

SSP Safety System Products GmbH & Co. KG
Max-Planck-Str. 21
D-78549 Spaichingen
www.safety-products.de

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Version 1.0
March 2019

Depending on features of your device, description of optional functions in the form of additional sheets will be provided as a complement to this operating manual.

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EDI A | EDI I

Stop button | Emergency stop/Emergency off button

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1. About This Document

1.1 Function

This operating manual provides all necessary information for the assembly, installation, safe operation and disassembly of the EDI emergency stop/emergency off button. The operating manual must always be readable and available during the operating life of the device. Read the operating manual carefully before using the device. Always hand this operating manual over to future owners and users of the device. Add any supplement received from the manufacturer to the operating manual.

1.2 Safety instruction for the authorized skilled personnel.

The tasks described in this operating manual may only be carried out by trained skilled personnel authorized by the plant owner. You must read and understand the operating manual before starting the EDI. Familiarize yourself with the applicable rules and regulations relating to industrial safety and accident prevention. National and international legislation apply to assembly, installation and regular technical inspections.

1.3 Symbols



Caution

If the warnings are not observed, faults or malfunctions as well as injury to persons and/or damage of the machines can occur.



Information

Helpful additional information

1.4 Scope of application

The EDI emergency stop/emergency off buttons are electromechanical switching devices for the protection of persons working on or near machines. They are used to stop/shut down machines and plants in order to avoid or reduce arising or existing dangers to persons as well as damages to the machine or workpieces. The manufacturer of the plant or machine is responsible for ensuring the correct overall function of the system.

1.5 Attention: Safety Instructions

Observe the safety instructions in the operating manual, which are identified by above symbol for caution or warning. Follow national installation, safety and accident prevention regulations. For additional technical information refer to SSP data sheets or visit our website at www.safety-products.de.

All information is supplied without liability. We reserve the right to make technical modifications for reasons of improvement. No remaining risks are known, if the safety notes and instructions regarding assembly, installation, operation and maintenance are followed. Disconnect the plant and the device from the power supply before starting installation. Emergency stop/emergency off buttons are used to protect personnel. Improper installation or manipulation may cause serious injury to persons and must not be bypassed, removed or otherwise rendered ineffective.



Caution

For emergency off buttons with key release, the key may only be inserted during the unlocking process.

1.6 Attention: Incorrect use

Danger to persons or damages to parts of machines or installations can arise as a result of inappropriate or incorrect use or manipulation of the process guard locking.

The emergency stop/emergency off function must not be used as a substitute for protective measures or other safety functions, but should be designed as a supplementary protective measure. Furthermore, the effectiveness of protective devices or devices with other safety functions must not be impaired. Using his risk analysis, the designer must ensure that the emergency stop/emergency off button in combination with the controller reaches the required safety level (SIL, SILCL or PL).

1.7 Liability Disclaimer

We accept no liability for damages or operational malfunctions resulting from improper installation or failure to comply with this operating manual. No other liability is accepted by the manufacturer for damages resulting from use of spare parts or accessories, which have not been approved by the manufacturer. Any unauthorized repairs, reconstructions and modifications are not permitted for safety reasons and rule out liability of the manufacturer for resulting damages.

2. Product Description

2.1 Intended Use

The device can only be used in industrial applications

2.2 Design types

The emergency stop/emergency off button EDI consists of variants of actuators and one or more contact transmitters for applications up to PLe according to EN ISO 13849-1 and up to SIL CL 3 according to EN IEC 62061. Different variants are available and can be combined in a modular manner.

- Standard
- with key release
- illuminated/not illuminated
- with (locking) protective collar (partially illuminated)
- Protection class for hygienic areas. Actuators for standard applications and actuators which can be used with their external parts in restricted food industry areas in accordance with DIN EN 1672-2 and DIN ISO 14159, see chapter "Notes for hygienic areas".

This operating manual is valid for the following design types:

EDI A1	standard	SP-G-60-000-01
EDI A1S	stop button black	SP-G-60-000-02
EDI A3	locking protective collar	SP-G-60-000-03
EDI A2	hygienic protective collar	SP-G-60-000-04
EDI A3B	locking protective collar - illuminable	SP-G-60-000-05
EDI A7L	integrated contact transmitter a. solder pins	SP-G-60-000-06
EDI A7SL	stop button black - integr. contact transmitter a. solder pins	SP-G-60-000-07
EDI A6B	key switch and protective collar - illuminable	SP-G-60-000-08
EDI A6	key switch and protective collar	SP-G-60-000-09
EDI A5B	key switch and locking protective collar - illuminable	SP-G-60-000-10
EDI A5	key switch and locking protective collar	SP-G-60-000-11
EDI A4	protective collar	SP-G-60-000-12
EDI A4B	protective collar - illuminable	SP-G-60-000-13
EDI I4	kit (EDI A3, EDI ZK4, EDI ZH2, 2 x EDI ZA2)	SP-G-61-000-06
EDI ZC2	contact transmitter, NO screw terminals	SP-G-62-000-01
EDI ZB2	contact transmitter, NC screw terminals, failure protection	SP-G-62-000-02
EDI ZA2	contact transmitter, NC screw terminals	SP-G-62-000-03
EDI ZD2	module connection element for light ring screw terminals	SP-G-62-000-04
EDI ZC1	contact transmitter, NO spring-loaded terminals	SP-G-62-000-05
EDI ZB1	contact transmitter, NC spring-loaded terminals, failure protection	SP-G-62-000-06
EDI ZA1	contact transmitter, NC spring-loaded terminals	SP-G-62-000-07
EDI ZD1	module connection element for light ring spring-loaded terminals	SP-G-62-000-08
EDI ZI2	module clamp for 5 module screw terminals	SP-G-62-000-09
EDI ZH2	module clamp for 3 module screw terminals	SP-G-62-000-10
EDI ZH1	module clamp for 3 module spring-loaded terminals	SP-G-62-000-11
EDI ZK4	empty housing for EDI A incl. M12-connector 4-pole	SP-G-62-000-14
EDI ZK5	empty housing for EDI A incl. M12-connector 5-pole	SP-G-62-000-15
EDI ZK8	empty housing for EDI A incl. M12-connector 8-pole	SP-G-62-000-16



For emergency off buttons with key release, the key may only be inserted during the unlocking process.

2.3 Scope of application and mode of action

National and international legislation apply to assembly, commissioning and regular technical inspections, in particular

- Machinery Directive 2006/42/EC
- Low Voltage Directive 2014/35/EU
- Safety regulations
- Accident prevention regulations & safety rules

Manufacturers and operators of machines with emergency stop/emergency off buttons are responsible for observing the operating manual as well as applicable safety regulations and rules.

For intended use, the relevant requirements for the installation and operation of emergency stop/emergency off buttons must be observed.

- EN 60204-1:2006
- EN 13849-1/-2:2008
- EN ISO 13850:2015 (D)

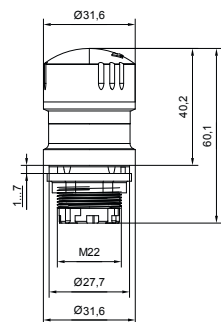
2.4 Product characteristics

Built-in version or surface-mounted version with two-part surface-mounting housing. Unlocking by rotary movement to the left or right or only to the right.

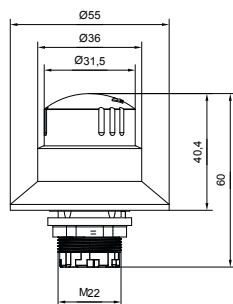
Connection of the contact blocks via spring-loaded terminal (quick connection), screw connection or M12 plug connector.

2.5 Dimensions

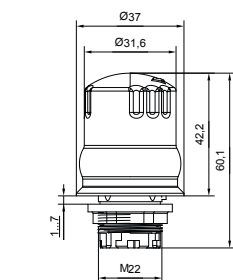
Dimensions in mm



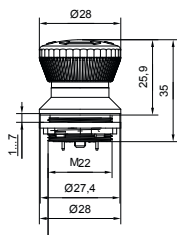
EDI A1, EDI A1S



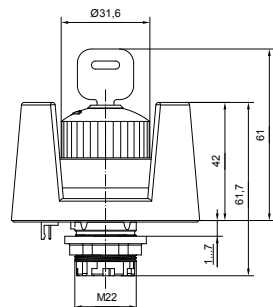
EDI A3, EDI A3B



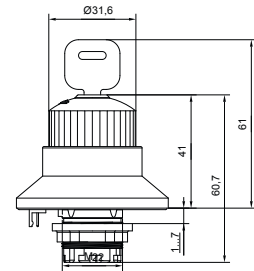
EDI A2



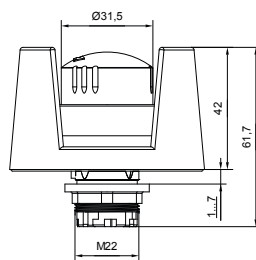
EDI A7L, EDI A7SL



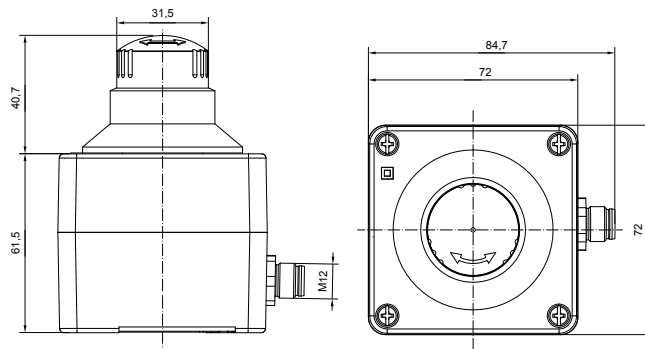
EDI A5, EDI A5B



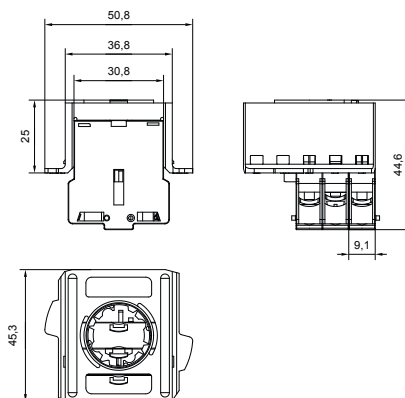
EDI A6, EDI A6B



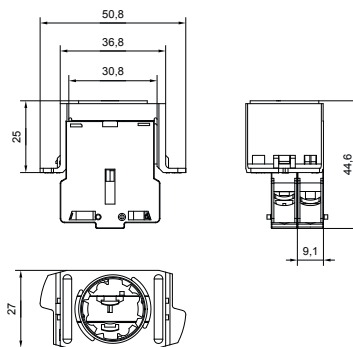
EDI A4, EDI A4B



EDI I4



Switch elements for module clamps ZI2



Switch elements for module clamps ZH2

2.6 Scope of Supply

Built-in version EDI A, button and switching element packed separately.
Surface-mounted version EDI I4, complete kit with pre-assembled button in housing with engaged switch element, other fixing materials (screws, dowels, slot nut) not included in delivery.

2.7 Functions

In order to maintain safety, the switch elements of the emergency stop/emergency off buttons are equipped with a safety contact. The contact supervises continuously the correct connection between the emergency stop/emergency off button and the contact transmitter. Even redundant, safe emergency-off chains are ineffective if the contact is not perfectly connected to the emergency-off actuator. (Step 9 „Configuration examples“)
If the emergency stop/emergency off button is disconnected from the contact transmitter as a result of an imperfect assembly or mechanical damage, the safety contact disconnects immediately and the machine shuts down. The machine can be restarted only after successful trouble-shooting.

- Confirm: Pressing of the emergency stop/emergency off button
- Unlock: Turning of the emergency stop/emergency off button

3. Installation

3.1 General installations notes



Make sure that emergency stop/emergency off button is mounted at an easily accessible location. Pay particular attention to this for buttons with a high protective collar.

The installation may only be carried out by authorized skilled personnel.



Precautions during installation

The actuating pins of the outer contact blocks must face inwards so that all actuating pins are inside the ring when the clamp is inserted. (Fig. 5)

3.2 Installation of the build-in version EDI A

- Drill the mounting holes in the mounting plate (22.3 mm). For illuminable buttons, provide the mounting plate with an additional hole for the lighting connection. (Fig. 4)

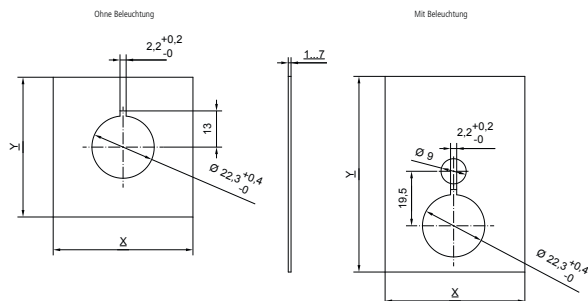


Fig. 4: Mounting holes dimensions of the built-in version (mm)

- Insert the button through the mounting hole and fasten it with lock nut (max. torque 2.5 Nm). Attach the switch element and turn clockwise by one eighth of a turn. The switch element engages. (Fig. 6)

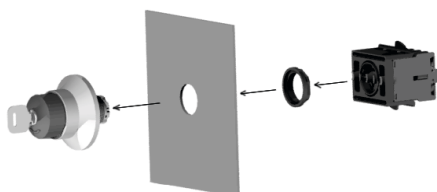


Fig. 6: Installation of the built-in version

- Check whether the self-monitoring contacts are closed when the switching element is engaged and the button is not pressed.
- Connect the connection wires to the terminal block. Observe the electrical and mechanical permissible values. (Step 4 "Technical data")

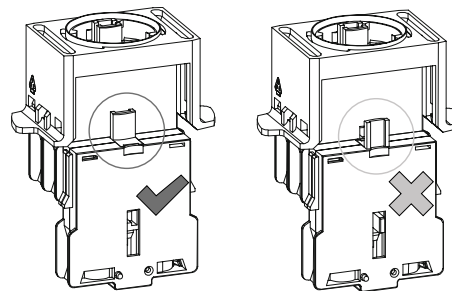


Fig. 5: Correct mounting of the switch elements

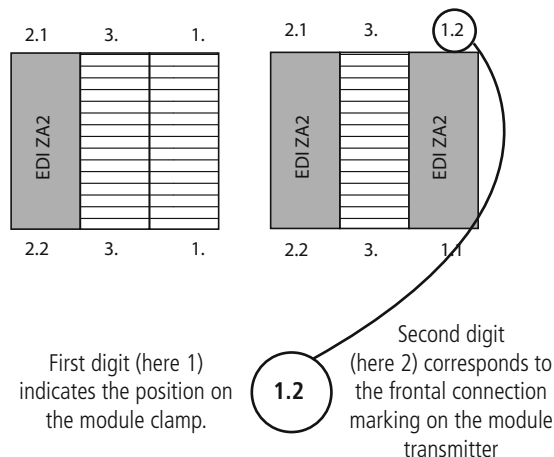


Fig. 2: Placement of the module clamps



Note: When illuminable buttons are used, a maximum of 250 V AC may be connected to the switch elements.

3.3 Installation of the surface mounted version EDI I4

- Install the lower part of the housing on a flat surface with a hole distance of 59 x 39 mm (see bottom of the housing).
- Close the housing. Make sure that the housing is tightly closed (tighten all screws).
- Connect the M12 wire to the provided M12 plug (4-pole).

3.4 Torque values

Torque values for fastening bolts see Table 1

Emergency off/emergency stop actuator torque value

Actuator with 16 mm-thread	1.5 Nm
Actuator with 22 mm-thread	2.5 Nm
EDI A2	min/max 1.5 Nm/2.2 Nm

4. Technical data

4.1 Switch elements

	EDI ZC2 SP-G-62-000-01		EDI ZB2 SP-G-62-000-02		EDI ZA2 SP-G-62-000-03		EDI ZC1 SP-G-62-000-05		EDI ZB1 SP-G-62-000-06		EDI ZA1 SP-G-62-000-07	
Protection class	II (protective insulation)											
Operating temperature	-30 ... +85°C without lighting						-25 ... +55°C with/without LED lighting					
	-30 ... +65°C with LED lighting											
Storage temperature	-50°C ... 85°C											
Connection system	Screw terminals						Spring-loaded terminals					
Min. switching voltage	5 V						24 V					
Max. wire cross-section	2 × 2.5 mm²						0.75 ... 2.5 mm²					
Min. switching current (laboratory conditions)	1 mA						5 mA					
Max. bounce time	< 10ms						< 10 ms					
Mechanical service life	1 million switching cycles	20.000 switching cycles	1 million switching cycles	20.000 switching cycles								
electrical service life (at nominal load)												
Contact material	AgNi											
Vertical resistance	< 20 mOhm		< 100 mOhm		< 20 mOhm				< 100 mOhm		< 20 mOhm	
Actuating travel	6 mm						5 mm					
Utilization category (EN 60947-5-1)	AC15 A600	DC13 Q300	AC15	DC13	AC15 A600	DC13 Q600	AC15 A600	DC13 Q300	AC15 A300	DC13	AC15 A600	DC13 Q300
Rated insulation voltage Ui (EN 60947-5-1)	600 V	600 V	250 V	250 V	600 V	600 V	600 V	400 V	250 V	250 V	600 V	400 V
Rated operating current Ie (EN 60947-5-1)	3A	2A	3A	2A	3A	2A	3A	2A	3A	2A	3A	2A
Rated operating voltage Ue (EN 60947-5-1)	240 V	24 V	240 V	24 V	240 V	24 V	240 V	24 V	240 V	24 V	240 V	24 V
Switching capacity (EN 60947-5-1)	10Ie	1.1Ie	10Ie	1.1Ie	10Ie	1.1Ie	10Ie	1.1Ie	10Ie	1.1Ie	10Ie	1.1Ie
Therm. Continuous current (EN 60947-5-1)	16 A		16 A		16 A		16 A		10 A		16 A	
Rated voltage Ue (IEC 61058-1)	250 V~		250 V~		250 V~		250 V~		250 V~		250 V~	
Rated current Ie (IEC 61058-1)	16(10) A		16(10) A		16(10) A		16(10) A		10(5) A		16(10) A	

Table 1

4.2 Buttons

	EDI A1 SP-G-60-000-01 EDI A3 SP-G-60-000-03 EDI A4 SP-G-60-000-12		EDI A2 SP-G-60-000-04	EDI A3B SP-G-60-000-05 EDI A6B SP-G-60-000-08 EDI A5B SP-G-60-000-10		EDI A7L SP-G-60-000-06		EDI A6 SP-G-60-000-09 EDI A5 SP-G-60-000-11		EDI A4B SP-G-60-000-13	
Mounting type	Front panel mounting										
Release type	Turning										
Actuator	Pushbutton										
Actuator color	Red										
Housing material	Plastic										
Protection class	IP 65 (IEC 60529)	IP 66 (IEC 60529)	IP 65 (IEC 60529)	IP 66 (IEC 60529)			IP 65 (IEC 60529)				
	IP 69K (IEC 60529)			IP 67 (IEC 60529)							
Operating temperature	-30 ... +70°C			-30 ... +55°C		-25 ... +70°C		-30 ... +70°C		-30 ... +55°C	
Storage temperature	-50 ... +85°C			-50 ... +85°C		-40 ... +80°C		-50 ... +85°C			
Mechanical service life	50,000		> 6050		50,000						
Torque	max. 2.5 Nm										
Actuating force						10 N (700 mm/min)					

Table 2

4.3 Elements with lighting connection

	EDI ZD2 SP-G-62-000-04	EDI ZD1 SP-G-62-000-08
Protection class	II (protective insulation)	
Operating temperature	-30 ... +70°C	-25 ... +55°C
Storage temperature	-50 ... +85°C	
Connection system	Screw terminals	Spring-loaded terminals
Max. wire cross-section	2 × 2.5mm	0.75...2.5mm
Operating voltage	max 30 V	
Operating current	max 44 mA	
Connection wires	0.25mm, 10cm, crimped-on BKL plug connector	
Connection	X1: Anode /rd, X2 cathode /wt	

Table 3

5. Commissioning and Maintenance

5.1 Function Test

- Mechanical inspection: Emergency stop/emergency off button engages upon operation
- Electrical inspection: The machine stops or switches off upon operation of the emergency stop/emergency off button.



Note

Damaged or defective devices must not be put into operation!

5.2 Periodic inspection

The inspection interval shall be determined by the machine designer on the basis of the risk assessment. However, it is recommended that the emergency stop/emergency off button is triggered at least once a year by the responsible safety officer for test purposes and to check the correct function.

- mechanical and electrical function test in accordance with Step 5.1
- safe attachment
- manipulation and damage visible
- no loose wire connections

5.3 Behavior in the event of a malfunction



Note

Mechanical overload or external force can damage and impair the function of the emergency stop button.

- Correct the error.
- Do a function test in accordance with Step 5.1.

6. Disassembly and Disposal

6.1 Removal

The EDI emergency stop/emergency off button must only be dismantled when the power is disconnected.

6.2 Disposal

The EDI emergency stop/emergency off button must be disposed of properly in accordance with national and local regulations.

7. Notes for hygienic areas

7.1 Application area

The emergency stop/emergency off button EDI A2 is also suitable for use in food processing machines in the food sector, injection area as well as in non-food sector (definition according to DIN EN 1672-2 and DIN ISO 14159). Please note the following,

7.2 Operating conditions

Operating temperature: -30°C to +50°C (temporary up to +70°C). Avoid permanent contact with hydrocarbons (e.g. petrol, oil, grease etc.). Limited UV resistance, permanent outdoor application without additional protection is not recommended.

7.3 Installation

The EDI A2 emergency stop button/emergency off button is intended for installation in a closed housing or a closed control cabinet on a smooth, preferably metallic surface (e.g. front panel). Before mounting, grease all around the sealing lip of the yellow bellows with the grease supplied, e.g. with your finger. Please wear gloves made of nitrile rubber. Remove excess grease without damaging the sealing lip. Apply a thin layer of the supplied grease to the bottom of the bellows.

The installation is suitable for material thicknesses from 1 to 6.5 mm. The recommended tightening torque of the fastening nut with 22mm thread is max. 2.5 Nm. A grid dimension of at least 50 mm must be maintained between the outer sides of the buttons to allow easy cleaning between the buttons. We recommend an appropriate installation position, preferably horizontally, to allow liquids to drain off automatically in both the unactuated and actuated state (fold).

7.4 Cleaning/disinfection

Always clean

- before the first commissioning,
- as required (depending on degree of contamination),
- at regular intervals (according to an internal cleaning schedule).

If the surfaces have been contaminated with substances containing oil or grease, they must be cleaned immediately. All external surfaces are suitable for wet cleaning and disinfection. We recommend the use of commercially available low concentrated cleaners and disinfectants with a low acid content. Cleaners and disinfectants in high concentrated solutions are not suitable. Use for cleaning/disinfection if necessary,

- cleaning utensils that are clean and hygienic,
- cleaning utensils that do not lose any particles on the surfaces to be cleaned (e.g. clean and lint-free cloths)

Do not use for cleaning/disinfection:

- sharp, hard or pointed objects (e.g. steel wool and steel brushes) which can damage the surface,
- abrasive processes that negatively affect the surface roughness of the material.

The use of high-pressure cleaners for cleaning/disinfection is not recommended.

Please note the following



Check all parts visible from the outside at certain intervals and after operation. In the event of damage, the actuators must be replaced immediately by equivalent hygienic devices.

8. Further information

8.1 Use of protective collars

The user must check accessibility and availability.

9. Configuration examples



Note:

The illustrated examples are only suggestions. The user has the responsibility to design the overall system in compliance with applicable rules and regulations.

Switching example	Spring-loaded terminals			Screw terminals		
	Item name	Item no	Placement pos.	Item name	Item no	Placement pos.
	EDI ZH1 EDI ZB1	SP-G-62-000-11 SP-G-62-000-06	3.1 - 3.2	EDI ZH2 EDI ZB2	SP-G-62-000-10 SP-G-62-000-02	2.1 - 2.2
	EDI ZH1 EDI ZB1 EDI ZA1	SP-G-62-000-11 SP-G-62-000-06 SP-G-62-000-05	3.1 - 3.2 2.1 - 2.2	EDI ZH2 EDI ZB2 EDI ZA2	SP-G-62-000-10 SP-G-62-000-02 SP-G-62-000-03	2.1 - 2.2 3.1 - 3.2
	EDI ZH1 EDI ZB1 EDI ZC1	SP-G-62-000-11 SP-G-62-000-06 SP-G-62-000-07	3.1 - 3.2 2.3 - 2.4	EDI ZH2 EDI ZB2 EDI ZC2	SP-G-62-000-10 SP-G-62-000-02 SP-G-62-000-01	2.1 - 2.2 3.3 - 3.4
				EDI ZI2 EDI ZB2 EDI ZA2 EDI ZD2 EDI ZC2	SP-G-62-000-09 SP-G-62-000-02 SP-G-62-000-03 SP-G-62-000-04 SP-G-62-000-01	2.1 - 2.2 5.1 - 5.2 1.3 - 1.4 3.X1 - 3.X2
	EDI ZH1 EDI ZB1 EDI ZA1 EDI ZD1	SP-G-62-000-11 SP-G-62-000-06 SP-G-62-000-07 SP-G-62-000-08	3.1 - 3.2 2.1 - 2.2 1.X1 - 1.X2	EDI ZH2 EDI ZB2 EDI ZA2 EDI ZD2	SP-G-62-000-10 SP-G-62-000-02 SP-G-62-000-03 SP-G-62-000-04	2.1 - 2.2 3.1 - 3.2 1.X1 - 1.X2

Table 4

10. Declaration of Conformity

10.1 EC conformity regulations

EDI emergency stop/emergency off button

Authorized representative: Johann Aulila

SSP Safety System Products GmbH & Co. KG

Max-Planck Str. 21, 78549 Spaichingen, Germany

www.safety-products.de

Date: October 2016

The designated products comply with the regulations of the directives:

- Machinery Directive 2006/42/EC

Applied standards:

- EN 60947-5-1: 2004
- EN 60947-5-5: 1997 + A1:2005 + A11:2013
- EN ISO 13850: 2015 (D)



Note

Signed EC Declaration of Conformity is available at the SSP website:
www.safety-products.de



SSP Safety System Products GmbH & Co. KG

Max-Planck-Straße 21

78549 Spaichingen, Germany

+49 7424 98 049-0

info@ssp.de

www.safety-products.de