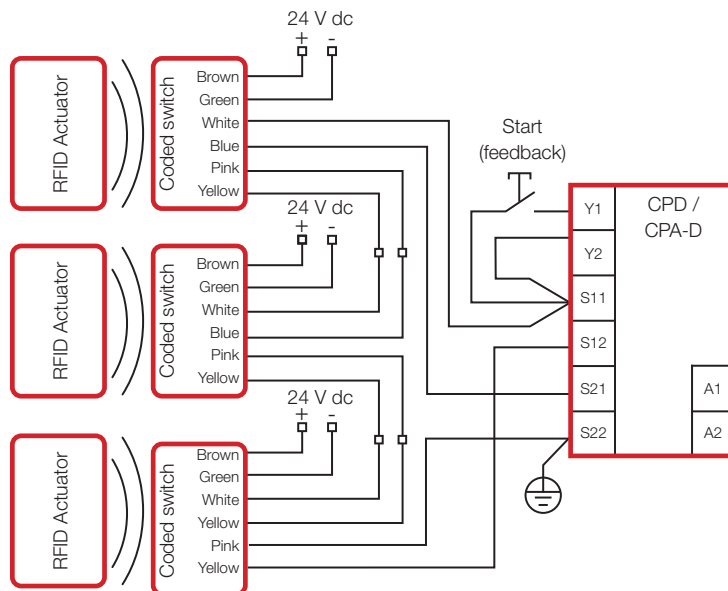


### Connector Output Wiring Examples

#### Connection with Single Sensor up to PLe / Cat.4 (ISO 13849-1)

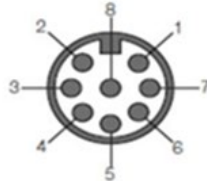


#### Connection with Multiple Sensors up to PLd / Cat.3 (ISO 13849-1)



Note: models with 2 m or 5 m cable.

#### M12 Connector / 8 Pins

Front view of the connector	Pin number	Cable	Connection type
		Color	
	1	White [WT]	NC1
	2	Brown [BN]	+24 V dc
	3	Green [GN]	0 V dc
	4	Yellow [YL]	NC 2
	5	Gray [GY]	NO 1
	6	Pink [PK]	NC 2
	7	Blue [BL]	NC 1
	8	Red [RD]	NO 1



## Tongue Operated Safety Interlock

CISC, the safety interlock switch, has been designed to monitor movable guards. The plastic housing version, CIS-P, has a polyester housing with reduced size and an 8-position rotating head for the insertion of the actuator<sup>1)</sup>.

The metal housing version, CIS-M, has a sturdy, cast metal housing ideal for movable guard applications in more aggressive environments. They have international certification to comply with the safety standards in force, positive-action contacts, forced disconnection of the safety contacts in the removal of the actuator and anti-tampering mechanism so as to prevent attempts to tamper with the integrity of the switch safety function.

### Technical Data

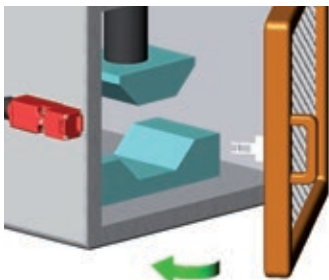
Standards	EN 1088, IEC 60947-5-1, EN 60204-1, ISO 13849-1, EN 62061, EN 954-1, UL 508
Certifications	TÜV, CE, UL
Safety and reliability certification data	
Mechanical reliability B10d	2.5 x 10 <sup>6</sup> operations at 100 mA load
EN 954-1	Up to category 4 with safety relay
ISO 13849-1	Up to PLe depending on system architecture
EN 62061	Up to SIL 3 depending on system architecture
Safety data - annual use	8 cycles per hour / 24 hours a day / 365 days a year
PFHd	3.44 x 10 <sup>-8</sup>
Test proof interval	35 years
MTTFd	356 years
Utilization categories	AC15, A300, 3A
Thermal current (Ith)	5 A
Rated insulation/withstand voltage	500 V ac / 2.500 V ac
Actuator stroke for positive opening	8 mm
Actuator minimum entry radius	175 mm (standard) / 100 mm (flexible)
Maximum approach / removal speed	600 mm/s
Housing material	Polyester (CIS-P) / cast metal (CIS-M)
Actuators	316 stainless steel or polyester
Protection rating	IP67
Operating temperature: minimum/maximum	- 25 °C / +80 °C
Vibration	IEC 68-2-6, 10-55 Hz + 1 Hz travel: 0.35 mm, 1 octave/min
Conduit entry	M20
Mounting	2 x M5 (CIS-P) / 4 x M5 (CIS-M)

Note: 1) Metal housing model (CIS-MM21A). The model with plastic housing (CIS-PP21A) has up to four actuator entry positions.

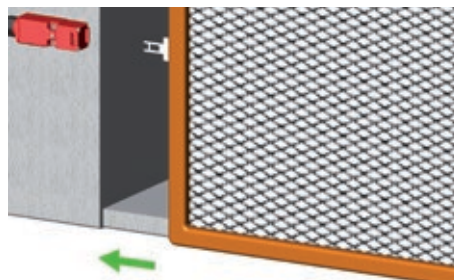
### Applications

It can be used in fixed or movable guards, in machines or devices that have no stopping inertia in their moving parts.

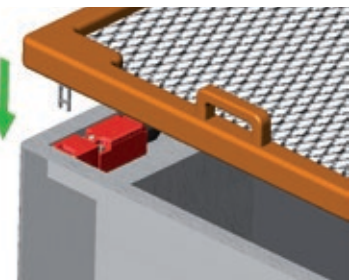
#### Movable Guards



Hinged



Sliding



Lift-off

## Specifications

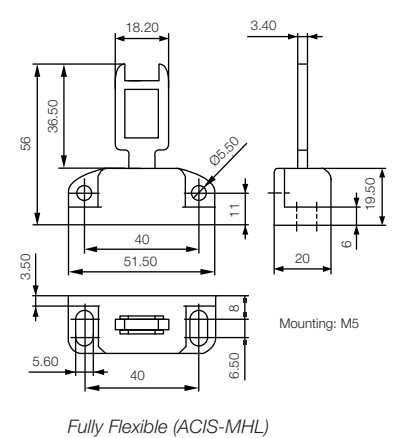
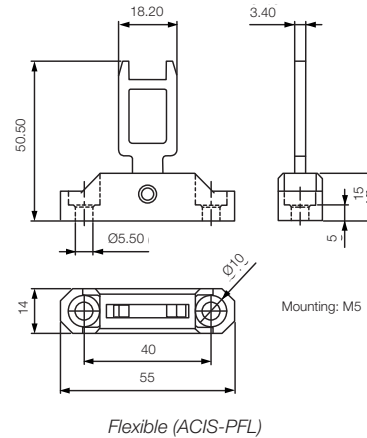
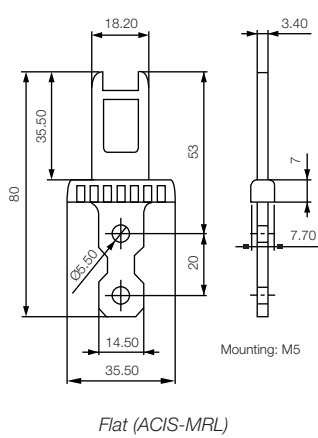
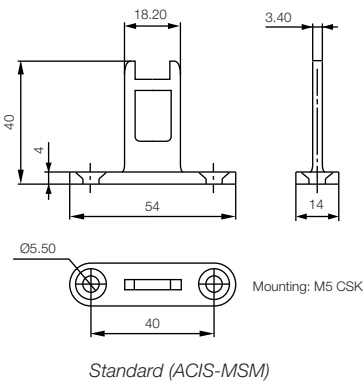
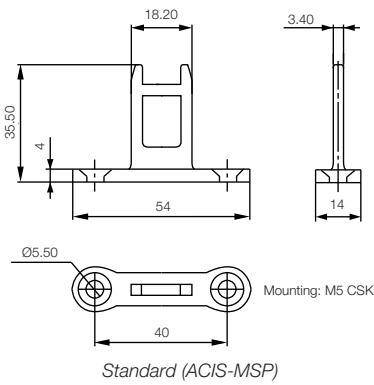
### Switches

Contacts		Output conduit	Housing	Reference
Safety	Auxiliary			
2NC	1NO	M20	Metal	CIS-MM21A
			Plastic	CIS-PP21A

Note: a switch and an actuator must be selected.

### Dimensions

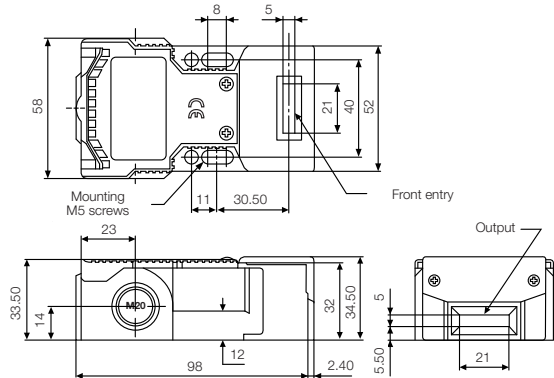
#### Actuators



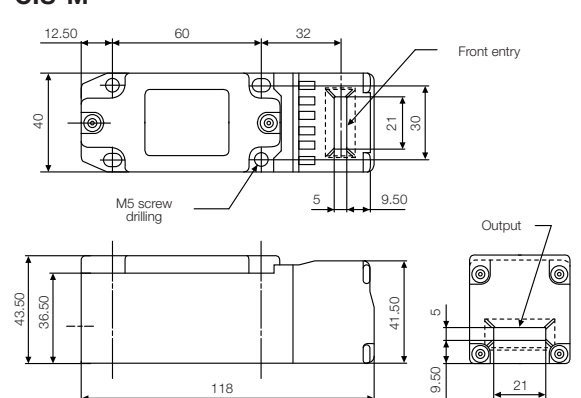
#### Actuators

Actuator description	Switch model		Reference
	CIS-P	CIS-M	
 Standard	x		ACIS-MSP
 Standard		x	ACIS-MSM
 Flat	x	x	ACIS-MRL
 Flexible plastic	x	x	ACIS-PFL
 Fully flexible	x	x	ACIS-MHL

#### CIS-P



#### CIS-M





## Compact Safety Interlock Switches

CISC, the compact safety interlock switch, is designed to monitor small movable guards.



It has a compact easy-to-mount polyester housing with an 8-position rotating head for the insertion of the actuator. Ideal for applications in restricted spaces, it can be used in lift-off, sliding or hinged guards. Rugged, stainless steel selectable tongue combined with the positive action mechanism, providing a reliable interlock device for safety applications, with international certification to meet current safety standards.

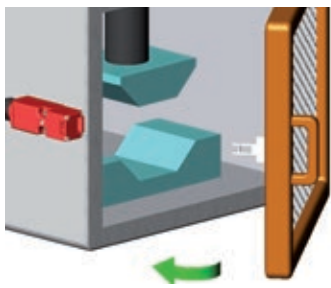
### Technical Data

Standards	EN 1088, IEC 60947-5-1, EN 60204-1, ISO 13849-1, EN 62061, EN 954-1, UL 508
Certifications	TÜV, CE, UL
Safety and reliability certification data	
Mechanical reliability B10d	2.5 x 10 <sup>6</sup> operations at 100 mA load
EN 954-1	Up to category 4 with safety relay
ISO 13849-1	Up to PLe depending on system architecture
EN 62061	Up to SIL 3 depending on system architecture
Safety data - annual use	8 cycles per hour / 24 hours a day / 365 days a year
PFHd	3.44 x 10 <sup>-8</sup>
Test proof interval	35 years
MTTFd	356 years
Utilization categories	AC15, A300, 3A
Thermal current (Ith)	5 A
Rated insulation/withstand voltage	600 V ac / 2,500 V ac
Actuator stroke for positive opening	6 mm
Actuator minimum entry radius	175 mm (standard) / 100 mm (flexible)
Maximum approach / removal speed	600 mm/s
Housing material	Polyester
Protection rating	IP67
Operating temperature: minimum/maximum	- 25 °C / +80 °C
Vibration	IEC 68-2-6, 10-55 Hz + 1 Hz travel: 0.35 mm, 1 octave/min
Conduit entry	M20
Mounting	2 x M4

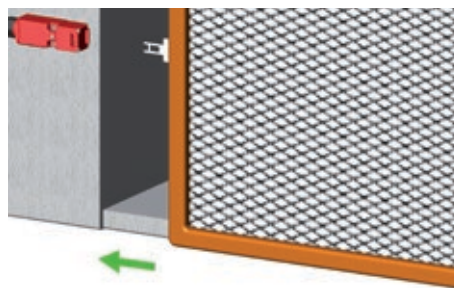
### Applications

It can be used in fixed or movable guards, in machines or devices that have no stopping inertia in their moving parts.

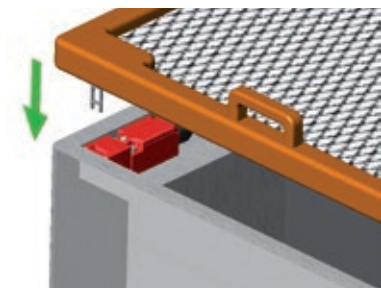
#### Movable Guards



Hinged



Sliding



Lift-off




## Specifications

### Switches

Contacts		Output conduit	Housing	Reference
Safety	Auxiliary			
2NC	1NO	M20	Plastic	CISC-PP21A
1NC				CISC-PP11A

Note: actuator (tongue) not included. Select an actuator according to the Actuators table below.

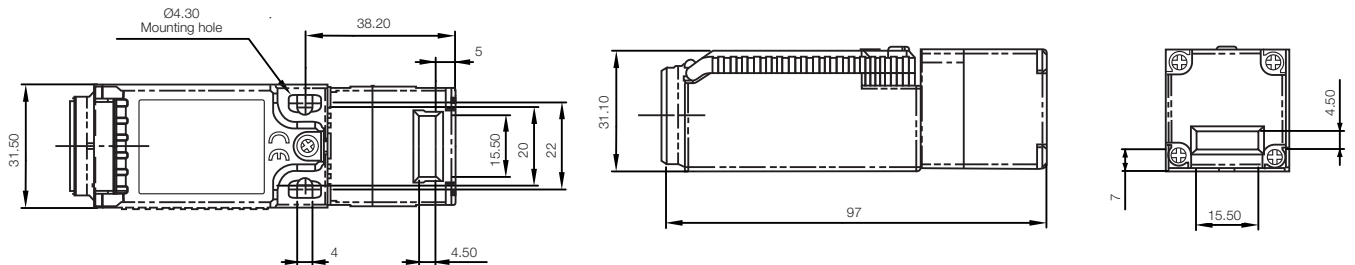
### Actuators

Actuator description	Reference
	ACIS-MAP
	ACIS-MRP
	ACIS-PFP

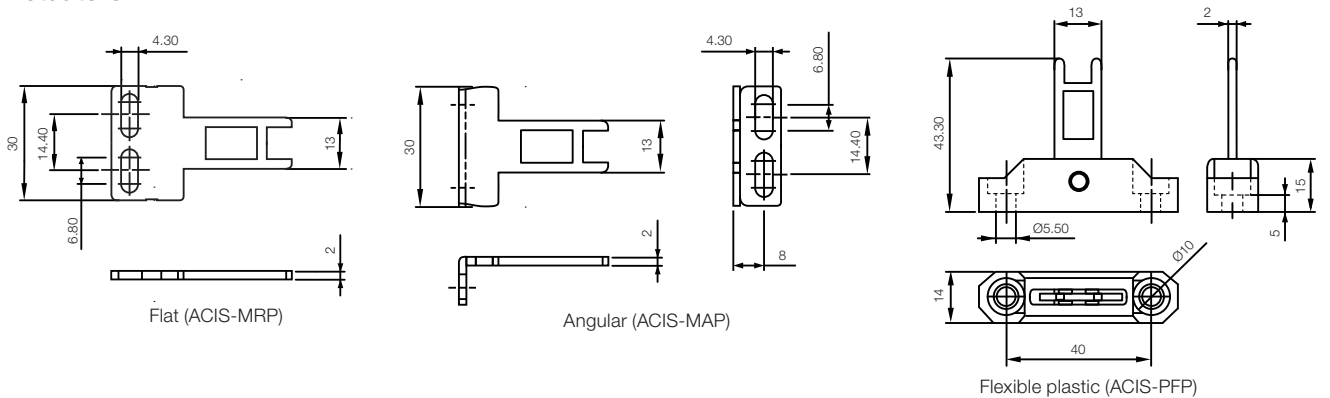
Note: always select an actuator (tongue) for each selected CISC switch.

## Dimensions

### CISC



### Actuators



Note: dimensions in millimeters (mm).



## Tongue Operated Safety Interlock Switches with Solenoid in a Protective Plastic Housing



The CISS-P safety interlock switch with solenoid in the plastic housing version is small and designed for 1,800 N holding force, keeping the medium or large movable guards closed until the hazards have been eliminated.

Its slim profile, 50 mm, is ideal for applications in restricted spaces, having a, 8-position rotating stainless steel head for the actuator entry. CISS interlock switches with solenoid are of the power-to-unlock type, suitable for applications with inertia at the stop. They have high quality plastic housing, resistant to chemical agents, and stainless steel heads that provide a robust and durable protection. IP67 protection rating, with double-gasket cover and metal fasteners, positive-break contacts IEC 60947-5-1 and high functional safety (ISO 13849-1).

### Technical Data

Standards	EN 1088, IEC 60947-5-1, EN 60204-1, ISO 13849-1, EN 62061, EN 954-1, UL 508
Certifications	TÜV, CE, UL
<b>Safety and reliability certification data</b>	
Mechanical reliability B10d	2,5 x 10 <sup>6</sup> operations at 100 mA load
EN 954-1	Up to category 4 with safety relay
ISO 13849-1	Up to PLe depending on system architecture
EN 62061	Up to SIL 3 depending on system architecture
Safety data - annual use	8 cycles per hour / 24 hours a day / 365 days a year
PFHd	3.44 x 10 <sup>-8</sup>
Test proof interval	35 years
MTTFd	356 years
Voltage on the solenoid	24 V dc / V ac
Power on the solenoid	12 W
Power supply LED 2	24 V dc
Utilization categories	AC15, A300, 3A
Thermal current (Ith)	5 A
Rated insulation/withstand voltage	500 V ac / 2,500 V ac
Actuator stroke for positive opening	10 mm
Actuator minimum entry radius	175 mm (standard) / 100 mm (flexible)
Maximum approach / removal speed	600 mm/s
Housing Material	Polyester (CISS-P) / cast metal (CISS-M)
Head material	Cast metal
Actuators	According to the selected model
Protection rating	IP67
Operating temperature: minimum/maximum	- 25 °C / +55 °C
Vibration	IEC 68-2-6, 10-55 Hz + 1 Hz travel: 0.35 mm, 1 octave/min
Conduit entry	M20
Mounting	4 x M5 (CISS-M)

### Specifications

#### Switches

Contacts		Output conduit	Head	Housing	Reference
Safety <sup>1)</sup>	Auxiliary				
2NC	2NO	M20	Stainless	Plastic	CISS-PI22AE26

Note: an actuator is required; see page 24.



## Tongue Operated Safety Interlock Switches with Solenoid in a Protective Metal Housing

The CISS-M safety interlock switch with solenoid in the robust metal housing has metal head and a narrow shape. It has been designed for a 2,000 N holding force to keep medium or large movable guards closed until the hazards have been eliminated.

Its narrow profile, 50 mm, is ideal for applications in restricted spaces, having a, 8-position rotating stainless steel head for the actuator entry. It has two independent contact blocks to monitor the lock and door status and LED to monitor the lock status, positive-break contacts (IEC 60947-5-1) and high functional safety (ISO 13849-1).

### Technical Data

Standards	EN 1088, IEC 60947-5-1, EN 60204-1, ISO 13849-1, EN 62061, EN 954-1, UL 508
Certifications	TÜV, CE, UL
<b>Safety and reliability certification data</b>	
Mechanical reliability B10d	2.5 x 10 <sup>6</sup> operations at 100 mA load
EN 954-1	Up to category 4 with safety relay
ISO 13849-1	Up to PLe depending on system architecture
EN 62061	Up to SIL 3 depending on system architecture
Safety data - annual use	8 cycles per hour / 24 hours a day / 365 days a year
PFHd	3.44 x 10 <sup>-9</sup>
Test proof interval	35 years
MTTFd	356 years
Voltage on the solenoid	24 V dc / V ac
Power on the solenoid	12 W
Power supply LED 2	24 V dc
Utilization categories	AC15, A300, 3A
Thermal current (Ith)	5 A
Rated insulation/withstand voltage	500 V ac / 2,500 V ac
Actuator stroke for positive opening	10 mm
Actuator minimum entry radius	175 mm (standard) / 100 mm (flexible)
Maximum approach / removal speed	600 mm/s
Housing Material	Polyester (CISS-P) / cast metal (CISS-M)
Head material	Cast metal
Actuators	According to the selected model
Protection rating	IP67
Operating temperature: minimum/maximum	- 25 °C / +55 °C
Vibration	IEC 68-2-6, 10-55 Hz + 1 Hz travel: 0.35 mm, 1 octave/min
Conduit entry	M20
Mounting	4 x M5 (CISS-M)

### Specifications

#### Switches




Contacts		Output conduit	Head	Housing	Reference
Safety <sup>1)</sup>	Auxiliary				
4NC	2NO	M20	Metallic	Metallic	CISS-MM42AE26

Notes: 1) The connection between terminals 31/32 and 41/42 is made using cables connected inside the switch (factory assembled). These connections can be removed at the installation to allow the individual monitoring of the solenoid lock status or actuator status. Refer to the installation guide for further details.

2) An actuator is required; see page 24.

## Specifications

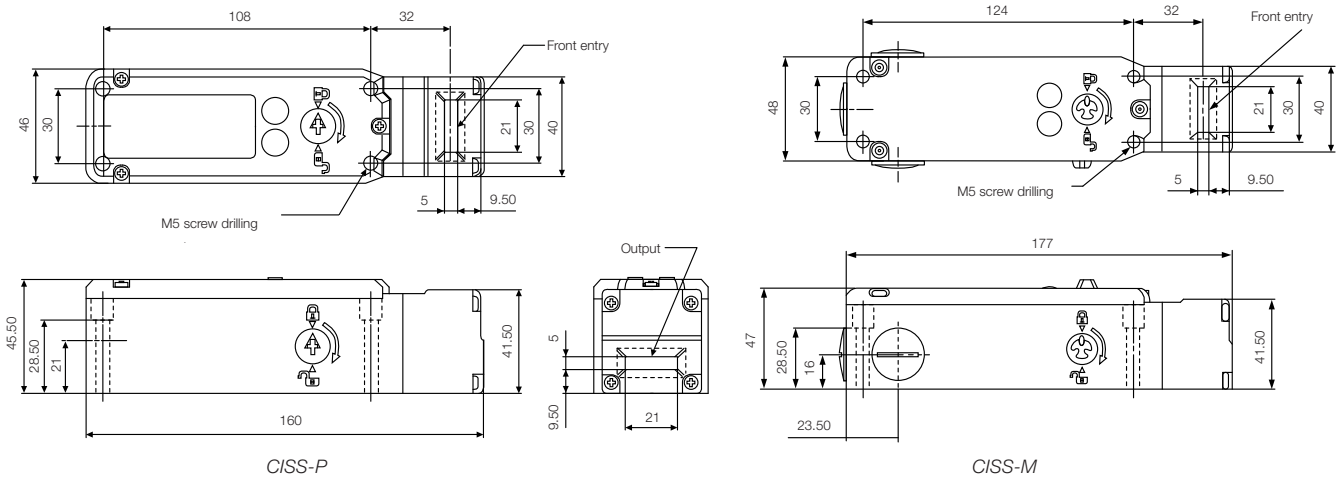
### Actuators

Actuator description	Switch model		Reference	
	CISS-P plastic housing	CISS-M metal housing		
	Standard	x	x	ACIS-MSM
	Flat	x	x	ACIS-MRL
	Flexible	x	x	ACIS-MHL

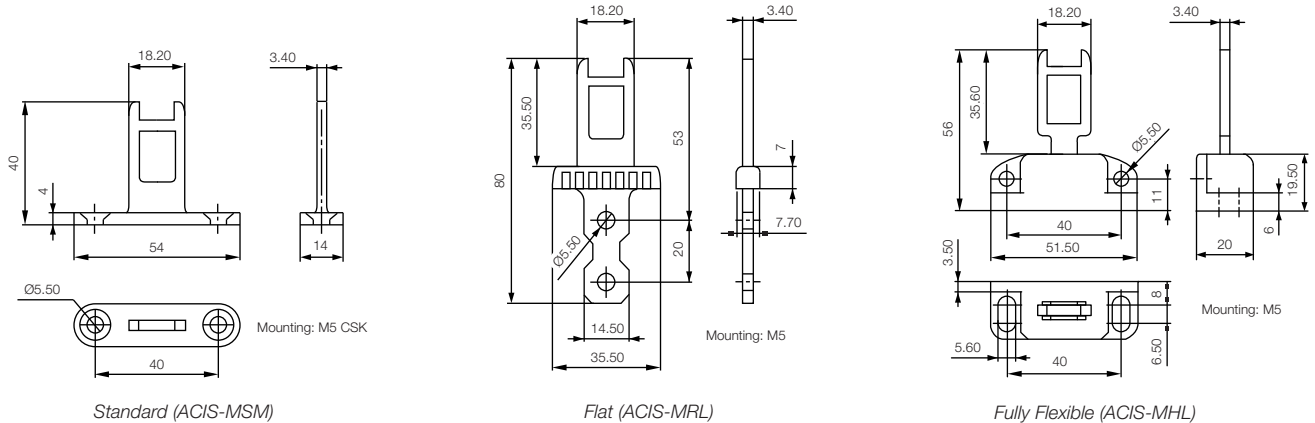
Note: a switch and an actuator must be selected.

## Dimensions

### Switches



### Actuators





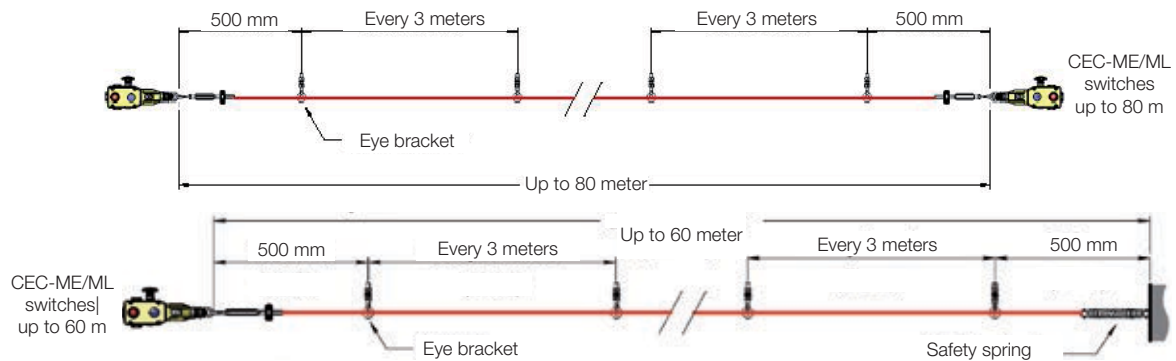


## Safety Emergency Pull-Cord Switch

The safety emergency pull-cord switch (CEC) has a robust cast metal housing and can be mounted on machines and conveyor sections that cannot be protected by barriers.

In contrast to the traditional mushroom emergency pushbutton, the pull-cord safety switches can activate the emergency command from any point along the length of the installed cord. In combination with dual channel safety relay, the CEC switches can be used as emergency stop devices and monitored for up to category 4 / PLE in accordance with ISO 13849-1.

### Installation Forms



Note: for further details, refer to the installation guide.

### Technical Data

Standards	IEC 60947-5-1, IEC 60947-5-5, UL 508, IEC 13850, IEC 13849-1, AS4024.1, AS1755
Approvals	cULus, TÜV
<b>Mechanical characteristics</b>	
Housing/cover	Cast metal (painted in yellow) or 316 stainless steel without coating
External parts	Stainless steel 316
IP rating	IP67
Cable extensions	Up to 80 m
Rope tensioning device	Tensioner/gripper - quick fixing
Rope type	Outside diameter 4.0 mm / Inner steel - PVC sheath
Mounting	4 x M5
Mounting position	Any
Conduit entry	4 x M20 or 4 x 1/2" NPT by number of piece
Torque settings	Mounting M5 4.0 Nm, Lid T20 Torx M4 1.5 Nm, Terminals 1.0 Nm
Ambient temperature	-25 °C, 80 °C (-40 °C for versions - FZ)
Vibration resistance	10-500 Hz, 0.35 mm
Shock resistance	15 g, 11ms
Tension force (typical average setting)	130 N
Typical operating force (rope pulled)	<125 N, 300 mm deflection
<b>Electrical characteristics</b>	
Safety contact type	IEC 60947-5-1, double break type Zb
Contact material	Silver
Terminal	Clamp up to 2.5 sq. mm conductors
Rating	Utilization category AC15
Operational rating	Ac15, A300, 240 V 3 A / 120 V 6 A AC 24 V 2.5 A DC inductive
Thermal current (Ith)	10 A
Rated insulation voltage	(U <sub>i</sub> ) 500 V
Withstand voltage	(U <sub>imp</sub> ) 2,500 V
Short circuit overload protection	Fuse externally 10 A (FF)







## Specifications

### Switches

Power supply	Rope length <sup>1)</sup>	Safety contacts	Auxiliary contacts	Housing	LED	Conduit	Reference
24 V dc	Up to 80 m	3NC	1NO	Metallic	-	M20	CEC-ME31A
		2NC	2NO		Yes		CEC-ME22A
		3NC	1NO				CEC-ML31AE26
		2NC	2NO				CEC-ML22AE26


Note: 1) Rope not included. It is necessary to use 1 installation kit with the desired rope length.

### Installation accessories

Description	Reference
	Rope tensioner - galvanized ACEC-TG
	Galvanized pulley (internal or external) ACEC-PG
	Galvanized screw (pack with 8 pieces) ACEC-EG
	Green / flashing red replacement LED 24 V ACEC-LME26
	Stainless steel safety spring ACEC-SI
	Emergency push-button (for switches) ACEC-B

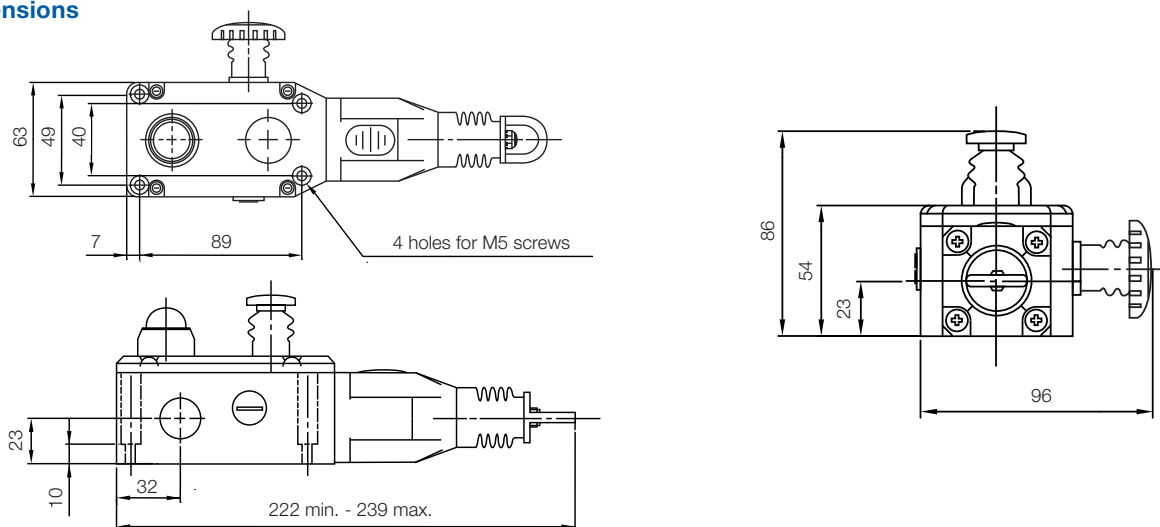
Note: accessories are only used to replace or complement the solution.

### Installation kits

Description	Reference
	Installation kit 5 m ACEC-K5G
	Installation kit 10 m ACEC-K10G
	Installation kit 15 m ACEC-K15G
	Installation kit 20 m ACEC-K20G
	Installation kit 30 m ACEC-K30G
	Installation kit 50 m ACEC-K50G
	Installation kit 80 m ACEC-K80G

Note: each kit consists of tensioner, galvanized screws and Allen wrench, required for the installation of the CEC switch, according to the length of the selected rope.

### Dimensions





## Zero-Force Electronic Pushbuttons

Developed to replace mechanical pushbuttons commonly used in machine tools, the zero-force electronic switches can be easily installed in place of the mechanical version.

In addition, they have the same type of contacts with normally open (NO) or normally closed (NC) relay output; therefore, they can be used in simultaneity systems.



### SS - Soft Switch

- 24 V dc power supply
- Operating temperature 0 °C...50 °C
- Reduced size
- Connection by cable, terminal or connector
- Applicable to category 4 systems



### PALM - Palm Switch

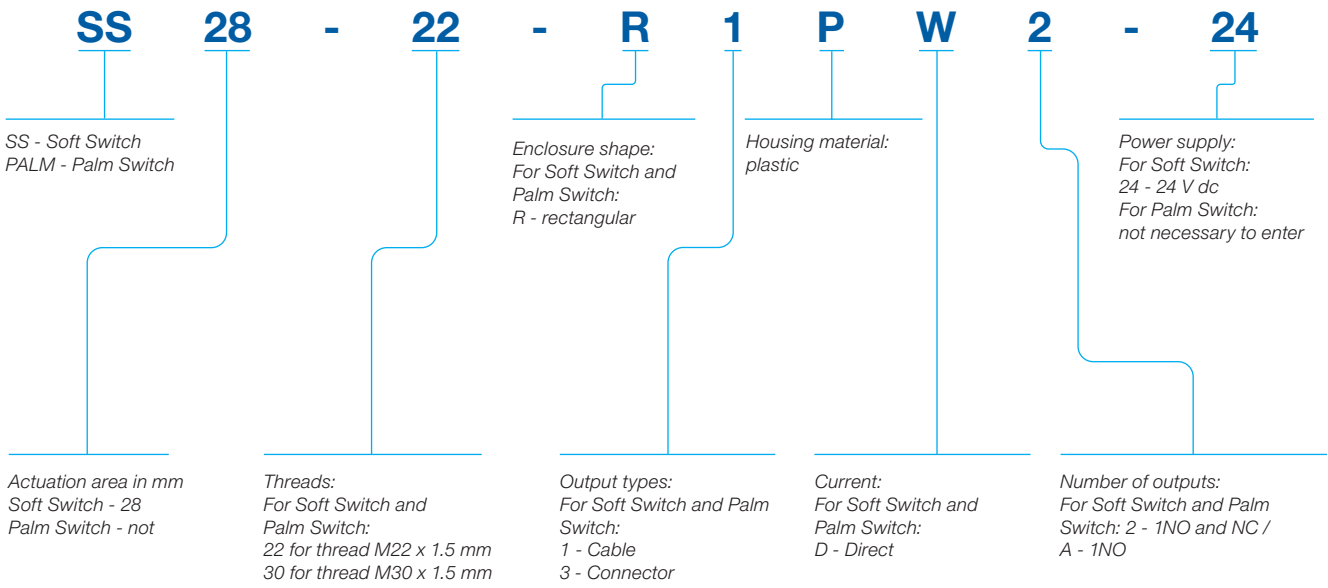
- 24 V dc power supply
- Operating temperature 0 °C...50 °C
- Reduced size
- Connection by cable, terminal or connector
- Applicable to category 4 systems

### Main Characteristics

- No force required for activation
- Reduction of the stress caused by the repeated effort required by conventional buttons
- They can be used simultaneously with control safety relays of the Safety Line

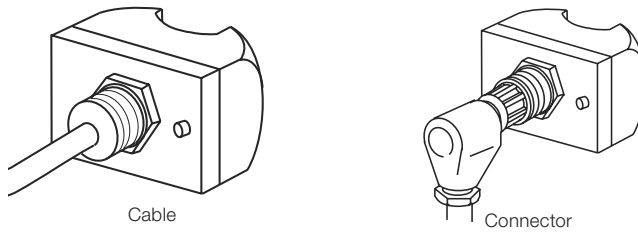
- Reduction of the causes of professional diseases, such as inflammation in the fingers, wrists and shoulders, promoting the operators' wellbeing
- Resistant to liquids, dust, oils and mechanical vibrations
- Protection rating IP67

### Coding



### Specifications

Soft Switch and Palm Switch pushbuttons offer two types of outputs, cable and connector, as shown below:




## Specifications

### SS - Soft Switch Electronic Pushbuttons

Power supply	Thread	Switching distance	Output	Connection type	Reference	Technical specifications
24 V dc	M22 x 1.5 mm	"Touch"	1NO + 1NC	Cable	SS28-22R1PD2/24	
			1NO	Connector	SS28-22R3PDA/24	
24 V dc	M30 x 1.5 mm	"Touch"	1NO + 1NC	Cable	SS28-30R1PD2/24	<p>Power supply ..... 24 V dc (±10%)                      Number of beams ..... 1                      Minimum object detection size ..... Ø10 x 20 mm                      Max. switching current ..... 3 A (24 V dc ±10%)</p> <p>Max. consumption current                      24 V dc power supply ..... 60 mA</p> <p>Maximum response time ..... 20ms                      Output logic ..... NO + NC, NO, NPN, PNP</p> <p>Emitter element ..... GaAlAs Diode                      Receiver element ..... PIN Diode                      Transmission frequency ..... 2,800 Hz                      Wavelength ..... 900 nm                      Operating temperature ..... 0 °C a 50 °C                      Protection rating ..... IP67                      Cable ..... 2 m                      Enclosure ..... Optical filter                      in injected black polyamide, yellow polyamide base                      Optical immunity ..... 100,000 lux                      Technical standards ..... IEC 61000-4-2 (2001);                      4-3 (2008); 4-4 (2002); 4-5 (2005); 4-6 (2006);                      4-11 (2004)                      Certification ..... TÜV Rheinland</p>
			1NO	Connector	SS28-30R3PDA/24	

### PS - Palm Switch Electronic Pushbuttons

Power supply	Thread	Switching distance	Output	Connection type	Reference	Technical specifications
24 V dc	M22 x 1.5 mm	"Touch"	1NO + 1NC	Cable	PALM-22R1PD2	
			1NO	Connector	PALM-22R3PDA	
24 V dc	M30 x 1.5 mm	"Touch"	1NO + 1NC	Cable	PALM-30R1PD2	<p>Power supply ..... 24 V dc (±10%)                      Max. switching current ..... 3 A (24 V dc ±10%)</p> <p>Max. consumption current                      Power supply 24 V dc ..... 60 mA</p> <p>Maximum response time ..... 0.5ms                      Output logic ..... NO + NC or NO or NPN or PNP</p> <p>Operating temperature ..... 0 °C a 50 °C                      Protection rating ..... IP67                      Cable ..... 2 m                      Enclosure ..... polyamide Injected in:                      black and yellow                      Technical standards ..... IEC 61000-4-2 (2001);                      4-3 (2008); 4-4 (2002); 4-5 (2005); 4-6 (2006);                      4-11 (2004)                      Certification ..... TÜV Rheinland</p>
			1NO	Connector	PALM-30R3PDA	

**Accessories**

**Guards for Electronic Pushbuttons**

**Soft Switch, Palm Switch or Soft Touch**

	Reference	Description	Dimensions (mm)
	PROT-22	Guard for pushbutton Soft Switch, 22.5 mm, SAE 1045 steel	
	PROT-30	Guard for pushbutton Soft Switch, 30 mm, SAE 1045 steel	

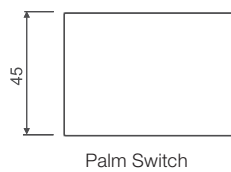
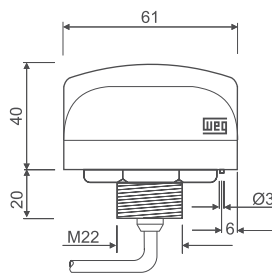
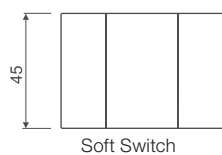
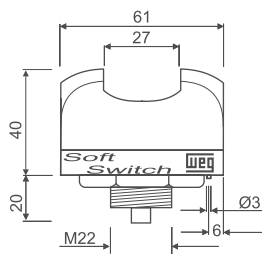
Note: they can be used in any model of electronic pushbuttons. Dimensions in mm.

**Palm Switch**

	Reference	Description	Dimensions (mm)
	PROT-PALM22E	Guard for Palm Switch pushbutton, left 22.5 mm SAE 1045 steel	
	PROT-PALM22D	Guard for Palm Switch pushbutton, right, SAE 1045 steel	

Note: they can only be used in the Palm Switch model. Dimensions in mm.

**Dimensions (mm)**





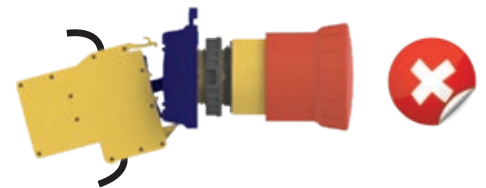
## Pushbuttons and Pilot Lights - CSW Line - IP66

### Monitoring of Emergency-Stop Pushbuttons

- Emergency-stop pushbuttons are one of the most common and important devices to actuate the emergency stop and indicate dangerous situations on machine and equipment panels. However, if this device is not properly installed, its function will be compromised, and it may put users at risk.
- The BCM01-CSW monitoring block was developed so as to ensure greater safety to those applications. Its application with the emergency-stop pushbuttons of the BESG/P/Y line ensures proper installation and provides greater reliability for emergency stop systems.
- Developed according to international IEC 60947-5-5 and UL 508 standards. Combined with the other collective protective equipment (CPE), it ensures greater safety to your application.



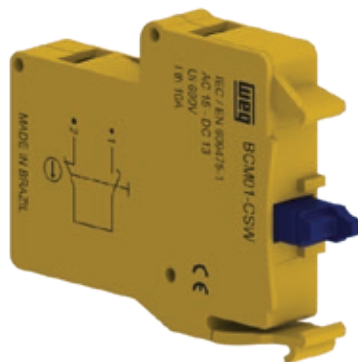
Flange **NOT** properly assembled on the pushbutton.



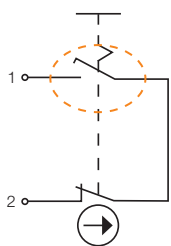
Block **NOT** properly assembled on the flange.



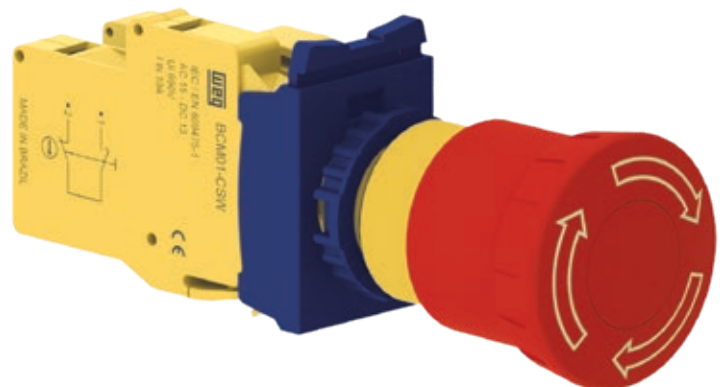
Correct assembly.



### Electrical Diagram




NO contact only closes when the mechanical assembly is correct.



## Specifications

### Supply: Only Frontal Part

Emergency Stop - ISO 13850 (EN 418) and IEC 60947-5-5 - External Diameter: Ø42 mm

Illustrative picture	Description	Indication	Color		Reference
	Pull Release	-		Red	CSW-BESP WH
	Twist Release	-		Red	CSW-BESG WH
	Key Release <sup>1)</sup>	-		Red	CSW-BESY WH
	Pull Release	Side		Red	CSW-BESPS WH
	Twist Release	Side		Red	CSW-BESGS WH
	Key Release <sup>1)</sup>	Side		Red	CSW-BESYS WH
	Pull Release with round engraving EMERGENCY	-		Red	CSW-BESP46 WH
	Twist Release with round engraving EMERGENCY	-		Red	CSW-BESG46 WH

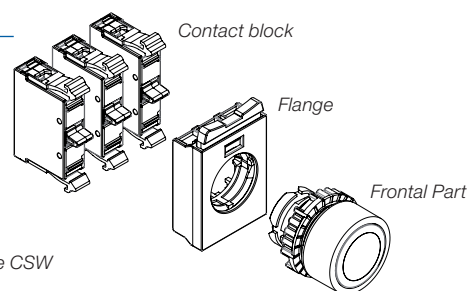
### How to order

- Frontal Part
- + Flange
- + Contact block

Notes: 1) Keys with different combinations only on request.

2) It does not allow the use of contact blocks in the center of the flange.


3) Check the maximum configurations of contact blocks recommended for each frontal part in the CSW Pushbuttons and Pilot Lights line general catalog available on the website [www.weg.net](http://www.weg.net).





## Specifications



### Individual<sup>1)</sup>

Illustrative picture	Description	Standard package	Reference
	Mounting flange with 3 positions for blocks on the frontal part Front-back assembly system	1 piece	AF3F
		10 pieces	AF3FX10

Note: 1) Not compatible with the PBS control stations.

**"Front-Back"  
System**

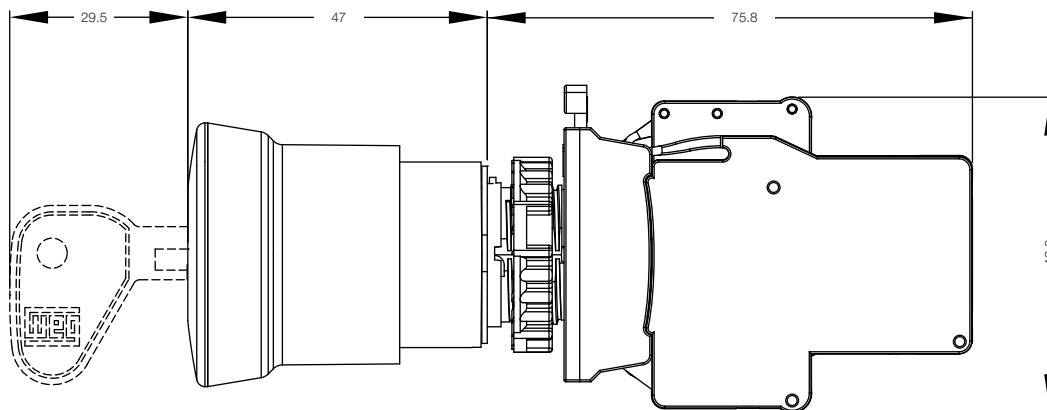
### Contact Block to Monitor Emergency-Stop Pushbuttons CSW-BES<sup>1)2)3)</sup>

Illustrative picture	Contacts	Diagram	Standard package	Compatible flange	Reference
	1NC		1 piece	AF3F	BCM01F-CSW

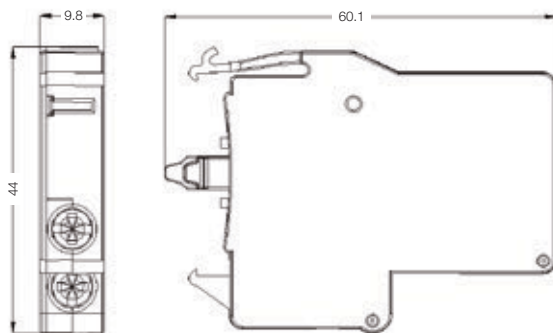
Notes: 1) Not compatible with the PBS control stations.  
2) NO auxiliary contact checks mechanical assembly.  
3) It does not allow front-back assembly.

**"Front-Back"  
System**

## Dimensions



BES + BCM01-CSW



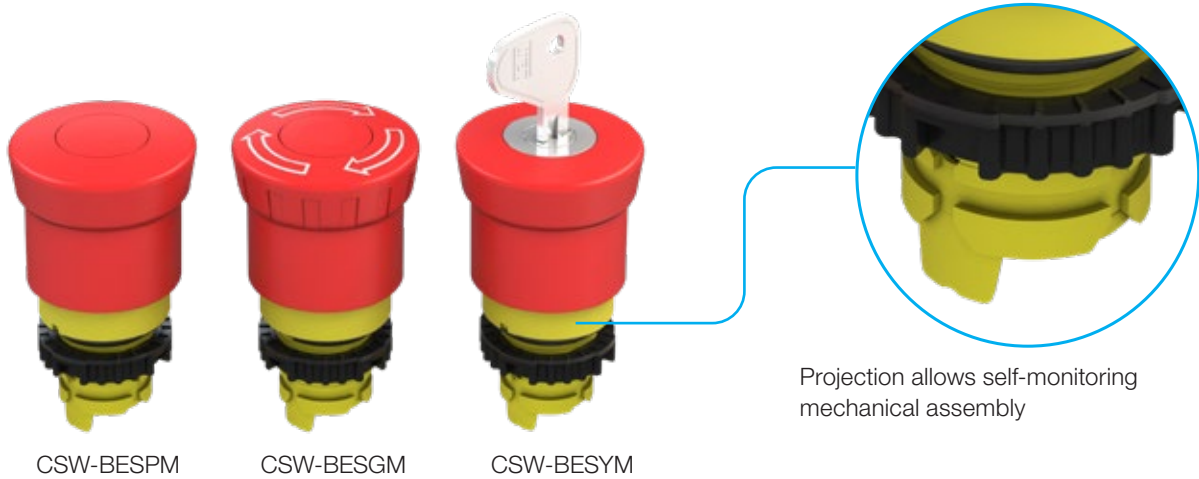
Note: dimensions in millimeters (mm).



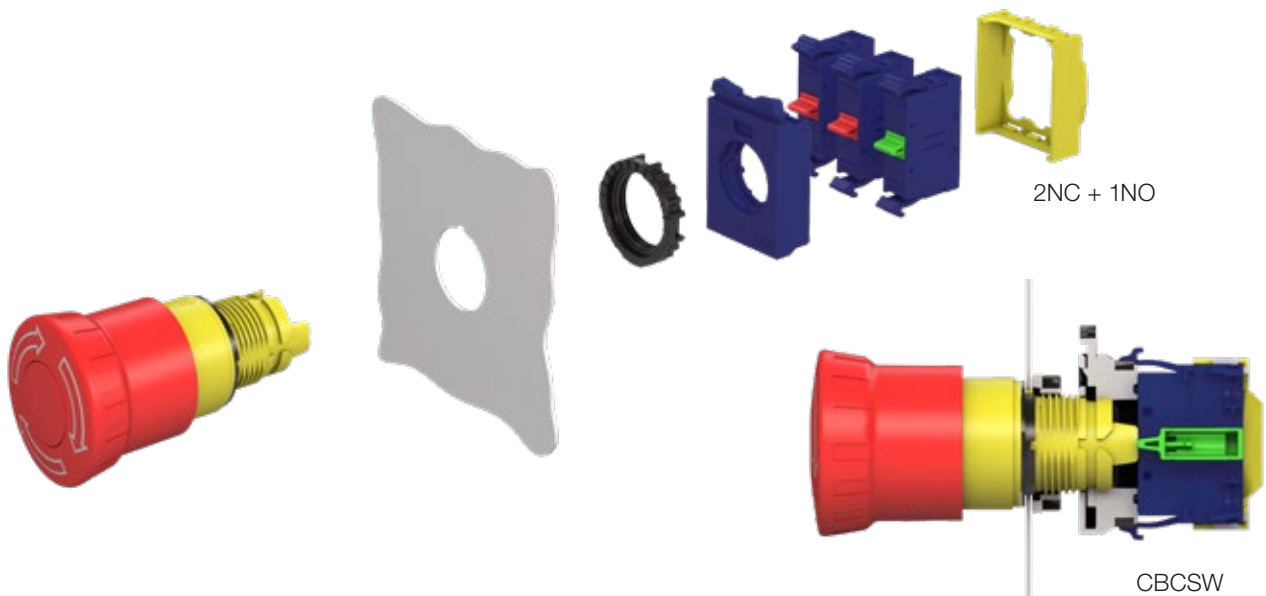
## Pushbuttons and Pilot Lights - CSW IP66 Line with Monitoring

### Monitoring of Emergency-Stop Pushbuttons

BESGM, BESPM and BESYM emergency-stop pushbuttons allow monitoring the mechanical assembly using single-contact blocks in flange or PBW control station assemblies. The CBCSW contact block tie enables turning all the items into a single set, ensuring greater safety and reducing the possibility of operation fault.



### Flange Mount with Front-back System



### PBW Control Stations for Assembly of Decentralized Control Stations and Emergency Stop

With a compact design, the PBW control stations meet the requirements of a great variety of the severest industrial applications. Manufactured with high-end materials, they ensure excellent performance to applications that require great resistance against impacts and bad weather. Their use with frontal parts of the CSW Pushbuttons and Pilot Lights line enables different functions, such as emergency stop, signaling, starts, stops, among others.

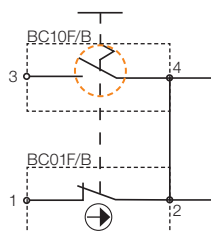


### Assembly in PBW Control Stations



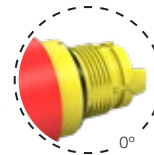
### Electric Diagram

NO contact closes when the mechanical assembly is correct

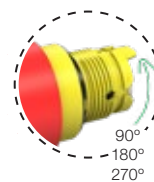


### Assembly

Monitored



Not Monitored



According to the emergency-stop pushbutton installation, it is possible to choose the monitoring of the mechanical assembly

**Specifications**

**Supply: Only Frontal Part**

Monitored Emergency Stop - ISO 13850 (EN 418) and IEC 60947-5-5 - External Diameter: Ø42 mm

Illustrative picture	Description	Indication	Color		Reference
	Pull Release	-		Red	CSW-BESPM WH
	Twist Release	-		Red	CSW-BESGM WH
	Key Release <sup>1)</sup>	-		Red	CSW-BESYM WH
	Pull Release	Side		Red	CSW-BESPSM WH
	Twist Release	Side		Red	CSW-BESGSM WH
	Key Release <sup>1)</sup>	Side		Red	CSW-BESYSM WH

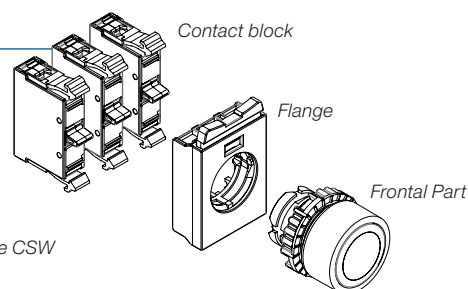
**How to order**

- Frontal Part
- + Flange
- + Contact block

Notes: 1) Keys with different combinations only on request.


2) It does not allow the use of contact blocks in the center of the flange.

3) Check the maximum configurations of contact blocks recommended for each frontal part in the CSW Pushbuttons and Pilot Lights line general catalog available on the website [www.weg.net](http://www.weg.net).



## Specifications






### Individual Flange<sup>1)</sup>

Illustrative picture	Description	Standard package	Reference
	Mounting flange with 3 positions for blocks on the frontal part Front-back assembly system	1 piece	AF3F
		10 pieces	AF3FX10

**"Front-Back" System**


Note: 1) Not compatible with the PBS control stations.

### Single Contact Blocks<sup>1)</sup>


Illustrative picture	Contacts	Diagram	Standard package	Compatible flange	Reference
	1NO		1 piece	AF3F	BC10F-CSW
			10 pieces		BC10F-CSWX10
	1NO		1 piece		BC01F-CSW
			10 pieces		BC01F-CSWX10
	1NOa (early make)		1 piece		BCA10F-CSW
	1NCr (late break)		1 piece		BCR01F-CSW

**"Front-Back" System**

### Individual Tie

Illustrative picture	Description	Standard package	Compatible blocks	Reference
	Contact block tie for monitoring the mechanical assembly together with CSW-BESGM, CSW-BESPM and CSW-BESYM pushbuttons. Maximum number of contact blocks: 3 BC_F/BC_B blocks  Note: - In does not allow overlapping the contacts	1 piece	BC10F BC01F BC10B BC01B	CBCSW

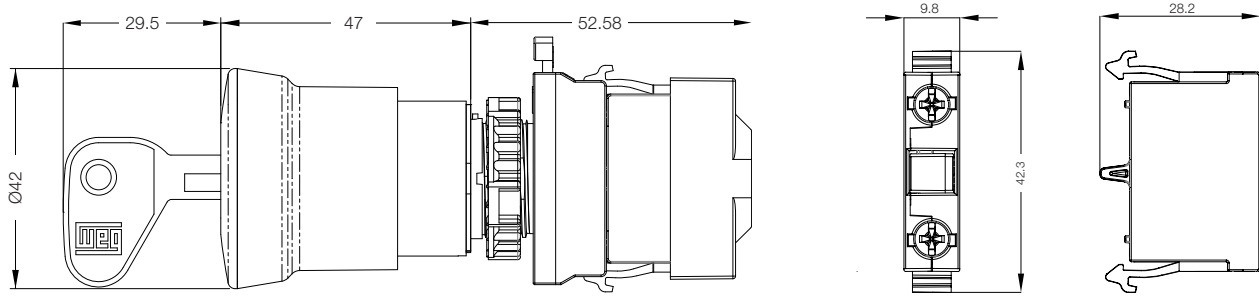
### Emergency-Stop Pushbuttons on Decentralized Control Station<sup>1)</sup>

Illustrative picture	Control Station	Emergency-stop pushbutton	Contact blocks	Engraved plate	Reference
	PBW-1Y	CSW-BESGM	1NO + 1NC	"EMERGENCY STOP"	PBW1Y-GM11V03
	PBW-1Y	CSW-BESGM	1NO + 2NC	"EMERGENCY STOP"	PBW1Y-GM12V03

Note: 1) Other configurations on request.

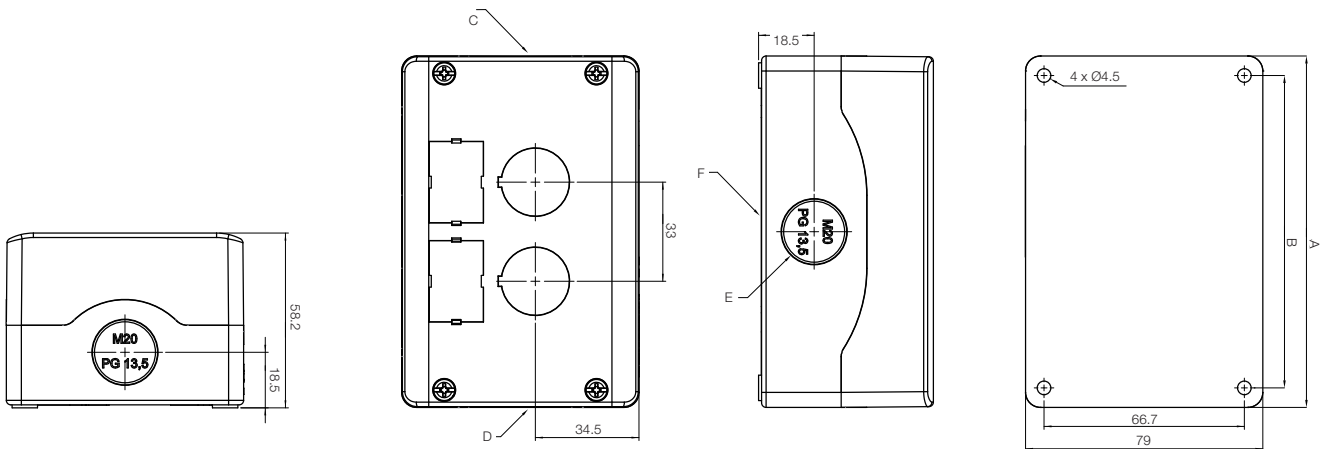


### Dimensions



BES\_M + BC10F/BC01F Contact Blocks + CBCSW Tie

BC10F/BC01F



PBW empty control stations

Number of holes	A	B	Cable gland input			
			C (lower)	D (upper)	E (side)	F (base)
1	74	66.7	1x ØM20/PG13.5	1x ØM20/PG13.5	1x ØM20/PG13.5	2x ØM16
2	117	104	1x ØM20/PG13.5	1x ØM20/PG13.5	1x ØM20/PG13.5	2x ØM16
3	150	137	1x ØM20/PG13.5	1x ØM20/PG13.5	2x ØM20/PG13.5	2x ØM16
4	183	170	1x ØM20/PG13.5	1x ØM20/PG13.5	2x ØM20/PG13.5	2x ØM16
6	249	236	1x ØM20/PG13.5	1x ØM20/PG13.5	2x ØM20/PG13.5	2x ØM16

Note: dimensions in millimeters (mm).



## CBM Two-Hand Control

Is a safety device to protect operators during the operation of machines that present hazards in the production process.

The operator is required to control the process with both hands, reducing the risk of accidents. Provided it is used with other products of the Safety Line, such as safety light screens.

### Main Characteristics

- Ergonomic design - lower risk of injuries
- IP20 protection rating
- High reliability
- It can be used with the other products of the Safety line.



(for the internally mounted CS-D / CS-D201 relay)

### Technical Data

Power supply	24 V dc
Consumption	<10 VA
Connection type	Connector
Lead free	According to RoHS directive
Output	2 NO contacts and 2 NC emergency contacts
Operating modes	Pushbutton, pulse foot switch, continuous foot switch
Service life of the contacts	10 <sup>7</sup> operations
Capacity of the contacts	3 A / 250 V - 90 W
Response time	10ms
Operating temperature	-5 °C to 50 °C
Protection rating	IP20
Standards	IEC 61000-4-2: 2001
Certification	TÜV Rheinland

### Coding

<b>CBM</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>D</b>
Two-hand control	2 - Soft Switch (SS) 3 - Palm Switch (PS)	1 - With emergency-stop pushbutton 0 - Without emergency-stop pushbutton	0 - Without foot switch	1 - With counter 0 - Without counter	D - 24 V dc

# CBM Two-Hand Control

## Specifications

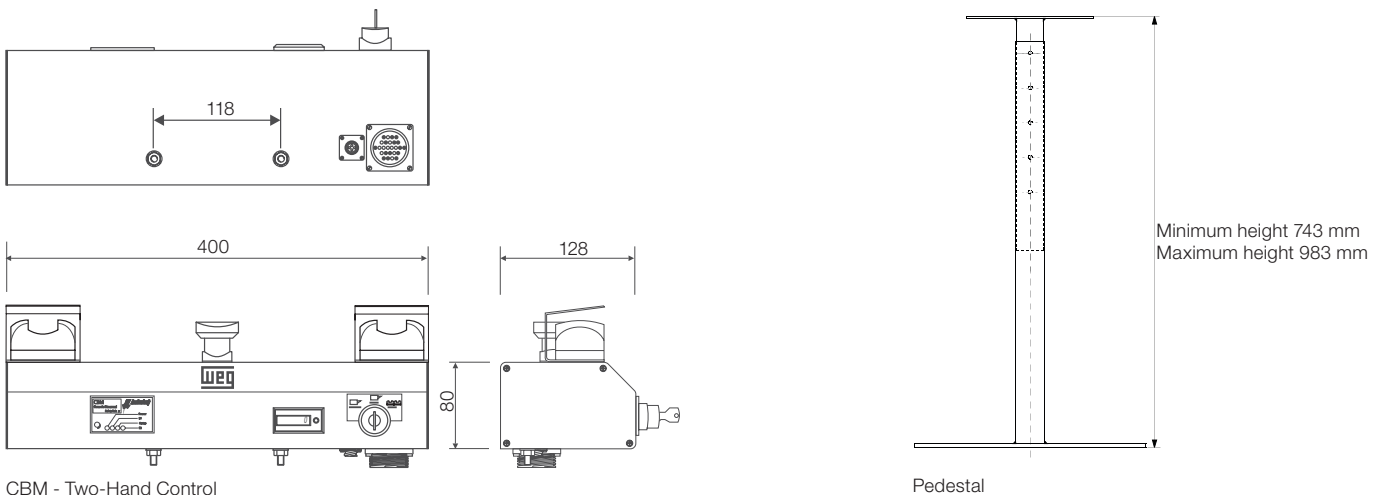
Power supply	Electronic pushbutton type	Emergency-stop pushbutton	Pneumatic pedal	Counter	Reference
24 V dc	SS - Soft Switch <sup>1)</sup>	YES	YES	YES	CBM-2111D
		YES	YES	NO	CBM-2110D
		YES	NO	YES	CBM-2101D
		YES	NO	NO	CBM-2100D
	PS - Palm Switch <sup>1)</sup>	YES	YES	YES	CBM-3111D
		YES	NO	YES	CBM-3101D
		YES	NO	NO	CBM-3100D
		NO	NO	NO	CBM-2000D

Note: 1) Connector, cable and simultaneity relay (CS-D) included.

## Pedestal

<b>REG Pedestal</b>	Adjustable pedestal with height adjustment from 743 to 983 mm
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## Dimensions



CBM - Two-Hand Control

Notes: Dimensions in mm.  
Connector + cable included.







## Programmable Safety Controller

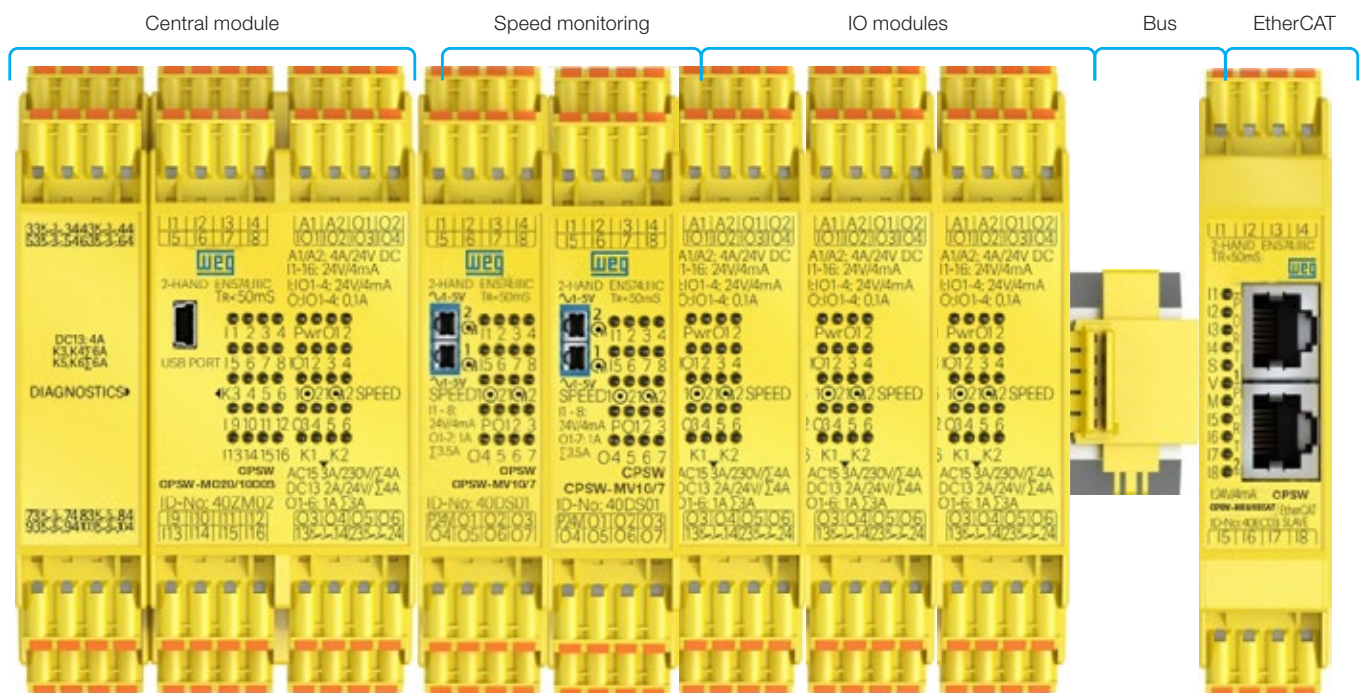
The CPSW safety programmable controller offers, in a simple and intelligent way, the ideal solution to implant machine and equipment safety systems.

Due to the flexible modular structure, it is suitable to meet the requirements of different applications, enabling the user to easily design solutions capable to integrate several safety devices.



### Hardware

- It is necessary to have at least one central module to configure an application. The number of functional modules depends on the requirement.



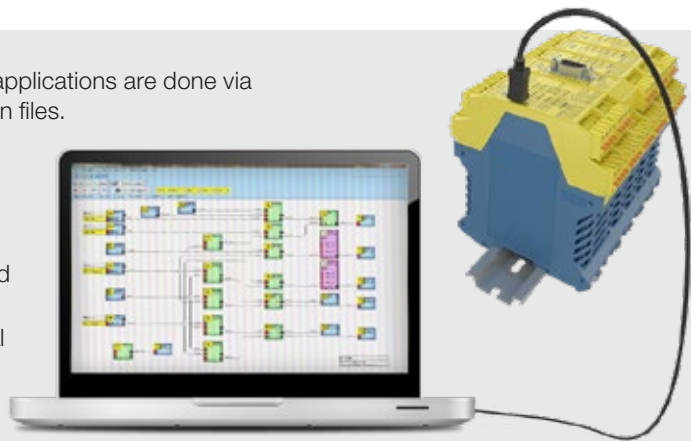
### Main Characteristics

- Compact modular system
- Configurable up to 15 modules
- Central modules with 20 inputs and 12 or 6 outputs
- Expansion modules with different functions (safety input and output expansion, speed monitoring and network communication)
- Push-in terminals
- Online diagnostics and monitoring via software
- Offline simulation of the application
- 24 V dc Power supply
- Programming via USB port
- Free programming software
- Safety category: SIL3 / PLe / Cat4
- Certifications: CE and DGUV Test

## Programming Software

The configuration, programming and documentation of the applications are done via CPSW Designer software, allowing the project to be stored in files.

- Free software in Portuguese, English and German.
- Programming through block diagram.
- Blocks with all the safety functions can be selected and easily adjusted to meet the application requirements.
- Monitoring of the application, which allows fast diagnostics and reduction of machine downtime.
- Simulation of the program operation without requiring a central module connected to the computer.
- Communication through USB port.
- Available for download on: [www.weg.net](http://www.weg.net).



## Network Communication

The CPSW line provides a network of communication modules to support the main protocols used in the global market.

Reference	Code	Protocol	Description
CPSW-MR8/OCAN	13806370	CANopen	Modules with 08 safety digital inputs and a network communication port.
CPSW-MR8/ODPV1	13806371	Profibus-DP	
CPSW-MR8/OECAT	13806369	EtherCAT	
CPSW-MR8/OPNET	13806267	PROFINET	
CPSW-MR8/OMBUS	13980284	Modbus-TCP	
CPSW-MR8/OENET	13980285	EtherNet	

## Standards

- EN 55011: 2009+A1 2010 (class A), EN 61326-1: 2006-05 SIL3, EN 61000-6-2: 2006-05, EN 62061: 2005, EN 61326-3-1: 2008, EN 61000-4-11: 2004;
- DIN EN 60947-5-1: Low-voltage panel and control devices; part 5.1: Control circuit devices and switching elements - electromechanical control circuit devices;
- DIN EN ISO 13849-1: Parts related to the safety of control systems; Part 1: General principles for project category 4, PLe;
- DIN EN ISO 13849-2: Parts related to the safety of control systems; Part 1: Validation;
- DIN EN 62061: Functional safety of electrical, electronic and programmable electronic control systems SIL CL3;
- GS-ET-20: Basic principles for testing and certifying safety switching devices.

## Certifications



US LISTED  
IND. CONT.EQ



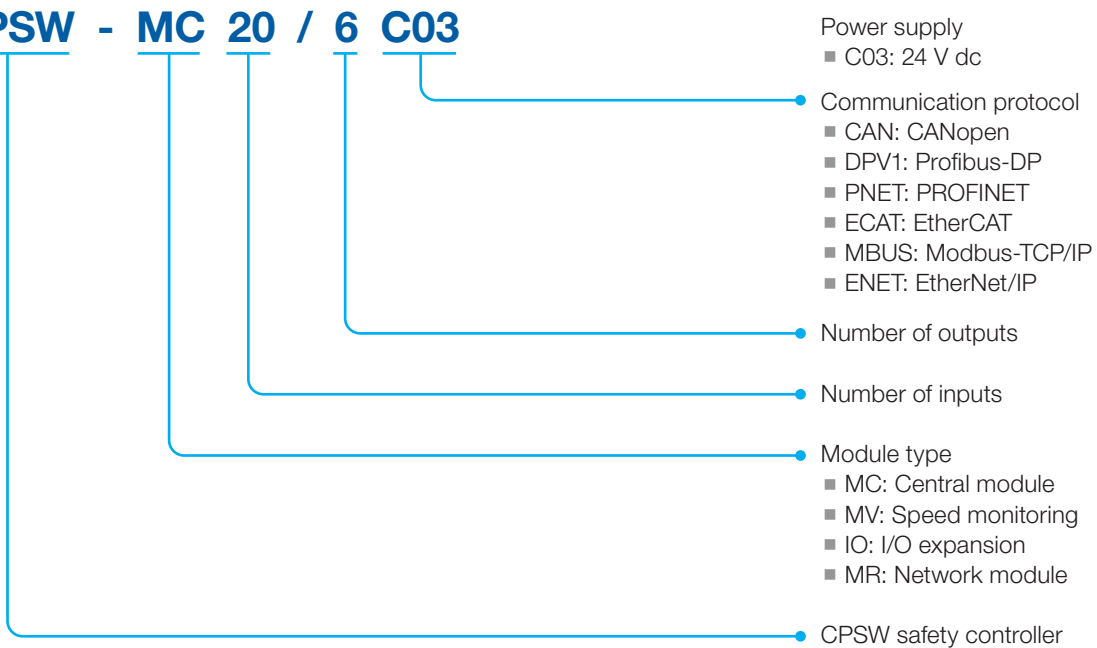
Product rated as safety device according to: EN ISO 13849-1: 2008-12, category 4, PLe; EN 62061: 2005-10, SIL CL 3.

## Reliability Data

Module	MTTFd (years)	PL	DC	SFF	PFHd	TM (years)
CPSW-MC20/6C03	79	e	high	99%	$3.0 \times 10^{-8}$	20
CPSW-MC20/12C03	141	e	high	99%	$1.6 \times 10^{-8}$	20
CPSW-MV10/7	97	e	high	96%	$2.5 \times 10^{-8}$	20
CPSW-IO12/4	238	e	high	95%	$1.4 \times 10^{-8}$	20
CPSW-IO8/7	97	e	high	96%	$2.5 \times 10^{-8}$	20
CPSW-IO8/2	91	e	high	98%	$2.5 \times 10^{-8}$	20
CPSW-MR8/OPNET	305	e	high	95%	$8.0 \times 10^{-9}$	20
CPSW-MR8/ODPV1	305	e	high	95%	$8.0 \times 10^{-9}$	20
CPSW-MR8/OECAT	305	e	high	95%	$8.0 \times 10^{-9}$	20
CPSW-MR8/OCAN	305	e	high	95%	$8.0 \times 10^{-9}$	20
CPSW-MR8/OMBUS	305	e	high	95%	$8.0 \times 10^{-9}$	20
CPSW-MR8/OENET	305	e	high	95%	$8.0 \times 10^{-9}$	20

## Coding

### CPSW - MC 20 / 6 C03



## Specifications

### Central Modules

Reference	Description	Code
CPSW - MC20/6C03	Main module, 24 V dc (-15%/+10%) power supply, with 8 safety digital/analog inputs, 8 safety digital inputs (four of these inputs can be used for monitoring speed sensor 24 V dc), 4 safety transistor digital inputs/outputs, 6 safety transistor digital outputs, USB port.	13806259
CPSW - MC20/12C03	Main module, 24 V dc (-15%/+10%) power supply, with 8 safety digital/analog inputs, 8 safety digital inputs (four of these inputs can be used for monitoring speed sensor 24 V dc), 4 safety transistor digital inputs/outputs, 2 speed monitoring inputs, 6 safety transistor digital outputs, 6 relay digital outputs with safety contacts, USB port.	13806023

### Speed Monitoring Module

Reference	Description	Code
CPSW - MV10/7	Speed monitoring module, 2 reading points (encoder/sensor). Speed up to 500 kHz. 8 safety digital inputs, 2 transistor digital/pulse outputs, 5 safety transistor digital outputs.	13806024

### Input/Output Expansion Modules

Reference	Description	Code
CPSW - IO8/7	Expansion module with 8 safety digital inputs and 7 safety transistor digital outputs.	13806022
CPSW - IO12/4	Expansion module with 12 safety digital inputs and 4 safety digital inputs/outputs.	13806025
CPSW - IO8/2	Expansion module with 8 safety digital inputs and 2 safety relay digital outputs.	13806266

### Network Communication Modules

Reference	Description	Code
CPSW - MR8/ODPV1	Profibus-DP network communication module and 8 safety digital inputs.	13806371
CPSW - MR8/OPNET	PROFINET network communication module and 8 safety digital inputs.	13806267
CPSW - MR8/OCAN	CANopen network communication module and 8 safety digital inputs.	13806370
CPSW - MR8/OECAT	EtherCAT network communication module and 8 safety digital inputs.	13806369
CPSW - MR8/OMBUS	Modbus-TCP/IP network communication module and 8 safety digital inputs.	13980284
CPSW - MR8/OENET	EtherNet/IP network communication module and 8 safety digital inputs.	13980285

## Specifications

### Accessories - Cables

Reference	Description	Code
CPSW - AC/15/8	DB15/RJ45 adapter cable to connect CNC, CLP, Encoder/CPSW - DB15 Connector (Male: CNC/CLP; Female: Encoder) with RJ45 output: CPSW.	13808709
CPSW - AC/25/8	DB25/RJ45 adapter cable to connect CNC, CLP, Encoder/CPSW - DB25 Connector (Male: CNC/CLP; Female: Encoder) with RJ45 output: CPSW.	13807108
CPSW - AC/45/T	Standard 2.5 m cable to connect incremental or sinusoidal encoder/output 5 V dc (TTL) with RJ45 connector - free end.	13861639
CPSW - AC/45/H	Standard 2.5 m cable to connect incremental encoder/output 24 V dc with RJ45 connector - free end.	13861597
CPSW - AC/45/H/10	Standard 10 m cable to connect incremental encoder/output 24 V dc with RJ45 connector - free end.	13863164







Note: 1) Maximum configuration: up to 15 modules (1 main module + expansion modules).

### Technical Data

Characteristics						
Operating voltage via A1, A2 on CPSW-MC20/6C03, CPSW-MC20/12C03			24 V dc, -15% +10% for all modules, ≤10% Ripple			
Input current in A1			≤4 A/internal fuse: 6 A			
Reference	CPSW-MC20/12C03	CPSW-MV10/7	CPSW-IO12/4	CPSW-IO8/7	CPSW-IO8/2	Fieldbus
Code	13806023	13806024	13806025	13806022	13806266	40xx01
Consumption	7.7 W	2.5 W	1.7 W	2.2 W	4.8 W	1 W
Operating temperature			-10 +55 °C			
Storage temperature			-40 +85 °C			
Vibration resistance in 3 axes			Sine 10-55 Hz, 0.35 mm, 10 cycles, 1 octave/min			
Shock resistance in 3 axes for output relay			≤5 g, 11ms			
Maximum cross section of the terminal cable			1 x (0.2-1.0 mm <sup>2</sup> ) with cable and terminal			
Terminal type			Push-in			
Connection wire			Only copper 60/75 °C			
Housing Material			Reinforced polyamide			
Protection rating			Installation in closed cabinet of class > IP54			
Voltage on the inputs to turn off the mat			I1 up to I8: 9.5 to 14 V, 11.5 V with 24 V trip voltage on the mat			
Mat tripping response time			<20ms			
Voltage on the inputs			24 V dc -15%, +10%			
Max. current consumption on the input			4 mA			
Input voltage terminal (P) in CPSW-MV10/7, CPSW-IO8/7			24 V dc -15% +10%			
Input current terminal (P) in CPSW-MV10/7, CPSW-IO8/7			≤4 A			
Input frequency on I9 - I12 in the central module			≤1,200 Hz HTL signals via, for example, proximity sensor			
Input frequency on I9 - I16 in the central module			≤50 kHz HTL signals via incremental measurement system			
Input frequency Encoder 1 and 2 on CPSW-MV10/7			≤500 kHz signals of Sin/Cos 1 Vpp or TTL			
Accuracy of analog inputs			+ 3% of maximum input value between -10 and +60 °C			
Input impedance of the analog inputs			500 Ω for signal 4-20 mA and >5 kΩ for signal 0-10 V			

Note: the current inputs (4-20 mA) may be damaged with input voltage > 12 V.



Semiconductor outputs technical data	CPSW-MC20/6C03 / CPSW-MC20/12C03		CPSW-MV10/7		CPSW-I012/4	CPSW-I08/7
	I01 - I04	01 - 06	01, 02	03 - 07	I01 - I04	01 - 07
Outputs						
Switching and direct current Ω/L	0.1 A	1 A	0.25 A	1 A	100 mA	1 A
Sum of the switching and direct currents Ω/L	0.4 A	3 A	0.4 A	2.5 A	0.4 A	3.5 A
Minimum switching current Ω/L	1 mA	1 mA	1 mA	1 mA	1 mA	1 mA

The power supply of semiconductor outputs will be disconnected if terminal (A2) is not connected to 0 V. Therefore, residual voltage on the output loads is not possible. All semiconductor outputs are short-circuit and overload proof. Each output has a recovery diode.

Technical data of the contact outputs	CPSW-MC20/6C03	CPSW-MC20/12C03	CPSW-I08/2
Outputs	K1, K2	K3 - K6	K1, K2
Output scheme, performance level: PLe			
Minimum switching current	10 mA	10 mA	10 mA
Switching current, 0.1 Hz cycles according to	DC1: 24 V / 6 A	DC1: 24 V / 6 A	DC1: 24 V / 6 A
DIN EN 60947-4-1/ EN 60947-5-1	DC13: 24 V / 2 A	DC13: 24 V / 5 A	DC13: 24 V / 4 A
Switching current according to DIN EN 60947-4-1/ EN 60947-5-1	AC1: 250 V / 6 A AC15: 230 V / 3 A	-	AC1: 250 V / 6 A AC15: 230 V / 3 A
Sum of the switching and direct currents	≤4 A	K3, K4: ≤6 A, K5, K6: ≤6 A	K1: ≤4 A, K2: ≤4 A
Electrical lifespan DC13: 24 V / 1 A	1.5x10 <sup>5</sup>	1x10 <sup>5</sup>	9x10 <sup>5</sup>
Electrical lifespan DC13: 24 V / 4 A	10 <sup>4</sup>	4x10 <sup>4</sup>	7x10 <sup>4</sup>
Electrical lifespan AC15: 230 V / 1 A	2x10 <sup>5</sup>	-	7x10 <sup>5</sup>
Electrical lifespan AC15: 230 V / 2 A	-	-	5x10 <sup>5</sup>
Mechanical lifespan	>50x10 <sup>6</sup>	>10 <sup>7</sup>	>40x10 <sup>6</sup>
Max. switching cycles DC13: 4 A	Max. switching cycles DC13: 4 A	360 cycles/h	360 cycles/h
Max. switching cycles AC15: 3 A	360 cycles/h	-	360 cycles/h
Contact protection fuse (gL/gG)	6 A	6 A	6 A
Resistance to short circuit Automatic	200 A / B6	-	200 A / B6
gG safety fuse	800 A / 6AgG	1,000 A SCPD 6 A	800 A / 6AgG
Rated insulation voltage	250 V ac	-	250 V
Rated AC impulse withstand voltage	-	-	-
Use in an environment with pollution degree 2	4 kV	-	4 kV
Response time, tripping time	15ms / 12ms	10ms / 3ms	10ms

Notes: AC1: switching of resistive or low-inductive load, AC voltage.  
 AC15: switching of inductive load, AC voltage.  
 DC1: switching of resistive or low-inductive load, DC voltage.  
 DC13: switching of inductive load, DC voltage.

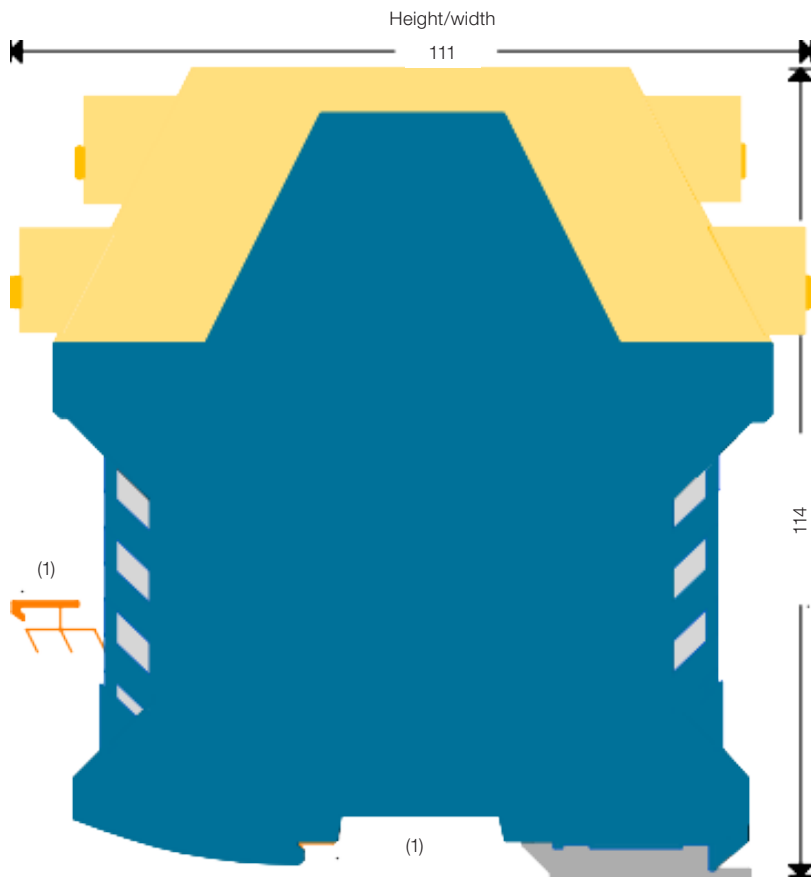
### Electrical lifespan of Contact Outputs

260 working days / year, 8h / day, 24 V dc switching voltage.

Module	CPSW-MC20/6C03, CPSW-MC20/12C03: K1, K2					CPSW-MC20/12C03: K3, K4, K5, K6					CPSW-I08/2: K1, K2					Years
	DC1	DC13	DC1	DC13	DC1	DC1	DC13	DC1	DC13	DC1	DC1	DC13	DC1	DC13	DC1	
Switching current	1 A	1 A	4 A	4 A	6 A	1 A	1 A	4 A	4 A	6 A	1 A	1 A	4 A	4 A	6 A	5
Switching cycles	384	15	192	1	153	144	15	36	5	29	769	91	192	67	96	10
Switching cycles	192	7	96	0.5	76	77	7	17	2	14	384	45	96	33	48	20
Switching cycles	96	3.6	48	0.25	38	38	3.6	8	1	7	192	23	48	17	24	

Note: in the case of service activities, the safety function for electromechanical parts must request PLe at least once a year (8760h) and PLa at least once a month (720h).

### Dimensions



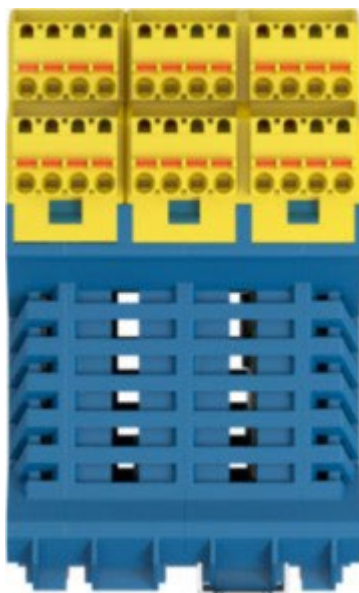
CPSW-MC20/6C03

45 mm



CPSW-MC17/12C03

67.5 mm



Others

22.5 mm



22.5 mm





Safety certification

# Safety Relays

The safety relays are devices that supervise circuits, ensuring the equipment/system and operator safety. They are designed to meet the latest safety standards, always aiming at reaching the maximum efficiency and reliability in a single product.

### Main Characteristics

- TÜV Rheinland certification
- Dual channel outputs
- Contact supervision
- Protected against faults and tampering
- Flexibility - suitable for different application types
- Lead-free products

### PSRW - Programable Safety Relay

- Configurable safety relay that can be programmed via WPS graphical interface
- 24 V dc control supply voltage
- Inputs monitored by pulse test
- Manual and automatic supervised reset
- 2 double channel outputs
- 4 double channel inputs
- Cat 4 / PLe (ISO 13849-1), SIL CL 3 IEC 62061/IEC 61508



### CPW - Emergency Stop Control

#### CPW22

- Model: CPW22 (22.5 mm wide)
- 24 V ac / V dc power supply
- Monitors contacts of different safety devices
- Manual and Automatic monitored reset
- 3 NO safety outputs
- Dual channel
- 1 NC auxiliary output
- Cat 4 / PLe (ISO 13849-1), SIL CL 3 IEC 62061/IEC 61508



NEW

### CPW - Emergency Stop Control

#### CPW17

- Model: CPW17 (17.5 mm wide)
- 24 V ac / V dc power supply
- Monitors contacts of different safety devices
- Manual and Automatic monitored reset
- 2 NO safety outputs
- Dual channel
- Cat 3 / PLd (ISO 13849-1), SIL CL 2 IEC 62061/IEC 61508



NEW

### CS Line - Simultaneity Monitoring

- CS-D and CS-D201 models
- 24 V dc power supply
- Dual channel
- Cat 4 / PLe (ISO 13849-1), SIL CL 3 IEC 62061/IEC 61508



### CP Line - Emergency Stop Control

- Models: CP-D, CPA-D and CPLS-D
- 24 V dc / V ac power supply
- Supervises contacts of different safety equipment types
- 3 NO safety outputs
- 1 NC auxiliary output
- Dual channel
- Cat 4 / PLe (ISO 13849-1), SIL CL 3 IEC 62061/IEC 61508



### SZS - Zero Speed Monitor

- Detects the zero-speed condition in electric motors
- It may be used in any type of single-phase or three-phase electric motor, AC or DC
- It can be used with frequency inverter or soft-starter
- Sensitivity adjustment
- Cable break detection
- Safety Contact 1NO + 1NC
- Category 4 / PL d (ISO 13849-1), SIL CL 2 IEC 61800-5-2 / IEC 62061 / IEC 61508






## PSRW Line - Programable Safety Relay

The PSRW is a configurable safety relay that can be programmed via WPS graphical interface. With four double channel safety inputs and two double channel safety outputs (OSSDs) with individual reset (manual or automatic), the PSRW programmable safety relay may supervise the following safety componets:

- Safety light screen
- Bimanual command
- Emergency stop control
- Magnetic sensors
- Mechanical switches
- Safety sensors



### Specifications

	PSRW	Supply voltage ..... 24 V dc ( $\pm 20\%$ ) Power consumption ..... 3 W max Response time ..... 5ms + Input filtering (4 ou 16ms) + delay (configurable) Digital inputs ..... 8 (4 double channel) Reset inputs ..... 2 (configurable manual/automatic) Inputs logic ..... PNP Active in high - (IEC 61131-2) Safety outputs ..... 4 (2 double channel) Safety outputs logic ..... PNP Active in high - [1÷4] 2 A $\Sigma$ 2 A max Auxiliary outputs ..... 2 (configurable) Auxiliary outputs logic ..... PNP Active in high - (isolated) 100 mA at 24 V dc max Maximum cross section of the terminal cable ..... 0.5 to 2.5 mm <sup>2</sup> / AWG 12 to 30 (solid/stranded) Maximum cable lenght ..... 30 meters Operating temperature ..... 0 to 50 °C Maximum ambient air temperature ..... 50 °C Storage temperature ..... -20 to 85 °C Humidity ..... 10 to 95% PC connection ..... USB 2.0 Cable lenght ..... 3 m (max.) Housing material ..... Polyamide Protection degree ..... IP20 Standards ..... SO 13849-1, IEC 61508, IEC 62061, IEC 61000-6-7, IEC 61131-2 2006/42/EU "Machinery Directive", 2004/108/EU "Electromagnetic Compatibility Directive", 2006/95/EU "Low Voltage Directive", 2011/95/UE "RoHS Directive" Safety certification ..... Cat 4 / PLe (ISO 13849-1), SIL CL 3 IEC 62061/IEC 61508 TÜV Rheinland Product certification ..... CE, UL
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Note: 1) UL certification as a control relay.

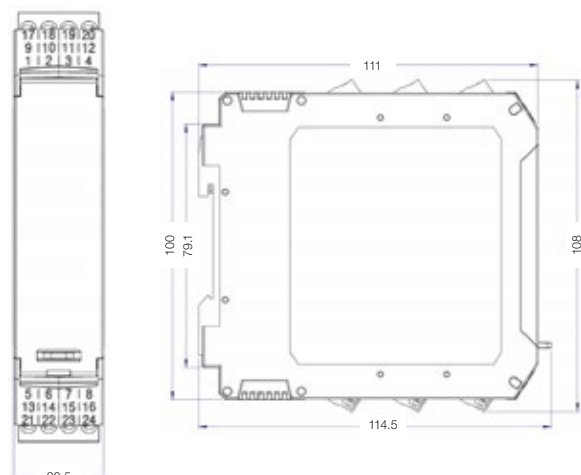
### Safety Levels

Parameter	Value	Standard
PL	e	ISO 13849-1:2006
CAT	4	ISO 13849-1:2006
SIL	3	IEC 61508:2010
SIL CL	3	IEC 62061:2005
PFH(1/h)	7.85 E-09	IEC 61508:2010
PFDavg	3.91 E-05	IEC 61508:2010
SFF	99.50%	IEC 61508:2010
MTTFd (year)	416.65	IEC 61508:2010
Test time interval	10 years	IEC 61508:2010
Service life	20 years	-

### Conection Diagram

See product data sheet.

### Dimensions




## CPW - Emergency Stop Control Relay

The safety relays of the CPW line can be used to monitor the contacts of emergency pushbuttons, light screens, safety sensors, interlock switches and other vital safety devices.

They are protected against faults and tampering (self-check) and have contact monitoring, dual channel and power supply to provide flexibility in a great variety of applications.



### CPW22 Specifications

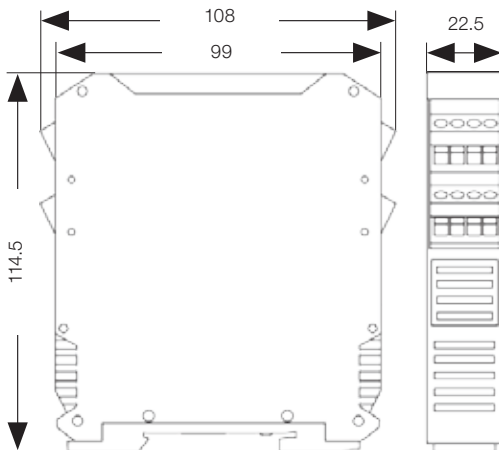
	CPW22	Supply voltage.....24 V ca / V dc (±15%)
		Frequency..... 50/60 Hz
		Power consumption ..... 3 VA max.
		Type ..... Terminal
		Reset ..... Manual / automatic
		Response time.....<10ms
		Outputs.....3 NO safety contacts and 1NC auxiliary safety contact
		Maximum switching capacity..... 3 A - 250 V ac / AC15. 3 A 24 V dc / DC13
		Maximum cross section of the terminal cable ..... 0.5 to 2.5 mm <sup>2</sup> / 12 to 24 AWG
		Maximum torque ..... 0.4 Nm
		Maximum cable length ..... 30 meters
		Cable resistance ..... 40 Ω
		Operating temperature.....-10 °C to 55 °C
		Storage temperature.....-40 °C to 70 °C
		Housing material..... PA (polyamide)
		Protection degree..... IP20
		Weight ..... 0.25 kg
		Life cycle ..... 10 million operation
		Standards..... ISO 13849-1, IEC 61508, IEC 62061, IEC 61000-6-7, 2004/108/EU "Electromagnetic Compatibility Directive", 2006/95/EU "Low Voltage Directive", 2011/95/EU "RoHS Directive".
		Safety certification.....Cat 4 / PLe (ISO 13849-1), SIL CL 3 IEC 62061/IEC 61508) TÜV Rheinland
		Product certification.....TÜV, CE
		Lead-free product

NEW

### Safety Levels

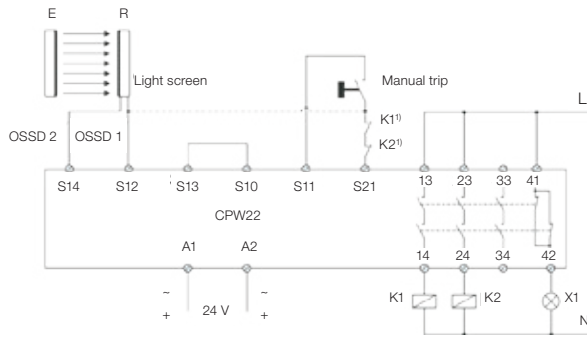
Parameter	Value	Standard
PL	e	ISO 13849-1:2006
CAT	4	ISO 13849-1:2006
SIL	3	IEC 61508:2010
SIL CL	3	IEC 62061:2005
PFH(1/h)	0.66 E-9	IEC 61508:2010
PFDavg	29.31 E-6	IEC 61508:2010
SFF	99.50%	IEC 61508:2010
MTTFd (year)	> 500	IEC 61508:2010
Test time interval	10 years	IEC 61508:2010
Service life	20 years	-

### Dimensions

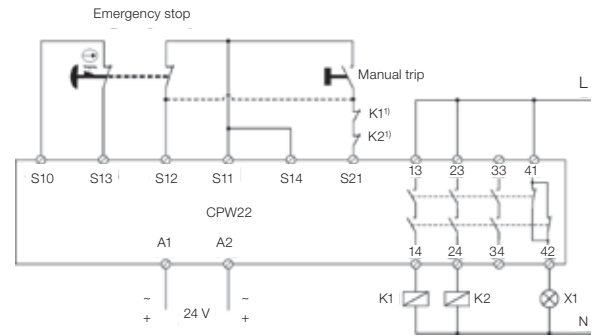


## CPW - Emergency Stop Control Relay

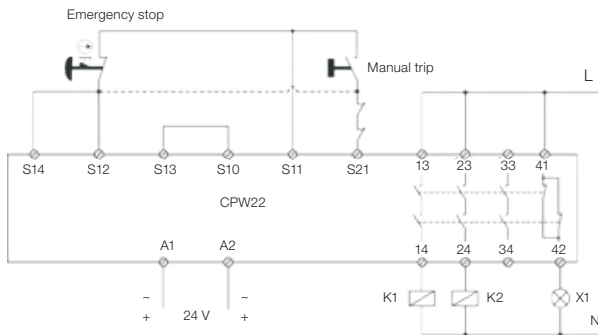
### Wiring Diagrams - CPW22



Note: 1) Dual-channel OSSD input device with manual start (automatic start jumper S12 / S21), suitable for CAT4 / PL e.



Note: 1) Dual-channel emergency stop circuit with manual start (automatic start jumper S12 / S21), suitable for CAT 4 / PL e.




Note: 1) One-channel emergency stop circuit with manual start (automatic start jumper S12/S21), suitable for CAT 1 / PL c.





**NEW**

### CPW17 Specifications

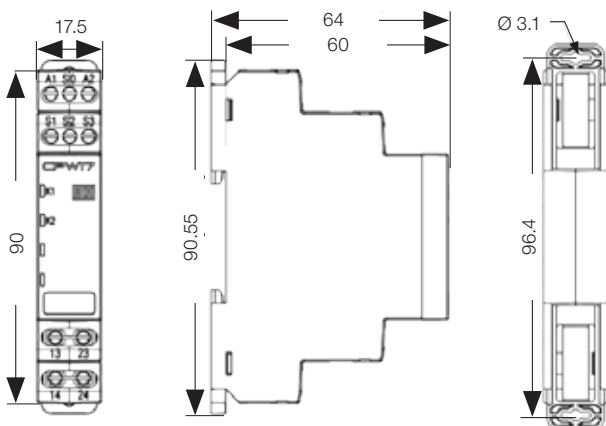
	<p>CPW17</p>	Supply voltage.....24 V ac / V dc (±15%) Frequency..... 50/60 Hz Power consumption ..... 2.5 W max. Type ..... Terminal Reset ..... Manual / automatic Response time..... < 10ms Outputs..... 2 NO safety contacts Maximum switching capacity..... 3 A - 250 V ac / AC15. 3 A 24 V dc / DC13 Maximum cross section of the terminal cable ..... 0.5 to 2.5 mm <sup>2</sup> / 12 to 24 AWG Maximum torque ..... 0.4 Nm Maximum cable length..... 30 meters Operating temperature..... -10 °C to 55 °C Storage temperature..... -40 °C to 70 °C Housing material..... PA (polyamide) Protection degree ..... IP20 Weight ..... 0.2 kg Dimensions..... 90 x 64 x 17.5 mm Life cycle ..... 10 million operation Standards ..... ISO 13849-1, IEC 61508, IEC 62061, IEC 61000-6-7, 2004/108/EU "Electromagnetic Compatibility Directive", 2006/95/EU "Low Voltage Directive", 2011/95 / EU "RoHS Directive". Safety certification..... Cat 3 / PLd (ISO 13849-1), SIL CL 2 IEC 62061/IEC 61508) TÜV Rheinland Product certification..... TÜV, CE
		Lead-free product

### Safety Levels

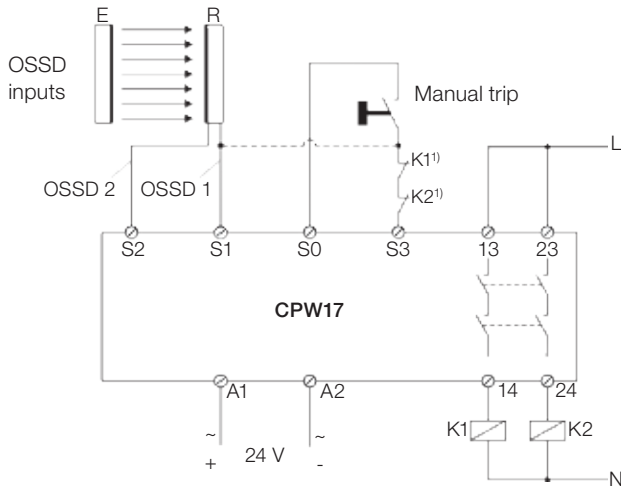
Parameter	Value	Standard
PL	d	ISO 13849-1:2006
CAT	3	ISO 13849-1:2006
SIL	2	IEC 61508:2010
SIL CL	2	IEC 62061:2005
PFH(1/h)	0.66 E-9	IEC 61508:2010
PFDavg	29.31 E-6	IEC 61508:2010
SFF	99.50%	IEC 61508:2010
MTTFd (year)	> 500	IEC 61508:2010
Test time interval	10 years	IEC 61508:2010
Service life	20 years	-

Note: 1) For OSSD devices, the safety level is Cat 4 / PLe (ISO 13849-1), SIL CL 3 IEC 62061 / IEC 61508.

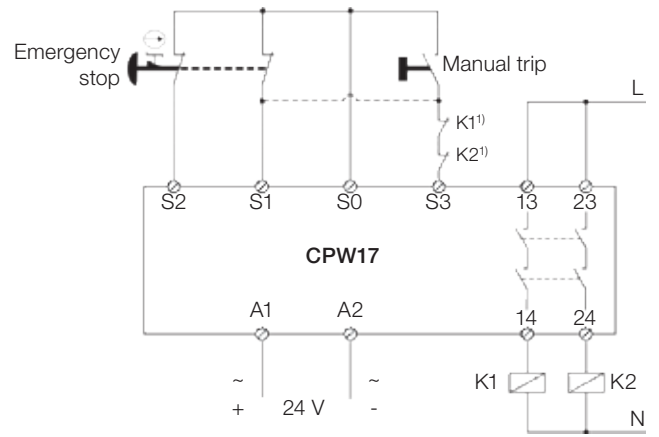
### Dimensions



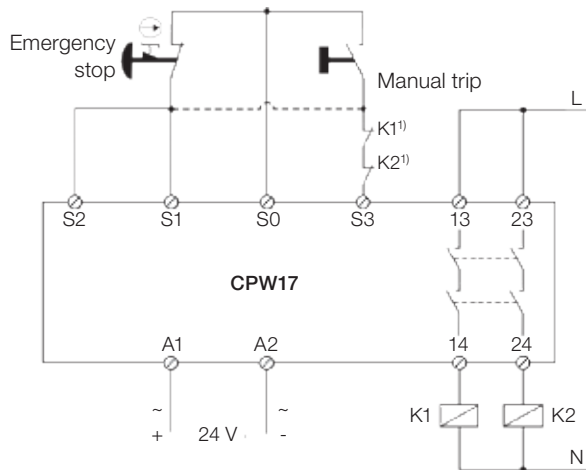
**Wiring Diagrams - CPW17**



Note: 1) Dual-channel OSSD input device with manual start (automatic start jumper S1/S3), suitable for CAT 4 / PL e.



Note: 1) Dual-channel emergency stop circuit with manual start (automatic start jumper S1/S3), suitable for CAT 3 / PL d.



Note: 1) One-channel emergency stop circuit with manual start (automatic start jumper S1/S3), suitable for CAT 1 / PL c.



### CS Line - Simultaneous Monitoring



Safety relays that monitor the simultaneous activation in the control of machines and processes; in addition, they provide safety for the control of machines preventing operators from putting their hands into the hazardous area, being commonly used in two-hand controls.

They can be used with the Soft Switch, Palm Switch and Soft Touch zero-force electronic pushbuttons.

They are protected against faults and tampering (auto check), and have contact monitoring, dual channel and power supply to provide flexibility in a variety of applications.

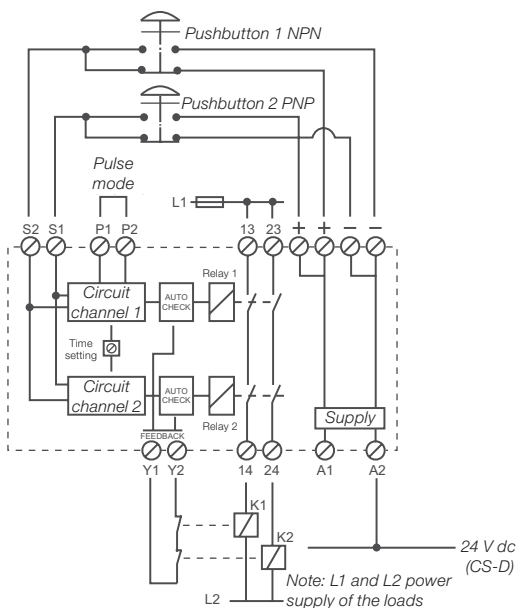


#### Specifications

	<p>CS-D</p>	<p>Power supply ..... 24 V dc ±10%                  Consumption ..... &lt;10 VA                  Connection types ..... Output terminal 2 safety contacts NO                  Service life of the contacts..... 10<sup>7</sup> operation                  Capacity of the contacts..... 3 A/250 V - 90 W                  Response time..... 10ms (max)                  Operating temperature..... -5 °C to 50 °C                  Protection degree ..... IP20                  Standards..... EN 574 (tipo IIC), ISO 13849-1, IEC 62061, IEC 61508, IEC 60947-5-1, IEC 60204-1, IEC 60664-1                  b10 ..... -                  PFHd..... 1.21 E-9 1/h                  MTTFd..... 80 years                  DC..... 99%                  Service life..... 20 years                  Safety certification..... Cat 4 / PLe (ISO 13849-1), SIL CL 3 IEC 62061/IEC 61508 TÜV Rheinland</p> <p>Lead-free product</p>
	<p>CS-D201</p>	<p>Power supply ..... 24 V dc ±10%                  Consumption ..... &lt;10 VA                  Connection types ..... Output terminal 2 safety contacts NA + 1NF                  Service life of the contacts..... 10<sup>7</sup> operation                  Capacity of the contacts..... 3 A/250 V - 90 W                  Response time..... 10ms (max)                  Operating temperature..... -5 °C to 50 °C                  Protection degree ..... IP20                  Standards..... EN 574 (tipo IIC), ISO 13849-1, IEC 62061, IEC 61508, IEC 60947-5-1, IEC 60204-1, IEC 60664-1                  b10 ..... -                  PFHd..... 4.37 E-10 1/h                  MTTFd..... 84 years                  DC..... 99%                  Service life..... 20 years                  Safety certification..... Cat 4 / PLe (ISO 13849-1), SIL CL 3 IEC 62061/IEC 61508 TÜV Rheinland                  Product certification..... TÜV, CE, UL<sup>1)</sup></p> <p>Lead-free product</p>

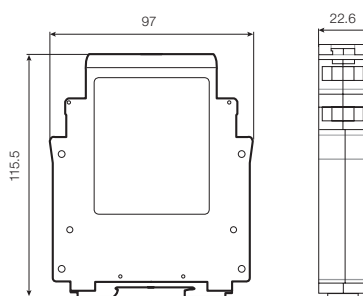
Note: 1) UL certification as a control relay.

#### Typical Wiring Diagram - CS Line



Example of CS-D safety relay connection with Soft Switch and Palm Switch pushbuttons

#### Dimensions



Note: dimensions in mm.



## CP Line - Emergency Stop Control

The CP safety relays can be used to monitor the contacts of emergency pushbuttons, safety sensors, interlock switches and other vital safety devices.

They are protected against faults and tampering (auto check), and have contact monitoring, dual channel and power supply to provide flexibility in a variety of applications.



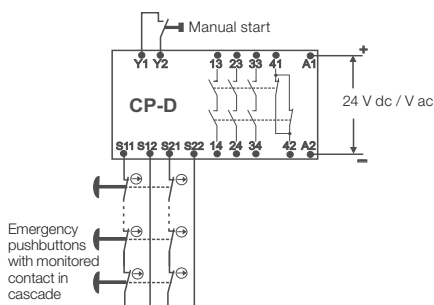
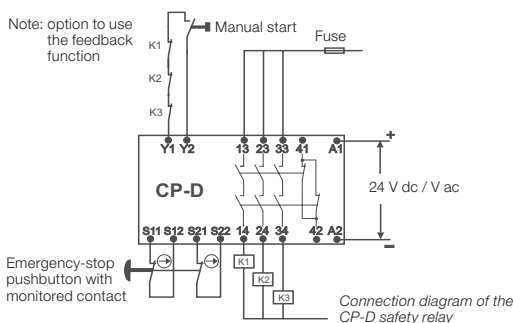
### Specifications

	CP-D	Manual start	Power supply ..... 24 V dc / V ac $\pm$ 10% Consumption..... 2.5 W Connection types ..... Borne Output ..... 3 NO safety contacts and 1NC auxiliary Service life of the contacts ..... 10 <sup>7</sup> operation Capacity of the contacts ..... 4.5 A - 30 V dc / 200 W - 250 V ac Response time ..... 10ms (max) Operating temperature ..... -10 to 55 °C Protection degree ..... IP20 b10 ..... - PFHd ..... 2.82 E-10 1/h MTTFd ..... 2,315 years DC ..... 99% Service life ..... 20 years Standards ..... IEC 60204-1, ISO 13850, IEC 60947-5-1, ISO 13849-1, IEC 61508, IEC 62061 Safety certification ..... Cat 4 / PLe (ISO 13849-1), SIL CL 3 IEC 62061/IEC 61508 TÜV Rheinland Product certification ..... TÜV, CE and UL <sup>1)</sup>
	CPA-D	Automatic start	Power supply ..... 24 V dc / V ac $\pm$ 10% Consumption..... 2.5 W Connection types ..... Borne Output ..... 33 NO safety contacts and 1NC auxiliary contact Service life of the contacts ..... 10 <sup>7</sup> operation Capacity of the contacts ..... 4.5 A - 30 V dc / 200 W - 250 V ac 3 A/250 V - 90 W Response time ..... 10ms (max) Operating temperature ..... -10 to 55 °C Protection degree ..... IP20 b10 ..... - PFHd ..... 2.82 E-10 1/h MTTFd ..... 2,195 anos DC ..... 99% Service life ..... 20 years Standards ..... ISO 13849-1, IEC 61508, IEC 62061, IEC 954-1 Safety certification ..... Cat 4 / PLe (ISO 13849-1), SIL CL 3 IEC 62061/IEC 61508 TÜV Rheinland Product certification ..... TÜV, CE and UL <sup>1)</sup>

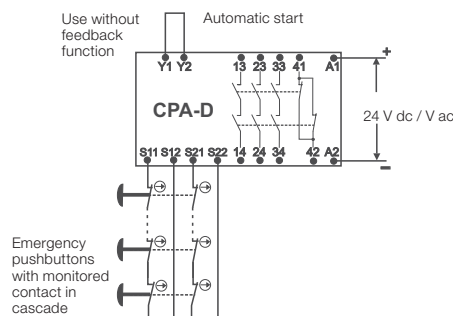
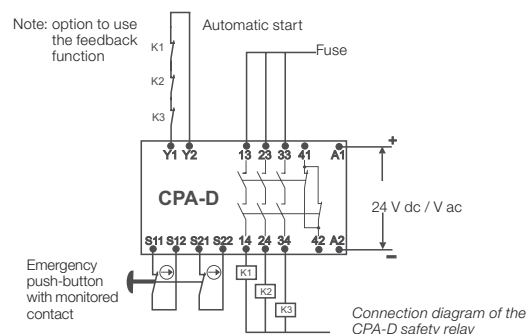
Note: 1) UL certification as a control relay.

### Typical Wiring Diagrams

#### Manual Start




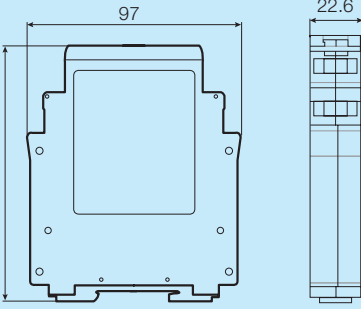
#### Automatic Start



**CP Line - Safety Light Screen Monitoring**

The CPLS-D301 safety relay is used for monitoring the safety light screens LSP or similar products.

**Specifications**

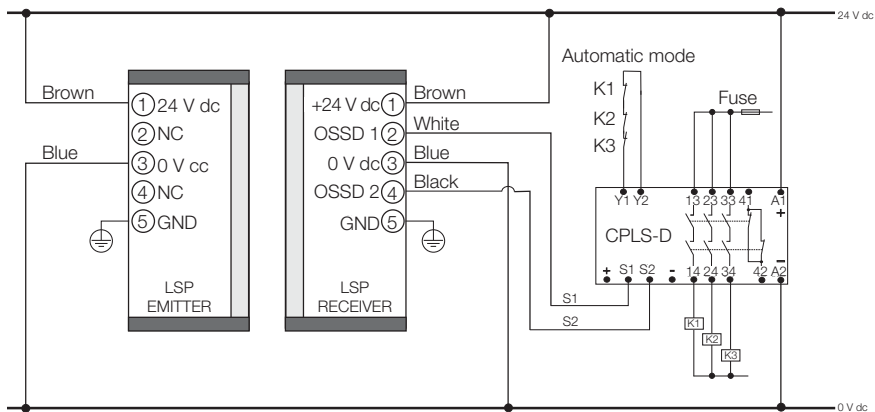
	<p>CPLS-D301</p>	<p>Manual/ Automatic</p>	<p>Power supply .....24 V dc <math>\pm</math>10%                  Consumption.....2.5 W                  Connection type..... Terminal                  Cable cross-section ..... 2 mm<sup>2</sup>                  Connection cable .....Solid or flexible (maximum 2.5 mm<sup>2</sup>)                  Removable terminals.....No                  Wire break detection.....Yes                  Cable length.....See the maximum cable resistance                  Maximum cable resistance..... 40 Ohms                  Output..... 3 NO safety contacts and 1NC auxiliary contact                  Service life of the contacts.....10<sup>7</sup> operation                  Capacity of the contacts. ....4.5 A - 30 V dc / 200 W - 250 V ac                  Response time..... 10ms (max)                  Operating temperature.....-10 to 55 °C                  Storage/transportation temp.....-40 °C to +70 °C                  EMC classification.....EMC Directive                  Protection degree.....IP20                  b10.....-                  PFHd.....5.57 E-10 1/h                  MTTFd ..... 1,504 years                  DC ..... 99%                  Service life..... 20 years                  Standards .....IEC 60204-1, ISO 13850, IEC 60947-5-1,                  ISO 13849-1, IEC 61508, IEC 62061</p>	
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Notes: The NC auxiliary contact is not a safety contact and must only be used for signaling.  
 Lead-free products.  
 Dimensions in mm (CP-D, CPA-D or CPLS-D).

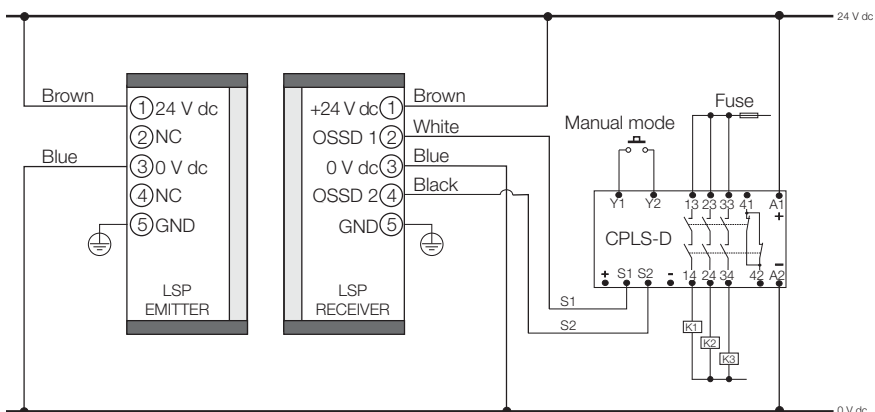


**Connection Diagrams**

**Automatic Mode**



**Manual Mode**






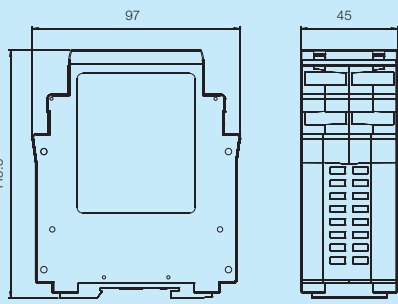
## SZS - Zero Speed Monitor

Used to detect the zero-speed condition of electric motors through the residual voltage from the voltages of the coils due to the rotor inertia.

The SZS can be used to detect zero speed in any type of single-phase or three-phase electric motor, AC or DC. It can also be used with frequency inverters and soft-starters. The SZS has been designed so that any failure will not result in a hazardous condition, always ensuring safe shutdown through internal interlocks and autocheck.

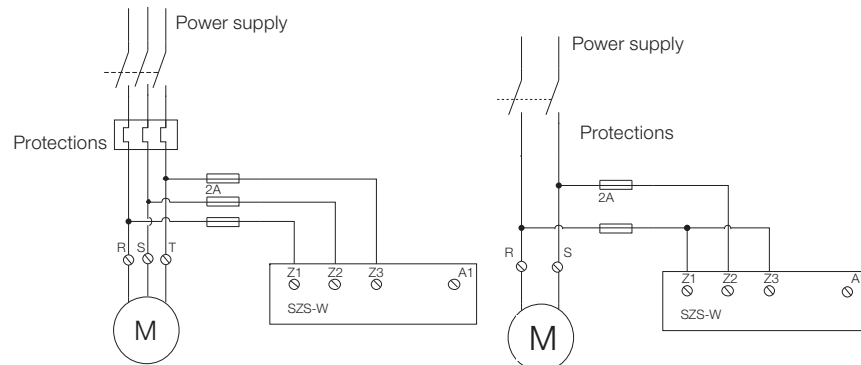


### Specifications

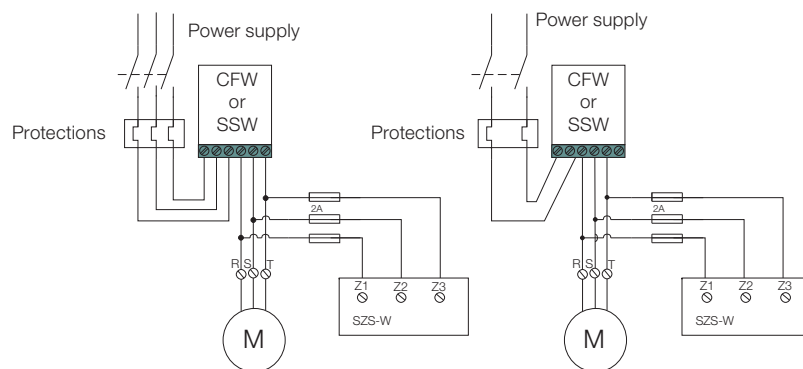
	<p>SZS-W/22</p>	<p>Power supply..... 230 V ac 50/60 Hz                  Consumption ..... &lt;10 VA                  Connection types ..... Terminals                  Safety contacts ..... 1NO + 1NC                  Service life..... 10<sup>7</sup> operation                  Capacity of the contacts..... 4.5 A/250 V                  Operating temperature ..... -5 °C to 50 °C                  Protection degree..... IP20                  Lead free ..... RoHS                  b10 .....                  PFHd..... 3.91 E-9 1/h                  MTTFd..... 78 years                  DC ..... 95.30%                  Service life..... 20 years                  Standards..... EN ISO 13849-1,                  IEC 62061, IEC 61508 (part 1-7), IEC 60947-5-1, IEC 60204-1,                  IEC 60664-1                  Certification ..... Category 3 / PL d (EN ISO 13849-1), SIL CL 2                  IEC 61800-5-2, IEC 62061, IEC 61508) TÜV Rheinland                  Certifications ..... TÜV, CE and UL<sup>1)</sup></p>	
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Note: 1) UL certification as a control relay.

### Typical Wiring Diagrams



Three-phase direct on line start



Start with frequency inverter or soft-starter



## Contactors for Safety Applications - Line CWBS

WEG's new CWBS line of contactors for safety applications (from 9 A to 80 A in AC-3) was developed in compliance with IEC and UL standards, featuring mechanically linked contacts (IEC/EN 60947-5-1) and mirror contacts (IEC/EN 60947-4-1), which provide proper operation of safety circuits of machines and equipment that must operate in compliance with international safety standards.

### Characteristics

#### CWBS Power Contactors

- TÜV certification for mechanically linked contacts (IEC 60947-5-1 - Annex L) and mirror contacts (IEC 60947-4-1 - Annex F);
- 45 mm wide up to 38 A and 54 mm wide in models from 40 to 80 A, having two built-in auxiliary contacts (1 NO +1 NC);
- Choice of up to six auxiliary contacts;
- Compact starters can be assembled with MPW18, MPW40 and MPW80 manual motor protectors, and RW27-2D and RW67-5D thermal relays.

#### CAWBS Auxiliary Contactors

- TÜV certification for mechanically linked contacts (IEC 60947-5-1 - Annex L);
- 45 mm wide in versions with 5, 7 or up to 9 contacts.

### Benefits



Protection against inadvertent operation



Protection for operators and equipment



Contactors to retrofit machines



Machine safety applications



Certificate for worldwide use



Fast mounting on DIN rail 35 mm or with screws



Auxiliary contact block assembled and tested at the factory



Different color, enabling easy identification in safety systems on panels and equipment

### Certifications



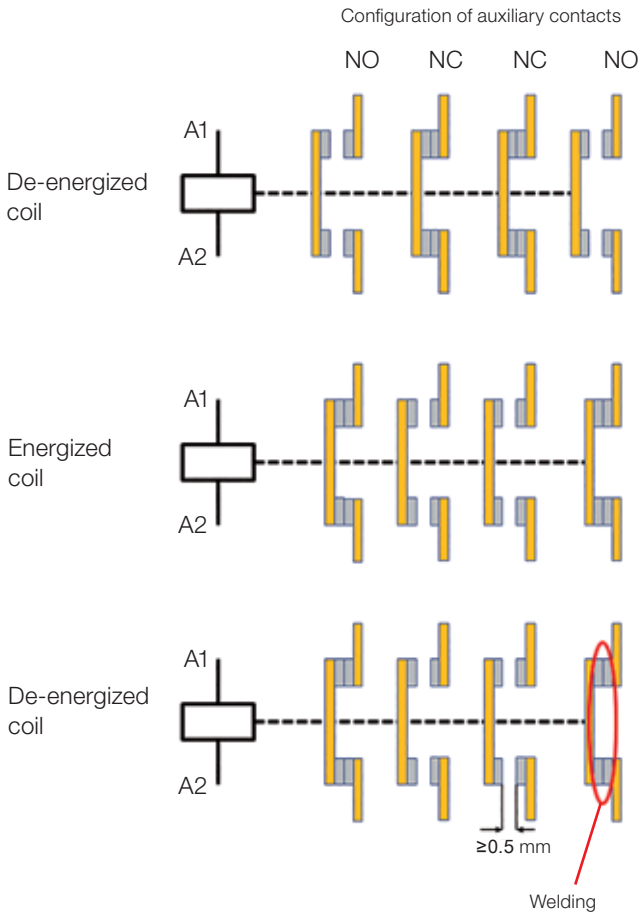
Note: 1) Under process.

Rússia

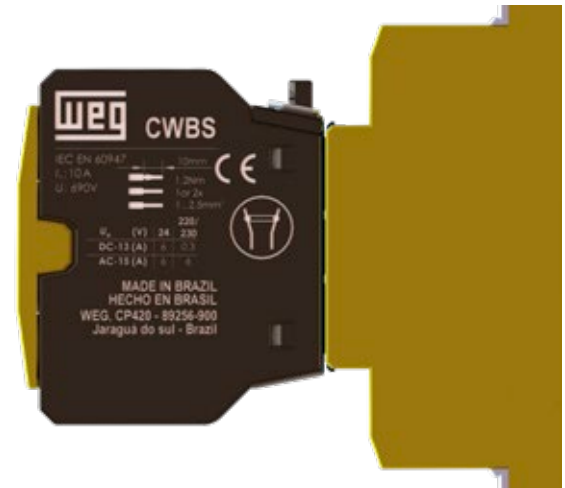
### Mechanically Linked Contacts (IEC/EN 60947-5-1 - Annex L)



Applicable to the auxiliary contacts used in auxiliary control circuits those contacts can be built into the contactor or blocks of external auxiliary contacts mounted on the contactors. According to IEC/EN 60947-5-1 - Annex L, open contacts and closed contacts cannot be simultaneously closed. In case welding occurs on the NO contacts, the NC contacts must remain open, and in case welding occurs on the NC contacts, the NO auxiliary contacts must remain open. The following example shows that characteristic:



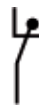
Some other names may also be given to this same requirement of the standard in technical documents, such as: forced contacts, positively activated contacts, linked contacts and positively guided contacts. Contactors with that characteristic are often used in self-monitoring circuits combined with safety interfaces (e.g., safety relays) used in the automation and safety of machinery and equipment. Contactors which do not meet that requirement may damage the equipment or harm the operator.



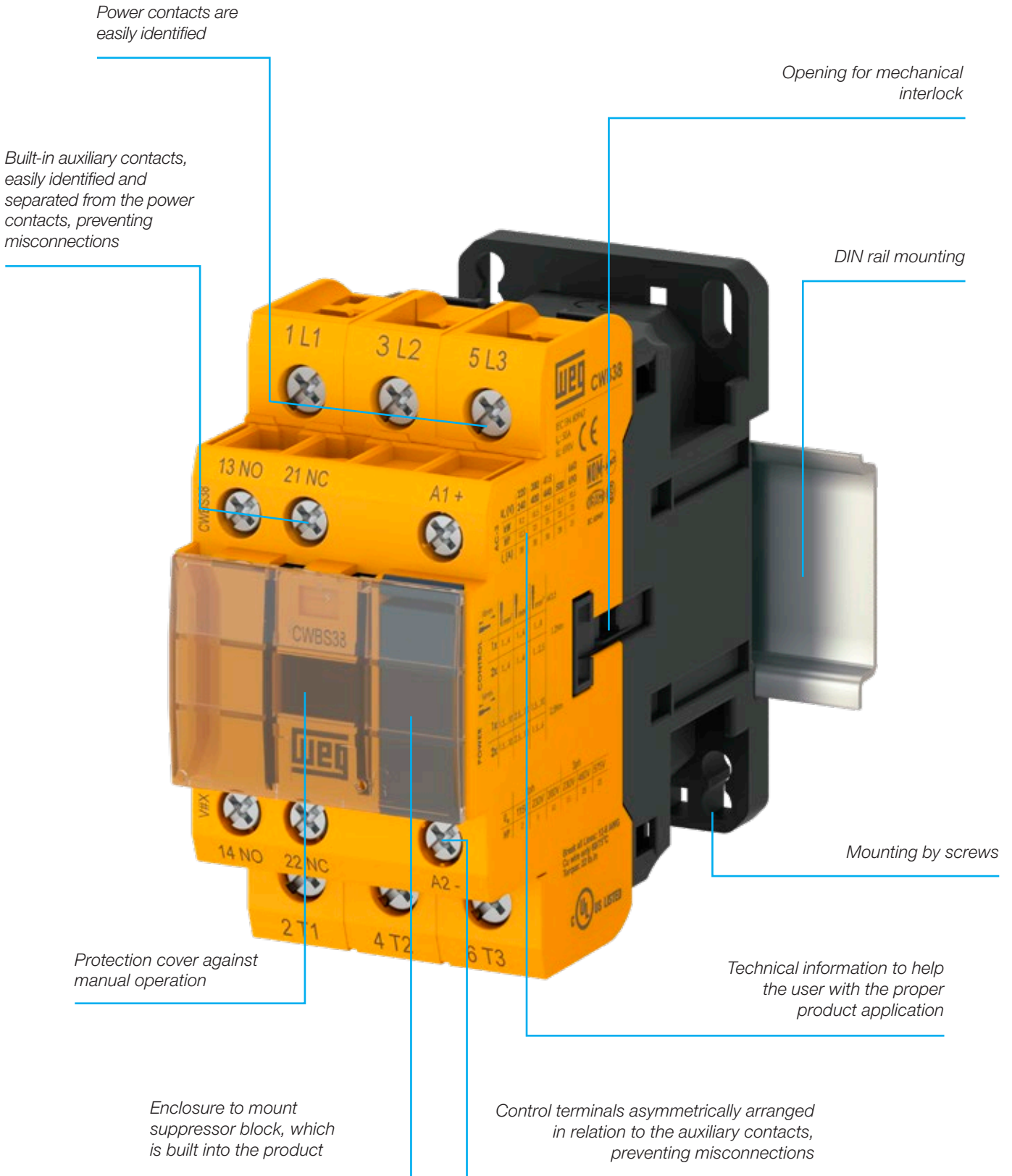
Side indication of the symbols of mechanically linked contacts.

### Mirror Contact - IEC/EN 60947-4-1 - Annex F

Applicable to the auxiliary contacts mechanically linked to the power contacts. When the contactor coil is energized, the power contacts will be closed and at the same time the NC auxiliary contacts will be open. Those auxiliary contacts are called mirror contacts.





### Construction Features



## Power Contactors for Safety Applications

### Three-Pole from 9 A to 38 A (AC-3)

I <sub>e</sub> max. (U <sub>e</sub> ≤ 440 V)	I <sub>e</sub> = I <sub>th</sub> (U <sub>e</sub> ≤ 690 V) θ ≤ 55 °C	Orientative rated operational power in AC-3 <sup>1)</sup> Three-phase motor - IV poles - 60 Hz - 1,800 rpm					Auxiliary contacts per contactor		Reference to complete with the control voltage	Weight <sup>3)</sup> kg
		220 V 230 V	380 V 400 V	415 V 440 V	500 V	660 V 690 V	 NO	 NC		
AC-3	AC-1									
A	A	kW / cv	kW / cv	kW / cv	kW / cv	kW / cv				
9	25	2.2 / 3	4 / 5.5	4.5 / 6	5.5 / 7.5	5.5 / 7.5	1 1	1 3	CWBS9-11-30 ♦ CWBS9-13-30 ♦	0.372
							1 2 3 3 4 5	5 2 1 3 2 1	CWBS9-15-30 ♦ CWBS9-22-30 ♦ CWBS9-24-30 ♦ CWBS9-31-30 ♦ CWBS9-33-30 ♦ CWBS9-42-30 ♦ CWBS9-51-30 ♦	0.435
12	25	3 / 4	5.5 / 7.5	6.5 / 8.7	7.5 / 10	7.5 / 10	1 1 2	1 5 2	CWBS12-11-30 ♦ CWBS12-13-30 ♦ CWBS12-15-30 ♦ CWBS12-22-30 ♦	0.372
							2 3 3 4 5	4 1 3 2 1	CWBS12-24-30 ♦ CWBS12-31-30 ♦ CWBS12-33-30 ♦ CWBS12-42-30 ♦ CWBS12-51-30 ♦	0.435
18	32	4.5 / 6	7.5 / 10	9.2 / 12.5	10 / 13.4	11 / 15	1 1 1	1 3 5	CWBS18-11-30 ♦ CWBS18-13-30 ♦ CWBS18-15-30 ♦	0.372
							2 2 3 3 4 5	2 4 1 3 2 1	CWBS18-22-30 ♦ CWBS18-24-30 ♦ CWBS18-31-30 ♦ CWBS18-33-30 ♦ CWBS18-42-30 ♦ CWBS18-51-30 ♦	0.435
25	40	6.5 / 8.7	12.5 / 16.8	12.5 / 16.8	15 / 20	15 / 20	1 1 1	1 3 5	CWBS25-11-30 ♦ CWBS25-13-30 ♦ CWBS25-15-30 ♦	0.49
							2 2 3 3 4 5	2 4 1 3 2 1	CWBS25-22-30 ♦ CWBS25-24-30 ♦ CWBS25-31-30 ♦ CWBS25-33-30 ♦ CWBS25-42-30 ♦ CWBS25-51-30 ♦	0.553
32	50	7.5 / 10	15 / 20	15 / 20	18.5 / 25	18.5 / 25	1 1 1	1 3 5	CWBS32-11-30 ♦ CWBS32-13-30 ♦ CWBS32-15-30 ♦	0.49
							2 2 3 3 4 5	2 4 1 3 2 1	CWBS32-22-30 ♦ CWBS32-24-30 ♦ CWBS32-31-30 ♦ CWBS32-33-30 ♦ CWBS32-42-30 ♦ CWBS32-51-30 ♦	0.553
38	50	9.2 / 12.5	18.5 / 25	18.5 / 25	18.5 / 25	18.5 / 25	1 1 1	1 3 5	CWBS38-11-30 ♦ CWBS38-13-30 ♦ CWBS38-15-30 ♦	0.49
							2 2 3 3 4 5	2 4 1 3 2 1	CWBS38-22-30 ♦ CWBS38-24-30 ♦ CWBS38-31-30 ♦ CWBS38-33-30 ♦ CWBS38-42-30 ♦ CWBS38-51-30 ♦	0.553

Replace “♦” by the control voltage code<sup>2)</sup>.

Notes: 1) Orientative values.

2) Other voltages on request.

3) Weight for contactors with control circuit in alternating current. For control circuit in direct current, add 0.121 kg to the alternating-current models.

### Alternating Current

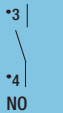
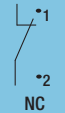
Code	D02	D07	D13	D23	D24	D25	D33	D34	D35	D36	D39
V (50/60 Hz)	24	48	110	220	230	240	380	400	415	440	480

### Direct Current

Code	C02	C03	C07	C09	C12	C13	C15
V dc	12	24	48	60	110	125	220

## Power Contactors for Safety Applications

### Three-pole from 40 A to 80 A (AC-3)

I <sub>o</sub> máx. (A) (U <sub>e</sub> ≤ 440 V)	I <sub>e</sub> = I <sub>th</sub> (A) (U <sub>e</sub> ≤ 690 V) θ ≤ 55 °C	Orientative rated operational power in AC-3 <sup>1)</sup> Three-phase motor - IV poles - 60 Hz - 1,800 rpm					Auxiliary contacts per contactor		Reference to fill in with the control voltage	Weight <sup>3)</sup> kg
		220 V 230 V	380 V 400 V	415 V 440 V	500 V	660 V 690 V	 NO	 NC		
AC-3	AC-1						*3	*1		
A	A	kW / cv	kW / cv	kW / cv	kW / cv	kW / cv	*4	*2		
40	60	11 / 15	18.5 / 25	22 / 29	22 / 29	30 / 40	1	1	CWBS40-11-30 ♦	0.91
							1	3	CWBS40-13-30 ♦	0.973
							1	5	CWBS40-15-30 ♦	
							2	2	CWBS40-22-30 ♦	
							2	4	CWBS40-24-30 ♦	
							3	1	CWBS40-31-30 ♦	
							3	3	CWBS40-33-30 ♦	
							4	2	CWBS40-42-30 ♦	
							5	1	CWBS40-51-30 ♦	
50	90	15 / 20	22 / 29	30 / 40	30 / 40	33 / 44	1	1	CWBS50-11-30 ♦	0.91
							1	3	CWBS50-13-30 ♦	0.973
							1	5	CWBS50-15-30 ♦	
							2	2	CWBS50-22-30 ♦	
							2	4	CWBS50-24-30 ♦	
							3	1	CWBS50-31-30 ♦	
							3	3	CWBS50-33-30 ♦	
							4	2	CWBS50-42-30 ♦	
							5	1	CWBS50-51-30 ♦	
65	110	18.5 / 25	30 / 40	37 / 50	37 / 50	37 / 50	1	1	CWBS65-11-30 ♦	0.91
							1	3	CWBS65-13-30 ♦	0.973
							1	5	CWBS65-15-30 ♦	
							2	2	CWBS65-22-30 ♦	
							2	4	CWBS65-24-30 ♦	
							3	1	CWBS65-31-30 ♦	
							3	3	CWBS65-33-30 ♦	
							4	2	CWBS65-42-30 ♦	
							5	1	CWBS65-51-30 ♦	
80	110	22 / 29	37 / 50	45 / 60	55 / 74	45 / 60	1	1	CWBS80-11-30 ♦	0.91
							1	3	CWBS80-13-30 ♦	0.973
							1	5	CWBS80-15-30 ♦	
							2	2	CWBS80-22-30 ♦	
							2	4	CWBS80-24-30 ♦	
							3	1	CWBS80-31-30 ♦	
							3	3	CWBS80-33-30 ♦	
							4	2	CWBS80-42-30 ♦	
							5	1	CWBS80-51-30 ♦	

Replace “♦” by the control voltage code<sup>2)</sup>.

### Alternating Current

Code	D02	D07	D13	D23	D24	D25	D33	D34	D35	D36	D39
V (50/60 Hz)	24	48	110	220	230	240	380	400	415	440	480

### Direct Current

Code	C02	C03	C07	C09	C12	C13	C15
V dc	12	24	48	60	110	125	220

Notes: 1) Orientative values.

2) Other voltages on request.

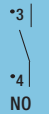

3) Weight for contactors with control circuit in alternating current. For control circuit in direct current, add 0.121 kg to the alternating-current models.

### Auxiliary Contactors for Safety Applications

- Protected against foreign bodies and unintentional touch
- Auxiliary contacts permanently connected to the contactors
- Factory assembled and tested units
- Specific colour that enables easy identification on panels of machinery and equipment
- Directly mounted on DIN rail 35 mm or tightened with screws
- TÜV certification regarding the characteristics of mechanically linked contacts (IEC 60947-5-1- Annex L)



### CAWBS

I <sub>e</sub> max. (A)		Auxiliary contacts		Reference	Weight kg
(U <sub>e</sub> ≤230 V) AC-14 / AC-15	(U <sub>e</sub> ≤24 V) DC-13	 *3 NO	 *1 NC		
10	4	1	4	CAWBS-14-00 ♦	0.372
		2	3	CAWBS-23-00 ♦	
		3	2	CAWBS-32-00 ♦	
		4	1	CAWBS-41-00 ♦	
		4	3	CAWBS-43-00 ♦	0.435
		4	5	CAWBS-45-00 ♦	
		5	2	CAWBS-52-00 ♦	
		5	4	CAWBS-54-00 ♦	
		6	1	CAWBS-61-00 ♦	
		6	3	CAWBS-63-00 ♦	
		7	2	CAWBS-72-00 ♦	
		8	1	CAWBS-81-00 ♦	

### Alternating Current












Code	D02	D07	D13	D23	D24	D25	D33	D34	D35	D36	D39
V (50/60 Hz)	24	48	110	220	230	240	380	400	415	440	480

### Direct Current

Code	C02	C03	C07	C09	C12	C13	C15
V dc	12	24	48	60	110	125	220

### Accessories



#### Surge Protectors - Plug-In Type

Illustrative figure	Use with	Voltages	Diagram	Reference	Code	Weight kg
	CWBS9...38 CWBS40...80 CAWBS	24...48 V 50/60 Hz		RCBD53	12242511	0.008
		50...127 V 50/60 Hz		RCBD55	12242512	
		130...250 V 50/60 Hz		RCBD63	12242513	
		12...48 V 50/60 Hz / 12...60 V dc		VRBE49	12242514	
		50...127 V 50/60 Hz / 60...180 V dc		VRBE34	12242515	
		130...250 V 50/60 Hz / 180...300 V dc		VRBE50	12242516	
		277...380 V 50/60 Hz / 300...510 V dc		VRBE41	12242517	
		400...510 V 50/60 Hz		VRBD73	12242558	
		12...600 V dc		DIBC33 <sup>1)</sup>	12242560	
		12...250 V dc		DIZBC26 <sup>2)</sup>	12242561	


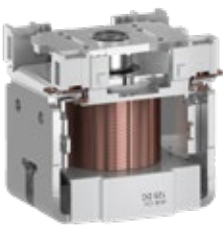
Notes: 1) Contactors with control in direct current assembled with DIB surge suppressor blocks increases the opening time by six times.  
 2) Contactors with control in direct current assembled with DIZB surge suppressor blocks increases the opening time by four times.

## Accessories

### Mechanical Interlock

Illustrative figure	Use with	Description	Reference	Code	Weight kg
	CWBS9...38 CAWBS	Mounting set for interlocking two contactors with the same frame type. Fitting through snaps without tools. Content: lock + 2 clips	IM1	12244300	0.004
	CWBS40...80	Mounting set for interlocking two contactors with the same frame type. Fitting through snaps without tools.	IM2	13765620	

### Spare Coils for Contactors<sup>1)</sup>

Illustrative figure	Use with	Control type	Reference to fill in with the control voltage	Code	Weight kg
	CWBS9...38 CAWBS	CA	BRB-38 ♦	On request	0.08
	CWBS40...80	CA	BRB-80 ♦	On request	0.09
	CWBS40...80	DC	BRB-80 ♦	On request	0.40

Replace “♦” by the control voltage code.

### Alternating Current

Code	D02	D07	D13	D23	D24	D25	D33	D34	D35	D36	D39
V (50/60 Hz)	24	48	110	220	230	240	380	400	415	440	480

### Direct Current

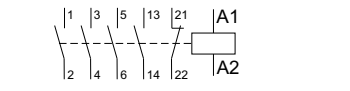
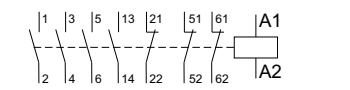
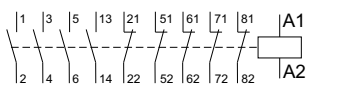
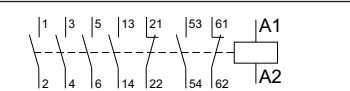
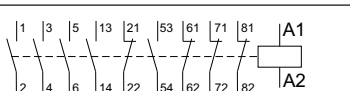
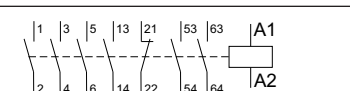
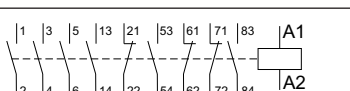
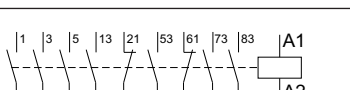
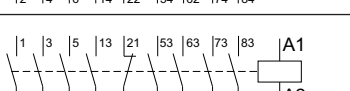
Code	C03	C07	C09	C12	C13	C15
V dc	24	48	60	110	125	220

Note: 1) Spare coil in direct current (DC) only for CWB40...80 A.



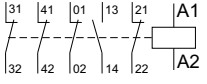
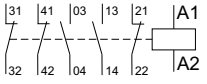
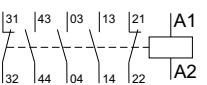
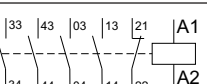
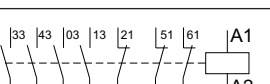
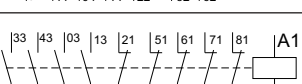
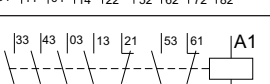
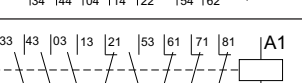
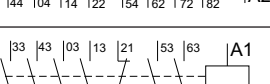



**Technical Data**

**Contact Numbering According to IEC/EN 60947**

Diagram	Configuration	Auxiliary contacts		Reference
		NO	NC	
Three-pole power contactors with built-in auxiliary contact				
	11	1	1	CWBSxx.11.30
	13	1	3	CWBSxx.13.30
	15	1	5	CWBSxx.15.30
	22	2	2	CWBSxx.22.30
	24	2	4	CWBSxx.24.30
	31	3	1	CWBSxx.31.30
	33	3	3	CWBSxx.33.30
	42	4	2	CWBSxx.42.30
	51	5	1	CWBSxx.51.30

## Technical Data

### Contact Numbering According to IEC/EN 60947

Diagram	Configuration	Auxiliary contacts		Reference
		NO	NC	
Auxiliary contactors				
	14	1	4	CAWBS-14-00 ♦
	23	2	3	CAWBS-23-00 ♦
	32	3	2	CAWBS-32-00 ♦
	41	4	1	CAWBS-41-00 ♦
	43	4	3	CAWBS-43-00 ♦
	45	4	5	CAWBS-45-00 ♦
	52	5	2	CAWBS-52-00 ♦
	54	5	4	CAWBS-54-00 ♦
	61	6	1	CAWBS-61-00 ♦
	63	6	3	CAWBS-63-00 ♦
	72	7	2	CAWBS-72-00 ♦
	81	8	1	CAWBS-81-00 ♦



## Technical Data

### Basic Data

Models	CAWBS	CWBS9	CWBS12	CWBS18	CWBS25	CWBS32	CWBS38	CWBS40	CWBS50	CWBS65	CWBS80		
Compliance with the standards	IEC/EN 60947-1, IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 508												
Rated insulation voltage $U_i$ (pollution degree 3)	IEC/EN 60947-4-1 UL, CSA	(V)	690 V						1,000 V				
Rated impulse withstand voltage $U_{imp}$	IEC/EN 60947-1	(kV)	6 kV										
Frequency limits		(Hz)	25...400										
Mechanical life	AC coil	(millions of operations)	10						6				
	DC coil	(millions of operations)	10						6				
Electrical life	$I_e$ AC-3	(millions of operations)	-	2.0	2.0	1.8	1.6	1.6	1.2	1.6	1.6	1.6	1.2
Degree of protection (IEC 60529)	Main terminals		IP10 (front)										
	Coil and auxiliary contacts		IP20 (front)										
Mounting			Screws or DIN rail 35 mm (EN 50022)										
Coil connection points	Contactors with AC coil		2										
	Contactors with DC coil		2										
Resistance to vibrations (IEC 60068-2-6)	Open contactor	(g)	4										
	Closed contactor	(g)	4										
Resistance to mechanical shocks (½ sine wave = 11ms - IEC 60068-2-27)	Open contactor	(g)	10										
	Closed contactor	(g)	15										
Ambient temperature	Operation		-25 °C...+55 °C										
	Storage		-55 °C...+80 °C										
Maximum operation altitude without modification in the rated values <sup>1)</sup>			3,000 m										

### Control Circuit - Alternating Current (AC)

Models	CWBS9...38, CAWBS				CWBS40...80					
Rated insulation voltage $U_i$ (pollution degree 3)	IEC/EN 60947-4-1 UL, CSA	(V)	690				1,000			
Standard voltages at 50/60 Hz		(V)	12...600				24...600			
Coil operation limits		(xUs)	0.8...1.1				0.8...1.1			
Coil 50/60 Hz	Pick up	(xUs)	0.5...0.8				0.5...0.8			
	Drop out	(xUs)	0.2...0.6				0.2...0.6			
Average coil consumption 50/60 Hz	Closed magnetic circuit	(VA)	7.5				17.5			
	Power factor switched on	(cos φ)	0.27				0.28			
	Thermal power dissipation	(W)	1.5...2.5				4...5.5			
	Closing of the magnetic circuit	(VA)	75				185			
	Power factor switching on	(cos φ)	0.7				0.55			
Average commute time	Closing of the NO contacts	(ms)	15...25				10...15			
	Opening of the NO contacts	(ms)	8...12				8...12			

### Control Circuit - Direct Current (DC)

Models	CWBS9...38, CAWBS				CWBS40...80					
Rated insulation voltage $U_i$ (pollution degree 3)	IEC/EN 60947-4-1 UL, CSA	(V)	690				1,000			
Standard voltages		(V)	12...500				12...500			
Coil operation limits		(xUs)	0.8...1.1				0.8...1.1			
	Pick up	(xUs)	0.5...0.8				0.5...0.8			
	Drop out	(xUs)	0.1...0.4				0.1...0.4			
Average DC coil consumption	Closed magnetic circuit	(W)	5.8				10.6			
	Closing of the magnetic circuit	(W)	5.8				105.5			
Average commute time	Closing of the NO contacts	(ms)	35...45				20...30			
	Opening of the NO contacts	(ms)	8...12				4...8			

Note: 1) For altitudes of 3,000...4,000 m ( $0.90xI_e$  and  $0.80xU_i$ ) and of 4,000...5,000 m ( $0.80xI_e$  and  $0.75xU_i$ ).

## Technical Data

### Main Contacts

Models			CWBS9	CWBS12	CWBS18	CWBS25	CWBS32	CWBS38	CWBS40	CWBS50	CWBS65	CWBS80	
Rated operational current $I_e$	AC-3 ( $U_e \leq 440$ V)	(A)	9	12	18	25	32	38	40	50	65	80	
	AC-4 ( $U_e \leq 440$ V)	(A)	4.4	5.8	8.5	10.4	13.7	13.7	18.5	18.5	26	32	
	AC-1 ( $\theta \leq 55$ °C, $U_e \leq 690$ V)	(A)	25	25	32	40	50	50	60	90	110	110	
Rated operational voltage $U_e$	IEC/EN 60947-4-1	(V)	690						1,000 V				
	UL, CSA	(V)	600										
Conventional thermal current $I_{th}$	( $\theta \leq 55$ °C)	(A)	25	25	32	40	50	50	60	90	110	110	
Making capacity - IEC/EN 60947		(A)	250	250	300	450	550	550	550	1,000	1,000	1,000	
Breaking capacity IEC 60947	( $U_e \leq 400$ V)	(A)	250	250	300	450	550	550	550	1,000	1,000	1,000	
	( $U_e = 500$ V)	(A)	220	220	250	350	450	450	480	880	880	880	
	( $U_e = 690$ V)	(A)	150	150	180	250	350	350	350	640	640	640	
Acceptable short-time current (no current flowing during recovery time of 15min and $\theta \leq 40$ °C)	1s	(A)	210	210	240	380	400	430	720	820	900	900	
	10s	(A)	105	105	145	240	260	310	320	400	520	640	
	1min	(A)	61	61	84	120	138	150	165	230	340	360	
	10min	(A)	30	30	40	50	60	60	85	110	130	130	
Short circuit protection of the main contacts Fuse (gL/gG)	@600 V - UL/CSA	(kA)	5										
	Coordination type 1	(A)	25	40	50	63	63	63	80	100	125	160	
	Coordination type 2	(A)	20	25	35	40	63	63	63	80	100	125	
Average impedance per pole	(m $\Omega$ )	2.5	2.5	2.5	2	2	2	1.6	1.6	1.6	1.6	1.6	
Average power dissipation per pole	AC-1	(W)	1.5	1.5	2.5	3.2	5	5	6	13	19	19	
	AC-3	(W)	0.2	0.4	0.8	1.2	2	3	3	4	7	10	
Reliability <sup>1)</sup>	(V/mA)	50/100											
Utilization category AC-3													
Rated operational current $I_e$ ( $\theta \leq 55$ °C)	$U_e \leq 440$ V	(A)	9	12	18	25	32	38	40	50	65	80	
	$U_e \leq 500$ V	(A)	9	12	15.8	23	28.5	28.5	35	45	55	75	
	$U_e \leq 690$ V	(A)	7	9	12.8	16.5	21	21	32	35	40	50	
Orientative rated operational power Three-phase induction motors (50/60 Hz) IV poles - 1,800 rpm	220/230 V	(kW)	2.2	3	4.5	6.5	7.5	9.2	11	15	18.5	22	
		(cv)	3	4	6	8.7	10	12.5	15	20	25	29	
	380/400 V	(kW)	4	5.5	7.5	12.5	15	18.5	18.5	22	30	37	
		(cv)	5.5	7.5	10	16.8	20	25	25	29	40	50	
	415/440 V	(kW)	4.5	6.5	9.2	12.5	15	18.5	22	30	37	45	
		(cv)	6	8.7	12.5	16.8	20	25	29	40	50	60	
	500 V	(kW)	5.5	7.5	10	15	18.5	18.5	22	30	37	55	
		(cv)	7.5	10	13.4	20	25	25	29	40	50	74	
	660/690 V	(kW)	5.5	7.5	11	15	18.5	18.5	30	33	37	45	
		(cv)	7.5	10	15	20	25	25	40	44	50	60	
Maximum percentage	600 ops./h	(%)	100	100	100	100	100	100	100	100	100	100	
Utilization category AC-4													
Rated operational current $I_e$	( $U_e \leq 440$ V)	(A)	4.4	5.8	8.5	10.4	13.7	13.7	18.5	18.5	26	32	
	( $U_e \leq 500$ V)	(A)	3.9	5.1	7.5	12	13.9	13.9	17.5	23.5	28.5	33	
	( $U_e \leq 690$ V)	(A)	2.8	3.7	5.4	12	12.8	12.8	14	18	22	26	
Orientative rated operational power Three-phase induction motors (50/60 Hz) IV poles - 1,800 rpm (200,000 operations)	220/240 V	(kW)	1.5	1.5	2.2	3	4	4	4.5	5.5	7.5	11	
		(cv)	2.0	2.0	2.9	4.0	5.4	5.4	6.0	7.4	10.1	14.7	
	380/400 V	(kW)	2.2	3.7	4	5.5	7.5	7.5	9.2	11	15	18.5	
		(cv)	2.9	5.0	5.4	7.4	10.1	10.1	12.3	14.7	20.1	24.8	
	415/440 V	(kW)	2.2	3	3.7	5.5	7.5	7.5	11	11	15	22	
		(cv)	2.9	4.0	5.0	7.4	10.1	10.1	14.7	14.7	20.1	29.5	
	500 V	(kW)	2.2	3	5	7.5	9	9	11	15	18.5	22	
		(cv)	2.9	4.0	6.7	10.1	12.1	12.1	14.7	20.1	24.8	29.5	
	660/690 V	(kW)	2.2	3	5	10	11	11	12.5	15	20	25	
		(cv)	2.9	4.0	6.7	13.4	14.7	14.7	16.8	20.1	26.8	33.5	

Note: 1) In order to achieve acceptable reliability for application and/or continuity test on the power contacts, a minimum voltage and current of 50 V and 100 mA, respectively, must be used. For lower values, the auxiliary contacts must be used.

## Technical Data

### Main Contacts

Models	Utilization category AC-1										
	CWBS9	CWBS12	CWBS18	CWBS25	CWBS32	CWBS38	CWBS40	CWBS50	CWBS65	CWBS80	
	3P (NO)										
Conventional thermal current $I_{th}$ ( $\theta \leq 55^\circ\text{C}$ )	(A)	25	25	32	40	50	50	60	90	110	110
Maximum orientative operational current according to the ambient temperature $\theta \leq 60^\circ\text{C}$ ( $U_e \leq 690\text{ V}$ )	(A)	25	25	32	40	50	50	60	90	110	110
Maximum operational power $\theta \leq 55^\circ\text{C}$ (three-phase resistors)	220/230 V (kW)	9.5	9.5	12	15	19	19	22.5	34	42	42
	380/400 V (kW)	16.5	16.5	21	26	33	33	39.5	59	72.5	72.5
	415/440 V (kW)	19	19	24.5	30.5	38	38	45.5	68.5	84	84
	500 V (kW)	21.5	21.5	27.5	34.5	43	43	52	77	95	95
	660/690 V (kW)	28.5	28.5	36.5	45.5	57	57	66	100	125	125
Actual values for connections	2 poles in parallel	$I_e \times 1.7$									
	3 poles in parallel	$I_e \times 2.4$									
	4 poles in parallel	$I_e \times 3.2$									
Percentage of maximum operational current	600 ops./h (%)	100	100	100	100	100	100	100	100	100	100

### Auxiliary Contacts

Models	CWBS9...80 (built-in), CAWBS		BFBS (Front mounted blocks)
Compliance with the standards	IEC 60947-5-1		
Rated insulation voltage $U_i$ (pollution degree 3)	IEC/EN 60947-4-1, VDE 0660 (V)		690
	UL, CSA (V)		600
Rated operational voltage $U_e$	IEC/EN 60947-4-1, VDE 0660 (V)		690
	UL, CSA (V)		600
Conventional thermal current $I_{th}$ ( $\theta \leq 55^\circ\text{C}$ )	(A)		10
Rated operational current $I_e$			
AC-15 (IEC/EN 60947-5-1)	220/230 V (A)		10
	380/440 V (A)		4
	500 V (A)		2.5
	660/690 V (A)		1.5
DC-13 (IEC/EN 60947-5-1)	24 V (A)		4
	48 V (A)		2
	110 V (A)		0.7
	220 V (A)		0.3
	440 V (A)		0.15
Making capacity	$U_e \leq 690\text{ V}$ 50/60 Hz - AC-15 (A)		$10 \times I_e$
Breaking capacity	$U_e \leq 400\text{ V}$ 50/60 Hz - AC-15 (A)		$1 \times I_e$
Short circuit protection with fuse (gL/gG)	(A)		10
Control circuit reliability	(V / mA)		17 / 5
Electrical life	(millions of operations)		1
Mechanical life	(millions of operations)		10
Non-overlapping time between NO and NC contacts	(ms)		1.5
Impedance of the contacts	(m $\Omega$ )		2.5

### Reliability

Product	B10	B10d	Declared service life
CWB9	1,800,000	2,400,000	2,000,000
CWB12	1,500,000	2,000,000	2,000,000
CWB18	1,200,000	1,600,000	1,600,000
CWB25	750,000	1,000,000	1,200,000
CWB32	750,000	1,000,000	1,200,000
CWB38	700,000	933,333	1,200,000
CWB40	850,000	1,133,333	1,200,000
CWB50	800,000	1,066,667	1,100,000
CWB65	750,000	1,000,000	1,300,000
CWB80	650,000	866,667	1,100,000

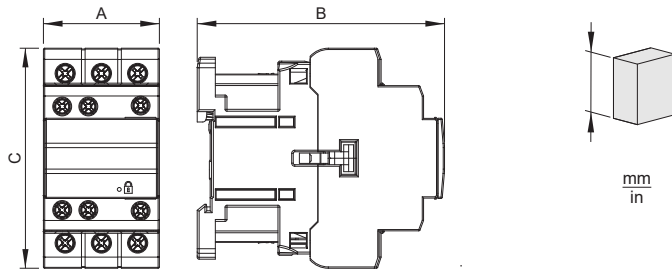
## Technical Data





### Terminal Capacity and Tightening Torque

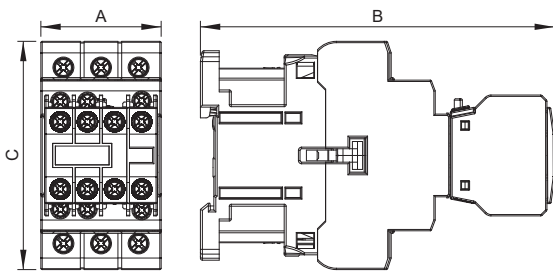
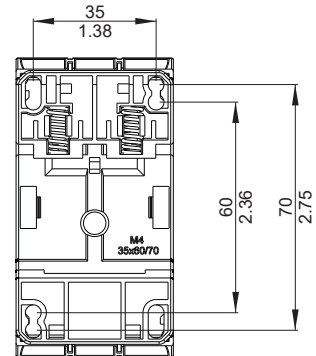
		Conductor cross-section		
<b>Power circuit</b>				
<b>Models</b>		<b>CWBS9...18, CAWBS</b>	<b>CWBS25...38</b>	<b>CWBS40...80</b>
Mounting system screw type		M4 Slot / Phillips	M4 Slot / Phillips	ALLEN 4 mm
Flexible conductor without terminal	(mm <sup>2</sup> )		1 x 1...6 2 x 1...6	1 x 2.5...10 2 x 2.5...10
Flexible conductor with terminal	(mm <sup>2</sup> )		1 x 1...6 2 x 1...4	1 x 1.5...10 2 x 1.5...6
Solid wire	(mm <sup>2</sup> )		1 x 1...6 2 x 1...6	1 x 2.5...10 2 x 2.5...10
Tightening torque	(Nm)		1.7	2.5
<b>Control and auxiliary circuit</b>				
<b>Models</b>		<b>CWBS9...38, CAWBS</b>		<b>CWBS40...80</b>
Mounting system screw type		M3.5 Slot / Phillips		Phillips number 2
Flexible conductor without terminal	(mm <sup>2</sup> )		1 x 1...4 2 x 1...4	1 x 1...4 2 x 1...4
Flexible conductor with terminal	(mm <sup>2</sup> )		1 x 1...4 2 x 1...2.5	1 x 1...4 2 x 1...2.5
Solid wire	(mm <sup>2</sup> )		1 x 1...4 2 x 1...4	1 x 1...4 2 x 1...4
Tightening torque	(Nm)		1.0	1.0
<b>Auxiliary contact blocks</b>				
<b>Models</b>		<b>BFBS (front)</b>		
Mounting system screw type		M3.5 Slot / Phillips		
<b>Conductor cross-section</b>				
Flexible conductor without terminal	(mm <sup>2</sup> )		1 x 1...2.5 2 x 1...2.5	
Flexible conductor with terminal	(mm <sup>2</sup> )		1 x 1...2.5 2 x 1...2.5	
Solid wire	(mm <sup>2</sup> )		1 x 1...2.5 2 x 1...2.5	
Tightening torque	(Nm)		1.0	







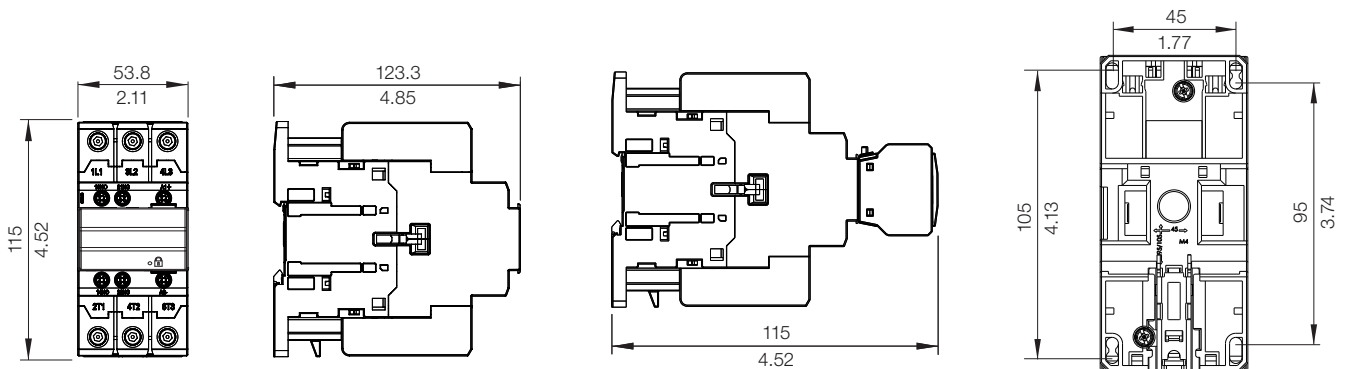
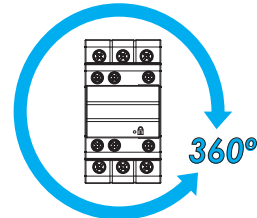
### Dimensions (mm)



mm in	CWBS9-18 AC	CWBS9-18 DC	CWBS25-38 AC + cover	CWBS25-38 DC + cover
				
A	45 1,772			
B	89.5 3,524	98.3 3,870	95.6 3,764	104.8 4,126
C	78,4 3,087		85 3,346	



mm in	(CWBS9-18 CA) + BFBS	(CWBS9-18 CC) + BFBS	CWBS25-38 CA + BFBS	CWBS25-38 CC + BFBS
				
A	45 1,772			
B	125.8 4,953	134.6 5,299	131.9 5,193	141.1 5,555
C	78.4 3,087		85 3,346	



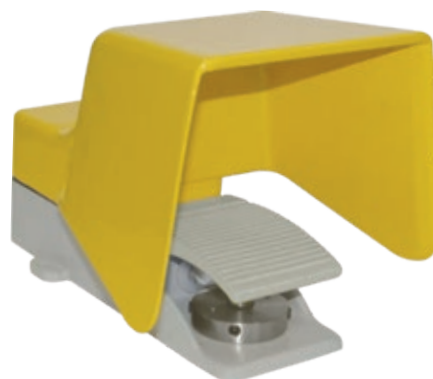
# Safety Foot Switch

## PD3S - 3-Stage Safety Foot Switch

A safety device to protect operators in the operation of machines that present hazards in the production process. It is used when the operator needs to have their hands free during the machine operation.

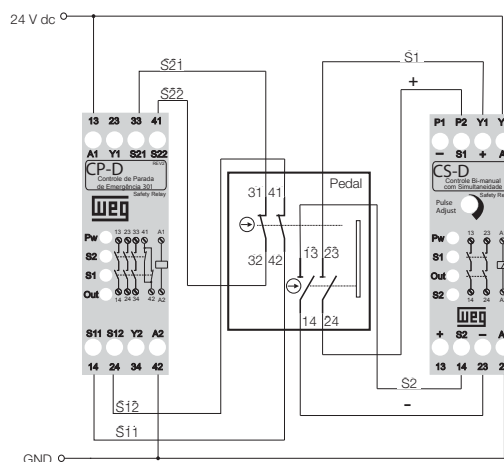
The PD3S safety foot switch has a guard to avoid inadvertent actuation and three stages: OFF, machine activation and emergency lock respectively, using monitored contact blocks with positive opening.

The PD3S safety foot switch must be used with the CS-D/CS-D201 simultaneity activation control and CP-D/CPA-D emergency stop relay.



### Main Characteristics

- High reliability
- It can be used with the other products of the Safety Line
- 3 actuation stages
- Monitored contact block with positive trip
- Guard to avoid inadvertent actuation
- Reset button
- IP65 protection rating



### Specifications

Output	Reference
2NO for safety actuation + 2NC for emergency lock	PD3S-202

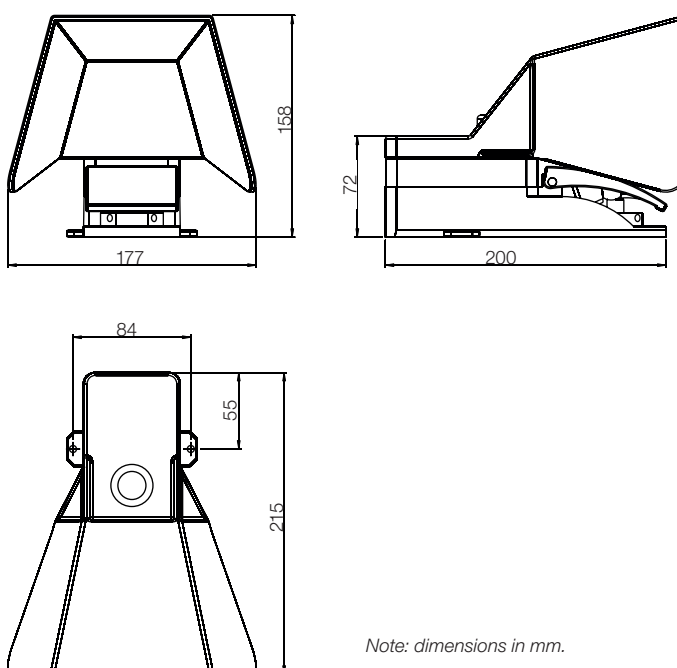
### Technical Data

Volts	120	240	380	440
AC 15	6	3	2	1.5

Volts	24	110	220
DC 13	2.5	0.55	0.27

Rated insulation voltage  $U_i$  - 690 V (IEC/EN 60947-1)  
 Rated impulse withstand voltage  $U_{imp}$  - 4 kV (IEC/EN 60947-1)  
 Conventional thermal current  $I_{th}$  - 10 A  
 Applicable standards - IEC/EN 60947-5-1, VDE 0660, UL 508, GENELEC EN 50007, ISO 13850, IEC 60947-5-5

### Dimensions



Note: dimensions in mm.



# Safety Block

## CA - Press Safety Block

Mechanical holding devices, used to block the press ram during maintenance activities (tool change, adjustments, scheduled shutdowns).

Designed to withstand the weight of the hammer during the tool change activity. The CA block must be mechanically interconnected through its steel cable to the actuator of a safety interlock switch<sup>1)</sup>, monitored by a CP-D / CPA-D safety relay.

The safety switch monitors the removal of the safety block from the rest position and consequently prevents its operation during the activity.



*Note: 1) See the available interlock switches from page 18.*

### Main Characteristics

- Several models with different and adjustable heights
- Withstands up to 20 tons
- They can be used in presses or similar machines
- Sturdy
- High reliability

### Specifications

Code	Minimum height (mm)	Maximum height (mm)
CA1520	150	200
CA2030	200	300
CA3050	300	500
CA5090	500	900

*Note: for special heights, contact your representative.*

### Technical Data

Color	Yellow electrostatic coating	
Weight	CA1520	6 Kg
	CA2030	7 Kg
	CA3050	10 Kg
	CA5090	12.5 Kg
Maximum load capacity	Up to 20 tons	

*Note: The CA safety block must withstand the weight of the ram and the tool at rest, not the force made by the ram in operation. Mechanical resistance reports provided by the Falcão Bauer laboratory.*



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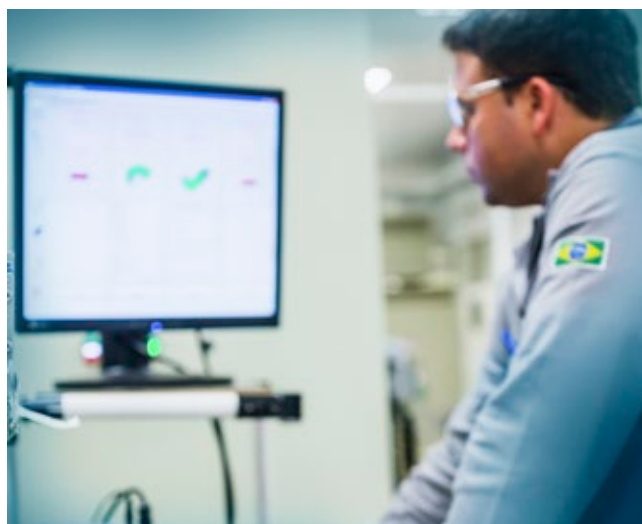
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The values shown are subject to change without prior notice.  
The information contained is reference values.