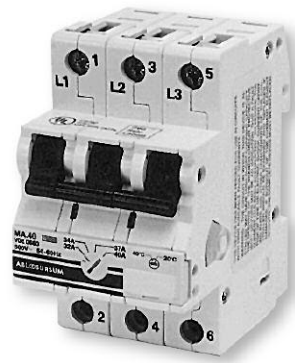


MA- Series

Three Phase Adjustable Trip Miniature Circuit Breakers/ Manual Motor Controllers



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

MA RT
(a) **(b)** **(c)** **(d)**

- (a) = MA - Manual Motor Controller
- (b) = Rated Current
- (c) = U - US Housing
- (d) = Blank - Standard Terminal
 RT - Ring-tongue Terminal

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

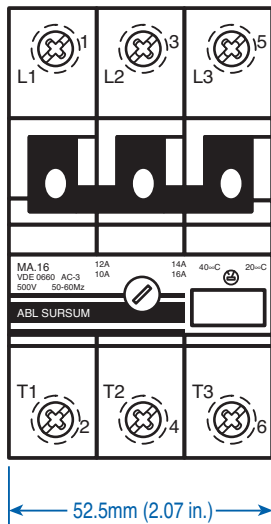
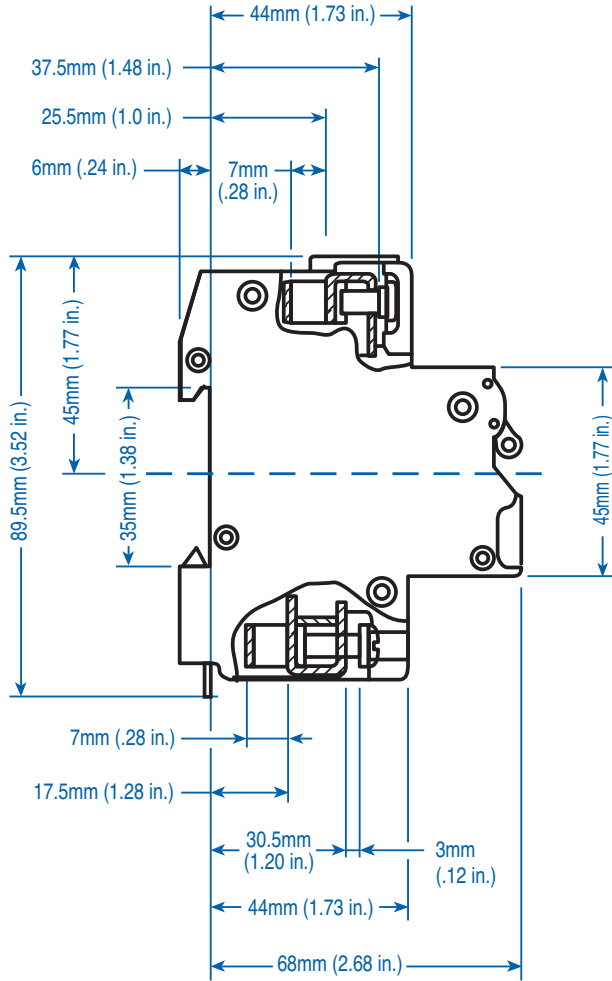
Type and Rated Current	Cat. No.	FLA Dial Adjustment Markings	GROUP SHORT CIRCUIT RATING AT 480VAC ^a (and BCP size)	3Ø HORSEPOWER RATINGS AT NOMINAL LINE VOLTAGE (See Note for HEA Definition)				
				110-120V HP (HEA)	200V HP (HEA)	208V HP (HEA)	220-240V HP (HEA)	460-480V HP (HEA)
MA0.16U	15.901U	0.1/ 0.12/0.14/0.16	42kARMS symmetrical (max. 1200A MCCB or RK5)					
MA0.25U	15.902U	0.16/0.19/0.22/0.25						
MA0.40U	15.903U	0.25/0.30/0.35/0.40						
MA0.63U	15.904U	0.40/0.48/0.56/0.63						
MA1.0U	15.905U	0.63/0.75/0.87/1.0						
MA1.6U	15.906U	1.0/1.2/1.4/1.6						
MA2.5U	15.907U	1.6/1.9/2.2/2.5	14kARMS symmetrical (max. 350A MCCB or RK5)					
MA4.0U	15.908U	2.5/3.0/3.5/4.0		1/2 (4.0)	3/4 (3.2)	3/4 (3.1)	1 (3.6)	2 (3.42)
MA6.3U	15.909U	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)
MA10U	15.910U	6.3/7.5/8.7/10		1 (7.2)	2 (7.8)	2 (7.5)	3 (9.6)	5 (7.6)
MA16U	15.911U	10/12/14/16		2 (13.6)	3 (11.0)	3 (10.6)	5 (15.2)	10 (14.0)
MA20U	15.912U	16/17/18.5/20		3 (19.2)	5 (17.5)	5 (16.7)	5 (15.2)	10 (14.0)
MA25U	15.913U	20/21.5/23/25		3 (19.2)	5 (17.5)	7 1/2 (24.2)	7 1/2 (22.0)	15 (21.0)
MA32U	15.914U	25/27/30/32		5 (30.4)	7 1/2 (25.0)	7 1/2 (24.2)	10 (28.0)	20 (27.0)
MA40U	15.915U	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.

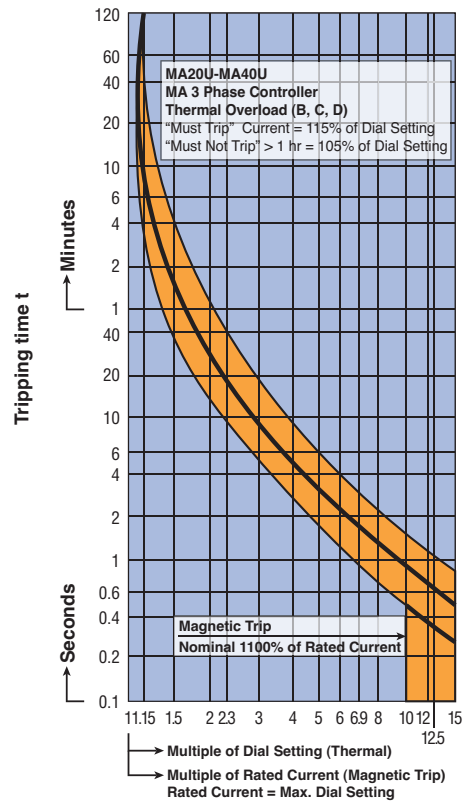
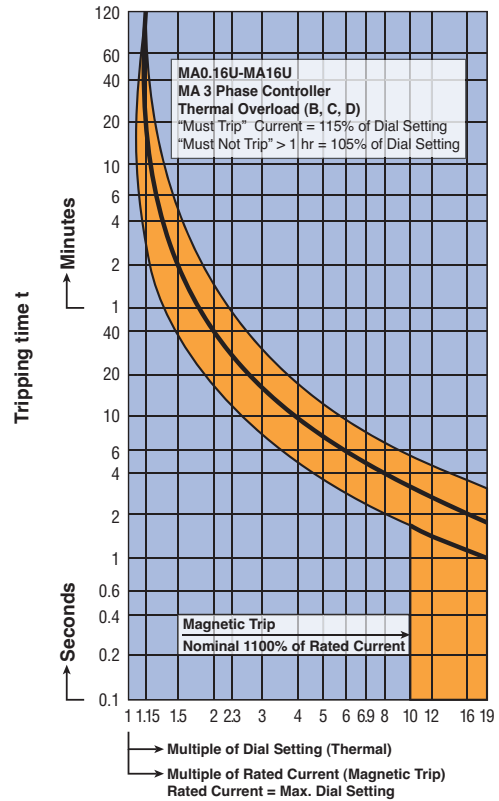
Note: **HEA - Horsepower Equivalent Amperes**, the nominal amperage assigned to standard motor horsepower ratings in design guide tables such as NFPA-70 Tables 430-248, 430-249, 430-250; UL1077 Table 16.2; CSA - C22.2 No. 235-M89 Tables 44 and 45; CSA-C22.2 No. 14-M91 Table 19, etc. Multiply HEA values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

^a 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 Circuit Breaker Accessories



UL508 listed
E137938



FA - Shunt Trip

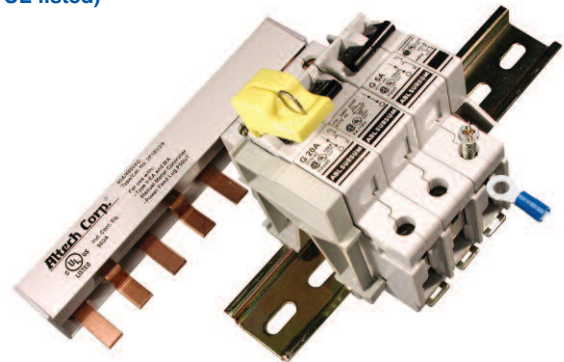
Type/ Cat. No.	Trip/Coil Voltage AC or DC	Max. Coil Current	Approvals
FA12U	12V	1.3A	UL Ⓢ
FA24U	24V	0.6A	UL Ⓢ
FA48U	48-72V	0.2A	UL Ⓢ
FA110U	110V/220V	0.25A/0.5A	UL Ⓢ

Std.Pk.: 1
Unit Weight: 120 grams (0.27 lb.)
Width: 17.5mm (.689in.)

UA - Undervoltage Trip (not UL listed)

Type/ Cat. No.	Line Voltage 60Hz*
UA120	120VAC
UA240	240VAC
UA277	277VAC
UA415	415VAC
UA480	480VAC

Std.Pk.: 1
Unit Weight: 70 grams (0.16 lb.)
Width: 17.5mm (.689in.)



For further Busbar information please see pages 56-73 or our comprehensive Altech Universal Power Distribution catalog.



H - Auxiliary Switch

Type/ Cat. No.	Contact Rating	Wire Size	Approvals	For Use With:
H11U	10A / 220V AC 3A / 110V DC or pulsed 1A / 220V DC or pulsed	4mm ² (12 AWG)	UL Ⓢ	V-EA, MA

Std. Pk.: 1
Unit Weight: 45 grams (0.12 lb.)
Width: 9mm (.354in.)



Lock-out ** Cat. No. EASS

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



Cooling Spacer Cat. No. 15.960

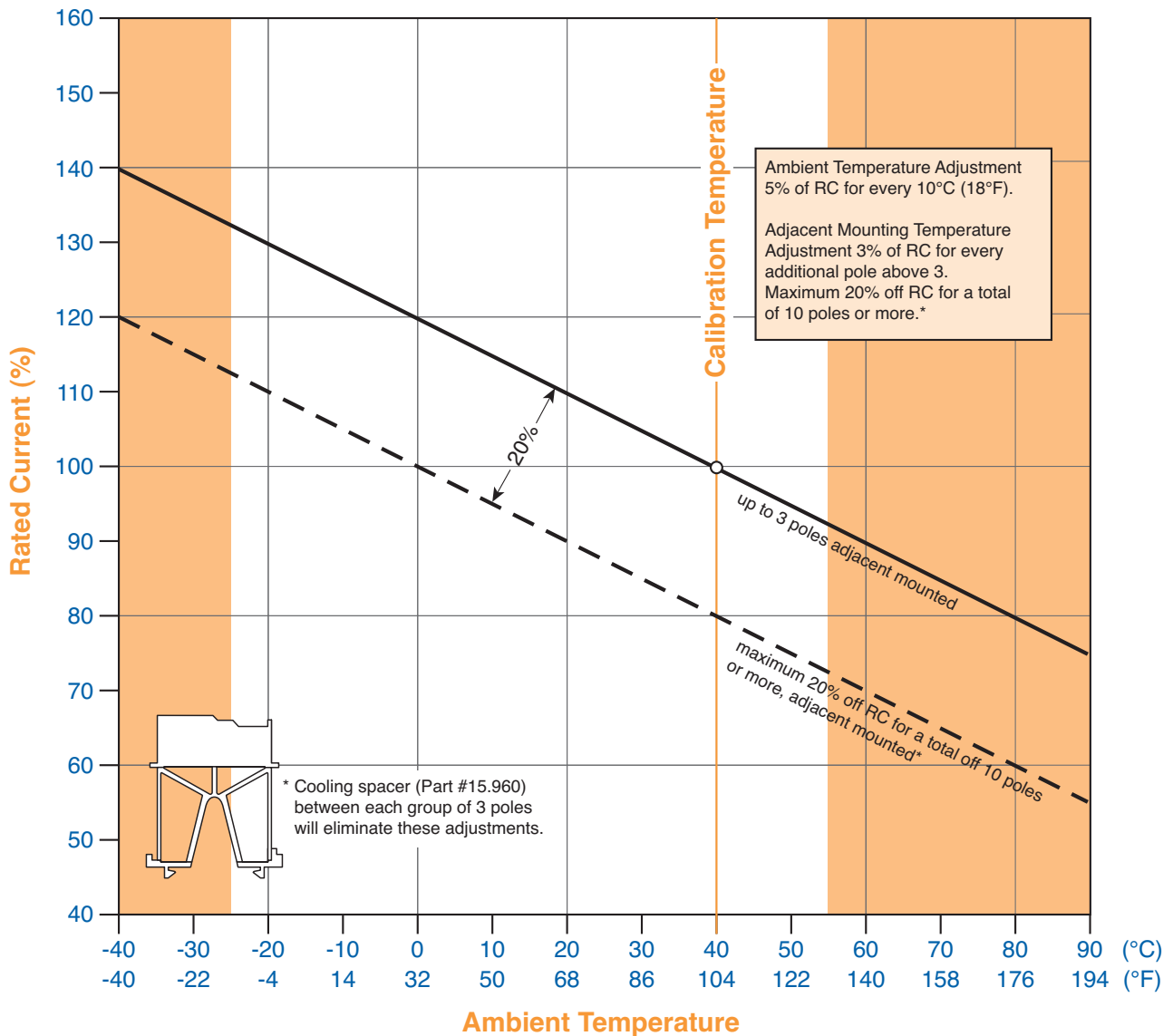
* Please consult Altech for your 50Hz application needs.

** 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.

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)



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