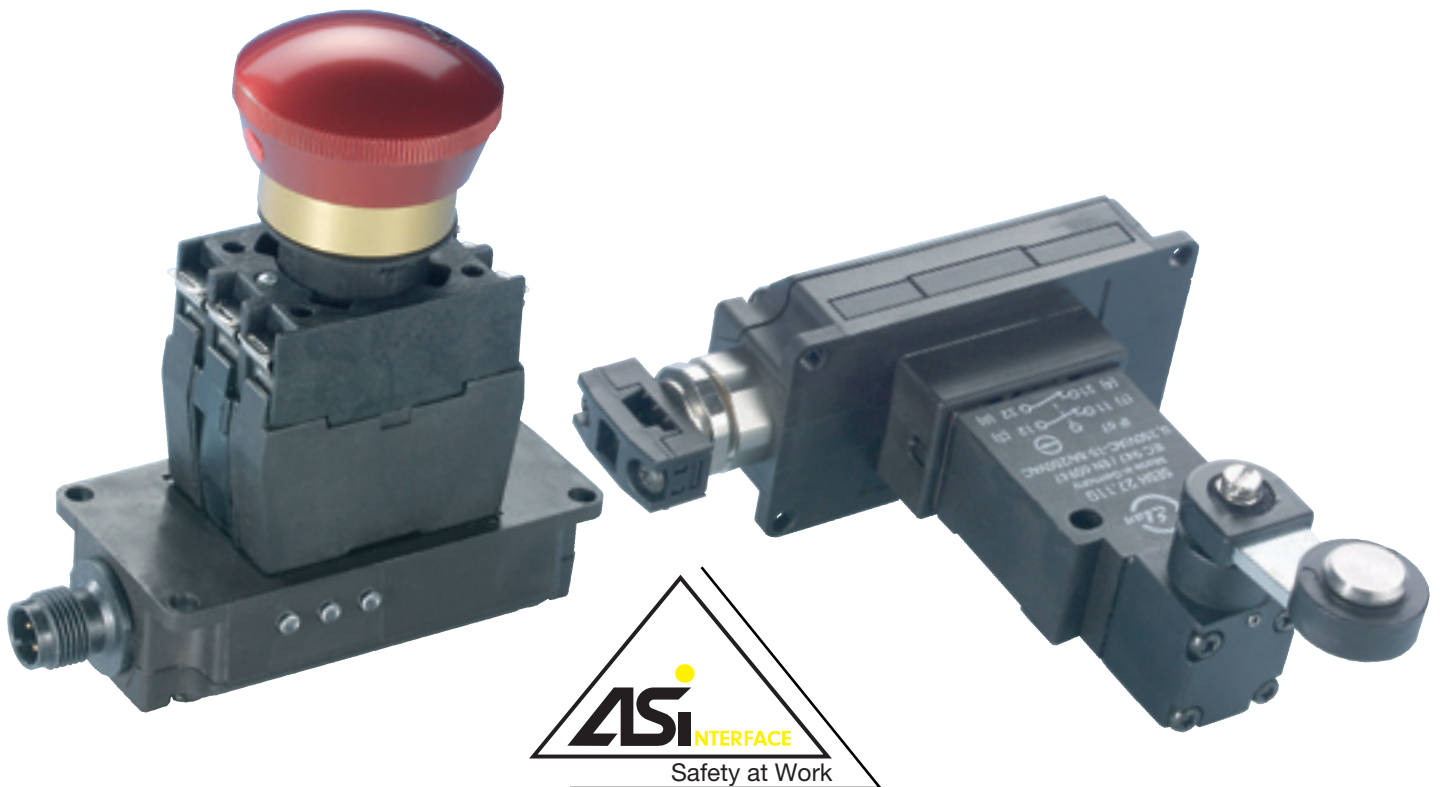


**Control devices, position switches and interlocking devices
with adapter box for AS-Interface Safety at Work (AS-i SaW)**
Catalogue ASU/03



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Subject to technical modifications and error. The data specified in this catalogue are carefully checked typical standard values.

Or as the ancient Greeks already knew:

The Gods do not reveal everything to mortals from the beginning. But during the course of time our search will show us what is better.

Xenophanes
(Greek philosopher,
580/577 B.C.)

Descriptions of technical correlations, details on external control units, installation and operating instructions or similar have been provided to the best of our knowledge. However, this does not mean that warranted characteristics or other properties under liability law may be assumed

which extend beyond the “General Terms of Delivery of Products and Services of the Electrical Industry”. We trust you will understand that the user must therefore check out information and recommendations before using our equipment.

Control devices, position switches and interlocking devices with adapter box for AS-interface Safety at Work (AS-i SaW)

What is AS-interface Safety at Work?

AS-interface Safety at Work (SaW) is the first safe bus system based on the open AS standard. International safety components such as emergency STOP, safety switches, solenoid interlocks or safety light barriers are simply interconnected via the AS-interface cable. Only a safety monitor is necessary for the evaluation of the safety signals.



Why safe?

Safe transmission mechanism

The transmission mechanism for safety applications is based on the unaltered AS-interface standard protocol. In connection with safety monitor and safety components a defined telegram is sent for every master call. The monitor analyses this information and opens the enabling fields if there is a deviation from the pre-set values. The maximum reaction time for safe shutdown is 40 ms.

Cost reduction

Cost reduction with AS-interface Safety at Work

How to reduce costs and time – a never-ending story. During installation, commissioning and during maintenance the AS-interface SaW provides useful assistance with integrated system diagnosis. The system provides detailed information on cause and location of failure, permitting the user to quickly replace safety components in the case of defect and thus minimise idling times. The AS-interface Safety at Work enables you to directly reduce your costs.

Installation time

Less installation time with AS-interface SaW

Installation could hardly be simpler or faster using the AS-interface SaW. Select a safety component, connect it using the AS-interface ribbon cable and assign parameters of the safety monitor. There's no more to it than that.

No further adjustments need to be made to the safety components. The time-consuming wiring between the safety components and the switchgear cabinet is reduced and assembly times shortened. Even the power supply for the safety sensor system is supplied via the AS-interface 2-wire cable.

Finish the job quicker with the AS-interface Safety at Work.



System features

AS-interface SaW system features

- Up to 31 safe and non-safe slaves on the AS-interface system.
- No failsafe PLC necessary.
- Safety signals can be assigned to groups and distributed to several safety monitors
- Shutdown of the safety enabling fields after a maximum of 40 ms.
- Incorporation of safety signals into the system diagnosis.
- Approved up to control category 4 to EN 954-1.
- TÜV certified (German Technical Inspectorate).

Control devices, position switches and interlocking devices with adapter box for AS-interface Safety at Work (AS-i SaW)

Background information

ASU adapter box

For different reasons, whether because of space or cost, not all switchgear for safety circuits realised with the safety bus system AS-Interface Safety at Work (AS-i SaW) can also be offered with an integrated AS-i SaW interface.

In cases such as these, the devices are usually connected via AS-i SaW-compatible interface boxes (in which the safety contacts of the devices can be wired parallel by the user) or via device adapters with corresponding interface if available.

A special form of an adapter (referred to as an adapter box in the following) is the Elan series ASU which has been developed for plug-in control devices (with installed diameter of 22.3 mm to EN 50 007) and for plug-in position switches (in accordance with EN 50 047) from Elan.

ASU adapter boxes are also suitable for parallel wiring of switchgear and interlocking devices. By comparison with interface boxes, the advantage here is that this pre-wiring is performed in the factory so that the user can be offered a pre-assembled ready-to-connect solution.

Control devices, position switches and interlocking devices with ASU adapter boxes extend the range of AS-Interface Safety at Work products from the Schmersal Group, thus contributing to a very broad range of products.

Please request the brochure entitled
"Safety Bus System AS-interface at Work"
from the following address:

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or visit our homepage at:



<http://www.schmersal.com>

Control devices, position switches and interlocking devices with adapter box for AS-interface Safety at Work (AS-i SaW)

ASU adapter boxes

ASU adapter boxes consist of a glass-fibre-reinforced self-extinguishing thermoplastic housing with integral AS-i SaW-compatible electronics in three different connection options:

1. ASi ribbon cable connection
2. Flange plug M 12 x 1
3. Cable gland M 16 x 1.5

Technical data (excerpt*)

Control category	4 to EN 954-1
Housing material	Glass-fibre reinforced thermoplastic, self-extinguishing (in compliance with UL-94-V-0)
Protection class	See device versions
LED functional displays:	
– LED green	Power supply
– LED red	Communication
– LED yellow	Enabling status
Power supply	26.5 ... 31.6 VDC (via AS-interface), protected against reverse-polarity
Current consumption	≤ 50 mA (or ≤ 70 mA in the case of illuminated push-buttons)
Operating temperature	–25 ... +60 °C
Version	to EN 50295 (ASi standard)
AS-i SaW version	2.1
Input module address	Pre-set to address 0, can be changed via AS-interface bus master
Noise immunity	to EC EMC Directive
Approvals (in preparation)	TÜV, AS International Association

* More data: on request



ASi ribbon cable connection



Cable gland M16 x 1.5



Flange plug M12 x 1

Control devices with ASU adapter box

General technical information

Selected device types from Elan (refer to figures/product range) are offered for installation bore holes of 22.3 mm to EN 50 007 which are typical for safety circuits or suitable for safety-related tasks (further versions on request).

The control devices are tough industrial versions with large actuation areas in metal or plastic. A control device and the ASU adapter box are connected via contact and illuminated elements with receptacle in pin connections 0.8 x 1.6 mm.

A special feature of the devices is the high switching reliability through the use of a self-cleaning contact bridge system, the so-called Elan four-way system. This is a twin contact bridge with both parallel and crosswise switching.

Each control device consists of three assemblies:

- 1. Device head with assembly flange (type series E...)
- 2. Contact element, possibly illuminated element incl. bulb (type series EFP/ELP) and
- 3. ASU adapter box with fixing element EFB.

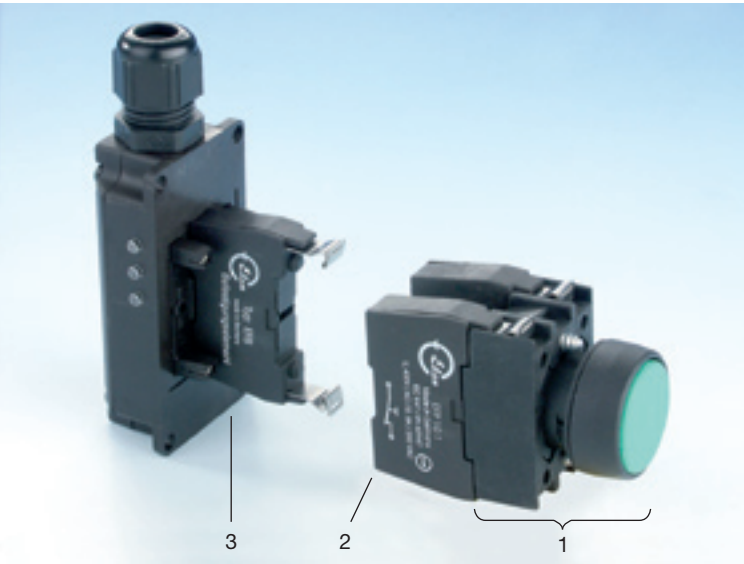
Technical data (excerpt*)

Standardisation	Industrial switchgear (with positive opening NC contacts) to IEC 60947-5-1
Class of protection (front side)	IP 65
Class of protection (reverse of front side)	IP 20
Installation	Single hole fixing 22.3 mm + 0.4 mm to EN 50 007 (a lug cut-out as anti-rotation element is not necessary in Elan devices)
Contact type	Momentary-touch contacts
Shock resistance	110 g/4 ms – 30 g/18 ms, no rebound (appropriately smaller in the case of larger actuator heads)
Vibration resistance	≥ 20 g/10 ... 200 Hz (appropriately smaller in the case of larger actuator heads)
Shock and vibration resistance of emergency STOP devices	Refer to product range
Dimensions	Refer to product range

* Further data: on request

Assemblies 2 and 3 are supplied in one order and packaging unit.

Safety information:
If control devices are offered with two contacts they are realised in the form of two separate contact elements each with one contact, i.e. they can thus be used for 2-channel safety circuits.



Control devices with ASU adapter box

Emergency STOP control devices



Product range

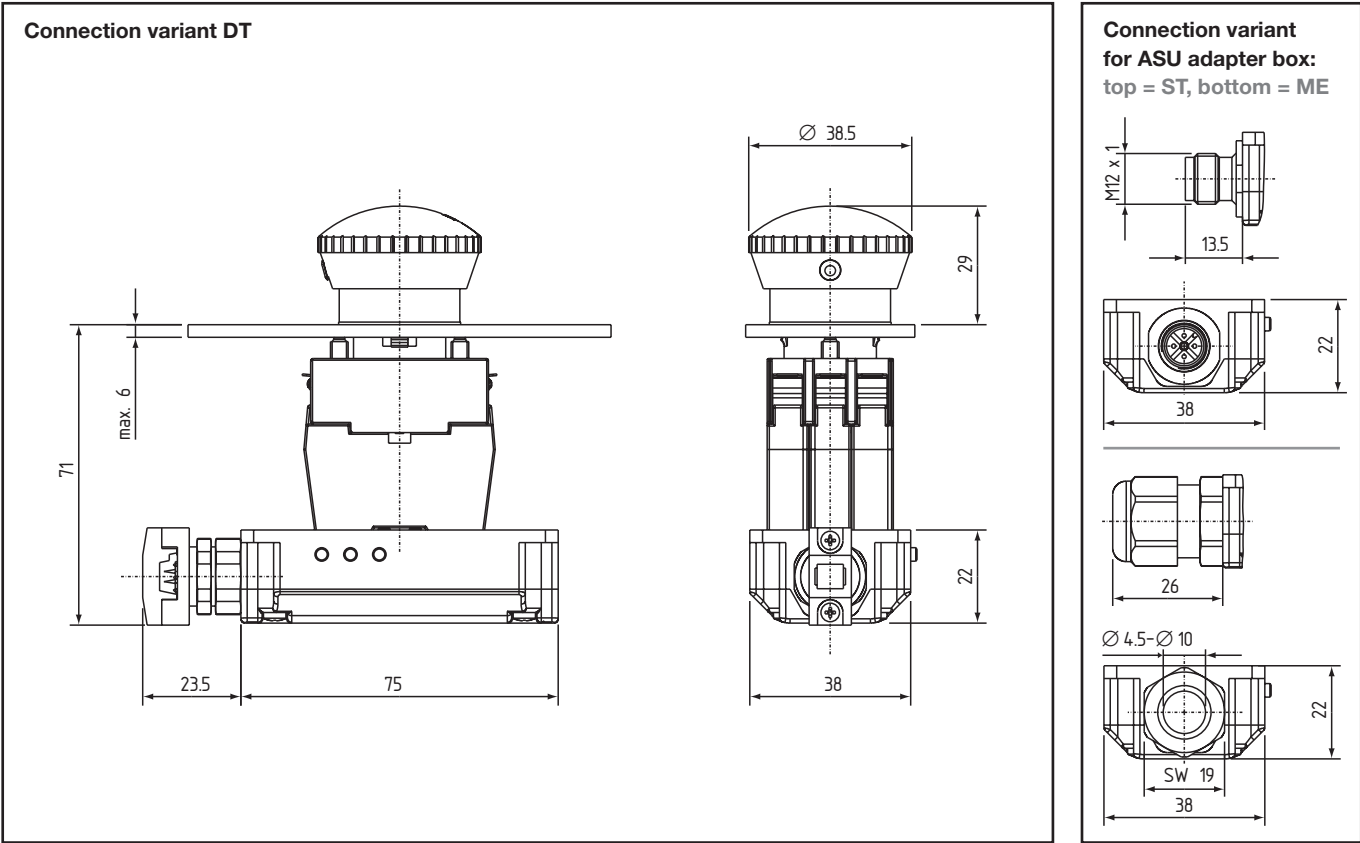
Emergency STOP control devices

With mushroom head diameter 38.5 mm, snap action to EN 418, version under consideration of the additional requirements to IEC 60 947-5-5, colour of the actuator: red similar to RAL 3000

Actuator design	Order number
Al metal version	EDRZ 40 RT
Shock resistance: max. 15 g/11 ms*	
Vibration resistance: max. 0.35 mm, 0–150 Hz*	
Plastic version	KDRKZ 40 RT
Shock resistance: max. 15 g/11 ms*	
Vibration resistance: max. 0.35 mm, 0–150 Hz*	
Contact element(s) with ASU adapter box	
... with ASi ribbon cable connection	
1 x 1 NC contact	EFP DT-AS30
2 x 1 NC contact	EFP DT-AS330
... with flange plug M12 x 1	
1 x 1 NC contact	EFP ST-AS30
2 x 1 NC contact	EFP ST-AS330
... with cable gland M16 x 1.5	
1 x 1 NC contact	EFP ME-AS30
2 x 1 NC contact	EFP ME-AS330

* Provisional information to the best of our knowledge and belief

Dimensions



Control devices with ASU adapter box

Pushbuttons



Product range

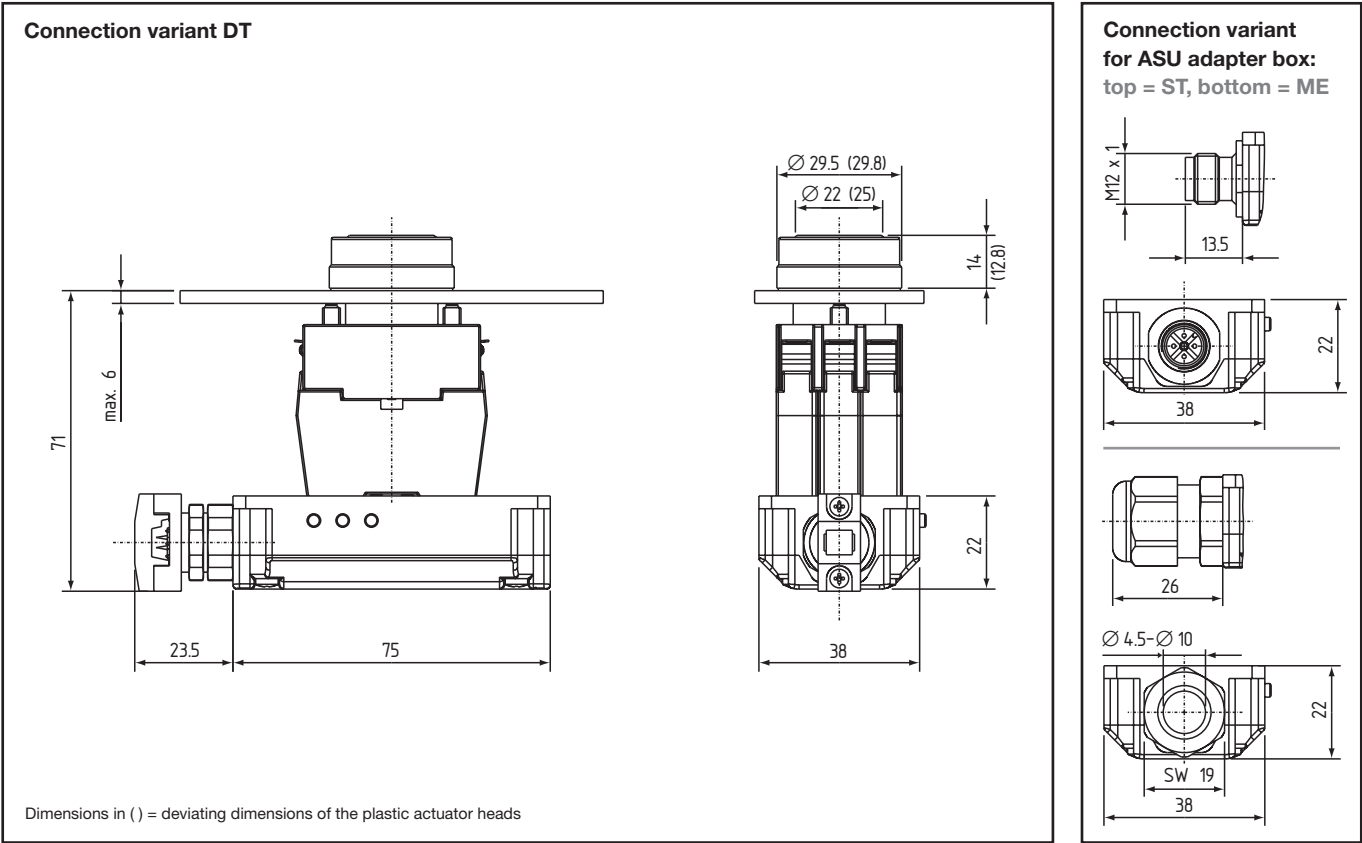
Pushbuttons
e.g. for safety-related reset and restart signals

Actuator design	Colour*	Order number
Al metal bezel/ Al metal button	green	EDT GN
	black	EDT SW
	blue	EDT BL
Plastic bezel/ plastic button	green	KDT GN
	black	KDT SW
	blue	KDT BL

Contact element(s) with ASU adapter box**	
... with ASi flange cable connection	
1 x 1 NO contact	EFP DT-AS03
2 x 1 NO contact	EFP DT-AS033
... with flange plug M12 x 1	
1 x 1 NO contact	EFP ST-AS03
2 x 1 NO contact	EFP ST-AS033
... with cable gland M16 x 1.5	
1 x 1 NO contact	EFP ME-AS03
2 x 1 NO contact	EFP ME-AS033

* Other colours: on request
** Other contact complements: on request

Dimensions



Control devices with ASU adapter box

Illuminated pushbuttons



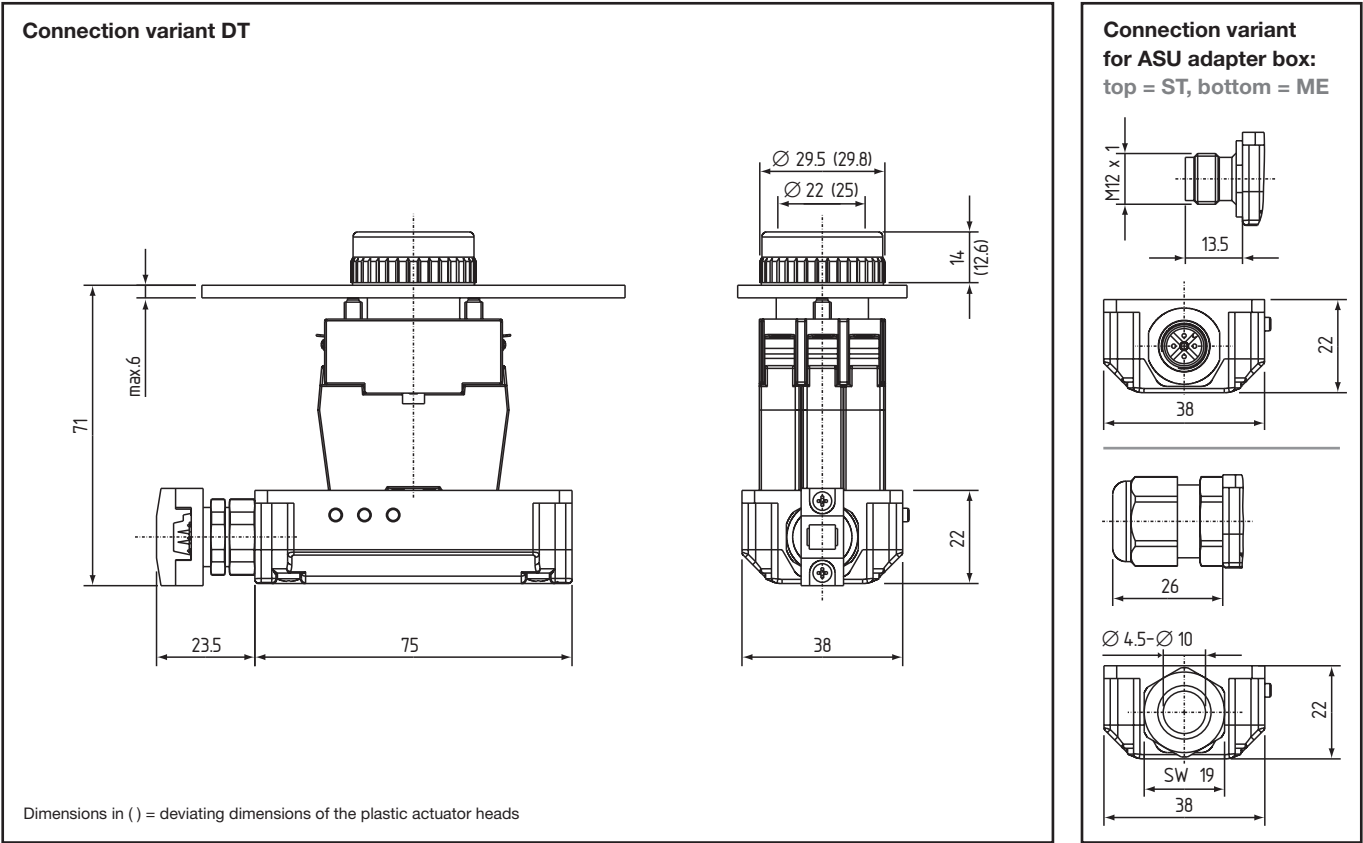
Product range

Illuminated pushbuttons
e.g. for safety-related reset and restart signals

Actuator design	Colour*	Order number
Al metal bezel/ glass lens	green	EDL GN
	blue	EDL BL
Plastic bezel/ plastic lens	green	KDL GN
	blue	KDL BL
Contact element(s) with ASU adapter box**		
... with ASi flange cable connection 1 x 1 NO contact incl. illuminating element and bulb (LED LE24/9 WS)		EFP DT-AS03L
... with flange plug M12 x 1 1 x 1 NO contact incl. illuminating element and bulb (LED LE24/9 WS)		EFP ST-AS03L
... with cable gland M16 x 1.5 1 x 1 NO contact incl. illuminating element and bulb (LED LE24/0 WS)		EFP ME-AS03L

* Other colours: on request
** Other contact complements: on request

Dimensions



Control devices with ASU adapter box

Other device types



Product range

Other device types

e.g. (key-operated) selector switch/selector pushbuttons, enabling switches, other commercially available device types and versions etc.: on request.

Due to the wide and varied range of conceivable combinations (device types, designs, contact complements) a product table will not be provided here.

The incorporation of other device types in ASi SaW safety bus systems, e.g. of key-operated selector switches for operating mode selection, enabling switches etc. will depend on the logic operation and on the possible logic operations of asimon, the configuration software and may need careful planning.

Please ask us to specify the versions you require.

Accessories

e.g. control boxes, name plates, protective collars etc.: refer to Elan catalogue D-22.G

Position switches with ASU adapter box

General technical information

Position switch

with ASU adapter box

Selected position switches of the Elan type series SES (refer to product range/other versions on request) are offered which are typical for tasks in safety circuits, e.g. for safety-related final shutdown of machine or actuator motions, for position monitoring of moving guards etc.

The devices are tough industrial versions in plastic housings with fixing dimensions in accordance with EN 50047 and installation and functional dimensions in conformity with EN 50047. Position switch and the ASU adapter box are connected via spade type plug connections to DIN 46224.

Switches, drive heads and ASU adapter box are permanently connected under one order number as one assembly.

A special reliability feature of the devices is the high switching reliability due to the use of a self-cleaning contact bridge system, the so-called Elan four-path system, i.e. a twin contact bridge with parallel and cross-wise switching.



General information on use of the Elan position switches

Approach angle	max. 30°
Approach direction of the actuating heads	can be offset 4 x 90°
Switching point repetition accuracy:	
– plastic rollers	± 0.2 mm
– metal rollers	± 0.1 mm
– vertical rounded plungers	± 0.01 mm
Material selection for the rollers:	
– plastic roller	Normal operation, approach speed > 30 m/min.
– metal roller	Temperatures > 50 °C, approach speeds max. 30 m/min.
Recommended fixing	Cylinder head screws M4 x 25 ISO 1207 (DIN 84), Spring washer A4 DIN 137

Safety remarks:

The devices are supplied as standard with two NC contacts whereby the two contacts are separated from each other and both have positive opening. However, from the point of view of independence they are actuated by a single actuating mechanism and thus comply with control category 1 to EN 954-1 ("tried and tested components and principles") subject to other stipulations in C standards with respect to a single switch.

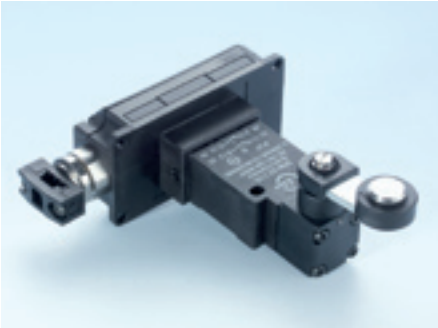
Technical data (excerpt*)

Standardisation	Industrial switchgear (with positive opening NC contacts) to IEC 60947-5-1
Fixing dimensions	to EN 50047
Installation and functional dimensions	in compliance with EN 50047
Class of protection (reverse of front plate)	IP 20 (switching chamber IP 67)
Contact type	Momentary-touch contacts
Switching frequency	3,600 c/h
Shock resistance	30 g/18 ms, no rebound (appropriately smaller in the case of larger actuator heads)
Vibration resistance	≥ 15 g/10 ... 200 Hz (appropriately smaller in the case of larger actuator heads)
Dimensions	Refer to product range

* Further data: on request

Position switches with ASU adapter box

Version with roller-lever actuator



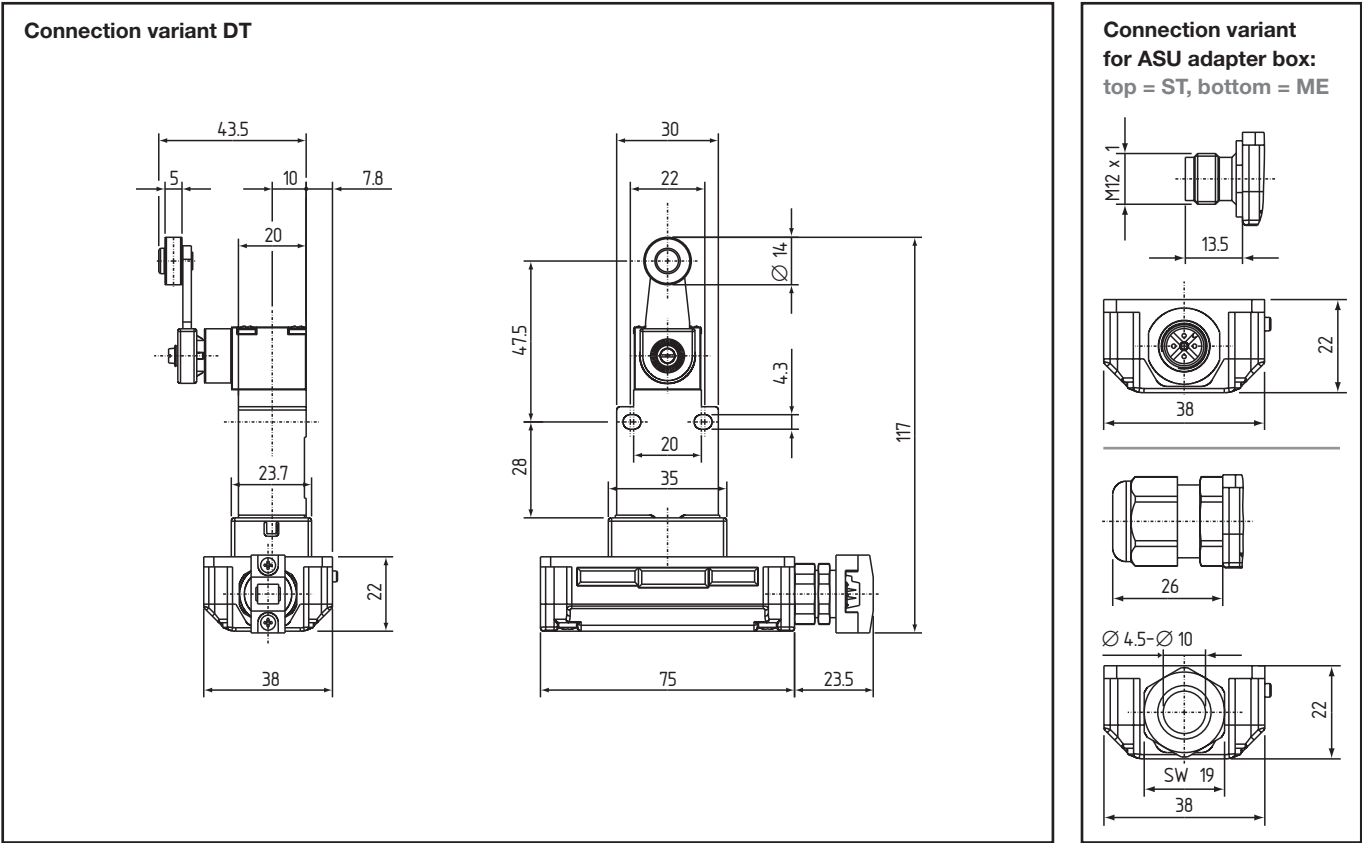
Product range

Position switch with ASU adapter box with roller-lever actuator (form A to EN 50047)	Order number
... with ASi ribbon cable connection	
– metal roller	SESH15 DT-AS110
– plastic roller	SESH17 DT-AS110
... with flange plug M12 x 1	
– metal roller	SESH15 ST-AS110
– plastic roller	SESH17 ST-AS110
... with cable gland M16 x 1.5	
– metal roller	SESH15 ME-AS110
– plastic roller	SESH17 ME-AS110
Other actuator versions: on request	

Version		
Circuit	Function	Switching angle
110	2 NC contacts	60° 30° 0° 30° 60°

Instruction on use: In addition to the actuator head the roller lever can also be adjusted by 4 x 90° or, if the lever is reverse mounted, finely by 10°. Positive opening is restricted if a fine gearing is used.

Dimensions



Position switches with ASU adapter box Version with vertical rounded plunger

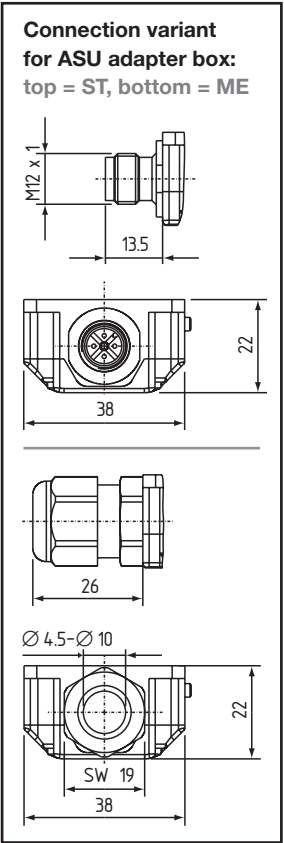
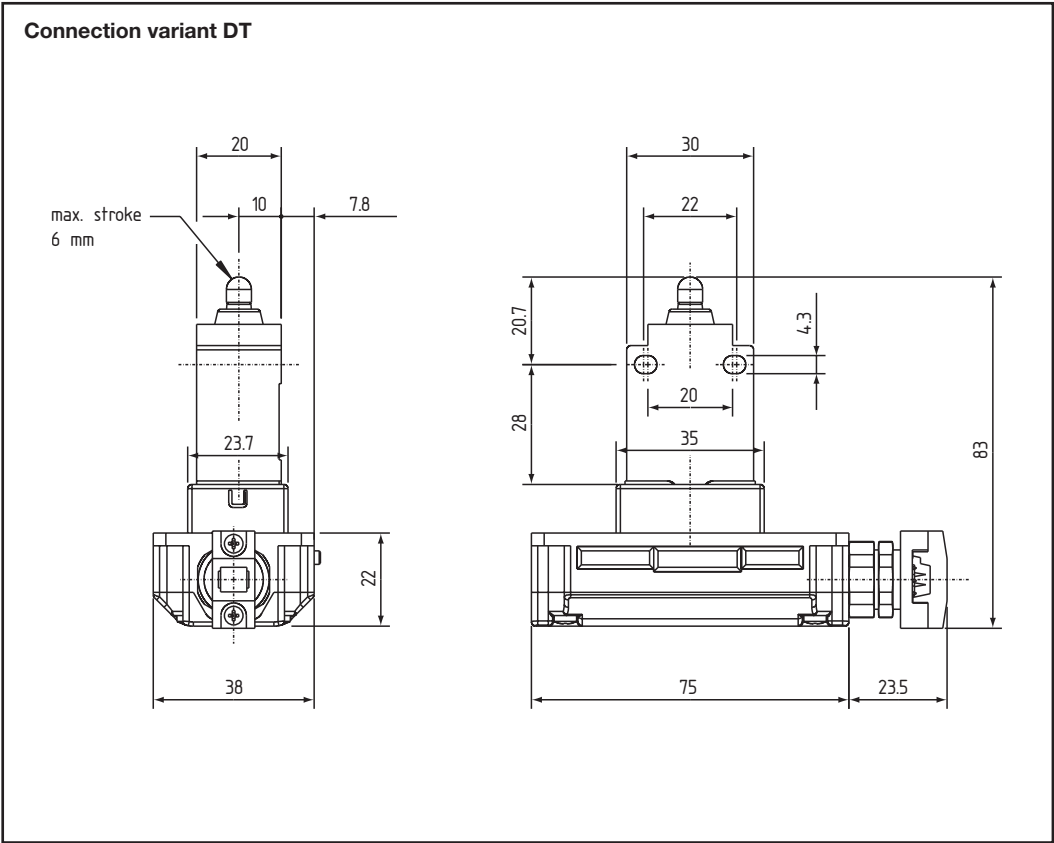


Product range

Position switch with ASU adapter box with vertical rounded plunger (form B to EN 50047)	Order number
... with ASi ribbon cable connection	SES DT-AS110
... with flange plug M12 x 1	SES ST-AS110
... with cable gland M16 x 1.5	SES ME-AS110
Other actuator versions: on request	

Version		
Circuit	Function	Switching path
110	2 NC contacts	0 2 4 6
Instructions on use: Max. approach speed 15 m/min. for plastic cams and 6 m/min. for steel cams. Max. actuation force: 8 N		

Dimensions



Version with vertical roller plunger



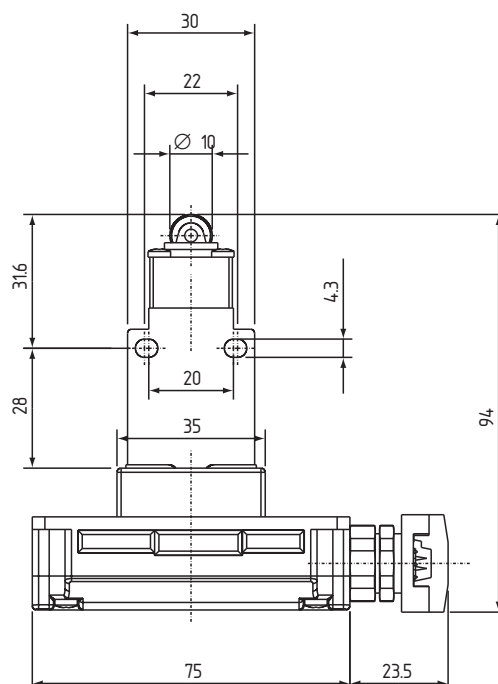
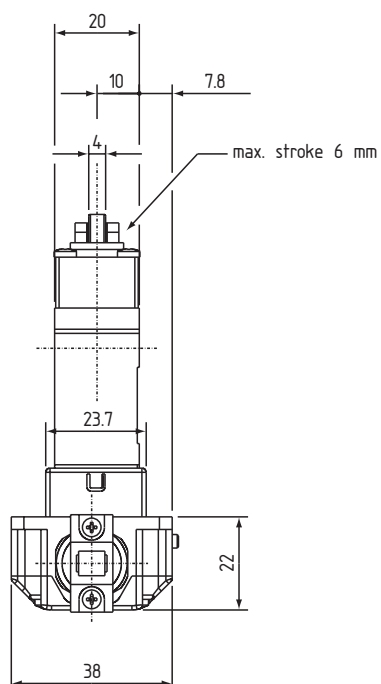
Product range

Position switch with ASU adapter box with roller plunger (form C to EN 50047)	Order number
... with ASi ribbon cable connection	
– metal roller	SESB31 DT-AS110
– plastic roller	SESB33 DT-AS110
... with flange plug M12 x 1	
– metal roller	SESB31 ST-AS110
– plastic roller	SESB33 ST-AS110
... with cable gland M16 x 1.5	
– metal roller	SESB31 ME-AS110
– plastic roller	SESB33 ME-AS110
Other actuator versions: on request	

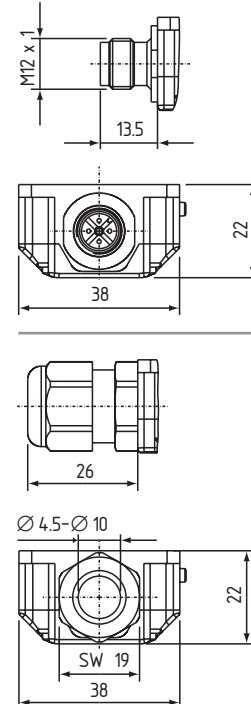
Version		
Circuit	Function	Switching path
110	2 NC contacts	

Dimensions

Connection variant DT



**Connection variant
for ASU adapter box:
top = ST, bottom = ME**



Position switches with ASU adapter box
Version with roller lever



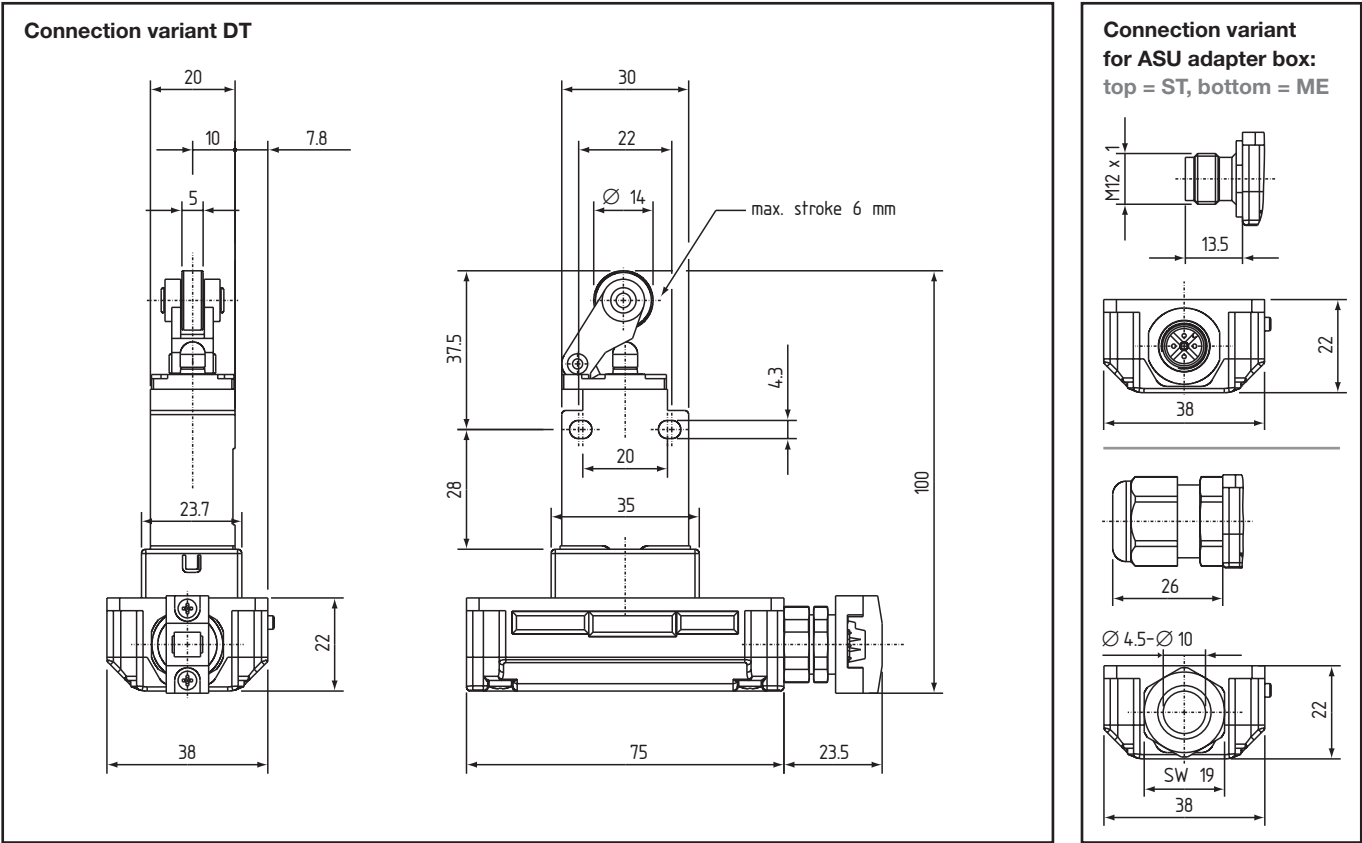
Product range

Position switches with ASU adapter box with roller lever (form E to EN 50047)	Order number
... with ASi ribbon cable connection	
– metal roller	SESR11 DT-AS110
– plastic roller	SESR13 DT-AS110
... with flange plug M12 x 1	
– metal roller	SESR11 ST-AS110
– plastic roller	SESR13 ST-AS110
... with cable gland M16 x 1.5	
– metal roller	SESR11 ME-AS110
– plastic roller	SESR13 ME-AS110
Other actuator versions: on request	

Versions										
Circuit	Function	Switching path								
110	2 NC contacts	<table><tr><td>0</td><td>2</td><td>4</td><td>6</td></tr><tr><td>■</td><td></td><td></td><td></td></tr></table>	0	2	4	6	■			
0	2	4	6							
■										

Instructions on use: only intended for approach from one side

Dimensions



Position switches with ASU adapter box

Other device versions



Product range

Other device versions

For example, position switches with adjustable roller-levers and/or other rollers, spring and rod levers, with other switching paths, possibly with other contact complements: on request.

Due to the wide and varied range of conceivable combinations (device type, designs, contact complements) a product table will not be provided here.

Please ask us to specify the versions you require.

Product range

Due to the wide and varied range of conceivable combinations (device types, designs, contact complements) a product table will not be provided here.

By way of example possible device types and designs are presented here which can be equipped with ASU adapter boxes whereby the wiring between the switching contacts of the devices and the ASU adapter box with protective class IP 65 is provided as parallel wiring in the factory.



TESZ hinge monitoring switches

- Safety switch without locking to EN 1088
- BIA/BG type testing of the standard versions
- Simple assembly particularly to (Al) profile systems
- Different contact complements possible (max. 3 contacts)
- Plastic-encapsulated version, protective class IP 65
- Optionally:
 - standard versions (type series TESZ)
 - V4A stainless steel versions (type series TESZX)
 - Versions with additional mechanical restart lock (type series TESZR)



TZK safety door interlocks

- Interlocking device with locking to EN 1088
- BIA/BG type testing of the standard versions
- With lateral reverse head particularly for hinge mounted protective devices for inside mounting
- Special versions for protective safe guards and profile systems
- Funnel-shaped entry throat with dust lid
- Failsafe mechanism
- Versions actuated by spring or magnetic force
- Different supply voltages
- Plastic-encapsulated version, protective class IP 65
- Optionally with auxiliary, escape and emergency release

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