

# Specifications

Photo is representative

## Eaton 109199

Eaton Moeller® series DILM Contactor, 3 pole, 380 V 400 V 37 kW, 110 V 50/60 Hz, AC operation, Screw terminals  
DILM72(110V50/60HZ)

### General specifications

<b>PRODUCT NAME</b>	Eaton Moeller® series DILM contactor
<b>CATALOG NUMBER</b>	109199
<b>MODEL CODE</b>	DILM72(110V50/60HZ)
<b>EAN</b>	4015081088195
<b>PRODUCT LENGTH/DEPTH</b>	132.1 mm
<b>PRODUCT HEIGHT</b>	115 mm
<b>PRODUCT WIDTH</b>	55 mm
<b>PRODUCT WEIGHT</b>	0.872 kg
<b>CERTIFICATIONS</b>	CSA IEC/EN 60947-4-1 UL 60947-4-1 CSA File No.: 012528 VDE 0660 CSA-C22.2 No. 60947-4-1-14 IEC/EN 60947 CE UL UL File No.: E29096 UL Category Control No.: NLDX CSA Class No.: 2411-03, 3211-04
<b>CATALOG NOTES</b>	Contacts according to EN 50012
<b>GLOBAL CATALOG</b>	109199

## Product specifications

<b>NUMBER OF POLES</b>	Three-pole
<b>10.10 TEMPERATURE RISE</b>	The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.
<b>10.11 SHORT-CIRCUIT RATING</b>	Is the panel builder's responsibility. The specifications for the switchgear must be observed.
<b>10.12 ELECTROMAGNETIC COMPATIBILITY</b>	Is the panel builder's responsibility. The specifications for the switchgear must be observed.
<b>10.13 MECHANICAL FUNCTION</b>	The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.
<b>10.2.2 CORROSION RESISTANCE</b>	Meets the product standard's requirements.
<b>10.2.3.1 VERIFICATION OF THERMAL STABILITY OF ENCLOSURES</b>	Meets the product standard's requirements.
<b>10.2.3.2 VERIFICATION OF RESISTANCE OF INSULATING MATERIALS TO NORMAL HEAT</b>	Meets the product standard's requirements.
<b>10.2.3.3 RESIST. OF INSUL. MAT. TO ABNORMAL HEAT/FIRE BY INTERNAL ELECT. EFFECTS</b>	Meets the product standard's requirements.
<b>10.2.4 RESISTANCE TO ULTRA-VIOLET (UV) RADIATION</b>	Meets the product standard's requirements.
<b>10.2.5 LIFTING</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.2.6 MECHANICAL IMPACT</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.2.7 INSCRIPTIONS</b>	Meets the product standard's requirements.
<b>10.3 DEGREE OF PROTECTION OF</b>	Does not apply, since the entire switchgear needs to

## Resources

<b>CATALOGS</b>	<a href="#">Product Range Catalog</a> <a href="#">Switching and protecting motors</a>  <a href="#">SmartWire-DT Catalog</a>  <a href="#">eaton-product-overview-for-machinery-catalogue-ca08103003zen-en-us.pdf</a>
<b>CHARACTERISTIC CURVE</b>	<a href="#">eaton-contactors-component-dilm-characteristic-curve-003.eps</a>  <a href="#">eaton-contactors-switch-dilm-characteristic-curve.eps</a>  <a href="#">eaton-contactors-switch-dilm-characteristic-curve-002.eps</a>
<b>DECLARATIONS OF CONFORMITY</b>	<a href="#">DA-DC-00004782.pdf</a>  <a href="#">DA-DC-00004817.pdf</a>
<b>DRAWINGS</b>	<a href="#">eaton-contactors-dilm-dimensions-002.eps</a>  <a href="#">eaton-contactors-mounting-dilm-dimensions-002.eps</a>  <a href="#">eaton-contactors-mounting-dilm-dimensions.eps</a>  <a href="#">eaton-contactors-dilm-dimensions-012.eps</a>  <a href="#">eaton-contactors-mounting-dilm-3d-drawing.eps</a>  <a href="#">eaton-contactors-dilm-3d-drawing-011.eps</a>
<b>ECAD MODEL</b>	<a href="#">ETN.109199.edz</a>
<b>INSTALLATION INSTRUCTIONS</b>	<a href="#">IL03407033Z</a>
<b>INSTALLATION VIDEOS</b>	<a href="#">WIN-WIN with push-in technology</a>
<b>MCAD MODEL</b>	<a href="#">DA-CD-dil_m40_72</a>  <a href="#">DA-CS-dil_m40_72</a>

<b>ASSEMBLIES</b>	be evaluated.
<b>10.4 CLEARANCES AND CREEPAGE DISTANCES</b>	Meets the product standard's requirements.
<b>10.5 PROTECTION AGAINST ELECTRIC SHOCK</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.6 INCORPORATION OF SWITCHING DEVICES AND COMPONENTS</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.7 INTERNAL ELECTRICAL CIRCUITS AND CONNECTIONS</b>	Is the panel builder's responsibility.
<b>10.8 CONNECTIONS FOR EXTERNAL CONDUCTORS</b>	Is the panel builder's responsibility.
<b>10.9.2 POWER-FREQUENCY ELECTRIC STRENGTH</b>	Is the panel builder's responsibility.
<b>10.9.3 IMPULSE WITHSTAND VOLTAGE</b>	Is the panel builder's responsibility.
<b>10.9.4 TESTING OF ENCLOSURES MADE OF INSULATING MATERIAL</b>	Is the panel builder's responsibility.
<b>OPERATING FREQUENCY</b>	5000 mechanical Operations/h (AC operated)
<b>POLLUTION DEGREE</b>	3
<b>CLIMATIC PROOFING</b>	Damp heat, cyclic, to IEC 60068-2-30 Damp heat, constant, to IEC 60068-2-78
<b>CONNECTION TO SMARTWIRE-DT</b>	No
<b>RATED IMPULSE WITHSTAND VOLTAGE (UIMP)</b>	8000 V AC
<b>UTILIZATION CATEGORY</b>	AC-1: Non-inductive or slightly inductive loads, resistance furnaces AC-3: Normal AC induction motors: starting, switch off during running AC-4: Normal AC induction motors: starting, plugging, reversing, inching
<b>CONNECTION</b>	Screw terminals
<b>FRAME SIZE</b>	FS3
<b>AMBIENT OPERATING TEMPERATURE - MAX</b>	60 °C
<b>AMBIENT OPERATING</b>	-25 °C

<b>SYSTEM OVERVIEW</b>	<a href="#">eaton-contactors-dilm-contactor-system-overview.eps</a>
<b>WIRING DIAGRAMS</b>	<a href="#">eaton-contactors-contact-dilm-wiring-diagram-003.eps</a>

**TEMPERATURE - MIN****AMBIENT OPERATING**

**TEMPERATURE** 40 °C  
**(ENCLOSED) - MAX**

**AMBIENT OPERATING**

**TEMPERATURE** -25 °C  
**(ENCLOSED) - MIN**

**AMBIENT STORAGE**

**TEMPERATURE - MAX** 80 °C

**AMBIENT STORAGE**

**TEMPERATURE - MIN** -40 °C

**ASSIGNED MOTOR**

**POWER AT 115/120 V, 60 HZ, 1-PHASE** 5 HP

**ASSIGNED MOTOR**

**POWER AT 200/208 V, 60 HZ, 3-PHASE** 20 HP

**ASSIGNED MOTOR**

**POWER AT 230/240 V, 60 HZ, 1-PHASE** 15 HP

**ASSIGNED MOTOR**

**POWER AT 230/240 V, 60 HZ, 3-PHASE** 25 HP

**ASSIGNED MOTOR**

**POWER AT 460/480 V, 60 HZ, 3-PHASE** 50 HP

**ASSIGNED MOTOR**

**POWER AT 575/600 V, 60 HZ, 3-PHASE** 60 HP

**CONVENTIONAL**

**THERMAL CURRENT ITH (1-POLE, ENCLOSED)** 180 A

**CONVENTIONAL**

**THERMAL CURRENT ITH (3-POLE, ENCLOSED)** 72 A

**CONVENTIONAL**

**THERMAL CURRENT ITH AT 55°C (3-POLE, OPEN)** 83 A

**CONVENTIONAL**

**THERMAL CURRENT ITH OF MAIN CONTACTS (1-POLE, OPEN)** 200 A

**EQUIPMENT HEAT**

**DISSIPATION, CURRENT-DEPENDENT PVID** 21 W

**HEAT DISSIPATION**

**CAPACITY PDISS** 0 W

**HEAT DISSIPATION PER**

**POLE, CURRENT-DEPENDENT PVID** 7 W

<b>APPLICATION</b>	Contactors for Motors
<b>PRODUCT CATEGORY</b>	Contactors
<b>PROTECTION</b>	Finger and back-of-hand proof, Protection against direct contact when actuated from front (EN 50274)
<b>ARCING TIME</b>	10 ms
<b>ELECTRICAL</b>	
<b>CONNECTION TYPE OF MAIN CIRCUIT</b>	Screw connection
<b>SCREWDRIVER SIZE</b>	0.8 x 5.5/1 x 6 mm, Terminal screw, Standard screwdriver 2, Terminal screw, Pozidriv screwdriver
<b>VOLTAGE TYPE</b>	AC
<b>DEGREE OF PROTECTION</b>	IP00
<b>NUMBER OF AUXILIARY CONTACTS (NORMALLY CLOSED CONTACTS)</b>	0
<b>NUMBER OF AUXILIARY CONTACTS (NORMALLY OPEN CONTACTS)</b>	0
<b>NUMBER OF CONTACTS (NORMALLY CLOSED) AS MAIN CONTACT</b>	0
<b>NUMBER OF MAIN CONTACTS (NORMALLY OPEN CONTACT)</b>	3
<b>RATED BREAKING CAPACITY AT 220/230 V</b>	650 A
<b>RATED BREAKING CAPACITY AT 380/400 V</b>	650 A
<b>RATED BREAKING CAPACITY AT 500 V</b>	650 A
<b>RATED BREAKING CAPACITY AT 660/690 V</b>	370 A
<b>RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 50 HZ - MAX</b>	110 V
<b>RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 50 HZ - MIN</b>	110 V
<b>RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MAX</b>	110 V
<b>RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60</b>	110 V

**HZ - MIN**

<b>DROP-OUT VOLTAGE</b>	AC operated: 0.6 - 0.3 x Uc, AC operated
<b>OVERVOLTAGE CATEGORY</b>	III
<b>DUTY FACTOR</b>	100 %
<b>EMITTED INTERFERENCE</b>	According to EN 60947-1
<b>INTERFERENCE IMMUNITY</b>	According to EN 60947-1
<b>LIFESPAN, MECHANICAL</b>	7,000,000 Operations (Coil 50/60 Hz) 10,000,000 Operations (AC operated)
<b>PICK-UP VOLTAGE</b>	0.8 - 1.1 V AC x Uc
<b>POWER CONSUMPTION, PICK-UP, 50 Hz</b>	154 VA, Dual-frequency coil in a cold state and 1.0 x Us 168 VA, Dual-frequency coil in a cold state and 1.0 x Us
<b>SAFE ISOLATION</b>	440 V AC, Between coil and contacts, According to EN 61140 440 V AC, Between the contacts, According to EN 61140
<b>POWER CONSUMPTION, PICK-UP, 60 Hz</b>	154 VA, Dual-frequency coil in a cold state and 1.0 x Us 168 VA, Dual-frequency coil in a cold state and 1.0 x Us
<b>SCREW SIZE</b>	M6, Terminal screw, Main cables M3.5, Terminal screw, Control circuit cables
<b>POWER CONSUMPTION, SEALING, 50 Hz</b>	4.1 W, Dual-frequency coil in a cold state and 1.0 x Us
<b>POWER CONSUMPTION, SEALING, 60 Hz</b>	22 VA, Dual-frequency coil in a cold state and 1.0 x Us, at 60 Hz 4.1 W, Dual-frequency coil in a cold state and 1.0 x Us
	14 VA, Dual-frequency coil in a cold state and 1.0 x Us, at 60 Hz
<b>TERMINAL CAPACITY (STRANDED)</b>	1 x (16 - 50) mm <sup>2</sup> , Main cables 2 x (16 - 35) mm <sup>2</sup> , Main cables

<b>TERMINAL CAPACITY (COPPER BAND)</b>	2 x (6 x 9 x 0.8) mm (Number of segments x width x thickness), Main cables
<b>TERMINAL CAPACITY (FLEXIBLE WITH FERRULE)</b>	1 x (0.75 - 35) mm <sup>2</sup> , Main cables 2 x (0.75 - 25) mm <sup>2</sup> , Main cables 2 x (0.75 - 2.5) mm <sup>2</sup> , Control circuit cables 1 x (0.75 - 2.5) mm <sup>2</sup> , Control circuit cables
<b>SHOCK RESISTANCE</b>	7 g, N/O auxiliary contact, Mechanical, according to IEC/EN 60068-2-27 when tabletop-mounted, Half-sinusoidal shock 10 ms 7 g, N/O 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 5 g, N/C auxiliary contact, Mechanical, according to IEC/EN 60068-2-27, Half-sinusoidal shock 10 ms 5 g, N/C auxiliary contact, Mechanical, according to IEC/EN 60068-2-27 when tabletop-mounted, Half-sinusoidal shock 10 ms 10 g, N/O main contact, Mechanical, according to IEC/EN 60068-2-27 when tabletop-mounted, Half-sinusoidal shock 10 ms
<b>TERMINAL CAPACITY (SOLID)</b>	2 x (0.75 - 2.5) mm <sup>2</sup> , Control circuit cables 2 x (0.75 - 16) mm <sup>2</sup> , Main cables 1 x (0.75 - 16) mm <sup>2</sup> , Main cables 1 x (0.75 - 4) mm <sup>2</sup> , Control circuit cables
<b>TERMINAL CAPACITY (SOLID/STRANDED AWG)</b>	Single 14 - 1, double 14 - 2, Main cables 18 - 14, Control circuit cables
<b>SWITCHING CAPACITY (MAIN CONTACTS, GENERAL USE)</b>	88 A, Maximum motor rating (UL/CSA)

<b>TIGHTENING TORQUE</b>	3.3 Nm, Screw terminals, Main cables 1.2 Nm, Screw terminals, Control circuit cables
<b>RATED CONTROL SUPPLY</b>	
<b>VOLTAGE (US) AT DC -</b>	0 V
<b>MAX</b>	
<b>RATED CONTROL SUPPLY</b>	
<b>VOLTAGE (US) AT DC -</b>	0 V
<b>MIN</b>	
<b>RATED INSULATION</b>	
<b>VOLTAGE (UI)</b>	690 V
<b>RATED MAKING</b>	
<b>CAPACITY UP TO 690 V (COS PHI TO IEC/EN 60947)</b>	910 A
<b>RATED OPERATIONAL</b>	
<b>CURRENT (IE) AT AC-1, 380 V, 400 V, 415 V</b>	98 A
<b>RATED OPERATIONAL</b>	
<b>CURRENT (IE) AT AC-3, 220 V, 230 V, 240 V</b>	72 A
<b>RATED OPERATIONAL</b>	
<b>CURRENT (IE) AT AC-3, 380 V, 400 V, 415 V</b>	72 A
<b>RATED OPERATIONAL</b>	
<b>CURRENT (IE) AT AC-3, 440 V</b>	72 A
<b>RATED OPERATIONAL</b>	
<b>CURRENT (IE) AT AC-3, 500 V</b>	72 A
<b>RATED OPERATIONAL</b>	
<b>CURRENT (IE) AT AC-3, 660 V, 690 V</b>	37 A
<b>RATED OPERATIONAL</b>	
<b>CURRENT (IE) AT AC-4, 220 V, 230 V, 240 V</b>	25 A
<b>RATED OPERATIONAL</b>	
<b>CURRENT (IE) AT AC-4, 400 V</b>	25 A
<b>RATED OPERATIONAL</b>	
<b>CURRENT (IE) AT AC-4, 440 V</b>	25 A
<b>RATED OPERATIONAL</b>	
<b>CURRENT (IE) AT AC-4, 500 V</b>	25 A
<b>RATED OPERATIONAL</b>	
<b>CURRENT (IE) AT AC-4, 660 V, 690 V</b>	20 A
<b>RATED OPERATIONAL</b>	
	72 A

**CURRENT (IE) AT DC-1,  
110 V**

**RATED OPERATIONAL**

**CURRENT (IE) AT DC-1, 65 A  
220 V**

**RATED OPERATIONAL**

**CURRENT (IE) AT DC-1, 60 V 72 A**

**RATED OPERATIONAL**

**CURRENT FOR SPECIFIED  
HEAT DISSIPATION (IN)**

**RATED OPERATIONAL**

**POWER AT AC-3, 240 V, 50 Hz 25 kW**

**RATED OPERATIONAL**

**POWER AT AC-3, 380/400 V, 50 Hz 37 kW**

**RATED OPERATIONAL**

**POWER AT AC-3, 415 V, 50 Hz 41 kW**

**RATED OPERATIONAL**

**POWER AT AC-4, 220/230 V, 50 Hz 7 kW**

**RATED OPERATIONAL**

**POWER AT AC-4, 240 V, 50 Hz 7.5 kW**

**RATED OPERATIONAL**

**POWER AT AC-4, 380/400 V, 50 Hz 12 kW**

**RATED OPERATIONAL**

**POWER AT AC-4, 415 V, 50 Hz 13 kW**

**RATED OPERATIONAL**

**POWER AT AC-4, 440 V, 50 Hz 14 kW**

**RATED OPERATIONAL**

**POWER AT AC-4, 500 V, 50 Hz 16 kW**

**RATED OPERATIONAL**

**POWER AT AC-4, 660/690 V, 50 Hz 17 kW**

**RATED OPERATIONAL**

**POWER (NEMA) 37 kW**

**RATED OPERATIONAL**

**VOLTAGE (UE) AT AC -  
MAX 690 V**

**RESISTANCE PER POLE**

**1.9 mΩ**

**STATIC HEAT**

**DISSIPATION, NON-  
CURRENT-DEPENDENT 4.1 W**

**PVS**

<b>STRIPPING LENGTH (CONTROL CIRCUIT CABLE)</b>	10 mm
<b>STRIPPING LENGTH (MAIN CABLE)</b>	14 mm
<b>SWITCHING TIME (AC OPERATED, MAKE CONTACTS, CLOSING DELAY) - MAX</b>	18 ms
<b>SWITCHING TIME (AC OPERATED, MAKE CONTACTS, CLOSING DELAY) - MIN</b>	12 ms
<b>SWITCHING TIME (AC OPERATED, MAKE CONTACTS, OPENING DELAY) - MAX</b>	13 ms
<b>SWITCHING TIME (AC OPERATED, MAKE CONTACTS, OPENING DELAY) - MIN</b>	8 ms
<b>SHORT-CIRCUIT CURRENT RATING (BASIC RATING)</b>	250 A, max. CB, SCCR (UL/CSA) 250 A, max. Fuse, SCCR (UL/CSA) 10 kA, SCCR (UL/CSA)
<b>SHORT-CIRCUIT CURRENT RATING (HIGH FAULT AT 480 V)</b>	100 A, max. CB, SCCR (UL/CSA) 30/100 kA, Fuse, SCCR (UL/CSA) 65 kA, CB, SCCR (UL/CSA) 250/150 A, Class J, max. Fuse, SCCR (UL/CSA)
<b>SHORT-CIRCUIT CURRENT RATING (HIGH FAULT AT 600 V)</b>	30/100 kA, Fuse, SCCR (UL/CSA) 30 kA, CB, SCCR (UL/CSA) 250 A, max. CB, SCCR (UL/CSA) 250/150 A, Class J, max. Fuse, SCCR (UL/CSA)
<b>SHORT-CIRCUIT PROTECTION RATING (TYPE 1 COORDINATION) AT 400 V</b>	250 A gG/gL
<b>SHORT-CIRCUIT PROTECTION RATING (TYPE 1 COORDINATION) AT 690 V</b>	100 A gG/gL
<b>SHORT-CIRCUIT PROTECTION RATING (TYPE 2 COORDINATION)</b>	125 A gG/gL

**AT 400 V**

**SHORT-CIRCUIT  
PROTECTION RATING  
(TYPE 2 COORDINATION)**  
**AT 690 V**

80 A gG/gL

**SPECIAL PURPOSE** 88 A (600V 60Hz 3phase,  
**RATING OF BALLAST** 347V 60Hz 1phase)  
**ELECTRICAL DISCHARGE  
LAMPS** 88 A (480V 60Hz 3phase,  
277V 60Hz 1phase)

**SPECIAL PURPOSE** 432 A, LRA 480 V 60 Hz 3-  
**RATING OF DEFINITE  
PURPOSE RATING** ph, 100,000 cycles acc. to  
UL 1995, (UL/CSA)  
72 A, FLA 480 V 60 Hz 3-  
ph, 100,000 cycles acc. to  
UL 1995, (UL/CSA)

**SPECIAL PURPOSE** 30 HP, 480 V 60 Hz 3-ph,  
**RATING OF ELEVATOR  
CONTROL** (UL/CSA)  
10 HP, 200 V 60 Hz 3-ph,  
(UL/CSA)  
42 A, 240 V 60 Hz 3-ph,  
(UL/CSA)  
40 A, 480 V 60 Hz 3-ph,  
(UL/CSA)  
40 HP, 600 V 60 Hz 3-ph,  
(UL/CSA)  
41 A, 600 V 60 Hz 3-ph,  
(UL/CSA)  
32.2 A, 200 V 60 Hz 3-ph,  
(UL/CSA)  
15 HP, 240 V 60 Hz 3-ph,  
(UL/CSA)

**SPECIAL PURPOSE** 88 A, 480 V 60 Hz 3phase,  
**RATING OF RESISTANCE** 277 V 60 Hz 1phase,  
**AIR HEATING** (UL/CSA)  
88 A, 600 V 60 Hz 3phase,  
347 V 60 Hz 1phase,  
(UL/CSA)

**SPECIAL PURPOSE** 88 A, 480 V 60 Hz 3phase,  
**RATING OF TUNGSTEN  
INCANDESCENT LAMPS** 277 V 60 Hz 1phase,  
(UL/CSA)  
88 A, 600 V 60 Hz 3phase,  
347 V 60 Hz 1phase,  
(UL/CSA)

**CONVENTIONAL  
THERMAL CURRENT ITH  
AT 40°C (3-POLE, OPEN)** 98 A

**CONVENTIONAL  
THERMAL CURRENT ITH  
AT 50°C (3-POLE, OPEN)** 88 A

**CONVENTIONAL  
THERMAL CURRENT ITH  
AT 60°C (3-POLE, OPEN)** 80 A

**RATED OPERATIONAL** 44 kW

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**POWER AT AC-3, 440 V, 50**

**Hz**

**RATED OPERATIONAL**

**POWER AT AC-3, 500 V, 50** 50 kW

**Hz**

**RATED OPERATIONAL**

**POWER AT AC-3, 690 V, 50** 35 kW

**Hz**

**ACTUATING VOLTAGE** 110 V 50/60 Hz

**ALTITUDE** Max. 2000 m

**OPERATING VOLTAGE AT  
AC, 50 Hz - MIN** 230 V

**OPERATING VOLTAGE AT  
AC, 50 Hz - MAX** 690 V

**OPERATING VOLTAGE AT  
AC, 60 Hz - MIN** 230 V

**OPERATING VOLTAGE AT  
AC, 60 Hz - MAX** 690 V

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**PROJECT NAME:**

**PROJECT NUMBER:**

**PREPARED BY:**

**DATE:**

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