



## DOL starter 9A

**Part no.**  
**Article no.**

**EMS-DO-T-9-24VDC**  
**170100**




Powering Business Worldwide™

**Catalog No.**

**EMS-DO-T-9-24VDC**

### Delivery programme

Product range			Electronic motor starter
Basic function			DOL starters (complete devices)
Description			DOL starting Motor protection Circuit design: safety output stage with bypass, three-phase disconnect.
Conformity, Approval			
Explosion protection (according to ATEX 94/9/EC)			II (2) G [Ex e] [Ex d] [Ex px] II (2) D [Ex t] [Ex p]
EC-prototype test certification			PTB 13 ATEX 3003
<b>Motor ratings</b>			
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 <sub>r</sub>	A <sub>x</sub>	1,5 - 6,5 (AC-53a) 9 (AC-51)
			
Actuating voltage			24 V DC
Connection technique			Push in terminals
Connection to SmartWire-DT			no

### Approvals

Product Standards  
UL File No.  
UL Category Control No.  
CSA File No.  
North America Certification  
Specially designed for North America

IEC/EN 60947-5; UL 508; CSA-C22.2 No. 14; CE marking  
E29096  
NLDX, NLDX7  
UL report applies to both US and Canada  
UL listed, certified by UL for use in Canada  
No

### General

Standards			IEN/EN 60947-4-2 UL508
Dimensions			
Width		mm	30
Height		mm	157
Depth		mm	123.5
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 Motor feeder at bottom
Lifespan, electrical	Operations		3 x 10 <sup>7</sup>
Max. switching frequency		Operations/h	200 (pulse pause time 50:50)
Terminal capacity			
Solid		mm <sup>2</sup>	1 x (0,75 - 2,5) 1 x AWG20 - 14
flexible, with ferrule		mm <sup>2</sup>	2 x (0,75 - 2,5) 1 x AWG20 - 14
Notes			Minimum length 10 mm.
flexible, with twin ferrule		mm <sup>2</sup>	2 x (0,75 - 1,5) 2 x AWG20 - 16

Notes			Minimum length 10 mm.
<b>Climatic environmental conditions</b>			
Operating ambient temperature		°C	-25 - +60, in accordance with IEC 60068-2-1
Condensation			Take appropriate measures to prevent condensation
Storage	θ	°C	-40 - +80
<b>Main conducting paths</b>			
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 - 6.5
Heat dissipation	$P_V$	W	3.3 - 14.6
Basic insulation to IEC/EN60947-1			
Between supply, control, and switching voltages		V AC	500
between feedback signal output and switch voltage		V AC	500
Safe isolation to IEC/EN60947-1			
Between supply, control, and switching voltages		V AC	$\leq 300$
between feedback signal output and switch voltage		V AC	$\leq 300$
Safe isolation to EN 50178			
Between supply, control, and switching voltages		V AC	500
between feedback signal output and switch voltage		V AC	500
Current measurement			
Setting range of overload releases	$I_r$	A_x	1,5 - 6,5 (AC-53a) 9 (AC-51)
Release class		CLASS	10 ( $I_r \leq 4$ A) 10A ( $I_r > 4$ A)
Recovery time	$t_W$	min.	2 (manual startup) 20 (automatic restart)
Balance monitoring			
Magnitude $I_{max} > I_{rated} ((I_{max} - I_{min})/I_{max})$		%	bei $\leq 33$ , Ansprechzeit 120 s bei $\leq 67$ , Ansprechzeit 1,8 s
Magnitude $I_{max} < I_{rated} ((I_{max} - I_{min})/I_{rated})$		%	bei $\leq 33$ , Ansprechzeit 120 s bei $\leq 67$ , Ansprechzeit 1,8 s
Stall protection			
Pick-up time I (L1) or I (L3)		A	45
Pick-up time		S	2
Short-circuit rating			
Type "1" coordination			
Short-circuit protective device			50 kA, 500 V AC: Fuse 16 A gG/gL 50 kA, 415 V AC: PKM0-4 15 kA, 415 V AC: PKM0-6,3
<b>Control section</b>			
Input data			
Supply voltage	$U_{AUX}$	V DC	A1 - A2: 24 (-20 - +25 %)
Residual ripple on the input voltage		%	$\leq 5$
Input current		mA	40
Note on input current			without feedback signal
Actuating circuit (ON, L, R)			
Switching level "Low"		V DC	-3 - +9.6

Switching level "confirm Off"		V DC	< 5
Switching level "High"		V DC	19.2 - 30
Input current		mA	5
Feedback outputs			
Notes			Contacts 95, 96 or 98
Contacts			
CO = changeover			1 CO
Rated operational voltage	$U_e$	V AC/ DC	250
Rated operational current			
AC-15			
230 V	$I_e$	A	3
DC-13			
24 V	$I_e$	A	2

### 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 (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			motor protection
Ambient temperature		°C	40
Values according to EN ISO 13849-1			
MTTFd	Years		316
Values according to IEC 62061			
			$\lambda_{sd}$ [FIT]: 0 $\lambda_{su}$ [FIT]: 1550 $\lambda_{dd}$ [FIT]: 314 $\lambda_{du}$ [FIT]: 47,2 SFF [%]: 97,9 DC [%]: 86,9 SIL: 2

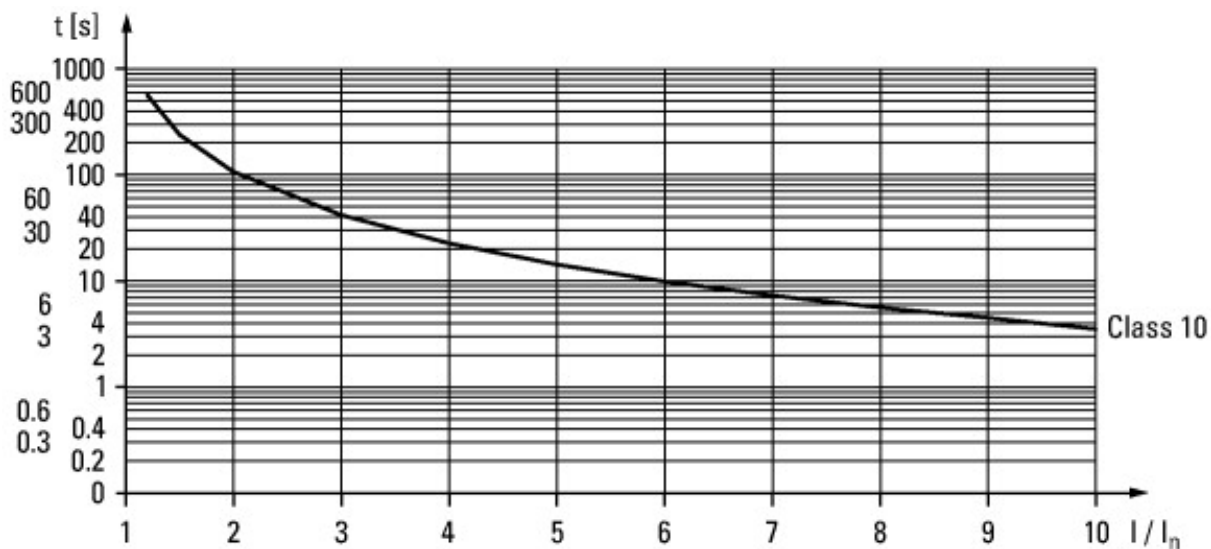
### Technical data ETIM 5.0

Low-voltage industrial components (EG000017) / Motor starter combination (EC001037)			
Electric engineering, automation, process control engineering / Low-voltage switch technology / Load breakout, motor breakout / Motor starter combination (ecl@ss8-27-37-09-05 [AJZ718009])			
Function			Direct starter
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, 400 V		kW	3
Rated operation current $I_e$		A	9

Conditioned rated short-circuit current $I_q$		kA	50
Setting range overload protector		A	1.5 - 9
With short-circuit release			No
Type of coordination			1
Connection type main current circuit			Spring clamp connection
Degree of protection (IP)			IP20
Suited for bus connection			No

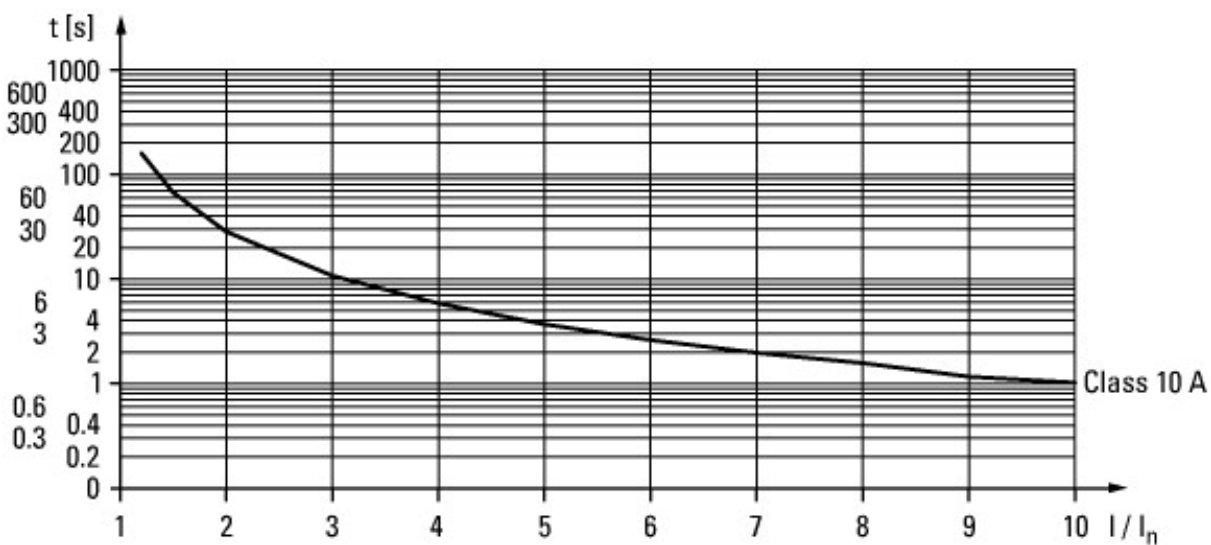
## Characteristics

Characteristic curves



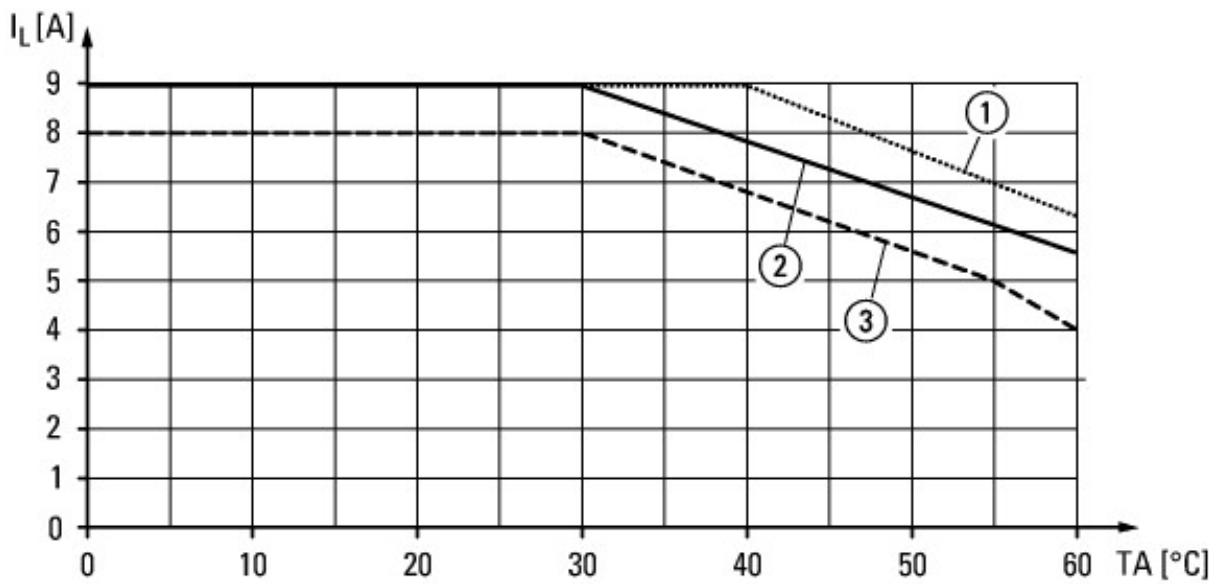
Tripping characteristics  
CLASS 10

set motor current  $\leq 4$  A



Tripping characteristics  
CLASS 10A

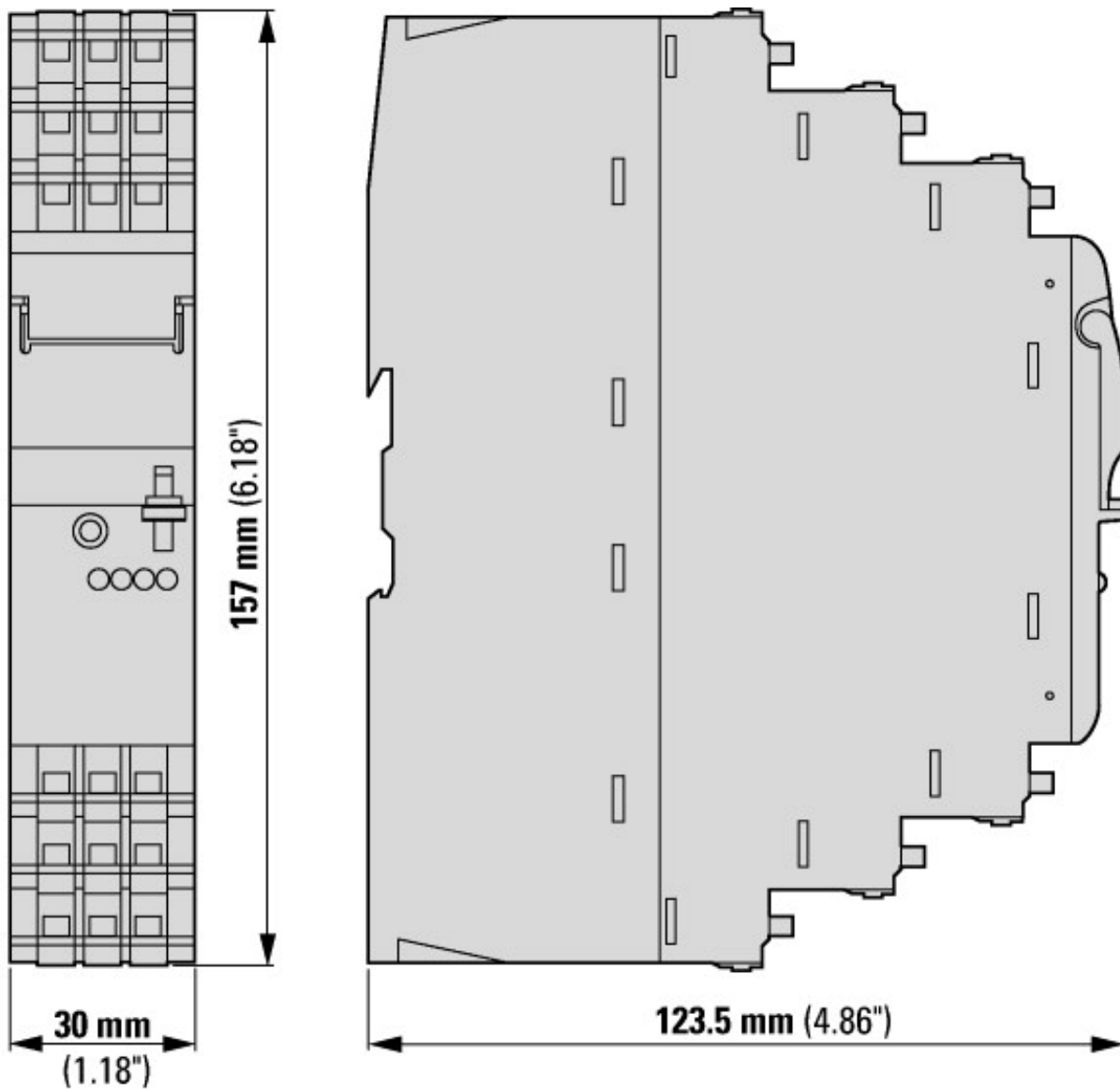
set motor current  $> 4$  A



Current derating

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

Dimensions



## Additional product information (links)

<b>IL03407198Z Electronic motor starter EMS</b>	
IL03407198Z Electronic motor starter EMS	<a href="ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03407198Z2014_02.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03407198Z2014_02.pdf</a>
<b>MN03407009Z-DE/EN Electronic motor starter EMS</b>	
MN03407009Z-DE/EN Electronic motor starter EMS - Deutsch / English	<a href="ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN03407009Z_DE_EN.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN03407009Z_DE_EN.pdf</a>
EMS product information, engineering notes	<a href="http://www.moeller.net/binary/w_brochures/br034001en.pdf">http://www.moeller.net/binary/w_brochures/br034001en.pdf</a>