Control devices and indicator lights for 22.3 mm installed diameter

Explosion protection for ATEX zones 1, 2, 21 and 22

Catalogue D-22 Ex-R

SCHMERSAL

Elan

Caution!

The devices in this delivery range are not intended for the private consumer, i.e. they are not consumer products in the sense of the European Directives (in Germany in the Sense of § 5 GPSG, the Equipment and Product Safety Act) or other national statutory regulations.

The assembly and commissioning of the devices require personnel who have appropriate knowledge of basic electronics or have been instructed accordingly.

Technical modifications and errors reserved. The data quoted in this list are carefully checked typical series values.

Or as the old Greeks knew already:

By no means did the gods reveal all things to mortals from the beginning, but in time, by searching, we discover better.

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

Descriptions of the control contexts, details on external controls, installation and operating information or suchlike are given to the best of our knowledge. This does not mean however that any assured properties or other claims under liability law that extend beyond the “General Delivery Conditions for Products and Services in the Electrical Industry“ may be derived.

The user is not absolved of his obligation to examine our information and recommendations before using them for his own purposes. We trust you understand and will heed this information.

Catalogue D-22 Ex-R

Control devices and indicator lights for 22.3 mm installed diameter

for ATEX zones 1, 2, 21 and 22

Content

ATEX directives

Two directives basically govern the explosion protection of machinery and plants within the European Union:

- Directive 94/9/EC of the European Parliament and of the Council of 23 March 1994
- Directive 1999/92/EC of the Europe and of the Council of 16 December 1999.

Both directives are also called the ATEX directives (ATEX= Atmosphère Explosible).

Whereas the “Manufacturer’s Directive” 94/9/EC lays down the essential requirements for improving the safety and health protection of workers potentially at risk from explosive atmosphere, the industrial safety regulation or Operator’s Directive 1999/92/EC divides the equipment which it covers into equipment groups and categories; this directive provides for a classification by the employer of the places where explosive atmospheres may occur in terms of zones and determines which equipment groups and categories should be used in each zone.

These zones, equipment categories and groups are basically determined as shown in the table.

In zones 1 and 21 only electrical equipment with an approval in the form of an EC-type examination certificate may be used.

In zones 2 and 22 electrical equipment may be used, which comply with all the essential safety requirements of Directive 94/9/EC and for which a written declaration of conformity from the manufacturer exists.

As one of the largest industrial switchgear manufacturers in the world, the Schmersal group offers a comprehensive range of safety devices for any application in equipment categories 2GD and 3GD from non-contact position switches (magnetic switches) up to safety switches with and without interlocking device for the protection of men.

The product range includes products for equipment categories 2G and 2D. They are suitable for zones 1 and 21. The products also can be installed in zones 2 and 22.

Gas			Dust	
Ex category[1]	Zone[2]	**Definition explosive atmosphere**	Zone[2]	Ex category[1]
1G	0	Continuous, long periods, frequent	20	1D
2G	1	Occasional	21	2D
3G	2	Normally not, only for short periods	22	3D

Mining	
Ex category[1]	**Definition**
M1	Can also operate when explosive atmosphere exist.
M2	Can be switched off when explosive atmosphere exist.

1 Manufacturer: 94/9/EG = ATEX directive

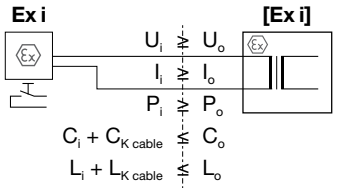
2 User: 1999/92/EG = ATEX directive

ATEX marking

Gas			Dust	
Zone 1			**Zone 21**	
Ⓔx II 2G	Ex ib IIC T4 X		Ⓔx II 2D	Ex tD A21 IP65 T110°C X
Ⓔx	ATEX – specific marking of explosive predection		Ⓔx	ATEX – specific marking of explosive predection
II	Equipment group		II	Equipment group
2G	Equipment category – zone 1 (gases and vapours) to EN 60079-0		2D	Equipment category – zone 21 (dust) to EN 61241-0
Ex ib	Intrinsic safety		Ex tD	Protection by enclosure according to EN 61241-1
IIC	Explosion predection group		A	Test method to EN 61241-1
			21	Equipment for zone 21
			IP65	Protection class to IEC 60529
T4	Temperature class: max. ambient temperature of the equipment permitted to.		T110°C	Temperature in degree Celsius: max. ambient temperature of the equipment permitted to.
X	For details please refer to the instruction manual.		X	For details please refer to the instruction manual.

Gas	
Grading of the max. ambient temperatures of electrical equipment of group II in classes (EN 60079-0)	
T1	450 °C
T2	300 °C
T3	200 °C
T4	135 °C
T5	100 °C
T6	85 °C
Mining	
150 °C with	deposit of coal dust on the equipment
450 °C without	

Dimension of intrinsic safety circuits



Resistance (bidirectional)*	0.5 mm²	72 ohm/km
	0.75 mm²	48 ohm/km
	1.5 mm²	24 ohm/km
Capacity*		180–200 nF/km
Inductivity*		0.8–1 mH/km

* Approximate values

Flammable gases, vapours or mists

Gas-explosive atmospheres may occur in the following places:

- Printing machines
- Paint-spraying plants
- Fuel stations (areas accessible to customers)
- Weaving/Dying factories
- Chemical industry
- Waste processing plants
- Petrochemical industry
- Pharmaceutical industry
- Plastics manufacturers
- Furniture plants

In directive 1999/92/EG, the zones are defined in the following way:

Zone 1: “A place in which an explosive atmosphere consisting of a mixture with air or flammable substances in the form of gas, vapour or mist is likely to occur in normal operation occasionally.”

Zone 2: “A place in which an explosive atmosphere consisting of a mixture with air or flammable substances in the form of gas, vapour or mist is not likely to occur in normal operation but, if it does occur, will persist for a short period only.”

Flammable dusts

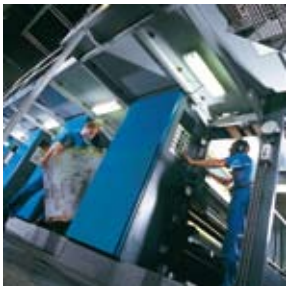
Dust-explosive atmospheres may occur in the following places:

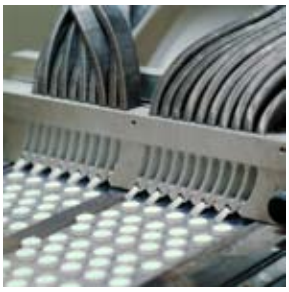
- Grain and corn mills
- Powder coating
- Textile industry
- Chemical industry
- Waste processing plants
- Pharmaceutical industry
- Woodworking machines
- Grain, beans and coffee warehouses
- Furniture plants

In directive 1999/92/EG, the zones are defined in the following way:

Zone 21: “A place in which an explosive atmosphere in the form of a cloud of combustible dust in air is likely to occur in normal operation occasionally.”

Zone 22: “A place in which an explosive atmosphere in the form of a cloud of combustible dust in air is not likely to occur in normal operation but, it does occur, will persist for a short period only.”





Control devices and indicator lights for 22.3 mm installed diameter

Equipment category ⟨Ex⟩ II 3GD

General description

Design

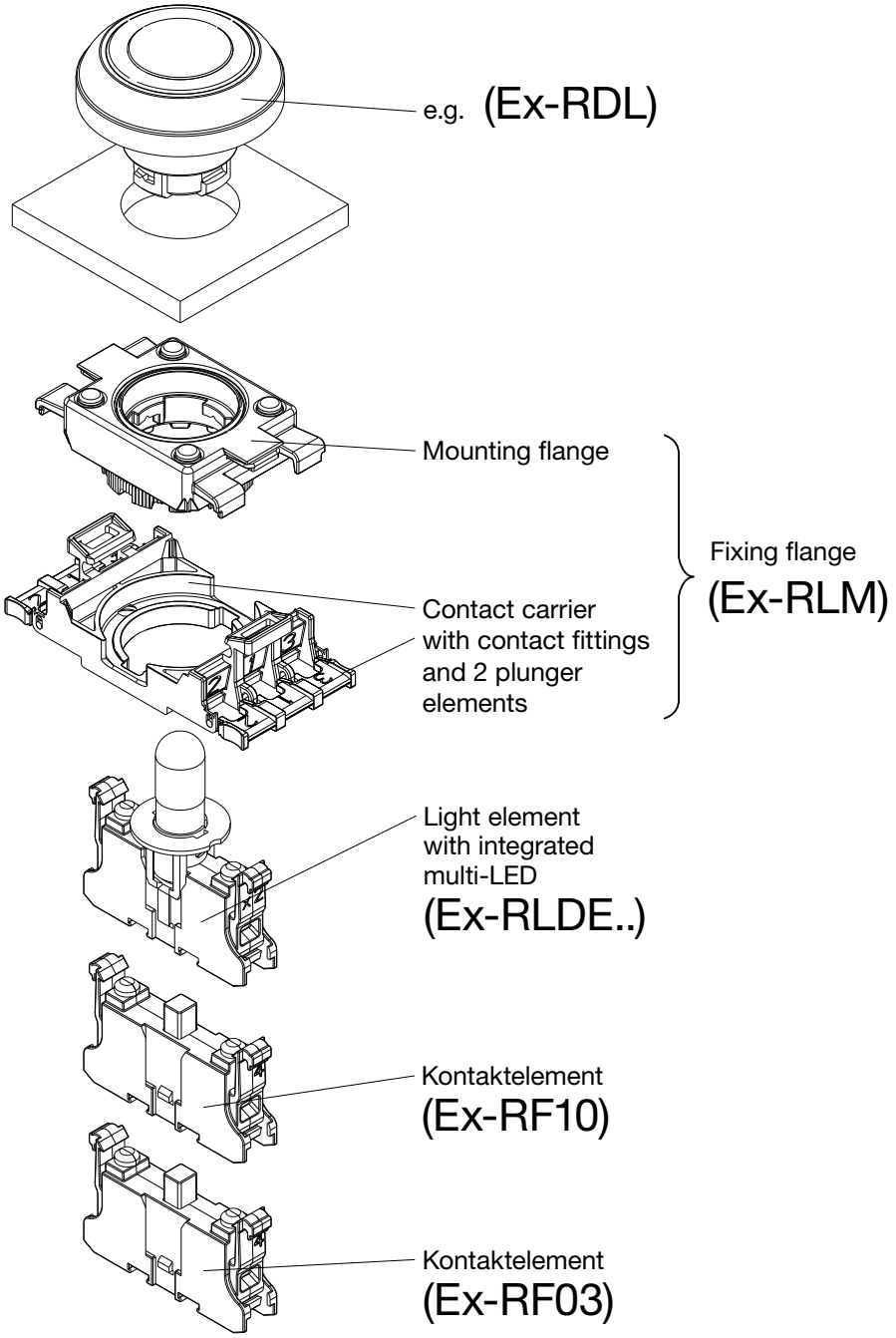
With the new development of this 22 mm control device and indicator light range, Elan provides a switching device concept to provide the user with additional device functionality, reliability and spatial use beyond the usual standard. The RF/RL contact and light element system makes a special contribution here. Traditionally tried-and-tested features in earlier Elan designs (metal bezels, glass lens covers, knobs of selector switches/push-buttons made of impact-resistant plastic) have been improved.

The devices are applicable for the Ex-category ⟨Ex⟩ II 2GD. The protection against explosion of the devices respectively the type of protection complies:

- Ex ib IIC T4 X
- Ex tD A21 IP65 T110°C X

Control devices and indicator light actuators

A variety of fully insulated pushbuttons/slam buttons/ illuminated pushbuttons/ selector switches/key-operated switches etc. is offered. The actuators are made of chrome-plated brass with a large actuating diameter of min. 28 mm. The pushbuttons are made of coated brass. The lens covers of the illuminated pushbuttons and indicator lights are made of impact resistant plastic. In addition to the high mechanical strength, this material selection permits an above-average degree of resistance to heat and chemical effects (such as from cleaning, lubricating and cooling agents).



Simple apparatus – intrinsic safety

Type	Condition	Example
Passive components	none	**Switches**, junction box (mounting box), resistor, simple semiconductor device
Stored energy	Values shall be considered	Capacitor, inductor
Generated energy	≤1.5 V ≤100 mA ≤25 mW	Thermo couples Photo cell

Protection class
The front seal of these devices corresponds to protection class IP 65 in accordance with EN 60529. The design features of the device sealing guarantee the high type of protection over a long period of time, also under extreme conditions, e.g. through oil, organic and inorganic grease residue, grinding dust and high switching frequency.

Mechanical protection
Requirements according the housing or other outside parts of the housing, e.g. pushbuttons, are defined at standard EN 60079-0. The mechanical resistance test with defined energy shows the mechanical firmness.

Structure of range
A control and indicator device consists of actuator, mounting flange and contact or light element. The type designation for this type series starts with Ex-R…, e.g. Ex-RDT for a pushbutton. The mounting flange (divided into two, type Ex-RLM) is not part of the scope of delivery of the actuators, the same applies to contact and light elements.

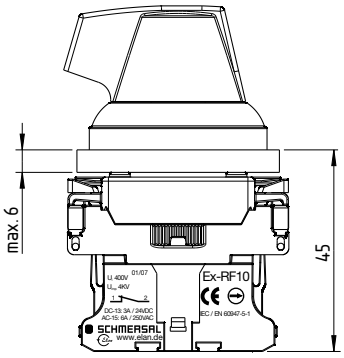
Per control device are max. 2 contact elements designated.

One-hole fixing
The devices are designed in accordance with DIN EN 50047 for single bore holes of a 22.3 + 0.4 mm diameter. An additional cut-out to prevent redation is not required.

Grid dimensions
It is possible to install several devices with minimum dimensions as follows:

Minimum distance between fixing holes to DIN EN 50047:
- Horizontal: 40 mm
- Vertical: 50 mm

Exceptions: selector switches/pushbuttons with long knob, EMERGENCY STOP-buttons Ex-RDRZ45…:
- Horizontal: 50 mm
- Vertical: 60 mm

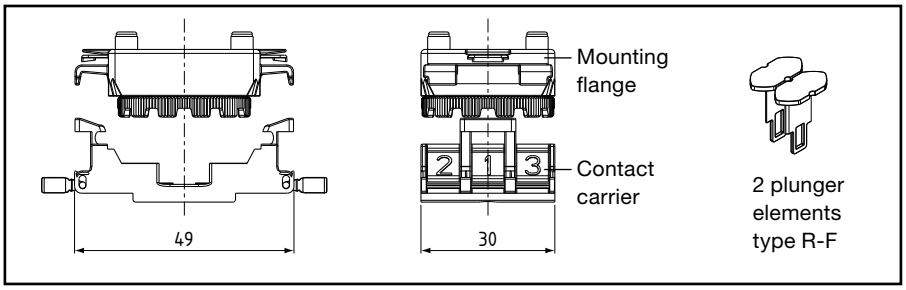


Mechanical resistance acc. EN 60079-0

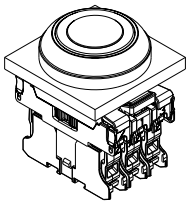
Risk of mechanical danger	high		low	
Group	I	II	I	II
Enclosures and external accessible parts	20 Nm	7 Nm	7 Nm	4 Nm
Light-transmitting parts without guard	7 Nm	4 Nm	4 Nm	2 Nm
	No further measures necessarily		Mechanical protected installation	

Control devices and indicator lights for 22.3 mm installed diameter for ATEX zones 1, 2, 21 and 22

Mounting and dismantling information



Mounting flange Ex-RLM



Installed in instrument panel (e.g. illuminated pushbuttons)

Control devices and indicator lights can be mounted in instrumented panels or installation in housing type Ex-EBGxxx.O (see page 23 et seq). All devices of the Ex-R product range fulfil the mechanical protection requirements to mount as external accessible parts of the enclosure.

The requirements for intrinsic safe circuits shall be obtained. Keep a clearance distance of 50 mm between intrinsic safe and others circuits. Alternatively separating plates can be used. Between each intrinsically safe circuit a clearance distance of 6 mm shall be obtained.

Device installation
The actuator is accurately aligned and firmly plugged into the bore hole. The retention lugs have a self-holding function so that the mounting flange can be pushed up from the rear of the front panel and then redated into locked position using the supplied fixing tool.

The contact bracket serves to preassemble the contact elements Ex-RF or the light element Ex-RLDE.

The fixing flange includes mounting flange, contact bracket and the two plunger segments. In the case of two or three contact elements arranged beside each other, the plunger segments attached by simply pushing them onto the middle contact element (position 1) serve to actuate the contact elements located in positions 2 and 3. After snapping on the elements to the contact brackets, they are pushed onto the mounting flange.

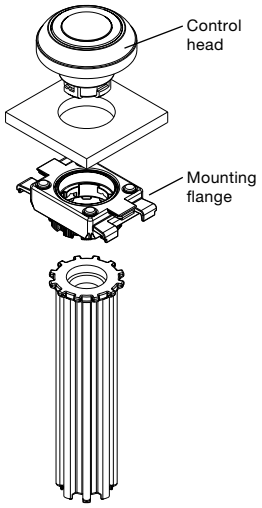
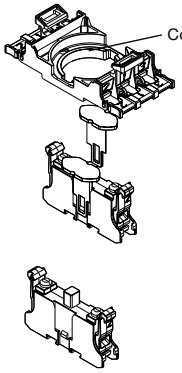
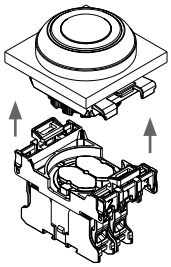
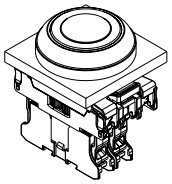
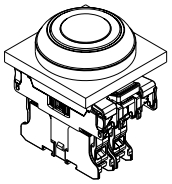
Using the contact lugs attached to the right and the left-hand side, the contact elements are additionally fixed so that incorrect assembly or detachment in the case of strong vibrations is not possible.

Installed in housing Ex-EBG….O

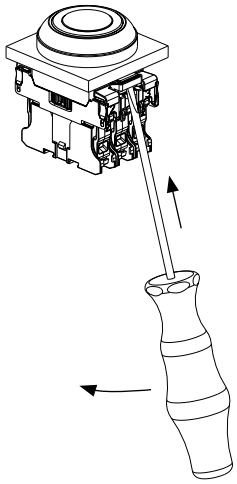
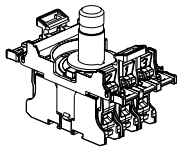
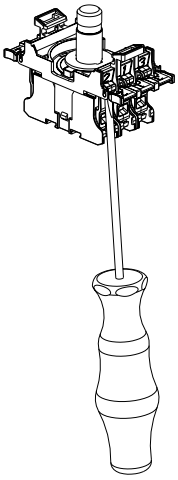
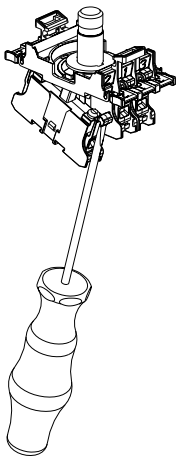
Control devices and indicator lights for installation diameter 22.3 mm for ATEX zones 1, 2, 21 and 22

Assembly and dismantling information

Mounting

1. Assembly of operating element and mounting flange with aid of the mounting tool RMW (p. 22) through "clockwise twist"	2. Preliminary assembly of light/contact elements to the contact support	3. Assembly of the pre-assembled contact support to the mounting flange	4. First row ready assembled (with 3 contact elements or with 1 light element and 2 contact elements)	5. Ready mounted
				 Push button with max. number of contacts (2 contact elements)
	Before assembly of the contact elements onto the contact support the two plunger segments should be mounted onto the central contact element through simple insertion in the trapezoidal grooves left and right. Snap this contact element onto the central position (1) of the contact support. In the case of light element RL/RLDE this tappet is already pre-assembled. A further contact element can be mounted to position 2 or 3.	The contact locking devices left and right are folded up 90° and then pressed down until they engage. This means that the contact elements are additionally mechanically secured to the contact support. Engage the contact support on mounting flange on one side. Then repeat this process on the opposite side.	The contact locking devices are automatically also fixed once the contact support has been snapped onto the mounting flange. This precludes incorrect assembly. Correct assembly should be checked once again.	

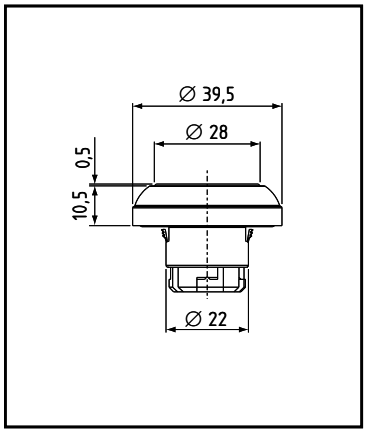
Dismantling

1. Dismantling of the contact elements in the second row	2. Dismantled contact carrier and opening of the contact sicherung	3. + 4. Dismantling of the contact/light elements	
			
Insert the screwdriver in the latch of the contact support. The unlocking device is opened through slight pressure against the mounting flange. Now additionally move the screwdriver gently in the direction of the contact support – this releases the contact support from the mounting flange. This procedure should be repeated on the opposite side.	By lifting both contact locking devices these are released from the catch mechanism and can be folded back 90°.	Dismantling of the contact elements is now possible as described in 1. and 2. The outer contact elements should be dismantled first. Only then can the central contact or light element be similarly dismantled.	

Pushbuttons and pushbuttons with diaphragm

Type series Ex-RDT .. and Ex-RDM ..

Pushbutton Ex-RDT ..

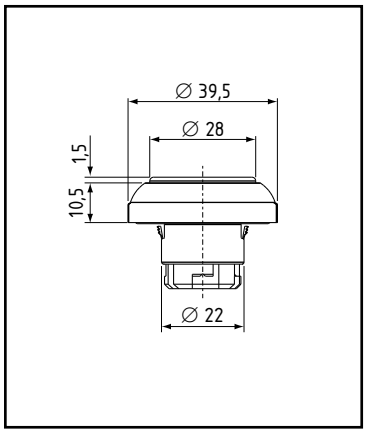


Pushbutton Ex-RDT ..

The mounting flange Ex-RLM consisting of mounting flange, contact bracket, contact lug and two contact links, belong to the scope of delivery of the device heads (refer to page 22).

The pushbutton withstand an impact energy of 7 Nm.

Pushbutton with diaphragm Ex-RDM ..



Pushbutton with diaphragm Ex-RDM ..

Pushbuttons				
Brief description	**Colour**	**Type**	**Catalogue no.**	**Order no.**
Pushbuttons, ∅ 28 mm, button of coated Ms,	black	Ex-RDT sw	0840010	1197336
	yellow	Ex-RDT gb	0840015	1197337
	red	Ex-RDT rt	0840020	1197338
	green	Ex-RDT gn	0840025	1197339
	white	Ex-RDT ws	0840030	1197340
	blue	Ex-RDT bl	0840035	1197341

Pushbuttons with diaphragm				
Brief description	**Colour**	**Type**	**Catalogue no.**	**Order no.**
Pushbuttons with diaphragm, ∅ 28 mm button of coated Ms. The diaphragm protects the button from grinding dust or other viscous media. Symbols are still easily legible.	black	Ex-RDM sw	0840410	1197342
	yellow	Ex-RDM gb	0840415	1197343
	red	Ex-RDM rt	0840420	1197344
	green	Ex-RDM gn	0840425	1197345
	white	Ex-RDM ws	0840430	1197346
	blue	Ex-RDM bl	0840435	1197347

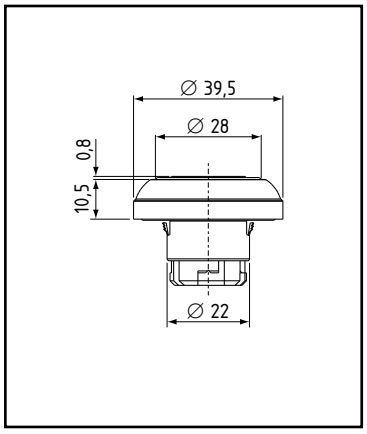
Contact elements: See page 20

Technical data: See page 30

Illuminated pushbuttons and illuminated pushbuttons with diaphragm

Type series Ex-RDL .. and Ex-RDLM ..

Illuminated pushbuttons Ex-RDL ..

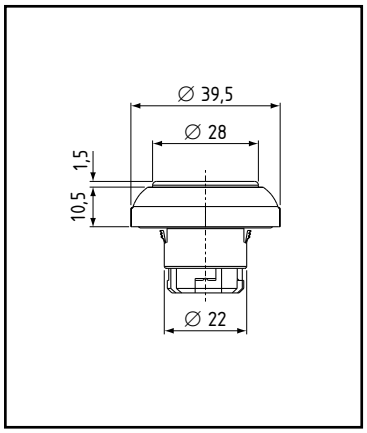


Illuminated pushbuttons Ex-RDL ..

The mounting flange Ex-RLM consisting of mounting flange, contact bracket, contact lug and two contact links, belong to the scope of delivery of the device heads (refer to page 22).

The illuminated pushbutton withstand an impact energy of 4 Nm.

Illuminated pushbuttons with diaphragm Ex-RDLM ..



Illuminated pushbuttons with diaphragm Ex-RDLM ..

Illuminated pushbuttons				
Brief description	**Colour**	**Type**	**Catalogue no.**	**Order no.**
Illuminated pushbuttons[1], swivel of impact-proof plastics, ∅ 28 mm	yellow	Ex-RDL gb	084 5015	119 7348
	red	Ex-RDL rt	084 5020	119 7349
	green	Ex-RDL gn	084 5025	119 7350
	white	Ex-RDL ws	084 5030	119 7351
	blue	Ex-RDL bl	084 5035	119 7352

Illuminated pushbuttons with diaphragm				
Brief description	**Colour**	**Type**	**Catalogue no.**	
Illuminated pushbuttons with diaphragm[1], swivel of impact-proof plastics, ∅ 28 mm. The diaphragm protects the buttons from grinding dust or other pasty, viscous media. Symbols are still easily legible.	yellow	Ex-RDLM gb	084 5215	119 7353
	red	Ex-RDLM rt	084 5220	119 7354
	green	Ex-RDLM gn	084 5225	119 7355
	white	Ex-RDLM ws	084 5230	119 7356
	blue	Ex-RDLM bl	084 5235	119 7357

Contact elements: See page 20

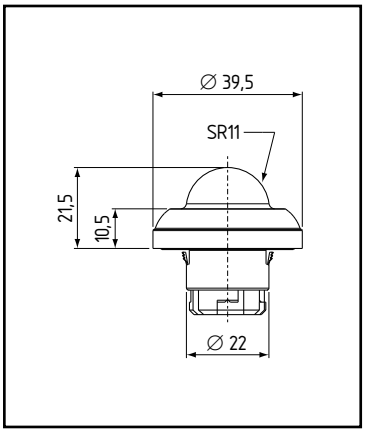
Ba9S-LED: See page 21

Technical data: See page 30

1) Only in conjunction with Ex-RLDE ws 24 applicable, see page 22

Pilot lights with protruding swivel
Type Ex-RMLH ..

Pilot light Ex-RMLH ..



Pilot light Ex-RMLH ..

The mounting flange Ex-RLM consisting of mounting flange, contact bracket, contact lug and two contact links, belong to the scope of delivery of the device heads (refer to page 22).

The pilot light withstand an impact energy of 4 Nm.

Pilot lights with protruding swivel				
Brief description	**Colour**	**Type**	**Catalogue no.**	**Order no.**
Pilot lights for LED's[1], protruding swivel of impact-resistant plastics[2]	yellow	Ex-RMLH gb	084 6115	119 7358
	red	Ex-RMLH rt	084 6120	119 7359
	green	Ex-RMLH gn	084 6125	119 7360
	white	Ex-RMLH ws	084 6130	119 7361
	blue	Ex-RMLH bl	084 6135	119 7362

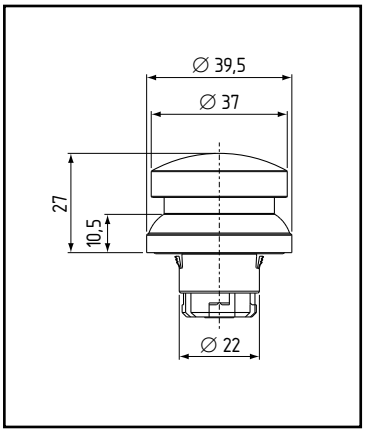
LED: See page 21
Technical data: See page 30

1) Only in conjunction with Ex-RLDE ws 24 applicable, see page 21

2) Swivel of plastics limited chemical-resistant (refer to resistance table at page 32)

Impact buttons without latching
Type Ex-RDP40 ..

Impact button without latching
Ex-RDP40 ..



Impact button without latching
Ex-RDP40 ..

The mounting flange Ex-RLM consisting of mounting flange, contact bracket, contact lug and two contact links, belong to the scope of delivery of the device heads (refer to page 22).

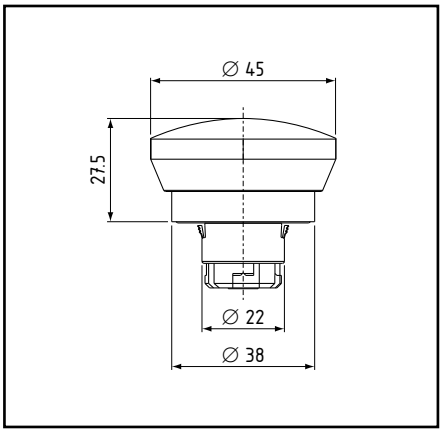
The impact button withstand an impact energy of 4 Nm.

Impact button				
Brief description	**Colour**	**Type**	**Catalogue no.**	**Order no.**
Impact button without latching, pushbutton-∅ 37 mm, made of coated Ms	black	Ex-RDP40 sw	084 0810	119 3561
	yellow	Ex-RDP40 gb	084 0815	119 3560
	red	Ex-RDP40 rt	084 0820	119 3558
	green	Ex-RDP40 gn	084 0825	119 3559
	white	Ex-RDP40 ws	084 0840	119 3557
	blue	Ex-RDP40 bl	084 0845	119 3562

Contact elements: See page 20
Technical data: See page 30

Mushroom-head impact buttons with latching
Type Ex-RDRZ45 ..

Mushroom-head impact button with latching Ex-RDRZ45 ..



Mushroom-head impact button with latching Ex-RDRZ45 ..

The mounting flange Ex-RLM consisting of mounting flange, contact bracket, contact lug and two contact links, belong to the scope of delivery of the device heads (refer to page 22).

The mushroom-head impact button withstand an impact energy of 4 Nm.

Mushroom-head impact button				
Brief description	**Colour**	**Type**	**Catalogue no.**	**Order no.**
Mushroom-head impact button with latching, mushroom-head made of coated Ms, released by pulling	black	Ex-RDRZ45 sw	084 1210	119 5091
	yellow	Ex-RDRZ45 gb	084 1315	119 3588
	green	Ex-RDRZ45 gn	084 1325	119 5089

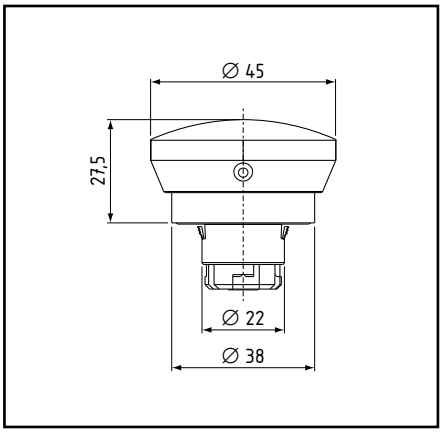
Other colours: On request.

Contact elements: See page 20

Technical data: See page 30

EMERGENCY STOP mushroom-head impact button according to EN ISO 13850: 2006
Type Ex-RDRZ45 rt

EMERGENCY STOP mushroom-head button Ex-RDRZ45 rt



EMERGENCY STOP mushroom-head button Ex-RDRZ45 rt

The mounting flange Ex-RLM consisting of mounting flange, contact bracket, contact lug and two contact links, belong to the scope of delivery of the device heads (refer to page 22).

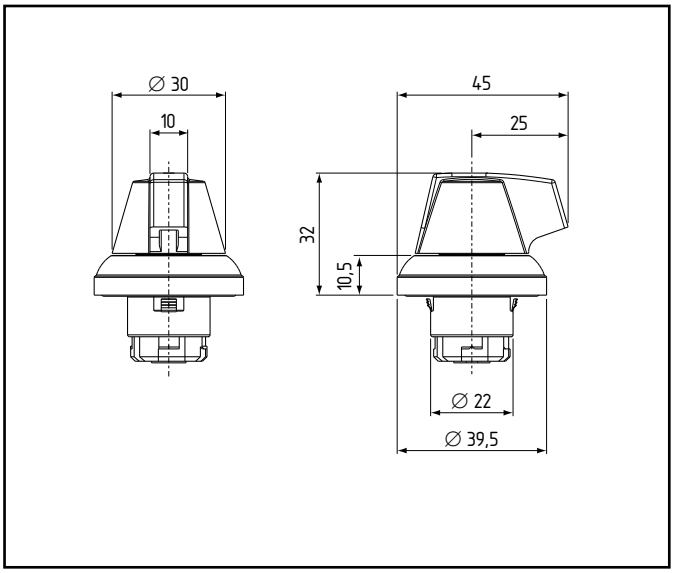
The EMERGENCY STOP mushroom head impact button withstand an impact energy of 4 Nm.

EMERGENCY STOP mushroom-head impact button				
Brief description	**Colour**	**Type**	**Catalogue no.**	**Order no.**
Emergency stop mushroom-head impact button with latching, made of coated Ms, released by pulling	red	Ex-RDRZ45 rt	0841350	1193587

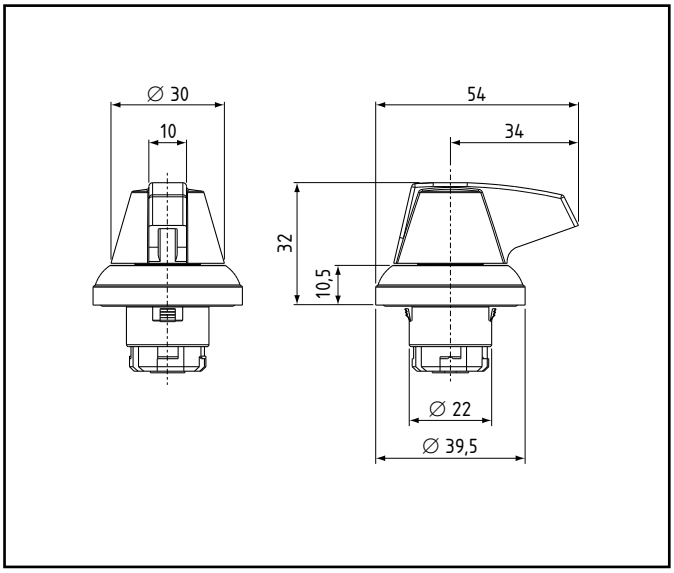
Contact elements: See page 20
Technical data: See page 30

Selector switches/spring-return rotary selector switch/maintained spring-return rotary selector switch with short or long toggle

Type Ex-RW.. ..



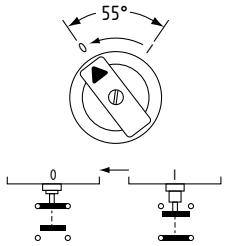
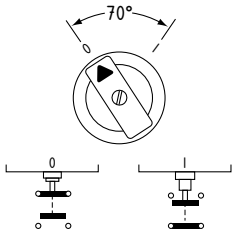
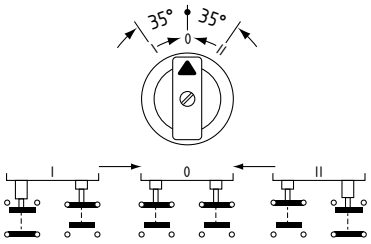
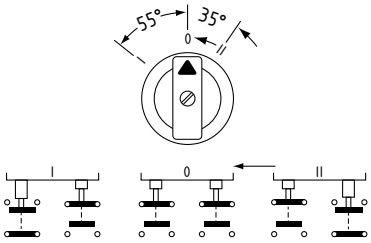
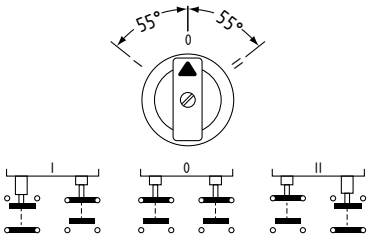
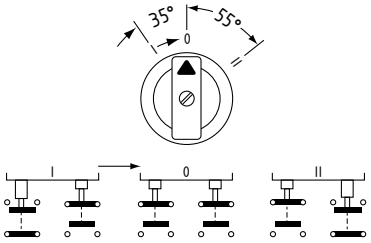
Spring-return rotary selector switch Ex-RWT 21/32 and selector switch Ex-RWS 21/32 with standard toggle (short)



Selector switch Ex-RWS 21.1/32.1 and maintained spring-return rotary selector switch Ex-RWT 21.1/32.1 with long toggle

The mounting flange Ex-RLM consisting of mounting flange, contact bracket, contact lug and two contact links, belong to the scope of delivery of the device heads (refer to page 22).

The selector switch/spring-return rotary selector switch/ maintained spring-return rotary selector switch withstand an impact energy of 4 Nm.

Selector switches/spring-return rotary selector switches/Maintained spring-return rotary selector switches				
Brief description	**Switching angle**	**Type**	**Catalogue no.**	**Order no.**
Spring-return rotary selector switch with 2 positions	1 × 55° 	Ex-RWT 21	084 2000	119 7373
		Ex-RWT 21.1	084 2010	119 7374
Selector switch with 2 latched positions	1 × 70° 	Ex-RWS 21	084 2060	119 7375
		Ex-RWS 21.1	084 2070	119 7376
Maintained spring-return rotary selector switch with 3 positions	2 × 35° 	Ex-RWT 32	084 2020	119 7377
		Ex-RWT 32.1	084 2030	119 7378
Selector switch with 3 positions; right: latching, left: switching	right 35° left 55° 	Ex-RWST 32	084 2035	119 7379
		Ex-RWST 32.1	084 2040	119 7380
Selector switch with 3 positions	2 × 55° 	Ex-RWS 32	084 2080	119 7381
		Ex-RWS 32.1	084 2090	119 7382
Maintained spring-return rotary selector switch with 3 positions, right: switching, left: latching	right 55° left 35° 	Ex-RWTS 32	084 2045	119 7383
		Ex-RWTS 32.1	084 2050	119 7384

.1-versions with long toogle (54 mm)

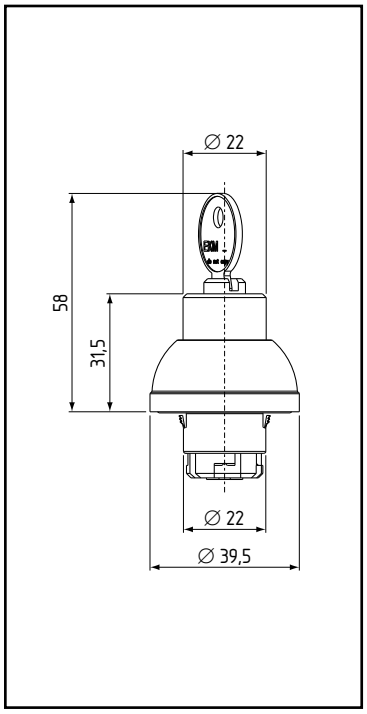
Selector switches/maintained spring-return rotary selector switches with long toggle need a grid dimension of 50 × 60 mm.

Contact elements: See page 20

Technical data: See page 30

Key-operated selector switches/key-operated maintained spring return selector switches/key-operated switches

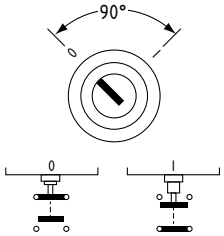
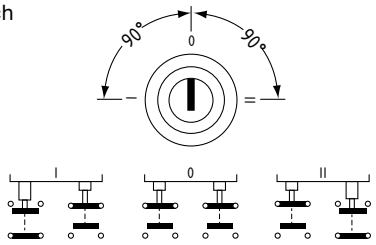
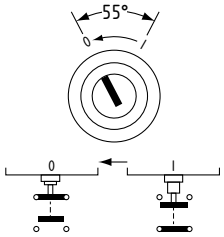
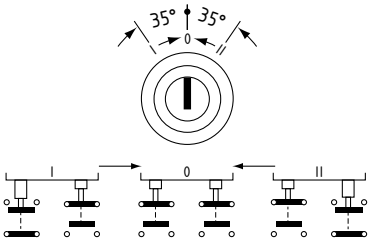
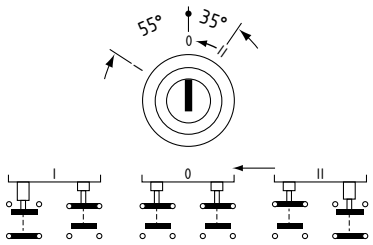
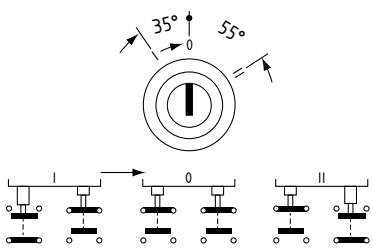
Type Ex-RS.....



Key-operated selector switch Ex-RSS...21/...32 and key-operated switches Ex-RST...21/...32

The mounting flange Ex-RLM consisting of mounting flange, contact bracket, contact lug and two contact links, belongs to the scope of delivery of the device heads (refer to page 22).

The key-operated selector switch/key-operated maintained spring return selector switch/key-operated switch withstand an impact energy of 4 Nm.

Key-operated selector switches/selector switch pushbuttons, lock EKM 30					
Brief description		**Key-withdrawal position**	**Type**	**Catalogue no.**	**Order no.**
Key-operated selector switch with 2 latched positions		only left	Ex-RSS21S1	0842170	1197385
		only right	Ex-RSS21S2	0842180	1197386
		in both positions	Ex-RSS21S12	0842190	1197387
Key-operated selector switch with 3 latched positions		left	Ex-RSS32S1	0842200	1197388
		middle	Ex-RSS32S2	0842210	1197389
		right	Ex-RSS32S3	0842220	1197390
		in all 3 positions	Ex-RSS32S123	0842230	1197391
Key-operated spring-return selector switch with 1 touch position, automatic return to the zero position, latch position 55°		only left	Ex-RST21S1	0842100	1197392
Key-operated spring-return selector switch with 2 touch positions left and right, automatic return to the zero position		only middle	Ex-RST32S2	0842140	1197393
Key-operated selector switch pushbutton, touch position 35°, latch position 55° – left switching, right latching		S1 = only left	Ex-RSST32S1	0842240	1197394
		S2 = only middle	Ex-RSST32S2	0842250	1197395
Key-operated selector switch pushbutton with 3 positions, touch position 35°, latch position 55° – left switching, right latching		S2 = nur mittig	Ex-RSTS32S2	0842260	1197396
		S3 = nur rechts	Ex-RSTS32S3	0842270	1197397
Spare key EKM 30 for CES lock (for Ex-RSS../RST.., standard for the above listed versions)			SDS2	0721191	1001629

Special locks and master key function available: On request

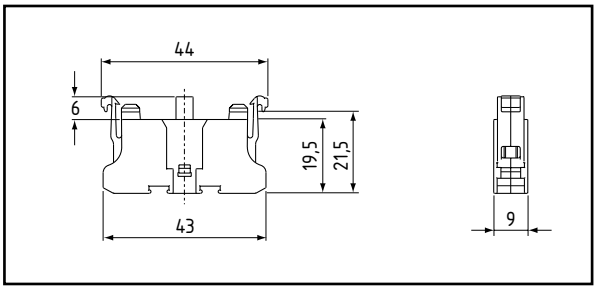
Contact elements: See page 20

Techncal data: See page 30

Contact terminal blocks
Type Ex-RF...

Contact element Ex-RF 10...

Contact element Ex-RF 03...



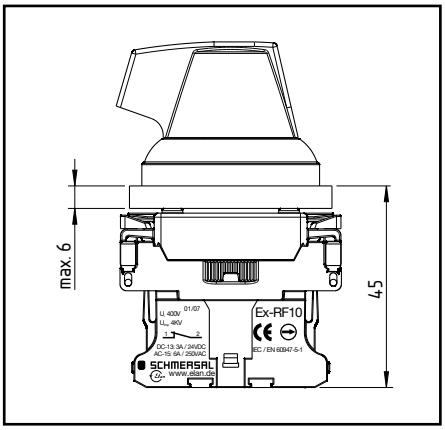
Contact element Ex-RF ...

Contact blocks with screw connection terminal				
Function/contact path diagram	**Contact label**	**Type**	**Catalogue no.**	**Order no.**
1 NC	1, 2	Ex-RF 10	084 0015	119 5134
	11, 12	Ex-RF 10.1	084 0016	119 5465
1 NO	3, 4	Ex-RF 03	084 0045	119 5132
	13, 14	Ex-RF 03.1	084 0046	119 5466

Contacts with other connections: On request.

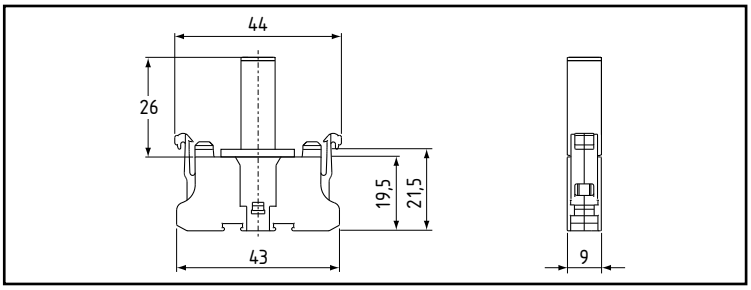
The contact elements are simple apparatus acc. EN 60 079-11, type of protection „intrinisic safety“.

Max. 2 contact elements per head.

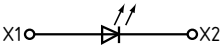


Light terminal block
Type Ex-RLDE

Light terminal block
Ex-RLDE ws 24



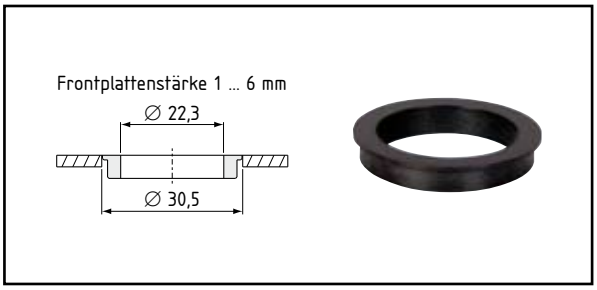
Light terminal block Ex-RLDE ws 24

Light terminal blocks with integrated Multi-LEDs for pilot lights Ex-RMLH and illuminated pushbuttons Ex-RDL ../Ex-RDLM ..				
Function/voltage	**Colour**	**Type**	**Catalogue no.**	**Order no.**
	white	Ex-RLDE ws 24	084 6614	119 5062
24 VDC/AC				

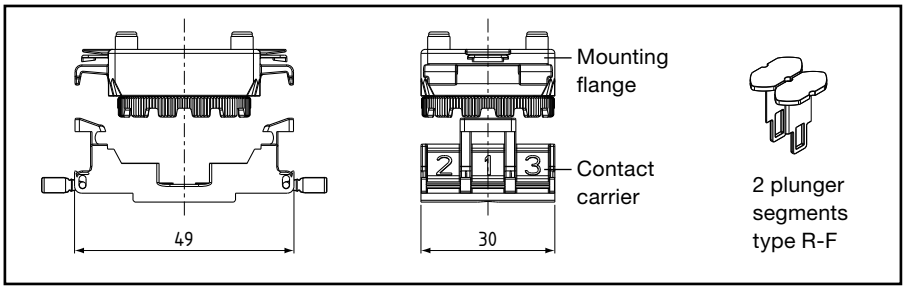
The light terminal blocks are simple apparatus acc. EN 60 079-11, type of protection „intrinisic safety“.

The light terminal blocks can be used inside intrinsically safe circuits.

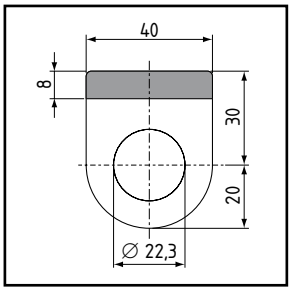
Mounting tool RMW



Adapter ring Ex-RUE



Mounting flange Ex-RLM



Marking plate Ex-RZSO

Accessories			
Brief description	**Type**	**Catalogue no.**	**Order no.**
Mounting tool for mounting flange	RMW	0839005	1188787
Adapter ring for control device entry Ex-RBN	Ex-RUE	on request	
Mounting flange	Ex-RLM	0839015	1197408
1 plunger segment for “take-along” on additional positions 2 or 3	R-F	0839020	1196132
Marking plate	Ex-RZSO	0849000	1197402
Plug for control device entry	Ex-RBN	0840300	1197407

Housings (mounting boxes)
ATEX types

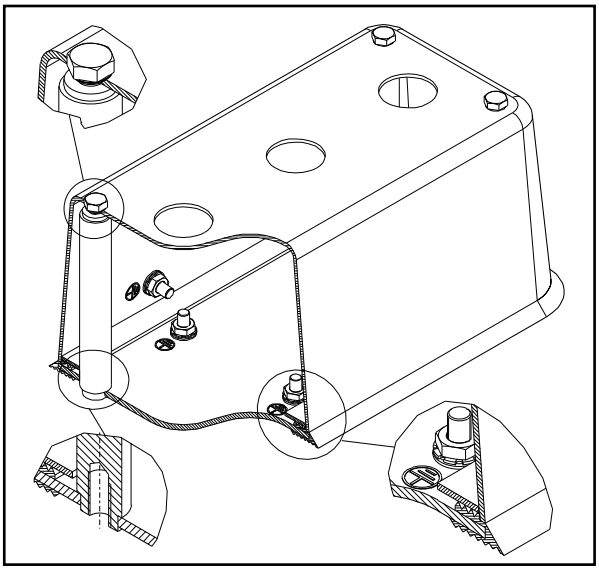
Design
The mounting boxes (control boxes) of the type series Ex-EBG consist of a housing top part made of V4A material produced using a special deep-drawing process and a bottom part. Versions are available as empty housing with bore holes for 1, 3 and 5 control points (installation diameter: 22.3 mm).

The bottom part of the housing (with 2 earthing screws) has a special seal which covers the edges of the top part of the housing (with 1 earthing screw) and all sides of the bottom part of the housing.

The top and bottom parts of the housing are connected by means of V4A hexagonal screws M 5 × 10 (to ISO 4017 or DIN 933). With respect to tightness, the screw bushing is additionally protected with special washers (PA) and sealing.

The housing is fixed via 4 or 6 threaded boreholes – depending on version – M 6/12 deep. The corresponding screws (M 6) are not supplied.

The protection class is IP 67.



Option on request
Mounting box equipped with control and indicator devices.

Assembly instructions
The assembly (with screws M6) is provided via the bottom part (see figure “fixing holes” at pages 24 and 25).

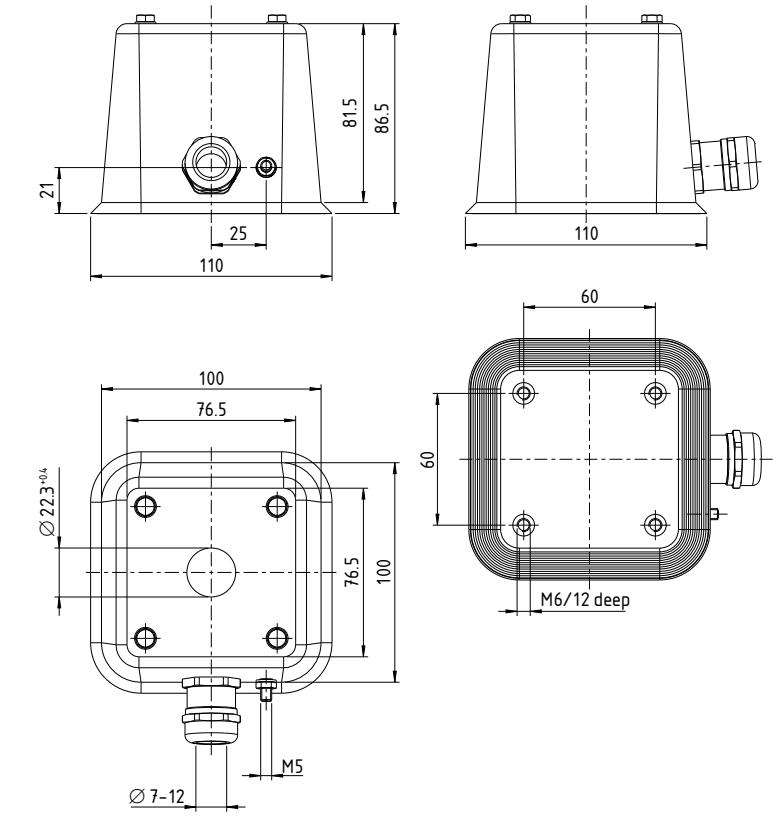
The cable entries are provided as follows:
- Housing Ex-EBG 311.O
  1 × M 20 –
  for cable-∅ 7–12 mm
- Housing Ex-EBG 633.O
  1 × M 25 –
  for cable-∅ 13–18 mm
- Housing Ex-EBG 665.O
  2 × M 25 –
  for cable-∅ 13–18 mm

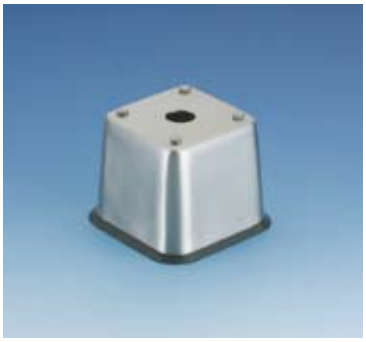
Simple apparatus – intrinsic safety

Type	Condition	Example
Passive components	none	Switches, junction box (**mounting box**), resistor, simple semiconductor device
Stored energy	Values shall be considered	Capacitor, inductor
Generated energy	≤ 1.5 V ≤ 100 mA ≤ 25 mW	Thermo couples Photo cell

- Empty housing made of V4A
- Versions for 1, 3 and 5 control points for installation-∅ 22.3 mm

Dimensions housing with 1 control point

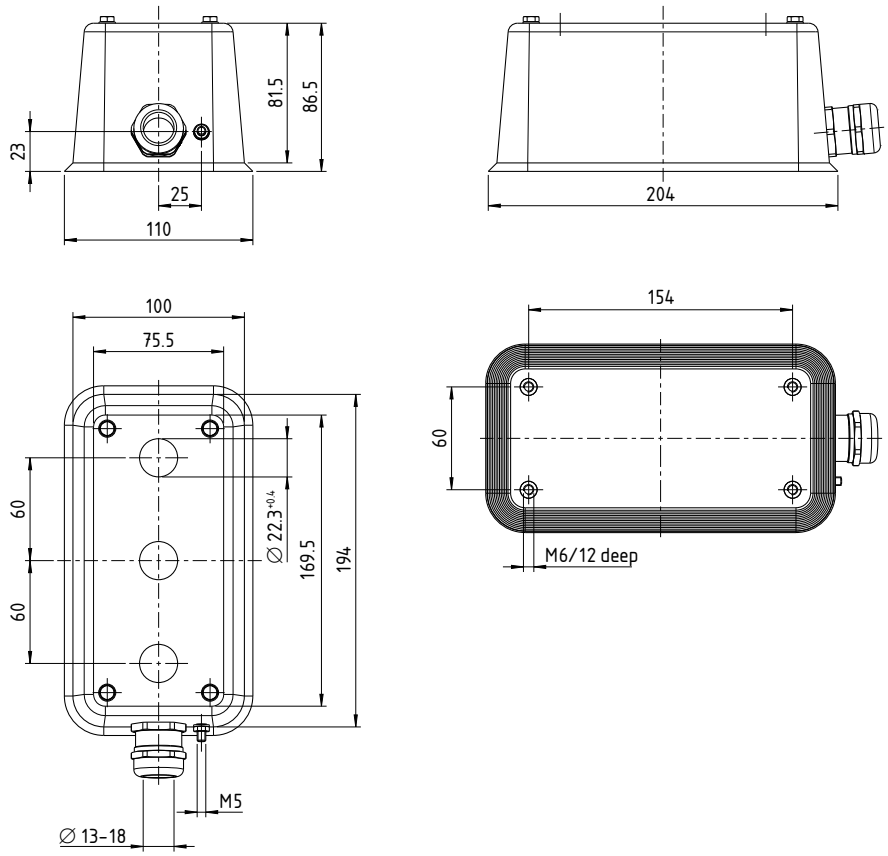




Housing type Ex-EBG 311.O

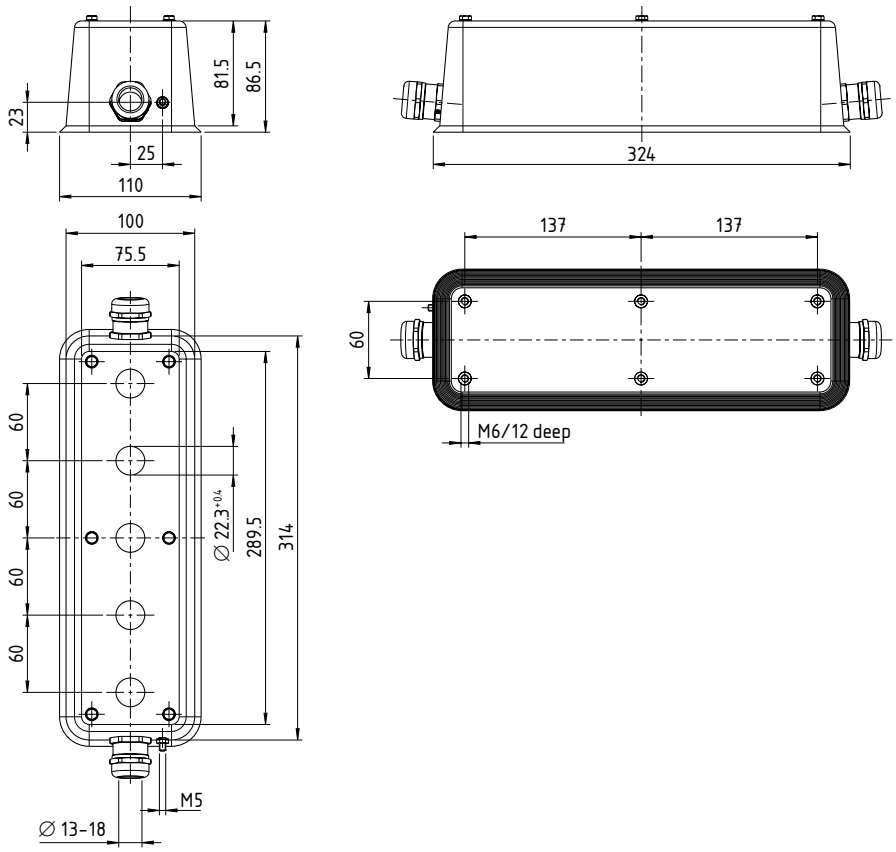
Housings (mounting boxes) (continued)

Dimensions housing with 3 control points



Housing type Ex-EBG 633.O

Dimensions housing with 5 control points



Housing type Ex-EBG 665.O

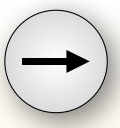
Product range housings			
Brief description	**Type**	**Catalogue no.**	**Order no.**
Housings (mounting boxes) with UV- and Ozone-resistant seals:			
• incl. 1 cable gland M20 × 1.5	Ex-EBG 311.O	084 9500	119 7404
• incl. 1 cable gland M25 × 1.5	Ex-EBG 633.O	084 9510	119 7405
• incl. 2 cable glands M25 × 1.5 and plug	Ex-EBG 665.O	084 9520	119 7406

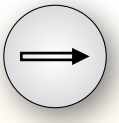
Product range accessories for housings			
Brief description	**Type**	**Catalogue no.**	**Order no.**
Plug for control device entry	Ex-RBN	084 0300	119 7407

Technical data	
Version	Under consideration of EN 1672-2 and ISO 14 159 largely avoiding corners and edges with radiuses > 6 mm
Type of protection	IP 67
Material	NIROSTA 1.4571 (AiSi 316Ti)
Use of the material	Apparatus and components of the chemicals industry, textiles industry, cellulose manufacture, dye works as well as in the photo, paint, artificial resin and rubber industry
Corrosion resistance class	III medium (structures with moderate chloride and sulphur dioxide exposure from industry, traffic and sea water atmosphere; a concentration of pollutants must be avoided)

Notes

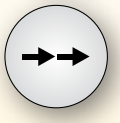
Linear motion

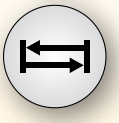

101
Working motion feed

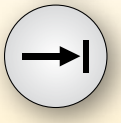

102
Rapid motion or idling

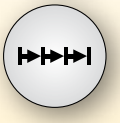

103
Rapid motion

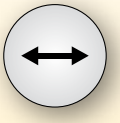

104
Feed


105
Interrupted motion jogging


106
Reciprocating motion

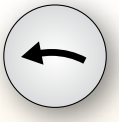

107
Limited motion


108
Indexing


109
Motion in 2 directions

Rotary motion

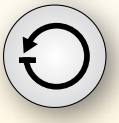

201
Continuous clockwise rotation


202
Anti-clock-wise rotation

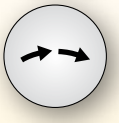

203
Clockwise rotation STOP


204
Anti-clockwise rotation STOP

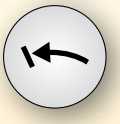

205
1 revolution clockwise

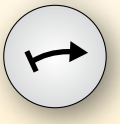

206
Anti-clock-wise

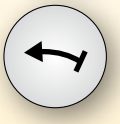

207
Rotary indexing


208
Interrupted rotary motion

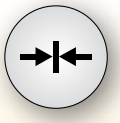

209
Clockwise motion restricted

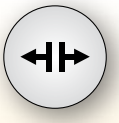

210
Anti-clock-wise motion restricted

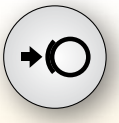

211
Clockwise motion from a restriction


211
Anti-clockwise motion from a restriction

Additional options

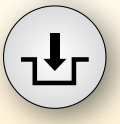

301
Clamping, chucking


302
Release

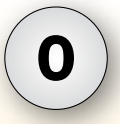

303
Braking


304
Release brake


305
Unlock

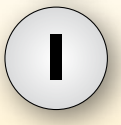

306
Lock

Arabic numerals[1]


700


701


702


801


802


803

1 Other numerals available, e.g. part no. 709 for number 9

Drives

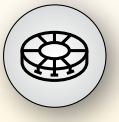

401
Electric motor


402
Pump general


403
Gear pump


405
Coolant


406
Oil lubrication


407
Rotary indexing table

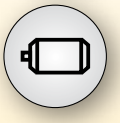

408
Shuttle table forward


409
Backwards

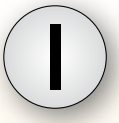

410
Brake fan


411
Caution – live


412
Clamp table rectangular

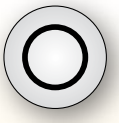

413
Electrical machine

Signals


501
On


502
Jog

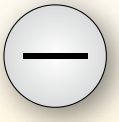

503
Automatic


504
Off


505
Everything off


506
On – off


507
Increase of a variable


508
Decrease of a variable


509
Pause (time elapse)


510
Manual operation


511
Visual


512
Hydraulics

Words

513

514

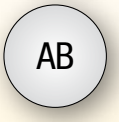
515

516

517

518

519



520

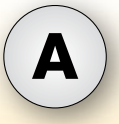
521

522

523

524

Letters[1]



901

902

903

904

1 Further letters available

Control elements	
Regulations	• IEC/EN 60947-5-1 • IEC/EN 60947-5-5 • EN 60947-1 • EN 61241-1 • EN 60079-0 • EN 60079-11
Equipment category	Ⓔx II 2GD
Type of protection (ATEX)[1]	• Ex ib IIC T4 X • Ex tD A21 IP65 T110°C X (in combination mit contact/illuminated element(s) and Ex-EBG xxx.O housings)
Design	round
Installation-∅	22.3 mm
Grid dimension	• 40 × 50 mm • 50 × 60 mm (selector switches, mushroom-head impact button with latching)
Front plate thickness	1 … 6 mm (1 … 5 mm with identification plate)
Installation position	any
Designation	Identification plates, symbols
Climatic resistance to DIN EN 60068	Part 2-30
Ambient temperature	• Pushbuttons: −25 °C … +70 °C • Illuminated pushbuttons: −25 °C … +70 °C • Pilot lights: −25 °C … +70 °C • Impact buttons: −25 °C … +70 °C • Selector switches: 0 °C … +70 °C • Key-operated switches: 0 °C … +70 °C
Switching frequency	1,000 s/h (except impact button with latching)
Degree of protection acc. IEC 60529	IP 65
Mechanical resistance (EN 60079-0)	refer to description page 10 et seq.
Full insulation	yes
Materials	• Swivels: PC (chemical-resistance see page 32) • Front rings: Ms chromated • Buttons: Ms coated
Type of fixing	with mounting flange
Max. torque for mounting	2 Nm
Shock resistance to IEC 60068-2-27	<50 g
Vibration resistance to IEC 60068-2-6	5 g
Actuating stroke	4 mm
Actuating force	• Pushbuttons: approx. 1.5 N • Pushbuttons with diaphragm: approx. 2 N • Illuminated pushbuttons: approx. 1.5 N • Selector switches: approx. 0.2 Nm • Impact buttons: approx. 2 N
Mechanical life	• Pushbuttons: 10×10^6 switching cycles • Illuminated pushbuttons: 5×10^6 switching cycles • Selector switches: 3×10^5 switching cycles • Key-operated switches: 1×10^5 switching cycles
Rohs-conformity	yes

1) The temperature informations corresponds the installation in reference mounting boxes Ex-EBG 665.O (see page 25).
In combination with control devices and contact/illuminated contact elements the housing fufills the requirements Ex tD (protection by housing).

Contact/illuminated contact elements	
Regulations	• IEC/EN 60947-5-1 • IEC/EN 60947-5-5 • EN 61241-1 • EN 60079-0 • EN 60079-11
Equipment category	Ⓔx II 3GD
Explosion protection (ATEX)[1]	• Ex ib IIC T4 X • Ex tD A21 IP65 T110°C X (in combination with control device(s) and Ex-EBG xxx.O housings)
U_i	• Contact element: 250 V • Illuminated contact element: 24 V
I_i	• Contact element: 6 A • Illuminated contact element: 0.8 A
P_i	• Contact element: max. 1,500 W • Illuminated contact element: max. 2 W
C_i	~ 0
L_i	~ 0
Rated operating voltage U_e max.	• Contact element: 400 V • Illuminated contact element: 24 V
Rated insulation voltage U_i at pollution degree 3 to IEC 60947-1	400 V
Rated impulse withstand voltage	U_{imp} 4 kV
Thermal rated current I_{th} (in air)	6 A
Rated operating voltage I_e as dependent on the utilisation category and test voltage U_e	• 6 A, AC-15, 250 VAC • 3 A, DC-13, 24 VDC
Contact safety	5 VDC/1 mA
Short-circuit protection	gG 6 A
Proof of positive opening	2.5 kV impulse voltage
Positive opening path	approx. 2 mm after achieving opening point
Air clearance and creeping distance to DIN EN 60664-1	4 kV/3
Switching frequency	1,200 s/h
Switching points	• NC: approx. 1 mm • NO: ca. 2.5 mm
Climatic resistance to DIN EN 60068	Part 2-20
Installation position	any
Mechanical life to IEC 60947-5-1	10×10^6 switching cycles
Actuating force at stroke end	approx. 4.5 N
Terminal designations	to IEC 60947-1
Type of connection	Screwed connection
Mounting diameter	• Single-core: 2 × (0.5 … 2.5 mm²) • Dual-core with wire-end ferrule: 2 × (0.5 … 1.5 mm²)
Max. torque of the mounting screw	max. 1 Nm
Electric shock protection	present (to EN 50274 and BGV A2)
Protection class	• Connections: IP 20 (finger-safe) • Switching elements: IP 40

1) The temperature informations corresponds the installation in reference mounting boxes Ex-EBG 665.O (see page 25).
In combination with control devices and contact/illuminated contact elements the housing fufills the requirements Ex tD (protection by housing).

Chemical resistance of polycarbonate

The following details are based on information from our suppliers and are merely intended as orientation of a non-binding character because the respective resistance usually depends on several influencing aspects (quantity, duration of exposure, temperature etc.).

The influence of chemicals on the part made of polycarbonate will depend on the concentration and temperature.

The resistance of a product made of polycarbonate to chemicals must be examined in individual cases if exposure to chemical (also household chemicals or food) is to be expected by the intended use.

Test method
The object is exposed to a solution of a specific chemical at 23 °C and 70 °C for 28 days after which any changes to the physical properties are tested.

Component		Max. concentration	Immersion temperature	
			23 °C	70 °C
Inorganic acids	Distilled water		O	A
	Hydrochloric acid	–10%	O	A
		–20%	O	A
	Sulfuric acid	–10%	O	A
		–30%	O	A
	Nitric acid	–10%	A	A
		–30%		X
Alkalis	Sodium hydroxide	–1%	A	X
	Ammonium hydroxide		X	X
	Calcium hydroxide	–10%		
	Cooking salt	–10%	O	A
	Potassium chloride	–10%	O	A
	Potassium nitrate	–10%	O	A
	Potassium dichromate	–10%	A	A
Inorganic salts	Sodium sulfide	–10%	O	A
	Ammonium chloride	–10%	O	A
	Calcium chloride	–10%	O	A
	Sodium carbonate	–10%		
Alcohols	Methanol		A	
	Ethanol	–50%	O	A
	i-Propanol		O	A
	n-Butanol		O	A–O
	Ethylene glycol		O	O
	Glycerine		O	O
Organic acids	Formic acid	–10%	O	
	Acetic acid (vinegar)	–10%	O	A–X
	Oxalic acid	–10%	O	O
	Oleic acid		O	O
Organic solvents	n-Hexane		O	
	n-Heptane		O	O–A
	Cyclohexane		A	X
	Benzol		X	X
	Toluene		X	X
	Acetone		X	
	Methyl-ethyl-ketone		X	
	Butyl acetate		X	
	Methylene chloride		X	
	Carbon tetrachloride		X	X
	Gasoline		A	X
	Kerosene		O	
	Paraffin oil		O	

O Only minimal changes of the physical attributes in both tests
A Only momentary applicable
X Application not possible, swelling and decomposition

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