



Modular Contactors

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Modular Contactors

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

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



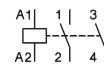
20	4,6	-	R20-10 24	12	0,12
20	4,6	-	R20-10 230	12	0,12



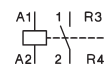
Two-pole 1 module (17,5mm), AC-operated (low noise)



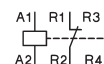
20	4,6	-	R20-20 24	12	0,12
20	4,6	-	R20-20 230	12	0,12



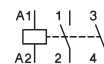
20	4,6	-	R20-11 24	12	0,12
20	4,6	-	R20-11 230	12	0,12



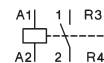
20	4,6	-	R20-02 24	12	0,12
20	4,6	-	R20-02 230	12	0,12



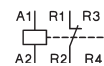
25	5,5	-	R25-20 24	12	0,14
25	5,5	-	R25-20 230	12	0,14



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



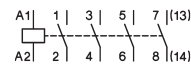
25	5,5	-	R25-02 24	12	0,14
25	5,5	-	R25-02 230	12	0,14



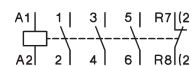
Four-pole 2 modules (35mm)¹⁾, AC-operated (low noise)



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



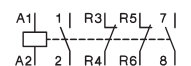
25	5,7	17	R25-31 24	6	0,21
25	5,7	17	R25-31 230	6	0,21



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



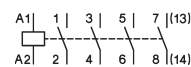
25	5,7	17	R25-04 24	6	0,21
25	5,7	17	R25-04 230	6	0,21



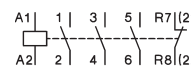
Four-pole 2 modules(35mm), AC/DC-operated ¹⁾, (hum free)



25	5,7	17	R25-40 24VM	6	0,22
25	5,7	17	R25-40 230VM	6	0,22



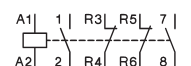
25	5,7	17	R25-31 24VM	6	0,22
25	5,7	17	R25-31 230VM	6	0,22



25	5,7	17	R25-13 24VM	6	0,22
25	5,7	17	R25-13 230VM	6	0,22



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



25	5,7	17	R25-04 24VM	6	0,22
25	5,7	17	R25-04 230VM	6	0,22



1) Sealable with Sealing Cover P721, available aux. contact block RH11(see page 135)
 2) Sealable with Sealing Cover P721, available aux. contact block RH11-1(see page 135)

Modular Contactors

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) for contactor R25, R40, R63 (4p.) max. 1 piece for contactor R40 and R63 (2p.) max. 1 piece



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

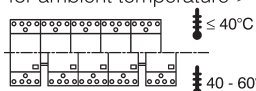
Accessories



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

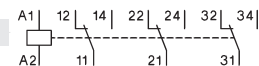
1) Sealable with Sealing Cover P690, available aux. contact block RH11
 2) AC-operated R25-..., 4-pole

Day-Night Reloading Contactors

Compact Module, for separate tariff counters 2 modules (35mm), AC-operated (low noise)



3-pole 400V 25A **R25-TN 230** 1 0,22



2 Switch positions:

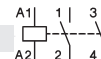
Day (Reloading, contact 11-14 ... closed, remains in position Night, until the next occurs)

Night (Basis operation) contact 11-12 ... closed

Contactor Module, for double tariff counters 1 module (17,5mm), AC-operated (low noise)



2-pole 400V 25A **R25-TN20 230** 1 0,13



4 Switch position:

Day (Reloading, contact 1-2 ... closed, remains in position Night, until the next occurs)

Night (automatic operation, contact 1-2 ... only at night closed)

On (Permanently On)

Off (permanently Off)

Switch Module 1 module (17,5mm)



2-pole 400V 25A **RH25-20** 1 0,13



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..
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
85	0,6	8	12	16	33	44	

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..	
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	
	2 x 36	0,32	-	10	10	25	30	
	2 x 58	0,49	-	7	7	15	20	
	2 x 80	0,7	-	4	4	8	10	
	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	
300		1,3	-	3	4	9	14	
Mercury-vapour lamps (high-pressure lamps), uncompensated e. g. HQL, HPL	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	
	700	5,4	-	1	2	4	6	
	1000	7,5	-	1	1	3	4	
Mercury-vapour lamps (high-pressure lamps), compensated e. g. HQL, HPL	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	
Metal halide lamps uncompensated e. g. HQL, 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. HQL, 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	

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..
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 _{nlamp} 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 cosφ 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			

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

Type	2-pole				4-pole			RH11	
	R20	R25	R40	R63	R25	R40	R63		
Main Contacts ^{5) 6) 7)}									
Rated insulation voltage U_i	V~	440 ²⁾	440 ²⁾	440 ²⁾	440 ²⁾	440 ²⁾	440 ²⁾	440 ²⁾	
Rated operation voltage U_e	V~	440	440	440	440	440	440	440	
Frequency of operations z AC1, AC3	1/h	300	300	600	600	300	600	600	
Mechanical life	S x 10 ⁶	1	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									
220V	kW	-	-	-	-	2,2	7,5	8	-
230-240V	kW	-	-	-	-	2,5	8	8,5	-
380-415V	kW	-	-	-	-	4	12,5	15	-
2-pole motors	230V kW	1,1	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	33 - 45	33 - 45	-
sealed	VA	2,2 - 4,2	2,2 - 4,2	5 - 7	5 - 7	4 - 6	6 - 8	6 - 8	-
	W	0,8 - 1,6	0,8 - 1,6	-	-	1,5 - 2,5	2,6	2,6	-
AC and DC-operated	W	-	-	-	-	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	-

1) Suitable for: earthed-neutral systems, overvoltage category I to IV, pollution degree 3 (standard-industry): U_{imp} = 8kV.

2) Suitable for: earthed-neutral systems, overvoltage category I to III, pollution degree 3 (standard-industry): U_{imp} = 4kV.

3) Maximum cable cross-section with prepared conductor

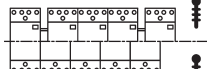
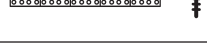
5) Rated frequency 50/60Hz

6) Max. occ. switching overvoltage <4kV

7) Duty cycle: 100%

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
Maximum ambient temperature							
Operation					-40 to + 60	 40 - 60°C	
open °C					-40 to + 40		
enclosed °C					-50 to + 90	 ≤ 40°C	
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 _{sc} " kA	3	3	3	3	3	3	-
"I _q " kA	3	3	10	10	10	10	-
Switching time at control voltage U _s ±10%							
make time ms	7 - 16	7 - 16	9 - 15	17 - 24	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 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 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 ^{5) 6) 7)}							
Rated insulation voltage U _i ¹⁾ V AC	-	-	440 ²⁾	440 ²⁾	440 ²⁾	440 ²⁾	440 ²⁾
Thermal rated current I _{th} 40°C A	-	-	25	25	40	63	10
Ambient temperature 60°C A	-	-	25	25	40	63	6
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 24-60V A	-	-	2	2	2	2	2
110V A	-	-	0,4	0,4	0,4	0,4	0,4
per pole 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	1 ½	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
	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

2) Suitable for: earthed-neutral systems, overvoltage category I to III, pollution degree 3 (standard-industry): U_{imp} = 4kV.

3) Maximum cable cross-section with prepared conductor 4) AC7b motor 2-pole 230V 1,1kW

5) Rated frequency 50/60Hz

6) Max. occ. switching overvoltage <4kV

7) Duty cycle: 100%