



Kraus & Naimer

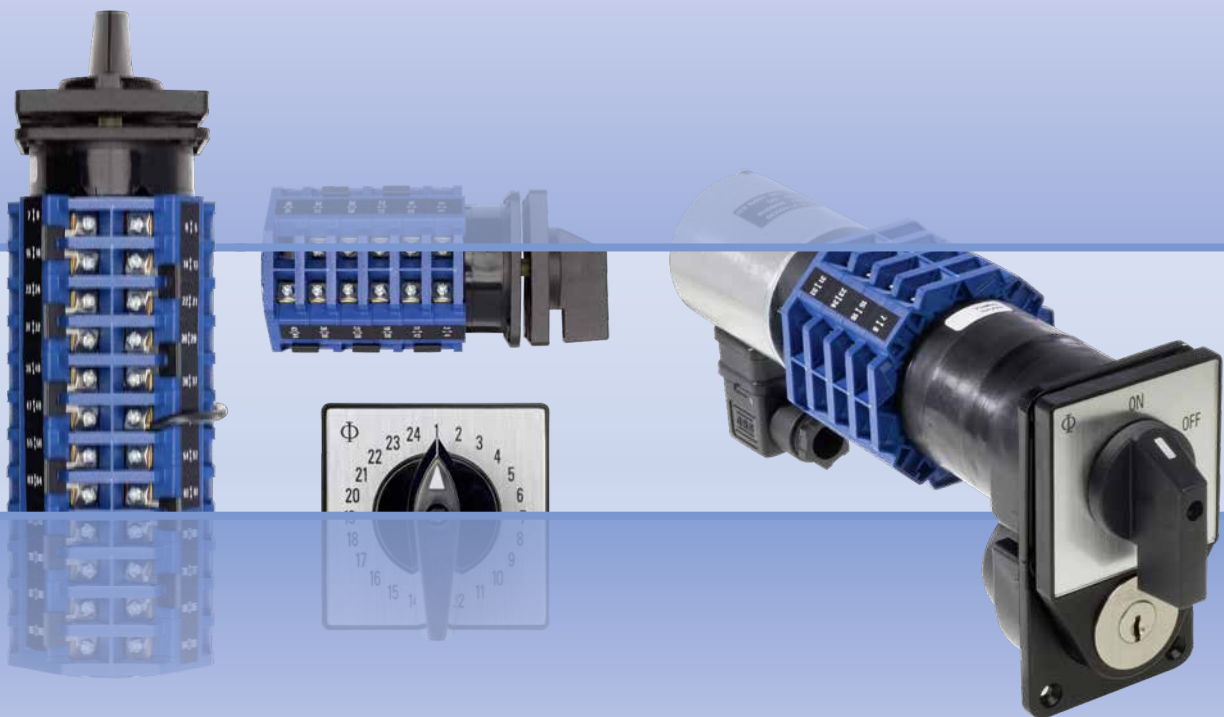
BLUE LINE switchgear

since 1907

Catalog 110 Control Switches for Special Applications

02/2013

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



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

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

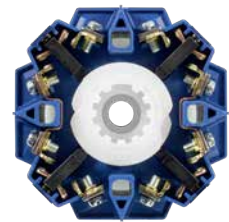
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Construction Data

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.

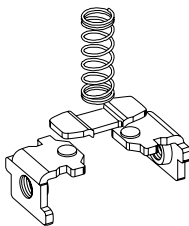


Switch type	Switching angle	Max. number of switch positions
A11, AD11, AD12	15°, 20°, 30°, 45°, 60°, 90°	24
A25	15°, 20°, 30°, 45°, 60°, 90°	24

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

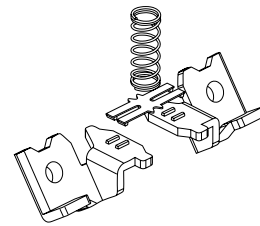
2 different Contact Systems are available

A11 and A25



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

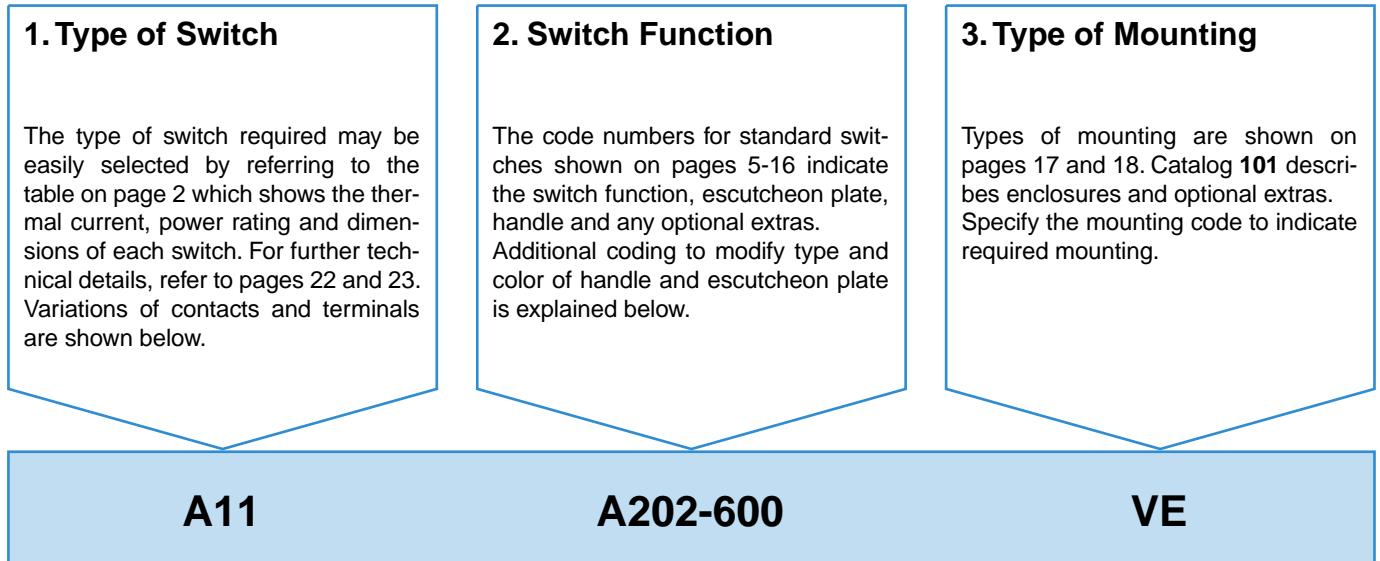
Rated Values

Switch Size	Type	According to IEC 60947-3/VDE 0660 part 107			
		Thermal Current I_u/I_{th} A	Motor Rating 3 x 380 V/440 V AC-23A kW	AMP-Rating UL/Canada	AC-15/220 V A
S1	AD11	6	-	1 V/ 6 A 24 V/ 1 A 110 V/ 0,4 A 220 V/ 0,2 A 380 V/ 0,13 A	-
		6	-	6 V/ 6 A 24 V/ 5 A 110 V/ 3 A 220 V/ 2 A 380 V/ 1,3 A	-
	AD12	20	7,5	10 A	6
		25	11	16 A	8
S2	A11 A25	20	7,5	10 A	6
		25	11	16 A	8
	A11C A25C	20	7,5	10 A	6
		25	11	16 A	8

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 ¹	A11, A11C
-4	with quick connects	A11, A11C, A25, A25C
-5	with quick connects and gold contacts	A11, A11C
C	S1 switches with latching mechanism size S2	A11, A25
L	with lockout-relay w/o manual release for std. switches	A11, AD11, AD12, A25
M	with lockout-relay with manual release for std. switches	A11, AD11, AD12, A25
X	with power failure release	A11, AD11, AD12, A25

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	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, black handle and black escutcheon plate frame with brushed aluminum backing and black inscription which reads 0-1 is as follows: **A11 A202-600 E**.

¹Technical 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 with 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 black escutcheon plate frame, square escutcheon plate without lettering, brushed aluminum plate backing and black handle reads as follows: **A11 A202-603 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.



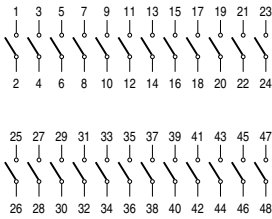








For technical reasons, it may not be possible to follow the sequence of contacts requested by the customer. The final contact development which is sent with every switch will show the customer's original terminal markings.

POSITIONS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48		
1	X																																																	
2		X																																																
3			X																																															
4				X																																														
5					X																																													
6						X																																												
7							X																																											

Order forms are available on request.



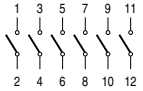


Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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ON/OFF Switches with 60° Switching







1 pole 2 pole 3 pole 3 pole with red handle 3 pole with V850 padlock attachment 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 A202-627 A203-600 WAA 341 A342-600 A344-600 A346-600 A348-600 WAA 350 WAA 352 WAA 354 WAA 356 WAA 358 WAA 360	1 1 1 1 1 1 2 2 2 3 3 4 4 5 5 6 6	 <p>1-24 pole</p>
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 WAA 341 A342-620 A344-620 A346-620 A348-620 WAA 350 WAA 352 WAA 354 WAA 356 WAA 358 WAA 360	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 WAA 341 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 WAA 341 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 WAA 341 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			WAA 341	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			WAA 341	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			WAA 374	5	
12 pole			WAA 376	6	
14 pole			WAA 660	7	
16 pole			WAA 661	8	
18 pole		WAA 662	9		
20 pole		WAA 663	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			WAA 364	4	
10 pole			WAA 366	5	
12 pole			WAA 368	6	
14 pole			WAA 655	7	
16 pole		WAA 656	8		
18 pole		WAA 657	9		
20 pole		WAA 658	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			A210-620 A211-620 A212-620	1 1 2	 1-4 and 6-8 pole 5 pole
4 pole 5 pole 6 pole 8 pole			A213-620 A361-620 A362-620 WAA 364	2 3 3 4	
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 pole with spring return to center 2 pole with spring return to center 3 pole with spring return to center			A714-600 A715-600 WAA 716	1 1 2	 1-3 pole

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 3 Step 2 pole 3 pole			A230-600 A250-600 A270-600	1 2 3	<p>1 pole</p> <p>2 and 3 pole</p>
4 pole 5 pole 6 pole			A476-600 WAA 484 WAA 489	3 4 5	<p>4 and 5 pole</p>
7 pole 8 pole			WAA 494 WAA 497	6 6	<p>6-8 pole</p>
1 pole 4 Step 2 pole 3 pole			A231-600 A251-600 A271-600	1 2 3	<p>1 pole</p> <p>2 and 3 pole</p>
4 pole 5 pole 6 pole			A477-600 WAA 485 WAA 490	4 5 6	<p>4 and 5 pole</p> <p>6 pole</p>
1 pole 5 Step 2 pole 3 pole 4 pole 5 pole			A232-600 A252-600 WAA 272 WAA 478 WAA 676	2 3 4 5 7	<p>1 pole</p> <p>2 and 3 pole</p> <p>4 and 5 pole</p>
1 pole 6 Step 2 pole 3 pole 4 pole			A233-600 WAA 253 WAA 273 WAA 479	2 3 5 6	<p>1 pole</p> <p>2 and 3 pole</p> <p>4 pole</p>
1 pole 7 Step 2 pole 3 pole 4 pole			WAA 234 WAA 254 WAA 274 WAA 670	2 4 6 7	<p>1 pole</p> <p>2 and 3 pole</p> <p>4 pole</p>
1 pole 8 Step 2 pole 3 pole 4 pole			WAA 235 WAA 255 WAA 275 WAA 671	2 4 6 8	<p>1 pole</p> <p>2 and 3 pole</p> <p>4 pole</p>
1 pole 9 Step 2 pole 3 pole 4 pole			WAA 236 WAA 256 WAA 276 WAA 672	3 5 7 9	<p>1 pole</p> <p>2 and 3 pole</p> <p>4 pole</p>

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			WAA 237 WAA 257 WAA 277	3 5 8	1 pole 2 and 3 pole
1 pole 2 pole 3 pole			WAA 238 WAA 258 WAA 278	3 6 9	1 pole 2 and 3 pole
1 pole 2 pole 3 pole			WAA 239 WAA 259 WAA 279	3 6 9	1 pole 2 and 3 pole

Multi-step Switches with „OFF“

1 pole 2 pole 3 pole 5 pole			A240-600 A260-600 A280-600 WAA 486	1 1 2 3	1- and 2 pole
1 pole 2 pole 3 pole 5 pole			A240-620 A260-620 A280-620 WAA 486	1 1 2 3	3 and 5 pole
1 pole 2 pole 3 pole 5 pole			A241-600 A261-600 A281-600 WAA 487	1 2 3 4	2 and 3 pole
1 pole 2 pole 3 pole 5 pole			A241-620 A261-620 A281-620 WAA 487	1 2 3 4	5 pole
1 pole 2 pole			A241-621 A261-621	1 2	
1 pole 2 pole 3 pole			A242-600 WAA 262 WAA 282	1 2 3	2 and 3 pole
1 pole 2 pole 3 pole			A242-620 WAA 262 WAA 282	1 2 3	
1 pole 2 pole 3 pole			A243-600 WAA 263 WAA 283	2 3 5	2 and 3 pole
1 pole 2 pole 3 pole			A243-620 WAA 263 WAA 283	2 3 5	
1 pole 2 pole 3 pole			A244-600 WAA 264 WAA 284	2 3 5	2 and 3 pole
1 pole 2 pole 3 pole			A244-620 WAA 264 WAA 284	2 3 5	






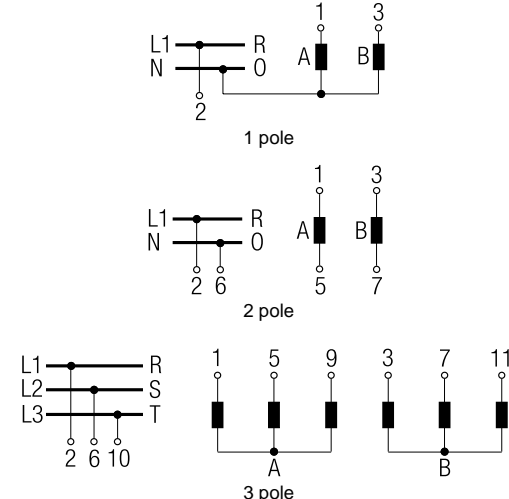





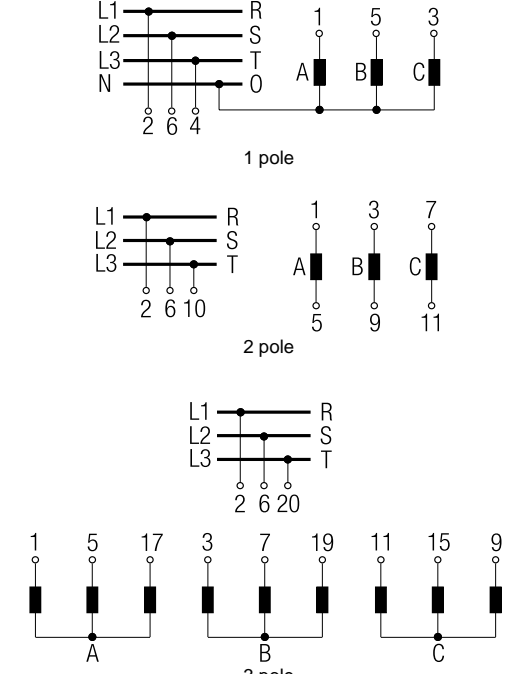
Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Multi-step Switches with „OFF“

1 pole 2 pole 3 pole			WAA 245 WAA 265 WAA 285	2 4 6	1 pole 2 pole
1 pole 2 pole 3 pole			WAA 245 WAA 265 WAA 285	2 4 6	1 pole 2 pole 3 pole
1 pole 2 pole 3 pole			WAA 246 WAA 266 WAA 286	2 4 6	1 pole 2 pole
1 pole 3 pole			WAA 246 WAA 286	2 6	1 pole 3 pole
1 pole 2 pole 3 pole			WAA 247 WAA 267 WAA 287	3 5 8	1 pole 2 pole
1 pole 3 pole			WAA 247 WAA 287	3 8	1 pole 3 pole
1 pole 2 pole 3 pole			WAA 248 WAA 268 WAA 288	3 5 9	1 pole 2 pole
1 pole 3 pole			WAA 248 WAA 288	3 9	1 pole 3 pole
1 pole 2 pole 3 pole			WAA 249 WAA 269 WAA 289	3 6 9	1 pole 2 pole
1 pole 3 pole			WAA 249 WAA 289	3 9	1 pole 3 pole
1 pole			WAA 630	3	1 pole
2 pole 3 pole			WAA 635 WAA 644	7 11	2 pole 3 pole
1 pole			WAA 631	4	1 pole
1 pole			WAA 632	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 WAA 314</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 WAA 313 WAA 315</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“			WAA 008	2	
			WAA 008	2	
			WAA 008	2	
			WAA 008	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			WAA 019	3	
			WAA 019	3	
			A038-600	3	
			A038-620	3	
			A038-620	3	
			A038-621	3	

Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Control Switches

Stop switch			WAA 174	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	1	
			A178-620	1	
Stop start switch with spring return to run for 2 units			WAA 177	1	
			WAA 177	1	

Switch Function and Configuration

A Switches

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			WAA 416	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			WAA 457	3	
			WAA 457	3	

Four Hole Panel Mounting	Code	A11 AD11 AD12	A25	A11C A25C
---------------------------------	-------------	---------------------	-----	--------------

	<p>Panel Mounting</p> <p>Four hole panel mounting</p> <p>Four hole panel mounting, protection IP 65</p>	E EF	● ●	● ●	● ●
	<p>Panel and base mounting</p> <p>Four hole panel mounting</p> <p>Four hole panel mounting, protection IP 65</p>	ER ERF	● ●	● ●	● ●
	<p>Panel mounting using larger escutcheon plate and handle</p> <p>Four hole panel mounting</p> <p>Four hole panel mounting, protection IP 65</p>	EG EGF	● ●	● ●	
	<p>Panel mounting with heavy duty stop and metal shaft</p> <p>Four hole panel mounting Mounting plate, escutcheon plate and handle of size S1</p> <p>Four hole panel mounting Mounting plate, escutcheon plate and handle of size S1 and 6 mm square metal shaft</p>	KN1 KD1	● ●	● ●	



Mounting

A, AD Switches

Single Hole Mounting 40 mm	Code	A11 AD11 AD12	A25	A11C A25C
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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 (PRC)</p> <p>EL2 + PRC</p>	EL4	●	●	

Base Mounting


	<p>Base mounting</p> <p>Base mounting - four hole</p>	VE	●	●	●
	<p>Snap-on base mounting for track EN 50022</p>	VE1	●	●	

Handles

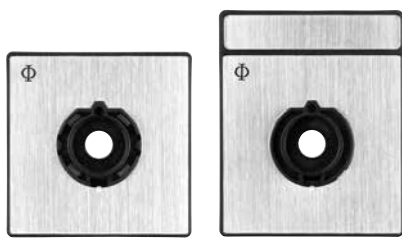
Type	Color	Code	Size	
			S1	S2

Type	Color	Code	Size	
			S1	S2

Black and Red are standard colours. White and Electro-Grey available on request.

R-Handle 	black red white electro-gray	G001 G002 G003 G007	● ● ● ● ● ● ● ●
I-Handle 	black red white electro-gray	G251 G252 G253 G257	● ● ● ● ● ● ● ●
F-Handle 	black red white electro-gray	G221 G222 G223 G227	● ● ● ● ● ● ● ●
B-Handle 	black red white electro-gray	G521 G522 G523 G527	● — ● — ● — ● —
S-Handle 	black red white electro-gray	G301 G302 G303 G307	● — ● — ● — ● —
L-Handle 	black red white electro-gray	G501 G502 G503 G507	● — ● — ● — ● —
P-Handle 	black red white electro-gray	G211 G212 G213 G217	● ● ● ● ● ● ● ●
K-Handle 	black red white electro-gray	G411 G412 G413 G417	● ● ● ● ● ● ● ●
O-Handle 	black red white electro-gray	G971	● — ● — ● — ● —

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

45° switching

Escutcheon Plates

60° switching

F7070	F7087	F7088	F7089	F7133	F7197	F7198	F7232	F7243	F7247	F7263	F7268	F7310	F7311	F7323	F7328	F7352
F7379	F7380	F7470	F7754	F7072	F7163	F7164	F7192	F7193	F7196	F7230	F7231	F7234	F7244	F7257	F7262	F7264
F7288	F7291	F7313	F7382	F7441	F7705	F7721	F7722	F7750	F7757	F7758	F7075	F7076	F7098	F7220	F7223	F7356
F7377	F7723	F7071	F7073	F7080	F7081	F7085	F7086	F7090	F7091	F7092	F7093	F7094	F7104	F7194	F7235	F7237
F7240	F7241	F7249	F7260	F7269	F7274	F7281	F7290	F7292	F7312	F7314	F7315	F7316	F7324	F7331	F7344	F7354
F7359	F7364	F7370	F7371	F7373	F7381	F7385	F7442	F7444	F7469	F7732	F7735	F7759	F7077	F7100	F7101	F7102
F7342	F7343	F7361	F7362	F7363	F7365	F7366	F7078	F7191	F7325	F7326	F7720	F7074	F7082	F7096	F7097	F7195
F7256	F7079	F7083	F7084	F7095	F7099	F7185	F7190	F7199	F7233	F7236	F7238	F7242	F7283	F7725	F7730	F7731
F7377																

90° switching

F7056	F7063	F7068	F7134	F7201	F7251	F7252	F7346	F7456	F7058	F7065	F7069	F7177	F7178	F7182	F7208	F7253
F7340	F7360	F7378	F7458	F7443	F7700	F7743	F7057	F7061	F7064	F7067	F7171	F7181	F7205	F7207	F7209	F7320
F7437	F7445	F7715	F7719	F7059	F7060	F7062	F7066	F7170	F7172	F7173	F7174	F7175	F7176	F7179	F7180	F7186
F7202	F7204	F7206	F7250	F7265	F7266	F7286	F7318	F7327	F7338	F7339	F7425	F7716	F7717	F7718	F7726	F7733
F7755	F7756															

Miscellaneous

F7119	F7130	F7122	F7126	F7125	F7129	F7225	F7248	F7246	F7261	F7341	F7345	F7123	F7127	F7145	F7146	
F7706	F7707	F7245	F7120	F7124	F7128	F7131	F7121	F7132	F7749							
F7805	F7806	F7807	F7808	F7809	F7810	F7811	F7812	F7813	F7814	F7815	F7816	F7817	F7818	F7819	F7820	F7821
F7823	F7824	F7825	F7826	F7827	F7828	F7829	F7830	F7831	F7832	F7833	F7834	F7835	F7837	F7838	F7839	F7840

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

Selection Data	A11 A11C	AD11 AD11C	AD12 AD12C	A25 A25C
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Rated Insulation Voltage U_i	IEC 60947-3 ¹ VDE 0660 part 107 ¹ UL/Canada min. operational voltage	V V V	690 600 20	600 600 1	600 600 6	690 600 20	
Rated Impulse Withstand Voltage U_{imp}		kV	6	on request	on request	6	
Rated Thermal Current I_U/I_{th}	IEC 60947-3 VDE 0660 part 107 UL/Canada	A A	20 10	6 6	6 6	25 25 ⁵	
Rated Operational Current I_e							
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	– 6 3 2 20 0,4/0,2 0,13/0,1 0,08/0,05 –	– – 6 6 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 25
AC-15	Switching of control devices, contactors, valves etc.	IEC 60947-5-1 VDE 0660 part 200	220 V-240 V 380 V-440 V	A A	6 4	– –	8 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 25
Power loss per contact at I_U Resistance to vibration Resistance to shock		W	0,9	0,5	0,2	on request on request	0,7
Short Circuit Protection Max. fuse size Rated short-time withstand current	(gG-characteristic) (1s-current)	A A	20 120	6 45	6 75	35 220	
DC Switching Capacity²						Rated Operational Current I_e	
No. of series contacts	1 2 3 4 5 6 8						
	Voltage V					A11 AD11 AD12 A25	
Resistive loads $T \leq 1$ ms, DC-1	1 2 3 4 5 6 8	A	– 6 12 24 24 48 48 60 110 220 440 240 440 550 600	4 2,5 1,5 0,8 0,3 0,27 0,2 0,1 0,08 0,05 0,03 0,02	– 4 4 3 2,2 1,2 1 0,6 0,3 0,25 0,15 0,1	– – – 16 15 5 1,2 0,38 0,35 0,25 0,2 –	
Inductive loads $T = 50$ ms	24 48 72 96 120 144 190	A	– 30 60 90 120 150 180 240 300 360 450	– 10 5 1,8 1 0,7 0,3	– – – – – – – – – – –	16 7 2,5 1 1 0,4	
Ambient Temperature of Stages^{3,4}	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				

¹Valid for lines with grounded common neutral termination, overvoltage category III, pollution degree 3. Values for other supply systems on request. ²DC switching capacity applies to ON/OFF switches. Switching capacity for other configurations on request. ³For electromagnetic optional extras see additional data in Catalog 101. ⁴Storage temperature: -40 °C to 85 °C (in case of temperature below -5 °C no shock load permissible). ⁵A25-4 and A25C-4: 22A

Selection Data	A11 A11C	AD11 AD11C	AD12 AD12C	A25 A25C
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Rated Utilization Category		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, A25	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			
Ratings		UL/Canada							
	Standard motor load		120 V	HP	1	–	–	1,5	
	DOL-Rating	3 phase	240 V		1	–	–	3	
	(similar AC-3)	3 pole	480 V		1	–	–	7,5	
			600 V		1	–	–	10	
			120 V	HP	0,5	–	–	0,75	
		1 phase	240 V		1	–	–	1,5	
		2 pole	277 V		1	–	–	2	
			480 V		1	–	–	3	
			600 V		1	–	–	5	
Max. Permissible Wire Gage - Use copper wire only									
Single-core or stranded wire				mm ²	2,5	2,5	2,5	4	
				AWG	12	12	12	10	
Flexible wire				mm ²	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	

International Standards and Approvals

Country	Authority	Mark or Standard	A11	AD11	AD12	A25
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 ²	+	+	+	+
Great Britain	British Standards Institution	BS EN 60947 ²	+	+	+	+
Europe		EN 60947 ²	+	+	+	+
International Electrical Commission (IEC) Recommendation		IEC 60947 ²	+	+	+	+

● Switch approved

+ Switch conforms to requirements

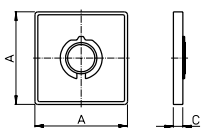
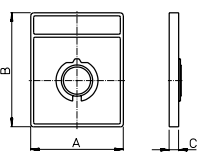
¹Approved under the "Component Program" (UL-Recognized Industrial Component). File No. E35541, Guide No. NLRV2 and NLRV8.

²Industrial 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.

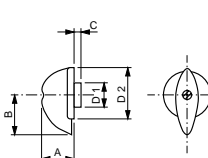
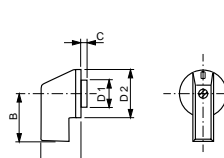
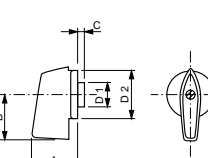
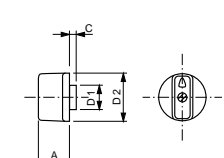
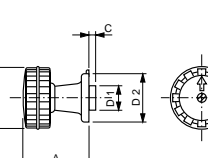
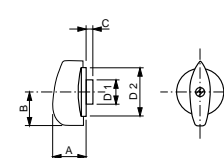
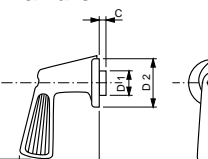
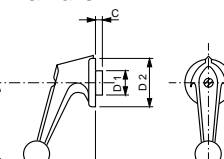
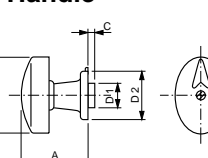
³Approved under the "Listing-Program". File No. E35541, Guide No. NLRV and NLRV7 resp. File No. E60262, Guide No. NRNT and NRNT7.

Dimensions mm
 inch

Escutcheon Plates and Handles	Size	A	B	C	D1ø	D2ø	Escutcheon Plates and Handles	Size	A	B	C	D1ø	D2ø
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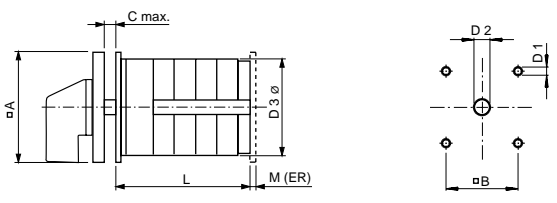
PE-Escutcheon Plate							PR-Escutcheon Plate						
	S1	64		7,4				S1	64	78,8	7,4		
		2.52		.29					2.52	3.10	.29		
	S2	88		8,5									
		3.46		.34									

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

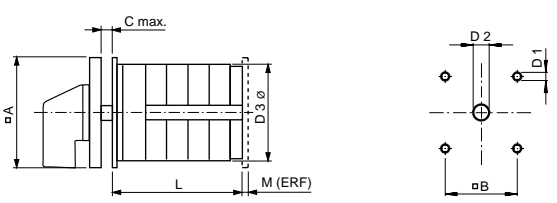
R-Handle 	S1 S2	23 0.91 30 1.18	31,5 1.24 42 1.65	5 .20 5 .20	18,2 .72 25,4 1.00	36 1.42 50,0 1.97	I-Handle 	S1	27 1.06	31,8 1.25	2,5 .10	18,2 .72	36 1.42
F-Handle 	S1 S2	34 1.34 44,7 1.76	34 1.34 45 1.77	5 .20 5 .20	18,2 .72 25,4 1.00	36 1.42 50 1.97	B-Handle 	S1	23 .91		5 .20	18,2 .72	36 1.42
S-Handle 	S1	50 1.97	45 1.77	5 .20	18,2 .72	36 1.42	L-Handle 	S1	24 .95	24,1 .95	5 .20	18,2 .72	36 1.42
P-Handle 	S1 S2	58 2.28 70 2.76	57,5 2.26 68 2.68	5 .20 5 .20	18,2 .72 25,4 1.00	36 1.42 50 1.97	K-Handle 	S1 S2	54 2.13 55 2.17	64 2.52 71 2.80	5 .20 5 .20	18,2 .72 25,4 1.00	36 1.42 50 1.97
O-Handle 	S1	50 1.97	56 2.2	5 .20	18,2 .72	36 1.42							

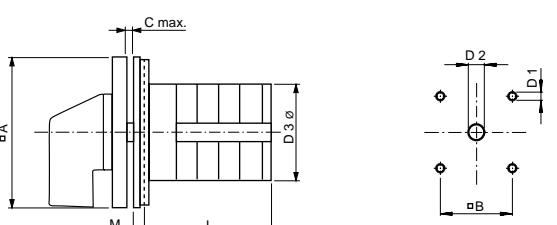
Dimensions mm
 inch

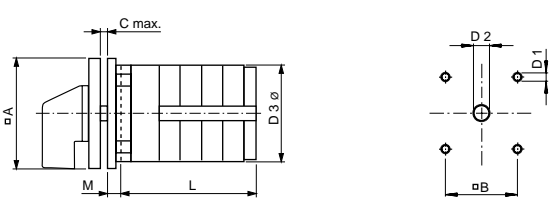
Four Hole Panel Mounting	A11		
	AD11		A11C
	AD12	A25	A25C

E, ER		E (ER)¹		
		mm	inch	mm
A		64	64	(88) 88
B		48	48	(68) 68
C		4	4	5,5
D1		5	5	(6) 6
D2		10-22	10-22	13-17
D3		60	70	84
		2.36	2.76	3.31

¹Dimensions in brackets for rear mounting plate with ER

EF, ERF		E (ER)¹		
		mm	inch	mm
A		64	64	88
B		48	48	68
C		4	4	5,5
D1		5	5	6
D2		19-22	19-22	26-30
D3		60	70	84
		2.36	2.76	3.31

EG, EGF		E (ER)¹		
		mm	inch	mm
A		88	88	-
B		68	68	-
C		5,5	5,5	-
D1		6	6	-
D2	EG	13-30	13-30	-
D2	EGF	26-30	26-30	-
D3		60	70	-
		2.36	2.76	-

KN1, KD1		E (ER)¹		
		mm	inch	mm
A		60	60	
B		48	48	
C		4	4	
D1		5	5	
D2		10-22	10-22	
D3		60	70	
		2.36	2.76	

Dimensions mm
 inch

Single Hole Mounting 40 mm	A11	
	AD11	
	AD12	A25

EL1	EL2	EL4													
			<table border="1"> <tr> <td>D1</td> <td>60</td> <td>70</td> </tr> <tr> <td></td> <td>2.36</td> <td>2.76</td> </tr> <tr> <td>C</td> <td>1-6,3</td> <td>1-6,3</td> </tr> <tr> <td></td> <td>.04-.25</td> <td>.04-.25</td> </tr> </table>	D1	60	70		2.36	2.76	C	1-6,3	1-6,3		.04-.25	.04-.25
D1	60	70													
	2.36	2.76													
C	1-6,3	1-6,3													
	.04-.25	.04-.25													

Base Mounting	A11		A11C
	AD11	A25	A25C
	AD12		

VE				A	64	64	88
				B	2.52	2.52	3.46
				C	48	48	68
				D1	1.89	1.89	2.68
				D2	13,5	13,5	16
				D3	.53	.53	.63
				D4	5	5	6
				E	.20	.20	.24
				G	10-22	10-22	13-30
				K	.39-.87	.39-.87	.51-1.18
VE1				A	60	70	84
				B	2.36	2.76	3.31
				C	4,1	4,1	5,4
				D1	.16	.16	.21
				D2	70	70	-
				D3	2,76	2,76	-
				D4	30	30	-
				E	1,18	1,18	-
				G	30	30	-
				K	1,18	1,18	-

Length L	A11		Additional Length M¹	A11	
	AD11	A25		AD12	A25
	AD12				

Mounting E	Mounting +
	switch with latching mechanism size S2

No. of stages			ER/ERF	6,5	8,7
1	42,5	43,5	EG/EGF	.26	.34
	1.67	1.71	KN1/KD1	7	7
2	55,2	56,2	VE	.28	.28
	2.17	2.21	EL1	5	5
3	67,9	68,9	EL2	.20	.20
	2.67	2.71	EL4	11	11
4	80,6	81,6	A11C/A25C	.43	.43
	3.17	3.21		11	11
5	93,3	94,3		.43	.43
	3.67	3.71		11	11
6	106	107		.43	.43
	4.17	4.21		11	11
7	118,7	119,7		.43	.43
	4.67	4.71		11	11
8	131,4	132,4		.43	.43
	5.17	5.21		11	11
9	144,1	145,1		.43	.43
	5.67	5.71		11	11
10	156,8	157,8		.43	.43
	6.17	6.21		11	11
11	169,5	170,5		.43	.43
	6.67	6.71		11	11
12	182,2	183,2		.43	.43
	7.17	7.21		11	11

¹Additional length plus length shown in the E mounting table = overall length

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-315 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. 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.	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
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

SALES AND SERVICE ORGANIZATION

Australia

Kraus & Naimer Pty. Ltd.
379 Liverpool Road, ASHFIELD, N.S.W. 2131
Tel: +61 2 9797-7333, Fax: 0092
salesaus@krausnaimer.com

Austria

Kraus & Naimer GmbH
Schumanngasse 35, Postfach 431
A-1181 WIEN
Tel: +43 1 404 06-0, Fax: 404 06-190
aso@krausnaimer.com

Belgium, Luxembourg

Kraus & Naimer B.V.
Ikaros Business Park
Ikaroslaan 2
B-1930 ZAVENTHEM
Tel: +32 2 757-0141, Fax: 1640
sales.be@krausnaimer.com

Brazil

Central and South America
Kraus & Naimer Ind. Com. Ltda.
Rua Santa Monica, 1061
Parque Industrial San Jose
06715-865 Cotia - SP
Tel: +55 11 2198-1288, Fax: 1251
knbrasil@krausnaimer.com.br

Canada

Kraus & Naimer Ltd.
219 Connie Crescent, Unit: 13A
CONCORD, Ontario, L4K 1L4
Tel: +1 905 738-1666, Fax: 9327
salescan@krausnaimer.com

Cyprus

ELECTROMATIC CONSTRUCTIONS LTD.
72, Evagoras Pallikarides Str., CY-2235 LATSIA-Nicosia
P. O. Box 12630, CY-2251 LATSIA-Nicosia
Tel: +357 2 48 41 41, Fax: 48 57 47

Czech Republic

OBZOR, výrobní družstvo Zlín
Na Slanici 378
CZ-76413 ZLÍN
Tel: +420 57 7195-111/-153 (Techn. Supp.)
Fax: +420 57 7195-152/-138
ots@obzor.cz

Denmark

THIIM A/S
Transformervej 31
DK-2730 HERLEV
Tel: +45 4485 8000, Fax: 8005
thiim@thiim.com

Finland

Kraus & Naimer Oy
Karitie 7
FIN-01530 VANTAA
Tel: +358 9 825-424-0, Fax: 424-10
myynti@krausnaimer.com

France

Kraus & Naimer s.a.s.
33, rue Bobillot
F-75013 PARIS
Tél: +33 1 58 40 80 80, Fax: 45 80 91 19
ventes@krausnaimer.com

Germany

Kraus & Naimer GmbH
Wikingerstraße 20-28, D-76189 KARLSRUHE
Postfach 10 01 24, D-76231 KARLSRUHE
Tel: +49 721 59 88-0, Fax: 59 28 28
sales.ger@krausnaimer.com

Great Britain

Kraus & Naimer Ltd.
115 London Road
NEWBURY/BERKSHIRE RG14 2AH
Tel: +44 1635 262626, Fax: 37807
sales-uk@krausnaimer.com

Greece

KALAMARAKIS-SAPOUNAS S. A.
Ionias & Neromilou Str., P. O. Box 46566
GR-13671 ACHARNES/ATHENS
Tel: +30 2 10 240-6000-6, Fax: 240-6007
kalamarakis.sapounas@ksa.gr

Hungary

GANZ, Schalter- u. Gerätefabrik
X. Kőbányal út 41/c, Postfach 87
H-1475 BUDAPEST
Tel: +36 1 261-5479, Fax: 4685
ganzkk@ganzkk.hu

Iceland

BRAEDURNIR ORMSSON EHF
Lágmúli 6-8, P. O. Box 8670
REYKJAVIK
Tel: +354 530-28 00, Fax: 28 10
skuli@ormsson.is

India

Liaison Office, Kraus & Naimer Pte. Ltd.
10B, 1st Floor, Infinity,
Ashar Commercial Complex, Gladly Alwares Road
Off Pokhran Road no. 2,
THANE (W) 400 610
Tel: +91 22 66716451, Fax: 66716451
india@krausnaimer.com

Republic of Ireland

Kraus & Naimer Ltd.
Bay 145, Shannon Free Zone
SHANNON, Co. Clare
Tel: +353 61 704700, Fax: 471084
sales-ie@krausnaimer.com

Italy

Kraus & Naimer s.r.l.
Via Terracini, 9
I-24047 TREVIGLIO (BG)
Tel: +39 0363-30 11 12, Fax: 30 21 13
sales-ita@krausnaimer.com

Japan

Kraus & Naimer Ltd.
Yoshiwada Building 2F
1-11-6 Hamamatsucho
Minato-Ku, TOKYO 105-0013
Tel: +81 3 3436-6151, Fax: 6325
sales-jpn@krausnaimer.com

Mexico

JC Ingeniería y Control, SA de CV.
Ángel Gaviño 30,
C. Satélite, C. Medicos,
Naucalpan Edo. de Mexico, C.P. 53100
Tel. (+52 55) 55 62 75 77, Fax. 55 62 04 34
ventas@jcingenieriacontrol.com

Middle East - UAE

Branch Office, Kraus & Naimer Pte. Ltd.
SAIF Zone, P. O. Box 121607,
Sharjah, UAE
Tel: +971 6 557 8886
Fax: +971 6 557 8088
uae@krausnaimer.com

Netherlands

Kraus & Naimer B.V.
Wegtersweg 38-40, Postbus 199
NL-7556 BR HENGEL0 (Ov.)
Tel: +31 74 291-9441, Fax: 8380
sales.nl@krausnaimer.com

New Zealand

Kraus & Naimer Ltd.
42 Miramar Avenue, WELLINGTON 6022
P. O. Box 15-009, WELLINGTON 6243
Tel: +64 4 380-9888, Fax: 9877
sales-nz@krausnaimer.com

Norway

Kraus & Naimer AS
Hjalmar Brantings vei 8, P. O. Box 21, Økern
N-0508 OSLO
Tel: +47 22 64 44 20, Fax: 65 39 49
ordre.no@krausnaimer.com

Poland

ASTAT sp. z o.o.
ul. Dąbrowskiego 461
PL-60451 POZNAN
Tel: +48 61 848-8871/72, Fax: 8276
info@astat.com.pl

Portugal

ELECTRICOL-DAMAS, FERREIRA & DAMASCENO, LDA.
Apartado 1063, S. Ant. Cavaleiros
P-2670 LOURES
Tel: +351 21 989-8939, Fax: 988-6464
Im.emertex@electricol.pt

Singapore

Kraus & Naimer Pte. Ltd.
Blk 115A, Commonwealth Drive
#03-17/23
SINGAPORE 149 596
Tel: +65 6473-8166, Fax: 8643
sgp@krausnaimer.com

Slovenia

SCHRACK Technik d.o.o.
Pameče 175
SI-2380 Slovenj Gradec
Tel: +386 2 883 92 00, Fax: +386 2 884 34 71
m.abeln@schrack.si

Republic of South Africa

Kraus & Naimer Pty. Ltd.
7 Village Crescent, Linbro Village
Linbro Business Park, SANDTON 2065
P. O. Box 511, KELVIN 2054
Tel: +27 11 608-6060, Fax: 608-2874
salesZAF@krausnaimer.com

Spain

HAZEMEYER HES. S.L.
Pol. Ind. Gaserans
Sector 3, Parcela 7B
17451 SANT FELIU DE BUIXALLEU (GIRONA)
Tel: +34 972 87-4450, Fax: 87-4402
hazemeyer@grupo-hes.net

Sweden

Kraus & Naimer AB
Dr. Widerströms Gata 11, FRUÅNGEN
Box 42097, S-126 14 STOCKHOLM
Tel: +46 8 97 00 80, Fax: 97 87 33
order.se@krausnaimer.com

Switzerland

AWAG Elektrotechnik AG
Sandbühlstraße 2, Postfach
CH-8604 VOLKETSCHWIL
Tel: +41 44 908 19 19, Fax: 19 99
info@awag.ch, www.awag.ch

Turkey

KARDEŞ ELEKTRİK SANAYİ VE TİCARET ANONİM ŞİRKETİ
Beşyol, Eski Londra Asfaltı-6
TR-34295 İSTANBUL-Sefaköy
Tel: +90 212 624-9204, Fax: 592-4810
info@unalkardes.com.tr

USA

Kraus & Naimer Inc.
760 New Brunswick Road
SOMERSET, NJ 08873
Tel: +1 732 560-1240, Fax: 8823
salesusa@krausnaimer.com



Kraus & Naimer

BLUE LINE switchgear



Contact us:

www.krausnaimer.com