

UL 489

UL 508

UL 1077

UL 1077
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	
Voltage Rating	0.5-60A / 480Y/277V AC
Short Circuit Withstand Rating	0.5 - 10A (RC): 10 kA with no back-up fuse 8 - 63A (RC): 10 kA with UL-listed Class J back-up fuse; 5 kA with no back-up fuse
Calibration Temperature	30°C (86°F)
Ambient Temperature	-25°C to +70°C (-13°F to 158°F)
Storage Temperature	-40°C to +70°C (-40°F to 158°F)
Terminal Torque (min/max)	2 Nm (17.7 lb.in.) / 2.5Nm (22.2 lb.in)
Electrical Life	6,000 switching cycles ON/ OFF
Mechanical Life	10,000 switching cycles ON/ OFF
Vibration Resistance	> 15g according to DIN EN 60069-2-59 during a load with 1.05 x I _N
Resistance to mechanical shocks	25g @ 11ms
Degree of protection acc. IEC/EN 60529	IP20
Mounting Orientation	In any plane

Short Circuit Withstand Ratings

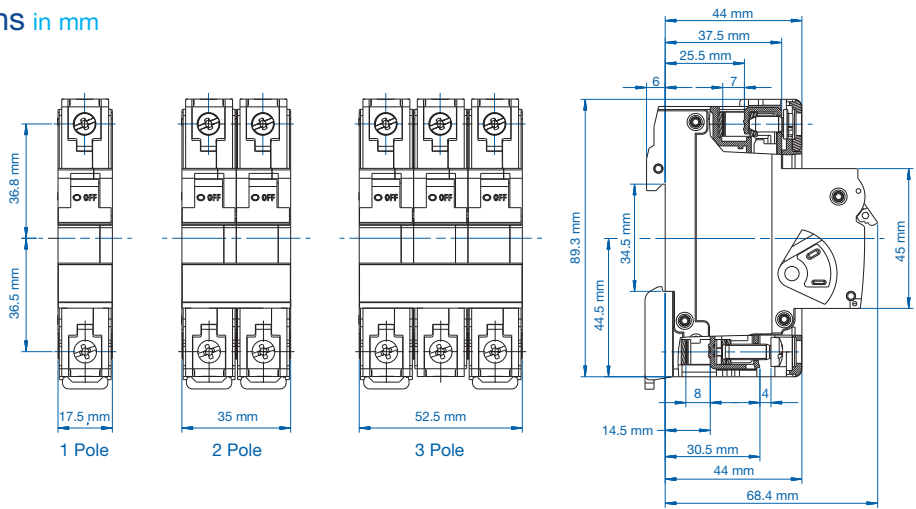
Trip Curve	Amp Range	Backup Protection	
		UL-Listed Class J Fuse up to 10kA	No Backup Fuse Required up to:
All	0.5 - 10A	70A	10kA
All	12 - 60A	4xRC*	5kA

*up to nearest rated current

Marking Details



Dimensions in mm



Application Overview

Trip-Characteristics*				Applications					
Characteristic Trip Boundaries				Lighting Wiring Protection Control Circuits	Business Equipment Appliances	Control Transformers	Power Supplies	General Electronics	Reactive Load
Thermal Trip		Magnetic Trip							
Must not Trip>100ms	Must Trip <1hr	Must not Trip>100ms	Must Trip at 100ms						
B-Characteristics									
1.13xRC	1.45xRC	3xRC	5xRC						
C-Characteristics									
1.13xRC	1.45xRC	5xRC	10xRC						
D-Characteristics									
1.13xRC	1.45xRC	10xRC	20xRC						

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



Warning!

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

UL 489

UL 508

UL 1077

UL 1077
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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/ 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/ 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/ 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/ 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/ 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/ 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/ 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/ 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 Breakers

Earth Leakage
Circuit Breakers

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UL 508

UL 1077

UL 1077
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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/ 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/ 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/ 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/ 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.



Auxiliary Contact, Alarm Switch



Type/ Cat No.	Description	Contacts Type	Std Pk
H10UM	1 Auxiliary Contact	1NO	6
H11UM	2 Auxiliary Contacts	1NO + 1NC	6
H12UM	3 Auxiliary Contacts	1NO + 2NC	6
H21UM	3 Auxiliary Contacts	2NO + 1NC	6
HLS11M*	1 Auxiliary/ 1 Signal Contacts	1CO + 1CO (Signal)	6

Rated Operating Currents

10A@240V AC
3A@110V DC
1A@220V DC

Minimum Contact Load

1mA @ 24V DC

Torque

max. 0.8Nm (7 lb.in)

Wire Range:

Single Wire 1.0mm² - 2.5mm² (18-14 AWG)
Stranded Wire 1.0mm² - 1.5mm² (18-16 AWG)
Stranded Wire with Ferrule 1.0mm² - 1.5mm² (18-16 AWG)

Shunt Trip



Type/ Cat No.	Rated Voltage U _N	Max. Operating Current @ U _N	Std Pk
FA12UM	12V AC/DC	1.3A	5
FA24UM	24V AC/DC	0.6A	5
FA48UM	48 - 72V AC/DC	0.2A	5
FA110UM	110 - 240 V AC/DC, 277V AC	0.25A @ 110V 0.5A @ 240V 0.58A @ 277V	5

Neutral Pole

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

Touch Protection Caps

to cover the terminal screw holes on the switching devices, neutral Poles and shunt trips for increased touch protection.



Type/ Cat No.	Std Pk	Type/ Cat No.	Std Pk
BS.UL	100	15.960	1

Cooling Spacer



Mounting Screw 34mm

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

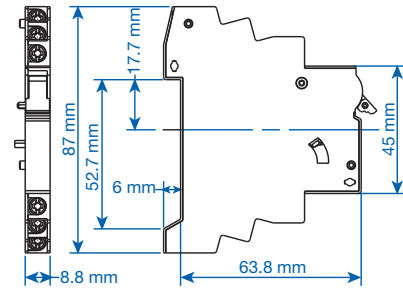


Type/ Cat No.	Std Pk	Type/ Cat No.	Std Pk
E983419	10	EASS	10

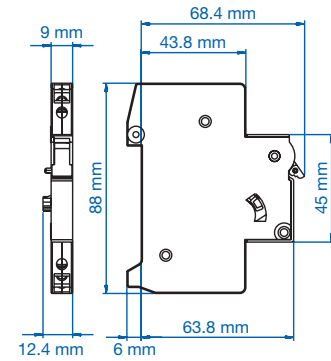


Lock-out Adapter**

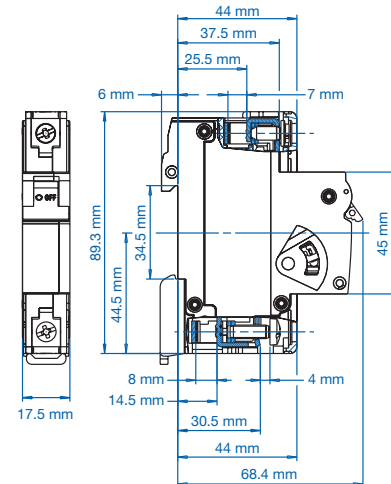
** UR series can also be locked in the on and off position by simply using a common lead or meter seal, which gets fed through the hole in the handle and a corresponding hole in the housing.



Dimensions HxxUM.



Dimensions HLS11M.



Dimensions N63UM, FxUM.

UL 489

UL 508

UL 1077

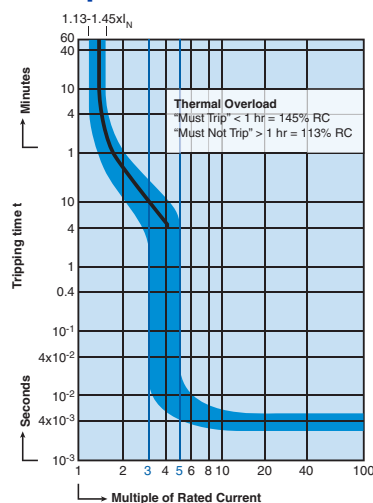
UL 1077
Equipment Breakers

Earth Leakage
Circuit Breakers

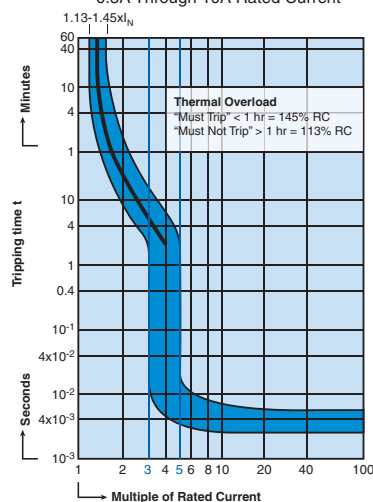
ANNEX

DLS7 Series Trip Curves

B Trip Curve



0.5A Through 10A Rated Current



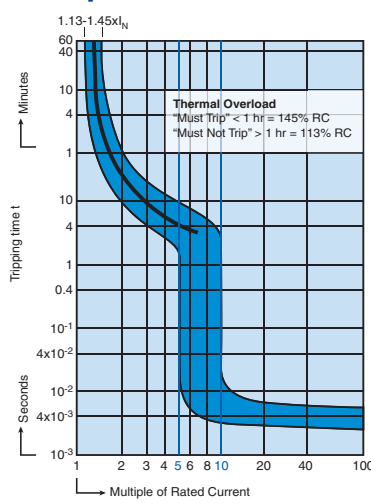
12A Through 63A Rated Current

"B" Magnetic Trip Parameters

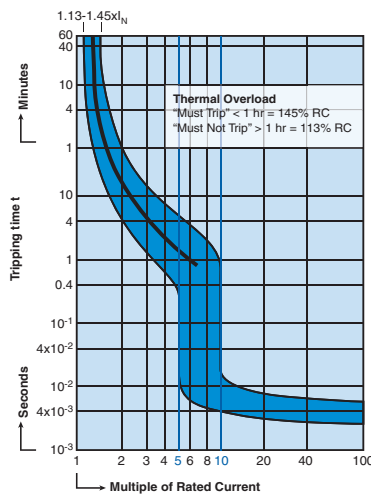
Rated current 0.5A to 63A.

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



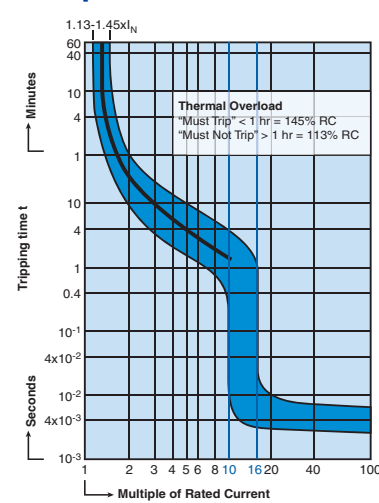
12A Through 63A Rated Current

"C" Magnetic Trip Parameters

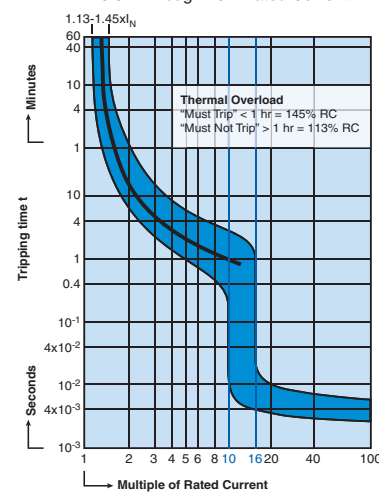
Rated current 0.5A to 63A.

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

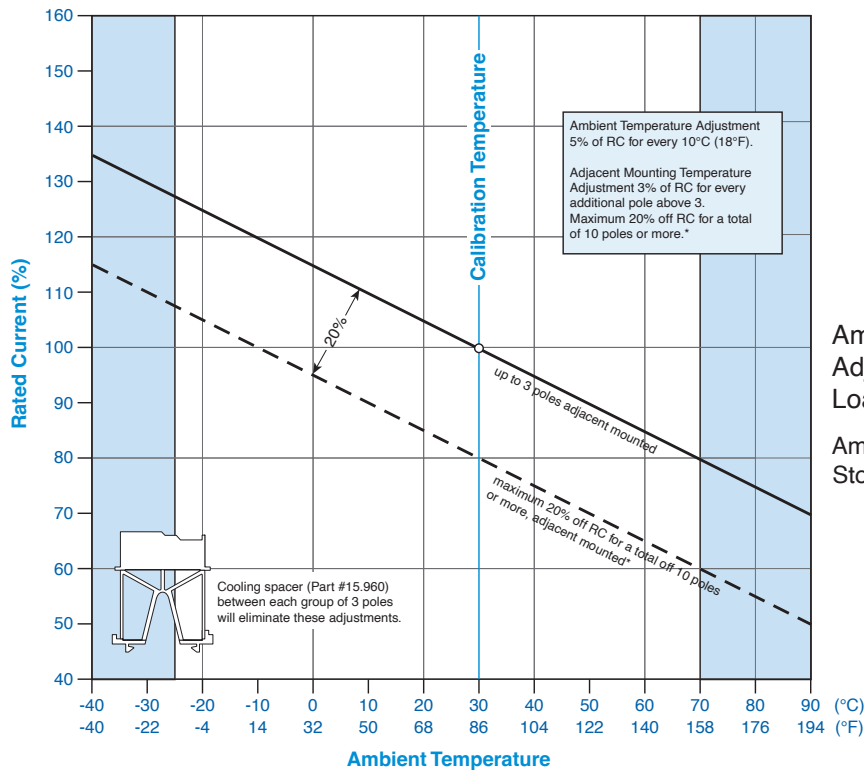
Rated current 0.5A to 63A.

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 (A)	Trip Characteristic		
B (Ohm)	C (Ohm)	D (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

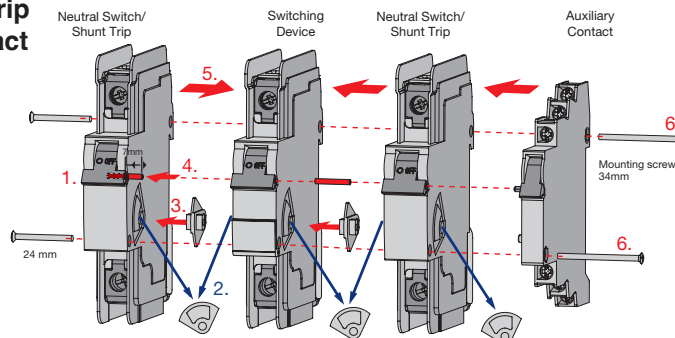
UL 1077
Equipment Breakers

Earth Leakage
Circuit Breakers

ANNEX

Accessory Mounting Instructions

Neutral / Shunt Trip + Auxiliary Contact

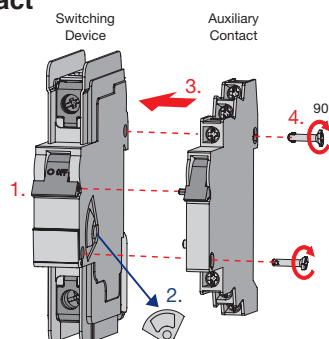


Neutral Poles N63UM, N32UL, N63UL or Shunt Trips FA..UM, FA..UL can be mounted on the right or left side of the circuit protection device.

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.