



**Contactor,4kW/400V,DC-operated**

**Part no.**

**DILM9-10(24VDC)**

**Article no.**

**276705**



**Delivery programme**

Connection technique			Screw terminals
Actuating voltage			24 V DC
Voltage AC/DC			DC operation
			3 pole
Rated operational current			
AC-3			
380 V 400 V	$I_e$	A	9
Max. rating for three-phase motors, 50 – 60 Hz			
AC-3			
220 V 230 V	$P$	kW	2.5
380 V 400 V	$P$	kW	4
660 V 690 V	$P$	kW	4.5
AC-4			
220 V 230 V	$P$	kW	1.5
380 V 400 V	$P$	kW	2.5
660 V 690 V	$P$	kW	3.6
Conventional free air thermal current $I_{th} = I_e$ AC-1 at 60 °C			
Open	$I_{th} = I_e$	A	20
Contacts			
N/O = Normally open			1 N/O
Contact sequence			
Can be combined with auxiliary contact			DILM32-XHI.. DILA-XHI(V)..

**General**

Standards			IEC/EN 60947, VDE 0660, UL, CSA
Lifespan, mechanical			
AC operated	Operations	$\times 10^6$	10
DC operated	Operations	$\times 10^6$	10
Operating frequency, mechanical			
AC operated	Operations/h		9000
DC operated	Operations/h		9000
Climatic proofing			Damp heat, constant, to IEC 60068-2-78 Damp heat, cyclical, to IEC 60068-2-30
Ambient temperature		°C	
Open		°C	&#8211; 25 ... 60
Enclosed		°C	- 25 ... 40
Storage		°C	&#8211; 40 - 80
Mounting position, AC- and DC operated			
Mechanical shock resistance (IEC/EN 60068-2-27)			

Half-sinusoidal shock, 10 ms			
Main contacts			
N/O contact		g	10
Auxiliary contacts			
N/O contact		g	7
N/C contact		g	5
Mechanical shock resistance (IEC/EN 60068-2-27) when tabletop-mounted			
Half-sinusoidal shock, 10 ms			
Main contacts			
N/O contact		g	5.7
Auxiliary contacts			
N/O contact		g	3.4
N/C contact		g	3.4
Protection type			IP20
Protection against direct contact when actuated from front (IEC 536)			Finger- and back-of-hand proof
Weight			
AC operated		kg	0.23
DC operated		kg	0.28
Terminal capacity main cable			
Solid		mm <sup>2</sup>	1 × (0.75 – 4) 2 × (0.75 – 2.5)
Flexible with ferrule		mm <sup>2</sup>	1 × (0.75 – 2.5) 2 × (0.75 – 2.5)
Solid or stranded		AWG	18 – 10
Main cable connection screw/bolt			M3.5
Tightening torque		Nm	1.2
Terminal capacity control circuit cables			
Solid		mm <sup>2</sup>	1 × (0.75 – 4) 2 × (0.75 – 2.5)
Flexible with ferrule		mm <sup>2</sup>	1 × (0.75 – 1.5) 2 × (0.75 – 1.5)
Solid or stranded		AWG	18 – 10
Control circuit cable connection screw/bolt			M3.5
Tightening torque		Nm	1.2
Tool			
Main cable			
Pozidriv screwdriver		Size	2
Standard screwdriver		mm	0.8 × 5.5 1 × 6
Control circuit cables			
Pozidriv screwdriver		Size	2
Standard screwdriver		mm	0.8 × 5.5 1 × 6
Terminal capacity main cable			
Solid		mm <sup>2</sup>	1 × (0.75 – 2.5) 2 × (0.75 – 2.5)
flexible		mm <sup>2</sup>	1 × (0.75 – 2.5) 2 × (0.75 – 2.5)
flexible with ferrules		mm <sup>2</sup>	1 × (0.75 – 1.5) 2 × (0.75 – 1.5)
Solid or stranded		AWG	18 – 14
Terminal capacity control circuit cables			
Solid		mm <sup>2</sup>	1 × (0.75 – 2.5) 2 × (0.75 – 2.5)
Flexible		mm <sup>2</sup>	1 × (0.75 – 1.5) 2 × (0.75 – 1.5)
Flexible with ferrule		mm <sup>2</sup>	1 × (0.75 – 1.5) 2 × (0.75 – 1.5)
Solid or stranded		AWG	18 – 14

Tool			
Stripping length		mm	10
Screwdriver blade width		mm	3.5

## Main conducting paths

Rated impulse withstand voltage	$U_{imp}$	V AC	8000
Overvoltage category/pollution degree			III/3
Rated insulation voltage	$U_i$	V AC	690
Rated operational voltage	$U_e$	V AC	690
Safe isolation to VDE 0106 Part 101 and Part 101/A1			
between coil and contacts		V AC	400
between the contacts		V AC	400
Making capacity (p.f. to IEC/EN 60947)			
	Up to 690 V	A	112
Breaking capacity			
230 V		A	90
380/400 V		A	90
500 V		A	70
660/690 V		A	50
Short-circuit rating			
Short-circuit protection maximum fuse			
Type "2" coordination			
400 V	gG/gL 500 V	A	20
690 V	gG/gL 690 V	A	16
Type "1" coordination			
400 V	gG/gL 500 V	A	35
690 V	gG/gL 690 V	A	20

## AC

AC-1 duty			
conv. therm. current 3 pole 50 – 60 Hz			
open			
at 40 °C	$I_{th}$	A	22
at 50 °C	$I_{th}$	A	21
at 55 °C	$I_{th}$	A	21
at 60 °C	$I_{th}$	A	20
enclosed	$I_{th}$	A	18
Conventional free air thermal current, 1 pole			
open	$I_{th}$	A	50
enclosed	$I_{th}$	A	45
AC-3 duty			
Rated operational current AC-3 open, 50 – 60 Hz, 3 pole	$I_e$		
230 V	$I_e$	A	9
240 V	$I_e$	A	9
380/400 V	$I_e$	A	9
415 V	$I_e$	A	9
440V	$I_e$	A	9
500 V	$I_e$	A	7
660/690 V	$I_e$	A	5
Motor rating	$P$	$P$	
230 V	$P$	kW	2.5
240V	$P$	kW	3
380/400 V	$P$	kW	4
415 V	$P$	kW	5.5
440 V	$P$	kW	5.5
500 V	$P$	kW	4.5

660/690 V	$P$	kW	4.5
AC-4 duty			
Rated operational current AC-4 open, 50 – 60 Hz, 3 pole	$I_e$		
230 V	$I_e$	A	6
240 V	$I_e$	A	6
380/400 V	$I_e$	A	6
415 V	$I_e$	A	6
440 V	$I_e$	A	6
500 V	$I_e$	A	5
660/690 V	$I_e$	A	4.5
Motor rating	$P$	$P$	
230 V	$P$	kW	1.5
240 V	$P$	kW	1.6
380/400 V	$P$	kW	2.5
415 V	$P$	kW	2.8
440 V	$P$	kW	3
500 V	$P$	kW	2.8
660/690 V	$P$	kW	3.6

## DC

Rated operational current, open			
DC-1 operation			
60 V	$I_e$	A	20
110 V	$I_e$	A	20
220 V	$I_e$	A	15
440 V	$I_e$	A	1.3
DC-3 operation			
60 V	$I_e$	A	20
110 V	$I_e$	A	20
220 V	$I_e$	A	1.5
440 V	$I_e$	A	0.2
DC-5 operation			
60 V	$I_e$	A	20
110 V	$I_e$	A	20
220 V	$I_e$	A	1.5
440 V	$I_e$	A	0.2

## Current heat loss (3 pole)

Current heat loss at $I_{th}$		W	3
Current heat loss at $I_e$ to AC-3/400 V		W	0.6
Impedance per pole		m#	2.5

## Magnet systems

Voltage tolerance		$\times U_c$	
AC operated	Pick-up	$\times U_c$	0.8 ... 1.1
Drop-out voltage AC operated	Drop-out	$\times U_c$	0.3 ... 0.6
DC operated	Pick-up	$\times U_c$	0.8 ... 1.1
DC operated	Drop-out	$\times U_c$	0.15 ... 0.6
Power consumption of the coil in a cold state and $1.0 \times U_c$			
50 Hz	Pick-up	VA	24
50 Hz	Sealing	VA	3.4
50 Hz	Sealing	W	1.2
60 Hz	Pick-up	VA	30
60 Hz	Sealing	VA	4.4
60 Hz	Sealing	W	1.4
50/60 Hz	Pick-up	VA	27 25

50/60 Hz	Sealing	VA	4.2 3.3
50/60 Hz	Sealing	W	1.4 1.2
DC operated	Pick-up	W	3
DC operated	Sealing	W	3
Duty factor		% DF	100
Switching times at 100 % $U_c$ (approximate values)			
Main contacts			
AC operated			
Closing delay		ms	15 ... 21
Opening delay		ms	9 ... 18
DC operated			
Closing delay		ms	31
Opening delay		ms	12
Arcing time		ms	10
Lifespan, mechanical; Coil 50/60 Hz	at 50 Hz		Mechanical lifespan at 50 Hz approx. 30% lower than under "Technical data, general"

### Electromagnetic compatibility (EMC)

Emitted interference			to EN 60947-1
Interference immunity			to EN 60947-1

### Notes

**Notes** The following applies to magnet systems, voltage tolerance, pickup voltage DC-operated DILM17 – DILM32:

RDC 24 ( $U_{min}$  24 V DC/ $U_{max}$  27 V DC)

RDC 60 ( $U_{min}$  48 V DC/ $U_{max}$  60 V DC)

RDC 130 ( $U_{min}$  110 V DC/ $U_{max}$  130 V DC)

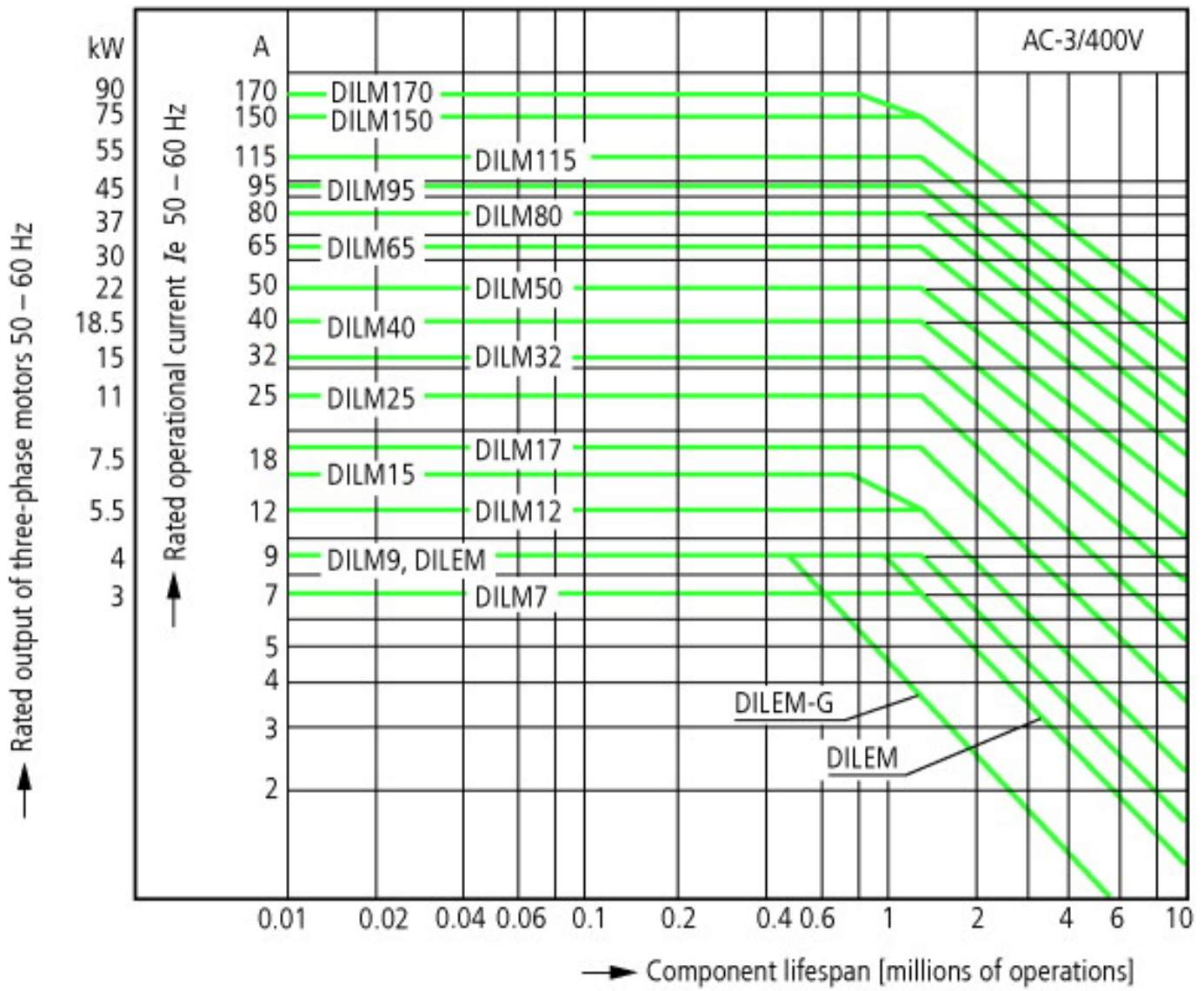
RDC 240 ( $U_{min}$  200 V DC/ $U_{max}$  240 V DC)

Example:

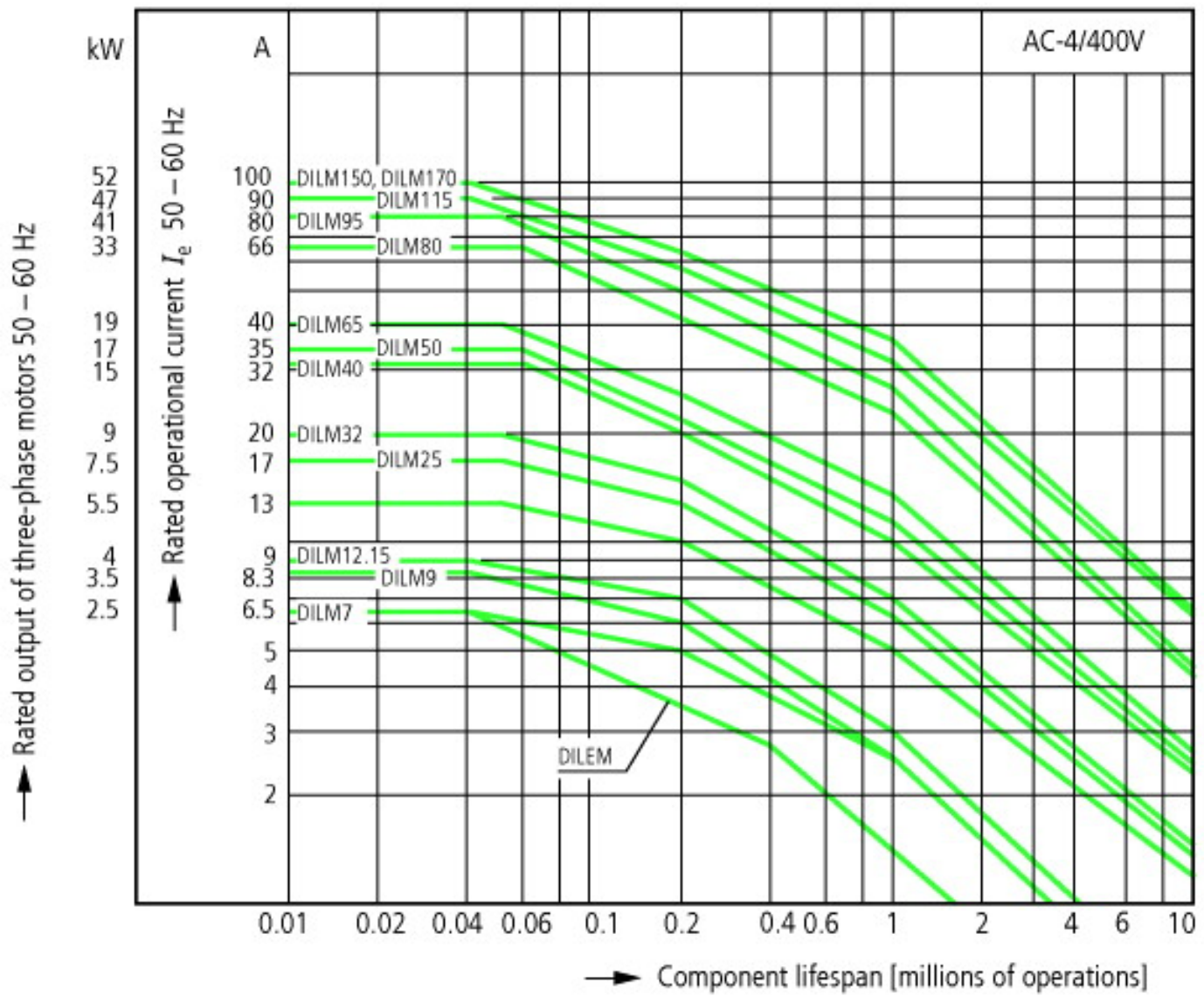
$$U_c = 0.7 \times U_{min} - 1.2 \times U_{max}$$

$$U_c = 0.7 \times 24 \text{ V} - 1.2 \times 27 \text{ V DC}$$

With voltage tolerance and DC operated power consumption the following applies: At least smoothed double-pulse bridge rectification or a three-phase current rectifier is necessary

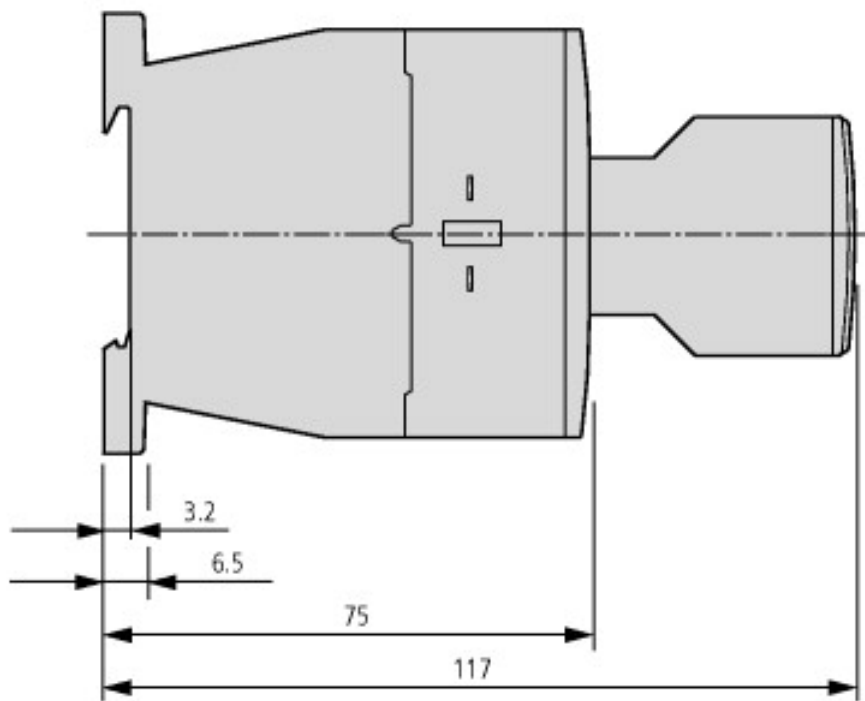
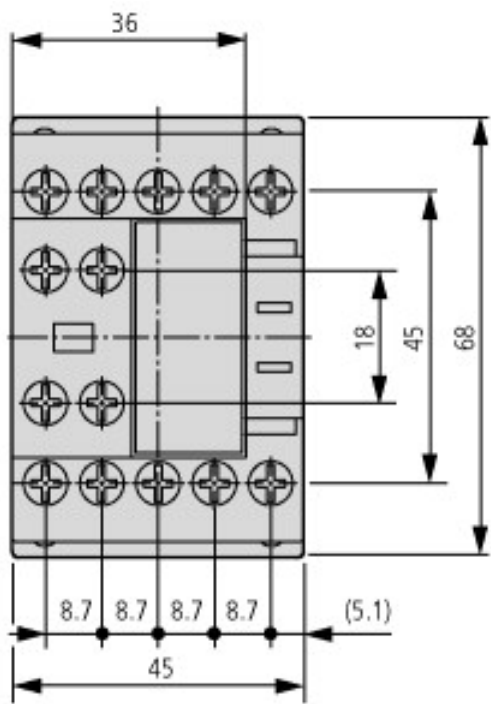


- Squirrel-cage motor
- Operating characteristics
- Starting: from rest
- Stopping: after attaining full running speed
- Electrical characteristics
- Make: up to 6 × rated motor current
- Break: up to 1 × rated motor current
- Utilization category
- 100 % AC-3
- Typical applications
- Compressors
- Lifts
- Mixers
- Pumps
- Escalators
- Agitators
- Fans
- Conveyor belts
- Centrifuges
- Hinged flaps
- Bucket-elevators
- Air conditioning system
- General drives in manufacturing and processing machines



- Extreme switching duty
- Squirrel-cage motor
- Operating characteristics
- Inching, plugging, reversing
- Electrical characteristics
- Make: up to 6 × rated motor current
- Break: up to 6 × rated motor current
- Utilization category
- 100 % AC-4
- Typical applications
- Printing presses
- Wire-drawing machines
- Centrifuges
- Special drives for manufacturing and processing machines

## Dimensions



Contacteur with auxiliary contact module



