Thermal Circuit Breakers

Reliable, Cost-effective Circuit Protection





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 through out 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

CMBA/CLBA-SERIES

Number or Poles	Single	Single	Single	Single	Single
Actuator Style	Rocker / Lighted Rocker	Rocker	Pushbutton	Pushbutton	N/A
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	3 to 40A, 125-250VAC, 32VDC
Maximum Interrupting Capacity	1000A	1000A	2500A @ 32 VDC	2500A @ 32 VDC	2500A @ 32 VDC
Available Circuits	Series Trip Manual Reset	Series Trip Manual Reset	Series Trip Manual Reset	Series Trip Manual Reset	Series Trip Auto Reset
Terminal Options	.250" Tab Solder Lug	.250" Tab	.250" Tab w/ 90° bend .250" Tab w/ 90° bend Screw Terminal Screw Terminal w/ 90° bend	.250" Tab .250" Tab with 90° bend Screw Terminal Screw Terminal w/ 90° bend	.250" Tab .250" Tab with 90° bend
Mounting Method	Front Panel Snap-in	Front Panel Snap-in	Front Panel Front Panel Snap-in	Front Panel Front Panel Snap-in	Plug-in
Operating Temperature	-10°C to 65°C	-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	UL, CUL, TUV, UL1500 / ISO8846 for ignition protection / marine
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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











Contact

Material





Series

Illumination Termination Current Rating

Bezel Leaend

Rocker Color

Lamp Voltage

1 SERIES

C1005B

2 ILLUMINATION

- Non-Lighted Lighted
- **3 TERMINATION**
- Solder Lug .250 Tab

4 CURRENT RATING (AMPERES)

07	7 amps	
80	8 amps	
09	9 amps	
10	10 amps	
44	11 amne	

12 amps 12 13 13 amps 14 14 amps 15 15 amps 16 16 amps

Notes:

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

5 CONTACT MATERIAL¹

Silver Cad Oxide (switch), Silver plated copper (breaker)

6 BEZEL LEGEND IMPRINT

- Black Bezel with white legend
- White Bezel with black legend Gray Bezel with black legend

7 ROCKER COLOR

- Red Green
- Blue
- Clear

Note: RESET OFF Legend is standard.

8 LAMP VOLTAGE

- Neon Lamp 125/250 VAC
- Non-lighted

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.

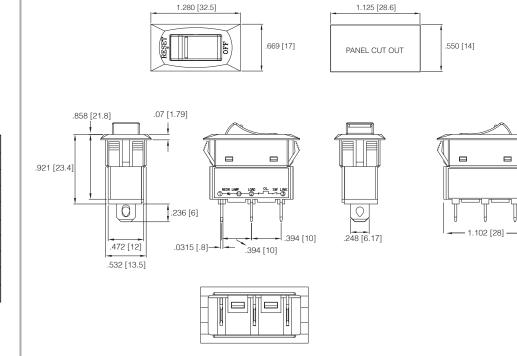
CORRECTION FACTOR ¹		
0°C	x .67	
10°C	x .72	
15℃	x .83	
18°C	x .87	
25°C	x 1.00	
32°C	x 1.05	
40°C	x 1.18	
50℃	x 1.33	
60°C	x 1.67	

Notes:

4

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]



^{*}Manufacturer 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 Complaint

Ordering Scheme



1 SERIES CTB

2 BEZEL COLOR¹

B Black

3 ROCKER COLOR¹

B Black

Additional colors available. Consult factory.

4 RATING 03 3 amp 8 amp 04 4 amp 5 amp 09 9 amp 10 amp 15 16 15 amp 16 amp 05 10 6 amp 12 12 amp 7 amp 13 amp

5 PANEL THICKNESS

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

Time Delay

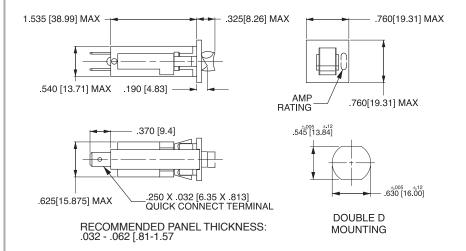


CORRECTION FACTOR ¹		
0°C	x .67	
10°C	x .72	
15°C	x .83	
18℃	x .87	
25°C	x 1.00	
32℃	x 1.05	
40°C	x 1.18	
50°C	x 1.33	
60°C	x 1.67	

Notes

 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

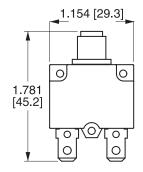
ROHS Compliant

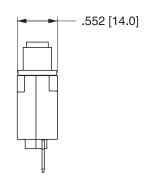


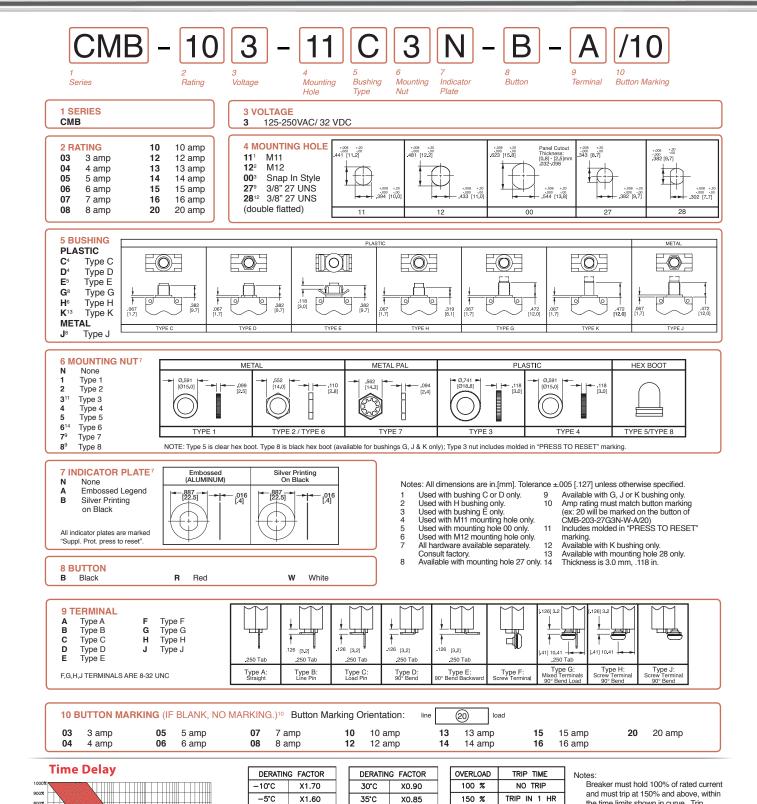




Dimensional Specifications:







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

O.C

5°C

10°C

15°C

20°C

25°C

X1.50

X1.40

X1.30

X1.20

X1.10

X1.00

40°C

45°C

50°C

55°C

60°C

X0.80

X0.75

X0.70

X0.65

X0.60

200 %

300 %

400 %

500 %

600 %

4.0~40 sec

0.9~8.0 sec

0.42~5.0 sec

0.25~3.0 sec

0.1~1.8 sec

800%

500%

400%

300%

the time limits shown in curve. Trip

preloading.

times specified at 25° ambient with no

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.)

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



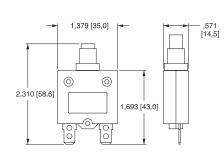


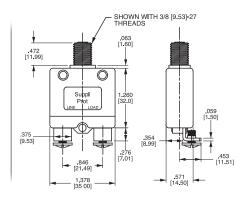
A COMPACT, SINGLE POLE, PUSH-TO-RESET FAMILY OF THERMAL CIRCUIT BREAKERS

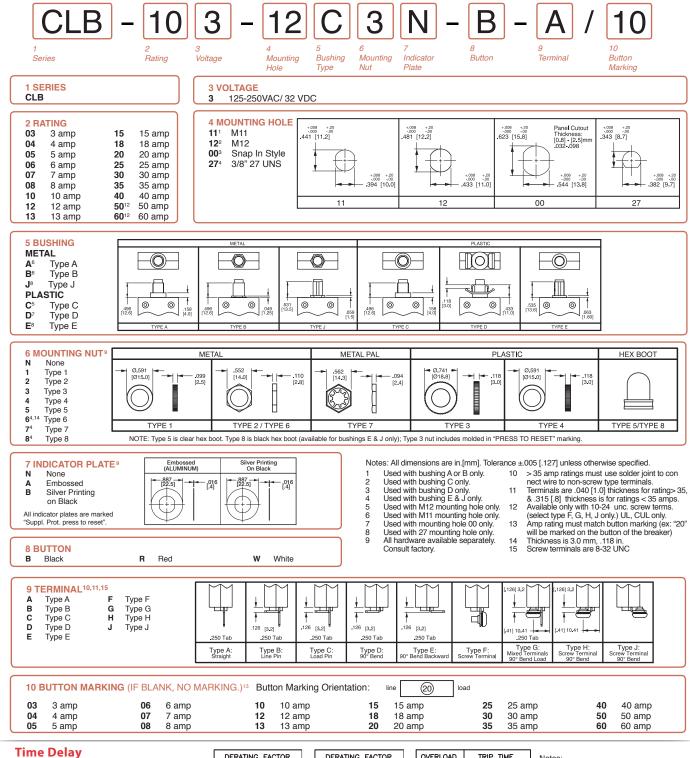
Dimensional Specifications:

3-40A Construction

50 & 60A Construction







000%	
700%	
600%	
500%	
400%	
300%	
200%	

DERATING FACTOR		
-10°C	X1.70	
−5*C	X1.60	
o.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

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.

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

CMBA/CLBA-Series

Auto-Reset Thermal Circuit Protectors

The CMBA/CLBA-Series feature automatic cycling and resetting thermal protection capabilities with the same performance as its traditional push-to-reset counterparts.

Ratings:

CMBA: 3 to 20A, 125-250VAC, 32VDC CLBA: 3 to 40A, 125-250VAC, 32VDC

Approvals:

UL, CUL, TUV

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

Power Strips

Medical Equipment

Audio Visual Equipment

Power Supplies

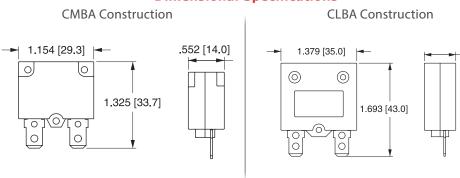
ROHS Compliant

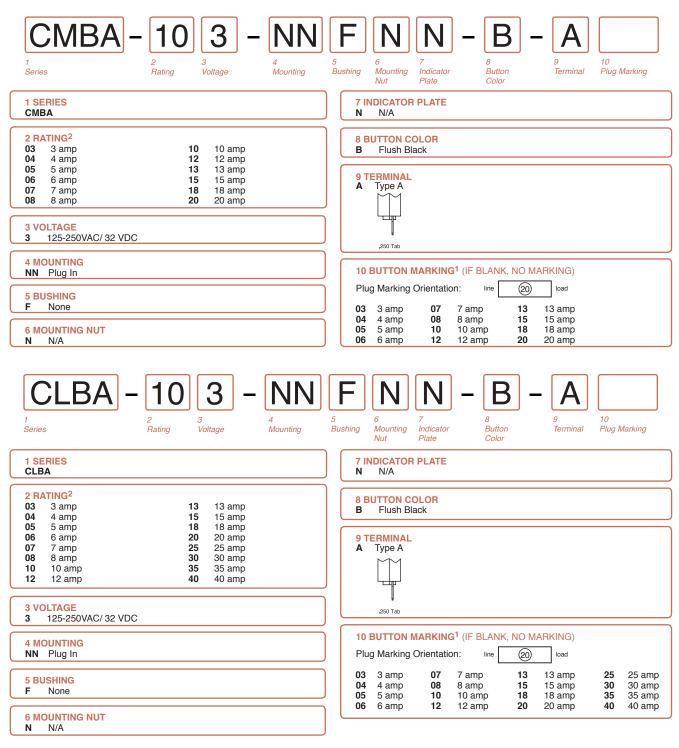




[14.5]

Dimensional Specifications





- Amp rating must match plug marking. (ex: "20" will be marked on the plug of the breaker)
 No marking is standard.
 See CMB/CLB graph for time delay information.

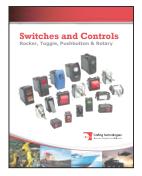
There are several catalogs available featuring complete details on all Carling Technologies products. Below is a complete list of catalogs available on print and online as eCatalogs and downloadable PDF files. Please visit our website at **carlingtech.com** or scan the QR codes below for complete details.





Visit us online for complete products and company information.

Switches & Controls





Features complete line and ordering details of Switches and Controls products including Rocker, Toggle, Pushbutton, and Rotary style switches.

Hydraulic Magnetic





Features complete line and ordering details of all hydraulic/magnetic circuit breakers.

Thermal's





Features complete line and ordering details of all thermal circuit breakers.

GFCI's





Features complete line and ordering details of all GFCIs/ELCIs.

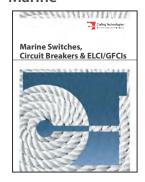
On-Off Highway





Features specific transportation products such as switches, controls and custom solutions.

Marine





Features all marine application products such as switches, ELCIs, thermal and hydraulic/magnetic circuit breakers.

Telecom/Datacom





Features complete line of hydraulic/magnetic circuit protection products specific for telecom and datacom systems.

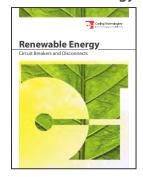
Military





Features all COTS (Commercial-Off-The-Shelf) Military grade switches and circuit breakers.

Renewable Energy





Features a complete line of circuit protection and disconnect products for photovoltaic energy systems.



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