

# Kraus & Naimer

BLUE LINE switchgear

[www.krausnaimer.com](http://www.krausnaimer.com)

SINCE 1907

According to CE,  
IEC 947, EN 60947



## Contactor Catalogue



3 Pole & 4 Pole Contactors 4kW - 160kW



Thermal Overload



Mini-Contactors 4kW - 5.5kW



DC Contactors



Mini-Relays 10A



Motor Starter DOL, Star-Delta



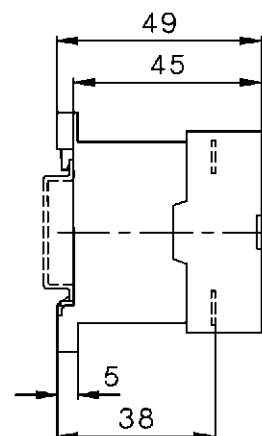
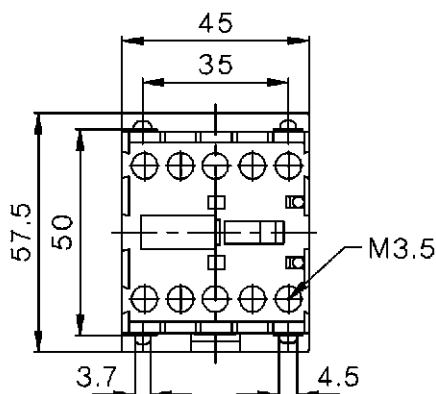
Capacitor Switching



Modular Contactors (for Distribution Board DB)

## Mini-Contactors

- Compact frame size up to AC3 5.5kW
- Screw connection terminals
- DIN-Rail or Screw Base Mount



AC3 380-415V KW	AC1 Rated Current A	Auxiliary NO	Contact NC	Type	AC Coil Voltage Coding		
3P - AC Operated	4.5	20	1	-	<b>*230Vac coil voltage</b> <b>9B K1-09D 10 A230</b> <b>9B K1-09D 01 A230</b>		
	4.5	20	-	1			
	5.5	20	1	-	<b>9B K1-12D 10 A230</b> <b>9B K1-12D 01 A230</b>		
	5.5	20	-	1			
4P - AC Operated	4.5	20	-	-	<b>230Vac coil voltage</b> <b>9B K1-09D 0040 A230</b> <b>9B K1-09D 0040 A230 SIS0011</b>		
	4.5	20	1	1			
	5.5	20	-	-	<b>24Vdc coil voltage</b> <b>9B K1-09D 10 D024</b> <b>9B K1-09D 01 D024</b>		
	5.5	20	1	1			
4P - DC Operated	4.5	20	-	-	<b>24Vdc coil voltage</b> <b>9B K1-09D 0040 D024</b> <b>9B K1-09D 0040 D024 SIS0011</b>		
	4.5	20	1	1			
	5.5	20	-	-	<b>24Vdc coil voltage</b> <b>9B K1-09D 10 D024</b> <b>9B K1-09D 01 D024</b>		
	5.5	20	1	1			
					*Other coil voltages, Please consult us.		

## Accessories

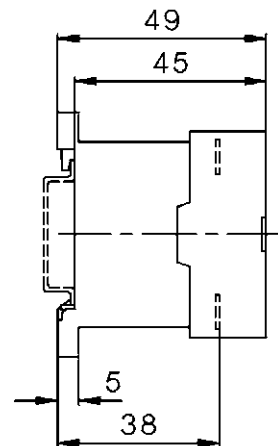
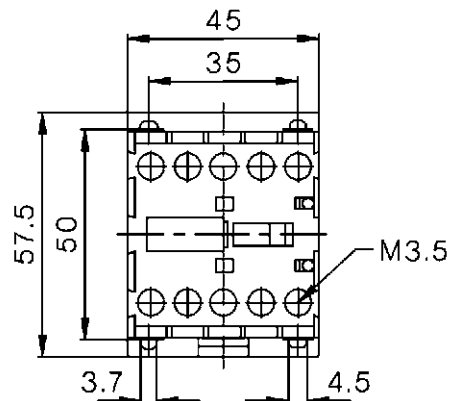


Coil RC Suppressor Unit for K1 Relay & Mini-contactor to protect contactor coil against voltage peaks and harmonic waves.  
To snap on to contactor

Type	Voltage Range		
<b>9B RC-K124</b>	12-48V	ac/dc	1600nF/22 ohm
<b>9B RC-K1110</b>	48-127V	ac/dc	680nF/270 ohm
<b>9B RC-K1230</b>	110-250V	ac/dc	220nF/2200 ohm

## Mini-Relays

- 10A thermal  $I_{th}$  rating
- Suitable for electronic circuit
- DIN-rail or Screw Base Mounting
- Screw terminals
- Add Aux Contact Block - up to 8 contacts available



AC15 230V  A	$I_{th}$ Thermal Current  A	Contact		Type	
		NO	NC		
Mini Relay AC Operated				<b>*230Vac coil voltage</b>	<b>AC Coil Voltage Coding</b>
3	10	4	-	<b>9B K1-07D 40 A230</b>	Code      Volts 50Hz      Volts 60 Hz
3	10	3	1	<b>9B K1-07D 31 A230</b>	A024      22-24V      22-27V
3	10	2	2	<b>9B K1-07D 22 A230</b>	A042      42-47V      47-52V
					A110      100-110V      110-122V
					A127      122-135V      135-150V
					A230      220-240V      230-264V
					A400      380-415V      400-460V
Mini Relay DC Operated				<b>24Vdc coil voltage</b>	<b>DC Coil Voltage Coding</b>
3	10	4	-	<b>9B K1-07D 40 D024</b>	Code      Volts
3	10	3	1	<b>9B K1-07D 31 D024</b>	D024      24Vdc
3	10	2	2	<b>9B K1-07D 22 D024</b>	D048      48Vdc
					D110      110Vdc
					D220      220Vdc
*Other coil voltages Please consult us.					

### Auxiliary Add on Contact Block for Mini Contactors and Mini-Relays

AC15 230V  A	$I_{th}$ Thermal Current  A	NO	NC	Type
3	10	1	1	<b>9B HK11</b>
3	10	-	2	<b>9B HK02</b>
3	10	2	-	<b>9B HK20</b>
3	10	4	-	<b>9B HK40</b>
3	10	2	2	<b>9B HK22</b>
3	10	-	4	<b>9B HK04</b>

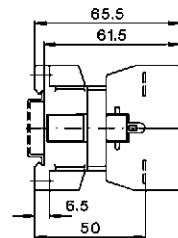
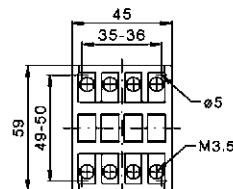




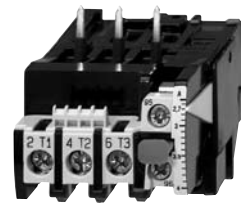
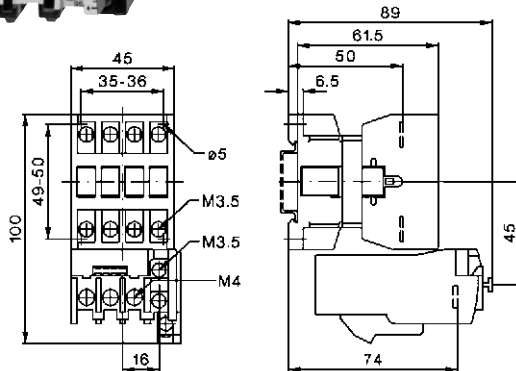
Ordering Example : Required 4 NO + 4 NC relay contacts (coil AC230) :-

Order 1pcs 9B K1 07D 40 A230 (4 NO) + 1pc 9B HK04 (4 NC)

## Contactors 3-pole

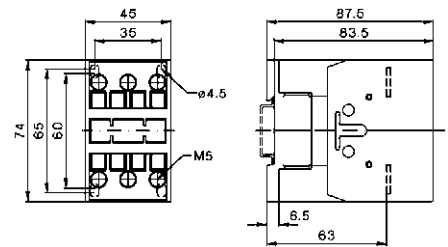
- Up to 315A AC3
- Up to 500A AC1
- DIN-rail mounting up to AC3 115A
- International Approvals
- Data according to IEC 947 / EN 60947





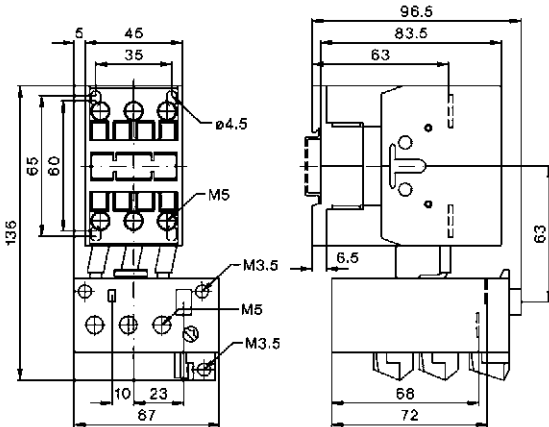



Ratings			10A	14A	18A	22A																																							
AC3	400V	Motor																																											
	400-415V		4kW	5.5kW	7.5kW	11kW																																							
	660-690V		5.5kW	7.5kW	10kW	10kW																																							
AC1	690V at 40°C		25A	25A	32A	32A																																							
Auxiliary contacts			Type				AC Coil Voltage Coding																																						
			*230AC Coil				Code	Volts	Volts																																				
							50Hz	60Hz																																					
			NO	NC																																									
			1	0	9B K3-10ND 10 A230	9B K3-14ND 10 A230	9B K3-18ND 10 A230	9B K3-22ND 10 A230	A024	22-24V	22-27V																																		
0	1	9B K3-10ND 01 A230	9B K3-14ND 01 A230	9B K3-18ND 01 A230	9B K3-22ND 01 A230	A042	42-47V	47-52V																																					
1	1	-	-	-	-	A110	100-110V	110-122V																																					
0	0	-	-	-	-	A127	122-135V	135-150V																																					
Cable cross-section							A230	220-240V	230-264V																																				
Solid	mm²		0.75 - 6				A400	380-415V	400-460V																																				
Flexible	mm²		1 - 4																																										
Cables per clamp			2																																										
Auxiliary contact																																													
I <sub>th</sub>	40°C	A	16																																										
AC15	230V	A	12																																										
	400V	A	4																																										
Power consumption of coils							DC Coil Voltage Coding																																						
Inrush VA			33 - 45				Code	Volts																																					
hold VA			7 - 10				D024	24Vdc																																					
Operation range of coils			0.85 - 1.1				D048	48Vdc																																					
							D110	110Vdc																																					
							D220	220Vdc																																					
Mounting			35mm DIN-rail or base																																										
Additional aux. contact blocks							*Other coil voltages, Please consult us.																																						
Front mounting contacts	Type		 9B HN10 1NO	 9B HN01 1NC	<ul style="list-style-type: none"><li>Contact Rating 10A</li><li>Maximum 4HN</li><li>Suitable for low Voltage (17V, 5mA)</li></ul>																																								
Additional aux. contact blocks																																													
Side mounting contacts	Type		-	-	-	-																																							
Thermal Overload Relay																																													
*3 elements type thermal relay							<table><tr><th colspan="2">TOR For K3-10 to K3-22</th></tr><tr><th>Setting Range</th><th>Type</th></tr><tr><td>0.12 - 0.18A</td><td>9B U12/16E 0.18 K3</td></tr><tr><td>0.18 - 0.27A</td><td>9B U12/16E 0.27 K3</td></tr><tr><td>0.27 - 0.4A</td><td>9B U12/16E 0.4 K3</td></tr><tr><td>0.4 - 0.6A</td><td>9B U12/16E 0.6 K3</td></tr><tr><td>0.6 - 0.9A</td><td>9B U12/16E 0.9 K3</td></tr><tr><td>0.8 - 1.2A</td><td>9B U12/16E 1.2 K3</td></tr><tr><td>1.2 - 1.8A</td><td>9B U12/16E 1.8 K3</td></tr><tr><td>1.8 - 2.7A</td><td>9B U12/16E 2.7 K3</td></tr><tr><td>2.7 - 4.0A</td><td>9B U12/16E 4 K3</td></tr><tr><td>4.0 - 6.0A</td><td>9B U12/16E 6 K3</td></tr><tr><td>6.0 - 9.0A</td><td>9B U12/16E 9 K3</td></tr><tr><td>8.0 - 11.0A</td><td>9B U12/16E 11 K3</td></tr><tr><td>10.0 - 14.0A</td><td>9B U12/16E 14 K3</td></tr><tr><td>13.0 - 18.0A</td><td>9B U12/16E 18 K3</td></tr><tr><td>17.0 - 23.0A</td><td>9B U12/16E 23 K3</td></tr><tr><td>22.0 - 30.0A</td><td>9B U12/16E 30 K3</td></tr></table>			TOR For K3-10 to K3-22		Setting Range	Type	0.12 - 0.18A	9B U12/16E 0.18 K3	0.18 - 0.27A	9B U12/16E 0.27 K3	0.27 - 0.4A	9B U12/16E 0.4 K3	0.4 - 0.6A	9B U12/16E 0.6 K3	0.6 - 0.9A	9B U12/16E 0.9 K3	0.8 - 1.2A	9B U12/16E 1.2 K3	1.2 - 1.8A	9B U12/16E 1.8 K3	1.8 - 2.7A	9B U12/16E 2.7 K3	2.7 - 4.0A	9B U12/16E 4 K3	4.0 - 6.0A	9B U12/16E 6 K3	6.0 - 9.0A	9B U12/16E 9 K3	8.0 - 11.0A	9B U12/16E 11 K3	10.0 - 14.0A	9B U12/16E 14 K3	13.0 - 18.0A	9B U12/16E 18 K3	17.0 - 23.0A	9B U12/16E 23 K3	22.0 - 30.0A	9B U12/16E 30 K3
TOR For K3-10 to K3-22																																													
Setting Range	Type																																												
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6.0 - 9.0A	9B U12/16E 9 K3																																												
8.0 - 11.0A	9B U12/16E 11 K3																																												
10.0 - 14.0A	9B U12/16E 14 K3																																												
13.0 - 18.0A	9B U12/16E 18 K3																																												
17.0 - 23.0A	9B U12/16E 23 K3																																												
22.0 - 30.0A	9B U12/16E 30 K3																																												
*Automatic Temperature compensation for ambient Temperature -25 to +60 Deg C																																													
*Trip Class 10A to IEC 947 - 4 - 1																																													
*Protect against:- - Overload Current - Phase Unbalance - Single Phase Failure																																													
																																													

## Contactors 3-pole

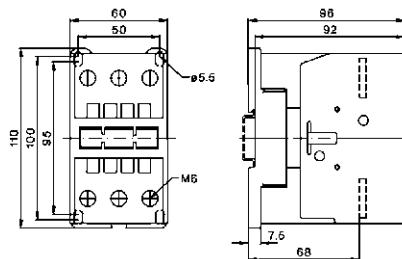
- Climate resistant, suitable for extreme humidity application
- Ambient temperature -40 Deg C .. 90Deg C
- Large cable cross sections termination area
- HN ..auxiliary contact suitable for electronics circuit (17V, 5mA)
- Minimum size and Maximun performance







<b>Ratings</b>																				
AC3	400V	Motor	<b>24A</b>	<b>32A</b>	<b>40A</b>															
	400-415V		11kW	15kW	18.5kW															
	660-690V		15kW	18.5kW	18.5kW															
AC1	690V at 40°C		50A	65A	80A															
<b>Auxiliary contacts</b>			<b>Type</b>			<b>AC Coil Voltage Coding</b>														
			<b>*230AC Coil</b>			Code	Volts	Volts												
NO	NC						50Hz	60Hz												
1	0		<b>9B K3-24A 00 A230 SIS 0010</b>	<b>9B K3-32A 00 A230 SIS 0010</b>	<b>9B K3-40A 00 A230 SIS 0010</b>	A024	22-24V	22-27V												
0	1		-	-	-	A042	42-47V	47-52V												
1	1		-	-	-	A110	100-110V	110-122V												
0	0		<b>9B K3-24A 00 A230</b>	<b>9B K3-32A 00 A230</b>	<b>9B K3-40A 00 A230</b>	A127	122-135V	135-150V												
<b>Cable cross-section</b>						A230	220-240V	230-264V												
Solid	mm <sup>2</sup>		1.5 - 25			A400	380-415V	400-460V												
Flexible	mm <sup>2</sup>		2.5 - 16																	
Cables per clamp			1 + 1																	
<b>Auxiliary contact</b>																				
I <sub>th</sub>	40°C	A	-																	
AC15	230V	A	-																	
	400V	A	-																	
<b>Power consumption of coils</b>						<b>DC Coil Voltage Coding</b>														
Inrush VA			90 - 115			Code	Volts													
hold VA			9 - 13			D024	24Vdc													
Operation range of coils			0.85 - 1.1			D048	48Vdc													
						D110	110Vdc													
						D220	220Vdc													
<b>Mounting</b>			35mm DIN-rail or base																	
<b>Additional aux. contact blocks</b>						*Other coil voltages, Please consult us.														
Front mounting contacts	Type		 <b>9B HN10</b> 1NO	 <b>9B HN01</b> 1NC	<ul style="list-style-type: none"><li>• Contact Rating 10A</li><li>• Maximun 4HN</li><li>• Suitable for low Voltage (17V, 5mA)</li></ul>															
<b>Additional aux. contact blocks</b>																				
Side mounting contacts	Type		 <b>9B HB11</b> 1NO+1NC	 <b>9B HB02</b> 2NC	<ul style="list-style-type: none"><li>• Contact Rating 10A</li><li>• Maximun 2HB</li><li>• Suitable for low Voltage (17V, 5mA)</li></ul>															
<b>Thermal Overload Relay</b>																				
*3 elements type thermal relay																				
*Automatic Temperature compensation for ambient Temperature -25 to +60 Deg C																				
*Trip Class 10A to IEC 947 - 4 - 1																				
*Protect against:- - Overload Current - Phase Unbalance - Single Phase Failure																				
			<table><tr><th colspan="2">TOR FOR K3-24 TO K3-40</th></tr><tr><th>Setting Ranges</th><th>Type</th></tr><tr><td>10 - 14A</td><td><b>9B U3/4214</b></td></tr><tr><td>14 - 20A</td><td><b>9B U3/4220</b></td></tr><tr><td>20 - 28A</td><td><b>9B U3/4228</b></td></tr><tr><td>28 - 42A</td><td><b>9B U3/4242</b></td></tr></table>						TOR FOR K3-24 TO K3-40		Setting Ranges	Type	10 - 14A	<b>9B U3/4214</b>	14 - 20A	<b>9B U3/4220</b>	20 - 28A	<b>9B U3/4228</b>	28 - 42A	<b>9B U3/4242</b>
TOR FOR K3-24 TO K3-40																				
Setting Ranges	Type																			
10 - 14A	<b>9B U3/4214</b>																			
14 - 20A	<b>9B U3/4220</b>																			
20 - 28A	<b>9B U3/4228</b>																			
28 - 42A	<b>9B U3/4242</b>																			
																				

## Contactors 3-pole

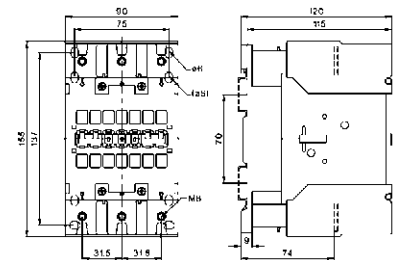
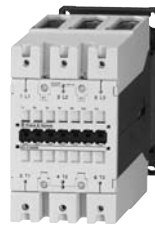
- Up to 315A AC3
- Up to 500A AC1
- DIN-rail mounting up to AC3 115A
- International Approvals
- Data according to IEC 947 / EN 60947





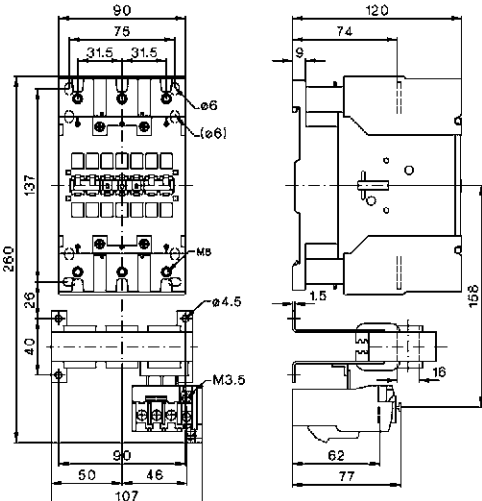
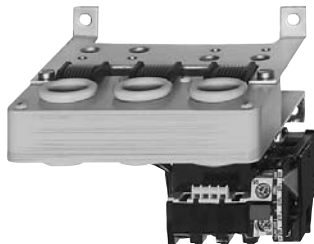


<b>Ratings</b>			<b>50A</b>	<b>62A</b>	<b>74A</b>			
AC3	400V	Motor						
	400-415V		22kW	30kW	37kW			
	660-690V		30kW	37kW	45kW			
AC1	690V at 40°C		110A	120A	130A			
<b>Auxiliary contacts</b>			<b>Type</b>			<b>AC Coil Voltage Coding</b>		
			<b>*230AC Coil</b>			Code	Volts	Volts
NO	NC						50Hz	60Hz
1	0		9B K3-50A 00 A230 SIS 0010	9B K3-62A 00 A230 SIS 0010	9B K3-74A 00A 230 SIS 0010	A024	22-24V	22-27V
0	1		-	-	-	A042	42-47V	47-52V
1	1		-	-	-	A110	100-110V	110-122V
0	0		9B K3-50A 00 A230	9B K3-62A 00 A230	9B K3-74A 00 A230	A127	122-135V	135-150V
<b>Cable cross-section</b>						A230	220-240V	230-264V
Solid	mm <sup>2</sup>		4 - 50			A400	380-415V	400-460V
Flexible	mm <sup>2</sup>		10 - 35					
Cables per clamp			1 + 1					
<b>Auxiliary contact</b>								
I <sub>th</sub>	40°C	A	-					
AC15	230V	A	-					
	400V	A	-					
<b>Power consumption of coils</b>						<b>DC Coil Voltage Coding</b>		
Inrush VA			140 - 165			Code	Volts	
hold VA			13 - 18			D024	24Vdc	
Operation range of coils			0.85 - 1.1			D048	48Vdc	
						D110	110Vdc	
						D220	220Vdc	
<b>Mounting</b>			35mm DIN-rail or base					
<b>Additional aux. contact blocks</b>						*Other coil voltages, Please consult us.		
Front mounting contacts	Type		 <b>9B HN10</b> 1NO	 <b>9B HN01</b> 1NC	<ul style="list-style-type: none"><li>Contact Rating 10A</li><li>Maximun 4HN</li><li>Suitable for low Voltage (17V, 5mA)</li></ul>			
<b>Additional aux. contact blocks</b>								
Side mounting contacts	Type		 <b>9B HB11</b> 1NO+1NC	 <b>9B HB02</b> 2NC	<ul style="list-style-type: none"><li>Contact Rating 10A</li><li>Maximun 2HB</li><li>Suitable for low Voltage (17V, 5mA)</li></ul>			
<b>Thermal Overload Relay</b>						<b>TOR FOR K3-50 TO K3-74</b>		
*3 elements type thermal relay						Setting Ranges		
*Automatic Temperature compensation for ambient Temperature -25 to +60 Deg C						20 - 28A		
*Trip Class 10A to IEC 947 - 4 - 1						28 - 42A		
*Protect against:-						40 - 52A		
- Overload Current						52 - 65A		
- Phase Unbalance						60 - 74A		
- Single Phase Failure						Type		
						9B U3/7428		
						9B U3/7442		
						9B U3/7452		
						9B U3/7465		
						9B U3/7474		

## Contactors 3-pole

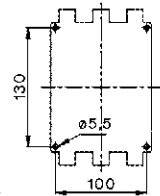
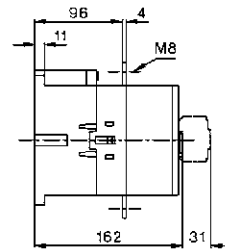
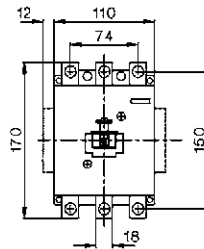
- Climate resistant, suitable for extreme humidity application
- Ambient temperature -40 Deg C .. 90Deg C
- Large cable cross sections termination area
- HN ..auxiliary contact suitable for electronics circuit (17V, 5mA)
- Minimum size and Maximun performance



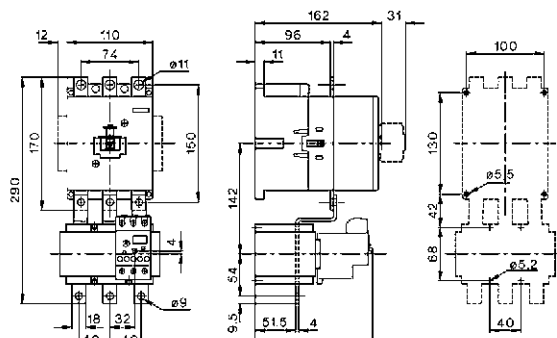
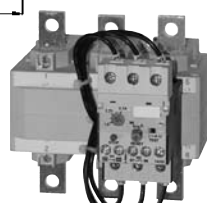


<b>Ratings</b>																
AC3	400V	Motor	<b>90A</b>		<b>115A</b>											
	400-415V		45kW		55kW											
	660-690V		55kW		55kW											
AC1	690V at 40°C		160A		200A											
<b>Auxiliary contacts</b>			<b>Type</b>				<b>AC Coil Voltage Coding</b>									
			<b>*230AC Coil</b>				Code	Volts								
NO	NC		<b>9B K3-90A 00 A230 SIS 0010</b>		<b>9B K3-115A 00 A230 SIS 0010</b>		50Hz	Volts								
1	0		-		-		A024	22-24V								
0	1		-		-		A042	42-47V								
1	1		-		-		A110	100-110V								
0	0		<b>9B K3-90A 00 A230</b>		<b>9B K3-115A 00 A230</b>		A127	122-135V								
<b>Cable cross-section</b>							A230	220-240V								
Solid	mm <sup>2</sup>		120 + 95				A400	380-415V								
Flexible	mm <sup>2</sup>		95 + 70													
Cables per clamp			1 + 1													
<b>Auxiliary contact</b>																
I <sub>th</sub>	40°C	A	-													
AC15	230V	A	-													
	400V	A	-													
<b>Power consumption of coils</b>							<b>DC Coil Voltage Coding</b>									
Inrush VA			280				Code	Volts								
hold VA			5				D024	24Vdc								
Operation range of coils			0.85 - 1.1				D048	48Vdc								
<b>Mounting</b>			35mm DIN-rail or base				D110	110Vdc								
<b>Additional aux. contact blocks</b>							D220	220Vdc								
Front mounting contacts	Type			<b>9B HN10 1NO</b>		<b>9B HN01 1NC</b>	*Other coil voltages, Please consult us.									
Side mounting contacts	Type			<b>9B HB11 1NO+1NC</b>		<b>9B HB02 2NC</b>										
<b>Thermal Overload Relay</b>																
*3 elements type thermal relay																
*Automatic Temperature compensation for ambient Temperature -25 to +60 Deg C																
*Trip Class 10A to IEC 947 - 4 - 1																
*Protect against:- - Overload Current - Phase Unbalance - Single Phase Failure																
			<div><div></div><div><table><tr><th colspan="2">TOR FOR K3-90 TO K3-115</th></tr><tr><th>Setting Ranges</th><th>Type</th></tr><tr><td>60 - 90A</td><td><b>9B U8590</b></td></tr><tr><td>80 - 120A</td><td><b>9B U85120</b></td></tr></table></div></div>						TOR FOR K3-90 TO K3-115		Setting Ranges	Type	60 - 90A	<b>9B U8590</b>	80 - 120A	<b>9B U85120</b>
TOR FOR K3-90 TO K3-115																
Setting Ranges	Type															
60 - 90A	<b>9B U8590</b>															
80 - 120A	<b>9B U85120</b>															

## Contactors 3-pole

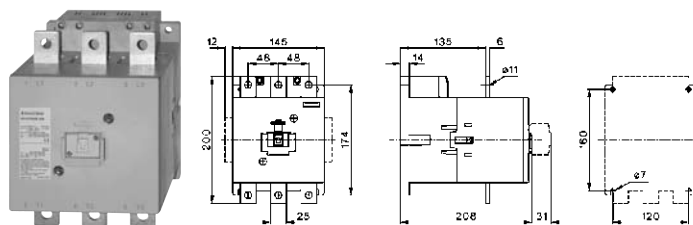
- Up to 315A AC3
- Up to 500A AC1
- DIN-rail mounting up to AC3 115A
- International Approvals
- Data according to IEC 947 / EN 60947



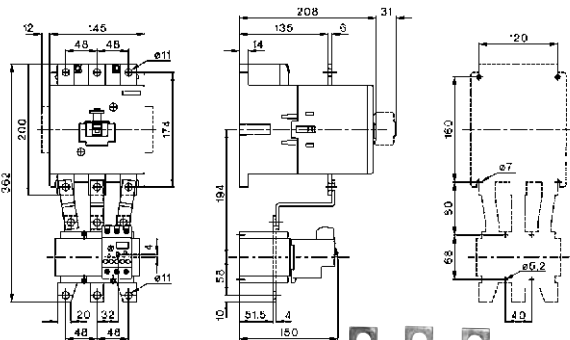
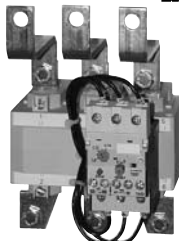


<b>Ratings</b>																				
AC3	400V	Motor	<b>150A</b>		<b>175A</b>															
	400-415V		75kW		90kW															
	660-690V		90kW		110kW															
AC1	690V at 40°C		230A		250A															
<b>Auxiliary contacts</b>			<b>Type</b>			<b>AC Coil Voltage Coding</b>														
			<b>*230AC Coil</b>			Code	Volts	Volts												
NO	NC						50Hz	60Hz												
1	0		-			A024	22-24V	22-27V												
0	1		-			A042	42-47V	47-52V												
1	1		<b>9B K3-151A 00 A230 SIS 0011</b>			A110	100-110V	110-122V												
0	0		<b>9B K3-151A 00 A230</b>			A127	122-135V	135-150V												
<b>Cable cross-section</b>						A230	220-240V	230-264V												
Solid	mm <sup>2</sup>		2 x 16 - 120			A400	380-415V	400-460V												
Flexible	mm <sup>2</sup>		2 x 16 - 120																	
Cables per clamp			1 + 1																	
<b>Auxiliary contact</b>																				
I <sub>th</sub>	40°C	A	-																	
AC15	230V	A	-																	
	400V	A	-																	
<b>Power consumption of coils</b>						<b>DC Coil Voltage Coding</b>														
Inrush VA			350			Code	Volts													
hold VA			5			D024	24Vdc													
Operation range of coils			0.85 - 1.1			D048	48Vdc													
						D110	110Vdc													
<b>Mounting</b>			Base			D220	220Vdc													
<b>Additional aux. contact blocks</b>					<b>9B HKT11</b> 1NO + 1NC	<b>9B HKT22</b> 2NO + 2NC	• Contact Rating 10A • Maximun 1 HKT													
Front mounting contacts	Type						*Other coil voltages, Please consult us.													
<b>Additional aux. contact blocks</b>					<b>9B HKA11</b> 1NO + 1NC				• Contact Rating 10A • Maximun 1 HKA											
Side mounting contacts	Type																			
<b>Thermal Overload Relay</b>																				
*3 elements type thermal relay																				
*Automatic Temperature compensation for ambient Temperature -25 to +60 Deg C																				
*Trip Class 10A to IEC 947 - 4 - 1																				
*Protect against:- - Overload Current - Phase Unbalance - Single Phase Failure																				
																				
																				
			<table><tr><th colspan="3">TOR FOR K3-151 TO K3-176</th></tr><tr><th>Setting Ranges</th><th colspan="2">Type</th></tr><tr><td>120 -180A</td><td colspan="2">9B U180180</td></tr><tr><td>Links for independent mounting (Basbar set)</td><td colspan="2">9B SU180/176</td></tr></table>						TOR FOR K3-151 TO K3-176			Setting Ranges	Type		120 -180A	9B U180180		Links for independent mounting (Basbar set)	9B SU180/176	
TOR FOR K3-151 TO K3-176																				
Setting Ranges	Type																			
120 -180A	9B U180180																			
Links for independent mounting (Basbar set)	9B SU180/176																			
			Or alternatively used with C.T. ( Not supplied)																	
			<table><tr><th>Current Range</th><th>TOR Type</th><th>Current Transformer (C.T)</th></tr><tr><td>120 - 180A</td><td>9B U12/16E1.8 (1.2 - 1.8A) + 9B U12SM (Din-Rail Mounting Unit)</td><td>500 : 5</td></tr></table>						Current Range	TOR Type	Current Transformer (C.T)	120 - 180A	9B U12/16E1.8 (1.2 - 1.8A) + 9B U12SM (Din-Rail Mounting Unit)	500 : 5						
Current Range	TOR Type	Current Transformer (C.T)																		
120 - 180A	9B U12/16E1.8 (1.2 - 1.8A) + 9B U12SM (Din-Rail Mounting Unit)	500 : 5																		

## Contactors 3-pole

- Climate resistant, suitable for extreme humidity application
- Ambient temperature -40°C .. 70°C
- Large cable cross sections termination area
- HN ..auxiliary contact suitable for electronics circuit (17V, 5mA)
- Minimum size and Maximun performance



<b>Ratings</b>			<b>210A</b>	<b>260A</b>	<b>315A</b>			
AC3	400V	Motor						
	400-415V							
	660-690V							
AC1	690V at 40°C		110kW	132kW	160kW			
			160kW	210kW	250kW			
			350A	450A	500A			
<b>Auxiliary contacts</b>			<b>Type</b>			<b>AC Coil Voltage Coding</b>		
			<b>*230AC Coil</b>			Code	Volts	Volts
NO	NC						50Hz	60Hz
1	0		-	-	-	A024	22-24V	22-27V
0	1		-	-	-	A042	42-47V	47-52V
1	1		9B K3-210A 00 A230 SIS 0011	9B K3-260A 00 A230 SIS 0011	9B K3-316A 00 A230 SIS 0011	A110	100-110V	110-122V
0	0		9B K3-210A 00 A230	9B K3-260A 00 A230	9B K3-316A 00 A230	A127	122-135V	135-150V
<b>Cable cross-section</b>						A230	220-240V	230-264V
Solid	mm <sup>2</sup>		busbar			A400	380-415V	400-460V
Flexible	mm <sup>2</sup>		30 x 6					
Cables per clamp								
<b>Auxiliary contact</b>								
I <sub>th</sub>	40°C	A	-					
AC15	230V	A	-					
	400V	A	-					
<b>Power consumption of coils</b>						<b>DC Coil Voltage Coding</b>		
Inrush VA			360			Code	Volts	
hold VA			5			D024	24Vdc	
Operation range of coils			0.85 - 1.1			D048	48Vdc	
						D110	110Vdc	
						D220	220Vdc	
<b>Mounting</b>			Base					
<b>Additional aux. contact blocks</b>						*Other coil voltages, Please consult us.		
Type								
Front mounting contacts				<b>9B HKT11</b> 1NO + 1NC	<b>9B HKT22</b> 2NO + 2NC	• Contact Rating 10A • Maximun 1 HKT		
<b>Additional aux. contact blocks</b>								
Side mounting contacts				<b>9B HKA11</b> 1NO + 1NC		• Contact Rating 10A • Maximun 1 HKA		
<b>Thermal Overload Relay</b>						<b>TOR FOR K3-210 TO K3-316</b>		
*3 elements type thermal relay						Setting Ranges		
*Automatic Temperature compensation for ambient Temperature -25 to +60 Deg C						144 - 320A		
*Trip Class 10A to IEC 947 - 4 - 1						Type		
*Protect against:- - Overload Current - Phase Unbalance - Single Phase Failure						9B U320320		
						Or alternatively used with C.T. ( Not supplied)		
								
						Current Range	TOR Type	Current Transformer (C.T)
						180 - 270A	9B U12/16E27 (1.8 - 2.7A) + 9B U12SM (Din-Rail Mounting Unit)	500:5
						270 - 400A	9B U12/16E27 (2.7 - 4A) + 9B U12SM (Din-Rail Mounting Unit)	500:5

## 4 Poles Contactor

- AC1 rated 25A to 500A
- AC3 rated 4KW to 160KW
- Compact and space saving design
- Suitable for applications such as switching heating circuits, as generator, as bypass or changeover contactor.



K3-10A



K2-45A

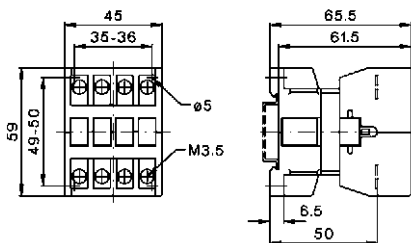


K3-151A

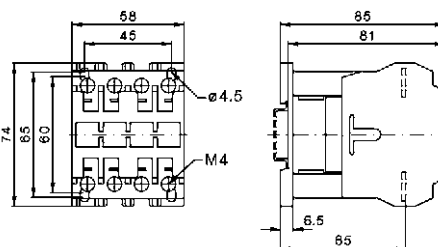
AC3 (Motor) 380-415V kW	AC1 (Resistive) 400V kW	AC1 690V Rated Current A	Auxiliary NO	Contact NC	Type	AC Coil Voltage Coding		
4	17.5	25	1	-	9B K3-10NA 0040 A230 SIS0010	Code	Volts 50Hz	Volts 60Hz
17.5	22	32	1	-	9B K3-18NA 0040 A230 SIS0010	A024	22-24V	22-27V
11	31	45	1	-	9B K2-23A 0040 A230 SIS0010	A042	42-47V	47-52V
15	34.5	50	1	-	9B K2-30A 0040 A230 SIS0010	A110	100-110V	110-122V
22	55	80	1	-	9B K2-45A 0040 A230 SIS0010	A127	122-135V	135-150V
30	69	100	1	-	9B K2-60A 0040 A230 SIS0010	A230	220-240V	230-264V
55	139	200	1	1	9B K3-116A 0040 A230 SIS0011	A400	380-415V	400-460V
75	159	230	1	1	9B K3-151A 0040 A230 SIS0011	*Other coil voltages, Please consult us.		
90	173	250	1	1	9B K3-176A 0040 A230 SIS0011			
110	242	350	1	1	9B K3-210A 0040 A230 SIS0011			
132	310	450	1	1	9B K3-260A 0040 A230 SIS0011			
160	346	500	1	1	9B K3-316A 0040 A230 SIS0011			
						DC Coil Voltage Coding		
						Code	Volts	
						D024	24Vdc	
						D048	48Vdc	
						D110	110Vdc	
						D220	220Vdc	

### Contactor 4-pole, AC operated

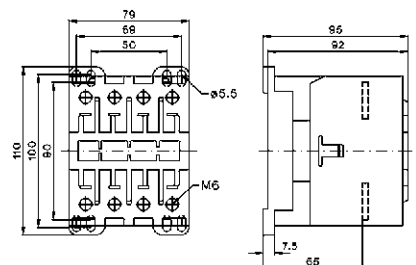
K3-10NA 00-40  
K3-14NA 00-40  
K3-18NA 00-40  
K3-22NA 00-40



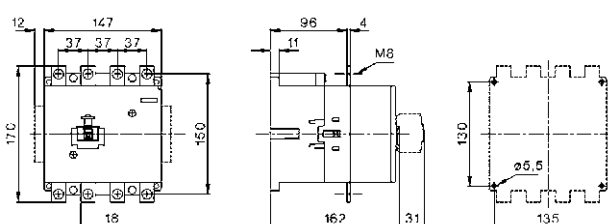
K2-23A 00-40  
K2-30A 00-40  
K2-37A 00-40



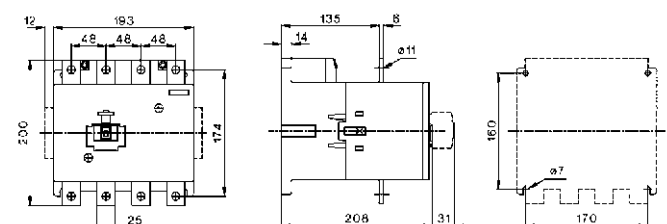
K2-45A 00-40  
K2-60A 00-40



K3-116A 00-40  
K3-151A 00-40  
K3-176A 00-40

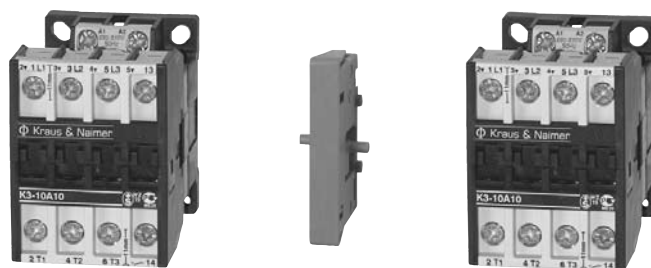


K3-210A 00-40  
K3-260A 00-40  
K3-316A 00-40



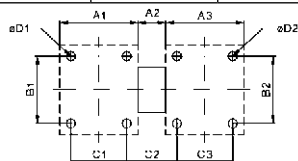
## 4 Poles Change-Over Contactor

- AC1 rated 25A to 450A
- AC3 rated 4KW to 132KW
- Compact and space saving design
- Consists of 2 contactors fitted with mechanical interlock
- Suitable for Mains disconnection and Mains changeover, Switching of heating system and 4-pole load switching



AC3 (Motor)  380-415V  KW	AC1 (Resistive)  400V  KW	AC1 690V  Rated Current  A	Auxiliary Contact		Type			
NO	NC							
					* 230Vac coil voltage (220V - 240ac)			
4	17.5	25	2	2	9B K3-WU10-40 A230 SIS0001	AC Coil Voltage Coding		
7.5	22	32	2	2	9B K3-WU18-40 A230 SIS0001	Code	Volts	Volts
							50Hz	60Hz
						A024	22-24V	22-27V
11	31	45	2	2	9B K3-WU23-40 A230 SIS0001	A042	42-47V	47-52V
						A110	100-110V	110-122V
15	34.5	50	2	2	9B K3-WU30-40 A230 SIS0001	A127	122-135V	135-150V
						A230	220-240V	230-264V
22	55	80	2	2	9B K3-WU45-40 A230 SIS0001	A400	380-415V	400-460V
30	69	100	2	2	9B K3-WU60-40 A230 SIS0001	DC Coil Voltage Coding		
						Code	Volts	
55	139	200	2	2	9B K3-WU116-40 A230 SIS0001	D024	24Vdc	
						D048	48Vdc	
75	159	230	2	2	9B K3-WU151-40 A230 SIS0001	D110	110Vdc	
						D220	220Vdc	
90	173	250	2	2	9B K3-WU176-40 A230 SIS0001	*Other coil voltages, Please consult us.		
110	242	350	2	2	9B K3-WU210-40 A230 SIS0001			
132	310	450	2	2	9B K3-WU260-40 A230 SIS0001			

### Dimensions

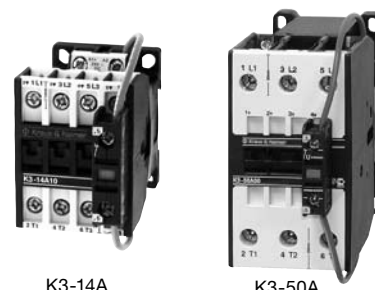


Interlock Type	Contactor 1	Contactor 1	A1	A2	A3	B1	B2	C1	C2	C3	D1	D2	
9B LG10889	K3-10 to K3-40	K3-10 to K3-40	45	7	45	50	50	35	17	35	4.5	4.5	
9B LG10889	K2-23 to K2-37	K2-23 to K2-37	58	7	58	65	65	45	20	45	4.5	4.5	
9B LG10890	K3-50 to K3-74	K3-24 to K3-40	60	12	55	100	65	50	22	45	5.5	5.5	
9B LG10890	K3-50 to K3-74	K3-50 to K3-74	60	12	60	100	100	50	22	50	5.5	5.5	
9B LG10890	K3-90 to K3-115	K3-90 to K3-115	90	12	90	100	100	75	27	75	5.5	5.5	
9B LG10890	K2-45 to K2-60	K2-45 to K2-60	79	12	79	100	100	69	22	69	5.5	5.5	
9B LG11223H	K3-115, -176	K3-115, -176	110	30	110	130	130	100	40	100	6	6	3-pole Contactor
9B LG11223H	K3-116, -151, -176	K3-116, -151, -176	147	30	147	130	130	135	42	135	6	6	4-pole Contactor
9B LG11223H	K3-210, -260, -316	K3-210, -260, -316	145	30	145	160	160	120	55	120	6	6	3-pole Contactor
9B LG11223H	K3-210, -260, -316	K3-210, -260, -316	193	30	193	160	160	170	55	170	6	6	4-pole Contactor

## Contactors 3-pole

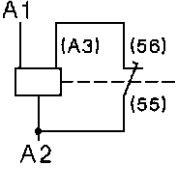
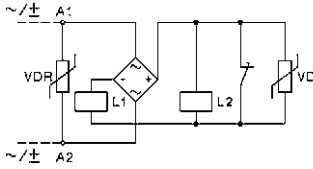

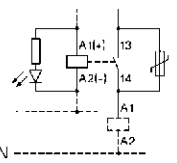

## DC Coil Control

- AC1 rated 25A to 500A
- AC3 rated 4KW to 160KW
- Use in DC Applications with lead - acid batteries, rectified power, battery charger & UPS etc..
- For application when Main Supply is AC and Contactor coil voltage is DC



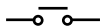
K3-14A


K3-50A

AC3 (Motor) 380-415V kW	AC1 (Resistive) 400V kW	AC1 690V Rated Current A	Auxiliary NO	Contact NC	Type	DC Coil Voltage Coding	
						Code	Volts
						D024	24Vdc
					*Coil Voltage 24Vdc	D048	48Vdc
4	17.5	25	1	-	9B K3-10ND 10 D024	D110	110Vdc
4	17.5	25	-	1	9B K3-10ND 01 D024	D220	220Vdc
5.5	17.5	25	1	-	9B K3-14ND 10 D024	 <p>DC operated with double coil winding for K3-10A to K3-74A contactor</p>	
5.5	17.5	25	-	1	9B K3-14ND 01 D024		
7.5	22	32	1	-	9B K3-18ND 10 D024		
7.5	22	32	-	1	9B K3-18ND 01 D024		
11	22	32	1	-	9B K3-22ND 10 D024		
11	22	32	-	1	9B K3-22ND 01 D024		
11	34.6	50	-	-	9B K3-24A 00 D024		
15	45	65	-	-	9B K3-32A 00 D024		
18.5	55	80	-	-	9B K3-40A 00 D024		
22	76	110	-	-	9B K3-50A 00 D024		
30	83	120	-	-	9B K3-62A 00 D024	 <p>DC operated with double coil winding for K3-90A, K3-115A, K3-151A, K3-176A, K3-210A, K3-260A, K3-316A contactor</p>	
37	90	130	-	-	9B K3-74A 00 D024		
45	110	160	-	-	9B K3-90A 00 A024		
55	139	200	-	-	9B K3-115A 00 A024		
75	159	230	-	-	9B K3-151A 00 A024		
90	173	250	-	-	9B K3-176A 00 A024		
110	242	350	-	-	9B K3-210A 00 A024		
132	310	450	-	-	9B K3-260A 00 A024		
160	346	500	-	-	9B K3-316A 00 A024		
Add On Auxiliary Contact block (AC1 10A rating)						TYPE	
K3 10ND to K3 74A - Maximum 3 HN..			1 NO		9B HN10		
K3 90A to K3 115A - Maximum 7 HN..			1NC		9B HN01		
For K3 151A to K3 316A contactors			1NO + 1NC		9B HKT11		
Maximum 1 HKT			2NO + 2NC		9B HKT22		
Accessories							
 <p>Interface for contactors K3-10ND to K3-74A Input Voltage 24V dc, Amplifier element for contactor control by PLC programmable controller.</p>					Type 9B K2 IM		
 <p>Coil RC Suppressor Unit for Contactors K3-10ND to K3-74A To protect contactor coil against voltage peaks and harmonic wave. To snap on to contactor</p>					Type 9B RC-K3N24 9B RC-K3N110 9B RC-K3N230 9B RC-K3N400		Voltage Range 12-48V ac/dc 1600nF/22 ohm 48-172V ac/dc 680nF/270 ohm 110-250V ac/dc 220nF/2200 ohm 230-415V ac/dc 120nF/620 ohm

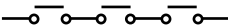
## Contactors 3-pole

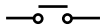
## Main Contacts DC Load supply - Ampere Rating

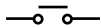
Utilization Category DC1 Switching of Resistive load Time Constant L/R, 1ms Rated operation current Ie  1 pole	<b>Type</b>	<b>9B K1-09D</b>	<b>9B K1-12D</b>	<b>9B K3 10ND</b>	<b>9B K3 14ND</b>	<b>9B K3 18ND</b>	<b>9B K3 22ND</b>	<b>9B K3 24A</b>	<b>9B K3 32A</b>	<b>9B K3 40A</b>	<b>9B K3 50A</b>
	DC										
	24V	20A	20A	20A	25A	32A	32A	50A	65A	80A	110A
	60V	20A	20A	20A	25A	32A	32A	50A	65A	80A	110A
	110V	5A	5A	6A	6A	6A	6A	10A	10A	10A	12A
	220V	0.6A	0.6A	0.8A	0.8A	0.8A	0.8A	1.4A	1.4A	1.4A	1.4A

Utilization Category DC1 Switching of Resistive load Time Constant L/R, 1ms Rated operation current Ie  1 pole	<b>Type</b>	<b>9B K3-62A</b>	<b>9B K3-74A</b>	<b>9B K3-90A</b>	<b>9B K3-115A</b>
	DC				
	24V	120A	130A	160A	200A
	60V	120A	130A	160A	200A
	110V	12A	20A	20A	25A
	220V	1.4A	1.4A	2A	2.5A

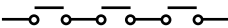
Utilization Category DC1 Switching of Resistive load Time Constant L/R, 1ms Rated operation current Ie  3 poles In Series	<b>Type</b>	<b>9B K1-09D</b>	<b>9B K1-12D</b>	<b>9B K3 10ND</b>	<b>9B K3 14ND</b>	<b>9B K3 18ND</b>	<b>9B K3 22ND</b>	<b>9B K3 24A</b>	<b>9B K3 32A</b>	<b>9B K3 40A</b>	<b>9B K3 50A</b>
	DC										
	24V	20A	20A	20A	25A	32A	32A	50A	65A	80A	110A
	60V	20A	20A	20A	25A	32A	32A	50A	65A	80A	110A
	110V	20A	20A	20A	25A	32A	32A	50A	65A	80A	110A
	220V	16A	16A	16A	20A	20A	20A	30A	35A	35A	63A

Utilization Category DC1 Switching of Resistive load Time Constant L/R, 1ms Rated operation current Ie  3 poles In Series	<b>Type</b>	<b>9B K3 62A</b>	<b>9B K3 74A</b>	<b>9B K3 90A</b>	<b>9B K3 115A</b>	<b>9B K3 151A</b>	<b>9B K3 176A</b>	<b>9B K3 210A</b>	<b>9B K3 260A</b>	<b>9B K3 316A</b>
	DC									
	24V	120A	130A	160A	200A	200A	250A	350A	400A	450A
	60V	120A	130A	160A	200A	200A	250A	350A	400A	450A
	110V	120A	130A	160A	200A	150A	170A	250A	280A	315A
	220V	80A	80A	100A	160A	80A	100A	150A	180A	200A

Utilization Category DC3 & DC5 Switching of Inductive load Time Constant L/R < 15ms Rated operation current Ie  1 pole	<b>Type</b>	<b>9B K1-09D</b>	<b>9B K1-12D</b>	<b>9B K3 10ND</b>	<b>9B K3 14ND</b>	<b>9B K3 18ND</b>	<b>9B K3 22ND</b>	<b>9B K3 24A</b>	<b>9B K3 32A</b>	<b>9B K3 40A</b>	<b>9B K3 50A</b>
	DC										
	24V	20A	20A	20A	25A	32A	32A	50A	65A	80A	110A
	60V	5A	5A	6A	6A	6A	6A	30A	30A	30A	60A
	110V	1A	1A	1.2A	1.2A	1.2A	12.2A	1.8A	1.8A	1.8A	1.8A
	220V	0.15A	0.15A	0.2A	0.2A	0.2A	0.2A	0.2A	0.2A	0.2A	0.25A

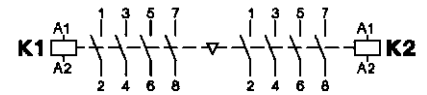
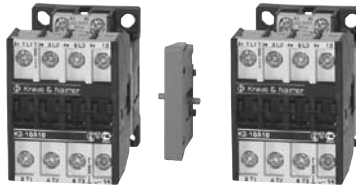
Utilization Category DC3 & DC5 Switching of Inductive load Time Constant L/R < 15ms Rated operation current Ie  1 pole	<b>Type</b>	<b>9B K3 62A</b>	<b>9B K3 74A</b>	<b>9B K3 90A</b>	<b>9B K3 115A</b>
	DC				
	24V	120A	130A	160A	200A
	60V	60A	60A	85A	110A
	110V	1.8A	1.8A	2A	2.5A
	220V	0.25A	0.25A	0.5A	0.5A


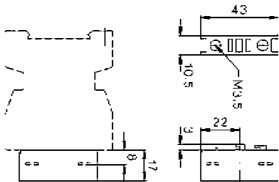

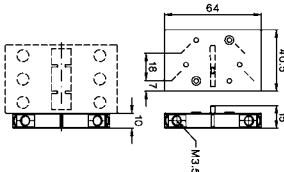

Utilization Category DC3 & DC5 Switching of Inductive load Time Constant L/R < 15ms Rated operation current Ie  3 poles In Series	<b>Type</b>	<b>9B K1-09D</b>	<b>9B K1-12D</b>	<b>9B K3 10ND</b>	<b>9B K3 14ND</b>	<b>9B K3 18ND</b>	<b>9B K3 22ND</b>	<b>9B K3 24A</b>	<b>9B K3 32A</b>	<b>9B K3 40A</b>	<b>9B K3 50A</b>
	DC										
	24V	20A	20A	20A	25A	32A	32A	50A	65A	80A	110A
	60V	20A	20A	20A	25A	32A	32A	40A	40A	40A	80A
	110V	20A	20A	20A	20A	20A	20A	40A	40A	40A	80A
	220V	2A	2A	2.5A	2.5A	2.5A	2.5A	4A	4A	4A	5A

Utilization Category DC3 & DC5 Switching of Inductive load Time Constant L/R < 15ms Rated operation current Ie  3 poles In Series	<b>Type</b>	<b>9B K3 62A</b>	<b>9B K3 74A</b>	<b>9B K3 90A</b>	<b>9B K3 115A</b>
	DC				
	24V	120A	130A	160A	200A
	60V	80A	80A	100A	110A
	60V	80A	80A	100A	110A
	220V	5A	5A	7A	8A

## 3 Poles Reversing Contactor

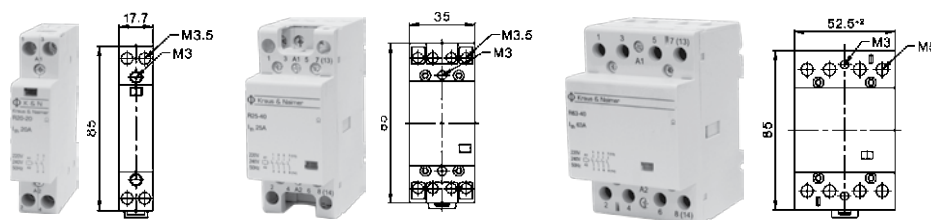
- AC3 rated 4KW to 75KW
- For Motor Control
- Compact and space saving design
- Consist of 2 contactors fitted with Mechanical Interlock



AC3 ( Motor ) 380-415V kW	AC3 400V Rated Current A	Auxiliary NO	Contact NC	Type			
				<b>*230Vac Coil Voltage (220V-240Vac)</b>			
4	10	2	2	<b>9B K3-WU10 A230 SIS 0001</b>	<b>AC Coil Voltage Coding</b>		
5.5	14	2	2	<b>9B K3-WU14 A230 SIS 0001</b>	Code	Volts 50Hz	Volts 60Hz
7.5	18	2	2	<b>9B K3-WU18 A230 SIS 0001</b>	A024	22-24V	22-27V
11	22	2	2	<b>9B K3-WU22 A230 SIS 0001</b>	A042	42-47V	47-52V
15	32	2	2	<b>9B K3-WU32 A230 SIS 0001</b>	A110	100-110V	110-122V
18.5	40	2	2	<b>9B K3-WU40 A230 SIS 0001</b>	A127	122-135V	135-150V
22	50	2	2	<b>9B K3-WU50 A230 SIS 0001</b>	A230	220-240V	230-264V
30	62	2	2	<b>9B K3-WU62 A230 SIS 0001</b>	A400	380-415V	400-460V
37	74	2	2	<b>9B K3-WU74 A230 SIS 0001</b>			
45	90	2	2	<b>9B K3-WU90 A230 SIS 0001</b>	<b>DC Coil Voltage Coding</b>		
55	115	2	2	<b>9B K3-WU115 A230 SIS 0001</b>	Code	Volts	
					D024	24Vdc	
					D048	48Vdc	
					D110	110Vdc	
					D220	220Vdc	
					*Other coil voltages Please consult us.		
<b>Accessories</b>							
 Auxiliary Contact Block - Top Mounted for contactors K3-10 to K3-115 AC1(690) = 10A AC15 (230V) = 3A				<b>Type</b> 9B HN10 9B HN01 9B HN10U 9B HN01U	<b>Contact</b> 1NO 1NC 1NO Early make 1NC Late Break		
 Auxiliary Contact Block - Side Mounted for contactors K3-24 to K3-115 AC1(690) = 10A AC15 (230V) = 3A				<b>Type</b> 9B HB11 9B HN02	<b>Contact</b> 1NO + 1NC 2NC		
 Auxiliary Contact Block for contactors K3-116 to K3-316 AC1(690) = 10A AC15 (230V) = 3A				<b>Type</b> 9B HKT11 9B HKT22  9B HKA11	<b>Contact</b> 1NO + 1NC 2NO + 2NC  1NO + 1NC		
HKT11 (Top Mounted)				HKA11 (Side Mounted)			

## Modular Contactors

- AC1 rated 20A to 63A
- Compact module and space saving
- Low switching noise & hum free
- Low power consumption, sealed
- For use in Distribution Board 45mm
- For application such as controlling small pumps ventilations, lighting systems, heating system etc.
- Suitable for switching lamps such as Incandescent, Fluorescent, Mercury-Vapour, Sodium vapour and Metal Halide



AC1 400V Rated Current A	Main	Contact	Type
	NO	NC	* 230Vac coil voltage (220V-240Vac)
<b>1pole (1 module 17.5mm)</b> 20	1	-	<b>9B R20-10 A230</b>
<b>2pole (1 module 17.5mm)</b> 20 20 20	2 1 -	- 1 2	<b>9B R20-20 A230</b> <b>9B R20-11 A230</b> <b>9B R20-02 A230</b>
<b>2pole (1 module 17.5mm)</b> 25 25 25	2 1 -	- 1 2	<b>9B R25-20 A230</b> <b>9B R25-11 A230</b> <b>9B R25-02 A230</b>
<b>4pole (2 module 35mm)</b> 25 25 25 25 25	4 3 1 2 -	- 1 3 2 4	<b>9B R25-40 A230</b> <b>9B R25-31 A230</b> <b>9B R25-13 A230</b> <b>9B R25-22 A230</b> <b>9B R25-04 A230</b>
<b>4pole (3 module 52.5 mm)</b> 40 40 40 40 40	4 3 1 2 -	- 1 3 2 4	<b>9B R40-40 A230</b> <b>9B R40-31 A230</b> <b>9B R40-13 A230</b> <b>9B R40-22 A230</b> <b>9B R40-04 A230</b>
<b>4pole (3 module 52.5 mm)</b> 63 63 63 63 63	4 3 1 2 -	- 1 3 2 4	<b>9B R63-40 A230</b> <b>9B R63-31 A230</b> <b>9B R63-13 A230</b> <b>9B R63-22 A230</b> <b>9B R63-04 A230</b>
<b>Accessories</b>			
1NO + 1NC Auxiliary Contact Block 1/2 Module (8.8mm) For Modular Contactor R25 (4P) , R40 and R63 (Max. 1pc)			<b>9B RH11</b>
RC-Unit 2x for R20 to R63 12V to 250Vac 220nF/100 Ohm			<b>9B RC-R230</b>
Spacer piece 1/2 Module (8.8mm) for R20.. TO R63			<b>9B P730</b>

Coil Voltage AC 24V. Please consult us.

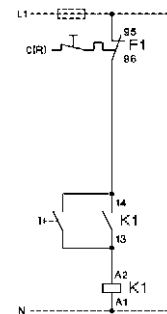
## D.O.L Starters in Thermoplastic Enclosure

- Starter for motor control
- 0.06kW to 11kW with 3 -phase thermal overload relay with 3 protected phases
- Weather Proof Enclosures IP 65 rated up to 11kW (191 x 89 x 101mm box size)
- Include Start/Stop pushbutton
- Supplied with Thermal Overload Relay fitted

Motor 3- phase Power Rating 50/60Hz	Setting Range of Thermal Overload	Type
AC3	Relay	
400V		
kW	A	<b>*Coil =400Vac (380V-440Vac)</b>
0.06	0.18-0.27	<b>9B P1T10 A400 SIS0002</b>
0.09	0.27-0.4	<b>9B P1T10 A400 SIS0004</b>
0.12	0.4-0.6	<b>9B P1T10 A400 SIS0006</b>
0.18	0.6-0.9	<b>9B P1T10 A400 SIS0009</b>
0.25	0.8-1.2	<b>9B P1T10 A400 SIS0012</b>
0.37	1.2-1.8	<b>9B P1T10 A400 SIS0018</b>
0.55	1.2-1.8	<b>9B P1T10 A400 SIS0018</b>
0.75	1.8-2.7	<b>9B P1T10 A400 SIS0027</b>
1.10	1.8-2.7	<b>9B P1T10 A400 SIS0027</b>
1.50	2.7-4	<b>9B P1T10 A400 SIS0040</b>
2.20	4-6	<b>9B P1T10 A400 SIS0060</b>
3.00	6-9	<b>9B P1T10 A400 SIS0090</b>
3.70	8-11	<b>9B P1T10 A400 SIS0110</b>
4.00	8-11	<b>9B P1T10 A400 SIS0110</b>
5.50	10-14	<b>9B P1T18 A400 SIS0140</b>
7.50	13-18	<b>9B P1T18 A400 SIS0180</b>
11.00	17-23	<b>9B P1T22 A400 SIS0230</b>



Option-with Run Indication Light



Wiring Control Circuits Diagram

For P1T10 & P1T18 & PT122

- \* Coil voltage 230Vac - Code A230
- \* Other Thermal overload range and coil voltages please consult us.
- \* Option of fitting Run Indication light. (Ordering kits: 9B K2-INR & 9B LG9743R)

## Star-Delta Starters in Steel Enclosure

- Starter for motor control
- 5.5KW to 55kW with 3 -phase thermal overload relay with 3 protected phases
- Include 1 green Start and 1 red Stop pushbutton
- Include 1 Green Indicating Run Light and 1 Yellow Indicating Trip Light (400Vac Coil)
- Star Delta Timer and Mechanical Interlock fitted
- Include Thermal Overload Relay



Standard with 400V coil      Option-with AOM selector switch

Motor 3- phase Power Rating 50/60Hz	Motor 3- phase Current Rating 50/60Hz	Setting Range Y - D Thermal Overload Relay A	Type  <b>*Coil =400Vac (380V-440Vac)</b>	Type  <b>*Coil =230Vac (220V-240Vac)</b>	Type  <b>*Coil =230Vac fitted with Auto-Off-Manual selector switch</b>	Enclosure  Size  (mm)  (L x W x D)
AC3	AC3					
400V	400V					
kW	A					
5.50	11.5	6-9	<b>9B K3-Y14 BT A400/9</b>	<b>9B K3-Y14 BT A230/9</b>	<b>9B K3-Y14 BTAOM A230/9</b>	<b>300x250x180</b>
7.50	15.5	8-11	<b>9B K3-Y18 BT A400/11</b>	<b>9B K3-Y18 BT A230/11</b>	<b>9B K3-Y18 BTAOM A230/11</b>	<b>300x250x180</b>
11.00	22	10-14	<b>9B K3-Y22 BT A400/14</b>	<b>9B K3-Y22 BT A230/14</b>	<b>9B K3-Y22 BTAOM A230/14</b>	<b>300x250x180</b>
15.00	30	13-18	<b>9B K3-Y32 BT A400/18</b>	<b>9B K3-Y32 BT A230/18</b>	<b>9B K3-Y32 BTAOM A230/18</b>	<b>300x250x180</b>
18.50	37	17-23	<b>9B K3-Y40 BT A400/23</b>	<b>9B K3-Y40 BT A230/23</b>	<b>9B K3-Y40 BTAOM A230/23</b>	<b>400x300x180</b>
22.00	44	20-28	<b>9B K3-Y50 BT A400/28</b>	<b>9B K3-Y50 BT A230/28</b>	<b>9B K3-Y50 BTAOM A230/28</b>	<b>400x300x180</b>
30.00	60	28-42	<b>9B K3-Y62 BT A400/42</b>	<b>9B K3-Y62 BT A230/42</b>	<b>9B K3-Y62 BTAOM A230/42</b>	<b>400x300x180</b>
37.00	72	40-52	<b>9B K3-Y74 BT A400/52</b>	<b>9B K3-Y74 BT A230/52</b>	<b>9B K3-Y74 BTAOM A230/52</b>	<b>500x400x200</b>
45.00	85	40-52	<b>9B K3-Y90 BT A400/52</b>	<b>9B K3-Y90 BT A230/52</b>	<b>9B K3-Y90 BTAOM A230/52</b>	<b>500x400x200</b>
55.00	105	52-65	<b>9B K3-Y115 BT A400/65</b>	<b>9B K3-Y115 BT A230/65</b>	<b>9B K3-Y115 BTAOM A230/65</b>	<b>500x400x200</b>

\* Coil Voltage 230Vac-CodeA230

\* Other Thermal overload range and coil voltages please consult us.

\* Weatherproof Thermoplastic IP 65 or Steel IP 65 enclosures available on request.

# Open Type Star-Delta Motor Starter Selection Option

- AC3 rated 4KW to 55KW
- Sub-assembly by customer

AC3 ( Motor ) 380-415V kW	AC3 400V Rated Current A	Main Contactor c/w 1NO+1NC aux.	Delta Contactor c/w 1NC aux.	Star Contactor c/w 2NO+1NC aux.	Thermal Overload To be fitted on Delta	Thermal Overload Range Y D (Ampere)	Mechanical Interlock between Star & Delta
4	8.5	9B K3-10ND 10 A230 SIS0001	9B K3-10ND 01 A230	9B K3-10ND 10 A230 SIS0011	9B U12/16E6	7-10.5	9B LG10889
5.5	11.5	9B K3-10ND 10 A230 SIS 0001	9B K3-10ND 01 A230	9B K3-10ND 10 A230 SIS0011	9B U12/16E9	10.5-15.5	9B LG10889
7.5	15.5	9B K3-10ND 10 A230 SIS 0001	9B K3-10ND 01 A230	9B K3-10ND 10 A230 SIS0011	9B U12/16E11	14-19	9B LG10889
11	22	9B K3-14ND 10 A230 SIS 0001	9B K3-14ND 01 A230	9B K3-10ND 10 A230 SIS0011	9B U12/16E14	18-24	9B LG10889
15	30	9B K3-18ND 10 A230 SIS 0001	9B K3-18ND 01 A230	9B K3-14ND 10 A230 SIS 0011	9B U12/16E18	23-31	9B LG10889
18.5	37	9B K3-22ND 10 A230 SIS 0001	9B K3-22ND 01 A230	9B K3-18ND 10 A230 SIS 0011	9B U12/16E23	30-40	9B LG10889
22	44	9B K3-32A 00 A230 SIS 0011	9B K3-32A 00 A230 SIS0001	9B K3-22ND 10 A230 SIS 0011	9B U3/4228	35-48	9B LG10889
30	60	9B K3-40A 00 A230 SIS 0011	9B K3-40A 00 A230 SIS0001	9B K3-32A 00 A230 SIS 0021	9B U3/4242	48-73	9B LG10889
37	72	9B K3-50A 00 A230 SIS 0011	9B K3-50A 00 A230 SIS0001	9B K3-40A 00 A230 SIS 0021	9B U3/7452	70-90	9B LG10890
45	85	9B K3-62A 00 A230 SIS 0011	9B K3-62A 00 A230 SIS0001	9B K3-50A 00 A230 SIS 0021	9B U3/7452	70-90	9B LG10890
55	105	9B K3-74A 00 A230 SIS 0011	9B K3-74A 00 A230 SIS0001	9B K3-62A 00 A230 SIS 0021	9B U3/7465	90-112	9B LG10890

AC Coil Voltage Coding	
Code	Volts
A024	24v 50Hz
A042	42v 50Hz
A110	110v 50Hz/120v 60Hz
A230	220v-240v 50Hz
A400	380-415V 50Hz

DC Coil Voltage Coding	
Code	Volts
D012	24Vdc
D048	48Vdc
D110	110Vdc
D220	220Vdc



Mechanical Interlock

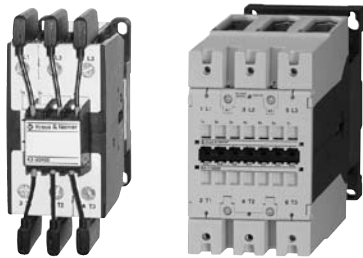




Specific Timer for Star-Delta changeover

Other Thermal Overload ange and Coil Voltages, Please consult us.

# Capacitor Switching Contactors

for use with reactive or non-reactive capacitor banks



Rated Operational Power at 50/60Hz Ambient Temperature						Aux. Contacts Built-in Add.			Type	Coil voltage <sup>1)</sup> 220-240V 50Hz
50°C			60°C							
380V	415V	660V	380V	415V	660V					
400V	440V	690V	400V	440V	690V					
kVAr	kVAr	kVAr	kVAr	kVAr	kVAr	NO	NC	pcs.		
0-12.5	0-13	0-20	0-12.5	0-13	0-20	1	-	1 <sup>2)</sup>	9B K3-18NK10A230	A230
0-12.5	0-13	0-20	0-12.5	0-13	0-20	-	1	1 <sup>2)</sup>	9B K3-18NK01A230	A230
10-20	10.5-22	17-33	10-20	10.5-22	17-33	-	-	3 <sup>3)</sup>	9B K3-24K00A230	A230
10-25	10.5-27	17-41	10-25	10.5-27	17-41	-	-		9B K3-32K00A230	A230
20-33.3	23-36	36-55	20-33.3	23-36	36-55	-	-	3 <sup>3)</sup>	9B K3-50K00A230	A230
20-50	23-53	36-82	20-50	23-53	36-82	-	-		9B K3-62K00A230	A230
20-75 <sup>4)</sup>	23-75 <sup>4)</sup>	36-120 <sup>4)</sup>	20-60	23-64	36-100	-	-		9B K3-74K00A230	A230
33-80	36-82	57-120	33-75	36-77	57-120	-	-	6 <sup>5)</sup>	9B K3-90K00A230	A230
33-100 <sup>6)</sup>	36-103 <sup>6)</sup>	57-148 <sup>6)</sup>	33-90 <sup>6)</sup>	36-93 <sup>6)</sup>	57-148 <sup>6)</sup>	-	-		9B K3-115K00A230	A230

**Specification:** Contactors K3-..K are suitable for switching low-inductive and low loss capacitors in capacitor banks (IEC70 and 831, VDE 0560) without and with reactors.

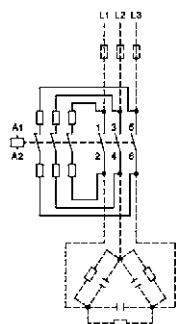
Capacitor switching contactors are fitted with early make contacts and damping resistors, to reduce the value of make current  $< 70 \times I_g$ .

**Operating Conditions:** Capacitor switching contactors are protected against contact welding for a prospective making current of  $200 \times I_g$ .

**Technical Data acc. to IEC 947-4-1, IEC 947-5-1, EN 60947-4-1, EN 60947-5-1, VDE 0660**

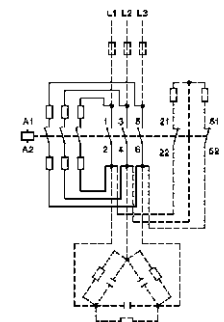
Type			9B K3-18NK	9B K3-24K	9B K3-32K	ZBK3-50K	9B K3-62K	9B K3-74K	9B K3-90K	9B K3-115K
Max. frequency of operations z	1/h		120	120	120	120	120	80	80	80
Contact life	non reactive capacitor banks	S x 103	250	150	150	150	150	120	120	120
	reactive capacitor banks	S x 103	400	300	300	300	300	200	200	200
Rated operational current $I_g$ AC6b	at 50°C	A	0-18	14-28	14-36	30-48	30-72	30-108	50-115	50-144
	at 60°C	A	0-18	14-28	14-36	30-48	30-72	30-87	50-108	50-130
Rated operational current $I_{th}$ AC1	at 50°C	A	32	45	60	100	110	120	155	190
	at 60°C	A	32	40	55	90	100	110	145	170
Overload factor acc. to EN 61921: 30% min.	at 50°C	%	78	60	67	108	53	11	35	32
	at 60°C	%	78	43	53	88	39	26	34	31
Fuses gL (gG)	from / to	A	35 / 63	50 / 80	63 / 100	80 / 160	125 / 160	160 / 200	160 / 200	160 / 250

## Typical Circuit Diagram



## Wiring Diagram for Quick Discharge Resistors

Make sure that the current of the discharge resistors is not higher than the rated current (AC1) of the auxiliary contacts.

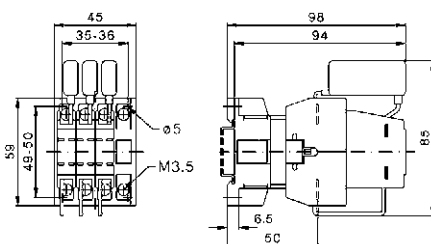


## Mounting instructions:

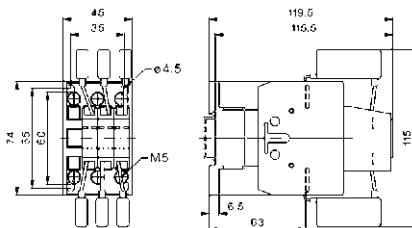
In the area of capacitor switching contactors, difficulty inflammable and self-extinguishing materials shall be used only, because abnormal temperatures within the area of the resistor spirals cannot be excluded.

- 1) Other coil voltages, please contact us
- 2) 1 HN.. snap-on auxiliary
- 3) 2HB.. for side mounting and 1 HN.. snap-on auxiliary

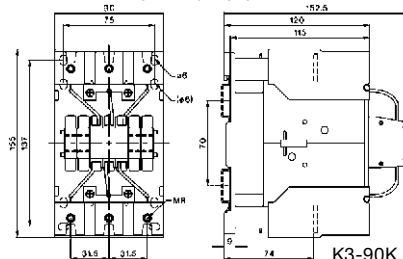
- 4) Consider the max. thermal current of the contactor K3-74A:  $I_{th}$  130A
- 5) 2 HB.. on the left or right side and 4 HN.. snap-on auxiliary
- 6) Consider the min. cross-section of conductor at max. load



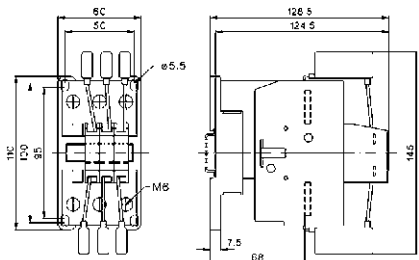
K3-18NK



K3-24K & K3-32K



K3-90K & K3-115K



K3-50K  
K3-62K  
K3-74K

# Approximate Values for three-phase Motors

## Motor Full Load Currents

Approximate values of motor F.L.C. and minimum "slow blow" respectively "gL" short-circuit fuse

Motor rating kW	Range according to BS for 415V				220-230V Motor			240V Motor			380-400V Motor			415V Motor			500V Motor			660-690V Motor		
	PS-hp	cosφ	F.L.C. %		D.O.L. A	YD A	F.L.C. A	D.O.L. A	YD A	F.L.C. A	D.O.L. A	YD A	F.L.C. A	D.O.L. A	YD A	F.L.C. A	D.O.L. A	YD A	F.L.C. A	D.O.L. A	YD A	F.L.C. A
0.06	0.08	-	0.7	59	0.38	1	1	0.35	1	1	0.22	1	1	-	-	-	0.16	1	1	-	-	-
0.09	0.12	-	0.7	60	0.55	2	2	0.5	2	2	0.33	2	2	-	-	-	0.24	1	1	-	-	-
0.12	0.16	-	0.7	61	0.76	2	2	0.68	2	2	0.42	2	2	-	-	-	0.33	1	1	-	-	-
0.18	0.24	-	0.7	61	1.1	2	2	1	2	2	0.64	2	2	-	-	-	0.46	1	1	-	-	-
0.25	0.34	-	0.7	62	1.4	4	2	1.38	4	2	0.88	2	2	-	-	-	0.59	2	2	-	-	-
0.37	0.5	-	0.72	64	2.1	4	4	1.93	4	4	1.22	4	2	-	-	-	0.85	2	2	0.7	2	2
0.55	0.75	-	0.75	69	2.7	4	4	2.3	4	4	1.5	4	2	-	-	-	1.2	4	2	0.9	2	2
0.75	1	1	0.8	74	3.3	6	4	3.1	6	4	2	4	4	2	4	4	1.48	4	2	1.1	2	2
1.1	1.5	1.5	0.83	77	4.9	10	6	4.1	6	6	2.6	4	4	2.5	4	4	2.1	4	4	1.5	4	2
1.5	2	2	0.83	78	6.2	10	10	5.6	10	10	3.5	6	4	3.5	6	4	2.6	4	4	2	4	4
2.2	3	3	0.83	81	8.7	16	10	7.9	16	10	5	10	6	5	10	6	3.8	6	6	2.9	6	4
2.5	3.4	-	0.83	81	9.8	16	16	8.9	16	10	5.7	10	10	-	-	-	4.3	6	6	-	-	-
3	4	4	0.84	81	11.6	20	16	10.6	20	16	6.6	16	10	6.5	16	10	5.1	10	10	3.5	6	4
3.7	5	5	0.84	82	14.2	25	20	13	25	16	8.2	16	10	7.5	16	10	6.2	16	10	-	-	-
4	5.5	-	0.84	82	15.3	25	20	14	25	20	8.5	16	10	-	-	-	6.5	16	10	4.9	10	6
5.5	7.5	7.5	0.85	83	20.6	35	25	18.9	35	25	11.5	20	16	11	20	16	8.9	16	10	6.7	16	10
7.5	10	10	0.86	85	27.4	35	35	24.8	35	35	15.5	25	20	14	25	16	11.9	20	16	9	16	10
8	11	-	0.86	85	28.8	50	35	26.4	35	35	16.7	25	20	-	-	-	12.7	20	16	-	-	-
11	15	15	0.86	87	39.2	63	50	35.3	50	50	22	35	25	21	35	25	16.7	25	20	13	25	16
12.5	17	-	0.86	87	43.8	63	50	40.2	63	50	25	35	35	-	-	-	19	35	25	-	-	-
15	20	20	0.86	87	52.6	80	63	48.2	80	63	30	50	35	28	35	35	22.5	35	25	17.5	25	20
18.5	25	25	0.86	88	64.9	100	80	58.7	80	63	37	63	50	35	50	50	28.5	50	35	21	35	25
20	27	-	0.86	88	69.3	100	80	63.4	80	80	40	63	50	-	-	-	30.6	50	35	-	-	-
22	30	30	0.87	89	75.2	100	80	68	100	80	44	63	50	40	63	50	33	50	50	25	35	35
25	34	-	0.87	89	84.4	125	100	77.2	100	100	50	80	63	-	-	-	38	63	50	-	-	-
30	40	40	0.87	90	101	125	125	92.7	125	100	60	80	63	55	80	63	44	63	50	33	50	35
37	50	50	0.87	90	124	160	160	114	160	125	72	100	80	66	100	80	54	80	63	42	63	50
40	54	-	0.87	90	134	160	160	123	160	160	79	100	100	-	-	-	60	80	63	-	-	-
45	60	60	0.88	91	150	200	160	136	200	160	85	125	100	80	100	100	64.5	100	80	49	63	63
51	70	-	0.88	91	168	200	200	154	200	200	97	125	100	-	-	-	73.7	100	80	-	-	-
55	75	-	0.88	91	181	250	200	166	200	200	105	160	125	-	-	-	79	125	100	60	80	63
59	80	80	0.88	91	194	250	250	178	250	200	112	160	125	105	160	125	85.3	125	100	-	-	-
75	100	100	0.88	92	245	315	250	226	315	250	140	200	160	135	200	160	106	160	125	82	125	100
90	125	125	0.88	92	292	400	315	268	315	315	170	250	200	165	200	200	128	160	160	98	125	125
110	150	150	0.88	92	358	500	400	327	400	400	205	250	250	200	250	250	156	200	200	118	160	125
129	175	175	0.88	92	420	500	500	384	500	400	242	315	250	230	315	250	184	250	200	-	-	-
132	180	-	0.88	92	425	500	500	393	500	500	245	315	250	-	-	-	186	250	200	140	200	160
147	200	200	0.88	93	472	630	630	432	630	500	273	315	315	260	315	315	207	250	250	-	-	-
160	220	-	0.88	93	502	630	630	471	630	630	295	400	315	-	-	-	220	315	250	170	200	200
184	250	250	0.88	93	590	800	630	541	630	630	340	400	400	325	400	400	259	315	315	-	-	-
200	270	-	0.88	93	626	800	800	589	800	630	370	500	400	-	-	-	278	315	315	215	250	250
220	300	300	0.88	93	700	1000	800	647	800	800	408	500	500	385	500	400	310	400	400	-	-	-
250	340	-	0.88	93	803	1000	1000	736	1000	800	460	630	500	-	-	-	353	500	400	268	315	315
257	350	350	0.88	93	826	1000	1000	756	1000	800	475	630	630	450	630	500	363	500	400	-	-	-
295	400	400	0.88	93	948	1250	1000	868	1000	1000	546	800	630	500	630	630	416	500	500	-	-	-
315	430	-	0.88	93	990	1250	1250	927	1250	1000	580	800	630	-	-	-	445	630	500	337	400	400
355	483	-	0.89	95	-	-	-	-	-	-	636	800	800	-	-	-	483	630	630	366	500	400
400	545	-	0.89	96	-	-	-	-	-	-	710	1000	800	-	-	-	538	630	630	410	500	500

The motor F.L.C. be valid for standard internal and surface cooled three-pole motors with 1500 min<sup>-1</sup>. The fuses values be valid for the motor F.L.C. shown in the table and D.O.L.-start: starting current max. 6x motor F.L.C., starting time max. 5s; star-delta-start: starting current max. 2x motor F.L.C., starting time max. 15s. For motors with higher F.L.C., higher starting

current and / or longer starting time, larger short-circuit fuses are required.

The maximum admissible value is dependent on the switchgear respectively thermal overload relay.

Approximate values of motor F.L.C. according to CSA and UL

Motor rating hp	Motor F.L.C. at 110-120V			Motor F.L.C. at 220-240V <sup>1)</sup>			Motor F.L.C. at 440-480V			Motor F.L.C. at 550-600V		
	1-phase A	2-phase A	3-phase A	1-phase A	2-phase A	3-phase A	1-phase A	2-phase A	3-phase A	1-phase A	2-phase A	3-phase A
1/2	9.8	4.0	4.4	4.9	2.0	2.2	2.5	1.0	1.1	2.0	0.8	0.9
3/4	13.8	4.8	6.4	6.9	2.4	3.2	3.5	1.2	1.6	2.8	1.0	1.3
1	16.0	6.4	8.4	8.0	3.2	4.2	4.0	1.6	2.1	3.2	1.3	1.7
1-1/2	20.0	9.0	12.0	10.0	4.5	6.0	5.0	2.3	3.0	4.0	1.8	2.4
2	24.0	11.8	13.6	12.0	5.9	6.8	6.0	3.0	3.4	4.8	2.4	2.7
3	34.0	16.6	19.2	17.0	8.3	9.6	8.5	4.2	4.8	6.8	3.3	3.9
5	56.0	26.4	30.4	28.0	13.2	15.2	14.0	6.6	7.6	11.2	5.3	6.1
7-1/2	80.0	38.0	44.0	40.0	19.0	22.0	21.0	9.0	11.0	16.0	8.0	9.0
10	100.0	48.0	56.0	50.0	24.0	28.0	26.0	12.0	14.0	20.0	10.0	11.0
15	135.0	72.0	84.0	68.0	36.0	42.0	34.0	18.0	21.0	27.0	14.0	17.0
20	-	94.0	108.0	88.0	47.0	54.0	44.0	23.0	27.0	35.0	19.0	22.0
25	-	118.0	136.0	110.0	59.0	68.0	55.0	29.0	34.0	44.0	24.0	27.0
30	-	138.0	160.0	136.0	69.0	80.0	68.0	35.0	40.0	54.0	28.0	32.0
40	-	180.0	208.0	176.0	90.0	104.0	88.0	45.0	52.0	70.0	36.0	41.0
50	-	226.0	260.0	216.0	113.0	130.0	108.0	56.0	65.0	86.0	45.0	52.0
60	-	-	-	-	133.0	145.0	-	67.0	77.0	-	53.0	62.0
75	-	-	-	-	166.0	192.0	-	83.0	96.0	-	66.0	77.0
100	-	-	-	-	218.0	248.0	-	109.0	124.0	-	87.0	99.0
125	-	-	-	-	-	312.0	-	135.0	156.0	-	108.0	125.0
150	-	-	-	-	-	360.0	-	156.0	180.0	-	125.0	144.0
200	-	-	-	-	-	480.0	-	208.0	240.0	-	167.0	192.0
250	-	-	-	-	-	602.0	-	-	302.0	-	-	242.0
300	-	-	-	-	-	-	-	-	361.0	-	-	289.0
350	-	-	-	-	-	-	-	-	414.0	-	-	336.0
400	-	-	-	-	-	-	-	-	477.0	-	-	382.0
500	-	-	-	-	-	-	-	-	590.0	-	-	472.0

1) Determine the motor current for 200V



**Mini-Reversing Contactor for motor control  
PCB mounting and Screw Termination**



**Mini-Contactor PCB mounting and Solder Pins  
Termination**



**Mini-Contactor Din rail and Fast On Tab  
Connector Termination**



**Mini-Reversing Contactor for motor control  
Din Rail and Screw Termination**



**Contactor with Latch (K1-L2) option - to keep  
contactor mechanically closed even after  
power failures.**



**Aux.Contact HN....**

- Bifurcated contact design - 4 contact points
- By moving the length (contact point distance) of straight to bended contact bridge - relative movement will clean contact surface.
- Suitable for used in low voltage electronic circuit. (17mV, 15mA)



**RC- Units protect the contactor coils against  
voltage peaks & harmonic waves.**



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