DATASHEET - DILM400-S/22(220-240V50/60HZ)

Contactor, 380 V 400 V 212 kW, 2 N/O, 2 NC, 220 - 240 V 50/60 Hz, AC operation, Screw connection

Part no.	**DILM400-S/22(220-240V50/60HZ)**
	274196
EL Number (Norway)	**4110263**

General specifications

Product name	Eaton Moeller® series DILM Contactor
Part no.	DILM400-S/22(220-240V50/60HZ)
EAN	4015082741969
Product Length/Depth	216 millimetre
Product height	209 millimetre
Product width	160 millimetre
Product weight	8.42 kilogram
Compliances	CE Marked
Certifications	EN 45545: Fire protection on railway vehicles UL/CSA North America (UL listed, CSA certified) CSA file No. 012528 IEC 61373: Vibration and shock, tested for category 1 class B CE marking UL Category Control No.: NLDX UL File No.: E29096 IEC/EN 60947-4-1 CSA Class No.: 3211-04 UL 60947-4-1 VDE 0660
Product Tradename	DILM
Product Type	Contactor
Product Sub Type	None
Catalog Notes	EN 45545 - Fire protection on railway vehicles: Fire protection class of all plastics according to UL94: V-0 / plastic weight in total: 2.576 kg Also suitable for motors with efficiency class IE3. Also tested according to AC-3e up to 500 V. Contacts according to EN 50012

General information

Accessories	Fitting options auxiliary contacts: on the side: 2 x DILM820-XHI11(V)-SI; 2 x DILM820-XHI11-SA
Application	Contactors for Motors
Connection	Screw terminals
Degree of protection	IP00
Electromagnetic compatibility	Designed for operation in industrial environments. Its use in residential environments may cause radio-frequency interference, requiring additional noise suppression.
Fitted with:	Suppressor circuit in actuating electronics
Lifespan, electrical	100,000 Operations (at Condensor operation)
Lifespan, mechanical	7,000,000 Operations (AC operated)
Operating frequency	200 Operations/h 2000 mechanical Operations/h (AC operated)
Overvoltage category	III
Pollution degree	3
Product category	Contactors
Protection	Finger and back-of-hand proof with terminal shroud or terminal block, Protection against direct contact when actuated from front (EN 50274)
Rated impulse withstand voltage (Uimp)	8000 V AC
Resistance	500 mΩ (Admissible transitional contact resistance - of the external control circuit device when actuating A11)
Shock resistance	10 g, N/O auxiliary contact, Mechanical, according to IEC/EN 60068-2-27, Half-sinusoidal shock 10 ms 8 g, N/C auxiliary contact, Mechanical, according to IEC/EN 60068-2-27, Half-sinusoidal shock 10 ms 10 g, N/O main contact, Mechanical, according to IEC/EN 60068-2-27, Half-sinusoidal shock 10 ms
Utilization category	AC-4: Normal AC induction motors: starting, plugging, reversing, inching

	AC-1: Non-inductive or slightly inductive loads, resistance furnaces AC-3: Normal AC induction motors: starting, switch off during running
Voltage type	AC

Climatic environmental conditions

Altitude	Max. 2000 m
Ambient operating temperature - min	-40 °C
Ambient operating temperature - max	60 °C
Ambient operating temperature (enclosed) - min	-40 °C
Ambient operating temperature (enclosed) - max	40 °C
Ambient storage temperature - min	-40 °C
Ambient storage temperature - max	80 °C
Climatic proofing	Damp heat, cyclic, to IEC 60068-2-30 Damp heat, constant, to IEC 60068-2-78

Terminal capacities

Terminal capacity (busbar)	25 mm width, Main connection
Terminal capacity (copper band)	Fixing with flat cable terminal or cable terminal blocks; See terminal capacity for cable terminal blocks
Terminal capacity (flexible with cable lug)	50 - 240 mm^2
Terminal capacity (flexible with ferrule)	1 x (0.75 - 2.5) mm^2, Control circuit cables 2 x (0.75 - 2.5) mm^2, Control circuit cables
Terminal capacity (solid)	2 x (0.75 - 2.5) mm^2, Control circuit cables 1 x (0.75 - 2.5) mm^2, Control circuit cables
Terminal capacity (solid/stranded AWG)	2/0 - 500 MCM, Main cables 18 - 14, Control circuit cables
Terminal capacity (stranded with cable lug)	70 - 240 mm^2
Width across flats	16 mm
Screw size	M10, Terminal screw, Main connections M3.5, Terminal screw, Control circuit cables
Screwdriver size	2, Terminal screw, Control circuit cables, Pozidriv screwdriver
Tightening torque	24 Nm, Main cable connection screw/bolt 1.2 Nm, Screw terminals, Control circuit cables

Electrical rating

Inrush current	Max. 30 x Ie (peak)
Rated breaking capacity at 220/230 V	5000 A
Rated breaking capacity at 380/400 V	5000 A
Rated breaking capacity at 500 V	5000 A
Rated breaking capacity at 660/690 V	5000 A
Rated breaking capacity at 1000 V	950 A
Rated insulation voltage (Ui)	1000 V
Rated making capacity (cos phi to IEC/EN 60947)	5500 A
Rated operational current (Ie)	177 A at 690 V (Individual compensation, three-phase capacitors, open) 307 A at up to 525 V (Individual compensation, three-phase capacitors, open)
Rated operational current (Ie) at AC-1, 380 V, 400 V, 415 V	612 A
Rated operational current (Ie) at AC-3, 220 V, 230 V, 240 V	400 A
Rated operational current (Ie) at AC-3, 380 V, 400 V, 415 V	400 A
Rated operational current (Ie) at AC-3, 440 V	400 A
Rated operational current (Ie) at AC-3, 500 V	400 A
Rated operational current (Ie) at AC-3, 660 V, 690 V	325 A
Rated operational current (Ie) at AC-3, 1000 V	95 A
Rated operational current (Ie) at AC-4, 220 V, 230 V, 240 V	296 A
Rated operational current (Ie) at AC-4, 440 V	296 A
Rated operational current (Ie) at AC-4, 500 V	296 A
Rated operational current (Ie) at AC-4, 660 V, 690 V	260 A
Rated operational current (Ie) at AC-4, 1000 V	95 A
Rated operational power at AC-3, 240 V, 50 Hz	132 kW
Rated operational power at AC-3, 380/400 V, 50 Hz	200 kW
Rated operational power at AC-3, 415 V, 50 Hz	232 kW
Rated operational power at AC-3, 440 V, 50 Hz	250 kW
Rated operational power at AC-3, 500 V, 50 Hz	280 kW

Rated operational power at AC-3, 690 V, 50 Hz	300 kW
Rated operational power at AC-3, 1000 V, 50 Hz	132 kW
Rated operational power at AC-4, 220/230 V, 50 Hz	92 kW
Rated operational power at AC-4, 240 V, 50 Hz	100 kW
Rated operational power at AC-4, 415 V, 50 Hz	176 kW
Rated operational power at AC-4, 440 V, 50 Hz	186 kW
Rated operational power at AC-4, 500 V, 50 Hz	210 kW
Rated operational power at AC-4, 660/690 V, 50 Hz	240 kW
Rated operational voltage (Ue) at AC - max	1000 V
Rated operational power at AC-4, 1000 V, 50 Hz	132 kW
Safe isolation	1000 V AC, Between coil and contacts, According to EN 61140
Special purpose rating of definite purpose rating	3120 A, LRA 600 V 60 Hz 3-ph, 100,000 cycles acc. to UL 1995, (UL/CSA) 3300 A, LRA 480 V 60 Hz 3-ph, 100,000 cycles acc. to UL 1995, (UL/CSA) 420 A, FLA 600 V 60 Hz 3-ph, 100,000 cycles acc. to UL 1995, (UL/CSA) 550 A, FLA 480 V 60 Hz 3-ph, 100,000 cycles acc. to UL 1995, (UL/CSA)

Short-circuit rating

Short-circuit current rating (basic rating)	30 kA, SCCR (UL/CSA) 600 A, max. CB, SCCR (UL/CSA) 800 A, max. Fuse, SCCR (UL/CSA)
Short-circuit current rating (high fault at 480 V)	30/100 kA, Fuse, SCCR (UL/CSA) 100 kA, CB, SCCR (UL/CSA) 800/600 A, Class J, max. Fuse, SCCR (UL/CSA) 600 A, max. CB, SCCR (UL/CSA)
Short-circuit current rating (high fault at 600 V)	800/600 A, Class J, max. Fuse, SCCR (UL/CSA) 30/100 kA, Fuse, SCCR (UL/CSA) 600 A, max. CB, SCCR (UL/CSA) 30 kA, CB, SCCR (UL/CSA)
Short-circuit protection rating (type 1 coordination) at 1000 V	250 A gG/gL
Short-circuit protection rating (type 1 coordination) at 400 V	630 A gG/gL
Short-circuit protection rating (type 1 coordination) at 690 V	630 A gG/gL
Short-circuit protection rating (type 2 coordination) at 1000 V	200 A gG/gL
Short-circuit protection rating (type 2 coordination) at 400 V	500 A gG/gL
Short-circuit protection rating (type 2 coordination) at 690 V	500 A gG/gL

AC-1/Conventional thermal current Ith

Conventional thermal current ith at 40°C (3-pole, open)	612 A
Conventional thermal current ith at 50°C (3-pole, open)	548 A
Conventional thermal current ith at 55°C (3-pole, open)	522 A
Conventional thermal current ith at 60°C (3-pole, open)	500 A
Conventional thermal current ith (3-pole, enclosed)	450 A
Conventional thermal current ith of main contacts (1-pole, open)	1250 A
Conventional thermal current ith (1-pole, enclosed)	1125 A

Switching capacity

Switching capacity (main contacts, general use)	450 A, Maximum motor rating (UL/CSA)
Switching capacity (auxiliary contacts, general use)	15 A, 600 V AC, (UL/CSA) 1 A, 250 V DC, (UL/CSA)
Switching capacity (auxiliary contacts, pilot duty)	A600, AC operated (UL/CSA) P300, DC operated (UL/CSA)

Magnet system

Behavior in marginal and transitional conditions	Sealing - Pick-up phase (0.7 x Uc min - 1.15 x Uc max): Contactor switches on with certainty Sealing - Pick-up phase (0 - 0.7 x Uc min: Contactor does not switch on Sealing - Voltage interruptions 0 - 0.2 x Uc min) > 10 ms: Drop-out of the contactor Sealing - Voltage drops (0.2 - 0.6 x Uc min ≤12 ms: Time is bridged successfully Sealing - Voltage interruptions (0 - 0.2 x Uc min ≤ 10 ms: Time is bridged successfully Sealing - Voltage drops (0.2 - 0.6 x Uc min) > 12 ms: Drop-out of the contactor Sealing - Excess voltage (1.15 - 1.3 x Uc max): Contactor remains switched on Sealing - Voltage drops (0.6 - 0.7 x Uc min: Contactor remains switched on
Drop-out voltage	AC operated: 0.25 x US max - 0.6 x US min, AC operated AC operated: 0.2 x US max - 0.4 x US min, AC operated
Duty factor	100 %
Pick-up voltage	0.85 - 1.1 V AC x Us
Power consumption	Control transformer with uk ≤ 10%
Power consumption, pick-up, 50 Hz	715 VA, Pull-in power, Coil in a cold state and 1.0 x Us

	645 W, Pull-in power, Coil in a cold state and 1.0 x Us
Power consumption, pick-up, 60 Hz	645 W, Pull-in power, Coil in a cold state and 1.0 x Us 715 VA, Pull-in power, Coil in a cold state and 1.0 x Us
Power consumption, sealing, 50 Hz	4 W, Coil in a cold state and 1.0 x Us 6.8 VA, Coil in a cold state and 1.0 x Us
Power consumption, sealing, 60 Hz	4 W, Coil in a cold state and 1.0 x Us 6.8 VA, Coil in a cold state and 1.0 x Us
Rated control supply voltage (Us) at AC, 50 Hz - min	220 V
Rated control supply voltage (Us) at AC, 50 Hz - max	240 V
Rated control supply voltage (Us) at AC, 60 Hz - min	220 V
Rated control supply voltage (Us) at AC, 60 Hz - max	240 V
Rated control supply voltage (Us) at DC - min	0 V
Rated control supply voltage (Us) at DC - max	0 V
Switching time (AC operated, make contacts, closing delay) - max	55 ms
Switching time (AC operated, make contacts, opening delay) - max	50 ms
Motor rating	
Assigned motor power at 200/208 V, 60 Hz, 3-phase	125 HP
Assigned motor power at 230/240 V, 60 Hz, 3-phase	150 HP
Assigned motor power at 460/480 V, 60 Hz, 3-phase	300 HP
Assigned motor power at 575/600 V, 60 Hz, 3-phase	400 HP
Contacts	
Number of auxiliary contacts (normally closed contacts)	2
Number of auxiliary contacts (normally open contacts)	2
Number of contacts (normally closed contacts)	2
Number of contacts (normally open contacts)	2
Design verification	
Equipment heat dissipation, current-dependent Pvid	0 W
Heat dissipation capacity Pdiss	0 W
Heat dissipation per pole, current-dependent Pvid	12.33 W
Rated operational current for specified heat dissipation (In)	400 A
Static heat dissipation, non-current-dependent Pvs	3.3 W
10.2.2 Corrosion resistance	Meets the product standard's requirements.
10.2.3.1 Verification of thermal stability of enclosures	Meets the product standard's requirements.
10.2.3.2 Verification of resistance of insulating materials to normal heat	Meets the product standard's requirements.
10.2.3.3 Resist. of insul. mat. to abnormal heat/fire by internal elect. effects	Meets the product standard's requirements.
10.2.4 Resistance to ultra-violet (UV) radiation	Meets the product standard's requirements.
10.2.5 Lifting	Does not apply, since the entire switchgear needs to be evaluated.
10.2.6 Mechanical impact	Does not apply, since the entire switchgear needs to be evaluated.
10.2.7 Inscriptions	Meets the product standard's requirements.
10.3 Degree of protection of assemblies	Does not apply, since the entire switchgear needs to be evaluated.
10.4 Clearances and creepage distances	Meets the product standard's requirements.
10.5 Protection against electric shock	Does not apply, since the entire switchgear needs to be evaluated.
10.6 Incorporation of switching devices and components	Does not apply, since the entire switchgear needs to be evaluated.
10.7 Internal electrical circuits and connections	Is the panel builder's responsibility.
10.8 Connections for external conductors	Is the panel builder's responsibility.
10.9.2 Power-frequency electric strength	Is the panel builder's responsibility.
10.9.3 Impulse withstand voltage	Is the panel builder's responsibility.
10.9.4 Testing of enclosures made of insulating material	Is the panel builder's responsibility.
10.10 Temperature rise	The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.
10.11 Short-circuit rating	Is the panel builder's responsibility. The specifications for the switchgear must be observed.
10.12 Electromagnetic compatibility	Is the panel builder's responsibility. The specifications for the switchgear must be observed.
10.13 Mechanical function	The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.

Technical data ETIM 9.0

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@ss13-27-37-10-03 [AAB718020])			
Rated control supply voltage AC 50 Hz		V	220 - 240
Rated control supply voltage AC 60 Hz		V	220 - 240
Rated control supply voltage DC		V	0 - 0
Voltage type for actuating			AC
Number of normally closed contacts as main contact			0
Number of normally open contacts as main contact			3
Type of electrical connection of main circuit			Rail connection
Operating voltage AC 50 Hz		V	220 - 240
Operating voltage AC 60 Hz		V	220 - 240
Rated operation current Ie at AC-1, 400 V		A	612
Rated operation current Ie at AC-3, 400 V		A	400
Rated operation power at AC-3, 400 V		kW	200
Rated operation current Ie at AC-4, 400 V		A	296
Rated operation power at AC-4, 400 V		kW	160
Rated operation power NEMA		kW	223
Number of auxiliary contacts as normally open contact			2
Number of auxiliary contacts as normally closed contact			2
Modular version			No
Width		mm	160
Height		mm	209
Depth		mm	216