



Eaton 170099

Eaton Moeller® series EMS DOL starter, 24 V DC, 0,18 - 2,4 A, PTB 13 ATEX 3003, Push in terminals

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PRODUCT NAME	Eaton Moeller® series EMS DOL starter
CATALOG NUMBER	170099
PRODUCT LENGTH/DEPTH	160 mm
PRODUCT HEIGHT	60 mm
PRODUCT WIDTH	155 mm
PRODUCT WEIGHT	0.3 kg
CERTIFICATIONS	IEC/EN 61000-4-3 Certified by UL for use in Canada UL File No.: E29096 PTB 13 ATEX 3003 IEC/EN 60947-4-2 IEC/EN 60947-5 UL Category Control No.: NLDX, NLDX7 UL 508 CSA-C22.2 No. 14 CE UL508 UL report applies to both US and Canada IEC/EN 61000-4-2, Level 3 UL



Powering Business Worldwide

TYPE	DOL starter (complete device)
AIR DISCHARGE	8 kV
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.
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.

CHARACTERISTIC CURVE	eaton-contactors-ems2-reversing-starter-characteristic-curve.eps
□□□□	eaton-ems2-electronic-motorstarter-brochure-br034001en-en-us.pdf
□□□	eaton-ems2-electronic-motorstarter-flyer-fl034007en-en-us.pdf
□□	eaton-contactors-ems-dol-starter-dimensions.eps eaton-contactors-3d-drawing-018.eps

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.
OPERATING FREQUENCY	7200 Operations/h (pulse pause time 50:50)
POLLUTION DEGREE	2
CLASS	CLASS 10
BURST IMPULSE	2 kV According to IEC/EN 61000-4-4, level 3
LIFESPAN, ELECTRICAL	30,000,000 Operations
CONNECTION TO SMARTWIRE-DT	No
RATED IMPULSE WITHSTAND VOLTAGE (UIMP)	6000 V AC
MODEL	Direct starter
EXPLOSION SAFETY CATEGORY FOR DUST	ATEX dust-ex-protection, II (2) G [Ex e] [Ex d] [Ex px] ATEX dust-ex-protection, II (2) D [Ex t] [Ex p]
ENVIRONMENTAL CONDITIONS	Condensation: prevent with appropriate measures Designed for operation in industrial environments. The use in residential environments could cause electrical interference so that addition suppression must be planned.
ELECTRICAL CONNECTION TYPE OF MAIN CIRCUIT	Spring clamp connection

VOLTAGE TYPE	DC
MOUNTING POSITION	Vertical Motor feeder at bottom
MOUNTING METHOD	Top-hat rail fixing (according to IEC/EN 60715, 35 mm) Rail mounting possible
CONTACT DISCHARGE	6 kV
OVERVOLTAGE CATEGORY	III
SUPPLY VOLTAGE	A1 - A2: 24 V DC (-20 - +25 %), UAUx, Control section, Input data
BASIC INSULATION	500 V AC, between supply voltage, control voltage and switch voltage according to IEC/EN60947- 1 500 V AC, between feedback signal output and switch voltage according to IEC/EN60947- 1
FUNCTIONS	External reset possible DOL starting Motor protection Temperature compensated overload protection
SURGE RATING	1 kV, symmetrical, power pulses (Surge), EMC 2 kV, asymmetrical, power pulses (Surge), EMC According to IEC/EN 61000-4-5, power pulses (Surge), EMC
TERMINAL CAPACITY	2 x (0.75 - 2.5) mm ² , flexible with ferrule 1 x (0.75 - 2.5) mm ² , solid 2 x (0.75 - 1.5) mm ² , flexible, with twin ferrule Minimum length 10 mm.
TERMINAL CAPACITY (AWG)	1 x (20 - 14), flexible with ferrule 2 x (20 - 16), flexible with twin ferrule 1 x (20 - 14), solid
ELECTROMAGNETIC FIELDS	3 V/m at 2.0 - 2.7 GHz (according to IEC EN 61000-4-3) 10 V/m at 1.4 - 2 GHz (according to IEC EN 61000-4-3) 10 V/m at 800 - 1000 MHz (according to IEC EN

	61000-4-3)
OVERLOAD RELEASE CURRENT SETTING - MIN	0.18 A
RATED CONDITIONAL SHORT-CIRCUIT CURRENT (IQ), TYPE 2, 230 V	0 A
RATED CONDITIONAL SHORT-CIRCUIT CURRENT (IQ), TYPE 2, 380 V, 400 V, 415 V	0 A
RATED CONDITIONAL SHORT-CIRCUIT CURRENT, TYPE 1, 480 Y/277 V	0 A
RATED CONDITIONAL SHORT-CIRCUIT CURRENT, TYPE 1, 600 Y/347 V	0 A
RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 50 HZ - MAX	0 V
RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 50 HZ - MIN	0 V
RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MAX	0 V
RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MIN	0 V
RATED CONTROL SUPPLY VOLTAGE (US) AT DC - MAX	24 V
RATED CONTROL SUPPLY VOLTAGE (US) AT DC - MIN	24 V
RATED OPERATIONAL CURRENT (IE) AT AC-15, 220 V, 230 V, 240 V	3 A
RATED OPERATIONAL CURRENT (IE) AT AC-3, 380 V, 400 V, 415 V	2.4 A
IMMUNITY TO LINE-CONDUCTED INTERFERENCE	10 V (according to IEC/EN 61000-4-6)
RADIO INTERFERENCE CLASS	Class A (EN 55011, emitted interference, line-conducted) Class A (EN 61000-6-3, emitted interference, radiated)
SAFE ISOLATION	500 V AC; Between supply, control, and switching

	<p>voltages; According to EN50178</p> <p>300 V AC, Between feedback signal output and switch voltage, According to EN 50178</p> <p>300 V AC; Between supply, control, and switching voltages; According to EN50178</p> <p>500 V AC, Between feedback signal output and switch voltage, According to EN 50178</p>
RESIDUAL RIPPLE	≤ 5 % (input voltage)
RECOVERY TIME	20 min (automatic restart) 2 min (manual startup)
RATED OPERATIONAL CURRENT (IE)	2.4 A
RATED OPERATIONAL CURRENT (IE) AT AC-51	2.4 A
RATED OPERATIONAL CURRENT (IE) AT AC-53A - MAX	2.4 A
RATED OPERATIONAL CURRENT (IE) AT AC-53A - MIN	0.15 A
RATED OPERATIONAL CURRENT (IE) AT DC-13, 24 V	2 A
RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)	2.4 A
RATED OPERATIONAL VOLTAGE	250 V AC/DC 42 - 550 V
SAFETY PARAMETER (EN ISO 13849-1)	316 years; MTTFD
SAFETY PARAMETER (IEC 62061)	<p>Λ_{su} [FIT]: 1550</p> <p>SIL: 2</p> <p>Λ_{dd} [FIT]: 314</p> <p>97.9 %, SFF</p> <p>Λ_{sd} [FIT]: 0</p> <p>Λ_{du} [FIT]: 47.2</p> <p>86,9 %, DC</p>
SWITCHING LEVEL	<p>-3 - 9.6 V DC, Switching level "Low", Actuating circuit (ON, L, R)</p> <p>< 5 V DC, Switching level "confirm Off", Actuating circuit (ON, L, R)</p> <p>19.2 - 30 V DC, Switching level "High", Actuating circuit (ON, L, R)</p>
SHORT-CIRCUIT	50 kA, 500 V AC: Fuse 16 A

PROTECTION RATING	gG/gL, Short-circuit protective device, Type "1" coordination, Main conducting paths 50 kA, 415 V AC: PKM0-4, Short-circuit protective device, Type "1" coordination, Main conducting paths 15 kA, 415 V AC: PKM0-6,3, Short-circuit protective device, Type "1" coordination, Main conducting paths
AMBIENT OPERATING TEMPERATURE - MAX	60 °C
AMBIENT OPERATING TEMPERATURE - MIN	-25 °C
AMBIENT STORAGE TEMPERATURE - MAX	80 °C
AMBIENT STORAGE TEMPERATURE - MIN	-40 °C
EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT PVID	2 W
HEAT DISSIPATION CAPACITY PDISS	0 W
HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID	0.7 W
NUMBER OF AUXILIARY CONTACTS (NORMALLY CLOSED CONTACTS)	1
NUMBER OF AUXILIARY CONTACTS (NORMALLY OPEN CONTACTS)	1
NUMBER OF COMMAND POSITIONS	0
NUMBER OF CONTACTS (CHANGE-OVER CONTACTS)	1
NUMBER OF PILOT LIGHTS	4
OVERLOAD RELEASE CURRENT SETTING - MAX	2.4 A
RATED OPERATIONAL POWER AT AC-3, 220/230 V, 50 HZ	0.37 kW
RATED OPERATIONAL POWER AT AC-3, 380/400 V, 50 HZ	0.75 kW
RATED OPERATIONAL POWER AT AC-53A,	0.75 kW

