

DATASHEET - EMS-ROS-T-9-SWD

Reversing starter, 24 V DC, 1,5 - 7 (AC-53a), 9 (AC-51) A, Push in terminals, SmartWire-DT slave, Controlled stop

Part no. EMS-ROS-T-9-SWD
Catalog No. 169790
Alternate Catalog No. EMS-ROS-T-9-SWD

Delivery program

Product range				This item is only available for a limited time. Replacement item: Art. no. 192390, Type: EMS2-ROS-T-9-SWD
Product range				Electronic motor starter
Subrange				SmartWire-DT slave
Basic function				SmartWire-DT electronic motor starters
Function				Reversing starters (complete devices)
Description				For connecting to SmartWire-DT for expanded diagnostics.
Messages				DOL starting Reversing start Motor protection Circuit design: safety output stage with bypass, three-phase disconnect. Controlled stop via additional enable signal terminal up to SIL3/PlE.
Commands				Operational readiness Operating direction feedback Enable signal Motor current in % Motor current in A Thermal motor image in % Overload prewarning Trip indications (overload, phase failure, etc.) Set short-circuit release value Device Type

Motor ratings

Max. rating for three-phase motors, 50 - 60 Hz				
AC-53a				
380 V 400 V 415 V	P	kW		0.55 - 3
Setting range of overload releases	I _r	A _x		1,5 - 7 (AC-53a) 9 (AC-51)
Actuating voltage				24 V DC
Connection technique				Push in terminals
Stop Function				Controlled stop
Connection to SmartWire-DT				yes

Technical data**General**

Standards				IEC/EN 60947-4-2
Dimensions				
Width		mm		30
Height		mm		157
Depth		mm		124
Weight		kg		0.3
Mounting				Top-hat rail IEC/EN 60715, 35 mm
Protection type (IEC/EN 60529, EN50178, VBG 4)				IP20
Mounting position				Vertical
Lifespan, electrical	Operations			3 x 10 ⁷

Max. switching frequency		Operation	3/200 (pulse pause time 50:50)
Terminal capacity		h	
Solid		mm ²	1 x (0,2 - 2,5) 1 x AWG20 - 14
flexible, with ferrule		mm ²	2 x (0,2 - 2,5) 1 x AWG24 - 14
Notes			Minimum length 10 mm.
flexible, with twin ferrule		mm ²	2 x (0,2 - 1,5) 2 x AWG24 - 16
Notes			Minimum length 10 mm.

Climatic environmental conditions

Operating ambient temperature		°C	-5 - +60, in accordance with IEC 60068-2-1
Storage	θ	°C	-40 - +80

Main conducting paths

Rated impulse withstand voltage	U _{imp}	V AC	6000
Overvoltage category/pollution degree			III/2
Rated operational voltage	U _e	V	42 - 550
Rated operational current			
AC-51	I _e	A	1.20 - 9
AC-53a	I _e	A	1.20 - 7
Heat dissipation	P _V	W	1 - 12
Static heat dissipation, non-current-dependent	P _{vs}	W	1
Basic insulation to IEC/EN60947-1			
between feedback signal output and switch voltage		V AC	500
Current measurement			
Setting range of overload releases	I _r	A_x	1,5 - 7 (AC-53a) 9 (AC-51)
Release class		CLASS	10 (I _r ≤ 4 A) 10A (I _r > 4 A)
Recovery time	t _w	min.	2 (manual startup) 20 (automatic restart)
Balance monitoring			
Magnitude I _{max} > I _{rated} ((I _{max} - I _{min})/I _{max})		%	If ≥ 33, pick-up time of 120 s If ≥ 67, pick-up time of 1.8 s
Magnitude I _{max} < I _{rated} ((I _{max} - I _{min})/I _{rated})		%	If ≥ 33, pick-up time of 120 s If ≥ 67, pick-up time of 1.8 s
Stall protection			
Pick-up time I (L1) or I (L3)		A	60
Pick-up time		S	0.5
Short-circuit rating			
Type "1" coordination			
Short-circuit protective device			50 kA, 500 V AC: Fuse 16 A gG/gL 50 kA, 500 V AC: fuse 30 A CCMR 50 kA, 415 V AC: PKM0-4 15 kA, 415 V AC: PKM0-6,3 2.5 kA, 400 V AC: FAZ-B16/3

Control section

Input data			
Supply voltage	U _{AUX}	V DC	24 (-15 - +20 %)
Residual ripple on the input voltage		%	≤ 5
Input current		mA	70
Note on input current			If the +, EN+ / -, EN- inputs are linked
Current draw inrush		mA	120
Current draw (operation)	U _{AUX}	mA	50

Electromagnetic compatibility (EMC)

Electrostatic discharge (ESD)			
applied standard			IEC EN 61000-4-2, Level 3
Air discharge		kV	8
Contact discharge		kV	6
Electromagnetic fields (RFI)			

applied standard			IEC/EN 61000-4-3
		V/m	800 - 1000 MHz: 10 1.4 - 2 GHz: 10 2.0 - 2.7 GHz: 3
Radio interference suppression			EN 55011, Class A (emitted interference, line-conducted) EN 61000-6-3, Class A (emitted interference, radiated)
Note on use			This product is designed for operation in industrial environments (environment 2). The use in residential environments (environment 1) could cause electrical interference so that addition suppression must be planned.
Burst		kV	2 IEC/EN 61000-4-4, level 3
power pulses (Surge)			1 kV (symmetrical) 2 kV (asymmetrical) according to IEC/EN 61000-4-5
Immunity to line-conducted interference to (IEC/EN 61000-4-6)		V	10

Technical safety parameters:

Notes			Safe switch off. motor protection
Ambient temperature		°C	40
Values according to EN ISO 13849-1			
Performance level	PL		e
Category			3 (Sicheres Abschalten) / 2 (Motorschutz)
Values according to IEC 62061			
			λ_{sd} [FIT]: 0 λ_{su} [FIT]: 1321 (Sicheres Abschalten) / 1061 (Motorschutz) λ_{dd} [FIT]: 685 (Sicheres Abschalten) / 577 (Motorschutz) λ_{du} [FIT]: 0,1 (Sicheres Abschalten) / 18 (Motorschutz) SFF [%]: 99 (Sicheres Abschalten) / 98 (Motorschutz) DC [%]: 99 (Sicheres Abschalten) / 96 (Motorschutz)
Notes			Safe switch off. motor protection

Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	I_n	A	6.5
Heat dissipation per pole, current-dependent	P_{vid}	W	2.1
Equipment heat dissipation, current-dependent	P_{vid}	W	6.3
Static heat dissipation, non-current-dependent	P_{vs}	W	1
Heat dissipation capacity	P_{diss}	W	0
Operating ambient temperature min.		°C	-5
Operating ambient temperature max.		°C	60
IEC/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.
10.2.3.3 Verification 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 (ec1@ss10.0.1-27-37-09-05 [AJZ718013])

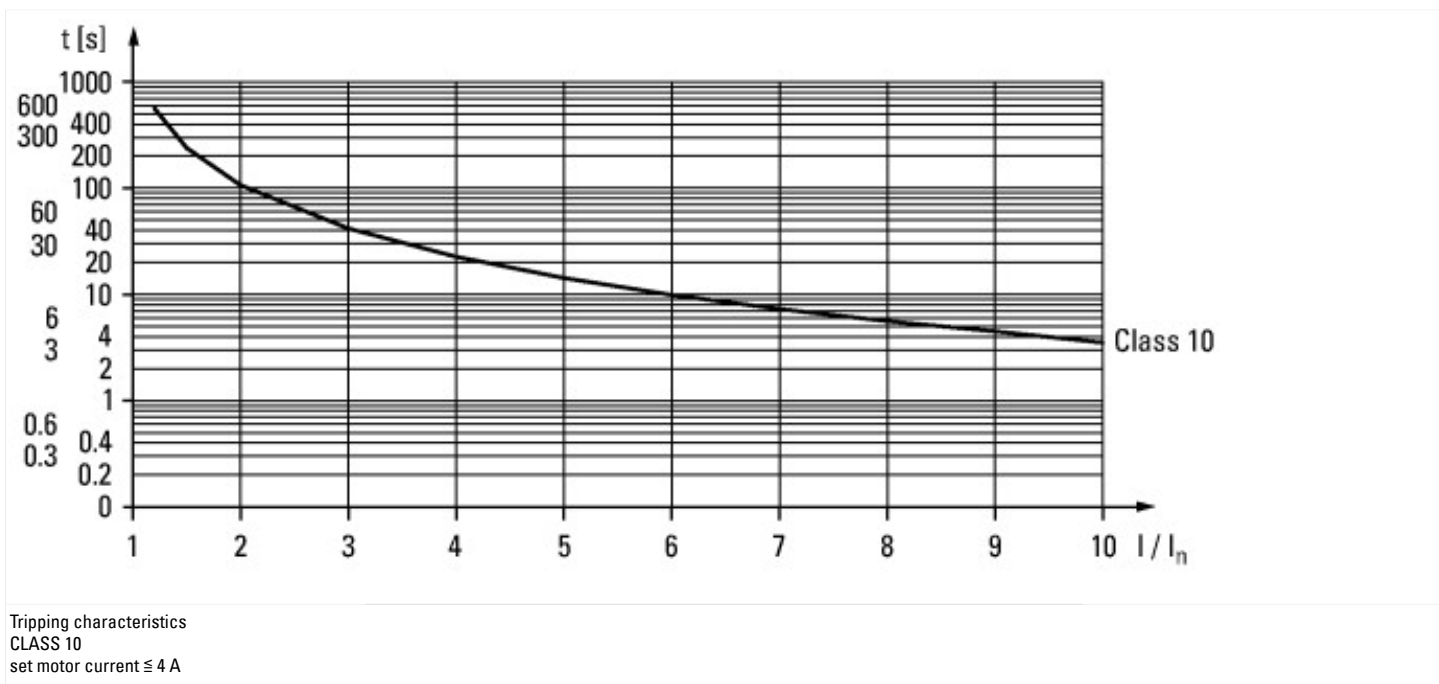
Kind of motor starter		Reversing starter
With short-circuit release		No
Rated control supply voltage U_s at AC 50HZ	V	0 - 0
Rated control supply voltage U_s at AC 60HZ	V	0 - 0
Rated control supply voltage U_s at DC	V	24 - 24
Voltage type for actuating		DC
Rated operation power at AC-3, 230 V, 3-phase	kW	1.5
Rated operation power at AC-3, 400 V	kW	3
Rated power, 460 V, 60 Hz, 3-phase	kW	2.2
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		0
Number of auxiliary contacts as normally closed contact		0
Ambient temperature, upper operating limit	°C	40
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		Yes
Coordination class according to IEC 60947-4-3		Class 1
Number of indicator lights		4
External reset possible		Yes
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

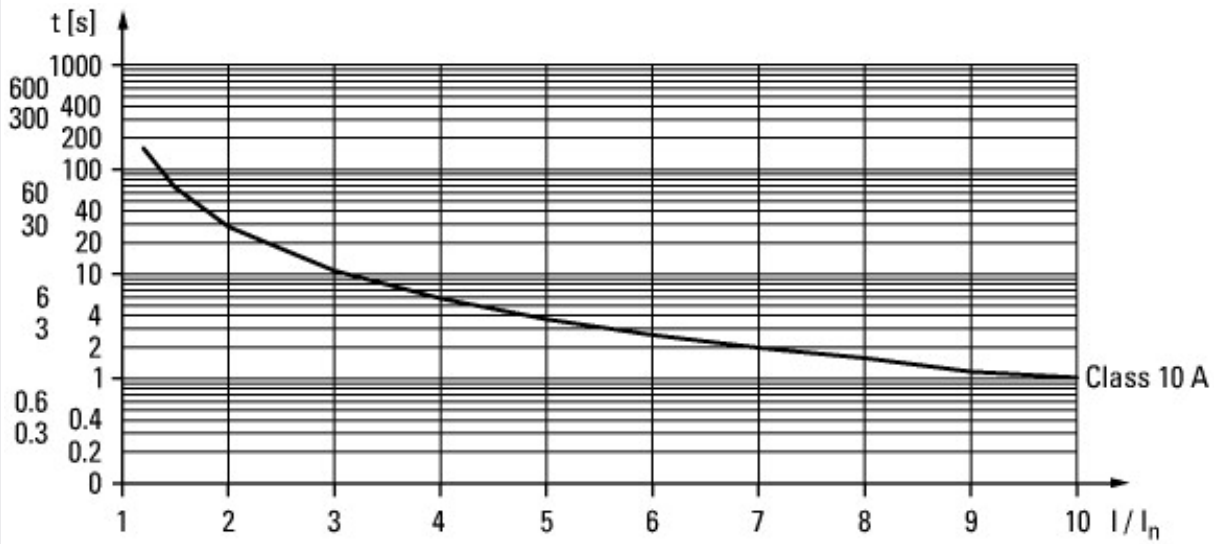
Supporting protocol for PROFINET IO		No
Supporting protocol for PROFINET CBA		No
Supporting protocol for SERCOS		No
Supporting protocol for Foundation Fieldbus		No
Supporting protocol for EtherNet/IP		No
Supporting protocol for AS-Interface Safety at Work		No
Supporting protocol for DeviceNet Safety		No
Supporting protocol for INTERBUS-Safety		No
Supporting protocol for PROFIsafe		No
Supporting protocol for SafetyBUS p		No
Supporting protocol for other bus systems		Yes
Width	mm	30
Height	mm	157
Depth	mm	139

Approvals

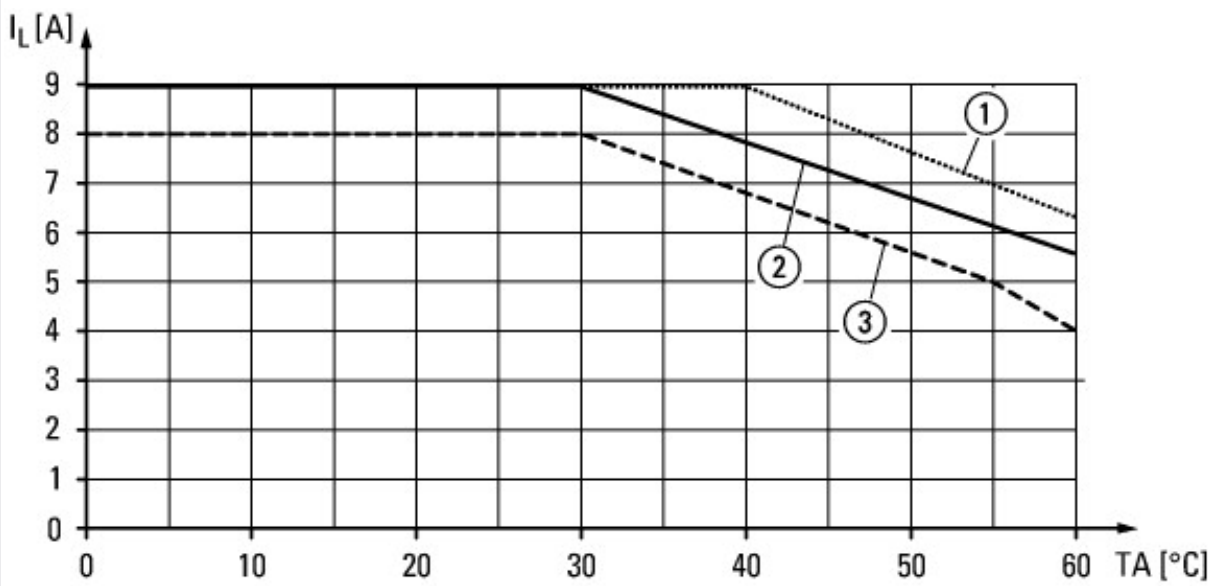
Product Standards		IEC/EN 60947-5; UL 508; CSA-C22.2 No. 14; CE marking
UL File No.		E29096
UL Category Control No.		NLDX, NLDX7
CSA File No.		UL report applies to both US and Canada
North America Certification		UL listed, certified by UL for use in Canada
Specially designed for North America		No

Characteristics



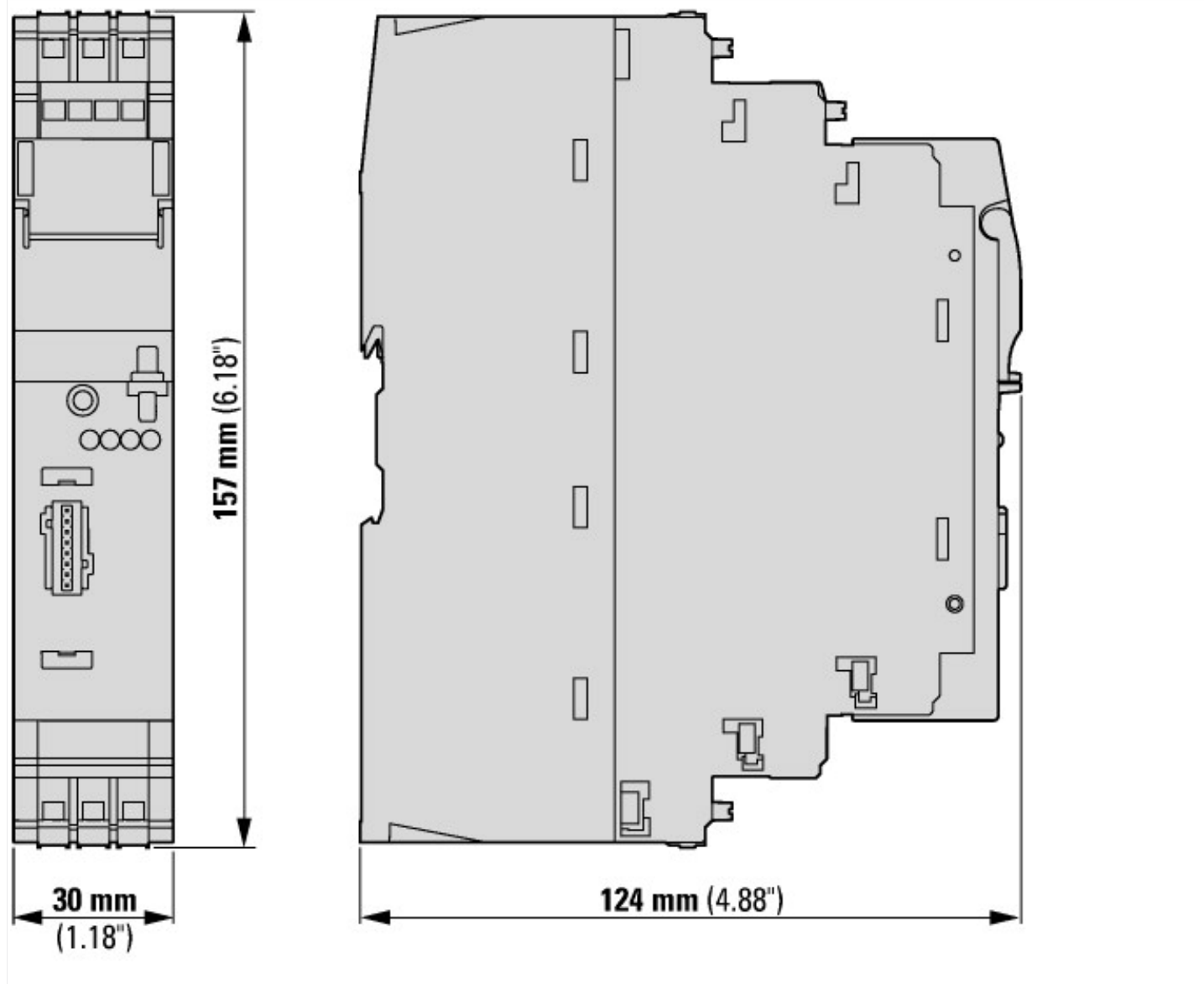


Tripping characteristics
 CLASS 10A
 set motor current > 4 A



Current derating
 ① Single device
 ② connected in series with 30 mm clearance
 ③ connected in series without clearance

Dimensions





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