Technical information

						Command auxiliaries
Rated insulation voltage		Ui	IEC947-5-1		V	600
Rated thermal current		Ithe	IEC947-5-1		A	10
Rated operating current			IEC947-5-1/EN60947-5-1			
	Category AC15	Ie		230 V	A	6
				400 V	A	4
				500 V	A	3
	Category DC13	Ie		24 V	A	6
				250 V	A	0,4
Insulation				500 V DC	MΩ	100
Contact resistance			IEC255-7 cat. 3	Initial value	mΩ	25
Insulation strength				50/60 Hz per 1' *	Vca	2500
Protection against short circuits		IEC269 (IEC947-5-1)				
			GI or gG fuse		A	10
Conditional short circuit current			IEC947-5-1		A	100
Pollution degree			IEC947-5-1			3
Command protection degree	(EN 60529)		Opaque/illuminated		IP	65
			Dual pushbuttons		IP	40
			Controllers		IP	65
Resistance to vibrations			IEC68-2-6		mm	0,35 ± 15% (10 to 55 Hz ± 1 Hz)
Resistance to shock			IEC68-2-27	11 ms	g	30
Mechanical life			Mushroom and coupling			
			pushbuttons and controllers		cycles	500000
			Selector switches and		cycles	1000000
			Illuminated pushbuttons		cycles	3000000
Electrical life			at 250 V AC 6A with			
			resistant cosφ=1		min cycles	500000
			at 250 V AC 6A with			
			inductive load of cosφ=0,4		min cycles	500000
Distance between contacts			slow action models		mm	2x2
Terminals			type			Screw with combined notch and removable plate
			Screw		M	3,5
			Protection level		IP	20
			Material			Steel class 8.8 / 6-8 micron galvanised iridescent yellow
			Max screw tightening force		N cm (kg cm)	120 (12,24)
			Sections that can	rigid cable	mm^2	2x1,5
			be connected	flexible cable	mm^2	2x1,5
			With prod terminal		mm^2	1x1,5
			Terminal numbering			In accordance with EN50013
			Terminal coloring			Red for NC contacts, green for NO contacts

Conditions of use

Ambient temperature	operating	°C	-25 to +70
Relative humidity	operating		95% max
Weather resistance	temperate in accordance with DIN 50014:		23/50
	damp in accordance with DIN 50015:		23/83
	hot humid in accordance with DIN 50015:		40-92
	variable humid in accordance with DIN 50016:		FW24

* Between terminals of the same polarity; between terminals of different polarity; between live metal parts and mass; between live and unpowered metal parts.

Definition of the colors in accordance with the specific use

- **Provisions laid down by the CEI 16-3, EN60073 and CEI 44-5, and EN60204-1 standards**

- **Introduction:** when the color alone is insufficient to identify a function, it is useful to make use of one or more complementary methods, such as wording or symbols. For the symbols, see the EI 16-3 and IEC 417 standards. To simplify the choice of colors, some of the provisions set out in the CEI 16-3 and CEI 44-5 standards are set out below.

Colors of the light indicators and their meaning

Color	Meaning	Explanation	Operator action	Examples of application
Red	**Emergency**	Dangerous conditions	Immediate action to eliminate a dangerous condition (such as an emergency stop)	❑ Pressure / temperature outside safety limits ❑ Voltage drop ❑ Cut-off ❑ Limit switch beyond the stop condition
Yellow	**Abnormal**	Abnormal conditions critical condition imminent	Check and/or action (such as the restoration of the desired function)	❑ Pressure / temperature beyond normal limits ❑ Release of the safety device
Green	**Normal**	Normal condition	Optional	❑ Pressure / temperature within normal limits ❑ Authorisation to proceed
Blue	**Compulsory**	Indicates a condition requiring action by the operator	Compulsory action	❑ Instruction to enter pre-selected values
White	**Neutral**	Other conditions – may be used each time there are doubts over the use of the other colours	Check	❑ General information

Illuminated pushbuttons
The illuminated pushbuttons have to be colored in accordance with the code in the tables.
The red color used for the emergency stop driver should not depend on its light source.

Colors of the light indicators on the illuminated pushbuttons and their meaning*

Color	Meaning	Explanation	Examples of application
Red	**Emergency**	Activate in the event of dangerous or emergency conditions	❑ Emergency stop ❑ Start of the emergency function (**)
Yellow	**Abnormal**	Activate in the event of abnormal conditions	❑ Operation to eliminate an abnormal condition ❑ Operation to restart an interrupted automatic cycle
Green	**Safety**	Activate in the event of a safety condition or as preparation for a normal condition	(**)
Blue	**Compulsory**	Activate in the event of a condition that requires compulsory action	❑ Reset function
White	**No specific meaning**	For the general start-up of the functions, with the exception of emergency stop (see note **)	❑ Start-up (preferential) ❑ Stop
Grey			❑ Start-up ❑ Stop
Black			❑ Stop ❑ Start-up (preferential)

(*) When a supplementary coding method is used (such as a special structure, shape or position) to identify the pushbutton drive systems, white, grey or black may be used for a variety of functions (for example, white for the start and stop buttons).
(**) The colors for the start buttons are white and black, with white preferred. Green may also be used. Red should be used for the emergency stop buttons. The colors used for the stop buttons are white and (preferably) black. Red may also be used. Green cannot be used. Red, green and yellow should not be used for pushbuttons that cause start-up or stop, or which cause a function to be performed when they are pressed and a stop when released (pushbuttons held down, for example). Green is reserved for the indication of normal or safety functions. Green should not be used for reset buttons.

22mm diameter selector switches – Thermoplastic - Rear ring-nut mounting

Short black handle selector switch

Code	Model	Description
ER503010	**ISN1CD**	2 position 0-1 maintained
ER543400	**ISN1CD-RD**	2 position 0-1 with spring return
ER503000	**ISN1A**	2 position 0-1 maintained at 60°
ER503020	**ISN1E**	3 position 1-0-2 maintained
ER543500	**ISN1E-RD**	3 position 1 maintained-0-with spring return-2
ER543510	**ISN1E-RS**	3 position 1 with spring return-0-maintained-2
ER543520	**ISN1E-RC**	3 position 1-0-2 with spring return

Long black handle selector switch

Code	Model	Description
ER503110	**ISNL1CD**	2 position 0-1 maintained
ER543600	**ISNL1CD-RD**	2 position 0-1 with spring return
ER503100	**ISNL1A**	2 position 0-1 maintained at 60°
ER503120	**ISNL1E**	3 position 1-0-2 maintained
ER543700	**ISNL1E-RD**	3 position 1 maintained-0-with spring return-2
ER543710	**ISNL1E-RS**	3 position 1 with spring return-0-maintained-2
ER543720	**ISNL1E-RC**	33 position 1-0-2 with spring return

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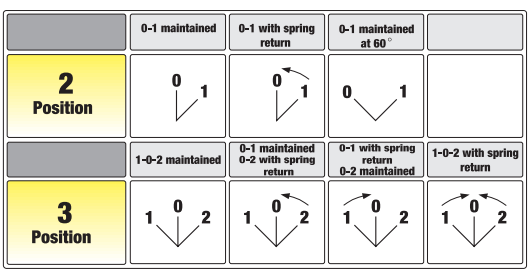
Key selector

Code	Model	Description	Key removable in
ER543010	**ISC1CD/V**	2 position 0-1 maintained	0
ER543020	**ISC1CD/W**	2 position 0-1 maintained	1
ER503210	**ISC1CD/Z**	2 position 0-1 maintained	0-1
ER543030	**ISC1CD-RD/V**	2 position 0-1 with spring return	0
ER503200	**ISC1A/U**	2 position 0-1 maintained at 60°	0
ER543100	**ISC1A/W**	2 position 0-1 maintained at 60°	1
ER543110	**ISC1A/Y**	2 position 0-1 maintained at 60°	0-1
ER503220	**ISC1E/J**	3 position 1-0-2 maintained	1-0-2
ER543200	**ISC1E/V**	3 position 1-0-2 maintained	0
ER543210	**ISC1E/U**	3 position 1-0-2 maintained	1
ER543220	**ISC1E/Y**	3 position 1-0-2 maintained	1-2
ER543230	**ISC1E/Z**	3 position 1-0-2 maintained	0-2
ER543240	**ISC1E/W**	3 position 1-0-2 maintained	2
ER543250	**ISC1E/X**	3 position 1-0-2 maintained	1-0
ER543260	**ISC1E-RD/V**	3 position 1 maintained 0-2 with spring return	0
ER543270	**ISC1E-RD/X**	3 position 1 maintained 0-2 with spring return	1-0
ER543280	**ISC1E-RD/U**	3 position 1 maintained 0-2 maintained	1
ER543290	**ISC1E-RS/V**	3 position 1 with spring return-0-2 maintained	0
ER543300	**ISC1E-RS/W**	3 position 1 with spring return-0-2 maintained	2
ER543310	**ISC1E-RS/Z**	3 position 1 with spring return-0-2 maintained	0-2
ER543320	**ISC1E-RC/V**	3 position 1-0-2 with spring return	0

(*) **Note:**
The final letter in the model code identifies the key extraction position (to find the meaning, see the table below).
In the key selectors with return to centre, the key can be removed only in the central position. In the key selectors with return from the left or the right, the key can be removed in the other two stable positions.

Suffix letter	Left	Center	Right
U	■		
W			■
V		■	
X	■	■	
Y	■		■
Z		■	■
J	■	■	■

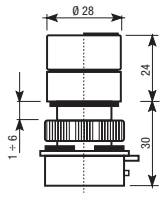
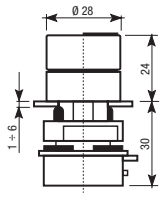
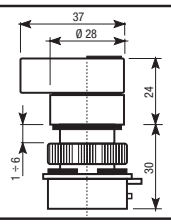
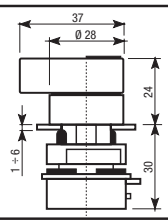
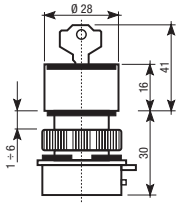
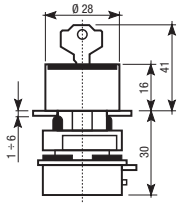
The above parts refer to **ONLY** the **OPERATOR** and **CONTACT HOLDER ELEMENT**. The products may be combined with one or more **CONTACT ELEMENTS** shown on page C27.



- Dimensions page **C26**
- Technical information page **C8**

22mm diameter operators – Dimensions (mm)

Selector switches

Series	Model	Thermoplastic and metal operators (ring-nut mounting)	Model	Metal operators (screw mounting)
Short handle selector switch	ISN... SN... QSN...		SN.../V	
Long handle selector switch	ISNL... SNL... QSNL...		SNL.../V	
Key selector switch	ISC... SC... QSC...		ISC.../V	

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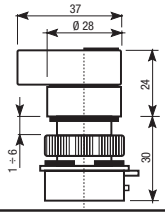
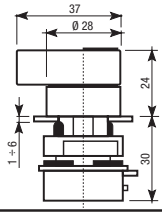
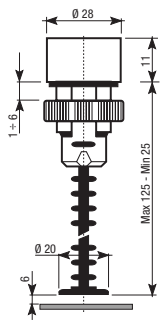
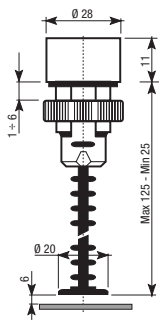
Two and three position illuminated operators

Series	Model	Thermoplastic operators	Model	Metal operators
Short selector switch	ISL... SL...		SL.../V	

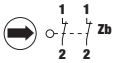
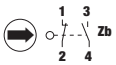
Reset pushbutton

Series	Model	Thermoplastic operators	Model	Metal operators
Reset button	IPR... + AR QPR... + AR		PR... + AR	

Contact elements for 22 or 30mm diameter operators

Contact elements (*)

Code	Model	Description	
ER520810	**C01B**	1 NC	
ER520800	**C10B**	1 NO	

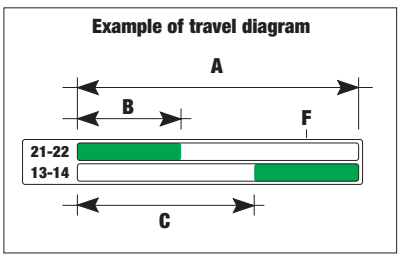
Code	Model	Description	
ER520840	**C02**	2 NC	
ER520830	**C20**	2 NO	
ER520820	**C11**	1 NC + 1 NO	

Zb Contact element in exchange with 4 terminals (the two mobile contacts are electrically separated)

Forced NC contact opening symbol (IEC 947-5-1, section 3)
For switches used in command circuits with safety functions, the safe operation of the NC contact opening is required (see IEC 204, EN 60204)

(*) Slow action contact element

Example of travel diagram

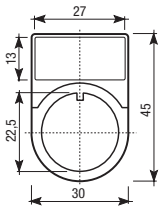
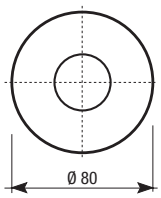
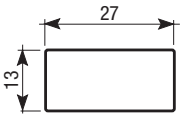
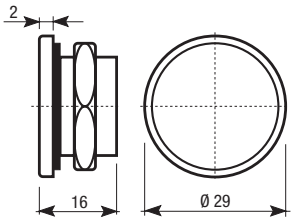
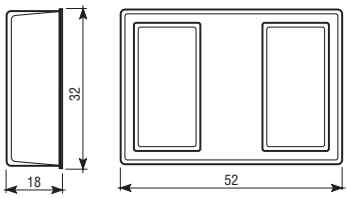
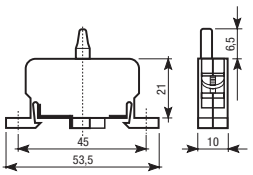
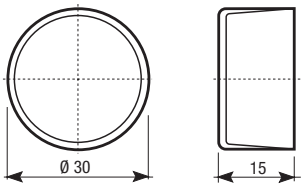
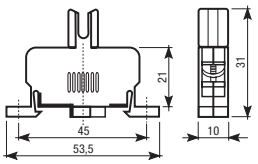
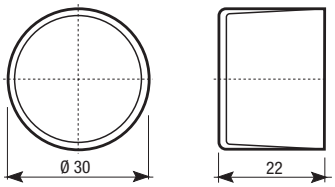
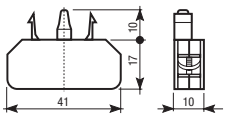
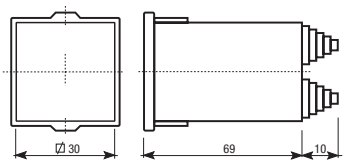
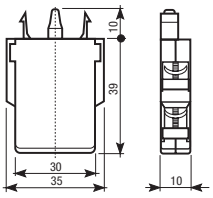
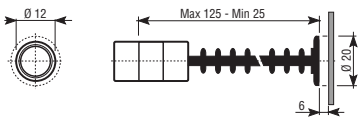
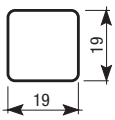


A = maximum driver travel
B = drive travel up to the opening of the 21-22 NC contact
C = drive travel up to the closure of the 13-14 NO contact
F = total travel necessary for complete forced opening

C

• Dimensions page **C32**
• Technical information page **C8**

Accessories for 22mm diameter operator - Dimension (mm)

Series and model	Dimensions	Series and model	Dimensions
PTR PTQ Plate holders		**DG22 DGS22 Adhesive yellow disc**	
EN Series adhesive labels		**T22 Closure caps for 22.5 hole**	
P22-2 P22-3 P22-4 Anti-dust caps for double pushbutton		**R01 R10 Contact elements for control station**	
P22 Dust caps for flush pushbuttons		**BL9R GRR Lamp holder for rear mounting**	
P22-A Dust caps for extended pushbuttons		**C01B C10B Contact elements**	
CF Dust caps for for contacts elements		**C02 C20 C11 Contact elements**	
AR Reset button rod		**Adhesive legend labels**	

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