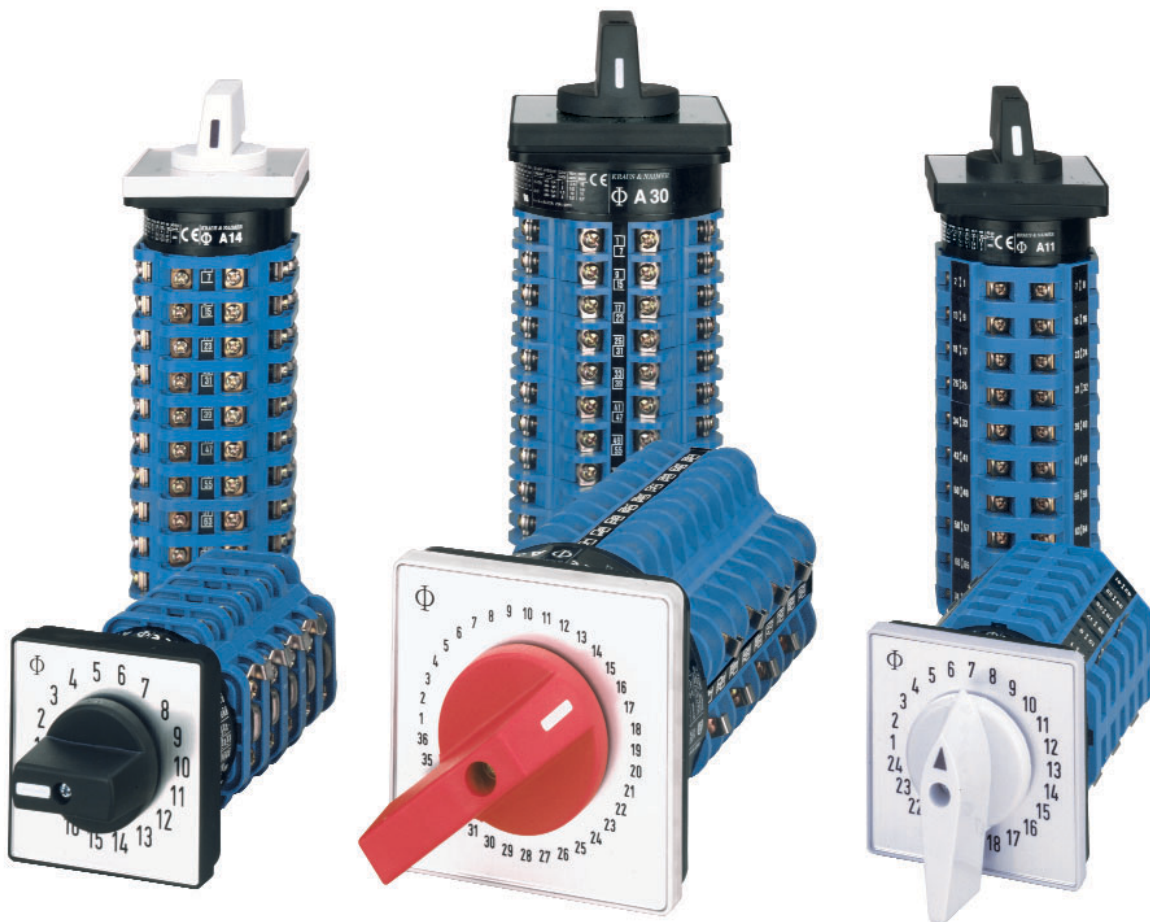


Catalog 110
A, AD Switches
6 A-25 A



KRAUS & NAIMER

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

BLUE LINE

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

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

The Kraus & Naimer Registered Trademark



WORLDWIDE SYMBOL
FOR QUALITY SWITCHGEAR

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

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Construction Data

A Switches

A11, A14, A30

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 or 18 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.

Switches AD11 and AD12 incorporate a self-cleaning H-bridge with a cross-wire contact system and are available with either silver (AD12) or gold (AD11) contacts. Their construction guarantees maximum contact security even at low voltages.

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
A30	10°, 15°, 20°, 30°, 45°, 60°, 90°	36

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

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	Operational Current I_o A	
				AC-21A	AC-15/220 V
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	-
	AD12	6	-	6 V/ 6 A 24 V/ 5 A 110 V/ 3 A 220 V/ 2 A 380 V/ 1,3 A	-
	A11 A14	20 25	7,5 11	20 A 25 A	6 10
S2	A11C	20	7,5	20 A	6
	A14C	25	11	25 A	10
	A30	25	12,5	25 A	14

To furnish with gold contacts, AMP terminals or gold contacts and AMP terminals see page 3.

How to order

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

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

1. Type of Switch

The type of switch required may be easily selected by referring to the table on page 2 which shows the thermal current, power rating and dimensions of each switch. For further technical details, refer to pages 22 and 23. Variations of contacts and terminals are shown below.

2. Switch Function

The code numbers for standard switches shown on pages 5-16 indicate the switch function, escutcheon plate, handle and any optional extras. Additional coding to modify type and color of handle and escutcheon plate is explained below.

3. Type of Mounting

Types of mounting are shown on pages 17 and 18. Catalog 101 describes enclosures and optional extras. Specify the mounting code to indicate required mounting.

A11

A202-600

VE

Type of Switch

Extending the switch type coding the following combinations will define:

Amendment	Definition	For switch types
-1	with gold contacts ¹	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**.

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 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**.

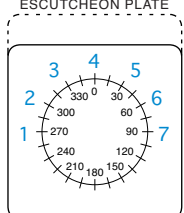
Switch Size

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	POSITIONS	HANDLES	MOUNTING	DATE	SIGNED																																																																																																														
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>POSITIONS</th> <th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th> </tr> <tr> <td>1</td> <td style="text-align: center;">x</td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>2</td> <td></td><td style="text-align: center;">x</td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>3</td> <td></td><td></td><td style="text-align: center;">x</td><td></td><td></td><td></td><td></td> </tr> <tr> <td>4</td> <td></td><td></td><td></td><td style="text-align: center;">x</td><td></td><td></td><td></td> </tr> <tr> <td>5</td> <td></td><td></td><td></td><td></td><td style="text-align: center;">x</td><td></td><td></td> </tr> <tr> <td>6</td> <td></td><td></td><td></td><td></td><td></td><td style="text-align: center;">x</td><td></td> </tr> <tr> <td>7</td> <td></td><td></td><td></td><td></td><td></td><td></td><td style="text-align: center;">x</td> </tr> </table>	POSITIONS	1	2	3	4	5	6	7	1	x							2		x						3			x					4				x				5					x			6						x		7							x	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td><td>37</td><td>38</td><td>39</td><td>40</td><td>41</td><td>42</td><td>43</td><td>44</td><td>45</td><td>46</td><td>47</td><td>48</td> </tr> </table>	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	SWITCH TYPE : A14 ESCUTCHEON PLATE : HANDLES : G251 MOUNTING : E OPTIONAL EXTRAS : DATE : SIGNED :
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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			A200-600	1			
2 pole			A201-600	1			
3 pole			A202-600	1			
3 pole with red handle			A202-626	1			
3 pole with V850 padlock attachment			A202-627	1			
4 pole			A203-600	1			
5 pole			A341-600	2			
6 pole			A342-600	2			
8 pole			A344-600	2			
10 pole			A346-600	3			
12 pole			A348-600	3			
14 pole			A350-600	4			
16 pole			A352-600	4			
18 pole			A354-600	5			
20 pole			A356-600	5			
22 pole			A358-600	6			
24 pole			A360-600	6			
1 pole						A200-620	1
2 pole	A201-620	1					
3 pole	A202-620	1					
4 pole	A203-620	1					
5 pole	A341-620	2					
6 pole	A342-620	2					
8 pole	A344-620	2					
10 pole	A346-620	3					
12 pole	A348-620	3					
14 pole	A350-620	4					
16 pole	A352-620	4					
18 pole	A354-620	5					
20 pole	A356-620	5					
22 pole	A358-620	6					
24 pole	A360-620	6					
1 pole					A200-621	1	
2 pole					A201-621	1	
3 pole					A202-621	1	
4 pole			A203-621	1			
5 pole			A341-621	2			
6 pole			A342-621	2			
1 pole			A200-622	1			
2 pole			A201-622	1			
3 pole			A202-622	1			
4 pole			A203-622	1			
5 pole			A341-622	2			
6 pole			A342-622	2			
1 pole			A200-623	1			
2 pole			A201-623	1			
3 pole			A202-623	1			
4 pole			A203-623	1			
5 pole			A341-623	2			
6 pole			A342-623	2			

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

1 pole		  	A200-624	1	
2 pole			A201-624	1	
3 pole			A202-624	1	
4 pole			A203-624	1	
5 pole			A341-624	2	
6 pole			A342-624	2	
1 pole		  	A200-625	1	<p>1-6 pole</p>
2 pole			A201-625	1	
3 pole			A202-625	1	
4 pole			A203-625	1	
5 pole			A341-625	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	A374-600	5			
12 pole	A376-600	6			
14 pole	A660-600	7			
16 pole	A661-600	8			
18 pole	A662-600	9			
20 pole	A663-600	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	A364-600	4			
10 pole	A366-600	5			
12 pole	A368-600	6			
14 pole	A655-600	7			
16 pole	A656-600	8			
18 pole	A657-600	9			
20 pole	A658-600	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
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




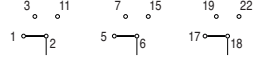

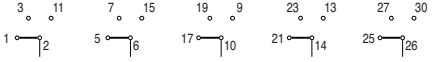

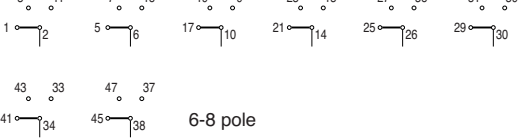



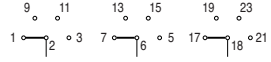

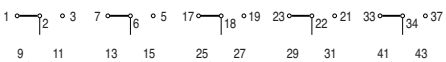
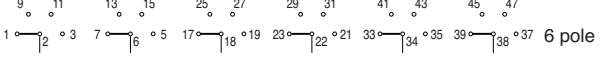



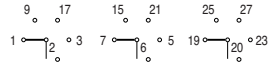
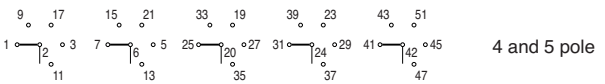



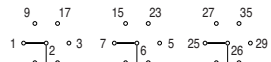
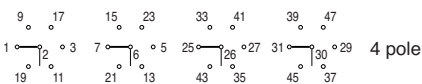



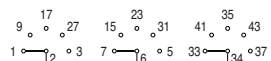
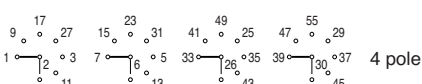



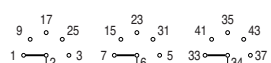
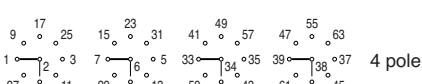




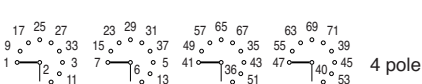
1 pole 2 pole 3 pole			A710-600 A711-600 A712-600	1 1 2	 1-3 pole
1 pole with spring return to center 2 pole with spring return to center 3 pole with spring return to center			A714-600 A715-600 A716-600	1 1 2	

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	

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

1 pole 2 pole 3 pole			A230-600 A250-600 A270-600	1 2 3	 1 pole  2 and 3 pole
4 pole 5 pole 6 pole			A476-600 A484-600 A489-600	3 4 5	 4 and 5 pole
7 pole 8 pole			A494-600 A497-600	6 6	 6-8 pole
1 pole 2 pole 3 pole			A231-600 A251-600 A271-600	1 2 3	 1 pole  2 and 3 pole
4 pole 5 pole 6 pole			A477-600 A485-600 A490-600	4 5 6	 4 and 5 pole  6 pole
1 pole 2 pole 3 pole 4 pole 5 pole			A232-600 A252-600 A272-600 A478-600 A676-600	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 A253-600 A273-600 A479-600	2 3 5 6	 1 pole  2 and 3 pole  4 pole
1 pole 2 pole 3 pole 4 pole			A234-600 A254-600 A274-600 A670-600	2 4 6 7	 1 pole  2 and 3 pole  4 pole
1 pole 2 pole 3 pole 4 pole			A235-600 A255-600 A275-600 A671-600	2 4 6 8	 1 pole  2 and 3 pole  4 pole
1 pole 2 pole 3 pole 4 pole			A236-600 A256-600 A276-600 A672-600	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			A237-600 A257-600 A277-600	3 5 8	1 pole 2 and 3 pole
1 pole 2 pole 3 pole			A238-600 A258-600 A278-600	3 6 9	1 pole 2 and 3 pole
1 pole 2 pole 3 pole			A239-600 A259-600 A279-600	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 A486-600	1 1 2 3	1- and 2 pole
1 pole 2 pole 3 pole 5 pole			A240-620 A260-620 A280-620 A486-620	1 1 2 3	3 and 5 pole
1 pole 2 pole 3 pole 5 pole			A241-600 A261-600 A281-600 A487-600	1 2 3 4	2 and 3 pole
1 pole 2 pole 3 pole 5 pole			A241-620 A261-620 A281-620 A487-620	1 2 3 4	5 pole
1 pole 2 pole			A241-621 A261-621	1 2	
1 pole 2 pole 3 pole			A242-600 A262-600 A282-600	1 2 3	2 and 3 pole
1 pole 2 pole 3 pole			A242-620 A262-620 A282-620	1 2 3	
1 pole 2 pole 3 pole			A243-600 A263-600 A283-600	2 3 5	2 and 3 pole
1 pole 2 pole 3 pole			A243-620 A263-620 A283-620	2 3 5	
1 pole 2 pole 3 pole			A244-600 A264-600 A284-600	2 3 5	2 and 3 pole
1 pole 2 pole 3 pole			A244-620 A264-620 A284-620	2 3 5	



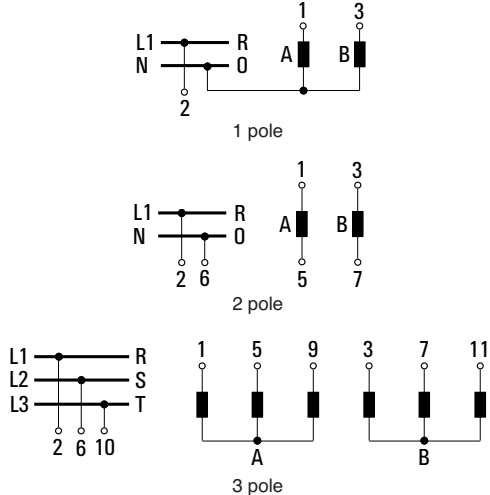


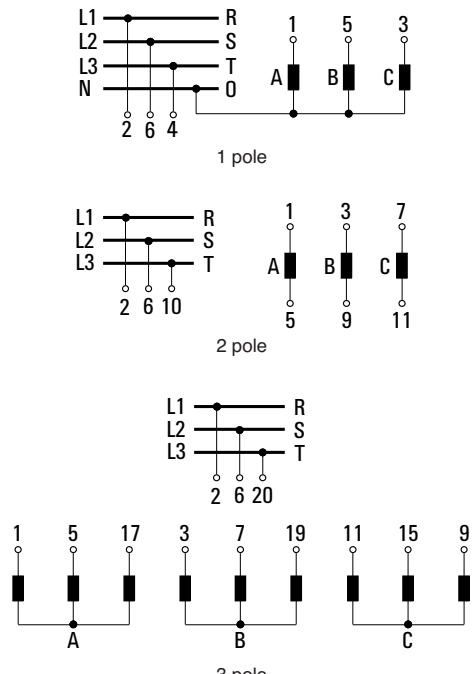
Function	Escutch. Plate	Handle	Code	Stages	Connection Diagram
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Multi-step Switches with „OFF“

1 pole 2 pole 3 pole			A245-600 A265-600 A285-600	2 4 6	1 pole 2 pole
1 pole 2 pole 3 pole			A245-620 A265-620 A285-620	2 4 6	1 pole 3 pole
1 pole 2 pole 3 pole			A246-600 A266-600 A286-600	2 4 6	1 pole 2 pole
1 pole 3 pole			A246-620 A286-620	2 6	3 pole
1 pole 2 pole 3 pole			A247-600 A267-600 A287-600	3 5 8	1 pole 2 pole
1 pole 3 pole			A247-620 A287-620	3 8	3 pole
1 pole 2 pole 3 pole			A248-600 A268-600 A288-600	3 5 9	1 pole 2 pole
1 pole 3 pole			A248-620 A288-620	3 9	3 pole
1 pole 2 pole 3 pole			A249-600 A269-600 A289-600	3 6 9	1 pole 2 pole
1 pole 3 pole			A249-620 A289-620	3 9	3 pole
1 pole			A630-600	3	1 pole
2 pole 3 pole			A635-600 A644-600	7 11	2 and 3 pole
1 pole			A631-600	4	1 pole
1 pole			A632-600	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 A314-600</p> <p>A310-620 A312-620 A314-620</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 A313-600 A315-600</p> <p>A311-620 A313-620 A315-620</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“			A008-600	2	
			A008-620	2	
			A008-621	2	
			A008-622	2	

¹Type A30 with handle

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			A019-600	3	
			A019-620	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			A174-600	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			A177-600 A177-620	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			A416-600	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			A457-600	3	
			A457-620	3	



Four Hole Panel Mounting	Code	A11 AD11 AD12	A14	A11C A14C A30
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	<p>Panel Mounting</p> <p>Four hole panel mounting</p> <p>Four hole panel mounting, protection IP 65</p>	E	●	●	●
	<p>Panel and base mounting</p> <p>Four hole panel mounting</p> <p>Four hole panel mounting, protection IP 65</p>	ER	●	●	●
	<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	●	●	A30
	<p>Panel mounting with heavy duty stop and metal shaft</p> <p>Four hole panel mounting</p> <p>Mounting plate, escutcheon plate and handle of size S1</p>	KN1	●	●	
	<p>Four hole panel mounting</p> <p>Mounting plate, escutcheon plate and handle of size S1 and 6 mm square metal shaft</p> <p>Panel mounting with protective cover</p> <p>Four hole panel mounting</p> <p>Protection front IP 40 rear IP 42</p> <p>Four hole panel mounting</p> <p>Protection front IP 65 rear IP 42</p>	KD1	●	●	
		EC	●	●	
		ED	●	●	



Mounting

A, AD Switches

Single Hole Mounting 40 mm	Code	A11 AD11 AD12	A14	A11C A14C A30
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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 50022</p>	VE1	●	●	

Handles

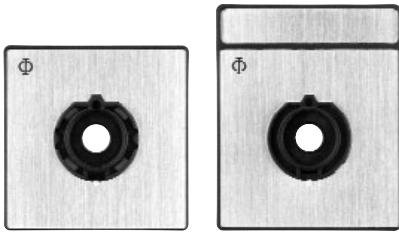
Type	Color	Code	Size	
			S1	S2

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

45° switching

Escutcheon Plates

60° switching

F7070	F7072	F087	F088	F089	F133	F163	F164	F192	F193	F196	F197	F198	F230	F231	F232	F234	F243
F244	F247	F257	F262	F263	F264	F268	F282	F288	F470	F291	F310	F311	F313	F323	F328	F352	F367
F379	F380	F382	F705	F721	F722	F750	F754	F701	F703	F705	F706	F800	F801	F805	F806	F900	F901
F092	F093	F094	F098	F104	F194	F220	F223	F235	F237	F239	F240	F241	F249	F260	F269	F469	F274
F281	F290	F292	F312	F314	F315	F316	F324	F331	F344	F354	F356	F357	F358	F359	F364	F370	F371
F373	F377	F381	F385	F723	F732	F735	F077	F100	F101	F102	F309	F342	F343	F361	F362	F363	F365
F366	F074	F078	F082	F096	F097	F191	F195	F256	F325	F326	F720	F724	F079	F083	F084	F095	F099
F185	F190	F199	F233	F236	F238	F242	F283	F275	F730	F731	F736	F737					

90° switching

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

Miscellaneous

F119	F122	F125	F126	F129	F130	F225	F246	F248	F261	F341	F123	F127	F145	F146	F148	F245	F287
F345	F706	F707	F120	F121	F124	F128	F131	F132	F749								
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	

Selection Data	A11	AD11	AD12	A14	A30
	A11C	AD11C	AD12C	A14C	

Rated Insulation Voltage U_i	IEC 60947-3 ¹	V	690	600	600	690	690	
	VDE 0660 part 107 ¹	V	500	600	600	500	500	
	SEV ²	V	600	600	600	600	600	
	UL/Canada	V	400	—	—	400	400	
	CEE ²	V	20	1	6	20	20	
min. operational voltage								
Rated Impulse Withstand Voltage U_{imp}		kV	6	on request	on request	6	6	
Rated Thermal Current I_U/I_{th}	IEC 60947-3	A	20	6	6	25	25	
	VDE 0660 part 107							
	SEV ²	A	10	6	6	16	25	
	UL/Canada	A	10	6	6	16	25	
Rated Operational Current I_e								
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	25
		110/220 V	A	20	0,4/0,2	3/2	25	25
		380/440 V	A	20	0,13/0,1	1,3/1	25	25
		500/600 V	A	20	0,08/0,05	0,8/0,5	25	25
		660/690 V	A	20	—	—	25	25
AC-22A Switching of combined resistive or low inductive loads including moderate overloads	IEC 60947-3	220 V-500 V	A	20	—	—	25	25
	VDE 0660 part 107	660 V-690 V	A	16	—	—	20	25
AC-15 Switching of control devices, contactors, valves etc.	IEC 60947-3	220 V-240 V	A	6	—	—	10	14
	VDE 0660 part 107	380 V-440 V	A	4	—	—	5	6
Pilot Duty	UL/Canada	Heavy	VAC	600	—	—	600	600
Ampere Rating Resistive or low inductive loads	UL/Canada		A	10	see AC-21A	see AC-21A	16	25
Resistive load/Motor load	CEE		A	10/6	—	—	16/10	25/10
Short Circuit Protection								
Max. fuse size	(gL-characteristic)	A	20	6	6	25	35	
Rated short-time withstand current	(1s-current)	A	120	45	75	220	300	
DC Switching Capacity³								
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	190
		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	—	
Ambient Temperature of Stages⁴	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					









¹Valid for lines with grounded common neutral termination, overvoltage category III, pollution degree 3. Values for other supply systems on request.
²International Standards and Approvals, refer to page 24. ³DC switching capacity applies to ON/OFF switches. Switching capacity for other configurations on request. ⁴For electromagnetic optional extras see additional data in Catalog 101.

Selection Data	A11	AD11	AD12	A14	A30
	A11C	AD11C	AD12C	A14C	

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	7	
		3 pole	380 V-440 V		7,5	–	–	11	12,5	
			500 V		10	–	–	15	16	
			660 V-690 V		10	–	–	13	15	
AC-3	Direct-on-line starting, star-delta starting A11, A14, A30	3 phase	220 V-240 V	kW	3	–	–	4	5,5	
		3 pole	380 V-440 V		5,5	–	–	7,5	10	
			500 V		5,5	–	–	7,5	11	
			660 V-690 V	5,5	–	–	7,5	11		
			1 phase	110 V	kW	0,6	–	–	1,5	1,5
			2 pole	220 V-240 V		2,2	–	–	3	3
		380 V-440 V	3	–	–	3,7	5,5			
AC-4	Direct-on-line starting, reversing, plugging and inching	3 phase	220 V-240 V	kW	0,55	–	–	1	2,7	
		3 pole	380 V-440 V		1,5	–	–	2,2	5	
			500 V		1,5	–	–	2,5	6	
			660 V-690 V	1,5	–	–	2,5	6		
			1 phase	110 V	kW	0,15	–	–	0,2	0,7
			2 pole	220 V-240 V		0,25	–	–	0,5	1,3
		380 V-440 V	0,55	–	–	0,8	2,5			
AC-23A	Frequent switching of motors or other high inductive loads	3 phase	220 V-240 V	kW	3,7	–	–	5,5	7	
		3 pole	380 V-440 V		7,5	–	–	11	12,5	
			500 V		7,5	–	–	11	15	
			660 V-690 V	7,5	–	–	11	15		
			1 phase	110 V	kW	0,75	–	–	1,5	1,5
			2 pole	220 V-240 V		2,2	–	–	3	3
		380 V-440 V	3,7	–	–	5,5	5,5			
Ratings		UL/Canada								
Standard motor load DOL-Rating (similar AC-3)	3 phase 3 pole	120 V	HP	1	–	–	1,5	3		
		240 V		1	–	–	3	7,5		
		480 V		1	–	–	7,5	15		
		600 V		1	–	–	10	20		
	1 phase 2 pole	120 V	HP	0,5	–	–	0,75	2		
		240 V		1	–	–	1,5	3		
		277 V		1	–	–	2	5		
		480 V		1	–	–	3	7,5		
	1 phase 2 pole	600 V	HP	1	–	–	5	10		
		120 V		–	–	–	1	2		
		240 V		–	–	–	2	3		
		480 V-600 V		–	–	–	5	10		
Heavy motor load ¹ Reversing-Rating (similar AC-4)	3 phase 3 pole	120 V	HP	–	–	–	0,33	0,5		
		240 V		–	–	–	0,75	1,5		
		480 V-600 V		–	–	–	0,75	1,5		
		120 V		–	–	–	0,33	0,5		
	1 phase 2 pole	240 V	HP	–	–	–	0,75	1,5		
		277 V		–	–	–	0,75	1,5		
Max. Permissible Wire Gage - Use copper wire only										
Single-core or stranded wire				mm ²	2,5	2,5	2,5	4	4	
				AWG	12	12	12	10	10	
Flexible wire				mm ²	2,5	2,5	2,5	2,5	2,5	
(sleeving in accordance with DIN 46228)					(2,5)	(2,5)	(2,5)	(2,5)	(2,5)	
Flexible AWG wires (without sleeve)				AWG	14	14	14	12	12	

¹Reversing-Rating is not part of the existing UL and Canada approvals.

International Standards and Approvals

Country	Authority	Mark or Standard	A11	AD11	AD12	A14	A30
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

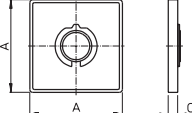
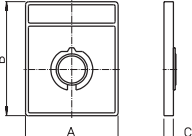
¹Approved under the "Component Program" (UL-Recognized Industrial Component). File No. E35541, Guide No. NLRV2 and NLRV8.

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.

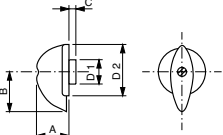
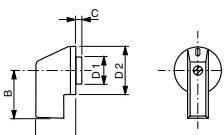
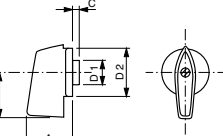
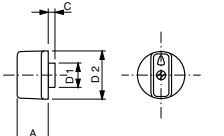
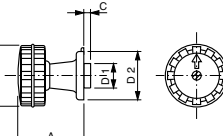
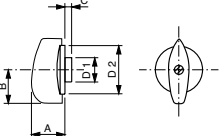
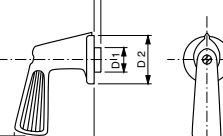
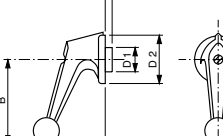
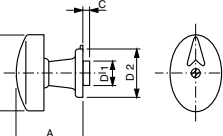
³Approved under the "Listing-Program". File No. E35541, Guide No. NLRV and NLRV7 resp. File No. E60262, Guide No. NRNT and NRNT7.

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		
	S2	2.52		.29					2.52	3.10	.29		
		88		8,5									
		3.46		.34									

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 	S1 23 0.91 S2 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 34 1.34 S2 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 58 2.28 S2 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 54 2.13 S2 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	A14	A11C	A30
	AD11		A14C	
	AD12			

Series	Diagram	A	B	C	D1	D2	D3	
E, ER		A	64 2.52	64 2.52	88 3.46	88 3.46		
		B	48 1.89	48 1.89	68 2.68	68 2.68		
		C	4 .16	4 .16	5.5 .22	5.5 .22		
		D1	5 .20	5 .20	6 .24	6 .24		
		D2	10-15 .39-.59	10-15 .39-.59	13-17 .51-.67	13-17 .51-.67		
		D3	60 2.36	65 2.56	84 3.31	88 3.46		
EF, ERF		A	64 2.52	64 2.52	88 3.46	88 3.46		
		B	48 1.89	48 1.89	68 2.68	68 2.68		
		C	4 .16	4 .16	5.5 .22	5.5 .22		
		D1	5 .20	5 .20	6 .24	6 .24		
		D2	19-22 .75-.87	19-22 .75-.87	26-30 1.02-1.18	26-30 1.02-1.18		
		D3	60 2.36	65 2.56	84 3.31	88 3.46		
EG, EGF		A	88 3.46	88 3.46	-	130 5.12		
		B	68 2.68	68 2.68	-	104 4.09		
		C	5.5 .22	5.5 .22	-	7 .28		
		D1	6 .24	6 .24	-	7 .28		
		D2 EG	13-17 .51-.67	13-17 .51-.67	-	15.5-20 .61-.79		
		D2 EGF	26-30 1.02-1.18	26-30 1.02-1.18	-	22-25 .87-.98		
		D3	60 2.36	65 2.56	-	88 3.46		
KN1, KD1		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				
EC, ED		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

Single Hole Mounting 40 mm	A11 AD11 A14 AD12
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EL1	EL2	EL4								
				<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								

Base Mounting	A11 AD11 A14 AD12	A11C A14C	A30
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VE		A	64 2.52	64 2.52	88 3.46	88 3.46
		B	48 1.89	48 1.89	68 2.68	68 2.68
		C	13,5 .53	13,5 .53	16 .63	16 .63
		D1	5 .20	5 .20	6 .24	6 .24
		D2	10-15 .39-.59	10-15 .39-.59	13-17 .51-.67	13-17 .51-.67
		D3	60 2.36	65 2.56	84 3.31	88 3.46
		D4	4,1 .16	4,1 .16	5,4 .21	5,4 .21
		E	70 2.76	70 2.76	-	-
		G	30 1.18	30 1.18	-	-
		K	30 1.18	30 1.18	-	-
VE1						

Length L	A11 AD11 AD12	A14	A30	Length L	A11 AD11 AD12	A14	Additional Length M ¹	A11 AD11 AD12	A14	A30
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Mounting E	Mounting EC and ED	Mounting + switch with latching mechanism size S2
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No. of stages	A11 AD11 AD12	A14	A30	No. of stages	EC, ED	EC, ED	ER/ERF	6,5 .26	6,5 .26	9,4 .37
1	42,5 1.67	42,5 1.67	47,2 1.86	1	41,5 1.63	47,2 1.86	EG/EGF	0,5 .02	0,5 .02	2 .08
2	55,2 2.17	55,2 2.17	59,9 2.36	2	54,2 2.13	59,9 2.36	KN1/KD1	7 .28	7 .28	-
3	67,9 2.67	67,9 2.67	72,6 2.86	3	66,9 2.63	72,6 2.86	VE	5 .20	5 .20	8,9 .35
4	80,6 3.17	80,6 3.17	85,3 3.36	4	79,6 3.13	85,3 3.36	EL1	11 .43	11 .43	-
5	93,3 3.67	93,3 3.67	98 3.86	5	92,3 3.63	98 3.86	EL2	11 .43	11 .43	-
6	106 4.17	106 4.17	110,7 4.36	6	105 4.13	110,7 4.36	EL4	11 .43	11 .43	-
7	118,7 4.67	118,7 4.67	123,4 4.86	7	117,7 4.63	123,4 4.86	A11C/A14C	8,2 .32	8,2 .32	-
8	131,4 5.17	131,4 5.17	136,1 5.36	8	130,4 5.13	136,1 5.36				
9	144,1 5.67	144,1 5.67	148,8 5.86	9	143,1 5.63	148,8 5.86				
10	156,8 6.17	156,8 6.17	161,5 6.36	10	155,8 6.13	161,5 6.36				
11	169,5 6.67	169,5 6.67	174,2 6.86	11	168,5 6.63	174,2 6.86				
12	182,2 7.17	182,2 7.17	186,9 7.36	12	181,2 7.13	186,9 7.36				

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