

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).



UL508 listed
E137938



CAN/CSA-C22.2 No.14 certified



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

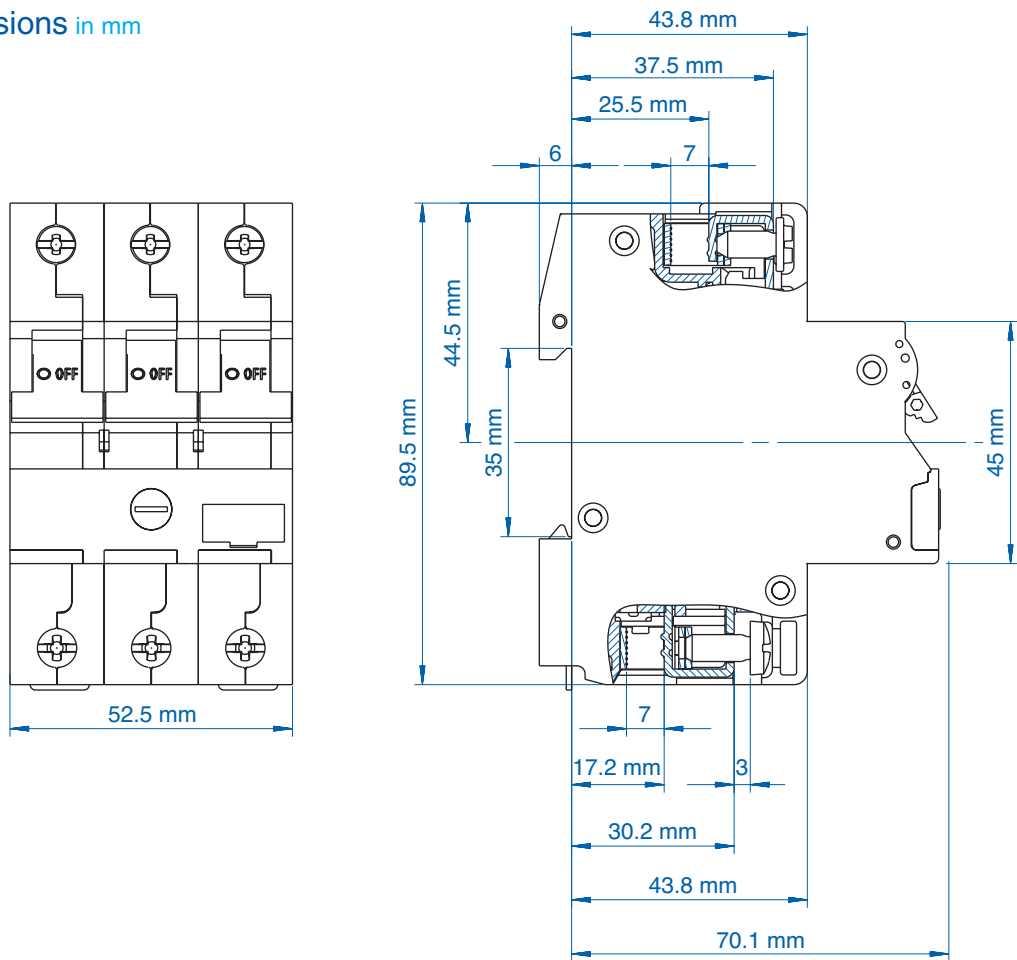
Voltage Rating	480Y/277V AC
AIC (Interrupt Capacity)	0.16A-2.5A: 42kA; 4.0A-16A: 14kA; 20A-40A: 10kA
Standard Short Circuit Withstand Rating (UL/CSA Ratings)	0.16A-2.5A: 42kA; 4.0A-16A: 14kA; 20A-40A: 10kA
Group Short Circuit Ratings (UL/CSA Ratings)	see above
Typical Life	6000 on/off operations with 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	10kARMS 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		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)

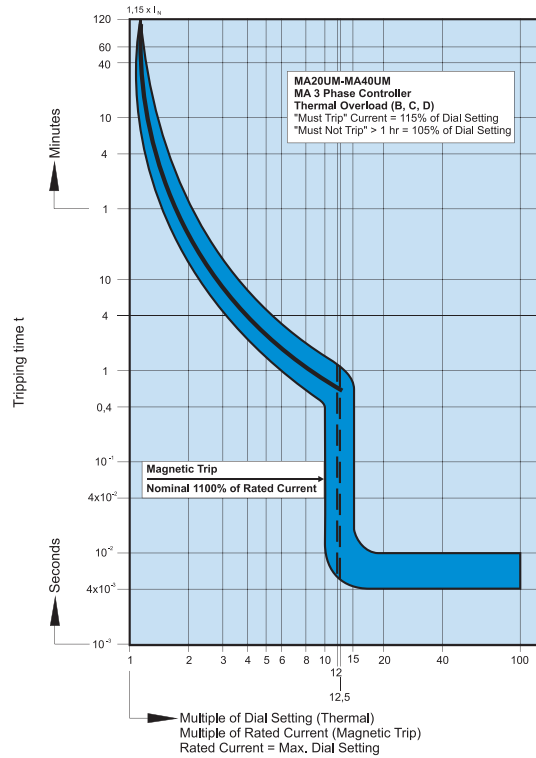
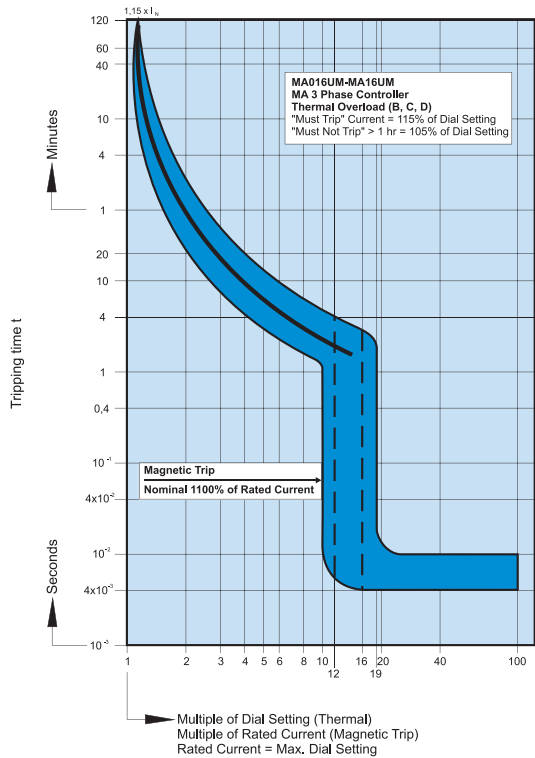
Note: **HEA - Horsepower Equivalent Amperes**, the nominal amperage assigned to standard motor horsepower ratings in design guide tables such as NFPA-70 Tables 430-248, 430-249, 430-250; UL1077 Table 16.2; CSA - C22.2 No. 235-M89 Tables 44 and 45; CSA-C22.2 No. 14-M91 Table 19, etc. Multiply HEA values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

UL 489

UL 508

UL 1077

UL 1077
Equipment Breakers

Earth Leakage
Circuit Breakers

ANNEX

UM (V-EA) and MA Accessories

For mounting instructions please refer to page 43.



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 DC
1A@220V DC

Minimum Contact Load

1mA @ 24V DC

Torque

max. 0.8Nm (7 lb.in)

Wire Range:

Single Wire

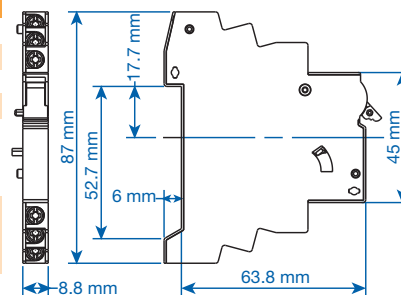
1.0mm² - 2.5mm² (18-14 AWG)

Stranded Wire

1.0mm² - 1.5mm² (18-16 AWG)

Stranded Wire with Ferrule

1.0mm² - 1.5mm² (18-16 AWG)

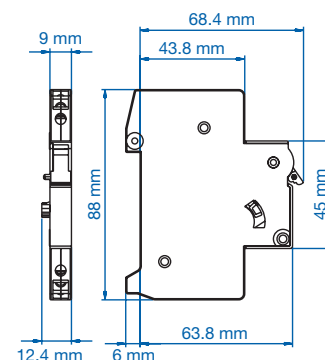


Dimensions HxxUM.



Shunt Trip

Type/ Cat No.	Rated Voltage U _N	Max. Operating Current @ U _N	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



Dimensions HLS11M.



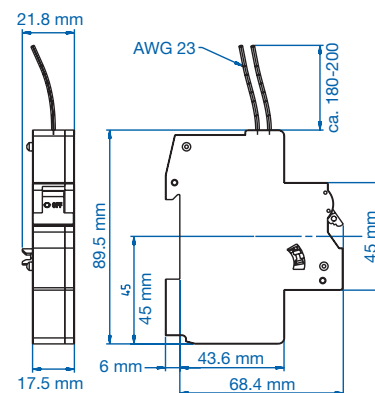
Undervoltage Trip*

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



Dimensions UA120UM.

* Not UL approved.

** UM (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.

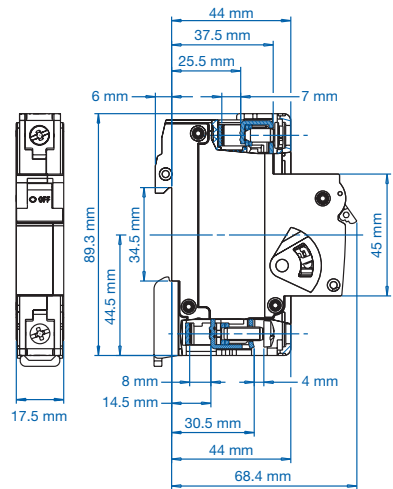
UM (V-EA) and MA Accessories

For mounting instructions please refer to page 43.



Neutral Pole

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



Dimensions N63UM, FxUM.



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

Cooling Spacer



Type/ Cat No.	Std Pk
15.960	1



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

UL 489

UL 508

UL 1077

UL 1077
Equipment Breakers

Earth Leakage
Circuit Breakers

ANNEX

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Altech:

[FA110UM](#) [H11UM](#) [MA016UM](#) [MA20UM](#) [MA25UM](#) [MA1.6UM](#) [MA4.0UM](#) [H10UM](#) [FA12UM](#) [FA24UM](#) [FA48UM](#)
[EASS](#) [MA040UM](#) [MA025UM](#) [MA063UM](#) [MA40UM](#) [MA32UM](#) [MA16UM](#) [MA6.3UM](#) [MA1.0UM](#) [MA10UM](#) [MA2.5UM](#)
[H12UM](#) [E983419](#) [BS.UL](#) [15.960](#) [H21UM](#)