



# Kraus & Naimer

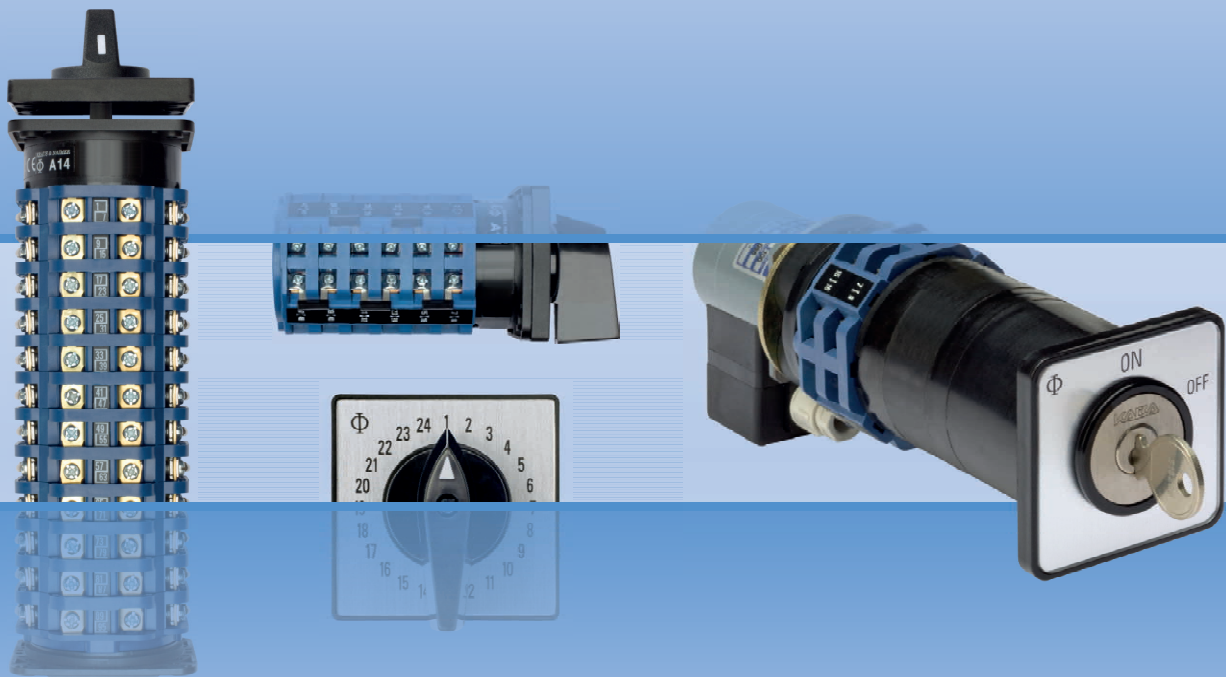
BLUE LINE switchgear

since 1907

## Catalog 110 Control Switches for Special Applications

03/2011

A type up to 25 A  
AD type up to 6 A



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# Kraus & Naimer

The development of the Blue Line rotary switch, contactor and motor starter product ranges is based on more than hundred 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

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

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## Construction Data

### A Switches

A switches are used in applications where available depths behind the mounting plates are limited and the switching programs require a large number of contacts. They are used when more than 12 switching positions are required. Typical applications for A switches are multi-step switches, multi-pole step switches, instrumentation switches and control switches where depth problems exist. The A switch has 4 double-break contacts which are controlled by two independent cams.

The switch column can contain up to 12 stages representing a total of 48 contacts. Additional contacts can be added by using a tandem drive to operate more than one switch column with a single handle.

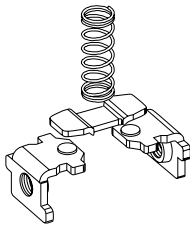


Switch type	Switching angle	Max. number of switch positions
A11, AD11, AD12	15°, 20°, 30°, 45°, 60°, 90°	24
A14	20°, 30°, 45°, 60°, 90°	18

A wide range of optional extras, escutcheon plates, handles, mountings and enclosures is available.

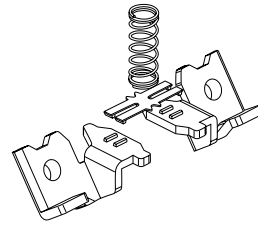
### 2 different Contact Systems are available

A11 and A14



A rigid, double-break bridge with silver alloy contacts provides high making and breaking capabilities for regular control applications.

AD11 and AD12



High contact reliability by H-bridge design with self-cleaning "cross-wire" contacts. The contact system with gold-plated contacts (AD12 with silver contact) allows for low voltages, electronic compatible.

### Switch Size

### Type

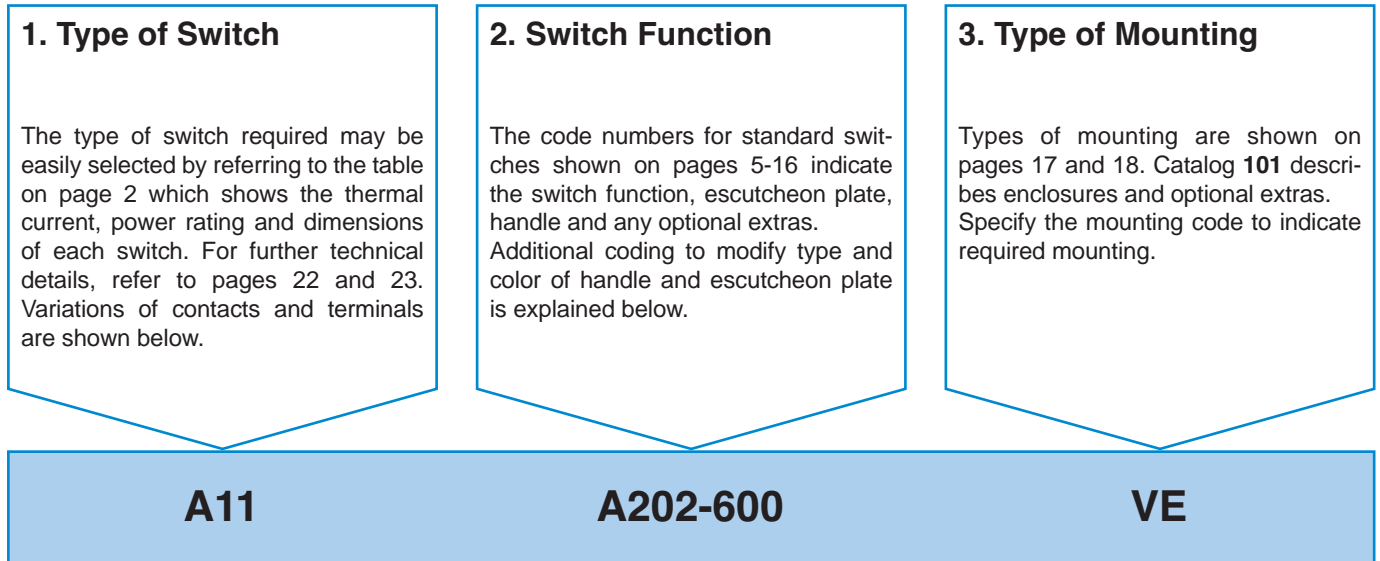
### Rated Values

Switch Size	Type	According to IEC 60947-3/VDE 0660 part 107		
		Thermal Current $I_u/I_{th}$ <b>A</b>	Motor Rating 3 x 380 V/440 V AC-23A <b>kW</b>	Operational Current $I_e$ AC-21A AC-15/220 V <b>A</b>
<b>S1</b>	<b>AD11</b>	6	-	1 V/ 6 A 24 V/ 1 A 110 V/ 0,4 A 220 V/ 0,2 A 380 V/ 0,13 A
	<b>AD12</b>	6	-	6 V/ 6 A 24 V/ 5 A 110 V/ 3 A 220 V/ 2 A 380 V/ 1,3 A
	<b>A11</b>	20	7,5	20 A
	<b>A14</b>	25	11	25 A
<b>S2</b>	<b>A11C</b>	20	7,5	20 A
	<b>A14C</b>	25	11	25 A

## 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.



### Type of Switch

Extending the switch type coding the following combinations will define:

Amendment	Definition	For switch types
-1	with gold contacts <sup>1</sup>	A11, A11C, A14, A14C
-4	with quick connects	A11, A11C
-5	with quick connects and gold contacts	A11, A11C
C	S1 switches with latching mechanism size S2	A11, A14
L	with lockout-relay w/o manual release for std. switches	A11, AD11, AD12, A14
M	with lockout-relay with manual release for std. switches	A11, AD11, AD12, A14
X	with power failure release	A11, AD11, AD12, A14

**Example:** Coding for switch type **A11** with gold contacts is **A11-1**.

### 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.

Size	Escutcheon Plate Frame	Handle	Escutcheon Plate Backing	Escutcheon Plate Lettering	Dash-Number
S1, S2	electro-gray	electro-gray	brushed alu	black	-100
S1, S2	electro-gray	electro-gray	black	mat silver	-500
S1, S2	black	black	brushed alu	black	-600
S1, S2	black	black	black	mat silver	-700

The standard switch consists of a transparent escutcheon plate with brushed aluminum backing and black inscription. The escutcheon plate frame is black as well as the handle. Above there are 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 A11 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: **A11 A202-100 E**.

<sup>1</sup>Technical data on request.

## How to order

### Special programs for escutcheon plate and handle combinations

The following is a list of special programs for escutcheon plate and handle combinations. They may be obtained by specifying any one of the following two (2) digits dash-numbers as a part of the overall dash-number. It is still necessary to prefix these two digit numbers with the first digit which represents the color combination required.

- 000 = 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 frame and fixation ring only
- .11 = without escutcheon plate, but with handle bearing plate
- .12 = with yellow escutcheon plate backing and red handle
- .14 = with B-handle

**Example:** The complete coding for switch type A11 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: **A11 A202-103 E.**

### Handles, Escutcheon Plates and Optional Extras

The handles for standard switches shown on pages 5-16 are suitable for mounting units with four hole panel mounting. Alternative types of handles available are illustrated on pages 17-19.

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 19-21. 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

Blue Line A switches are available in sizes S1 and S2. These size codes indicate the dimensions of the mounting, the escutcheon plate and the handle as well as the size of the optional devices and enclosures. Page 2 lists these sizes and the various switch types they include.

### Ordering of Special Switches and Escutcheon Plates

When ordering special switches and escutcheon plates it is advisable to use our order form, as illustrated. The customer's requirements are shown in blue as an example.





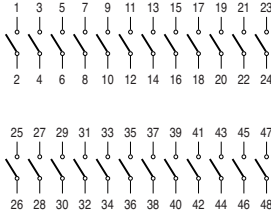






For technical reasons, it may not be possible to follow the sequence of contacts requested by the customer. The final contact development which is sent with every switch will show the customer's original terminal markings.

ESCUTCHEON PLATE		SWITCH																																															
POSITIONS		TYPE																																															
		ESCUTCHEON PLATE																																															
		OPTIONAL EXTRAS																																															
		HANDLE																																															
1		A14																																															
2		E																																															
3		G251																																															
4		MOUNTING																																															
5		DATE																																															
6		FIRM																																															
7		SIGNED																																															

Order forms are available on request.



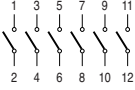


Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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**ON/OFF Switches with 60° Switching**







1 pole 2 pole 3 pole 3 pole with red handle 4 pole 5 pole 6 pole 8 pole 10 pole 12 pole 14 pole 16 pole 18 pole 20 pole 22 pole 24 pole			A200-600 A201-600 A202-600 A202-626 A203-600 WAA341 A342-600 A344-600 A346-600 A348-600 WAA350 WAA352 WAA354 WAA356 WAA358 WAA360	1 1 1 1 1 2 2 2 3 3 4 4 5 5 6 6	
1 pole 2 pole 3 pole 4 pole 5 pole 6 pole 8 pole 10 pole 12 pole 14 pole 16 pole 18 pole 20 pole 22 pole 24 pole			A200-620 A201-620 A202-620 A203-620 WAA341 A342-620 A344-620 A346-620 A348-620 WAA350 WAA352 WAA354 WAA356 WAA358 WAA360	1 1 1 1 2 2 2 3 3 4 4 5 5 6 6	
1 pole 2 pole 3 pole 4 pole 5 pole 6 pole			A200-621 A201-621 A202-621 A203-621 WAA341 A342-621	1 1 1 1 2 2	
1 pole 2 pole 3 pole 4 pole 5 pole 6 pole			A200-622 A201-622 A202-622 A203-622 WAA341 A342-622	1 1 1 1 2 2	
1 pole 2 pole 3 pole 4 pole 5 pole 6 pole			A200-623 A201-623 A202-623 A203-623 WAA341 A342-623	1 1 1 1 2 2	

Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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**ON/OFF Switches with 60° Switching**

1 pole			A200-624	1	 <p>1-6 pole</p>
2 pole			A201-624	1	
3 pole			A202-624	1	
4 pole			A203-624	1	
5 pole			WAA341	2	
6 pole			A342-624	2	
1 pole			A200-625	1	
2 pole			A201-625	1	
3 pole			A202-625	1	
4 pole			A203-625	1	
5 pole			WAA341	2	
6 pole			A342-625	2	

**ON/OFF Switches with 90° Switching**

1 pole contacts preclose 30°			A290-600	1	 <p>contacts preclose 30°</p> <p>1-3 pole</p>
2 pole contacts preclose 30°			A291-600	1	
3 pole contacts preclose 30°			A292-600	1	
4 pole 1 contact precloses 60° 3 contacts preclose 30°			A293-600	1	
1 pole contacts preclose 30°			A290-620	1	 <p>3 contacts preclose 30°</p> <p>1 contact precloses 60°</p> <p>4 pole</p>
2 pole contacts preclose 30°			A291-620	1	
3 pole contacts preclose 30°			A292-620	1	
4 pole 1 contact precloses 60° 3 contacts preclose 30°			A293-620	1	



Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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**Double-throw Switches without „OFF“ 60° Switching**

1 pole			A220-600	1	
2 pole			A221-600	1	
3 pole			A222-600	2	
4 pole			A223-600	2	
6 pole			A370-600	3	
8 pole			A372-600	4	
10 pole			WAA374	5	
12 pole			WAA376	6	
14 pole			WAA660	7	
16 pole			WAA661	8	
18 pole	WAA662	9			
20 pole	WAA663	10			

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

1 pole			A720-600	1	
2 pole			A721-600	1	
3 pole			A722-600	2	
4 pole			A723-600	2	

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

1 pole			A210-600	1	
2 pole			A211-600	1	
3 pole			A212-600	2	
4 pole			A213-600	2	
5 pole			A361-600	3	
6 pole			A362-600	3	
8 pole			WAA364	4	
10 pole			WAA366	5	
12 pole			WAA368	6	
14 pole			WAA655	7	
16 pole	WAA656	8			
18 pole	WAA657	9			
20 pole	WAA658	10			

Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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**Double-throw Switches with Center „OFF“ 60° Switching**

1 pole 2 pole 3 pole 4 pole 5 pole 6 pole 8 pole			A210-620 A211-620 A212-620 A213-620 A361-620 A362-620 WAA364	1 1 2 2 3 3 4	 1-4 and 6-8 pole  5 pole
1 pole 2 pole 3 pole			A210-621 A211-621 A212-621	1 1 2	
1 pole 2 pole 3 pole			A210-622 A211-622 A212-622	1 1 2	
1 pole 2 pole 3 pole			A210-623 A211-623 A212-623	1 1 2	
1 pole 2 pole 3 pole 4 pole			A210-624 A211-624 A212-624 A213-624	1 1 2 2	

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




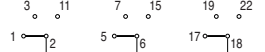
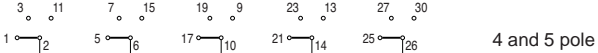
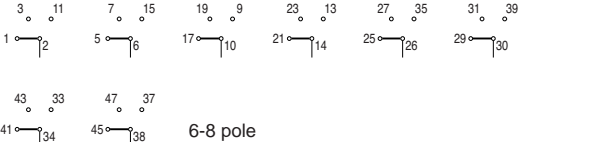



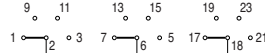
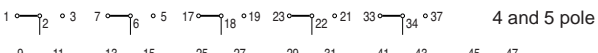
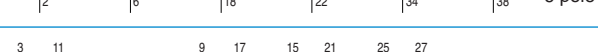



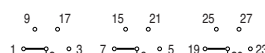
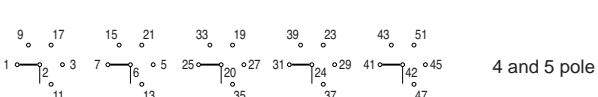



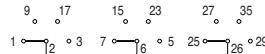
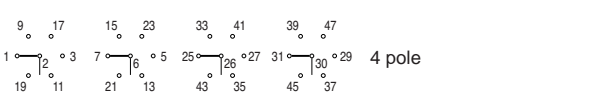




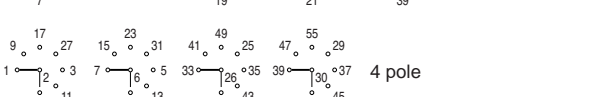




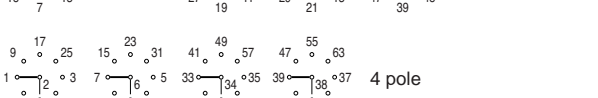




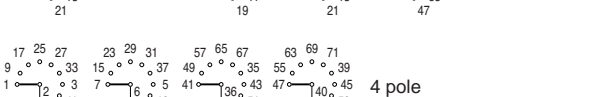
1 pole 2 pole 3 pole			A710-600 A711-600 A712-600	1 1 2	 1-3 pole  1-3 pole
1 pole with spring return to center 2 pole with spring return to center 3 pole with spring return to center			A714-600 A715-600 WAA716	1 1 2	

**Double-throw Switches with Spring Return to Center**

1 pole with spring return to center 2 pole with spring return to center 3 pole with spring return to center			A214-600 A215-600 A216-600	1 1 2	 1-3 pole
1 pole with spring return to center 2 pole with spring return to center 3 pole with spring return to center			A214-620 A215-620 A216-620	1 1 2	

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

1 pole 2 pole 3 pole 4 pole 5 pole 6 pole 7 pole 8 pole			A230-600 A250-600 A270-600 A476-600 WAA484 WAA489 WAA494 WAA497	1 2 3 3 4 5 6 6	 1 pole  2 and 3 pole  4 and 5 pole  6-8 pole
1 pole 2 pole 3 pole 4 pole 5 pole 6 pole			A231-600 A251-600 A271-600 A477-600 WAA485 WAA490	1 2 3 4 5 6	 1 pole  2 and 3 pole  4 and 5 pole  6 pole
1 pole 2 pole 3 pole 4 pole 5 pole			A232-600 A252-600 WAA272 WAA478 WAA676	2 3 4 5 7	 1 pole  2 and 3 pole  4 and 5 pole
1 pole 2 pole 3 pole 4 pole			A233-600 WAA253 WAA273 WAA479	2 3 5 6	 1 pole  2 and 3 pole  4 pole
1 pole 2 pole 3 pole 4 pole			WAA234 WAA254 WAA274 WAA670	2 4 6 7	 1 pole  2 and 3 pole  4 pole
1 pole 2 pole 3 pole 4 pole			WAA235 WAA255 WAA275 WAA671	2 4 6 8	 1 pole  2 and 3 pole  4 pole
1 pole 2 pole 3 pole 4 pole			WAA236 WAA256 WAA276 WAA672	3 5 7 9	 1 pole  2 and 3 pole  4 pole

# Switch Function and Configuration

# A Switches

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

1 pole 2 pole 3 pole			WAA237 WAA257 WAA277	3 5 8	  
1 pole 2 pole 3 pole			WAA238 WAA258 WAA278	3 6 9	  
1 pole 2 pole 3 pole			WAA239 WAA259 WAA279	3 6 9	  

## Multi-step Switches with „OFF“

1 pole 2 pole 3 pole 5 pole			A240-600 A260-600 A280-600 WAA486	1 1 2 3	   
1 pole 2 pole 3 pole 5 pole			A240-620 A260-620 A280-620 WAA486	1 1 2 3	   
1 pole 2 pole 3 pole 5 pole			A241-600 A261-600 A281-600 WAA487	1 2 3 4	   
1 pole 2 pole 3 pole 5 pole			A241-620 A261-620 A281-620 WAA487	1 2 3 4	   
1 pole 2 pole			A241-621 A261-621	1 2	
1 pole 2 pole 3 pole			A242-600 WAA262 WAA282	1 2 3	  
1 pole 2 pole 3 pole			A242-620 WAA262 WAA282	1 2 3	
1 pole 2 pole 3 pole			A243-600 WAA263 WAA283	2 3 5	  
1 pole 2 pole 3 pole			A243-620 WAA263 WAA283	2 3 5	
1 pole 2 pole 3 pole			A244-600 WAA264 WAA284	2 3 5	  
1 pole 2 pole 3 pole			A244-620 WAA264 WAA284	2 3 5	



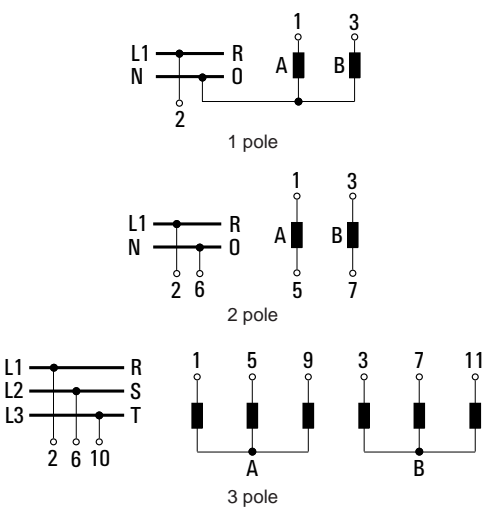


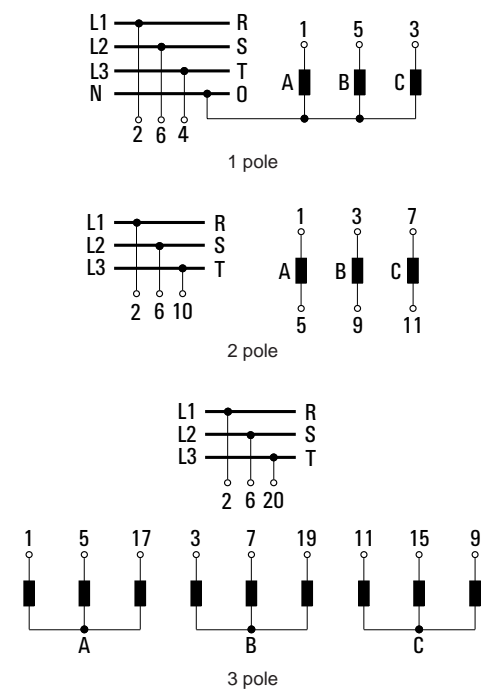
Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Multi-step Switches with „OFF“

1 pole 2 pole 3 pole			WAA245	2	 1 pole	 2 pole
			WAA265	4		
1 pole 2 pole 3 pole			WAA245	2	 1 pole	 3 pole
			WAA265	4		
1 pole 2 pole 3 pole			WAA246	2	 1 pole	 2 pole
			WAA266	4		
1 pole 2 pole 3 pole			WAA246	2	 1 pole	 3 pole
			WAA286	6		
1 pole 2 pole 3 pole			WAA247	3	 1 pole	 2 pole
			WAA267	5		
1 pole 2 pole 3 pole			WAA247	3	 1 pole	 3 pole
			WAA287	8		
1 pole 2 pole 3 pole			WAA248	3	 1 pole	 2 pole
			WAA268	5		
1 pole 2 pole 3 pole			WAA248	3	 1 pole	 3 pole
			WAA288	9		
1 pole 2 pole 3 pole			WAA249	3	 1 pole	 2 pole
			WAA269	6		
1 pole 2 pole 3 pole			WAA249	3	 1 pole	 3 pole
			WAA289	9		
1 pole			WAA630	3	 1 pole	
2 pole 3 pole			WAA635 WAA644	7 11	 2 pole	 3 pole
1 pole			WAA631	4	 1 pole	
1 pole			WAA632	5	 1 pole	

Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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General Application Switches

<p>1 pole 2 Gang 2 pole 3 pole</p> <p>Switching sequence: 0, A, A+B</p> <p>1 pole 2 pole 3 pole</p>			<p>A310-600 A312-600 WAA314</p> <p>A310-620 A312-620 WAA314</p>	<p>1 1 2</p> <p>1 1 2</p>	
<p>1 pole 3 Gang 2 pole 3 pole</p> <p>Switching sequence: 0, A, A+B, A+B+C</p> <p>1 pole 2 pole 3 pole</p>			<p>A311-600 WAA313 WAA315</p> <p>A311-620 WAA313 WAA315</p>	<p>1 2 3</p> <p>1 2 3</p>	

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

3 phase to phase			A004-600	1	
			A004-620	1	
			A004-621	1	
			A004-622	1	
			A004-623	1	
			A004-624	1	
3 phase to phase and 3 phase to neutral			A007-600	2	
			A007-620	2	
			A007-621	2	
			A007-622	2	
			A007-623	2	
			A007-624	2	
2 separate 3 phase with center „OFF“			WAA008	2	
			WAA008	2	
			WAA008	2	
			WAA008	2	

Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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**Ammeter Switches**

Single pole with 3 current transformers with „OFF“ 360° rotation			A048-600	2	
			A048-620	2	
			A048-621	2	
			A048-622	2	
			A048-623	2	
Single pole with 2 current transformers (3 readings)			A021-600	1	
			A021-620	1	
2 pole, 3 current transformers			WAA019	3	
			WAA019	3	
			A038-600	3	
			A038-620	3	
			A038-621	3	



Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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**Control Switches**

Stop switch			WAA174	1	
Start switch			A175-600	1	
Stop start switch single pole			A176-600	1	
Stop start switch with spring return from start to run			A178-600 A178-620	1 1	
Stop start switch with spring return to run for 2 units			WAA177 WAA177	1 1	

Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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**Motor Reversing Switches**

3 pole			A401-600	2	
			A401-620	2	
			A401-621	2	

**Star-delta Switches**

Off-star-delta			A410-600	2	
			A410-620	2	
With auxiliary contact closed in „OFF“ position			WAA416	3	






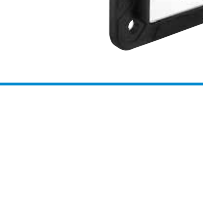
**Motor Control Switches**

2 speed single winding			A440-600	2	
			A440-620	2	
2 speed single winding with center „OFF“			A441-600	2	
			A441-620	2	
2 speed single winding reversing			A442-600	4	
			A442-620	4	

**Motor Control Switches**

3 speed 2 winding 0 - AΔ - BY - AY			WAA457	3	
			WAA457	3	



<b>Four Hole Panel Mounting</b>	<b>Code</b>	A11	A14	A11C
		AD11 AD12		A14C

	Panel Mounting	E	●	●	●
	Four hole panel mounting				
	Panel and base mounting	ER	●	●	●
	Four hole panel mounting				
	Four hole panel mounting, protection IP 66	ERF	●	●	●
	Four hole panel mounting, protection IP 66				
	Panel mounting using larger escutcheon plate and handle	EG	●	●	
	Four hole panel mounting				
	Four hole panel mounting, protection IP 66	EGF	●	●	
	Four hole panel mounting, protection IP 66				
	Panel mounting with heavy duty stop and metal shaft	KN1	●	●	
	Four hole panel mounting				
	Mounting plate, escutcheon plate and handle of size S1				
	Four hole panel mounting				
	Mounting plate, escutcheon plate and handle of size S1 and 6 mm square metal shaft	KD1	●	●	
	Four hole panel mounting				
	Panel mounting with protective cover				
	Four hole panel mounting				
	Protection front IP 40 rear IP 42	EC	●	●	
	Four hole panel mounting				
	Protection front IP 65 rear IP 42	ED	●	●	
	Four hole panel mounting				



## Mounting

## A, AD Switches

Single Hole Mounting 40 mm	<b>Code</b>	A11 AD11 AD12	A14	A11C A14C
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	<p>Single hole mounting</p> <p>Without escutcheon plate</p>	EL1	●	●	
	<p>With square escutcheon plate</p>	EL2	●	●	
	<p>With rectangular escutcheon plate</p>	EL4	●	●	

## Base Mounting

	<p>Base mounting</p> <p>Base mounting - four hole</p>	VE	●	●	●
	<p>Snap-on base mounting for track EN 60715</p>	VE1	●	●	

# Handles

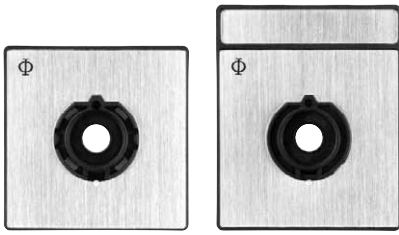
Type	Color	Code	Size	
			S1	S2

Type	Color	Code	Size	
			S1	S2

<p>R-Handle</p> 	black red white electro-gray	G001 G002 G003 G007	● ● ● ● ● ● ● ●
<p>F-Handle</p> 	black red white electro-gray	G221 G222 G223 G227	● ● ● ● ● ● ● ●
<p>S-Handle</p> 	black red white electro-gray	G301 G302 G303 G307	● — ● — ● — ● —
<p>P-Handle</p> 	black red white electro-gray	G211 G212 G213 G217	● ● ● ● ● ● ● ●
<p>O-Handle</p> 	black red white electro-gray	G321 G322 G323 G327	● — ● — ● — ● —

<p>I-Handle</p> 	black red white electro-gray	G251 G252 G253 G257	● ● ● ● ● ● ● ●
<p>B-Handle</p> 	black red white electro-gray	G521 G522 G523 G527	● — ● — ● — ● —
<p>L-Handle</p> 	black red white electro-gray	G501 G502 G503 G507	● — ● — ● — ● —
<p>K-Handle</p> 	black red white electro-gray	G411 G412 G413 G417	● ● ● ● ● ● ● ●

# 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 the handle bearing plate T100-04.

## Standard Letterings Available

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

### 30° switching

F022	F141	F158	F703	F023	F137	F142	F159	F701	F704	F152	F709	F026	F035	F153	F169	F024	F143
F160	F221	F222	F224	F025	F034	F036	F037	F038	F039	F139	F144	F147	F149	F150	F151	F219	F258
F259	F273	F280	F329	F384	F708	F053	F161	F297	F298	F306	F307	F001	F040	F052	F229	F355	F018
F019	F029	F030	F154	F155	F165	F166	F183	F184	F301	F302	F321	F332	F333	F334	F335	F374	F711
F712	F002	F021	F033	F041	F055	F305	F319	F054	F003	F042	F138	F255	F299	F308	F353	F350	F351
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	F045
F015	F050	F007	F011	F046	F008	F012	F047	F016	F051	F009	F013	F048	F748				

### 45° switching

F747	F295	F742	F743	F215	F216	F738	F744	F746	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	F429
F739	F741	F419	F789	F790	F791	F794	F795	F110	F106	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

F707	F087	F088	F089	F133	F197	F198	SYNCHROSCOPE	F243	F247	F263	F268	F310	F311	HIVIDRYTARE	HIVIDRYTARE	F352	F367
F379	F380	F470	F754	F072	F163	F164	F192	F193	F196	F230	F231	F234	F244	F257	F262	F264	F282
F288	F291	F313	F382	F441	F705	F721	F722	F750	F757	F758	F075	F076	F098	F220	F223	F356	F357
F377	F723	F071	F073	F080	F081	F085	F086	F090	F091	F092	F093	F094	F104	F194	F235	F237	F239
F240	F241	F249	F260	F269	F274	F281	F290	F292	F312	F314	F315	F316	F324	F331	F344	F354	F358
F359	F364	F370	F371	F373	F381	F385	F442	F444	F469	F732	F735	F759	F077	F100	F101	F102	F309
F342	F343	F361	F362	F363	F365	F366	F078	F191	F325	F326	F720	F074	F082	F096	F097	F195	F724
F256	F079	F083	F084	F095	F099	F185	F190	F199	F233	F236	F238	F242	F283	F725	F730	F731	F736
F737																	

## 90° switching

F056	F063	F068	F134	F201	F251	F252	F346	F456	F058	F065	F069	F177	F178	F182	F208	F253	F254
F340	F360	F378	F458	F443	F700	F743	F057	F061	F064	F067	F171	F181	F205	F207	F209	F320	F349
F437	F445	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																

## Miscellaneous

F119	F130	F122	F126	F125	F129	F225	F248	F246	F261	F341	F345	F287	F123	F127	F145	F146	F148						
F706	F707	F245	F120	F124	F128	F131	F121	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	F837	F838	F839 <sup>1</sup>	F840 <sup>2</sup>	F841 <sup>3</sup>						

<sup>1</sup>INTERRUPTEUR PRINCIPAL, OUVERTURE EN POSITION 0 <sup>2</sup>INTERRUPTORE GENERALE, APRIRE SOLO CON MANIGLIA SU 0  
<sup>3</sup>INTERRUPTOR PRINCIPAL, ABRIR ARMARIO SOLO EN POS. "0"

<b>Selection Data</b>	A11 A11C	AD11 AD11C	AD12 AD12C	A14 A14C
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<b>Rated Insulation Voltage <math>U_i</math></b>	IEC 60947-3 <sup>1</sup> VDE 0660 part 107 <sup>1</sup> SEV <sup>2</sup> UL/Canada CEE <sup>2</sup> min. operational voltage	V	690 500 600 400 20	600 600 600 – 1	600 600 600 – 6	690 500 600 400 20					
<b>Rated Impulse Withstand Voltage <math>U_{imp}</math></b>		kV	6	on request	on request	6					
<b>Rated Thermal Current <math>I_U/I_{th}</math></b>	IEC 60947-3 VDE 0660 part 107  SEV <sup>2</sup> UL/Canada	A	20  10 10	6  6 6	6  6 6	25  16 16					
<b>Rated Operational Current <math>I_e</math></b>											
AC-21A Switching of resistive loads, including moderate overloads	IEC 60947-3 VDE 0660 part 107	1 V 6 V 12 V 24/48 V 110/220 V 380/440 V 500/600 V 660/690 V	A A A A A A A A	– – – 20 20 20 20 20	6 3 2 1/0,8 0,4/0,2 0,13/0,1 0,08/0,05 –	– – – 5/4 3/2 1,3/1 0,8/0,5 –	– – – 25 25 25 25 25				
AC-22A Switching of combined resistive or low inductive loads including moderate overloads	IEC 60947-3 VDE 0660 part 107	220 V-500 V 660 V-690 V	A A	20 16	– –	– –	25 20				
AC-15 Switching of control devices, contactors, valves etc.	IEC 60947-3 VDE 0660 part 107	220 V-240 V 380 V-440 V	A A	6 4	– –	– –	10 5				
Pilot Duty	UL/Canada	Heavy	VAC	600	–	–	600				
Ampere Rating Resistive or low inductive loads	UL/Canada		A	10	see AC-21A	see AC-21A	16				
Resistive load/Motor load	CEE		A	10/6	–	–	16/10				
Power loss per contact at $I_U$ Resistance to vibration Resistance to shock			W	0,9	0,5 on request on request	0,2	1,3				
<b>Short Circuit Protection</b> Max. fuse size Rated short-time withstand current	(gL/gG-characteristic) (1s-current)	A A	20 120	6 45	6 75	25 220					
<b>DC Switching Capacity<sup>3</sup></b>							<b>Rated Operational Current <math>I_e</math></b>				
No. of series contacts	1 Voltage V	2 3 4 5 6 8					A11 AD11 AD12 A14				
Resistive loads $T \leq 1$ ms	1 6 12 24 48 60 110 220 240 440 550 600	2 12 24 48 96 120 220 440 480 660 – –	3 18 36 72 140 180 330 660 – – – –	4 24 48 96 190 240 440 – – – – –	5 30 60 120 240 300 550 – – – – –	6 36 72 144 290 360 660 – – – – –	8 48 96 190 360 450 660 – – – – –	A – – – – 10 3,5 0,8 0,35 0,3 0,25 0,15 0,1	– 4 2,5 1,5 0,8 0,3 0,27 0,2 0,1 0,08 0,05 0,03 0,02	– – 4 3 2,2 1,2 1 0,6 0,3 0,25 0,15 0,1 0,1	– – – – 16 15 5 1,2 0,38 0,35 0,25 0,2 –
Inductive loads $T = 50$ ms	24 30 48 60 110	48 60 90 120 220	72 90 140 180 330	96 120 190 240 440	120 150 240 300 550	144 180 290 360 660	190 240 350 450 –	A 10 5 1,8 0,7 0,3	– – – – – – – – –	– – – – – – – – –	16 7 2,5 1 0,4
<b>Ambient Temperature of Stages<sup>4,5</sup></b>		open at 100 % $I_U/I_{th}$ 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				

<sup>1</sup>Valid for lines with grounded common neutral termination, overvoltage category III, pollution degree 3. Values for other supply systems on request. <sup>2</sup>International Standards and Approvals, refer to page 24. <sup>3</sup>DC switching capacity applies to ON/OFF switches. Switching capacity for other configurations on request. <sup>4</sup>For electromagnetic optional extras see additional data in Catalog 101. <sup>5</sup>Storage temperature: -40 °C to 85 °C (in case of temperature below -5 °C no shock load permissible).











Selection Data	A11 A11C	AD11 AD11C	AD12 AD12C	A14 A14C
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<b>Rated Utilization Category</b>		IEC 60947-3 VDE 0660 part 107						
AC-2	Slip ring motor starting, reversing and plugging, star-delta starting	3 phase	220 V-240 V	kW	4	–	–	5,5
		3 pole	380 V-440 V		7,5	–	–	11
			500 V		10	–	–	15
			660 V-690 V		10	–	–	13
AC-3	Direct-on-line starting, star-delta starting A11, A14	3 phase	220 V-240 V	kW	3	–	–	4
		3 pole	380 V-440 V		5,5	–	–	7,5
			500 V		5,5	–	–	7,5
			660 V-690 V		5,5	–	–	7,5
		1 phase	110 V	kW	0,6	–	–	1,5
	2 pole	220 V-240 V	2,2		–	–	3	
		380 V-440 V		3	–	–	3,7	
AC-4	Direct-on-line starting, reversing, plugging and inching	3 phase	220 V-240 V	kW	0,55	–	–	1
		3 pole	380 V-440 V		1,5	–	–	2,2
			500 V		1,5	–	–	2,5
			660 V-690 V		1,5	–	–	2,5
		1 phase	110 V	kW	0,15	–	–	0,2
	2 pole	220 V-240 V	0,25		–	–	0,5	
		380 V-440 V		0,55	–	–	0,8	
AC-23A	Frequent switching of motors or other high inductive loads	3 phase	220 V-240 V	kW	3,7	–	–	5,5
		3 pole	380 V-440 V		7,5	–	–	11
			500 V		7,5	–	–	11
			660 V-690 V		7,5	–	–	11
		1 phase	110 V	kW	0,75	–	–	1,5
	2 pole	220 V-240 V	2,2		–	–	3	
		380 V-440 V		3,7	–	–	5,5	
<b>Ratings</b>		UL/Canada						
Standard motor load DOL-Rating (similar AC-3)	3 phase		120 V	HP	1	–	–	1,5
			240 V		1	–	–	3
		3 pole	480 V		1	–	–	7,5
			600 V		1	–	–	10
		1 phase	120 V	HP	0,5	–	–	0,75
		240 V	1		–	–	1,5	
2 pole	277 V	1	–		–	2		
		480 V		1	–	–	3	
		600 V		1	–	–	5	
Heavy motor load <sup>1</sup> Reversing-Rating (similar AC-4)	3 phase		120 V	HP	–	–	–	1
			240 V		–	–	–	2
	3 pole	480 V-600 V	–	–	–	5		
		1 phase	120 V	HP	–	–	–	0,33
2 pole	240 V	–	–		–	0,75		
		277 V		–	–	–	0,75	
<b>Max. Permissible Wire Gage</b> - Use copper wire only								
Single-core or stranded wire				mm <sup>2</sup>	2,5	2,5	2,5	4
				AWG	12	12	12	10
Flexible wire				mm <sup>2</sup>	2,5	2,5	2,5	2,5
(sleeving in accordance with DIN 46228)					(2,5)	(2,5)	(2,5)	(2,5)
Flexible AWG wires (without sleeve)				AWG	14	14	14	12

<sup>1</sup>Reversing-Rating is not part of the existing UL and Canada approvals.

## International Standards and Approvals

Country	Authority	Mark or Standard	A11	AD11	AD12	A14
USA/Canada	Underwriters Laboratories			●	●	
			●			●
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 <sup>2</sup>	+	+	+	+
Great Britain	British Standards Institution	BS EN 60947 <sup>2</sup>	+	+	+	+
Europe		EN 60947 <sup>2</sup>	+	+	+	+
International Electrical Commission (IEC) Recommendation		IEC 60947 <sup>2</sup>	+	+	+	+

● Switch approved

+ Switch conforms to requirements

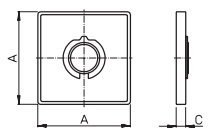
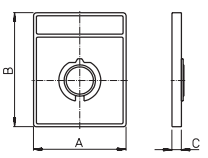
<sup>1</sup>Approved under the "Component Program" (UL-Recognized Industrial Component). File No. E35541, Guide No. NLRV2 and NLRV8.

<sup>2</sup>Industrial 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.

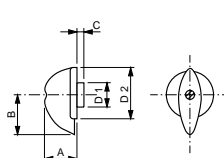
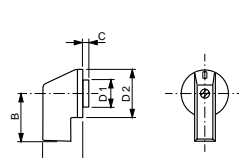
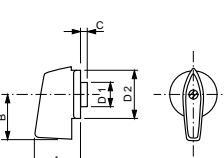
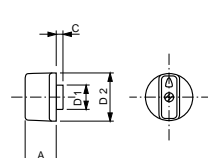
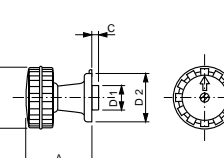
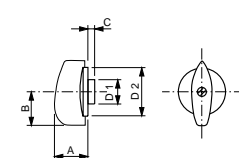
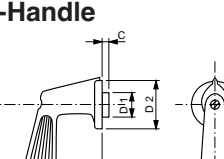
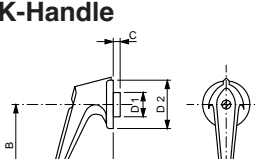
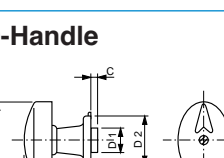
<sup>3</sup>Approved under the "Listing-Program". File No. E35541, Guide No. NLRV and NLRV7 resp. File No. E60262, Guide No. NRNT and NRNT7.

**Dimensions**      mm  
                         inch

Escutcheon Plates and Handles	Size	A	B	C	D1ø	D2ø	Escutcheon Plates and Handles	Size	A	B	C	D1ø	D2ø
-------------------------------	------	---	---	---	-----	-----	-------------------------------	------	---	---	---	-----	-----

PE-Escutcheon Plate	Size	A	B	C	D1ø	D2ø	PR-Escutcheon Plate	Size	A	B	C	D1ø	D2ø
	<b>S1</b>	64		7,4				<b>S1</b>	64	78,8	7,4		
	<b>S2</b>	88		8,5					2,52	3,10	.29		

Dimensions for the E, EF, ER, ERF, EG, EGF, KN1, KD1, EC, ED, VE and VE1 escutcheon plates.  
Dimensions of the escutcheon plates used for other mounting, refer to page 27.

R-Handle	Size	A	B	C	D1ø	D2ø	I-Handle	Size	A	B	C	D1ø	D2ø
	<b>S1</b>	23	31,5	5	18,2	36		<b>S1</b>	27	31,8	2,5	18,2	36
	<b>S2</b>	30	42	5	25,4	50,0			1,06	1,25	.10	.72	1,42
	<b>S1</b>	34	34	5	18,2	36		<b>S1</b>	23		5	18,2	36
	<b>S2</b>	44,7	45	5	25,4	50			.91		.20	.72	1,42
	<b>S1</b>	50	45	5	18,2	36		<b>S1</b>	24	24,1	5	18,2	36
		1,97	1,77	.20	.72	1,42			.95	.95	.20	.72	1,42
	<b>S1</b>	58	57,5	5	18,2	36		<b>S1</b>	54	64	5	18,2	36
	<b>S2</b>	70	68	5	25,4	50			2,13	2,52	.20	.72	1,42
	<b>S1</b>	50	56	5	18,2	36							
		1,97	2,2	.20	.72	1,42							

**Dimensions**      mm  
                              inch

<b>Four Hole Panel Mounting</b>	<b>A11</b>		
	<b>AD11</b>		<b>A11C</b>
	<b>AD12</b>	<b>A14</b>	<b>A14C</b>

<b>E, ER</b> 	A	64 2.52	64 2.52	88 3.46
	B	48 1.89	48 1.89	68 2.68
	C	4 .16	4 .16	5.5 .22
	D1	5 .20	5 .20	6 .24
	D2	10-15 .39-.59	10-15 .39-.59	13-17 .51-.67
	D3	60 2.36	65 2.56	84 3.31

<b>EF, ERF</b> 	A	64 2.52	64 2.52	88 3.46
	B	48 1.89	48 1.89	68 2.68
	C	4 .16	4 .16	5.5 .22
	D1	5 .20	5 .20	6 .24
	D2	19-22 .75-.87	19-22 .75-.87	26-30 1.02-1.18
	D3	60 2.36	65 2.56	84 3.31

<b>EG, EGF</b> 	A	88 3.46	88 3.46	-
	B	68 2.68	68 2.68	-
	C	5.5 .22	5.5 .22	-
	D1	6 .24	6 .24	-
	D2 EG	13-17 .51-.67	13-17 .51-.67	-
	D2 EGF	26-30 1.02-1.18	26-30 1.02-1.18	-
	D3	60 2.36	65 2.56	-

<b>KN1, KD1</b> 	A	60 2.36	60 2.36	
	B	48 1.89	48 1.89	
	C	4 .16	4 .16	
	D1	5 .20	5 .20	
	D2	10-15 .39-.59	10-15 .39-.59	
	D3	60 2.36	65 2.56	

<b>EC, ED</b> 	A	88 3.46	88 3.46	
	B	68 2.68	68 2.68	
	C EC	5.5 .22	5.5 .22	
	C ED	7.5 .30	7.5 .30	
	D1	6 .24	6 .24	
	D2 EC	13-17 .51-.67	13-17 .51-.67	
	D2 ED	28-33 1.10-1.30	28-33 1.10-1.30	

**Dimensions**      mm  
                              inch

<b>Single Hole Mounting 40 mm</b>	A11 AD11 AD12    A14
-----------------------------------	----------------------------

	<table border="1"> <tr> <td>D1</td> <td>60 2.36</td> <td>65 2.56</td> </tr> <tr> <td>C</td> <td>1-6.3 .04-.25</td> <td>1-6.3 .04-.25</td> </tr> </table>	D1	60 2.36	65 2.56	C	1-6.3 .04-.25	1-6.3 .04-.25
D1	60 2.36	65 2.56					
C	1-6.3 .04-.25	1-6.3 .04-.25					

<b>Base Mounting</b>	A11 AD11 AD12    A14    A11C A14C
----------------------	--

	<table border="1"> <tr> <td>A</td> <td>64 2.52</td> <td>64 2.52</td> <td>88 3.46</td> </tr> <tr> <td>B</td> <td>48 1.89</td> <td>48 1.89</td> <td>68 2.68</td> </tr> <tr> <td>C</td> <td>13,5 .53</td> <td>13,5 .53</td> <td>16 .63</td> </tr> <tr> <td>D1</td> <td>5 .20</td> <td>5 .20</td> <td>6 .24</td> </tr> <tr> <td>D2</td> <td>10-15 .39-.59</td> <td>10-15 .39-.59</td> <td>13-17 .51-.67</td> </tr> <tr> <td>D3</td> <td>60 2.36</td> <td>65 2.56</td> <td>84 3.31</td> </tr> <tr> <td>D4</td> <td>4,1 .16</td> <td>4,1 .16</td> <td>5,4 .21</td> </tr> <tr> <td>E</td> <td>70 2.76</td> <td>70 2.76</td> <td>-</td> </tr> <tr> <td>G</td> <td>30 1.18</td> <td>30 1.18</td> <td>-</td> </tr> <tr> <td>K</td> <td>30 1.18</td> <td>30 1.18</td> <td>-</td> </tr> </table>	A	64 2.52	64 2.52	88 3.46	B	48 1.89	48 1.89	68 2.68	C	13,5 .53	13,5 .53	16 .63	D1	5 .20	5 .20	6 .24	D2	10-15 .39-.59	10-15 .39-.59	13-17 .51-.67	D3	60 2.36	65 2.56	84 3.31	D4	4,1 .16	4,1 .16	5,4 .21	E	70 2.76	70 2.76	-	G	30 1.18	30 1.18	-	K	30 1.18	30 1.18	-
A	64 2.52	64 2.52	88 3.46																																						
B	48 1.89	48 1.89	68 2.68																																						
C	13,5 .53	13,5 .53	16 .63																																						
D1	5 .20	5 .20	6 .24																																						
D2	10-15 .39-.59	10-15 .39-.59	13-17 .51-.67																																						
D3	60 2.36	65 2.56	84 3.31																																						
D4	4,1 .16	4,1 .16	5,4 .21																																						
E	70 2.76	70 2.76	-																																						
G	30 1.18	30 1.18	-																																						
K	30 1.18	30 1.18	-																																						

Length L	A11 AD11 AD12    A14	Length L	A11 AD11 AD12    A14	Additional Length M <sup>1</sup>	A11 AD11 AD12    A14
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Mounting E	Mounting EC and ED	Mounting +
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No. of stages		No. of stages	EC, ED	EC, ED	ER/ERF	6,5 .26	6,5 .26
1	42,5 1.67	42,5 1.67	1	41,5 1.63	47,2 1.86	0,5 .02	0,5 .02
2	55,2 2.17	55,2 2.17	2	54,2 2.13	59,9 2.36	7 .28	7 .28
3	67,9 2.67	67,9 2.67	3	66,9 2.63	72,6 2.86	5 .20	5 .20
4	80,6 3.17	80,6 3.17	4	79,6 3.13	85,3 3.36	11 .43	11 .43
5	93,3 3.67	93,3 3.67	5	92,3 3.63	98 3.86	11 .43	11 .43
6	106 4.17	106 4.17	6	105 4.13	110,7 4.36	11 .43	11 .43
7	118,7 4.67	118,7 4.67	7	117,7 4.63	123,4 4.86	8,2 .32	8,2 .32
8	131,4 5.17	131,4 5.17	8	130,4 5.13	136,1 5.36		
9	144,1 5.67	144,1 5.67	9	143,1 5.63	148,8 5.86		
10	156,8 6.17	156,8 6.17	10	155,8 6.13	161,5 6.36		
11	169,5 6.67	169,5 6.67	11	168,5 6.63	174,2 6.86		
12	182,2 7.17	182,2 7.17	12	181,2 7.13	186,9 7.36		

<sup>1</sup>Additional length plus length shown in the E mounting table = overall length

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# The Range of “Blue Line” Switchgear

Technical literature covering the following products is available on request.

	Catalog Number
<b>Main Switches and Main Switches with Emergency Function 16 A-315 A</b> <b>Maintenance Switches 20 A-315 A</b> <b>Switch Disconnectors 20 A-315 A</b> According to IEC 60947-3, EN 60947-3, VDE 0660 part 107, IEC 60204, EN 60204 and VDE 0113	<b>500</b>
<b>CL Switches 10 A-20 A</b> <b>C, CA and CAD Switches 10 A-315 A and L Switches 350 A-2400 A</b> 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.	<b>100</b>
<b>Optional Extras and Enclosures</b> 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.	<b>101</b>
<b>A and AD Switches 6 A-25 A</b> 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 24 switching positions are possible, with availability of 48 contacts per 12 stage switch column.	<b>110</b>
<b>CG, CH and CHR Switches 10 A-25 A</b> Ultra compact CG, CH and CHR switches are ideally suited for control and instrumentation applications. Switch terminals are “finger-proof” and 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.	<b>120</b>
<b>DH, DHR, DK and DKR Switches 6 A-16 A</b> 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.	<b>130</b>
<b>X Switches 200 A-630 A</b> 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.	<b>140</b>
<b>KG Switches 20 A-315 A and KH and KHR Switches 16 A-80 A</b> 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.	<b>150</b>
<b>Push Buttons and Pilot Lights, 22,5 mm Ø</b> 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.	<b>302</b>

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BLUE LINE switchgear



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