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Modular Contactors, low noise

Rated Current	Heating Power AC1 at		Type	coil voltage		Pack pcs.	Weight kg/pc.	Wiring Diagram
	1-phase	3-phase		24	230			
AC1 400V A	230V kW	400V kW			24V 50/60Hz 220-240V 50Hz, 230-264V 60Hz			

One-pole 1 module (17,5mm), AC-operated (low noise)



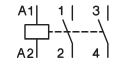
20	4,6	-	R20-10 24	12	0,12
20	4,6	-	R20-10 230	12	0,12



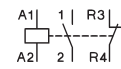
Two-pole 1 module (17,5mm), AC-operated (low noise)



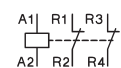
20	4,6	-	R20-20 24	12	0,12
20	4,6	-	R20-20 230	12	0,12



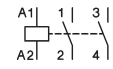
20	4,6	-	R20-11 24	12	0,12
20	4,6	-	R20-11 230	12	0,12



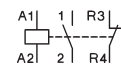
20	4,6	-	R20-02 24	12	0,12
20	4,6	-	R20-02 230	12	0,12



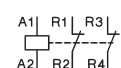
25	5,5	-	R25-20 24	12	0,14
25	5,5	-	R25-20 230	12	0,14



25	5,5	-	R25-11 24	12	0,14
25	5,5	-	R25-11 230	12	0,14



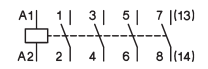
25	5,5	-	R25-02 24	12	0,14
25	5,5	-	R25-02 230	12	0,14



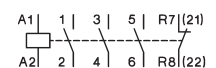
Four-pole 2 modules (35mm) ¹⁾, AC-operated (low noise)



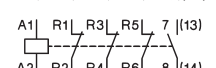
25	5,7	17	R25-40 24	6	0,21
25	5,7	17	R25-40 230	6	0,21



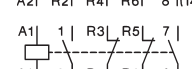
25	5,7	17	R25-31 24	6	0,21
25	5,7	17	R25-31 230	6	0,21



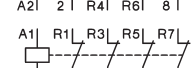
25	5,7	17	R25-13 24	6	0,21
25	5,7	17	R25-13 230	6	0,21



25	5,7	-	R25-22 24	6	0,21
25	5,7	-	R25-22 230	6	0,21



25	5,7	17	R25-04 24	6	0,21
25	5,7	17	R25-04 230	6	0,21



1) Sealable with Sealing Cover P721, available aux. contact block RH11(see page 136)

Modular Contactors, hum free

Rated Current	Heating Power AC1 at		Type	coil voltage		Pack pcs.	Weight kg/pc.	Wiring Diagram
	1-phase	3-phase		24VM	230VM			
400V	230V	400V			24V 50/60Hz, 24V DC			
A	kW	kW		↓	220-240V 50/60Hz, 220V DC			

One-pole 1 module (17,5mm), AC-operated (hum free)

20	4,6	-	R20-10 24VM	12	0,12	
20	4,6	-	R20-10 230VM	12	0,12	

Two-pole 1 module (17,5mm), AC-operated (hum free)

20	4,6	-	R20-20 24VM	12	0,12	
20	4,6	-	R20-20 230VM	12	0,12	
20	4,6	-	R20-11 24VM	12	0,12	
20	4,6	-	R20-11 230VM	12	0,12	
20	4,6	-	R20-02 24VM	12	0,12	
20	4,6	-	R20-02 230VM	12	0,12	

25	5,5	-	R25-20 24VM	12	0,14	
25	5,5	-	R25-20 230VM	12	0,14	
25	5,5	-	R25-11 24VM	12	0,14	
25	5,5	-	R25-11 230VM	12	0,14	
25	5,5	-	R25-02 24VM	12	0,14	
25	5,5	-	R25-02 230VM	12	0,14	

Four-pole 2 modules (35mm) ¹⁾, AC-operated (hum free)

25	5,7	17	R25-40 24VM	6	0,21	
25	5,7	17	R25-40 230VM	6	0,21	
25	5,7	17	R25-31 24VM	6	0,21	
25	5,7	17	R25-31 230VM	6	0,21	
25	5,7	17	R25-13 24VM	6	0,21	
25	5,7	17	R25-13 230VM	6	0,21	
25	5,7	-	R25-22 24VM	6	0,21	
25	5,7	-	R25-22 230VM	6	0,21	
25	5,7	17	R25-04 24VM	6	0,21	
25	5,7	17	R25-04 230VM	6	0,21	



1) Sealable with Sealing Cover P721, available aux. contact block RH11(see page 136)

Modular Contactors, low noise

Rated Current	Heating Power AC1 at	Type	coil voltage	Pack pcs.	Weight kg/pc.	Wiring Diagram
AC1	1-phase 3-phase	24	24V 50/60Hz			
400V	230V 400V	230	220-240V 50Hz, 230-264V 60Hz			
A	kW kW	↓				

Two-pole 2 modules (35mm), AC-operated (low noise)



40	9	-	R40-20 24	6	0,23	
40	9	-	R40-20 230	6	0,23	
40	9	-	R40-02 24	6	0,23	
40	9	-	R40-02 230	6	0,23	
63	14,3	-	R63-20 24	6	0,23	
63	14,3	-	R63-20 230	6	0,23	
63	14,3	-	R63-02 24	6	0,23	
63	14,3	-	R63-02 230	6	0,23	

Four-pole 3 modules (52,5mm)¹⁾, AC-operated (low noise)



40	9	27,5	R40-40 24	4	0,35	
40	9	27,5	R40-40 230	4	0,35	
40	9	27,5	R40-31 24	4	0,35	
40	9	27,5	R40-31 230	4	0,35	
40	9	-	R40-22 24	4	0,35	
40	9	-	R40-22 230	4	0,35	
40	9	27,5	R40-04 24	4	0,35	
40	9	27,5	R40-04 230	4	0,35	
63	14,3	43	R63-40 24	4	0,36	
63	14,3	43	R63-40 230	4	0,36	
63	14,3	43	R63-31 24	4	0,36	
63	14,3	43	R63-31 230	4	0,36	
63	14,3	-	R63-22 24	4	0,36	
63	14,3	-	R63-22 230	4	0,36	
63	14,3	43	R63-04 24	4	0,36	
63	14,3	43	R63-04 230	4	0,36	

Auxiliary Contact Block 1/2 module (8,8mm)²⁾ for contactor R25, R40, R63 (4p.) max. 1 piece for contactor R40 and R63 (2p.) max. 1 piece



Rated current	AC15	AC1	Type	Pack pcs.	Weight kg/pc.	Wiring Diagram	
AC15	400V	400V	for contactor				
230V	A	A					
A	A	A					
3	2	10	R25 ³⁾ , R40, R63	RH11	3	0,026	
3	2	10	R25-..VM (4p.)	RH11-1	3	0,026	

Accessories



Type	Pack pcs.	Weight kg/pc.
RC-unit 2x for R20.. to R63.. for 12V to 250V AC 220nF / 100 Ohm not for R20-..., R25-..VM	RC-R 230	2 0,05
Spacing piece 1/2 module (8,8mm) for R20.. to R63.. for ambient temperature >40°C	P730	10 0,012
Sealing cover for R25.. (4p.)	P721	10 0,002
Sealing cover for R40..., R63..	P690	10 0,003

1) Sealable with Sealing Cover P690, available aux. contact block RH11

2) Contacts suitable for electronic circuits, according to IEC60947-5-4 for rated voltage 24V DC (test ratings 17V DC, 5mA). Mirror contacts acc. IEC60947-4-1 Annex F.

3) AC-operated R25-... 4-pole

Modular Contactors

Switching of lamps

Lamp Type	Power W	Current A	Capacitors μ F	Max. lamps per pole at 230V 50Hz and max. 60°C			
				R20..	R25..	R40..	R63..
Incandescent lamps	60	0,27	-	36	50	92	129
	100	0,45	-	21	30	55	77
	200	0,91	-	10	15	27	38
	300	1,36	-	7	10	19	26
	500	2,27	-	4	6	11	16
	1000	4,5	-	2	3	6	8
Fluorescent lamps uncompensated or serial compensated	11	0,16	1,3	60	75	210	310
	18	0,37	2,7	25	30	90	140
	24	0,35	2,5	25	30	90	140
	36	0,43	3,4	20	25	70	140
	58	0,67	5,3	14	17	45	70
	65	0,67	5,3	13	16	40	65
Fluorescent lamps dual-connection	11	0,07	-	2 x 100	2 x 110	2 x 220	2 x 250
	18	0,11	-	2 x 50	2 x 55	2 x 130	2 x 200
	24	0,14	-	2 x 40	2 x 44	2 x 110	2 x 160
	36	0,22	-	2 x 30	2 x 33	2 x 70	2 x 100
	58	0,35	-	2 x 20	2 x 22	2 x 45	2 x 70
	65	0,35	-	2 x 15	2 x 16	2 x 40	2 x 60
Fluorescent lamps parallel compensated	11	0,09	2	33	43	67	107
	18	0,13	2	25	32	50	80
	24	0,16	3	25	32	50	80
	36	0,27	4	22	32	50	80
	58	0,45	7	14	18	36	46
	65	0,5	7	14	18	36	46
Fluorescent lamps with electronic fluorescent lamp ballast	18	0,09	-	40	40	100	150
	36	0,16	-	20	20	52	75
	58	0,25	-	15	15	30	55
	80	0,4	-	7	10	20	30
	2 x 18	0,17	-	20	20	50	60
	2 x 28	0,25	-	15	15	37	45
Transformers for metal halid low voltage lamps	20	0,09	-	40	52	110	174
	50	0,22	-	20	24	50	80
	75	0,33	-	13	16	35	54
	100	0,43	-	10	12	27	43
	150	0,65	-	7	9	19	29
	200	0,87	-	5	5	14	23
Mercury-vapour lamps (high-pressure lamps), uncompensated e. g. HQL, HPL	300	1,3	-	3	4	9	14
	50	0,61	-	16	21	38	55
	80	0,8	-	12	16	29	40
	125	1,15	-	8	11	20	28
	250	2,15	-	4	6	11	15
	400	3,25	-	3	4	7	10
Mercury-vapour lamps (high-pressure lamps), compensated e. g. HQL, HPL	700	5,4	-	1	2	4	6
	1000	7,5	-	1	1	3	4
	50	0,28	7	14	18	36	50
	80	0,41	8	12	16	31	44
	125	0,65	10	10	13	25	35
	250	1,22	18	5	7	14	19
	400	1,95	25	4	5	10	14
	700	3,45	45	2	3	6	8
	1000	4,8	60	1	2	4	6

Modular Contactors

Switching of lamps

Lamp Type	Power W	Current A	Capacitors μF	Max. lamps per pole at 230V 50Hz and max. 60°C				
				R20..	R25..	R40..	R63..	
Metal halide lamps uncompensated e. g. HQI, HPI, CDM	35	0,53	-	22	24	57	65	
	70	1	-	12	14	30	35	
	150	1,8	-	6	8	17	18	
	250	3	-	4	5	10	12	
	400	3,5	-	3	4	8	10	
	1000	9,5	-	1	1	3	4	
	2000	16,5	-	-	-	2	2	
	400V per pole	2000	10,5	-	-	2	2	
		3500	18	-	-	1	1	
	Metal halide lamps compensated e. g. HQI, HPI, CDM	35	0,25	6	16	21	42	58
70		0,45	12	8	11	21	29	
150		0,75	20	5	7	13	18	
250		1,5	33	3	4	9	11	
400		2,1	35	2	4	9	10	
1000		5,8	95	1	1	3	4	
2000		11,5	148	-	-	2	2	
400V per pole		2000	6,6	58	-	-	3	4
		3500	11,6	100	-	-	2	3
Metal halide lamps with electronic fluorescent with electronic fluorescent lamp ballast (e. g.: PCI) 50-125 x I _{n lamp} for 0,6ms		20	0,1	integrated	9	9	18	20
	28	0,15	integrated	-	-	-	18	
	35	0,2	integrated	6	6	11	13	
	70	0,36	integrated	5	5	10	12	
	150	0,7	integrated	4	4	8	10	
Sodium-vapour lamps (low pressure lamps), uncompensated	35	1,5	-	7	9	22	30	
	55	1,5	-	7	9	22	30	
	90	2,4	-	4	6	13	19	
	135	3,3	-	3	4	10	14	
	150	3,3	-	3	4	10	14	
	180	3,3	-	3	4	10	14	
	200	3,3	-	3	4	10	14	
Sodium-vapour lamps (low pressure lamps), compensated	35	0,31	20	5	6	15	18	
	55	0,42	20	5	6	15	18	
	90	0,63	30	3	4	10	12	
	135	0,94	45	2	3	7	8	
	150	1	40	2	3	8	9	
	180	1,16	40	2	3	8	9	
	200	1,32	25	-	-	10	12	
Sodium-vapour lamps (high pressure lamps), uncompensated	150	1,8	-	5	8	17	22	
	250	3	-	4	5	10	13	
	330	3,7	-	3	4	8	10	
	400	4,7	-	2	3	6	8	
	1000	10,3	-	1	1	3	4	
Sodium-vapour lamps (high pressure lamps), compensated	150	0,83	20	5	7	20	25	
	250	1,5	33	3	4	12	15	
	330	2	40	2	3	10	13	
	400	2,4	48	2	2	8	12	
	1000	6,3	106	1	1	4	6	
Sodium-vapour lamps (high pressure lamps) with serial electronic (e. g.: PCI) 50-125 x I _{n lamp} for 0,6ms	20	0,1	integrated	9	9	18	20	
	35	0,2	integrated	6	6	11	13	
	70	0,36	integrated	5	5	10	12	
	150	0,7	integrated	4	4	8	10	
LED-Lamps consider the inrush current of the lamp ballast and the cos ϕ of the lamp	max. inrush current of contactor [A]			195A	233A	424A	565A	
	$\frac{\text{inrush current of contactor}}{\text{inrush current of lamp/EVG}} =$			max. lamps per pole at 230V 50Hz and max. 60°C ($I_{r,LED} \leq I_n$)				

Modular Contactors

Data according to IEC60 947-4-1, IEC 60947-5-1, VDE 0660-5-1

Type	2-pole				4-pole			RH11			
	R20 (VM) ⁷⁾	R25 (VM) ⁷⁾	R40	R63	R25 (VM) ⁷⁾	R40	R63				
Main Contacts ^{4) 5) 6)}											
Rated insulation voltage U_i ¹⁾	V~		440	440	440	440	440	440			
Rated operation voltage U_e	V~		440	440	440	440	440	440			
Frequency of operations z AC1, AC3	1/h		300	300	600	600	600	600			
Mechanical life	S x 10 ⁶		1	1	1	1	1	1			
Utilization category AC1 / AC7a											
Switching of resistive load											
Rated operational current I_e (= I_{th}) open at 60°C	A		20	25	40	63	25	40	63	-	
Contact life	S x 10 ⁶		0,1	0,1	0,1	0,1	0,1	0,1	0,1	-	
Minimum Switch Voltage	V/mA		24/100	24/100	24/100	24/100	24/100	24/100	24/100	17/5	
Short time current	10s-current		A	72	72	216	240	72	216	240	-
Power loss per pole at I_e /AC1	W		2	3	3	7	2	3	7	0,5	
Utilization category AC2 and AC3 / AC7b											
Switching of three-phase motors											
Rated operational current I_e	A		-	-	-	-	9	27	30	-	
Rated operational power of three-phase motors			-	-	-	-	2,2	7,5	8	-	
50-60Hz			-	-	-	-	2,5	8	8,5	-	
			-	-	-	-	4	12,5	15	-	
2-pole motors			-	-	-	-	-	-	-	-	
			1,1 ²⁾	1,3	2,6	5	-	-	-	-	
Contact life	S x 10 ⁶		0,15	0,15	0,15	0,15	0,15	0,15	0,15	-	
Power consumption of coils											
AC operated											
	inrush	VA	7 - 9	7 - 9	20 - 25	20 - 25	20 - 25	33 - 45	33 - 45	-	
	sealed	VA	2,2 - 4,2	2,2 - 4,2	4 - 6	4 - 6	4 - 6	6 - 8	6 - 8	-	
		W	0,8 - 1,6	0,8 - 1,6	1,5 - 2,5	1,5 - 2,5	1,5 - 2,5	2,6	2,6	-	
AC and DC-operated		W	2 - 3	2 - 3	-	-	3 - 4	-	-	-	
Operation range of coils											
in multiples of control voltage U_s (-40° - +40°C)			0,85 - 1,1	0,85 - 1,1	0,85 - 1,1	0,85 - 1,1	0,85 - 1,1	0,85 - 1,1	0,85 - 1,1	-	
Noise level (operation) acc. to EN ISO 3744											
from front, distance 0,5 m		dB	16 (0) ⁷⁾	16 (0) ⁷⁾	8	8	8 (0) ⁷⁾	< 4	< 4	-	
Type			R20	R25 (2p.)	R25 (4p.)	R25-..VM	R40 (2p./4p.)	R63 (2p./4p.)	RH11		
Maximum ambient temperature											
Operation		°C									
	open	°C				-40 to + 60					
	enclosed	°C				-40 to + 40					
Storage		°C				-50 to + 90					
Short circuit protection											
max. fuse Coordination-type "1" gL (gG)	A		35	35	35	35	63	80	-		
Rated short circuit current	"I _m "	kA	3	3	3	3	3	3	-		
	"I _q "	kA	3	3	10	10	10	10	-		
Switching time at control voltage $U_s \pm 10\%$											
	make time	ms	7 - 16	7 - 16	9 - 15	17 - 50	11 - 15	11 - 15	-		
	release time	ms	6 - 12	6 - 12	4 - 8	17 - 23	6 - 13	6 - 13	-		
	arc duration	ms	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	-		
Cable cross-sections											
Main connector		mm ²									
	solid or stranded	mm ²	1,5 - 10	1,5 - 10	1,5 - 10	1,5 - 10	2,5 - 25	2,5 - 25	0,5 - 2,5 ³⁾		
	flexible	mm ²	1,5 - 6	1,5 - 6	1,5 - 6	1,5 - 6	2,5 - 16	2,5 - 16	0,5 - 2,5 ³⁾		
	flexible with multicore cable end	mm ²	1,5 - 6	1,5 - 6	1,5 - 6	1,5 - 6	2,5 - 16	2,5 - 16	0,5 - 1,5		
Clamps per pole			1	1	1	1	1	1	2		
Magnetic coil		mm ²									
	solid or stranded	mm ²	0,75 - 2,5	0,75 - 2,5	0,75 - 2,5	0,75 - 2,5	0,75 - 2,5	0,75 - 2,5	-		
	flexible	mm ²	0,5 - 2,5	0,5 - 2,5	0,5 - 2,5	0,5 - 2,5	0,5 - 2,5	0,5 - 2,5	-		
	flexible with multicore cable end	mm ²	0,5 - 1,5	0,5 - 2,5	0,5 - 1,5	0,5 - 1,5	0,5 - 1,5	0,5 - 1,5	-		
Clamps per pole			1	1	1	1	1	1	-		
Auxiliary Contacts ^{4) 5) 6)}											
Rated insulation voltage U_i ¹⁾	V AC		-	-	440	440	440	440	440		
Thermal rated current I_{th}	40°C		-	-	25	25	40	63	10		
Ambient temperature	60°C		-	-	25	25	40	63	6		

1) Suitable for: earthed-neutral systems, overvoltage category I to III, pollution degree 3 (standard-industry): $U_{imp} = 4kV$.
 2) AC7b motor 2-pole 230V 1,1kW
 3) Maximum cable cross-section with prepared conductor

4) Rated frequency 50/60Hz
 5) Max. occ. switching overvoltage < 4kV
 6) Duty cycle: 100%
 7) 0 dB for contactors type "VM" (AC/DC operated)

Contactors, Motor-Starters
 Circuit Breakers
 Manual Motor-Starters
 Switches
 AC-Main Switches
 DC-Switch Disconnectors
 Push Buttons
 Representatives, Suppliers

Modular Contactors

Data according to IEC60 947-4-1, IEC 60947-5-1, VDE 0660-5-1

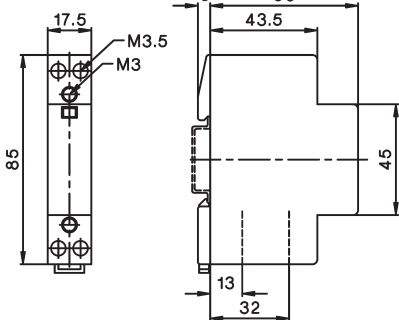
Type	R20	R25 (2p.)	R25 (4p.)	R25-..VM	R40 (2p./4p.)	R63 (2p./4p.)	RH11
Utilization category AC15							
Rated operational current I_e	220-240V A	-	3	3	3	3	3
	380-415V A	-	2	2	2	2	2
	440V A	-	1,6	1,6	1,6	1,6	1,6
Utilization category DC13							
Rated operational current I_e per pole	24-60V A	-	2	2	2	2	2
	110V A	-	0,4	0,4	0,4	0,4	0,4
	220V A	-	0,1	0,1	0,1	0,1	0,1
Short circuit protection							
short-circuit current 1kA, contact welding not accepted							
max. fuse size	gL (gG) A	-	10	10	10	10	10

Data according to UL508

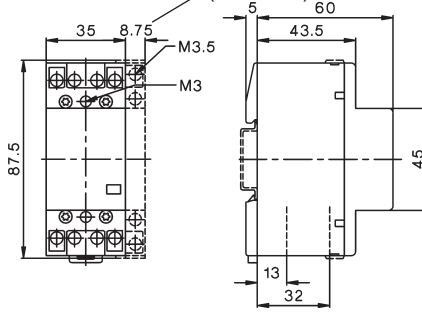
Main Contacts (cULus)	Type	R20	R25 (2p.)	R25 (4p.)	R40 (2p./4p.)	R63 (2p./4p.)	RH11
Rated operational current "General Use"	A	20	25	25	40	63	10
Rated operational power of three-phase motors at 60Hz (3ph)	110-120V hp	-	-	1	2	3	-
	200-208V hp	-	-	2	5	7½	-
	220-240V hp	-	-	3	7½	10	-
	265-277V hp	-	-	3	7½	10	-
Rated operational power of AC motors at 60Hz (1ph)	110-120V hp	½	½	½	1	1½	-
	200-208V hp	1	1	1	2	3	-
	220-240V hp	1½	1 ½	1½	3	5	-
	265-277V hp	1½	2	2	3	5	-
Fuses	A	40	40	40	80	80	-
Suitable for use on a capability of delivering not more than	rms A	5000	5000	5000	5000	5000	-
	V	300	300	300	300	300	300
Rated operation voltage	V~	300	300	300	300	300	300
Auxiliary Contacts (cULus)	heavy pilot duty AC	-	-	-	-	-	C300

Dimensions

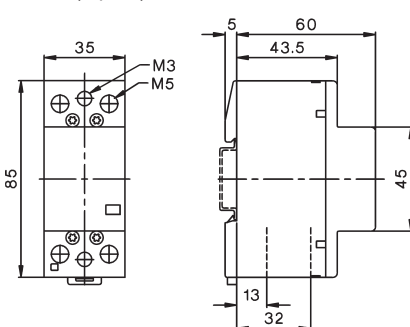
R20-..., R25-... (2-pole)
RC-R 230



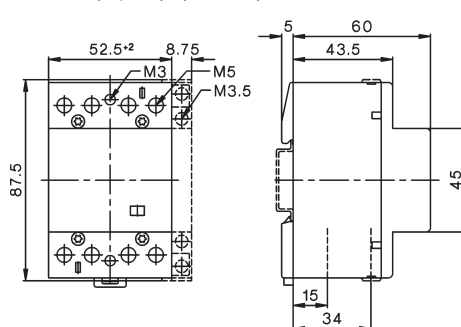
R25-... (4-pole) (+RH11)
R25-..VM (+RH11-1)



R40-... (2-pole)
R63-... (2-pole)



R40-... (4-pole) (+RH11)
R63-... (4-pole) (+RH11)



Aux. contact block
RH11, RH11-1

