

Contactor, 4 pole, DC operation, AC-1: 22 A, 24 V DC, Push in terminals



**Part no.** DILMP20(24VDC)-PI  
**Catalog No.** 199263  
**Alternate Catalog No.** XTCFPI020B00TD

**Delivery program**

Product range			Contactors
Application			Contactors for 4 pole electric consumers
Subrange			Contactors up to 200 A, 4 pole
Utilization category			AC-1: Non-inductive or slightly inductive loads, resistance furnaces AC-3/AC-3e: Normal AC induction motors: Starting, switching off while running
Connection technique			Push in terminals
Number of poles			4 pole
<b>Rated operational current</b>			
AC-1			
Conventional free air thermal current, 3 pole, 50 - 60 Hz			
at 40 °C	$I_{th} = I_e$	A	22
at 50 °C	$I_{th} = I_e$	A	21
at 55 °C	$I_{th} = I_e$	A	20.5
at 60 °C	$I_{th} = I_e$	A	20
Contact sequence			
For use with			DILM12-XHI(C)...-PI DILM32-XHI(C)...-PI DILA-XHI(V)(C)...-PI
Actuating voltage			24 V DC
Voltage AC/DC			DC operation
Connection to SmartWire-DT			yes in conjunction with DIL-SWD SmartWire DT contactor module
<b>Instructions</b>			Contacts to EN 50 012. Integrated varistor suppressor circuit.

**Technical data**

**General**

Standards			IEC/EN 60947, VDE 0660
Lifespan, mechanical			
AC operated	Operations	$\times 10^6$	10
DC operated	Operations	$\times 10^6$	10
Operating frequency, mechanical			
DC operated	Operations/h		5000
Climatic proofing			Damp heat, constant, to IEC 60068-2-3 Damp heat, cyclic, to IEC 60068-2-30
Ambient temperature			
Open		°C	-25 - +60
Enclosed		°C	-25 - 40
Storage		°C	-40 - 80
Mounting position			
Mounting position			
Mechanical shock resistance (IEC/EN 60068-2-27)			
Half-sinusoidal shock, 10 ms			

<b>Main contacts</b>			
N/O contact		g	10
<b>Auxiliary contacts</b>			
N/O contact		g	7
N/C contact		g	5
Degree of Protection			IP20
Altitude		m	Max. 2000
Protection against direct contact when actuated from front (EN 50274)			Finger and back-of-hand proof
Stripping length		mm	10
<b>Terminal capacity main cable</b>			
Stripping length		mm	10
<b>Push-in terminals</b>			
Solid		mm <sup>2</sup>	1 x (0,5 - 2,5) 2 x (0,5 - 2,5)
flexible		mm <sup>2</sup>	1 x (0,5 - 2,5) 2 x (0,5 - 2,5)
flexible with ferrules		mm <sup>2</sup>	1 x (0,5 - 1,5) 2 x (0,5 - 1,5)
flexible with ultrasonic welded busbar end		mm <sup>2</sup>	1 x (0,5 - 2,5) 2 x (0,5 - 2,5)
flexible with uninsulated wire end ferrule		mm <sup>2</sup>	1 x (0,5 - 2,5) 2 x (0,5 - 2,5)
Solid or stranded		AWG	20 - 14
Stripping length		mm	10
Standard screwdriver			3.0 x 0.5
<b>Terminal capacity control circuit cables</b>			
<b>Push-in terminals</b>			
Solid		mm <sup>2</sup>	1 x (0,5 - 2,5) 2 x (0,5 - 2,5)
Flexible		mm <sup>2</sup>	1 x (0,5 - 2,5) 2 x (0,5 - 2,5)
Flexible with ferrule		mm <sup>2</sup>	1 x (0,5 - 1,5) 2 x (0,5 - 1,5)
flexible with ultrasonic welded busbar end		mm <sup>2</sup>	1 x (0,5 - 2,5) 2 x (0,5 - 2,5)
flexible with uninsulated wire end ferrule		mm <sup>2</sup>	1 x (0,5 - 2,5) 2 x (0,5 - 2,5)
Solid or stranded		AWG	20 - 14
Stripping length		mm	10
Standard screwdriver		mm	3.0 x 0.5

### Main conducting paths

Rated impulse withstand voltage	$U_{imp}$	V AC	6000
Overvoltage category/pollution degree			III/3
Rated insulation voltage	$U_i$	V AC	690
Rated operational voltage	$U_e$	V AC	690
<b>Safe isolation to EN 61140</b>			
between coil and contacts		V AC	400
between the contacts		V AC	400
Making capacity (cos $\phi$ )	Up to 690 V	A	144 According to IEC/EN 60947
<b>Breaking capacity</b>			
220 V 230 V		A	120
380 V 400 V		A	120
500 V		A	100
660 V 690 V		A	70
<b>Short-circuit rating</b>			
<b>Short-circuit protection maximum fuse</b>			
<b>Type "2" coordination</b>			
400 V	gG/gL 500 V	A	20
690 V	gG/gL 690 V	A	20

Type "1" coordination			
400 V	gG/gL 500 V	A	35
690 V	gG/gL 690 V	A	25

## AC

AC-1			
Rated operational current			
Conventional free air thermal current, 3 pole, 50 - 60 Hz			
Open			
at 40 °C	$I_{th} = I_e$	A	22
at 50 °C	$I_{th} = I_e$	A	21
at 55 °C	$I_{th} = I_e$	A	20.5
at 60 °C	$I_{th} = I_e$	A	20
enclosed			
	$I_{th}$	A	18
Conventional free air thermal current, 1 pole			
open			
	$I_{th}$	A	60
enclosed			
	$I_{th}$	A	54
Motor rating			
	P	kWh	
220/230 V	P	kW	8
240 V	P	kW	9
380/400 V	P	kW	14
415 V	P	kW	15
440 V	P	kW	16
500 V	P	kW	18
690 V	P	kW	24

AC-3			
Rated operational current			
Open, 3-pole: 50 – 60 Hz			
Notes			At maximum permissible ambient temperature (open.) Also tested according to AC-3e.
220 V 230 V	$I_e$	A	12
240 V	$I_e$	A	12
380 V 400 V	$I_e$	A	12
415 V	$I_e$	A	12
440V	$I_e$	A	12
500 V	$I_e$	A	10
660 V 690 V	$I_e$	A	7
Motor rating			
	P	kWh	
220 V 230 V	P	kW	3.5
240V	P	kW	4
380 V 400 V	P	kW	5.5
415 V	P	kW	7
440 V	P	kW	7.5
500 V	P	kW	7
660 V 690 V	P	kW	6.5

## Current heat loss

3 pole, at $I_{th}$ (60°)		W	3
Impedance per pole		mΩ	2.5

## Magnet systems

Voltage tolerance			
AC operated 50/60 Hz		$x U_c$	0.8 - 1.1
DC operated	Pick-up	$x U_c$	At least double-pulse bridge rectifier - 0.8 - 1.1
DC operated	Drop-out	$x U_c$	At least double-pulse bridge rectifier - 0.2 - 0.6
Power consumption of the coil in a cold state and $1.0 \times U_S$			
Notes on DC actuation			At least double-pulse bridge rectifier
DC operated	Pick-up	W	4,5

DC operated	Sealing	W	4,5
Duty factor		% DF	100
Changeover time at 100 % U <sub>S</sub> (recommended value)			
Main contacts			
DC operated		ms	
Notes on DC actuation			At least double-pulse bridge rectifier
Closing delay		ms	31
Opening delay		ms	12
Arcing time		ms	10
Permissible residual current with actuation of A1 - A2 by the electronics (with 0 signal).		mA	≤ 1

### Rating data for approved types

Switching capacity			
Maximum motor rating			
Three-phase			
200 V 208 V		HP	5
230 V 240 V		HP	5
460 V 480 V		HP	10
575 V 600 V		HP	10
Single-phase			
115 V 120 V		HP	1
230 V 240 V		HP	2
General use		A	20
Short Circuit Current Rating		SCCR	
Basic Rating			
SCCR		kA	5
max. Fuse		A	45
max. CB		A	60
480 V High Fault			
SCCR (fuse)		kA	30
max. Fuse		A	25 Class RK5
600 V High Fault			
SCCR (fuse)		kA	30
max. Fuse		A	25 Class RK5
Special Purpose Ratings			
Electrical Discharge Lamps (Ballast)			
480V 60Hz 3phase, 277V 60Hz 1phase		A	20
600V 60Hz 3phase, 347V 60Hz 1phase		A	20
Incandescent Lamps (Tungsten)			
480V 60Hz 3phase, 277V 60Hz 1phase		A	14
600V 60Hz 3phase, 347V 60Hz 1phase		A	14
Resistance Air Heating			
480V 60Hz 3phase, 277V 60Hz 1phase		A	20
600V 60Hz 3phase, 347V 60Hz 1phase		A	20
Definite Purpose Ratings (100,000 cycles acc. to UL 1995)			
LRA 480V 60Hz 3phase		A	90
FLA 480V 60Hz 3phase		A	15
Elevator Control			
200V 60Hz 3phase		HP	2
200V 60Hz 3phase		A	7.8
240V 60Hz 3phase		HP	3
240V 60Hz 3phase		A	9.6

480V 60Hz 3phase	HP	7.5
480V 60Hz 3phase	A	11
600V 60Hz 3phase	HP	7.5
600V 60Hz 3phase	A	9

## Design verification as per IEC/EN 61439

Technical data for design verification		
Operating ambient temperature min.	°C	-25
Operating ambient temperature max.	°C	60

## Technical data ETIM 8.0

Low-voltage industrial components (EG000017) / Power contactor, AC switching (EC000066)		
Electric engineering, automation, process control engineering / Low-voltage switch technology / Contactor (LV) / Power contactor, AC switching (ecl@ss10.0.1-27-37-10-03 [AAB718015])		
Rated control supply voltage Us at AC 50HZ	V	0 - 0
Rated control supply voltage Us at AC 60HZ	V	0 - 0
Rated control supply voltage Us at DC	V	24 - 24
Voltage type for actuating		DC
Rated operation current Ie at AC-1, 400 V	A	22
Rated operation current Ie at AC-3, 400 V	A	12
Rated operation power at AC-3, 400 V	kW	5.5
Rated operation current Ie at AC-4, 400 V	A	10
Rated operation power at AC-4, 400 V	kW	4.5
Rated operation power NEMA	kW	0
Modular version		No
Number of auxiliary contacts as normally open contact		0
Number of auxiliary contacts as normally closed contact		0
Type of electrical connection of main circuit		Spring clamp connection
Number of normally closed contacts as main contact		0
Number of normally open contacts as main contact		4

## Characteristics

<p>1: Auxiliary contact module 2: Suppressor</p> <p>Switching conditions for 4 pole, non-motor loads Operating characteristics Non inductive and slightly inductive loads Electrical characteristics Switch on: 1 x rated operational current Switch off: 1 x rated operational current Utilization category 100 % AC-1 Typical examples of application Electric heat</p>
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## Dimensions

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## Additional product information (links)

Motor starters and "Special Purpose Ratings" for the North American market	<a href="http://www.eaton.eu/ecm/groups/public/@pub/@europe/@electrical/documents/content/pct_3258146.pdf">http://www.eaton.eu/ecm/groups/public/@pub/@europe/@electrical/documents/content/pct_3258146.pdf</a>
Switchgear of Power Factor Correction Systems	<a href="http://www.moeller.net/binary/ver_techpapers/ver934en.pdf">http://www.moeller.net/binary/ver_techpapers/ver934en.pdf</a>
X-Start - Modern Switching Installations Efficiently Fitted and Wired Securely	<a href="http://www.moeller.net/binary/ver_techpapers/ver938en.pdf">http://www.moeller.net/binary/ver_techpapers/ver938en.pdf</a>
Mirror Contacts for Highly-Reliable Information Relating to Safety-Related Control Functions	<a href="http://www.moeller.net/binary/ver_techpapers/ver944en.pdf">http://www.moeller.net/binary/ver_techpapers/ver944en.pdf</a>
Effect of the Cable Capacitance of Long Control Cables on the Actuation of Contactors	<a href="http://www.moeller.net/binary/ver_techpapers/ver949en.pdf">http://www.moeller.net/binary/ver_techpapers/ver949en.pdf</a>
Switchgear for Luminaires	<a href="http://www.moeller.net/binary/ver_techpapers/ver955en.pdf">http://www.moeller.net/binary/ver_techpapers/ver955en.pdf</a>
Standard Compliant and Functionally Safe Engineering Design with Mechanical Auxiliary Contacts	<a href="http://www.moeller.net/binary/ver_techpapers/ver956en.pdf">http://www.moeller.net/binary/ver_techpapers/ver956en.pdf</a>
The Interaction of Contactors with PLCs	<a href="http://www.moeller.net/binary/ver_techpapers/ver957en.pdf">http://www.moeller.net/binary/ver_techpapers/ver957en.pdf</a>

