DATASHEET - EMS2-D0-T-2,4-24VDC



DOL starter, 24 V DC, 0,18 - 2,4 A, Push in terminals

EMS2-D0-T-2P4-24VDC

Powering Business Worldwide

EMS2-D0-T-2,4-24VDC Part no. 192391

Catalog No.

Alternate Catalog

EL-Nummer 4100391

(Norway)

Delivery program

		Electronic motor starter
		DOL starters (complete devices)
		DOL starting Motor protection Circuit design: safety output stage with bypass, three-phase disconnect.
P	kW	0.06 - 0.75
I _r	A_x	0,18 - 2,4
		24 V DC
		Push in terminals
		no

Technical data

General

Standards		IEC/EN 60947-4-2 UL508
Ambient temperature		
Storage	°C	
Min. ambient temperature, storage	°C	- 40
Ambient temperature, storage max.	°C	+ 80
Open	°C	
Operating ambient temperature min.	°C	-25
Operating ambient temperature max.	°C	+ 70
Weight	kg	0.22
Mounting		Top-hat rail IEC/EN 60715, 35 mm
Protection type (IEC/EN 60529, EN50178, VBG 4)		IP20
Mounting position		Vertical Motor feeder at bottom
Terminal capacity		
Push-in terminals		
	mm^2	0.2 - 2.5
	AWG	24 - 14
Main conducting noths		

Main conducting paths

- Section - Sect			
Rated operational voltage	U _e	V AC	500
Operational voltage range		V	
Operating voltage range min.		V	42
Operating voltage range max.		V	550
Rated operational current			
AC-51	I _e	Α	2.4
AC-53a	I _e	Α	2.4
			AC-53a: Please note possible derating.
Setting range of overload releases	I _r	A_x	0,18 - 2,4
Release class		CLASS	10

Heat dissipation	P_V	W	1.1 - 3.3
Control section			
Rated control voltage	U_s	V DC	24
Control voltage range		V	19,2 - 30 V DC
Residual ripple on the input voltage		%	≦5
Rated control current	Is	mA	40
Actuating circuit (ON, L, R)			
Rated actuation voltage	U _c	V	24
Switching level "Low"		V	-3 - +9.6 V DC
Switching level "confirm Off"		V	< 5 V DC
Switching level "High"		V	19.2 - 30 V DC
Rated actuating current	I _c	mA	5
Relay outputs			
Contacts			
CO = changeover			1 00
Rated operational current			
AC-15			
230 V	I _e	Α	3
DC-13			
24 V	I _e	Α	2
Flectromagnetic compatibility (FMC)			

Electromagnetic compatibility (EMC)

Notes

Radio interference suppression	EN 55011 EN 61000-6-3, Class A (emitted interference, radiated)
Technical safety parameters:	

motor protection

Design verification on per IEC/EN 61/20

Design verification as per IEC/EN 61439			
Fechnical data for design verification			
Rated operational current for specified heat dissipation	In	Α	2.4
Heat dissipation per pole, current-dependent	P _{vid}	W	0
Equipment heat dissipation, current-dependent	P _{vid}	W	3.3
Static heat dissipation, non-current-dependent	P_{vs}	W	1
Heat dissipation capacity	P _{diss}	W	0
Operating ambient temperature min.		°C	-25
Operating ambient temperature max.		°C	70
			If necessary, Allow for derating
EC/EN 61439 design verification			
10.2 Strength of materials and parts			
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.
10.2.3.3Verification of resistance of insulating materials to abnormal heat and fire due to internal electric 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 Insulation properties			
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 7.0

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 [A.IZ718013])

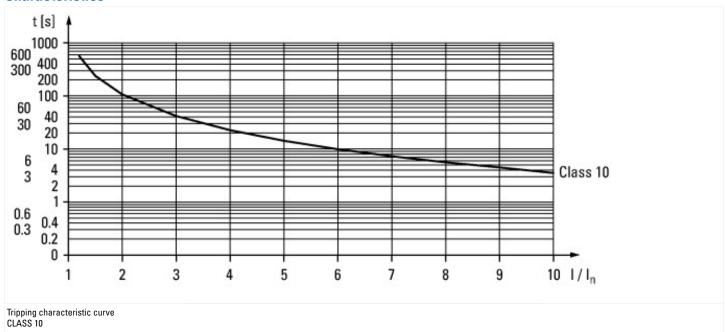
Kind of motor starter Direct starter With short-circuit release No Stated control supply voltage Us at AC 59HZ V 0 - 0 Rated control supply voltage Us at AC 59HZ V 0 - 0 Rated control supply voltage Us at AC 59HZ V 2 - 24 Rated control supply voltage Us at AC 59HZ V 2 - 24 Rated control supply voltage Us at AC 59HZ V 0 - 0 Rated control supply voltage Us at AC 59HZ V 0 - 0 Rated control supply voltage Us at AC 59HZ V 0 - 0 Rated control supply voltage Us at AC 59HZ V 0 - 0 Rated coperation power at AC-3, 200 V W 0 - 7 Rated operation power at AC-3, 200 V W 0 - 0 Rated operation current at AC 3, 400 V A 2 - 4 Rated operation current star AC 3, 400 V A 0 - 0 Rated conditional abort-circuit current, ype 1, 400 V/37 V A 0 - 0 Rated conditional abort-circuit current, ype 2, 400 V A 0 - 0 Rated conditional short-circuit current, ype 2, 400 V A 0 - 0 Rated condi
Rated control supply voltage Us at AC 50HZ V 0 - 0 Rated control supply voltage Us at AC 50HZ V 2 - 24 Rated control supply voltage Us at AC 50HZ V 2 - 24 Voltage type for actuating D C Rated operation power at AC-3, 200 V, 3-phase kW 0.37 Rated operation power at AC-3, 400 V kW 0.75 Rated operation current te A 2.4 Rated operation current at AC-3, 400 V A 2.4 Rated operation current at AC-3, 400 V A 2.4 Rated operation current at AC-3, 400 V A 2.4 Rated operation current at AC-3, 400 V A 0.0 Rated conditional short-circuit current, type 1, 480 Y/277 V A 0 Rated conditional short-circuit current, type 2, 200 V A 0 Rated conditional short-circuit current, type 2, 200 V A 0 Rated conditional short-circuit current, type 2, 200 V A 0 Rated conditional short-circuit current, type 2, 200 V A 0 Rated conditional short-circuit current, type 2, 400 V Y Y </td
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 power at AC-3, 200 V.3-phase kW 0.37 Rated operation power at AC-3, 200 V.3-phase kW 0.0 Rated power, 460 V, 60 Hz, 3-phase kW 0 Rated power at AC-3, 400 V A 2.4 Rated operation current te A 2.4 Rated operation current at AC-3, 400 V A 2.4 Overload release current setting A 0.8-3 Rated conditional short-circuit current, type 1, 480 Y/277 V A 0 Rated conditional short-circuit current, type 1, 200 Y347 V A 0 Rated conditional short-circuit current, type 2, 290 V A 0 Rated conditional short-circuit current, type 2, 400 V A 0 Number of auxiliary contacts as normally closed contact A 0 Ambient temperature, upper operating limit C CLASS 10 Temperature compensated ownrioed protection Yes CLASS 10 Number
Rated control supply voltage Us at DC V 24 - 24 Voltage type for actuaining C CC Rated operation power at AC-3, 240 V.3-phase kW 0.37 Rated operation power at AC-3, 2400 V.9 phase kW 0.3 Rated operation current at AC-3, 2400 V.9 ph.g. 3-phase kW 0.0 Rated operation current at AC-3, 400 V.9 ph.g. 3-phase kW 2.4 Rated operation current at AC-3, 400 V.9 A 2.4 Overload ralease current setting A 2.1 Rated conditional short-circuit current, type 1, 800 V/347 V. A 0 Rated conditional short-circuit current, type 2, 400 V.947 V. A 0 Rated conditional short-circuit current, type 1, 800 V/347 V. A 0 Rated conditional short-circuit current, type 2, 400 V.947 V. A 0 Rated conditional short-circuit current, type 2, 400 V.947 V. A 0 Number of auxiliary contacts as normally closed contact V 1 Number of auxiliary contacts as normally closed contact V 6 Temperature compensated everload protection V Spring clamp connection <t< td=""></t<>
Voltage type for a ctuating DC Rated operation power at AC-3, 230 V, 3-phase kW 0.75 Rated power, 460 V, 60 Hz, 3-phase kW 0.75 Rated power, 575 V, 60 Hz, 3-phase kW 0 Rated operation current le A 2.4 Rated operation current at AC-3, 400 V A 2.4 Overload release current setting A 0.18-3 Rated conditional short-circuit current, type 1, 800 Y/277 V A 0 Rated conditional short-circuit current, type 1, 800 Y/374 V A 0 Rated conditional short-circuit current, type 1, 800 Y/374 V A 0 Rated conditional short-circuit current, type 2, 230 V A 0 Rated conditional short-circuit current, type 2, 230 V A 0 Rated conditional short-circuit current, type 2, 230 V A 0 Rated conditional short-circuit current, type 2, 230 V A 0 Rated conditional short-circuit current, type 2, 230 V A 0 Rated conditional short-circuit current, type 2, 230 V A 0 Rated conditional short-circuit current, type 2, 230 V X
Rated operation power at AC-3, 290 V, 3-phase kW 0.375 Rated power, 690 V, 60 Hz, 3-phase kW 0.75 Rated power, 575 V, 60 Hz, 3-phase kW 0 Rated operation current la Caca, 400 V A 2.4 Rated operation current at AC-3, 400 V A 2.4 Overload release current setting A 0.18-3 Rated conditional short-circuit current, type 1, 480 Y/277 V A 0 Rated conditional short-circuit current, type 2, 4800 Y/347 V A 0 Rated conditional short-circuit current, type 2, 200 V A 0 Rated conditional short-circuit current, type 2, 400 V A 0 Number of auxiliary contacts as normally open contact I 1 Number of auxiliary contacts as normally closed contact I 6 Release class I CLASS 10 Temperature compensated overload protection I Spring clamp connection Release class CLASS 10 Spring clamp connection Rull mounting possible I No With transformer I No Numb
Rated operation power at AC-3, 400 V kW 0.75 Rated power, 460 V, 60 Hz, 3-phase kW 0 Rated power, 575 V, 60 Hz, 3-phase kW 0 Rated power, 575 V, 60 Hz, 3-phase kW 0 Rated operation current at Pack AC, 400 V A 2.4 Coverload release current satting A 0 18 - 3 Rated conditional short-circuit current, type 1, 480 V;277 V A 0 0 Rated conditional short-circuit current, type 2, 230 V A 0 0 Rated conditional short-circuit current, type 2, 2400 V A 0 0 Number of auxiliary contacts as normally closed contact A 0 0 Ambient temperature, upper operating limit °C 80 Release class S C 80 Release class C CLASS 10 2 Release class C 20 2 Type of electrical connection of main circuit Spring clamp connection 80 80 With transformer Pes 90 90 90 9
Rated power, 460 V, 60 Hz, 3-phase kW 0 Rated power, 575 V, 60 Hz, 3-phase kW 0 Rated operation current le A 2.4 Rated operation current at AC-3, 400 V A 2.4 Overload release current setting A 0.18 - 3 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, 400 V A 0 Rated conditional short-circuit current, type 2, 400 V A 0 Number of auxiliary contacts as normally closed contact A 1 Ambient temperature, upper operating limit °C Ve Temperature compensated overload protection °C CLASS 10 Type of electrical connection of main circuit Ye Spring clamp connection Type of electrical connection for auxiliary- and control current circuit Ye Spring clamp connection Rail mounting possible Ye No With transformer Ye No Number of indicator lights Ye <th< td=""></th<>
Rated power, 575 V, 80 Hz, 2-phase kW 0 Rated operation current le A 2.4 Rated operation current at AC-3, 400 V A 2.4 Overload release current setting A 0.18 - 3 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 closed contact B 1 Ambient temperature, upper operating limit C 80 Temperature compensated overload protection C 9 Release class CLASS 10 1 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 No Number of inclicator lights Spring clamp connection Number of inclicator lights
Rated operation current le Rated operation current at AC-3, 400 V Portoad release current setting Rated conditional short-circuit current, type 1, 480 Y/277 V Rated conditional short-circuit current, type 1, 500 Y/347 V Rated conditional short-circuit current, type 1, 500 Y/347 V Rated conditional short-circuit current, type 2, 230 V Rated conditional short-circuit current, type 2, 230 V Rated conditional short-circuit current, type 2, 230 V Rated conditional short-circuit current, type 2, 240 V Rated conditional short-circuit current, type 2, 400 V Rated conditional short-circuit current, type 2, 250 V Rated conditional short-c
Rated operation current at AC-3, 400 V Overload release current setting Rated conditional short-circuit current, type 1, 480 Y/277 V Rated conditional short-circuit current, type 1, 600 Y/347 V Rated conditional short-circuit current, type 2, 230 V Rated conditional short-circuit current, type 2, 400 V Rated conditional short-circuit current, type 2, 400 V Rated conditional short-circuit current, type 2, 400 V Rumber of auxiliary contacts as normally open contact Rumber of auxiliary contacts as normally closed contact Release class Release cl
Overload release current setting Rated conditional short-circuit current, type 1, 480 Y/277 V Rated conditional short-circuit current, type 1, 600 Y/347 V Rated conditional short-circuit current, type 2, 230 V Rated conditional short-circuit current, type 2, 230 V Rated conditional short-circuit current, type 2, 400 V Rated conditional short-circuit current type
Rated conditional short-circuit current, type 1, 480 Y/277 V
Rated conditional short-circuit current, type 1,600 Y/347 V
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 1 Number of auxiliary contacts as normally closed contact 1 1 Ambient temperature, upper operating limit C C 60 Temperature compensated overload protection Yes Release class Type of electrical connection of main circuit Ype of electrical connection of main circuit Ype of electrical connection for auxiliary- and control current circuit Ype of electrical connection for auxiliary- and control current circuit Ype of electrical connection for auxiliary- and control current circuit Ype of electrical connection for auxiliary- and control current circuit Ype of electrical connection for auxiliary- and control current circuit Yes With transformer No. Number of command positions Suitable for emergency stop Coordination class according to IEC 60947-4-3 Number of indicator lights 3 External reset possible Yes With fuse No. Degree of protection (IP) Pizo International Pizo Internation
Rated conditional short-circuit current, type 2, 400 V Number of auxiliary contacts as normally open contact Number of auxiliary contacts as normally closed contact Ambient temperature, upper operating limit **C*** 60 Temperature compensated overload protection Release class Type of electrical connection of main circuit Type of electrical connection for auxiliary- and control current circuit Rail mounting possible With transformer Number of command positions Suitable for emergency stop Coordination class according to IEC 60947-4-3 Number of indicator lights External reset possible With fuse Degree of protection (IP) I a Coordination class according (IP)
Number of auxiliary contacts as normally open contact Number of auxiliary contacts as normally closed contact Ambient temperature, upper operating limit Temperature compensated overload protection Release class Type of electrical connection of main circuit Type of electrical connection for auxiliary- and control current circuit Rail mounting possible With transformer Number of command positions Suitable for emergency stop Coordination class according to IEC 60947-4-3 Number of indicator lights External reset possible With fuse Degree of protection (IP) I a 1 1 a 1 a
Number of auxiliary contacts as normally closed contact Ambient temperature, upper operating limit Temperature compensated overload protection Release class Type of electrical connection of main circuit Type of electrical connection for auxiliary- and control current circuit Rail mounting possible With transformer Number of command positions Suitable for emergency stop Coordination class according to IEC 60947-4-3 Number of indicator lights External reset possible With fuse Degree of protection (IP) I a la l
Ambient temperature, upper operating limit Temperature compensated overload protection Release class Type of electrical connection of main circuit Type of electrical connection for auxiliary- and control current circuit Rail mounting possible With transformer Number of command positions Suitable for emergency stop Coordination class according to IEC 60947-4-3 Number of indicator lights External reset possible With fuse Degree of protection (IP) Ambier of indicator lights External reset possible Ves About
Temperature compensated overload protection Release class CLASS 10 Type of electrical connection of main circuit Spring clamp connection Type of electrical connection for auxiliary- and control current circuit Rail mounting possible With transformer With transformer No Number of command positions Suitable for emergency stop Coordination class according to IEC 60947-4-3 Number of indicator lights External reset possible With fuse No Degree of protection (IP) Pes CLASS 10 Spring clamp connection Spring clamp connection No Yes No No Yes No No In I
Release class Type of electrical connection of main circuit Type of electrical connection for auxiliary- and control current circuit Spring clamp connection Type of electrical connection for auxiliary- and control current circuit Spring clamp connection Yes With transformer No Number of command positions Suitable for emergency stop No Coordination class according to IEC 60947-4-3 Number of indicator lights Sternal reset possible With fuse No Degree of protection (IP) IP20
Type of electrical connection of main circuit Type of electrical connection for auxiliary- and control current circuit Rail mounting possible With transformer With transformer No Number of command positions Suitable for emergency stop Coordination class according to IEC 60947-4-3 Number of indicator lights External reset possible With fuse Degree of protection (IP) Spring clamp connection No Yes No IP20
Type of electrical connection for auxiliary- and control current circuit Rail mounting possible With transformer Number of command positions Suitable for emergency stop Coordination class according to IEC 60947-4-3 Number of indicator lights External reset possible With fuse Degree of protection (IP) Spring clamp connection Yes No No No No IP20
Rail mounting possible With transformer No Number of command positions Suitable for emergency stop Coordination class according to IEC 60947-4-3 Number of indicator lights External reset possible With fuse No Degree of protection (IP) Yes No No IP20
With transformer No Number of command positions Suitable for emergency stop Coordination class according to IEC 60947-4-3 Number of indicator lights External reset possible With fuse No Degree of protection (IP) No No No IP20
Number of command positions Suitable for emergency stop No Coordination class according to IEC 60947-4-3 Number of indicator lights Saternal reset possible With fuse No Degree of protection (IP) No IP20
Suitable for emergency stop Coordination class according to IEC 60947-4-3 Number of indicator lights External reset possible With fuse No Degree of protection (IP) No No IP20
Coordination class according to IEC 60947-4-3 Number of indicator lights External reset possible With fuse No Degree of protection (IP) IP20
Number of indicator lights External reset possible With fuse Degree of protection (IP) 3 Yes No IP20
External reset possible With fuse No Degree of protection (IP) Yes No IP20
With fuse No Degree of protection (IP) IP20
Degree of protection (IP)
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	110.8
Depth	mm	113.6

Approvals

Product Standards	UL 60947-4-1; CSA C22.2 No. 60947-4-1-14; CE marking
UL File No.	E29096
UL Category Control No.	NLDX, NLDX7
CSA File No.	UL report applies to both US and Canada
North America Certification	UL listed, certified by UL for use in Canada
Specially designed for North America	No

Characteristics



Dimensions

