

# MA- Series

## Three Phase Adjustable Trip Miniature Circuit Breakers/ Manual Motor Controllers



UL508 listed  
E137938



CAN/CSA-C22.2 No.14 certified



The MA was designed to handle the high inrush loads of 3 phase transformers, power supplies, motors, etc. The MA protects wiring and equipment from damage caused by the three major classes of over-current, yet greatly reduces the number of nuisance trips in high starting and inrush current circuits.

An IEC device with excellent ratings under a UL listing at 480Y/277V (including group ratings) and at 500V under international standards, the Altech/ABL Sursum MA provides short and long term cost effective circuit protection for USA and/or export applications. The short term advantages include: (1) adjustable thermal trip allows finalization of initial designs before procurement of the load equipment is complete; (2) snap-on mounting for readily available, internationally standardized DIN Rail saves panel layout design time as well as installation and change labor; (3) large cage-clamp terminals with screws suitable to power screwdrivers, simplifies and speeds wiring; (4) convenient switched disconnect during factory testing and/or initial start-up saves time and aggravation. The key long term advantage is customer satisfaction and proven over-current protection of wiring and equipment (and the lack of rework/repair costs).

### Type Designation

<u>MA</u>	<u>16</u>	<u>U</u>	<u>M</u>
(a)	(b)	(c)	(d)

- (a) = MA - Manual Motor Controller
- (b) = Rated Current
- (c) = U - US Housing  
= R - US Housing + Ring Tongue
- (d) = M - Part No. Designation

<b>Voltage Rating</b>	480Y/277VAC
<b>AIC (Interrupt Capacity)</b>	0.16A-2.5A: 42kA; 4.0A-16A: 14kA; 20A-40A: 10kA
<b>Standard Short Circuit Withstand Rating (UL/CSA Ratings)</b>	0.16A-2.5A: 42kA; 4.0A-16A: 14kA
<b>Group Short Circuit Ratings (UL/CSA Ratings)</b>	see above
<b>Typical Life</b>	6000 on/off operations with 2xRC
<b>Calibration Temperature</b>	25°C, +0°, -5° (77°F, +0° -9°)
<b>Standard Pack and Weight</b>	1/450g (1.0 lb.)
<b>Terminal Size Acceptability</b>	Top/Bottom: 18-3 AWG

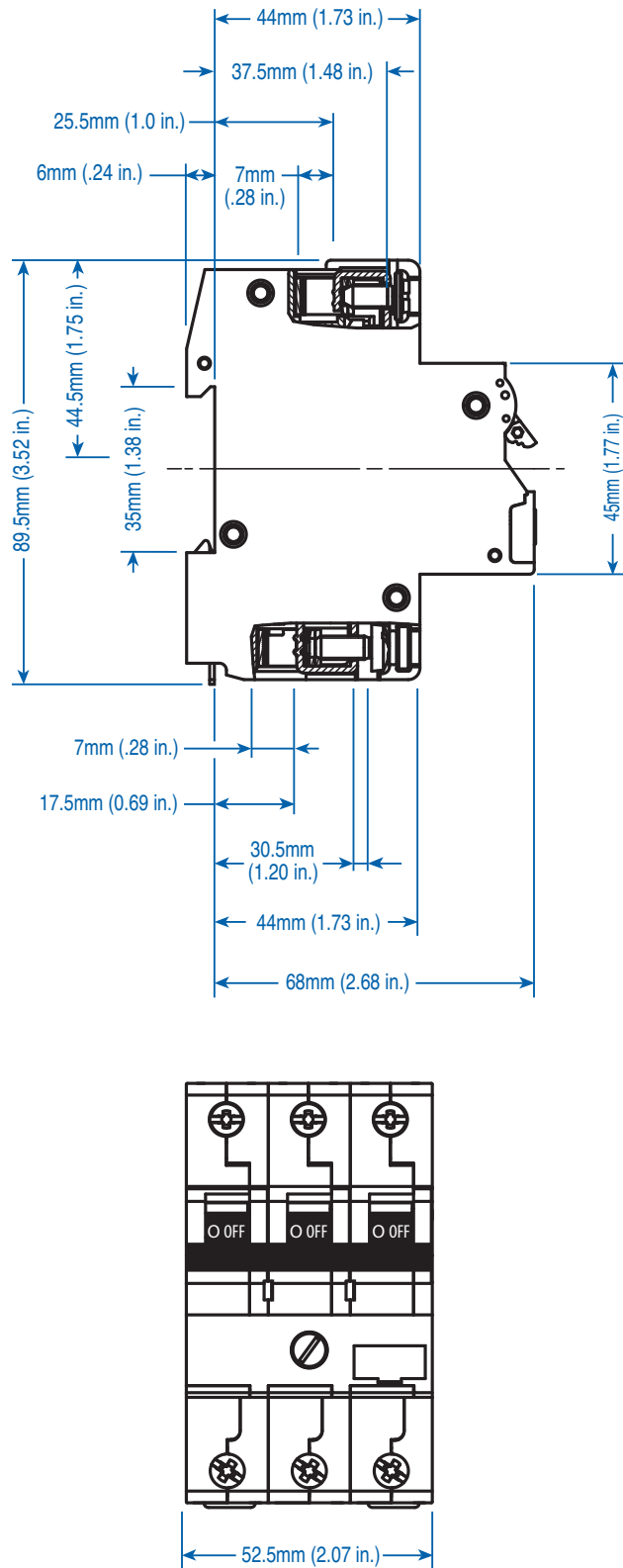
Cat. No.	Rated Current	FLA Dial Adjustment Markings	GROUP SHORT CIRCUIT RATING AT 480VAC <sup>a</sup> (and BCP size)	3Ø HORSEPOWER RATINGS AT NOMINAL LINE VOLTAGE (See Note for HEA Definition)				
				110-120V HP (HEA)	200V HP (HEA)	208V HP (HEA)	220-240V HP (HEA)	460-480V HP (HEA)
MA016UM	0.16A	0.1/ 0.12/0.14/0.16	42kA <sub>rms</sub> symmetrical (max. 1200A MCCB or RK5)					
MA025UM	0.25A	0.16/0.19/0.22/0.25						
MA040UM	0.40A	0.25/0.30/0.35/0.40						
MA063UM	0.63A	0.40/0.48/0.56/0.63						
MA1.0UM	1.0A	0.63/0.75/0.87/1.0						
MA1.6UM	1.6A	1.0/1.2/1.4/1.6						
MA2.5UM	2.5A	1.6/1.9/2.2/2.5						
MA4.0UM	4.0A	2.5/3.0/3.5/4.0	14kA <sub>ARMS</sub> symmetrical (max. 350A MCCB or RK5)	1/2 (4.0)	3/4 (3.2)	3/4 (3.1)	1 (3.6)	2 (3.42)
MA6.3UM	6.3A	4.0/4.8/5.6/6.3		3/4 (5.6)	1 1/2 (6.0)	1 1/2 (5.7)	1 1/2 (5.2)	3 (4.8)
MA10UM	10A	6.3/7.5/8.7/10	10kA <sub>ARMS</sub> symmetrical (max. 350A MCCB or RK5)	1 (7.2)	2 (7.8)	2 (7.5)	3 (9.6)	5 (7.6)
MA16UM	16A	10/12/14/16		2 (13.6)	3 (11.0)	3 (10.6)	5 (15.2)	10 (14.0)
MA20UM	20A	16/17/18.5/20	10kA <sub>ARMS</sub> symmetrical (max. 350A MCCB or RK5)	3 (19.2)	5 (17.5)	5 (16.7)	5 (15.2)	10 (14.0)
MA25UM	25A	20/21.5/23/25		3 (19.2)	5 (17.5)	7 1/2 (24.2)	7 1/2 (22.0)	15 (21.0)
MA32UM	32A	25/27/30/32		5 (30.4)	7 1/2 (25.0)	7 1/2 (24.2)	10 (28.0)	20 (27.0)
MA40UM	40A	32/34/37/40		5 (30.4)	10 (32.0)	10 (31.0)	10 (28.0)	25 (34.0)

Through MA2.5U, ampere rated for motor circuits having a full-load-amperage (FLA) not exceeding the MA's general purpose rated current (RC, equals maximum dial setting) and a locked rotor current not exceeding 6 times the MA's RC.

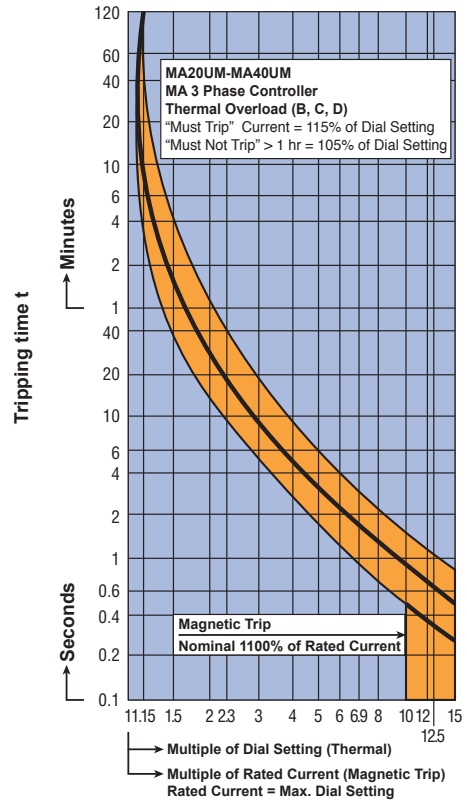
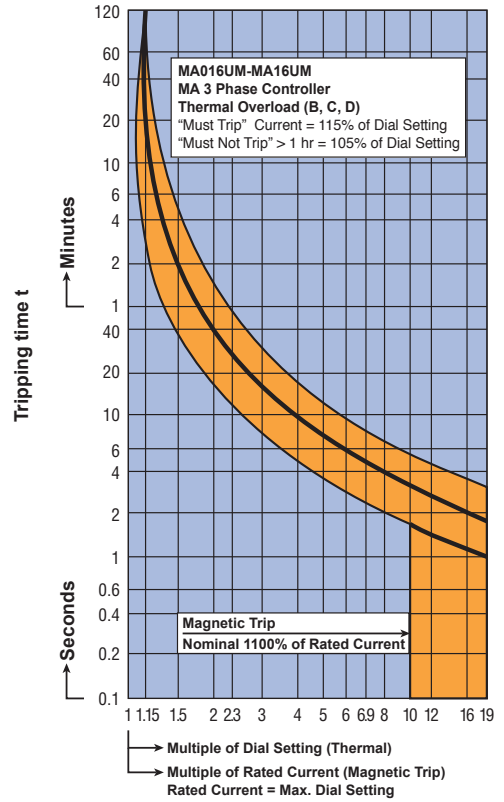
Note: HEA - Horsepower Equivalent Amperes, the nominal amperage assigned to standard motor horsepower ratings in design guide tables such as NFPA-70 Tables 430-248, 430-249, 430-250; UL1077 Table 16.2; CSA - C22.2 No. 235-M89 Tables 44 and 45; CSA-C22.2 No. 14-M91 Table 19, etc. Multiply HEA values (in parenthesis) by 1.1 if power factor is 90%, and by 1.2 if power factor is 80%.

<sup>a</sup> The standard-circuit short-circuit rating is 14kA for all types. Group ratings can be used in a standard circuit (e.g., MA1.0U at 42kA), but a higher standard rating cannot be used in a group circuit (e.g., MA40U at 14kA only in standard circuit.)

**DIMENSIONS**



MA/USA Manual Motor Controller



## V-EA and MA Manual Motor Controllers Accessories



Accessories can be factory or field mounted on V-EA and MA manual motor controllers for enhanced control and monitoring capabilities. Field mounting kits include all necessary parts and instructions. Accessories can be gang mounted on a single controller (the Auxiliary Switch in the outside position). The mounting arrangement links the internal latch-pins for the tripping mechanisms, ensuring simultaneous trips. Handles are linked to simplify manual resetting.

\* Reset-Hold Voltage =  $0.85 \times V_E$ ; Drop-Out Voltage =  $0.2 \times V_E$



### FA - Shunt Trip

Type/ Cat. No.	Trip/Coil Voltage AC or DC	Max. Coil Current	Approvals
FA12UM	12V	1.3A	UL SP
FA24UM	24V	0.6A	UL SP
FA48UM	48-72V	0.2A	UL SP
FA110UM	110V/220V	0.25A/0.5A	UL SP

Standard Pack: 5  
Weight: 525 grams (1.16 lb.)  
Width: 17.5mm (.689in.)

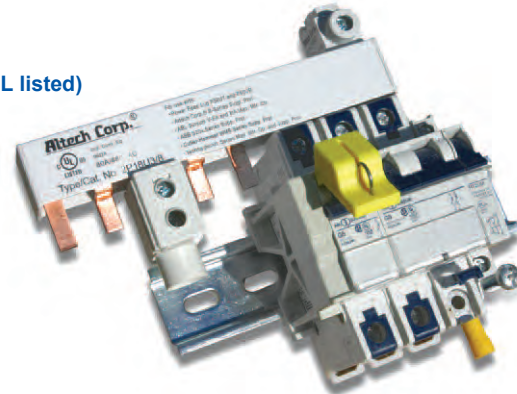


### UA - Undervoltage Trip (not UL listed)

Type/ Cat. No.	Line Voltage 60Hz*
UA120UM	120VAC
UA220UM	220VAC

Reset-Hold Voltage =  $0.85 \times V_E$   
Drop-Out Voltage =  $0.35 - 0.7 \times V_E$

Standard Pack: 5  
Weight: 750 grams (1.65 lb.)  
Width: 17.5mm (.689in.)



For further Busbar information please see our comprehensive Altech Universal Power Distribution catalog.



### H - Auxiliary Switch

Type/ Cat. No.	No. of Contacts	Contact Type	Contact Rating	Wire Size	For Use with:	Approvals
H10UM	1	1NO	10A / 220V AC 3A / 110V DC or pulsed 1A / 220V DC or pulsed	4mm <sup>2</sup> (12 AWG)	V-EA, MA	UL SP
H11UM	2	1NO + 1NC				UL SP
H12UM	3	1NO + 2NC				UL SP
H21UM	3	2NO + 1NC				UL SP

Standard Pack: 10  
Weight: 450 grams (0.99 lb.)  
Width: 9mm (.354in.)



### Add-on Neutral Pole

Type/ Cat. No.	Rating	Approvals
N63UM	0.3-63A/ 480Y/277V	UL SP

Standard Pack: 5  
Weight: 0.775kg (1.71lb.)  
Width: 17.5mm (.689in.)

\* Please consult Altech for other voltages and your 50Hz application needs.



**Lock-out \***  
Cat. No. EASS

Prevent inadvertent resetting of the V-EA or MA during maintenance. Fits 1/4" pad lock.

**Touch Protector**  
Cat. No. BS.UL

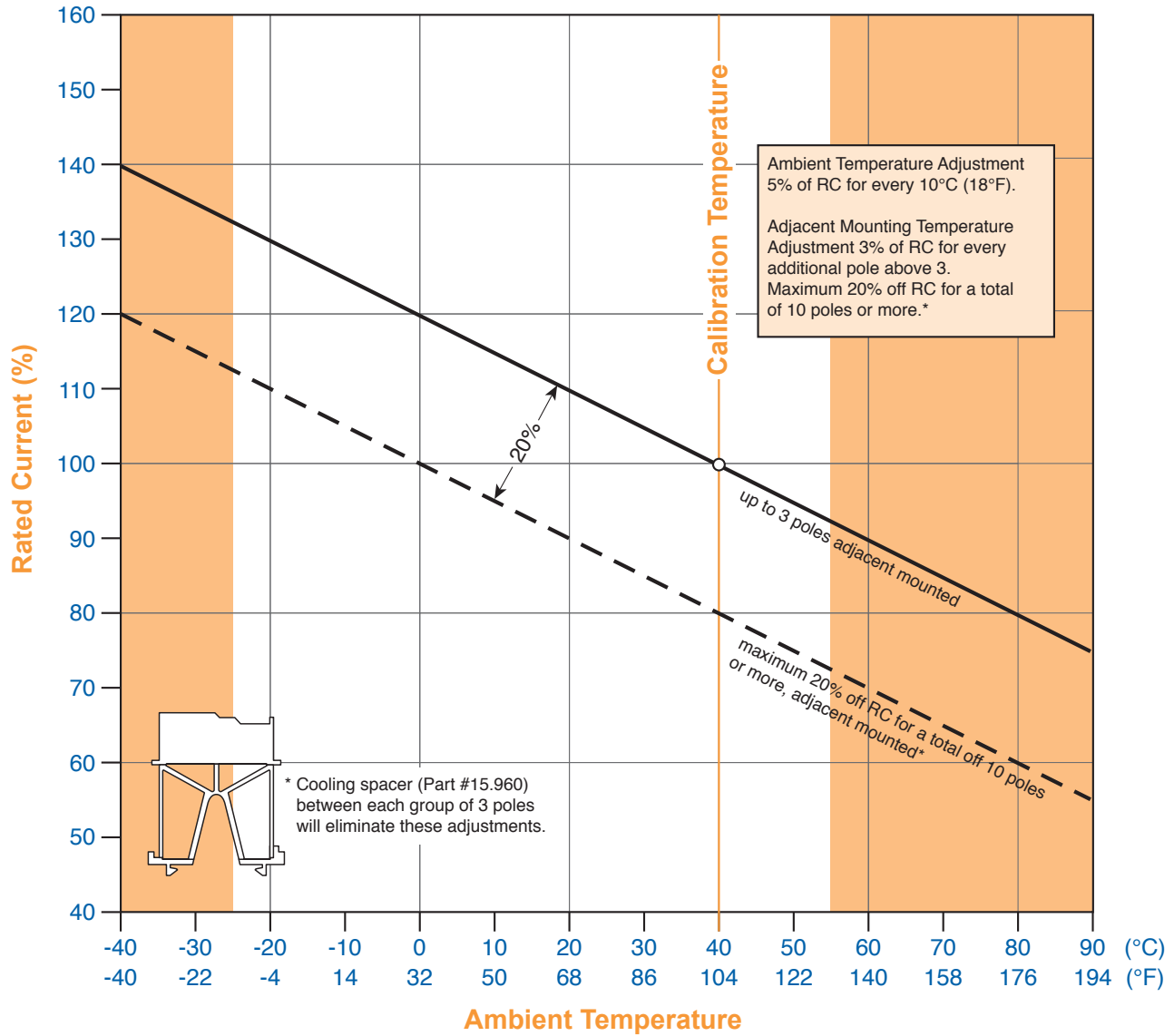


**Cooling Spacer**  
Cat. No. 15.960

**Temperature correction curve**

**Ambient Temperature and Adjacent Mounting/Loading Adjustment**

(V-EA/MA Ambient Temperature - 25°C to 55°C, Storage Temperature -40°C to 70°C)



\* V-EA and MA can also be locked in the on and off position by simply using a common lead or meter seal, which gets fed through the hole in the handle and a corresponding hole in the housing.