Specifications

Photo is representative

Eaton 192400

Eaton Moeller® series EMS2 Reversing starter, 24 V DC, 1,5 - 7 (AC-53a), 9 (AC-51) A, Screw terminals, Controlled stop, PTB 19 ATEX 3000 EMS2-ROSF-Z-9-24VDC

General specifications

PRODUCT NAME	Eaton Moeller® series EMS2 Reversing starter
CATALOG NUMBER	192400
MODEL CODE	EMS2-ROSF-Z-9-24VDC
EAN	4015081930975
PRODUCT LENGTH/DEPTH	114.5 mm
PRODUCT HEIGHT	160 mm
PRODUCT WIDTH	22.5 mm
PRODUCT WEIGHT	0.35 kg
CERTIFICATIONS	IEC 61508 IEC/EN 60947-4-2 EN ISO 13849 UL508 UL File No.: E29096 UL Category Control No.: NLDX, NLDX7 PTB 19 ATEX 3000 UL 60947-4-1 CSA-C22.2 No. 60947-4-1-14 CE marking UL listed Certified by UL for use in Canada UL report applies to both US and Canada

Powering Business Worldwide

Features & Functions

FITTED WITH:	fuse
FUNCTIONS	Motor protection Controlled stop DOL starting Reversing start Temperature compensated overload protection

General

CLASS	CLASS 10 A
CONNECTION TO SMARTWIRE-DT	No
DEGREE OF PROTECTION	IP20 NEMA Other
MODEL	Reversing starter
MOUNTING METHOD	Mounting on Busbar 30 mm Rail mounting possible Motor starter Feeder System Mounting on Busbar 60 mm Top-hat rail fixing (according to IEC/EN 60715, 35 mm)
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	0.14 - 2.5 mm^2, Control circuit cables 0.2 - 2.5 mm^2, Main cables
TERMINAL CAPACITY (AWG)	26 - 14, Control circuit cables 24 - 14, Main cables
TYPE	Reversing 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	EN 55011 Class A (EN 61000-6-3, emitted interference, radiated)

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	1.5 kW

Contacts

NUMBER OF AUXILIARY CONTACTS (NORMALLY CLOSED CONTACTS)	1
NUMBER OF AUXILIARY CONTACTS (NORMALLY OPEN CONTACTS)	1
NUMBER OF CONTACTS (CHANGE-OVER CONTACTS)	1

V, 50 HZ	
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	-3 - 9.6 V DC, Switching level "Low", Actuating circuit (ON, L, R) < 5 V DC, Switching level "confirm Off", Actuating circuit (ON, L, R) 19.2 - 30 V DC, Switching level "High", Actuating circuit (ON, L, R)

Safety

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]
SAFETY PARAMETER (EN ISO 13849-1)	3 (safe switch off), Category PL e, Performance level (safe switch off) 60 (safe switch off) / 70 (motor protection) years; MTTFD
SAFETY PARAMETER (IEC 62061)	99 % (safe switch off) / 98 % (motor protection), DC PFHd [FIT]: 2.3 (Safe switch off) Λsu [FIT]: 1072 (Safe switch off) / 969 (Motor protection) Λdd [FIT]: 580 (Safe switch off) / 601 (Motor protection) Λdu [FIT]: 2.3 (Safe switch off) / 11 (Motor protection) 99 %, SFF SIL 3 (Safe switch off) / SIL 2 (Motor protection) Opening delay [ms]: 200 (safe switch off) / Class 10A (motor protection) Λsd [FIT]: 0

Design verification

EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT PVID	13 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	Meets the product standard's requirements.

BY INTERNAL ELECT. EFFECTS	
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.

Resources	
APPLICATION NOTES	eaton-motor-starter-ems2-setting-motor-protection-twincat3-ap034001-en-us.pdf
BROCHURES	eaton-ems2-electronic-motorstarter-brochure-br034001en-en-us.pdf
CHARACTERISTIC CURVE	eaton-contactors-ems2-reversing-starter-characteristic-curve-007.eps eaton-contactors-ems2-reversing-starter-characteristic-curve-005.eps eaton-contactors-ems2-reversing-starter-characteristic-curve.eps eaton-contactors-ems2-reversing-starter-characteristic-curve-004.eps eaton-contactors-ems2-reversing-starter-characteristic-curve-002.eps eaton-contactors-ems2-reversing-starter-characteristic-curve-006.eps
DECLARATIONS OF CONFORMITY	DA-DC-00004948.pdf DA-DC-00004947.pdf DA-DC-00004126.pdf
DRAWINGS	eaton-contactors-ems2-reversing-starter-dimensions-004.eps eaton-contactors-ems2-reversing-starter-3d-drawing-004.eps
ECAD MODEL	DA-CE-ETN.EMS2-ROSF-Z-9-24VDC
INSTALLATION INSTRUCTIONS	IL034089ZU
INSTALLATION VIDEOS	Eaton's electronic motor starter EMS2

MANUALS AND USER GUIDES	eaton-electronic-motor-starter-ems2-manual-mn034003en-us.pdf
MCAD MODEL	DA-CD-ems2_rosf_z_24vdc DA-CS-ems2_rosf_z_24vdc
SALES NOTES	eaton-ems2-electronic-motorstarter-flyer-fl034007en-en-us.pdf

PROJECT NAME:	
PROJECT NUMBER:	
PREPARED BY:	
DATE:	

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