



***industrial  
controls***

[www.breter.it](http://www.breter.it)

# Cam switches R series

from 16A to 315A





# PROFILE

BRETER has been established in the fifties as a manufacturer of switches for industrial applications and achieved a key specialist role in the market of electro-mechanical low-voltage industrial controls, especially due to its expertise on custom-designed products.

Product quality has been Breter distinctive and prestigious way to be succesful through the years.

Thanks to its development and constructive policies, today Breter's strength is a unit of 20.000 square meters, a specialists equipe, the leading position into the major international markets besides Italy and a worldwide distribution network.

The Company works in Quality Warranty to ensure top quality levels, also confirmed by products conformity to UL/CSA and IEC/EN national and international regulations and a number of approvals.

Breter faces the future with technological innovations applied to design systems, workshop, production and Quality Warranty structures.

High innovative production organizations are based on automatic assembly lines and automatic injection plastic materials presses as well as advanced gears for quality control carried out on 100% of finished products.

Engineering systems exploit CAD technology to develop new solutions and improve products quality and functionality.

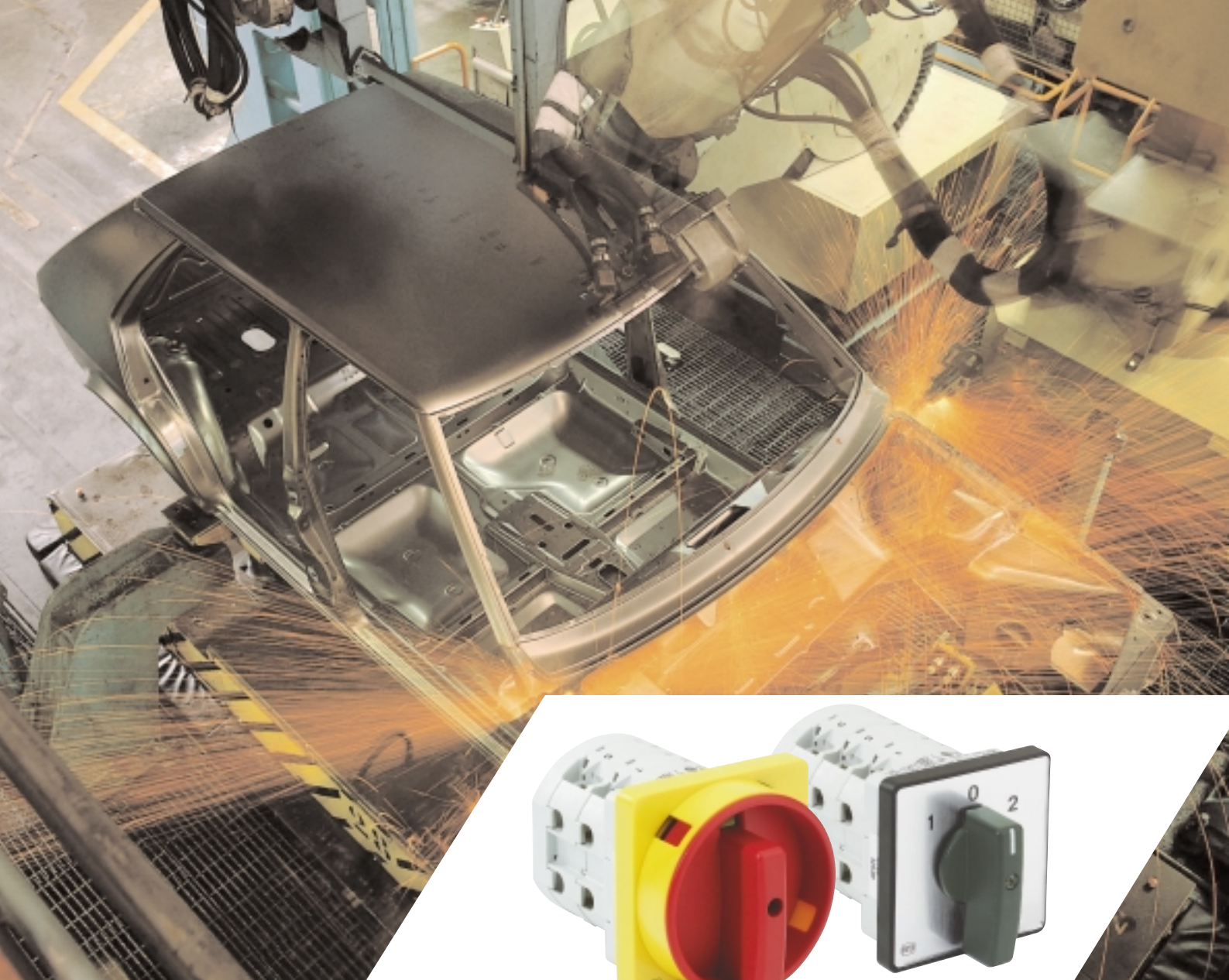
The Company Test Laboratory is equipped with gears and instruments suitable for electrical, mechanical and climatic high reliable tests both on prototypes and finished products.

Breter complete range of standard and special versions for all power and control functions in electrical and electronic applications is typically used by OEM, panel builders and installers in the following fields: tools and industrial machines, automation, transports, off-shore, lifting equipment, energy production and distribution.

The whole Breter range covers more than 4 thousands products out of the catalog in addition to an even higher number of custom-designed products; cam switches and switch disconnectors from 10A up to 630A and a complete line of push buttons, selector switches and pilot lights Ø 16 - 22 - 30 mm with plenty of choices as far as functions and outward solutions.







## R SERIES

### Cam switches

For rated current from 16A to 315A  
Wide range of electrical functions  
Special schemes  
available on request

Type of fixing: front mounting, base  
mounting or central fixing Ø 22mm

Actuator with screw fixture or  
central fixture Ø 22mm

### LEGENDA

- Black legend plate
- Grey legend plate
- Silver-grey legend plate
- Grey/black actuator
- Yellow/red actuator
- Key removable

## General features

The features and the use of the best standard of materials assure the quality, reliability and safety of breter cam-switches, as confirmed by the approvals granted by the most important international test houses.

- Use for breaking, changing-over, making and starting of circuits with inductive or resistive electric loads; rated loads from 16A up to 315A
- High resistance to mechanical stress and to tracking, dimensional stability.
- Double break silver alloy contacts
- Screw terminals for cables with/without cable terminal, of easy identification
- Special electrical schemes available on request
- Wide range of attachments to obtain many versions
- Quality and reliability for the highest safety of operation on control circuits
- Convenience and practical use
- Compliance with international specifications
- Ip degree of protection according to IEC 529, CEI 70-1
- CEI/EN 60445 is the standard applies to the identification and marking of terminals of electrical equipment

**On-off switch**

Two-position switches used to connect and disconnect any electrical supply. They are used in a variety of power switching applications like manual control of direct on-line motors and isolation of motor branch circuits.

**Changeover switch**

Three-position switches used in power applications to change between alternate electrical supplies. Changeover switches are typically used to switch the power supply from the primary source to a stand-by generator or emergency supply in the event of a power outage.

**Step switch**

Multi-position switches used to connect a variety of loads to an electrical supply in a predetermined logical sequence. A typical application would be temperature control of a heating oven or furnace.

**Reversing switch**

Three-position (Forward, Off, Reverse) switches used to manually control the direction of rotation of a motor. Operating the switch changes the wiring configuration to the motor to operate in the forward or reverse direction.

**Dahlander switch**

Three-position (1st speed, off, 2nd speed) switches used to select 2 different speeds of rotation of a motor. Operating the switch changes the wiring configuration and the number of poles of the motor (i.e. 4/2, 8/4, etc.). The second speed is always two times the first one.

**Star Delta switch (Wye-Delta)**

Three-position (Off, Wye, Delta) switches used to manually control the reduced voltage starting of a motor. Operating the switch changes the wiring configuration to the motor from a star configuration to a delta configuration once the person operating the controller determines the motor is up to speed.

**Ammeter switch**

Multi-position switches used to connect one or more phases of the electrical supply to an ammeter, so that the current in each phase can be displayed on the ammeter.

**Voltmeter switch**

Multi-position switches used to connect two lines of the electrical supply system to a voltmeter, so that the voltage between lines (phase-to-phase or phase-to-neutral) can be displayed on the voltmeter.

**DICHIARAZIONE DI CONFORMITA'**

Declaration of conformity

**N ° 04/2003**

Noi **BRETER S.r.l.**  
We (Denominazione del fornitore) (Supplier's name)

**Via Cardinal Riboldi 161 - Paderno Dugnano**  
(Indirizzo) (Address)

Dichiariamo sotto la nostra esclusiva responsabilità che il prodotto  
Declare under our sole responsibility that the product

Questa dichiarazione è conforme alla Norma Europea EN 45014 "Criteri generali per la dichiarazione di conformità rilasciata dal fornitore". Le basi per l'enunciazione dei criteri esposti derivano dalla documentazione internazionale, in particolare dalla guida ISO/IEC 22, 1982. "Informazioni sulla dichiarazione di conformità alle norme o ad altre specifiche tecniche rilasciate dal fornitore".

This Declaration of Conformity is suitable to the European Standard EN 45014 "General criteria for supplier's declaration of conformity".

The basis for the criteria has been found in international documentation, particularly in: ISO/IEC Guide 22 1982. "Information on manufacturer's declaration of conformity with standards or other technical specifications".

**COMMUTATORI A CAMME/CAM SWITCHES**

**SERIE/SERIES: 13-14-1-R32-R40-R50-R80-R125-R250-R400-R630 ed accessori / and accessories**

(nome, tipo, modello, lotto, gruppo o numero di serie, possibilmente la sua origine ed il numero)  
(name, type or model, batch or serial number, possibly sources and number of items)

al quale questa dichiarazione si riferisce è conforme alla seguente norma o ad altri documenti normativi

to which this declaration relates is in conformity with the following standard(s) or other normative document(s)

**EN 60947- 1** (1999) - Apparecchiature a bassa tensione - Regole generali (Inclusi A1+A2)  
**IEC 60947- 1** (1999) - Low -voltage switchgear and controlgear - General rules  
**DIN VDE 0660 Teil100** (1992) - Niederspannung-Schaltgeräte Teil 1:Allgemeine Festlegungen  
**EN 60947-3**(1999) - Interruttori di manovra-sezionatori e unità combinate con fusibili  
**IEC 60947- 3**(1999) - Switches, disconnectors, switch-disconnectors and fuse-combin. units  
**DIN VDE 0660 Teil 107** (1992) - Niederspannung-Schaltgeräte Teil 3 : Lastschalter; Trennschalter Lasttrennschalter und Schalter-Sicherungs-Einheiten Incl.Amendments.

(titolo e/o num. e data di pubbl. della norma e/o di altri documenti normativi, se applicabili)  
(title and/or number and date of issue of the standard(s) or other normative document(s))

in base a quanto previsto dalla direttiva

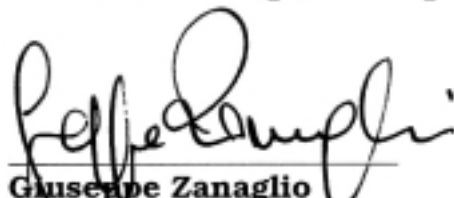
following the provisions of Directive(s)

**73/23 CEE Materiale elettrico da utilizzare entro taluni limiti di tensione**  
Electrical equipment designed for use within certain voltage limits  
**93/68 CEE Modifiche apportate alla Direttiva sopra menzionata**  
Amending to above mentioned Directive  
**89/336 CEE Compatibilità elettromagnetica**  
Electromagnetic compatibility

Anno di 1° Marcatura CE (Direttiva Bassa Tensione)  
1<sup>st</sup> Year of CE Marking (Low Voltage directive)

**1997**

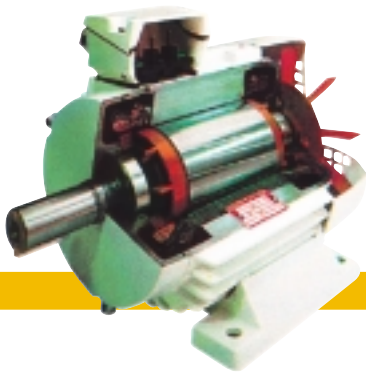
Paderno Dugnano, 01.04.03

  
**Giuseppe Zanaglio**  
Direttore Generale  
General Manager



To choose the most suitable and economic cam-switch in relation to the specific application it is necessary to compare the operating parameters of the unit to be controlled (voltage, current and power) with the cam-switch performance.

To make this comparison consult the IEC/EN 60947-1-3, 60947-5-1, 60204-1, specifications for the utilization categories.



- AC-1 Non-inductive or slightly inductive loads, resistance furnaces
- AC-3 Squirrel-cage motors: starting switching off motors during running
- AC-4 Squirrel-cage motors: starting, plugging, inching
- AC-12 Control of resistive loads and solid state loads with isolation by optocouplers
- AC-13 Control of solid state loads with transformer isolation
- AC-15 Control of a.c. electromagnetic loads
- AC-20 Connecting and disconnecting under no-load condition
- AC-21 Switching of resistive loads, including moderate overloads
- AC-22 Switching of mixed resistive and inductive loads, including moderate overloads
- AC-23 Switching of motor loads or other highly inductive loads
  
- DC-1 Non-inductive or slightly inductive loads, resistance furnaces
- DC-3 Shunt-motors, starting, plugging, inching, dynamic breaking of motors
- DC-5 Series-motors, starting, plugging, inching, dynamic breaking of motors
- DC-12 Control of resistive loads and solid state loads with isolation by optocouplers
- DC-13 Control of d.c. electromagnets
- DC-20 Connecting and disconnecting under no-load conditions
- DC-21 Switching of resistive loads, including moderate overloads
- DC-22 Switching of mixed resistive and inductive loads, including moderate overloads (e.g. shunt motors)
- DC-23 Switching of highly inductive loads (e.g. series motors)

### Average full load currents of squirrel cage motors

(alternate current 4 poles 1500 rpm)

kW	Ampère			
	230V	400V	500V	690V
0,06	0,41	0,24	0,19	0,14
0,09	0,62	0,36	0,29	0,21
0,12	0,83	0,48	0,38	0,28
0,18	1,16	0,67	0,54	0,39
0,25	1,43	0,83	0,66	0,48
0,37	1,90	1,10	0,88	0,64
0,55	2,67	1,55	1,24	0,90
0,75	3,45	2,00	1,60	1,16
1,10	4,75	2,75	2,20	1,60
1,50	6,05	3,50	2,80	2,05
2,20	8,45	4,90	3,90	2,85
3,00	11,70	6,80	5,40	3,90
4,00	15,00	8,70	7,00	5,00
5,50	19,50	11,30	9,10	6,50
7,50	25,50	14,80	11,90	8,60
11,00	37,00	21,50	17,00	12,50
15,00	50,00	29,00	23,00	17,00
18,50	60,50	35,00	28,00	20,50
22,00	72,50	42,00	33,50	24,50
30,00	97,50	56,50	45,00	32,50
37,00	117,00	68,00	54,50	39,50
45,00	141,00	82,00	64,00	47,00
55,00	173,00	100,50	80,00	57,00
75,00	229,00	133,00	106,00	77,00
90,00	272,00	158,00	126,00	91,00
110,00	333,00	193,00	153,00	110,00

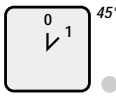
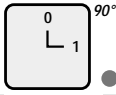
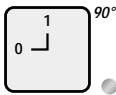
# Series R Front mounting - On-off switches



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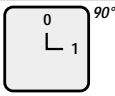
## Standard handle

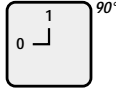


Rated current $I_e$ AC-21A (A)	IP protection	Dimensions mm x mm	1 pole 1 bank	2 poles 1 banks	3 poles 2 banks	4 poles 2 banks	6 poles 3 banks
16	40	 48	14.01.11	14.02.11	14.03.11	14.04.11	
		 54	13.01.11	13.02.11	13.03.11	13.04.11	
72			13.01.11C	13.02.11C	13.03.11C	13.04.11C	
20			1.01.11	1.02.11	1.03.11	1.04.11	
25							
32		66	 64	RE321751A	RE321752A	RE321753A	RE321754A
40	RE401751A			RE401752A	RE401753A	RE401754A	RE401756A
50	RE501751A			RE501752A	RE501753A	RE501754A	RE501756A
75	RE801751A			RE801752A	RE801753A	RE801754A	RE801756A
120	RE1251751A			RE1251752A	RE1251753A	RE1251754A	RE1251756A
200				RE2501752A	RE2501753A	RE2501754A	RE2501756A
250					RE4001753A	RE4001754A	
315					RE6301753A	RE6301754A	

## Padlockable handle



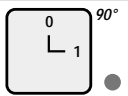
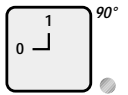
Rated current $I_e$ AC-21A (A)	IP protection	Dimensions mm x mm	3 poles 2 banks	4 poles 2 banks	3 poles 2 banks	4 poles 2 banks
20	54	 72	13.03.11-OZ	13.04.11-OZ	13.03.11-OM	13.04.11-OM
25			1.03.11-OZ	1.04.11-OZ	1.03.11-OM	1.04.11-OM

Rated current $I_e$ AC-21A (A)	IP protection	Dimensions mm x mm	3 poles 2 banks	4 poles 2 banks	6 poles 3 banks	3 poles 2 banks	4 poles 2 banks	6 poles 3 banks
32	66	 67	RE321753G	RE321754G	RE321756G	RE321753N	RE321754N	RE321756N
40			RE401753G	RE401754G	RE401756G	RE401753N	RE401754N	RE401756N
50			RE501753G	RE501754G	RE501756G	RE501753N	RE501754N	RE501756N
75			RE801753G	RE801754G	RE801756G	RE801753N	RE801754N	RE801756N
120			RE1251753G	RE1251754G	RE1251756G	RE1251753N	RE1251754N	RE1251756N
200			RE2501753G	RE2501754G	RE2501756G	RE2501753N	RE2501754N	RE2501756N
250			RE4001753G	RE4001754G		RE4001753N	RE4001754N	
315			RE6301753G	RE6301754G		RE6301753N	RE6301754N	



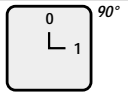
### Standard handle

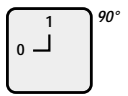


Rated current I <sub>e</sub> AC-21A (A)	IP protection	Dimensions mm x mm	3 poles 2 banks	4 poles 2 banks	6 poles 3 banks
20	54		13.03.11-3	13.04.11-3	
25			13.03C-3	13.04C-3	
			1.03.11-3	1.04.11-3	
32	66		RA321753A	RA321754A	RA321756A
40			RA401753A	RA401754A	RA401756A
50			RA501753A	RA501754A	RA501756A
75			RA801753A	RA801754A	RA801756A
120			RA1251753A	RA1251754A	RA1251756A
200			RA2501753A	RA2501754A	RA2501756A
250			RA4001753A	RA4001754A	
315			RA6301753A	RA6301754A	

### Padlockable handle



Rated current I <sub>e</sub> AC-21A (A)	IP protection	Dimensions mm x mm	3 poles 2 banks	4 poles 2 banks	3 poles 2 banks	4 poles 2 banks
20	55		13.03.11-SP	13.04.11-SP	13.03.11-OP	13.04.11-OP
25			1.03.11-SP	1.04.11-SP	1.03.11-OP	1.04.11-OP

Rated current I <sub>e</sub> AC-21A (A)	IP protection	Dimensions mm x mm	3 poles 2 banks	4 poles 2 banks	6 poles 3 banks	3 poles 2 banks	4 poles 2 banks	6 poles 3 banks
32	66		RA321753G	RA321754G	RA321756G	RA321753N	RA321754N	RA321756N
40			RA401753G	RA401754G	RA401756G	RA401753N	RA401754N	RA401756N
50			RA501753G	RA501754G	RA501756G	RA501753N	RA501754N	RA501756N
75			RA801753G	RA801754G	RA801756G	RA801753N	RA801754N	RA801756N
120			RA1251753G	RA1251754G	RA1251756G	RA1251753N	RA1251754N	RA1251756N
200			RA2501753G	RA2501754G	RA2501756G	RA2501753N	RA2501754N	RA2501756N
250			RA4001753G	RA4001754G		RA4001753N	RA4001754N	
315			RA6301753G	RA6301754G		RA6301753N	RA6301754N	

**Central mounting Ø 22mm**



Rated current $I_e$ AC-21A (A)	IP protection	Positions	Control	2 poles 1 bank	3 poles 2 banks	4 poles 2 banks	6 poles 3 banks
20	66		handle	13.02.11-2M	13.03.11-2M	13.04.11-2M	
			key	13.02.11-2C	13.03.11-2C	13.04.11-2C	
32			handle	RC321752B	RC321753B	RC321754B	RC321756B
			key	RC321752DD	RC321753DD	RC321754DD	RC321756DD
40			handle	RC401752B	RC401753B	RC401754B	RC401756B
			key	RC401752DD	RC401753DD	RC401754DD	RC401756DD

**Thermoplastic enclosed switch, front actuator (130x95 h91mm)**



Rated current $I_e$ AC-21A (A)	IP protection	Dimensions mm x mm	3 poles	4 poles	3 poles	4 poles
16	54		14.03.11-5S	14.04.11-5S	14.03.11-5R <sup>①</sup>	14.04.11-5R <sup>①</sup>
20			13.03.11-5S	13.04.11-5S	13.03.11-5M	13.04.11-5M
25			1.03.11-5S	1.04.11-5S	1.03.11-5M	1.04.11-5M
32			2.03.11-5S	2.04.11-5S	2.03.11-5M	2.04.11-5M

**Enclosed switch side lever**

Rated current $I_e$ AC-21A (A)	IP protection	Fiber-glass filled enclosure		IP protection	Metal enclosure		
		3 poles	4 poles		3 poles	4 poles	
20	54	13.03.11-5L	13.04.11-5L	55	13.03.11-4L	13.04.11-4L	
25		1.03.11-5L	1.04.11-5L		1.03.11-4L	1.04.11-4L	
32		2.03.11-5L	2.04.11-5L		2.03.11-4L	2.04.11-4L	
50		3.03.11-5L	3.04.11-5L		3.03.11-4L	3.04.11-4L	
75		4.03.11-5L	4.04.11-5L		4.03.11-4L	4.04.11-4L	
120						5.03.11-4L	5.04.11-4L

① Yellow cover and red handle

**Front mounting - Standard handle**


Rated current $I_e$ AC-21A (A)	IP protection	Dimensions mm x mm	1 pole 1 bank	2 poles 2 banks	3 poles 3 banks	4 poles 4 banks
16	40	48 54 72	14.05.11	14.06.11	14.07.11	14.45.11
20			13.05.11	13.06.11	13.07.11	13.45.11
25			13.05.11C	13.06.11C	13.07.11C	13.45.11C
32	66	64 88	1.05.11	1.06.11	1.07.11	1.45.11
40			RE323251A	RE323252A	RE323253A	RE323254A
50			RE403251A	RE403252A	RE403253A	RE403254A
75		RE503251A	RE503252A	RE503253A	RE503254A	
120		88RE803251A	RE803252A	RE803253A	RE803254A	
200		130		RE1253252A	RE1253253A	RE1253254A
250				RE2503503A	RE2503504A	
315				RE4003503A	RE4003504A	
					RE6303503A	RE6303504A

**Front mounting - Padlockable handle**


Rated current $I_e$ AC-21A (A)	IP protection	Dimensions mm x mm	3 poles 3 banks	4 poles 4 banks
20	54	72	13.07.11-OZ	13.45.11-OZ
25			1.07.11-OZ	1.45.11-OZ
32	66	67 90 135	RE323253G	RE323254G
40			RE403253G	RE403254G
50			RE503253G	RE503254G
75			RE803253G	RE803254G
120			RE1253253G	RE1253254G

**Base mounting - Padlockable handle - Doorlock**


Rated current $I_e$ AC-21A (A)	IP protection	Dimensions mm x mm	3 poles 3 banks	4 poles 4 banks
20	54	72	13.07.11-SP	13.45.11-SP
25			1.07.11-SP	1.45.11-SP
32	66	67 90 135	RA323253G	RA323254G
40			RA403253G	RA403254G
50			RA503253G	RA503254G
75			RA803253G	RA803254G
120			RA1253253G	RA1253254G



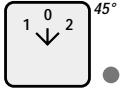

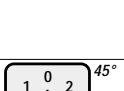



# Series R Changeover switches



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## Central mounting Ø 22mm



Rated current I <sub>e</sub> AC-21A (A)	IP protection	Positions	Control	3 poles 3 banks	4 poles 4 banks
20	66		handle	13.07.11 - 2M	13.45.11 - 2M
			key 	13.07.11 - 2C	13.45.11 - 2C
32			handle	RC323253B	RC323254B
			key 	RC323253DC	RC323254DC
40			handle	RC403253B	RC403254B
			key 	RC403253DC	RC403254DC

## Enclosed switch side lever



Rated current I <sub>e</sub> AC-21A (A)	IP protection	Fiber-glass filled enclosure		IP protection	Metal enclosure	
		3 poles	4 poles		3 poles	4 poles
20	55	13.07.11-5L	13.45.11-5L	54	13.07.11-4L	13.45.11-4L
25		1.07.11-5L	1.45.11-5L		1.07.11-4L	1.45.11-4L
32		2.07.11-5L	2.45.11-5L		2.07.11-4L	2.45.11-4L
50		3.07.11-5L	3.45.11-5L		3.07.11-4L	3.45.11-4L
75		4.07.11-5L	4.45.11-5L		4.07.11-4L	4.45.11-4L
120					5.07.11-4L	5.45.11-4L

**Standard handle**



Rated current $I_e$ AC-21A (A)	Rated power $P_e$ AC-23A (kW)	IP protect.	Dim. mm×mm	REVERSING SWITCHES			DAHLANDER SWITCHES	
				3 poles 3 banks	For single phase motor with auxiliary winding 3 banks	For single phase motor with capacitor 3 banks	3 poles Dahlander 4 banks	3 poles pole changing and reversing switch 7 banks
16	5,5	40 ●	48					
20	7,5	40 ●	54	14.08.11	13.32.11	13.37.11	13.09.11	13.11.11
25	11		72	13.08.11C	13.32.11C	13.37.11C	13.09.11C	13.11.11C
32	18,5	66 ●	64	1.08.11	1.32.11	1.37.11	1.09.11	1.11.11
40	22			RE327303A			RE327293A	
50	22			RE407303A			RE407293A	
75	30			RE507303A			RE507293A	
120	45			RE807303A			RE807293A	
			130	RE1257303A			RE1257293A	

Rated current $I_e$ AC-21A (A)	Rated power $P_e$ AC-23A (kW)	IP protect.	Dim. mm×mm	YΔ SWITCHES			
				4 banks 45°-90°	4 banks 60°	4 banks 30°-60°	Y-Δ reversing switch 5 banks 45°-90°
20	7,5	40 ●	54				
25	11		72	13.10.11	13.70.11	13.54.11	13.12.11
32	18,5	66 ●	64	13.10.11C	13.70.11C	13.54.11C	13.12.11C
40	22			1.10.11	1.70.11	1.54.11	1.12.11
50	22			RE327323A	RE327553A		
75	30			RE407323A	RE407553A		
120	45			RE507323A	RE507553A		
			130	RE807323A	RE807553A		
				RE1257503A			

Rated current $I_e$ AC-21A (A)	Rated power $P_e$ AC-23A (kW)	IP protect.	Dim. mm×mm	For single phase motor with auxiliary winding 2 banks	For remote control reverser 2 banks
				45°	45°
20	7,5	40 ●	54		
25	11		72	13.29.11	13.30.11
				13.29.11C	13.30.11C
				1.29.11	

**Enclosed switch side lever**



Rated current $I_e$ AC-21A (A)	Rated power $P_e$ AC-23A (kW)	IP protect.	3 poles		
			reversing switches	Dahlander switches	ΔY switches
20	7,5	55			
25	11		13.08.11 - 5L	13.09.11 - 5L	13.10.11 - 5L
32	18,5		1.08.11 - 5L	1.09.11 - 5L	1.10.11 - 5L
50	22		2.08.11 - 5L	2.09.11 - 5L	2.10.11 - 5L
75	30		3.08.11-5L	3.09.11-5L	3.10.11 - 5L
120	40	54	4.08.11-5L	4.09.11-5L	4.10.11 - 5L
			5.08.11-4L	5.09.11-4L	5.10.11 - 4L

# Series R On-off switches - Front mounting



industrial  
controls



Rated current $I_e$ AC-21A (A)	IP Protection	Positions	Dimensions mm x mm	1 pole	2 poles	3 poles	
16	40		48	2 banks	3 banks	5 banks	
20				14.57.11			
25				13.57.11	13.60.11	13.61.11	
32				13.57.11C	13.60.11C	13.61.11C	
40	66		64	1.57.11	1.60.11	1.61.11	
40				RE325261A			
				RE405261A			
20	40		54	2 banks	4 banks	6 banks	
25				13.58.11	13.62.11	13.63.11	
32				13.58.11C	13.62.11C	13.63.11C	
40				1.58.11	1.62.11	1.63.11	
	66		64	RE325271A			
40				RE405271A			
20	40		54	3 banks			
25				13.59.11			
32				13.59.11C			
40				1.59.11			
	66		64	RE325281A			
40				RE405281A			
20	40		54	3 banks	6 banks	9 banks	
				13.64.11	13.65.11	13.66.11	
				13.64.11C	13.65.11C	13.66.11C	
				72			
16	40		48	4 banks			
20				14.67.11			
				72			
			54	13.67.11			
			72	13.67.11C			








20	40		54	1 bank	2 banks	3 banks	4 banks
				13.41.11	13.42.11	13.43.11	13.44.11
			72	13.41.11C	13.42.11C	13.43.11C	13.44.11C
20	40		54	2 banks			
				13.38.11			
			72	13.38.11C			
20	40		54	2 banks	4 banks	6 banks	
				13.46.11	13.47.11	13.48.11	
			72	13.46.11C	13.47.11C	13.48.11C	
20	40		54	3 banks	6 banks	9 banks	
				13.49.11	13.50.11	13.51.11	
			72	13.49.11C	13.50.11C	13.51.11C	
20	40		54	5 banks			
				13.52.11			
			72	13.52.11C			
				6 banks			
				13.53.11			
				13.53.11C			



**Front mounting**








**VOLTMETER SWITCHES**

Rated current I <sub>e</sub> AC-21A (A)	IP protection	Dimensions mm x mm	3 phase	for 3 phase to phase	for phase to phase of two 3-phase lines	for 3 phase and 3 phase to phase	for 1 phase and 3 phase to phase
			2 banks 	2 banks 	4 banks 	3 banks 	3 banks 
16	40	● 48		14.16.11		14.18.11	14.19.11
20		● 54	13.15.11	13.16.11	13.17.11	13.18.11	13.19.11
25		● 72	13.15.11C	13.16.11C	13.17.11C	13.18.11C	13.19.11C
			1.15.11	1.16.11		1.18.11	

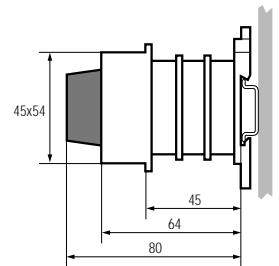
**Front mounting**



**AMMETER SWITCHES**




Rated current I <sub>e</sub> AC-21A (A)	IP protection	Dimensions mm x mm	For direct measure without break	1 pole for 1 current transformer	1 pole for 3 current transformer	1 pole for 4 current transformers	2 poles for 3 current transformers
			5 banks 	1 banks 	3 banks 	4 banks 	5 banks 
16	40	● 48			14.22.11		
20		● 54	13.14.11	13.20.11	13.22.11	13.23.11	13.25.11
25		● 72	13.14.11C	13.20.11C	13.22.11C	13.23.11C	13.25.11C
			1.14.11		1.22.11		1.25.11

**DIN - RAIL mounting**



**VOLTMETER SWITCHES**

**AMMETER SWITCHES**

Rated current I <sub>e</sub> AC-21A (A)	IP protection	Dimensions mm x mm	for 3 phase to phase	for 3 phase and 3 phase to phase	1 pole for 3 current transformers
			2 banks 	2 banks 	3 banks 
20	40	54x45	13.16.11D	13.18.11D	13.22.11D

## Series R Accessories - handles and actuators



industrial  
controls

		Series	Code
	Standard handle		
	Black - lenght 40mm	13	G1392N
	Red - lenght 40mm	13	G1392R
	Black - lenght 50mm	13, 1	G1527N
	Black standard handle		
	Lenght 35 mm	13, 1	G3397N
	Lenght 37,5mm	R32, R40	L2-G3154N
	Lenght 48mm	R32, R40	L2-G3155N
	Lenght 71mm	R50, R80	RG3518N
	Lenght 106 mm	R125..R630	RG3519N
	Red standard handle		
	Lenght 37,5mm	R32, R40	L2-G3154R
	Lenght 48mm	R32, R40	L2-G3155R
	Lenght 71mm	R50, R80	RG3518R
	Lenght 106 mm	R125..R630	RG3519R
	Black handle Ø 30mm	13, 1	G2536N
	Red handle Ø 37mm	13, 1	G2057R
	Black handle Ø 37mm	13, 1	G2057N
	Black handle Ø 41mm	13, 1	G3587N
	IP40	R32, R40	L2-G2851N
	IP65	R32, R40	L2-G2854N
	Handle with locking device	R32, R40	
	black		L2-G2864N
	red		L2-G2864R
	Black lever	13, 1	G1529N
	Orange lever	13, 1	G1529L
	Orange lever	R32, R40	G2865L
	Black standard lever	R125..R630	RG3520N
	Red standard lever	R125..R630	RG3520R
	Actuator type N 72x72 mm yellow/red (for on - off switches with standard actuator)	13, 1	G2391
	Actuator type N 67x67 mm yellow/red	R32, R40	LFS2-N-6-175
	Actuator type N 90x90 mm yellow/red	R50, R80	LFSR-N-8-175
	Actuator type N 135x135 mm yellow/red (with lever instead of handle)	R125, R250	LFSR-N-13-175
	Actuator type G 72x72 mm grey/black for on-off switches (0-1) with standard actuator	13, 1	G3818
	Actuator type G 72x72 mm grey/black for change over sw. (1-0-2) with standard actuator	13, 1	G2393
	Actuator type G 67x67 mm grey/black for change over sw. (1-0-2) with standard actuator	R32, R40	LFS2-G-6-325
	Actuator type G 67x67 mm grey/black for on-off switches (0-1) with standard actuator	R32, R40	LFS2-G-6-175
	Actuator type G 90x90 mm grey/black	R50, R80	LFSR-G-8-175
	Actuator type G 135x135 mm grey/black	R125, R250	LFSR-G-13-175
	Yellow legend plate 72mm, red handle for on-off switches	13, 1	G2397
	Yellow legend plate 54mm, red handle for on-off switches	13	G2396
	Actuator 54x54 mm neutral legend plate (without handle)	13, 1	G3455
	Actuator 72x72 mm neutral legend plate (without handle)	13, 1	G3456
	Actuator with guard 70x70 mm (Complete of legend plate 0-1 Ø57 mm)	13, 1	G2433

			Series	Code
	Gaskets to obtain IP54 degree of protection for basic version IP40		13 13, 1	G1683 G1590
	Central mounting Ø 22mm key operated removable in "0" position	☞	13	G2389N
	Central mounting Ø 22mm key operated removable in "0" position	☜	R32, R40	G3805 + LFC2-DD-001
	Central mounting Ø 22mm handle operated		13	G2390N
	Central mounting Ø 22mm handle operated		R32, R40	G3805 + LFC2-B-001
	Installation tool for tightening the central fixture nut (Ø 22mm)		R32, R40	P3906
	Panel hole adapter from Ø 30mm to Ø 22mm		13	G2326
	Support for rear mounting		13 1 R50, R80 R125, R250 (max. 6 banks) R125, R250 (max. 6 banks) R400, R630	G1720 RG1722 RG1724 RG1462 RG1474 RG1474
	Extension supports for rear mounting Length: 35..171mm		13, 1, R50, R80	RG1761
	Adapter plate for 4 fixing holes 68x68mm or 86x86mm Adapter plate for 4 fixing holes 68x68mm or 104x104mm		R50, R80 R125..R630	REG3516 REG3517
	DIN-rail mounting plate		13	G2535
	Spacer for DIN-rail version (thickness 12,5 mm)		13	G2539
	6,35 mm slip on terminal for screw terminals connection (M3,5)		13	1417
	Device set to obtain a doorlock system from standard actuator		1 R32, R40	G2065 G3806



# Series R Accessories - Protections



**industrial  
controls**



Terminal covers  
(3/4 poles)

front mounting

**Series**

**Code**

13, 1	P21853
R32	RE32C4
R40	RE40C4
R50	RE50C4
R80	RE80C4
R125	RE125C4

base mounting

13	P21273
1	P20431
R32	RA32C4
R40	RA40C4
R50	RA50C4
R80	RA80C4
R125	RA125C4

Flexible shield



1 bank

13	G1466
1	P10889
R32, R40	REG3180
R50	REP10891
R80	REP10892

2 banks

13	G1466
1	P10889
R32, R40	REG3180
R50	REP10891
R80	REP10892

3 banks

13	G1467
1	P10890
R32, R40	REG3181
R50, R80	REP10892

4 banks

13	G1467
1	P10890
R32, R40	REG3181
R50	REP10892
R80	REP12792

5 banks

13	G1468
1	P12481
R32, R40	REG3182
R50	REP12792

6 banks

13	G1468
1	P12481
R32, R40	REG3182
R50	REP12792

		Series	Code
	Front installation shaft	R32, R40	
	Lenght 34 mm Termoplastic (standard)		L2-G3380
	Lenght 34 mm Metal		L7-G3688
	Lenght 34 mm Termoplastic (to turn position 90° anti-clockwise)		G3189
	Lenght 34 mm Termoplastic (to turn position 90° clockwise)		G3186
	Base installation shaft	R32, R40	
	Lenght 44 mm Termoplastic (standard)		LA2-G2830
	Lenght 44 mm Metal		L7-G3687
	Lenght 52 mm Termoplastic		LA2-G3194
	Lenght 52 mm Metal		L7-G3707
	Lenght 57 mm Termoplastic		LA2-G3195
	Modular shaft extension 2 overlapping modules 24 mm (Max 4 modules - total lenght 96 mm)	R32, R40	LA2-G2853
	Metal shaft extension	R32, R40	
	Lenght 110..235 mm		LA2-G3393
	Lenght 230..350 mm With yellow insert for on-off switches "0" h9		LA2-G3394
	Insert for metal extension With red insert for on-off switches "0" h12	R32, R40	LA2-G3398
	Grey insert to obtain a different start position "0"	R32, R40	LA2-G3399
	Clutch for doorlock "0" in position h12 "0" in position h9	R32, R40	P25394 P26747
	Reducer for front installation shaft	R32, R40	P3907
<hr/>			
		<b>Series</b>	<b>banks</b>
<b>Termoplastic enclosure - front actuator with guard</b>	78x60 h 61mm	13	2
<b>IP54</b>			<b>Code</b> G3150
<b>Termoplastic enclosure - side operated lever</b>	122x97 h 79mm	13	6
		1	6
<b>IP55</b>			<b>Code</b> G2401
<b>Metal enclosure - side operated lever</b>	113x95 h 85mm	13	5
		1	5
<b>IP55</b>			<b>Code</b> G2403
<b>Termoplastic enclosure - front actuator</b>	130x95 h 91mm	13	4
		1	4
<b>IP54</b>			<b>Code</b> G2533

**Central mounting Ø 22mm**

29,5x41mm

				P22850 <i>NEUTRAL</i>
P22921	P24447	P24720		P24143 <i>NEUTRAL IN SILUMIN</i>

54x54mm

				P24897
P24894	P24906	P24890		
				P24907 <i>NEUTRAL</i>
P24892	P24907			

**Series 13,1**

72x72mm

				P3814
P20688	P3813	P20673		
				P20742
P20706	P20772	P20764		
				P20733
P20699	P22456	P20701		
				P20830 <i>NEUTRAL</i>
P20704	P20686	P20690		

Ø 57mm

				P10433 <i>NEUTRAL</i>
P25175	P22714	P10433		

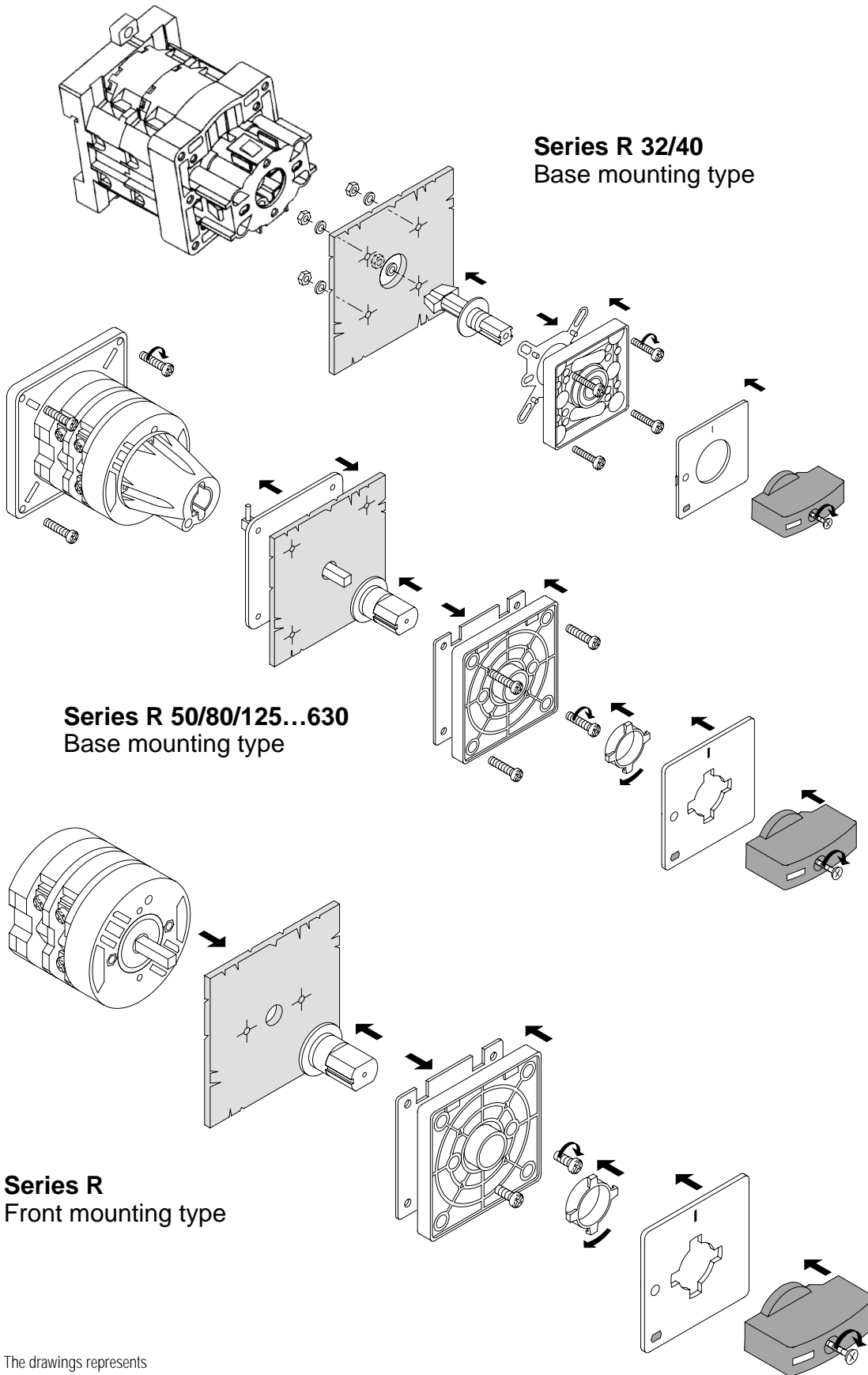
**Series 13 - Front plates (DIN-RAIL type) 45x54 mm**

Handle operated

				P25120
P25103	P25138	P25092		
				P24919 <i>NEUTRAL</i>
P25100	P25102	P25105		

Key operated

				P25070
P25053	P25088	P25042		
				P24914 <i>NEUTRAL</i>
P25050	P25052	P25055		



The drawings represents  
only some mounting types  
for additional details, please  
see the relevant instruction sheets



**ALTERNATING CURRENT (IEC / EN 60947-3)**

		Series	14	13
<b>Rated operational voltage</b> $U_e$	IEC-EN / UL-CSA	V	440	690/600
<b>Rated isolation voltage</b> $U_i$	IEC / UL-CSA	V	440	690/600
<b>Rated impulse withstand voltage</b> $U_{imp}$	IEC	kV	4	6
<b>Dielectric test voltage for 1 min. corresponding to</b> $U_i$		kV	2,5	2,5
<b>Rated frequency</b>		Hz	50/60	50/60
<b>Conventional free air thermal current</b> $I_{th}$		A	16	25
<b>Conventional enclosed thermal current</b> $I_{the}$		A	16	25
<b>Power loss by 1 pole at</b> $I_{the}$		W	0,34	0,3
<b>Rated operational current</b> $I_e$	690 V			
<b>AC-1</b> Non inductive or slightly inductive loads		A	16 (400V)	25
<b>AC-21A</b> Switching of resistive loads with slight overload				
<b>Rated power</b> $P_e$				
<b>AC-23A</b> Frequent switching of motors or other highly inductive load	230 V	kW	4	5,5
	400 V	kW	5,5	7,5
	690 V	kW	-	11
<b>AC-3</b> Squirrel - cage motors: starting and stopping of running motors	230 V	kW	2,2	4
	400 V	kW	3	5,5
	690 V	kW	-	7,5
<b>AC-4</b> Squirrel - cage motor starting, reversing, electric breaking, inching	230 V	kW	-	2,2
	400 V	kW	-	3
	500 V	kW	-	3
<b>Rated breaking capacity (AC-23A)</b>				
$\cos \varphi$ 0,45 per $I_e \leq 100A$	230 V	A	120	176
$\cos \varphi$ 0,35 per $I_e > 100A$	400 V	A	90,4	176
	690 V	A	-	100
<b>Short circuit characteristic</b>				
Conditional rated short-circuit current	400/415 V	kA	5	5
Max. fuse rated current (fuse type gG/gL)		A	16	25
Rated short-time withstand current $I_{cw}$ (1s)		kA	0,32	0,4
Rated short-circuit making capacity $I_{cm}$		kA	-	1,5
<b>AC-15</b> Control of AC electromagnetic loads			A300	

**DIRECT CURRENT (IEC / EN 60947-3)**

<b>DC-20A</b> Rated operational current $I_e$		A		20
<b>Rated operational current</b> $I_e$		A		10
<b>DC-1</b> Non inductive or slightly inductive loads		$V_{max}$ per polo		60
<b>DC-21A</b> Switching of resistive loads with slight overloads				
<b>Rated power</b>	24 V	kW		0,3 ①
<b>DC-23A</b> Control of high inductive loads series and shunt motors	48 V	kW		0,4 ②
	60 V	kW		0,6 ③
	110 V	kW		0,8 ④
	220 V	kW		1,2 ④
<b>Rated operational current</b> $I_e$	24 V	A		10
<b>DC-13</b> Control of electromagnets	48 V	A		5
L/R = 40 ms	60 V	A		3
	110 V	A		1,3
	220 V	A		0,5
	380 V	A		0,3
	500 V	A		0,2
<b>DC-13</b> Control of DC electromagnetic loads				Q300

① The rounded values correspond to  
the numbers of poles to connect in series

1	R32	R40	R50	R80	R125	R250	R400	R630
690/600	690/600	690/600	690/600	690/600	690/600	690/600	690/600	690/600
690/600	690/600	690 <sup>#</sup> /600	690 <sup>#</sup> /600	690 <sup>#</sup> /600	690/600	690/600	690/600	690/600
6	8	8 <sup>#</sup>	8 <sup>#</sup>	8 <sup>#</sup>	8	8	8	8
2,5	2,5	2,5	2,5	2,5	2,5	2,5	2,5	2,5
50/60	50/60	50 <sup>#</sup> /60 <sup>#</sup>	50/60	50/60	50/60	50/60	50/60	50/60
25	32	45 <sup>#</sup>	50 <sup>#</sup>	80 <sup>#</sup>	125	250	400	630
25	32	45 <sup>#</sup>	50 <sup>#</sup>	75 <sup>#</sup>	120	200	315	500
0,6	0,8	1,4	1,5	2,8	5,3	10	13,6	25,5
25	32	40 <sup>#</sup>	50 <sup>#</sup>	75 <sup>#</sup>	120	200	250	315
7,5	11	11 <sup>#</sup>	15 <sup>#</sup>	18,5 <sup>#</sup>	30	37		
11	18,5	22 <sup>#</sup>	22 <sup>#</sup>	30 <sup>#</sup>	45	55		
15	22	22 <sup>#</sup>	30 <sup>#</sup>	37 <sup>#</sup>	55	75		
5,5	7,5	7,5 <sup>#</sup>	11 <sup>#</sup>	15 <sup>#</sup>	22	30		
7,5	15	18,5 <sup>#</sup>	18,5 <sup>#</sup>	22 <sup>#</sup>	30	37		
11	18,5	18,5 <sup>#</sup>	22 <sup>#</sup>	30 <sup>#</sup>	37	45		
2,2	5,5	5,5	7,5	11	15	18,5		
4	7,5	7,5 <sup>#</sup>	11	15	22	30		
4	7,5	11	15	18,5	30	37		
204	296	296 <sup>#</sup>	400 <sup>#</sup>	484 <sup>#</sup>	780	936		
172	280	336 <sup>#</sup>	336 <sup>#</sup>	544 <sup>#</sup>	656	804		
136	196	196 <sup>#</sup>	260 <sup>#</sup>	316 <sup>#</sup>	456	616		
5	5	5 <sup>#</sup>	5 <sup>#</sup>	5 <sup>#</sup>	6	8	12	15
25	35	40 <sup>#</sup>	50 <sup>#</sup>	63 <sup>#</sup>	100	160	250	315
0,5	0,8	0,8	1 <sup>#</sup>	1,5 <sup>#</sup>	2,4	4	5	6,5
1,5	2	2	2,5 <sup>#</sup>	3 <sup>#</sup>	5	7	10	15
25	32	40	50	75	120	200		
16	25	25	40	63	100	200		
60	60	60	60	60	48	42		
0,3 (1)	0,3 (1)	0,3 (1)	0,7 (1)	1 (1)				
0,5 (2)	0,5 (2)	0,5 (2)	1,4 (2)	2 (2)				
1 (2)	1 (2)	1 (2)	2 (2)	2,7 (2)				
2 (3)	2 (3)	2 (3)	3 (3)	4 (3)				
2,2 (5)	2,2 (5)	2,2 (5)	6 (6)	8 (6)				
14	16	16						
7	8	8						
4,2	4,8	4,8						
1,8	2	2						
0,5	0,6	0,6						
0,4	0,4	0,4						
0,3	0,3	0,3						

# Values approved by IMQ

UL / CSA		Series	14	13	1 ①
<b>General use</b>	1 phase/2 poles, 3 phase/3 poles				
Rated current	600 V	A		20	16
Heavy Pilot Duty (AC)		Code designation		A 600	
Standard Duty (DC)		Code designation		P 600	
<b>Rated operational power</b>					
Across the line AC motor starting					
DOL-Rating	120 V	HP		1,5	
1 phase 2 poles	240 V	HP		3	3
	480 V	HP		5	6 ②
	600 V	HP		5	7,5
	120 V	HP		2	
3 phases 3 poles	240 V	HP		5	6
	480 V	HP		10	12 ②
	600 V	HP		10	15

#### ENVIROMENTAL DATA

<b>Ambient temperature:</b>	Operation:	-25°C a +60°C
	Storage:	-40°C a +80°C

#### MECHANICAL DATA

##### Protection class according to IEC/EN 60529

Actuators		IP40	IP40..IP55	IP40..IP55
Switch bodies		IP00	IP00	IP00

<b>Mechanical life</b>	Milion of operations	1	2	1,5
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##### Terminal sizes according to IEC/EN 60947-1 gauge form

Min./max. wire cross section		A2	A3	A3
Fine strands	mm <sup>2</sup>	0,75/2,5	1/2,5	1/2,5
Solid or stranded	mm <sup>2</sup>	0,75/2,5	1/4	1/4
Max. wire gauges according to UL/CSA (solid/stranded)	AWG	14/14	10/12	10/12

<b>Terminals</b>	Type	screw	screw	screw
	Thread	M3	M3,5	M4
	Screw driver size	2/1	3/2	3/2
	recommended torque (Nm)	0,6	1,2	1,8

#### APPROVALS

CE-confirmal		•	•	•
CSA (Canada)			•	•
IMO (Italy)				•
UL-Listed (USA)				
UR (USA)			•	

- Approved as a result of test passed

① Only CSA approval

② For CSA 220V e 440V ③ Only UL approval

R32	R40	R50	R80	R125	R250	R400	R630
32	40	50	63	115	200	250 (315A at 480V)	315
2	2	3	5 (3)	7,5	10		
5	5	7,5	10 (2)	15	20		
7,5	10	15	20 (2)	30	40		
10	15	20	25	35	50		
5	5	7,5	10 (3)	15	25		
7,5	10	15	20 (2)	30	50		
20	25	30	40 (2)	60	75		
20	25	40	50	75	100		

Operation: -25°C a +60°C

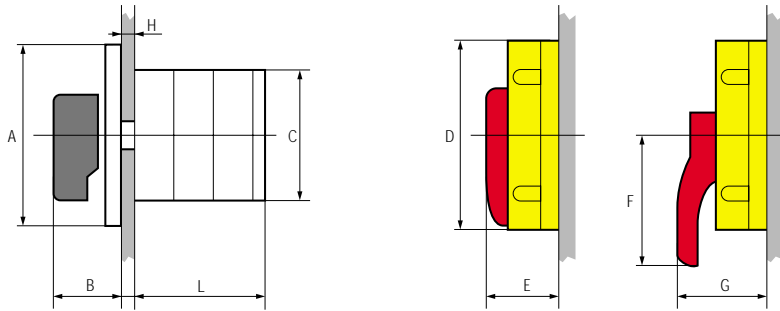
Storage: -40°C a +80°C

IP66	IP66	IP66	IP66	IP66	IP66	IP66	IP66
IP20	IP20	IP00	IP00	IP00	IP00	IP00	IP00
1	1	1	1	1	1	0,5	0,5
A5	A5	A5	A5	B7			
2,5/6	2,5/6	2,5/6	2,5/16	1,5/35			
2,5/10	2,5/10	2,5/10	2,5/25	1,5/50			
8/10	8/10	8/10	4/6	1/2			
screw	screw	screw	screw	screw	embedded hexagon	embedded hexagon	embedded hexagon
M4	M4	M5	2xM4	2xM6	M10	M12	M14
3/2	3/2	3/2	3/2	4/-	hexagon 8 mm	hexagon 10 mm	hexagon 12 mm
1,8	1,8	2	1,2	2	10	14	19

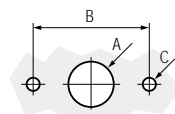
•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•
	•	•	•				
•	•						
		•	•	•	•	•	•



**Front mounting**

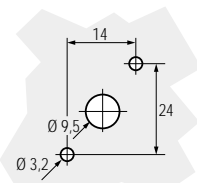


Series	L no. of banks								A (mm x mm)	B	C	D	E	F	G	H max
	1	2	3	4	5	6	7	8								
14	-	32	-	54	-	-	-	-	48	23,5	Ø 35					1,5
13	37	50	62	75	87	100	112	125	54 or 72	28 or 32	Ø 47	72	38			
1	35	48	60	73	85	98	110	123	72	32	Ø59					
R32	41	58,5	76	93,5	111	128,5	146	163,5	64	28	Ø 61	67	34			4
R40																
R50	51	69	87	105	123	141	159	177	88	45	Ø 80	90	49			
R80	60	87	114	141	168	195	222	249								
R125	83	113	143	173	203	233	263	293	130	55	118x102	135	-	120	70	
R250											118x191					
R400	113	173	233	293	353	413	473	533			118x180					
R630	143	233	323	413	503	593	683	773								

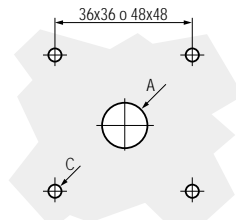


**BODIES/ACTUATORS**  
Series 13, 1, R32, R40, R50, R80

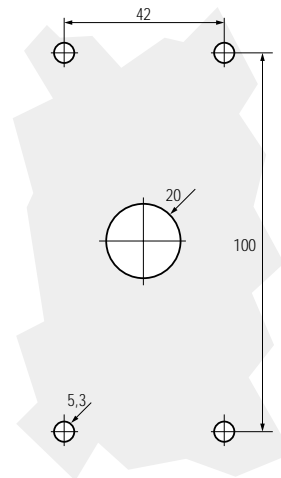
Series	A	B	C
13	9,5	32	3,2
1		33	
R32			
R40	12	46	5,3
R50			
R80			



**BODIES/ACTUATORS**  
Series 14 fixing

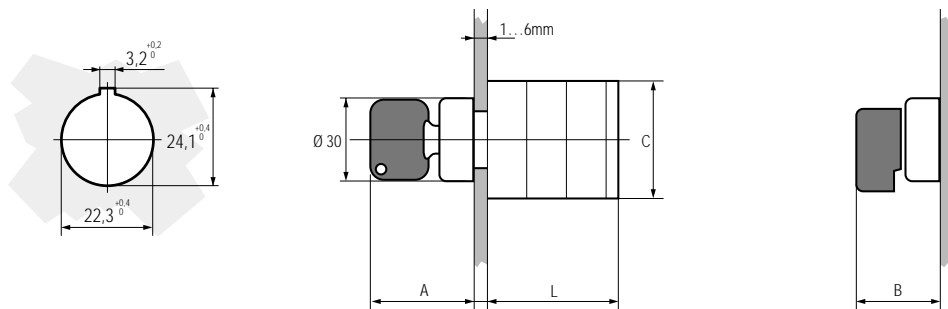


**BODIES/ACTUATORS**  
Alternative fixing  
for series 13, 1, R32, R40



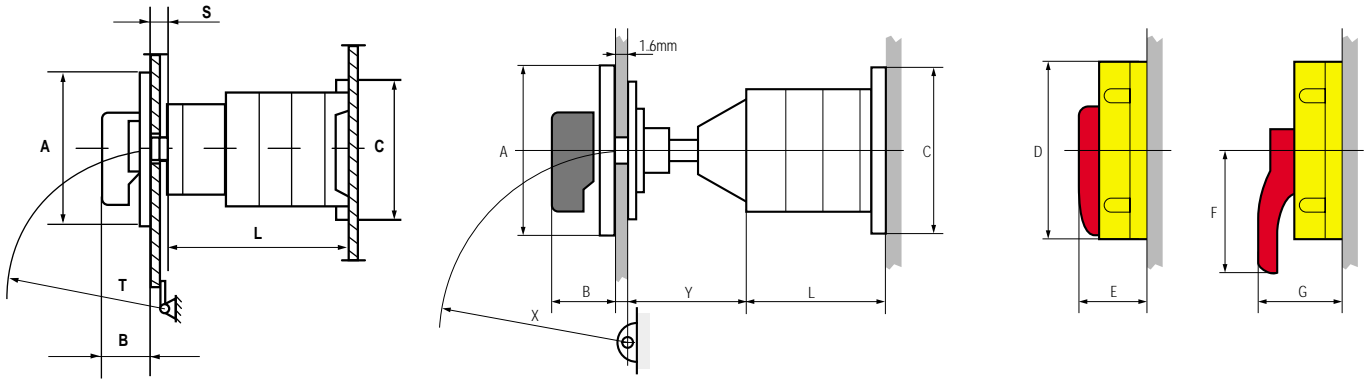
**BODIES/ACTUATORS**  
Series R125..R630

**Central mounting Ø 22mm**

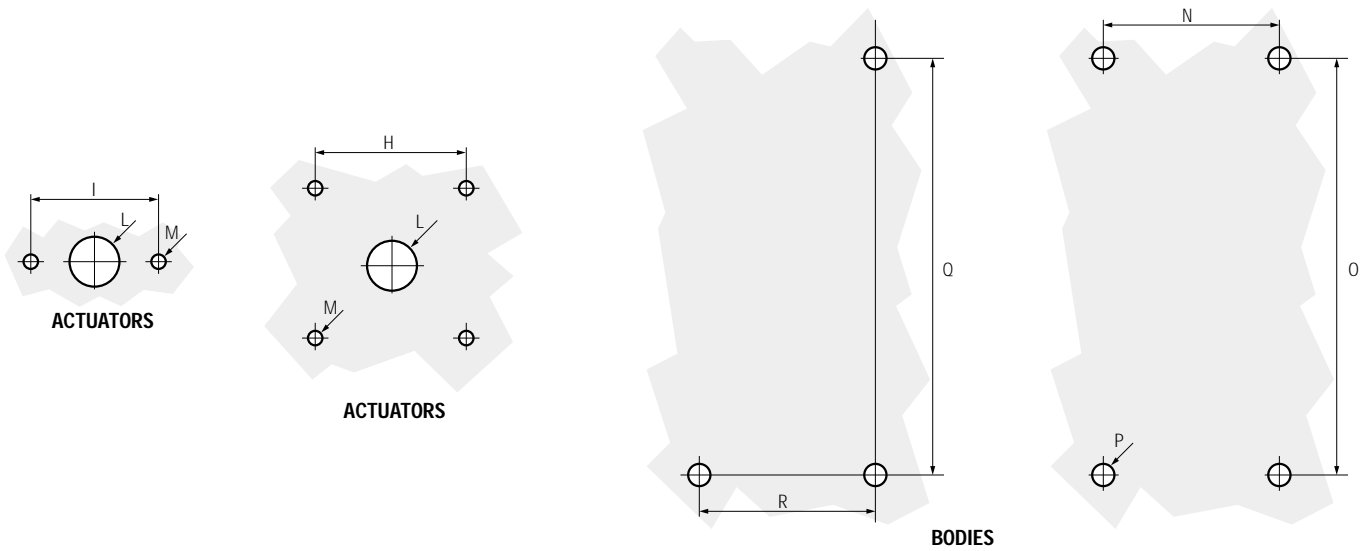


Series	L N° of banks								A	B	C
	1	2	3	4	5	6	7	8			
13	69	82	94	107	119	132	144	157	36	26	Ø 47
R32	86	103,5	121	138,5	156	173,5	191	208,5	41	28	Ø 61
R40											

**Base mounting**



Series	L no. of banks				if Y min	then X ≥	if Y max	then X ≥	IF S MIN.	then T	IF S MIN.	then T
	1	2	3	4								
13	43	56	68	81	29	150	29	150				
1	42	55	67	80	75		75					
R32	42,5	60	77,5	95	-	-	-	-	2,5	150	9,5	90
R40												
R50	59	77	95	113	75	150	78	150				
R80	68	95	122	149								
R125	-	123	153	183	71,5	220	77,5	220				
R250	-											
R400	-	183	-	-								
R630	-	243	-	-								

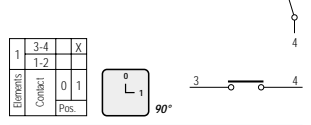


Series	A (mm x mm)	B	C	D	E	F	G	ACTUATORS				BODIES				
								H	I	L	M	N	O	P	Q	R
13	54 o 72	28	51x51	72	38			58	32	9,5	3,2	36	36	M4	70	15
1	72	32							33							
R32	64	28	78x55	67	34	-	-	36 o 48		17		-	-			
R40																
R50	88	45	102x102	92	49					12		85	85			
R80																
R125	130	55	57x148	135	-	120	70	68		20	5,3	37	132	M5		
R250																
R400																
R630																

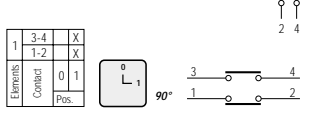
# Diagrams

## SERIES R (13, 1)

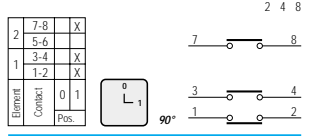
**01 1 Pole on-off switch**



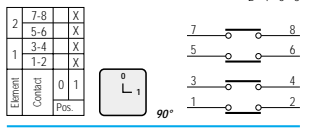
**02 2 Poles on-off switch**



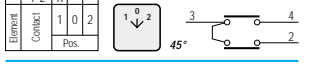
**03 3 Poles on-off switch**



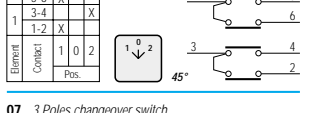
**04 4 Poles on-off switch**



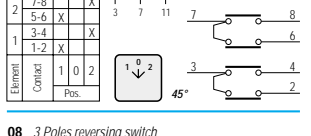
**05 1 pole changeover switch**



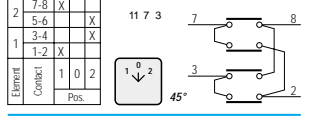
**06 2 Poles changeover switch**



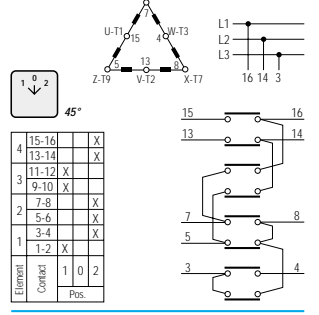
**07 3 Poles changeover switch**



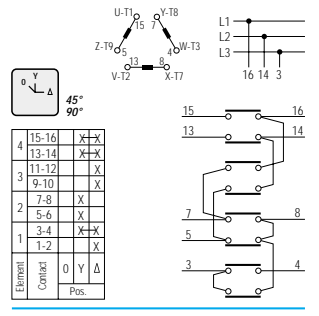
**08 3 Poles reversing switch**



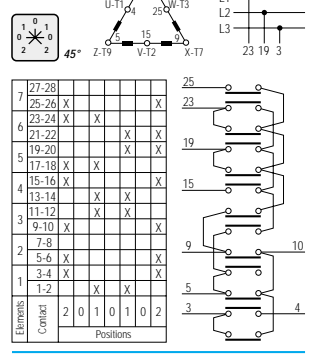
**09 3 Poles dahlender switch**



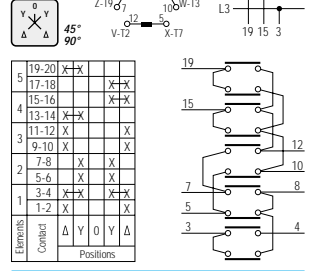
**10 Star-Delta switch**



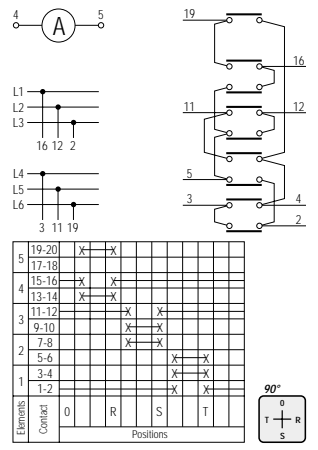
**11 Pole changing reversing switch**



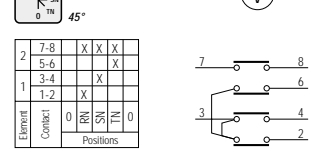
**12 Star-Delta reversing switch**



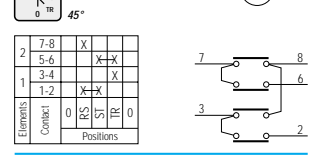
**14 Ammeter sw. for direct measure without break**



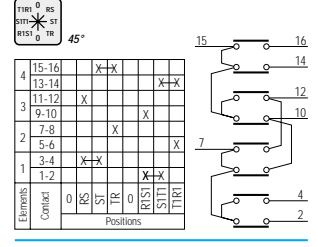
**15 3 Phase voltmeter switch**



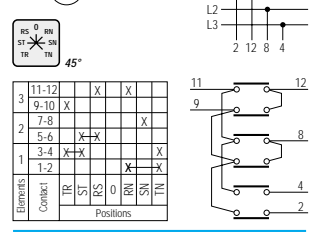
**16 3 Phase to phase voltmeter switch**



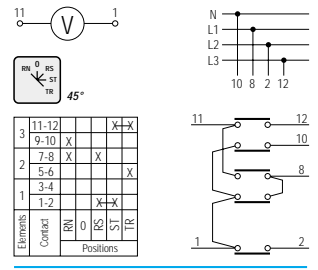
**17 Voltmeter switch 3 Phase to phase of 2-3 phases lines**



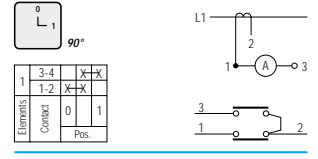
**18 Voltmeter switch 3 phases and 3 phase to phase**



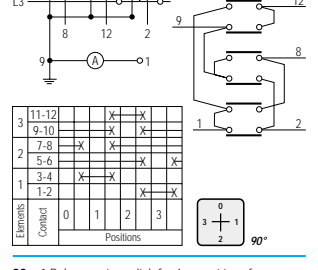
**19 Voltmeter switch 1 phase and 3 phase to phase**



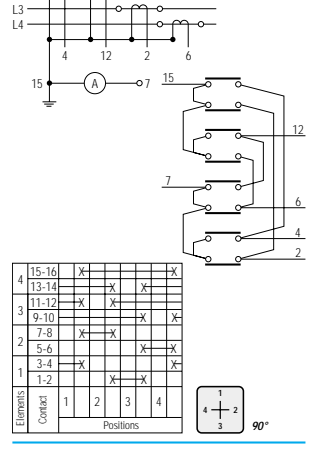
**20 1 Pole ammeter switch for 1 current transformer**



**22 1 Pole ammeter switch for 3 current transformers**



**23 1 Pole ammeter switch for 4 current transformers**

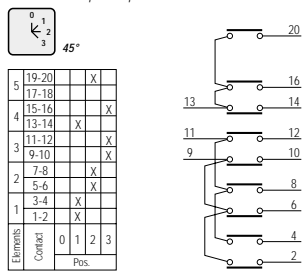




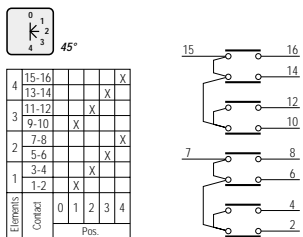


# Diagrams

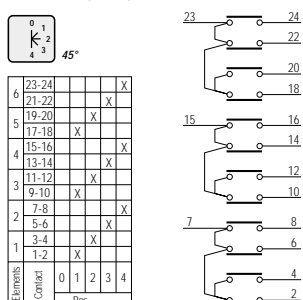
**61** 3 Poles step sw. 3 positions + 0



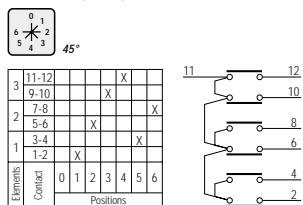
**62** 2 Poles step sw. 4 positions + 0



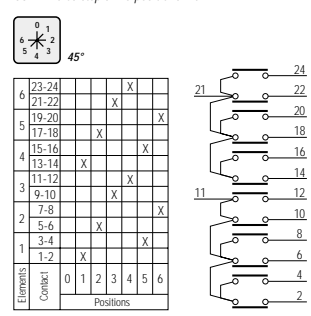
**63** 3 Poles step sw. 4 positions + 0



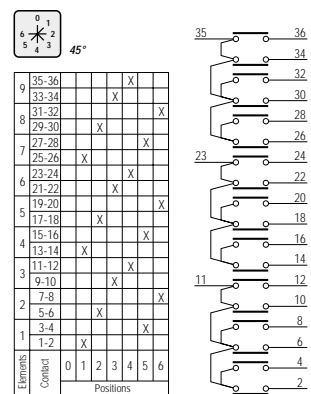
**64** 1 Pole step sw. 6 positions + 0



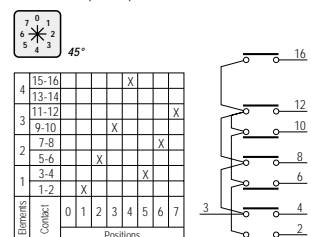
**65** 2 Poles step sw. 6 positions + 0



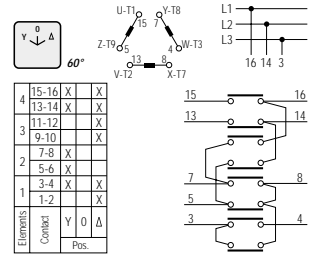
**66** 3 Poles step sw. 6 positions + 0



**67** 1 Pole step sw. 7 positions + 0

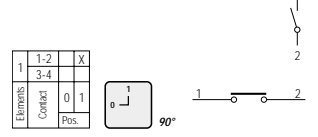


**70** Star-Delta switch

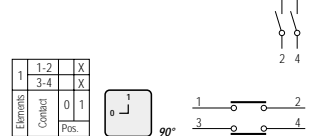


## SERIES R (R32..R630)

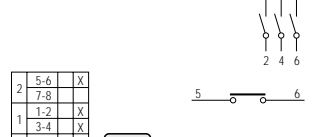
**1751** 1 Pole on-off switch



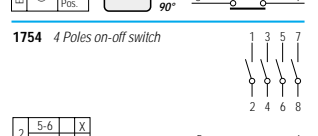
**1752** 2 Poles on-off switch



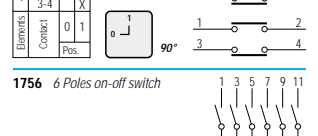
**1753** 3 Poles on-off switch



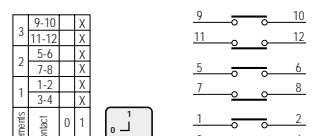
**1754** 4 Poles on-off switch



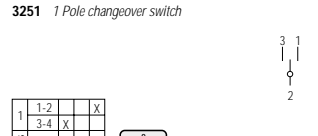
**1756** 6 Poles on-off switch



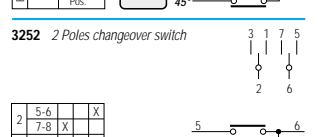
**3251** 1 Pole changeover switch



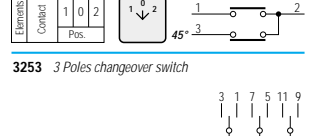
**3252** 2 Poles changeover switch



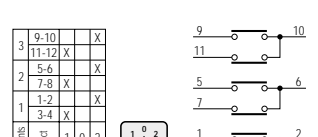
**3253** 3 Poles changeover switch



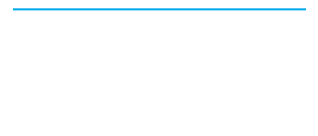
**3254** 4 Poles changeover switch



**5261** 1 Pole step switch 3 position + 0



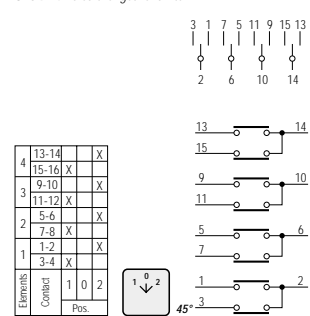
**5271** 1 Pole step switch 4 positions + 0



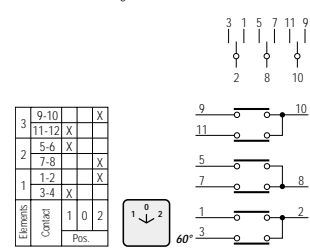
**5281** 1 Pole step switch 5 positions + 0



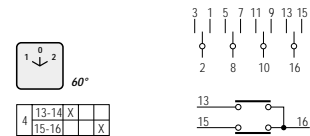
**3503** 3 Poles changeover switch



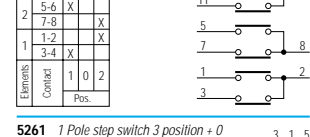
**3504** 4 Poles changeover switch



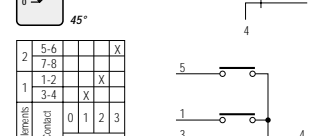
**5261** 1 Pole step switch 3 position + 0



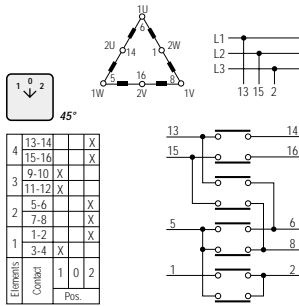
**5271** 1 Pole step switch 4 positions + 0



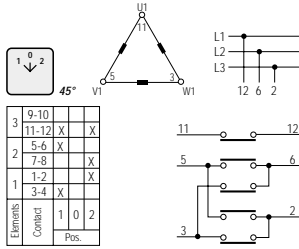
**5281** 1 Pole step switch 5 positions + 0



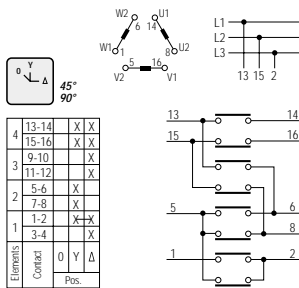
**7293 3 Poles Dahlander switch**



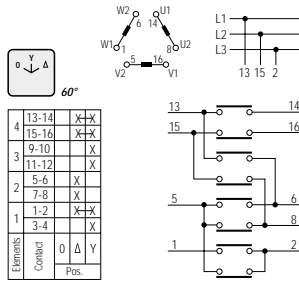
**7303 3 Poles reversing switch**



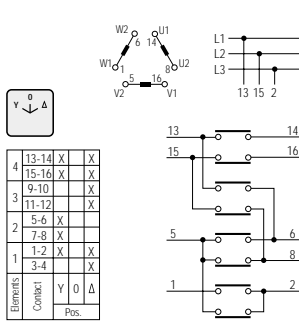
**7323 Star-Delta switch**



**7503 Star-Delta switch**

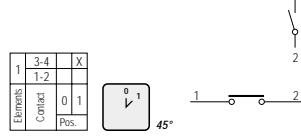


**7553 Star-Delta switch**

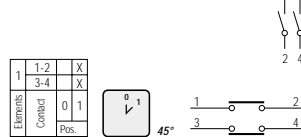


**SERIES 14**

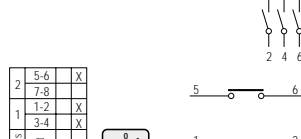
**01 1 Pole on-off switch**



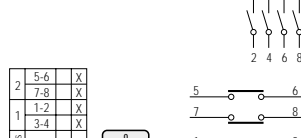
**02 2 Poles on-off switch**



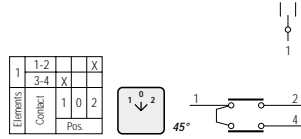
**03 3 Poles on-off switch**



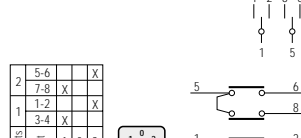
**04 4 Poles on-off switch**



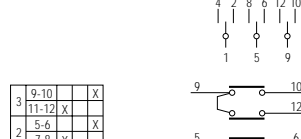
**05 1 Pole changeover switch**



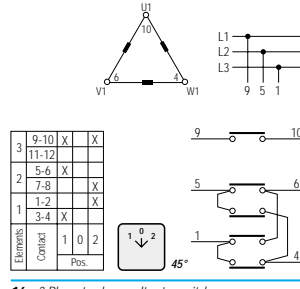
**06 2 Poles changeover switch**



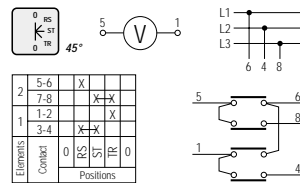
**07 3 Poles changeover switch**



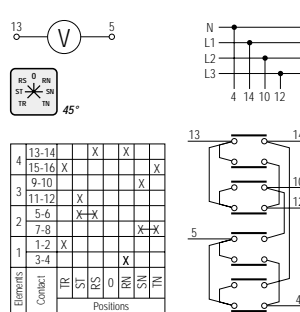
**08 3 Poles reversing switch**



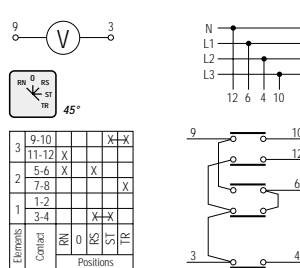
**16 3 Phase to phase vollmeter switch**



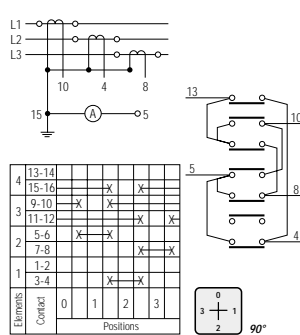
**18 Vollmeter switch 3 phase and 3 phase to phase**



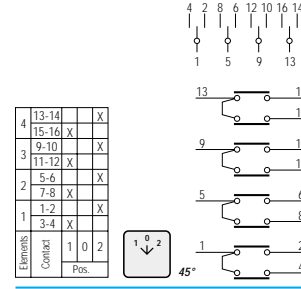
**19 Vollmeter switch 1 phase and 3 phase to phase**



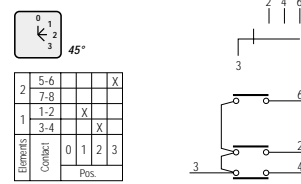
**22 1 Pole ammeter switch for 3 current transformers**



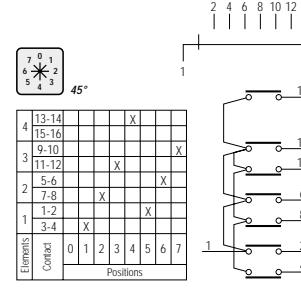
**45 4 Poles changeover switch**



**57 1 Pole step switch 3 positions + 0**

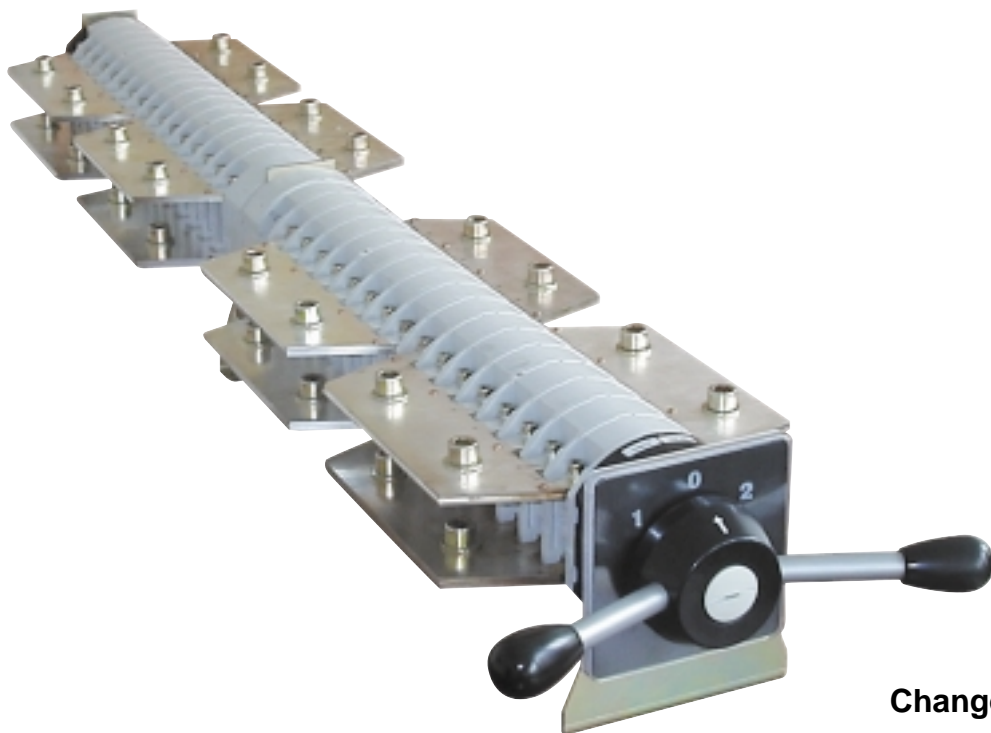


**67 1 Pole step switch 7 positions + 0**

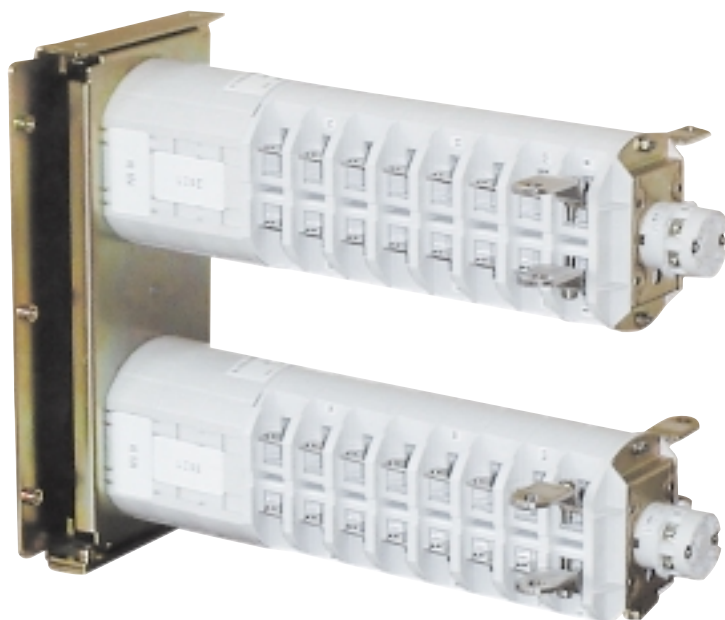








**Changeover Sw. 4x1600A**

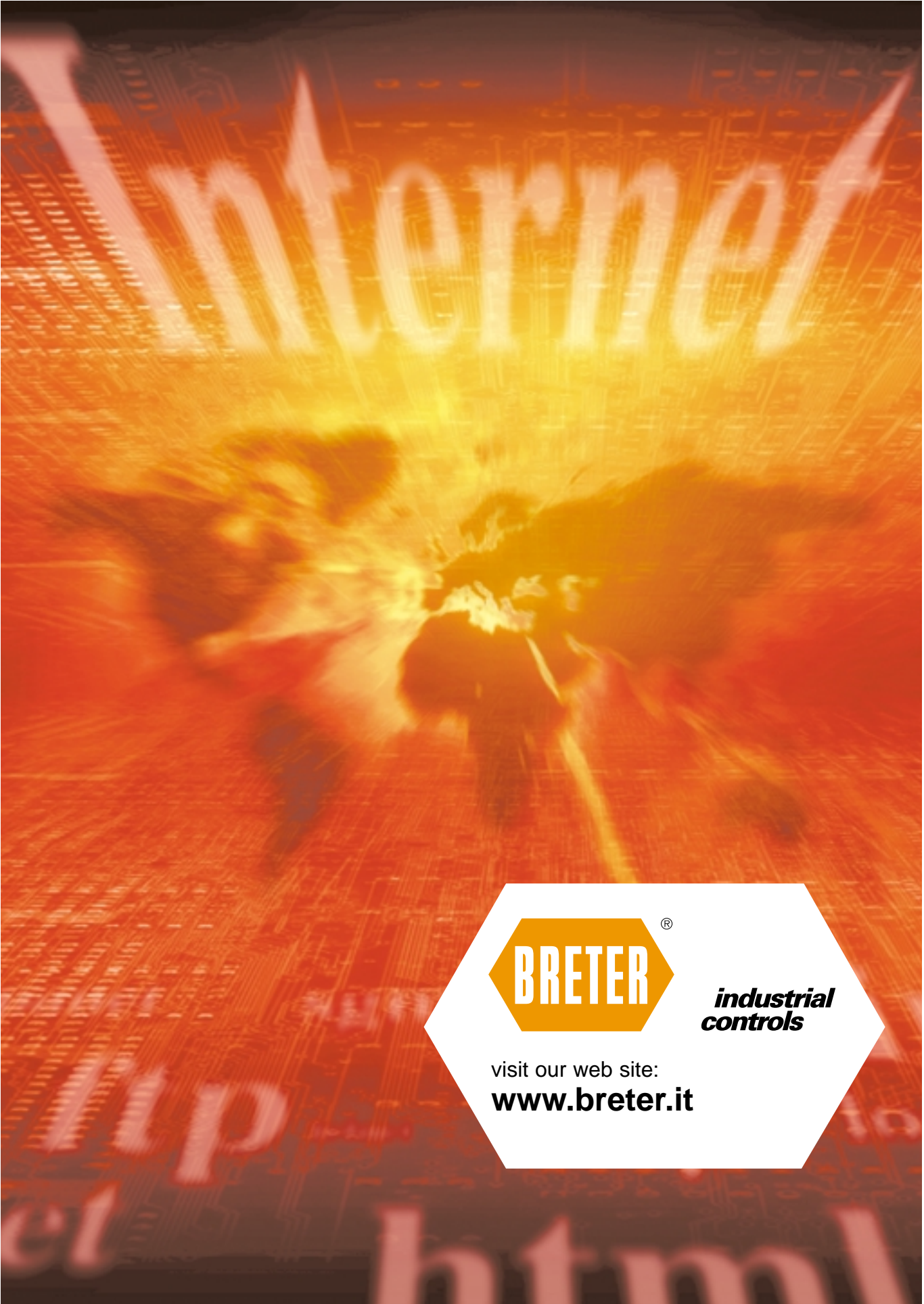


**Disconnecter Sw. 2200A**





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Cam switches R series - 9/2003