Kraus & Naimer Pty. Ltd.

BLUE LINE switchgear

2011

Short Form Catalogue











FOR COMPLETE PRODUCT RANGE VISIT

www.krausnaimer.com.au

Kraus & Naimer

BLUE LINE switchgear

The development of the Blue Line rotary switch, load break switches disconnectors - switch disconnectors, contactor and motor starter product ranges is based on One Hundred years experience by Kraus & Naimer. In the Design and manufacture of electrical switchgear, Kraus and Naimer have pioneered the introduction of the cam operated rotary switch, and continues to be recognised 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 recognised for their quality and workmanship. They are supported by the world-wide sales and service organisation.

The Kraus & Naimer Registered Trademark

WORLDWIDE SYMBOL FOR QUALITY SWITCHGEAR

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- Control, Instrument, Motor Switches
- Infinite number of switch programmes
- CA / CG / CH Switches with fingerproof terminals
- CA / CG / CH Switches with captive plus-minus terminal screws
- CAD Switches having self-cleaning “H” Bridge with ‘cross wire’ contacts
- CHR Switches with captive terminal screws for use with ring terminals
- Special Switches designed to any contact programme

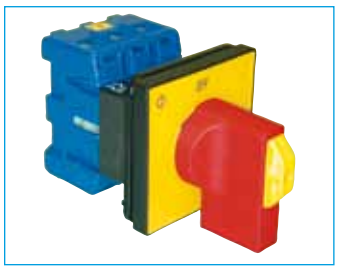
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Enclosed KG Main Switches 20A - 315A 16 - 18
- Padlockable maintenance and safety switches
- Enclosed IP 65 protection in Plastic or Stainless Steel
- 3, 4, 6 and 8 pole models available
- Enclosure cable entries top, bottom, sides and rear, or blank

KG Main Switches 20A - 315A 16 - 18
- Padlockable main and emergency switches
- Modular frame sizes
- 3, 4, 6 and 8 pole models available
- Forced positive contact movement
- Cam operated auxilliary contacts



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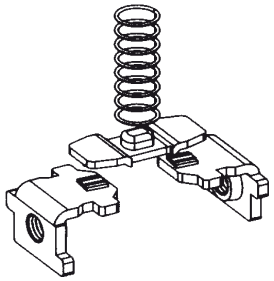
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Technical Data

Rated Operational Current

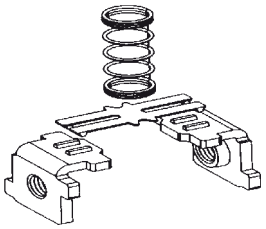
Multi cross point contacts		1V	6V	12V	24V	48V	110V	240V
CA4/CG4	AC21A	-	-	-	10	10	10	10
	DC21 B	-	-	-	10	6	0.7	0.2
H-Bridge cross wire contacts								
CGD4 - 1	AC21A	5	2	1.2	0.7	0.45	0.25	0.15
	DC21B	3	1.2	0.7	0.4	0.25	0.13	0.08
CAD11	AC21A	5	3	2	1	0.8	0.4	0.2
	DC21B	4	2.5	1.5	0.8	0.3	0.2	0.1
CAD12	AC21A	-	5	5	5	4	3	2
	DC21B	-	4	3	2.2	1.2	0.6	0.3

Special Contact Systems



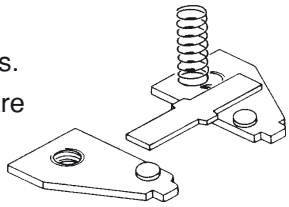
CA4/CG4 (@1µ gold plating)

A high contact reliability is achieved by the use of mulliple crosspoint contacts, having a fourpoint contact face to minimise contact resistance. Terminals on the CA series are accessible from both sides, and the terminals on the CG series are accessible from the rear. Both switches have finger proof terminals.These are the smallest cam switch 30mm sq.



CAD11/CAD12 / CGD4 - 1

H-bridge cross wire contact system. The moving contact is made of spring type material to absorb possible contact bounce. These corrosive resistant contacts are capable of operating on systems voltages as low as 1 volt. CAD11 = Gold contacts. CAD12 = Silver contacts. Both switches have screw driver guides, finger proof terminals and captive plus-minus screws terminals capable of accepting two variant cable sizes.



C/CA

Switches C/CA have finger proof terminals and captive plus-minus terminal screws. Each stage contains two rigid, double-break silver alloy contacts. The terminals are accessible from both sides. Ranging from 20 ~ 315 amperes these switches will accept a wide range of “optional extras”.

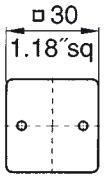
KG/KH Switches: This durable switch line possesses high short circuit withstand capabilities, with positive movement during both making and breaking functions. The **KG/KH** range of isolators and changeover switches exhibit excellent AC-3 and AC-23 making and breaking capabilities.

This ‘Short Form’ catalogue illistrates only a small selection of the KRAUS & NAIMER switches. Other switches available are:- A11, A14, A30, AD11, AD12, CH10 ~ CHR16B, D10 ~ D14R, DH, DHR, DK, DKR, L350 ~ L1251,X63 ~ X630. Additional information available on request.

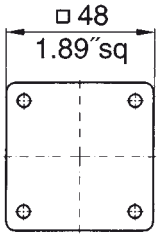
G20 (S) DC SWITCHING WITH KNIFE CONTACTS Refer Page 33

Escutcheon Plate Dimensions
Note: for drilling details refer to pages 31 & 32

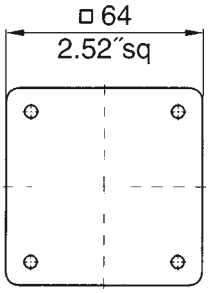
S00



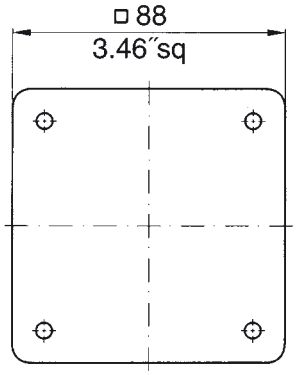
S0



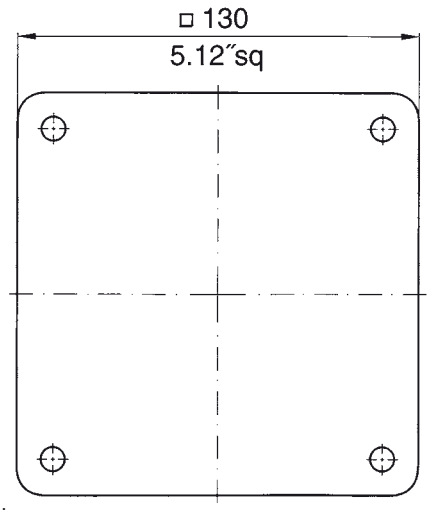
S1



S2



S3



TYPE	Cable mm²	Nominal Voltage U_i V	Thermal Current I_u/I_{th} A	Motor Rating 3 x 380 V - 440 V AC-23A kW	AC-3 kW
			According to IEC 60947-3/VDE 0660, part 107		
CA4	2 x 1.5	440	10	3	2.2
CG4	2 x 1.5	440	10	3	2.2
CG 8	2 x 2.5	690	20	7.5	5.5
CA10	2 x 2.5	690	20	7.5	5.5
CA20	2 X 4	690	25	11	7.5
CA25	2 x 6	690	32	15	11
CH10	2 x 4	690	20	7.5	5.5
CH16	2 x 4	690	25	11	7.5
CA10B	2 x 2.5	690	20	7.5	5.5
CA20B	2 x 4	690	25	11	7.5
CA25B	2 x 6	690	32	15	11
CA40	1 x 16	690	40	18.5	15
CA50	1 x 16	690	50	22	18.5
CA63	1 x 16	690	63	30	18.5
C26	2 x 6	690	32	15	11
C32	2 x 10	690	50	22	15
C42	2 x 16	690	63	30	18.5
CHR10B	Ring	690	20	7.5	5.5
CHR20B	Ring	690	25	11	7.5
C43	2 x 16	690	63	30	18.5
C80	35	690	115	45	30
C125	70	690	150	75	37
C200-4	M8	690	200	75	37
C315	M12	690	315	132	55
C316	M12	1000	315	132	55
L400	M12	690	500	132	55
L600	M16	690	800	132	55
L800	M16	690	1100	132	55
L1200	M16	690	1450	132	55
L1600	2 X M16	690	1900	132	55
L2000	2 X M16	690	2400	132	55

For further technical details, refer to Catalogue 100 and 120.
Gold contacts and quick connects see Catalogue 100 P4.

For Safety and Maintenance Switches Refer Page 16-19

Rotary Cam Switches - Panel Mounting



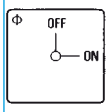
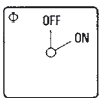
CG4 A290 FS2



CA10 A291 E

Selection Data	IEC 60947-3, EN 60947, VDE 0660			CG 4 CA 4	CG 8 CH 10 CA 10	CA20 CA20B	C26 CA25	CA 40	C32 CA 50
Rated Thermal Current		$I_U = I_{th}$	A	10	20	25	32	40	50
Rated Category	3 x 380 V/440 V	AC-23A	kW	3	7.5	11	15	18.5	22

				C 42 CA 63	C 80	C125	C200-4	C315	L400
Rated Thermal Current		$I_U = I_{th}$	A	63	115	150	200	315	500
Rated Category	3 x 380 V/440 V	AC-23A	kW	30	45	75	75	132	132

Function	Front Plate	Code No.		No. of Stages	Code No.		No. of Stages
OFF / ON Switches 90° Switching Waterproof switches to IP 65 available in E24 Mounting - no additional price		**1 Pole**			**2 Pole**		
		CG 4	A290-621 E	1	CG 4	A291-621 E	1
		CA 10	A290-621 E	1	CA 10	A291-621 E	1
		CH 10	A290-621 E	1	CH 10	A291-621 E	1
		CA20	A290-621 E	1	CA20	A291-621 E	1
		CA25	A290-621 E	1	CA25	A291-621 E	1
		CA40/C26	A290-621 E	1	CA40/C26	A291-621 E	1
		CA50/C32	A290-621 E	1	CA50/C32	A291-621 E	1
		CA63/C42	A290-621 E	1	CA63/C42	A291-621 E	1
		C80	A290-621 E	1	C80	A291-621 E	1
		C125	A290-621 E	1	C125	A291-621 E	1
		C200-4	A290-621 E	1	C200-4	A291-621 E	1
		C315	A290-621 E	1	C315	A291-621 E	1
		3 Pole			**4 Pole**		
		CG 4	A292-621 E	2	CG 4	A324-621 E	2
		CA10	A292-621 E	2	CA10	A324-621 E	2
		CH10	A292-621 E	2	CH10	A324-621 E	2
		CA20	A292-621 E	2	CA20	A324-621 E	2
		CA25	A292-621 E	2	CA25	A324-621 E	2
		CA40/C26	A292-621 E	2	CA40/C26	A324-621 E	2
		CA50/C32	A292-621 E	2	CA50/C32	A324-621 E	2
		CA63/C42	A292-621 E	2	CA63/C42	A324-621 E	2
		C80	A292-621 E	2	C80	A324-621 E	2
		C125	A292-621 E	2	C125	A324-621 E	2
		C200-4	A292-621 E	2	C200-4	A324-621 E	2
		C315	A292-621 E	2	C315	A324-621 E	2
		6 Pole			**8 Pole - 60°**		
		CG 4	A326-621 E	3	CG 4	A344-620 E	4
		CA10	A326-621 E	3	CA10	A344-620 E	4
		CH10	A326-621 E	3	CH10	A344-620 E	4
		CA20	A326-621 E	3	CA20	A344-620 E	4
		CA25	A326-621 E	3	CA25	A344-620 E	4
		CA40/C26	A326-621 E	3	CA40/C26	A344-621 E	4
		CA50/C32	A326-621 E	3	CA50/C32	A344-621 E	4
		CA63/C42	A326-621 E	3	CA63/C42	A344-621 E	4
		C80	A326-621 E	3	C80	A344-620 E	4
		C125	A326-621 E	3	C125	A344-620 E	4
		C200-4	A326-621 E	3	C200-4	A344-620 E	4
		C315	A326-621 E	3	C315	A344-620 E	4
OFF / ON Switches 60° Switching		**1 Pole**			**3 Pole**		
		CG 4	A200-620 E	1	CG 4	A202-620 E	2
		CA 10	A200-620 E	1	CA 10	A202-620 E	2
		CH 10	A200-620 E	1	CH 10	A202-620 E	2
		CA20	A200-620 E	1	CA20	A202-620 E	2
		CA25	A200-620 E	1	CA25	A202-620 E	2
		CA40/C26	A200-620 E	1	CA40/C26	A202-620 E	2
		CA50/C32	A200-620 E	1	CA50/C32	A202-620 E	2
		CA63/C42	A200-620 E	1	CA63/C42	A202-620 E	2
		C80	A200-620 E	1	C80	A202-620 E	2
		C125	A200-620 E	1	C125	A202-620 E	2
		C200-4	A200-620 E	1	C200-4	A202-620 E	2
		C315	A200-620 E	1	C315	A202-620 E	2
		L400	A200-620 E	2	L400	A202-620 E	4

Rotary Cam Switches - Panel Mounting

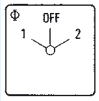
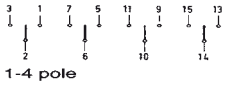
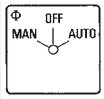
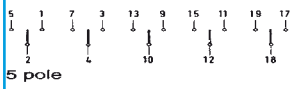
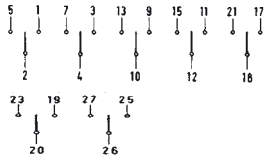
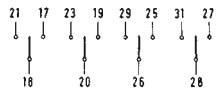


CG4 A210 FS2



CA10 A211 E

Selection Data	IEC 60947-3, EN 60947, VDE 0660			CG 4 CA 4	CG 8 CH 10 CA 10	CA20 CA20B	C26 CA25	CA 40	C32 CA 50
Rated Thermal Current		$I_U = I_{th}$	A	10	20	25	32	40	50
Rated Category	3 x 380 V/440 V	AC-23A	kW	3	7.5	11	15	18.5	22
				C 42 CA 63	C 80	C125	C200-4	C315	L400
Rated Thermal Current		$I_U = I_{th}$	A	63	115	150	200	315	500
Rated Category	3 x 380 V/440 V	AC-23A	kW	30	45	75	75	132	132

Function	Front Plate	Code No.	No of Stages	Code No.	No. of Stages
Changeover Switches with Centre "OFF" 60° Switching		**1 Pole**		**2 Pole**	
1-4 pole 		CG4 A210-620 E	1	CG4 A211-620 E	2
		CA10 A210-620 E	1	CA10 A211-620 E	2
		CH10 A210-620 E	1	CH10 A211-620 E	2
		CA20 A210-620 E	1	CA20 A211-620 E	2
		CA25 A210-620 E	1	CA25 A211-620 E	2
		CA40/C26 A210-620 E	1	CA40/C26 A211-620 E	2
		CA50/C32 A210-620 E	1	CA50/C32 A211-620 E	2
		CA63/C42 A210-620 E	1	CA63/C42 A211-620 E	2
		C80 A210-620 E	1	C80 A211-620 E	2
		C125 A210-620 E	1	C125 A211-620 E	2
		C200-4 A210-620 E	1	C200-4 A211-620 E	2
5 pole 		C315 A210-620 E	1	C315 A211-620 E	2
		3 Pole		**4 Pole(1)**	
6- and 7 pole 		CG4 A212-620 E	3	CG4 A213-620 E	4
		CA10 A212-620 E	3	CA10 A213-620 E	4
		CH10 A212-620 E	3	CH10 A213-620 E	4
		CA20 A212-620 E	3	CA20 A213-620 E	4
		CA25 A212-620 E	3	CA25 A213-620 E	4
		CA40/C26 A212-620 E	3	CA40/C26 A213-620 E	4
		CA50/C32 A212-620 E	3	CA50/C32 A213-620 E	4
		CA63/C42 A212-620 E	3	CA63/C42 A213-620 E	4
		C80 A212-620 E	3	C80 A213-620 E	4
		C125 A212-620 E	3	C125 A213-620 E	4
		C200-4 A212-620 E	3	C200-4 A213-620 E	4
8 pole 		C315 A212-620 E	3	C315 A213-620 E	4
		6 Pole		**8 Pole**	
		CA10 A362-620 E	6	CA10 A364-620 E	8

Gang Switches - Sequence Switching

Function	Code No.	Function	Code No.
OFF / A / A + B 60° Switching	**1 Pole**	**OFF / A / A + B 60° Switching**	**3 Pole**
	CA10 A310-620 E		**CA10 A314-620 E**
OFF /A / A + B 60° Switching	**2 Pole**	**OFF/A/A+B/A+B+C 30° Switching**	**Without Bridges**
	CA10 A312-620 E		**CA10 A311-620 E**

Special Application Switches:-

Ship To Shore Switches, UPS Bypass Switches*, Series Parallel Switches, Special Meters Switches, For further information, contact your nearest KRAUS & NAIMER stockist.

*(see p13)

(1) If Preclosing 4th Pole Required Change A213 To A663

Rotary Cam Switches - Panel Mounting



KG Switch
See P17~ P20

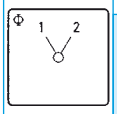


CA10 A220 E

Selection Data	IEC 60947-3, EN 60947, VDE 0660			CG 4 CA 4	CG 8 CH 10 CA 10	CA20 CA20B	C26 CA25	CA 40	C32 CA 50
Rated Thermal Current		$I_U = I_{th}$	A	10	20	25	32	40	50
Rated Category	3 x 380 V/440 V	AC-23A	kW	3	7.5	11	15	18.5	22

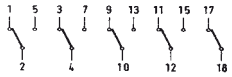
				C 42 CA 63	C 80	C125	C200-4	C315	L400
Rated Thermal Current		$I_U = I_{th}$	A	63	115	150	200	315	500
Rated Category	3 x 380 V/440 V	AC-23A	kW	30	45	75	75	132	132

Changeover Switches without Centre "OFF" 60° Switching





1-4 pole



5 pole

6- and 7 pole



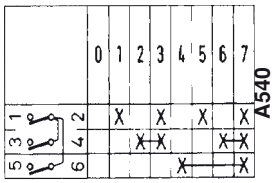


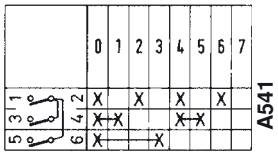
8 Pole

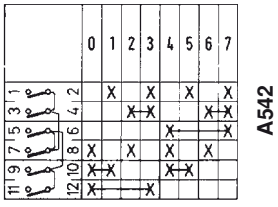
Function	Front Plate	Code No.		No of Stages	Code No.		No. of Stages
		1 Pole			2 Pole		
		CG4	A220-600 E	1	CG4	A221-600 E	2
		CA10	A220-600 E	1	CA10	A221-600 E	2
		CH10	A220-600 E	1	CH10	A221-600 E	2
		CA20	A220-600 E	1	CA20	A221-600 E	2
		CA25	A220-600 E	1	CA25	A221-600 E	2
		CA40/C26	A220-600 E	1	CA40/C26	A221-600 E	2
		CA50/C32	A220-600 E	1	CA50/C32	A221-600 E	2
		CA63/C42	A220-600 E	1	CA63/C42	A221-600 E	2
		C80	A220-600 E	1	C80	A221-600 E	2
		C125	A220-600 E	1	C125	A221-600 E	2
		C200-4	A220-600 E	1	C200-4	A221-600 E	2
		C315	A220-600 E	1	C315	A221-600 E	2
		3 Pole			4 Pole (1)		
		CG4	A222-600 E	3	CG4	A223-600 E	4
		CA10	A222-600 E	3	CA10	A223-600 E	4
		CH10	A222-600 E	3	CH10	A223-600 E	4
		CA20	A222-600 E	3	CA20	A223-600 E	4
		CA25	A222-600 E	3	CA25	A223-600 E	4
		CA40/C26	A222-600 E	3	CA40/C26	A223-600 E	4
		CA50/C32	A222-600 E	3	CA50/C32	A223-600 E	4
		CA63/C42	A222-600 E	3	CA/63C42	A223-600 E	4
		C80	A222-600 E	3	C80	A223-600 E	4
		C125	A222-600 E	3	C125	A223-600 E	4
		C200-4	A222-600 E	3	C200-4	A223-600 E	4
		C315	A222-600 E	3	C315	A223-600 E	4
		6 Pole			8 Pole		
		CA10	A370-600 E	6	CA10	A372-600 E	8

Binary Coded Decimal Switches - from 1 Volt. For PLC and Electronic Applications.

CG4-1 = Gold Plated Contact POA
CAD11 = Gold Wiping H-bridge Contacts
CAD12 = Silver Wiping H-bridge Contacts







Front Plate	Code No.		No of Stages	Code No.		No of Stages
	0-7 Binary			0-11 Binary		
	CAD11	A540-600 E	2	CAD11	A543-600 E	2
	CAD12	A540-600 E	2	CAD12	A543-600 E	2
	0-7 Complement			0-9 Binary		
	CAD11	A541-600 E	2	CAD11	A550-600 E	2
	CAD12	A541-600 E	2	CAD12	A550-600 E	2
	0-7 + Complement			0-9 Complement		
	CAD11	A542-600 E	3	CAD11	A551-600 E	2
	CAD12	A542-600 E	3	CAD12	A551-600 E	2
				Additional positions and combinations available on request.		

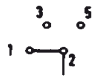
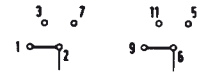
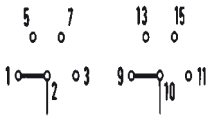
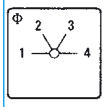
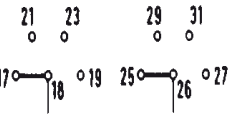
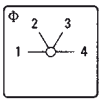
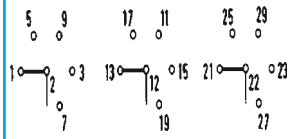
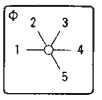
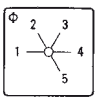
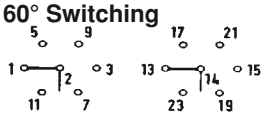
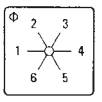
(1) If Preclosing 4th Pole Required Change A223 To A673

Rotary Cam Switches - Panel Mounting



CG4 A230 FS2 CA10 A251 E

Selection Data	IEC 60947-3, EN 60947, VDE 0660			CG 4 CA 4	CG 8 CH 10 CA 10	CA20 CA20B	C26 CA25	CA 40	C32 CA 50
Rated Thermal Current		$I_U = I_{th}$	A	10	20	25	32	40	50
Rated Category	3 x 380 V/440 V	AC-23A	kW	3	7.5	11	15	18.5	22
				C 42 CA 63	C 80	C125	C200-4	C315	L400
Rated Thermal Current		$I_U = I_{th}$	A	63	115	150	200	315	500
Rated Category	3 x 380 V/440 V	AC-23A	kW	30	45	75	75	132	132

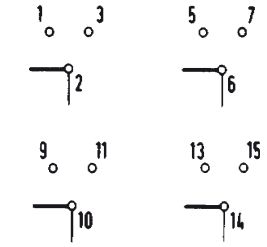
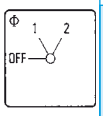
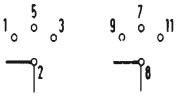
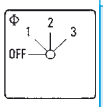
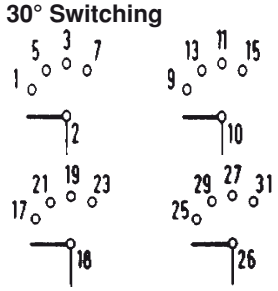
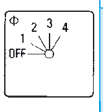
Function	Front Plate	Code No.	List	No. of Stages	Code No.		No. of Stages
3 Step Switches without "OFF" 60° Switching		**1 Pole**			**2 Pole**		
 1 pole		CG 4 A230-600 E		2	CG 4 A250-600 E		3
 2 pole		CA10 A230-600 E		2	CA10 A250-600 E		3
 3 pole		CH10 A230-600 E		2	CH10 A250-600 E		3
1 - 3 Pole		CA20 A230-600 E		2	CA20 A250-600 E		3
Drawing for 4 - 6 Pole on Request		**3 Pole**			**4 Pole**		
		CG 4 A270-600 E		5	CG 4 A476-600 E		6
		CA10 A270-600 E		5	CA10 A476-600 E		6
		CH10 A270-600 E		5	CH10 A476-600 E		6
		CA20 A270-600 E		5	CA20 A476-600 E		6
		5 Pole			**6 Pole**		
		CA10 A484-600 E		8	CA10 A489-600 E		9
4 Step Switches without "OFF" 60° Switching		**1 Pole**			**2 Pole**		
		CG 4 A231-600 E		2	CG 4 A251-600 E		4
		CA10 A231-600 E		2	CA10 A251-600 E		4
		CH10 A231-600 E		2	CH10 A251-600 E		4
		CA20 A231-600 E		2	CA20 A251-600 E		4
		**3 Pole**			**4 Pole**		
1 - 4 Pole		CG 4 A271-600 E		6	CG 4 A477-600 E		8
		CA10 A271-600 E		6	CA10 A477-600 E		8
		CH10 A271-600 E		6	CH10 A477-600 E		8
		CA20 A271-600 E		6	CA20 A477-600 E		8
5 Step Switches without "OFF" 60° Switching		**1 Pole**			**2 Pole**		
		CG 4 A232-600 E-V		3	CG 4 A252-600 E		5
		CA10 A232-600 E		3	CA10 A252-600 E		5
		CH10 A232-600 E		3	CH10 A252-600 E		5
		CA20 A232-600 E		3	CA20 A252-600 E		5
		3 Pole					
1 - 3 Pole		CG 4 A272-600 E		8	Refer to catalogue or enquire for details on additional 'standard' switches.		
		CA10 A272-600 E		8			
		CH10 A272-600 E		8			
		CA20 A272-600 E		8			
6 Step Switches without "OFF" 60° Switching		**1 Pole**			**2 Pole**		
 1 - 2 pole		CG 4 A233-600 E		3	CG 4 A253-600 E		6
		CA10 A233-600 E		3	CA10 A253-600 E		6
		CH10 A233-600 E		3	CH10 A253-600 E		6
		CA20 A233-600 E		3	CA20 A253-600 E		6

Rotary Cam Switches - Panel Mounting



CG4 A240 FS2 CA10 A280 E

Selection Data	IEC 60947-3, EN 60947, VDE 0660			CG 4 CA 4	CG 8 CH 10 CA 10	CA20 CA20B	C26 CA25	CA 40	C32 CA 50
Rated Thermal Current		$I_U = I_{th}$	A	10	20	25	32	40	50
Rated Category	3 x 380 V/440 V	AC-23A	kW	3	7.5	11	15	18.5	22
				C 42 CA 63	C 80	C125	C200-4	C315	L400
Rated Thermal Current		$I_U = I_{th}$	A	63	115	150	200	315	500
Rated Category	3 x 380 V/440 V	AC-23A	kW	30	45	75	75	132	132

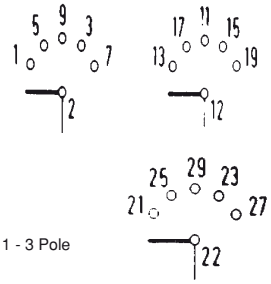
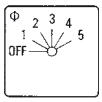
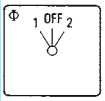
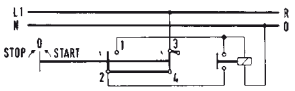
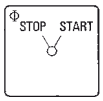
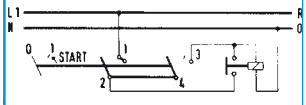
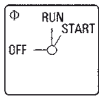
Function	Front Plate	Code No.	No. of Stages	Code No.	No. of Stages
6 Step Switches cont. 3 Pole		**3 Pole** CA10 A273-600 E CH10 A273-600 E CA20 A273-600 E	 9 9 9	Refer to catalogue or enquire for details on additional 'standard' switches.	
2 Step Switches with "OFF" 60° Switching  1 - 4 Pole		**1 Pole** CG 4 A240-620 E CA10 A240-620 E CH10 A240-620 E CA20 A240-620 E **3 Pole** CG 4 A280-620 E CA10 A280-620 E CH10 A280-620 E CA20 A280-620 E	 1 1 1 1 3 3 3 3	**2 Pole** CG 4 A260-620 E CA10 A260-620 E CH10 A260-620 E CA20 A260-620 E **4 Pole** CG 4 A480-620 E CA10 A480-620 E CH10 A480-620 E CA20 A480-620 E	 2 2 2 2 4 4 4 4
3 Step Switches with "OFF" 45° Switching  1- and 2 pole  1 - 3 Pole 4 Pole Drawing on Request		**1 Pole** CG 4 A241-620 E CA10 A241-620 E CH10 A241-620 E CA20 A241-620 E **3 Pole** CG 4 A281-620 E CA10 A281-620 E CH10 A281-620 E CA20 A281-620 E	 2 2 2 2 5 5 5 5	**2 Pole** CG 4 A261-620 E CA10 A261-620 E CH10 A261-620 E CA20 A261-620 E **4 Pole** CG 4 A481-620 E CA10 A481-620 E CH10 A481-620 E CA20 A481-620 E	 3 3 3 3 6 6 6 6
4 Step Switches with "OFF" 30° Switching  1 - 4 Pole		**1 Pole** CG 4 A242-620 E CA10 A242-620 E CH10 A242-620 E CA20 A242-620 E **3 Pole** CG 4 A282-620 E CA10 A282-620 E CH10 A282-620 E CA20 A282-620 E	 2 2 2 2 6 6 6 6	**2 Pole** CG 4 A262-620 E CA10 A262-620 E CH10 A262-620 E CA20 A262-620 E 4 Pole drawing on request **4 Pole** CG 4 A482-620 E CA10 A482-620 E CH10 A482-620 E CA20 A482-620 E	 4 4 4 4 8 8 8 8
		This catalogue lists some of the many common 'Standard Switches' available. For additional selection refer to catalogue 100 or enquire.			

Rotary Cam Switches - Panel Mounting



CG4 A244 FS2 CA10 A263 E-V

Selection Data	IEC 60947-3, EN 60947, VDE 0660			CG 4 CA 4	CG 8 CH 10 CA 10	CA20 CA20B	C26 CA25	CA 40	C32 CA 50
Rated Thermal Current		$I_U = I_{th}$	A	10	20	25	32	40	50
Rated Category	3 x 380 V/440 V	AC-23A	kW	3	7.5	11	15	18.5	22
				C 42 CA 63	C 80	C125	C200-4	C315	L400
Rated Thermal Current		$I_U = I_{th}$	A	63	115	150	200	315	500
Rated Category	3 x 380 V/440 V	AC-23A	kW	30	45	75	75	132	132

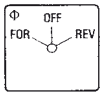
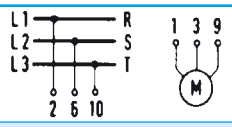
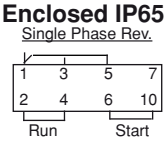
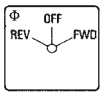
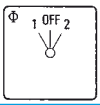
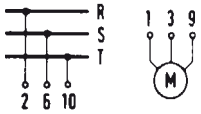
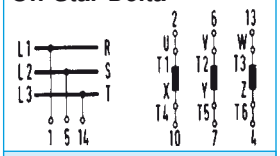
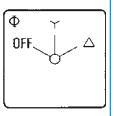
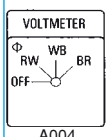
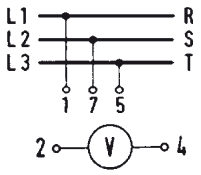
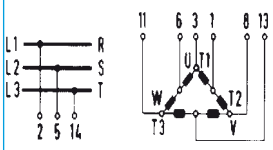
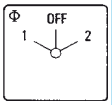
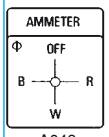
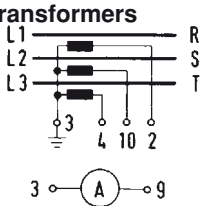
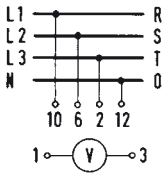
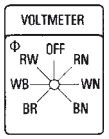
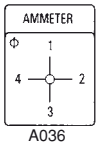
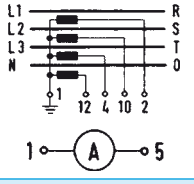
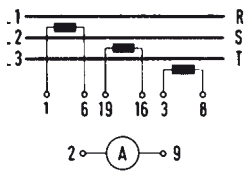
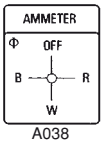
Function	Front Plate	Code No.	No. of Stages	Code No.	No. of Stages
5 Step Switches with "OFF" 30° Switching  1 - 3 Pole		**1 Pole** CG 4 A243-620 E CA10 A243-620 E CH10 A243-620 E CA20 A243-620 E **3 Pole** CG 4 A283-620 E CA10 A283-620 E CH10 A283-620 E CA20 A283-620 E	3 3 3 3 8 8 8 8	**2 Pole** CG 4 A263-620 E CA10 A263-620 E CH10 A263-620 E CA20 A263-620 E Refer to catalogue or enquire for details on additional 'standard' switches.	5 5 5 5
6 Step Switches with "OFF" 30° Switching  1 - 3 Pole		**1 Pole** CG 4 A244-620 E CA10 A244-620 E CH10 A244-620 E CA20 A244-620 E **3 Pole** CA10 A284-620 E CH10 A284-620 E CA20 A284-620 E	3 3 3 3 9 9 9	**2 Pole** CG 4 A264-620 E CA10 A264-620 E CH10 A264-620 E CA20 A264-620 E Refer to catalogue or enquire for details on additional 'standard' switches.	6 6 6 6
Double Throw Spring Return to "OFF" 30° Switching  1 - 3 Pole		**1 Pole** CA10 A214-620 E CH10 A214-620 E **3 Pole** CA10 A216-620 E CH10 A216-620 E	1 1 3 3	**2 Pole** CA10 A215-620 E CH10 A215-620 E Refer to catalogue or enquire for details on additional 'standard' switches.	2 2
Stop Start Switch 30° Switching 		**1 Pole** CA10 A176-600 E CH10 A176-600 E	1 1	**2 Pole** CA10 A183-600 E CH10 A183-600 E	2 2
Stop Start Switch Spring return to "RUN" 		**1 Pole** CA10 A178-620 E CH10 A178-620 E	1 1	Refer to catalogue or enquire for details on additional 'standard' switches.	

Rotary Cam Switches - Panel Mounting



CA10 AU9Y96-600FT2

Selection Data	IEC 60947-3, EN 60947, VDE 0660			CG 4 CA 4	CG 8 CH 10 CA 10	CA20 CA20B	C26 CA25	CA 40	C32 CA 50
Rated Thermal Current		$I_U = I_{th}$	A	10	20	25	32	40	50
Rated Category	3 x 380 V/440 V	AC-23A	kW	3	7.5	11	15	18.5	22
				C 42 CA 63	**C 80**	**C125**	**C200-4**	**C315**	**L400**
Rated Thermal Current		$I_U = I_{th}$	A	63	115	150	200	315	500
Rated Category	3 x 380 V/440 V	AC-23A	kW	30	45	75	75	132	132

Function	Front Plate	Code No.		No. of Stages	Code No.		No. of Stages
Motor Reversing 3 Phase 60° Switching					**Single or Three phase 90° Enclosed IP65** 		
		CA10 A401-620 E		3			
		CA40/C26 A401-620 E		3			
Split Phase							
		CA10 A622-600 E		3	**CA10C2Y096*PFAUS0001**		3
		CA20B A622-600 E		3	**CA10 AU9Y96600FT20002**		3
Motor Reversing 3 Phase Spring Return					**Off-Star-Delta** 		
		CA10 A228-600 E		3	**CA10 A410-620 E**		4
		CA40/C26 A228-600 E		3	**CA40/C26 A410-620 E**		4
Meter/Motor Switches	 A004	**3 Phase - 3 Wire** 			**Tap wound Motor** 	(2 Speed) 	
		CA10 A004-625 E		2	**CA20 A441-620 E**		4
		CH10 A004-625 E		2	**CH10 A441-620 E**		4
Meter Switches	 A048	**1 Pole - 3 Current Transformers** 			**3 Ph - Ph / 3 Ph - N** 	 A007	
		CA10 A058/AUN0180 E		3	**CA10 A007/AU2122 E**		3
		CH10 A058/AUN0180 E		3	**CA10 A007/AU30001 E**		3
	 A036	**1 Pole - 4 Current Transformers** 			**2 Pole - 3 Current Transformers** (Can be used for direct reading) 	 A038	
		CA10 A036-620 E		4	**CA10 A038-622 E**		5
		CH10 A036-620 E		4	**CA40/C26 A038-622 E**		5

UPS – Maintenance Bypass Switches

Maintenance Bypass Switches

Kraus & Naimer Maintenance Bypass Switches are an accepted industrial standard wherever emergency power equipment is installed and maintained.
The Maintenance Bypass Switch can be utilized as a simple method of isolating a UPS without interrupting the power source. This allows servicing of the UPS with complete safety to maintenance personel. A wide range of models has been established, while a broad selection of designer specified options is available on request.

Options Include

Maintenance Bypass Switches are available as - Switch only, Enclosed or Enclosed wired to terminals.

1. Key interlock (V760) with auxiliaries for signal confirmation on locking/unlocking or to shut down the inverter of a UPS prior to switching to the bypass position.
2. Push button interlock with auxiliaries (V400). Switching only possible if push button is depressed, simultaneously closing or opening auxiliaries for signal confirmation to the UPS.
3. A solenoid interlock device (V140) that prevents the operation of the switch except under predetermined electrical conditions.
4. Automatic changeover switches also available.

Current rating to AC22A – 240v	amps	max. cable size	KVA ratings to AC22A – 240v	KVA
CA10B	16	2.5mm	CA10B	3.68
C26	32	6mm	C26	7.3
C42	63	16mm	C42	14
Current rating to AC22A – 415V	**amps**	**max. cable size**	**KVA ratings to AC22A – 415v**	**KVA**
CA10B	16	2.5mm	CA10B	11.5
C26	32	6mm	C26	23
C42	63	16mm	C42	45
C80	100	35mm	C80	72
C125	150	70mm	C125	107
C200-4	200	M8 95mm	C200-4	143
C315	315	M12 185mm	C315	225



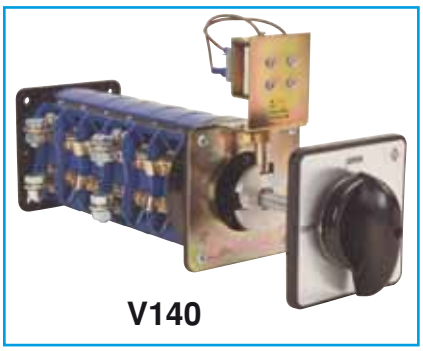
V400



V760



Enclosed & Wired to Terminals



V140

Be smart look for them NOW, at your nearest Wholesaler.

Get smart with Smart Switch

The complete switch solution- First time everytime.

IP 65 PROTECTION **22.5mm** MOUNTING control switches suitable for all applications.

SMART SWITCH STOCK LIST

Product	Description	Barcode	Trade Price
KN11	Smart Body - On Off 1 Pole	9004257083664	
KN12	Smart Body - On Off 2 Pole	9004257083671	
KN13	Smart Body - On Off 3 Pole	9004257083688	
KN14	Smart Key - For KN11, KN12,KN13	9004257083572	
KN15	Smart Padlock Yellow - For KN11, KN12,KN13	9004257083596	
KN25	Smart Padlock Black - For KN11, KN12,KN13	9004257091942	
KN27	Smart Main Switch - 32A 3 Pole	9004257092680	
KN16	Smart Body - Auto Off Man 1 Pole	9004257083626	
KN17	Smart Body - Auto Off Man 3 Pole	9004257083633	
KN18	Smart Key - For KN16, KN17	9004257083589	
KN19	Smart Body - C/O w/out Off 1 Pole	9004257083640	
KN20	Smart Body - C/O w/out Off 3 Pole	9004257083657	
KN21	Smart Key - For KN19, KN20	9004257083701	
KN26	Smart Reverser - 1 & 3 Phase	9004257091959	
KN31	Smart Contactor - 20A AC1, 4kW AC3	9004257092703	
KN22	Smart Handle - Bezel Only	9004257083602	
KN23	Smart Handle - With Frame & Plate	9004257083619	
KN24	Smart Box - IP65 Enclosure	9004257091966	
KN28	Smart Header Plate - For KN22	9004257092710	
KN29	Smart Header Plate - For KN23	9004257092727	
KN30	Smart DIN Mount	9004257092697	

FOR PRICING REFER TO YOUR NEAREST WHOLESALER

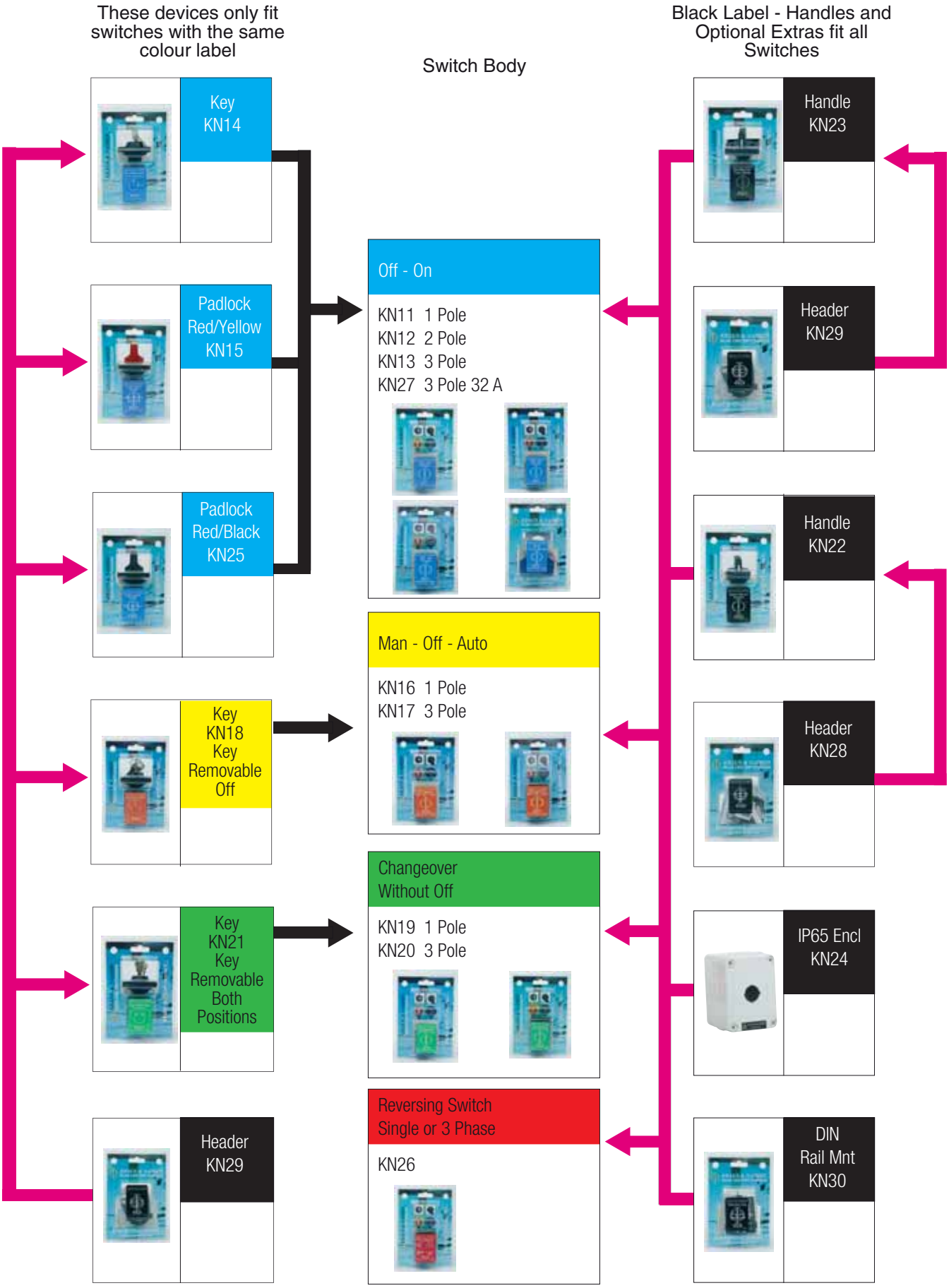
Simply select a contact body and match it to the operator of your choice.



Make perfect contact...

Smart Switch

Match the label colours (blue to blue, yellow to yellow) to ensure the switch body and handle, key or padlock device are compatible.

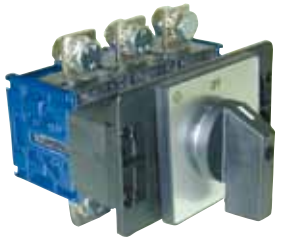












Frame Size	Type	IEC 60947-3/VDE 0660, part 107 Rated Values Cable Size mm²	Thermal Current I_u/I_{th} A	Operational Current AC-21A A	Utilization AC-23A 3 x 380 V - 440 V kW	Category AC-3 kW
S0/S1	KG10/KG10B	2.5	20	20	5.5	3.7
S00/S1	KG20/KG20B	6	25	25	7,5	5,5
S0/S1	KG32A/KG32B	6	32	32	11	7,5
S0/S1	KG41/KG41B	16	40	40	15	11
S0/S1	KG64/KG64B	16	63	63	22	18,5
S1	KG80	50	80	80	30	22
S1	KG100	50	100	100	37	30
S1	KG105	50	125	125	45	37
S2	KG125 (Tunnel)	95 M10 Both	125	125	45	37
S2	KG126 (Lugs)					
S2	KG127 (Both)					
S2	KG160 (Tunnel)	95 M10 Both	160	160	55	45
S2	KG161 (Lugs)					
S2	KG162 (Both)					
S2	KG210 (Tunnel)	185 M12 Both	200	200	75	55
S2	KG211 (LUG)					
S2	KG212 (BOTH)					
S2	KG250 (Tunnel)	185 M12 Both	250	250	90	55
S2	KG251 (Lugs)					
S2	KG252 (Both)					
S2	KG315 (Tunnel)	185 M12 Both	315	315	110	75
S2	KG316 (Lugs)					
S2	KG317 (Both)					

FOR HIGHER CURRENT RATINGS

Please contact your nearest KRAUS & NAIMER **stockist.**

IEC 60947-3 SWITCHES - DISCONNECTORS - SWITCH DISCONNECTORS

IEC 60947 is a safety and performance standard for low voltage switchgear (up to 1000V) which has universally replaced IEC 408 and combined specific requirements of many individual national standards. IEC 60947 is a uniform standard for most countries around the world and establishes a truely global marketplace. IEC 60947-3 is a section of the standard specific to switches. Importantly, it recognises that devices for the switching function and isolating function require very different performance criteria. Switching requires high performance of current carrying parts to make and break loads under normal and overload conditions, ie., motor reversing applications. Isolation requires high insulation, sufficient spacing of current carrying parts and mechanical integrity that the handle corresponds to actual contact position for the safety of maintenance personnel.

Practicality of real life applications calls for three definitions within IEC 60947-3; Switches, Disconnectors and Switch Disconnectors. A switch does not have to satisfy the isolation and mechanical strength tests, and a disconnector likewise the load tests. A Switch Disconnector must satisfy all tests and is suitable for safety switch applications. A switch disconnector must have a direct drive late make early break auxillary contact in series with a load breaking device to be suitable as a safety switch.

Kraus & Naimer have developed complete products which satisfy all IEC 60947 criteria, some of which are listed overleaf. For further information, please contact our offices.

KG Main Switches - Padlockable Panel Mount, Enclosed Plastic or Stainless Steel

Selection Data
IEC 60947, EN 60947, VDE 0660
IEC 204, EN 60204, VDE 0113

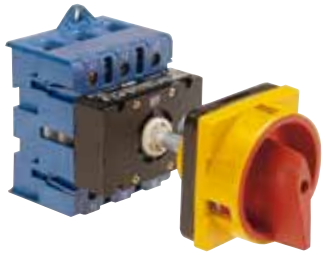
			Switch Type												
			KG10	KG20	KG32	KG41	KG64				KG125	KG160	KG210	KG250	KG315
											KG126	KG161	KG211	KG251	KG316
			KG10B	KG20B	KG32B	KG41B	KG64B	KG80	KG100	KG105	KG127	KG162	KG212	KG252	KG317
Nominal Voltage	U_i	V	690	690	690	690	690	690	690	690	1000(2)	1000(2)	1000(2)	1000(2)	1000(2)
Thermal Current	I_U / I_{th}	A	20	25	32	40	63	80	100	125	125	160	200	250	315
Enclosed Thermal Current	I_{the}	A	20	25	32	40	50	63	80	100	100	140	200	250	315
Operational Current AC21A	I_e	A	20	25	32	40	63	80	100	125	125	160	200	250	315
Utilisation Category 3 x 380V / 440V AC-23A/B		kW	5,5	7,5	11	15	22	30	37	45	45	55	75	90	110

Product	Code No.			Code No.	
Panel Mount IP65 Red / Yellow Padlock Handle - V840G/D	**Panel Mount - Lockable** **3 Pole** (ESC. OFF-ON) V840G/D			**Enclosed - Plastic** **3 Pole** + 1 N/O 1 N/C Aux.	
	KG10B K300*AU2100 E KG20B K300*AU2100 E KG32B K300*AU2100 E KG41B K300*AU2100 E KG64B K300*AU2100 E KG80 K300*AU2100 E KG100 K300*AU2100 E KG105 K300*AU2100 E KG126 K300*AU2100 E KG161 K300*AU2100 E KG211 K300*AU2100 E KG251 K300*AU2100 E KG316 K300*AU2100 E			KG20A T203/AU1902 PFE1 KG32A T203/AU1902 PFE1 KG41 K302-PFE1 AUS0001 KG41 K302*AU0162*KL12 KG64 K302-PFE1 AUS0001 KG64 K302*AU0162*KL12 KG80 K302*AU0163*KL12 KG100 K302*AU0163*KL12 KG126 K302*AU0760*6FE KG161 K302*AU0760*6FE KG211 K302*AU0171*6FE KG251 K302*AU0171*6FE KG316 K302*AU0171*6FE	
Plastic Enclosure IP65 Red / Yellow Padlock Handle - V845	**Panel Mount - Lockable** **3 Pole** + 1 N/O 1 N/C Aux. V840G/D			**Enclosed - Plastic** (larger enclosure) **3 Pole** + 1 N/O 1 N/C Aux.	
	KG10B K302*AU2100 E KG20B K302*AU2100 E KG32B K302*AU2100 E KG41B K302*AU2100 E KG64B K302*AU2100 E KG80 K302*AU2100 E KG100 K302*AU2100 E KG105 K302*AU2100 E KG126 K302*AU2100 E KG161 K302*AU2100 E KG211 K302*AU2100 E KG251 K302*AU2100 E KG316 K302*AU2100 E			KG20B K302*AU0160*KL12 KG32B K302*AU0160*KL12 KG41B K302*AU0152*KL12 KG64B K302*AU0152*KL12 KG80 K302*AU0153*6FE KG100 K302*AU0153*6FE KG126 K302*AU0761*6FE KG161 K302*AU0761*6FE KG211 K302*AU0172*6AE$_{metal}$ KG251 K302*AU0172*6AE$_{metal}$ KG316 K302*AU0171*6AE$_{metal}$	
	Panel Mount - Lockable **4 Pole** ESC. (OFF-ON) V840G/D		(1)	**Enclosed - Plastic (1-0-2)** **3 Pole C/O with centre OFF**	
	KG10B K400*AU2100 E KG20B K400*AU2100 E KG32B K400*AU2100 E KG41B K400*AU2100 E KG64B K400*AU2100 E KG80 K400*AU2100 E KG100 K400*AU2100 E KG105 K400*AU2100 E KG126 K400*AU2100 E KG161 K400*AU2100 E KG211 K400*AU2100 E KG251 K400*AU2100 E KG316 K400*AU2100 E			KG20B K900*AU0157*KL12 KG32B K900*AU0157*KL12 KG41B K900*AU0158*KL12 KG64B K900*AU0158*KL12 KG80 K900*AU0159*6FE KG100 K900*AU0159*6FE	
				Enclosed - Stainless Steel **3 pole** + 1 N/O 1 N/C Aux. (Hinged Lid)	
				KG41B K302*AU1150*6SH1 KG64B K302*AU1150*6SH1 KG80 K302*AU1148*6SH1 KG100 K302*AU1148*6SH1 KG125 K302*AU1145*6SH2 KG161 K302*AU1145*6SH2 KG211 K302*AU1151*6SH3 KG251 K302*AU1151*6SH3 KG316 K302*AU1151*6SH3	
Stainless Steel Enclosure IP65 	**Enclosed - Stainless Steel** **3 pole** + 1 N/O 1 N/C Aux. screwed lid			**Stainless Steel Enclosures. . .** Marine Grade 316 IP65 N/O contact late make early break. Finish:- Bead Blast or Food Industry.(**FI**) Available on request:- Intergrated Rain Hood. Hinged Door. Mounting Flanges Stainless Steel Padlock Device	
	KG20A K302*AUN0478*6SS0 KG32A K302*AUN0478*6SS0 KG41B K302*AUN0479*6SS1 KG64B K302*AUN0479*6SS1 KG80 K302*AUN0479*6SS1 KG100 K302*AUN0479*6SS1 KG125 K302*AUN0480*6SS2 KG161 K302*AUN0480*6SS2				
	Variations on request:- Stop/Start Pushbuttons. Control & Changeover Switches. Selection of auxiallary contacts.				

(1) 4 Pole changeover enclosed. Refer page 20.
For Panel and Base mount 4 Pole changeover Refer to page 20.
(2) Suitable for no load switching (AC-20A) above 690v.

KG Main Switches - Base Mounted Padlockable with Extension Shafts

Selection Data **IEC 60947-3, EN 60947, VDE 0660** **IEC 204, EN 60204, VDE 0113**			**Switch Type** **KG10** **KG10B**	**KG20** **KG20B**	**KG32** **KG32B**	**KG41** **KG41B**	**KG64** **KG64B**	**KG80**	**KG100**	**KG105**	**KG125** **KG126** **KG127**	**KG160** **KG161** **KG162**	**KG210** **KG211** **KG212**	**KG250** **KG251** **KG252**	**KG315** **KG316** **KG317**
Nominal Voltage	U_i	**V**	690	690	690	690	690	690	690	690	1000[1]	1000[1]	1000[1]	1000[1]	1000[1]
Thermal Current	I_U / I_{th}	**A**	20	25	32	40	63	80	100	125	125	160	200	250	315
Enclosed Thermal Current	I_{the}	**A**	20	25	32	40	50	63	80	100	100	140	200	250	315
Operational Current AC21A	I_e	**A**	20	25	32	40	63	80	100	125	125	160	200	250	315
Utilisation Category 3 x 380V / 440V AC-23A/B		**kW**	5,5	7,5	11	15	22	30	37	45	45	55	75	90	110

Product	**Code No.**			**Code No.**		
Base / DIN Mount. (KG10B ~ KG100) Base mounted c/w Door clutch (M280E) Padlock Device (V840G/D) 	Door Clutch **M280E/EF** P'lockable Handle **V840G/D** Esc. plate **OFF - ON** **3 Pole**			Door Clutch **M280E/EF** P'lockable Handle **V840G/D** Esc. plate **OFF - ON** **3 Pole** + 1N/O 1 N/C aux. (N/O aux. early break)		
	KG10B K300*AUN0481 VE **KG20B K300*AUN0481 VE** **KG32B K300*AUN0481 VE** **KG41B K300*AUN0481 VE** **KG64B K300*AUN0481 VE** **KG80 K300*AUN0481 VE** **KG100 K300*AUN0481 VE** **KG105 K300*AUN0481 VE** **KG126 K300*AUN0481 VE** **KG161 K300*AUN0481 VE** **KG211 K300*AUN0481 VE** **KG251 K300*AUN0481 VE** **KG316 K300*AUN0481 VE**			**KG10B K302*AUN0483VE** **KG20B K302*AUN0483VE** **KG32B K302*AUN0483VE** **KG41B K302*AUN0483VE** **KG64B K302*AUN0483VE** **KG80 K302*AUN0483 VE** **KG100 K302*AUN0483 VE** **KG105 K302*AUN0483 VE** **KG126 K302*AUN0483 VE** **KG161 K302*AUN0483 VE** **KG211 K302*AUN0483 VE** **KG251 K302*AUN0483 VE** **KG316 K302*AUN0483 VE**		
Base Mounted with Door Clutch M280E & V845 	Door Clutch **M280E/EF** P'lockable Handle **V845** Esc. plate **OFF - ON** **3 Pole** (without aux's)			Door Clutch **M280E/EF** P'lockable Handle **V840G/D** Esc. plate **OFF - ON** **4 Pole**		
	KG10B K300*AUN0482 VE **KG20B K300*AUN0482 VE** **KG32B K300*AUN0482 VE** **KG41B K300*AUN0482 VE** **KG64B K300*AUN0482 VE** **KG80 K300*AUN0482 VE** **KG100 K300*AUN0482 VE** **KG105 K300*AUN0482 VE** **KG126 K300*AUN0482 VE** **KG161 K300*AUN0482 VE** **KG211 K300*AUN0482 VE** **KG251 K300*AUN0482 VE** **KG316 K300*AUN0482 VE**			**KG10B K400*AUN0481VE** **KG20B K400*AUN0481VE** **KG32B K400*AUN0481VE** **KG41B K400*AUN0481VE** **KG64B K400*AUN0481VE** **KG80 K400*AUN0481VE** **KG100 K400*AUN0481VE** **KG105 K400*AUN0481VE** **KG126 K400*AUN0481VE** **KG161 K400*AUN0481VE** **KG211 K400*AUN0481VE** **KG251 K400*AUN0481VE** **KG316 K400*AUN0481VE**		
6 Pole Isolator 	**6 Pole Isolator** **Panel Mounted** **Escutcheon plate OFF-ON**			**3 Pole Change Over** **Panel Mounted with OFF** **Escutcheon 1/0FF/2**		
	KG20B K600*AU2103 E **KG32B K600*AU2103 E** **KG41B K600*AU2103 E** **KG64B K600*AU2103 E** **KG80 K600*AU2103 E** **KG100 K600*AU2103 E** **KG126 K600*AU2103 E** **KG161 K600*AU2103 E**			**KG20B K900-620 E** **KG32B K900-620 E** **KG41B K900-620 E** **KG64B K900-620 E** **KG80 K900-620 E** **KG100 K900-620 E** **KG126 K900-620 E** **KG161 K900-620 E**		
Aux. Contacts fitted on request 8 Pole Isolators and 4 Pole c/o also available	TERMINATION: KG10 ~ KG125, KG160, KG210 KG250 & KG315 Tunnel. KG126, KG161, KG211, KG251 & KG316 Lugs. KG127, KG162, KG212, KG252 & KG317 Tunnel & Lugs.					

(1) Suitable for no load switching (AC-20A) above 690v.

Application Guide AS/NZS 947-3 3F Lockout Isolators

Get a Handle on Safety with your Eyes Closed

Product Features

M700 Door Interlock

- Padlockable in 'OFF' only - safety requirement according to AS/NZS 947-3
- In 'ON' the door interlock is engaged - the cabinet cannot be opened
- In 'ON' the door interlock can be defeated by using a tool - authorised entry only
- The door interlock re-engages when the door is closed after authorised defeat in 'ON'
- In 'OFF' and padlocked, the door interlock defeat is disabled - no access
- When the door is opened the handle position is locked - assured alignment
- Mechanical Position Indicator on the switch module - visible when the door is open
- Internal Padlock Device on switch module
- Robust, keyed, floating head on switch shaft

KG Switch Disconnectors

- 13/14mm contact gap. 690v - 1000v insulation
- High AC3 and AC23 ratings
- Large, finger proof IP20 box type terminals
- Double break forced opening safety rated auxiliary contacts. Silver or Gold 1 to 6 N/O - N/C
- Positive drive make and break main contacts. 3 to 8 poles OFF ON, 3 or 4 pole C/O
- IEC 947-3 3F disconnector handle. Isolation is assured 'OFF' is 'OFF'

General Features

- Custom colours and engraving for escutcheon plates and header labels
- Scratch-proof reverse engraving
- IP65 dust and water protection
- Robust, double insulated handle
- Asymmetric shaft and interlock profiles ensure the handle position matches the switch position
- Fixed length shaft ensures shaft must engage with the handle

Telephone now for a demonstration

IEC 947-1

Equipment Suitable For Isolation - The Following Clauses Apply

Clause 7.1.6 Additional constructional requirements for equipment suitable for isolation

Clause 7.1.6.1 Additional constructional requirements

Equipment suitable for isolation shall provide, in the open position (see 2.4.21) an isolation distance in accordance with the requirements necessary to satisfy the isolation function (see 7.2.3.1 and 7.2.2) (dielectric test)

Indication of the position of the mains contacts shall be provided by one or more of the following means:

(1) The position of the actuator
(2) A separate mechanical indicator
(3) Visibility of the moving contacts

The effectiveness of each of the means of indication provided on the equipment and its mechanical strength shall be verified in accordance with clause 8.2.5

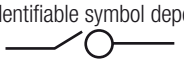
Clause 8.2.5 *Verification of the effectiveness of indication of the main contact position of equipment suitable for isolation*

To verify the effectiveness of the indication of the main contact position, all means of indication of contact position shall continue to function correctly after the operational performance type tests, and special durability type tests (if performed).

Switch Classifications

All low voltage switches installed in Australia and New Zealand shall meet AS/NZS 60947 and carry the appropriate easily identifiable symbol depending on the switch classification.

Switch



A mechanical switching device capable of making and breaking currents under normal conditions, which may include specified overload conditions according to the duty, and abnormal circuit conditions such as short-cicuit. (motor reversing switches, control switches, start delta switches, etc)

Disconnector



A mechanical switching device which in the open position, complies with the requirements specified for the isolating function (Off load isolator)

Switch Disconnector



A 'Switch' which in the open position, complies with the requirements specified for the isolating function (On load isolator)











Mains Off Generator Switches Base Mount & Enclosed

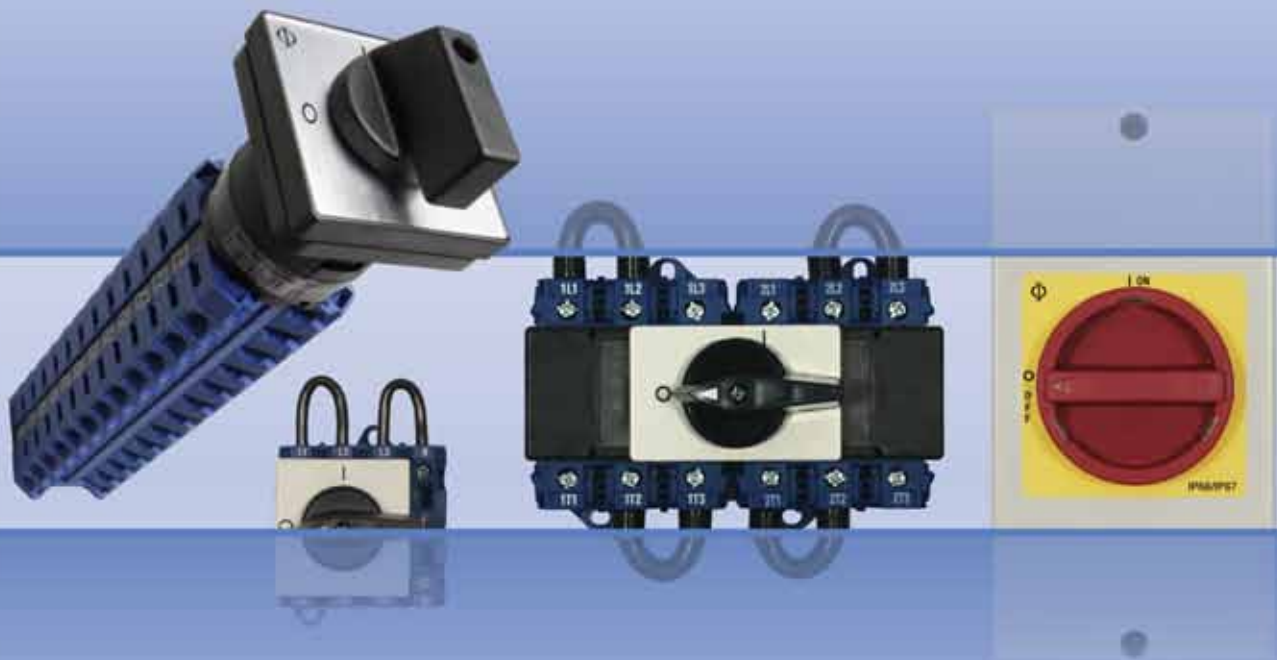
KG switch technical information refer to top of Page 20

Product	Base Mount Code No.		Base Mount Code No.	
 **VE2-Mounting**	**2 Pole Changeover** **Din Rail Mtg - MCB cut out** **Eng: Mains Off Gen**		**3 Pole changeover** **with M280E door clutch** **Eng: Mains Off Gen**	
	KH32 T902*NZ0001 VE2 KH40 T902*NZ0001 VE2 KH63 T902*NZ0001 VE2 KH80 T902*NZ0001 VE2		KG20B K900*AUN0123 VE KG32B K900*AUN0123 VE KG41B K900*AUN0123 VE KG64B K900*AUN0123 VE KG 80 K900*AUN0123 VE KG100 K900*AUN0123 VE KG126 K900*AUN0124 VE KG161 K900*AUN0124 VE	
	3 Pole Changeover **Din Rail Mtg - MCB cut out** **Eng: Mains Off Gen**			
 **VE-Mounting**	KG32A T903*NZ0001 VE2 KG41B T903*NZ0001 VE2 KG64B T903*NZ0001 VE2 KG80 T903*NZ0001 VE2 KG100 T903*NZ0001 VE2		**4 Pole Changeover** **with M280E door clutch** **Eng: Mains Off Gen**	
	4 Pole Changeover **Din Rail Mtg - MCB cut out** **Eng: Mains Off Gen**		KG20B K950*AUN0125 VE KG32B K950*AUN0125 VE KG41B K950*AUN0125 VE KG64B K950*AUN0125 VE KG 80 K950*AUN0125 VE KG100 K950*AUN0125 VE KG126 K950*AUN0126 VE KG161 K950*AUN0126 VE 6KF252 K950*AUN0130 VE(250A) 6KF402 K950*AUN0130 VE(400A)	
 **64CC6**	KG32A T904*AUN0127 VE2 KG41B T904*AUN0127 VE2 KG64B T904*AUN0127 VE2 KG 80 T904*AUN0127 VE2 KG100 T904*AUN0127 VE2		**Enclosure for Domestic / Commercial Installations**	
	Enclosed Code No.		Suitable for VE2 2 & 3 Pole Changeover To 63 Amp **IP40**	64CC6
	3 Pole Changeover **Enclosed - Plastic IP65** **Eng: Mains Off Gen**		Suitable for VE2 2 Pole Changeover To 40Amp **IP65**	6FKV
 **6FKV**	KG20B K900*AUN0115*KL12 KG32B K900*AUN0115*KL12 KG41B K900*AUN0116*KL12 KG64B K900*AUN0116*KL12 KG 80 K900*AUN0117*6FE KG100 K900*AUN0117*6FE KG126 K900*AUN0118*6FE KG161 K900*AUN0118*6FE		**Enclosure & cable size**	
	4 Pole Changeover **Enclosed - Plastic IP65** **Eng: Mains Off Gen**		**For 3 Pole changeover** KG20B - 190 x 100 x 90 - 6mm KG32B - 190 x 100 x 90 - 6mm KG41B - 250 x 145 x 100 - 16mm KG64B - 250 x 145 x 100 - 16mm KG 80 - 280 x 190 x 130 - 35mm KG100 - 280 x 190 x 130 - 35mm KG126 - 560 x 380 x 180 - M10 (Lugs) - 95mm KG161 - 560 x 380 x 180 - M10 (Lugs) - 95mm	
 **Enclosed- Plastic**	KG20B K950*AUN0119*6FE KG32B K950*AUN0119*6FE KG41B K950*AUN0120*6FE KG64B K950*AUN0120*6FE KG 80 K950*AUN0121*6FE KG100 K950*AUN0121*6FE KG126 K950*AUN0122*6FE KG161 K950*AUN0122*6FE 6KF252 K950*AUN0128*6AE(250A) 6KF402 K950*AUN0129*6IP (400A)		**For 4 Pole changeover** KG20B - 190 x 190 x 130 - 6mm KG32B - 190 x 190 x 130 - 6mm KG41B - 280 x 190 x 130 - 16mm KG64B - 280 x 190 x 130 - 16mm KG 80 - 380 x 280 x 130 - 35mm KG100 - 380 x 280 x 130 - 35mm KG126 - 560 x 380 x 180 - M10 (Lugs) - 95mm KG161 - 560 x 380 x 180 - M10 (Lugs) - 95mm **6KF252 - 600 x 600 x 350 Metal - M10 (Lugs) - 150mm** **6KF402 - 800 x 600 x 400 Metal - M10 (Lugs) - 240mm**	

Kraus & Naimer

BLUE LINE switchgear since 1907

Disconnectors for **Photovoltaic**



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Optional Extras

Keylocks	Code	
Direct drive operator	V750/A9	
For base mounting	V750D/ VE21	
IP66 For single hole 22mm Standard K&N Key	V750D/3	
Direct Drive Key Operator Mounted in a IP66 Hinged / Flip Lid Enclosure	V755/ 6CL	
Direct Drive Key Operator Nominate key barrel:- 570 Lockwood, Bi-Lock,Lock Focus, KabaQuattro, Efco, Schlage, CL, etc..... Customised key systems:- Key Indication, cylinder removable from front (RL), Electronic key interlocks etc. Nominate Mounting:- Panel mount, Wall Plate mounting, enclosed (plastic,s/steel etc),	6S0LW V755/A	
Separate Drive Key Lock Programmable locking positions using Strebor barrel	V760/A.E	
Separate Drive Key Lock Programmable locking positions for: Lockwood 5-6 pin barrels C4 (201). Bi - Lock.(specify) Includes: *australian solenoid co pty ltd.* standard barrel:- 6S1 V760 S (Lockwood type).	V760/A  S0 V760/A.E	

Mounting Units	Code	
Right Angle Drive	K3 M330/A K3 M330/B	
Terminal Covers 3 main contacts KG 20 - KG 100 KG 126 / KG 161 KG 251 / KG 316 4 main contacts KG 20 - KG 100 KG 126 / KG 161 KG 251 / KG 316	 M160 / 3 M160 / 33 M160 / 4 M160 / 43 M160 / 43 M160 / 41	

Mounting Units	Code	
Panel mount 2 or 4 screw	E	
Panel mount 2 or 4 screw IP65	EFA	
Base mounting 4 screw mount	VE	
Base mount DIN rail	VE1	
Base mount DIN rail with MCB cut out	VE2	
Double end mount 4 screw fixing	ER	
Double end mount for fixing of plate with DIN mounting	VE1E	
IP66 Single hole without plate 16/22mm 22/30mm	FSI FT1	
IP66 Single hole square plte 16/22mm 22/30mm	FS2 FT2	
Next size upo handle and plate	EG	
Single hole with plate 16/22mm Rectangle 30 x 39 Single hole with plate 16/22mm Rectangle 48 x 59 Single hole with plate 16/22mm Rectangle 64 x 78 Header 2 Lines Header 3 Lines	FS4 FT6 FH4 PRC PRA	 

Optional Extras

Padlock	Code	
The padlock is an intergral part of the switch handle	V840A	
Locking handle for DIN cutout handles	V840B	
For a padlocks	V845	
Padlock with intergral flat or raised handle - 2 padlock	V840D	
Padlock with integral flat or raised handle - 3 padlock	V840G/B	
Padlock with integral flat or raised handle - 4 padlock	V840G	
Padlock device	V850	
Shaft locking device	V840VE	
Heavy Duty Stainless Steel Lock-out safety device	6SS V840	
Clip on aux contacts - base mount for KG20 -KG32 for KG41 - KG64	KO-H010/A11-VE K1-H010/A11-VE	
Clip on aux contacts - panel mount for KG20 -KG32 for KG41 - KG64	KO-H010/A11-E K1-H010/A11-E	

Door Clutch & Shaft Extensions	Code	
Door clutch for misaligned doors with locking handle Note: Knowledgeable personal using a simple tool are able to defeat the interlock Refer to Page 19	M700	
Door clutch with shaft extension Interlocked or Non Interlocked Available	M280E	
IP66 Single hole 22mm door clutch and locking handle	V840G/B	
IP66 Single hole 22mm door clutch and locking handle	V840G	
IP66 Single hole 22mm door clutch and locking handle	V845	
Single hole 22mm door clutch and locking handle	V840E	
Single hole 22mm door clutch	M295A	
IP66/67 Single hole mounting with intergrated door clutch *Override fuction in On-Postion	M800	
Shaft extentions asymmetric profile	M004D	
Shaft extentions square profile	L100A/M004E	

Special Drive Options & Enclosures

Special Drives	Description	Optional Code No.	CG 4 - CA 4 / CA10 - CA25 / CA10B - C 42 / C 43 - C125 / C315 - L2000
	**Heavy Duty Drive** Create your own handle/drive unit and weld it onto the removable plate. Long rods, T-bars, etc. **E** Panel Mount, **PK** Plastic Encl. **GK** Aluminum Enclosure	**G800/A**	**PRICES AVAILABLE ON REQUEST**
	**Limit Switch** Heavy duty roller & actuator for spring return or stepping applications. **E** Panel Mount **PK** Plastic Enclosure **GK** Aluminum Enclosure Also Available in 6CL 56 Plastic Enclosure.	**G800/B**	**PRICES AVAILABLE ON REQUEST**
	**Rope Operator** Heavy duty for **GK** / **PK** or **6CL 56** series enclosures. Drive Only Also Available in 6CL 56 Plastic Enclosure	**G900/B**	**PRICES AVAILABLE ON REQUEST**
	**Aluminium Enclosures for Drives** Switch length 4 stages. Various sizes available on request.	**GK**	**PRICES AVAILABLE ON REQUEST**
	**Plastic Enclosures for Drives** Switch length 4 stages. Various sizes available on request.	**PK**	**PRICES AVAILABLE ON REQUEST**
	**HAZARDOUS AREAS** **Dust Ignition Proof** **Flame Proof**	**DIP** **Ex d**	**PRICES AVAILABLE ON REQUEST**
	**Stainless Steel Enclosures Marine Grade 316** 208H x 113W x 96D 240H x 140W x 120D 350H x 230W x 170D 500H x 320W x 175D 710H x 320W x 175D C/W rain hood (Other sizes available on request)	**6S**	**Finish:-** Bead Blast or Food Industry. **Options:-** Rain Hood. Hinge Door. **Variations on request:-** Stop / Start Pushbuton. Control & Changeover Switches. Selection of auxiallary contacts.

Standard Enclosures

Enclosure Information

The following options can be included by substituting suffix code “E” for the optional code number.. **PF, KS, KL, 6CL...**

Note: KG enclosed isolators listed complete on page 17

Example: 3pole 20Amp Off/On Switch — CA 10 A292-621 **PF**
Enclosed with Padlockabe handle — **V840G**

Enclosures	Description	Code No.	CG 4 - CA 4 / CA10 - CA20 / CA10B - C 42 / C 43 - C125 / C315 - L2000
 KS enclosure	**CG 4 & CA 4 Switches** Material - Very high UV resistance - High chemical resistance Dimensions mm 1 stage - 90L x 70W x 60H 2 stage - 90L x 70W x 72.5H	 **KS** **KS**	**PRICES AVAILABLE ON REQUEST**
 PF enclosure	**Standard without Cover Interlock** Very high UV resistance Excellent chemical resistance	**PF**	**PRICES AVAILABLE ON REQUEST**
 6 CL 56/98 enclosure	**Industrial Enclosure** IP66 Dimensions mm - 101L x 101W x 91H */98 series* - 198L x 101W x 91H */195 series* Chemical resistant orange available on request. (Nominate entries prefered).	**6 CL 56/98** **6 CL 56/98-4** **6 CL 56/195**	Flip Lid **PRICES AVAILABLE ON REQUEST**
 6 FE enclosure	**General Purpose ABS Enclosures** Excellent Chemical resistance IP67. 6FE B85AG - 110H x 80W x 85D 6FE C65AG - 140H x 80W x 65D 6FE C85AG - 140H x 80W x 85D 6FE D85AG - 170H x 60W x 85D 6FE M95AG - 230H x 140W x 95D	 **6FE B85AG** **6FE C65AG** **6FE C85AG** **6FE D85AG** **6FE M95AG**	**PRICES AVAILABLE ON REQUEST**
 6 FEC enclosure	**Polycarbonate Enclosures IP67** 6FEC - 190H x 190W x 130D 6FEC - 190H x 190W x 180D 6FEC - 280H x 190W x 130D 6FEC - 280H x 190W x 180D 6FEC - 280H x 280W x 130D 6FEC - 380H x 280W x 130D 6FEC - 380H x 280W x 180D 6FEC - 560H x 380W x 180D 6FEC - 560H x 380W x 230D		**PRICES AVAILABLE ON REQUEST**
 AE enclosure	**Metal Enclosures** IP67 Switches mounted to gear tray with door interlock. 6AE 1033/300 x 300 x 210 6AE 1385/380 x 380 x 250 6AE 1338/600 x 380 x 350 Additional metal enclosures available	**6AE 1033** **6AE 1385** **6AE 1338**	**PRICES AVAILABLE ON REQUEST**

FOR FURTHER INFORMATION ON LARGER ENCLOSURES
PLEASE TELEPHONE YOUR NEAREST BRANCH

Castell & Fortress Trapped Key Interlocking Systems

Products	Applications
Panel Door Interlock Multiple Panel Door Interlock	As part of an interlock system, the locks are used to control access to areas, e.g. switchgear panels or machines where hazards may be present, until a safe condition has been achieved.
Key Operated Rotary Switches	As part of an interlock system, the switch units are used for the direct control or isolation of control or power circuits controlling the plant or machinery.
Solenoid Controlled Interlock Unit	As above with a solenoid facility to integrate with other electronic control processes within the system.
Key Operated Rotary Switch for Use in Hazardous Areas	A key operated rotary switch for use as part of an interlocked system, in areas where explosive/flammable gases or dust particles may be present. BASEEFA certified (EExdIIC T6 Zones 1 & 2.)
H31 Basic Interlock and Keys	This form of basic interlock is normally used in the mechanical interlocking of electrical switchgear. Used in conjunction with other interlocking systems.
Door Interlock	Specifically designed for sliding doors.
Interlock Deadlock	Single or multi-keyed deadlocks, with either claw bolt or limit switch.
Mechanical Key Exchange Boxes	A range of mechanical key exchange units into which any sequence of trapped and freed keys can be incorporated.
Electronic Time Delay Rotation Sensing Unit Temperature Sensing	As part of an interlock system, the locks are used to control access to areas, e.g. switchgear panels or machines where hazards may be present, until a safe condition has been achieved.
Other Products	Fortress Amgard Modular Safety Systems. Castell Products. Smith Ellis – Valve Interlocks. HF Securite Products. Load banks







Handles

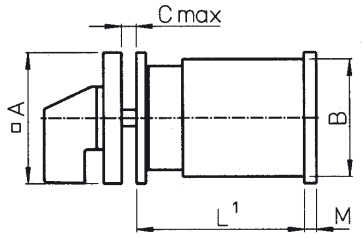
Type	Colour	Code	Size 00	0	1	2	3
I - Handle *"Standard Handle"* 	Black	G251	√	√	√	√	–
	Red	G252	√	√	√	√	–
	White	G253	√	√	√	√	–
	Electro-grey	G257	√	√	√	√	–
F - Handle 	Black	G221	√	√	√	√	–
	Red	G222	√	√	√	√	–
	White	G223	√	√	√	√	–
	Electro-grey	G227	√	√	√	√	–
K - Handle 	Black	G411	–	–	√	√	√
	Red	G412	–	–	√	√	√
	White	G413	–	–	√	√	√
	Electro-grey	G417	–	–	√	√	√
L Handle 	Black	G501	–	–	√	–	–
	Red	G502	–	–	√	–	–
	White	G503	–	–	√	–	–
	Electro-grey	G507	–	–	√	–	–
Handwheel 	Black		–	–	–	–	√

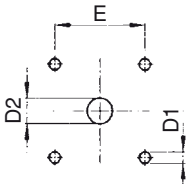
Type	Colour	Code	Size 00	0	1	2	3
R - Handle 	Black	G001	–	√	√	√	√
	Red	G002	–	√	√	√	√
	White	G003	–	√	√	√	√
	Electro-grey	G007	–	√	√	√	√
B - Handle 	Black	G521	–	√	√	–	–
	Red	G522	–	√	√	–	–
	White	G523	–	√	√	–	–
	Electro-grey	G257	–	√	√	–	–
	White (For UE mtg)	G258	–	–	√	–	–
P - Handle  S0 S1 ~ S3	Black	G211	–	√	√	√	√
	Red	G212	–	√	√	√	√
	White	G213	–	√	√	√	√
	Electro-grey	G217	–	√	√	√	√
S Handle  S0 S1	Black	G301	–	√	√	–	–
	Red	G302	–	√	√	–	–
	White	G303	–	√	√	–	–
	Electro-grey	G307	–	√	√	–	–

The Handles listed are for the Kraus & Naimer standard profile shafts, enquire for Handle code numbers suitable for square shafts.

Dimensions mm

Rotary Cam Switches - Panel Mounting





E Panel Mounting
Size 0 - Size 3

	CG4	CAD's CA10	CA20	CA25	CA63 CA50 CA40 C26	C32	C42	C80	C200-4 C125	C315 L400
A	30	48	48	48	64	64	64	88	88	130
B	28	43	45	46	45/58	60	66	84	88	126
C	4	4	4	4	4	4	4	5,5	5,5	7
D1	3,2	5	5	5	5	5	5	6	6	7
D2	8	8	8	10	10	10	10	13	13	16
E	-	36	36	36	48	48	48	68	68	104
M	-	4,5	4,5	5,5	6,5	7.5	7.5	9,4	9,4	11,9

Length L

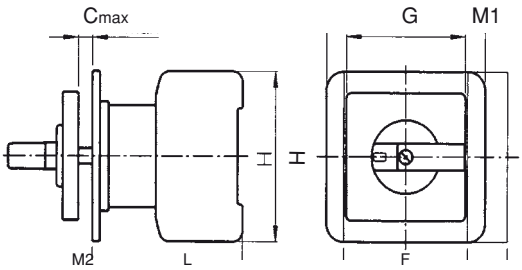
Stages	CG4	CAD's CA10	CA20	CA25	CA63 CA50 CA40 C26	C32	C42	C80	C200-4 C125	C315 L-switches Size S3
1	38,5	31,7	35,9	37,2	41	45,8	49,8	61,5	67,5	78,6
2	50	41,2	48,6	51,2	53.7	63,3	71,3	88	100	117,2
3	62,5	50,7	61,3	65,2	66.4	80,8	92,8	114,5	132,5	155,8
4	74,5	60,2	74	79,2	79.1	98,3	114,3	141	165	194,4
5	86,5	69,7	86,7	93,2	91.8	115,8	135,8	167,5	197,5	233
6	94,5	79,2	99,4	107,2	104.5	133,3	157,3	194	230	271,6
7	110,5	88,7	112,1	121,2	117.2	150,8	178,8	220,5	262,5	310,2
8	122,5	98,2	124,8	135,2	129.9	168,3	200,3	247	295	348,8
9	-	107,7	137,5	149,2	142.6	185,8	221,8	273,5	327,5	387,4
10	-	117,2	150,2	163,2	155.3	203,3	243,3	300	360	426
11	-	126,7	162,9	177,2	168	220,8	264,8	326,5	392,5	464,6
12	-	136,2	175,6	191,2		238,3	286,3	353	425	503,2

Dimensions mm

KG Main Switches

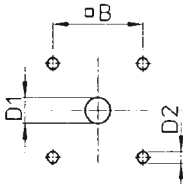
Panel Mounting

3 and 4 Pole



	A	B	C	D1	D2	F	G	H	L	M1	M2	M3
KG10A	48	36	4	11	5	48	48	50	48,2			
KG20A, KG32A	48	36	4	10	5	48	42	54	53,8			
KG20B, KG32B	64	48	4	10	5	64	42	54	53,8	13,5	9	2
KG41B, KG64B	64	48	4	10	5	64	50	64	60,5	16	12,5	16
KG80, KG100	64	48	4	10	5	70	70	80	70,6	22	10	25
KG126, KG161	88	68	5,5	13	6	-	112	108	96	38	21	22
KG251, KG316	88	68	5,5	13	6	-	145	126	103	52,5	21	24,5 x 2

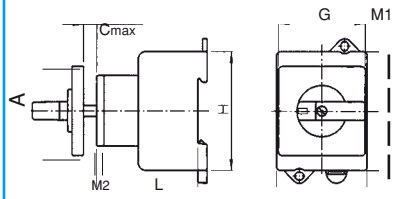
M1 = Extra Length 4th Pole / Neutral Contact / Earth Block
M2 = Extra Length Top Mounted Auxilliary Contacts
M3 = Extra Length Terminal Cover



Base Mounted

3 and 4 Pole

Note : 6 Pole Width = 3 Pole Width x 2



	A	B	C	D1	D2	G	H	L	M1	M2	M3
KG10	48	36	12	8	5	48	50	49,2			
KG20A, KG32A	48	36	12	8	5	42	54	50			
KG20B, KG32B	64	48	13,5	10	5	42	54	50	13,5	-	20
KG41B, KG64B	64	48	13,5	10	5	50	64	61	16	10	16
KG80, KG100	64	48	13,5	10	5	70	80	68	22	10	25
KG126, KG161	88	68	16	13	6	112	108	91	38	0	22
KG251, KG316	88	68	16	13	6	145	126	98	52,5	0	24,5 x 2

M1 = Extra Length 4th Pole / Neutral Contact / Earth Block
M2 = Extra Length Top Mounted Auxilliary Contacts
M3 = Extra Length Terminal Cover

Padlock Device V840G

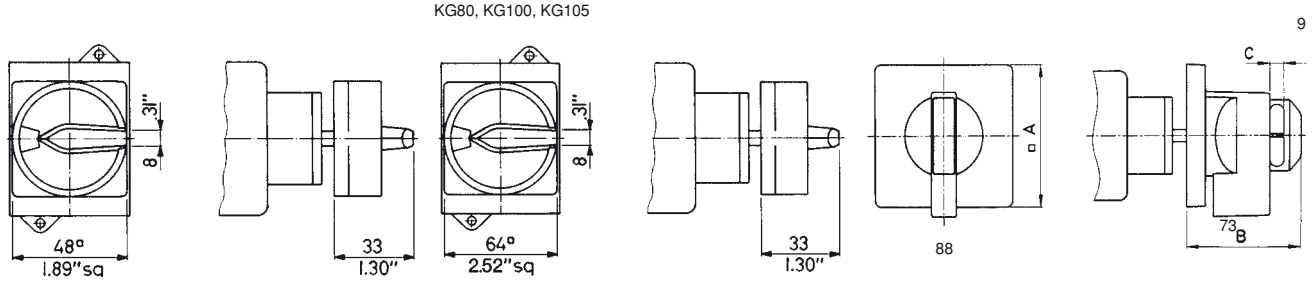
36 mm sq. Fixation
KG10, KG20, KG32

Padlock Device V840G

48 mm sq. Fixation
KG10B, KG20B, KG32B, KG41B, KG64B, KG80, KG100, KG105

Padlock Device V845

68mm sq. Fixation
KG126, KG161, KG251, KG316



Door Interlock M280E 48mm sq.

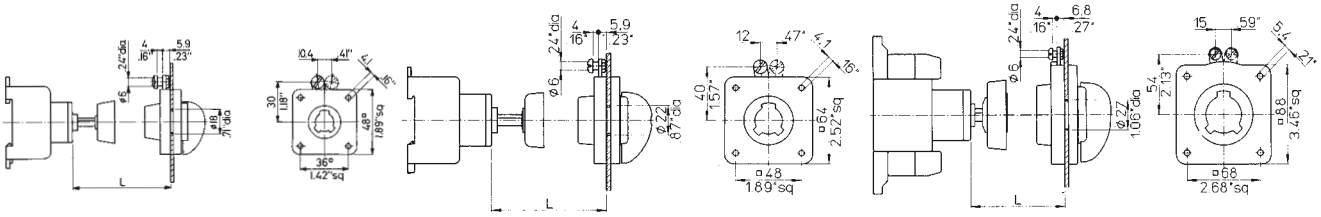
36 mm sq. Fixation
KG10, KG20, KG32

Door Interlock M280E 64mm sq.

48mm sq. Fixation
KG10, KG20, KG32, KG41, KG64, KG80, KG100

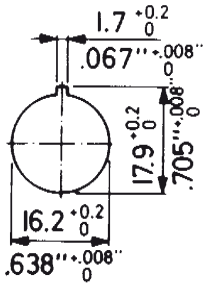
Door Interlock M280E 88mm sq.

68mm sq. Fixation
KG126, KG161, KG251, KG316



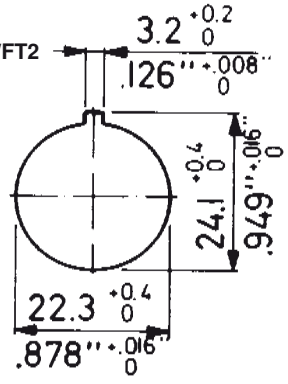
Single Hole Mounting FS1/FS2 (Size 00)

To accomodate
16.2 in 22.3 Hole
S00 T160 - 01



Single Hole Mounting FT1/FT2 (Size 0)

To accomodate
22.3 in 30.5 Hole
S0E T160 - 01



Control & Signalling Units 22mm - Assembled Units

Item	Code No.		Item	Code No.	
Push Button IP67/IP69K 	1 Normally Open AC - 15 240v 6A		**Push Button** IP67/IP69K 	1 Normally Closed AC - 15 240v 6A	
Green Red Yellow Blue White	PSN-WD0001 PSN*NZ0007 PSN*NZ0015 PSN*AUN0148 PSN*NZ0017		Green Red Yellow Blue White	PSN-NZ0018 PSN-WD0002 PSN*NZ0019 PSN*NZ0009 PSN*NZ0020	
Pilot Light IP67/IP69K 	c/w 24V LED		**Pilot Light** IP67/IP69K 	c/w 240V LED	
Green Red Yellow Blue White	PSN-WD0003 PSN-WD0004 PSN*NZ0021 PSN*NZ0022 PSN*NZ0023		Green Red Yellow Blue White	PSN-WD0005 PSN-WD0006 PSN*NZ0004 PSN*NZ0012 PSN*NZ0013	
Double - Push Button IP67/IP69K 	c/w 240V LED		**Emergency Stop** **Non-Illuminated** IP67/IP69K 	*Reset by twisting 1 Normally Closed	
	PSN/DDL/GR/X1-XO-K11			PSN*NZ0006 (enclosure available on request)	
	c/w 24V LED				
	PSN*AUN0144				

For further information refer to Catalogue 302

*NOTE ALSO AVAILABLE AS RESET BY PULLING OR KEY OPERATION

Palm Push Buttons AC-15 230v 6A, IP66

Foot & Palm Switch Red & Yellow Reset By Pulling				Foot & Palm Switch Spring Return Black & White Enclosed with Red Operator			
1 x N/C	PFT/R-V-KC01-1Y			N/O x N/C	PFT/R-KC11-1		

Potentionmeter Units Heavy Duty & Standard 22mm Mounting

Heavy Duty With K&N Switch Front IP65 Reienforced Stop. Optional Keyed or Stepping 48mm Square Front Engraved With Swoop			
1k	CA10NZQ172*02FT2		
2.2	CA10NZU606*01FT2		
4.7k	CA10NZU607*01FT2		
10k	CA10NZV049*02FT2		
64mm Square Front Engraved With Swoop			
1k	CA10NZQ172*02FH3		
2.2k	CA10NZU606*01FH3		
4.7k	CA10NZQ607*01FH3		
10k	CA10NZQ049*02FH3		

Standard IP66 3 Screw Terminals P max = 0.5 watt			
1.0k Ohm	PSN/R1k		
4.7k Ohm	PSN/R4K7		
10k Ohm	PSN/R10K		

Heavy Duty Pot Units.

Developed by Kraus & Naimer for use in industrial applications.
The 270° single turn pot drive features a HEAVY DUTY drive, large operator handle and sealing to IP65. With easy mount 22mm single hole mounting the drive has smooth stepless operation and comes complete with a header label. Options include keys and additional contacts

Control & Signalling Units 22mm - Loose Components

Push Buttons AC-15 230v 6A, IP67/IP69K

Push Buttons Front Element Flush Illuminated		
Green	PSN/DL/G	
Red	PSN/DL/R	



Push Buttons Front Element Flush Illuminated		
Green	PSN/DLH/G	
Red	PSN/DLH/R	



Push Buttons AC-15 230v 6A, IP67/IP69K

Push Buttons Front Element Flush Non Illuminated		
Green	PSN/D/G	
Red	PSN/D/R	



Push Buttons Front Element Flush Non Illuminated		
Green	PSN/DH/G	
Red	PSN/DH/R	



Rotary Switches AC-15 230v 6A, IP66

Rotary Switch Front Element Latching Non Illuminated (changeable to spring return)		
2 Position	PSN/WRK	
2 Position	PSN/WKV	
3 Position	PSN/WRK3	
Rotary Switch Front Element Latching Key Operated (changeable to spring return)		
2 Position (1)	PSN/WRS	
2 Position (2)	PSN/WKS/A1	
3 Position (3)	PSN/WRS3	
3 Position (2)	PSN/WRS3/A1	
Key Removable Programme (1) Both Pos (2) Centre Off Pos (3) Three Pos		



Rotary Switch Front Element Latching Non Illuminated (changeable to spring return)		
2 Position	PSN/WRLK/*K	
2 Position	PSN/WKLK3/*	
*Specify colour -	G,R,Y,B,O	
Colour		
Green -G		
Red - R		
Yellow - Y		
Blue - B		
Opaque - O		



Double Push Buttons AC-15 230v 6A, IP66 Colour Cap Opaque

Double Push Button Non Illuminmated		
Red/Green	PSN/DDL/GR	
Red/Green	PSN/DDL/GR/X1-X0	
Red/Green STOP START	PSN/DDL/GR/GB1-GB0	



Double Push Button Non Illuminmated		
Black/Black		
Arrow/Arrow	PSN/DDL/S/X7-X7	
Black/White	PSN/DDL/WS	



Pilot Lights IP67/69K

Flush		
Green	PSN/L/G	
Red	PSN/L/R	
Yellow	PSN/L/Y	
Blue	PSN/L/B	
Opaque	PSN/L/W	



Extended (conical)		
Green	PSN/LH/G	
Red	PSN/LH/R	
Yellow	PSN/LH/Y	
Blue	PSN/LH/B	
Opaque	PSN/LH/W	



Push Buttons Pilot Lights Accessories

Contact Blocks Front Mounting		
N/O	PSN/K10	
N/C	PSN/K01	
LED Pilot Assemblies 12-30v AC/DC		
Green	PSN/LED/G	
Red	PSN/LED/R	
White	PSN/LED/W	
Coupling Plate		
PB's & Lights	PSN/A	
Legend Carrier W/O Legend		
PB's Lights	PSB/ST/X	
Double PB's	PSB/STDD/X	
Legend Insert	PSN/XST	
Engraving	F*AU	
Plastic Enclosure Top Yellow, Bottom Black		
1 x 22.5mm	PSN/IY1	



Contact Blocks Base Mounting		
N/O	PSN/KC10	
N/C	PSN/KC01	
LED Pilot Assemblies 85-260v AC/DC		
Green	PSN/LED/230/G	
Red	PSN/LED/230/R	
White	PSN/LED/230/W	
DIN Rail Mounting	PSN/IVS	
Protection Extras (not with legend carriers)		
Single PB's	PSN/T/D	
Double PB's	PSN/T/DD	
Shroud	PSN/XGWK	
Bulb Extractor	PSN/LG	
Blank Plug	PSN/B	
Emergency Stop Extras		
Shroud	PSN/XGPV	
Plate 60mm	PSN/XAK1	
Plate 90mm	PSN/XBK1	
LED Test Elements For Press To Test		
12v to 30v	PSN/XLED/T	
85v to 260v	PSN/XLED230/T	
Resistor Element		
42v -60v	PSN/XLED60	



New Product
Main Switches and Switch Disconnectors

KC Switch Series 16 A-32A

- With spring cage clamps
- Suitable for 2 conductors per terminal
- Secure connections even during vibration and temperature varations
- Terminals finger proof and accessible while the switch is installed
- Positive contact movement during making and breaking

Switch Disconnectors with Standard Handle

Ith_2	AC-23A kW	Max Cable	Code No	4 Screw Panel Mount	Base Mount	DIN Cutout
				3 Pole	3 Pole	3 Pole
				T303*NZ0001 E	T303*NZ0002 VE	T303*NZ0003 VE2
16	7.5	2 x 0.5 - 6	KC16	P.O.A	P.O.A	P.O.A
20	10	2 x 0.5 - 6	KC20	P.O.A	P.O.A	P.O.A
25	12	2 x 0.5 - 6	KC25	P.O.A	P.O.A	P.O.A
32	16	2 x 0.5 - 6	KC32	P.O.A	P.O.A	P.O.A

Main Switches with Padlock Handle

Ith_2	AC-23A kW	Max Cable	Code No	Panel Mount 4 Screw	Panel Mount 22mm Single Hole	Base Mount With Clutch
				3 Pole	3 Pole	3 Pole
				T203*NZ0004 E	T203*NZ0005 FT2	T203*NZ0006 VE
16	7.5	2 x 0.5 - 6	KC16	P.O.A	P.O.A	P.O.A
20	10	2 x 0.5 - 6	KC20	P.O.A	P.O.A	P.O.A
25	12	2 x 0.5 - 6	KC25	P.O.A	P.O.A	P.O.A
32	16	2 x 0.5 - 6	KC32	P.O.A	P.O.A	P.O.A

Maintenance and Safety Switches Enclosed

Ith_2	AC-23A kW	Max Cable	Code No	Padlockable	
				3 Pole	
				T203*NZ0007 KS10V	
16	7.5	2 x 0.5 - 6	KC16	P.O.A	
20	10	2 x 0.5 - 6	KC20	P.O.A	
25	12	2 x 0.5 - 6	KC25	P.O.A	
32	16	2 x 0.5 - 6	KC32	P.O.A	



1. In order to open the tension spring insert the screwdriver to the stop.



2. Insert the bare wire conductor with or without sleeve into the open clamping unit.



3. After removing the screwdriver the spring lamp securely holds the conductor against the terminal surface.







G20 (S) - DC Switch With Knife Contacts

Kraus and Naimer have developed and designed a new DC Switch; the G20(S)
The 'Knife contacts' have been designed in a new way resulting in a switching capacity of 20 Amps at 690V DC (DC-22A) and high short circuit withstand capability.

Finger-proof terminals according to EN 50274 and protection degree IP20 offer maximum safety.
With a standard latching mechanism, the G20 complies with all regulations required for main switches according to IEC/EN 60204.
In addition the G20 is also ideal for AC applications with high short circuit fault levels, as well as electronic circuitry with low current and voltages.

- Self-cleaning and vibration resistant knife contacts
- Compact design
- High DC switching capacity
- Highest contact reliability (better than any H-bridge contact system)
- High short circuit withstand capability
- Finger-proof terminals (IP20) even if jumper leads are used
- Terminal extensions (accessory item) for ring type cable lugs (max. width 6mm) and quick connect lugs available
- Heat resistant contact system according to standard EN 12101-3

G20 - with normal latching (in preparation)
G20S - with snap action latching





Utilisation Category	No. of Series Contacts G20S Total Voltage in Volts						Rated Operational Current Ie/A
	1	2	3	4	5	6	
DC-21A	250	500	750	1000	-	-	20
	440	880	-	-	-	-	13
DC-22A	250	500	750	1000	-	-	20
	330	660	990	-	-	-	10
	440	880	-	-	-	-	5
DC-23A	48	96	144	192	240	144	20
	60	120	180	240	300	288	15
	110	220	330	440	550	360	12
	160	320	480	640	-	-	8
	250	500	750	1000	-	-	5
	330	660	990	-	-	-	3
	440	880	-	-	-	-	1

KF Switch Range 1 Pole per module (16-32A)

The innovative modular system is both simple and very safe while offering enormous flexibility.
The position of the various modules in relation to each other can be defined by the user.
Than assembled in the factory

Rotating contact movement (instead of the classical vertical lifting) allows

- Big contact gaps
- High mechanical life expectancy
- Very precise movement sequence
- Self cleaning contacts
- Forced opening and closing of contacts
- Compact (very shallow design)
- Up to 1000V insulation voltage according to IEC possible
- Lateral drive possible (latching module not in the centre but on left or right hand side)
- Coupling profile determines pre-closing function of switched 4th pole
- Visible contacts (windows) available on request
- Design allows a big variation of terminal markings



Telephone now for a demonstration

New Product

Maintenance Switches For EMC - Frequency Regulated Motor

According to IEC 60204 and VDE 0113

Kraus & Naimer

BLUE LINE switchgear since 1907



SWITCH ORDERING CHART

Mounting Requirements

- ☐ **E** Panel Mount. (5 hole mount)
- ☐ **VE** Base mount suitable for door clutch etc.
- ☐ **E - V** Panel Mount.(vertical access to terminals
- ☐ **E22** Panel mount. (3 hole, size 0)
- ☐ **ER** Combined panel square base plates.
- ☐ **T146 K** DIN rail mounting plate. (size 0 and size 1)
- ☐ **FT1** Single hole mtg. w/o esc. plate IP65. (S0 = 22.3mm)
- ☐ **FT2** Single hole mtg. wth square plate IP65. (S0 = 22.3mm)
- ☐ **EF** Panel seal IP65. (mounts between switch and panel).
- ☐ **KD/KN** Heavy duty mounting plate and metal shaft.
- ☐ **L100** Various shaft lengths (metal)
- ☐ **M004** Adjustable shaft (advise length).
- ☐ **PF** Enclosure ABS IP56
- ☐ **GK** Enclosure aluninium IP54.
- ☐ **M280E** Door clutch (specify depth required).
- ☐ **6 CL** Enclosure 56 series.
- ☐ **6 SS** Enclosure stainless steel.
- ☐ **KS/KL** Enclosures IP65.
- ☐ **6S115 x 70** Wall plate stainless or Plastic
- ☐ Other, nominate type of mounting required.

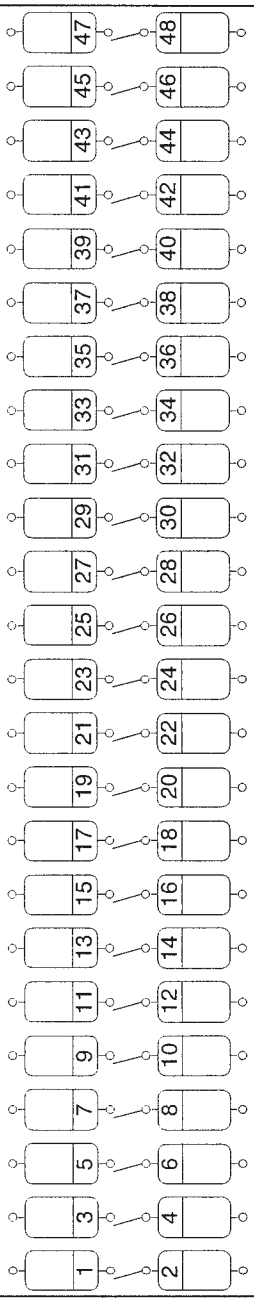
Handle Operation

- ☐ Normal/standard handle (G251) or .....
- ☐ **V750D** Key operator size 00 ~ 0.
- ☐ **V755A** or **C** Key operator (530 series) .
- ☐ **V750/A9** Key operator size 0 switch.(Lockwood)
- ☐ **6SOLW V750** Key operator (201 Lockwood etc.)
- ☐ **V760** Seperate key and handle (programmable).
- ☐ **V840A/.**Padlockable handle (S0 & S1).
- ☐ **V845** Padlock Handle. (c/w esc.plate)
- ☐ **V840G** Padlock device.
- ☐ **V850** Padlockable with handle device
- ☐ **V400** Push-button interlock device.
- ☐ Other specify

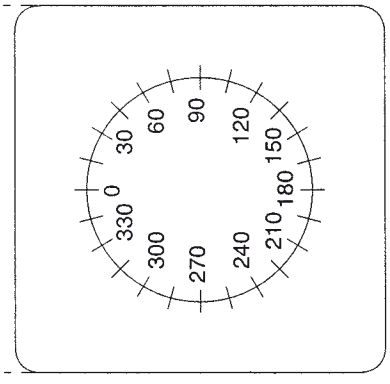
Essential Data

1. Switch/circuit requirement. . . Amp ..... Volts ..... **kW** .....
2. Cable size ..... or limiting dimensions .....
3. AC or DC (DC voltage required).....Duty:- AC21/AC22/AC23/AC11 or other.
4. **PLC**/Electronic circuit/dry circuit or standard switch.

SWITCH TYPE	:	MOUNTING	:	FIRM	:
ESCUTCHEON PLATE	:	OPTIONAL EXTRAS	:		
HANDLE	:			DATE :	SIGNED :

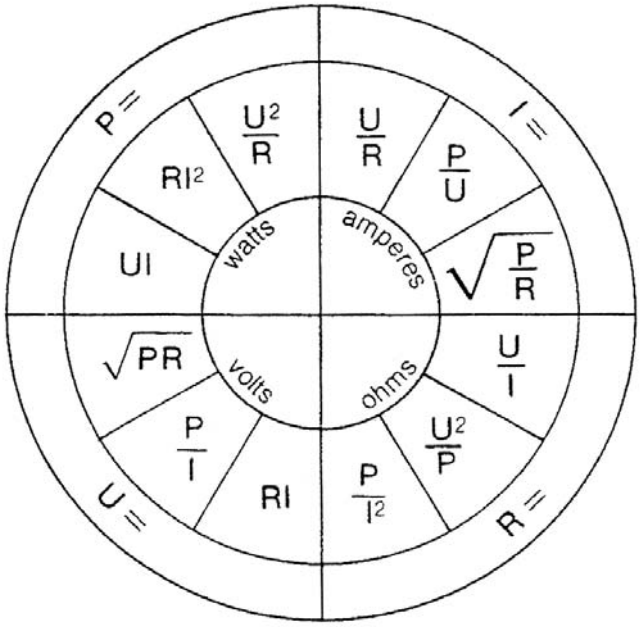


ESCUTCHEON PLATE



POSITIONS

Ohm's Law



SYMBOLS

U = Voltage in volts

I = Current in amperes

R = Resistance on ohms

P = Power in watts

Useful Formulae

$kW = kVA \times pF$	$\text{Line Amps} = \frac{hp \times 746}{\text{Line volts} \times 1.732 \times \text{Eff} \times pF}$
$kW = \frac{hp \times 746}{1000 \times \text{Eff}} \quad \frac{hp \times 746 \times 100}{1000 \times \%\text{Eff}}$	$\text{Horsepower (hp)} = \frac{kVA \times 1000 \times \text{Eff}}{746}$
$kW = \frac{\text{Line amps} \times \text{Line volts} \times 1.732 \times pF}{1000}$	$hp = \frac{kVA \times 1000 \times \text{Eff } pF}{746}$
$kVA = \frac{kW}{pF}$	$hp = \frac{\text{Line amps} \times \text{Line volts} \times 1.732 \times \text{Eff} \times pF}{746}$
$kVA = \frac{hp \times 756}{1000 \times \text{Eff} \times pF}$	1 Watt = 1 joule/second
$kVA = \frac{\text{Line amps} \times \text{Line volts} \times 1.732}{1000}$	1 hp = 746 Watts
$\text{Line Amps} = \frac{kVA \times 1000}{\text{Line volts} \times 1.732}$	1 hp = 746 joules/second
$\text{Line Amps} = \frac{kW \times 1000}{\text{Line volts} \times 1.732 \times pF}$	

VOLT-DROP Single Phase

Service Voltage = 240V

Max Permissible Vd = $\frac{240 \times 2.5}{100}$ (2.5% Service Voltage)

= 6V

Max Unit Vd = $\frac{\text{Max Vd} \times 1000}{1 \times \text{distance}}$ (Length of cable run)

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AC-1
Resistive or low inductive loads.

AC-3
Direct on line starting, star delta starting.

AC-4
Direct on line starting, reversing, plugging and inching.

AC-21
Switching of resistive loads, including moderate overloads.

AC-23A
Frequent switching of motors or other highly inductive loads (selection criteria for main switches).

AC-22
Isolation of 6 Pole star delta motor circuits

POWER Motor Size		CURRENT three phase 50-60 Hz	
kW	h.p.	415V	440V
0.37	0.5	1.2	1
0.55	0.75	1.6	1.3
0.75	1	2	1.68
1.1	1.5	2.5	2.37
1.5	2	3.5	3.06
2.2	3	5	4.42
3	4	6.5	5.77
4	5.5	7.5	7
5.5	7.5	11	10.4
7.5	10	14	13.7
10	13.5	19	16.5
11	15	21	20.1
15	20	28	26.5
18.5	25	35	32.8
22	30	40	39
30	40	55	51.5
37	50	66	64
45	60	80	76.3
55	75	100	90
75	100	135	125
90	125	165	156
110	150	200	186
132	175	230	216
160	220	280	256
200	270	340	321
220	300	385	353
250	350	450	400
315	430	535	500

IP Ratings

IP65 - where 6 means complete protection against accidental contact with live or internal moving parts. Protection against the ingress of dust (dust tight). Where 5 means water projected by nozzle against the equipment from any direction shall have no harmful effect.

IP66 - where 6 means complete protection against accidental contact with live or internal moving parts. Protection against the ingress of dust (dust tight). Where 6 means water projected by powerful jets against the enclosure from any direction shall have no harmful effect.

IP69K - where 6 means complete protection against accidental contact with live or internal moving parts. Protection against the ingress of dust (dust tight). Where 9K means where water directed against the enclosure under extremely high pressure from any direction must not have any harmful effect. Water pressure of 100 bar. Water temperature of 80 deg C.

The Range of **Blue Line** Switchgear

Technical Catalogue's for the following products are available from our website. www.krausnaimer.com.au

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 andCAD switches are designed for universal application. They are recommended for instument, 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 oiptional extras is available, including door interlocks, push-pull devces, cylinder and padlock attachments, control and indicator devices, Ac motor drives, as well as enclosures, both inslated 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 postions are possible, with availability of 48 contacts per 12 stage column.

110

CG, CH and CHR Switches 10 A-25 A
Ultra compact CG, CH and CHR switches are ideally suited for control and instumentation applications.
Switch terminals are 'finger-proof' and conveniently accessible for wiring and are delivered open. All CG4 ewiches 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 swiches can be applied for load, tap and gang duties. They incorporate 6 contacts in each switching stage. Their compact design provides a minimum lengtgh dimension for mounting purpose.

140

KC 16 A-32 A, KG Switches 20 A-315 A and KH and KHR Switches 16 A-80 A
KC, KG, KH anh 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.
KC switches offer spring cage terminals for greater termination security.

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 economical efficiency in a modular design.

302

Disconnectors for Photovoltaic

Maintence Switches for EMC - Compliant Connection
Freguency regulated motors.

We reserve the right to make technical and dimensional changes without prior notice. Any errors or omissions are not binding.

Kraus & Naimer Pty. Ltd.

BLUE LINE switchgear

Sydney
379 Liverpool Road
Ashfield, NSW 2131
Telephone: +61 2 9797 7333 Fax: +61 2 9797 0092
Email: salesaus@krausnaimer.com

Melbourne
14 Brunsdon Street
Bayswater, Vic 3153
Telephone: +61 3 9720 9777 Fax: +61 3 9720 9766
Email: salesvic@krausnaimer.com

Brisbane
22 Brookes Street
Bowen Hills, Qld 4006
Telephone: +61 7 3252 8344 Fax: +61 7 3252 1497
Email: salesqld@krausnaimer.com

Adelaide
Unit9/780 - 802 South Road
Glandore, SA 5037
Telephone: +61 8 8371 1443 Fax: +61 8 8371 0901
Email: salessa@krausnaimer.com

Distributor:

The Cam Switch Creators and Innovators.