

en Installation instructions **Motor starters**

- de** Montageanweisung
- fr** Notice de montage
- it** Istruzioni di montaggio
- zh** 安装说明书
- es** Instrucciones de montaje
- ru** Инструкция по монтажу
- pt** Instruções de instalação
- ko** 설치 매뉴얼



At the end of its life, this equipment should be collected separately from any unsorted municipal waste.



en WARNING! HAZARDOUS VOLTAGE!
Risk of electrical shock. Disconnect power before servicing, commissioning, decommissioning, and dismantling. The installation and the operation of this device and any maintenance must be carried out by a qualified person in accordance with specific local standards and safety regulations. Before installing this device, read these operating instructions carefully. Do not touch live parts. To avoid damages to persons and material the devices have to be replaced in case of mechanical and/or electrical damage. (Follow NFPA 70E requirements).

de ACHTUNG! GEFÄHRLICHE SPANNUNG!
Stromschlaggefahr. Unterbrechen Sie vor Wartungsarbeiten, Inbetriebnahme, Außerbetriebnahme und Demontage die Stromversorgung. Die Installation und der Betrieb dieses Geräts sowie jegliche Wartung müssen von einer qualifizierten Person gemäß den spezifischen örtlichen Normen und Sicherheitsvorschriften durchgeführt werden. Lesen Sie vor der Installation des Geräts diese Betriebsanleitung sorgfältig durch. Aktive Teile dürfen nicht berührt werden. Um Schäden an Personen und Material zu vermeiden, müssen die Geräte bei mechanischen und/oder elektrischen Schäden an den Geräten ersetzt werden.

fr ATTENTION! TENSION DANGEREUSE!
Risque de choc électrique. Débrancher l'alimentation électrique avant toute intervention, mise en service ou mise hors service et démantèlement. L'installation, l'utilisation et la maintenance de ce dispositif doivent être réalisées par du personnel qualifié conformément aux normes et réglementations de sécurité locales. Avant d'installer le dispositif, lisez attentivement ces directives d'utilisation. Ne touchez pas les pièces sous tension. Afin d'éviter les dommages causés aux personnes et aux biens, les dispositifs doivent être remplacés en cas de dommage mécanique et/ou électrique. (Respectez les exigences NFPA 70E).

it ATTENZIONE! PERICOLO TENSIONE!
Rischio di scossa elettrica. Interrompere l'alimentazione prima di ogni operazione di manutenzione, messa in servizio, dismissione e smontaggio. L'installazione e il funzionamento di questo dispositivo e qualsiasi manutenzione devono essere eseguiti da una persona qualificata in conformità con le norme locali e di sicurezza specifiche. Prima di installare questo dispositivo, leggere attentamente queste istruzioni per l'uso. Non toccare le parti in tensione. Per evitare danni a persone e materiali, i dispositivi devono essere sostituiti in caso di danni meccanici e/o elettrici.

zh 注意! 电压危险!
电击危险。请在维修、调试、撤拆和拆解前断开电源。本设备的安装和操作以及所有维护工作必须由合格的人员按照当地的具体标准和安全守则进行。安装本设备前，请仔细阅读这些操作说明。请勿触摸带电部分。为了避免人员伤害和材料损害，如果在出现机械和/或电气损坏，必须更换此设备。

es ¡ATENCIÓN! ¡VOLTAJE PELIGROSO!
Riesgo de descarga eléctrica. Desconecte la alimentación eléctrica antes de dar servicio, poner en marcha, retirar de servicio y desmontar. La instalación y operación de este dispositivo, así como cualquier mantenimiento, debe ser realizado por una persona cualificada de acuerdo con estándares locales y reglamentos de seguridad específicos. Antes de instalar este dispositivo, lea atentamente las instrucciones de uso. No toque piezas bajo tensión. Para evitar daños personales y materiales, los dispositivos deben reemplazarse en caso de fallo mecánico o eléctrico. (Siga los requisitos NFPA 70E).

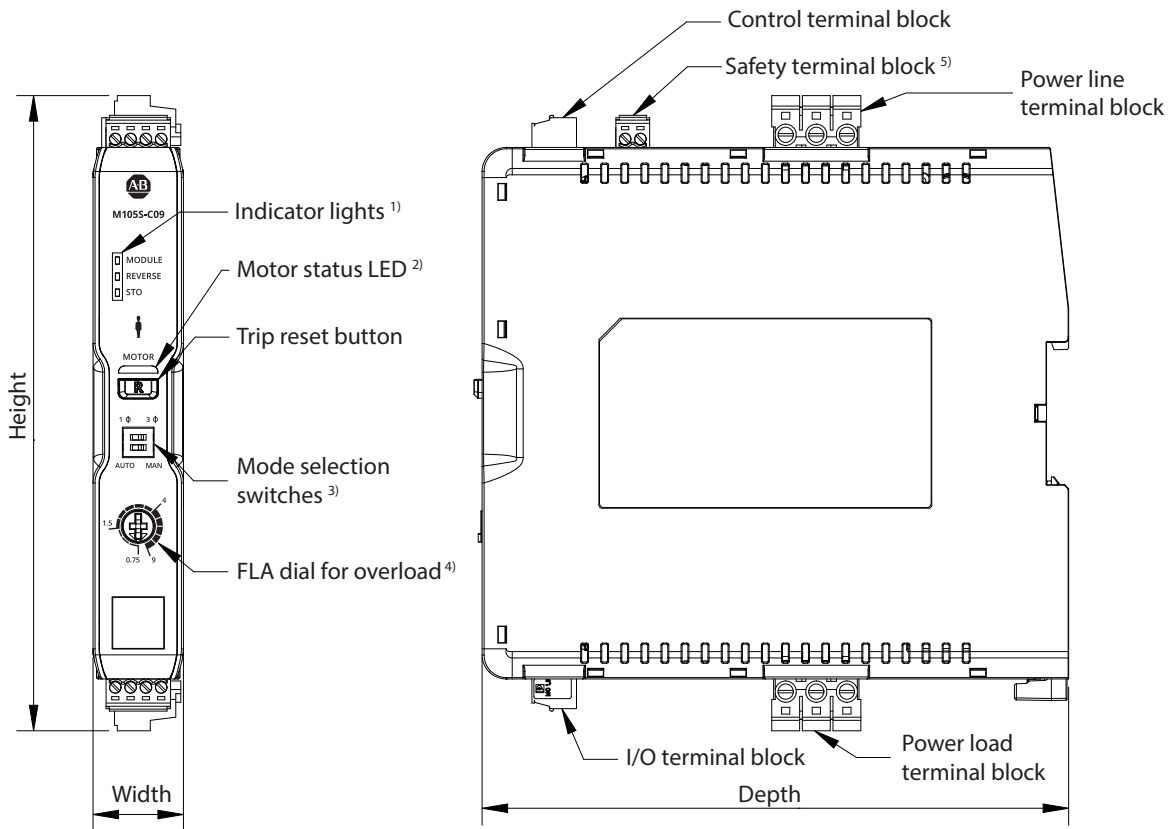
ru ВНИМАНИЕ! ОПАСНОЕ НАПРЯЖЕНИЕ!
Опасность поражения электрическим током. Отключите питание перед выполнением обслуживания, ввода в эксплуатацию, вывода из эксплуатации и демонтажа. Установка и эксплуатация этого устройства, а также любое техническое обслуживание и ремонт должны выполняться квалифицированным специалистом согласно соответствующим местным стандартам и нормам техники безопасности. Перед установкой данного устройства внимательно прочтите настоящую инструкцию по эксплуатации. Не прикасайтесь к токоведущим частям. В случае возникновения механических и/или электрических повреждений необходимо заменять устройства во избежание травматизма персонала и повреждения материальной части.

pt ATENÇÃO! TENSÃO PERIGOSA!
Risco de choque elétrico. Desconecte a alimentação antes de fazer manutenção, comissionamento, desativação e desmontagem. A instalação e operação deste dispositivo e qualquer manutenção devem ser feitas por pessoal qualificado, de acordo com as normas locais e regulamentações de segurança. Antes de instalar este dispositivo, leia com atenção as instruções de operação. Não toque em peças energizadas. Para evitar danos a pessoas e materiais, os dispositivos devem ser substituídos em caso de dano mecânico e/ou elétrico.

ko 주의! 위험한 전압!
감전 위험, 작동, 시운전, 해체 및 철거 전에 전원을 분리하십시오. 이 장치의 설치 및 작동과 유지 보수는 유자격 직원이 지역 표준 및 안전 규정에 따라 수행해야 합니다. 이 장치를 설치하기 전에 사용자 매뉴얼을 주의 깊게 읽으십시오. 작동 중인 부품에 손을 대지 마십시오. 인적 및 물적 피해를 방지할 수 있도록 기계적 및/또는 전기적 손상이 발생하는 경우에 장치를 교체해야 합니다.

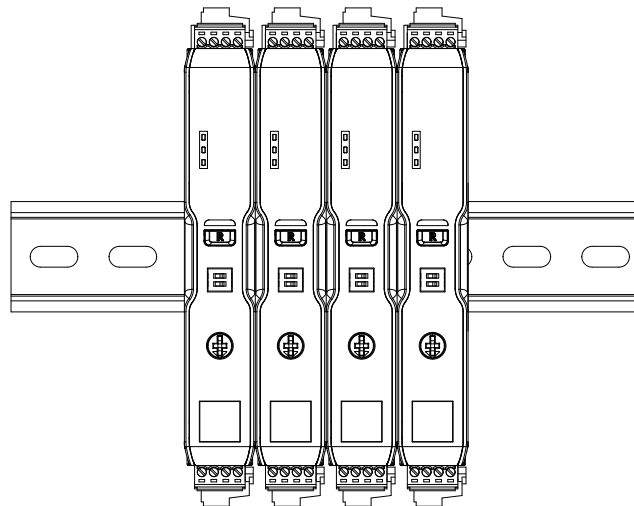
Dimensions and weight properties

Catalog	Description			Weight [g]	Height [mm]	Width [mm]	Depth [mm]
	Type of Device	Current Range	Terminal Type				
M109N-C09-S	Standard Non-Reversing Starter	0,75 to 9 A	Screw Terminal	352	158,1	22,5	148
M109N-C09-P	Standard Non-Reversing Starter	0,75 to 9 A	Push-In Terminal	352	158,1	22,5	148
M105N-C09-S	Standard Reversing Starter	0,75 to 9 A	Screw Terminal	420	158,1	22,5	148
M105N-C09-P	Standard Reversing Starter	0,75 to 9 A	Push-In Terminal	420	158,1	22,5	148
M109S-C09-S	Safety Non-Reversing Starter	0,75 to 9 A	Screw Terminal	386	158,1	22,5	148
M109S-C09-P	Safety Non-Reversing Starter	0,75 to 9 A	Push-In Terminal	386	158,1	22,5	148
M105S-C09-S	Safety Reversing Starter	0,75 to 9 A	Screw Terminal	414	158,1	22,5	148
M105S-C09-P	Safety Reversing Starter	0,75 to 9 A	Push-In Terminal	414	158,1	22,5	148
M109N-C23-S	Standard Non-Reversing Starter	4,6 to 23 A	Screw Terminal	706	180,6	45	168,7
M109N-C23-P	Standard Non-Reversing Starter	4,6 to 23 A	Push-In Terminal	706	180,6	45	168,7
M105N-C23-S	Standard Reversing Starter	4,6 to 23 A	Screw Terminal	866	180,6	45	168,7
M105N-C23-P	Standard Reversing Starter	4,6 to 23 A	Push-In Terminal	866	180,6	45	168,7
M109S-C23-S	Safety Non-Reversing Starter	4,6 to 23 A	Screw Terminal	708	180,6	45	168,7
M109S-C23-P	Safety Non-Reversing Starter	4,6 to 23 A	Push-In Terminal	708	180,6	45	168,7
M105S-C23-S	Safety Reversing Starter	4,6 to 23 A	Screw Terminal	868	180,6	45	168,7
M105S-C23-P	Safety Reversing Starter	4,6 to 23 A	Push-In Terminal	868	180,6	45	168,7



- 1) On the panel there are 3 LED indicator lights that indicate device status:
 - Module Status LED (top): shows the status of M100 starter (green for status ON / red for status FAULT),
 - Reversing LED (middle): no indication for forward mode, green LED for reversing mode,
 - Safety LED (bottom): green for Safe Torque Off / off for no Safe Torque Off.
- 2) Motor status LED: shows the status of connected motor (green for status ON / amber for status WARNING, red for status FAULT).
- 3) Top switch: for selection between 3 phase mode (default) and 1 phase mode.
Bottom switch: for selection between automatic and manual (default) control of trip reset.
- 4) Motor FLA dial.
- 5) Safety module only.

Preferred mounting position

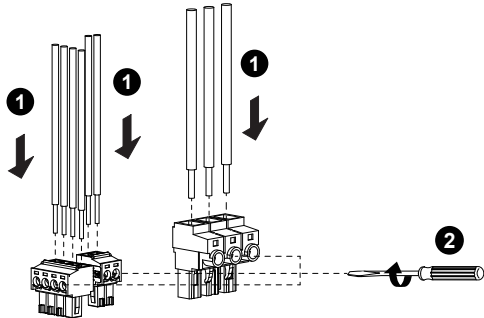


Vertical mounting position

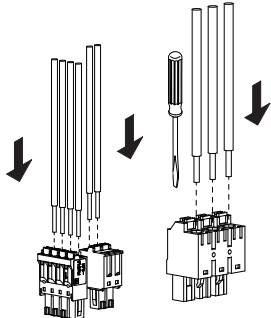
For additional information on mounting positions, reference user manual

Installation

Wiring connection

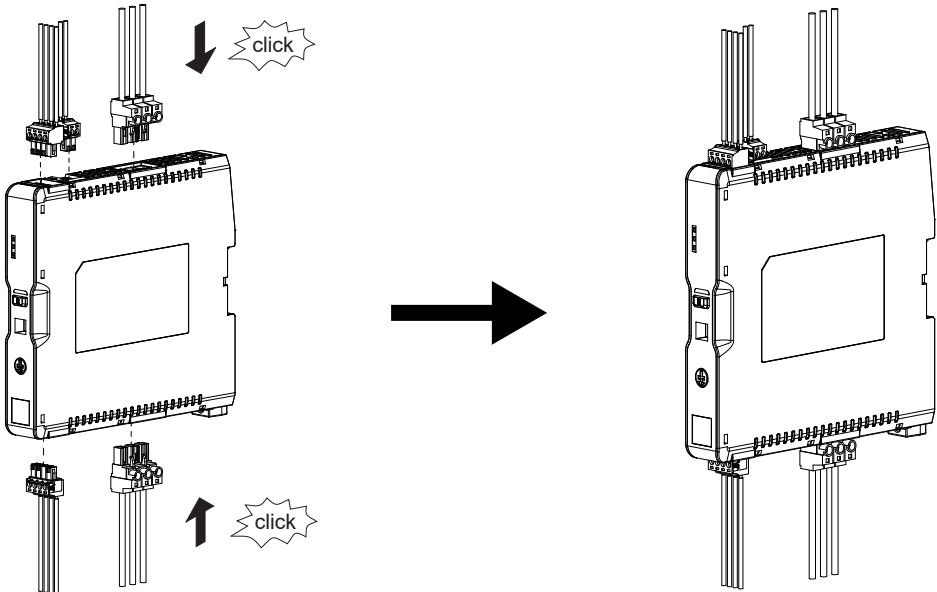


Screw terminals version

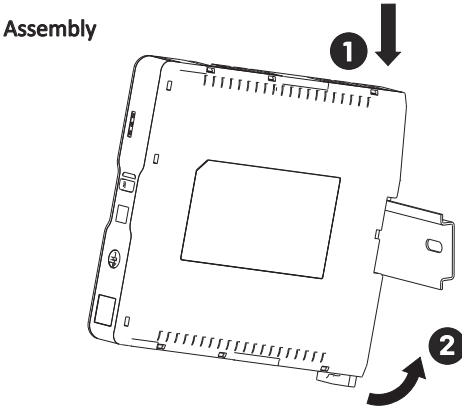


Push-in terminals version
See table on p. 4 to check for proper tool for wiring installation

Terminal blocks installation

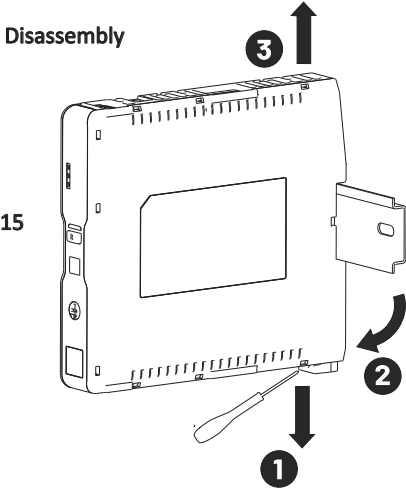


DIN rail installation



Assembly

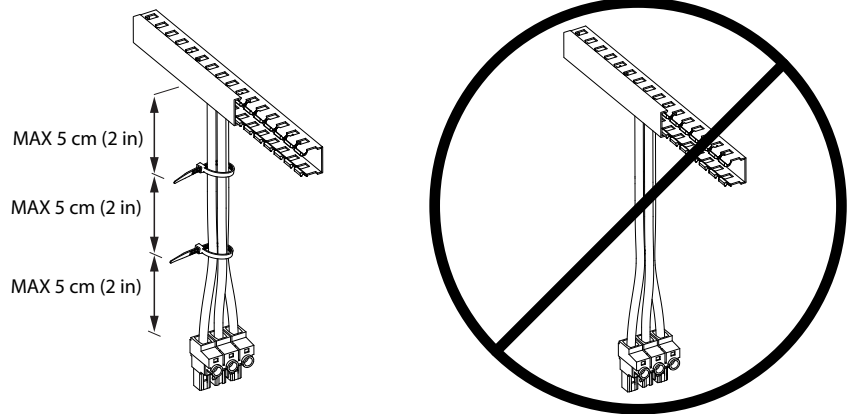
35 mm
EN/IEC 60715



Disassembly

! Important

Securely attach a cable tie every 5 cm (2 in) along the length of the power cables, starting at the power plug and ending at the wireway.



Torque specification and wiring

Power line / power load terminals *		9 A power No. 14...12 AWG 2,5...4 mm ²	 0,4...0,5 Nm 3,5...4,4 lb-in		9 A power No. 14...12 AWG 2,5...4 mm ²	 Push button
		23 A power No. 14...10 AWG 2,5...6 mm ²	 0,5...0,6 Nm 4,4...5,3 lb-in		23 A power No. 14...10 AWG 2,5...6 mm ²	
Control / auxiliary terminals		1 x No. 18...14 AWG 1 x 1...2,5 mm ²	 0,22...0,25 Nm 1,95...2,21 lb-in		1 x No. 18...14 AWG 1 x 1...2,5 mm ²	 Bladed screwdriver 0,4 x 2,5 mm
		or 2 x No. 18...16 AWG 2 x 1...1,5 mm ²	 1/8" / 3 mm Slotted screwdriver		or 2 x No. 18...16 AWG 2 x 1...1,5 mm ²	
Safety terminals		1 x No. 28...16 AWG 1 x 0,5...1,5 mm ²	 0,22...0,25 Nm 1,95...2,21 lb-in		1 x No. 28...16 AWG 1 x 0,5...1,5 mm ²	 Bladed screwdriver 0,4 x 2,5 mm
			 1/8" / 3 mm Slotted screwdriver			

Screw terminals version

Push-in terminals version

- 1) Stranded wire can be mounted only by opening the spring using recommended tool or by pressing the push button before the installation. Solid wire and stranded wire with ferrule can be mounted by directly pushing in without opening the spring.
- 2) To open spring in 9 A power starter power terminals, push button should be pressed manually before the wire installation. To open spring in 23 A power starter in power terminals, it is required to insert a screwdriver (recommended tool) in the slot above the wire entry before the wire installation.
- 3) Recommended tool.

Short circuit ratings

Table 1: M100 Starter Series - UL Standard Fault Ratings

Cat. No.	Max. Fuse Max [A]	Max. Ckt Bkr [A]	Self-Protected Combination Motor Controller	Standard Fault Current [kA]
M105*-C09-** M109*-C09-**	35 (Class RK5)	140UT (30 Amp)	140MT-D9E-C20	1
M105*-C23-** M109*-C23-**	90 (Class J)	140UT (30 Amp)	-	3

Table 2: M100 Starter Series - UL High Fault Ratings (Fuses)

Cat. No.	Max. Fuse Max [A]	Standard Fault Current [kA]	CC fuses [A]
M105*-C09-** M109*-C09-**	35 (Class J)	100	30 (Class CC)
M105*-C23-** M109*-C23-**	60 (Class J)	100	-

Table 3: M100 Starter Series - UL High Fault Ratings (Circuit Breaker)

Cat. No.	Max. Circuit Breaker [A]	High Fault Current [kA]	Recommended Circuit Breaker (480 Y / 277 V)
M105*-C09-** M109*-C09-**	30	65	140UT-D7D3-C30
M105*-C23-** M109*-C23-**	30	65	140UT-D7D3-C30

Table 4: M100 Starter Series - UL High Fault Ratings (Self-Protected CMC)

Cat. No.	High Fault Current [kA]	Self-Protected Combination Motor Controller (480 Y / 277 V)
M105*-C09-** M109*-C09-**	65	140MT-D9E-C20

* Incomplete Catalog number, Replace * with "N" (Standard) or "S" (Safety)

** Incomplete Catalog number, Replace ** with "S" (Screw Terminal Blocks) or "P" (Push-In Terminal Blocks)

Wiring diagrams

Terminal block location/description:

- 3 phase line terminals (L1, L2, L3) = 3 position terminal block
- on top of the unit
- 3 phase load terminals (T1, T2, T3) = 3 position terminal block
- on bottom of the unit
- Control terminal block = 4 position terminal block on top of the unit
 - 24 VDC control power = A1 (+) and A2 (-)
 - Start = In1 (+24 VDC)
 - Stop = In2 (+24 VDC)
- I/O terminal block = 4 position terminal block on bottom of the unit
 - RES = remote reset (+24 VDC input)
 - REV = reverse motor direction (+24 VDC input)
 - O-1 = contactor status output (+24 VDC output, 100 mA load maximum)
 - O-2 = fault status output (+24 VDC output, 100 mA load maximum)

Minimum enclosure size

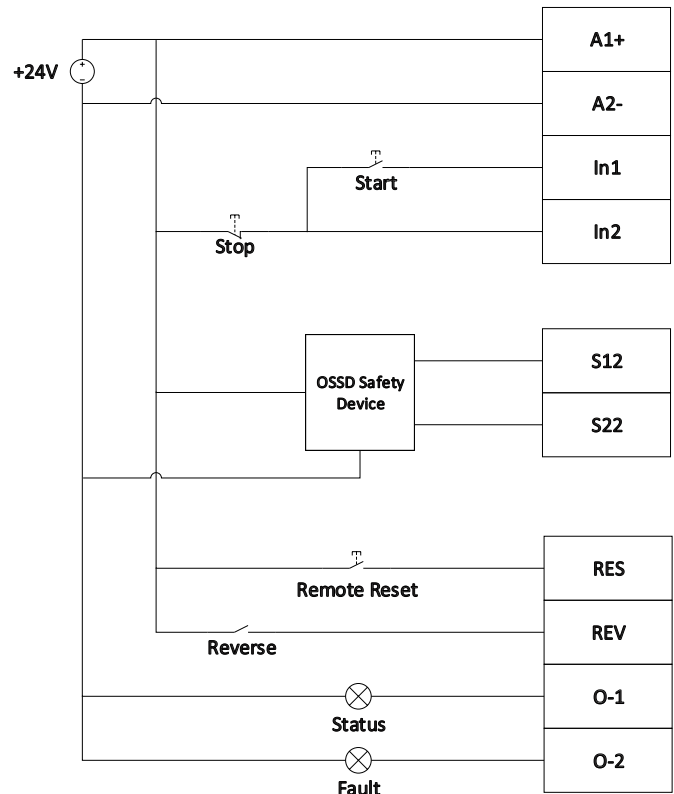
M10XX-C09: 16 " x 12 " x 8 " (406 mm x 305 mm x 203 mm)

M10XX-C23: 16 " x 12 " x 8 " (406 mm x 305 mm x 203 mm)

9 A & 23 A M100 temperature range

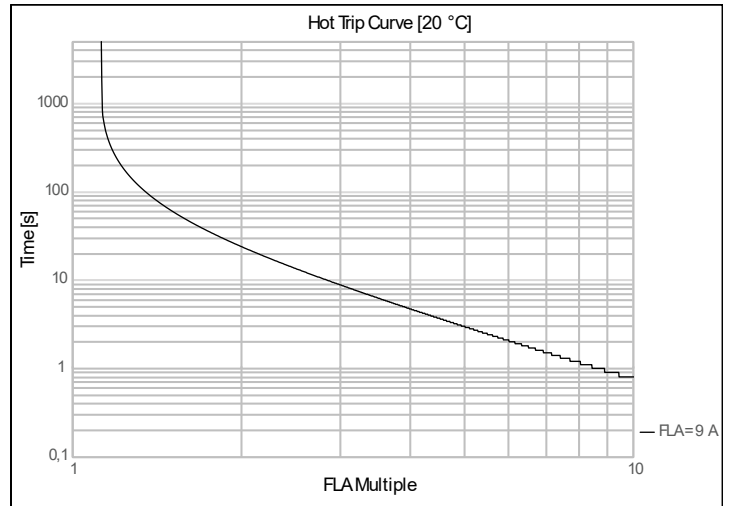
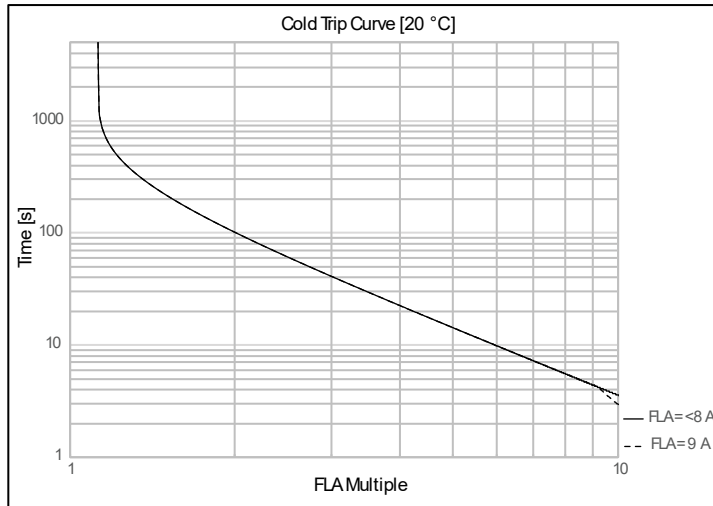
Enclosed Ambient Temperature Range: -20 ... +50 °C

Surrounding Air Temperature Range: -20 ... +65 °C

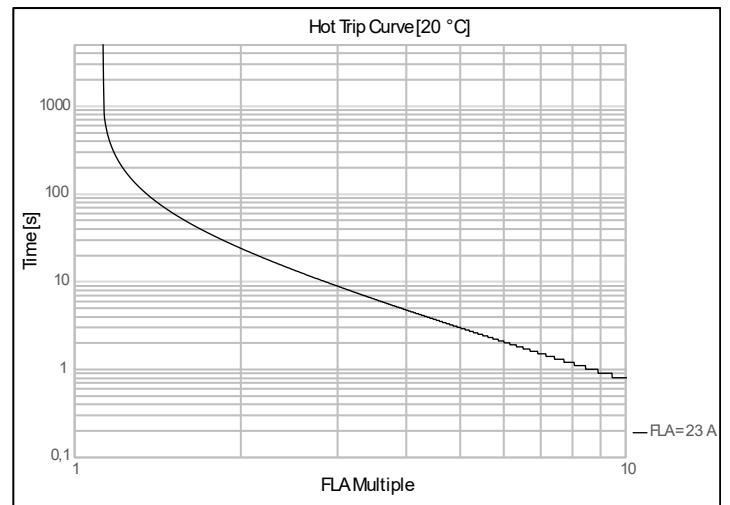
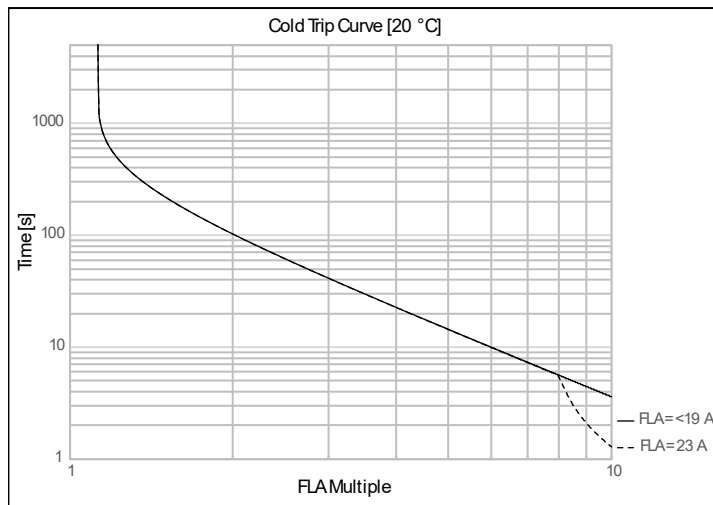


Trip curves

9 A starter



23 A starter







For Technical Support, visit rok.auto/support.

Rockwell Automation maintains current product environmental compliance information on its website at rok.auto/pec.

Product certificates are located in the Rockwell Automation Literature Library: rok.auto/certifications.

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