

Catalogue



Kraus & Naimer Ltd.

BLUE LINE switchgear



History of Kraus & Naimer

From the beginning in 1907, Kraus & Naimer’s strategy has been based on innovation and customer service, and today, Kraus & Naimer employs some 900 people worldwide and manufactures around 4.0 million switches per annum.

Kraus & Naimer’s global leadership is due to products built to the highest standards, uncompromising quality and a global presence. Qualified engineering and customer support, local stock and on-site assembly facilities guarantee competent service and a fast delivery to 65 countries. In 1978 a manufacturing plant was opened in Wellington to service the Australian, Far Eastern and New Zealand markets, which remains a modern production and assembly centre for Australasia.

Technical Innovation

Kraus & Naimer has pioneered many new developments since the first modular design ‘Cam switch’ was introduced in 1949, and continues to place the utmost importance on innovation, excellence and technology which will carry us through the next 100 years.



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DECLARATIONS OF CONFORMITY

International Standards and Approvals for Switches
Declarations of Conformity for Switches and Switch Disconnectors

- Datasheets library
- International standards and approvals for switches
- Declaration of conformity for switch and switch disconnectors
- Switching functions
- Handles types and sizes

Product Certification:

- UL and cUL
- CSA
- CCC



ISO 90001:2015-Certificate



RoHS Certificates



Reach Confirmation



Conflict Materials



Standard face plate letterings



Description of replacement switch order

Go to www.krausnaimer.com select NZ & Declarations for links to view



SCAN FOR WEB



SCAN FOR DECLARATION

Quick Reference

Popular Products

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Smart Switch

KN11

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Popular Products

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Smart Switch

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Enclosed Isolators

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3 Pole Switches

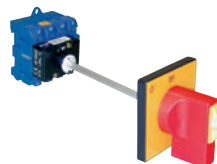
KN297



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Rope Switches



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Pilot Lights



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Potentiometers



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PB Accessories



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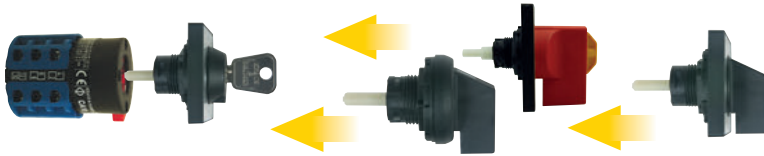
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NZS9B

Slimline Starters



Smart Switches 22mm IP 66/67/69k Protection



1. Select a Switch Body

Off - On



KN11 1 Pole 20 A
KN12 2 Pole 20 A
KN13 3 Pole 20 A



KN27 3 Pole 32 A

Reversing Switch
Single or 3 Phase



KN26

Man - Off - Auto



KN16 1 Pole



KN17 3 Pole

Man - Auto



KN19 1 Pole



KN20 3 Pole

2. Match it to an operator of the same Label Colour, or select any Black Label Operator

Key Out
Off Only



KN14 KN32



Padlock
Red/Yellow KN15



Padlock
Red/Black KN25

Key Out
All Positions

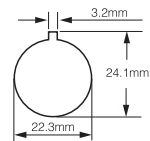


KN18 KN33

Key Out
Both Positions



KN21 KN34



Round bezel
with handle
KN22



Standard square
frame and handle
KN23



IP 65 Enclosure
KN24



DIN
Rail Mnt
KN30

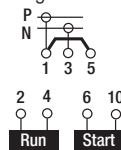
Smart Switches 22mm IP 66/67/69k Protection

Amps	Description	Order Code
Smart Switches (Face Plates included with Switch Body)		
OFF - ON switch body only BLUE LABELS		
20	1 Pole	KN11
20	2 Pole	KN12
20	3 Pole	KN13
32	3 Pole	KN27
Key out	Key Operator Square Frame	KN14
OFF only	Key Operator Round Bezel	KN32
	Padlock Handle Red/Yellow	KN15
	Padlock Handle Black/Red	KN25
Reversing Switch Single or Three Phase - body only RED LABEL		
20	0.75kW 220VAC: 1.5kW 400VAC	KN26
Changeover with OFF 1 - OFF - 2; MAN - OFF - AUTO YELLOW LABELS		
20	1 Pole	KN16
20	3 Pole	KN17
Key out	Key Operator Square Frame	KN18
ALL	Key Operator Round Bezel	KN33
Changeover No OFF 1 - 2; MAN - AUTO - GREEN LABELS		
20	1 Pole	KN19
20	3 Pole	KN20
Key out	Key Operator Square Frame	KN21
ALL	Key Operator Round Bezel	KN34
Standard Handles - Fit All Switch Bodies BLACK LABELS		
	Handle Round Bezel	KN22
	Handle Square Frame	KN23
Accessories - Fit All Switches BLACK LABELS		
	Pre-drilled Enclosure 22.5mm	KN24
	DIN Rail Mounting Base Plate	KN30

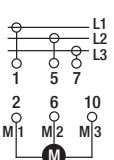
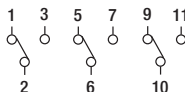
WIRING DIAGRAM

KN26

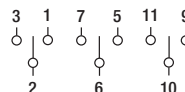
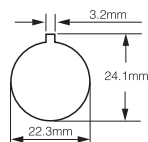
Single Phase








Note: FIT LOOP 1-5


WIRING DIAGRAM

RATINGS

	IEC 60947-3
Amps	1 20A
AC-23A	7.5kW / 440v
VAC Max.	690V
DC Max.	20A / 24v
Cables x 2	2.5mm
Mech. life	2 million
Max. fuse gL	25A
Temp Max.	55°C
Terminal Torque	0.8Nm

WIRING DIAGRAM

MOUNTING


Control Products 22mm IP 66/67/69k Protection

Description	Order Code	Description	Order Code
Switches, Buttons, Pilot Lights, Potentiometers, E-Stops			
1 Pole OFF - ON Switch 20 Amp	KN1	3 Pole OFF - ON Switch 20 Amp	KN2
			
1 Pole OFF - ON KEY Switch 20 Amp	KN3	3 Pole OFF - ON KEY Switch 20 Amp	KN4
			
1 Pole OFF - ON Lockable 20 Amp	KN5	3 Pole OFF - ON Lockable 20 Amp	KN6
			
3 Pole OFF - ON Lockable 32 Amp	KN7	1 Pole MAN - OFF - AUTO 20 Amp	KN8
			
1 Pole MAN - OFF - AUTO 20 Amp	KN9	Single & 3 Phase Reversing Enclosed	KN10
			

Control Products 22mm IP 66/67/69k Protection

Description	Order Code	Description	Order Code
Switches, Buttons, Pilot Lights, Potentiometers, E-Stops			
1 Pole OFF - ON 6 Amp Spring Return is Programmable 	KN81	1 Pole OFF - ON Key Switch 6 Amp Key Removal and Spring Return are Programmable 	KN82
1 Pole MAN - OFF - AUTO 6 Amp Spring Return is Programmable 	KN83	1 Pole MAN - OFF - AUTO Key Switch 6 Amp Key Removal and Spring Return are Programmable 	KN84
Green Push Button 1 x N/O 	KN52	Red Push Button 1 x N/C 	KN53
Green Pilot Light 12 - 30 V AC/DC 	KN55	Red Pilot Light 12 - 30 V AC/DC 	KN56
Green Pilot Light 86 - 264 V AC 	KN57	Red Pilot Light 86 - 264 V AC 	KN58

Control Products 22mm IP 66/67/69k Protection

Description	Order Code	Description	Order Code
Switches, Buttons, Pilot Lights, Potentiometers, E-Stops			
Potentiometer 1.0 k OHM	KN64	Potentiometer 4.7 k OHM	KN67
			
Potentiometer 10 k OHM	KN65	Reset Button with 100mm Rod	KN59
			
Emergency Stop 1 x N/C	KN66	Emergency Stop 1 x N/C Palm Push	KN68
			
Emergency Stop 1 x N/C	KN51	Emergency Stop 1 x N/C	KN86
			
Contact Blocks	KN60 N/O KN61 N/C	Legend Carrier c/w Engraving	KN62
			



IEC 60947-3 SWITCHES, DISCONNECTORS, SWITCH DISCONNECTORS

IEC 60947 is a safety and performance standard for low voltage switchgear (up to 1000V). It has universally replaced IEC 408 and has combined specific requirements of many individual National Standards. IEC 60947 is a uniform standard for most countries around the world, and establishes a truly global market place. IEC 60947-3 is a section 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 the current carrying parts to make and break loads under normal and overload conditions, e.g. motor applications. **Isolation** requires high insulation, sufficient spacing of current carrying parts and mechanical integrity, so that the handle corresponds to the actual contact position, so important for the safety of maintenance personal.

The 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 **Disconnecter** does not have to satisfy the load tests.

A **Switch Disconnector** must satisfy all tests, and is suitable for safety switch applications. A **Disconnecter** must have a direct drive late make, early break auxiliary contact in series with a load breaking device (contactor) to be suitable as a safety switch.

Kraus & Naimer have developed complete products which satisfy all IEC 60947-3 criteria, some of which are listed in this catalogue.

For further information, please contact us.








Note: See pages 95-97 for application guides.

K&N KG, KF, KE Switches Nominal Values To AS/NZS 3947-3

SWITCH TYPES	MAX CABLE SIZE mm ²	THERMAL CURRENT Iu/Ith A	MOTOR RATING 3 x 380v - 440v AC-23A kW
KG10A KG20A KG32A KF20 KF25 KF32  S0 - 48 x 48mm	2.5 6 6 6 6 6	20 25 32 20 25 32	5.5 7.5 11 10 12 16
KG20B KG32B KG41B KA40B KG64B KA63B KG80 KG100 KG105  S1 - 64 x 64mm	6 6 16 25 16 25 50 50 50	25 32 40 40 63 63 80 100 125	7.5 11 15 20 22 22 30 37 45
KG126 KG161 KG211 KG251 KG316  S2 - 88 x 88mm	M10 Lug M10 Lug M12 Lug M12 Lug M12 Lug	125 160 200 250 315	45 55 75 90 110
KE252 KE401 KE631 KE800 KE1200  S3 - 130 x 130mm	Bar Bar Bar Bar Bar	250 400 630 800 1000	132 220 280 450 560


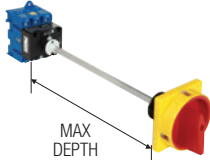

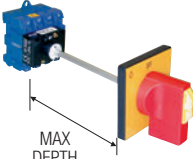



Padlockable Motor Isolators Enclosed - 3 Pole

Amps	kW	Description	Order Code	
3 Pole Plastic Enclosed Isolators				
Red/Yellow emergency switch - IP 66/67				
20	5.5		KGSW20R	
25	7.5		KFSW25R	
32	11		KFSW32R	
40	15		KGSW40R	
63	22		KGSW63R	
80	30		KGSW80R	
100	37		KGSW100R	
125	45		KGSW125R	
125	45			KN361
160	55			KN362
200	75	KN363		
250	90	KN364		
315	110	KN365		
Black/Grey maintenance switch - IP 66/67				
20	5.5		KGSW20B	
25	7.5		KFSW25B	
32	11		KFSW32B	
40	15		KGSW40B	
63	22		KGSW63B	
80	30		KGSW80B	
100	37		KGSW100B	
125	45	KGSW125B		
3 Pole With 1 N/O LMEB Aux Plastic Enclosed Isolators				
Red/Yellow emergency switch - IP 66/67				
20	5.5		KN199	
25	7.5		KN200	
32	11		KN201	
40	15		KN202	
63	22		KN203	
80	30		KN204	
100	37		KN205	
125	45		KN206	
3 Pole Isolators Tag Padlock Handles				
Red/Yellow emergency switch -panel mount 22mm single hole				
20	5.5		KN420	67 (Depth)
25	7.5		KN421	68 (Depth)
32	11		KN422	68 (Depth)

Note: See page 98 for enclosure sizes

Padlockable Motor Isolators - 3 Pole

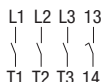
Amps	kW	Description	Order Code	Depth
3 Pole Isolators Disc Padlock Handles				
Red/Yellow emergency switch - panel mount screw fix - IP 66				
20	5.5		KN320	48
25	7.5		KN321	54
32	11		KN322	54
40	15		KN323	60
63	22		KN324	60
80	30		KN325	70
100	37		KN326	70
125	45	KN327	70	
Red/Yellow emergency switch - base mount 22mm with door clutch - IP 66				
20	5.5	 MAX DEPTH	KN328	160
25	7.5		KN329	240
32	11		KN330	240
40	15		KN331	290
63	22		KN332	290
80	30		KN333	290
100	37		KN334	295
125	45	KN335	295	
3 Pole Isolators Tag Padlock Handles				
Red/Yellow emergency switch - panel mount screw fix - IP 66				
20	5.5		KN297	48
25	7.5		KN298	54
32	11		KN299	54
40	15		KN300	60
63	22		KN301	60
80	30		KN302	70
100	37		KN303	70
125	45	KN304	70	
Red/Yellow emergency switch - base mount 22mm with door clutch - IP 66				
20	5.5	 MAX DEPTH	KN311	160
25	7.5		KN312	240
32	11		KN305	240
40	15		KN306	290
63	22		KN307	290
80	30		KN308	290
100	37		KN309	295
125	45	KN310	295	
Red/Yellow emergency switch - base mount with door clutch - IP 66				
125	45		KN356	275
160	57		KN357	275
200	75		KN358	280
250	90		KN359	280
315	110		KN360	280

Padlockable Motor Isolators - 3 Pole



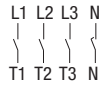
Amps	kW	Description	Order Code	Depth
3 Pole Isolators Disc Padlock Handles				
Black/Grey main switch - panel mount screw fix - IP 66				
20	5.5		KN340	48
25	7.5		KN341	54
32	11		KN342	54
40	15		KN343	60
63	22		KN344	60
80	30		KN345	70
100	37		KN346	70
125	45	KN347	70	
Black/Grey main switch - base mount 22mm with door clutch - IP 66				
20	5.5		KN348	160
25	7.5		KN349	240
32	11		KN350	240
40	15		KN351	290
63	22		KN352	290
80	30		KN353	290
100	37		KN354	295
125	45	KN355	295	
3 Pole Isolators Tag Padlock Handles				
Black/Red main switch - panel mount screw fix - IP 66				
20	5.5		KN498	160
25	7.5		KN499	240
32	11		KN500	240
40	15		KN501	290
63	22		KN502	290
80	30		KN503	290
100	37		KN504	295
125	45	KN505	295	
Black/Red main switch - base mount 22mm with door clutch - IP 66				
20	5.5		KN508	160
25	7.5		KN509	240
32	11		KN510	240
40	15		KN511	290
63	22		KN512	290
80	30		KN513	290
100	37		KN514	295
125	45	KN515	295	



Padlockable Motor Isolators + LMEB Aux - For VSD



Amps	kW	Description	Order Code	Depth
3 Pole With 1 x N/O aux Isolators Tag Padlock Handles				
Red/yellow emergency switch - panel mount 22mm single hole - IP 66				
25	7.5		KN423	76
32	11		KN424	76
Red/yellow emergency switch - panel mount screw fix - IP 66				
25	7.5		KN425	63
32	11		KN426	63
40	15		KN427	71
63	22		KN428	71
80	30		KN429	81
100	37		KN430	81
125	45	KN431	81	
Red/yellow emergency switch - base mount 22mm with door clutch - IP 66				
25	7.5		KN432	170
32	11		KN433	170
40	15		KN434	180
63	22		KN435	180
80	30		KN436	185
100	37		KN437	185
125	45		KN438	185
Red/yellow emergency switch - base mount with door clutch screw fix - IP 66				
125	45		KN439	275
160	55		KN440	275
200	75		KN441	280
250	90		KN442	280
315	110		KN443	280
Additional sealing kit for 22mm mount			SOD V110/NZZ141	
Lock nut tool			SOO T170 09	



Padlockable Motor Isolators - 4 Pole



Amps	kW	Description	Order Code	Depth
4 Pole Isolators Tag Padlock Handles				
Red/Yellow emergency switch - panel mount 22mm single hole - IP 66				
20	5.5		KN444	67
25	7.5		KN445	68
32	11		KN446	68
Red/Yellow emergency switch - panel mount screw fix - IP 66				
20	5.5		KN447	48
25	7.5		KN448	54
32	11		KN449	54
40	15		KN450	60
63	22		KN451	60
80	30		KN452	70
100	37		KN453	70
125	45		KN454	70
Red/Yellow emergency switch - base mount 22mm with door clutch - IP 66				
20	5.5	 MAX DEPTH	KN455	160
25	7.5		KN456	240
32	11		KN457	240
40	15		KN458	290
63	22		KN459	290
80	30		KN460	295
100	37		KN461	295
125	45		KN462	295
Red/Yellow emergency switch - base mount 4 screw with door clutch - IP 66				
125	45		KN463	275
160	55		KN464	275
200	75		KN465	280
250	90		KN466	280
315	110		KN467	280

Padlockable Motor Isolators Enclosed - 3 Pole

L1 L2 L3
 | | |
 } } }
 T1 T2 T3

Amps	kW	Description	Order Code
3 Pole Food Grade Stainless Isolators			
Red/Yellow emergency switch B Series (with gutter) - IP 66/67			
25	7.5	 	KG20B T203*NZ1213 VE
32	11		KG32B T203*NZ1213 VE
40	15		KG41B T203*NZ1213 VE
63	22		KG64B T203*NZ1213 VE
80	30		KG80 T203*NZ1213 VE
100	37		KG100 T203*NZ1213 VE
125	45		KG105 T203*NZ1213 VE
125	45		KG126 T203*NZ1213 VE
160	55		KG161 T203*NZ1213 VE
200	75		KG211 T203*NZ1213 VE
250	90	KG251 T203*NZ1213 VE	
315	110	KG316 T203*NZ1213 VE	

Black/Grey maintenance switch B Series (with gutter) - IP 66/67			
25	7.5	 	KG20B T103*NZ1213 VE
32	11		KG32B T103*NZ1213 VE
40	15		KG41B T103*NZ1213 VE
63	22		KG64B T103*NZ1213 VE
80	30		KG80 T103*NZ1213 VE
100	37		KG100 T103*NZ1213 VE
125	45		KG105 T103*NZ1213 VE
125	45		KG126 T103*NZ1213 VE
160	55		KG161 T103*NZ1213 VE
200	75		KG211 T103*NZ1213 VE
250	90	KG251 T103*NZ1213 VE	
315	110	KG316 T103*NZ1213 VE	

Note: SS Mounting feet available on request

Note: See page 100 for enclosure sizes



Padlockable Motor Isolators Enclosed - 3 Pole + Aux

Amps	kW	Description	Order Code
3 Pole 304 Food Grade Stainless Isolators with 1 x N/O & 1 x N/C Aux			
Red/Yellow emergency switch B Series (with gutter) IP 66/67			
25	7.5	 	KG20B T203*NZ1216 VE
32	11		KG32B T203*NZ1216 VE
40	15		KG41B T203*NZ1216 VE
63	22		KG64B T203*NZ1216 VE
80	30		KG80 T203*NZ1216 VE
100	37		KG100 T203*NZ1216 VE
125	45		KG105 T203*NZ1216 VE
125	45		KG126 T203*NZ1216 VE
160	55		KG161 T203*NZ1216 VE
200	75		KG211 T203*NZ1216 VE
250	90	KG251 T203*NZ1216 VE	
315	110	KG316 T203*NZ1216 VE	
Black/Grey maintenance switch B Series (with gutter) - IP 66/67			
25	7.5	 	KG20B T103*NZ1216 VE
32	11		KG32B T103*NZ1216 VE
40	15		KG41B T103*NZ1216 VE
63	22		KG64B T103*NZ1216 VE
80	30		KG80 T103*NZ1216 VE
100	37		KG100 T103*NZ1216 VE
125	45		KG105 T103*NZ1216 VE
125	45		KG126 T103*NZ1216 VE
160	55		KG161 T103*NZ1216 VE
200	75		KG211 T103*NZ1216 VE
250	90	KG251 T103*NZ1216 VE	
315	110	KG316 T103*NZ1216 VE	

Note: SS Mounting feet available on request

Note: See page 100 for enclosure sizes

Dairy Industry Isolators Enclosed - 3 Pole + Aux



Amps	kW	Description	Order Code
3 Pole Food 304 Grade Stainless Isolators with 2 x N/O LMEB Aux			
Red/Yellow emergency switch (with gutter) - IP 66/67			
25	7.5		KN933
40	15		KN934
40	15	<i>New larger enclosure</i>	KN956
63	22		KN935
63	22	<i>New larger enclosure</i>	KN957
80	30	<i>New smaller enclosure</i>	KN958
80	30		KN937
125	45		KN938
125	45		KN939
160	55		KN940
250	90		KN941
315	110		KN942
400	220		KN944
500	295		KN945

Note: SS Mounting feet available on request

Note: See page 100 for enclosure sizes

Dairy Industry Isolators Enclosed - 3 Pole + Aux



Amps	kW	Description	Order Code
3 Pole 304 Food Grade Stainless Isolators with 2 x N/O LMEB Aux			
Black/Grey maintenance switch (with gutter) - IP 66/67			
25	7.5		KN833
40	15		KN834
63	22		KN835
63	22		KN836
80	30		KN837
125	45		KN838
125	45		KN839
160	55		KN840
250	90		KN841
315	110		KN842
1 Pole Heat Pump Plastic Enclosed Isolators			
Black padlockable - IP 65			
20			KN907
20			KN908

Note: SS Mounting feet available on request

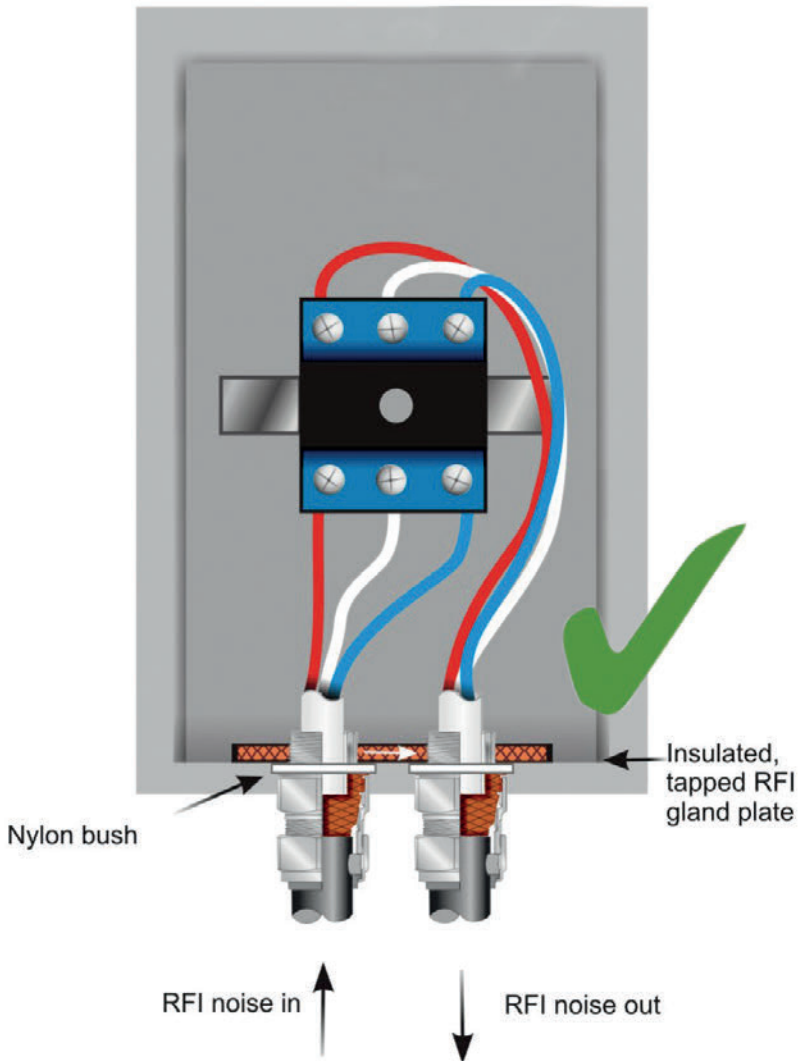
Note: See pages 98 and 100 for enclosure sizes

RFI Gland Plates - for Secure Screen Continuity

Screen cables are designed to contain RFI/EMC noise that can interfere with surrounding electronic equipment and severely impair signals and performance.

When terminating, it is very important that the screen is not broken, or significantly exposed as pig tails and steel enclosures easily become aerial amplifiers.

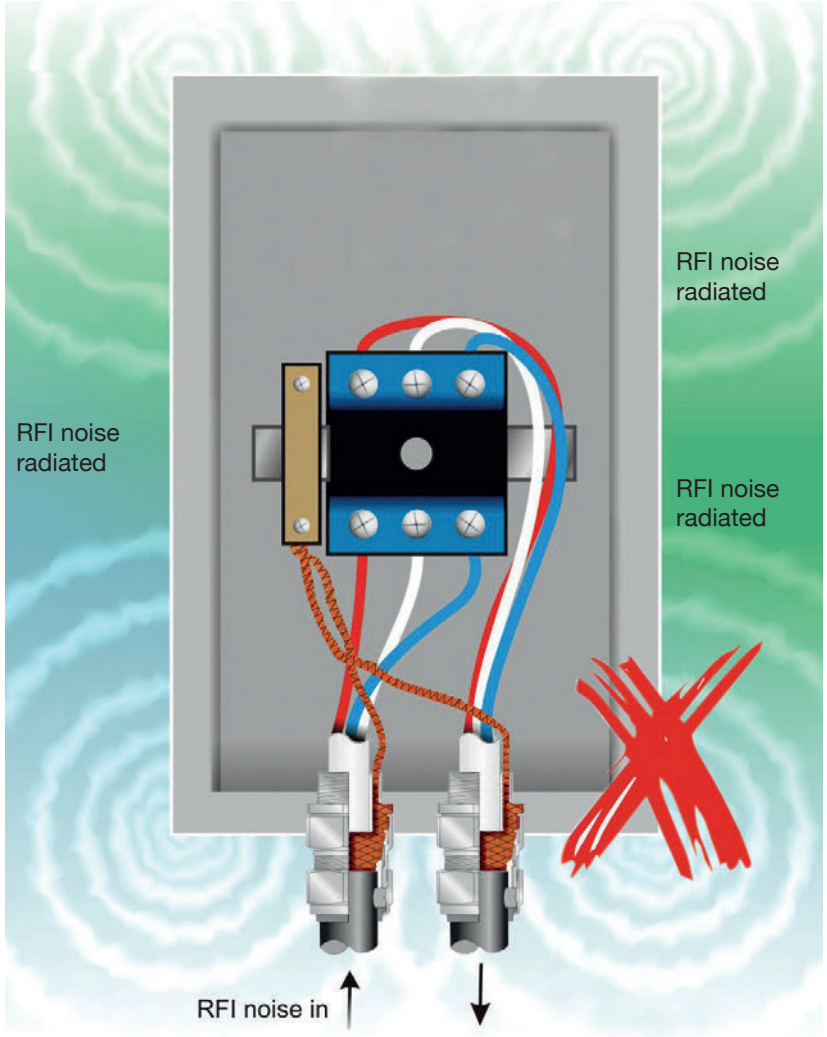
To overcome this, the use of EMC glands and a K&N RFI Gland Kit ensures 360 degree bond and insulated continuity from one gland to the other through the insulated RFI Bar.



RFI Gland Plates - for Secure Screen Continuity

Pig Tail connections and screens bonding to steel enclosures create aerial amplifiers for RFI noise to be radiated to other electronic equipment.

This is overcome by the use of EMC glands and a K&N RFI Gland Kit ensures 360 degree bond and insulated continuity from one gland to the other through the insulated RFI Bar.



RFI Screened Systems For VSD - Plastic Enclosed



Amps	kW	Description	Order Code
3 Pole & Earth Enclosed & RFI Tapped Brass Bar			
lth	AC23-A		
25	7.5		KN410 2x20mm
40	15		KN411 2x25mm
63	22		KN412 2x32mm
80	30		KN470 2X40mm
100	37		KN471 2X40mm

Amps	kW	Description	Order Code
3 Pole + 1 x Late Make Early Break Aux & Earth Enclosed & RFI Tapped Brass Bar			
lth	AC23-A		
25	7.5		KN413 2x20mm
40	15		KN414 2x25mm
63	22		KN415 2x32mm
80	30		KN472 2X40mm
100	37		KN473 2X40mm
125	45		KN474 2x40mm



Gland size	Drilling Centres	Bar Size
2x25mm		9 RFIPDL56 40 31.8 x 70

Gland size	Drilling Centres	Bar Size
2x20mm		9 RFIEC00 40 38.1 x 76
2x25mm		9 RFIEC01 40 38.1 x 76
2x32mm		9 RFIEC02 40 38.1 x 76
2x32mm		9 RFIEC02.1 50 38.1 x 82

RFI Gland Plates - Tapped Brass
Fitted as standard to (non standard combinations available on request)
KN410, 413 RFIEC00
KN411, 414 RFIEC01
KN412, 415 RFIEC02

Note: See page 24 for details

Note: Glands not supplied but available on request


Note: See page 98 for enclosure sizes

RFI Screened Systems For VSD - 304 Stainless Steel



lth	AC23-a	Description	Order Code
3 Pole + 2 x Late Make Early Break Aux Enclosed To Fonterra Spec & RFI Kit			
Red/Yellow emergency switch (with gutter) - IP 66/67			
Amps	KW		Gland
25	7.5		KN946 2x25mm entries
40	15		KN947 2x25mm entries
40	15	<i>New larger enclosure</i>	KN972 2x32mm entries
63	22		KN948 2x32mm entries
63	22	<i>New larger enclosure</i>	KN973 2x32mm entries
63	22		KN949 2x32mm entries
80	30	<i>New smaller enclosure</i>	KN959 2x40mm entries
80	30		KN950 2x40mm entries
125	45		KN951 2x40mm entries
125	45		KN952 2x50mm entries
160	55		KN953 2x50mm entries
250	90		KN954 2x50mm entries
315	110		KN955 2x50mm entries

RFI Kits for Stainless Steel Enclosures

Gland size		Drilling Centres	Bar Size
2x20mm		9 RFIKIT0	60 38.1 x 110
2x25mm		9 RFIKIT1	60 38.1 x 110
2x32mm		9 RFIKIT2	60 38.1 x 110
2x40mm		9 RFIKIT3	90 50.8 x 150
2x40mm		9 RFIKIT3.1	70 50.8 x 130
2x40mm		9 RFIKIT3.2	60 50.8 x 108
2x50mm		9 RFIKIT4	180 76.2 x 250
2x63mm		9 RFIKIT5	180 76.2 x 260

Note: See page 24 for details

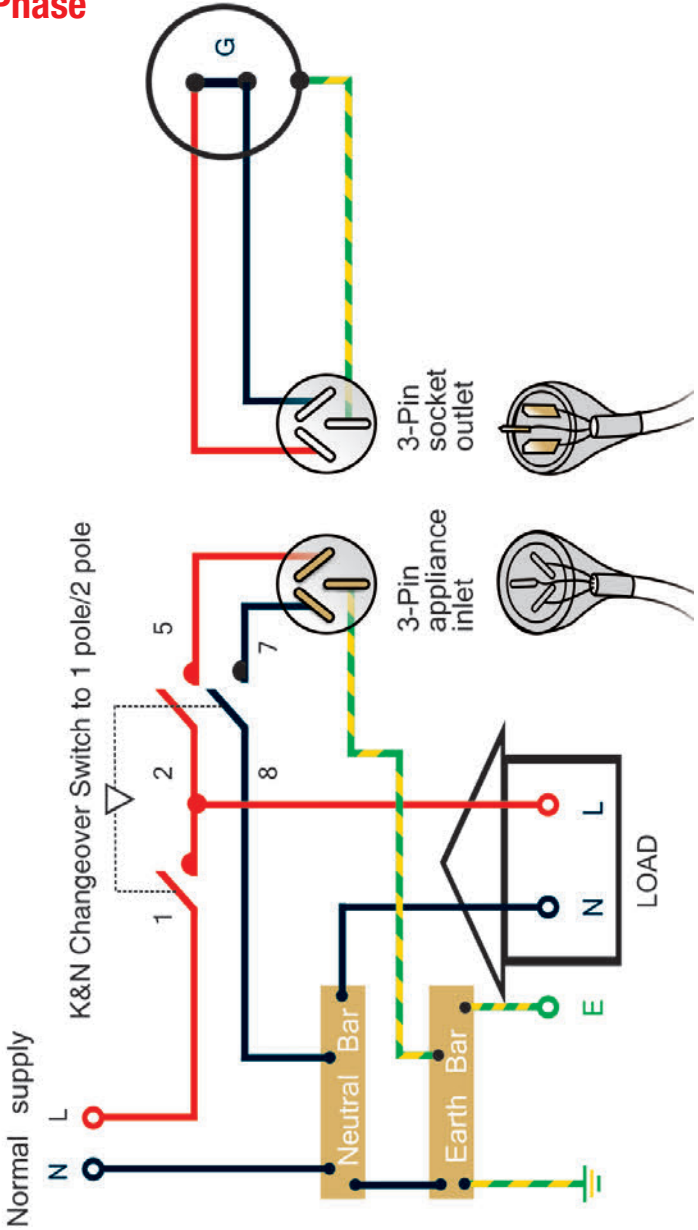
Note: Glands not supplied but available on request

Note: See page 100 for enclosure sizes

Single Phase

Example of connections to AS/NZS 3000:2007 & 3010:2005

For Single phase installations (do not switch normal supply neutral)



Mains Off Generator Switches to AS/NZS 3010: 2005

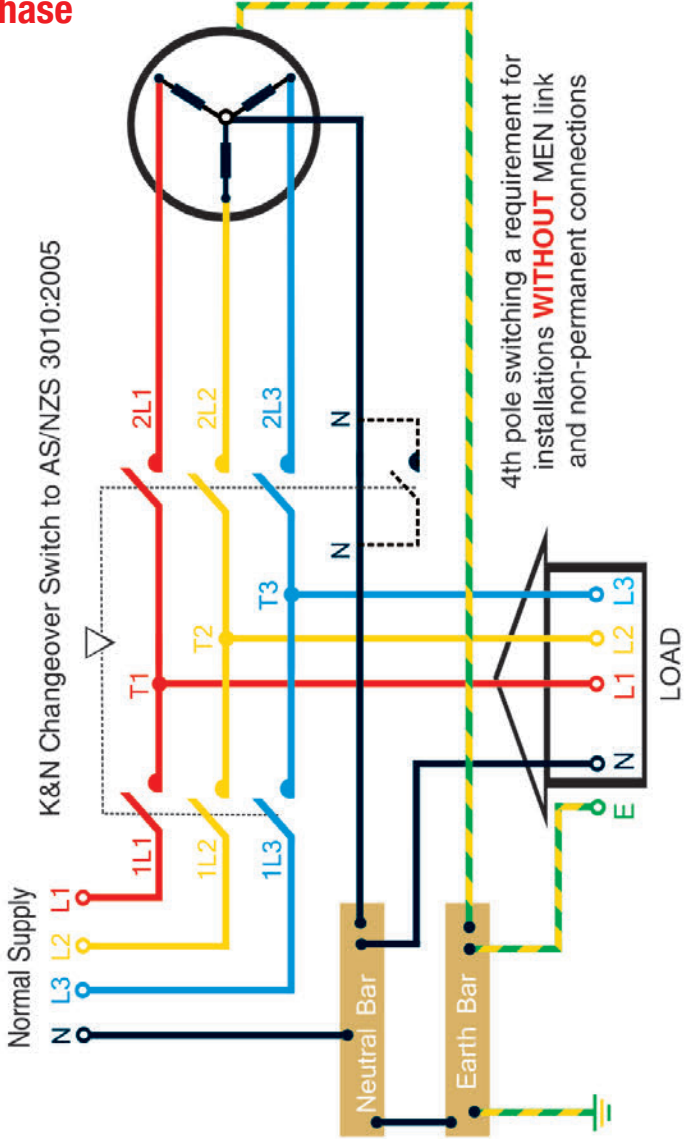
Amps	Description	Order Code
1 Pole & Through Neutral Mains/2 Pole Generator		
Din mount MCB knockout with shallow handle for superboards IP 40		
20	 <p><i>Now with metal shaft</i></p>	KH20 T922*NZ0001 VE2
32		KH32 T922*NZ0001 VE2
40		KH40 T922*NZ0001 VE2
63		KN416
80		KH80 T922*NZ0001 VE2
Din mount MCB knockout standard handle IP 40		
20		KH20 T922*NZ0002 VE2
32		KH32 T922*NZ0002 VE2
40		KH40 T922*NZ0002 VE2
63		KN400
80		KH80 T922*NZ0002 VE2
Base mount with door clutch IP 40		
20		KH20 T922*NZ0003 VE
32		KH32 T922*NZ0003 VE
40		KH40 T922*NZ0003 VE
63		KH63 T922*NZ0003 VE
80		KH80 T922*NZ0003 VE
Enclosed in large plastic enclosure IP 65		
20		KH20 T922*NZ0004 VE
32		KH32 T922*NZ0004 VE
40		KH40 T922*NZ0004 VE
63		KN401
80		KH80 T922*NZ0004 VE
2 Pole Mains / 2 Pole Generator (for pilot)		
Din mount MCB knockout with shallow handle for superboards IP 40		
63	 <p><i>Now with metal shaft</i></p>	KH63 T902*NZ0007 VE2
Enclosed in large plastic enclosure IP65		
63		KH63 T902*NZ0006 VE

Note: See page 102 for dimensions



Three Phase

Example of connections to AS/NZS 3000:2007 & 3010:2005

For three phase installations (do not switch normal supply neutral)



Mains OFF Generator Switches With Appliance Inlet Plug

Amps	Plug	Description	Order Code
1 Pole & Through Neutral Mains/2 Pole Generator			
With wired CEEFORM 3 pin appliance inlet enclosed for INDOOR use			
32	32		MOG321
63	32		MOG631-32
63	63		MOG631
With wired CEEFORM 3 pin appliance inlet enclosed for OUTDOOR use			
32	32		MOG321P
63	32		MOG631-32P
63	63		MOG631P
3 Pole Mains/4 Pole Generator			
With wired CEEFORM 5 pin appliance inlet enclosed for INDOOR use			
32	32		MOG323
63	32		MOG633-32
63	63		MOG633
80	125		MOG803
100	125		MOG1003
125	125		MOG1253
With wired CEEFORM 5 pin appliance inlet enclosed for OUTDOOR use			
32	32		MOG323P
63	32		MOG633-32P
63	63		MOG633P
80	125		MOG803P
100	125		MOG1003P
125	125		MOG1253P
		Up to 63amp	
			
		80, 100, 125amp Side mount on request MCB version available on request	
			<p>We use Walthers CEE form, IEC60309, (formerly IEC309) Appliance Inlets, which are compatible with the following brands of couplers:</p> <ul style="list-style-type: none"> • Walthers • Mennekes • Scame • Gewiss

Tip: Plug not supplied. 56 style appliance inlets and dust caps available on request

Note: See page 101 for enclosure sizes

Mains Off Generator Switches To AS/NZS 3010: 2005

Amps	Description	Order Code
3 Pole Mains/3 Pole Generator		
Din mount MCB knockout with shallow handle for superboards IP 40		
25		KG20A T903*NZ0008 VE2
32		KG32A T903*NZ0012 VE2
40		KG41B T903*NZ0010 VE2
63		KG64B T903*NZ0010 VE2
Din mount MCB knockout with standard handle IP 40		
25		KG20A T903*NZ0006 VE2
32		KG32A T903*NZ0001 VE2
40		KG41B T903*NZ0001 VE2
63		KG64B T903*NZ0001 VE2
80		KG80 T903*NZ0001 VE2
100		KG100 T903*NZ0001 VE2
105	KG105 T903*NZ0002 VE2	
Base mount with door clutch IP 66		
25		KG20A T903*NZ0009 VE
32		KG32A T903*NZ0008 VE
40		KG41B T903*NZ0008 VE
63		KN402
80		KN406
100		KG100 T903*NZ0008 VE
125		KG105 T903*NZ0001 VE
125		KG126 T903*NZ0001 VE
160		KG161 T903*NZ0007 VE
200		C200-4 A212 600 VE
315	C315 A212 600 VE	
Enclosed in large plastic enclosure IP 65		
25		KG20A T903*NZ0010 VE
32		KG32A T903*NZ0009 VE
40		KG41B T903*NZ0009 VE
63		KN403
80		KN407
100		KG100 T903*NZ0009 VE
125		KG105 T903*NZ0002 VE
125		KG126 T903*NZ0008 VE
160	KG161 T903*NZ0008 VE	

Note: See page 99 for enclosure sizes and page 102 for cutouts and footprints

Mains Off Generator Switches to AS/NZS 3010: 2005

Amps	Description	Order Code
3 Pole Mains/4 Pole Generator		
MCB knockout with shallow handle for superboards		
25		KG20A T934*NZ0002 VE2
32		KG32A T934*NZ0002 VE2
40		KG41B T934*NZ0002 VE2
63		KN417
Din mount MCB knockout with standard handle IP 40		
25		KG20A T934*NZ0001 VE2
32		KG32A T934*NZ0001 VE2
40		KG41B T934*NZ0001 VE2
63		KN418
80		KG80 T934*NZ0001 VE2
100		KG100 T934*NZ0001 VE2
125	KG105 T934*NZ0001 VE2	
Base mount with door clutch IP 66		
25		KG20A T934*NZ0003 VE
32		KG32A T934*NZ0003 VE
40		KG41B T934*NZ0003 VE
63		KN404
80		KN408
100		KG100 T934*NZ0003 VE
125		KG105 T934*NZ0003 VE
125		KG126 T934*NZ0001 VE
160	KG161 T934*NZ0001 VE	
Enclosed in large plastic enclosure IP 65		
25		KG20A T934*NZ0004 VE
32		KG32A T934*NZ0004 VE
40		KG41B T934*NZ0004 VE
63		KN405
80		KN409
100		KG100 T934*NZ0004 VE
125		KG105 T934*NZ0004 VE
125		KG126 T934*NZ0002 VE
160	KG161 T934*NZ0002 VE	
		2053.40

Note: See page 99 for enclosure sizes and page 102 for cutouts and footprints

Hot Water Isolator Kits – Compliant to AS/NZS 3000: 2007 & 2018
Padlockable Safety Switch
3F Handle Torque Test compliant to AS/NZS 60947-3 as a Switch Disconnecter

Amps	kW	Description	Order Code
Hot Water Isolator Kits			
1.5m flex c/w glands 16mmø; 1.8m 2.5mm cable; 2 x connectors; mounting block			
20	4.6		KNHWS20AK
32	7.3		KNHWS32AK



Hot Water Isolator Only – Compliant to AS/NZS 3000: 2007 & 2018
Padlockable Safety Switch
3F Handle Torque Test compliant to AS/NZS 60947-3 as a Switch Disconnecter

Amps	kW	Description	Order Code
Hot Water Isolator Kits - Switch Only			
2 x connectors; mounting block			
20	4.6		KNHWS20A
32	7.3		KNHWS32A



AS/NZS 3000: 2007 & 2018
 2.3.2.2.1 Isolator Requirements (precis)

- Shall be capable of withstanding impulse voltages
- Shall not falsely indicate the contacts are Open
- Shall clearly indicate the Off position
- Shall prevent unintentional closure by impact, vibration, etc.
- Shall disconnect all conductors
- Shall be mounted in a readily accessible location

DC Switches For PV Systems to AS/NZS 5033:2014

Description

Order Code

2 Pole 6 Contact (2x3 in Series) Rated Insulation Voltage 1500v

Enclosed with red/yellow locking handle



KN909 Small Enclosure
KN910 Large Enclosure

Rated Values

Operational current (enclosed to 50° C)

1.2 x Voc 2 pole
 1.2 x Voc on each side
 Insulation voltage

DC21B Amps

7	9	12	14	19	23	25
1500v	1500v	1500v	1500v	1500v	1500v	1500v
1200v	1100v	1000v	900v	690v	600v	510v
1500v	1500v	1500v	1500v	1500v	1500v	1500v

2 Pole 6 Contact (2x3 in Series) Rated Insulation Voltage 1000v

Enclosed with red/yellow locking handle

**KN915**

Rated Values

Operational current (enclosed to 50° C)

1.2 x Voc 2 pole
 1.2 x Voc on each side
 Insulation voltage

DC21B Amps

20	30	40
1000v	1000v	1000v
1000v	750v	600v
1000v	1000v	1000v

2 Pole 8 Contact (2x4 in Series) Rated Insulation Voltage 1000v

Enclosed with red/yellow locking handle

**KN916**

Rated Values

Operational current (enclosed to 50° C)

1.2 x Voc 2 pole
 1.2 x Voc on each side
 Insulation voltage

DC21B Amps

30	40
1000v	1000v
1000v	800v
1000v	1000v

AC Isolators Enclosed

AC isolation 2 pole

20A
25A






KN911 Small Enclosure
KN912 Small Enclosure

20A
25A

KN913 Large Enclosure
KN914 Large Enclosure

Note: See page 99 for enclosure sizes Tip: For terminal torque values see page 105

K&N Cam Switches Nominal Values To AS/NZS 3947-3

SWITCH TYPES		MAX CABLE SIZE mm ²	THERMAL CURRENT Iu/Ith A	MOTOR RATING 3 x 380v - 440v AC-23A kW
CA4 CG4		2 x 1.5	10	3
S00 - 30 x 30mm				
CA10 CA20 CA25		2 x 2.5 2 x 4 2 x 6	20 25 32	7.5 11 15
S0 - 48 x 48mm				
CA 40 CA50 CA63 C26 C32 C42		16 16 16 2 x 6 2 x 10 2 x 16	40 50 63 32 50 63	18.5 22 30 15 30 45
S1 - 64 x 64mm				
C80 C80-6 C125 C125-6 C200-4		35 M8 Lug 70 M8 Lug M8 Lug	115 115 150 150 200	45 45 75 75 75
S2 - 88 x 88mm				
C43 C315		2 x 16 M12 Lug	63 315	45 132
S3 - 130 x 130mm				

Rotary Cam Switches For Low Voltage Systems Minimum Ratings

Switch	Voltage	Current mA	Contact System	Contact Material
Minimum ratings				
CA10	20	5	Rigid double break bridge	Silver alloy
CA10-1	20	3	Rigid double break bridge	Gold alloy
CAD11	1*	1	H-bridge with cross wire contact	Gold alloy
CAD12	6	3	H-bridge with cross wire contact	Silver alloy
CG4	20	5	Multi Cross-point contacts	Silver alloy
CG4-1	12	3	Multi Cross-point contacts	Gold/Cobalt alloy
DH11	1*	1	H-bridge with cross wire contact	Gold alloy
DH12	6	3	H-bridge with cross wire contact	Silver alloy

* For voltage values less than 1v please consult K&N



CG4 Contacts



CA10 Contacts



CAD Contacts

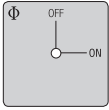
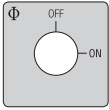
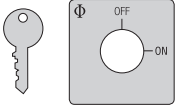
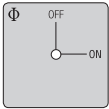
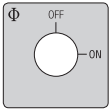
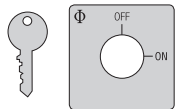


Low Voltage and Electronic Circuit Switches from 30mV

Contact reliability depends on various parameters such as the number of operations per day, maximum permissible contact resistance, environmental conditions (dust, chemical contamination of the ambient air) and others.

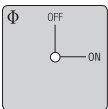
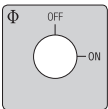
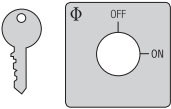
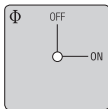
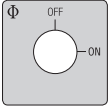
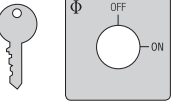
We recommend the use of K&N specialist switches for low voltage 4-20 mA applications

Rotary Cam Switches OFF ON IP 66

Amps	Description	Order Code
1 Pole OFF ON		
Panel mount screw fix		
1-20mA		CAD11 A290 600 EF
10		CG4 A290* NZ1001 EF-V
20		CA10 A290* NZ1001 EF
25		CA20 A290* NZ1001 EF
22mm single hole mount		
1-20mA		CAD11 A290 600 FT2
10		CG4 A290* NZ1001 FS2-V
20		CA10 A290* NZ1001 FT2
25		CA20 A290* NZ1001 FT2
Key operated 22mm single hole mount key removable OFF only		
1-20mA		CAD11 A290* NZ0003* FT2
10		CG4 A290* NZ0001* FS2-V
20		CA10 A290* NZ0003* FT2
25		CA20 A290* NZ0003* FT2
2 Pole OFF ON		
Panel mount screw fix		
1-20mA		CAD11 A291* NZ1001 EF
10		CG4 A291* NZ1001 EF-V
20		CA10 A291* NZ1001 EF
25		CA20 A291* NZ1001 EF
22mm single hole mount		
1-20mA		CAD11 A291* NZ1001 FT2
10		CG4 A291* NZ1001 FS2-V
20		CA10 A291* NZ1001 FT2
25		CA20 A291* NZ1001 FT2
Key operated 22mm single hole mount key removable OFF only		
1-20mA		CAD11 A291* NZ0003* FT2
10		CG4 A291* NZ0002* FS2-V
20		CA10 A291* NZ0001* FT2
25		CA20 A291* NZ0001* FT2
Additional sealing kit for 22mm mount		SOD V110/NZZ141
Lock nut tool		S00 T170 09

Tip: Up to 2000 Amps and 36 positions available

Rotary Cam Switches OFF ON IP 66

Amps	Description	Order Code
3 Pole OFF ON		
Panel mount screw fix		
1-20mA		CAD11 A292 600 EF CG4 A292* NZ1001 EF-V CA10 A292* NZ1001 EF CA20 A292* NZ1001 EF
10		
20		
25		
22mm single hole mount		
1-20mA		CAD11 A292 600 FT2 CG4 A292* NZ1001 FS2-V CA10 A292* NZ1001 FT2 CA20 A292* NZ1001 FT2
10		
20		
25		
Key operated 22mm single hole mount key removable OFF only		
1-20mA		CAD11 A292* NZ0002* FT2 CG4 A292* NZ0002* FS2-V CA10 A292* NZ0002* FT2 CA20 A292* NZ0002* FT2
10		
20		
25		
4 Pole OFF ON		
Panel mount screw fix		
1-20mA		CAD11 A324 600 EF CG4 A324* NZ1001 EF-V CA10 A324* NZ1001 EF CA20 A324* NZ1001 EF
10		
20		
25		
22mm single hole mount		
1-20mA		CAD11 A324 NZ1001 FT2 CG4 A324* NZ1001 FS2-V CA10 A324* NZ1001 FT2 CA20 A324* NZ1001 FT2
10		
20		
25		
Key operated 22mm single hole mount key removable OFF only		
1-20mA		CAD11 A324* NZ0003* FT2 CG4 A324* NZ0001* FS2-V CA10 A324* NZ0001* FT2 CA20 A324* NZ0001* FT2
10		
20		
25		
Additional sealing kit for 22mm mount		SOD V110/NZZ141
Lock nut tool		S00 T170 09

Rotary Cam Switches Changeover IP 66

Amps	Description	Order Code
1 Pole Changeover With OFF		
Panel mount 4 screw		
1-20mA		CAD11 A210 623 EF
10		CG4 A210 623 EF-V
20		CA10 A210 623 EF
25		CA20 A210 623 EF
22mm single hole mount		
1-20mA		CAD11 A210 623 FT2
10		CG4 A210 623 FS2-V
20		CA10 A210 623 FT2
25		CA20 A210 623 FT2
1 Pole Changeover With OFF Spring Return to Centre		
Panel mount 4 screw		
1-20mA		CAD11 A214 600 EF
10		CG4 A214 600 EF-V
20		CA10 A214 600 EF
22mm Single hole mount		
1-20mA		CAD11 A214 600 FT2
10		CG4 A214 600 FS2-V
20		CA10 A214 600 FT2
3 Pole Changeover With OFF		
Panel mount 4 screw		
1-20mA		CAD11 A212 623 EF
10		CG4 A212 623 EF-V
20		CA10 A212 623 EF
25		CA20 A212 623 EF
Single hole mount 22mm		
1-20mA		CAD11 A212 623 FT2
10		CG4 A212 623 FS2-V
20		CA10 A212 623 FT2
25		CA20 A212 623 FT2
Additional sealing kit for 22mm mount		SOD V110/NZZ141
Lock nut tool		S00 T17009

Rotary Cam Switches Changeover IP 66

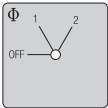
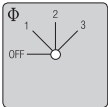
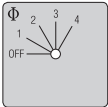
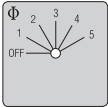
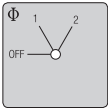
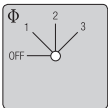
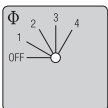
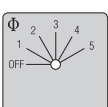
Amps	Description	Order Code
1 Pole Changeover Without OFF		
Panel mount screw fix		
1-20mA		CAD11 A220 600 EF
10		CG4 A220 600 EF-V
20		CA10 A220 600 EF
25		CA20 A220 600 EF
22mm single hole mount		
1-20mA		CAD11 A220 600 FT2
10		CG4 A220 600 FS2-V
20		CA10 A220 600 FT2
25		CA20 A220 600 FT2
3 Pole Changeover Without OFF		
Panel mount screw fix		
1-20mA		CAD11 A222 600 EF
10		CG4 A222 600 EF-V
20		CA10 A222 600 EF
25		CA20 A222 600 EF
22mm single hole mount		
1-20mA		CAD11 A222 600 FT2
10		CG4 A222 600 FS2-V
20		CA10 A222 600 FT2
25		CA20 A222 600 FT2
Additional sealing kit for 22mm mount		SOD V110/NZZ141
Lock nut tool		S00 T170 09

Rotary Cam Switches Multi-step IP 66

Amps	Description	Order Code
Multi-step Without OFF Panel Mount screw fix IP 66		
1 pole 3 step without OFF		
1-20mA		CAD11 A230 600 FT2
20		CA10 A230 600 FT2
25		CA20 A230 600 FT2
1 pole 4 step without OFF		
1-20mA		CAD11 A231 600 FT2
20		CA10 A231 600 FT2
25		CA20 A231 600 FT2
1 pole 5 step without OFF		
1-20mA		CAD11 A232 600 FT2
20		CA10 A232 600 FT2
25		CA20 A232 600 FT2
1 pole 6 step without OFF		
1-20mA		CAD11 A233 600 FT2
20		CA10 A233 600 FT2
25		CA20 A233 600 FT2
2 pole 3 step without OFF		
1-20mA		CAD11 A250 600 FT2
20		CA10 A250 600 FT2
25		CA20 A250 600 FT2
2 pole 4 step without OFF		
1-20mA		CAD11 A251 600 FT2
20		CA10 A251 600 FT2
25		CA20 A251 600 FT2
2 pole 5 step without OFF		
1-20mA		CAD11 WAA252 600 FT2
20		CA10 WAA252 600 FT2
25		CA20 WAA252 600 FT2
2 pole 6 step without OFF		
1-20mA		CAD11 WAA253 600 FT2
20		CA10 WAA253 600 FT2
25		CA20 WAA253 600 FT2

Tip: Many more variations available

Rotary Cam Switches Multi-step IP 66

Amps	Description	Order Code
Multi-step With Off Panel Mount screw fix IP 66		
1 pole 2 step with OFF		
1-20mA 20 25		CAD11 A240 620 FT2 CA10 A240 620 FT2 CA20 A240 620 FT2
1 pole 3 step with OFF		
1-20mA 20 25		CAD11 A241 620 FT2 CA10 A241 620 FT2 CA20 A241 620 FT2
1 pole 4 step with OFF		
1-20mA 20 25		CAD11 A242 620 FT2 CA10 A242 620 FT2 CA20 A242 620 FT2
1 pole 5 step with OFF		
1-20mA 20 25		CAD11 A243 620 FT2 CA10 A243 620 FT2 CA20 A243 620 FT2
2 pole 2 step with OFF		
1-20mA 20 25		CAD11 A260 620 FT2 CA10 A260 620 FT2 CA20 A260 620 FT2
2 pole 3 step with OFF		
1-20mA 20 25		CAD11 A261 620 FT2 CA10 A261 620 FT2 CA20 A261 620 FT2
2 pole 4 step with OFF		
1-20mA 20 25		CAD11 WAA262 620 FT2 CA10 WAA262 620 FT2 CA20 WAA262 620 FT2
2 pole 5 step with OFF		
1-20mA 20 25		CAD11 WAA263 620 FT2 CA10 WAA263 620 FT2 CA20 WAA263 620 FT2

Rotary Cam Switches Motor Control IP 66

Amps	Description	Order Code
Motor Reversing Switches		
Enclosed 1 phase & 3 phase IP 66		
20	AC4-1.5kW	KN10
Panel mount screw fix 1 phase		
20	AC4-0.75kW	CA10 WAA622 600 EF
25	AC4-1.1kW	CA20 WAA622 600 EF
32	AC4-1.5kW	CA25 WAA622 600 EF
Panel mount screw fix 3 phase		
20	AC4-1.5kW	CA10 A401 620 EF
25	AC4-3kW	CA20 A401 620 EF
32	AC4-5.5kW	CA25 A401 620 EF
Panel mount screw fix 3 phase spring return to OFF		
20	AC4-1.5kW	CA10 WAA228 EF
Motor 2 Speed Control Switches (delta double star)		
Panel mount screw fix OFF 1 2		
20	AC23-7.5kW	CA10 A440 620 EF
25	AC23-11kW	CA20 A440 620 EF
32	AC23-15kW	CA25 A440 620 EF
Panel mount screw fix 1 OFF 2		
20	AC23-7.5kW	CA10 A441 620 EF
25	AC23-11kW	CA20 A441 620 EF
32	AC23-15kW	CA25 A441 620 EF
Motor Start Switches (star delta) 3 phase		
Panel mount screw fix OFF Δ \triangle		
20	AC2-7.5kW	CA10 A410 620 EF
25	AC2-11kW	CA20 A410 620 EF
32	AC2-15kW	CA25 A410 620 EF



KN 10

Tip: A single tapped winding motor has only 6 terminals. Do not confuse with Star Delta motors

Rotary Cam Switches Metering & Binary Codes

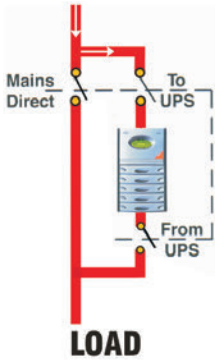
Amps	Description	Order Code
Metering Switches Screw Fix Panel Mount		
Voltmeter 3 phase 3 wire		
20		CA10 A004 623 EF
Voltmeter 3 phase to phase & 3 phase to N		
20		CA10 A007 623 EF
Ammeter 2 pole for 3 CT's or direct reading		
20		CA10 A038 621 EF
Ammeter 1 pole for 3 CT's only		
20		CA10 A048 624 EF
Binary Code 3 Contact 0-7		
22mm single hole mounting		
1-20ma		CAD11 A540 600 FT2
10		CG4-1 A540 600 FS2-V
5		DH11 A540 600 FT2
Binary Code 4 Contact 0-9		
22mm single hole mounting		
1-20ma		CAD11 A550 600 FT2
10		CG4-1 A550 600 FS2-V
5		DH11 A550 600 FT2
Binary Code 4 Contact 0-11		
22mm single hole mount		
10		CG4-1 A543 600 FS2-V



Wrap Around Bypass Switch

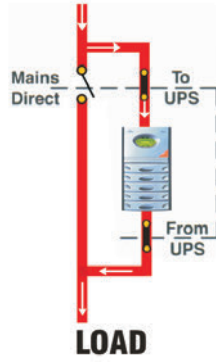
1. Off

All contacts are open. The load is isolated from UPS and mains.



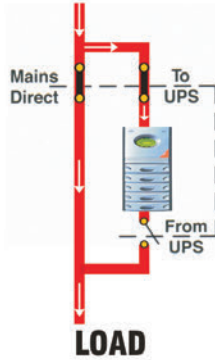
2. Normal

Power flows via the UPS to the load. The load is isolated from the unconditioned mains.



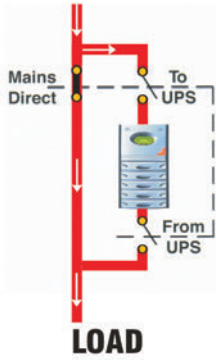
3. Test

The load is connected to the mains and is isolated from the UPS output. The UPS has power for testing.

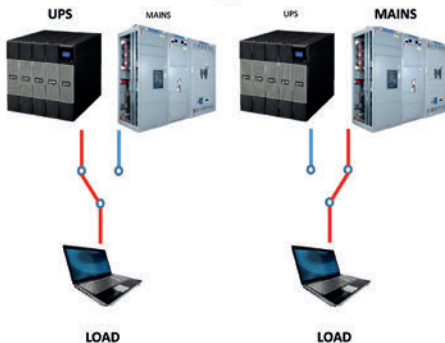


4. Bypass

The load is connected to the mains and the UPS is isolated and may be safely removed or serviced.



Tail End Bypass Switch



Rotary Cam Switches UPS Bypass

Amps	Description	Order Code
Tail End Bypass Switches MB4B		
Single phase (2 Pole)		
AC21	kVA 230v	
16	4.0	CA10 NZH768
32	7.5	CA25 NZH768
63	12	CA63 NZH768
Three phase + N (4 Pole)		
AC21	kVA 230v	
16	11.5	CA10 NZK406
32	23	CA25 NZK406
63	45	CA63 NZK406
100	72	C80-6 NZK406
150	107	C125-6 NZK406
315	225	C315 NZK406



Options Available For UPS Systems



Pushbutton Interlocks
 Solenoid Interlocks
 Signalling Aux. Contacts
 Key Locks
 Padlock Handles
 Enclosures to Suit
 Panel or Base Mounting



Order Sheet For Special Switches For Copying

Master (for copying)

Escutcheon plate	Type of Switch / Configuration	Customer Information
	Type of Switch:	Company:
	Mounting:	Contact:
	Escutcheon Plate:	Date:
	Optional Extras:	Tel:
		Fax:
		E-Mail:
		 Kraus & Naimer Ltd. <small>BLUE LINE switchgear NZZ</small>

Switching Function			
	Position / Lettering	Degree	
 Spring return			
			270
			300
			330
			0
			30
			60
			90
			120
			150
			180
			210
			240

X Contact closed
 Contact closed during switching
 Contact Bridge

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

CREATE YOUR SWITCH:

ONLINE:


Create your own special switch online using the **NEW** eSwitch tool. Just scan the Q code and click on eSwitch icon, register and you are all set to go.



Order Sheet For Special Switches And Example Plates

Example








Escutcheon plate	Type of Switch / Configuration	Customer Information
<p>MILK PUMP</p>	Type of Switch: <u>CA-10</u> Mounting: <u>Single hole</u> Escutcheon Plate: <u>Special with header plate</u> Optional Extras: <u>Key switch with Key out in FWD only</u>	Company: <u>K&N Electrical</u> Contact: <u>Rory</u> Date: <u>29-10-2012</u> Tel: <u>03-123 4567</u> Fax: <u>03-123 4568</u> E-Mail: <u>Rory@knelectrical.co.nz</u>
Kraus & Naimer Ltd. <small>BLUE LINE switchgear NZ</small>		

Switching Function																																																				
Spring-ram Position / Lettering Degree	Customer's terminal markings																																																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48				
START											X																																									
OFF	X	X	X																																																	
FWD								X										X																																		
ON		X	X						X																																											



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

Switch Optional Extras

Description	Order Code
Padlocking Handle - Other colour options available	
For 1 padlock 	V840K
The padlock is an integral part of the switch handle 	V840A
Locking handle for DIN cutout handles 	V840B
For 4 padlocks Available in: S0 - 48mm ² S1 - 64mm ² S2 - 88mm ² S3 - 130mm ² 	V845
Mounting Type - 4 screw panel mount 	V845/E21/A11
Mounting Type - 22mm single hole panel mount 	V845/E21/D11
Mounting Type - 22mm single hole base mount 	V845/E21A3/12

Switch Optional Extras

Description

Order Code

Padlocking Handle - Other colour options available

For 3 padlocks

Available in:

S0 - 48mm²S1 - 64mm²S2 - 88mm²

V840G/D

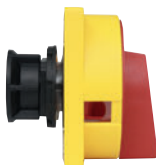
Mounting Type - 4 screw panel mount

V840G/D62



Mounting Type - 22mm single hole base mount

V840G/D61A1



Available in:

S1 - 64mm²

V840G/B

Mounting Type - 4 screw panel mount

V840G/BD62



Mounting Type - 22mm single hole base mount

V840G/BD61A2



Switch Optional Extras

Description	Order Code
Door Clutch & Shaft Extensions	
<p>Padlock device - Heavy duty</p> <p>Multiple locking positions - Programmable</p>	<p>V850</p> <p>S1-S3</p>
<p>Shaft locking device (Locking at 9 O'Clock only)</p>	<p>V840VE</p>
<p>Enclosure engraving - Plastic</p> <p>Stainless</p>	
<p>Single hole 22mm door clutch</p>	<p>M295A</p>
<p>Single hole 22mm with door clutch and locking handle</p>	<p>V840E</p>
<p>Door clutch with shaft extension</p>	<p>M280D</p>

Switch Optional Extras

Description	Order Code
Door Clutch & Shaft Extensions	
Centring aid for door clutches 	M600
Door clutch for misaligned doors with locking handle - Defeatable 	M700
Single hole 22mm with door clutch and locking handle - Defeatable 	M800 M810
Shaft extensions up to 990mm 	M004D
Standard shaft 	KOB M001 01
Special engraving - header 2 line Special engraving - header 3 line 	PRC PRA

Switch Optional Extras

Description	Order Code
Mounting Units	
Panel mount screw fix 	E
Panel mount screw fix IP 66 	EF1
Base mount screw fix 	VE
Base mount DIN rail 	VE1
Base mount DIN rail with MCB cut out 	VE21
Double end mount for fixing of esc. plate with DIN mounting base 	VE1E

Switch Optional Extras

Description

Order Code

Mounting Units

Double end mount for fixing of esc.
plate with screw mounting base



ER

Single hole mount
without esc plate 16/22mm
without esc plate 22mm



FS1

FT1

Single hole mount
square plate 16/22mm
square plate 22mm



FS2

FT2

Single hole with plate 16/22mm
rectangle 30x39
Single hole with plate 22mm
rectangle 48x59
Single hole with plate 22mm
rectangle 64x78



FS4

FT6

FH4

Next size up handle and plate



EG

Switch Optional Extras

Description	Order Code
Key Locks	
Direct drive operator (less switch and lock) - For CA10-CA25 	V750/A9
For base mounting VE21 - For CA4-CA25 	V750D
For single hole 16/22mm security key - For CA4/CG4 	V750D/1
For single hole 16/22mm standard K&N key - For CA4/CG4 	V750D/2
For single hole 22mm standard K&N key - For CA10-CA25 	V750D/3
Separate drive key lock standard K&N key - For CA10-CA25 	V760/AE

Switch Optional Extras

Description	Order Code
Key Locks & Aux Contacts	
Separate drive key lock Yale type key - For CA10-C315 	V760/A
With half-cylinder lock - For CA10-CA25 	V765
5 pin barrel 	9 201/5P
Spare keys Ronis (601) Standard K&N (K&N101) Spare keys security 	S00 V750 S2 SOC V750 S2 Kaba EG0031
Clip on aux contacts - base mount - 1xN/O 1xN/C for KG20 - KG32, KH16 - KH25 for KG41 - KG64 for KG80 - KG105 	K0-H010/A11-VE K1-H010/A11-VE K2-H010/A11-VE
Clip on aux contacts - panel mount - 1xN/O 1xN/C for KG20 - KG32, KH16 - KH25 for KG41 - KG64 for KG80 - KG105 	K0-H010/A11-E K1-H010/A11-E K2-H010/A11-E

Fortress Trapped Key Interlocking, Zero Energy & Isolation Systems

Fortress Interlocks design and manufacture safety interlock systems for industrial applications. These range from power generation, steel making, automotive manufacturing to food and beverage processing, materials recycling, concrete processing and construction.

Through the use of interlocks, the Fortress products ensure all activities are undertaken in a safe, predetermined sequence e.g. isolating the power, air and hydraulic systems before any maintenance work can take place.

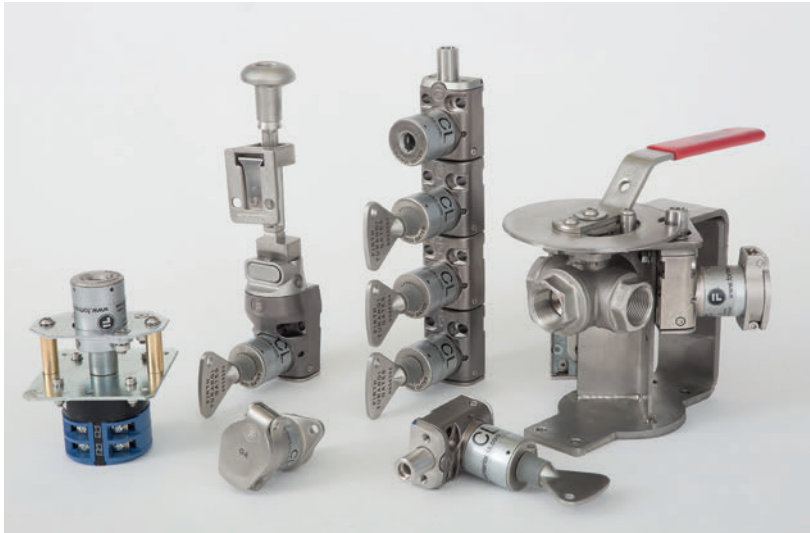
This creates a safer workplace where employees are safeguarded from injury and equipment is protected from damage.

The Fortress product portfolio includes trapped key interlocks (mGard), heavy duty safety gate switches, with and without guard locking (amGard Pro) and standard duty interlocks with in-built control functionality (tGard).


All product ranges are compliant with the latest machinery safety standards and independently approved by TUV.

Because this product is modular, they can be adapted to just about any safeguarding scenario in just about any industrial environment, from food and drink to steel and timber.

With over 40 years' experience, Fortress Interlocks have become known in the industry for innovative design, robust engineering and reliability.



Note: For assistance please talk to your friendly Kraus & Naimer representative or call 0800 736 522



Kraus & Naimer
BLUE LINE INNOVATION


For isolation of new & existing plant, K&N interlocking systems are a simple mechanical solution to guarantee a safe work place. The robust design can withstand harsh environments including vibration

Zero Energy Isolation

Options Include

- Interlock with limit switch
- Interlock with main switch
- Solenoid controlled
- Time delay
- Alex key switch
- Key exchange box
- Dust covers
- Zinc/316 SS construction

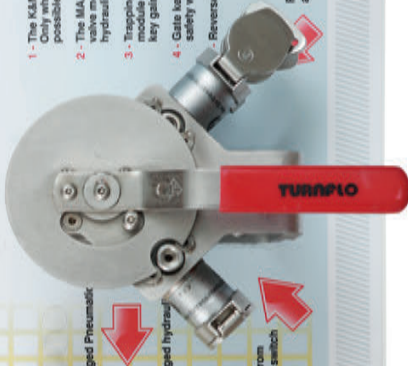
Safety Gate Access




Machine guarding application example

- 1 - The K&N safety MAIN SWITCH is turned OFF. Only when the power is isolated is it possible to remove the trapped key.
- 2 - The MAIN SWITCH key is inserted into the valve module. This allows the pneumatics, hydraulics etc. to be isolated and dumped.
- 3 - Trapping the MAIN SWITCH key in the valve module allows the removal of the gate access key gaining access to the restricted area.
- 4 - Gate key is taken by operator ensuring his safety while in restricted area.

Reverse the steps to re-start.








Kraus & Naimer
BLUE LINE INNOVATION

Note: For assistance please talk to your friendly Kraus & Naimer representative or call 0800 736 522

Switch Enclosures Plastic (Less Switch)

Size	Best For	Order Code
Plastic		
Plastic surface mount DIN enclosures for Generator c/o switches		
120x130x70	2 pole c/o to 40 amps	9 SE6P
160x160x65	3/4 pole c/o to 63 amps	9 ME8
		
ABS chemical resistant enclosures IP 65 (UV resistant available on request)		
110x80x70	Switches & Push buttons	9 87-84303
110x80x85	Switches & Push buttons	9 87-84304
170x140x95	KH20/32 & KG20/32	9 87-84315
250x150x100	KH63/80 & KG41/64	9 87-84318
190x190x130	KH63/80 & KG41/64	9 767-80041
280x190x130	KH63/80 & KG41/64	9 767-80042
280x280x130	KH63/80 & KG41/64	9 767-80043
380x280x130	KH80/100/105	9 767-80044
190x190x180	KH60/80 KG41/64	9 767-80001
280x190x180	KH80/100/105	9 767-80002
280x280x180	KG80/100/105	9 767-80003
380x280x180	KG80/100/105	9 767-80004
560x380x180		9 767-80046
		
Sheet Steel Powder Coated		
Fixed cover IP 65		
150x150x120	KH20/32 & KG20/32	9 CT151512
200x200x120	KH20/32 & KG20/32	9 CT202012
Hinged door IP 65		
250x200x100	KH60/80 & KG41/64	9 CR252010
250x200x150	KH60/80 & KG41/64	9 CR252015
300x250x150	KG80/100/105	9 CR302515
300x300x200	KG80/100/105	9 CR303020
400x300x200	KG126/316	9 CR403020
		

Tip - Holes punched to order free of charge - RFI screening possible

Switch Enclosures Stainless Steel (Less Switch)

Size	Best For	Order Code
Stainless Steel 304		
Flat top (with gutter) IP 66 - sloping tops on request		
200x120x100	KH60/80 & KG41/64	9 NZ2/0000B
250x150x100	KH60/80 & KG41/64	9 NZ5/0000B
280x190x130	KH60/80 & KG41/64	9 NZ9/0000B
300x300x150	KH80 & KG100/105	9 NZ3/0000B
400x300x150	KG126/316	9 NZ4/0000B
600x400x250	Oversized for extra wiring room	9 NZ6/0000B
800x400x250	Oversized for extra wiring room	9 NZ8/0000B
800x600x250	Oversized for extra wiring room	9 NZ10/0000B
Control stations IP 66		
100x100x85	1 22mm hole	9 NZPB1
160x100x85	2 22mm hole	9 NZPB2
220x100x85	3 22mm hole	9 NZPB3



Note: SS Mounting feet available on request

Tip - Holes punched to order free of charge - RFI screening possible

Rope Switches, Reversing Switches

Amps	Description	Order Code
Rope Pull - Low Voltage Contacts		
Plastic enclosures IP 44		
6	1 pole Pull On Pull Off	KN960
6	3 pole Pull On Pull Off	KN961
6	1 pole Momentary	KN962
6	2 pole Momentary	KN963
6	1 pole C/O Stepping	KN964
6	1 pole Intermediate switch	KN971
Metal enclosures IP 65		
6	1 pole Pull On Pull Off	KN965
6	3 pole Pull On Pull Off	KN966
6	1 pole Momentary	KN967
6	2 pole Momentary	KN968
6	1 pole C/O Stepping	KN969
6	1 pole N/C Spring Return	KN970
Reversing Switches		
1.5 kW 1 or 3 phase FOR OFF REV switch enclosed with cord pull		
20	Latching	CA10 NZP052*EG
20	Spring Return	CA10 NZH972
1.5 kW 1 or 3 phase FOR OFF REV switch with lever mounting plate		
20	Latching	CA10B NZH789*E
20	Spring Return	CA10B NZT282*E
1.5 kW 1 or 3 phase FOR OFF REV enclosed switch IP 65		
20	Enclosed	KN10
20	Bakers rev sw c/w aux	CA10 NZB581 EG
Commercial & Machinery Switches		
12	Concrete mixer switch	CA4 NZQ471 FS2
20	Tyre changing switch	CA10 NZN883
32	Deep fryer 3 heat switch	C26 AH5458



KN960



KN965



NZP052





NZH972

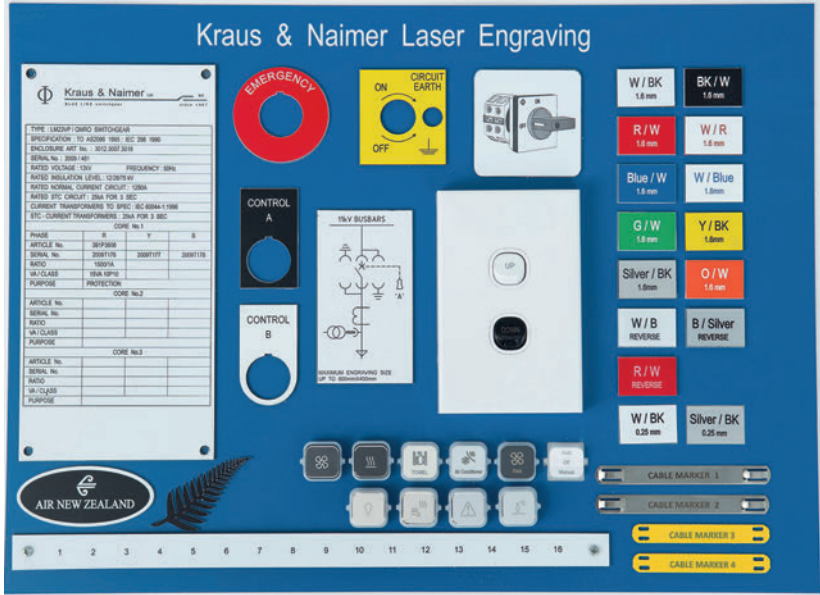


KN10

56 Retrofits - Less Base

Amps	kW	Description	Order Code
3 Pole			
Base mount switch only			
25	7.5		KG20B T303*NZ0027 VE
63	22		KG64B T303*NZ0027 VE
Base mount switch with locking handle, mounting bracket and lid			
20	7.5		KG20B T103*NZ0026 VE
63	22		KG64B T103*NZ0026 VE
3 Pole + 1 x N/O Gold Aux Contact			
Panel mount switch with locking handle			
25	7.5		KG20B T103*NZ0076 E
63	22		KG64B T103*NZ0076 E
Panel mount switch with locking handle and lid			
25	7.5		KG20B T103*NZ0075 E
63	22		KG64B T103*NZ0075 E
Base mount switch only			
25	7.5		KG20B T103*NZ0025 VE
63	22		KG64B T103*NZ0025 VE
Base mount switch with locking handle, mounting bracket and lid			
25	7.5		KG20B T103*NZ0023 VE
63	22		KG64B T103*NZ0023 VE
Lid only with locking handle - fits all base mount switches			
			S1 V840G/NZZ112
			

Engraving & Labels



Engraving & Labels

Standard Engraving (includes 1, 2 or 3 lines of text)

Order Code	Description	Standard	Adhesive
MECH ENG	Domestic light Mech		
PLATE ENG	Domestic Switch Plate		
S/S TAG ENG	Stainless Cable Tag		
PLASTIC TAG	Yellow Plastic Cable Tag		
GRAVO-KN1000	50x16 – Advise Colour		
GRAVO-KN1001	75x16 – Advise Colour		
GRAVO-KN1002	27x18 – Advise Colour		
GRAVO-KN1003	60x20 – Advise Colour		
GRAVO-KN1004	40x25 – Advise Colour		
GRAVO-KN1005	100x25 – Advise Colour		
GRAVO-KN1006	52x30 PB Plate 22mm Hole		
GRAVO-KN1007	100x30 – Advise Colour		
GRAVO-KN1008	150x30 – Advise Colour		
GRAVO-KN1009	300x20 – Advise Colour		
GRAVO-KN1010	100x55 – Advise Colour		
GRAVO-KN1011	200x55 – Advise Colour		
GRAVO-KN1012	150x100 – Advise Colour		

Engraved Schneider Iconic Series Dollys - Dolly Included

Quantity	Colour	Order Code
Colours - (VW) Vivid White, (AN) Anthracite, (CY) Cool Grey, (WY) Warm Grey		
Pictograms – Specify <i>Icon</i> when ordering		
1	Vivid White	9 381A <i>Icon</i> -VW
1	Anthracite	9 381A <i>Icon</i> -AN
1	Cool Grey	9 381A <i>Icon</i> -CY
1	Warm Grey	9 381A <i>Icon</i> -WY
10		10 pieces all the same
Text – Specify <i>Text</i> when ordering		
1	Vivid White	9 381VW <i>Text</i>
1	Anthracite	9 381AN <i>Text</i>
1	Cool Grey	9 381CY <i>Text</i>
1	Warm Grey	9 381WY <i>Text</i>
10		10 pieces all the same
Colours (SH) Silver Shadow, (CE) Crowne, (SV) Silver		
Pictograms – Specify <i>Icon</i> when ordering		
1	Silver Shadow	9 381A <i>Icon</i> -SH
1	Crowne	9 381A <i>Icon</i> -CE
1	Silver	9 381A <i>Icon</i> -SV
10		10 pieces all the same
Text – Specify <i>Text</i> when ordering		
1	Silver Shadow	9 381SH <i>Text</i>
1	Crowne	9 381CE <i>Text</i>
1	Silver	9 381SV <i>Text</i>
10		10 pieces all the same
Iconic electric vehicle charger blanking plate		
1	Vivid White	9 EV PLATE
		

Security Key Switches

Amps	Description	Order Code
------	-------------	------------

Oval Series

C4 Type Oval Lock Cylinder
 Lazy Cam allows for key removal in both OFF & ON positions
 Captive Key Available
 Comes with Standard and Architrave Plates, Clipsal 2000 series
 Stainless Steel Mounting Plate option available
 Can be master keyed by local Locksmith



Lazy Cam Captive Key

10	OFF-ON Lazy cam Key out in BOTH 1 x N/O & 1x N/C	9 Oval 1
10	OFF-ON Spring return 1 x N/O & 1x N/C	9 Oval 2
10	ON-OFF-ON Spring return to centre Key out in BOTH 2 x N/O	9 Oval 3
10	OFF-ON Captive key 1 x N/O & 1x N/C	9 Oval 4

E Series









Lift Mount Bezel Mount

K Series



Note: Other combinations and styles are available on request

Security Key Switches

Amps	Description	Order Code
Auto Door Series		
Key removable in multiple positions Security fixing with removable cylinder from the front Concealed fixing points		
10	OFF-ON key out in both 1 x N/O & 1 x N/C	9 AL525003
		
10	OPEN-AUTO-EXIT-LOCK key out all 1x Contact closed in each position	9 AL545021
		
10	OFF-ON Spring return to Off key out OFF 1 x N/O & 1x N/C	9 AL515004
		
E Series		
	 	
	Lift Mount Bezel Mount	
K Series		
		








Note: Other combinations and styles are available on request

Emergency Stops IP 67/69K 22mm

Description	Order Code
Emergency Stops	
Twist to release 1 x N/C contact	
Panel mount Panel mount mechanical indicator Encl. with base mount contact blocks Encl. with mechanical indicator	KN51 KN86 KN66 KN87
	
Pull to release 1 x N/C contact	
Panel mount	KN80
	
Illuminated twist to release 1 x N/C contact	
Panel mount 024v Panel mount 240v	P SN*NZ0386 P SN*NZ0301
	
Key to reset 1 x N/C contact	
Panel mount	P SN/PVS-K01
	
Self-Monitoring contacts for emergency stops	
Front mount Base mount	9 P SN/K01SMC10 9 P SN/KC01SMC10
	
Emergency stop accessories	
Yellow shroud Yellow emergency stop plate 60mm	P SN/XGPV P N880-61
	







Tip: Self-monitoring contact blocks for E Stops available on request

Push Button Stations / Palm Push Buttons








Description		Order Code
Stop Start Stations		
ABS grey/black IP 67/69K SS screws with base mount contact blocks		
Stop Start buttons		KN69
Start button		P SN*NZ0318
Stop button		P SN*NZ0319
Drilled Enclosures		
ABS grey/black IP 67/69K SS screws for base mount contact blocks		
1 hole		P SN/11
2 hole		P SN/12
3 hole		P SN/13
4 hole		P SN/14
6 hole		P SN/16
Plastic yellow/black IP 67/69K SS screws for base mount contact blocks		
1 hole		P SN/Y1
Stainless IP 54		
1 hole		NZPB1
2 hole		NZPB2
3 hole		NZPB3
Palm push Red/Yellow 1 x N/C contact - Pull to Release		
Encl. with base mount contact blocks		KN68
Palm push Red/Yellow 1 x N/C + 1 x N/O contact - Pull to Release		
Encl. with base mount contact blocks		P FT*NZ0001
Palm push Black/White 1 x N/C + 1 x N/O contact		
Encl. base mount contact blocks Spring return		KN79

Note: See page 101 for enclosure sizes

Push Buttons IP 67/69K 22mm

Description	Order Code
Push Buttons	
1 x N/O contact panel mount	
Plain green Engraved START Blue engraved RESET	 KN52 P SN*NZ0067 KN54
1 x N/C contact panel mount	
Plain red Engraved STOP	 KN53 P SN*NZ0068
Double Push Buttons	
Red green	 KN63
Black with white arrows	 P SN*NZ0111
4 Way Push Buttons	
Black with 4 x N/O White arrows White arrows with STOP START & 2 x N/O	 P SN*NZ0094 P SN*NZ0120 P SN*NZ0142
Reset Rod 100mm	
Blue with engraved R	 KN59

Pilot Lights LED Type IP 67/69K 22mm





Description		Order Code
12 - 30v		
AC or DC		
Green		KN55
Red		KN56
Green engraved RUN		P SN*NZ0121
Red engraved FAULT		P SN*NZ0122
Blue		KN73
White		KN75
Yellow		KN77
85 - 264v		
AC only		
Green		KN57
Red		KN58
Green engraved RUN		P SN*NZ0171
Red engraved FAULT		P SN*NZ0170
Blue		KN72
White		KN74
Yellow		KN76
		
		
		

Tip: Printing & engraving of push buttons & pilot lights available






Push Button & Joy Stick Components IP 67/69K

Description	Order Code
Push Button Front Elements	
Non illuminated flush operator	
Black	P SN/D/S
Green	P SN/D/G
Red	P SN/D/R
Blue	P SN/D/B
Yellow	P SN/D/Y
White	P SN/D/W
Non illuminated extended operator	
Green	P SN/DH/G
Red	P SN/DH/R
Illuminate pushbutton elements	
Green	P SN/DL/G
Red	P SN/DL/R
Yellow	P SN/DL/Y
Blue	P SN/DL/B
Opaque	P SN/DL/W
Double push button non illuminated	
Red/Green	P SN/DDL/GR
Red/Green engraved I O	P SN/DDL/GR/X1-XO
Red/Green engraved STOP START	P SN*NZ0369
Black/Black white arrows	P SN*NZ0370
Black/White	P SN/DDL/WS
Black/White engraved FWD REV	P SN*NZ0144
	
4 way push button non illuminated	
Plain black	P SN/D4/S
With white arrows	P SN*NZ0377
With white arrows & STOP START	P SN*NZ0378
	

Pilot Light Components IP 67/69K

Description		Order Code
Pilot Light Front Elements		
Standard lens		
Green		P SN/L/G
Red		P SN/L/R
Yellow		P SN/L/Y
Blue		P SN/L/B
Opaque		P SN/L/W
Conical (extended) lens		
Green		P SN/LH/G
Red		P SN/LH/R
Yellow		P SN/LH/Y
Blue		P SN/LH/B
Opaque		P SN/LH/W
Joy Stick Front Elements		
4 way spring return		
4 position		P SN/WJ4
Acoustic Buzzer		
Front only no buzzer		P SN/AMC
Continuous Buzzer 18-30V AC/DC		P SN/XAM

Rotary Switch Components IP 67/69K

Description	Order Code
Rotary Switch Front Elements	
Non illuminated latched (changeable to spring return)	
2 position I/	P SN/WRK
2 position v	P SN/WKV
3 position \I/	P SN/WRK3
	
Illuminated latched (changeable to spring return)	
2 position I/ green	P SN/WRLK/G
2 position I/ red	P SN/WRLK/R
2 position I/ yellow	P SN/WRLK/Y
2 position I/ blue	P SN/WRLK/B
2 position I/ opaque	P SN/WRLK/W
	
Illuminated latched (changeable to spring return)	
3 position \I/ green	P SN/WRLK3/G
3 position \I/ red	P SN/WRLK3/R
3 position \I/ yellow	P SN/WRLK3/Y
3 position \I/ blue	P SN/WRLK3/B
3 position \I/ opaque	P SN/WRLK3/W
	
Key operated latching (changeable to spring return)	
2 position (1)	P SN/WRS
2 position (2)	P SN/WRS/A1
3 position (2)	P SN/WRS3/A1
3 position (3)	P SN/WRS3
Spare key	P SN/ES/MS1
	
(1) key removable in both positions	
(2) key removable in 0 only	
(3) key removable in all positions	
Coding Pieces	
To convert rotary switch front elements to spring return	
	P SN/XC/Y

Potentiometer Units IP 66

Description

Order Code

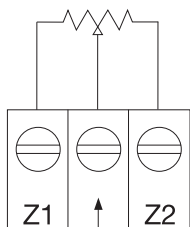
Standard Units 22mm

3 screw terminals 0.5w max accurate to + or - 10%

1.0k ohm

4.7k ohm

10k ohm


KN64
KN67
KN65
Heavy Duty Units with Switch Fronts 22mm

Size 0 48x48 with reinforced stop

1.0k ohm

2.2k ohm

4.7k ohm

10k ohm


KN100
KN102
KN104
KN106

Size 1 64x64 with reinforced stop

1.0k ohm

2.2k ohm

4.7k ohm

10k ohm


KN101
KN103
KN105
KN107

Tip: Any range pot can be fitted to the heavy duty units

Push Button, Joy Stick & Rotary Switch Accessories

Description	Order Code
Push Button, Joy Stick & Rotary Switch Accessories	
Contact blocks	
N/O front mounting N/C front mounting N/O base mounting N/C base mounting	 KN60 KN61 P SN/KC10 P SN/KC01
Push button protection (not with legend carriers)	
Boot for single push buttons Boot for double push buttons	KN70 KN71
	
Legend carrier with engraved plate (not with boots)	
Engraving to your spec. For PB's & Pilot Lights	 KN62
Legend carrier without plate (not with boots)	
For PB's & Pilot lights For double push buttons Legend plate insert for carrier Legend plate engraving	P SB/ST/X P SB/STDD/X P SN/XST 9PB engraving
Blanking Plug for 22mm hole	
Grey Black	 P SN/B P SB/B
Mounting components	
Coupling plate Coupling plate for joy stick	 KN78 P SN/A4
Telescopic clip	 P SN/TC
Lock nut key	
For PB's	 P SN/MS

Pilot Light Accessories

Description		Order Code
Pilot Light Accessories		
LED pilot light assemblies 12 - 30v AC/DC		
Blue		P SN/LED/B
Green		P SN/LED/G
Red		P SN/LED/R
White		P SN/LED/W
LED pilot light assemblies 85 - 264v AC only		
Blue		P SN/LED230/B
Green		P SN/LED230/G
Red		P SN/LED230/R
White		P SN/LED230/W
LED pilot light test elements for press to test		
12v to 30v		P SN/XLED/T
85v to 264v		P SN/XLED/230/T
Resistor Element		P SN/XLED60
Legend carrier with engraved plate (not with boots)		
Engraving to your spec. For PB's & Pilot lights		KN62
Legend carrier without plate		
For PB's & Pilot lights		P SB/ST/X
Legend plate insert for carrier		P SN/XST
Legend plate engraving		9PB engraving
Blanking Plug for 22mm hole		
Grey		P SN/B
Black		P SB/B
Mounting components		
Coupling plate		KN78
DIN track adaptor		P SN/IVS
Lock nut key		
For pilot lights		P SN/MS

Standard Contactors

AC1 Amps	AC3KW	N/O aux	N/C aux	Order Code
3 Pole Contactors Type K3				
230 volt coil, other voltages available to order				
25	4.5	1	-	NZS9B K3-10A10A230
25	4.5	-	1	NZS9B K3-10A01A230
25	5.5	1	-	NZS9B K3-14A10A230
25	5.5	-	1	NZS9B K3-14A01A230
32	7.5	1	-	NZS9B K3-18A10A230
32	7.5	-	1	NZS9B K3-18A01A230
32	11	1	-	NZS9B K3-22A10A230
32	11	-	1	NZS9B K3-22A01A230
50	11	-	-	NZS9B K3-24A00A230
65	15	-	-	NZS9B K3-32A00A230
80	18.5	-	-	NZS9B K3-40A00A230
110	22	-	-	NZS9B K3-50A00A230
120	30	-	-	NZS9B K3-62A00A230
130	37	-	-	NZS9B K3-74A00A230

Contactors for reversing, changeover & DC coils
please consult Kraus and Naimer

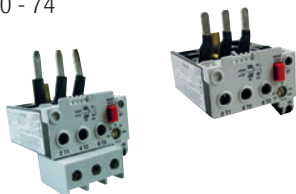
4 Pole Contactors Type K3				
230 volt coil, other voltages available to order				
25	4	-	-	NZS9B K3-10A0040A230
32	7.5	-	-	NZS9B K3-18A0040A230
45	11	-	-	NZS9B K2-23A0040A230
50	15	-	-	NZS9B K2-30A0040A230
80	22	-	-	NZS9B K2-45A0040A230
100	30	-	-	NZS9B K2-60A0040A230



Tip - AC & DC coil voltages available

Thermal Overload Relays

Setting Amps	Order Code
Overload Relays	
For contactors K3-10 to K3-22	
0.12 - 0.18	NZS9BU12/16E0.18
0.18 - 0.27	NZS9B U12/16E0.27
0.27 - 0.4	NZS9B U12/16E0.4
0.4 - 0.6	NZS9B U12/16E0.6
0.6 - 0.9	NZS9B U12/16E0.9
0.8 - 1.2	NZS9B U12/16E1.2
1.2 - 1.8	NZS9B U12/16E1.8
1.8 - 2.7	NZS9B U12/16E2.7
2.7 - 4	NZS9B U12/16E4
4 - 6	NZS9B U12/16E6
6 - 9	NZS9B U12/16E9
8 - 11	NZS9B U12/16E11
10 - 14	NZS9B U12/16E14
13 - 18	NZS9B U12/16E18
17 - 23	NZS9B U12/16E23
22 - 30	NZS9B U12/16E30
For contactors K3-24 to K3-40	
10 - 14	NZS9B U3/4214
14 - 20	NZS9B U3/4220
20 - 28	NZS9B U3/4228
28 - 42	NZS9B U3/4240
For contactors K3-50 to K3-74	
20 - 28	NZS9B U3/7428
28 - 42	NZS9B U3/7442
40 - 52	NZS9B U3/7452
52 - 65	NZS9B U3/7465
60 - 74	NZS9B U3/7474



Contactor Accessories & Coil Data

AC1

Amps	Description	Order Code
------	-------------	------------

Auxiliary Contacts

Top mount for all contactors (except modular type)

10	N/O		NZS9B HN10
10	N/C		NZS9B HN01

Side mount for all contactors K3-24 to K3-74

10	1 x N/O & 1 x N/C		NZS9B HB11
10	2 x N/C		NZS9B NH02

Mechanical Interlocks

For contactors K3-10 to K3-40



NZS9B LG10889

For contactors K3-24 to K3-74



NZS9B LG10890

RC Coil Suppressor

For contactors AC or DC coils

Coil volts 12 - 48v

Coil volts 48 - 127v

Coil volts 110 - 230v



NZS9B RC-K324

NZS9B RC-K3110

NZS9B RC-K3230

Mechanical Latch

Local or remote reset

For contactors K3-10 to K3-22

For contactors K3-24 to K3-40

For contactors K3-50 to K3-74



NZS9B K2-L22





NZS9B K2-L40

NZS9B K2-L74

Relays & Modular Contactors






AC1 Amps	N/O aux	N/C aux	Order Code
Mini Relays Type K1			
230 volt coil, other voltages available to order			
10	4	-	NZS9B K1-07D40A
10	3	1	NZS9B K1-07D31A
10	2	2	NZS9B K1-07D22A
Aux blocks for mini relays			
10	-	2	NZS9B HK02
10	4	-	NZS9B HK40
10	-	4	NZS9B HK04
10	2	2	NZS9B HK22
4 Pole Modular Contactors			
230 volt coil		Main poles	
25	4	-	NZS9B R2540A230
25	2	2	NZS9B R2522A230
25	-	4	NZS9B R2504A230
40	4	-	NZS9B R4040A230
40	2	2	NZS9B R4022A230
40	-	4	NZS9B R4004A230
63	4	-	NZS9B R6340A230
63	2	2	NZS9B R6322A230
63	-	4	NZS9B R6304A230
			
Coil Data - Coils Available Ex Stock			
AC coils 50/60Hz Min Max			
024v			
042v			
110v			
230v			
400v			
DC coils double wound type			
024v	Late break aux contact must be used and will be fitted as standard		
048v			
110v			

Motor Starters Direct On Line

kW	Description	Order Code
Slimline DOL Motor Starters without Overloads IP65		
230 volt coil, without aux contacts		
4		NZS9B P1T10A230
7.5		NZS9B P1T18A230
400 volt coil, without aux contacts		
4		NZS9B P1T10A400
7.5		NZS9B P1T18A400
DOL Motor Starters without Overloads in large Enclosures IP65		
230 volt coil, without aux contacts		
4		NZS9B M10D1A230..M
5.5		NZS9B M14D1A230..M
7.5		NZS9B M18D1A230..M
11		NZS9B M22D1A230..M
15		NZS9B M32D1A230..M
400 volt coil, without aux contacts		
4		NZS9B M10D1A400..M
5.5		NZS9B M14D1A400..M
7.5		NZS9B M18D1A400..M
11		NZS9B M22D1A400..M
15		NZS9B M32D1A400..M
DOL Motor Starters without Overloads in Deep 56 Lid IP65		
230 volt coil, without aux contacts c/w lockable isolator		
5.5		NZS9B K3-14*02
400 volt coil, without aux contacts c/w lockable isolator		
5.5		NZS9B K3-14*01

Tip - order overloads separately

Motor Starters Reversing & Star Delta - Enclosed

kW	Description	Order Code
DOL Reversing Motor Starters without Overloads IP66		
230 volt coil, without aux contacts		
4		NZS9B M10DC12300 M
5.5		NZS9B M14DC12300 M
400 volt coil, without aux contacts		
4		NZS9B M10DC12301 M
5.5		NZS9B M14DC12301 M
230 volt coil, without aux contacts c/w lockable isolator		
4		NZS9B M10DC12310 M
5.5		NZS9B M14DC12310 M
400 volt coil, without aux contacts c/w lockable isolator		
4		NZS9B M10DC12311 M
5.5		NZS9B M14DC12311 M
Automatic Star Delta Starters without Overloads IP66		
400 volt coil, without aux contacts		
7.5		NZS9B M15S1A400/..M
11		NZS9B M15S2A400/..M
15		NZS9B M17S1A400/..M
18.5		NZS9B M17S2A400/..M
22		NZS9B M26S2A400/..M
25		NZS9B M26S1A400/..M
30		NZS9B M27S1A400/..M
37		NZS9B M35S1A400/..M
45		NZS9B M36S1A400/..M
55		NZS9B M36S2A400/..M

Tip - order overloads separately

Alphanumeric Index

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KFSW25B	KF25 T103/NZ0001 KT10V	15
KFSW32B	KF32 T103/NZ0001 KT10V	15
KFSW25R	KF25 T203/NZ0001 KT10V	15
KFSW32R	KF32 T203/NZ0001 KT10V	15
KGSW20B	KG10 T103/NZ0001 KS10V	15
KGSW20R	KG10 T303/NZ0001 KS10V	15
KGSW40B	KG41 T203/NZ0002 KL10V	15
KGSW40R	KG41 T303/NZ0002 KL10V	15
KGSW63B	KG64 T103*NZ1222 KL12V	15
KGSW63R	KG64 T203*NZ1222 KL12V	15
KGSW80B	KG80 T103*NZ1222 KL72V	15
KGSW80R	KG80 T203*NZ1222 KL72V	15
KGSW100B	KG100 T103*NZ1222 KL72V	15
KGSW100R	KG100 T203*NZ1222 KL72V	15
KGSW125B	KG105 T103*NZ1222 KL72V	15
KGSW125R	KG105 T203*NZ1222 KL72V	15
KN1	CA10 T301*NZ0002 *FT2	10
KN2	CA10 T303*NZ0002 *FT2	10
KN3	CA10 T301*NZ0003 *FT2	10
KN4	CA10 T303*NZ0003 *FT2	10
KN5	CA10 T201*NZ0004 *FT2	10
KN6	CA10 T203*NZ0004 *FT2	10
KN7	KG32A T203*NZ0002 *FT2	10
KN8	CA10 A210*NZ0005 FT2	10
KN9	CA10 A210*NZ0006 *FT2	10
KN10	CA10NZP010*05 EF	10
KN11	CA10 A290*NZ0015 FT	9
KN12	CA10 A291*NZ0002 FT	9
KN13	CA10 A292*NZ0004 FT	9
KN14	SO V750*NZ0002	9
KN15	SO V845/NZZ124	9
KN16	CA10 A210*NZ0002 FT	9
KN17	CA10 A212*NZ0002 FT	9
KN18	SO V750*NZ0003	9
KN19	CA10 A220*NZ0001 FT	9
KN20	CA10 A222*NZ0001 FT	9
KN21	SO V750*NZ0004	9
KN22	SOE T160/NZZ516	9
KN23	SOE T161/NZZ517	9
KN24	9 87-84304/NZZ139	9

Alphanumeric Index

Short Code	Product Code	Page
KN25	S0 V845*NZ0002	9
KN26	CA10 NZP010*02 FT	9
KN27	KG32A T303*NZ0001 FT	9
KN30	S0D T111*NZ0001	9
KN32	S0 V750D/NZZ632	9
KN33	S0 V750D/NZZ633	9
KN34	S0 V750D/NZZ634	9
KN51	P SN*NZ0006	12
KN52	P SN*NZ0077	11
KN53	P SN*NZ0078	11
KN54	P SN*NZ0016	70
KN55	P SN*NZ0055	11
KN56	P SN*NZ0056	11
KN57	P SN*NZ0057	11
KN58	P SN*NZ0058	11
KN59	P SN*NZ0203	12
KN60	P SN*NZ0204	12
KN61	P SN*NZ0205	12
KN62	P SB*NZ0001	12
KN63	P SN*NZ0084	70
KN64	P SN*NZ0085	12
KN65	P SN*NZ0086	12
KN66	P SN*NZ0317	12
KN67	P SN*NZ0089	12
KN68	P SN*NZ0090	12
KN69	P SN*NZ0237	69
KN70	P SN*NZ0206	76
KN71	P SN*NZ0207	76
KN72	P SN*NZ0012	71
KN73	P SN*NZ0022	71
KN74	P SN*NZ0013	71
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KN76	P SN*NZ0004	71
KN77	P SN*NZ0021	71
KN78	P SN*NZ0208	76
KN79	P SN*NZ0209	69
KN80	P SN*NZ0216	68
KN81	P SN*NZ0448	11
KN82	P SN*NZ0449	11
KN83	P SN*NZ0450	11

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KN86	P SN*NZ0463	68
KN87	P SN*NZ0464	68
KN100	CA10 NZQ172*02 FT2	75
KN101	CA10 NZQ172*02 FH3	75
KN102	CA10 NZU606*01 FT2	75
KN103	CA10 NZU606*01 FH3	75
KN104	CA10 NZU607*01 FT2	75
KN105	CA10 NZU607*01 FH3	75
KN106	CA10 NZV049*02 FT2	75
KN107	CA10 NZV049*02 FH3	75
KN199	KG10 T203NZ0002 KS10V	15
KN200	KG20 T223*NZ1225 KS10V	15
KN201	KG32 T223*NZ1225 KS10V	15
KN202	KG41 T223*NZ1225 KL12V	15
KN203	KG64 T223*NZ1225 KL12V	15
KN204	KG80 T223*NZ1225 KL72V	15
KN205	KG100 T223*NZ1225 KL72V	15
KN206	KG105 T223*NZ1225 KL72V	15
KN297	KG10A T203*NZ1202 E	16
KN298	KG20A T203*NZ1202 E	16
KN299	KG32A T203*NZ1202 E	16
KN300	KG41B T203*NZ1202 E	16
KN301	KG64B T203*NZ1202 E	16
KN302	KG80 T203*NZ1202 E	16
KN303	KG100 T203*NZ1202 E	16
KN304	KG105 T203*NZ1202 E	16
KN305	KG32B T203*NZ1201 VE	16
KN306	KG41B T203*NZ1201 VE	16
KN307	KG64B T203*NZ1201 VE	16
KN308	KG80 T203*NZ1201 VE	16
KN309	KG100 T203*NZ1201 VE	16
KN310	KG105 T203*NZ1201 VE	16
KN311	KG10B T203*NZ1201 VE	16
KN312	KG20B T203*NZ1201 VE	16
KN320	KG10A T203*NZ1203 E	16
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KN329	KG20B T203*NZ1212 VE	16
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KN340	KG10A T103*NZ1203 E	17
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KN348	KG10B T103*NZ1212 VE	17
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KN351	KG41B T103*NZ1212 VE	17
KN352	KG64B T103*NZ1212 VE	17
KN353	KG80 T103*NZ1212 VE	17
KN354	KG100 T103*NZ1212 VE	17
KN355	KG105 T103*NZ1212 VE	17
KN356	KG126 T203*NZ1201 VE	16
KN357	KG161 T203*NZ1201 VE	16
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KN359	KG251 T203*NZ1201 VE	16
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KN361	KG126 T203*NZ3207 VE	15
KN362	KG161 T203*NZ3207 VE	15
KN363	KG211 T203*NZ3207 VE	15
KN364	KG251 T203*NZ3207 VE	15
KN365	KG316 T203*NZ3207 VE	15
KN400	KH63 T922*NZ0002 VE2	29
KN401	KH63 T922*NZ0004 VE	29
KN402	KG64B T903*NZ0008 VE	32

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KN404	KG64B T934*NZ0003 VE	33
KN405	KG64B T934*NZ0004 VE	33
KN406	KG80 T903*NZ0008 VE	32
KN407	KG80 T903*NZ0009 VE	32
KN408	KG80 T934*NZ0003 VE	33
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KN410	KG20B T203*NZ0088 VE	26
KN411	KG41B T203*NZ0088 VE	26
KN412	KG64B T203*NZ0088 VE	26
KN413	KG20B T203*NZ0090 VE	26
KN414	KG41B T203*NZ0090 VE	26
KN415	KG64B T203*NZ0090 VE	26
KN416	KH63 T922*NZ0001 VE2	29
KN417	KG64B T934*NZ0002 VE2	33
KN418	KG64B T934*NZ0001 VE2	33
KN420	KG10A T203*NZ1204 FT2	15
KN421	KG20A T203*NZ1204 FT2	15
KN422	KG32A T203*NZ1204 FT2	15
KN423	KG20A T223*NZ0001 FT2	18
KN424	KG32A T223*NZ0001 FT2	18
KN425	KG20A T223*NZ0002 E	18
KN426	KG32A T223*NZ0002 E	18
KN427	KG41B T223*NZ0005 E	18
KN428	KG64B T223*NZ0005 E	18
KN429	KG80 T223*NZ0005 E	18
KN430	KG100 T223*NZ0005 E	18
KN431	KG105 T223*NZ0005 E	18
KN432	KG20B T223*NZ0006 VE	18
KN433	KG32B T223*NZ0006 VE	18
KN434	KG41B T223*NZ0006 VE	18
KN435	KG64B T223*NZ0006 VE	18
KN436	KG80 T223*NZ0006 VE	18
KN437	KG100 T223*NZ0006 VE	18
KN438	KG105 T223*NZ0006 VE	18
KN439	KG126 T223*NZ0003 VE	18
KN440	KG161 T223*NZ0003 VE	18
KN441	KG211 T223*NZ0003 VE	18
KN442	KG251 T223*NZ0003 VE	18
KN443	KG316 T223*NZ0006 VE	18

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KN445	KG20A T204*NZ1203 FT2	19
KN446	KG32A T204*NZ1203 FT2	19
KN447	KG10A T204*NZ1202 E	19
KN448	KG20A T204*NZ1202 E	19
KN449	KG32A T204*NZ1202 E	19
KN450	KG41B T204*NZ1202 E	19
KN451	KG64B T204*NZ1202 E	19
KN452	KG80 T204*NZ1202 E	19
KN453	KG100 T204*NZ1202 E	19
KN454	KG105 T204*NZ1202 E	19
KN455	KG10B T204*NZ1201 VE	19
KN456	KG20B T204*NZ1201 VE	19
KN457	KG32B T204*NZ1201 VE	19
KN458	KG41B T204*NZ1201 VE	19
KN459	KG64B T204*NZ1201 VE	19
KN460	KG80 T204*NZ1201 VE	19
KN461	KG100 T204*NZ1201 VE	19
KN462	KG105 T204*NZ1201 VE	19
KN463	KG126 T204*NZ1201 VE	19
KN464	KG161 T204*NZ1201 VE	19
KN465	KG211 T204*NZ1201 VE	19
KN466	KG251 T204*NZ1201 VE	19
KN467	KG316 T204*NZ1201 VE	19
KN470	KG80 T203*NZ0080 VE	26
KN471	KG100 T203*NZ0080 VE	26
KN472	KG80 T203*NZ0090 VE	26
KN473	KG100 T203*NZ0090 VE	26
KN474	KG105 T203*NZ0090 VE	26
KN498	KG10A T103*NZ1202 E	17
KN499	KG20A T103*NZ1202 E	17
KN500	KG32AT103*NZ1202 E	17
KN501	KG41B T103*NZ1202 E	17
KN502	KG64B T103*NZ1202 E	17
KN503	KG80 T103*NZ1202 E	17
KN504	KG100 T103*NZ1202 E	17
KN505	KG105 T103*NZ1202 E	17
KN508	KG10B T103*NZ1201 VE	17
KN509	KG20B T103*NZ1201 VE	17
KN510	KG32B T103*NZ1201 VE	17
KN511	KG41B T103*NZ1201 VE	17

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KN513	KG80 T103*NZ1201 VE	17
KN514	KG100 T103*NZ1201 VE	17
KN515	KG105 T103*NZ1201 VE	17
KN820	KG20B T103*NZ2000 VE	23
KN821	KG41B T103*NZ2000 VE	23
KN822	KG64B T103*NZ2000 VE	23
KN823	KG64B T103*NZ2003 VE	23
KN824	KG80 T103*NZ2000 VE	23
KN825	KG105 T103*NZ2000 VE	23
KN826	KG126 T103*NZ54 VE	23
KN827	KG161 T103*NZ54 VE	23
KN828	KG251 T103*NZ54 VE	23
KN829	KG316 T103*NZ54 VE	23
KN833	KG20B T103*NZ2002 VE	23
KN834	KG41B T103*NZ2002 VE	23
KN835	KG64B T103*NZ2002 VE	23
KN836	KG64B T103*NZ2004 VE	23
KN837	KG80 T103*NZ2002 VE	23
KN838	KG105 T103*NZ2002 VE	23
KN839	KG126 T103*NZ65 VE	23
KN840	KG161 T103*NZ65 VE	23
KN841	KG251 T103*NZ65 VE	23
KN842	KG316 T103*NZ65 VE	23
KN907	CA10 A290*NZ0016 EF	23
KN908	CA10 A290*NZ0018 EF	23
KN909	KFD25 T206/AUP0013 KT11V	35
KN910	KFD25B T206/AUP0013 KL11V	35
KN911	KF20 T102*NZ0003 KT11V	35
KN912	KF25 T102*NZ0003 KT11V	35
KN913	KF20B T102*NZ0003 KL11V	35
KN914	KF25B T102*NZ0003 KL11V	35
KN915	KGD40B TD206/AUP0033 KL11V	35
KN916	KGD40B TD208/AUP0028 KL11V	35
KN920	KG20B T203*NZ2000 VE	22
KN921	KG41B T203*NZ2000 VE	22
KN922	KG64B T203*NZ2000 VE	22
KN923	KG64B T203*NZ2003 VE	22
KN924	KG80 T203*NZ2000 VE	22
KN925	KG105 T203*NZ2000 VE	22







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KN928	KG251 T203*NZ54 VE	22
KN929	KG316 T203*NZ54 VE	22
KN931	KNS400*NZ54 VE	22
KN932	KNS500*NZ54 VE	22
KN933	KG20B T203*NZ2002 VE	22
KN934	KG41B T203*NZ2002 VE	22
KN935	KG64B T203*NZ2002 VE	22
KN936	KG64B T203*NZ2004 VE	22
KN937	KG80 T203*NZ2002 VE	22
KN938	KG105 T203*NZ2002 VE	22
KN939	KG126 T203*NZ65 VE	22
KN940	KG161 T203*NZ65 VE	22
KN941	KG251 T203*NZ65 VE	22
KN942	KG316 T203*NZ65 VE	22
KN944	KNS400*NZ65 VE	22
KN945	KNS500*NZ65 VE	22
KN946	KG20B T203*NZ2010 VE	27
KN947	KG41B T203*NZ2010 VE	27
KN948	KG64B T203*NZ2010 VE	27
KN949	KG64B T203*NZ2011 VE	27
KN950	KG80 T203*NZ2010 VE	27
KN951	KG105 T203*NZ2010 VE	27
KN952	KG126 T203*NZ2010 VE	27
KN953	KG161 T203*NZ2010 VE	27
KN954	KG251 T203*NZ2010 VE	27
KN955	KG316 T203*NZ2010 VE	27
KN956	KG41B T203* NZ2022 VE	22
KN957	KG64B T203* NZ2022 VE	22
KN958	KG80 T203* NZ2003 VE	22
KN959	KG80 T203* NZ2011 VE	27
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KN962	CAD11B NZU827*01 PK1	62
KN963	CAD11B NZH866*01 PK1	62
KN964	CAD11B NZH777*01 PK1	62
KN965	CAD11B NZH639*01 GK1	62
KN966	CAD11B NZK650*01 GK1	62
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KN969	CAD11B NZH777*01 GK1	62
KN970	CAD11B NZR030*01 GK1	62
KN971	CAD11B NZV607*01 PK1	62
KN972	KG41B T203*NZ2023 VE	27
KN973	KG64B T203*NZ2023 VE	27
KN1000	9 GRAVO-KN1000	65
KN1001	9 GRAVO-KN1001	65
KN1002	9 GRAVO-KN1002	65
KN1003	9 GRAVO-KN1003	65
KN1004	9 GRAVO-KN1004	65
KN1005	9 GRAVO-KN1005	65
KN1006	9 GRAVO-KN1006	65
KN1007	9 GRAVO-KN1007	65
KN1008	9 GRAVO-KN1008	65
KN1009	9 GRAVO-KN1009	65
KN1010	9 GRAVO-KN1010	65
KN1011	9 GRAVO-KN1011	65
KN1012	9 GRAVO-KN1012	65
MOG321	KH32 T922*NZ0006 VE	31
MOG321P	KH32 T922*NZ0007 VE	31
MOG323	KG32A T934*NZ0009 VE	31
MOG323P	KG32A T934*NZ0008 VE	31
MOG631	KH63 T922*NZ0007 VE	31
MOG631P	KH63 T922*NZ0009 VE	31
MOG631-32	KH63 T922*NZ0006 VE	31
MOG631-32P	KH63 T922*NZ0008 VE	31
MOG633-32P	KG64B T934*NZ0021 VE	31
MOG633	KG64B T934*NZ0006 VE	31
MOG633P	KG64B T934*NZ0007 VE	31
MOG633-32	KG64B T934*NZ0011 VE	31
MOG803	KG80 T934*NZ0006 VE	31
MOG803P	KG80 T934*NZ0007 VE	31
MOG1003	KG100 T934*NZ0009 VE	31
MOG1003P	KG100 T934*NZ0011 VE	31
MOG1253	KG105C T934*NZ0006 VE	31
MOG1253P	KG105C T934*NZ0007 VE	31
NZP052	CA10 NZP052*03 EG	62

IP Ratings - SOLIDS 1st Number

1		Protected against solid objects greater than 50mm (eg. accidental contact with hand).
2		Protected against solid objects greater than 12mm (eg. contact with finger).
3		Protected against solid objects greater than 2.5mm (eg. tools and fingers).
4		Protected against solid objects greater than 1mm (eg. tools and small wires).
5		Protected against dust. Prevent entry in sufficient quantity to interfere with satisfactory operation.
6		Complete protection against dust.

IP Ratings - LIQUIDS 2nd Number

1		Protected against drops of water falling vertically.
2		Protected against drops of water falling at up to 15° from the vertical.
3		Protected against spraying water at up to 60° from the vertical.
4		Limited protection against water sprayed from all directions (limited ingress permitted).
5		Limited protection against low pressure jets of water from all directions (limited ingress permitted).
6		Protected against strong jets of water similar force to heavy seas (limited ingress permitted).
7		Protected against the effects of immersion.
8		Protected against the effects of submersion.
9		Protected against high temperature steam and high pressure water

Mains Off Generator (MOG) Installation FAQ's according to AS/NZS 3010:2005

- Q** Can I replace a permanently connected main switch with a MOG switch?
A *A permanently connected changeover device (MOG switch) with an intermediate OFF position may replace a main switch.*
- Q** Do I need to switch the generator neutral on permanently wired generators?
A *When a generator neutral is permanently wired to the main neutral bar and a MEN link is provided, there is no requirement to switch the generator neutral. The main supply neutral is not switched.*
- Q** Do I need to switch the generator neutral on removable generators, i.e., connected with an appliance inlet?
A *When a generator is not permanently wired there is a requirement to switch the generator neutral. The main supply neutral is not switched.*
- Q** Do I need to switch neutrals where there is no MEN link?
A *The generator neutral is switched. The mains supply neutral is not switched.*
- Q** Why do I need an Early Make Late Break Neutral?
A *The neutral must not close after the main contacts, or open before the main contacts. In practical terms, a late make early break contact development is required.*
- Q** Is it possible to have a Multi-source changeover switch?
A *Switches are available for multi-source installations. e.g., mains, generator, solar, turbine.*
- Q** Can it be mounted in modern domestic superboards?
A *Switches are available with MCB fronts and shallow handles which fit inside modern superboards.*

Mains Off Generator Switch Ordering Data

Electrical data

Supply current (Amps)

Mains cable size

Switched neutral on the generator yes / no (See FAQ's above)

Mounting Data

Panel mount

Base mount with long shaft and door clutch

DIN mount with MCB front plate

Enclosed indoor / outdoors

With an appliance inlet plug

Application Guide Changeover Switches

Guidance on the use of K&N Changeover Switches

Standard - AS/NS 3010:2005 Electrical Installations Generating Sets

2.5.5.4 Changeover device with intermediate 'OFF' position

A permanently connected changeover device having an intermediate 'OFF' position may be used in place of a main switch or a switch controlling sub mains or final sub circuits, such that the supply may be obtained from either of two sources and isolated from both.

NOTE: Changeover devices having an intermediate 'OFF' position would normally be used for manual operation only.

2.5.5.10 Three pole/three pole changeover devices

A three pole/three pole changeover device may be used to connect a generating set at a switchboard.

Where a three/three pole changeover device is used, the generating set neutral and earth conductors shall be connected as shown in figures 2.2 or 2.4

2.5.5.11 Threepole/four pole changeover devices

A three pole/four pole changeover device may be used to connect a generating set at a switchboard.

Where a three/four pole changeover device is used, the generating set neutral and earth conductors shall be connected as shown in figures 2.3 or 2.8

NOTE: Figures referred to above can be reviewed in the standard. Our drawings on pages 26 and 28 are electrically the same.

Standard - AS/NS 3000:2007 Wiring Rules

7.3.8.1.2 Switching

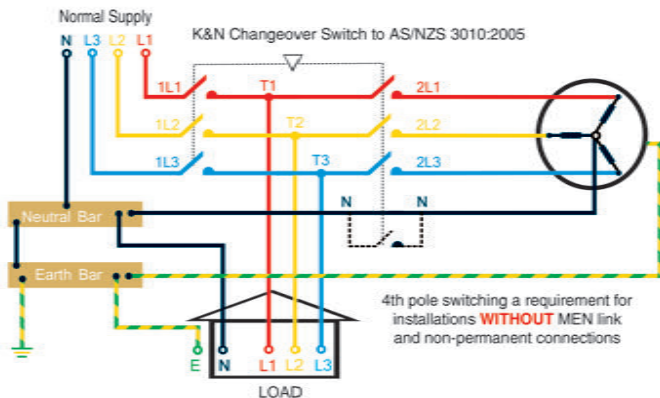
AS/NZS 3010 provides guidance for connection and switching of alternative supplies and compliance with AS/NZS 3010 is deemed to satisfy clause 7.3.8.1

NOTE: Typical arrangements are shown in figures 7.2.7.3 and 7.4

NOTE: Figures referred to above can be reviewed in the standard. Our drawings on pages 26 and 28 are electrically the same.

Example of connections to AS/NZS 3000:2007 & 3010:2005

For three phase installations (do not switch normal supply neutral)



Application Guide AS/NZS 3947-3 3F Lockout Isolators

IEC 60947 - 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 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 3947-3 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 circuit, (motor reversing switches, control switches, star delta switches, etc.)

Disconnecter 

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

Switch Disconnecter 

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



Application Guide AS/NZS 3947-3 3F Lockout Isolators

Product Features

M700 door interlock

- Padlockable in 'OFF' only - safety requirement according to AS/NZS 3947-3
- 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'
- The '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 IP 20 box type terminals
- Double break forced opening safety 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 60947-3 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
- IP 65 dust and water protection
- Robust, double insulated handle
- Asymmetric shaft & interlock profiles ensure the handle position matches the switch position
- Fixed length shaft ensures shaft must engage with handle



Tip: Telephone now for a demonstration

Dimensions

Product		Size mm	Material
Enclosure Sizes			
Reversing switch		H W D	
KN10		110x80x70	ABS
Emergency isolators			
KFSW25R,32R		130x85x65	PC
KGSW20R,		120x85x80	PC
KN200, KN201		120x85x80	PC
KGSW40,63R,		190x100x91	PC
KN202, KN203		190x100x91	PC
KGSW80,100,125R		250x145x107	PC
KN204, KN205, KN206		250x145x107	PC
KN361, 362, 363		380x280x180	PC
KN364, 365	380x280x180	PC	
Maintenance isolators			
KFSW25,32B		120x85x80	PC
KGSW20B		120x85x90	PC
KGSW40,63B		190x100x91	PC
KGSW80,100,125B		250x145x107	PC
Heat pump isolators			
KN907		80x110x70	ABS
KN908		190x100x91	ABS
RFI series			
KN410, 413		120x120x100	ABS
KN411, 414		150x150x100	ABS
KN412, 415		150x150x100	ABS
KN419, KN420		280x190x130	ABS
KN421, KN422		280x190x130	ABS

Note: Base mount motor isolator panel depths - Pages 14 - 17

Dimensions

Product		Size mm	Material
Enclosure Sizes			
Solar DC		H W D	
KN909		132x85x64	PC
KN910		178x100x93	PC
KN915		250x145x107	PC
KN916		250x145x107	PC
KN917		178x100x93	PC
KN918		250x145x107	PC
Solar AC			
KN911		132x85x64	PC
KN912		132x64x85	PC
KN913		230x140x95	PC
KN914		230x140x95	PC
MOG C/O 1 pole/2 pole			
KG20/32 KH40/63		250x150x100	ABS
KG41/64 KH40/63		280x190x130	ABS
KG80/100/80 KH80		280x280x130	ABS
MOG C/O 3 pole/3 pole & 3 pole/4pole			
KH20/32		170x140x95	ABS
KG20/32 KH40/63		250x150x100	ABS
KG41/64 KH40/63		280x190x130	ABS
KG80/100/105 KH80		280x280x130	ABS
MOG C/O 3 pole/3 pole			
KG126/161		380x280x180	ABS
MOG C/O 3 pole/4 pole			
KG126/161		560x380x180	ABS

Dimensions






Product	Size mm	Material
Enclosure Sizes		
Standard series	H W D	
KG20B,32B,41B,64B	200x120x100	304 SS
KN920, 921, 922	200x120x100	304 SS
KG80,100,105	280x190x130	304 SS
KG126,161	300x300x150	304 SS
KN923, 924, 925	300x300x150	304 SS
KN926, 927	300x300x150	304 SS
KG211,251,316	400x300x150	304 SS
KN928, 929	400x300x150	304 SS
KN930	600x400x250	304 SS
KN931, 932	800x600x250	304 SS
B series		
KG20B,32B,41B,64B	200x120x100	304 SS
KN933, 934, 935	200x120x100	304 SS
KN956, 957	250x150x100	304 SS
KG80,100,105	280x190x130	304 SS
KN958	280x190x130	304 SS
KG126,161	300x300x150	304 SS
KN937, 938, 939, 940	300x300x150	304 SS
KG211,251,316	400x300x150	304 SS
KN941, 942	400x300x150	304 SS
KN943	600x400x250	304 SS
KN944, 945	800x600x250	304 SS
B series		
KG20B,32B,41B,64B	200x120x100	304 SS
KG80,100,105	280x190x130	304 SS
KG126,161	300x300x150	304 SS
KG211,251,316	400x300x150	304 SS
RFI series		
KN946, 947, 948	200x120x100	304 SS
KN972, 973	250x150x100	304 SS
KN959	280x190x130	304 SS
KN949, 950, 951	300x300x150	304 SS
KN952, 953	300x300x150	304 SS
KN954, 955	400x300x150	304 SS



Dimensions

Product	Size mm	Material
Enclosure Sizes		
1 Pole	H W D	
MOG321, 631, 631-32	280x190x180	PC
MOG321P, 631P, 631-32P	280x190x180	PC
		
3 Pole		
MOG323, 633, 633-32	280x190x180	PC
MOG323P, 633P	280x190x180	PC
MOG803, 1003, 1253	380x280x180	PC
MOG803P, 1003P, 1253P	380x280x180	PC
		
Push button enclosures		
PSN/I1	72x80x56	PC
PSN/I2	120x80x56	PC
PSN/I3	153x80x56	PC
PSN/I4	186x80x56	PC
PSN/I6	252x80x56	PC
		
PSN/IY1	72x80x56	PC
		
NZPB1	100x100x85	304 SS
NZPB2	160x100x85	304 SS
NZPB3	220x100x85	304 SS
		

Dimensions

Product	Size mm	Switch Footprint			
Changeover Switch Sizes					
2 pole changeover DIN mount					
	Cover Plate MCB spaces DIN cutout	H	W	D	
KH20	3	43.7x45.4	56	60	53.5
KH32/40	4	70.4x45.4	62	70	54.7
KH63/80	4	70.4x45.4	90	86	61.7
					
3 pole/3 pole changeover DIN mount					
	MCB spaces DIN cutout	H	W	D	
KG20/32	5	43.7x45.4	54	84	64
KG41/64	7	105.4x45.4	64	100	62.5
KG80/100	8	70.0x45.0	80	140	76.2
					
3 pole/4 pole changeover DIN mount					
	MCB spaces DIN cutout	H	W	D	
KG20/32	5	43.7x45.4	54	97.5	64
KN417/418	7	105.4x45.4	64	116	62.5
KG80/100	8	70.0x45.0	84	162	76.2
					
3 pole/3 pole changeover base mount					
	Adjustable shaft length	H	W	D	
KG20/32	40-116mm	54	84	57.5	
KG41B/ KN402	40-118mm	64	100	67	
KN406	40-118mm	80	140	79.2	
KG100/105	40-118mm	80	140	79.2	
KG161	40-180mm	110	224	93	
C200-4	40-180mm	109	109	173.9	
C315	40-200mm	150	150	205.8	
					
3 pole/4pole changeover base mount					
	Adjustable shaft length	H	W	D	
KG20/32	40-116mm	54	97.5	57.5	
KG41B/ KN404	40-118mm	64	116	67	
KN408	40-118mm	80	162	79.2	
KG100/105	40-118mm	80	162	79.2	
KG161	40-180mm	110	262	93	
C200-4	40-180mm	109	109	173.9	
C315	40-200mm	150	150	205.8	
					

Technical Information

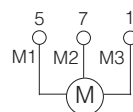
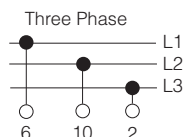
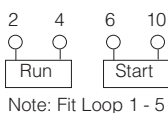
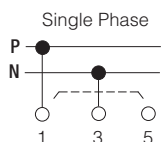
kVA to Amps

Single Phase 230V		
KVA	UNITY power Factor 1.0	power Factor .95
4	17.30	18.31
5	21.40	22.88
6	26.09	27.46
7	30.43	32.04
8	34.78	36.61
10	43.48	45.77
12	52.17	54.92
15	65.22	68.65
20	86.96	91.43
25	108.70	114.42
30	130.43	137.30
40	173.91	183.07
50	217.39	228.83
60	260.87	274.60
70	304.35	320.37
80	347.83	366.13

Three Phase 400V		
KVA	UNITY power Factor 1.0	power Factor .95
4	5.77	6.08
5	7.22	7.60
6	8.66	9.12
7	10.10	10.64
8	11.55	12.16
10	14.43	15.19
12	17.32	18.23
15	21.65	22.79
20	28.87	30.39
25	36.09	37.98
30	43.30	45.58
40	57.74	60.78
50	72.17	75.97
60	86.61	91.16
70	101.04	106.36
80	115.47	121.55
90	129.91	136.74
100	144.34	151.94
110	158.78	167.13
120	173.21	182.33
150	216.51	227.91
160	230.95	243.10
180	259.82	273.49
200	288.68	303.88
250	360.85	379.85
300	433.03	455.82
350	505.20	531.79
400	577.37	607.75

Amps = 1000 x kVA / Line Volts x 1.732 x eff x pf

Connection Guides



KN10 - 1 OR 3 PHASE REVERSING SWITCH

Technical Information

Kraus & Naimer Switches - General Information

General Electrical Data

- Minimum voltage – varies on switch, data on request.
- Power loss per contact at lu – varies on switch, data on request.
- Resistance to vibration – varies on switch, data on request
- Resistance to shock – varies on switch, data on request
- Rated impulse withstand voltage – varies on switch, data on request
- Short circuit protection – varies on switch, data on request.
- Terminal lead material – use copper wires only.

Altitude – IEC 60947-1, 6.1.2 specifies Altitude does not exceed 2000m.

Note for equipment to be used above 2000m it is necessary to take into account the reduction of dielectric strength & cooling effect of the air. Contact us for derating factors.

Forced Opening Contacts – KG type switches & switch disconnectors can be fitted with cam operated and or rack operated aux contacts with a direct opening action. As these aux contacts fully comply with the requirements outlined in Annex K of the product standards IEC 60947-5-1:1997 & EN60947-5-1:1999 they are suitable for isolation. Aux contacts can have rigid or H bridge “cross wire” contacts for low voltages & currents.

High Frequency – K&N switch ratings are valid for frequencies between 45Hz & 150Hz. For higher or lower ratings DC ratings can be used or contact us for best practice advice.

Low Voltage Switching – Most control switches use a rigid double break contact system. K&N also offer multi cross point contacts, H bridge “crosswire” contacts, with or without gold plating and “knife contact” systems.

See page 35 for general information or contact us for more specific ratings.

Short Time Current Ratings – Short time ratings for 1, 3, 6, 10, 30, 60, 100 & 200 seconds are available on request.

Ratings available for both CA type and KG switches.

Operating Temperatures – Normal use @ 100% of rating (standard applications) max ambient temperatures

- Average over 1 year +40° C
- Average over 24 hours +55° C with peaks up to +60° C

Operating Temperatures – Normal use @ 30% of rating (standard applications) max ambient temperatures

- Average over 1 year +70° C
- Average over 24 hours +85° C with peaks up to +90° C

Special Switch Configuration - K&N cam switches can be made to any contact configuration. This means we can replicate any old switch that has failed with a wire for wire replacement overnight.

See pages 46 & 47 for design sheets.

Terminal Position – Most control switches are normally supplied the terminals on the horizontal plane. In situations where switches are mounted closely together difficulties accessing the terminals may arise. In this case back access terminal switches are available. Contact us for your requirements.

Contacts - Do not lubricate or treat contacts.

Note: **Minimum Operating Temperature** - The minimum operating temperature for all K&N switches is -5°C. Lower temperature value on request, derating may apply.

Technical Information

Torque Settings & Mechanical Life

SWITCH	TERMINAL TORQUE Mn	STRIP LENGTH mm	MECH OPERATIONS
CA4	0.4	6	1,000,000
CG4	0.4	6	1,000,000
CA10	0.6	8	1,000,000
CAD11	0.6	8	1,000,000
CA20	1.3	9	1,000,000
CA25	1.3	11	1,000,000
C26	1.3	11	750,000
C32	2.2	11	1,000,000
C42	3.0	15	750,000
CA40	1.8	10	1,000,000
CA50	1.8	10	1,000,000
CA60	4.0	17	500,000
C80	4.0	17	500,000
C80-6	8	CRIMP LUG	500,000
C125	4.5	20	500,000
C125-6	8	CRIMP LUG	500,000
C200-4	8	CRIMP LUG	500,000
C315	14	CRIMP LUG	500,000
KA40B	2.0	15	750,000
KA63B	2.0	15	750,000

SWITCH	TERMINAL TORQUE Mn	STRIP LENGTH mm	MECH OPERATIONS
KFD16	1.25	9	100,000
KFD20	1.25	9	100,000
KFD25	1.25	9	100,000
KG10	0.6	8	200,000
KG20	1.25	9	200,000
KG32	1.25	9	200,000
KG41	1.8	10	150,000
KG64	1.8	10	150,000
KG80	3.0	14	100,000
KG100	3.0	14	100,000
KG105	3.0	14	50,000
KG126	14	CRIMP LUG	100,000
KG161	14	CRIMP LUG	100,000
KG211	16	CRIMP LUG	80,000
KG251	16	CRIMP LUG	80,000
KG316	16	CRIMP LUG	800,000
KH20	1.2	8	250,000
KH25	1.2	8	250,000
KH32	1.2	10	150,000
KH40	1.2	10	150,000
KH63	3	14	100,000
KH80	3	14	100,000

The strip lengths and torque settings listed above are valid for all the design variations of the respective switch types eg. for CA10, CA10B

Technical Information

Push Button & Pilot Light General Information

Front Elements

- Ergonomical design, front rings metallic coloured
- Illuminated elements offer excellent brightness & contrast in all light conditions
- Pilot lights with perfect light due to special lenses
- Any inscription, abrasion resistant by laser
- Latched push buttons & rotary switches are convertible into spring return function
- Mushroom push buttons
- High protection and food resistance: push buttons & pilot lights IP 67/IP 69K, double-push buttons and rotary cam switches IP 66
- For special operating available with protection caps

Legend Plates

- For front elements and double-push buttons
- With legend inserts
- Available with lasered inscription

Fixation Nut

- Is part of the front element
- Nut key for fixation nut as accessories

Coupling Plate

- For contact blocks and LED pilot light assemblies
- For max. 3 elements per contact level
- Up to 6 contacts on 2 contact levels are possible

Contact Blocks and LED Pilot Light Assemblies

- Finger-proof and open terminals (IP 20)
- Captive mounting screws
- Low overall depth

Contact Blocks

- Available as N/C and N/O, panel or base mounting
- High switching capacity, both in AC-15-and DC-13-operation

LED Pilot Light Assemblies

- In green, red and white colour
- Long life (100,000 running hours) by especially low power consumption and vibration resistance
- With only 2 voltage ranges the worldwide common applications are covered
- For decoupled function control LED series elements are available

Front
Element



Legend
Plate



Fixation
Ring



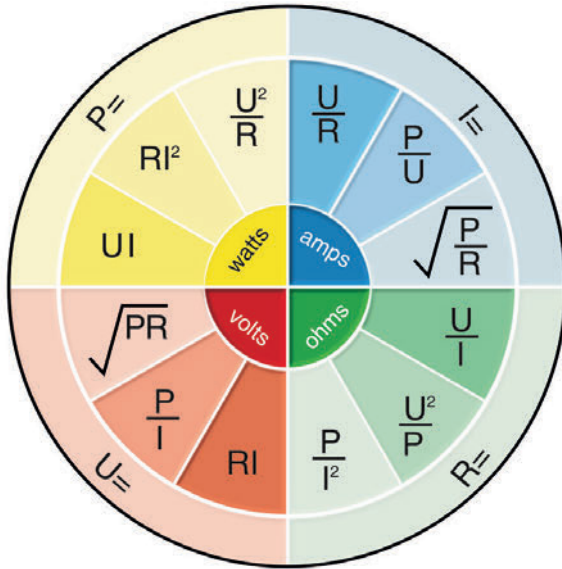
Coupling
Plate



Contact Blocks
LED Pilot Light
Assemblies



Ohm's Law



P = Power in watts

I = Current in amperes

U = Voltage in volts

R = Resistance in ohms

Motor Connections

Dual Voltage Motor Terminals:

If the voltage on the name plate reads:
220/240 - 380/420V.

For **220/240V** always connect in Delta with supply voltage to terminals A2.B2.C2. Join A2 and C1; B2 and A1; C2 and B1.

For **380/420V** always connect in Star with supply voltage to terminals A2.B2.C2. Join A1, B1, C1.

Technical Information

Useful Formulae for AC

$$kW = kVA \times pF$$

$$kW = \frac{hp \times 746}{1000 \times \text{Eff}} \quad \text{or} \quad \frac{hp \times 746 \times 100}{1000 \times \% \text{Eff}}$$

$$kW = \frac{\text{Line amps} \times \text{Line volts} \times 1.732 \times pF}{1000}$$

$$kVA = \frac{kW}{pF}$$

$$kVA = \frac{hp \times 746}{1000 \times \text{Eff} \times pF}$$

$$kVA = \frac{\text{Line amps} \times \text{Line volts} \times 1.732}{1000}$$

$$\text{Line Amps} = \frac{kW \times 1000}{\text{Line Volts} \times 1.732 \times pF}$$

$$\text{Line Amps} = \frac{kVA \times 1000}{\text{Line Volts} \times 1.732}$$

$$\text{Line Amps} = \frac{hp \times 746}{\text{Line Volts} \times 1.732 \times \text{Eff} \times pF}$$

$$\text{Horsepower (hp)} = \frac{kVA \times \text{Eff} \times pF}{746}$$

$$hp = \frac{kVA \times 1000 \times \text{Eff} \times pF}{746}$$

$$hp = \frac{\text{Line amps} \times \text{Line volts} \times 1.732 \times \text{Eff} \times pF}{746}$$

$$1 \text{ watt} = 1 \text{ joule/sec}$$

$$1hp = 746 \text{ watts}$$

$$1hp = 746 \text{ joules/sec}$$

VOLT-DROP single phase:

Service Voltage = 230V

$$\text{Max permissible Vd} = \frac{230 \times 2.5 \text{ (2.5\% Service voltage)}}{100} = 5.75V$$

$$\text{Max unit Vd} = \frac{\text{Max Vd} \times 1000}{1 \times \text{Distance (length of cable run)}}$$

Motor Currents

Motor Output		Full Load Current at operational voltage	
kW	H.P.	400v	415v
0.55	0.75	1.5	1.4
0.75	1	1.9	1.8
1.1	1.5	2.7	2.6
1.5	2	3.6	3.5
2.2	3	4.9	4.7
3	4	6.5	6.3
4	5.5	8.5	8.2
5.5	7.5	11.5	11
7.5	10	15.5	15
11	15	22	21
15	20	29	28
18.5	25	35	34
22	30	41	40
30	40	55	53
37	50	66	64
45	60	80	77
55	75	97	93
75	100	132	127
90	125	160	154
110	150	195	188
132	175	230	222
160	220	280	270
200	270	350	337
250	350	430	414

Average full load motor currents.
 Motor output figures relate to the full load currents.
 These values are for motor speeds of 1500 r.p.m.

Utilisation Categories

AC			
AC-21A	Switching of resistive loads, including overloads	AC-4	DOL starting, reversing, plugging, inching
AC-1	Resistive or low inductive loads	AC-23A	Frequent switching of motors or other high inductive loads
AC-22A	Switching of combined resistive or low inductive loads including moderate overloads	AC-20A	No load operation
AC-15	Switching of control devices, contactors, valves etc	AC-21B	Switching of resistive loads, including moderate overloads
AC-2	Slipping motor starting reversing and plugging, star delta starting	AC-23B	Occasional switching of motors or other high inductive loads
AC-3	DOL starting & higher current star delta starting		

DC			
DC-20A DC-20B	Connecting and disconnecting under no load conditions	DC-22A DC-22B	Switching of mixed resistive inductive loads, including moderate overloads (eg. series motors)
DC-21A DC-21B	Switching of resistive loads including moderate overloads	DC-23A DC-23B	Switching of motor loads, or other highly inductive loads (eg. series motors)

A = Frequent operations

B = Infrequent operations

Switch Reordering

Please quote all of the **highlighted** code numbers when reordering a switch




Φ Kraus & Naimer

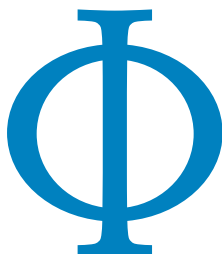
KG126
T306

DE19N25823/200

MADE IN GERMANY

IEC60947-3 / EN60947-3 / VDE0660-107

	50/60Hz	220V	380V	500V	660V	1000V
		240V	440V		690V	
$I_u = I_{th}$		125A	125A	125A	125A	125A
AC-21A		125A	125A	125A	125A	-
AC-23A	kW3ph	30	45	55	37	-
AC-3	kW3ph	22	37	45	30	-



WORLDWIDE SYMBOL FOR QUALITY SWITCHGEAR

The Range of Blue Line Switchgear

Technical literature covering the following is available by viewing our web site
www.krausnaimer.com

DC-Switch with knife contact G20/G20S

Disconnectors for Photovoltaic

Maintenance Switches for EMC-Compliant connection for F-U regulated drives

Catalogue 100:

C, CA & CAD Switches & L Switches: 10A-2400A

Catalogue 101:

Optional Extras & Enclosures

Catalogue 110:

A Switches: 6A-25A

Catalogue 120:

CG, CH & CHR Switches: 10A-25A

Catalogue 130:

DH, DHR, DK, DKR, D Switches: 20mA / 30mV-690V

Catalogue 150:

KG / KH Switches: 20A-80A

Catalogue 302:

Push Buttons & Pilot Lights 22.5mm Controls

Catalogue 500:

Main Switches, Maintenance Switches

& Switch Disconnectors



SCAN FOR CATALOGUES