

Altech Corp.®

Serving the Automation & Control Industry since 1984



ISO 9001
QMI-SAI Global



UL 489 Miniature
Molded Case
Circuit Breakers

UL 508 Manual
Motor Controllers



UL 1077
Supplementary
Protectors



Equipment
Ground Fault
Protectors

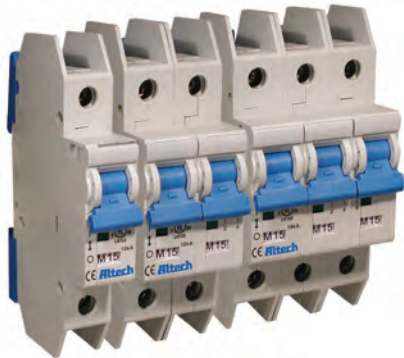
UL 489, UL 508
and UL 1077
Busbar Devices



Altech Circuit Protection Devices
SHORT FORM

Altech Miniature Circuit Breaker Advantages

In today's very competitive marketplace you need reliability, so you need to use circuit breakers that are high quality and technically correct for your application. Altech is a US leader in DIN rail mounted breakers with ratings up to 63A. Only Altech offers DIN rail mounted breakers that meet UL489, UL508 or UL1077 approvals with a short circuit interrupt capacity of up to 10kA.



**L Series, AC or DC
UL489 Miniature Molded Case
Circuit Breakers**



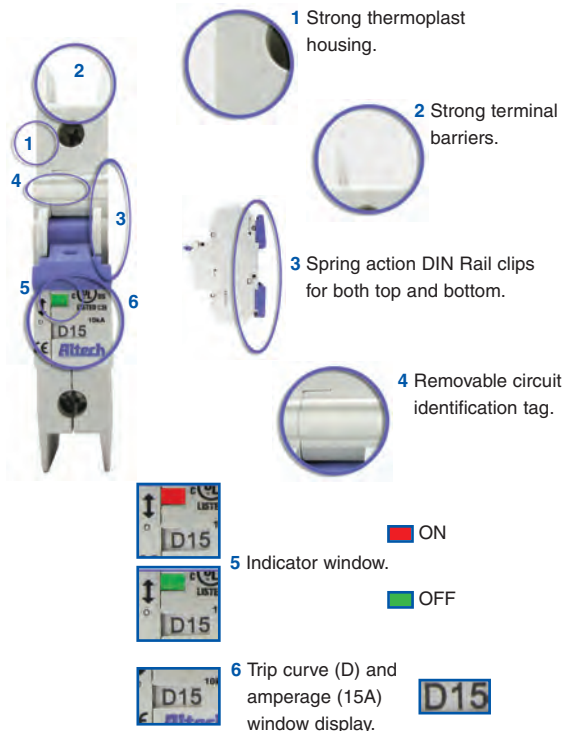
**M-Series
UL508 Manual Motor Controller
with Disconnecting Mean**



**R Series UL1077
Recognized
Supplementary Protector**

Overview of Physical Attributes

L, M and R Series



Ordering Nomenclature

L, M and R Series

EXAMPLE

DC 1 CU 25 L

Series
UL 489 = L / UL 508 = M / UL 1077 = R

Current Rating
0.3 – 63A

Trip Curve (Series dependent; Z is special order)
B, C, D, G, Z

No. of Poles
1, 2, 3, 4

Current Type
DC = DC / Blank = AC

For all the details visit:
AltechCorp.com/Breakers

L-Series AC or DC

Miniature Molded Case Circuit Breakers

UL489 Listed Circuit Breakers

- Available in AC and DC models
- DIN Rail Mounted
- 17.5mm width
- Thermal Magnetic
- 240V, 480Y/277V AC, 50/60Hz
- 125VDC (1 pole); 250VDC (2 pole)
- 10kA Short Circuit Interrupting Capacity
- Positive Trip indicator (Green - off/tripped, Red - on)
- HACR Type 40°C
- Line/Load reversible



For all the details visit:
AltechCorp.com/Breakers



Current/ Voltage Rating

| | |
|---|--|
| AC Version (one device - dual voltage ratings) | 0.2-63A/ 240V AC, 0.2-32A/ 480Y/277VAC |
| DC Version | 0.2-63A/ 125/ 250V DC |

Poles

1, 2, 3 (4 poles available upon request.)

Trip Characteristics

C, D; AC and DC; (Z special order only)

Interrupting Capacity

10kA

Calibration Temperature

40°C (104°F)

Ambient Temperature

-25°C to 60°C (-13°F to 140°F)

Storage Temperature

-25°C to 75°C (-13°F to 167°F)

Terminal Size Acceptability and Terminal Torque

14-3 AWG: 17.7 lb-in. (2.0 Nm)
18-16 AWG: 25 lb-in. (2.8 Nm)

Electrical Life

6,000 switching cycles ON/ OFF

Mechanical Life

10,000 switching cycles ON/ OFF

Terminal Protection Degree

IP20 at front

Mounting Orientation

In any plane

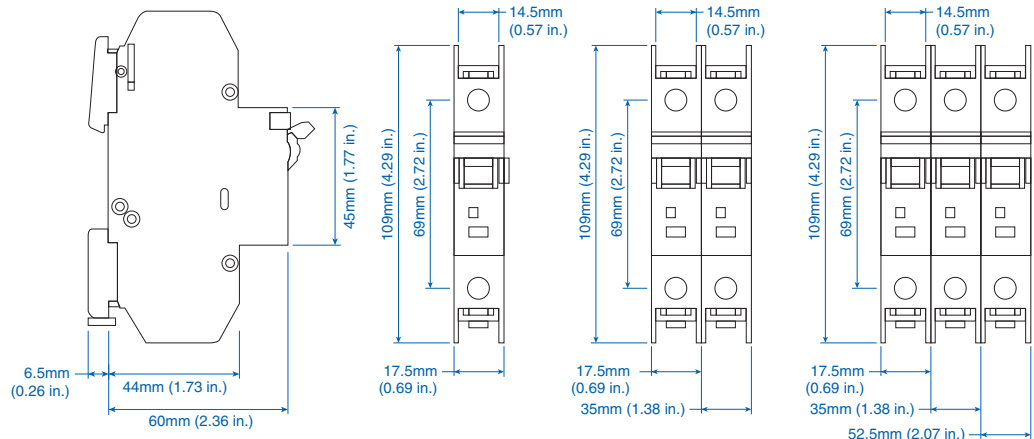
AC - SHORT CIRCUIT INTERRUPTING RATING

| No. Poles | Type | 0.2-32A | 33-63A |
|-----------|------|-----------------------------|------------------|
| 1 | AC | 10kA @ 120, 240, 277V | 10kA @ 120, 240V |
| 2-4 | AC | 10kA @ 120, 240V, 480Y/277V | 10kA @ 120, 240V |

DC - SHORT CIRCUIT INTERRUPTING RATING

| No. Poles | Type | 0.2-32A | 33-63A |
|-----------|------|-------------|-------------|
| 1 | DC | 10kA @ 125V | 10kA @ 125V |
| 2 | DC | 10kA @ 250V | 10kA @ 250V |

Dimensions



Accessories

- Auxiliary Contact
- Shunt Trip
- Neutral Pole
- Undervoltage (special order)
- Front Mounting Kit with hardware
- Lock-out Adapter

| Trip-Characteristics* | | | | AC Applications | | | | | | | | DC Applications | | |
|--------------------------------|-------------------|------------------------|-----------------------|---|-------------------------------------|--------------|------------------------------|---------------|----------------|------------------|------------------------|---|---|-------------------|
| Characteristic Trip Boundaries | | | | Lighting Wiring Protection Control Circuits | Business Equipment Appliances | Transformers | Power Supplies Heaters | Motors | | Reactive Load | General Electronics | Semi- conductors Components/ devices with low surge- current and short circuit withstand capabilities | Telecommu- nications/ Computer Equipment | Power Supplies |
| Thermal Trip | | Magnetic Trip | | | | | | Low Inrush | High Inrush | | | | | |
| Must not Trip>100ms | Must Trip <1hr | Must not Trip>100ms | Must Trip at 100ms | | | | | | | | | | | |
| C-Characteristics AC/DC | | | | | | | | | | | | | | |
| 1.05xRC | 1.35xRC | 5xRC | 10xRC | | | | | | | | | | | |
| D-Characteristics AC/DC | | | | | | | | | | | | | | |
| 1.05xRC | 1.35xRC | 10xRC | 20xRC | | | | | | | | | | | |
| Z-Characteristics AC | | | | | | | | | | | | | | |
| 1.05xRC | 1.35xRC | 2xRC | 3xRC | | | | | | | | | | | |

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

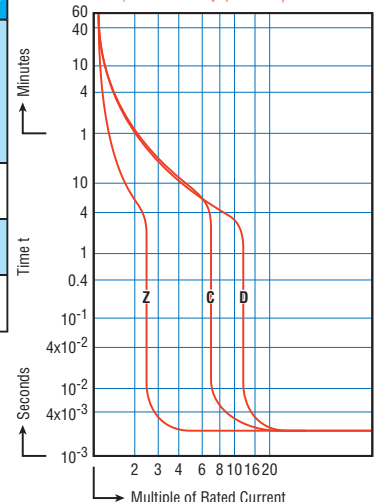


Warning!

This information should only be used as a selection guide. The use of a Miniature Circuit Breaker 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 for their specific application.

Time versus Current Trip Curve

(Z curve available by Special Order)



M-Series

Manual Motor Controller with Disconnecting Means

UL508 Listed Circuit Breakers



For all the details visit:
AltechCorp.com/Breakers

- DIN Rail Mounted
- 17.5mm width per pole
- Thermal Magnetic
- 480Y/277V AC, 50/60Hz
- 10kA Short Circuit Withstand Capacity
- Line / Load reversible
- Positive Trip indicator (Green - off/tripped, Red - on)

| | |
|--|--|
| Voltage Rating | 480Y/277VAC |
| Short Circuit Withstand Rating (UL - Ratings) | 0.5-6A (RC): 10kA with no back-up fuse 8-63A (RC): 10kA with UL-listed Class J back-up fuse; 5kA with no back-up fuse |
| Poles | 1, 2, 3 (4 poles available upon request.) |
| Trip Characteristics | B, C, D, G |
| Interrupting Capacity (IEC/EN60898/60947-2) | 0.5-63A (RC): 10kA |
| Calibration Temperature | 30°C (86°F) |
| Operating Temperature | -25° to 60°C (-13° to 140°F) |
| Storage Temperature | -25° to 75°C (-13° to 167°F) |
| Terminal Size Acceptability: and Torque | 14-3 AWG: 17.5 lb-in. (2.0 Nm) 18-16 AWG: 25 lb-in. (2.8 Nm) |
| Terminal Protection Degree | IP20 |
| Vibration Resistance | 3g (8-50Hz) |

SHORT CIRCUIT WITHSTAND RATINGS FOR M-SERIES MANUAL MOTOR CONTROLLER

| Trip Curve | Amp Range | Backup Protection | |
|------------|-----------|-----------------------------------|--------------------------------|
| | | UL-Listed Class J Fuse up to 10kA | No Backup Fuse Required up to: |
| All | 0.5 - 6A | 4xRC* | 10kA |
| All | 8 - 63A | 4xRC* | 5kA |

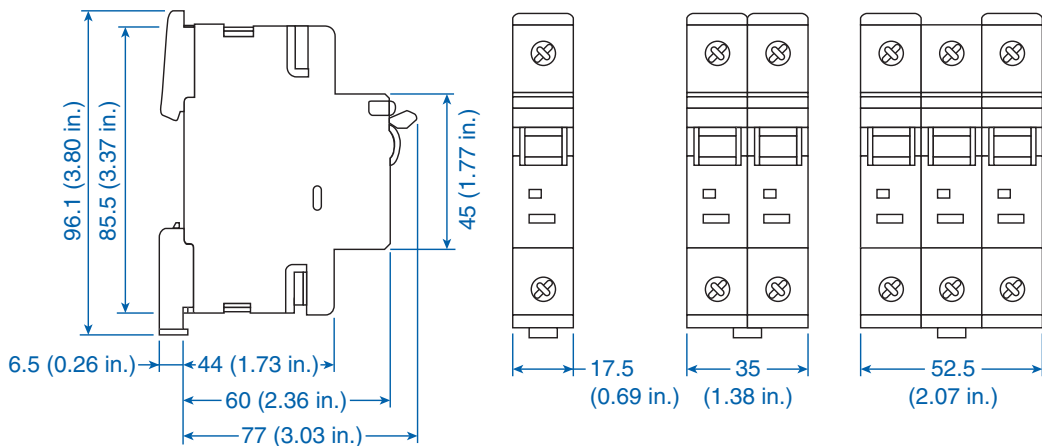
*up to nearest rated current



Accessories

- Auxiliary Contact
- Shunt Trip
- Neutral Pole
- Undervoltage (special order)
- Lock-out Adapter
- Front Mounting Kit with hardware

Dimensions



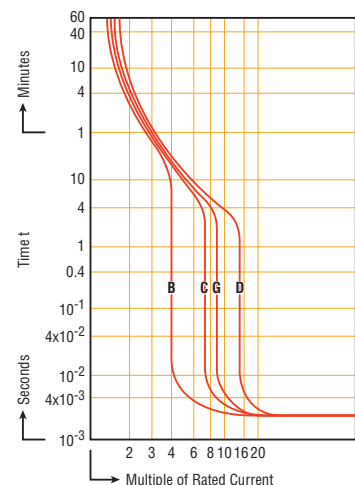
| Trip-Characteristics* | | | | Applications | | | | | | | | | |
|--------------------------------|-----------------|-----------------------|--------------------|---|-------------------------------|--------------|------------------------|---------|------------|-------------|---------------------|----------|---------------|
| Characteristic Trip Boundaries | | | | Lighting Wiring Protection Control Circuits | Business Equipment Appliances | Transformers | Power Supplies Heaters | Motors | | | General Electronics | Solenoid | Reactive Load |
| Thermal Trip | | Magnetic Trip | | | | | | General | Low Inrush | High Inrush | | | |
| 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 | 20xRC | | | | | | | | | | |
| G-Characteristics | | | | | | | | | | | | | |
| 1.05xRC | 1.35xRC | 8xRC | 10xRC | | | | | | | | | | |

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



Warning!
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Time versus Current Trip Curve



R-Series

Recognized Supplementary Protector UL1077 Listed Circuit Breakers

- DIN Rail Mounted
- 17.5mm width per pole
- Thermal Magnetic
- 480Y/277V AC, 50/60Hz
- 10kA Short Circuit Withstand Capacity
- Positive Trip indicator (Green - off/tripped, Red - on)



For all the details visit:
AltechCorp.com/Breakers



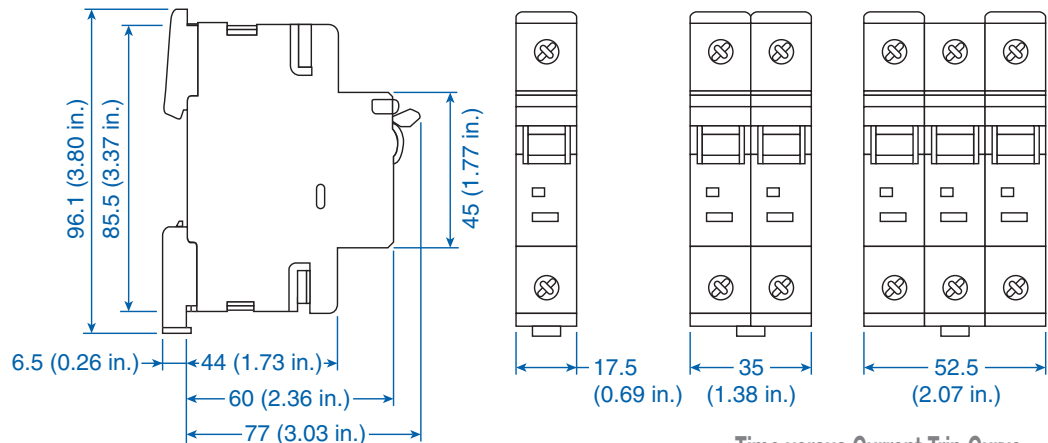
| | |
|--|--|
| Voltage Rating | 480Y/277VAC |
| Short Circuit Withstand Rating (UL - Ratings) | 0.5-6A (RC): 10kA with no back-up fuse 8-63A (RC): 10kA with UL-listed Class J back-up fuse; 5kA with no back-up fuse |
| Poles | 1, 2, 3 (4 poles available upon request.) |
| Trip Characteristics | B, C, D |
| Interrupting Capacity (IEC/EN60898/60947-2) | 0.5-63A (RC): 10kA |
| Calibration Temperature | 30°C (86°F) |
| Operating Temperature | -25° to 60°C (-13° to 140°F) |
| Storage Temperature | -25° to 75°C (-13° to 167°F) |
| Terminal Size Acceptability and Torque | 14-3 AWG: 17.5 lb-in. (2.0 Nm) 18-16 AWG: 25 lb-in. (2.8 Nm) |
| Terminal Protection Degree | IP20 at front |
| Electrical Life | 6,000 cycles on/off |
| Mechanical Life | 10,000 cycles on/off |
| Wire Connection | copper wire only 60/75°C |
| Vibration Resistance | 3g (18-50Hz) |
| Mounting Orientation | In any plane |

SHORT CIRCUIT WITHSTAND RATINGS FOR R-SERIES SUPPLEMENTARY PROTECTOR

| Trip Curve | Amp Range | Backup Protection | |
|------------|-----------|-----------------------------------|--------------------------------|
| | | UL-Listed Class J Fuse up to 10kA | No Backup Fuse Required up to: |
| All | 0.5 - 6A | 4xRC* | 10kA |
| All | 8 - 63A | 4xRC* | 5kA |

*up to nearest rated current

Dimensions



Accessories

- Auxiliary Contact
- Shunt Trip
- Neutral Pole
- Undervoltage (special order)
- Lock-out Adapter

| Trip-Characteristics* | | | | Applications | | | | | | |
|--------------------------------|-----------------|-----------------------|--------------------|---|-------------------------------|----------------------|----------------|---------------------|---------------|--|
| Characteristic Trip Boundaries | | | | Lighting Wiring Protection Control Circuits | Business Equipment Appliances | Control Transformers | Power Supplies | General Electronics | Reactive Load | |
| Thermal Trip | | Magnetic Trip | | | | | | | | |
| 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 | 20xRC | | | | | | | |

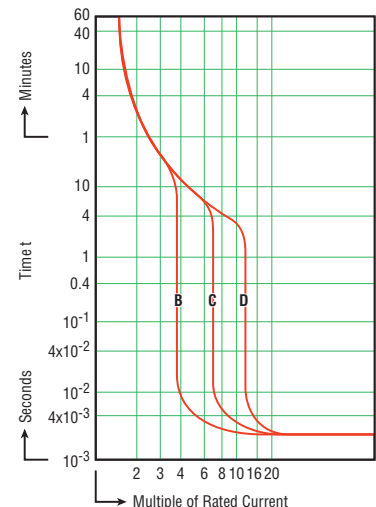
*The value of each characteristic is shown vertically beneath its corresponding heading.



Warning!

This information should only be used as a selection guide. The use of a Miniature Circuit Breaker/ Supplementary Protector 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/Supplementary Protector for their specific application.

Time versus Current Trip Curve



GFL Series (5A - 40A)

10kA UL489 Listed Branch Circuit Breaker with Equipment Ground Fault Protection (RCBO)

The GFL Series range is a combined Branch Circuit Breaker and Equipment Ground Fault Protector, featuring dual pole switching (live and neutral disconnect) and designed to provide protection against short circuits, overloads, AC ground faults (residual current faults) as well as pulsating DC ground faults.



GFL Series RCBO Ordering Scheme

| | | | | | |
|------------|--------------|------------|--|--|----------------------------|
| GFL | 2 | C | 08 | 030 | 2 |
| | No. of Poles | Trip Curve | Rated Current | Residual Current Sensitivity | System |
| | 2 | B, C, D | 5, 6, 8, 10, 12, 13, 15, 16, 20, 25, 30*, 32*, 35*, 40A* | 010 = 10mA** 030 = 30mA 100 = 100mA 300 = 300mA | 2, S, SN see note below |

EXAMPLE: GFL2C080302

* S & SN versions only
 ** 10mA only available on current ratings up to 25A

NOTE:

2 = 240V Single Phase System with neutral connection.
 S = 120/240V Split Phase System with no neutral connection.
 SN = 120/240V Split Phase System with neutral connection.

| | | |
|---------------------------------|---------|-----------------|
| Number of Poles | 1+N (2) | 2 (S), 2+N (SN) |
| Rated Voltage (U _n) | 240V AC | 120/240V AC |



GF Series (up to 63A)

480Y/277V AC Ground Fault Sensing and Relaying Device (RCCB)

The GF Series of Equipment Ground Fault Protection Relays (Earth Leakage Protection) is the latest addition to Altech's UL Listed product range, providing ground fault (residual current) protection for circuits with loads up to 63A. Short Circuit Withstand rating is 10kA.



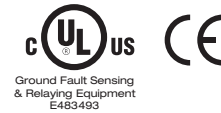
GF Series RCCB Ordering Scheme

| | | | |
|-----------|--------------|---------------|--|
| GF | 2 | 25 | 030 |
| | No. of Poles | Rated Current | Residual Current Sensitivity |
| | 2, 4 | 25, 40, 63A | 010 = 10mA* 030 = 30mA 100 = 100mA 300 = 300mA 500 = 500mA |

EXAMPLE: GF225030

*(ONLY 2 pole, 25A - Cat. No. GF225010)

| | | |
|---------------------------------|---------|--------------|
| Number of Poles | 2 (1+N) | 4 (3+N) |
| Rated Voltage (U _n) | 277V AC | 480Y/277V AC |



GFR Series (5A - 40A)

480Y/277V AC Ground Fault Relay with Overload Protection (RCBO)

The GFR Series is a combined Equipment Ground Fault Relay and Supplementary Protector (RCBO), featuring dual pole switching (live and neutral) and designed to provide protection against overloads and AC ground faults (residual current faults) as well as pulsating DC ground faults. Short Circuit Withstand rating is 10kA.



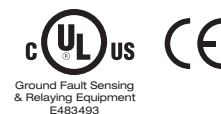
GFR Series RCBO Ordering Scheme

| | | | | |
|------------|--------------|------------|--|--|
| GFR | 2 | B | 06 | 030 |
| | No. of Poles | Trip Curve | Rated Current | Residual Current Sensitivity |
| | 2, 4 | B, C, D | 5, 6, 8, 10, 12, 13, 15, 16, 20, 25, 30, 32, 35, 40A | 010 = 10mA* 030 = 30mA 100 = 100mA 300 = 300mA 500 = 500mA |

EXAMPLE: GFR2B06030

* 10mA only available on current ratings up to 25A, 2 pole only

| | | |
|---------------------------------|---------|--------------|
| Number of Poles | 2 (1+N) | 4 (3+N) |
| Rated Voltage (U _n) | 277V AC | 480Y/277V AC |



UL489 & UL508/1077



UL489 recognized
E305318



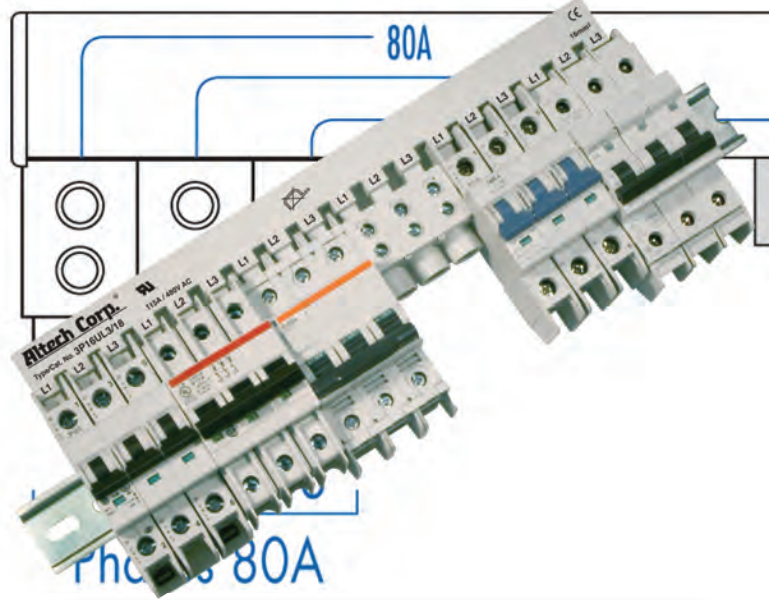
UL508 listed
US E205412



The Altech Busbar System is an innovative way to jumper up to 57 poles of miniature molded case circuit breakers, manual motor controllers or supplementary protectors.

The advantages of this busbar system are:

- 30% Installation time savings
- Panel space savings
- Reduced maintenance
- High electrical ratings



Universal Busbar fits most Miniature Circuit Breakers, Supplementary Protectors or Manual Motor Controllers in the market!
 Please contact Altech for details and further information.



UL489 Cutable Busbar

UL489 Busbar System

- Every pin configuration is possible by combination of existing 6, 12 and 18 pin busbars.
- Cutable busbar system available in any pin configuration - *consult Altech*
- Power Feeding:
 Power Feed Lug (115A), Direct Power Feed (115A)
- UL listed for Altech's L-Series of Miniature Circuit Breakers
- UL listed for use with most popular UL489 Miniature Circuit Breakers in the market.

UL1077/508 Busbar System

- 1-57 different pin configurations
- 1/2 pole spacing (auxiliary switch) available
- Power Feeding:
 Power Feed Lugs (115A), Direct Power Feed (115A), Power Feed Block (200A)
- UL recognized and listed for Altech's M and R-Series of Manual Motor Controllers and Supplementary Protectors
- UL recognized and listed for use with most popular UL1077 supplementary protectors and UL508 Manual Motor Controllers in the market.
- Customers can cut the Busbar without losing the UL approval
- Line/Load reversible



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- Connectors >
- Enclosures >
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- Foot Switches
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- Solid State Relays
- Terminal Blocks >
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New Products and Promotions

The NEW

Altech



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CIRCUIT PROTECTION

| | | | | |
|--|---|--|--|--|
|  Circuit Protection Devices |  Busbar & Power Distribution |  Contactors, Overload Relays, Manual Motor Starters |  Motor Disconnect Switches |  European Fuses & Holders |
|--|---|--|--|--|

CONNECTORS

| | |
|---|--|
|  Pin & Sleeve Devices |  Receptacles |
|---|--|

ENCLOSURES

| | | |
|---|--|--|
|  Industrial & ATEX Enclosures |  DIN Enclosures |  Control Enclosures and Suspension Systems |
|---|--|--|

FOOT SWITCHES

| | |
|--|---|
|  Industrial |  Medical |
|--|---|

MODULES & RELAYS

| | | |
|---|--|--|
|  Interface Modules |  Safety Relays |  Industrial & Slimline Relays |
|---|--|--|

PANEL ACCESSORIES

| | |
|--|--|
|  Panel Lights |  Heaters, Filters & Thermostats |
|--|--|


SPARE PARTS

| |
|--|
|  European Spare Parts |
|--|

PILOT DEVICES

| | |
|---|--|
|  22 & 30 mm Push Buttons & Enclosures |  Pilot Lights & E-Stops |
|---|--|






POWER DEVICES

| | |
|--|---|
|  Power Supplies |  DC-UPS & Battery Chargers |
|--|---|



POWER MANAGEMENT

| | | |
|---|---|--|
|  Altech Smart Relays |  Digital Panel Meters |  Digital Timers |
|---|---|--|



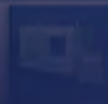
SAFETY SWITCHES

| | | | | |
|---|---|--|--|---|
|  Keyed Safety Switches |  Keyed Solenoid Locking Switches |  Hinged Safety Switches |  Non-Contact Safety Switches |  Safety Rope Pull Switches |
|---|---|--|--|---|

STANDARD SWITCHES

| | |
|--|--|
|  Light Switches |  Reset Switches |
|--|--|

SENSORS

| | | |
|---|---|---|
|  Cylindrical & Conical |  Flag Panel & Box |  Metal Detection |
|---|---|---|

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