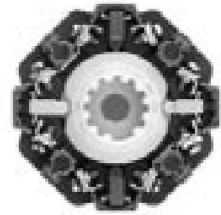


## Construction Data

### 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.

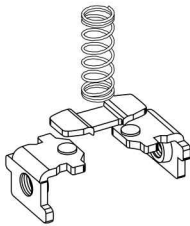


Switch type	Switching angle	Max. number of switch positions
A11, AD11, AD12	15°, 20°, 30°, 45°, 60°, 90°	24
A14	20°, 30°, 45°, 60°, 90°	18

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

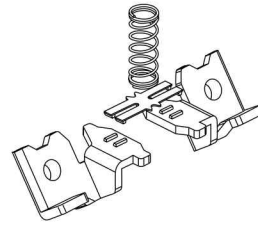
### 2 different Contact Systems are available

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

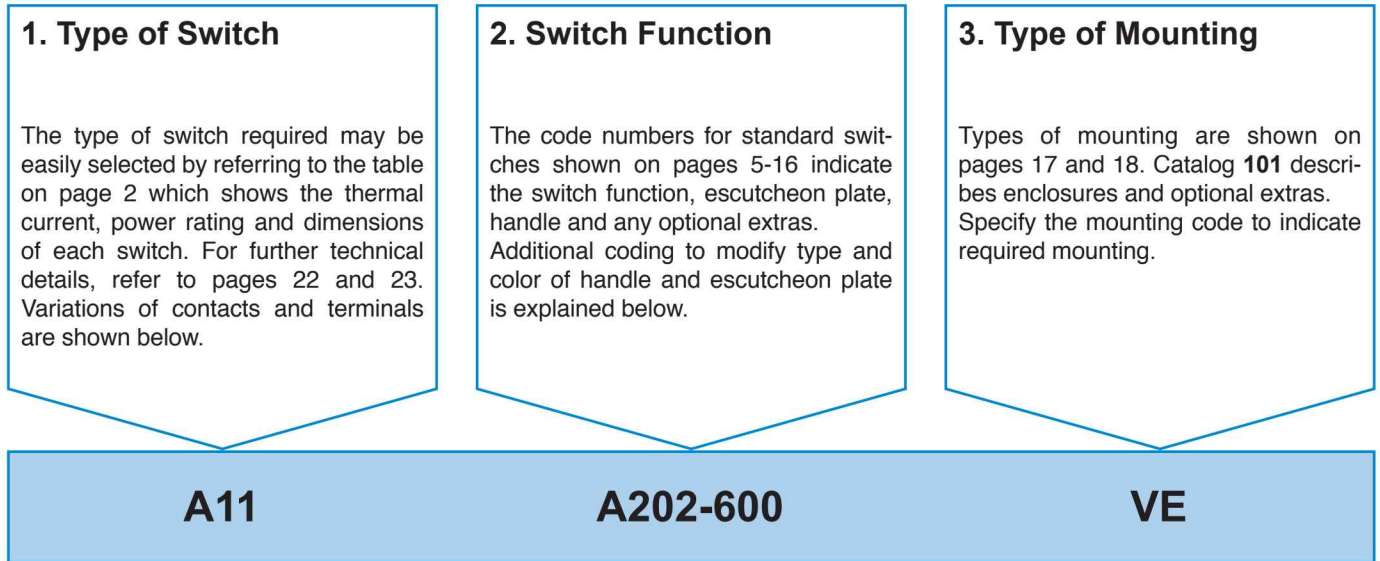
### Rated Values

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.

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
4 pole 5 pole 6 pole 8 pole			A213-620 A361-620 A362-620 A364-620	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 A716-600	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	




Four Hole Panel Mounting	Code	A11	A14	A11C
		AD11		A14C

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



## Mounting

## A, AD Switches

Single Hole Mounting 40 mm	<b>Code</b>	A11 AD11 AD12	A14	A11C A14C
----------------------------	-------------	---------------------	-----	--------------

	<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	●	●	



<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>	V	690	600	600	690	
	VDE 0660 part 107 <sup>1</sup>	V	500	600	600	500	
	SEV <sup>2</sup>	V	600	600	600	600	
	UL/Canada	V	400	–	–	400	
	CEE <sup>2</sup>	V	20	1	6	20	
min. operational voltage							
<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	A	20	6	6	25	
	VDE 0660 part 107	A	10	6	6	16	
	SEV <sup>2</sup>	A	10	6	6	16	
UL/Canada	A	10	6	6	16		
<b>Rated Operational Current <math>I_e</math></b>							
AC-21A Switching of resistive loads, including moderate overloads	IEC 60947-3	1 V	A	–	6	–	–
	VDE 0660 part 107	6 V	A	–	3	6	–
		12 V	A	–	2	6	–
		24/48 V	A	20	1/0,8	5/4	25
		110/220 V	A	20	0,4/0,2	3/2	25
		380/440 V	A	20	0,13/0,1	1,3/1	25
		500/600 V	A	20	0,08/0,05	0,8/0,5	25
	660/690 V	A	20	–	–	25	
AC-22A Switching of combined resistive or low inductive loads including moderate overloads	IEC 60947-3	220 V-500 V	A	20	–	–	25
	VDE 0660 part 107	660 V-690 V	A	16	–	–	20
AC-15 Switching of control devices, contactors, valves etc.	IEC 60947-3	220 V-240 V	A	6	–	–	10
	VDE 0660 part 107	380 V-440 V	A	4	–	–	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 $I_u$			W	0,9	0,5	0,2	1,3
Resistance to vibration					on request		
Resistance to shock					on request		
<b>Short Circuit Protection</b>	Max. fuse size	(gL/gG-characteristic)	A	20	6	6	25
	Rated short-time withstand current	(1s-current)	A	120	45	75	220
<b>DC Switching Capacity<sup>3</sup></b>							
No. of series contacts	1	2	3	4	5	6	8
	Voltage V						
Resistive loads $T \leq 1$ ms	1	2	3	4	5	6	8
	6	12	18	24	30	36	48
	12	24	36	48	60	72	96
	24	48	72	96	120	144	190
	48	96	140	190	240	290	360
	60	120	180	240	300	360	450
	110	220	330	440	550	660	–
	220	440	660	–	–	–	–
	240	480	–	–	–	–	–
	440	660	–	–	–	–	–
	550	–	–	–	–	–	–
	600	–	–	–	–	–	–
	Inductive loads $T = 50$ ms	24	48	72	96	120	144
30		60	90	120	150	180	240
48		95	140	190	240	290	350
60		120	180	240	300	360	450
110		220	330	440	550	660	–
<b>Ambient Temperature of Stages<sup>4,5</sup></b>	open at 100 % $I_u/I_{th}$		55 °C during 24 hours with peaks up to 60 °C				
	enclosed at 100 % $I_{the}$		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)		120 V	HP	1	–	–	1,5
	3 phase	240 V		1	–	–	3
	3 pole	480 V		1	–	–	7,5
		600 V		1	–	–	10
Heavy motor load <sup>1</sup> Reversing-Rating (similar AC-4)		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		120 V	HP	–	–	–	1
	3 phase	240 V		–	–	–	2
	3 pole	480 V-600 V		–	–	–	5
		120 V		–	–	–	0,33
Flexible wire (sleeving in accordance with DIN 46228)	1 phase	240 V	HP	–	–	–	0,75
	2 pole	277 V		–	–	–	0,75
Flexible AWG wires (without sleeve)			mm <sup>2</sup>	2,5	2,5	2,5	4
				AWG	12	12	12
Flexible wire (sleeving in accordance with DIN 46228)			mm <sup>2</sup>	2,5	2,5	2,5	2,5
				AWG	(2,5)	(2,5)	(2,5)
Flexible AWG wires (without sleeve)			mm <sup>2</sup>	14	14	14	12
				AWG	14	14	14

<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.

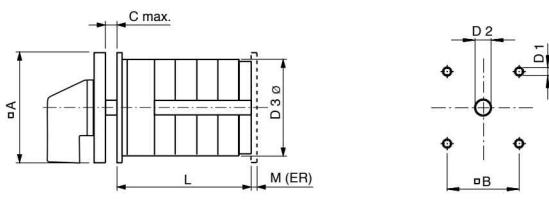
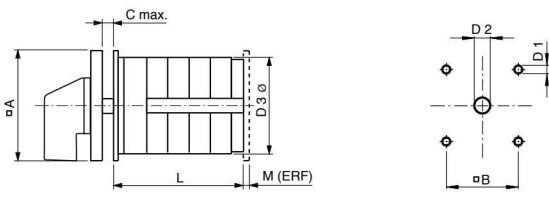
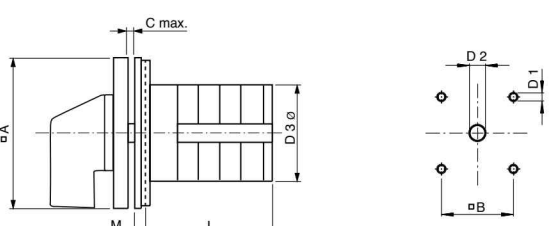
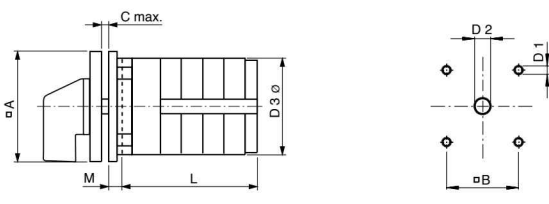
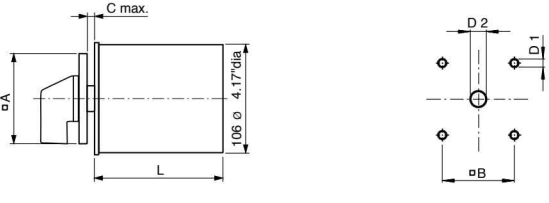
<sup>2</sup>Industrial switchgear is not required to bear a symbol but must conform to requirements. By referring to the specific specification on the product the manufacturer implies that these requirements have been met.

<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

<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		