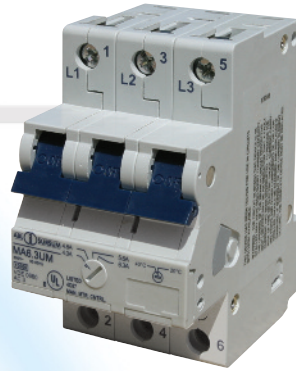


MA- Series

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

| | | | |
|-----|-----|-----|-----|
| MA | 16 | U | M |
| (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

| | |
|---|---|
| Voltage Rating | 480Y/277V AC |
| 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 |
| Terminal Torque (min/max) | 2 Nm (17.7 lb.in.) / 2.5Nm (22.2 lb.in) |

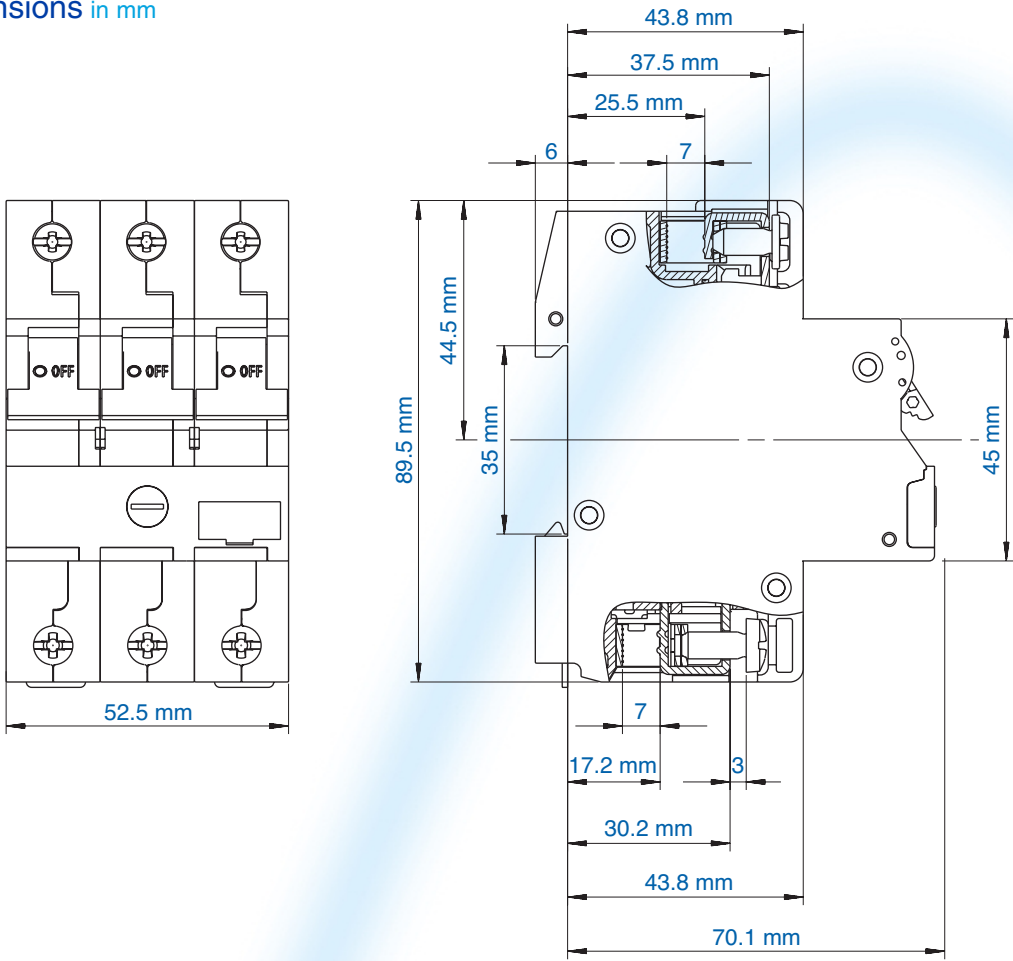
| Cat. No. | Rated Current | FLA Dial Adjustment Markings | GROUP SHORT CIRCUIT RATING AT 480VAC ^a (and BCP size) | 3Ø HORSEPOWER RATINGS AT NOMINAL LINE VOLTAGE (See Note for HEA Definition) | | | | |
|----------|---------------|------------------------------|--|---|---------------|---------------|-------------------|-------------------|
| | | | | 110-120V HP (HEA) | 200V HP (HEA) | 208V HP (HEA) | 220-240V HP (HEA) | 460-480V HP (HEA) |
| MA016UM | 0.16A | 0.1/ 0.12/0.14/0.16 | 42kARMS 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 | 14kARMS symmetrical (max. 350A MCCB or RK5) | | | | | |
| MA4.0UM | 4.0A | 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) |
| MA6.3UM | 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 | | 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 | | 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.

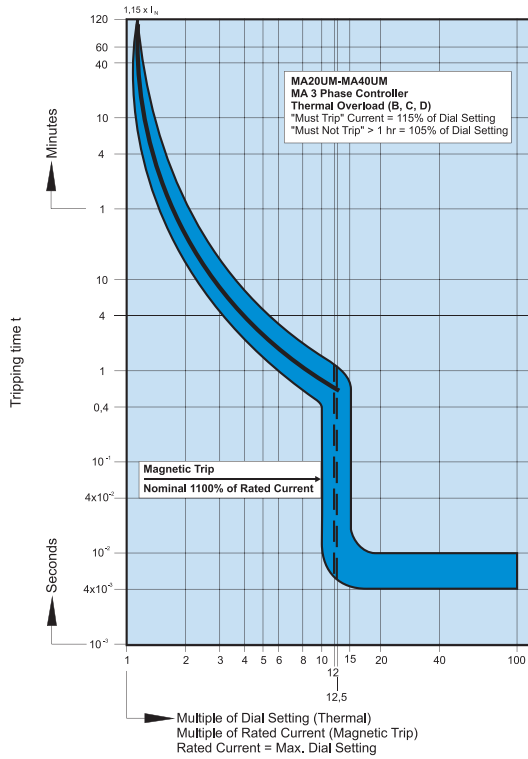
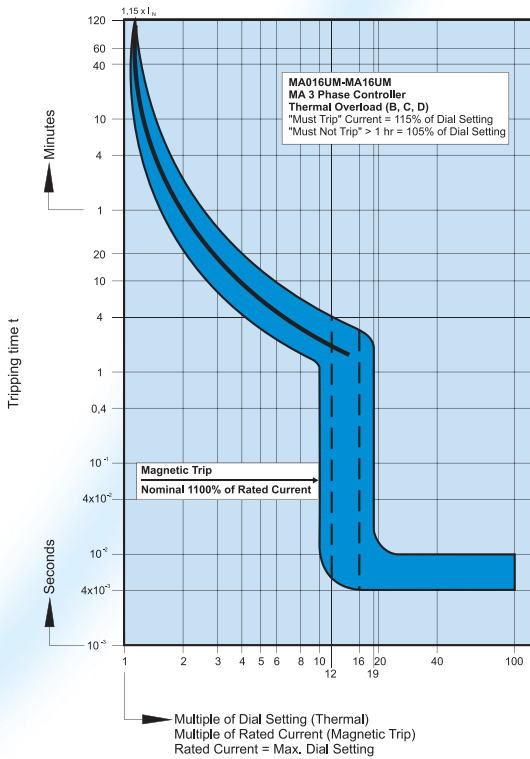
Note: HEA - Horsepower Equivalent Amperes, the nominal amperage assigned to standard motor horsepower ratings in design guide tables such as NFPA-70 Tables 430-248, 430-249, 430-250; UL1077 Table 16.2; CSA - C22.2 No. 235-M89 Tables 44 and 45; CSA-C22.2 No. 14-M91 Table 19, etc. Multiply HEA values (in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

^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 in mm



MA- Series Trip Curves



MA/USA Manual Motor Controller

UL508



Auxiliary Contact, Alarm Switch

| Type/ Cat No. | Description | Contacts Type | Std Pk |
|---------------|-------------------------------|--------------------|--------|
| H10UM | 1 Auxiliary Contact | 1NO | 6 |
| H11UM | 2 Auxiliary Contacts | 1NO + 1NC | 6 |
| H12UM | 3 Auxiliary Contacts | 1NO + 2NC | 6 |
| H21UM | 3 Auxiliary Contacts | 2NO + 1NC | 6 |
| HLS11M* | 1 Auxiliary/1 Signal Contacts | 1CO + 1CO (Signal) | 6 |

| | |
|---------------------------------|---|
| Rated Operating Currents | 10A @ 240V AC 3A @ 110V AC 1A @ 220V AC |
|---------------------------------|---|

| | |
|-----------------------------|----------------------|
| Minimum Contact Load | 1mA @ 24V DC |
| Torque | max. 0.8Nm (7 lb.in) |

| | |
|-----------------------------------|---|
| Wire Range: | |
| Single Wire | 1.0mm ² - 2.5mm ² (18-14 AWG) |
| Stranded Wire | 1.0mm ² - 1.5mm ² (18-16 AWG) |
| Stranded Wire with Ferrule | 1.0mm ² - 1.5mm ² (18-16 AWG) |

Shunt Trip

| Type/ Cat No. | Description | Max. Operating Current @ Un | Std Pk |
|---------------|------------------------------|---|--------|
| FA12UM | 12V AC/DC | 1.3A | 5 |
| FA24UM | 24V AC/DC | 0.6A | 5 |
| FA48UM | 48 - 72V AC/DC | 0.2A | 5 |
| FA110UM | 110 - 240V AC/DC, 277V AC | 0.25A @ 110V 0.5A @ 240V 0.58A @ 277V | 5 |

Undervoltage Trip*

| Type/ Cat No. | Line Voltage V _E | Std Pk |
|---------------|-----------------------------|--------|
| UA120UM | 120V AC, 60Hz | 5 |

Reset-Hold Voltage = 0.85 x V_E
Drop-Out Voltage = 0.35 ~ 0.7 x V_E

V_E = Rated Voltage

Neutral Pole

| Type/ Cat No. | Rated Current In | Rated Voltage | Std Pk |
|---------------|------------------|---------------|--------|
| N63UM | 0.3 - 63A | 480Y/277V AC | 6 |

Touch Protection Caps

to cover the terminal screw holes on the switching devices, neutral Poles and shunt trips for increased touch protection.



| Type/ Cat No. | Std Pk |
|---------------|--------|
| BS.UL | 100 |

Mounting Screw 34mm

to connect the auxiliary contact and shunt trip or neutral Pole to the circuit breaker.

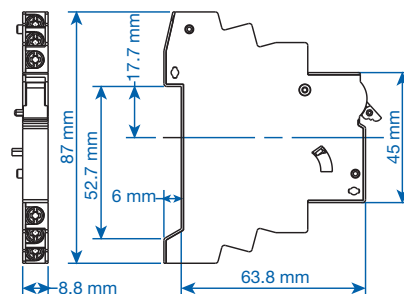


| Type/ Cat No. | Std Pk |
|---------------|--------|
| E983419 | 10 |

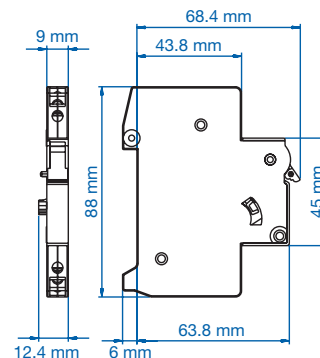


Lock-out Adapter

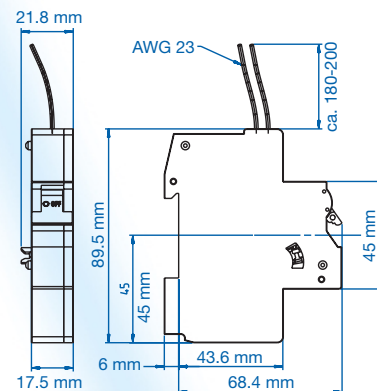
| Type/ Cat No. | Std Pk |
|---------------|--------|
| EASS | 10 |



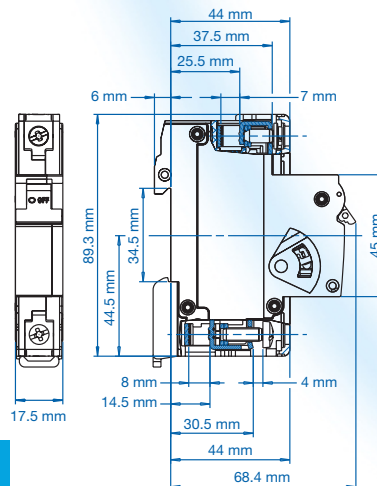
Dimensions HxxUM.



Dimensions HLS11M.



Dimensions UA120UM.



Dimensions N63UM, FAxXUM.

* UL Pending

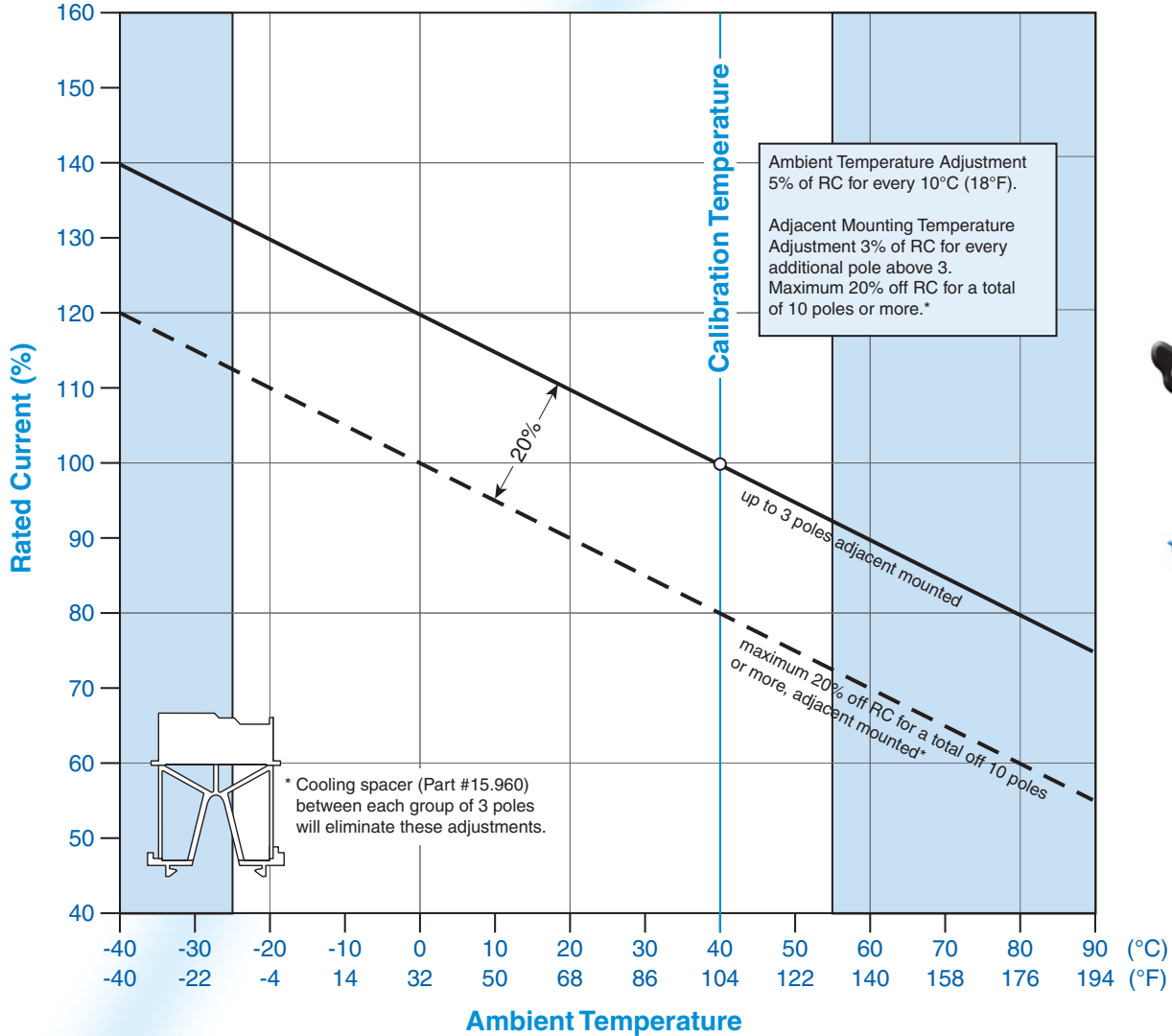


Cooling Spacer
Cat. No. 15.960

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.