

**DOL starter, 24 V DC, 1,5 - 7 (AC-53a), 9 (AC-51) A, Push in terminals,
Controlled stop, PTB 19 ATEX 3000**



Part no. EMS2-DOS-T-9-24VDC
192397
EL Number 4100395
(Norway)

General specifications		
Product name		Eaton Moeller® series EMS2 DOL starter
Part no.		EMS2-DOS-T-9-24VDC
EAN		4015081930944
Product Length/Depth		114.5 millimetre
Product height		99 millimetre
Product width		22.5 millimetre
Product weight		0.287 kilogram
Certifications		IEC/EN 60947-4-2 EN ISO 13849 IEC 61508 UL508 UL report applies to both US and Canada CSA-C22.2 No. 60947-4-1-14 Certified by UL for use in Canada UL File No.: E338590 UL Category Control No.: NLDX, NLDX7 UL listed CE marking PTB 19 ATEX 3000 UL 60947-4-1
Product Tradename		EMS2
Product Type		DOL starter
Product Sub Type		None
Catalog Notes		AC-53a: Please note possible derating. Circuit design: safety output stage with bypass, three-phase disconnect.
Features & Functions		
Functions		Controlled stop Temperature compensated overload protection Motor protection DOL starting
General information		
Class		CLASS 10
Connection to SmartWire-DT		No
Degree of protection		IP20 NEMA Other
Model		Direct starter
Mounting method		Top-hat rail fixing (according to IEC/EN 60715, 35 mm) Rail mounting possible
Mounting position		Motor feeder at bottom Vertical
Overload release current setting - min		1.5 A
Overload release current setting - max		9 A
Product category		Electronic motor starter
Residual ripple		≤ 5 % (input voltage)
Terminal capacity		0.2 - 2.5 mm ² , Main cables, Push-in terminals 0.2 - 2.5 mm ² , Main cables 0.14 - 2.5 mm ² , Control circuit cables
Terminal capacity (AWG)		26 - 14, Control circuit cables 24 - 14, Main cables 24 - 14, Main cables, Push-in terminals
Type		DOL starter (complete device)
Voltage type		DC
Climatic environmental conditions		
Ambient operating temperature - min		-25 °C
Ambient operating temperature - max		70 °C

Ambient storage temperature - min	40 °C
Ambient storage temperature - max	80 °C
Electro magnetic compatibility	
Radio interference class	Class A (EN 61000-6-3, emitted interference, radiated) EN 55011
Electrical rating	
Rated actuating current (Ic)	5 mA
Rated conditional short-circuit current (Iq), type 2, 380 V, 400 V, 415 V	0 A
Rated control supply current Is	40 mA
Rated control supply voltage	19.2 - 30 V DC
Rated control voltage (Uc)	24 V (Actuating circuit ON, L, R)
Rated control supply voltage (Us) at AC, 50 Hz - min	0 V
Rated control supply voltage (Us) at AC, 50 Hz - max	0 V
Rated control supply voltage (Us) at AC, 60 Hz - min	0 V
Rated control supply voltage (Us) at AC, 60 Hz - max	0 V
Rated control supply voltage (Us) at DC - min	24 V
Rated control supply voltage (Us) at DC - max	24 V
Rated operational current (Ie)	9 A
Rated operational current (Ie) at AC-15, 220 V, 230 V, 240 V	2 A
Rated operational current (Ie) at AC-3, 380 V, 400 V, 415 V	7 A
Rated operational current (Ie) at AC-51	9 A
Rated operational current (Ie) at AC-53A - max	7 A
Rated operational current (Ie) at DC-13, 24 V	2 A
Rated operational power at AC-3, 220/230 V, 50 Hz	1.5 kW
Rated operational power at AC-3, 380/400 V, 50 Hz	3 kW
Rated operational power at AC-53A, 380/400 V, 50 Hz	3 kW
Rated operational voltage	42 - 550 V 500 V AC
Switching level	< 5 V DC, Switching level "confirm Off", Actuating circuit (ON, L, R) -3 - 9.6 V DC, Switching level "Low", Actuating circuit (ON, L, R) 19.2 - 30 V DC, Switching level "High", Actuating circuit (ON, L, R)
Contacts	
Number of auxiliary contacts (normally closed contacts)	1
Number of auxiliary contacts (normally open contacts)	1
Number of contacts (change-over contacts)	1
Safety	
Explosion safety category for dust	ATEX dust-ex-protection, II (2) D [Ex t] [Ex p] ATEX dust-ex-protection, II (2) G [Ex e] [Ex d] [Ex px]
Safety parameter (EN ISO 13849-1)	PL e, Performance level (safe switch off) 3 (safe switch off), Category 60 (safe switch off) / 70 (motor protection) years; MTTFD
Safety parameter (IEC 62061)	99 % (safe switch off) / 98 % (motor protection), DC λdu [FIT]: 2.3 (Safe switch off) / 11 (Motor protection) λsd [FIT]: 0 λsu [FIT]: 1072 (Safe switch off) / 969 (Motor protection) Opening delay [ms]: 200 (safe switch off) / Class 10A (motor protection) PFHd [FIT]: 2.3 (Safe switch off) SIL 3 (Safe switch off) / SIL 2 (Motor protection) λdd [FIT]: 580 (Safe switch off) / 601 (Motor protection) 99 %, SFF
Design verification	
Equipment heat dissipation, current-dependent Pvid	12 W
Heat dissipation capacity Pdiss	0 W
Heat dissipation per pole, current-dependent Pvid	0 W
Rated operational current for specified heat dissipation (In)	9 A
Static heat dissipation, non-current-dependent Pvs	2 W
Heat dissipation details	If necessary, Allow for derating
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 8.0

Low-voltage industrial components (EG000017) / Motor starter/Motor starter combination (EC001037)		
Electric engineering, automation, process control engineering / Low-voltage switch technology / Load breakout, motor breakout / Motor starter combination (ecl@ss10.0.1-27-37-09-05 [AJZ718013])		
Type of motor starter		Direct online starter (DOL)
With short-circuit release		No
Rated control supply voltage U_s at AC 50HZ	V	0 - 0
Rated control supply voltage U_s at AC 60HZ	V	0 - 0
Rated control supply voltage U_s at DC	V	24 - 24
Voltage type for actuating		DC
Rated operation power at AC-3, 230 V, 3-phase	kW	1.5
Rated operation power at AC-3, 400 V	kW	3
Rated power, 460 V, 60 Hz, 3-phase	kW	0
Rated power, 575 V, 60 Hz, 3-phase	kW	0
Rated operation current I_e	A	9
Rated operation current at AC-3, 400 V	A	7
Overload release current setting	A	1.5 - 9
Rated conditional short-circuit current, type 1, 480 Y/277 V	A	0
Rated conditional short-circuit current, type 1, 600 Y/347 V	A	0
Rated conditional short-circuit current, type 2, 230 V	A	0
Rated conditional short-circuit current, type 2, 400 V	A	0
Number of auxiliary contacts as normally open contact		1
Number of auxiliary contacts as normally closed contact		1
Ambient temperature, upper operating limit	°C	70
Temperature compensated overload protection		Yes
Release class		CLASS 10
Type of electrical connection of main circuit		Spring clamp connection
Type of electrical connection for auxiliary- and control current circuit		Spring clamp connection
Rail mounting possible		Yes
With transformer		No
Number of command positions		0
Suitable for emergency stop		No
Coordination class according to IEC 60947-4-3		Class 1
Number of indicator lights		0
External reset possible		No

With fuse			No
Degree of protection (IP)			IP20
Degree of protection (NEMA)			Other
Supporting protocol for TCP/IP			No
Supporting protocol for PROFIBUS			No
Supporting protocol for CAN			No
Supporting protocol for INTERBUS			No
Supporting protocol for ASI			No
Supporting protocol for Modbus			No
Supporting protocol for Data-Highway			No
Supporting protocol for DeviceNet			No
Supporting protocol for SUCONET			No
Supporting protocol for LON			No
Supporting protocol for PROFINET IO			No
Supporting protocol for PROFINET CBA			No
Supporting protocol for SERCOS			No
Supporting protocol for Foundation Fieldbus			No
Supporting protocol for EtherNet/IP			No
Supporting protocol for AS-Interface Safety at Work			No
Supporting protocol for DeviceNet Safety			No
Supporting protocol for INTERBUS-Safety			No
Supporting protocol for PROFIsafe			No
Supporting protocol for SafetyBUS p			No
Supporting protocol for other bus systems			No
Width		mm	22.5
Height		mm	99
Depth		mm	114.5