

# DLS9 Series

## UL489 Miniature Molded Case Circuit Breakers

- AC (UL Series) and DC (DL Series)
- DIN Rail Mounted
- 17.5mm width
- Thermal Magnetic
- 240V, 480Y/277V AC, 50/60Hz
- 125V DC (1 pole); 125/250V DC (2 pole)
- 10kA Short Circuit Interrupting Capacity
- HACR Type 40°C
- Line/Load reversible



### Current/ Voltage Rating

|                                               |                                                                                 |
|-----------------------------------------------|---------------------------------------------------------------------------------|
| <b>UL-Series</b>                              | 0.3 - 63A/240V AC, 0.3-32A/480Y/277V AC                                         |
| <b>DL-Series</b>                              | 0.3 - 63A/125/250V DC                                                           |
| <b>Calibration Temperature</b>                | 40°C (104°F)                                                                    |
| <b>Ambient Temperature</b>                    | -25°C to +70°C (-13°F to 158°F)                                                 |
| <b>Storage Temperature</b>                    | -40°C to +70°C (-40°F to 158°F)                                                 |
| <b>Terminal Size Acceptability</b>            | Top: 18-3 AWG; Bottom: 18-2 AWG (Use Copper Wire Only 60/75°C)                  |
| <b>Terminal Torque (min/max)</b>              | 2 Nm (17.7 lb.in.) / 2.5Nm (22.2 lb.in)                                         |
| <b>Electrical Life</b>                        | 6,000 switching cycles ON/ OFF                                                  |
| <b>Mechanical Life</b>                        | 10,000 switching cycles ON/ OFF                                                 |
| <b>Vibration Resistance</b>                   | > 15g according to DIN EN 60069-2-59 during a load with $I_1 = 1.05 \times I_N$ |
| <b>Resistance to mechanical shocks</b>        | 25g @ 11ms                                                                      |
| <b>Degree of protection acc. IEC/EN 60529</b> | IP20                                                                            |
| <b>Mounting Orientation</b>                   | In any plane                                                                    |

### Short Circuit Interrupting Capacity According to UL 489

| No. Poles | Type | 0.3-32A                    | 40-63A           |
|-----------|------|----------------------------|------------------|
| 1         | AC   | 10kA @ 120, 240, 277V      | 10kA @ 120, 240V |
| 2-3       | AC   | 10kA @ 120, 240, 480Y/277V | 10kA @ 120 240V  |

| No. Poles | Type | 0.3-32A         | 40-63A          |
|-----------|------|-----------------|-----------------|
| 1         | DC   | 10kA @ 125V     | 10kA @ 125V     |
| 2         | DC   | 10kA @ 125/250V | 10kA @ 125/250V |

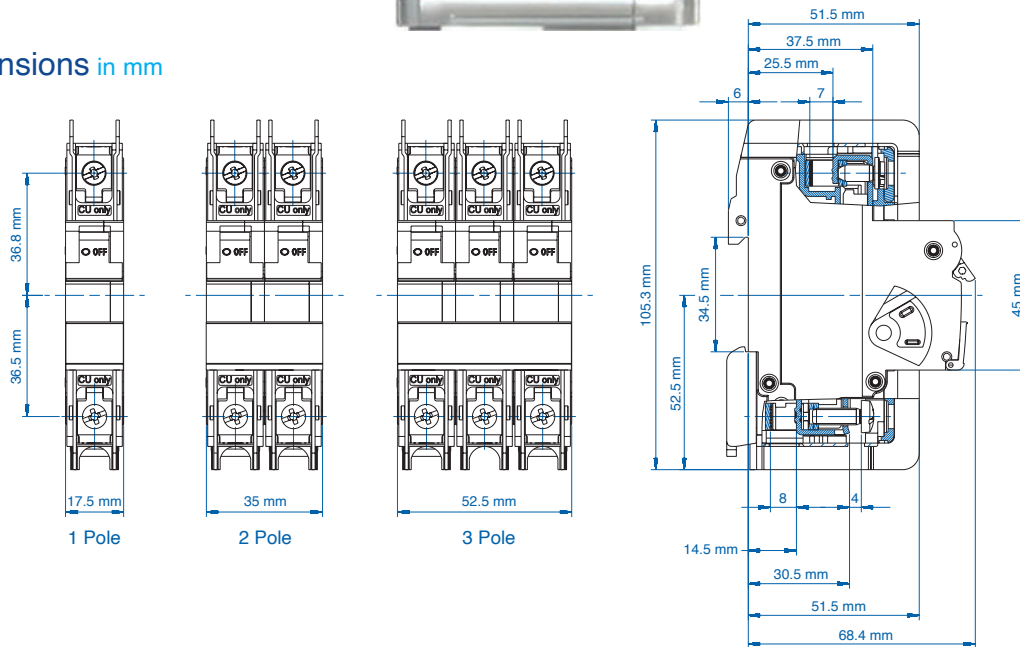
### Short Circuit Interrupting Capacity According to IEC 60947-2, DIN EN 60947-2

| No. Poles | Type | 0.3-32    | 40-63A    |
|-----------|------|-----------|-----------|
| 1         | AC   | 15kA@240V | 15kA@240V |
| 2-3       | AC   | 15kA@415V | 10kA@415V |

## Marking Details



## Dimensions in mm



UL 489

UL 508

UL 1077

UL 1077  
Equipment Breakers

Earth Leakage  
Circuit Breakers

ANNEX

# DLS9 Series

## C-Trip (AC)

### Characteristic



E329510

#### Application Examples:

Low inrush motors, resistive loads, wiring protection, receptacles, lighting, and control circuit applications. Relatively short thermal trip delay and medium magnetic trip point.



Standard Pack: 12

Weight:

0.3-32A:  
1.74kg (3.83lb.)40-63A:  
1.98kg (4.37lb.)

#### One Pole

| Rated Current | Type/<br>Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.3A          | 1C03UL            | 277V AC       |
| 0.5A          | 1C05UL            | 277V AC       |
| 1.0A          | 1C1UL             | 277V AC       |
| 1.6A          | 1C1.6UL           | 277V AC       |
| 2.0A          | 1C2UL             | 277V AC       |
| 3.0A          | 1C3UL             | 277V AC       |
| 4.0A          | 1C4UL             | 277V AC       |
| 5.0A          | 1C5UL             | 277V AC       |
| 6.0A          | 1C6UL             | 277V AC       |
| 8.0A          | 1C8UL             | 277V AC       |
| 10A           | 1C10UL            | 277V AC       |
| 12A           | 1C12UL            | 277V AC       |
| 13A           | 1C13UL            | 277V AC       |
| 15A           | 1C15UL            | 277V AC       |
| 16A           | 1C16UL            | 277V AC       |
| 20A           | 1C20UL            | 277V AC       |
| 25A           | 1C25UL            | 277V AC       |
| 30A           | 1C30UL            | 277V AC       |
| 32A           | 1C32UL            | 277V AC       |
| 40A           | 1C40UL            | 240V AC       |
| 50A           | 1C50UL            | 240V AC       |
| 60A           | 1C60UL            | 240V AC       |
| 63A           | 1C63UL            | 240V AC       |



Standard Pack: 4

Weight:

0.3-32A:  
1.74kg (3.83lb.)40-63A:  
1.98kg (4.37lb.)

#### Three Pole

| Rated Current | Type/<br>Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.3A          | 3C03UL            | 480Y/277V AC  |
| 0.5A          | 3C05UL            | 480Y/277V AC  |
| 1.0A          | 3C1UL             | 480Y/277V AC  |
| 1.6A          | 3C1.6UL           | 480Y/277V AC  |
| 2.0A          | 3C2UL             | 480Y/277V AC  |
| 3.0A          | 3C3UL             | 480Y/277V AC  |
| 4.0A          | 3C4UL             | 480Y/277V AC  |
| 5.0A          | 3C5UL             | 480Y/277V AC  |
| 6.0A          | 3C6UL             | 480Y/277V AC  |
| 8.0A          | 3C8UL             | 480Y/277V AC  |
| 10A           | 3C10UL            | 480Y/277V AC  |
| 12A           | 3C12UL            | 480Y/277V AC  |
| 13A           | 3C13UL            | 480Y/277V AC  |
| 15A           | 3C15UL            | 480Y/277V AC  |
| 16A           | 3C16UL            | 480Y/277V AC  |
| 20A           | 3C20UL            | 480Y/277V AC  |
| 25A           | 3C25UL            | 480Y/277V AC  |
| 30A           | 3C30UL            | 480Y/277V AC  |
| 32A           | 3C32UL            | 480Y/277V AC  |
| 40A           | 3C40UL            | 240V AC       |
| 50A           | 3C50UL            | 240V AC       |
| 60A           | 3C60UL            | 240V AC       |
| 63A           | 3C63UL            | 240V AC       |



Standard Pack: 6

Weight:

0.3-32A:  
1.74kg (3.83lb.)40-63A:  
1.98kg (4.37lb.)

#### Two Pole

| Rated Current | Type/<br>Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.3A          | 2C03UL            | 480Y/277V AC  |
| 0.5A          | 2C05UL            | 480Y/277V AC  |
| 1.0A          | 2C1UL             | 480Y/277V AC  |
| 1.6A          | 2C1.6UL           | 480Y/277V AC  |
| 2.0A          | 2C2UL             | 480Y/277V AC  |
| 3.0A          | 2C3UL             | 480Y/277V AC  |
| 4.0A          | 2C4UL             | 480Y/277V AC  |
| 5.0A          | 2C5UL             | 480Y/277V AC  |
| 6.0A          | 2C6UL             | 480Y/277V AC  |
| 8.0A          | 2C8UL             | 480Y/277V AC  |
| 10A           | 2C10UL            | 480Y/277V AC  |
| 12A           | 2C12UL            | 480Y/277V AC  |
| 13A           | 2C13UL            | 480Y/277V AC  |
| 15A           | 2C15UL            | 480Y/277V AC  |
| 16A           | 2C16UL            | 480Y/277V AC  |
| 20A           | 2C20UL            | 480Y/277V AC  |
| 25A           | 2C25UL            | 480Y/277V AC  |
| 30A           | 2C30UL            | 480Y/277V AC  |
| 32A           | 2C32UL            | 480Y/277V AC  |
| 40A           | 2C40UL            | 240V AC       |
| 50A           | 2C50UL            | 240V AC       |
| 60A           | 2C60UL            | 240V AC       |
| 63A           | 2C63UL            | 240V AC       |



#### Add-on Neutral Pole

| Rated Current | Type/<br>Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.3-32A       | N32UL             | 480/277V AC   |
| 40-63A        | N63UL             | 240V AC       |

Standard Pack: 6

Weight:

0.99kg (2.18 lb.)

## DLS9 Series D-Trip (AC) Characteristic



### 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:  
0.3-32A:  
1.74kg (3.83lb.)  
40-63A:  
1.98kg (4.37lb.)

| Rated Current | Type/<br>Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.3A          | 1D03UL            | 277V AC       |
| 0.5A          | 1D05UL            | 277V AC       |
| 1.0A          | 1D1UL             | 277V AC       |
| 1.6A          | 1D1.6UL           | 277V AC       |
| 2.0A          | 1D2UL             | 277V AC       |
| 3.0A          | 1D3UL             | 277V AC       |
| 4.0A          | 1D4UL             | 277V AC       |
| 5.0A          | 1D5UL             | 277V AC       |
| 6.0A          | 1D6UL             | 277V AC       |
| 8.0A          | 1D8UL             | 277V AC       |
| 10A           | 1D10UL            | 277V AC       |
| 12A           | 1D12UL            | 277V AC       |
| 13A           | 1D13UL            | 277V AC       |
| 15A           | 1D15UL            | 277V AC       |
| 16A           | 1D16UL            | 277V AC       |
| 20A           | 1D20UL            | 277V AC       |
| 25A           | 1D25UL            | 277V AC       |
| 30A           | 1D30UL            | 277V AC       |
| 32A           | 1D32UL            | 277V AC       |
| 40A           | 1D40UL            | 240V AC       |
| 50A           | 1D50UL            | 240V AC       |
| 60A           | 1D60UL            | 240V AC       |
| 63A           | 1D63UL            | 240V AC       |

### Three Pole



Standard Pack: 4

Weight:  
0.3-32A:  
1.74kg (3.83lb.)  
40-63A:  
1.98kg (4.37lb.)

| Rated Current | Type/<br>Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.3A          | 3D03UL            | 480Y/277V AC  |
| 0.5A          | 3D05UL            | 480Y/277V AC  |
| 1.0A          | 3D1UL             | 480Y/277V AC  |
| 1.6A          | 3D1.6UL           | 480Y/277V AC  |
| 2.0A          | 3D2UL             | 480Y/277V AC  |
| 3.0A          | 3D3UL             | 480Y/277V AC  |
| 4.0A          | 3D4UL             | 480Y/277V AC  |
| 5.0A          | 3D5UL             | 480Y/277V AC  |
| 6.0A          | 3D6UL             | 480Y/277V AC  |
| 8.0A          | 3D8UL             | 480Y/277V AC  |
| 10A           | 3D10UL            | 480Y/277V AC  |
| 12A           | 3D12UL            | 480Y/277V AC  |
| 13A           | 3D13UL            | 480Y/277V AC  |
| 15A           | 3D15UL            | 480Y/277V AC  |
| 16A           | 3D16UL            | 480Y/277V AC  |
| 20A           | 3D20UL            | 480Y/277V AC  |
| 25A           | 3D25UL            | 480Y/277V AC  |
| 30A           | 3D30UL            | 480Y/277V AC  |
| 32A           | 3D32UL            | 480Y/277V AC  |
| 40A           | 3D40UL            | 240V AC       |
| 50A           | 3D50UL            | 240V AC       |
| 60A           | 3D60UL            | 240V AC       |
| 63A           | 3D63UL            | 240V AC       |

### Two Pole



Standard Pack: 6

Weight:  
0.3-32A:  
1.74kg (3.83lb.)  
40-63A:  
1.98kg (4.37lb.)

| Rated Current | Type/<br>Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.3A          | 2D03UL            | 480Y/277V AC  |
| 0.5A          | 2D05UL            | 480Y/277V AC  |
| 1.0A          | 2D1UL             | 480Y/277V AC  |
| 1.6A          | 2D1.6UL           | 480Y/277V AC  |
| 2.0A          | 2D2UL             | 480Y/277V AC  |
| 3.0A          | 2D3UL             | 480Y/277V AC  |
| 4.0A          | 2D4UL             | 480Y/277V AC  |
| 5.0A          | 2D5UL             | 480Y/277V AC  |
| 6.0A          | 2D6UL             | 480Y/277V AC  |
| 8.0A          | 2D8UL             | 480Y/277V AC  |
| 10A           | 2D10UL            | 480Y/277V AC  |
| 12A           | 2D12UL            | 480Y/277V AC  |
| 13A           | 2D13UL            | 480Y/277V AC  |
| 15A           | 2D15UL            | 480Y/277V AC  |
| 16A           | 2D16UL            | 480Y/277V AC  |
| 20A           | 2D20UL            | 480Y/277V AC  |
| 25A           | 2D25UL            | 480Y/277V AC  |
| 30A           | 2D30UL            | 480Y/277V AC  |
| 32A           | 2D32UL            | 480Y/277V AC  |
| 40A           | 2D40UL            | 240V AC       |
| 50A           | 2D50UL            | 240V AC       |
| 60A           | 2D60UL            | 240V AC       |
| 63A           | 2D63UL            | 240V AC       |

### Add-on Neutral Pole



| Rated Current | Type/<br>Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.3-32A       | N32UL             | 480/277V AC   |
| 40-63A        | N63UL             | 240V AC       |

Standard Pack: 6

Weight:  
0.99kg (2.18 lb.)

UL 489

UL 508

UL 1077

UL 1077  
Equipment Breakers

Earth Leakage  
Circuit Breakers

ANNEX

UL 489

UL 508

UL 1077

UL 1077  
Equipment BreakersEarth Leakage  
Circuit Breakers

ANNEX

# DLS9 Series

## C-Trip (DC)

### Characteristic

#### Application Examples:

Telecommunication equipment,  
computer equipment, uninterruptable power supplies.

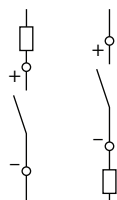


Standard Pack: 12

Weight:

0.3-32A:  
1.86kg (4.1lb.)

40-63A:  
2.10kg (4.6lb.)



#### One Pole

| Rated Current | Type/<br>Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.3A          | 1C03DL            | 125V DC       |
| 0.5A          | 1C05DL            | 125V DC       |
| 1.0A          | 1C1DL             | 125V DC       |
| 1.6A          | 1C1.6DL           | 125V DC       |
| 2.0A          | 1C2DL             | 125V DC       |
| 3.0A          | 1C3DL             | 125V DC       |
| 4.0A          | 1C4DL             | 125V DC       |
| 5.0A          | 1C5DL             | 125V DC       |
| 6.0A          | 1C6DL             | 125V DC       |
| 8.0A          | 1C8DL             | 125V DC       |
| 10A           | 1C10DL            | 125V DC       |
| 12A           | 1C12DL            | 125V DC       |
| 13A           | 1C13DL            | 125V DC       |
| 15A           | 1C15DL            | 125V DC       |
| 16A           | 1C16DL            | 125V DC       |
| 20A           | 1C20DL            | 125V DC       |
| 25A           | 1C25DL            | 125V DC       |
| 30A           | 1C30DL            | 125V DC       |
| 32A           | 1C32DL            | 125V DC       |
| 40A           | 1C40DL            | 125V DC       |
| 50A           | 1C50DL            | 125V DC       |
| 60A           | 1C60DL            | 125V DC       |
| 63A           | 1C63DL            | 125V DC       |

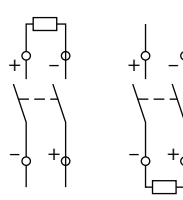


Standard Pack: 6

Weight:

0.3-32A:  
1.86kg (4.1lb.)

40-63A:  
2.10kg (4.6lb.)



#### Two Pole

| Rated Current | Type/<br>Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.3A          | 2C03DL            | 125/250V DC   |
| 0.5A          | 2C05DL            | 125/250V DC   |
| 1.0A          | 2C1DL             | 125/250V DC   |
| 1.6A          | 2C1.6DL           | 125/250V DC   |
| 2.0A          | 2C2DL             | 125/250V DC   |
| 3.0A          | 2C3DL             | 125/250V DC   |
| 4.0A          | 2C4DL             | 125/250V DC   |
| 5.0A          | 2C5DL             | 125/250V DC   |
| 6.0A          | 2C6DL             | 125/250V DC   |
| 8.0A          | 2C8DL             | 125/250V DC   |
| 10A           | 2C10DL            | 125/250V DC   |
| 12A           | 2C12DL            | 125/250V DC   |
| 13A           | 2C13DL            | 125/250V DC   |
| 15A           | 2C15DL            | 125/250V DC   |
| 16A           | 2C16DL            | 125/250V DC   |
| 20A           | 2C20DL            | 125/250V DC   |
| 25A           | 2C25DL            | 125/250V DC   |
| 30A           | 2C30DL            | 125/250V DC   |
| 32A           | 2C32DL            | 125/250V DC   |
| 40A           | 2C40DL            | 125/250V DC   |
| 50A           | 2C50DL            | 125/250V DC   |
| 60A           | 2C60DL            | 125/250V DC   |
| 63A           | 2C63DL            | 125/250V DC   |



#### Warning!

Correct polarity must be observed  
when connecting the DC circuit breakers.



# DLS9 Series D-Trip (DC) Characteristic



## Application Examples:

Telecommunication equipment,  
computer equipment, uninterruptible power supplies.

### One Pole

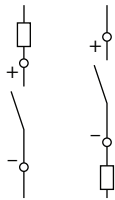


Standard Pack: 12

Weight:

0.3-32A:  
1.86kg (4.1lb.)

40-63A:  
2.10kg (4.6lb.)



| Rated Current | Type/<br>Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.3A          | 1D03DL            | 125V DC       |
| 0.5A          | 1D05DL            | 125V DC       |
| 1.0A          | 1D1DL             | 125V DC       |
| 1.6A          | 1D1.6DL           | 125V DC       |
| 2.0A          | 1D2DL             | 125V DC       |
| 3.0A          | 1D3DL             | 125V DC       |
| 4.0A          | 1D4DL             | 125V DC       |
| 5.0A          | 1D5DL             | 125V DC       |
| 6.0A          | 1D6DL             | 125V DC       |
| 8.0A          | 1D8DL             | 125V DC       |
| 10A           | 1D10DL            | 125V DC       |
| 12A           | 1D12DL            | 125V DC       |
| 13A           | 1D13DL            | 125V DC       |
| 15A           | 1D15DL            | 125V DC       |
| 16A           | 1D16DL            | 125V DC       |
| 20A           | 1D20DL            | 125V DC       |
| 25A           | 1D25DL            | 125V DC       |
| 30A           | 1D30DL            | 125V DC       |
| 32A           | 1D32DL            | 125V DC       |
| 40A           | 1D40DL            | 125V DC       |
| 50A           | 1D50DL            | 125V DC       |
| 60A           | 1D60DL            | 125V DC       |
| 63A           | 1D63DL            | 125V DC       |

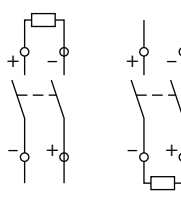


Standard Pack: 6

Weight:

0.3-32A:  
1.86kg (4.1lb.)

40-63A:  
2.10kg (4.6lb.)



### Two Pole

| Rated Current | Type/<br>Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.3A          | 2D03DL            | 125/250V DC   |
| 0.5A          | 2D05DL            | 125/250V DC   |
| 1.0A          | 2D1DL             | 125/250V DC   |
| 1.6A          | 2D1.6DL           | 125/250V DC   |
| 2.0A          | 2D2DL             | 125/250V DC   |
| 3.0A          | 2D3DL             | 125/250V DC   |
| 4.0A          | 2D4DL             | 125/250V DC   |
| 5.0A          | 2D5DL             | 125/250V DC   |
| 6.0A          | 2D6DL             | 125/250V DC   |
| 8.0A          | 2D8DL             | 125/250V DC   |
| 10A           | 2D10DL            | 125/250V DC   |
| 12A           | 2D12DL            | 125/250V DC   |
| 13A           | 2D13DL            | 125/250V DC   |
| 15A           | 2D15DL            | 125/250V DC   |
| 16A           | 2D16DL            | 125/250V DC   |
| 20A           | 2D20DL            | 125/250V DC   |
| 25A           | 2D25DL            | 125/250V DC   |
| 30A           | 2D30DL            | 125/250V DC   |
| 32A           | 2D32DL            | 125/250V DC   |
| 40A           | 2D40DL            | 125/250V DC   |
| 50A           | 2D50DL            | 125/250V DC   |
| 60A           | 2D60DL            | 125/250V DC   |
| 63A           | 2D63DL            | 125/250V DC   |



## Warning!

Correct polarity must be observed  
when connecting the DC circuit breakers.



UL 489

UL 508

UL 1077

UL 1077  
Equipment Breakers

Earth Leakage  
Circuit Breakers

ANNEX

UL 489

UL 508

UL 1077

UL 1077  
Equipment BreakersEarth Leakage  
Circuit Breakers

ANNEX

# DLS9 Series Accessories

For mounting instructions please refer to page 61.



## Auxiliary Contact, Alarm Switch

| Type/ Cat No. | Description                  | Contacts Type      | Std Pk |
|---------------|------------------------------|--------------------|--------|
| H10UL         | 1 Auxiliary Contact          | 1NO                | 6      |
| H11UL         | 2 Auxiliary Contacts         | 1NO + 1NC          | 6      |
| H12UL         | 3 Auxiliary Contacts         | 1NO + 2NC          | 6      |
| H21UL         | 3 Auxiliary Contacts         | 2NO + 1NC          | 6      |
| HLS11L*       | 1 Auxiliary/1 Signal Contact | 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** 1.0mm<sup>2</sup> - 2.5mm<sup>2</sup> (18-14 AWG)  
**Stranded Wire** 1.0mm<sup>2</sup> - 1.5mm<sup>2</sup> (18-16 AWG)  
**Stranded Wire with Ferrule** 1.0mm<sup>2</sup> - 1.5mm<sup>2</sup> (18-16 AWG)

## Shunt Trip

| Type/ Cat No. | Rated Voltage U <sub>N</sub> | Max. Operating Current @ U <sub>N</sub>     | Std Pk |
|---------------|------------------------------|---------------------------------------------|--------|
| FA12UL        | 12V AC/DC                    | 1.3A                                        | 5      |
| FA24UL        | 24V AC/DC                    | 0.6A                                        | 5      |
| FA48UL        | 48 - 72V AC/DC               | 0.2A                                        | 5      |
| FA110UL       | 110 - 240V AC/DC,<br>277V AC | 0.25A @ 110V<br>0.5A @ 240V<br>0.58A @ 277V | 5      |

## Neutral Pole

| Type/ Cat No. | Rated Current I <sub>N</sub> | Rated Voltage U <sub>N</sub> | Std Pk |
|---------------|------------------------------|------------------------------|--------|
| N32UL         | 0.3 - 32A                    | 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 |
|---------------|--------|
|---------------|--------|

## Cooling Spacer



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

## Mounting Screw 34mm

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



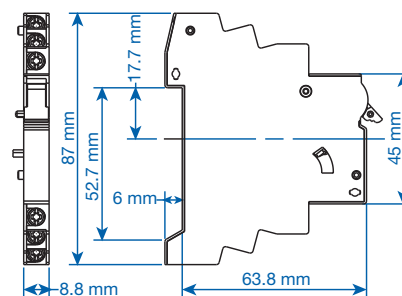
| Type/ Cat No. | Std Pk |
|---------------|--------|
|---------------|--------|

## Lock-out Adapter\*\*

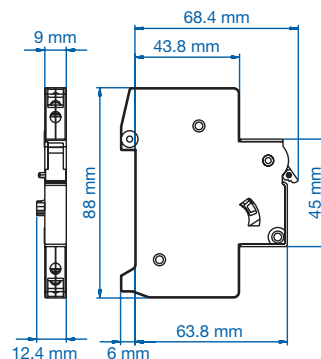


| Type/ Cat No. | Std Pk |
|---------------|--------|
|---------------|--------|

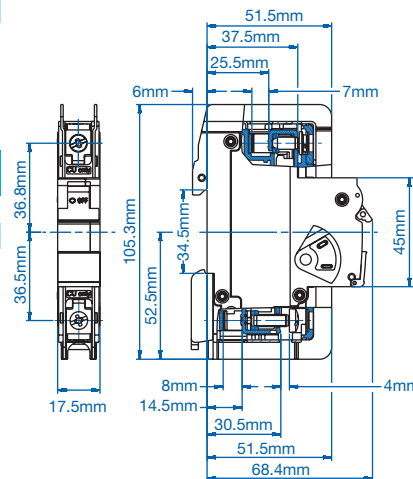
\*\* UL and DL series can also be locked in the on and off position by simply using a common lead or meter seal, which gets fed through the hole in the handle and a corresponding hole in the housing.



Dimensions HxxUL.



Dimensions HLS11L.



Dimensions NxxUL, FxxUL

# DLS9 Series (AC) Trip Curves

UL 489

UL 508

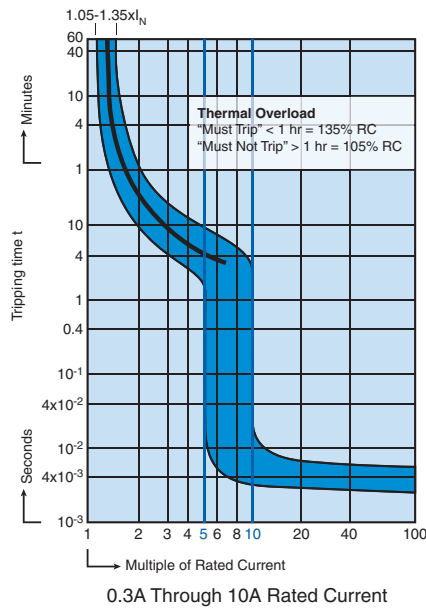
UL 1077

UL 1077  
Equipment Breakers

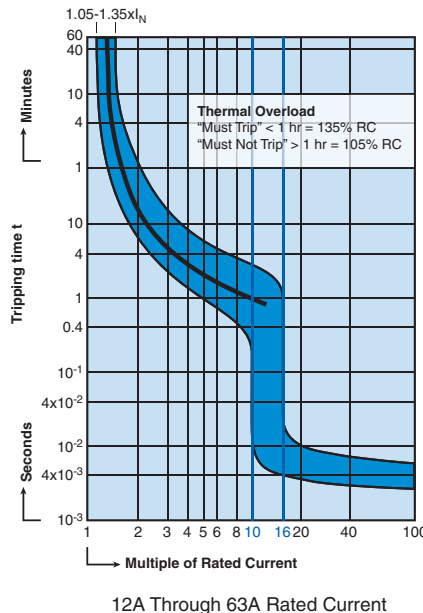
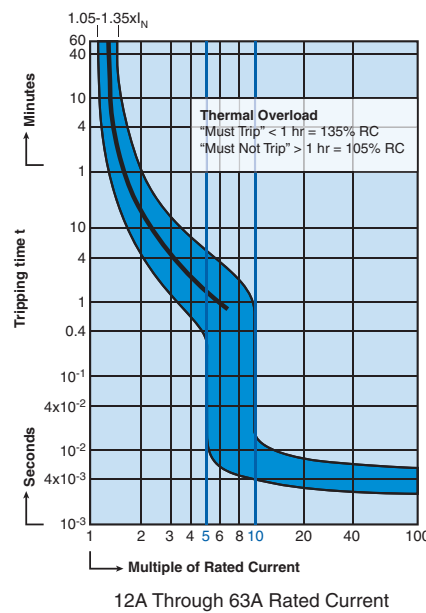
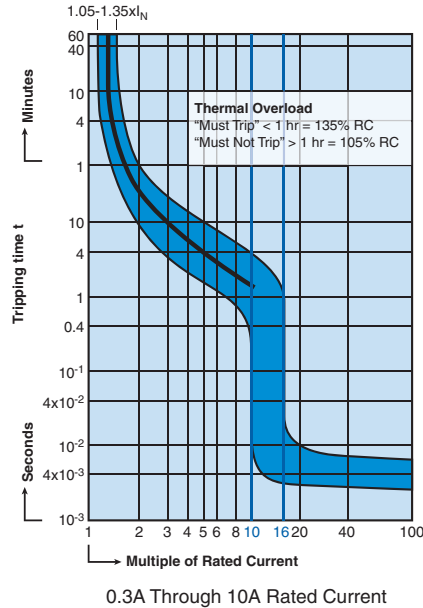
Earth Leakage  
Circuit Breakers

ANNEX

## C (AC) Trip Curve



## D (AC) Trip Curve



### "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.

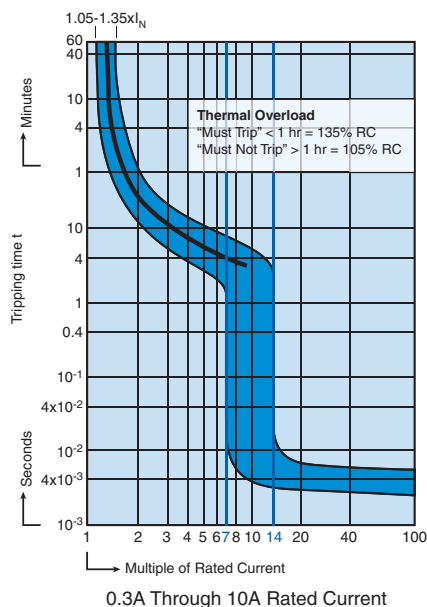
### "D" Magnetic Trip Parameters

Rated current 0.3A to 63A.

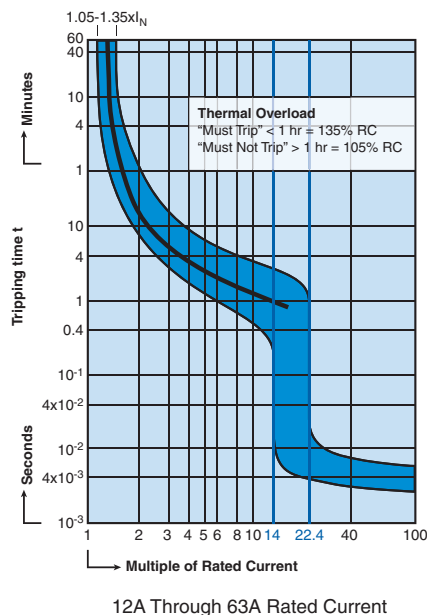
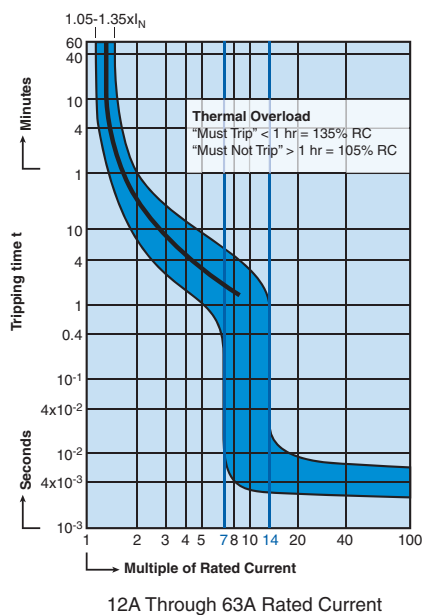
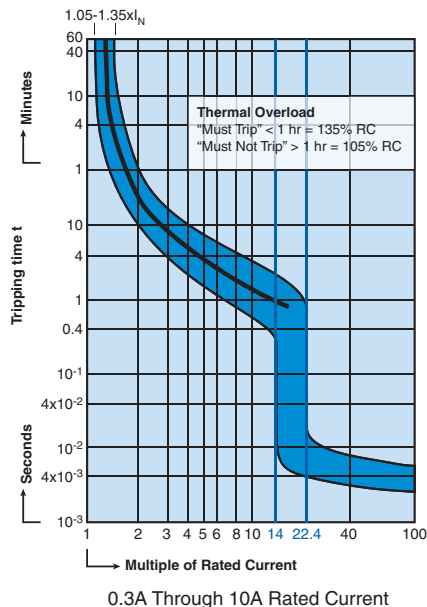
1. Hold for a minimum of 100ms at surge of 10 times rated current.
2. Trip in under 100ms at 16 times rated current.

# DLS9 Series (DC) Trip Curves

## C (DC) Trip Curve



## D (DC) Trip Curve



### "C" Magnetic Trip Parameters

Rated current 0.3A to 63A.

1. Hold for a minimum of 100ms at surge of 7 times rated current.
2. Trip in under 100ms at 14 times rated current.

### "D" Magnetic Trip Parameters

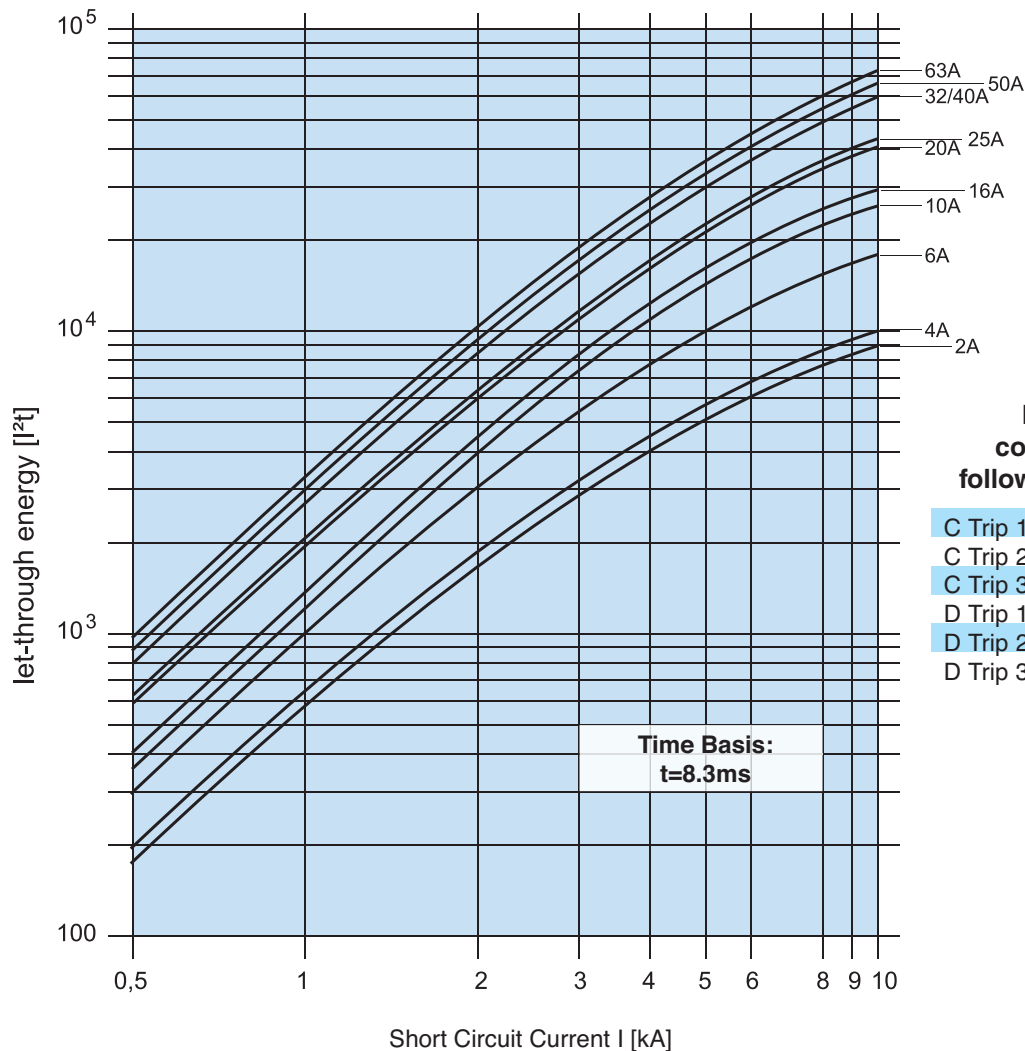
Rated current 0.3A to 63A.

1. Hold for a minimum of 100ms at surge of 14 times rated current.
2. Trip in under 100ms at 22.4 times rated current.

## DLS9 Series Internal Resistance

| Rated Current<br>(A) | Trip Characteristic |            |
|----------------------|---------------------|------------|
|                      | C<br>(Ohm)          | D<br>(Ohm) |
| 0.3                  | 16.8620             | 16.8620    |
| 0.5                  | 6.8540              | 6.0009     |
| 1.0                  | 1.7000              | 1.7560     |
| 1.6                  | 0.5870              | 0.5870     |
| 2.0                  | 0.4190              | 0.4190     |
| 3.0                  | 0.2020              | 0.2020     |
| 4.0                  | 0.1090              | 0.1090     |
| 5.0                  | 0.0654              | 0.0654     |
| 6.0                  | 0.0528              | 0.0491     |
| 8.0                  | 0.0278              | 0.0240     |
| 10                   | 0.0216              | 0.0187     |
| 12                   | 0.0084              | 0.0085     |
| 13                   | 0.0084              | 0.0085     |
| 15/ 16               | 0.0085              | 0.0076     |
| 20                   | 0.0067              | 0.0064     |
| 25                   | 0.0050              | 0.0041     |
| 30/ 32               | 0.0032              | 0.0027     |
| 40                   | 0.0025              | 0.0022     |
| 50                   | 0.0019              | 0.0018     |
| 60/ 63               | 0.0018              | 0.0017     |

## UL Series Let-through Energy I<sup>2</sup>t Diagram, D Trip 1 pole



For other Trip/Pole configurations use the following correction factors:

- C Trip 1 pole + 0.84 x curve value
- C Trip 2 pole + 0.71 x curve value
- C Trip 3 pole + 0.92 x curve value
- D Trip 1 pole + 1.00 x curve value
- D Trip 2 pole + 0.87 x curve value
- D Trip 3 pole + 1.08 x curve value

UL 489

UL 508

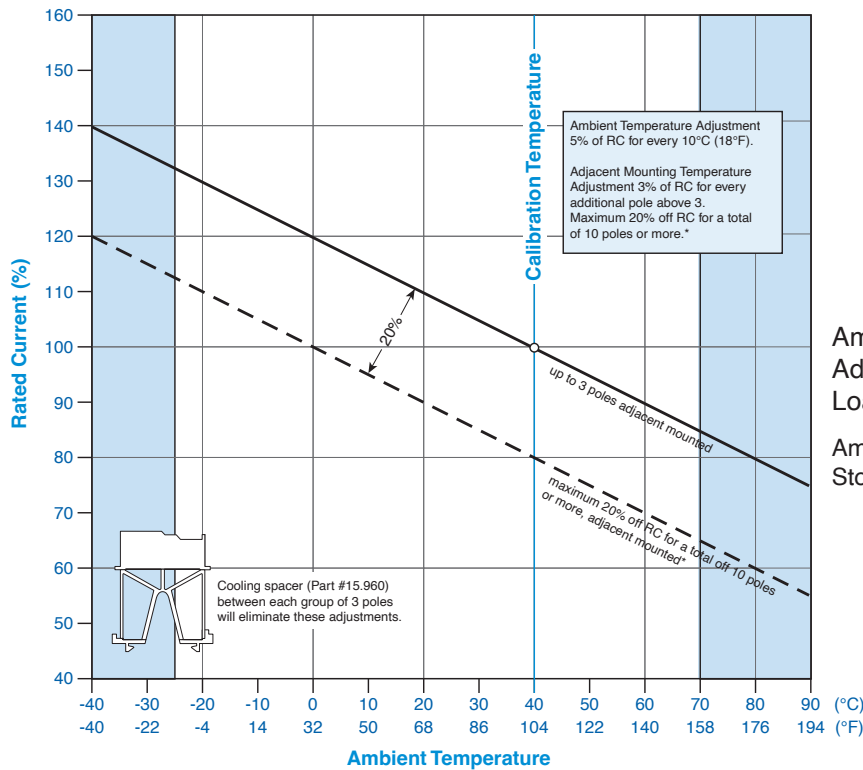
UL 1077

UL 1077  
Equipment Breakers

Earth Leakage  
Circuit Breakers

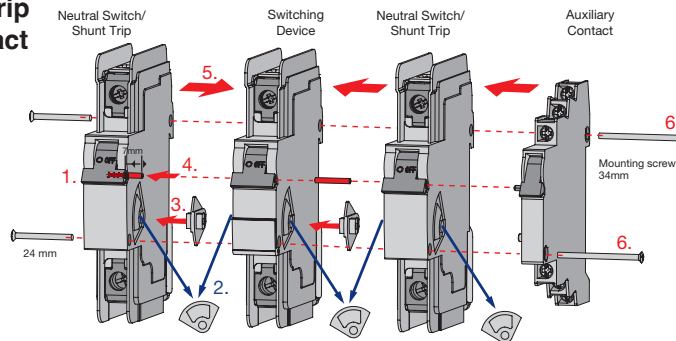
ANNEX

## Temperature Correction Curve



## Accessory Mounting Instructions

### Neutral / Shunt Trip + Auxiliary Contact

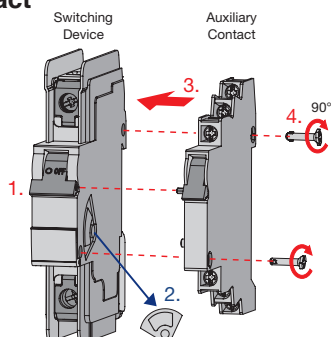


Neutral Poles N63UM, N32UL, N63UL or Shunt Trips FA..UM, FA..UL can be mounted on the right or left side of the circuit protection device.

1. Turn handle to off position.
2. Remove gray cover from the circuit protection device and accessory.
3. Insert linkage component between circuit protection device and neutral pole (N63UM, N32UL, N63UL) or shunt trip (FA..UM, FA..UL).
4. Insert connecting pin into handle.
5. Assemble circuit protection device and neutral pole (N63UM, N32UL, N63UL) or shunt trip (FA..UM, FL..UL).
6. The auxiliary contact (H..UM, H..UL) can also be mounted on the right side by using a different screw (E983419; see accessory pages 14, 32 or 41).

After final assembly check operation by moving the handle to the ON/OFF position several times.

### Auxiliary Contact



Auxiliary contact can be mounted on the right side of the circuit protection device only.

1. Turn handles to OFF position.
2. Remove gray cover from switching device.
3. Combine circuit protection device and auxiliary contact (H..UM, H..UL).
4. Insert mounting screws and connect the two devices by turning the screws 90° clockwise.

After final assembly check operation by moving the handle to the ON/OFF position several times.

UL 489

UL 508

UL 1077

UL 1077  
Equipment BreakersEarth Leakage  
Circuit Breakers

ANNEX

# DLS8 Series

## UL508 Listed Manual Motor Controllers “Suitable as Motor Disconnect”

- DIN Rail Mounted
- 17.5mm width per pole
- Thermal Magnetic
- 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)



E511762



300600

up to 25A  
B, C, D curveup to 25A  
B, C, D curve

|                                                                |                                                                                                               |
|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| <b>Current/ Voltage Rating</b>                                 | 0.3-60A/480Y/277V AC<br>0.3-25A: 1 pole - 42V DC; 2 Pole - 80V DC<br>30-60A: 1 pole - 24V DC; 2 Pole - 60V DC |
| <b>Short Circuit Withstand Rating (UL/CSA - Ratings)</b>       | 0.3-60A (RC): 10kA with UL-listed RK5 back-up fuse or MCCB                                                    |
| <b>Group Short Circuit Withstand Rating (UL/CSA - Ratings)</b> | 0.3-10A (RC): 10kA; 12-60A (RC): 5kA<br>no branch circuit protection required                                 |
| <b>Interrupting Capacity (VDE - Ratings)</b>                   | 0.3-63A (RC): 10kA                                                                                            |
| <b>Calibration Temperature</b>                                 | 40°C (104°F)                                                                                                  |
| <b>Operating Temperature</b>                                   | -25°C to 70°C (-13°F to 158°F)                                                                                |
| <b>Storage Temperature</b>                                     | -40°C to 70°C (-40°F to 158°F)                                                                                |
| <b>Terminal Size Acceptability</b>                             | Top: 18-3 AWG; Bottom: 18-2 AWG (Use Copper Wire Only 60/75°C)                                                |
| <b>Terminal Torque (min/max)</b>                               | 2 Nm (17.7 lb.in.) / 2.5Nm (22.2 lb.in)                                                                       |
| <b>Horse Power Ratings</b>                                     | contact Altech                                                                                                |
| <b>Mechanical Endurance Ratings</b>                            | contact Altech                                                                                                |
| <b>Vibration Resistance</b>                                    | > 15g according to DIN EN 60069-2-59 during a load with $I_1 = 1.05 \times I_N$                               |
| <b>Degree of protection acc. IEC/EN 60529</b>                  | IP20                                                                                                          |
| <b>Mounting Orientation</b>                                    | In any plane                                                                                                  |

### Short Circuit Withstand Ratings

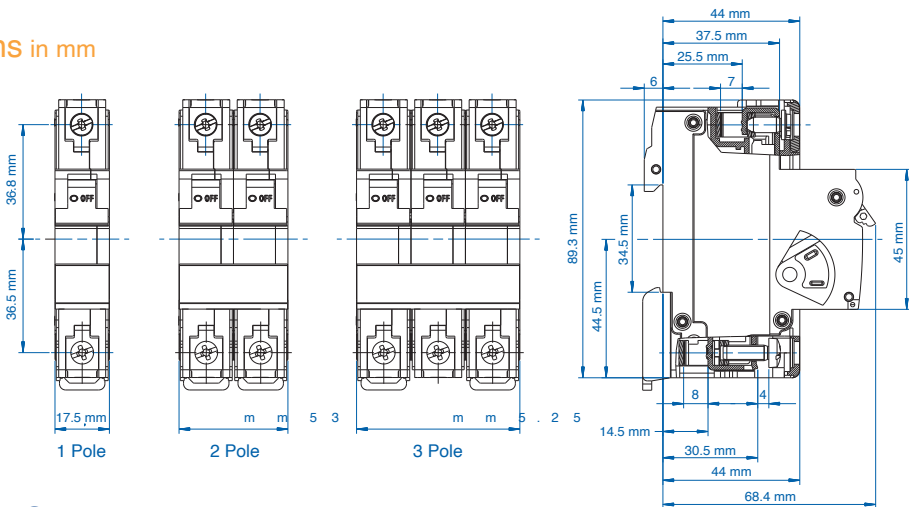
| Trip Curve | Amp Range   | Backup Protection | UL-Listed RK5-Fuse up to 10kA | UL-Listed MCCB up to 10kA | No BCP Required up to: |
|------------|-------------|-------------------|-------------------------------|---------------------------|------------------------|
| all        | 0.3 - 10A   |    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

\*up to nearest rated current

Marking Details



Dimensions in mm



Application Overview

| Trip-Characteristics*          |                   |                        |                       | Applications                                                                        |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                        |                                                                                       |                                                                                                                  |                  |
|--------------------------------|-------------------|------------------------|-----------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|------------------|
| Characteristic Trip Boundaries |                   |                        |                       | Lighting<br>Wiring<br>Protection<br><br>Control<br>Circuits                         | Business<br>Equipment<br><br>Appliances                                             | Transformers                                                                        | Power<br>Supplies<br><br>Heaters                                                    | Motors                                                                              |                                                                                     |                                                                                     |                                                                                       | General<br>Electronics | Solenoid                                                                              | Semi-<br>conductors<br>/ devices with<br>low surge-<br>current and<br>short circuit<br>withstand<br>capabilities | Reactive<br>Load |
| Thermal Trip                   |                   | Magnetic Trip          |                       |                                                                                     |                                                                                     |                                                                                     |                                                                                     | General                                                                             | Low<br>Inrush                                                                       | High<br>Inrush                                                                      | High<br>Efficiency                                                                    |                        |                                                                                       |                                                                                                                  |                  |
| Must not<br>Trip>100ms         | Must Trip<br><1hr | Must not<br>Trip>100ms | Must Trip<br>at 100ms |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                        |                                                                                       |                                                                                                                  |                  |
| B-Characteristics              |                   |                        |                       |  |  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |                        |                                                                                       |                                                                                                                  |                  |
| 1.13RC1.45R                    | C3xR              | C5xR                   | C                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                        |                                                                                       |                                                                                                                  |                  |
| C-Characteristics              |                   |                        |                       |  |  |                                                                                     |                                                                                     |                                                                                     |  |                                                                                     |                                                                                       |                        |                                                                                       |                                                                                                                  |                  |
| 1.13RC1.45R                    | C5xR              | C10xR                  | C                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                        |                                                                                       |                                                                                                                  |                  |
| D-Characteristics              |                   |                        |                       |                                                                                     |                                                                                     |  |  |                                                                                     |                                                                                     |  |                                                                                       |                        |                                                                                       |                             |                  |
| 1.13RC1.45R                    | C                 | 10xRC16xR              | C                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                        |                                                                                       |                                                                                                                  |                  |
| E-Characteristics              |                   |                        |                       |                                                                                     |                                                                                     |  |  |                                                                                     |                                                                                     |                                                                                     |  |                        |                                                                                       |                                                                                                                  |                  |
| 1.05RC1.35R                    | C                 | 14xRC18xR              | C                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                        |                                                                                       |                                                                                                                  |                  |
| G-Characteristics              |                   |                        |                       |  |                                                                                     |  |                                                                                     |  |  |                                                                                     |                                                                                       |                        |  |                                                                                                                  |                  |
| 1.05RC1.35R                    | C8xR              | C10xR                  | C                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                        |                                                                                       |                                                                                                                  |                  |
| Z-Characteristics              |                   |                        |                       |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |                        |  |                                                                                                                  |                  |
| 1.05RC1.35R                    | C2xR              | C3xR                   | C                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                        |                                                                                       |                                                                                                                  |                  |

\*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.

UL 489

UL 508

UL 1077

UL 1077  
Equipment BreakersEarth Leakage  
Circuit Breakers

ANNEX

# DLS8 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.



E511762



300600



upto 25A  
B,C,D curve



Standard Pack: 12

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)

#### One Pole

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



Standard Pack: 4

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)

#### Three Pole

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



Standard Pack: 6

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)

#### Two Pole

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



#### Add-on Neutral Pole

| Rated Current         | Type/<br>Cat. No. | Approvals |
|-----------------------|-------------------|-----------|
| 0.3-63A/<br>480Y/277V | N63UM             | UL SF     |

Standard Pack: 6

Weight:

0.775kg (1.71 lb.)

# DLS8 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.



E511762



300600



upto 25A  
B,C,D curve



Standard Pack: 12

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)

#### One Pole

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



Standard Pack: 4

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)

#### Three Pole

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



Standard Pack: 6

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)

#### Two Pole

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



#### Add-on Neutral Pole

| Rated Current         | Type/<br>Cat. No. | Approvals |
|-----------------------|-------------------|-----------|
| 0.3-63A/<br>480Y/277V | N63UM             | UL SF     |

Standard Pack: 6

Weight:

0.775kg (1.71lb.)

UL 489

UL 508

UL 1077

UL 1077  
Equipment Breakers

Earth Leakage  
Circuit Breakers

ANNEX

UL 489

UL 508

UL 1077

UL 1077  
Equipment BreakersEarth Leakage  
Circuit Breakers

ANNEX

# DLS8 Series D-Trip Characteristic

## Application Examples:

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



E511762



300600



upto 25A  
B,C,D curve



Standard Pack: 12

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)

## One Pole

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



Standard Pack: 4

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)

## Three Pole

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



Standard Pack: 6

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)

## Two Pole

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



## Add-on Neutral Pole

| Rated Current         | Type/<br>Cat. No. | Approvals |
|-----------------------|-------------------|-----------|
| 0.3-63A/<br>480Y/277V | N63UM             | UL SF     |

Standard Pack: 6

Weight:

0.775kg (1.71lb.)

## DLS8 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.



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300600



Standard Pack: 12

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)

### One Pole

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



Standard Pack: 4

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)

### Three Pole

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



Standard Pack: 6

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)

### Two Pole

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



### Add-on Neutral Pole

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

Standard Pack: 6

Weight:

0.775kg (1.71lb.)

UL 489

UL 508

UL 1077

UL 1077  
Equipment Breakers

Earth Leakage  
Circuit Breakers

ANNEX

UL 489

UL 508

UL 1077

UL 1077  
Equipment BreakersEarth Leakage  
Circuit Breakers

ANNEX

# DLS8 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.



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#### One Pole

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

Standard Pack: 12

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)



#### Three Pole

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

Standard Pack: 4

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)



#### Two Pole

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

Standard Pack: 6

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)



#### Add-on Neutral Pole

| Rated Current         | Type/<br>Cat. No. | Approvals |
|-----------------------|-------------------|-----------|
| 0.3-63A/<br>480Y/277V | N63UM             | UL SF     |

Standard Pack: 6

Weight:

0.775kg (1.71 lb.)

## DLS8 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.



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### One Pole

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

Standard Pack: 12

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)



### Three Pole

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

Standard Pack: 4

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)



### Two Pole

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

Standard Pack: 6

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)



### Add-on Neutral Pole

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

Standard Pack: 6

Weight:

0.775kg (1.71lb.)

UL 489

UL 508

UL 1077

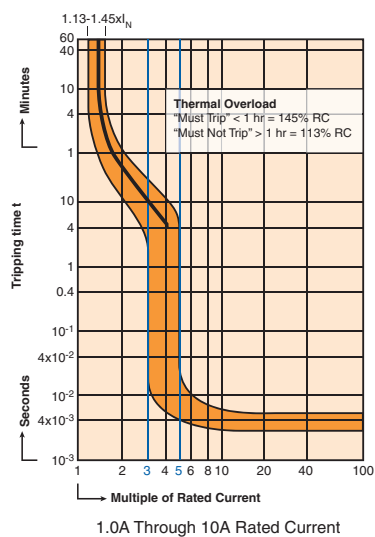
UL 1077  
Equipment Breakers

Earth Leakage  
Circuit Breakers

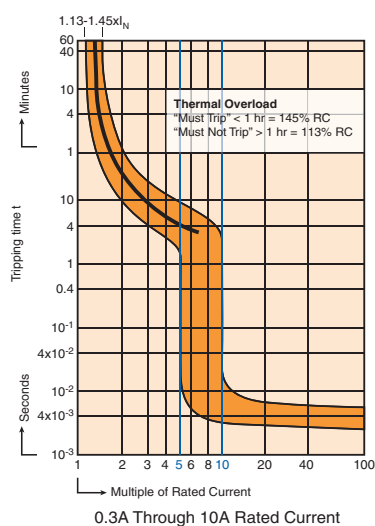
ANNEX

# DLS8 Trip Curves

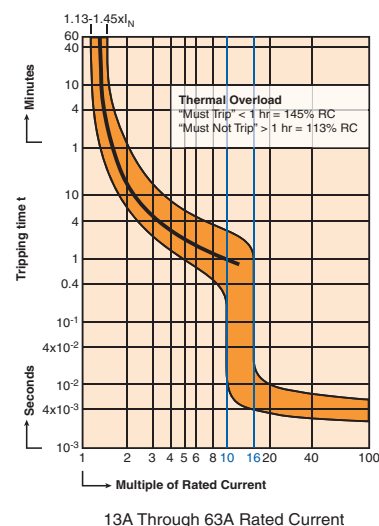
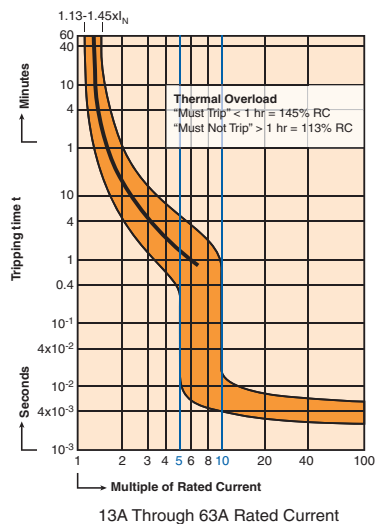
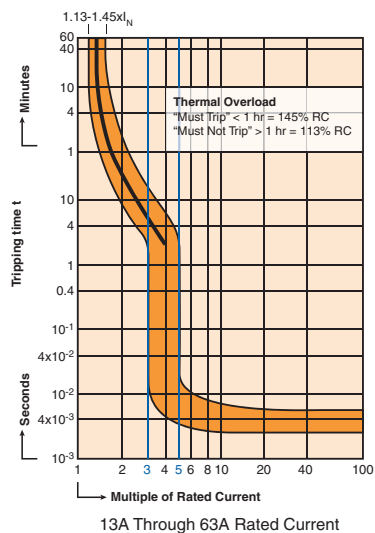
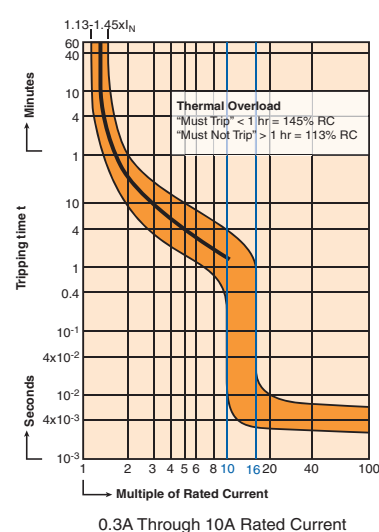
## B Trip Curve



## C Trip Curve



## D Trip Curve



### "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" 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.

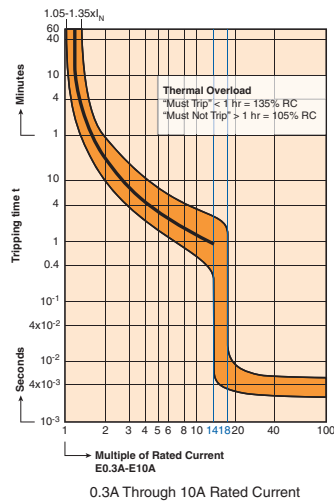
### "D" Magnetic Trip Parameters

Rated current 0.3A to 63A.

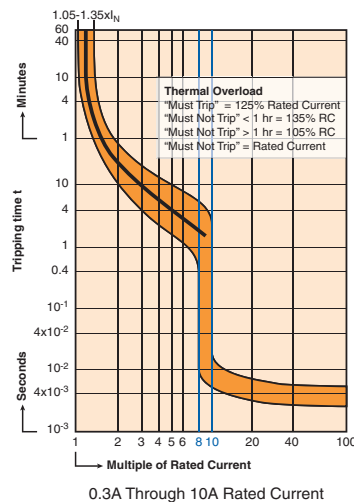
1. Hold for a minimum of 100ms at surge of 10 times rated current.
2. Trip in under 100ms at 16 times rated current.

# DLS8 Trip Curves

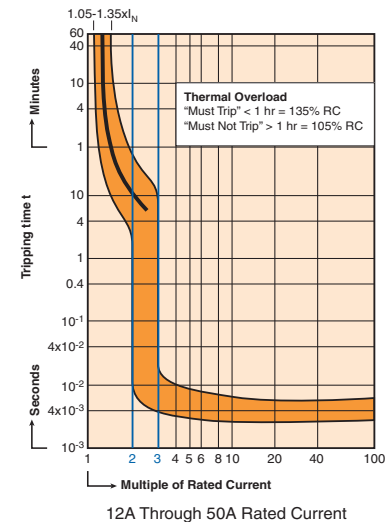
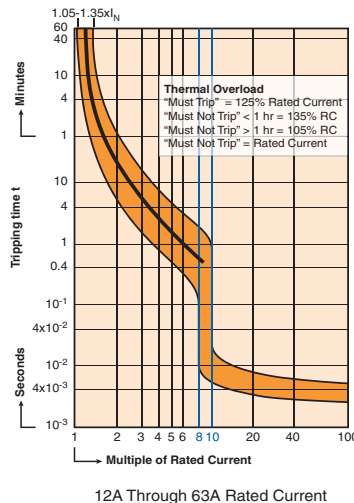
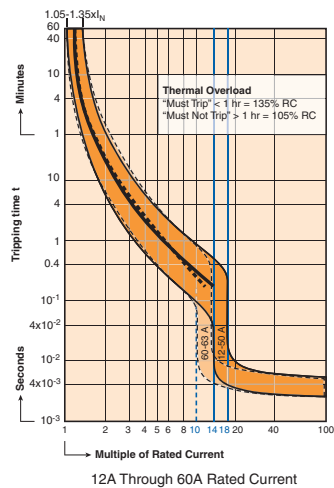
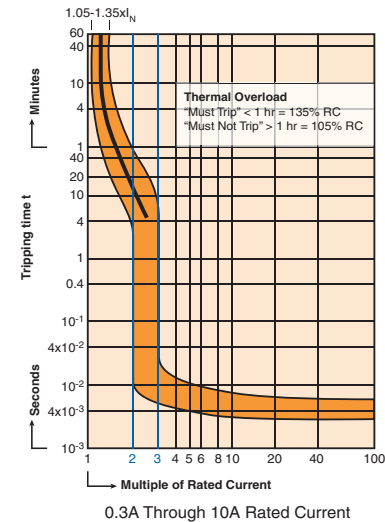
## E Trip Curve



## G Trip Curve



## Z Trip Curve



**"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.

Table HP 1: AMPERE RATINGS &amp; HORSEPOWER RATING 1 PHASE

|                          |                         |                         | FLA & LRC CONVERTED TO<br>TABLE HORSEPOWER (SEE NOTE #2)<br>USE FLA & LRC RATINGS WHERE<br>NO HP RATING IS GIVEN |                         |                         |                         |                         |                         |
|--------------------------|-------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
|                          |                         |                         | NOMINAL CIRCUIT VOLTAGE                                                                                          |                         |                         |                         |                         |                         |
| DLS8<br>RATED            | MOTOR<br>NAMEPLATE      | MOTOR<br>NAMEPLATE      | 110-120<br>VAC                                                                                                   | 200<br>VAC              | 208<br>VAC              | 220-240<br>VAC          | 265<br>VAC              | 277<br>VAC              |
| CURRENT<br>(SEE NOTE #1) | FLA<br>RATING           | STARTING/<br>LRC RATING |                                                                                                                  |                         |                         |                         |                         |                         |
| 0.30A<br>0.50A<br>0.75A  | 0.30A<br>0.50A<br>0.75A | 1.80A<br>3.00A<br>4.35A |                                                                                                                  |                         |                         |                         |                         |                         |
| 0.80A<br>1.0A<br>1.6A    | 0.80A<br>1.0A<br>1.6A   | 4.8A<br>6.0A<br>9.6A    |                                                                                                                  |                         |                         |                         |                         |                         |
| 2.0A<br>2.5A<br>3.0A     | 2.0A<br>2.5A<br>3.0A    | 12.0A<br>15.0A<br>18.0A |                                                                                                                  | 1/6hp<br>1/6hp          | 1/6hp<br>1/6hp          | 1/6hp<br>1/6hp<br>1/4hp | 1/6hp<br>1/6hp<br>1/4hp | 1/6hp<br>1/4hp<br>1/3hp |
| 3.5A<br>4.0A             | 3.5A<br>4.0A            | 21.0A<br>24.0A          |                                                                                                                  | 1/4hp<br>1/4hp          | 1/4hp<br>1/3hp          | 1/4hp<br>1/3hp          | 1/3hp<br>1/3hp          | 1/3hp<br>1/3hp          |
| 5.0A<br>6.0A<br>8.0A     | 5.0A<br>6.0A<br>8.0A    | 30.0A<br>36.0A<br>48.0A | 1/6hp<br>1/4hp<br>1/3hp                                                                                          | 1/3hp<br>1/2hp<br>3/4hp | 1/2hp<br>1/2hp<br>3/4hp | 1/2hp<br>1/2hp<br>1hp   | 1/2hp<br>3/4hp<br>1hp   | 1/2hp<br>3/4hp<br>1hp   |
| 10.0A                    | 10.0A                   | 60.0A                   | 1/2hp                                                                                                            | 1hp                     | 1hp                     | 1 1/2hp                 | 1 1/2hp                 | 2hp                     |
| 12.0A<br>12.5A           | 12.0A<br>12.5A          | 72.0A<br>75.0A          | 1/2hp<br>1/2hp                                                                                                   | 1 1/2hp<br>1 1/2hp      | 1 1/2hp<br>1 1/2hp      | 2hp<br>2hp              | 2hp<br>2hp              | 2hp<br>2hp              |
| 13.0A<br>15.0A<br>16.0A  | 13.0A<br>15.0A<br>16.0A | 78.0A<br>90.0A<br>96.0A | 1/2hp<br>3/4hp<br>1hp                                                                                            | 1 1/2hp<br>2hp<br>2hp   | 1 1/2hp<br>2hp<br>2hp   | 2hp<br>2hp<br>2hp       | 2hp<br>3hp<br>3hp       | 2hp<br>3hp<br>3hp       |
| 20.0A<br>25.0A           | 20.0A<br>25.0A          | 120.0A<br>150.0A        | 1 1/2hp<br>2hp                                                                                                   | 3hp<br>3hp              | 3hp<br>3hp              | 3hp<br>3hp              | 3hp<br>5hp              | 3hp<br>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<br>60.0A           | 50.0A<br>60.0A          | 300.0A<br>360.0A        | 3hp<br>5hp                                                                                                       | 7 1/2hp<br>10hp         | 10hp<br>10hp            | 10hp<br>10hp            | 10hp<br>10hp            | 10hp<br>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 &amp; HORSEPOWER RATING 3 PHASE &amp; 2 PHASE - 4 WIRE

| FLA & LRC RATINGS CONVERTED TO TABLE HORSEPOWER (SEE NOTE #2)<br>USE FLA & LRC RATINGS WHERE NO HP IS LISTED |                                     |                                               |                         |                         |                   |                   |                   |                   |                              |                         |                         |                         |
|--------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------------------------------|-------------------------|-------------------------|-------------------|-------------------|-------------------|-------------------|------------------------------|-------------------------|-------------------------|-------------------------|
| DLS8<br>RATED<br>CURRENT<br>(SEE NOTE #1)                                                                    | MOTOR<br>NAMEPLATE<br>FLA<br>RATING | MOTOR<br>NAMEPLATE<br>STARTING/<br>LRC RATING | 110-120<br>VAC          |                         | 200<br>VAC        |                   | 208<br>VAC        |                   | 220-240 VAC<br>(SEE NOTE #3) |                         | 440-480<br>VAC          |                         |
|                                                                                                              |                                     |                                               | Motor Design            |                         | Motor Design      |                   | Motor Design      |                   | Motor Design                 |                         | Motor Design            |                         |
|                                                                                                              |                                     |                                               | B, C, D                 | E                       | B, C, D           | E                 | B, C, D           | E                 | B, C, D                      | E                       | B, C, D                 | E                       |
| 0.30A<br>0.50A<br>0.75A                                                                                      | 0.30A<br>0.50A<br>0.75A             | 3.0A<br>5.0A<br>7.5A                          |                         |                         |                   |                   |                   |                   |                              |                         |                         |                         |
| 0.80A<br>1.0A<br>1.6A                                                                                        | 0.80A<br>1.0A<br>1.6A               | 8.0A<br>10.0A<br>16.0A                        |                         |                         |                   |                   |                   |                   |                              |                         | 1/2hp                   | 1/2hp                   |
| 2.0A<br>2.5A<br>3.0A                                                                                         | 2.0A<br>2.5A<br>3.0A                | 20.0A<br>25.0A<br>30.0A                       |                         |                         | 1/2hp<br>1/2hp    | 1/2hp<br>1/2hp    | 1/2hp<br>1/2hp    | 1/2hp<br>1/2hp    | 1/2hp<br>1/2hp<br>1/2hp      | 1/2hp<br>1/2hp<br>1/2hp | 3/4hp<br>1hp<br>1 1/2hp | 3/4hp<br>1hp<br>1 1/2hp |
| 3.5A<br>4.0A                                                                                                 | 3.5A<br>4.0A                        | 35.0A<br>40.0A                                |                         |                         | 1/2hp<br>3/4hp    | 1/2hp<br>3/4hp    | 3/4hp<br>3/4hp    | 3/4hp<br>3/4hp    | 3/4hp<br>3/4hp               | 3/4hp<br>3/4hp          | 2hp<br>2hp              | 2hp<br>2hp              |
| 5.0A<br>6.0A<br>8.0A                                                                                         | 5.0A<br>6.0A<br>8.0A                | 42.0A<br>50.4A<br>67.2A                       | 1/2hp<br>1/2hp<br>3/4hp | 1/2hp<br>1/2hp<br>3/4hp | 1hp<br>1hp<br>2hp | 1hp<br>1hp<br>2hp | 1hp<br>1hp<br>2hp | 1hp<br>1hp<br>2hp | 1hp<br>1 1/2hp<br>2hp        | 1hp<br>1 1/2hp<br>2hp   | 3hp<br>3hp<br>5hp       | 3hp<br>3hp<br>5hp       |
| 10.0A                                                                                                        | 10.0A                               | 84.0A                                         | 1hp                     | 1hp                     | 2hp               | 2hp               | 2hp               | 2hp               | 3hp                          | 3hp                     | 5hp                     | 5hp                     |
| 12.0A<br>12.5A                                                                                               | 12.0A<br>12.5A                      | 100.8A<br>105.0A                              | 1 1/2hp<br>1 1/2hp      | 1 1/2hp<br>1 1/2hp      | 3hp<br>3hp        | 3hp<br>3hp        | 3hp<br>3hp        | 3hp<br>3hp        | 3hp<br>3hp                   | 3hp<br>3hp              | 7 1/2hp<br>7 1/2hp      | 7 1/2hp<br>7 1/2hp      |
| 13.0A<br>15.0A<br>16.0A                                                                                      | 13.0A<br>15.0A<br>16.0A             | 109.2A<br>126.0A<br>134.4A                    | 1 1/2hp<br>2hp<br>2hp   | 1 1/2hp<br>2hp<br>2hp   | 3hp<br>3hp<br>3hp | 3hp<br>3hp<br>3hp | 3hp<br>3hp<br>3hp | 3hp<br>3hp<br>3hp | 3hp<br>3hp<br>5hp            | 3hp<br>3hp<br>5hp       | 7 1/2hp<br>10hp<br>10hp | 7 1/2hp<br>10hp<br>10hp |
| 20.0A<br>25.0A                                                                                               | 20.0A<br>25.0A                      | 168.0A<br>210.0A                              | 3hp<br>3hp              | 3hp<br>3hp              | 5hp<br>5hp        | 5hp<br>5hp        | 5hp<br>7 1/2hp    | 5hp<br>7 1/2hp    | 5hp<br>7 1/2hp               | 5hp<br>7 1/2hp          | 10hp<br>15hp            | 10hp<br>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<br>60.0A                                                                                               | 50.0A<br>60.0A                      | 282.5A<br>339.0A                              | 7 1/2hp<br>10hp         | 7 1/2hp<br>10hp         | 15hp<br>15hp      | 10hp<br>10hp      | 15hp<br>20hp      | 10hp<br>10hp      | 15hp<br>20hp                 | 10hp<br>15hp            | 30hp<br>40hp            | 25hp<br>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).

## DLS8 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 DLS8 and power loss per pole can be approximated with basic formulas:

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

$$P_{\text{LOSS P/P}} = I_{\text{OPERATING}}^2 \times R_{\text{TABLE}}$$

Voltage drops should be reviewed when DLS8s with high internal resistance are used (e.g., load voltage minimums). Power loss should be reviewed when DLS8s with high rated currents are used (e.g., enclosure heating).

The listed DLS8 internal resistance values should not be used in calculations of available short-circuit current downstream of the DLS8. The dynamic impedance of the DLS8 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) |
| <b>Z</b>                                  | 2 - 3                             | 2.2 - 3.3                  | 2.4 - 3.6                  | 2.8 - 4.2                  | 3.0 - 4.5              |
| <b>B</b>                                  | 3 - 5                             | 3.3 - 5.5                  | 3.6 - 6.0                  | 4.2 - 7.0                  | 4.5 - 7.5              |
| <b>C</b>                                  | 5 - 10                            | 5.5 - 11.0                 | 6.0 - 12                   | 7.0 - 14.0                 | 7.5 - 15.0             |
| <b>G</b>                                  | 8 - 10                            | 8.8 - 11.0                 | 9.6 - 12.0                 | 11.2 - 14.0                | 12.0 - 15.0            |
| <b>D</b>                                  | 10 - 16                           | 11.0 - 17.6                | 12.0 - 19.2                | 14.0 - 22.4                | 15.0 - 24.0            |
| <b>E</b>                                  | 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 DLS8 (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                          | —                                    | 6,000  | —     | 4,000   | 10,000 |
| AC Motor Starting Across the Line       | 1,000                                | —      | 5,000 | 4,000   | 10,000 |
| AC Incandescent Lamps (Tungsten)        | —                                    | —      | 6,000 | 4,000   | 10,000 |
| AC Electrical Discharge Lamps (Ballast) | —                                    | 6,000  | —     | 4,000   | 10,000 |
| AC Resistance                           | —                                    | 6,000  | —     | 4,000   | 10,000 |
| <b>Manufacturers self certification</b> | 20000 ON/OFF operations with no load |        |       |         |        |

# UM (DLS8) and MA Accessories

For mounting instructions please refer to page 61.



## 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

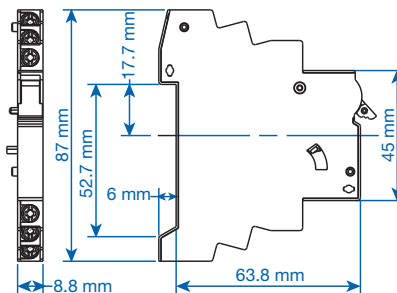
1.0mm<sup>2</sup> - 2.5mm<sup>2</sup> (18-14 AWG)

#### Stranded Wire

1.0mm<sup>2</sup> - 1.5mm<sup>2</sup> (18-16 AWG)

#### Stranded Wire with Ferrule

1.0mm<sup>2</sup> - 1.5mm<sup>2</sup> (18-16 AWG)

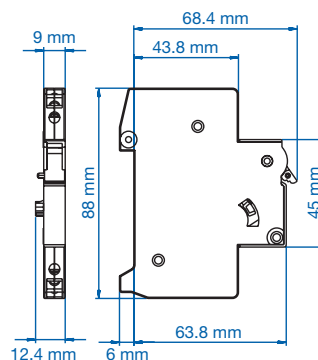


Dimensions HxxUM.



## Shunt Trip

| Type/ Cat No. | Rated Voltage U <sub>N</sub> | Max. Operating Current @ U <sub>N</sub>     | 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<br>0.5A @ 240V<br>0.58A @ 277V | 5      |



Dimensions HLS11M.

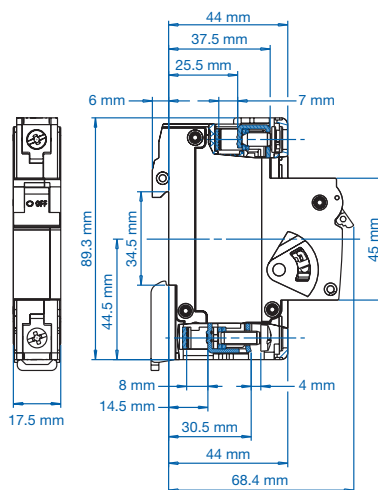
## UM (DLS8) and MA Accessories

For mounting instructions please refer to page 61.



### 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, FAxxUM.



### 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     |

\*\* UM (DLS8) 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.

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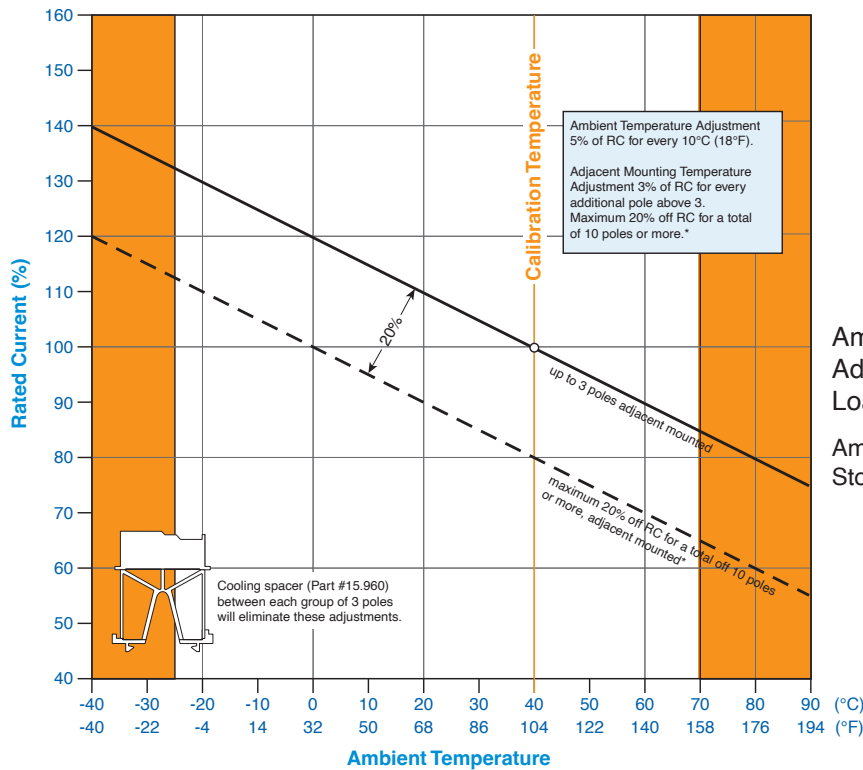
UL 1077

UL 1077  
Equipment Breakers

Earth Leakage  
Circuit Breakers

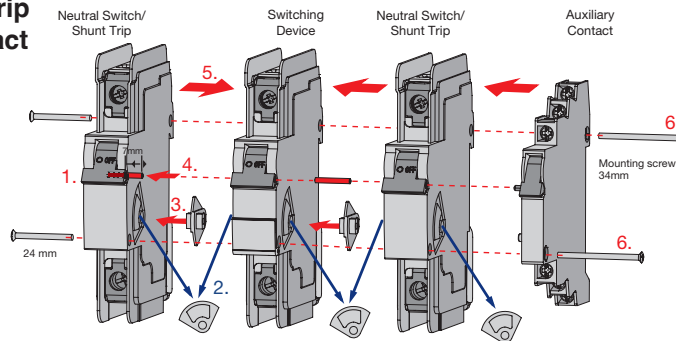
ANNEX

## Temperature Correction Curve



## Accessory Mounting Instructions

### Neutral / Shunt Trip + Auxiliary Contact

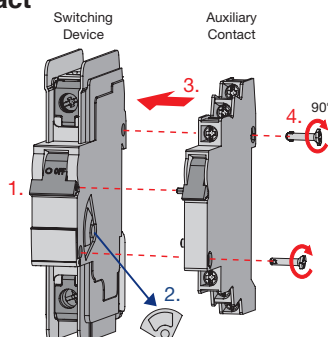


Neutral Poles N63UM, N32UL, N63UL or Shunt Trips FA..UM, FA..UL can be mounted on the right or left side of the circuit protection device.

1. Turn handle to off position.
2. Remove gray cover from the circuit protection device and accessory.
3. Insert linkage component between circuit protection device and neutral pole (N63UM, N32UL, N63UL) or shunt trip (FA..UM, FA..UL).
4. Insert connecting pin into handle.
5. Assemble circuit protection device and neutral pole (N63UM, N32UL, N63UL) or shunt trip (FA..UM, FL..UL).
6. The auxiliary contact (H..UM, H..UL) can also be mounted on the right side by using a different screw (E983419; see accessory pages 14, 32 or 41).

After final assembly check operation by moving the handle to the ON/OFF position several times.

### Auxiliary Contact



Auxiliary contact can be mounted on the right side of the circuit protection device only.

1. Turn handles to OFF position.
2. Remove gray cover from switching device.
3. Combine circuit protection device and auxiliary contact (H..UM, H..UL).
4. Insert mounting screws and connect the two devices by turning the screws 90° clockwise.

After final assembly check operation by moving the handle to the ON/OFF position several times.

UL 489

UL 508

UL 1077

UL 1077  
Equipment Breakers

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ANNEX

UL 489

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Equipment BreakersEarth Leakage  
Circuit Breakers

ANNEX

# DLS7 Series

## UL1077 Recognized Supplementary Protector

- DIN Rail Mounted
- 17.5mm width per pole
- Thermal Magnetic
- 0.5-60A / 480Y/277V AC, 50/60Hz
- 10kA Short Circuit Withstand Capacity
- Applications (on the load side of Branch Circuit Protection) include: Sensitive Electronics, Power Supplies, Appliance circuits, etc.



### UR - Series

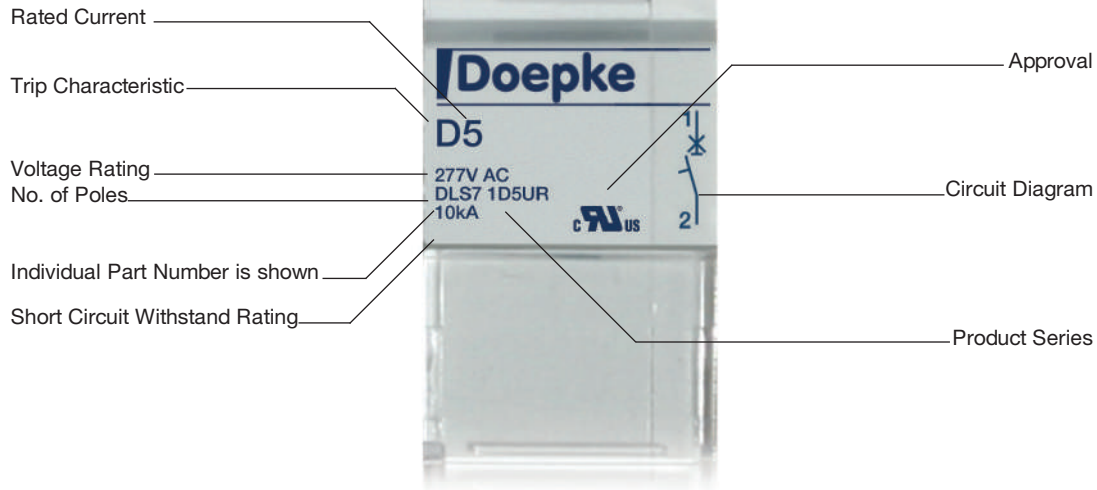
|                                               |                                                                                                                                     |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| <b>Voltage Rating</b>                         | 0.5-60A / 480Y/277V AC                                                                                                              |
| <b>Short Circuit Withstand Rating</b>         | 0.5 - 10A (RC): 10 kA with no back-up fuse<br>8 - 63A (RC): 10 kA with UL-listed Class J back-up fuse;<br>5 kA with no back-up fuse |
| <b>Calibration Temperature</b>                | 30°C (86°F)                                                                                                                         |
| <b>Ambient Temperature</b>                    | -25°C to +70°C (-13°F to 158°F )                                                                                                    |
| <b>Storage Temperature</b>                    | -40°C to +70°C (-40°F to 158°F )                                                                                                    |
| <b>Terminal Size Acceptability</b>            | Top: 18-3 AWG; Bottom: 18-2 AWG (Use Copper Wire Only 60/75°C)                                                                      |
| <b>Terminal Torque (min/max)</b>              | 2 Nm (17.7 lb.in.) / 2.5Nm (22.2 lb.in)                                                                                             |
| <b>Electrical Life</b>                        | 6,000 switching cycles ON/ OFF                                                                                                      |
| <b>Mechanical Life</b>                        | 10,000 switching cycles ON/ OFF                                                                                                     |
| <b>Vibration Resistance</b>                   | > 15g according to DIN EN 60069-2-59 during a load with 1.05 x I <sub>N</sub>                                                       |
| <b>Resistance to mechanical shocks</b>        | 25g @ 11ms                                                                                                                          |
| <b>Degree of protection acc. IEC/EN 60529</b> | IP20                                                                                                                                |
| <b>Mounting Orientation</b>                   | In any plane                                                                                                                        |

### Short Circuit Withstand Ratings

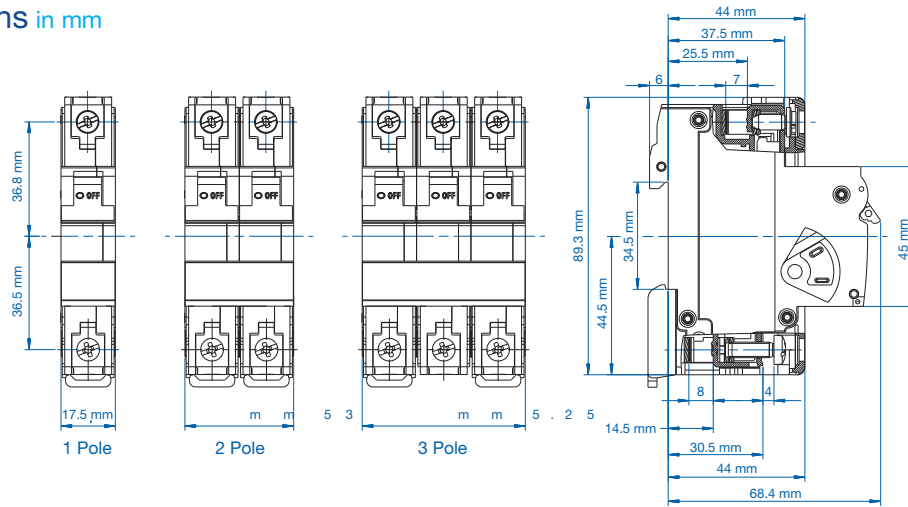
| Trip Curve | Amp Range | Backup Protection                 |                                |
|------------|-----------|-----------------------------------|--------------------------------|
|            |           | UL-Listed Class J Fuse up to 10kA | No Backup Fuse Required up to: |
| All        | 0.5 - 10A | 70A                               | 10kA                           |
| All        | 12 - 60A  | 4xRC*                             | 5kA                            |

\*up to nearest rated current

## Marking Details



## Dimensions in mm



## Application Overview

| Trip-Characteristics*          |                   |                        |                       | Applications                                                                        |                                                                                     |                                                                                     |                                                                                       |                                                                                       |                                                                                       |
|--------------------------------|-------------------|------------------------|-----------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Characteristic Trip Boundaries |                   |                        |                       | Lighting<br>Wiring<br>Protection<br>Control<br>Circuits                             | Business<br>Equipment<br>Appliances                                                 | Control<br>Transformers                                                             | Power<br>Supplies                                                                     | General<br>Electronics                                                                | Reactive<br>Load                                                                      |
| Thermal Trip                   |                   | Magnetic Trip          |                       |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                       |                                                                                       |
| Must not<br>Trip>100ms         | Must Trip<br><1hr | Must not<br>Trip>100ms | Must Trip<br>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 BreakersEarth Leakage  
Circuit Breakers

ANNEX

# DLS 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.



#### One Pole



Standard Pack: 12

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)

| Rated Current | Type/<br>Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.5A          | 1B05UR            | 277V AC       |
| 1.0A          | 1B1UR             | 277V AC       |
| 2.0A          | 1B2UR             | 277V AC       |
| 3.0A          | 1B3UR             | 277V AC       |
| 4.0A          | 1B4UR             | 277V AC       |
| 5.0A          | 1B5UR             | 277V AC       |
| 6.0A          | 1B6UR             | 277V AC       |
| 8.0A          | 1B8UR             | 277V AC       |
| 10A           | 1B10UR            | 277V AC       |
| 12A           | 1B12UR            | 277V AC       |
| 13A           | 1B13UR            | 277V AC       |
| 15A           | 1B15UR            | 277V AC       |
| 16A           | 1B16UR            | 277V AC       |
| 20A           | 1B20UR            | 277V AC       |
| 25A           | 1B25UR            | 277V AC       |
| 30A           | 1B30UR            | 277V AC       |
| 32A           | 1B32UR            | 277V AC       |
| 40A           | 1B40UR            | 277V AC       |
| 50A           | 1B50UR            | 277V AC       |
| 60A           | 1B60UR            | 277V AC       |
| 63A*          | 1B63UR            | 277V AC       |

#### Three Pole



Standard Pack: 4

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)

| Rated Current | Type/<br>Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.5A          | 3B05UR            | 480Y/277V AC  |
| 1.0A          | 3B1UR             | 480Y/277V AC  |
| 2.0A          | 3B2UR             | 480Y/277V AC  |
| 3.0A          | 3B3UR             | 480Y/277V AC  |
| 4.0A          | 3B4UR             | 480Y/277V AC  |
| 5.0A          | 3B5UR             | 480Y/277V AC  |
| 6.0A          | 3B6UR             | 480Y/277V AC  |
| 8.0A          | 3B8UR             | 480Y/277V AC  |
| 10A           | 3B10UR            | 480Y/277V AC  |
| 12A           | 3B12UR            | 480Y/277V AC  |
| 13A           | 3B13UR            | 480Y/277V AC  |
| 15A           | 3B15UR            | 480Y/277V AC  |
| 16A           | 3B16UR            | 480Y/277V AC  |
| 20A           | 3B20UR            | 480Y/277V AC  |
| 25A           | 3B25UR            | 480Y/277V AC  |
| 30A           | 3B30UR            | 480Y/277V AC  |
| 32A           | 3B32UR            | 480Y/277V AC  |
| 40A           | 3B40UR            | 480Y/277V AC  |
| 50A           | 3B50UR            | 480Y/277V AC  |
| 60A           | 3B60UR            | 480Y/277V AC  |
| 63A*          | 3B63UR            | 480Y/277V AC  |

#### Two Pole



Standard Pack: 6

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)

| Rated Current | Type/<br>Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.5A          | 2B05UR            | 480Y/277V AC  |
| 1.0A          | 2B1UR             | 480Y/277V AC  |
| 2.0A          | 2B2UR             | 480Y/277V AC  |
| 3.0A          | 2B3UR             | 480Y/277V AC  |
| 4.0A          | 2B4UR             | 480Y/277V AC  |
| 5.0A          | 2B5UR             | 480Y/277V AC  |
| 6.0A          | 2B6UR             | 480Y/277V AC  |
| 8.0A          | 2B8UR             | 480Y/277V AC  |
| 10A           | 2B10UR            | 480Y/277V AC  |
| 12A           | 2B12UR            | 480Y/277V AC  |
| 13A           | 2B13UR            | 480Y/277V AC  |
| 15A           | 2B15UR            | 480Y/277V AC  |
| 16A           | 2B16UR            | 480Y/277V AC  |
| 20A           | 2B20UR            | 480Y/277V AC  |
| 25A           | 2B25UR            | 480Y/277V AC  |
| 30A           | 2B30UR            | 480Y/277V AC  |
| 32A           | 2B32UR            | 480Y/277V AC  |
| 40A           | 2B40UR            | 480Y/277V AC  |
| 50A           | 2B50UR            | 480Y/277V AC  |
| 60A           | 2B60UR            | 480Y/277V AC  |
| 63A*          | 2B63UR            | 480Y/277V AC  |

#### Add-on Neutral Pole



| Rated Current | Type/<br>Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.3-63A       | N63UM             | 480/277V AC   |

Standard Pack: 6

Weight:

0.775kg (1.71)

\*63A is not UL Recognized.

# DLS 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.



Standard Pack: 12

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)

## One Pole

| Rated Current | Type/<br>Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.5A          | 1C05UR            | 277V AC       |
| 1.0A          | 1C1UR             | 277V AC       |
| 2.0A          | 1C2UR             | 277V AC       |
| 3.0A          | 1C3UR             | 277V AC       |
| 4.0A          | 1C4UR             | 277V AC       |
| 5.0A          | 1C5UR             | 277V AC       |
| 6.0A          | 1C6UR             | 277V AC       |
| 8.0A          | 1C8UR             | 277V AC       |
| 10A           | 1C10UR            | 277V AC       |
| 12A           | 1C12UR            | 277V AC       |
| 13A           | 1C13UR            | 277V AC       |
| 15A           | 1C15UR            | 277V AC       |
| 16A           | 1C16UR            | 277V AC       |
| 20A           | 1C20UR            | 277V AC       |
| 25A           | 1C25UR            | 277V AC       |
| 30A           | 1C30UR            | 277V AC       |
| 32A           | 1C32UR            | 277V AC       |
| 40A           | 1C40UR            | 277V AC       |
| 50A           | 1C50UR            | 277V AC       |
| 60A           | 1C60UR            | 277V AC       |
| 63A*          | 1C63UR            | 277V AC       |



Standard Pack: 4

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)

## Three Pole

| Rated Current | Type/<br>Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.5A          | 3C05UR            | 480Y/277V AC  |
| 1.0A          | 3C1UR             | 480Y/277V AC  |
| 2.0A          | 3C2UR             | 480Y/277V AC  |
| 3.0A          | 3C3UR             | 480Y/277V AC  |
| 4.0A          | 3C4UR             | 480Y/277V AC  |
| 5.0A          | 3C5UR             | 480Y/277V AC  |
| 6.0A          | 3C6UR             | 480Y/277V AC  |
| 8.0A          | 3C8UR             | 480Y/277V AC  |
| 10A           | 3C10UR            | 480Y/277V AC  |
| 12A           | 3C12UR            | 480Y/277V AC  |
| 13A           | 3C13UR            | 480Y/277V AC  |
| 15A           | 3C15UR            | 480Y/277V AC  |
| 16A           | 3C16UR            | 480Y/277V AC  |
| 20A           | 3C20UR            | 480Y/277V AC  |
| 25A           | 3C25UR            | 480Y/277V AC  |
| 30A           | 3C30UR            | 480Y/277V AC  |
| 32A           | 3C32UR            | 480Y/277V AC  |
| 40A           | 3C40UR            | 480Y/277V AC  |
| 50A           | 3C50UR            | 480Y/277V AC  |
| 60A           | 3C60UR            | 480Y/277V AC  |
| 63A*          | 3C63UR            | 480Y/277V AC  |



Standard Pack: 6

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)

## Two Pole

| Rated Current | Type/<br>Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.5A          | 2C05UR            | 480Y/277V AC  |
| 1.0A          | 2C1UR             | 480Y/277V AC  |
| 2.0A          | 2C2UR             | 480Y/277V AC  |
| 3.0A          | 2C3UR             | 480Y/277V AC  |
| 4.0A          | 2C4UR             | 480Y/277V AC  |
| 5.0A          | 2C5UR             | 480Y/277V AC  |
| 6.0A          | 2C6UR             | 480Y/277V AC  |
| 8.0A          | 2C8UR             | 480Y/277V AC  |
| 10A           | 2C10UR            | 480Y/277V AC  |
| 12A           | 2C12UR            | 480Y/277V AC  |
| 13A           | 2C13UR            | 480Y/277V AC  |
| 15A           | 2C15UR            | 480Y/277V AC  |
| 16A           | 2C16UR            | 480Y/277V AC  |
| 20A           | 2C20UR            | 480Y/277V AC  |
| 25A           | 2C25UR            | 480Y/277V AC  |
| 30A           | 2C30UR            | 480Y/277V AC  |
| 32A           | 2C32UR            | 480Y/277V AC  |
| 40A           | 2C40UR            | 480Y/277V AC  |
| 50A           | 2C50UR            | 480Y/277V AC  |
| 60A           | 2C60UR            | 480Y/277V AC  |
| 63A*          | 2C63UR            | 480Y/277V AC  |



## Add-on Neutral Pole

| Rated Current | Type/<br>Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.3-63A       | N63UM             | 480/277V AC   |

Standard Pack: 6

Weight:

0.775kg (1.71)

\*63A is not UL Recognized.

UL 489

UL 508

UL 1077

UL 1077  
Equipment BreakersEarth Leakage  
Circuit Breakers

ANNEX

# DLS9 Series

## D-Trip

### Characteristic

#### Application Examples:

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



Standard Pack: 12

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)

#### One Pole

| Rated Current | Type/<br>Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.5A          | 1D05UR            | 277V AC       |
| 1.0A          | 1D1UR             | 277V AC       |
| 2.0A          | 1D2UR             | 277V AC       |
| 3.0A          | 1D3UR             | 277V AC       |
| 4.0A          | 1D4UR             | 277V AC       |
| 5.0A          | 1D5UR             | 277V AC       |
| 6.0A          | 1D6UR             | 277V AC       |
| 8.0A          | 1D8UR             | 277V AC       |
| 10A           | 1D10UR            | 277V AC       |
| 12A           | 1D12UR            | 277V AC       |
| 13A           | 1D13UR            | 277V AC       |
| 15A           | 1D15UR            | 277V AC       |
| 16A           | 1D16UR            | 277V AC       |
| 20A           | 1D20UR            | 277V AC       |
| 25A           | 1D25UR            | 277V AC       |
| 30A           | 1D30UR            | 277V AC       |
| 32A           | 1D32UR            | 277V AC       |
| 40A           | 1D40UR            | 277V AC       |
| 50A           | 1D50UR            | 277V AC       |
| 60A           | 1D60UR            | 277V AC       |
| 63A*          | 1D63UR            | 277V AC       |



Standard Pack: 4

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)

#### Three Pole

| Rated Current | Type/<br>Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.5A          | 3D05UR            | 480Y/277V AC  |
| 1.0A          | 3D1UR             | 480Y/277V AC  |
| 2.0A          | 3D2UR             | 480Y/277V AC  |
| 3.0A          | 3D3UR             | 480Y/277V AC  |
| 4.0A          | 3D4UR             | 480Y/277V AC  |
| 5.0A          | 3D5UR             | 480Y/277V AC  |
| 6.0A          | 3D6UR             | 480Y/277V AC  |
| 8.0A          | 3D8UR             | 480Y/277V AC  |
| 10A           | 3D10UR            | 480Y/277V AC  |
| 12A           | 3D12UR            | 480Y/277V AC  |
| 13A           | 3D13UR            | 480Y/277V AC  |
| 15A           | 3D15UR            | 480Y/277V AC  |
| 16A           | 3D16UR            | 480Y/277V AC  |
| 20A           | 3D20UR            | 480Y/277V AC  |
| 25A           | 3D25UR            | 480Y/277V AC  |
| 30A           | 3D30UR            | 480Y/277V AC  |
| 32A           | 3D32UR            | 480Y/277V AC  |
| 40A           | 3D40UR            | 480Y/277V AC  |
| 50A           | 3D50UR            | 480Y/277V AC  |
| 60A           | 3D60UR            | 480Y/277V AC  |
| 63A*          | 3D63UR            | 480Y/277V AC  |



Standard Pack: 6

Weight:

0.3A - 32A

1.75kg (3.86 lb.)

40A - 63A

2.07kg (4.56 lb.)

#### Two Pole

| Rated Current | Type/<br>Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.5A          | 2D05UR            | 480Y/277V AC  |
| 1.0A          | 2D1UR             | 480Y/277V AC  |
| 2.0A          | 2D2UR             | 480Y/277V AC  |
| 3.0A          | 2D3UR             | 480Y/277V AC  |
| 4.0A          | 2D4UR             | 480Y/277V AC  |
| 5.0A          | 2D5UR             | 480Y/277V AC  |
| 6.0A          | 2D6UR             | 480Y/277V AC  |
| 8.0A          | 2D8UR             | 480Y/277V AC  |
| 10A           | 2D10UR            | 480Y/277V AC  |
| 12A           | 2D12UR            | 480Y/277V AC  |
| 13A           | 2D13UR            | 480Y/277V AC  |
| 15A           | 2D15UR            | 480Y/277V AC  |
| 16A           | 2D16UR            | 480Y/277V AC  |
| 20A           | 2D20UR            | 480Y/277V AC  |
| 25A           | 2D25UR            | 480Y/277V AC  |
| 30A           | 2D30UR            | 480Y/277V AC  |
| 32A           | 2D32UR            | 480Y/277V AC  |
| 40A           | 2D40UR            | 480Y/277V AC  |
| 50A           | 2D50UR            | 480Y/277V AC  |
| 60A           | 2D60UR            | 480Y/277V AC  |
| 63A*          | 2D63UR            | 480Y/277V AC  |



#### Add-on Neutral Pole

| Rated Current | Type/<br>Cat. No. | Rated Voltage |
|---------------|-------------------|---------------|
| 0.3-63A       | N63UM             | 480/277V AC   |

Standard Pack: 6

Weight:

0.775kg (1.71)

\*63A is not UL Recognized.

## DLS9 Series Accessories

For mounting instructions please refer to page 61.



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/<br>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** 1.0mm<sup>2</sup> - 2.5mm<sup>2</sup> (18-14 AWG)  
**Stranded Wire** 1.0mm<sup>2</sup> - 1.5mm<sup>2</sup> (18-16 AWG)  
**Stranded Wire with Ferrule** 1.0mm<sup>2</sup> - 1.5mm<sup>2</sup> (18-16 AWG)

### Shunt Trip



| Type/ Cat No. | Rated Voltage U <sub>N</sub>  | Max. Operating Current @ U <sub>N</sub>     | 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 - 240 V AC/DC,<br>277V AC | 0.25A @ 110V<br>0.5A @ 240V<br>0.58A @ 277V | 5      |

### Neutral Pole

| Type/ Cat No. | Rated Current I <sub>N</sub> | Rated Voltage U <sub>N</sub> | 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



### Mounting Screw 34mm

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



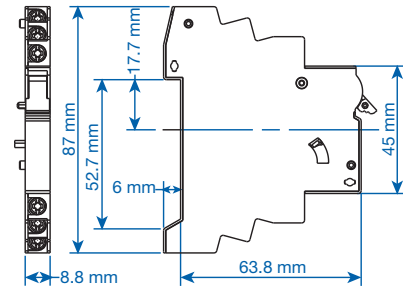
| Type/ Cat No. | Std Pk |
|---------------|--------|
| E983419       | 10     |



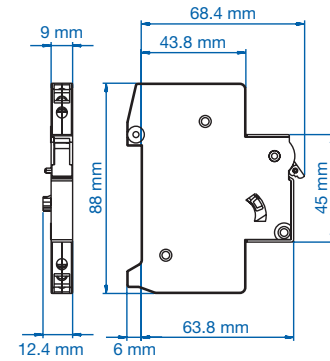
### Lock-out Adapter\*\*

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

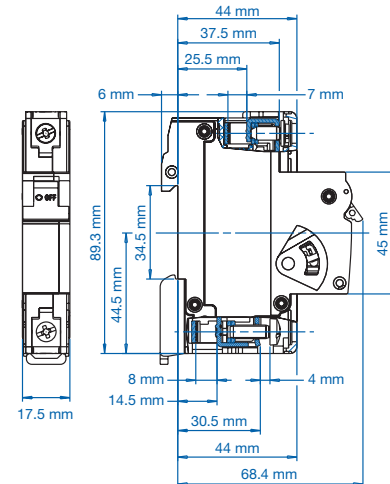
\*\* UR series can also be locked in the on and off position by simply using a common lead or meter seal, which gets fed through the hole in the handle and a corresponding hole in the housing.



Dimensions HxxUM.



Dimensions HLS11M.



Dimensions N63UM, FxaxUM.

UL 489

UL 508

UL 1077

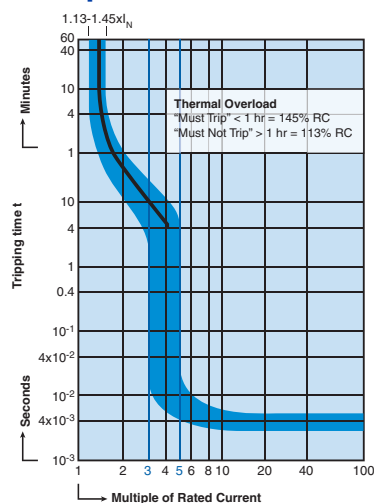
UL 1077  
Equipment Breakers

Earth Leakage  
Circuit Breakers

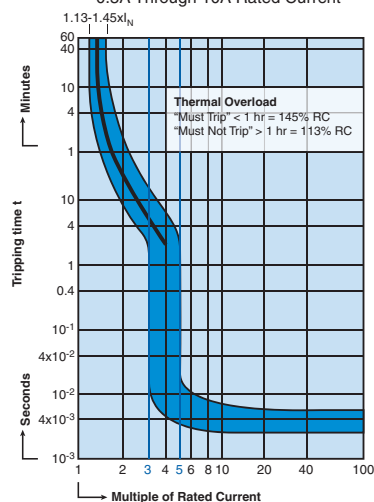
ANNEX

# DLS7 Series Trip Curves

## B Trip Curve



0.5A Through 10A Rated Current



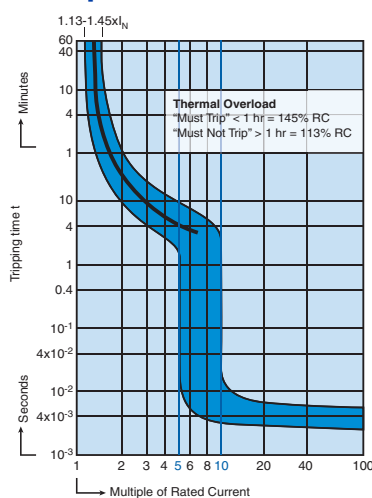
12A Through 63A Rated Current

### "B" Magnetic Trip Parameters

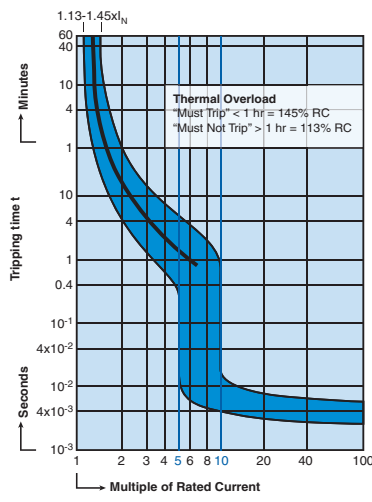
Rated current 0.5A to 63A.

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



0.5A Through 10A Rated Current



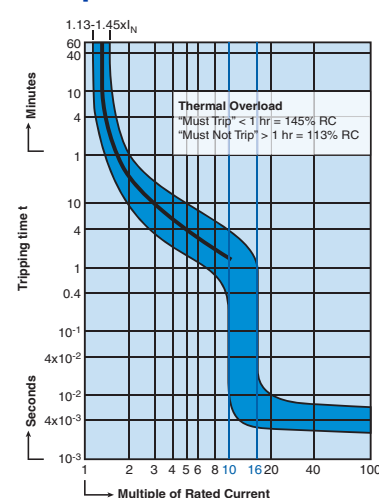
12A Through 63A Rated Current

### "C" Magnetic Trip Parameters

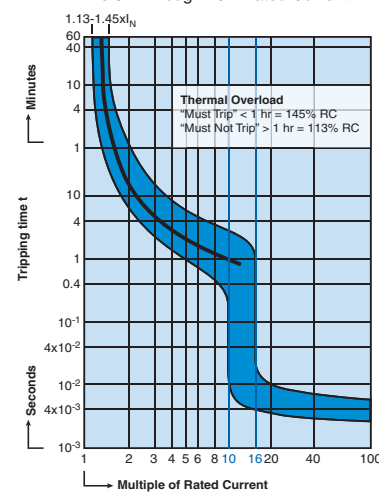
Rated current 0.5A to 63A.

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



0.5A Through 10A Rated Current



12A Through 63A Rated Current

### "D" Magnetic Trip Parameters

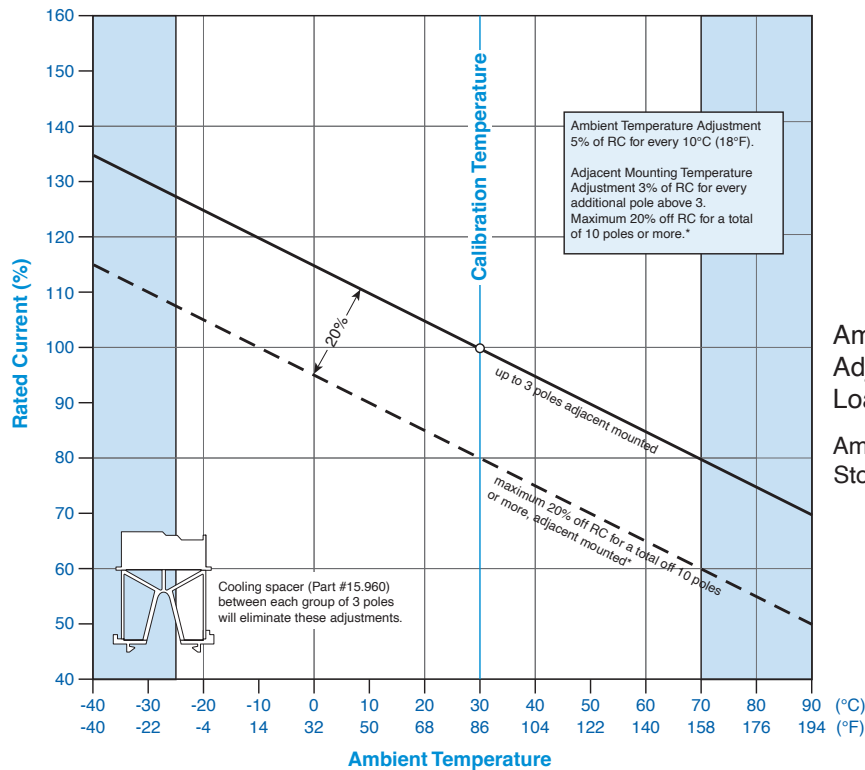
Rated current 0.5A to 63A.

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

## UR Series Internal Resistance

| Rated Current<br>(A) | Trip Characteristic |            |        |
|----------------------|---------------------|------------|--------|
| B<br>(Ohm)           | C<br>(Ohm)          | D<br>(Ohm) |        |
| 0.5                  | 8.0400              | 6.8540     | 6.0009 |
| 1.0                  | 1.7000              | 1.7000     | 1.7560 |
| 2.0                  | 0.4190              | 0.4190     | 0.4190 |
| 3.0                  | 0.2020              | 0.2020     | 0.2020 |
| 4.0                  | 0.1090              | 0.1090     | 0.1090 |
| 5.0                  | 0.0654              | 0.0654     | 0.0654 |
| 6.0                  | 0.0528              | 0.0528     | 0.0491 |
| 8.0                  | 0.0278              | 0.0278     | 0.0240 |
| 10                   | 0.0216              | 0.0216     | 0.0187 |
| 12/ 13               | 0.0113              | 0.0084     | 0.0085 |
| 15/ 16               | 0.0085              | 0.0085     | 0.0076 |
| 20                   | 0.0067              | 0.0067     | 0.0064 |
| 25                   | 0.0050              | 0.0050     | 0.0041 |
| 30/ 32               | 0.0032              | 0.0032     | 0.0027 |
| 40                   | 0.0025              | 0.0025     | 0.0022 |
| 50                   | 0.0019              | 0.0019     | 0.0018 |
| 60/ 63*              | 0.0018              | 0.0018     | 0.0017 |

## Temperature Correction Curve



Ambient Temperature and  
Adjacent Mounting/  
Loading Adjustment

Ambient Temperature -25°C to 70°C  
Storage Temperature -40°C to 70°C

UL 489

UL 508

UL 1077

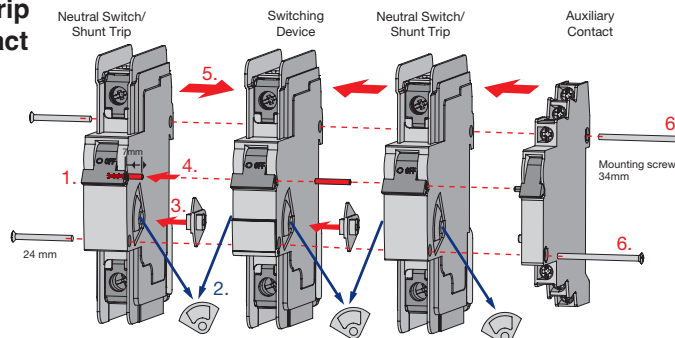
UL 1077  
Equipment Breakers

Earth Leakage  
Circuit Breakers

ANNEX

## Accessory Mounting Instructions

### Neutral / Shunt Trip + Auxiliary Contact

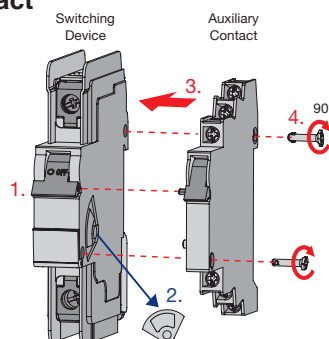


Neutral Poles N63UM, N32UL, N63UL or Shunt Trips FA..UM, FA..UL can be mounted on the right or left side of the circuit protection device.

1. Turn handle to off position.
2. Remove gray cover from the circuit protection device and accessory.
3. Insert linkage component between circuit protection device and neutral pole (N63UM, N32UL, N63UL) or shunt trip (FA..UM, FA..UL).
4. Insert connecting pin into handle.
5. Assemble circuit protection device and neutral pole (N63UM, N32UL, N63UL) or shunt trip (FA..UM, FL..UL).
6. The auxiliary contact (H..UM, H..UL) can also be mounted on the right side by using a different screw (E983419; see accessory pages 14, 32 or 41).

After final assembly check operation by moving the handle to the ON/OFF position several times.

### Auxiliary Contact



Auxiliary contact can be mounted on the right side of the circuit protection device only.

1. Turn handles to OFF position.
2. Remove gray cover from switching device.
3. Combine circuit protection device and auxiliary contact (H...UM, H...UL).
4. Insert mounting screws and connect the two devices by turning the screws 90° clockwise.

After final assembly check operation by moving the handle to the ON/OFF position several times.