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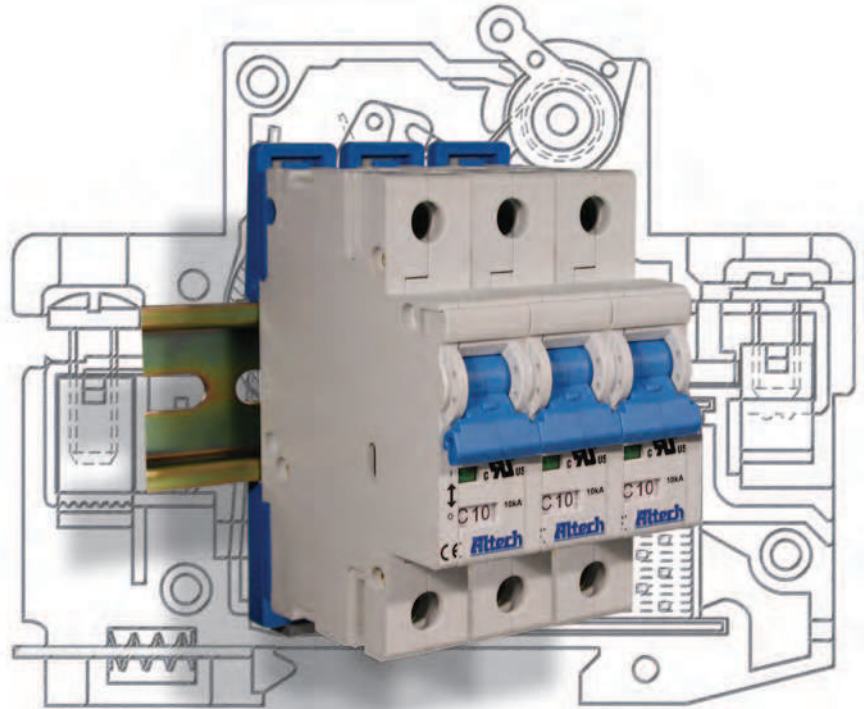
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



R-Series

UL1077 Recognized Supplementary Protector

- 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)
- Applications (on the load side of Branch Circuit Protection) include: Sensitive Electronics, Power Supplies, Appliance circuits, etc.





 E301611

| | |
|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| 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 |
| 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 |

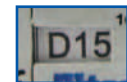
Indicator window



ON

OFF

Trip curve and amperage window display.

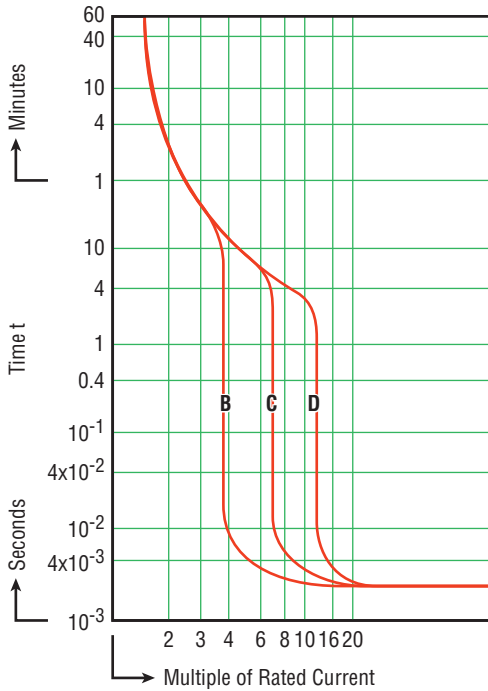


SHORT CIRCUIT WITHSTAND RATINGS FOR R-SERIES SUPPLEMENTARY PROTECTOR

| 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

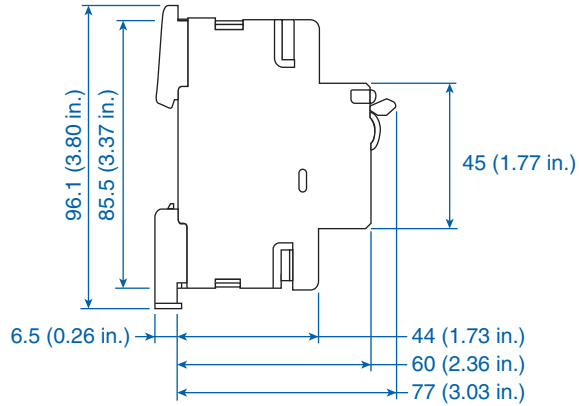
DC voltage rating: 48 VDC (self-certified).



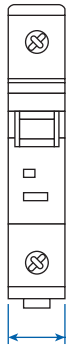
Time versus Current Trip Curve

For the exact trip curve, please refer to page 67.

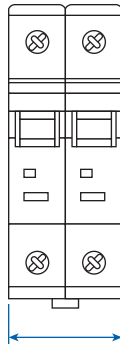
Dimensions in mm side view



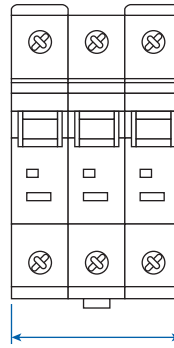
1 POLE



2 POLE



3 POLE



| 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 his specific application.

UL 489

UL 508

UL 1077

UL 1077
Equipment Breakers

Earth Leakage
Circuit Breakers

ANNEX

B-Trip Characteristic

Application Examples:

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

UL US
E301611



One Pole

| Rated Current | Type/ Cat. No. |
|---------------|-------------------|
| 0.5A | 1BU05R |
| 1.0A | 1BU1R |
| 2.0A | 1BU2R |
| 3.0A | 1BU3R |
| 4.0A | 1BU4R |
| 5.0A | 1BU5R |
| 6.0A | 1BU6R |
| 8.0A | 1BU8R |
| 10A | 1BU10R |
| 12A | 1BU12R |
| 13A | 1BU13R |
| 15A | 1BU15R |
| 16A | 1BU16R |
| 20A | 1BU20R |
| 25A | 1BU25R |
| 30A | 1BU30R |
| 32A | 1BU32R |
| 40A | 1BU40R |
| 50A | 1BU50R |
| 60A | 1BU60R |
| 63A | 1BU63R |

Standard Pack: 12

Weight:

0.5A - 63A: 1.6kg (3.54 lb.)



Two Pole

| Rated Current | Type/ Cat. No. |
|---------------|-------------------|
| 0.5A | 2BU05R |
| 1.0A | 2BU1R |
| 2.0A | 2BU2R |
| 3.0A | 2BU3R |
| 4.0A | 2BU4R |
| 5.0A | 2BU5R |
| 6.0A | 2BU6R |
| 8.0A | 2BU8R |
| 10A | 2BU10R |
| 12A | 2BU12R |
| 13A | 2BU13R |
| 15A | 2BU15R |
| 16A | 2BU16R |
| 20A | 2BU20R |
| 25A | 2BU25R |
| 30A | 2BU30R |
| 32A | 2BU32R |
| 40A | 2BU40R |
| 50A | 2BU50R |
| 60A | 2BU60R |
| 63A | 2BU63R |

Standard Pack: 6

Weight:

0.5A - 63A: 1.6kg (3.54 lb.)



Three Pole

| Rated Current | Type/ Cat. No. |
|---------------|-------------------|
| 0.5A | 3BU05R |
| 1.0A | 3BU1R |
| 2.0A | 3BU2R |
| 3.0A | 3BU3R |
| 4.0A | 3BU4R |
| 5.0A | 3BU5R |
| 6.0A | 3BU6R |
| 8.0A | 3BU8R |
| 10A | 3BU10R |
| 12A | 3BU12R |
| 13A | 3BU13R |
| 15A | 3BU15R |
| 16A | 3BU16R |
| 20A | 3BU20R |
| 25A | 3BU25R |
| 30A | 3BU30R |
| 32A | 3BU32R |
| 40A | 3BU40R |
| 50A | 3BU50R |
| 60A | 3BU60R |
| 63A | 3BU63R |

Standard Pack: 4

Weight:

0.5A - 63A: 1.66kg (3.67 lb.)



Four Pole
Please contact
Altech.

Non-standard current ratings available. Minimum quantities may apply. Please contact Altech for further details.

C-Trip Characteristic

Application Examples:
Lighting, wiring protection, appliances, business equipment, and control circuit applications. Relatively long thermal trip delay and medium magnetic trip point.



One Pole

| Rated Current | Type/ Cat. No. |
|---------------|-------------------|
| 0.5A | 1CU05R |
| 1.0A | 1CU1R |
| 2.0A | 1CU2R |
| 3.0A | 1CU3R |
| 4.0A | 1CU4R |
| 5.0A | 1CU5R |
| 6.0A | 1CU6R |
| 8.0A | 1CU8R |
| 10A | 1CU10R |
| 12A | 1CU12R |
| 13A | 1CU13R |
| 15A | 1CU15R |
| 16A | 1CU16R |
| 20A | 1CU20R |
| 25A | 1CU25R |
| 30A | 1CU30R |
| 32A | 1CU32R |
| 40A | 1CU40R |
| 50A | 1CU50R |
| 60A | 1CU60R |
| 63A | 1CU63R |

Standard Pack: 12

Weight:
0.5A - 63A: 1.6kg (3.54 lb.)



Two Pole

| Rated Current | Type/ Cat. No. |
|---------------|-------------------|
| 0.5A | 2CU05R |
| 1.0A | 2CU1R |
| 2.0A | 2CU2R |
| 3.0A | 2CU3R |
| 4.0A | 2CU4R |
| 5.0A | 2CU5R |
| 6.0A | 2CU6R |
| 8.0A | 2CU8R |
| 10A | 2CU10R |
| 12A | 2CU12R |
| 13A | 2CU13R |
| 15A | 2CU15R |
| 16A | 2CU16R |
| 20A | 2CU20R |
| 25A | 2CU25R |
| 30A | 2CU30R |
| 32A | 2CU32R |
| 40A | 2CU40R |
| 50A | 2CU50R |
| 60A | 2CU60R |
| 63A | 2CU63R |

Standard Pack: 6

Weight:
0.5A - 63A: 1.6kg (3.54 lb.)



Three Pole

| Rated Current | Type/ Cat. No. |
|---------------|-------------------|
| 0.5A | 3CU05R |
| 1.0A | 3CU1R |
| 2.0A | 3CU2R |
| 3.0A | 3CU3R |
| 4.0A | 3CU4R |
| 5.0A | 3CU5R |
| 6.0A | 3CU6R |
| 8.0A | 3CU8R |
| 10A | 3CU10R |
| 12A | 3CU12R |
| 13A | 3CU13R |
| 15A | 3CU15R |
| 16A | 3CU16R |
| 20A | 3CU20R |
| 25A | 3CU25R |
| 30A | 3CU30R |
| 32A | 3CU32R |
| 40A | 3CU40R |
| 50A | 3CU50R |
| 60A | 3CU60R |
| 63A | 3CU63R |

Standard Pack: 4

Weight:
0.5A - 63A: 1.66kg (3.67 lb.)



Four Pole
Please contact Altech.

Non-standard current ratings available. Minimum quantities may apply. Please contact Altech for further details.

UL 489

UL 508

UL 1077

UL 1077
Equipment Breakers

Earth Leakage
Circuit Breakers

ANNEX

D-Trip Characteristic

Application Examples:

Control transformers, power supplies and reactive loads. Relatively long thermal trip delay and very high magnetic trip point.



E301611



One Pole

| Rated Current | Type/ Cat. No. |
|---------------|-------------------|
| 0.5A | 1DU05R |
| 1.0A | 1DU1R |
| 2.0A | 1DU2R |
| 3.0A | 1DU3R |
| 4.0A | 1DU4R |
| 5.0A | 1DU5R |
| 6.0A | 1DU6R |
| 8.0A | 1DU8R |
| 10A | 1DU10R |
| 12A | 1DU12R |
| 13A | 1DU13R |
| 15A | 1DU15R |
| 16A | 1DU16R |
| 20A | 1DU20R |
| 25A | 1DU25R |
| 30A | 1DU30R |
| 32A | 1DU32R |
| 40A | 1DU40R |
| 50A | 1DU50R |
| 60A | 1DU60R |
| 63A | 1DU63R |

Standard Pack: 12

Weight:
0.5A - 63A: 1.6kg (3.54 lb.)



Two Pole

| Rated Current | Type/ Cat. No. |
|---------------|-------------------|
| 0.5A | 2DU05R |
| 1.0A | 2DU1R |
| 2.0A | 2DU2R |
| 3.0A | 2DU3R |
| 4.0A | 2DU4R |
| 5.0A | 2DU5R |
| 6.0A | 2DU6R |
| 8.0A | 2DU8R |
| 10A | 2DU10R |
| 12A | 2DU12R |
| 13A | 2DU13R |
| 15A | 2DU15R |
| 16A | 2DU16R |
| 20A | 2DU20R |
| 25A | 2DU25R |
| 30A | 2DU30R |
| 32A | 2DU32R |
| 40A | 2DU40R |
| 50A | 2DU50R |
| 60A | 2DU60R |
| 63A | 2DU63R |

Standard Pack: 6

Weight:
0.5A - 63A: 1.6kg (3.54 lb.)



Three Pole

| Rated Current | Type/ Cat. No. |
|---------------|-------------------|
| 0.5A | 3DU05R |
| 1.0A | 3DU1R |
| 2.0A | 3DU2R |
| 3.0A | 3DU3R |
| 4.0A | 3DU4R |
| 5.0A | 3DU5R |
| 6.0A | 3DU6R |
| 8.0A | 3DU8R |
| 10A | 3DU10R |
| 12A | 3DU12R |
| 13A | 3DU13R |
| 15A | 3DU15R |
| 16A | 3DU16R |
| 20A | 3DU20R |
| 25A | 3DU25R |
| 30A | 3DU30R |
| 32A | 3DU32R |
| 40A | 3DU40R |
| 50A | 3DU50R |
| 60A | 3DU60R |
| 63A | 3DU63R |

Standard Pack: 4

Weight:
0.5A - 63A: 1.66kg (3.67 lb.)

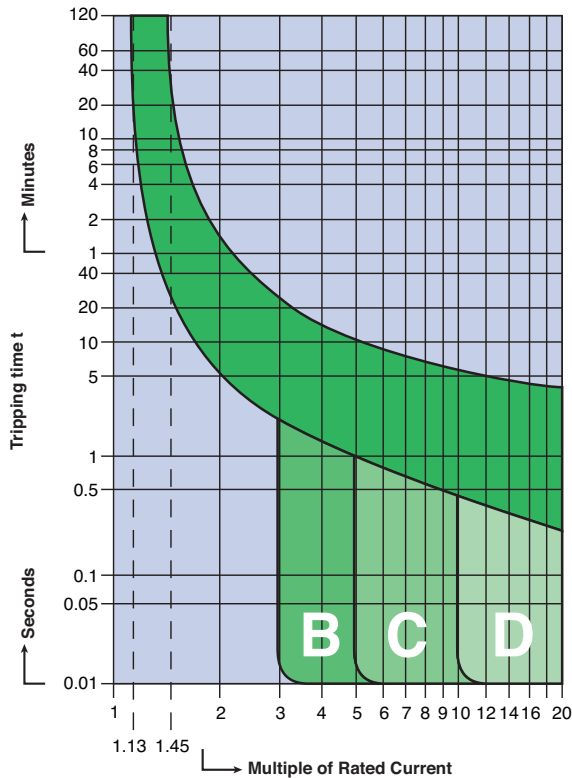


Four Pole
Please contact
Altech.

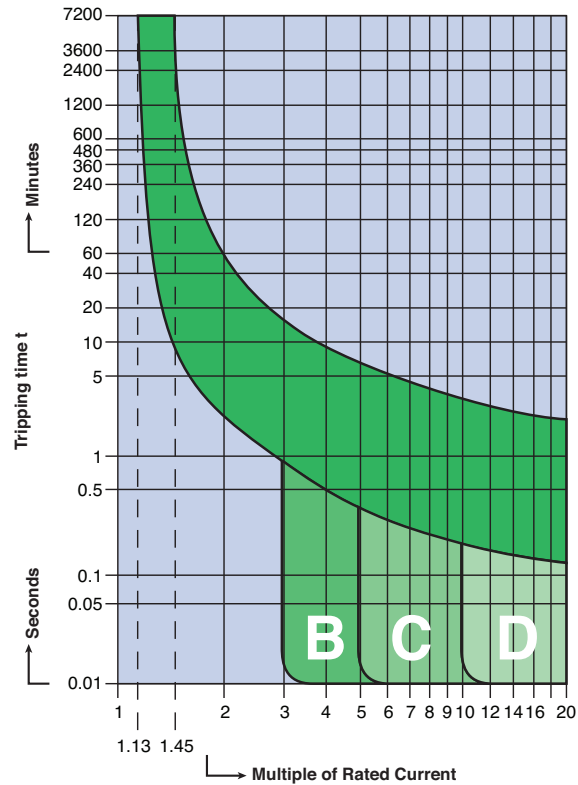
Non-standard current ratings available. Minimum quantities may apply. Please contact Altech for further details.

R-Series Trip Curves

B, C and D Trip
Less than 10A



B, C and D Trip
10A and higher



Temperature and Power Loss Specifications

| Rated current of MCB | Internal Impedances & Power Loss | | | | | MCB Temperature Compensation | | | | | | | | |
|----------------------|----------------------------------|------------------|----------------------------------------------------------|--------|--------|-----------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| | Internal impedance | Power loss on CB | Maximum allowable impedance of breakdown loop (0.2/0.4s) | | | Effective rated current allowing for ambient temperature. | | | | | | | | |
| | Z (m Ω) | P (W) | Z _s (Ω) | | | I _{cor} (A) | | | | | | | | |
| I _n (A) | Char. B,C,D | Char. B,C,D | Char.B | Char.C | Char.D | Ambient Temperature | | | | | | | | |
| | | | | | | -20°C | -10°C | 0°C | 10°C | 20°C | 30°C | 40°C | 50°C | 60°C |
| 0.50 | 6600 | 1.7 | 42.0 | 51.1 | 28.8 | 0.61 | 0.59 | 0.57 | 0.55 | 0.53 | 0.50 | 0.47 | 0.44 | 0.42 |
| 1.00 | 1650 | 1.7 | 46.0 | 25.6 | 14.4 | 1.21 | 1.18 | 1.14 | 1.10 | 1.05 | 1.00 | 0.93 | 0.88 | 0.83 |
| 2.00 | 370 | 1.5 | 23.0 | 12.8 | 7.2 | 2.42 | 2.36 | 2.28 | 2.20 | 2.10 | 2.00 | 1.86 | 1.76 | 1.67 |
| 3.00 | 210 | 1.9 | 15.3 | 8.5 | 4.8 | 3.63 | 3.54 | 3.42 | 3.30 | 3.15 | 3.00 | 2.79 | 2.64 | 2.50 |
| 4.00 | 126 | 2.0 | 11.5 | 6.4 | 3.6 | 4.84 | 4.72 | 4.56 | 4.40 | 4.20 | 4.00 | 3.72 | 3.52 | 3.33 |
| 6.00 | 51 | 1.8 | 7.7 | 4.3 | 2.4 | 7.30 | 7.10 | 6.80 | 6.60 | 6.30 | 6.00 | 5.60 | 5.30 | 5.00 |
| 8.00 | 21 | 1.3 | 5.8 | 3.2 | 1.8 | 9.70 | 9.40 | 9.10 | 8.80 | 8.40 | 8.00 | 7.40 | 7.00 | 6.70 |
| 10.00 | 14.8 | 1.5 | 4.6 | 2.6 | 1.4 | 12.1 | 11.8 | 11.40 | 11.00 | 10.50 | 10.00 | 9.30 | 8.80 | 8.30 |
| 13.00 | 11.3 | 1.9 | 3.5 | 2.0 | 1.1 | 15.7 | 15.3 | 14.80 | 14.30 | 13.70 | 13.00 | 12.10 | 11.50 | 10.80 |
| 16.00 | 7.5 | 1.9 | 2.9 | 1.6 | 0.9 | 19.4 | 18.9 | 18.20 | 17.60 | 16.80 | 16.00 | 14.90 | 14.10 | 13.30 |
| 20.00 | 6.3 | 2.5 | 2.3 | 1.3 | 0.7 | 24.2 | 23.60 | 22.80 | 22.00 | 21.00 | 20.00 | 18.60 | 17.60 | 16.70 |
| 25.00 | 4.4 | 2.8 | 1.8 | 1.0 | 0.6 | 30.3 | 29.50 | 28.50 | 27.50 | 26.30 | 25.00 | 23.30 | 22.00 | 20.80 |
| 32.00 | 3.1 | 3.2 | 1.4 | 0.8 | 0.4 | 38.7 | 37.80 | 36.50 | 35.20 | 33.60 | 32.00 | 29.80 | 28.20 | 26.70 |
| 40.00 | 2.5 | 4.0 | 1.2 | 0.6 | 0.4 | 48.4 | 47.20 | 45.60 | 44.00 | 42.00 | 40.00 | 37.20 | 35.20 | 33.30 |
| 50.00 | 2.2 | 5.5 | 0.9 | 0.5 | 0.3 | 60.5 | 59.0 | 57.00 | 55.00 | 52.50 | 50.00 | 46.50 | 44.10 | 41.70 |
| 63.00 | 1.6 | 6.4 | 0.7 | 0.4 | 0.2 | 76.2 | 74.30 | 71.80 | 69.30 | 66.20 | 63.00 | 58.60 | 55.50 | 52.50 |

Accessories

R-Series Supplementary Protector



E301611

Accessories can be factory or field mounted on R-Series supplementary protectors for enhanced control and monitoring capabilities. Field mounting kits include all necessary parts and instructions. Accessories can be gang mounted on a single controller (the Auxiliary Switch in the outside position). The mounting arrangement links the internal latch-pins for the tripping mechanisms, ensuring simultaneous trips. Handles are linked to simplify manual resetting.



Neutral Pole (63A/480Y/277 VAC)

| Description | Type/ Cat. No. | Cable Max | Cable Min | Torque Max | Torque Min |
|-------------|-------------------|----------------------------|------------------------------|-------------------|-------------------|
| Neutral | ALTN2 | 25mm ² AWG 3 | 2.5mm ² AWG 12 | 2Nm 17.5 lb-in | 1.5Nm 12 lb-in |

Standard Pack: 10

Weight: 1.25kg (2.77 lb.)



Shunt Trip



Undervoltage Trip

Shunt Trip and Undervoltage Trip

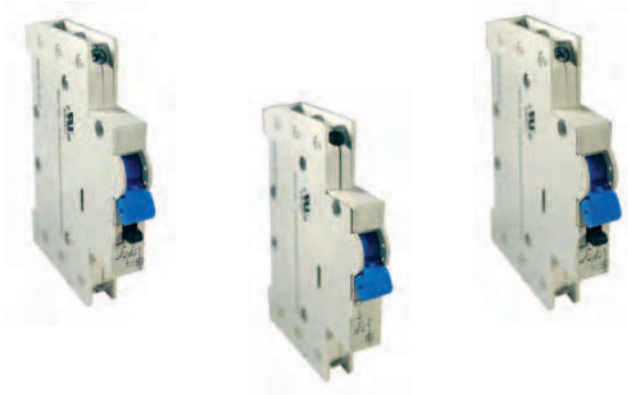
| Description | Shunt Trip Type/Cat. No. | Operational Voltage | Rated Coil Current | Undervoltage Trip* Type/Cat. No. |
|-----------------|-----------------------------|------------------------|-----------------------|-------------------------------------|
| AC Coil: | | | | |
| 12V AC | FA12ACR | 8.4 - 13.2V | 6A | UV12ACR |
| 24V AC | FA24ACR | 16.8 - 26.4V | 2.8A | UV24ACR |
| 48V AC | FA48ACR | 33.6 - 52.8V | 0.8A | UV48ACR |
| 60V AC | FA60ACR | 42 - 66V | ~0.7A | UV60ACR |
| 110V AC | FA110ACR | 77 - 121V | 0.5A | UV110ACR |
| 120V AC | FA120ACR | 84 - 132V | ~0.5A | UV120ACR |
| 230V AC | FA230ACR | 161 - 253V | 0.6A | UV230ACR |
| 277V AC | FA277ACR | 194 - 305V | ~0.5A | UV277ACR |
| 400V AC | FA400ACR | 280 - 440V | 0.5A | UV400ACR |
| DC Coil: | | | | |
| 12V DC | FA12DCR | 8.4 - 13.2V | ~6A | UV12DCR |
| 24V DC | FA24DCR | 16.8 - 26.4V | 3A | UV24DCR |
| 48V DC | FA48DCR | 33.6 - 52.8V | 2A | UV48DCR |
| 110V DC | FA110DCR | 77 - 121V | 0.6A | UV110DCR |

* Reset-Hold Voltage = 0.85 x V_E; Drop-Out Voltage = 0.2 x V_E

Standard Pack: 10

Weight: 1.1kg (2.43 lb.)

| | |
|---------------------------|----------------------------------------------------------|
| Terminal Size - min/max | 2.5 mm ² (12 AWG) / 25mm ² (3 AWG) |
| Terminal Torque - min/max | 1.5 Nm (12 lb. in.) / 2 Nm (17.5 lb. in.) |



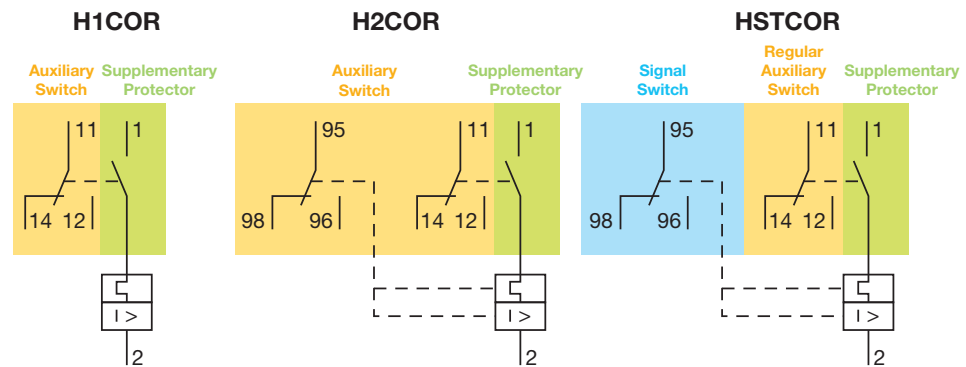
Auxiliary Contact (4A/230 VAC)

| Description | Type/ Cat. No. | Cable Max | Cable Min | Torque Max | Torque Min |
|-----------------------------------|-------------------|------------------------------|------------------------------|------------------|-------------------|
| 1 x CO | H1COR | 2.5mm ² AWG 12 | 0.5mm ² AWG 20 | 0.5Nm 4 lb-in | 0.33Nm 3 lb-in |
| 2 x CO | H2COR | | | | |
| 1 x CO, 1 Signal & Test Button | HSTCOR | | | | |

Standard Pack: 15

Weight: H1COR: 0.5kg (1.32 lb.); H2COR, HSTCOR: 0.72kg (1.59 lb.)

Wiring Diagram



Lock-out Adapter



| Description | Type/ Cat. No. |
|-------------|-------------------|
| Yellow | EASS2 |

Standard Pack: 10

Weight: 50g (1.76 oz.)

UL 489

UL 508

UL 1077

UL 1077
Equipment Breakers

Earth Leakage
Circuit Breakers

ANNEX