

ROTARY CAM SWITCHES

IEC 60947-3
EN IEC 60947-3

Approvals:



Permissible ambient temperature °C: -25 to + 55

TYPE	BS 16	BS 25	BS 32	BS 40	BS 63	BS 80	BS 100	BS 120	BS 160	BS 125	BS 200	BS 400 BS 630	PNBS 16 PNBS 25	PNGBS 25 PNGBS 32 PNGBS 40	PNGBS 25 LK PNGBS 32 LK PNGBS 40 LK
Rated insulation voltage U _i	V	690	690	690	690	690	690	690	690	690	690	690			
Rated thermal current I _{th} (Δt ≤ 40 °C)	A	20	25	32	40	63	80	100	125	150	125	200	400/630		
Rated operational current I _e AC1/AC21	A	20	25	32	40	63	70	75	85	100	120	200	400/630		
Rated operational current I _e AC15	A	8	20	25	30	40	-	-	-	-	-	-			
Motor switch in utilisation category AC3/AC23	kW	5/7.5	7.5/11	11/15	15/18.5	18.5/22	22/32	32/37	32/37	32/37	41/41	60/60			
Mechanical endurance switching cycles	10 ⁶	3	3	3	3	2	1	1	1	0.3	0.1	0.05			
Terminal screw		M3.5	M3.5	M4	M5	M5	2xM5	2xM5	M8	M8	M8	M10	M12/M16		
Cable cross-section	rigid acc. to IEC	mm ²	2x(1-4)	2x(1-4)	2x(2.5-6)	2x(2.5-10)	2x(4-16)	10-25	10-25			Copper bars	Copper bars		
	flexible acc. to IEC	mm ²	2x(1-2.5)	2x(1-2.5)	2x(2.5-6)	2x(2.5-6)	2x(4-10)	6-25	6-25	16/50	16/50	16/35	70-95	70-240	

Protection (front) IP 65 on request up to BS 63. BS 160 and BS 400 - 2 contacts per pole; BS 630 - 3 contacts per pole

SURVEY OF THE MOST FREQUENT SWITCHING DIAGRAMS

FUNCTION	Escutch. plate	No. of diagram	DIAGRAM	No. of elem.
1 pole		90		1
2 pole		91		2
3 pole		10		2
4 pole		92		3
5 pole		99		2
6 pole		100		3

FUNCTION	Front plate	No. of diagram	DIAGRAM	No. of elem.
Standard version		19		4

CHANGEOVER SWITCHES WITH "0"- 60° SWITCHING

1 pole	2 pole	3 pole	4 pole	5 pole	6 pole
51	52	53	75	76	77

3 line voltage and 3 phase voltage
66

MOTOR REVERSING SWITCHES

3 pole
11

2 pole 0-position 3 current (with or without current transformers)
97

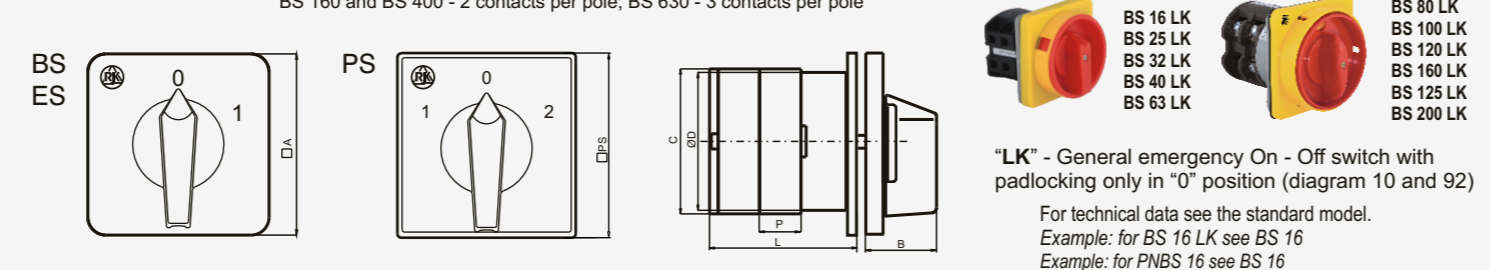
STAR - DELTA SWITCHES

Standard version
12

FRONT PLATES MODEL EXAMPLES



RADE KONČAR
KONTAKTORI I RELEI
1000 - Skopje, Macedonia
III Makedonska brigada br. 54
Tel./Fax ++389 (0)2/ 2461 106; 2463 620;
2465 586; 2463 596
E-mail: marketing@radekoncar.com.mk
E-mail: export@radekoncar.com.mk
http://www.radekoncar.com.mk



TYPE	MARKING		NUMBER OF ELEMENTS (L/mm)												(NUMBER OF CONTACTS: x 2)			
	□A	□PS	B	C	ØD	P	1	2	3	4	5	6	7	8	9	10	11	12
BS 16	51,2	48	27,2	45,2	38,6	12,8	32,5	45,3	58,1	70,9	83,7	96,5	109,3	122,1	134,9	147,7	160,5	173,3
BS 25																		
BS 32	72	65	33	53	38,6	12,8	37	49,8	62,6	75,4	88,2	101	113,8	126,6	139,4	152,2	165	177,8
BS 40	72	65	33	61	56,4	17,5	50,6	68,1	85,6	103,1	120,6	138,1	155,6	173,1	190,6	208,1	225,6	243,1
BS 63	72	65	33	68,6	56,4	20,5	42,5	63	83,5	104	124,5	145	165,5	186	206,5	227	247,5	268
BS 80																		
BS 100	105	90	41	84	80	25	67,5	92,5	117,5	142,5	167,5	192,5	217,5	242,5	267,5	292,5	317,5	342,5
BS 120																		
BS 160																		
BS 125							30	72	101,5	131,5	161,5							
BS 200							38,8	80,3	119,1	157,9	196,7							
BS 400	130	130	62	110	110		38,8	80,3	119,1	157,9	196,7	-	274,3					
BS 630							38,8	-	119,1	157,9	-	235,5	274,3	-	-	390,7		

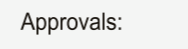
PUSHBUTTONS type PBN 22 ... and Pilot lights - PBN 22-31

IEC 60947-5-1	EN IEC 60947-5-1	UL 60947-5-1	Approvals:
			CE ENEC
Mechanical life	0.5 million operations		
Electrical endurance	0.1 million operation		
Rated insulation voltage	300V		
Rated operational current I _e	4A		
Rated operational voltage U _e	250V AC		
Base	Ba9s		
Max. permissible power	2W		
Ambient temperature during operation	-5° to +40°C		
Connection cable cross-section	1,5mm ² - 2,5mm ²		
Recommended torque	0,2Nm		
Protection degree	IP20 (IP50 if the product is in panel)		
Switching power in AC15	100VA 1kA		

MOULDED CASE CIRCUIT BREAKERS

IEC 60947-2
EN IEC 60947-2
UL 60947-2

Approvals:

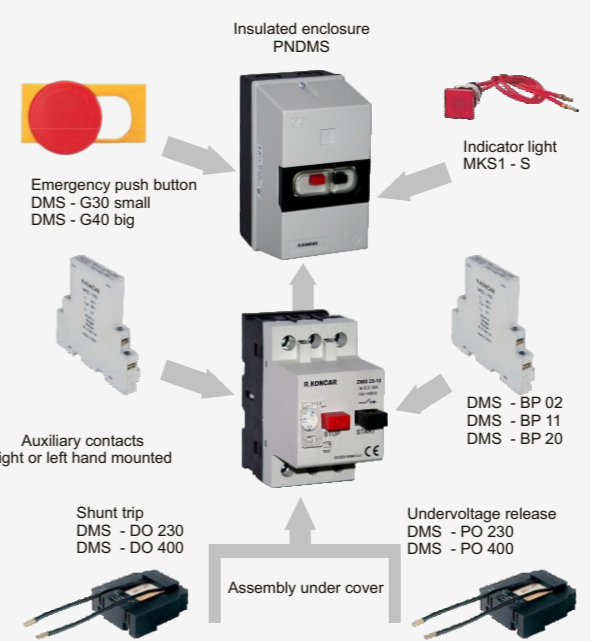


Type designation	KP 125-F	KP 250-F	KP 400-F	KP 800-F	KP 800-FE	KP 1250-FE	KP 1600-FE	KP 2500-FE		
Polution degree	III									
No. of poles P	3/4	3/4	3	3	3/4	3/4	3	3		
Standard current range/ratings I _n	16, 25, 40, 63, 80, 100, 125	160, 200, 250	300, 400, 500	300, 400, 500, 630, 800	300, 400, 500, 630, 800	1000, 1250	1600	2000, 2500		
Rated operational voltage U _{e~}	V	415	415	415	415	415	415	415		
Type of circuit breaker	Thermal circuit breaker				Electronic circuit breaker					
Rated insulation voltage U _{i~}	V	800	800	800	800	800	800	800		
Rated impulse withstand voltage U _{imp}	kV	8	8	8	8	8	8	8		
Category of use	A	A	A	A	A	A	A	A		
Degree of protection: Appliance with terminal shields	IP 30				IP 00					
Appliance in enclosure with front plate	IP 40				IP 40					
Dimensions (a x b x c x d-handle)	mm	90x130x71x92	105x165x91x116	140x257x103x140	210x270x111x159	210x280x111x162	210x370x124x180	210x370x155x203	392x412x250x320	
Weight	kg	1 / 1,5	2,3 / 3,1	5,5	8	10 / 13	18 / 24	27	54	
Ambient temperature	°C	-5 to +60				-5 to +40				
Ultimate breaking capacity I _{cu}	230/240 V ~	kA	35	65	70	70	75	80	80	85
	400/415 V ~	kA	25	35	50	50	50	50	50	50
	440 V ~	kA	20	25	40	40	40/35	35	40	35
	480/500 V ~	kA	12	18	35	35	30	25	25	30
	690 V ~	kA	8	12	25	25	20	18	20	20
250 V -	kA	15	22	20	22	20/-	-	-	-	
Standard breaking capacity I _{cs} (%I _{cu})	kA	75	100	100	100	100	50	50	100	
Rated short circuit making capacity (415 V-) I _{cs} peak	kA	53	74	74	74	105	105	105	105	
Endurance (o.c. cycle)	mechanical	≥15 000	≥15 000	≥15 000	≥15 000	≥15 000	≥15 000	≥15 000	≥15 000	
	electrical	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	
Type of protection										
Rated current adjustment area - I _n	(0,8 - 1)I _n	(0,7 - 1)I _n	(0,7 - 1)I _n	(0,7 - 1)I _n	(0,7 - 1)I _n	(0,7 - 1) / (0,4 - 1)I _n	(0,4 - 1)I _n	(0,4 - 1)I _n	(0,4 - 1)I _n	
Instant opening current adjustment - I _n	8I _n (min 600A)	(5 - 10)I _n	(5 - 10)I _n	(5 - 10)I _n	(5 - 10)I _n	(5 - 10)I _n / (2 - 10)I _n	(2 - 10)I _n	(2 - 10)I _n	(2 - 10)I _n	

MOTOR PROTECTION CIRCUIT BREAKERS - DMS 25

IEC 60947-4-1
EN IEC 60947-4-1
UL 60947-4-1

Type	Rated continuous current (A)	Switching capacity I _{cu} /400V (kA)	Responded current of short-circuit release (A)	Weight [g]	Packing [pcs]
DMS 25 - 0.16	0.1 - 0.16	100	1.92	220	1
DMS 25 - 0.25	0.16 - 0.25	100	3	220	
DMS 25 - 0.4	0.25 - 0.4	100	4.8	220	
DMS 25 - 0.63	0.4 - 0.63	100	7.6	220	
DMS 25 - 1	0.63 - 1	100	12	220	
DMS 25 - 1.6	1 - 1.6	6	19.2	220	
DMS 25 - 2.5	1.6 - 2.5	6	30	220	
DMS 25 - 4	2.5 - 4	6	48	220	
DMS 25 - 6.3	4 - 6.3	6	75.6	220	
DMS 25 - 10	6.3 - 10	6	120	220	
DMS 25 - 16	10 - 16	6	192	220	
DMS 25 - 20	16 - 20	6	240	220	
DMS 25 - 25	20 - 25	6	300	220	



Safe and reliable

LOW VOLTAGE SWITCHGEAR

CONTACTORS
THERMAL OVERLOAD RELAYS
PUSHBUTTONS

ROTARY CAM SWITCHES
MOULDED CASE CIRCUIT BREAKERS
MOTOR PROTECTION BREAKERS

www.radekoncar.com.mk

CONTACTORS

EN / UL / IEC 60947-1
EN / UL / IEC 60947-4-1
EN / UL / IEC 60947-5-1
CSA - C22.2

Approvals:



le(lth)	AC 1 ($\Delta t \leq 40^\circ\text{C}$)	A	10 (16)	10 (16)	20	25	30	40 / 40	50	50 (55) f)	85	90(125)	95(135)	105(135)	115(135)	130	150	160	200	250	350	390 / 400	800 / 1100			
le	AC 3 ($U_e = 400\text{V}$)	A	-	-	9 / 12	9 / 12	18 / 22	25 / 30	32	38	50 / 60	65	80	90	100	115	130	150	170	200	250	315 / 400	550 / 860			
le	AC 15 ($U_e = 230\text{V}$)	A	6	6	6	6	-	-	-	-	-	-	-	-	-	-	-	-	6	6	6	6	6			
			mm ²	mm ²	1-2.5	1-6	1-6	2.5-10	2.5-10	2.5-10	6-35	6-35	6-35	25-50	25-50	16-95; 2x(16-70)	16-95; 2x(16-70)	16-95; 2x(16-70)	50-120	50-120	70-240	70-240	2x(50x5)			
			AWG	AWG	18-12	16-10	14-8	14-8	14-8	14-8	8-2	8-2	8-2	4-0	4-0	6-000; 2x(6-00)	6-000; 2x(6-00)	6-000; 2x(6-00)	0-250 MCM	0-250 MCM	00-500 MCM	00-500 MCM	2x(60x6)			
	AC 3 3 ~ 50 Hz	230 V 400 V 690 V	kW	-	3 / 3.2 4 / 5.5 4 / 5.5	3.2 / 3.5 4.5 / 5.7 5.5 / 7.5	4 / 5.5 7.5 / 11 10 / 11	5.5 / 7.5 15 18.5	7.5 10 22	10 15 33	12 / 18.5 22 / 30 33 / 37	18.5 33 55	22 37 55	26 45 67	30 55 75	37 55 75	40 65 80	45 75 90	55 90 132	60 105 200	75 132 200	90 / 115 160 / 200 200 / 355	175 / 280 315 / 500 500 / 710			
	AC 3 3 ~ 60 Hz	230 V 460 - 480 V 575 V	Hp	-	3 5 / 7.5 7.5 / 10	3 / 3 5 / 7.5 7.5 / 10	5.5 / 7.5 10 / 15 15	11 20 25	15 30 30	20 / 25 30 / 50 40 / 50	25 50 60	25 50 60	30 60 75	40 70 75	50 90 110	60 100 150	50 90 110	60 100 150	60 125 200	75 150 200	100 180 220	100 / 155 220 / 270 230 / 250	-			
CONTACTORS FOR CONTROL WITH DC			DC TYPE	CP0	CNNP	CM1 9/12	CNN 9/12	CNN 18/22	CNN 25/30	CNN 32	CNN 40	CNN 50/60	CNN 70	CNN 80	CNN 90	CNN 100	CNN 115	CNN 130	CNN 150	CNN 170	CNN 200	CNN 250	CNN 315	CNN 400	CNN 550	CNN 860
Permissible ambient temperature °C: -25 to +55				4 0 3 1 2 2	4 0 3 1 2 2 1 3 0 4	1 0 1 1 2 0 1 3 0 2	1 0 0 1	1 0 0 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	2 2 4 4	2 2 4 4	2 2 4 4	2 2 4 4	2 2	2 2	
Auxiliary contacts				(NO) (NC)	(NO) (NC)	(NO) (NC)	(NO) (NC)	(NO) (NC)	(NO) (NC)	(NO) (NC)	(NO) (NC)	(NO) (NC)	(NO) (NC)	(NO) (NC)	(NO) (NC)	(NO) (NC)	(NO) (NC)	(NO) (NC)	(NO) (NC)	(NO) (NC)	(NO) (NC)	(NO) (NC)	(NO) (NC)	(NO) (NC)	(NO) (NC)	(NO) (NC)
Coil voltage				24V, 48V, 110V, 220/230V, 380/400V	24V, 48V, 110V, 220/230V, 380/400V	24V, 48V, 110V, 220/230V, 380/400V	24V, 48V, 110V, 220/230V, 380/400V	24V, 48V, 110V, 220/230V, 380/400V	24V, 48V, 110V, 220/230V, 380/400V	24V, 48V, 110V, 220/230V, 380/400V	24V, 48V, 110V, 220/230V, 380/400V	24V, 48V, 110V, 220/230V, 380/400V	24V, 48V, 110V, 220/230V, 380/400V	24V, 48V, 110V, 220/230V, 380/400V	24V, 48V, 110V, 220/230V, 380/400V	24V, 48V, 110V, 220/230V, 380/400V	24V, 48V, 110V, 220/230V, 380/400V	24V, 48V, 110V, 220/230V, 380/400V	24V, 48V, 110V, 220/230V, 380/400V	24V, 48V, 110V, 220/230V, 380/400V	24V, 48V, 110V, 220/230V, 380/400V	24V, 48V, 110V, 220/230V, 380/400V	24V, 48V, 110V, 220/230V, 380/400V	24V, 48V, 110V, 220/230V, 380/400V	24V, 48V, 110V, 220/230V, 380/400V	
Electromagnet (coil) consumption				open / closed	open / closed	open / closed	open / closed	open / closed	open / closed	open / closed	open / closed	open / closed	open / closed	open / closed	open / closed	open / closed	open / closed	open / closed	open / closed	open / closed	open / closed	open / closed	open / closed	open / closed	open / closed	open / closed
Dimensions (a x b x c)				CP0; CM1, CNN, CNM...22 mm	CP0; CM1, CNN, CNM...22 mm	CP0; CM1, CNN, CNM...22 mm	CP0; CM1, CNN, CNM...22 mm	CP0; CM1, CNN, CNM...22 mm	CP0; CM1, CNN, CNM...22 mm	CP0; CM1, CNN, CNM...22 mm	CP0; CM1, CNN, CNM...22 mm	CP0; CM1, CNN, CNM...22 mm	CP0; CM1, CNN, CNM...22 mm	CP0; CM1, CNN, CNM...22 mm	CP0; CM1, CNN, CNM...22 mm	CP0; CM1, CNN, CNM...22 mm	CP0; CM1, CNN, CNM...22 mm	CP0; CM1, CNN, CNM...22 mm	CP0; CM1, CNN, CNM...22 mm	CP0; CM1, CNN, CNM...22 mm	CP0; CM1, CNN, CNM...22 mm	CP0; CM1, CNN, CNM...22 mm	CP0; CM1, CNN, CNM...22 mm	CP0; CM1, CNN, CNM...22 mm	CP0; CM1, CNN, CNM...22 mm	
Weight				CP0; CM1, CNN, CNM...22 kg	CP0; CM1, CNN, CNM...22 kg	CP0; CM1, CNN, CNM...22 kg	CP0; CM1, CNN, CNM...22 kg	CP0; CM1, CNN, CNM...22 kg	CP0; CM1, CNN, CNM...22 kg	CP0; CM1, CNN, CNM...22 kg	CP0; CM1, CNN, CNM...22 kg	CP0; CM1, CNN, CNM...22 kg	CP0; CM1, CNN, CNM...22 kg	CP0; CM1, CNN, CNM...22 kg	CP0; CM1, CNN, CNM...22 kg	CP0; CM1, CNN, CNM...22 kg	CP0; CM1, CNN, CNM...22 kg	CP0; CM1, CNN, CNM...22 kg	CP0; CM1, CNN, CNM...22 kg	CP0; CM1, CNN, CNM...22 kg	CP0; CM1, CNN, CNM...22 kg	CP0; CM1, CNN, CNM...22 kg	CP0; CM1, CNN, CNM...22 kg	CP0; CM1, CNN, CNM...22 kg	CP0; CM1, CNN, CNM...22 kg	
Reversing contactors with electrical and mechanical interlock				Type	Type	MBCMN 9 00(20) MBCMN 12 20 a)	MBCMN 9 00(11) MBCMN 12 11 a)	MBCMN 18 00(11) MBCMN 22 11 a)	MBCMN 25 10 MBCMN 30 10	MBCMN 32 10	MBCMN 40 10	MBCMN 50 21 MBCMN 60 21	MBCMN 70 21	MBCMN 80 21	MBCMN 90 21	MBCMN 100 21	MBCMN 115 21	MBCMN 130 21	MBCMN 150 21	MBCMN 170 21	MBCMN 200 21	MBCMN 250 21	MBCMN 315 21 MBCMN 400 21	MBCMN 550 MBCMN 860		

Auxiliary block for CP0 and CM1

Type **BP0**

4-pole, front mounted

Type **BP1**

1-pole, Side mounted

Mechanical interlock for CP0, CM1

MB1

Mechanical interlock for CNN 9 - CNN 40

MB2

Auxiliary block for CNN 9 - CNN 70 and CNNP

BP2N and BP4N only for CNN 80 / 90 / 100 / 115 / 150

Type **BP2 1 1**

2-pole, front mounted

Type **BP4 2 2**

4-pole, front mounted

Additional terminal blocks

Set of 2 additional terminal blocks for connection multi-wired conductor from 6-25 mm for contactors CNN 32 / 40.

Auxiliary block for CNN 9 - CNN 70 and CNNP

Type **BP3 1 1**

2-pole, Side mounted

Type **BP5 1 1**

2-pole, Side mounted

Auxiliary block for CNN 170 - CNN 400

Left **155089S**

Right **155087S**

2-pole, Side mounted

Star-delta timer

22.5 mm

EVKR 40

Time interval connection (s)

Weight (kg)

PCB Connectors (pcs)

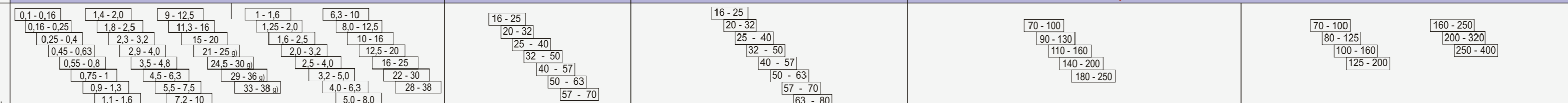
THERMAL OVERLOAD RELAYS

IEC 60947-4-1
EN IEC 60947-4-1
UL 60947-4-1

CSA - C22.2
VDE 0660

Approvals:

Release time classification	Weight	For mounting on contactor	Adapter for individual mounting support
class 10A	kg	CNN 9; CNN 12; CNN 18; CNN 22; CNN 25; CNN 30; CNN 32; CNN 40	ASM 40
class 10	kg	CNN 50; CNN60; CNN 70	ASM 75
class 10	kg	CNN 80; CNN 90; CNN 100	CONTACTORS for DC CONTROL (DC solenoid system): Type CNNBP (40/13/22/13/04) Type CNNB 9/12/18/22 (10/01) Type CNNB 25/30. (b)



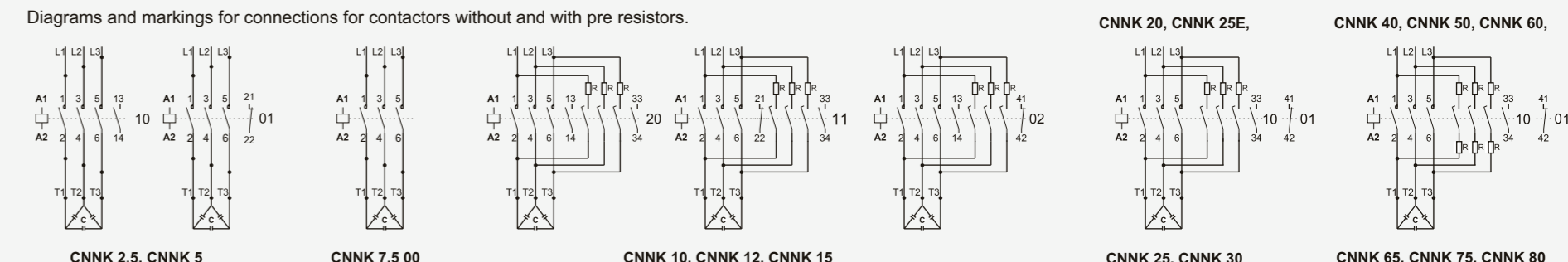
CAPACITOR CONTACTORS

EN / UL / IEC 60947-1
EN / UL / IEC 60947-4-1

Approvals:



Type designation	CNNK 2.5 CNNK 5	CNNK 7.5	CNNK 10 CNNK 12 CNNK 15	CNNK 20	CNNK 25E	CNNK 25 CNNK 30	CNNK 40 CNNK 50 CNNK 60	CNNK 65 CNNK 75	CNNK 80
AC 6b utilization category	1.4/2.8	4	5/6.7/8.5	11	14	14/20	25/29/32	32/38	45
for switching three phase capacitors	400 - 440V kVar	2.5/5	7.5	10/12.5/15	20	25	25/30	40/50/60	66/75
Capacitor rating at operating voltage 50/60Hz	500 - 550V kVar	3/5.5	9	12.5/15/18	24	30	30/35	50/60/70	75/80
Rated operation current Ie at 400V A	3.6/7.2	11	14/18/22	29	36	36/44	58/72/87	94/108	116
Rated operation current Ith at 400V A	20/20	25	25/25/30	40	50	60/60	85/100/125	130/150	165
Weight	kg	0,25/0,26	0,28	0,32/0,32/0,33	0,34	0,45	0,53	0,94/0,95/0,97	1,3/1,4



CONTACTORS IN ENCLOSURES AND D.O.L STARTERS

Type	Enclosure	Usage	Degree of protection	Weight (kg)	Packing (pcs)
PNN	without push buttons	PNN 9 - PNN 40	IP 65	325	1
PNNT	with push buttons	PNN 9 - PNN 40	IP 54	325	1

PNNT 9/12/18/22 (0NO - 0NC)
PNNT 25/30/32/40 (1NO - 2NC)

PNNRT 9/12/18/22 (0NO - 0NC)
PNNRT 25/30/32/40 (1NO - 2NC)

PNN - with contactor CNN 9/40
PNNRT - with contactor CNN9/40 and thermal overload relay TM 40

Star-delta starters in enclosures

Degree of protection - IP 54

Type	Ac3 In (400V) A	Max. motor output (60Hz)	Dimensions (axbxc) mm
PNSDS 7.5	16	4 kW	210x260x185
PNSDS 11	22	5.5 kW	210x260x185
PNSDS 15	29	7.5 kW	210x260x185
PNSDS 18.5	37	11 kW	210x260x185
PNSDS 22	44	15 kW	240x320x205
PNSDS 25	50	18.5 kW	240x320x205
PNSDS 30	60	22 kW	240x320x205
PNSDS 37	72	27 kW	400x500x207
PNSDS 45	85	33 kW	400x500x207
PNSDS 55	105	40 kW	400x600x217

THERMAL CONTACTORS FOR SWITCHING RESISTIVE LOADS

EN / UL / IEC 60947-1
EN / UL / IEC 60947-4-1

Approvals:



le (lth)	AC 1	A	65	115	130
Switching resistive load	AC1 Ue = 220/230V	kW	25	44	50
p.f. ≈ 1	Ue = 400V	kW	43	76	85
Multi - wire conductor		mm ²	6 - 16	16 - 35	16-95; 2x(16-70) 6-000; 2x(6-00)
Cable shoe					50/8
Type designation			TKN 65	TKN 115	TKN 130
Auxiliary contacts			(NO) (NC)	(NO) (NC)	(NO) (NC)
Coil voltages			24V, 48V, 110V, 220/230V, 380/400V	24V, 48V, 110V, 220/230V, 380/400V	24V, 48V, 110V, 220/230V, 380/400V
Electromagnet (coil) consumption		open / closed	VA	62/7	150/12
Dimensions (a x b x c)			mm	45 x 115 x 85	55 x 122 x 109
Weights			kg	0,45	0,90

Reversing contactors with electrical and mechanical interlock

Type MBCMN 1 ..., MBCNN ... and MBCNM ...