

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Visit our website - *Click HERE*

V-EA Series

UL508 Listed
Manual Motor Controllers
"Suitable as Motor Disconnect"



- DIN Rail Mounted
- 17.5mm width per pole
- Thermal Magnetic
- Current Limiting
- 0.3-60A / 480Y/277V AC, 50/60Hz
- 10kA Short Circuit Withstand Capacity
- Applications Include:
  - AC Motor Starting, Across the Line
  - AC General Use
  - AC Resistance
  - AC Discharge Lamps (Ballast)
  - AC Incandescent Lamps (Tungsten)

508 listed
E137938

C22.2 No.14 certified
LR104391

up to 25A
B,C,D curves

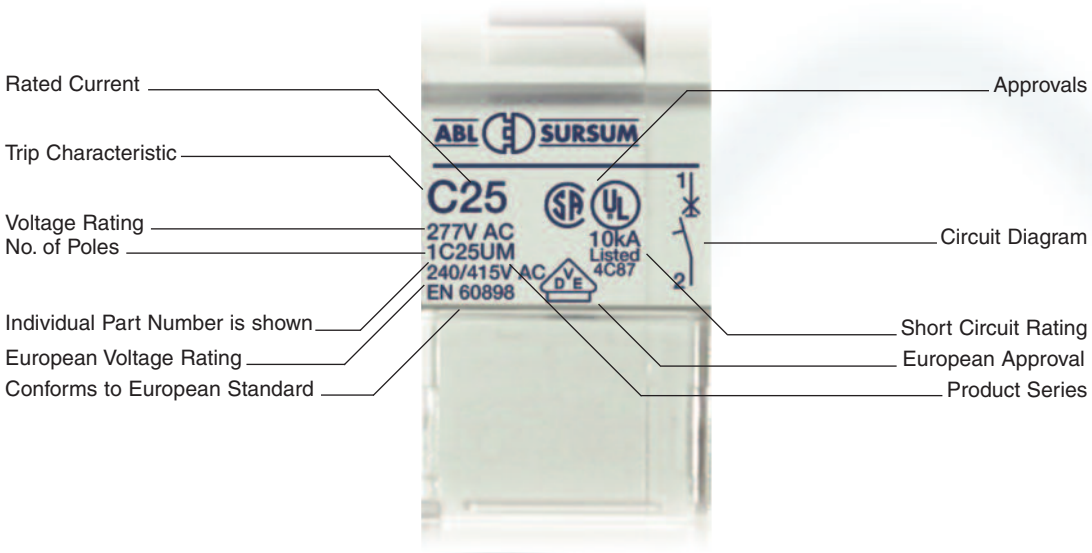
Current/ Voltage Rating	0.3-60A/480Y/277V AC 0.3-25A: 1 pole - 42V DC; 2 Pole - 80V DC 30-60A: 1 pole - 24V DC; 2 Pole - 60V DC
Short Circuit Withstand Rating (UL/CSA - Ratings)	0.3-60A (RC): 10kA with UL-listed RK5 back-up fuse or MCCB
Group Short Circuit Withstand Rating (UL/CSA - Ratings)	0.3-10A (RC): 10kA; 12-60A (RC): 5kA no branch circuit protection required
Interrupting Capacity (VDE - Ratings)	0.3-63A (RC): 10kA
Calibration Temperature	40°C (104°F)
Operating Temperature	-25°C to 55°C (-13°F to 131°F)
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Terminal Size Acceptability	Top: 18-3 AWG; Bottom: 18-2 AWG (Line/Load reversible)
Terminal Torque (min/max)	2 Nm (17.7 lb.in.) / 2.5Nm (22.2 lb.in)
Terminal Protection Degree	IP20
Horse Power Ratings	see page 28
Mechanical Endurance Ratings	see page 29

Short Circuit Withstand Ratings for V-EA Manual Motor Controller

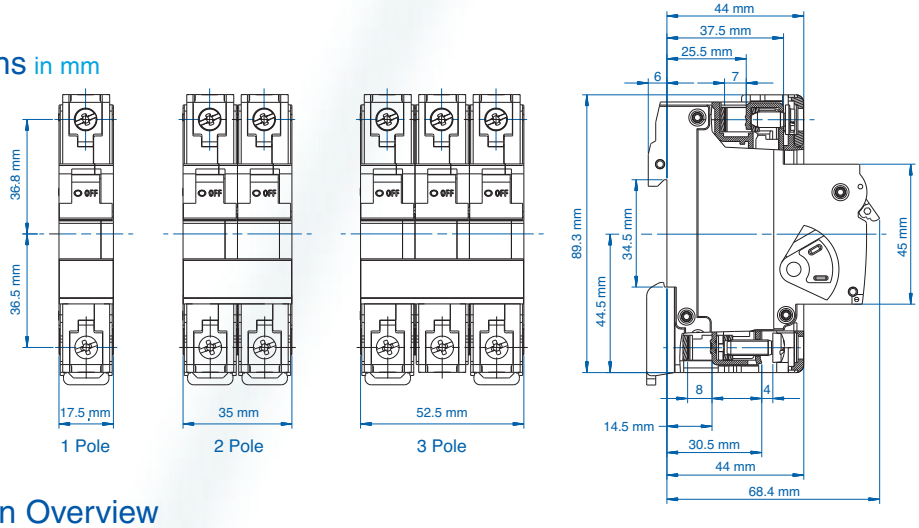
Trip Curve	Backup Protection / Amp Range	UL-Listed RK5-Fuse up to 10kA	UL-Listed MCCB up to 10kA	No BCP Required up to:
all	0.3 - 10A	4xRC* min 15A, max 70A	4xRC* min 15A, max 70A	10kA
all	12 - 30/32A	4xRC* max 125A	4xRC* max 125A	5kA
all	40 - 50A	4xRC* max 200A	4xRC* max 200A	5kA
all	60 / 63A	4xRC* max 250A	4xRC* max 250A	5kA

*up to nearest rated current

Marking Details



Dimensions in mm



Application Overview

Trip-Characteristics*				Applications												
Characteristic Trip Boundaries				Lighting Wiring Protection Control Circuits	Business Equipment Appliances	Transformers	Power Supplies Heaters	Motors				General Electronics	Solenoid	Semi-conductors Components/ devices with low surge-current and short circuit withstand capabilities	Reactive Load
Thermal Trip		Magnetic Trip						General	Low Inrush	High Inrush	High Efficiency				
Must not Trip>100ms	Must Trip <1hr	Must not Trip>100ms	Must Trip at 100ms												
B-Characteristics				●	●							●			
1.13xRC	1.45xRC	3xRC	5xRC												
C-Characteristics				●	●				●						
1.13xRC	1.45xRC	5xRC	10xRC												
D-Characteristics						●	●			●					●
1.13xRC	1.45xRC	10xRC	16xRC												
E-Characteristics						●	●				●				
1.05xRC	1.35xRC	14xRC	18xRC												
G-Characteristics				●		●		●	●				●		
1.05xRC	1.35xRC	8xRC	10xRC												
Z-Characteristics												●		●	
1.05xRC	1.35xRC	2xRC	3xRC												

**The value of each characteristic is shown vertically beneath its corresponding heading.*

Warning!
This information should only be used as a selection guide. The use of a Miniature Circuit Breaker/Manual Motor Controller in an application with a certain Trip-Characteristic always requires prototype testing! It is the responsibility of the circuit design engineer to select the appropriate Miniature Circuit Breaker/Manual Motor Controller for his specific application.

V-EA Series
B-Trip Characteristic

Application Examples:

Business equipment, wiring protection, lighting, appliances, control circuits, some motors and some electronic applications. Relatively long thermal trip delay but low magnetic trip point.

UL508 Listed
E137938

upto 25A
B,C,D curve

One Pole



Standard Pack: 12

Weight:
0.3A - 32A
1.75kg (3.86 lb.)
40A - 63A
2.07kg (4.56 lb.)

Rated Current	Type/ Voltage	Approvals
1.0A	1B1UM	
1.6A	1B1.6UM	
2.0A	1B2UM	
2.5A	1B2.5UM	
3.0A	1B3UM	
3.5A	1B3.5UM	
4.0A	1B4UM	
5.0A	1B5UM	
6.0A	1B6UM	
10A	1B10UM	
13A	1B13UM	
15A	1B15UM	
16A	1B16UM	
20A	1B20UM	
25A	1B25UZ	
30A	1B30UM	
32A	1B32UM	
40A	1B40UM	
50A	1B50UM	
60A	1B60UM	
63A	1B63UM	

Three Pole



Standard Pack: 4

Weight:
0.3A - 32A
1.75kg (3.86 lb.)
40A - 63A
2.07kg (4.56 lb.)

Rated Current	Type/ Cat. No.	Approvals
1.0A	3B1UM	
1.6A	3B1.6UM	
2.0A	3B2UM	
2.5A	3B2.5UM	
3.0A	3B3UM	
3.5A	3B3.5UM	
4.0A	3B4UM	
5.0A	3B5UM	
6.0A	3B6UM	
10A	3B10UM	
13A	3B13UM	
15A	3B15UM	
16A	3B16UM	
20A	3B20UM	
25A	3B25UM	
30A	3B30UM	
32A	3B32UM	
40A	3B40UM	
50A	3B50UM	
60A	3B60UM	
63A	3B63UM	

Two Pole



Standard Pack: 6

Weight:
0.3A - 32A
1.75kg (3.86 lb.)
40A - 63A
2.07kg (4.56 lb.)

Rated Current	Type/ Cat. No.	Approvals
1.0A	2B1UM	
1.6A	2B1.6UM	
2.0A	2B2UM	
2.5A	2B2.5UM	
3.0A	2B3UM	
3.5A	2B3.5UM	
4.0A	2B4UM	
5.0A	2B5UM	
6.0A	2B6UM	
10A	2B10UM	
13A	2B13UM	
15A	2B15UM	
16A	2B16UM	
20A	2B20UM	
25A	2B25UM	
30A	2B30UM	
32A	2B32UM	
40A	2B40UM	
50A	2B50UM	
60A	2B60UM	
63A	2B63UM	

Add-on Neutral Pole



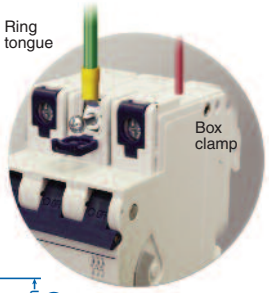
Rated Current	Type/ Cat. No.	Approvals
0.3-63A/ 480Y/277V	N63UM	

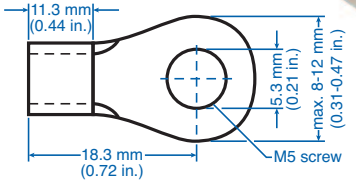
Standard Pack: 6

Weight:
0.775kg (1.71lb.)

Standard Dual Connection Terminal

- Box clamp terminals
  Top: 18-3 AWG;
  Bottom: 18-2 AWG
  (Line/Load reversible)
- Ring tongue terminals





** May differ by manufacturer. Top terminal ring tongue max. thickness 1.6mm.*

For the latest on Altech Circuit Breakers specifications please visit www.altechcorp.com/breaker.

V-EA Series
C-Trip Characteristic

Application Examples:

Low inrush motors, lighting, wiring protection, appliances, business equipment, and control circuit applications. Relatively long thermal trip delay and medium magnetic trip point.

Altech Corp.®

UL508 Listed
E137938

upto 25A
B,C,D curve

One Pole



Standard Pack: 12

Weight:
0.3A - 32A
1.75kg (3.86 lb.)
40A - 63A
2.07kg (4.56 lb.)

Rated Current	Type/ Cat. No.	Approvals
0.3A	1C03UM	
0.5A	1C05UM	
0.75A	1C075UM	
1.0A	1C1UM	
1.6A	1C1.6UM	
2.0A	1C2UM	
2.5A	1C2.5UM	
3.0A	1C3UM	
3.5A	1C3.5UM	
4.0A	1C4UM	
5.0A	1C5UM	
6.0A	1C6UM	
8.0A	1C8UM	
10A	1C10UM	
13A	1C13UM	
15A	1C15UM	
16A	1C16UM	
20A	1C20UM	
25A	1C25UM	
30A	1C30UM	
32A	1C32UM	
40A	1C40UM	
50A	1C50UM	
60A	1C60UM	
63A	1C63UM	

Three Pole



Standard Pack: 4

Weight:
0.3A - 32A
1.75kg (3.86 lb.)
40A - 63A
2.07kg (4.56 lb.)

Rated Current	Type/ Cat. No.	Approvals
0.3A	3C03UM	
0.5A	3C05UM	
0.75A	3C075UM	
1.0A	3C1UM	
1.6A	3C1.6UM	
2.0A	3C2UM	
2.5A	3C2.5UM	
3.0A	3C3UM	
3.5A	3C3.5UM	
4.0A	3C4UM	
5.0A	3C5UM	
6.0A	3C6UM	
8.0A	3C8UM	
10A	3C10UM	
13A	3C13UM	
15A	3C15UM	
16A	3C16UM	
20A	3C20UM	
25A	3C25UM	
30A	3C30UM	
32A	3C32UM	
40A	3C40UM	
50A	3C50UM	
60A	3C60UM	
63A	3C63UM	

Two Pole



Standard Pack: 6

Weight:
0.3A - 32A
1.75kg (3.86 lb.)
40A - 63A
2.07kg (4.56 lb.)

Rated Current	Type/ Cat. No.	Approvals
0.3A	2C03UM	
0.5A	2C05UM	
0.75A	2C075UM	
1.0A	2C1UM	
1.6A	2C1.6UM	
2.0A	2C2UM	
2.5A	2C2.5UM	
3.0A	2C3UM	
3.5A	2C3.5UM	
4.0A	2C4UM	
5.0A	2C5UM	
6.0A	2C6UM	
8.0A	2C8UM	
10A	2C10UM	
13A	2C13UM	
15A	2C15UM	
16A	2C16UM	
20A	2C20UM	
25A	2C25UM	
30A	2C30UM	
32A	2C32UM	
40A	2C40UM	
50A	2C50UM	
60A	2C60UM	
63A	2C63UM	

Add-on Neutral Pole



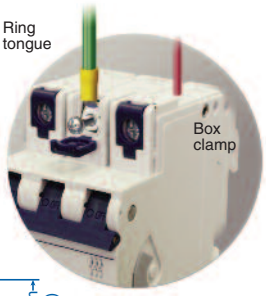
Rated Current	Type/ Cat. No.	Approvals
0.3-63A/ 480Y/277V	N63UM	

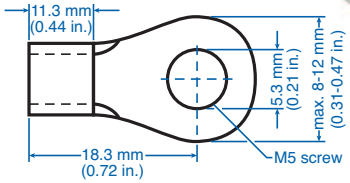
Standard Pack: 6

Weight:
0.775kg (1.71lb.)

Standard Dual Connection Terminal

- Box clamp terminals
  Top: 18-3 AWG;
  Bottom: 18-2 AWG
  (Line/Load reversible)
- Ring tongue terminals





** May differ by manufacturer. Top terminal ring tongue max. thickness 1.6mm.*

UL508

V-EA Series
D-Trip Characteristic

UL508 Listed
E137938

upto 25A
B,C,D curve

Application Examples:

High inrush motors, transformers, power supplies, heaters and reactive loads. Relatively long thermal trip delay and very high magnetic trip point.

One Pole



Standard Pack: 12

Weight:
0.3A - 32A
1.75kg (3.86 lb.)
40A - 63A
2.07kg (4.56 lb.)

Rated Current	Type/ Cat. No.	Approvals
0.3A	1D03UM	UL SP VDE
0.5A	1D05UM	UL SP VDE
0.75A	1D075UM	UL SP VDE
1.0A	1D1UM	UL SP VDE
1.6A	1D1.6UM	UL SP VDE
2.0A	1D2UM	UL SP VDE
2.5A	1D2.5UM	UL SP VDE
3.0A	1D3UM	UL SP VDE
3.5A	1D3.5UM	UL SP VDE
4.0A	1D4UM	UL SP VDE
5.0A	1D5UM	UL SP VDE
6.0A	1D6UM	UL SP VDE
8.0A	1D8UM	UL SP VDE
10A	1D10UM	UL SP VDE
13A	1D13UM	UL SP VDE
15A	1D15UM	UL SP
16A	1D16UM	UL SP VDE
20A	1D20UM	UL SP VDE
25A	1D25UM	UL SP VDE
30A	1D30UM	UL SP
32A	1D32UM	UL SP
40A	1D40UM	UL SP
50A	1D50UM	UL SP
60A	1D60UM	UL SP
63A	1D63UM	

Three Pole



Standard Pack: 4

Weight:
0.3A - 32A
1.75kg (3.86 lb.)
40A - 63A
2.07kg (4.56 lb.)

Rated Current	Type/ Cat. No.	Approvals
0.3A	3D03UM	UL SP VDE
0.5A	3D05UM	UL SP VDE
0.75A	3D075UM	UL SP VDE
1.0A	3D1UM	UL SP VDE
1.6A	3D1.6UM	UL SP VDE
2.0A	3D2UM	UL SP VDE
2.5A	3D2.5UM	UL SP VDE
3.0A	3D3UM	UL SP VDE
3.5A	3D3.5UM	UL SP VDE
4.0A	3D4UM	UL SP VDE
5.0A	3D5UM	UL SP VDE
6.0A	3D6UM	UL SP VDE
8.0A	3D8UM	UL SP VDE
10A	3D10UM	UL SP VDE
13A	3D13UM	UL SP VDE
15A	3D15UM	UL SP
16A	3D16UM	UL SP VDE
20A	3D20UM	UL SP VDE
25A	3D25UM	UL SP VDE
30A	3D30UM	UL SP
32A	3D32UM	UL SP
40A	3D40UM	UL SP
50A	3D50UM	UL SP
60A	3D60UM	UL SP
63A	3D63UM	

Two Pole



Standard Pack: 6

Weight:
0.3A - 32A
1.75kg (3.86 lb.)
40A - 63A
2.07kg (4.56 lb.)

Rated Current	Type/ Cat. No.	Approvals
0.3A	2D03UM	UL SP VDE
0.5A	2D05UM	UL SP VDE
0.75A	2D075UM	UL SP VDE
1.0A	2D1UM	UL SP VDE
1.6A	2D1.6UM	UL SP VDE
2.0A	2D2UM	UL SP VDE
2.5A	2D2.5UM	UL SP VDE
3.0A	2D3UM	UL SP VDE
3.5A	2D3.5UM	UL SP VDE
4.0A	2D4UM	UL SP VDE
5.0A	2D5UM	UL SP VDE
6.0A	2D6UM	UL SP VDE
8.0A	2D8UM	UL SP VDE
10A	2D10UM	UL SP VDE
13A	2D13UM	UL SP VDE
15A	2D15UM	UL SP
16A	2D16UM	UL SP VDE
20A	2D20UM	UL SP VDE
25A	2D25UM	UL SP VDE
30A	2D30UM	UL SP
32A	2D32UM	UL SP
40A	2D40UM	UL SP
50A	2D50UM	UL SP
60A	2D60UM	UL SP
63A	2D63UM	

Add-on Neutral Pole



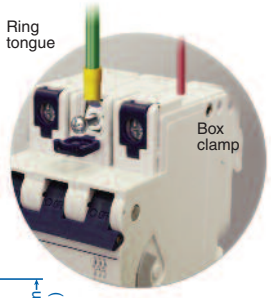
Rated Current	Type/ Cat. No.	Approvals
0.3-63A/ 480Y/277V	N63UM	UL SP

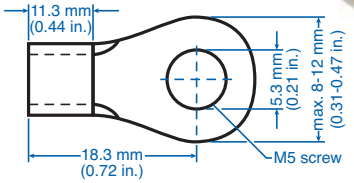
Standard Pack: 6

Weight:
0.775kg (1.71lb.)

Standard Dual Connection Terminal

- Box clamp terminals
  Top: 18-3 AWG;
  Bottom: 18-2 AWG
  (Line/Load reversible)
- Ring tongue terminals





** May differ by manufacturer. Top terminal ring tongue max. thickness 1.6mm.*

For the latest on Altech Circuit Breakers specifications please visit www.altechcorp.com/breaker.

V-EA Series
E-Trip Characteristic

Application Examples:

High efficiency motors, which have exceedingly high inrush currents. Relatively short thermal trip delays and very high magnetic trip points.

Altech Corp.®

UL508 Listed
E137938

One Pole



Standard Pack: 12

Weight:
0.3A - 32A
1.75kg (3.86 lb.)
40A - 63A
2.07kg (4.56 lb.)

Rated Current	Type/ Cat. No.	Approvals
0.3A	1E03UM	UL SA
0.5A	1E05UM	UL SA
0.75A	1E075UM	UL SA
1.0A	1E1UM	UL SA
1.6A	1E1.6UM	UL SA
2.0A	1E2UM	UL SA
2.5A	1E2.5UM	UL SA
3.0A	1E3UM	UL SA
3.5A	1E3.5UM	UL SA
4.0A	1E4UM	UL SA
5.0A	1E5UM	UL SA
6.0A	1E6UM	UL SA
8.0A	1E8UM	UL SA
10A	1E10UM	UL SA
12A	1E12UM	UL SA
13A	1E13UM	UL SA
15A	1E15UM	UL SA
16A	1E16UM	UL SA
20A	1E20UM	UL SA
25A	1E25UM	UL SA
30A	1E30UM	UL SA
32A	1E32UM	UL SA
40A	1E40UM	UL SA
50A	1E50UM	UL SA
60A	1E60UM	UL SA
63A	1E63UM	

Three Pole



Standard Pack: 4

Weight:
0.3A - 32A
1.75kg (3.86 lb.)
40A - 63A
2.07kg (4.56 lb.)

Rated Current	Type/ Cat. No.	Approvals
0.3A	3E03UM	UL SA
0.5A	3E05UM	UL SA
0.75A	3E075UM	UL SA
1.0A	3E1UM	UL SA
1.6A	3E1.6UM	UL SA
2.0A	3E2UM	UL SA
2.5A	3E2.5UM	UL SA
3.0A	3E3UM	UL SA
3.5A	3E3.5UM	UL SA
4.0A	3E4UM	UL SA
5.0A	3E5UM	UL SA
6.0A	3E6UM	UL SA
8.0A	3E8UM	UL SA
10A	3E10UM	UL SA
12A	3E12UM	UL SA
13A	3E13UM	UL SA
15A	3E15UM	UL SA
16A	3E16UM	UL SA
20A	3E20UM	UL SA
25A	3E25UM	UL SA
30A	3E30UM	UL SA
32A	3E32UM	UL SA
40A	3E40UM	UL SA
50A	3E50UM	UL SA
60A	3E60UM	UL SA
63A	3E63UM	

Two Pole



Standard Pack: 6

Weight:
0.3A - 32A
1.75kg (3.86 lb.)
40A - 63A
2.07kg (4.56 lb.)

Rated Current	Type/ Cat. No.	Approvals
0.3A	2E03UM	UL SA
0.5A	2E05UM	UL SA
0.75A	2E075UM	UL SA
1.0A	2E1UM	UL SA
1.6A	2E1.6UM	UL SA
2.0A	2E2UM	UL SA
2.5A	2E2.5UM	UL SA
3.0A	2E3UM	UL SA
3.5A	2E3.5UM	UL SA
4.0A	2E4UM	UL SA
5.0A	2E5UM	UL SA
6.0A	2E6UM	UL SA
8.0A	2E8UM	UL SA
10A	2E10UM	UL SA
12A	2E12UM	UL SA
13A	2E13UM	UL SA
15A	2E15UM	UL SA
16A	2E16UM	UL SA
20A	2E20UM	UL SA
25A	2E25UM	UL SA
30A	2E30UM	UL SA
32A	2E32UM	UL SA
40A	2E40UM	UL SA
50A	2E50UM	UL SA
60A	2E60UM	UL SA
63A	2E63UM	

Add-on Neutral Pole



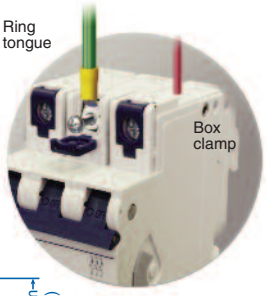
Rated Current	Type/ Cat. No.	Approvals
0.3-63A/ 480Y/277V	N63UM	UL SA

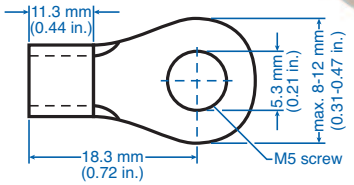
Standard Pack: 6

Weight:
0.775kg (1.71lb.)

Standard Dual Connection Terminal

- Box clamp terminals
  Top: 18-3 AWG;
  Bottom: 18-2 AWG
  (Line/Load reversible)
- Ring tongue terminals





** May differ by manufacturer. Top terminal ring tongue max. thickness 1.6mm.*

UL508

V-EA Series
G-Trip Characteristic

Application Examples:

General industrial, including motors, some transformers, solenoids, control circuits, lighting and wiring. Meets the US trip norms with relatively short thermal trip delay and high magnetic trip point.

UL508 Listed
E137938

One Pole



Standard Pack: 12

Weight:
0.3A - 32A
1.75kg (3.86 lb.)
40A - 63A
2.07kg (4.56 lb.)

Rated Current	Type/ Cat. No.	Approvals
0.3A	1G03UM	UL SP
0.5A	1G05UM	UL SP
0.8A	1G08UM	UL SP
1.0A	1G1UM	UL SP
1.6A	1G1.6UM	UL SP
2.0A	1G2UM	UL SP
2.5A	1G2.5UM	UL SP
3.0A	1G3UM	UL SP
3.5A	1G3.5UM	UL SP
4.0A	1G4UM	UL SP
5.0A	1G5UM	UL SP
6.0A	1G6UM	UL SP
8.0A	1G8UM	UL SP
10A	1G10UM	UL SP
12A	1G12UM	UL SP
13A	1G13UM	UL SP
15A	1G15UM	UL SP
16A	1G16UM	UL SP
20A	1G20UM	UL SP
25A	1G25UM	UL SP
30A	1G30UM	UL SP
32A	1G32UM	UL SP
40A	1G40UM	UL SP
50A	1G50UM	UL SP
60A	1G60UM	UL SP
63A	1G63UM	

Three Pole



Standard Pack: 4

Weight:
0.3A - 32A
1.75kg (3.86 lb.)
40A - 63A
2.07kg (4.56 lb.)

Rated Current	Type/ Cat. No.	Approvals
0.3A	3G03UM	UL SP
0.5A	3G05UM	UL SP
0.8A	3G08UM	UL SP
1.0A	3G1UM	UL SP
1.6A	3G1.6UM	UL SP
2.0A	3G2UM	UL SP
2.5A	3G2.5UM	UL SP
3.0A	3G3UM	UL SP
3.5A	3G3.5UM	UL SP
4.0A	3G4UM	UL SP
5.0A	3G5UM	UL SP
6.0A	3G6UM	UL SP
8.0A	3G8UM	UL SP
10A	3G10UM	UL SP
12A	3G12UM	UL SP
13A	3G13UM	UL SP
15A	3G15UM	UL SP
16A	3G16UM	UL SP
20A	3G20UM	UL SP
25A	3G25UM	UL SP
30A	3G30UM	UL SP
32A	3G32UM	UL SP
40A	3G40UM	UL SP
50A	3G50UM	UL SP
60A	3G60UM	UL SP
63A	3G63UM	

Two Pole



Standard Pack: 6

Weight:
0.3A - 32A
1.75kg (3.86 lb.)
40A - 63A
2.07kg (4.56 lb.)

Rated Current	Type/ Cat. No.	Approvals
0.3A	2G03UM	UL SP
0.5A	2G05UM	UL SP
0.8A	2G08UM	UL SP
1.0A	2G1UM	UL SP
1.6A	2G1.6UM	UL SP
2.0A	2G2UM	UL SP
2.5A	2G2.5UM	UL SP
3.0A	2G3UM	UL SP
3.5A	2G3.5UM	UL SP
4.0A	2G4UM	UL SP
5.0A	2G5UM	UL SP
6.0A	2G6UM	UL SP
8.0A	2G8UM	UL SP
10A	2G10UM	UL SP
12A	2G12UM	UL SP
13A	2G13UM	UL SP
15A	2G15UM	UL SP
16A	2G16UM	UL SP
20A	2G20UM	UL SP
25A	2G25UM	UL SP
30A	2G30UM	UL SP
32A	2G32UM	UL SP
40A	2G40UM	UL SP
50A	2G50UM	UL SP
60A	2G60UM	UL SP
63A	2G63UM	

Add-on Neutral Pole



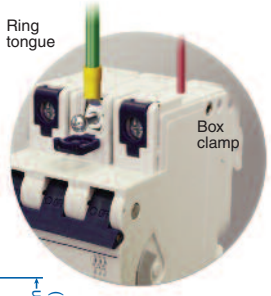
Rated Current	Type/ Cat. No.	Approvals
0.3-63A/ 480Y/277V	N63UM	UL SP

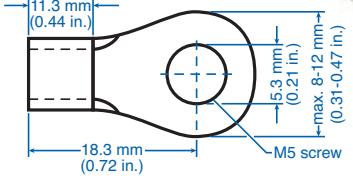
Standard Pack: 6

Weight:
0.775kg (1.71lb.)

Standard Dual Connection Terminal

- Box clamp terminals
  Top: 18-3 AWG;
  Bottom: 18-2 AWG
  (Line/Load reversible)
- Ring tongue terminals





** May differ by manufacturer. Top terminal ring tongue max. thickness 1.6mm.*

For the latest on Altech Circuit Breakers specifications please visit www.altechcorp.com/breaker.

V-EA Series
Z-Trip Characteristic

Application Examples:

Semiconductors, components which fail-short (vs. fail-open), and components/devices with low surge-current and short circuit withstand capabilities. Relatively short thermal delay and very low magnetic trip point.

Altech Corp.®

UL508 Listed
E137938

One Pole



Standard Pack: 12

Weight:
0.3A - 32A
1.75kg (3.86 lb.)
40A - 63A
2.07kg (4.56 lb.)

Rated Current	Type/ Cat. No.	Approvals
0.3A	1Z03UM	
0.5A	1Z05UM	
0.75A	1Z075UM	
1.0A	1Z1UM	
1.6A	1Z1.6UM	
2.0A	1Z2UM	
2.5A	1Z2.5UM	
3.0A	1Z3UM	
3.5A	1Z3.5UM	
4.0A	1Z4UM	
5.0A	1Z5UM	
6.0A	1Z6UM	
8.0A	1Z8UM	
10A	1Z10UM	
12A	1Z12UM	
13A	1Z13UM	
15A	1Z15UM	
16A	1Z16UM	
20A	1Z20UM	
25A	1Z25UM	
30A	1Z30UM	
32A	1Z32UM	
40A	1Z40UM	
50A	1Z50UM	

Three Pole



Standard Pack: 4

Weight:
0.3A - 32A
1.75kg (3.86 lb.)
40A - 63A
2.07kg (4.56 lb.)

Rated Current	Type/ Cat. No.	Approvals
0.3A	3Z03UM	
0.5A	3Z05UM	
0.75A	3Z075UM	
1.0A	3Z1UM	
1.6A	3Z1.6UM	
2.0A	3Z2UM	
2.5A	3Z2.5UM	
3.0A	3Z3UM	
3.5A	3Z3.5UM	
4.0A	3Z4UM	
5.0A	3Z5UM	
6.0A	3Z6UM	
8.0A	3Z8UM	
10A	3Z10UM	
12A	3Z12UM	
13A	3Z13UM	
15A	3Z15UM	
16A	3Z16UM	
20A	3Z20UM	
25A	3Z25UM	
30A	3Z30UM	
32A	3Z32UM	
40A	3Z40UM	
50A	3Z50UM	

Two Pole



Standard Pack: 6

Weight:
0.3A - 32A
1.75kg (3.86 lb.)
40A - 63A
2.07kg (4.56 lb.)

Rated Current	Type/ Cat. No.	Approvals
0.3A	2Z03UM	
0.5A	2Z05UM	
0.75A	2Z075UM	
1.0A	2Z1UM	
1.6A	2Z1.6UM	
2.0A	2Z2UM	
2.5A	2Z2.5UM	
3.0A	2Z3UM	
3.5A	2Z3.5UM	
4.0A	2Z4UM	
5.0A	2Z5UM	
6.0A	2Z6UM	
8.0A	2Z8UM	
10A	2Z10UM	
12A	2Z12UM	
13A	2Z13UM	
15A	2Z15UM	
16A	2Z16UM	
20A	2Z20UM	
25A	2Z25UM	
30A	2Z30UM	
32A	2Z32UM	
40A	2Z40UM	
50A	2Z50UM	

Add-on Neutral Pole



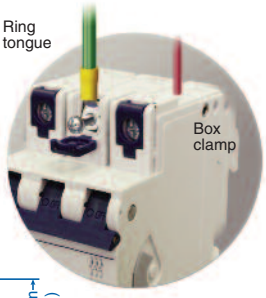
Rated Current	Type/ Cat. No.	Approvals
0.3-63A/ 480Y/277V	N63UM	

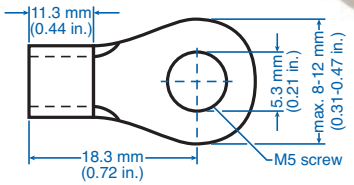
Standard Pack: 6

Weight:
0.775kg (1.71lb.)

Standard Dual Connection Terminal

- Box clamp terminals
  Top: 18-3 AWG;
  Bottom: 18-2 AWG
  (Line/Load reversible)
- Ring tongue terminals



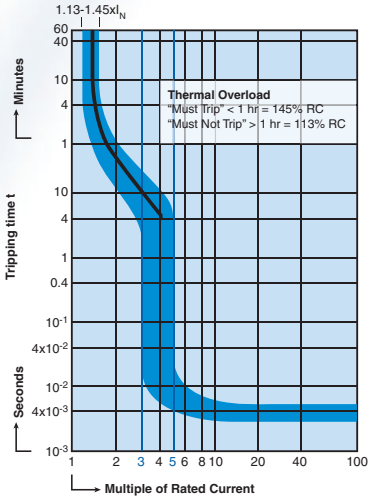


** May differ by manufacturer. Top terminal ring tongue max. thickness 1.6mm.*

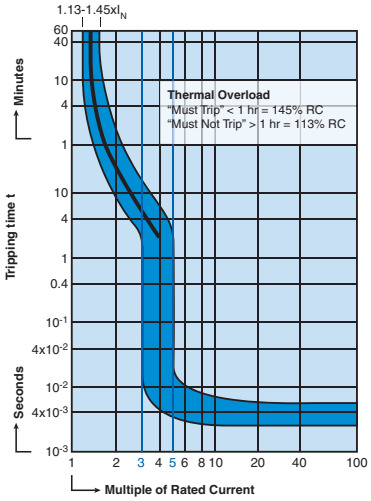
UL508

V-EA Trip Curves

B Trip Curve



1.0A Through 10A Rated Current

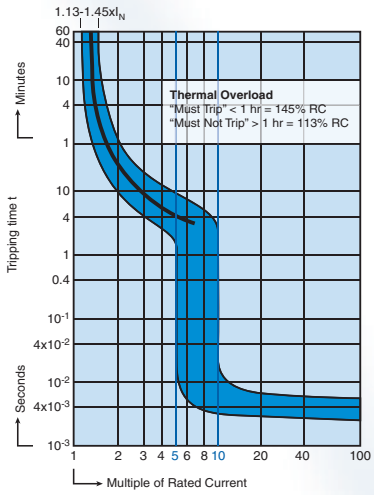


13A Through 63A Rated Current

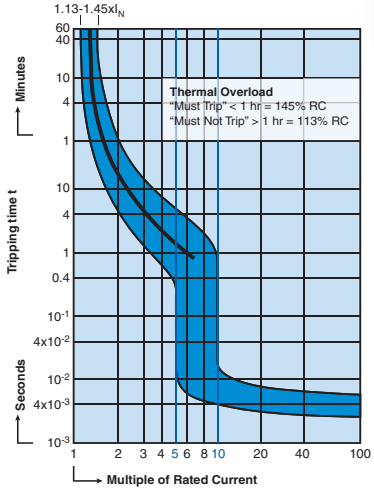
"B" Magnetic Trip Parameters
Rated current 1.0A to 63A.

1. Hold for a minimum of 100ms at surge of 3 times rated current.
2. Trip in under 100ms at 5 times rated current.

C Trip Curve



0.3A Through 10A Rated Current

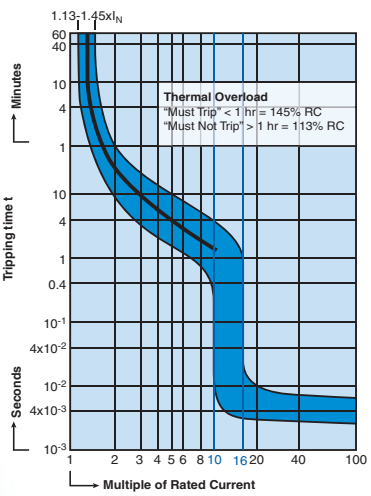


13A Through 63A Rated Current

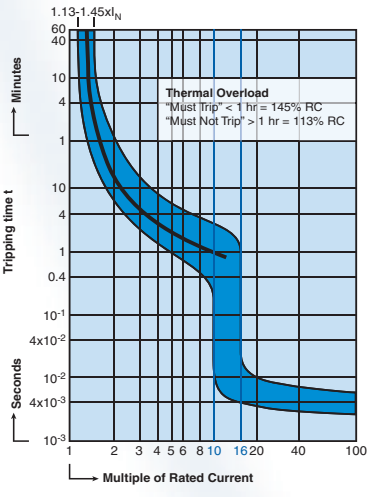
"C" Magnetic Trip Parameters
Rated current 0.3A to 63A.

1. Hold for a minimum of 100ms at surge of 5 times rated current.
2. Trip in under 100ms at 10 times rated current.

D Trip Curve



0.3A Through 10A Rated Current



13A Through 63A Rated Current

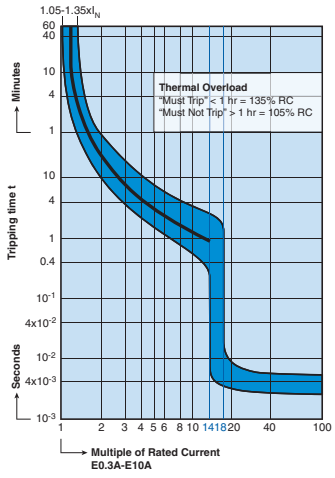
"D" Magnetic Trip Parameters
Rated current 0.3A to 63A.

1. Hold for a minimum of 100ms at surge of 10 times rated current.
2. Trip in under 100ms at 16 times rated current.

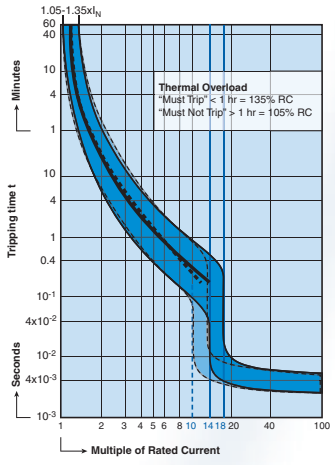
For the latest on Altech Circuit Breakers specifications please visit www.altechcorp.com/breaker.

V-EA Trip Curves

E Trip Curve

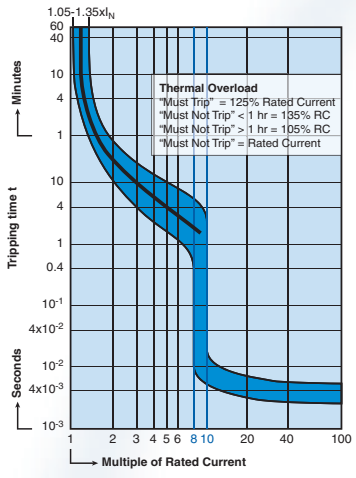


0.3A Through 10A Rated Current

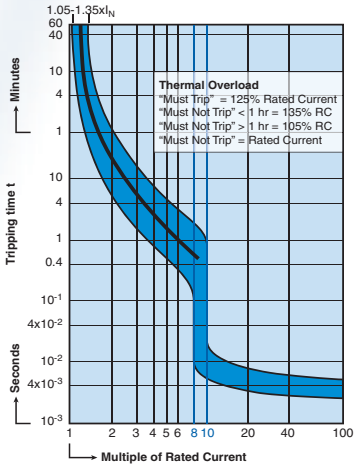


12A Through 60A Rated Current

G Trip Curve

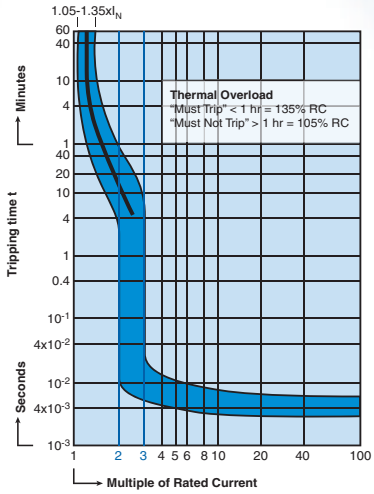


0.3A Through 10A Rated Current

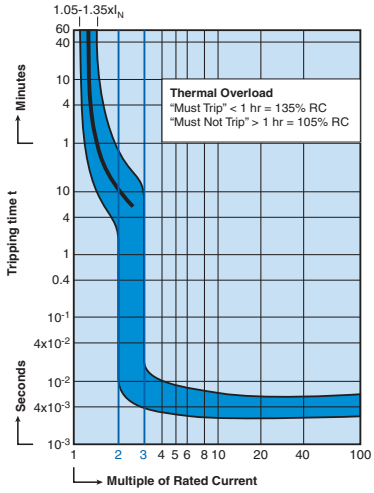


12A Through 63A Rated Current

Z Trip Curve



0.3A Through 10A Rated Current



12A Through 50A Rated Current

"E" Magnetic Trip Parameters
Rated Current, 0.3A to 50A, 60/63A (dotted line).

Magnetic Trip:
1. Hold for a minimum of 100ms at surge of 14 times (60A, 10 times) rated current.
2. Trip in under 100ms at 18 times (60A, 14 times) rated current.

"G" Magnetic Trip Parameters
Rated Current, 0.3A to 63A.

Magnetic Trip:
1. Hold for a minimum of 100ms at surge of 8 times rated current.
2. Trip in under 100ms at 10 times rated current.

"Z" Trip Parameters
Rated Current, 0.3A to 50A.

Magnetic Trip:
1. Hold for a minimum of 100ms at 2 times rated current.
2. Trip in under 100ms at 3 times rated current.

UL508

Table HP 1: AMPERE RATINGS & HORSEPOWER RATING 1 PHASE

			FLA & LRC CONVERTED TO TABLE HORSEPOWER (SEE NOTE #2) USE FLA & LRC RATINGS WHERE NO HP RATING IS GIVEN					
			NOMINAL CIRCUIT VOLTAGE					
V-EA RATED CURRENT (SEE NOTE #1)	MOTOR NAMEPLATE FLA RATING	MOTOR NAMEPLATE STARTING/ LRC RATING	110-120 VAC	200 VAC	208 VAC	220-240 VAC	265 VAC	277 VAC
0.30A 0.50A 0.75A	0.30A 0.50A 0.75A	1.80A 3.00A 4.35A						
0.80A 1.0A 1.6A	0.80A 1.0A 1.6A	4.8A 6.0A 9.6A						
2.0A 2.5A 3.0A	2.0A 2.5A 3.0A	12.0A 15.0A 18.0A		1/6hp 1/6hp	1/6hp 1/6hp	1/6hp 1/6hp 1/4hp	1/6hp 1/6hp 1/4hp	1/6hp 1/4hp 1/3hp
3.5A 4.0A	3.5A 4.0A	21.0A 24.0A		1/4hp 1/4hp	1/4hp 1/3hp	1/4hp 1/3hp	1/3hp 1/3hp	1/3hp 1/3hp
5.0A 6.0A 8.0A	5.0A 6.0A 8.0A	30.0A 36.0A 48.0A	1/6hp 1/4hp 1/3hp	1/3hp 1/2hp 3/4hp	1/2hp 1/2hp 3/4hp	1/2hp 1/2hp 1hp	1/2hp 3/4hp 1hp	1/2hp 3/4hp 1hp
10.0A	10.0A	60.0A	1/2hp	1hp	1hp	1 1/2hp	1 1/2hp	2hp
12.0A 12.5A	12.0A 12.5A	72.0A 75.0A	1/2hp 1/2hp	1 1/2hp 1 1/2hp	1 1/2hp 1 1/2hp	2hp 2hp	2hp 2hp	2hp 2hp
13.0A 15.0A 16.0A	13.0A 15.0A 16.0A	78.0A 90.0A 96.0A	1/2hp 3/4hp 1hp	1 1/2hp 2hp 2hp	1 1/2hp 2hp 2hp	2hp 2hp 2hp	2hp 3hp 3hp	2hp 3hp 3hp
20.0A 25.0A	20.0A 25.0A	120.0A 150.0A	1 1/2hp 2hp	3hp 3hp	3hp 3hp	3hp 3hp	3hp 5hp	3hp 5hp
30.0A	30.0A	180.0A	2hp	3hp	3hp	5hp	5hp	5hp
32.0A	32.0A	192.0A	2hp	3hp	5hp	5hp	5hp	5hp
40.0A	40.0A	240.0A	3hp	5hp	7 1/2hp	7 1/2hp	7 1/2hp	7 1/2hp
50.0A 60.0A	50.0A 60.0A	300.0A 360.0A	3hp 5hp	7 1/2hp 10hp	10hp 10hp	10hp 10hp	10hp 10hp	10hp 15hp

NOTE #1: For AC motor circuit nameplate full load current, AC general-use loads, AC resistance loads, AC incandescent lamp (tungsten) loads, AC electric discharge lamp (ballast) loads.
NOTE #2: Conversions per UL508® Table 45.2 and NFPA-70: National Electrical Code® 2011 Tables 430-248 and 430-251(A).

Table HP 2: AMPERE RATING & HORSEPOWER RATING 3 PHASE & 2 PHASE - 4 WIRE

FLA & LRC RATINGS CONVERTED TO TABLE HORSEPOWER (SEE NOTE #2) USE FLA & LRC RATINGS WHERE NO HP IS LISTED												
V-EA RATED CURRENT (SEE NOTE #1)	MOTOR NAMEPLATE FLA RATING	MOTOR NAMEPLATE STARTING/ LRC RATING	110-120 VAC Motor Design		200 VAC Motor Design		208 VAC Motor Design		220-240 VAC (SEE NOTE #3) Motor Design		440-480 VAC Motor Design	
			B, C, D	E	B, C, D	E	B, C, D	E	B, C, D	E	B, C, D	E
0.30A 0.50A 0.75A	0.30A 0.50A 0.75A	3.0A 5.0A 7.5A										
0.80A 1.0A 1.6A	0.80A 1.0A 1.6A	8.0A 10.0A 16.0A									1/2hp	1/2hp
2.0A 2.5A 3.0A	2.0A 2.5A 3.0A	20.0A 25.0A 30.0A			1/2hp 1/2hp	1/2hp 1/2hp	1/2hp 1/2hp	1/2hp 1/2hp	1/2hp 1/2hp 1/2hp	1/2hp 1/2hp 1/2hp	3/4hp 1hp 1 1/2hp	3/4hp 1hp 1 1/2hp
3.5A 4.0A	3.5A 4.0A	35.0A 40.0A			1/2hp 3/4hp	1/2hp 3/4hp	3/4hp 3/4hp	3/4hp 3/4hp	3/4hp 3/4hp	3/4hp 3/4hp	2hp 2hp	2hp 2hp
5.0A 6.0A 8.0A	5.0A 6.0A 8.0A	42.0A 50.4A 67.2A	1/2hp 1/2hp 3/4hp	1/2hp 1/2hp 3/4hp	1hp 1hp 2hp	1hp 1hp 2hp	1hp 1hp 2hp	1hp 1hp 2hp	1hp 1 1/2hp 2hp	1hp 1 1/2hp 2hp	3hp 3hp 5hp	3hp 3hp 5hp
10.0A 12.0A 12.5A	10.0A 12.0A 12.5A	84.0A 100.8A 105.0A	1hp 1 1/2hp 1 1/2hp	1hp 1 1/2hp 1 1/2hp	2hp 3hp 3hp	2hp 3hp 3hp	2hp 3hp 3hp	2hp 3hp 3hp	3hp 3hp 3hp	3hp 3hp 3hp	5hp 7 1/2hp 7 1/2hp	5hp 7 1/2hp 7 1/2hp
13.0A 15.0A 16.0A	13.0A 15.0A 16.0A	109.2A 126.0A 134.4A	1 1/2hp 2hp 2hp	1 1/2hp 2hp 2hp	3hp 3hp 3hp	3hp 3hp 3hp	3hp 3hp 3hp	3hp 3hp 3hp	3hp 3hp 5hp	3hp 3hp 5hp	7 1/2hp 10hp 10hp	7 1/2hp 10hp 10hp
20.0A 25.0A	20.0A 25.0A	168.0A 210.0A	3hp 3hp	3hp 3hp	5hp 5hp	5hp 5hp	5hp 7 1/2hp	5hp 7 1/2hp	5hp 7 1/2hp	5hp 7 1/2hp	10hp 15hp	10hp 15hp
30.0A	30.0A	252.0A	5hp	5hp	5hp	5hp	7 1/2hp	7 1/2hp	10hp	10hp	20hp	20hp
32.0A	32.0A	268.8A	5hp	5hp	5hp	5hp	10hp	10hp	10hp	10hp	20hp	20hp
40.0A	40.0A	226.0A	5hp	5hp	10hp	7 1/2hp	10hp	7 1/2hp	10hp	10hp	30hp	20hp
50.0A 60.0A	50.0A 60.0A	282.5A 339.0A	7 1/2hp 10hp	7 1/2hp 10hp	15hp 15hp	10hp 10hp	15hp 20hp	10hp 10hp	15hp 20hp	10hp 15hp	30hp 40hp	25hp 30hp

NOTE #1: For AC motor circuit nameplate full load current, AC general-use loads, AC resistance loads, AC incandescent lamp (tungsten) loads, AC electric discharge lamp (ballast) loads.
NOTE #2: Conversions per UL508® proposed Tables 45.2 and 45.4 and NFPA-70: National Electrical Code® 2011 Tables 430-249, 430-250 and 430-251(B).

V-EA INTERNAL RESISTANCE

Rated Current (Amp)	Trip Characteristic					
	B (Ohms)	C (Ohms)	D (Ohms)	E (Ohms)	G (Ohms)	Z (Ohms)
0.3	—	16.8620	16.8620	14.52000	16.8620	31.5060
0.5	—	6.8540	6.0009	5.92000	6.8540	10.2460
0.75/0.8	—	3.0540	3.0540	2.70000	3.0540	5.3920
1.0	—	1.7000	1.7560	1.48000	1.7560	2.6910
1.6	—	0.5870	0.5870	0.57400	0.5870	0.9440
2.0	—	0.4190	0.4190	0.40500	0.4190	0.8900
2.5	—	0.2950	0.2950	0.26900	0.2950	0.4290
3.0	—	0.2020	0.2020	0.18600	0.2020	0.3460
3.5	—	0.1390	0.1390	0.13900	0.1390	0.1790
4.0	—	0.1090	0.1090	0.10600	0.1090	0.1620
5.0	—	0.0654	0.0654	0.05900	0.0654	0.1050
6.0	0.0528	0.0528	0.0491	0.04600	0.0491	0.0823
8.0	—	0.0278	0.0240	0.03040	0.0333	0.0371
10	0.0216	0.0216	0.0187	0.02020	0.0211	0.0278
12/12.5	—	—	—	0.00724	0.0084	0.0151
13	0.0113	0.0084	0.0085	0.00724	0.0084	0.0151
15/16	0.0085	0.0085	0.0076	0.00731	0.0076	0.0114
20	0.0067	0.0067	0.0064	0.00582	0.0064	0.0075
25	0.0050	0.0050	0.0041	0.00411	0.0046	0.0050
30/32	0.0032	0.0032	0.0027	0.00272	0.0030	0.0032
40	0.0025	0.0025	0.0022	0.00212	0.0022	0.0022
50	0.0019	0.0019	0.0018	0.00184	0.0019	0.00195
60/63	0.0018	0.0018	0.0017	0.00172	0.00179	—

Resistances listed are “hot” values, as opposed to cold start values. Operating voltage drop across the V-EA and power loss per pole can be approximated with basic formulas:

$V_{DROP} = I_{OPERATING} \times R_{TABLE}$

$P_{LOSS\ P/P} = I^2_{OPERATING} \times R_{TABLE}$

Voltage drops should be reviewed when V-EAs with high internal resistance are used (e.g., load voltage minimums). Power loss should be reviewed when V-EAs with high rated currents are used (e.g., enclosure heating).

The listed V-EA internal resistance values should not be used in calculations of available short-circuit current downstream of the V-EA. The dynamic impedance of the V-EA under short-circuit conditions can vary significantly from internal resistance values in normal operation.

LINE CURRENT FREQUENCY EFFECTS ON TRIP CURVES

Frequency Effects on Magnetic Trip Curves					
Trip Curve	Trip Zone At 16 2/3 - 60Hz (x RC)	Trip Zone At 100 Hz (x RC)	Trip Zone At 200 Hz (x RC)	Trip Zone At 400 Hz (x RC)	Trip Zone At DC (x RC)
Z	2 - 3	2.2 - 3.3	2.4 - 3.6	2.8 - 4.2	3.0 - 4.5
B	3 - 5	3.3 - 5.5	3.6 - 6.0	4.2 - 7.0	4.5 - 7.5
C	5 - 10	5.5 - 11.0	6.0 - 12	7.0 - 14.0	7.5 - 15.0
G	8 - 10	8.8 - 11.0	9.6 - 12.0	11.2 - 14.0	12.0 - 15.0
D	10 - 16	11.0 - 17.6	12.0 - 19.2	14.0 - 22.4	15.0 - 24.0
E	14 - 18	15.4 - 19.8	16.8 - 21.6	19.6 - 25.2	21.0 - 27.0

The thermal trip is not affected by the frequency of the line current. The magnetic trip is within the trip zone of the characteristic curve for frequencies from 16 2/3 to 60Hz. At lower and higher frequencies, the magnetic trip will be delayed longer than indicated by the characteristic curve, roughly as follows:

At 100Hz: Mag. Trip Current = 1.1 x curve current
At 200Hz: Mag. Trip Current = 1.2 x curve current
At 400Hz: Mag. Trip Current = 1.4 x curve current
At DC: Mag. Trip Current = 1.5 x curve current

For example, at 16 2/3 - 60 Hz the magnetic trip zone for the “G” characteristic is 8 to 10 times the rated current of the specific V-EA (i.e., hold for at least 100ms at 8 x RC, trip in less than 100ms at 10 x RC). With a 400Hz current, a magnetic trip at 10 x RC would be greatly delayed (thermal would likely trip first), as the magnetic trip zone is now 11.2 to 14 x RC. If a quicker magnetic trip is required with 400Hz, the “B” or “C” characteristic should be considered.

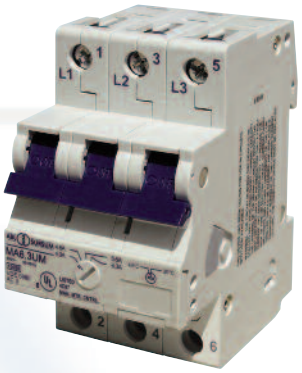
MECHANICAL ENDURANCE RATINGS (ON/OFF OPERATIONS)

Application	2 x (1.15 x RC)	2 x RC	RC	No Load	Total
AC General Use	—	6000	—	4000	10000
AC Motor Starting Across the Line	1000	—	5000	4000	10000
AC Incandescent Lamps (Tungsten)	—	—	6000	4000	10000
AC Electrical Discharge Lamps (Ballast)	—	6000	—	4000	10000
AC Resistance	—	6000	—	4000	10000

Manufacturers self certification	20000 ON/OFF operations with no load

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

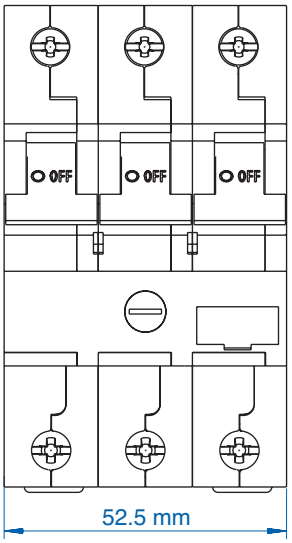
Voltage Rating	480Y/277V AC
AIC (Interrupt Capacity)	0.16A-2.5A: 42kA; 4.0A-16A: 14kA; 20A-40A: 10kA
Standard Short Circuit Withstand Rating (UL/CSA Ratings)	0.16A-2.5A: 42kA; 4.0A-16A: 14kA; 20A-40A: 10kA
Group Short Circuit Ratings (UL/CSA Ratings)	see above
Typical Life	6000 on/off operations with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

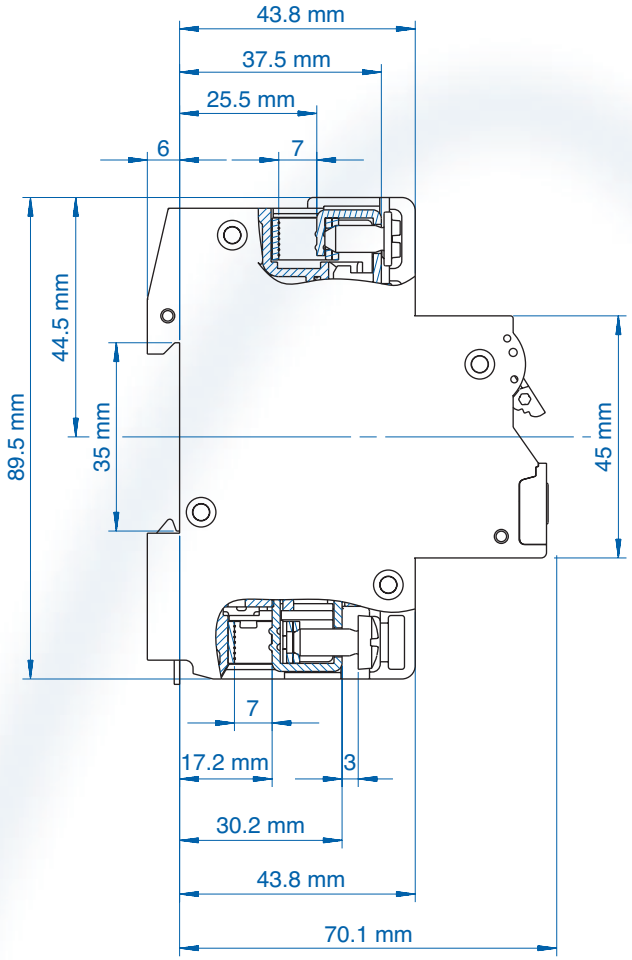
Cat. No.	Rated Current	FLA Dial Adjustment Markings	GROUP SHORT CIRCUIT RATING AT 480VAC[a] (and BCP size)	3Ø HORSEPOWER RATINGS AT NOMINAL LINE VOLTAGE (See Note for HEA Definition)				
				110-120V HP (HEA)	200V HP (HEA)	208V HP (HEA)	220-240V HP (HEA)	460-480V HP (HEA)
MA016UM	0.16A	0.1/ 0.12/0.14/0.16	42kA$_{RMS}$ symmetrical (max. 1200A MCCB or RK5)	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.				
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$_{RMS}$ 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		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$_{RMS}$ 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)

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%.

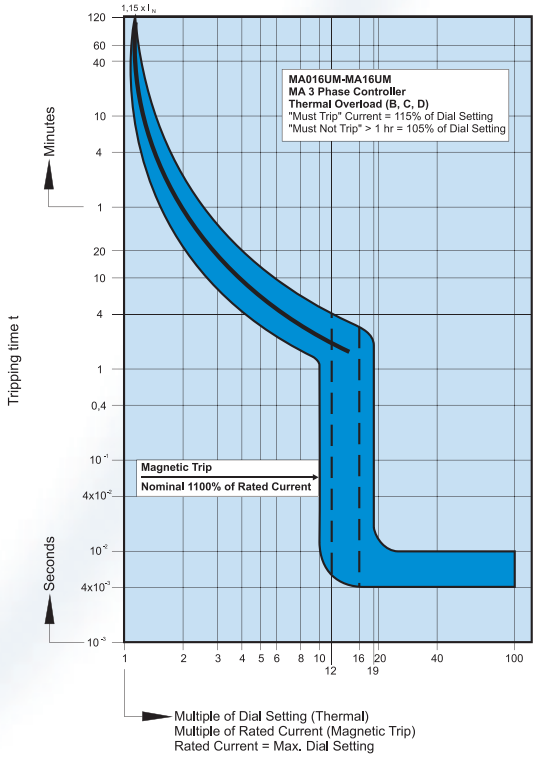
[a] The standard-circuit short-circuit rating is 14kA for all types. Group ratings can be used in a standard circuit (e.g., MA1.0U at 42kA), but a higher standard rating cannot be used in a group circuit (e.g., MA40U at 14kA only in standard circuit.)

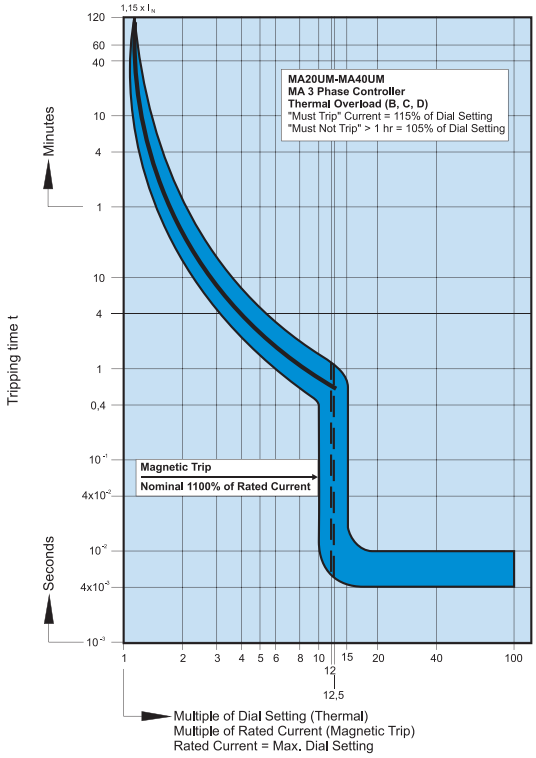
Dimensions in mm





MA- Series Trip Curves





MA/USA Manual Motor Controller

V-EA and MA Accessories

For mounting instructions please refer to page 43.

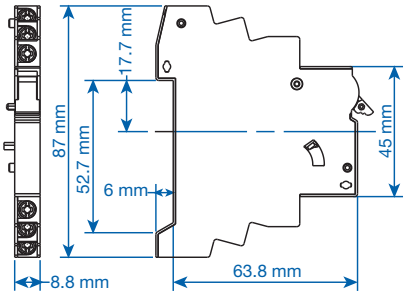
UL Listed
E137938



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)

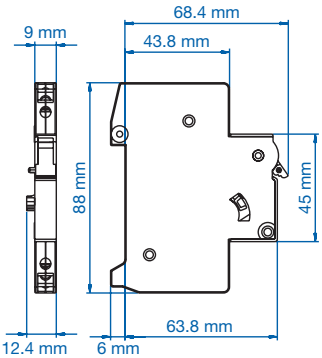


Dimensions HxxUM.



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.

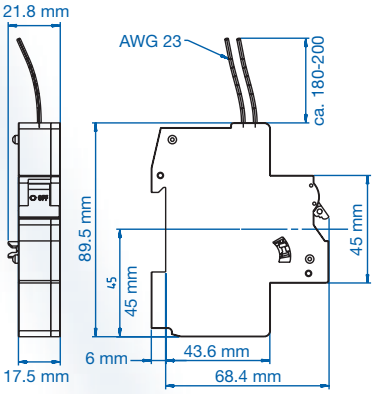


Undervoltage Trip*

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.



Neutral Pole

Type/ Cat No.	Rated Current I_N	Rated Voltage U_N	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



Cooling Spacer

Type/ Cat No.	Std Pk
15.960	1



Lock-out Adapter**

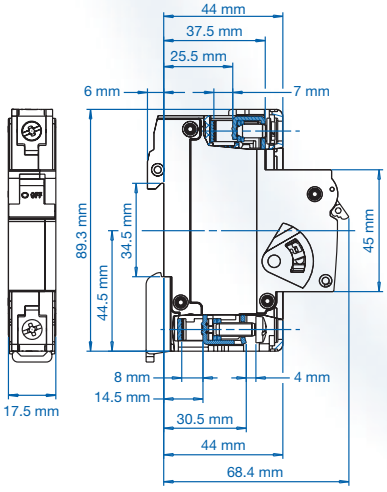
Type/ Cat No.	Std Pk
EASS	10



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



Dimensions N63UM, FAxxUM.

* UL Pending

** 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.

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP