

MODULAR CONTACTORS



Electrical characteristic									
Type									
Description	Modular contactors							Auxiliary contact	
Standard conformity	EN 61095								
Approvals	NF - VDE - IMQ - KEMA - RMC / CCC (see reference level)								
	Relay	Contact	Relay	Contact	Contact	Contact	Contact		
Number of module	1		2		3		1/2		
Thermal current I _{th} (40°C)	16A	25A	16A	25A	40 A	63 A	6A		
Rated frequency (power side)	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz		
Rated insulation voltage (Ui)	250V	250V	440V	440V	440V	440V	250V		
Rated impulse withstand voltage (Uimp)	4kV	4kV	4kV	4kV	4kV	4kV	4kV		
Protection degree	2	2	2	2	2	2	2		
Rated operating currents and power ratings in AC									
AC-7a / AC-1	Rated operational currents I _e		16A	25A	16A	25A	40A	63A	-
	Rated operational power		230V	3kW	4.6kW	3kW	4.6kW	7.3kW	11.6kW
			400V	-	8.9kW	13.8kW	22 kW	35kW	-
AC-7b / AC-3	Rated operational currents I _e		5.5A	8.5A	5.5A	8.5A	25A	32A	-
	Rated operational power		230V	570W	880W	570W	880W	2.6kW	3.3kW
			400V	-	1.7kW	2.6kW	7.8kW	10kW	-
AC-12	Rated operational currents I _e @ 230V		-	-	-	-	-	-	6A
AC-15	Rated operational currents I _e @ 230V		-	-	-	-	-	-	2A
Mechanical & electrical endurance									
Mechanical endurance	Number of operations		1 000 000	1 000 000	1 000 000	1 000 000	1 000 000	1 000 000	1 000 000
Electrical endurance @ I _e AC7a (AC12 for aux contact)	Number of operations		60 000	60 000	60 000	60 000	60 000	60 000	60 000
MCB Protected short-circuit withstand									
Prospected short-circuit current	rms		1kA	3kA	1kA	3kA	3kA	3kA	1kA
Associated protection			MCB C16-6kA	MCB C25-6kA	MCB C16-6kA	MCB C25-6kA	MCB C40-10kA	MCB C63-10kA	6A 10x38 gG Fuse
Power dissipation									
Power dissipation per current path			1W	1.5W	1W	1.5W	3.2W	5W	0.4W
Magnetic system for Eco and standard contactor									
Pick-up			7.4VA	7.4VA	9.2VA	9.2VA	60VA	60VA	-
Coil consumption			1.8VA	1.8VA	1.85VA	1.85VA	7VA	7VA	-
Closing delay			20ms	20ms	20ms	20ms	20ms	20ms	-
Opening delay			15ms	15ms	15ms	15ms	20ms	20ms	-
Magnetic system for Humfree contactors									
Pick-up			2.2W	2.2W	2.8W	2.8W	5W	5W	-
Coil consumption			2.2W	2.2W	2.8W	2.8W	5W	5W	-
Closing delay			25ms	25ms	25ms	25ms	25ms	25ms	-
Opening delay			15ms	15ms	15ms	15ms	20ms	20ms	-
Magnetic system for Lighting contactors									
Std and eco	Pick-up		9.5VA		16.3VA				
	Coil consumption		2.5 VA		3.1 VA				
Humfree	Pick-up		2.5 VA		3.2 VA				
	Coil consumption		2.5 VA		3.2VA				
Connection									
Main contact cable section	rigid	1...10 mm ²	1...10 mm ²	1...10 mm ²	1...10 mm ²	1.5...25 mm ²	1.5...25 mm ²	1...6 mm ²	
	flexible	1...6 mm ²	1...6 mm ²	1...6 mm ²	1...6 mm ²	1.5...16 mm ²	1.5...16 mm ²	1...6 mm ²	
Main contact connection screw	Type	M3.4	M3.4	M3.4	M3.4	M5	M5	M3.4	
	Posidrive	PZ2	PZ2	PZ2	PZ2	PZ2	PZ2	PZ2	
	Max. tight. torque	1.2 Nm	1.2 Nm	1.2 Nm	1.2 Nm	3.5 Nm	3.5 Nm	1.2 Nm	
Coil connection cable section	rigid	1...10 mm ²	1...10 mm ²	1...10 mm ²	1...10 mm ²	1...6 mm ²	1...6 mm ²	-	
	flexible	1...6 mm ²	1...6 mm ²	1...6 mm ²	1...6 mm ²	1...6 mm ²	1...6 mm ²	-	
Coil connection screw	Type	M3.5	M3.5	M3.5	M3.5	M4	M4	-	
	Posidrive	PZ2	PZ2	PZ2	PZ2	PZ2	PZ2	-	
	Max. tight. torque	1.2 Nm	1.2 Nm	1.2 Nm	1.2 Nm	2.5 Nm	2.5 Nm	-	
Working temperature									
			-10°C to +50°C	-10°C to +50°C	-10°C to +50°C	-10°C to +50°C	-10°C to +50°C	-10°C to +50°C	
Storage temperature									
			-40°C to +80°C	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C	

CONTACTOR SELECTION TOOL






The table below indicates the number of lamps (or dual fittings) that can be connected to each pole of the contactor on 230V/50hz
Lighting selection.




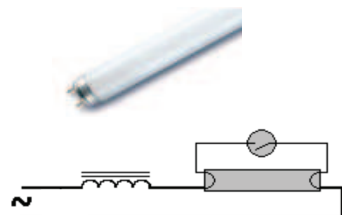
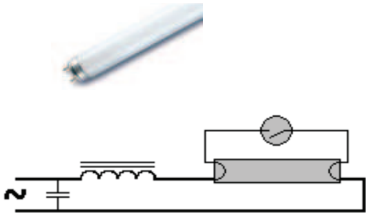
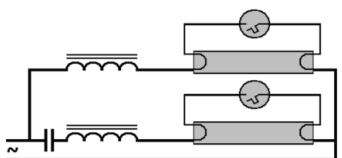
Due to the large variety of electrical characteristics in lamps, especially for the inrush current, the chart gives the maximum number of lamps bas
 The goal is to give the most precise and the highest number of lamps acceptable for the contactor.

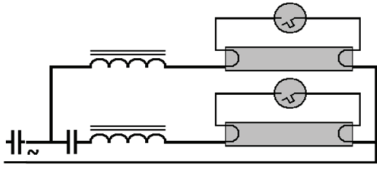
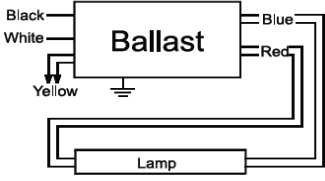
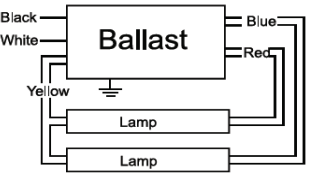
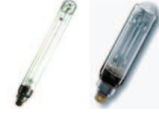


If the inrush current is not known, choose the column "I peak high" in order to favour the contactor lifetime.


The table below indicates the number of lamps (or dual fittings) that can be connected to each pole of the contactor on 230V/50hz circuits.

[A calculation tool is also available on the internet website in order to define the maximum number of lamps in your own configuration.](#)

	Light power	Standard / eco and Humfree				Lighting range 25A
		16A	25A	40A	63A	
Compact fluo lamp						
Compact fluo lamp	5W	11 to 27	15 to 42	49 to 154	76 to 240	20 to 55
With external electronic ballast or compensated	7W	11 to 27	15 to 42	49 to 154	76 to 240	20 to 55
	9W	9 to 25	13 to 38	40 to 120	63 to 190	17 to 50
Energy saving lamp	11W	9 to 25	13 to 38	40 to 120	63 to 190	17 to 50
	15W	7 to 21	11 to 33	36 to 108	57 to 170	14 to 42
	18W	7 to 21	11 to 33	36 to 108	57 to 170	14 to 42
	20W	7 to 17	11 to 30	36 to 75	57 to 118	14 to 39
	23W	7 to 17	11 to 27	36 to 75	57 to 118	14 to 35
	26W	7 to 12	11 to 19	36 to 58	57 to 91	14 to 24
Compact fluo lamp						
With integrated electronic ballast	5W	17 to 32	27 to 50	86 to 159	135 to 250	35 to 65
Substitute to incandescent lamps	7W	17 to 32	27 to 50	86 to 159	135 to 250	35 to 65
Energy saving lamp	9W	17 to 32	27 to 50	86 to 159	135 to 250	35 to 65
	11W	17 to 32	27 to 50	86 to 159	135 to 250	35 to 65
	15W	17 to 32	27 to 50	86 to 159	135 to 250	35 to 65
	18W	13 to 22	20 to 35	63 to 111	100 to 175	26 to 45
	20W	13 to 22	20 to 35	63 to 111	100 to 175	26 to 45
	23W	13 to 22	20 to 35	63 to 111	100 to 175	26 to 45
	26W	13 to 22	20 to 35	63 to 111	100 to 175	26 to 45
Incandescent lamps						
Tungsten & halogen lamps 230V	40W	32 to 38	50 to 60	76 to 102	120 to 160	65 to 78
	60W	21 to 31	33 to 48	67 to 79	105 to 125	42 to 62
	75W	17 to 24	27 to 38	63 to 67	100 to 105	35 to 49
	100W	13 to 19	20 to 30	41 to 48	65 to 75	26 to 39
	150W	8 to 13	13 to 20	29 to 32	45 to 50	16 to 26
	200W	6 to 10	9 to 12	22 to 24	35 to 38	13 to 19
	300W	4 to 6	7 to 10	15 to 16	23 to 25	9 to 13
	500W	2 to 3	3 to 5	9 to 10	14 to 15	4 to 6
	1000W	0	0	4 to 5	7 to 8	1
Halogen ELV (12 ou 24V)						
With electronic transformers	20W	13 to 22	20 to 34	139 to 236	218 to 367	26 to 44
	35W	8 to 13	13 to 20	82 to 135	129 to 210	17 to 26
	50W	6 to 9	9 to 14	60 to 82	94 to 129	11 to 18
	75W	4 to 7	6 to 11	52 to 78	82 to 123	8 to 14
	100W	2 to 4	3 to 7	35 to 50	55 to 78	4 to 9
	150W	1 to 3	2 to 5	20 to 35	31 to 55	2 to 6
LED						
LED						
230V integrated driver	4W	17	27	86	135	35
Non dimmable, E27	4.5W	17	27	86	135	35
	6W	17	27	86	135	35
	7W	17	27	86	135	35
	8W	17	27	86	135	35
	12W	17	27	86	135	35
	17W	13	20	63	100	26
	18W	13	20	63	100	26
	22W	13	20	63	100	26
	30W	9	14	44	70	18
	34W	9	14	44	70	18
	40W	9	14	44	70	18
	50W	7	11	35	55	14
LED						
230V integrated driver	4W	38	60	159	250	78
Dimmable, GU 10	5.5W	38	60	159	250	78
	6W	38	60	159	250	78
	7W	38	60	159	250	78
	8W	38	60	159	250	78
	12W	38	60	159	250	78
	17W	28	44	118	185	58
	18W	28	44	118	185	58

	22W 30W 34W 40W 50W	28 20 20 20 16	44 31 31 31 24	118 82 82 82 65	185 130 130 130 102	58 40 40 40 32
LED headlamp 230V integrated driver 	100W 150W 200W				6 4 4	7 5 5
LED 12V external driver Dimmable, GU 10 	1W 2.5W 4W 5W 7W 10W 15W	38 38 38 38 38 38 28	60 60 60 60 60 60 44	108 108 108 108 108 108 75	170 170 170 170 170 170 118	78 78 78 78 78 78 58
Fluorescent tubes						
Single - with starter without compensation 	15W 18W 20W 36W 40W 42W 58W 65W 80W 115W 140W	13 to 22 13 to 22 12 to 22 12 to 20 10 to 20 9 to 19 7 to 13 6 to 13 5 to 10 4 to 7 3 to 6	20 to 30 20 to 30 19 to 30 15 to 28 13 to 28 12 to 25 9 to 17 8 to 17 7 to 15 5 to 10 5 to 8	70 to 110 70 to 80 70 to 80 60 to 65 60 to 65 55 to 60 35 to 40 35 to 40 30 to 35 20 to 30 16 to 20	100 to 150 100 to 130 100 to 130 90 to 115 90 to 115 83 to 90 56 to 64 56 to 64 48 to 56 32 to 48 26 to 32	26 to 39 26 to 39 24 to 39 19 to 36 16 to 36 15 to 32 11 to 22 10 to 22 9 to 19 6 to 13 6 to 10
Single - with starter with parallel compensation 	15W 18W 20W 36W 40W 42W 58W 65W 80W 115W	7 to 32 7 to 21 7 to 21 7 to 17 7 to 12 7 to 12 6 to 10 6 to 10 6 to 10 6 to 10 6 to 7	11 to 50 11 to 33 11 to 33 11 to 27 11 to 19 11 to 19 10 to 15 10 to 15 10 to 15 10 to 15 10 to 11	36 to 162 36 to 108 36 to 108 34 to 81 29 to 58 29 to 58 27 to 44 27 to 44 27 to 44 27 to 44 25 to 29	57 to 255 57 to 170 57 to 170 53 to 127 45 to 91 45 to 91 42 to 70 42 to 70 42 to 70 42 to 70 39 to 46	14 to 65 14 to 42 14 to 42 14 to 35 14 to 24 14 to 24 13 to 19 13 to 19 13 to 19 13 to 19 13 to 14
Double with starter, no compensation (number of double lamps) 	2 x 18W 2 x 20W 2 x 36W 2 x 40W 2 x 42W 2 x 58W 2 x 65W 2 x 80W 2 x 115W	13 to 22 12 to 22 12 to 20 10 to 20 9 to 19 7 to 13 6 to 13 5 to 10 4 to 7	20 to 30 19 to 30 15 to 28 13 to 28 12 to 25 9 to 17 8 to 17 7 to 15 5 to 10	50 to 65 50 to 60 44 to 50 40 to 45 40 to 45 27 to 35 27 to 35 22 to 30 16 to 25	78 to 102 78 to 94 69 to 79 63 to 70 63 to 70 42 to 55 42 to 55 35 to 47 25 to 40	26 to 39 24 to 39 19 to 36 16 to 36 15 to 32 11 to 22 10 to 22 9 to 19 6 to 13
Double with starter, series compensation	2 x 18W	7 to 17	11 to 27	34 to 81	53 to 127	14 to 35

(number of double lamps) 	2 x 20W 2 x 36W 2 x 40W 2 x 42W 2 x 58W 2 x 65W 2 x 80W 2 x 115W	7 to 12 6 to 10 6 to 10 6 to 10 6 to 7 5 to 6 5 to 6 4 to 5	11 to 19 10 to 15 10 to 15 10 to 15 10 to 11 7 to 8 7 to 8 5 to 7	29 to 58 27 to 44 27 to 44 27 to 44 25 to 29 23 to 25 20 to 23 17 to 20	45 to 91 42 to 70 42 to 70 42 to 70 39 to 46 36 to 39 31 to 36 25 to 31	14 to 24 13 to 19 13 to 19 13 to 19 13 to 14 9 to 10 9 to 10 6 to 9
Single with electronic ballast 	15W 18W 20W 36W 40W 42W 58W 65W 80W 115W	7 to 32 7 to 21 7 to 21 7 to 17 7 to 12 7 to 12 6 to 10 6 to 10 6 to 10 6 to 7	11 to 50 11 to 33 11 to 33 11 to 27 11 to 19 11 to 19 10 to 15 10 to 15 10 to 15 10 to 11	36 to 162 36 to 108 36 to 108 34 to 81 29 to 58 29 to 58 27 to 44 27 to 44 27 to 44 25 to 29	57 to 255 57 to 170 57 to 170 53 to 127 45 to 91 45 to 91 42 to 70 42 to 70 42 to 70 39 to 46	14 to 65 14 to 42 14 to 42 14 to 35 14 to 24 14 to 24 13 to 19 13 to 19 13 to 19 13 to 14
Double with electronic ballast (number of double lamps) 	2 x 18W 2 x 20W 2 x 36W 2 x 40W 2 x 42W 2 x 58W 2 x 65W 2 x 80W 2 x 115W	7 to 17 7 to 12 6 to 10 6 to 10 6 to 10 6 to 7 5 to 6 5 to 6 4 to 5	11 to 27 11 to 19 10 to 15 10 to 15 10 to 15 10 to 11 7 to 8 7 to 8 5 to 7	34 to 81 29 to 58 27 to 44 27 to 44 27 to 44 25 to 29 23 to 25 20 to 23 17 to 20	53 to 127 45 to 91 42 to 70 42 to 70 42 to 70 39 to 46 36 to 39 31 to 36 25 to 31	14 to 35 14 to 24 13 to 19 13 to 19 13 to 19 13 to 14 9 to 10 9 to 10 6 to 9
Discharge lamps						
High-pressure mercury-vapor lamps Without compensation 	50W 80W 125W 250W 400W 700W	9 to 15 6 to 10 3 to 6 2 to 3 1 0	14 to 23 9 to 15 5 to 9 3 to 5 1 0	32 to 38 24 to 30 18 to 27 10 to 20 6 to 7 4 to 6	50 to 59 37 to 47 28 to 42 15 to 31 9 to 11 5 to 10	18 to 29 11 to 19 6 to 11 3 to 6 1 to 1 0 to 0
High-pressure mercury-vapor lamps Paralell compensation	50W 80W 125W 250W 400W 700W 1000W	7 to 11 5 to 9 3 to 6 2 to 3 1 0 0	11 to 17 8 to 14 5 to 9 3 to 5 1 0 0	26 to 34 22 to 28 15 to 25 9 to 20 5 to 8 3 to 4 2 to 5	40 to 53 34 to 43 23 to 39 14 to 30 8 to 12 5 to 6 3 to 8	14 to 22 10 to 18 6 to 11 3 to 6 1 to 1 0 to 0 0 to 0
Low pressure sodium lamps Without compensation 	18W 35W 55W 90W 135W 180W	8 to 12 4 to 6 3 to 6 2 to 4 1 to 3 1 to 2	10 to 18 6 to 10 6 to 9 4 to 6 3 to 4 2 to 3	18 to 23 10 to 16 9 to 14 6 to 13 4 to 8 4 to 6	21 to 36 13 to 25 12 to 22 9 to 20 6 to 12 5 to 10	13 to 23 7 to 13 7 to 11 5 to 7 3 to 5 2 to 3
Low pressure sodium lamps Paralell compensation	18W 35W 55W 90W 135W 180W	5 to 8 4 to 6 3 to 5 2 to 4 1 to 2 1 to 2	7 to 12 6 to 10 5 to 8 3 to 6 2 to 3 2 to 3	15 to 40 13 to 33 13 to 24 13 to 20 5 to 7 5 to 6	24 to 60 23 to 51 19 to 38 16 to 31 7 to 11 6 to 9	9 to 15 7 to 13 6 to 10 3 to 7 2 to 3 2 to 3
High pressure sodium lamps Without compensation	35W 50W 70W 110W 150W 250W 400W 1000W	11 to 17 9 to 15 8 to 10 6 to 8 4 to 6 2 to 3 0 0	14 to 22 12 to 17 9 to 12 8 to 11 7 to 10 4 to 6 1 to 4 1 to 2	30 to 40 22 to 28 18 to 20 14 to 17 10 to 13 6 to 8 4 to 5 2 to 3	35 to 60 25 to 42 19 to 32 16 to 25 12 to 18 7 to 11 5 to 8 3 to 4	18 to 28 15 to 22 11 to 16 11 to 15 9 to 13 5 to 7 1 to 5 1 to 2
High pressure sodium lamps Paralell compensation	35W 50W 70W 110W 150W 250W 400W 1000W	6 to 10 6 to 10 4 to 6 3 to 6 3 to 6 2 to 3 1 0	9 to 12 9 to 12 6 to 9 5 to 9 5 to 9 3 to 5 1 0	13 to 36 13 to 34 13 to 23 13 to 18 13 to 14 7 to 9 5 to 8 3 to 5	25 to 45 24 to 43 18 to 36 16 to 32 14 to 30 10 to 14 7 to 10 5 to 7	11 to 15 11 to 15 7 to 11 6 to 11 6 to 11 3 to 6 1 to 1 0
Metal-halide lamp Without compensation 	35W 70W 150W 250W	12 to 27 10 to 16 6 to 8 3 to 5	24 to 40 15 to 24 7 to 12 5 to 8	42 to 68 26 to 42 14 to 20 9 to 14	55 to 106 34 to 64 17 to 32 12 to 21	31 to 52 19 to 31 9 to 15 6 to 10

		400W 1000W	1 to 3 0	2 to 4 0 to 1	6 to 8 3 to 4	7 to 13 4 to 5	2 to 5 0
Metal-halide lamp Paralell compensation		35W 70W 150W 250W 400W 1000W	6 to 13 5 to 10 3 to 6 3 to 6 1 0	10 to 20 8 to 15 5 to 12 5 to 12 1 0	22 to 56 22 to 56 12 to 32 9 to 27 5 to 7 2 to 5	39 to 80 39 to 80 22 to 60 18 to 49 7 to 15 3 to 7	13 to 26 10 to 19 6 to 15 6 to 15 1 to 1 0

Choice of a contactor

Depending on the type of application, some parameters have to be considered to ensure continuous service and high durability of the contactors such as:

- type of the load supplied
- nominal current of the load
- Operating voltage
- number of operations
- ambient temperature

Type of load

Loads are classified in different utilization categories

Utilization categories	Typical applications	Remark
AC-7a (≈AC-1)	Slightly inductive loads	Such as resistive elements, infra-red elements, convectors etc...
AC-7b (≈AC-3)	Motor loads	May be used for occasional inching (jogging) or plugging for limited time periods
AC-7c (≈AC6b)	Switching of compensated electric discharge lamps	This category is similar to a capacitive switching category for the switching of capacitor banks, the characteristic being very dependant on the capacitance value of the lamp circuit.

Contactors are certified in AC-7a and AC-7b. The nominal rating is given at AC7a, and must be de-rated in AC-7b- See chart below.

Nominal current Ratings	Utilization categories	
	AC-7a	AC-7b
16A	16A	5.5A
25A	25A	8.5A
40A	40A	25A
63A	63A	32A

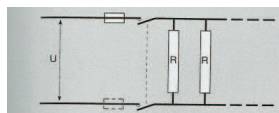
Heating applications (AC-7a)

The choice is depending on the electrical heating power and the targeted electrical lifetime (number of operations).

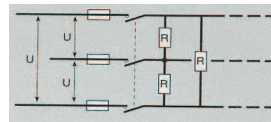
Maximum load in W

		Contactor rating	60 000	100 000	150 000	300 000	600 000
230V	16A		3 000	2 500	1 900	850	700
	25A		4 600	4 000	3 000	1 350	1 000
	40A		7 300	6 300	4 700	2 200	1 600
	63A		11 600	10 000	7 500	3 500	2 500
400V	16A		8 900	8 000	5 800	2 800	2 000
	25A		13 800	12 000	8 600	4 300	3 000
	40A		22 000	18 500	14 385	6 300	5 000
	63A		35 000	30 000	22 600	10 200	7 600

Single phase supply



Three phase supply



In this case, the maximum load given is for the total of the 3 elements.

Influence of the working temperature.

Derating factor between 40°C and 50°C: 0.9

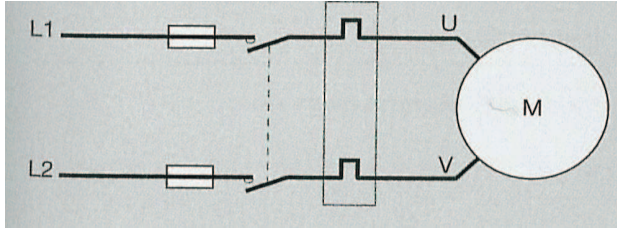
The maximal load at 50°C is the nominal load x 0.9: Contactor 25A (given at 40°C) corresponds to 22.5A Max at

Heat dissipation inserts

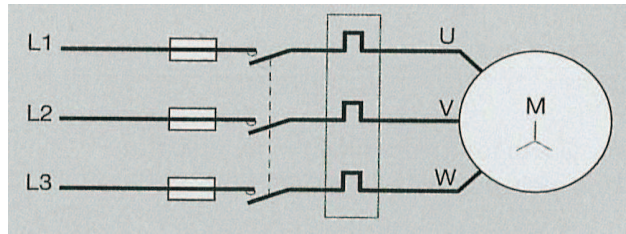
The ambient temperature around a contactor can affect its life expectancy, therefore, we recommend heat dissipation inserts (LZ060) between all contactors and adjacent devices.

MOTOR (Utilization category AC-7b similar to AC3)

Single Phase 230V (AC7b similar to AC3)



Three phase 400V (AC7b similar to AC3)



Maximum power for the motor (kW)

Contactor rating	Control diagram	
	2P 230V single phase	3P 400V 3phases
16 A	0.57 kW	1.7 kW
25A	0.88 kW	2.65 kW
40A	2.6 kW	7.8 kW
63A	3.3 kW	10 kW

Influence of the working temperature.

Derating factor between 40°C and 50°C: 0.9

The maximal load at 50°C is the nominal load x 0.9: Contactor 25A (given at 40°C) corresponds to 22.5A Max at 50°C.

Adjacent fitting

It is necessary to put a heat dissipation insert (reference LZ060) each 3 contactors.