

Thermal Circuit Breakers

Reliable, Cost-effective Circuit Protection



 **Carling Technologies®**
Innovative Designs. Powerful Solutions.



Transforming Customer Needs into Customer Solutions

Carling Technologies Sales, Service and Engineering teams do much more than manufacture electrical components, they engineer powerful solutions! By working closely with a customer's product team and understanding the requirements of the specific application, Carling's product experts can tailor switching and circuit protection solutions to meet any customer's needs—cost effectively.

Since the company was founded in 1920, there are few products that Carling Technologies hasn't turned "ON" and fewer industries that haven't turned to Carling for solutions. With four ISO registered manufacturing facilities and technical sales offices worldwide, Carling now ranks among the world's largest, privately owned manufacturers of hydraulic magnetic circuit breakers, thermal circuit breakers, electrical switches, electronic switches, miniature switches, power distribution centers, digital switching systems and electronic controls.

Globally, there are over 2,000 employees working for Carling, providing solutions to customers' application needs with innovation, value, and world-class service for both standard and custom products. Carling's breadth and depth of standard product offerings gives customers literally millions of configuration choices to meet the demands of its Strategic Markets:

- Marine
- Military
- Renewable Energy
- Telecom/Datacom
- Transportation



Additional markets served by Carling products include: Audio Visual, Commercial Food Equipment, Commercial HVAC, Floor Care, Generators, Industrial Control, Kitchen & Small Appliances, Security Systems, Test & Measurement equipment, among others.

If the standard product does not meet the application requirements, the engineering team at Carling has the expertise to customize solutions faster and more creatively thanks in measure to over ninety years of experience as an innovative company that manufactures a diverse range of products. The Carling Sales, Service and Engineering teams work closely with the customer's engineering team to advance a custom project from initial concept to final design and product release, respecting both quality and cost throughout the process. With extensive field knowledge and resources available, Carling Technologies can ensure that the products created for the customer are of superior quality from the start, thus avoiding costly secondary operations or modifications. Carling's commitment to excellence consistently delivers "Quality by Design," the company mission.

Carling has an extensive network of Sales Representatives and Distributors to assist with Carling products, or contact a Carling Technologies' Technical Sales Representative to design innovative, cost-effective, quality engineered solutions that exceed the tough demands of today's applications.

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Thermal Circuit Protectors

This catalog features Carling Technologies current line of thermal circuit protectors, from 3 to 60 amps, which offer reliable, cost effective circuit protection.

Thermal circuit protectors utilize a bimetallic strip electrically in series with the circuit. The heat generated by the current during an overload deforms the bimetallic strip and trips the breaker.

Thermal protectors have a significant advantage over fuses in that they can be reset after tripping. They can also be used as the main ON/OFF switch for the equipment being protected.

Typical Applications Include:

- ♦ Household Appliances
- ♦ Transportation
- ♦ Marine
- ♦ Power Strips
- ♦ Medical Equipment
- ♦ Audio Visual Equipment
- ♦ Power Supplies
- ♦ Exercise Equipment
- ♦ Among Others



C1005B-SERIES



CTB-SERIES



CMB-SERIES



CLB- SERIES

NUMBER OF POLES	Single	Single	Single	Single
ACTUATOR STYLE	Rocker / Lighted Rocker	Rocker	Pushbutton	Pushbutton
MAXIMUM CURRENT & VOLTAGE RATINGS	7 to 16A, 125-250VAC, 32VDC	3 to 16A, 125-250VAC, 50VDC	3 to 20A, 125-250VAC, 32VDC	3 to 60A, 125-250VAC, 32VDC
MAXIMUM INTERRUPTING CAPACITY	1000A	1000A	2500A @ 32 VDC	2500A @ 32 VDC
AVAILABLE CIRCUITS	Series Trip	Series Trip	Series Trip	Series Trip
TERMINAL OPTIONS	.250" Tab Solder Lug	.250" Tab	.250" Tab .250" Tab with 90° bend	.250" Tab .250" Tab with 90° bend Screw Terminal Screw Terminal w/ 90° bend
MOUNTING METHOD	Front Panel Snap-in	Front Panel Snap-in	Front Panel Front Panel Snap-in	Front Panel Front Panel Snap-in
OPERATING TEMPERATURE	-10°C to 60°C	-10°C to 60°C	-10°C to 60°C	-10°C to 60°C
AGENCY APPROVALS	UL, CUL, TUV	UL, CUL, VDE, CE	UL, CUL, CSA, TUV, CE, UL1500 / ISO8846 for ignition protection / marine	UL, CUL, CSA, TUV, CE, UL1500 / ISO8846 for ignition protection / marine

C1005B-Series

THERMAL CIRCUIT PROTECTORS

The C1005B-Series offers the functionality of a switch and circuit breaker in a single compact package, which fits an industry standard. 500 x 1.125 mounting hole. This combo device eliminates the need for both a switch and thermal circuit protector on customer panels. By using only this multipurpose product, wiring and assembly costs are greatly reduced, while at the same time, valuable panel real estate is saved.

The C1005B-Series is available lighted or unlighted, in a variety of colors, with solder lug or .250 Tabs. Current ratings range from 7-16 amps@125 and 250 VAC and up to 32 VDC.

Product Applications:

Household and Commercial Appliances
 Transportation
 Marine
 Telecommunications
 Power Strips
 Audio-visual Equipment
 Medical equipment
 Power supplies
 Generators

Safety Regulatory Agency Approvals:

UL, CUL, TUV



A SWITCH & CIRCUIT PROTECTOR
 IN ONE SMALL, COMPACT PACKAGE!

Product Highlights:

- ◆ Industry Standard .550 X 1.125 mounting hole (14mm X 28.6mm)
- ◆ Ratings from 7-16 Amps
- ◆ Standard Reset/Off Legend
- ◆ Aesthetically pleasing Curved Rocker & Angular Bezel
- ◆ .250 Tabs or Solder Lug Terminations
- ◆ 65°C Max Operating Temperature
- ◆ 1000 AIC Interrupting Capacity
- ◆ 1500 VAC Dielectric Strength
- ◆ 100 megohms at 500 VDC Insulation Resistance
- ◆ Compact Space-saving Envelope
- ◆ UL1077, UL1363, IEC 60934

C1005B - 3 B 15 1 B R 3

1
Series

2 3
Illumination Termination

4
Current Rating

5
Contact Material

6
Bezel Legend

7
Rocker Color

8
Lamp Voltage

**1 SERIES
C1005B**

2 ILLUMINATION

- 2 Non-Lighted
- 3 Lighted

3 TERMINATION

- A Solder Lug
- B .250 Tab

4 CURRENT RATING (AMPERES)

07	7 amps	12	12 amps
08	8 amps	13	13 amps
09	9 amps	14	14 amps
10	10 amps	15	15 amps
11	11 amps	16	16 amps

5 CONTACT MATERIAL¹

- 1 Silver Cad Oxide (switch), Silver plated copper (breaker)
- 3 Silver Cad Oxide (switch & breaker)

6 BEZEL LEGEND IMPRINT

- B Black Bezel with white legend
- W White Bezel with black legend
- C Gray Bezel with black legend

7 ROCKER COLOR

- R Red
- G Green
- U Blue
- T Clear

Note: RESET OFF Legend is standard.

8 LAMP VOLTAGE

- 3 Neon Lamp 125/250 VAC
- 9 Non-lighted

Notes:

- Silver cad oxide switch and breaker contacts are available as a special order. Specify 3 for selection 5

Time Delay

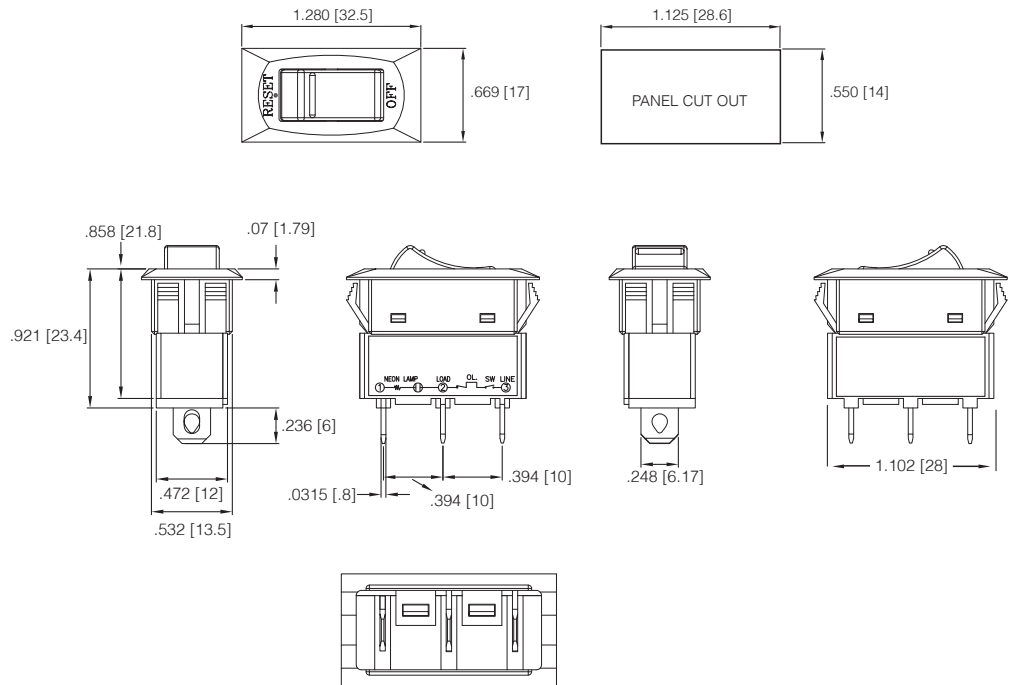
OVERLOAD	TRIP TIME
100%	NO TRIP
150%	TRIP IN 1 HR.
200%	5 - 35 SEC.
300%	1 - 10 SEC.
400%	.45 - 5.5 SEC.
600%	.1 - 20 SEC.

CORRECTION FACTOR ¹	
0°C	x .67
10°C	x .72
15°C	x .83
18°C	x .87
25°C	x 1.00
32°C	x 1.05
40°C	x 1.18
50°C	x 1.33
60°C	x 1.67

Notes:

- To adjust the breaker ratings for ambient temperature multiply the breaker rating by the factor. (ex: 5 amp rating at 0°C: 5 x .67 = 3.3 amp. Select 3 amp rating.)
2500 amps @ 32 VDC only.
AIC rating is 1000 amps for AC applications.

Dimensional Specifications: in. [mm]



¹Manufacturer reserves the right to change product specification without prior notice.



Rating:
3 to 15A, 125, 250VAC, 50VDC

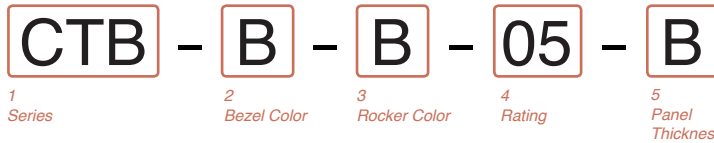
Approvals:
UL, CUL, VDE, CE

Interrupting capacity:
1000 amps

Insulation Resistance:
100M ohms

Applications:
Household Appliances
Transportation
Marine
Power Strips
Medical Equipment
Audio Visual Equipment
Power Supplies
Exercise Equipment
ROHS Compliant

Ordering Scheme



1 SERIES
CTB

2 BEZEL COLOR¹
B Black

3 ROCKER COLOR¹
B Black

4 RATING

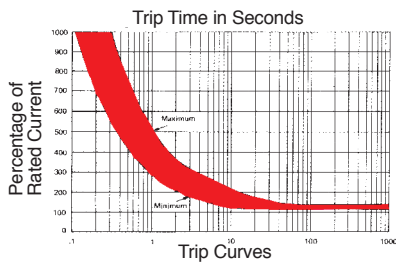
03	3 amp	08	8 amp	14	14 amp
04	4 amp	09	9 amp	15	15 amp
05	5 amp	10	10 amp		
06	6 amp	12	12 amp		
07	7 amp	13	13 amp		

5 PANEL THICKNESS

blank fits standard thickness of .032 - .062
B fits .070 - .110 panel thickness

Notes:
1. Additional colors available. Consult factory.

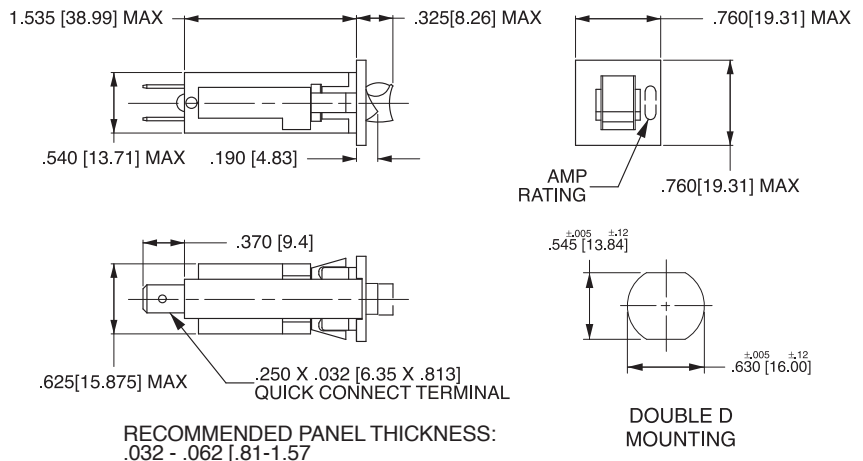
Time Delay



CORRECTION FACTOR ¹	
0°C	x .67
10°C	x .72
15°C	x .83
18°C	x .87
25°C	x 1.00
32°C	x 1.05
40°C	x 1.18
50°C	x 1.33
60°C	x 1.67

Notes:
1. To adjust the breaker rating for ambient temperature, multiply the breaker rating by the factor. (ex: 5A rating x .850 = 4.25A. Select 4A rating.)

Dimensional Specifications: in. [mm]



Notes:
All dimensions are in inches [millimeters]. Tolerance $\pm .005$ [.127] unless otherwise specified. Breaker must hold 100% of rated current and must trip at 150% and above, within the time limits shown in curve. Trip times specified at 25° ambient with no preloading.

*Manufacturer reserves the right to change product specification without prior notice.

CMB-Series

THERMAL CIRCUIT PROTECTORS

Rating:

3 to 20A, 125-250VAC, 32VDC

Approvals:

UL, CUL, CSA, TUV, CE
UL1500/ISO8846 for ignition protection/marine

Dielectric Strength:

2500 VAC/1 minute

Interrupting capacity:

2500 amps @ 32 VDC

Insulation Resistance:

100M ohms

Operating Temperature:

-10°C to 60°C

Voltage drop:

< 0.25 V

Applications:

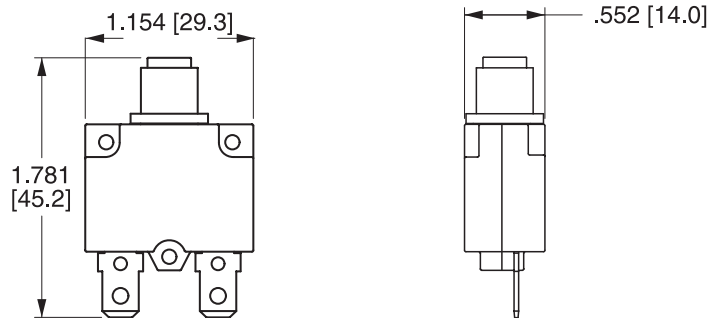
- Household Appliances
- Transportation
- Marine
- Power Strips
- Medical Equipment
- Audio Visual Equipment
- Power Supplies

ROHS Compliant



A COMPACT, SINGLE POLE, PUSH-TO-RESET FAMILY OF THERMAL CIRCUIT BREAKERS

Dimensional Specifications:



CMB - 10 3 - 11 C 3 N - B - A /10

1 Series 2 Rating 3 Voltage 4 Mounting Hole 5 Bushing Type 6 Mounting Nut 7 Indicator Plate 8 Button 9 Terminal 10 Button Marking

1 SERIES CMB

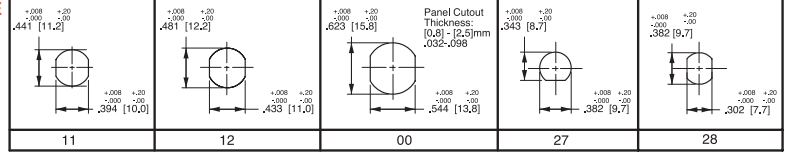
3 VOLTAGE 3 125-250VAC/ 32 VDC

2 RATING

03	3 amp	10	10 amp
04	4 amp	12	12 amp
05	5 amp	13	13 amp
06	6 amp	14	14 amp
07	7 amp	15	15 amp
08	8 amp	16	16 amp
		20	20 amp

4 MOUNTING HOLE

11 ¹	M11
12 ²	M12
00 ³	Snap In Style
27 ⁹	3/8" 27 UNS
28 ¹²	3/8" 27 UNS (double flatted)



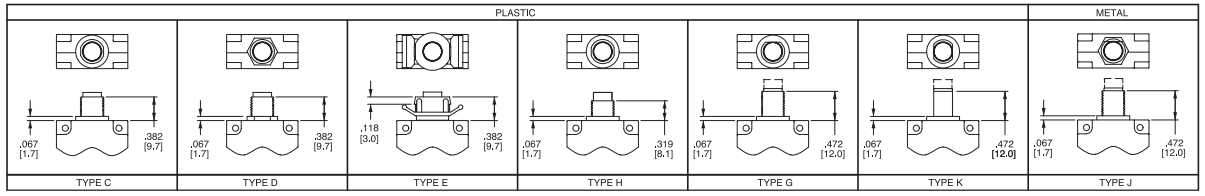
5 BUSHING

PLASTIC

- C⁴ Type C
- D⁴ Type D
- E⁵ Type E
- G⁸ Type G
- H⁶ Type H
- K¹³ Type K

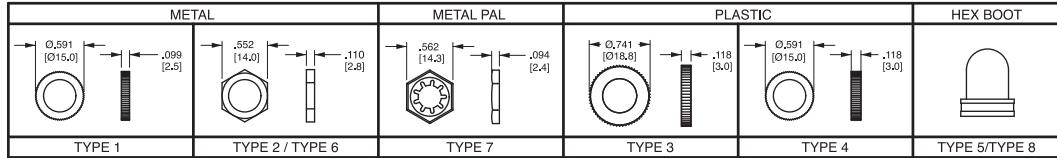
METAL

- J⁸ Type J



6 MOUNTING NUT⁷

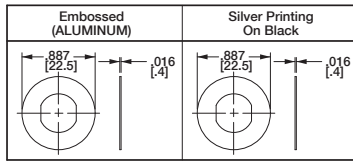
- N None
- 1 Type 1
- 2 Type 2
- 3¹¹ Type 3
- 4 Type 4
- 5 Type 5
- 6¹⁴ Type 6
- 7⁹ Type 7
- 8⁹ Type 8



NOTE: Type 5 is clear hex boot. Type 8 is black hex boot (available for bushings G, J & K only); Type 3 nut includes molded in "PRESS TO RESET" marking.

7 INDICATOR PLATE⁷

- N None
- A Embossed Legend
- B Silver Printing on Black



All indicator plates are marked "Suppl. Prot. press to reset".

Notes: All dimensions are in [mm]. Tolerance ±.005 [0.127] unless otherwise specified.

- 1 Used with bushing C or D only.
- 2 Used with H bushing only.
- 3 Used with bushing E only.
- 4 Used with M11 mounting hole only.
- 5 Used with mounting hole 00 only.
- 6 Used with M12 mounting hole only.
- 7 All hardware available separately. Consult factory.
- 8 Available with mounting hole 27 only.
- 9 Available with G, J or K bushing only.
- 10 Amp rating must match button marking (ex: 20 will be marked on the button of CMB-203-27G3N-W-A/20)
- 11 Includes molded in "PRESS TO RESET" marking.
- 12 Available with K bushing only.
- 13 Available with mounting hole 28 only. Thickness is 3.0 mm, .118 in.
- 14

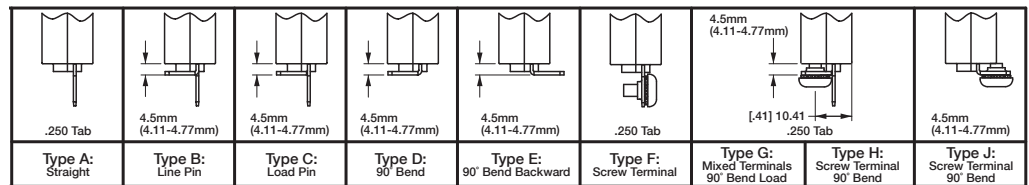
8 BUTTON

- B Black
- R Red
- W White

9 TERMINAL

- A Type A
- B Type B
- C Type C
- D Type D
- E Type E

- F Type F
- G Type G
- H Type H
- J Type J



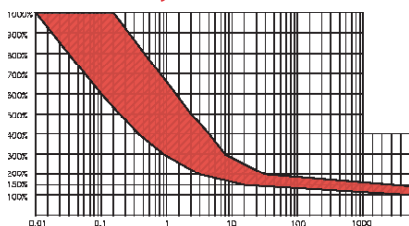
F,G,H,J TERMINALS ARE 8-32 UNC

10 BUTTON MARKING (IF BLANK, NO MARKING.)¹⁰ Button Marking Orientation:



03	3 amp	05	5 amp	07	7 amp	10	10 amp	13	13 amp	15	15 amp	20	20 amp
04	4 amp	06	6 amp	08	8 amp	12	12 amp	14	14 amp	16	16 amp		

Time Delay



DERATING FACTOR	
-10°C	X1.70
-5°C	X1.60
0°C	X1.50
5°C	X1.40
10°C	X1.30
15°C	X1.20
20°C	X1.10
25°C	X1.00

DERATING FACTOR	
30°C	X0.90
35°C	X0.85
40°C	X0.80
45°C	X0.75
50°C	X0.70
55°C	X0.65
60°C	X0.60

OVERLOAD	TRIP TIME
100 %	NO TRIP
150 %	TRIP IN 1 HR
200 %	4.0~40 sec
300 %	0.9~8.0 sec
400 %	0.42~5.0 sec
500 %	0.25~3.0 sec
600 %	0.1~1.8 sec

Notes:

Breaker must hold 100% of rated current and must trip at 150% and above, within the time limits shown in curve. Trip times specified at 25° ambient with no preloading.

- 1 To adjust the breaker rating for ambient temperature multiply the breaker rating by the factor. (ex: 5 amp rating at 0°C: 5 x .67 = 3.3 amp. Select 3 amp rating.)

*Manufacturer reserves the right to change product specification without prior notice.

CLB-Series

THERMAL CIRCUIT PROTECTORS

Rating:

3 to 60A, 125-250VAC, 32VDC

Approvals:

UL, CUL, CSA, TUV, CE
 UL1500/ISO8846 for ignition protection/marine

Dielectric Strength:

2500 VAC/1 minute

Interrupting capacity:

2500 amps @ 32 VDC

Insulation Resistance:

100M ohms

Operating Temperature:

-10°C to 60°C

Voltage drop:

< 0.25 V

Applications:

- Household Appliances
- Transportation
- Marine
- Power Strips
- Medical Equipment
- Audio Visual Equipment
- Power Supplies

ROHS Compliant

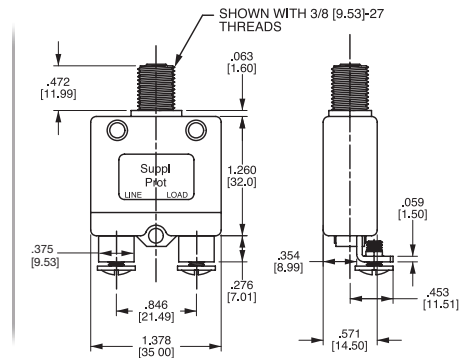
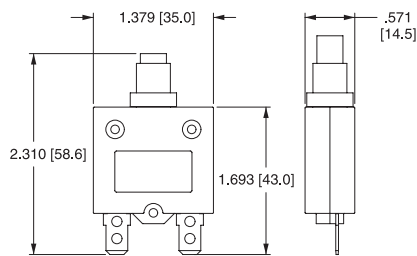


A COMPACT, SINGLE POLE, PUSH-TO-RESET FAMILY OF THERMAL CIRCUIT BREAKERS

Dimensional Specifications:

3-40A Construction

50 & 60A Construction



CLB - 10 3 - 12 C 3 N - B - A /10

1 Series 2 Rating 3 Voltage 4 Mounting Hole 5 Bushing Type 6 Mounting Nut 7 Indicator Plate 8 Button 9 Terminal 10 Button Marking

1 SERIES
CLB

3 VOLTAGE
3 125-250VAC/ 32 VDC

2 RATING

03	3 amp	15	15 amp
04	4 amp	18	18 amp
05	5 amp	20	20 amp
06	6 amp	25	25 amp
07	7 amp	30	30 amp
08	8 amp	35	35 amp
10	10 amp	40	40 amp
12	12 amp	50 ¹²	50 amp
13	13 amp	60 ¹²	60 amp

4 MOUNTING HOLE

11 ¹ M11	12 ² M12	00 ³ Snap In Style	27 ⁴ 3/8" 27 UNS
11	12	00	27

5 BUSHING

METAL
A⁶ Type A
B⁶ Type B
J⁸ Type J

PLASTIC
C⁵ Type C
D⁷ Type D
E⁸ Type E

TYPE A	TYPE B	TYPE J	TYPE C	TYPE D	TYPE E

6 MOUNTING NUT⁹

TYPE 1	TYPE 2 / TYPE 6	TYPE 7	TYPE 3	TYPE 4	TYPE 5 / TYPE 8

NOTE: Type 5 is clear hex boot. Type 8 is black hex boot (available for bushings E & J only); Type 3 nut includes molded in "PRESS TO RESET" marking.

7 INDICATOR PLATE⁹

N None
1 Type 1
2 Type 2
3 Type 3
4 Type 4
5 Type 5
6^{1,4} Type 6
7⁴ Type 7
8⁴ Type 8

Embossed (ALUMINUM)	Silver Printing On Black

All indicator plates are marked "Suppl. Prot. press to reset".

Notes: All dimensions are in [mm]. Tolerance ±.005 [0.127] unless otherwise specified.

- Used with bushing A or B only.
- Used with bushing C only.
- Used with bushing D only.
- Used with bushing E & J only.
- Used with M12 mounting hole only.
- Used with M11 mounting hole only.
- Used with mounting hole 00 only.
- Used with 27 mounting hole only.
- All hardware available separately. Consult factory.
- > 35 amp ratings must use solder joint to connect wire to non-screw type terminals.
- Terminals are .040 [1.0] thickness for ratings > 35, & .315 [8] thickness is for ratings < 35 amps.
- Available only with 10-24 unc. screw terms. (select type F, G, H, J only.) UL, CUL only.
- Amp rating must match button marking (ex: "20" will be marked on the button of the breaker)
- Thickness is 3.0 mm, .118 in.
- Screw terminals are 8-32 UNC

8 BUTTON

B Black R Red W White

9 TERMINAL^{10,11,15}

A Type A
B Type B
C Type C
D Type D
E Type E

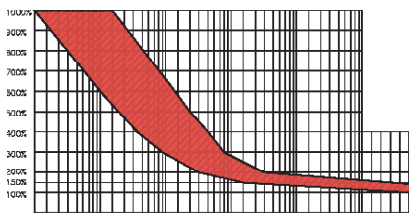
F Type F
G Type G
H Type H
J Type J

Type A: Straight	Type B: Line Pin	Type C: Load Pin	Type D: 90° Bend	Type E: 90° Bend Backward	Type F: Screw Terminal	Type G: Mixed Terminals 90° Bend Load	Type H: Screw Terminal 90° Bend	Type J: Screw Terminal 90° Bend

10 BUTTON MARKING (IF BLANK, NO MARKING.)¹³ Button Marking Orientation: line load

03	3 amp	06	6 amp	10	10 amp	15	15 amp	25	25 amp	40	40 amp
04	4 amp	07	7 amp	12	12 amp	18	18 amp	30	30 amp	50	50 amp
05	5 amp	08	8 amp	13	13 amp	20	20 amp	35	35 amp	60	60 amp

Time Delay



DERATING FACTOR

-10°C	X1.70
-5°C	X1.60
0°C	X1.50
5°C	X1.40
10°C	X1.30
15°C	X1.20
20°C	X1.10
25°C	X1.00

DERATING FACTOR

30°C	X0.90
35°C	X0.85
40°C	X0.80
45°C	X0.75
50°C	X0.70
55°C	X0.65
60°C	X0.60

OVERLOAD TRIP TIME

100 %	NO TRIP
150 %	TRIP IN 1 HR
200 %	4.0~40 sec
300 %	0.9~8.0 sec
400 %	0.42~5.0 sec
500 %	0.25~3.0 sec
600 %	0.1~1.8 sec

Notes:
Breaker must hold 100% of rated current and must trip at 150% and above, within the time limits shown in curve. Trip times specified at 25° ambient with no preloading.
1 To adjust the breaker rating for ambient temperature multiply the breaker rating by the factor. (ex: 5 amp rating at 0°C: 5 x .67 = 3.3 amp. Select 3 amp rating.)



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Innovative Designs. Powerful Solutions.

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