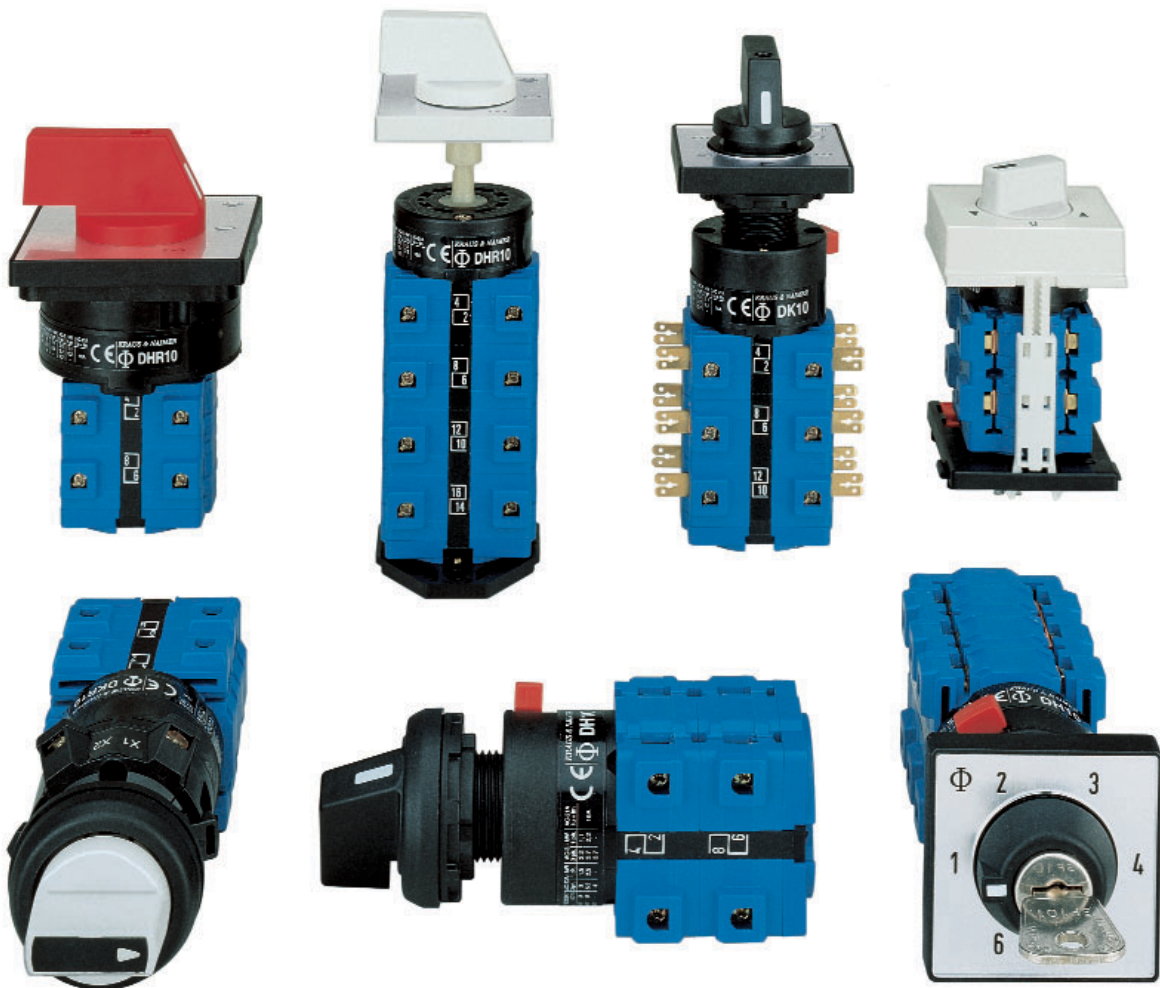


Catalog 130
DH, DHR, DK, DKR Switches
6 A-16 A



KRAUS & NAIMER

The development of the Blue Line rotary switch, contactor and motor starter product ranges is based on more than seventy-five years experience by Kraus & Naimer in the design and manufacture of electrical switchgear. Kraus & Naimer pioneered the introduction of the cam operated rotary switch and continues to be recognized as the world leader in that product field.

BLUE LINE

Blue Line products are protected by numerous patents throughout the industrial world. They are built to national and international standards and designed to withstand adverse temperatures and climates.

Blue Line products are accepted and universally recognized for their quality and workmanship. They are supported by a worldwide sales and service organization.

The Kraus & Naimer Registered Trademark



WORLDWIDE SYMBOL
FOR QUALITY SWITCHGEAR

Disconnectors and Main Switches acc. to IEC 60947-3 see Catalog 500

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Construction Data

Cam switches of the DH, DHR, DK and DKR series are designed for universal applications and may ideally be used for control switches, instrumentation switches and circuit interrupters. Different contact designs, contact materials and terminals allow their use in electronic circuitry as well as in aggressive environments in accordance with IEC 60947-3, EN 60947-3 and VDE 0660 part 107.

Fully enclosed contact chambers provide optimum protection from dust and other contaminants.

The stage is the basis for all switches and can be supplied with a maximum of 2 contacts. The terminals are accessible from the side. All switches in this series are supplied with open terminals and are finger-proof according to VDE 0106,

part 100 (VBG 4). Captive plus-minus terminal screws and integrated screwdriver guides facilitate wiring. Alternatively, the switches of the DH and DK series can be supplied with integrated quick connect terminals. Each quick connect terminal may accept either one 6.3 mm or two 2.8 mm quick connect lugs.

For connection with ring type terminals the DHR and DKR series of switches are available. These switches are supplied with large open terminals, which allow for connection without the need of removing the screws.

2 Contact Systems

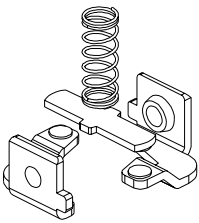


Fig. 1

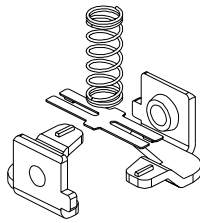
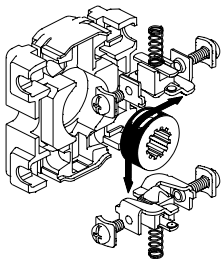


Fig. 2

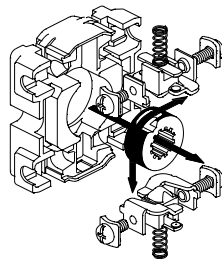
A rigid double-break bridge with silver alloy contacts (DH10, DHR10, DK10, DKR10, DH10B, DHR10B) provides high making and breaking capabilities for regular control applications. (Fig. 1)

Self-cleaning H-bridges with a cross-wire contact system are used for electronic and low voltage range applications. They are available with either silver contacts (DH12, DHR12, DK12, DKR12, DH12B, DHR12B) or gold-plated contacts (DH11, DHR11, DK11, DKR11, DH11B, DHR11B). This contact system offers maximum contact security, low resistance and virtually chatter free switching. (Fig. 2)

2 Methods of Contact Operation



Turning

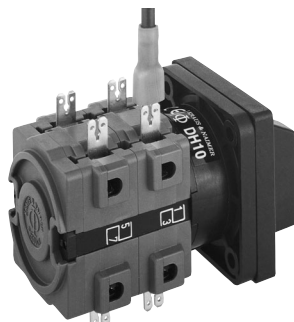


Turning and Pushing

The contacts of the switches of the DH and DHR series can be manually operated by turning and the DK and DKR series by turning and/or pushing. This versatility of handle movement permits a countless variety of contact arrangements. Special pre-select programs enable the operator to rotate the handle to any one of up to 12 positions, while bypassing contact operation in all intermediate positions. Momentary contact operation for a pre-selected position occurs only when the handle is depressed. Releasing the handle returns switch operation to the normal plane.

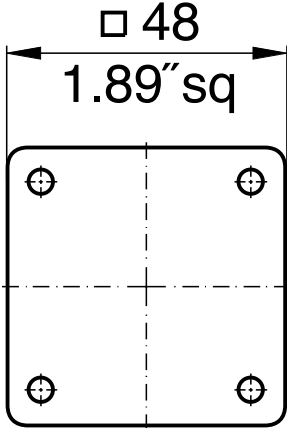
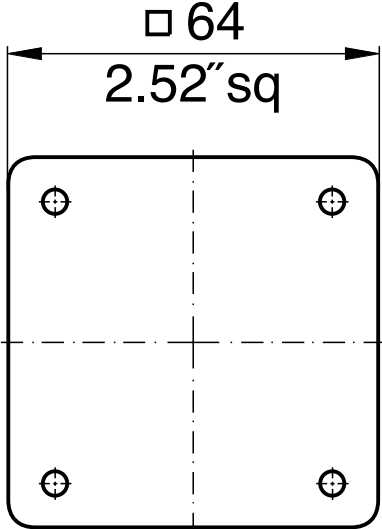
Type	Size	Possible Switching Angles	Max. No. of Stages
DH10-DHR12	S0	30°, 45°, 60°, 90°	12
DK10-DKR12	S0	30°, 60°, 90°	9
DH10B-DHR12B	S1	30°, 45°, 60°, 90°	12

DH and DK-series



DHR and DKR-series



Switch Size	Type	According to IEC/EN 60947-3 and VDE 0660 part 107			
		Operational Voltage ¹ min.-max. U_e	Thermal Current I_u/I_{th}	Operational Current I_e 220 V-240 V AC-15	
		V	A	A	
S0 	DH10 DH11 DH12 DHR10 DHR11 DHR12	20-690 1 ² -600 6-600 20-690 1 ² -600 6-600	16 6 6 16 6 6	5 - - 5 - -	
	Operation by turning				
	Operation by turning/pushing				
		DK10 DK11 DK12 DKR10 DKR11 DKR12	20-690 1 ² -600 6-600 20-690 1 ² -600 6-600	16 6 6 16 6 6	5 - - 5 - -
	S1 	Operation by turning			
		DH10B DH11B DH12B DHR10B DHR11B DHR12B	20-690 1 ² -600 6-600 20-690 1 ² -600 6-600	16 6 6 16 6 6	5 - - 5 - -

For further technical details, refer to pages 38 and 39.
 To furnish with gold contacts and quick connects, refer to page 4.

¹Valid for lines with grounded common neutral termination, overvoltage category III, pollution degree 3. Values for other supply systems on request. ²Values for lower voltages on request.

How to order

Disconnectors and Main Switches according to IEC 60947-3 see Catalog 500

Three types of data (shown below) are required for ordering Blue Line cam-operated switches. Code numbers for ordering are shown in this catalog.

1. Type of Switch

The type of switch required may be easily selected by referring to the table on page 3 which shows the thermal current, power rating and dimensions of each switch. For further technical details, refer to pages 38 and 39. Variations of contacts and terminals are shown below.

2. Switch Function

The code numbers for standard switches shown on pages 6-28 indicate the switch function, escutcheon plate, handle and any optional extras.

Additional coding to modify type and color of handle and escutcheon plate is explained below.

3. Type of Mounting

Types of mounting are shown on pages 29-33. Catalog **101** describes enclosures and optional extras.

Specify the mounting code to indicate required mounting.

DH10

A202-600

VE

Type of Switch

Extending the switch type coding the following combinations will define:

Amendment	Definition	For switch types
-1	with gold contacts ¹	DH10, DHR10, DK10, DKR10, DH10B, DHR10B
-4	with integrated quick connects	DH10, DH11, DH12, DK10, DK11, DK12, DH10B, DH11B, DH12B
-5	with integrated quick connects and gold contacts	DH10, DK10, DH10B

Example: Coding for switch type **DH10** with gold contacts is **DH10-1**.

Modification of Switches

The part number for switch function and options may be modified in cases where items are required other than standard. The modification may involve the escutcheon plate inscription, color combination of escutcheon plate and handle, type of escutcheon plate and handle or the optional extra.

Switch Size	Escutcheon Plate Frame	Handle	Escutcheon Plate Backing	Escutcheon Plate Lettering	Dash Number
S0, S1	electro-gray	electro-gray	brushed alu	black	-100
S0, S1	electro-gray	electro-gray	black	mat silver	-500
S0, S1	black	black	brushed alu	black	-600
S0, S1	black	black	black	mat silver	-700

¹Technical data on request.

How to order

Modification of Switches

The standard switch consists of a plexi glass escutcheon plate with brushed aluminum backing and black inscription. The escutcheon plate frame is black as well as the handle. Page 4 shows further color combinations of escutcheon plate and handle which are available. The appropriate dash number must be substituted in the switch function coding to specify other color combinations as required.

Example: The complete coding for switch type CG8 with a 3 pole ON/OFF switch function, electro-gray handle and electro-gray escutcheon plate frame with brushed aluminum backing and black inscription which reads 0-1 is as follows: **DH10 A202-100 E**.

Special programs for escutcheon plate and handle combinations

- **.00** = without escutcheon plate, without handle
- **.01** = without escutcheon plate
- **.02** = without handle
- **.03** = with square escutcheon plate without lettering
- **.04** = with rectangular escutcheon plate without lettering
- **.05** = with square escutcheon plate without lettering and without handle
- **.06** = with rectangular escutcheon plate without lettering and without handle
- **.07** = standard escutcheon plate, without lettering on rectangular section
- **.08** = with F-handle
- **.09** = with P-handle
- **.10** = escutcheon plate with frame and fixation ring only (if using switches with single hole mounting: - **.16**)
- **.11** = without escutcheon plate, but with handle bearing plate
- **.12** = with yellow escutcheon plate backing and red handle
- **.14** = with B-handle
- **.16** = escutcheon plate with frame and fixation ring only if using switches with single hole mounting
- **.17** = standard escutcheon plate and rectangular add-on escutcheon plate if using switches with single hole mounting FT2

Example: The complete coding for switch type DH10 with a 3 pole ON/OFF switch function with electro-gray escutcheon plate frame, square escutcheon plate without lettering, brushed aluminum plate backing and electro-gray handle reads as follows: **DH10 A202-103 E**.

Handles, Escutcheon Plates and Optional Extras

The handles for standard switches shown on pages 6-28 are suitable for mounting units with four hole panel mounting. Alternative types of handles available are illustrated on pages 29-33.

When a handle, escutcheon plate or optional extra is required but not covered by the dash number, the code number for the selected component should be entered separately. A comprehensive range of available standard escutcheon plates is illustrated on pages 34-36. Non-standard or special escutcheon plate engravings are available at extra cost. The large number of optional extras and enclosures is covered in Catalog **101**.

Switch Size

DH, DHR, DK and DKR switches are available in sizes S0 and S1. These size codes indicate the dimension of the mounting, the escutcheon plate and the handle, as well as the size of optional devices and enclosures. Page 3 lists these sizes and the various switch types they include.

Ordering of Special Switches and Escutcheon Plates

When ordering special switches and special escutcheon plates, we recommend the use of our ordering form as shown in this example.

Contacts may be operated in 2 plains. Consequently, each contact has two columns in which the required contact function is to be indicated. The shaded column indicates function of the contact with depressed handle. This means that the switch handle may be depressed in each switching position. Rotation of the handle is possible only in the depressed position.

Contacts 1-2, 3-4, 11-12 and 5-6, 7-8, 9-10 close in position 1 or 3. Depressing the handle will not change the contact function. In position 1 or 3 contact 13-14 is closed. This contact opens if the handle is depressed.

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Order forms are available on request.

Function	Escutch. Plate	Type/Handle		Code	Stages	Connection Diagram
		DH10-DHR12	DH10B-DHR12B			

ON/OFF Switches with 60° Switching

1 pole				A200-600	1		
2 pole				A201-600	1		
3 pole				A202-600	2		
3 pole with red handle				A202-626	2		
3 pole with V850 padlock attachment				A202-627	2		
4 pole				A203-600	2		
5 pole				A341-600	3		
6 pole				A342-600	3		
7 pole				A343-600	4		
8 pole				A344-600	4		
9 pole				A345-600	5		
10 pole				A346-600	5		
11 pole			A347-600	6			
12 pole			A348-600	6			
1 pole				A200-620	1		
2 pole				A201-620	1		
3 pole				A202-620	2		
4 pole				A203-620	2		
5 pole				A341-620	3		
6 pole				A342-620	3		
7 pole				A343-620	4		
8 pole				A344-620	4		
9 pole				A345-620	5		
10 pole				A346-620	5		
11 pole				A347-620	6		
12 pole				A348-620	6		
1 pole				A200-621	1		
2 pole				A201-621	1		
3 pole				A202-621	2		
4 pole				A203-621	2		
5 pole				A341-621	3		
6 pole				A342-621	3		
1 pole				A200-622	1		
2 pole				A201-622	1		
3 pole				A202-622	2		
4 pole				A203-622	2		
5 pole				A341-622	3		
6 pole				A342-622	3		
1 pole				A200-623	1		
2 pole				A201-623	1		
3 pole				A202-623	2		
4 pole				A203-623	2		
5 pole				A341-623	3		
6 pole				A342-623	3		
1 pole				A200-624	1		
2 pole				A201-624	1		
3 pole				A202-624	2		
4 pole				A203-624	2		
5 pole				A341-624	3		
6 pole				A342-624	3		
1 pole				A200-625	1		
2 pole				A201-625	1		
3 pole				A202-625	2		
4 pole				A203-625	2		
5 pole				A341-625	3		
6 pole				A342-625	3		

Switch Function and Configuration

DH, DHR Switches

Turn to operate

Function	Escutch. Plate	Type/Handle DH10- DH10B- DHR12 DHR12B	Code	Stages	Connection Diagram
----------	----------------	---	------	--------	--------------------

ON/OFF Switches with 90° Switching

1 pole contacts 2 pole preclose 30° 3 pole				A290-600 A291-600 A292-600	1 1 2		
4 pole 4 pole 1 pole preclose 60° 4 pole 3 pole preclose 30°				A324-600 A293-600 A327-600	2 2 2		1, 2, 3, 4, 5 and 6 pole
5 pole contacts 6 pole preclose 30°				A325-600 A326-600	3 3		
1 pole contacts 2 pole preclose 30° 3 pole				A290-620 A291-620 A292-620	1 1 2		4 pole 1 pole preclose 60°
4 pole 4 pole 1 pole preclose 60° 4 pole 3 pole preclose 30°				A324-620 A293-620 A327-620	2 2 2		
5 pole contacts 6 pole preclose 30°				A325-620 A326-620	3 3		4 pole 3 pole preclose 30°
3 pole 360° rotation				A208-600 A208-620	2 2		
3 pole for foot operation				A386-600	2		

ON/OFF Switches with Spring Return to „OFF“ 30° Switching

1 pole 2 pole 3 pole 4 pole				A204-600 A205-600 A206-600 A207-600	1 1 2 2		1-4 pole
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Function	Escutch. Plate	Type/Handle DH10- DH10B- DHR12 DHR12B	Code	Stages	Connection Diagram
----------	----------------	---	------	--------	--------------------

Double-throw Switches without „OFF“ 60° Switching

1 pole				A220-600	1	
2 pole				A221-600	2	
3 pole				A222-600	3	
4 pole				A223-600	4	
5 pole				A369-600	5	
6 pole				A370-600	6	
7 pole				A371-600	7	
8 pole				A372-600	8	
9 pole				A373-600	9	
10 pole				A374-600	10	
11 pole				A375-600	11	
12 pole				A376-600	12	

Double-throw Switches without „OFF“ with electrically isolated contacts

1 pole				A720-600	1		1-4 pole
2 pole				A721-600	2		
3 pole				A722-600	3		
4 pole				A723-600	4		
1 pole with spring return				A795-600	1		1 pole with spring return

Double-throw Switches with Spring Return to Center

1 pole				A295-600	1		1-3 pole
2 pole				A296-600	2		
3 pole				A297-600	3		
1 pole				A295-620	1		1-3 pole
2 pole				A296-620	2		
3 pole				A297-620	3		

Double-throw Switches with Center „OFF“ 60° Switching

1 polig				A210-600	1	
2 polig				A211-600	2	
3 polig				A212-600	3	
4 polig				A213-600	4	
5 polig				A361-600	5	
6 polig				A362-600	6	
7 polig				A363-600	7	
8 polig				A364-600	8	

Function	Escutch. Plate	Type/Handle		Code	Stages	Connection Diagram
		DH10- DHR12	DH10B- DHR12B			

Double-throw Switches with Center „OFF“ 60° Switching

1 pole 2 pole 3 pole 4 pole 5 pole 6 pole 7 pole 8 pole				A210-620 A211-620 A212-620 A213-620 A361-620 A362-620 A363-620 A364-620	1 2 3 4 5 6 7 8	
1 pole 2 pole 3 pole				A210-621 A211-621 A212-621	1 2 3	
1 pole 2 pole 3 pole				A210-622 A211-622 A212-622	1 2 3	
1 pole 2 pole 3 pole				A210-623 A211-623 A212-623	1 2 3	
1 pole 2 pole 3 pole 4 pole				A210-624 A211-624 A212-624 A213-624	1 2 3 4	

Double-throw Switches with Center „OFF“ 90° Switching

1 pole contacts 2 pole preclose 30° 3 pole 4 pole 1 pole preclose 60°				A218-600 A219-600 A299-600 A294-600	1 2 3 4	
1 pole 2 pole 3 pole 4 pole 1 pole preclose 60°				A218-620 A219-620 A299-620 A294-620	1 2 3 4	

Double-throw Switches with Center „OFF“ and electrically isolated contacts

1 pole 2 pole 3 pole 4 pole				A710-600 A711-600 A712-600 A713-600	1 2 3 4	
1 pole with spring return 2 pole to center				A714-600 A715-600	1 2	

Double-throw Switches with Spring Return to Center

1 pole with spring return 2 pole to center 3 pole				A214-600 A215-600 A216-600	1 2 3	
1 pole 2 pole 3 pole				A214-620 A215-620 A216-620	1 2 3	
1 pole with spring return 2 pole from left to center 3 pole				A320-600 A321-600 A322-600	1 2 3	

Function	Escutch. Plate	Type/Handle	Code	Stages	Connection Diagram
		DH10- DHR12	DH10B- DHR12B		

Multi-step Switches without „OFF“

1 pole 3 Step 2 pole 3 pole 4 pole 5 pole 6 pole				A230-600 A250-600 A270-600 A476-600 A484-600 A489-600	2 3 5 6 8 9	
1 pole 4 Step 2 pole 3 pole 4 pole 5 pole 6 pole				A231-600 A251-600 A271-600 A477-600 A485-600 A490-600	2 4 6 8 10 12	
1 pole 5 Step 2 pole 3 pole 4 pole				A232-600 A252-600 A272-600 A478-600	3 5 8 10	
1 pole 6 Step 2 pole 3 pole				A233-600 A253-600 A273-600	3 6 9	
1 pole 7 Step 2 pole 3 pole				A234-600 A254-600 A274-600	4 7 11	
1 pole 8 Step 2 pole 3 pole				A235-600 A255-600 A275-600	4 8 12	
1 pole 9 Step				A236-600	5	
1 pole 10 Step				A237-600	5	
1 pole 11 Step				A238-600	6	
1 pole 12 Step				A239-600	6	

Switch Function and Configuration

DH, DHR Switches

Turn to operate

Function	Escutch. Plate	Type/Handle	Code	Stages	Connection Diagram
		DH10- DH10B- DHR12 DHR12B			

Multi-step Switches without „OFF“ with electrically isolated contacts

1 pole 3 Step				A730-600	2	 1 pole
2 pole				A750-600	3	 2 pole
1 pole 4 Step				A731-600	2	 1 pole
2 pole				A751-600	4	 2 pole

Multi-step Switches with „OFF“

1 pole 2 Step				A240-600	1	 1-6 pole
2 pole				A260-600	2	
3 pole				A280-600	3	
4 pole				A480-600	4	
5 pole				A486-600	5	
6 pole				A491-600	6	
1 pole				A240-620	1	 1-6 pole
2 pole				A260-620	2	
3 pole				A280-620	3	
4 pole				A480-620	4	
5 pole				A486-620	5	
6 pole				A491-620	6	
1 pole 3 Step				A241-600	2	 1 and 2 pole
2 pole				A261-600	3	
3 pole				A281-600	5	
4 pole				A481-600	6	
5 pole				A487-600	8	
1 pole				A241-620	2	 3 pole
2 pole				A261-620	3	
3 pole				A281-620	5	
4 pole				A481-620	6	
5 pole				A487-620	8	
1 pole				A241-621	2	 4 pole
2 pole				A261-621	3	
						 5 pole

Function	Escutch. Plate	Type/Handle		Code	Stages	Connection Diagram
		DH10- DHR12	DH10B- DHR12B			

Multi-step Switches with „OFF“

1 pole 4 Step 2 pole 3 pole 4 pole				A242-600 A262-600 A282-600 A482-600	2 4 6 8	
1 pole 2 pole 3 pole 4 pole				A242-620 A262-620 A282-620 A482-620	2 4 6 8	1-4 pole
1 pole 5 Step 2 pole 3 pole				A243-600 A263-600 A283-600	3 5 8	
1 pole 2 pole 3 pole				A243-620 A263-620 A283-620	3 5 8	1-3 pole
1 pole 6 Step 2 pole 3 pole				A244-600 A264-600 A284-600	3 6 9	
1 pole 2 pole 3 pole				A244-620 A264-620 A284-620	3 6 9	1-3 pole
1 pole 7 Step 2 pole				A245-600 A265-600	4 7	
1 pole 2 pole				A245-620 A265-620	4 7	1 pole 2 pole
1 pole 8 Step				A246-600	4	
1 pole				A246-620	4	
1 pole 9 Step				A247-600	5	
1 pole				A247-620	5	
1 pole 10 Step				A248-600	5	
1 pole				A248-620	5	
1 pole 11 Step				A249-600	6	
1 pole				A249-620	6	

Function	Escutch. Plate	Type/Handle	Code	Stages	Connection Diagram
		DH10- DH10B- DHR12 DHR12B			

General Application Switches

1 pole 2 Gang 2 pole Switching sequence: 3 pole 0, A, A+B				A310-600 A312-600 A314-600	1 2 3	<p>1 pole</p> <p>2 pole</p>
1 pole 2 pole 3 pole				A310-620 A312-620 A314-620	1 2 3	<p>3 pole</p>
1 pole 3 Gang 2 pole Switching sequence: 3 pole 0, A, A+B, A+B+C				A311-600 A313-600 A315-600	2 3 5	<p>1 pole</p> <p>2 pole</p>
1 pole 2 pole 3 pole				A311-620 A313-620 A315-620	2 3 5	<p>3 pole</p>
1 pole 2 Gang 2 pole Series switching 3 pole Switching sequence: 0, A, B, A+B				A330-600 A331-600 A332-600	1 2 3	<p>1 pole</p> <p>2 pole</p>
1 pole 2 pole 3 pole				A330-620 A331-620 A332-620	1 2 3	<p>3 pole</p>
2 pole 2 Gang Series-parallel Switching				A339-600	2	
Switching sequence: 0, A+B series, A, A+B parallel				A339-620	2	

Switch Function and Configuration

DH, DHR Switches

Turn to operate

Function	Escutch. Plate	Type/Handle	Code	Stages	Connection Diagram
		DH10- DH10B- DHR12 DHR12B			

Voltmeter Switches without „OFF“

3 phase 3 wire			A023-600	2	
			A023-620	2	
3 phase 3 wire 3 phase to phase and phase to neutral			A025-600	3	
			A025-620	3	

Voltmeter Switches with „OFF“

2 pole 360° rotation			A002-600	1	
3 phase 3 wire			A004-600	2	
			A004-620	2	
			A004-621	2	
			A004-622	2	
			A004-623	2	
			A004-624	2	
			A011-600	2	

Switch Function and Configuration

DH, DHR Switches

Turn to operate

Function	Escutch. Plate	Type/Handle	Code	Stages	Connection Diagram
		DH10- DH10B- DHR12 DHR12B			

Voltmeter Switches with „OFF“

3 phase to neutral				A005-600	2	
				A005-620	2	
				A005-621	2	
				A005-622	2	
				A005-623	2	
3 phase to phase and 3 phase to neutral				A007-600	3	
				A007-620	3	
				A007-621	3	
				A007-622	3	
				A007-623	3	
				A007-624	3	
2 separate 3 phase with center „OFF“				A008-600	4	
				A008-620	4	
				A008-621	4	
				A008-622	4	

Function	Escutch. Plate	Type/Handle	Code	Stages	Connection Diagram
		DH10- DH10B- DHR12 DHR12B			

Voltmeter Switches with „OFF“

3 phase and 1 phase to neutral				A010-600	3	
				A010-620	3	
				A010-621	3	
				A010-622	3	

Ammeter Switches

Single pole with one current transformer				A046-600	1	
				A046-620	1	
				A046-621	1	
Single pole with 3 current transformers without „OFF“				A017-600	3	
				A017-620	3	
Single pole with 3 current transformers with „OFF“ 360° rotation				A048-600	3	
				A048-620	3	
				A048-621	3	
				A048-622	3	
				A048-623	3	

Function	Escutch. Plate	Type/Handle DH10- DH10B- DHR12 DHR12B	Code	Stages	Connection Diagram
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Ammeter Switches

Single pole with 2 current transformers (3 readings)				A021-600	2	
				A021-620	2	
Single pole with 4 current transformers				A036-600	4	
				A036-620	4	
2 pole 2 current transformers				A037-600	3	
				A037-620	3	
				A037-621	3	
2 pole 3 current transformers				A019-600	5	
				A019-620	5	
				A038-600	5	
2 pole 3 current transformers				A038-600	5	
				A038-620	5	
				A038-621	5	
2 pole 4 current transformers				A039-600	6	
				A039-620	6	

Function	Escutch. Plate	Type/Handle DH10- DH10B- DHR12 DHR12B	Code	Stages	Connection Diagram
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Volt-ammeter Switches

3 phase - phase to phase 3 current				A027-600	6	
				A028-600	7	
3 phase voltage 3 phase current 4 wire				A033-600	5	
3 phase voltage 3 phase current 3 wire				A035-600	5	

Control Switches

Stop switch				A174-600	1	
Start switch				A175-600	1	
Stop start switch single pole				A176-600	1	
Stop start switch 2 pole				A183-600	2	
Stop start switch with spring return from start to run				A178-600	1	
				A178-620	1	
Stop start switch with spring return to run for 2 units				A177-600	2	
				A177-620	2	
Stop start switch with spring return to run with contactor interlock contactors for 2 units				A182-600	2	
				A182-620	2	
Motor voltage control switch				A150-600	2	

Switch Function and Configuration

DH, DHR Switches

Turn to operate

Function	Escutch. Plate	Type/Handle	Code	Stages	Connection Diagram
		DH10- DH10B- DHR12 DHR12B			

Control Switches with electrically isolated contacts

Stop start switch single pole				A789-600	1	
Stop start switch with spring return to 1				A791-600	1	
Stop start switch with spring return to run for 2 units				A790-600	2	
Contactor control with spring return to „OFF“				A179-600	2	
				A179-620	2	
Circuit breaker control				A537-600	2	

Motor Reversing Switches

2 pole				A400-600	2	
				A400-620	2	
				A400-621	2	
3 pole				A401-600	3	
				A401-620	3	
				A401-621	3	
3 pole with spring return to „OFF“				A228-600	3	
				A228-620	3	
3 pole for use with reversing contactors				A402-600	4	

Function	Escutch. Plate	Type/Handle DH10- DH10B- DHR12 DHR12B	Code	Stages	Connection Diagram
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Star-delta Switches

OFF-star-delta				A410-600	4	
				A410-620	4	
Reversing				A413-600	5	
With auxiliary contact closed in „OFF“ position				A416-600	5	
For use with reversing contactors				A419-600	4	

Motor Control Switches

2 speed single winding				A440-600	4	
				A440-620	4	
2 speed single winding without „OFF“				A466-600	4	
2 speed single winding with center „OFF“				A441-600	4	
				A441-620	4	
2 speed single winding reversing				A442-600	6	
				A442-620	6	
2 speed single winding for use with contactors				A444-600	5	
				A444-620	5	

Switch Function and Configuration

DH, DHR Switches

Turn to operate

Function	Escutch. Plate	Type/Handle	Code	Stages	Connection Diagram
		DH10- DH10B- DHR12 DHR12B			

Motor Control Switches



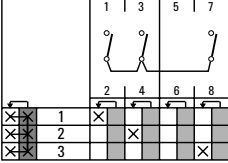



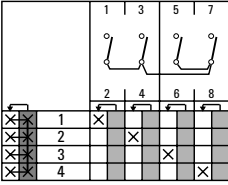



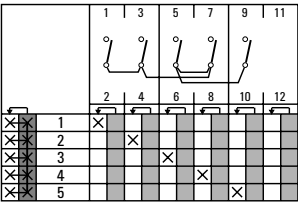



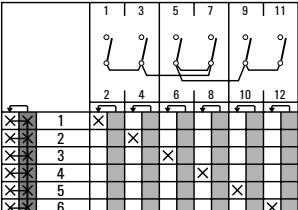



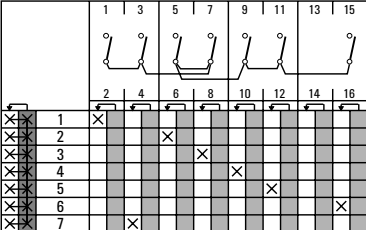



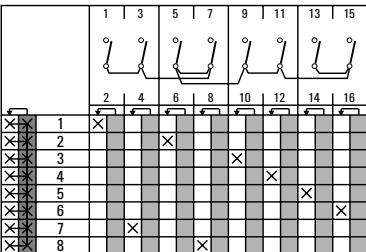

2 speed 2 winding 0-A-B Υ or Δ				A451-600	3	
				A451-620	3	
3 speed 2 winding 0-A Δ -B Υ -A $\Upsilon\Upsilon$				A457-600	6	
				A457-620	6	

Start and Run Switches

Split-phase start				A425-600	2	
				A425-620	2	
Split-phase start reversing				A426-600	3	
				A426-620	3	
Split-phase reversing, auto cut-out of start field winding				A622-600	3	



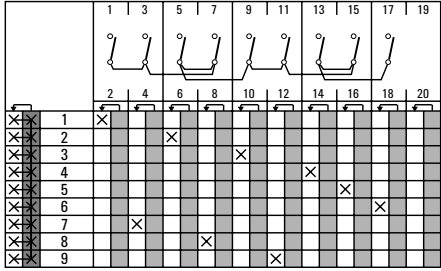



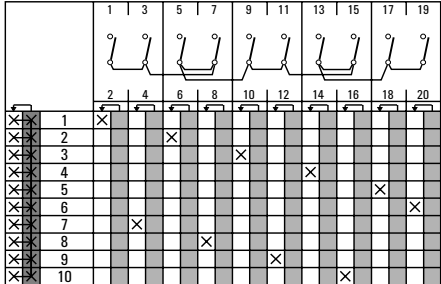



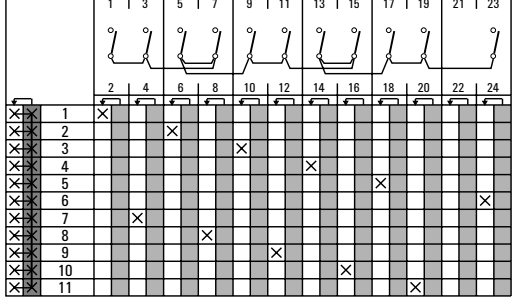



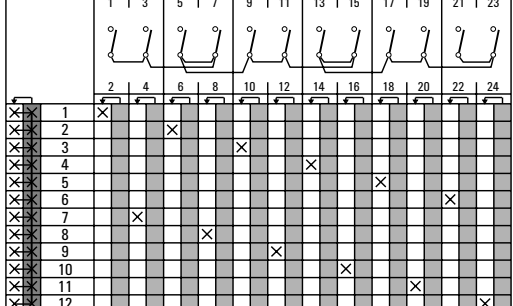

Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Multi-step Switches without „OFF“

1 pole 3 Step			A830-600	2	 
1 pole 4 Step			A831-600	2	 
1 pole 5 Step			A832-600	3	 
1 pole 6 Step			A833-600	3	 
1 pole 7 Step			A834-600	4	 
1 pole 8 Step			A835-600	4	 

Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Multi-step Switches without „OFF“

1 pole 9 Step			A836-600	5	 
1 pole 10 Step			A837-600	5	 
1 pole 11 Step			A838-600	6	 
1 pole 12 Step			A839-600	6	 

Rotation only in pushed position. Contacts are closed only in normal position. Therefore, one or more positions of a multi-step switch can be passed without contact operation.

Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Multi-step Switches with „OFF“

1 pole 2 Step			A840-600	1		
			A840-620	1		
1 pole 3 Step			A841-600	2		
			A841-620	2		
1 pole 4 Step			A842-600	2		
			A842-620	2		
1 pole 5 Step			A843-600	3		
			A843-620	3		
1 pole 6 Step			A844-600	4		
			A844-620	4		
1 pole 7 Step			A845-600	4		
			A845-620	4		

Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Multi-step Switches with „OFF“

1 pole 8 Step			A846-600	4	
			A846-620	4	
1 pole 9 Step			A847-600	5	
			A847-620	5	
1 pole 10 Step			A848-600	5	
			A848-620	5	
1 pole 11 Step			A849-600	6	
			A849-620	6	

Rotation only in pushed position. Contacts are closed only in normal position. Therefore, one or more positions of a multi-step switch can be passed without contact operation.

Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Voltmeter Switches with „OFF“

For 2 measuring ranges by additional NO and NC contacts operated by pushing handle			A804-600	3	
			A804-620	3	
			A804-621	3	
			A804-622	3	
			A804-623	3	
			A804-624	3	
For 2 measuring ranges by additional NO and NC contacts operated by pushing handle			A805-600	3	
			A805-620	3	
			A805-621	3	
			A805-622	3	
			A805-623	3	
For 2 measuring ranges by additional NO and NC contacts operated by pushing handle			A807-600	5	
			A807-620	5	
			A807-621	5	
			A807-622	5	
			A807-623	5	
			A807-624	5	



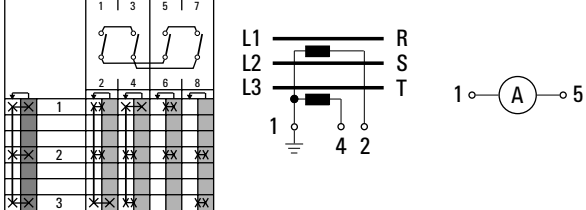
Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Voltmeter Switches with „OFF“



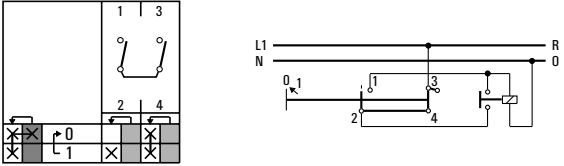


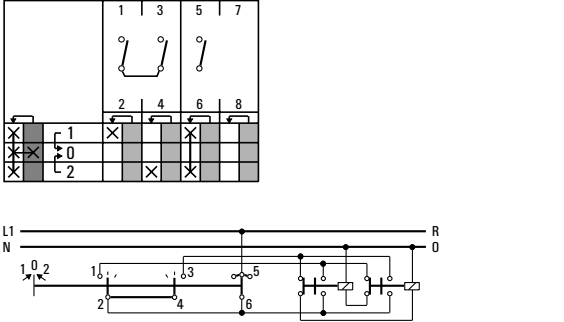


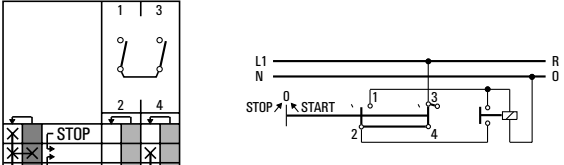


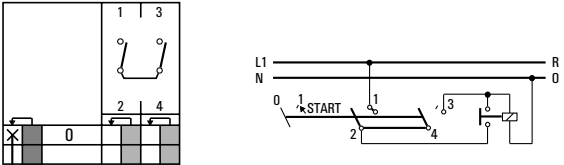
(as A804) for 2 measuring ranges by additional NO contact operated by pushing handle			A814-600	3	
			A814-620	3	
			A814-621	3	
			A814-622	3	
			A814-623	3	
			A814-624	3	
(as A805) for 2 measuring ranges by additional NO contact operated by pushing handle			A815-600	3	
			A815-620	3	
			A815-621	3	
			A815-622	3	
			A815-623	3	
(as A807) for 2 measuring ranges by additional NO contact operated by pushing handle			A817-600	4	
			A817-620	4	
			A817-621	4	
			A817-622	4	
			A817-623	4	
			A817-624	4	



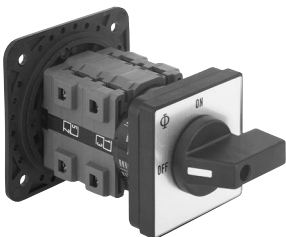
Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Ammeter Switches





<p>Single pole with 2 current transformers (3 readings)</p>			<p>A021-600</p>	<p>2</p>	
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Control Switches



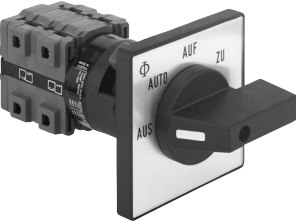

<p>Control switch for contactor control, closing by rotating, tripping by pushing in „OFF“ position</p>			<p>A874-600</p>	<p>1</p>	
<p>Control switch for 2 NO and 1 NC contacts</p>			<p>A875-600</p>	<p>2</p>	
<p>Control switch 1pole with additional emergency cut-out by pushing in „OFF“ position</p>			<p>A876-600</p>	<p>1</p>	
<p>Control switch stop start switch with spring return from start to position 1, with additional emergency cut-out by pushing in position 1</p>			<p>A878-600</p>	<p>1</p>	

Two or Four Hole Panel Mounting		Terminals rotated 90°	Code	DH.. DHR..	DH..B DHR..B	DK.. DKR..
	Panel mounting					
	Four hole panel mounting	●	E E-V	● ●	● ●	●
	Four hole panel mounting, protection IP 65	●	EF EF-V	● ●	● ●	
	Two hole panel mounting, protection IP 65	●	E22 E22-V	● ●		
	Panel mounting using larger escutcheon plate and handle and with heavy duty latching					
	Four hole panel mounting		EG	●		
	Four hole panel mounting, protection IP 65		EGF	●		
	Panel and base mounting					
	Four hole panel mounting		ER	●	●	
	Four hole panel mounting, protection IP 65		ERF	●	●	










Four Hole Panel Mounting	Code	DH.. DHR..	DH..B DHR..B
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	<p>Panel mounting with heavy duty latching and metal shaft</p> <p>Four hole panel mounting Mounting plate, escutcheon plate and handle of size 0</p>	KN2	●	
	<p>Four hole panel mounting Mounting plate, escutcheon plate and handle of size 1</p>	KN1	●	●
	<p>Four hole panel mounting Mounting plate, escutcheon plate and handle of size 1 and 6 mm square metal shaft</p>	KD1	●	●
	<p>Panel mounting with protective cover</p>			
	<p>Four hole panel mounting Protection front IP 40 rear IP 30</p>	EC	●	●
	<p>Four hole panel mounting with additional shaft seal Protection front IP 40 rear IP 30</p>	ED	●	●

Single Hole Mounting	Terminals rotated 90°	Code	DH.. DHR..	DK.. DKR..
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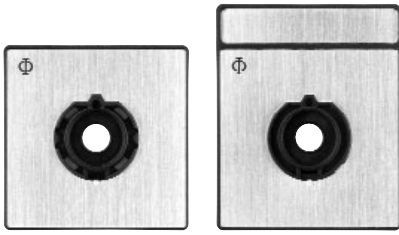
	<p>With locking nut and shaft seal, protection IP 65</p> <p>Without escutcheon plate</p>	<ul style="list-style-type: none"> ● ● 	<p>FT1 FT1-V</p> <p>FT3 FT3-V</p>	<p>mm</p> <p>22 22</p> <p>22/30 22/30</p>	<p>mm</p> <p>22 22</p> <p>22/30 22/30</p>
	<p>With square escutcheon plate</p>	<ul style="list-style-type: none"> ● ● 	<p>FT2 FT2-V</p> <p>FT4 FT4-V</p>	<p>22 22</p> <p>22/30 22/30</p>	<p>22 22</p> <p>22/30 22/30</p>
	<p>With size S1 escutcheon plate and heavy duty latching</p>	<ul style="list-style-type: none"> ● 	<p>FH3 FH3-V</p>	<p>22 22</p>	<p>22 22</p>
	<p>Mounting key for locking nut</p>		<p>S00 T170 09</p>		

Base Mounting	Terminals rotated 90°	Code	DH.. DHR..	DH..B DHR..B
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	<p>Base mounting</p> <p>For four hole panel mounting</p>	●	VE VE-V	● ●	● ●
	<p>For four hole base mounting and with integrated simplified door clutch, protection IP 65</p>	●	VF VF-V	● ●	
	<p>For two hole base mounting</p>	●	VE22 VE22V	● ●	
	<p>For two hole base mounting and with integrated simplified door clutch, protection IP 65</p>	●	VF22 VF22V	● ●	
	<p>Snap-on base mounting for track EN 50022</p>		VE1	●	●
	<p>Snap-on base mounting for track EN 50022 with rectangular escutcheon plate for 45 mm standard knock-out</p>		VE2	●	
	<p>Snap-on base mounting for track EN 50022. Both the escutcheon plate for 45 mm standard knock-out and the handle are adjustable in height.</p>		VE21	●	
	<p>Snap-on base mounting for track EN 50022 with circular escutcheon plate for 46 mm knock-out</p>		VE3	●	
	<p>Base mounting - four hole - with circular escutcheon plate for 46 mm knock-out</p>		VE4	●	

Mounting Plates for Plaster Depth Boxes acc. to DIN 49070 and ÖNORM E6508		Code	DH.. DHR..
	Plaster depth trim	UE1	●
	With light	UE2	●
	With facility for light addition	UE3	●
	Plaster depth trim	UE4	●
	With light	UE5	●
	With facility for light addition	UE6	●
	For multiple boxes	UE7	●

Escutcheon Plates



Square and rectangular escutcheon plates are available for each size of switch. The escutcheon plate consists of a frame and a faceplate having the switch positions which is then embossed with hot-foil backing. The escutcheon plate frame is an essential part of the switch and serves as a bearing surface for the handle. If the switch is to be mounted without an escutcheon plate we would recommend for size S1 the handle bearing plate T100-04.

Standard Letterings Available

(Over 500 standard letterings, special letterings upon request.)

30° switching

F022	F023	F137	F141	F142	F158	F159	F701	F703	F704	F026	F035	F152	F153	F169	F709	F024	F025
F034	F036	F037	F038	F039	F053	F139	F143	F144	F147	F149	F150	F151	F160	F161	F219	F221	F222
F224	F258	F259	F273	F280	F297	F298	F306	F307	F329	F384	F708	F001	F018	F019	F029	F030	F040
F052	F154	F155	F165	F166	F183	F184	F229	F301	F302	F321	F332	F333	F334	F335	F355	F374	F711
F712	F002	F021	F033	F041	F054	F055	F305	F319	F003	F042	F138	F255	F299	F308	F350	F351	F353
F004	F014	F017	F020	F027	F028	F031	F032	F043	F049	F135	F156	F157	F162	F167	F168	F187	F189
F303	F304	F336	F337	F347	F348	F710	F713	F714	F734	F005	F044	F136	F140	F702	F006	F010	F015
F045	F050	F007	F011	F046	F008	F012	F016	F047	F051	F009	F013	F048	F748				

45° switching

F215	F216	F295	F738	F742	F743	F744	F746	F747	F792	F793	F107	F109	F114	F115	F212	F213	F214
F217	F267	F289	F330	F375	F376	F383	F408	F409	F410	F411	F412	F413	F426	F427	F430	F729	F752
F775	F776	F777	F778	F779	F780	F781	F796	F797	F798	F105	F108	F112	F113	F117	F118	F293	F419
F429	F739	F741	F789	F790	F791	F794	F795	F106	F110	F116	F294	F317	F414	F415	F416	F417	F418
F782	F783	F784	F785	F786	F787	F788	F799	F111	F210	F211	F284	F285	F296	F322	F727	F740	

Escutcheon Plates

60° switching

F070	F072	F087	F088	F089	F133	F163	F164	F192	F193	F196	F197	F198	F230	F231	F232	F234	F243
F244	F247	F257	F262	F263	F264	F268	F282	F288	F470	F291	F310	F311	F313	F323	F328	F352	F367
F379	F380	F382	F705	F721	F722	F750	F754	F071	F073	F075	F076	F080	F081	F085	F086	F090	F091
F092	F093	F094	F098	F104	F194	F220	F223	F235	F237	F239	F240	F241	F249	F260	F269	F469	F274
F281	F290	F292	F312	F314	F315	F316	F324	F331	F344	F354	F356	F357	F358	F359	F364	F370	F371
F373	F377	F381	F385	F723	F732	F735	F077	F100	F101	F102	F309	F342	F343	F361	F362	F363	F365
F366	F074	F078	F082	F096	F097	F191	F195	F256	F325	F326	F720	F724	F079	F083	F084	F095	F099
F185	F190	F199	F233	F236	F238	F242	F283	F725	F730	F731	F736	F737					

90° switching

F056	F058	F063	F065	F068	F069	F134	F177	F178	F182	F201	F208	F251	F252	F253	F254	F340	F346
F360	F378	F456	F458	F700	F743	F057	F061	F064	F067	F171	F181	F205	F207	F209	F320	F349	F715
F719	F059	F060	F062	F066	F170	F172	F173	F174	F175	F176	F179	F180	F186	F188	F202	F204	F206
F250	F265	F266	F286	F318	F327	F338	F339	F425	F716	F717	F718	F726	F733	F751	F755	F756	F437


Miscellaneous


F119	F122	F125	F126	F129	F130	F225	F246	F248	F261	F341	F123	F127	F145	F146	F148	F245	F287
F345	F706	F707	F120	F121	F124	F128	F131	F132	F749							F990	F991
F801	F802	F803	F804	F805	F806	F807	F808	F809	F810	F811	F812	F813	F814	F815	F816	F817	F818
F819	F820	F821	F822	F823	F824	F825	F826	F827	F828	F829	F830	F831	F832	F833	F834	F835	

Handles

Type	Color	Code	Size	
			S0	S1


Type	Color	Code	Size	
			S0	S1

<p>R-Handle</p> 	black	G001	●	●
	red	G002	●	●
	white	G003	●	●
	electro-gray	G007	●	●

<p>I-Handle</p> 	black	G251	●	●
	red	G252	●	●
	white	G253	●	●
	electro-gray	G257	●	●

<p>F-Handle</p> 	black	G221	●	●
	red	G222	●	●
	white	G223	●	●
	electro-gray	G227	●	●

<p>B-Handle</p> 	black	G521	●	●
	red	G522	●	●
	white	G523	●	●
	electro-gray	G527	●	●

<p>S-Handle</p>  <p>S0 S1</p>	black	G301	●	●
	red	G302	●	●
	white	G303	●	●
	electro-gray	G307	●	●












<p>L-Handle</p> 	black	G501	—	●
	red	G502	—	●
	white	G503	—	●
	electro-gray	G507	—	●

<p>P-Handle</p>  <p>S0 S1</p>	black	G211	●	●
	red	G212	●	●
	white	G213	●	●
	electro-gray	G217	●	●

<p>K-Handle</p> 	black	G411	—	●
	red	G412	—	●
	white	G413	—	●
	electro-gray	G417	—	●

<p>O-Handle</p> 	black	G321	—	●
	red	G322	—	●
	white	G323	—	●
	electro-gray	G327	—	●

Country	Authority	Mark or Standard	DH10 DK10 DH10B	DHR10 DKR10 DHR10B	DH11 DK11 DH11B	DHR11 DKR11 DHR11B	DH12 DK12 DH12B	DHR12 DKR12 DHR12B
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USA	Underwriters Laboratories		●	●	●	●	●	●
		or 						
Canada	Canadian Standards Association		●	●	●	●	●	●
		or 						
Switzerland	Schweizerischer Elektrotechnischer Verein		+	+	+	+	+	+
Denmark	Danmarks Elektriske Materielkontrol		+	+	+	+	+	+
Norway	Norges Elektriske Materielkontrol		+	+	+	+	+	+
Sweden	Svenska Elektriska Materielkontrollanstalten		+	+	+	+	+	+
Finland	Sähkötar-kastuskeskus		+	+	+	+	+	+
Austria	Österreichischer Verband für Elektrotechnik		+	+	+	+	+	+
Federal Republic of Germany	Verband Deutscher Elektrotechniker	VDE 0660 ¹	+	+	+	+	+	+
Great Britain	British Standards Institution	BS EN 60947 ¹	+	+	+	+	+	+
International Electrical Commission (IEC) Recommendation		IEC 60947 ²	+	+	+	+	+	+
Russian Federation	GOST	 CH01	●	+	●	+	●	+

- Switch approved
- ⊕ Switch conforms to requirements

¹Industrial switchgear is not required to bear a symbol but must conform to requirements. By referring to the specific specification on the product the manufacturer implies that these requirements have been met.

²IEC does not operate an approval scheme.

Selection Data	DH10	DHR10
	DK10	DKR10
	DH10B	DHR10B

Rated Insulation Voltage U_e	IEC 60947-3 ¹ , EN 60947-3 ¹ VDE 0660 part 107 ¹ North America Min. operational voltage	V V V	690 600 20	690 600 20		
Rated Impulse Withstand Voltage U_{imp}¹		kV	6	6		
Rated Thermal Current I_{th}	IEC 60947-3, EN 60947-3 VDE 0660 part 107 North America	A A	16 15	16 15		
Rated Operational Current I_e						
AC-21A	Switching of resistive loads, including moderate overloads	IEC 60947-3, EN 60947-3 VDE 0660 part 107	A	16	16	
AC-15	Switching of control devices, contactors, valves etc.	IEC 60947-3, EN 60947-3 VDE 0660 part 107	110 V-240 V 380 V-440 V	A A	5 3	5 3
Pilot Duty	North America	Heavy	VAC		600	600
Ampere Rating	Resistive or low inductive loads	North America	A		15	15
Short Circuit Protection						
Max. fuse size		(gL-characteristic)	A		16	16
Rated short-time withstand current		(1s-current)	A		120	120
Rated Utilization Category	IEC 60947-3, EN 60947-3 VDE 0660 part 107					
AC-3	Direct-on-line starting, star-delta starting	3 phase 3 pole	220 V-240 V 380 V-440 V 500 V 660 V-690 V	kW	2,2 3,7 3,7 3,7	2,2 3,7 3,7 3,7
		1 phase 2 pole	110 V-120 V 220 V-240 V 380 V-440 V	kW	0,37 1,1 2,2	0,37 1,1 2,2
AC-23A	Frequent switching of motors or other high inductive loads	3 phase 3 pole	220 V-240 V 380 V-440 V 500 V 660 V-690 V	kW	3 5,5 5,5 4	3 5,5 5,5 4
		1 phase 2 pole	110 V-120 V 220 V-240 V 380 V-440 V	kW	0,55 1,5 2,5	0,55 1,5 2,5
Ratings	North America					
Standard motor load	3 phase	110 V-120 V	HP		0,75	0,75
DOL-Rating (similar AC-3)	3 pole	220 V-240 V 440 V-600 V			1,5 3	1,5 3
	1 phase 2 pole	110 V-120 V 220 V-277 V 440 V-600 V	HP		0,25 0,5 1	0,25 0,5 1
Max. Permissible Wire Gage - Use copper wire only						
Single-core or stranded wire			mm ² AWG		2x2,5 2x12	– –
Flexible wire (sleeving in accordance with DIN 46228)			mm ²		2x2,5(1,5)	–
Flexible AWG wires (without sleeve)			AWG		2x14	–
Connection with insulated ring and fork type terminals			mm		–	≥3,2
Internal diameter			mm		–	≤7,4
External diameter			mm		6,3	–
Connection with quick connect terminations			mm		–	–
Ambient Temperature of Stages²		open at 100 % I_{th} enclosed at 100 % I_{the}				55 °C during 24 hours with peaks up to 60 °C 35 °C during 24 hours with peaks up to 40 °C

¹Valid for lines with grounded common neutral termination, overvoltage category III, pollution degree 3. Values for other supply systems on request.

²For electromagnetic optional extras see additional data in Catalog 101.

Selection Data	DH11	DHR11	DH12	DHR12
	DK11	DKR11	DK12	DKR12
	DH11B	DHR11B	DH12B	DHR12B

Rated Insulation Voltage U_e	IEC 60947-3 ¹ , EN 60947-3 ¹ VDE 0660 part 107 ¹	V	600	600	600	600	
	North America	V	600	600	600	600	
	min. voltage	V	1 ²	1 ²	6	6	
Rated Impulse Withstand Voltage U_{imp}			on request				
Rated Thermal Current I_{θ}/I_{th}	IEC 60947-3, EN 60947-3 VDE 0660 part 107	A	6	6	6	6	
	North America	A	6	6	6	6	
Rated Operational Current I_e AC-21A Switching of resistive loads, including moderate overloads	IEC 60947-3, EN 60947-3 VDE 0660 part 107						
	North America						
	1 V/6 V	A	6/3	6/3	-/6	-/6	
	12 V/24 V	A	2/1	2/1	6/5	6/5	
	48 V/60 V	A	0,8/0,7	0,8/0,7	4/3,7	4/3,7	
	110 V/220 V	A	0,4/0,2	0,4/0,2	3/2	3/2	
	230 V/240 V	A	0,2/0,18	0,2/0,18	2/1,8	2/1,8	
	380 V/400 V	A	0,13/0,13	0,13/0,13	1,3/1,3	1,3/1,3	
440 V/500 V	A	0,1/0,09	0,1/0,09	1/0,9	1/0,9		
550 V/600 V	A	0,08/0,05	0,08/0,05	0,8/0,5	0,8/0,5		
Short Circuit Protection							
	Max. fuse size (glass-tube, quick)	A	6	6	6	6	
Rated short-time withstand current (1s-current)		A	40	40	65	65	
DC Switching Capacity	IEC 60947-3, EN 60947-3 VDE 0660 part 107						
	North America						
DC-21B Resistive load $T \leq 1$ ms	1 V/6 V	A	4/2,5	4/2,5	-/4	-/4	
	12 V/24 V	A	1,5/0,8	1,5/0,8	3/2,2	3/2,2	
	48 V/60 V	A	0,3/0,27	0,3/0,27	1,2/1	1,2/1	
	110 V/220 V	A	0,2/0,1	0,2/0,1	0,6/0,3	0,6/0,3	
	230 V/240 V	A	0,1/0,08	0,1/0,08	0,3/0,27	0,3/0,27	
	380 V/400 V	A	0,06/0,06	0,06/0,06	0,2/0,2	0,2/0,2	
	440 V/500 V	A	0,05/0,04	0,05/0,04	0,15/0,12	0,15/0,12	
	550 V/600 V	A	0,03/0,02	0,03/0,02	0,1/0,1	0,1/0,1	
Max. Permissible Wire Gage - Use copper wire only							
	Single-core or stranded wire	mm ²	2x2,5	-	2x2,5	-	
		AWG	2x12	-	2x12	-	
	Flexible wire (sleeving in accordance to DIN 46228) Flexible AWG wires (without sleeve)	mm ²	2x2,5(1,5)	-	2x2,5(1,5)	-	
		AWG	2x14	-	2x14	-	
	Connection with insulated ring and fork type terminals	Internal diameter	mm	-	≥3,2	-	≥3,2
		External diameter	mm	-	≤7,4	-	≤7,4
	Connection with quick connect terminations	mm	6,3	-	6,3	-	
	Ambient Temperature of Stages³	open at 100 % I_{θ}/I_{th}		55 °C during 24 hours with peaks up to 60 °C			
		enclosed at 100 % I_{θ}/I_{th}		35 °C during 24 hours with peaks up to 40 °C			

¹Valid for lines with grounded common neutral termination, overvoltage category III, pollution degree 3. Values for other supply systems on request. ²Values for lower voltages on request. ³For electromagnetic optional extras see additional data in Catalog 101.

Two or Four Hole Panel Mounting

	DH10-DHR12 ³	DK10-DKR12	DH10B-DHR12B
A	48 1.89	48 1.89	64 2.52
B	42 1.65	42 1.65	56 2.20
C	4 .16	4 .16	4 .16
D1	5 .20	5 .20	5 .20
E	8-15 .31-.59	15-19 .59-.75	10-15 .39-.59
E22	11-15 .43-.59	-	-
EF	15-19 .59-.75	-	19-22 .75-.87
E	30 1.17	-	-
F	36(48) 1.42(1.89)	-	48 1.89
M²	5,5 .22	-	5,5 .22

²M, additional length for mounting ER, ERF only
³Dimensions in () for ER, ERF mounting plate only

EG
EGF

	DH10-DHR12
A	64 2.52
B	42 1.65
C	4 .16
D1	5 .20
EG	10-15 .31-.59
EGF	19-22 .75-.87
E	48 1.89
M	6,7 .26

KN1
KD1
KN2

KN2	DH10-DHR12	KN1	DH10-DHR12	DH10B-DHR12B
A	48 1.89	A	64 2.52	64 2.52
B	42 1.65	B	42 1.65	56 2.20
C	4 .16	C	4 .16	4 .16
D1	5 .20	D1	5 .20	5 .20
D2	8-15 .31-.59	D2	10-15 .31-.59	10-15 .31-.59
E	36 1.42	E	48 1.89	48 1.89
M	5,2 .20	M	4,7 .19	12 .47

Four Hole Panel Mounting or Single Hole Mounting and Base Mounting

EC
ED

		DH10- DHR12	DH10B- DHR12B		DH10- DHR12	DH10B- DHR12B
Stages L	1	103 4.06	127 5.00	EC ED EC ED EC ED ED	A	64 2.52
	2	103 4.06	127 5.00		B	68 2.68
	3	103 4.06	127 5.00		C	4 .16
	4	-	127 5.00		C	2 .08
	5	-	139,5 5.49		D1	5 .20
	6	-	164,5 6.48		D2	8-15 .31-.59
	7	-	177 6.97		D2	18-22 .71-.87
				E	48 1.89	48 1.89
				M	2 .08	2 .08

FT1... FT3... **FH3... FT2... FT4...**

		DH10- DHR12	DK10- DKR12		DH10- DHR12	DK10- DKR12
FH3... FT1... FT2...	A	48 1.89	48 1.89	FH3... A B C M FH3... M	A	64 2.52
	A	64 2.52	64 2.52		B	42 1.65
	B	42 1.65	42 1.65		C	6 .24
	C	6 .24	6 .24		M	18,2 .72
	M	18,2 .72	3,7 .15		M	25,2 .99
	M	25,2 .99	3,7 .15			

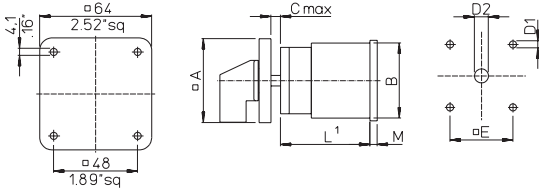
VE1

		DH10- DHR12	DH10B- DHR12B		DH10- DHR12	DH10B- DHR12B
VE1	A	48 1.89	64 2.52	A B C D E F	A	48 1.89
	B	42 1.65	56 2.20		B	42 1.65
	C	10,5 .41	13,5 .53		C	10,5 .41
	D	8-15 .31-.59	10-15 .39-.59		D	8-15 .31-.59
	E	36 1.42	48 1.89		E	36 1.42
	F	48 1.89	70 2.76		F	48 1.89

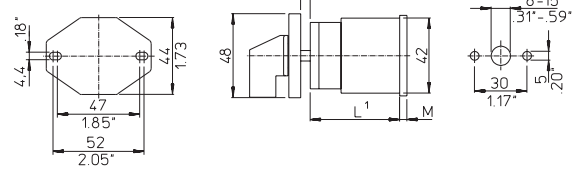
¹see page 43

Base Mounting

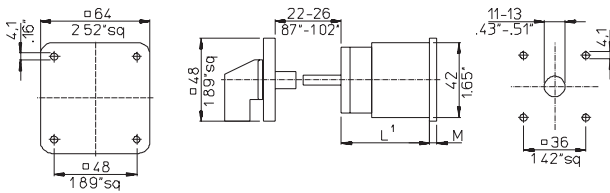
VE
VE-V



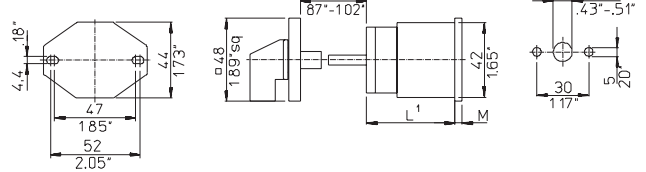
VE22
VE22V



VF
VF-V

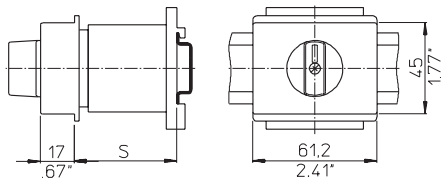


VF22
VF22V

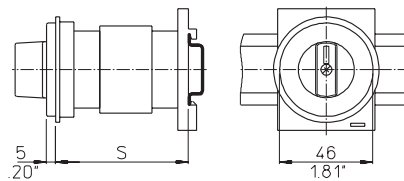


	DH10-DHR12	DH10B-DHR12B		DH10-DHR12	DH10B-DHR12B
A	48 1.89	64 2.52		E	36 1.42
B	42 1.65	56 2.20	VE	M	3,2 .13
C	10,5 .41	13,5 .53	VE22	M	1,9 .07
D1	5 .20	5 .20	VF	M	3,2 .13
D2	8-15 .31-.59	10-15 .39-.59	VF22	M	1,9 .07

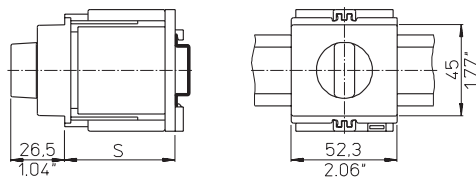
VE2



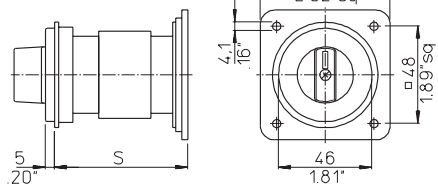
VE3



VE21



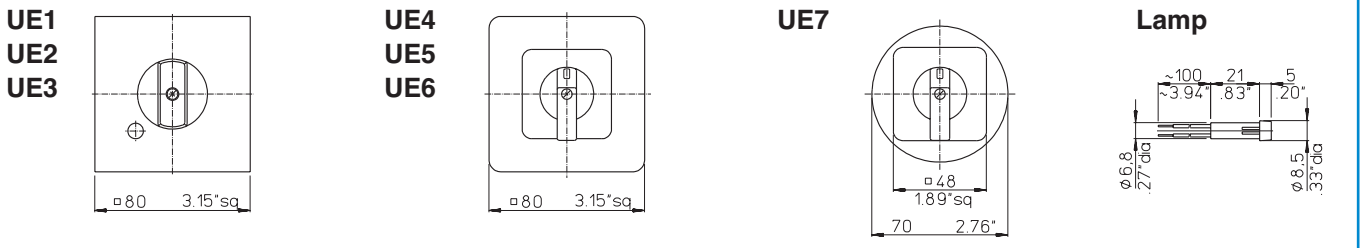
VE4



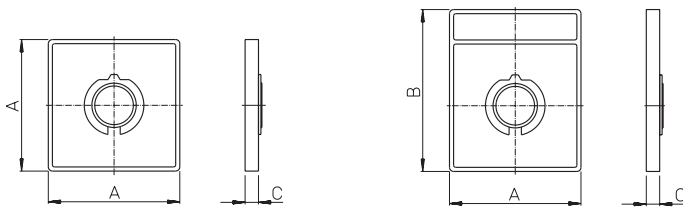
	VE2 DH10-DHR12 Max. no. of stages	VE3 DH10-DHR12 Max. no. of stages	VE4 DH10-DHR12 Max. no. of stages	S _{min.}	VE21 DH10-DHR12 No. of stages
S = 46 1.80	1	-	-	44 1.73	1
S = 50 1.97	1	1	1	54 2.13	2
S = 61 2.40	2	1	1	72 2.83	3
S = 67 2.64	2	2	2		
S = 69 2.70	2	2	2		

Dimensions mm
inch

Wall Mounting, Escutcheon Plates and Additional Length

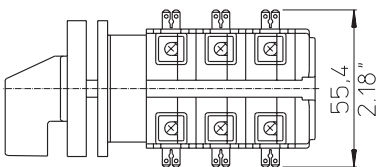


Escutcheon plates for mounting E, EF, ER, ERF, EG, EGF, KN1, KD1, KN2, EC, ED, VE, VE1, VF



Size	A	B	C
S0	48 1.89	59 2.32	6.7 .26
S1	64 2.52	78 3.07	7.4 .29

Quick connects for switches DH and DK (page 4)



Length L

Stages	DH10 DH11 DH12	DHR10 DHR11 DHR12	DK10 DK11 DK12	DKR10 DKR11 DKR12	DH10B DH11B DH12B	DHR10B DHR11B DHR12B
1	43,5 1,71	43,5 1,71	61 2,4	61 2,4	48,9 1,93	48,9 1,93
2	61 2,4	61 2,4	78,5 3,09	78,5 3,09	66,4 2,61	66,4 2,61
3	78,5 3,09	78,5 3,09	96 3,78	96 3,78	83,9 3,30	83,9 3,30
4	96 3,78	96 3,78	113,5 4,47	113,5 4,47	101,4 3,99	101,4 3,99
5	113,5 4,47	113,5 4,47	131 5,16	131 5,16	118,9 4,68	118,9 4,68
6	131 5,16	131 5,16	148,5 5,85	148,5 5,85	136,4 5,37	136,4 5,37
7	148,5 5,85	148,5 5,85	166 6,54	166 6,54	153,9 6,06	153,9 6,06
8	166 6,54	166 6,54	183,5 7,22	183,5 7,22	171,4 6,75	171,4 6,75
9	183,5 7,22	183,5 7,22	201 7,91	201 7,91	188,9 7,44	188,9 7,44
10	201 7,91	201 7,91	218,5 8,60	218,5 8,60	206,4 8,13	206,4 8,13
11	218,5 8,6	218,5 8,6	236 9,29	236 9,29	223,9 8,81	223,9 8,81
12	236 9,29	236 9,29	253,5 9,98	253,5 9,98	241,4 9,50	241,4 9,50

The Range of “Blue Line” Switchgear

Technical literature covering the following products is available on request.

	Catalog Number
Main Switches and Main Switches with Emergency Function 16 A-1250 A Maintenance Switches 20 A-315 A Switch Disconnectors 20 A-315 A According to IEC 60947-3, EN 60947-3, VDE 0660 part 107, IEC 60204, EN 60204 and VDE 0113	500
CL Switches 10 A-20 A C, CA and CAD Switches 10 A-315 A and L Switches 350 A-2400 A C, CA and CAD switches are designed for universal application. They are recommended for instrument, isolator, double-throw and motor control. L switches are designed for load and off-load applications. They are used to switch resistive or low inductive loads.	100
Optional Extras and Enclosures The complete product line, a large number of optional extras is available, including door interlocks, push-pull devices, cylinder and padlock attachments, control and indicator devices, AC motor drives, as well as enclosures, both insulated and metal.	101
A and AD Switches 6 A-25 A A and AD switches have 4 contacts in each switching stage. These switches provide an extensive range of switch functions and require a minimum mounting depth. Up to 36 switching positions are possible, with availability of 48 contacts per 12 stage switch column.	110
CG, CH and CHR Switches 10 A-25 A Ultra compact CG, CH and CHR switches are ideally suited for control and instrumentation applications. CG switch terminals are “finger-proof”, according to VDE 0106. Terminals are conveniently accessible for wiring and are delivered open. All CG4 switches offer specially designed gold plated contacts or H-bridges with “cross-wire” contact systems, which facilitates their use in electronic circuitry and chemically aggressive environments.	120
DH, DHR, DK and DKR Switches 6 A-16 A DH, DHR, DK and DKR switches incorporate unique corrosion resistant contacts that permit operation on system voltage as low as 1 V. They have fully enclosed and protected contacts which can be operated either by rotary and/or lateral handle movement. D switches are used in calibration and semiconductor circuits. They are also used for relay and contactor control.	130
X Switches 80 A-630 A X switches can be applied for load, tap and gang switching duties. They incorporate 6 contacts in each switching stage. Their compact design provides a minimum length dimension for mounting purposes.	140
KG Switches 20 A-315 A and KH and KHR Switches 16 A-80 A KG, KH and KHR switches are excellent circuit interruptors. They have high through fault and fault making capacities and are especially designed for use as isolators and safety switches for machine tools, distribution panels and switchboards. KG ON/OFF switches offer unusually high dimensioned air and creepage distances between terminals which are designed for time saving “straight-line” wiring. ON/OFF switches are available with up to 8 poles and double-throw switches are available with up to 4 poles.	150
Contactors 16 A-115 A and Motor Starters 1,1 kW-55 kW These include control relays, motor contactors, two and four pole output contactors, heating contactors, thermal overload relays.	200
Push Buttons and Pilot Lights, 22,5 mm Ø A complete range of state-of-the-art push buttons and pilot lights represent an ideal combination of functional security and economical efficiency in a modular design.	302

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