TECHNICAL DATA

	Type	Symbol	Unit	K03M	K07M K07MF K07MX	K07MG K07MGF K07MGX	K08MG	K08M
GENERAL	Standards			IEC/EN 60947-5-1, IEC 60947-4-1, UL 508				
	Approvals			CE, UL, CSA, EAC			CE, EAC	
	Module width		mm	35	45			
	Number of poles			4				
	Degree of protection			IP20				
	Pollution degree			3				
	Climatic conditions			95 % relative humidity				
	Ambient temperature: open closed		°C	-20 ... +60 -20 ... +45				
	Storage temperature		°C	-30 ... +80				
	Maximum altitude U_i and U_e is reduced for 1.2 % and I_e for 0.4 % for every additional 100 m		m	2000				
	Number of contactors or switches side-by-side: ≤40 °C (40 ... 55) °C			no limitation				
	Noise level (operation)		dB	30	30	20	20	30
	Maximum operating frequency with no load		op. c./h	3.000				
	Mechanical endurance		op. c.	10.000.000				
	Weight		g	160	170	215	215	170
MAIN CIRCUIT	Contact reliability			≥17 V; ≥50 mA				
	Power dissipation per pole		W	1.2				
	Overload current withstand capability - 10 s			68	90.4	90.4	124	124
	Maximum back-up fuse for short-circuit protection gL and gG: coordination type 2		A	25				
	Rated insulation voltage	U_i	V	690				
	Rated impulse withstand voltage	U_{imp}	kV	6				
	Rated operational voltage	U_e	V	690				
	Rated frequency	f	Hz	50/60				
	Thermal current	I_{th}	A	20				
	Rated operational current for AC-1, AC-7a and AC-21	I_e	A	20				
	Operational power for AC-1, AC-7a and AC-21: single-phase 230 V three-phase 230 V three-phase 400 V three-phase 500 V three-phase 690 V	P_e	kW	4.4 7.5 13 17.5 22				
	Maximum operating frequency for AC-1, AC-7a and AC-21		op. c./h	600				
	Electrical endurance for AC-1, AC-7a and AC-21		op. c.	200.000				
	Rated operational current for AC-3, AC-7b and AC-23 (at 400 V)	I_e	A	8.5	11.3	11.3	15.5	15.5
	Operational power for AC-3, AC-7b and AC-23: single-phase 230 V three-phase 230 V three-phase 400 V three-phase 500 V three-phase 690 V	P_e	kW	0.75 2 4 4 4	1.1 3 5.5 5.5 5.5	1.1 3 5.5 5.5 5.5	1.1 3.7 7.5 5.5 5.5	1.1 3.7 7.5 5.5 5.5
	Maximum operating frequency for AC-3, AC-7b and AC-23		op. c./h	600				
	Electrical endurance for AC-3, AC-7b and AC-23		op. c.	1.000.000				
	Rated operational current for AC-4 (at 400 V)	I_e	A	/	5	5	5	5
	Operational power for AC-4: three-phase 230 V three-phase 400 V three-phase 500 V three-phase 690 V	P_e	kW	/ / / /	0.75 2.2 1.5 1.5	0.75 2.2 1.5 1.5	0.75 2.2 1.5 1.5	0.75 2.2 1.5 1.5
	Maximum operating frequency for AC-4		op. c./h		300			
	Electrical endurance for AC-4		op. c.		100.000			
	Rated motor power according to standards UL and CSA: single-phase 115 V single-phase 230 V three-phase 230 V three-phase 460 V three-phase 575 V	P_e	HP	1/3 3/4 2 3 5	1/2 1.5 3 5 7.5	1/2 1.5 3 5 7.5	1/2 1.5 3 5 7.5	1/2 1.5 3 5 7.5

TECHNICAL DATA

	Type	Symbol	Unit	K03M	K07M K07MF K07MX	K07MG K07MGF K07MGX	K08MG	K08M
MAIN CIRCUIT	Switching of capacitors AC-6b and AC-7c (at 230 V)	C	µF	30				
	Maximum operating frequency for AC-6b and AC-7c		op. c./h	600				
	Electrical endurance for AC-6b and AC7c		op. c.	100.000				
	Terminal capacity: rigid (solid and stranded) flexible	S	mm^2	0.75 ... 2.5 0.5 ... 2.5				
	Length of removed wire insulation		mm	10				
	Screw			M3.5				
	Screw head			PZ2				
	Tightening torque		Nm	1.2				
AUXILIARY CIRCUIT	Power dissipation per pole		W	1.2				
	Maximum back-up fuse for short-circuit protection gL and gG: coordination type 2			20				
	Rated insulation voltage	U_i	V	690				
	Rated operational current for AC-15: single-phase 230 V single-phase 400 V single-phase 500 V single-phase 690 V	I_e	A	6 4 2 1				
	Maximum operating frequency for AC-15		op. c./h	1.200				
	Electrical endurance for AC-15		op. c.	1.000.000				
	Rated operational current for DC-13: 1 pole ... 24 V DC/110 V DC		A	4 / 0.25				
	Maximum operating frequency for DC-13		op. c./h	1.200				
	Terminal capacity: rigid (solid and stranded) flexible	S	mm^2	0.75 ... 2.5 0.5 ... 2.5				
	Length of removed wire insulation		mm	10				
	Screw			M3.5				
	Screw head			PZ2				
	Tightening torque		Nm	1.2				
COIL	Range of control voltage for switch-on	U_c	%	85 ... 110				
	Range of control voltage for drop out	U_c	%	20 ... 75		10 ... 75	10 ... 75	20 ... 75
	Kind of voltage			AC		DC	DC	AC
	Standard control voltages	U_c	V	1)	2)	3)	3)	2)
	Frequency of AC control voltage	f	Hz	50/60		/	/	50/60
	Control mode			remote control with U_c				
	Coil consumption: switch-on operation		VA/W	39/34 8.1/4		/ 3	/ 3	39/34 8.1/4
	Delays: make brake		ms	10 ... 15 6 ... 15	10 ... 15 5 ... 10	25 ... 30 10 ... 25	25 ... 30 10 ... 25	10 ... 15 5 ... 10
	Terminal capacity: rigid (solid and stranded) flexible		mm^2	0.75 ... 2.5 0.5 ... 2.5				
	Length of removed wire insulation		mm	10				
	Screw			M3.5				
	Screw head			PZ2				
	Tightening torque		Nm	1.2				
SAFETY	MTTF - Mean time to failure $MTTF = 1/\lambda = B10/(0.1\ n_{op})$	AC-1 AC-3	h	5.000 25.000				
	$MTTF_d$ - Mean time to failure dangerous $MTTFd = 1/\lambda_d = B10_d/(0.1\ n_{op})$	AC-1 AC-3	h	6.666 33.333				
	B10 - Number of operating cycles until 10 % of devices fail	AC-1 AC-3	op. c.	150.000 750.000				
	$B10_d$ - Number of operating cycles until 10 % of device dangerous $B10_d = B10/\text{ratio of dangerous failures}$	AC-1 AC-3	op. c.	200.000 1.000.000				
	λ - Failure rate $\lambda = (0.1\ n_{op})/B10$	AC-1 AC-3	1/h	0.0002 0.00004				
	λ_d - Failure rate dangerous $\lambda_d = (0.1\ n_{op})/B10_d$	AC-1 AC-3	1/h	0.00015 0.00003				
	Ratio of dangerous failures		%	75				
	n_{op} - Operating cycles (operating cycles/h)		op. c./h	300				

1) 6,12,24,42,48,110/125,220/240,380/415,440/460,550 V 2) 6,12,24,42,48,110/125,220/240,380/415,440/460,500,690 V 3) 6,12,24,48,60,72,110,125,220,250 V

TECHNICAL DATA

	Type	Symbol	Unit	K03C	K07C K07CF K07CX	K07CG K07CGF K07CGX
GENERAL	Standards			IEC/EN 60947-5-1, UL 508		
	Approvals			CE, UL, CSA, EAC		
	Module width		mm	35	45	
	Number of poles			4		
	Degree of protection			IP20		
	Pollution degree			3		
	Climatic conditions			95 % relative humidity		
	Ambient temperature: open closed		°C	-20 ... +60 -20 ... +45		
	Storage temperature		°C	-30 ... +80		
	Maximum altitude U_i and U_e is reduced for 1.2 % and I_e for 0.4 % for every additional 100 m		m	2000		
	Number of contactors or switches side-by-side: ≤40 °C (40 ... 55) °C			no limitation		
	Noise level (operation)		dB	30	30	20
	Maximum operating frequency with no load		op. c./h	3.000		
	Mechanical endurance		op. c.	10.000.000		
	Weight		g	160	170	215
MAIN CIRCUIT	Contact reliability			≥17 V; ≥50 mA		
	Maximum back-up fuse for short-circuit protection gL and gG: coordination type 2		A	25		
	Rated insulation voltage	U_i	V	690		
	Rated impulse withstand voltage	U_{imp}	kV	6		
	Rated operational voltage	U_e	V	690		
	Rated frequency	f	Hz	50/60		
	Thermal current	I_{th}	A	20		
	Rated operational current for AC-1, AC-7a and AC-21	I_e	A	20		
	Rated operational current for AC-15: single-phase 230 V single-phase 400 V single-phase 500 V single-phase 690 V	I_e	A	6 4 2 1		
	Maximum operating frequency for AC-15		op. c./h	1.200		
	Electrical endurance for AC-15		op. c.	1.000.000		
	Rated operational current for DC-13: 1 pole ... 24 V DC/110 V DC		A	4 / 0.25		
	Maximum operating frequency for DC-13		op. c./h	1.200		
	Terminal capacity: rigid (solid and stranded) flexible	S	mm^2	0.75 ... 2.5 0.5 ... 2.5		
	Length of removed wire insulation		mm	10		
	Screw			M3.5		
	Screw head			PZ2		
	Tightening torque		Nm	1.2		
COIL	Range of control voltage for switch-on	U_c	%	85 ... 110		
	Range of control voltage for drop out	U_c	%	20 ... 75		10 ... 75
	Kind of voltage			AC		DC
	Standard control voltages	U_c	V	1)	2)	3)
	Frequency of AC control voltage	f	Hz	50/60		/
	Control mode			remote control with U_c		
	Coil consumption: switch-on operation		VA/W	39/34 8.1/4		- / 3 - / 3
	Delays: make brake		ms	10 ... 15 6 ... 15	10 ... 15 5 ... 10	25 ... 30 10 ... 25
	Terminal capacity: rigid (solid and stranded) flexible		mm^2	0.75 ... 2.5 0.5 ... 2.5		
	Length of removed wire insulation		mm	10		
	Screw			M3.5		
	Screw head			PZ2		
	Tightening torque		Nm	1.2		

1) 6,12,24,42,48,110/125,220/240,380/415,440/460,550 V 2) 6,12,24,42,48,110/125,220/240,380/415,440/460,500,690 V 3) 6,12,24,48,60,72,110,125,220,250 V

TECHNICAL DATA

	Type	Symbol	Unit	K03C	K07C K07CF K07CX	K07CG K07CGF K07CGX
SAFETY	MTTF - Mean time to failure $MTTF = 1/\lambda = B10/(0.1\ n_{op})$	AC-15 DC-13	h		12.500 10.000	
	$MTTF_d$ - Mean time to failure dangerous $MTTFd = 1/\lambda_d = B10_d/(0.1\ n_{op})$	AC-15 DC-13	h		16.666 13.333	
	B10 - Number of operating cycles until 10 % of devices fail	AC-15 DC-13	op. c.		750.000 600.000	
	$B10_d$ - Number of operating cycles until 10 % of device dangerous $B10_d$ = B10/ratio of dangerous failures	AC-15 DC-13	op. c.		1.000.000 800.000	
	λ - Failure rate $\lambda = (0.1\ n_{op})/B10$	AC-15 DC-13	1/h		0.00008 0.0001	
	λ_d - Failure rate dangerous $\lambda_d = (0.1\ n_{op})/B10_d$	AC-15 DC-13	1/h		0.00006 0.000075	
	Ratio of dangerous failures		%		75	
	n_{op} - Operating cycles (operating cycles/h)		op. c./h		600	

Electrical endurance

Diagram 1
Electrical endurance of contactor relays and auxiliary contacts of motor contactors

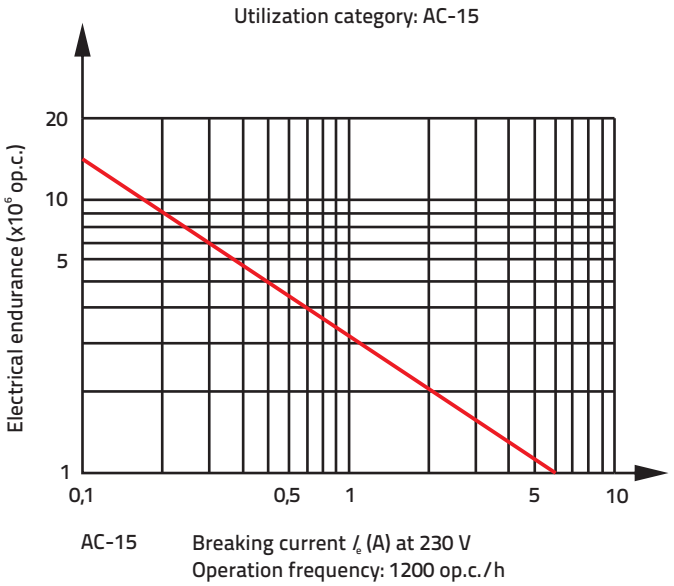

Diagram 2
Electrical endurance of main contacts of motor contactors