

Need reliable, accurate overload and phase-loss protection for your motors? c3's Series 320 Bimetallic Overload Relays provide unmatched protection and can be directly installed on all Series 300 IEC Contactors, saving you time and panel space. Plus, cULus and CE markings make them applicable worldwide.

# IEC OVERLOAD RELAYS

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NOTE: The scope (range, description, price, specifications, dimensions, etc.) of the product featured in this section is subject to change without notice. Refer to [www.c3controls.com](http://www.c3controls.com) for product updates.

#### Conformity to Standards:

UL 508  
CSA C22.2 No. 14  
IEC 60947-1, 60947-4-1

#### Certifications:

UL File #: E68568 (Guide NKCR, NKCR7)  
CE Marked (per EU Low Voltage Directive  
2006/95/EC and 93/68/EEC)



Visit [www.c3controls.com](http://www.c3controls.com) to download product certifications.

**IT'S EASY TO BUILD YOUR OWN OVERLOAD RELAY**

Simply pick the code number from each of the sections below and combine them to build your part number. See page 6 for more detailed directions.

**IEC Bimetallic Overload Relays**

**320-B**

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Example: To build one of our most popular Overload Relays, the part number would be **320-B + II** or **320-B2D18**



**I. OVERLOAD RELAY TYPE**

CODE	DESCRIPTION
320-B	Bimetallic Overload Relay

Our Series 320 Bimetallic Overload Relays are available in five frame sizes for motor full load currents from 0.28 ~ 112A.

DISCOUNT  
SCHEDULE **C**

**II. OVERLOAD RELAY FRAME SIZE AND CURRENT ADJUSTMENT RANGE**

CODE	INSTALLS ON CONTACTOR	CURRENT ADJUSTMENT RANGE	PRICE
1C40	-M07, -M09, -M12, -M16	0.28 ~ 0.4	\$21.50
1C63	-M07, -M09, -M12, -M16	0.4 ~ 0.63	\$21.50
1C80	-M07, -M09, -M12, -M16	0.56 ~ 0.8	\$21.50
1D12	-M07, -M09, -M12, -M16	0.8 ~ 1.2	\$21.50
1D18	-M07, -M09, -M12, -M16	1.2 ~ 1.8	\$21.50
1D28	-M07, -M09, -M12, -M16	1.8 ~ 2.8	\$21.50
1D40	-M07, -M09, -M12, -M16	2.8 ~ 4.0	\$21.50
1D63	-M07, -M09, -M12, -M16	4.0 ~ 6.3	\$21.50
1D80	-M07, -M09, -M12, -M16	5.6 ~ 8.0	\$21.50
1U10	-M07, -M09, -M12, -M16	7.0 ~ 10.0	\$21.50
1U12	-M07, -M09, -M12, -M16	8.0 ~ 12.5	\$21.50
1U15	-M07, -M09, -M12, -M16	10 ~ 15	\$21.50
1U17	-M07, -M09, -M12, -M16	11 ~ 17	\$21.50
2C40	-S09, -S12, -S18, -S25, -S32, -S40	0.28 ~ 0.4	\$23.50
2C63	-S09, -S12, -S18, -S25, -S32, -S40	0.4 ~ 0.63	\$23.50
2C80	-S09, -S12, -S18, -S25, -S32, -S40	0.56 ~ 0.8	\$23.50
2D12	-S09, -S12, -S18, -S25, -S32, -S40	0.8 ~ 1.2	\$23.50
2D18	-S09, -S12, -S18, -S25, -S32, -S40	1.2 ~ 1.8	\$23.50
2D28	-S09, -S12, -S18, -S25, -S32, -S40	1.8 ~ 2.8	\$23.50
2D40	-S09, -S12, -S18, -S25, -S32, -S40	2.8 ~ 4.0	\$23.50
2D63	-S09, -S12, -S18, -S25, -S32, -S40	4.0 ~ 6.3	\$23.50
2D80	-S09, -S12, -S18, -S25, -S32, -S40	5.6 ~ 8.0	\$23.50
2U10	-S09, -S12, -S18, -S25, -S32, -S40	7.0 ~ 10.0	\$23.50
2U12	-S09, -S12, -S18, -S25, -S32, -S40	8 ~ 12.5	\$23.50
2U15	-S09, -S12, -S18, -S25, -S32, -S40	10 ~ 15	\$23.50
2U17	-S09, -S12, -S18, -S25, -S32, -S40	11 ~ 17	\$23.50
2U23	-S09, -S12, -S18, -S25, -S32, -S40	15 ~ 23	\$23.50
2U32	-S09, -S12, -S18, -S25, -S32, -S40	22 ~ 32	\$23.50
3U40	-S32, -S40	25 ~ 40	\$37.50
4U50	-S50, -S65, -S80	32 ~ 50	\$45.00
4U57	-S50, -S65, -S80	40 ~ 57	\$45.00
4U63	-S50, -S65, -S80	50 ~ 63	\$45.00
4U70	-S50, -S65, -S80	57 ~ 70	\$45.00
5U80	-S95, -S105	63 ~ 80	\$53.00
5U97	-S95, -S105	78 ~ 97	\$53.00
5X11	-S95, -S105	90 ~ 112	\$53.00

**SOME OF OUR POPULAR CONFIGURATIONS:**

**IEC BIMETALLIC OVERLOAD RELAYS**

CATALOG NUMBER	DESCRIPTION	PRICE
320-B1D80	5.6 ~ 8.0A Overload Relay for Installation on 300-M07 Contactor	\$21.50
320-B2U10	7 ~ 10A Overload Relay for Installation on 300-S09 Contactor	\$23.50
320-B2U23	15 ~ 23A Overload Relay for Installation on 300-S25 Contactor	\$23.50
320-B3U40	25 ~ 40A Overload Relay for Installation on 300-S40 Contactor	\$37.50
320-B4U50	32 ~ 50A Overload Relay for Installation on 300-S50 Contactor	\$45.00
320-B5U97	78 ~ 97A Overload Relay for Installation on 300-S95 Contactor	\$53.00



**MOMENTARY RESET  
PUSH BUTTONS**

actuate the reset function of a Series 320 Overload Relay from outside the enclosure. See page 205.

AVAILABLE FRAME SIZES  
FOR OVERLOAD RELAYS



## IEC BIMETALLIC OVERLOAD RELAYS

c3controls Series 320 Bimetallic Overload Relays provide thermal Trip Class 10 overload protection for single and three phase motors, and phase loss protection for three phase motors. Other features like IP20 guarded terminals with dual terminal markings, integral stop button, and direct mounting will help you reduce your total installed costs and enhance the features and performance of your equipment. Just look and see what the Series 320 Overload Relays have to offer.

Product features include:

- Series 320-B1 Overload Relays for use with Series 300 IEC Mini Contactors.
- Series 320-B1 Overload Relays include integral connection to auxiliary and coil terminations for ease of wiring during installation when installed on Series 300 IEC Mini Contactors.
- Series 320-B1 Overload Relays share the same great features and benefits of the larger frame sizes.
- Trip Class 10 for reliable and accurate protection against overload conditions.
- Single phase sensitivity to protect motors against damaging phase loss conditions.
- Direct mounting to all contactors, including new 320-B1 Overload Relays for use with Series 300 IEC Mini Contactors.
- Dual IEC and NEMA terminal markings for ease of wiring anywhere in the world.
- Device identification marker for labeling overload relays simplifies troubleshooting in panels with many overload relays or starters.
- IP20 guarded terminals prevent accidental contact with live parts.
- Combination head terminal screws allow the use of straight, phillips or posidrive screwdrivers.
- Stop button for convenient and economical control circuit wiring.
- Ambient temperature compensation ensures reliable motor protection even in high temperature environments.



### UNIQUE PRODUCT FEATURES



A – Automatic Reset Only  
 AUTO – Automatic Reset and Test  
 H – Manual Reset Only  
 HAND – Manual Reset and Test

c3controls Series 320 Bimetallic Overload Relays feature a multi-function reset button enabling the user to select the reset mode – manual or automatic and whether or not to enable the test function.

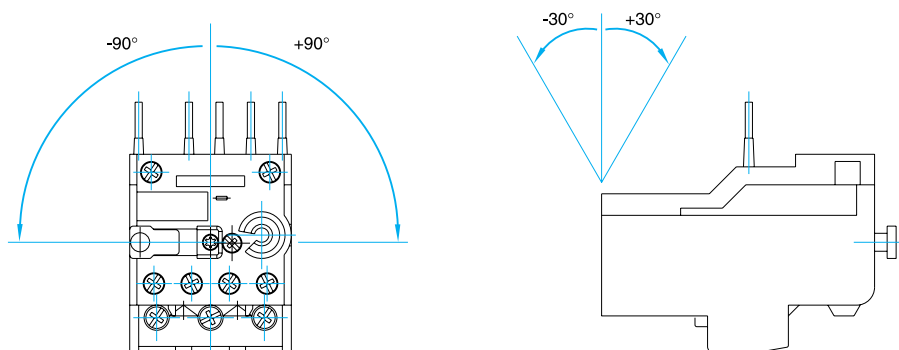
When the reset button is pressed, with the test function enabled, the Normally Open (NO) contact closes and the Normally Closed (NC) contact opens to verify the control circuit functionality. In addition, the NC contact can be used in a “Stop” circuit. With the test function disabled, the NO and NC contacts do not change state when the reset button is pressed – preventing unauthorized personnel from operating the control circuit.

Multiple functions in a single device help you to reduce inventory and customize the overload relay operation to provide the performance and features you need for your specific application.

## SPECIFICATIONS:

<b>ELECTRICAL AND ENVIRONMENTAL SPECIFICATIONS</b>						
		<b>320-B1</b>	<b>320-B2</b>	<b>320-B3</b>	<b>320-B4</b>	<b>320-B5</b>
<b>ELECTRICAL GENERAL</b>						
	<b>UNITS</b>					
Current Setting Range	A	0.28 ~ 17	0.28 ~ 32	25 ~ 50	40 ~ 80	63 ~ 112
Operating Frequency	Hz	0 ~ 400				
Power Dissipation per Pole	W	0.9 ~ 1.4	1.3 ~ 2.0	1.3 ~ 2.0	1.9 ~ 4.8	3 ~ 4.8
<b>ELECTRICAL UL/CSA APPLICATIONS</b>						
<b>MAIN CIRCUITS</b>						
Rated Operating Voltage, Ue	VAC	600				
Short Circuit Rating	kA	5	5	5	10	10
Maximum Fuse Size*	A	60	90	125	200	250
<b>CONTROL CIRCUITS</b>						
Pilot Duty Rating	AC	C600				
	DC	R300				
<b>ELECTRICAL IEC APPLICATIONS</b>						
<b>MAIN CIRCUITS</b>						
Rated Insulation Voltage, Ui	V	690				
Rated Impulse Voltage, Uimp	kV	6				
Rated Operating Voltage, Ue	VAC	690				
Maximum Rated Operating Current, Ie	A	17	32	50	80	112
Maximum Fuse Size*	A	40	63	100	125	250
<b>CONTROL CIRCUITS</b>						
Rated Insulation Voltage, Ui	V	690				
Rated Operating Current, Ie						
AC-15						
@ 24V AC	A	4				
@ 60V AC	A	3.5				
@ 120V AC	A	3				
@ 240V AC	A	2				
@ 415V AC	A	1.5				
@ 500V AC	A	0.5				
@ 690V AC	A	0.3				
DC-13						
@ 24V DC	A	1				
@ 60V DC	A	0.5				
@ 110V DC	A	0.25				
@ 220V DC	A	0.1				
Maximum Fuse Size (gL/gG)	A	6				
<b>ENVIRONMENTAL</b>						
Ambient Operating Temperature		-25 to +60° C (-13 to +140° F)				
Ambient Storage Temperature		-40 to +70° C (-40 to +158° F)				
Altitude	m/ft.	2,000/6,562				

\*Varies by current setting range of overload relay.



CONSTRUCTION SPECIFICATIONS						
		320-B1	320-B2	320-B3	320-B4	320-B5
<b>CONSTRUCTION</b>						
	<b>UNITS</b>					
Number of Poles		3				
Trip Class		10				
Pollution Degree		3				
<b>INGRESS PROTECTION</b>						
Main Circuit Terminals		IP20 (with wires connected)				
Control Circuit Terminals		IP20				
<b>WEIGHT</b>	kg	0.15	0.15	0.31	0.31	0.37
	lbs.	0.33	0.33	0.68	0.68	0.82
<b>CONDUCTOR SIZE</b>						
<b>MAIN CIRCUITS</b>						
UL/CSA	AWG	14 ~ 6	14 ~ 6	18 ~ 2	18 ~ 2	8 ~ 1/0
Solid	mm <sup>2</sup>	2 x 1.5 ~ 6.0	2 x 1.5 ~ 6.0	1 x 6 ~ 35	2 x 6 ~ 35	1 x 25 ~ 35
Stranded	mm <sup>2</sup>	2 x 1.5 ~ 6.0	2 x 1.5 ~ 6.0	1 x 6 ~ 35	2 x 6 ~ 35	1 x 25 ~ 35
Fine Strand with Sleeve	mm <sup>2</sup>	2 x 1.5 ~ 10.0	2 x 1.5 ~ 10.0	2 x 6 ~ 35	3 x 6 ~ 35	1 x 25 ~ 35
Terminal Torque	Nm	1.4 ~ 2.3	1.4 ~ 2.3	4.0 ~ 6.0	4.0 ~ 6.0	14 ~ 26
	Lb-in.	12.4 ~ 20.4	12.4 ~ 20.4	35 ~ 53	35 ~ 53	124 ~ 230
<b>CONTROL CIRCUITS</b>						
UL/CSA	AWG	18 ~ 14				
Solid	mm <sup>2</sup>	2 x 1 ~ 2.5				
Stranded	mm <sup>2</sup>	2 x 1 ~ 2.5				
Fine Strand	mm <sup>2</sup>	2 x 1 ~ 2.5				
Fine Strand with Sleeve	mm <sup>2</sup>	2 x 1 ~ 2.5				
Terminal Torque	Nm	1.4 ~ 2.3				
	Lb-in.	12.4 ~ 20.4				
RoHS Compliance		For RoHS compliance documentation by product, refer to <a href="http://www.c3controls.com">www.c3controls.com</a> .				

## SEPARATE MOUNTING ADAPTERS



320-BSMA2



320-BSMA4

Separate mounting adapters enable Series 320 Overload Relays to be installed separately from a contactor on a 35mm DIN rail or with fixing screws to a panel.

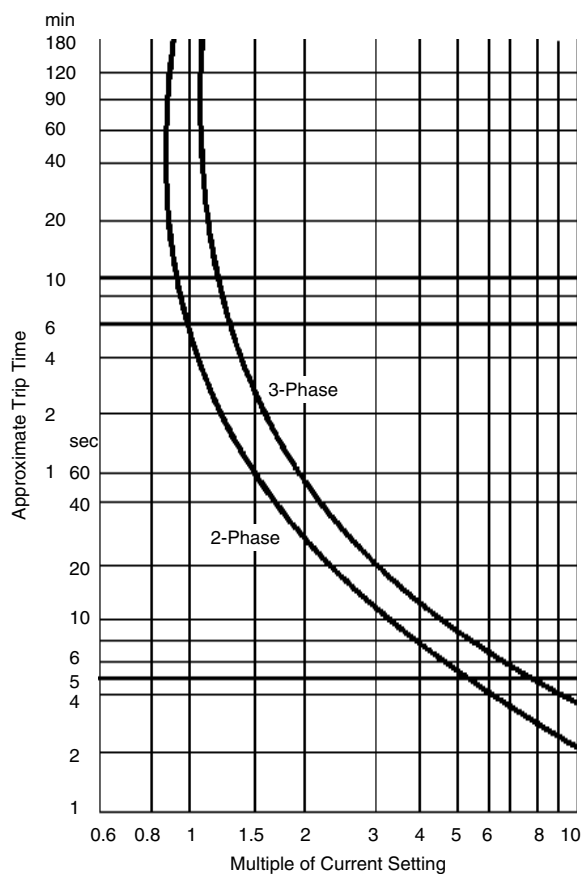
CODE	FOR USE WITH	PRICE
320-BSMA2	320-B2*** Overload Relays	\$ 7.00
320-BSMA4	320-B3*** and 320-B4*** Overload Relays	\$12.00
320-BSMA5	320-B5*** Overload Relays	\$15.00

DISCOUNT  
SCHEDULE

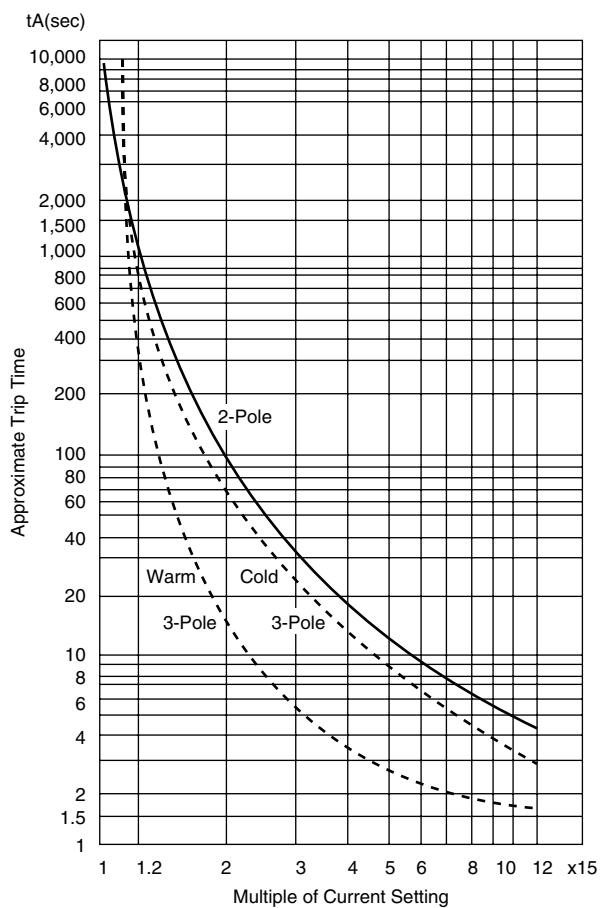
**C**

**TRIP CHARACTERISTICS**

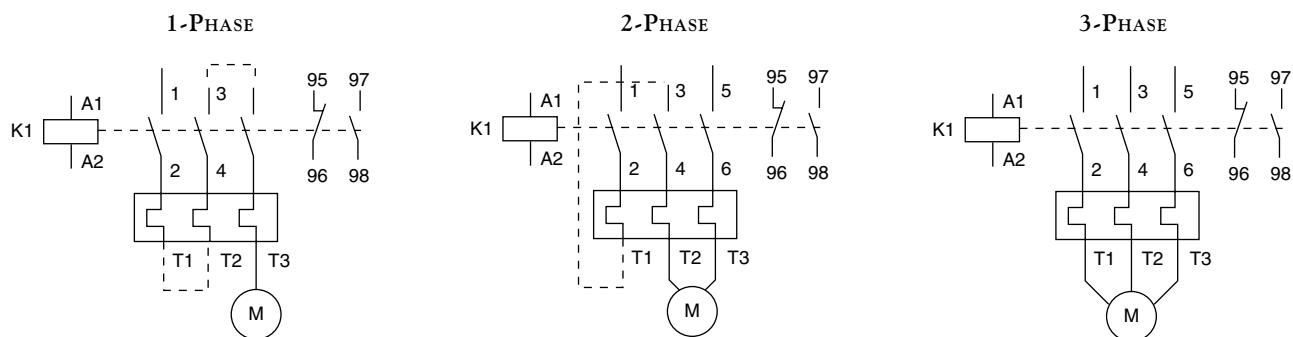
320-B1\*\*\*, 320-B2\*\*\*, 320-B3\*\*\* & 320-B4\*\*\*



320-B5\*\*\*

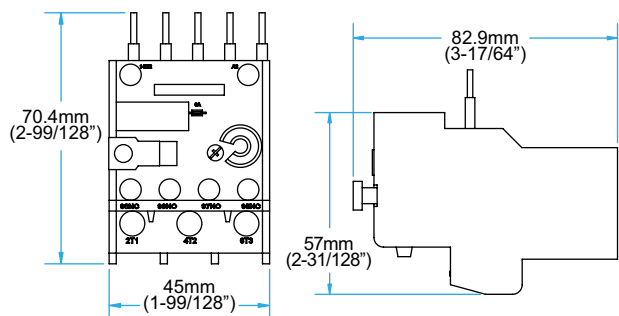


**CIRCUIT DIAGRAMS**

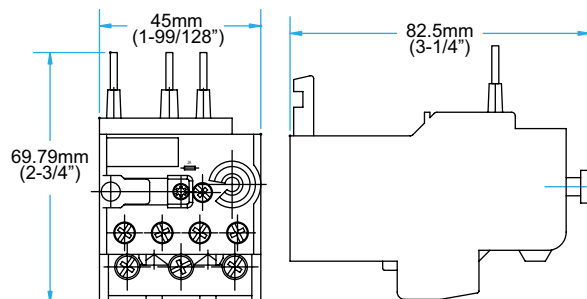


**SERIES 320 IEC BIMETALLIC OVERLOAD RELAYS**

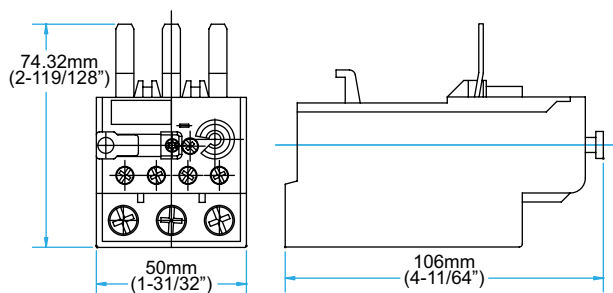
**320-B1\*\*\***



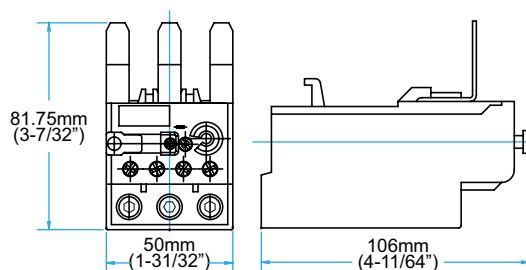
**320-B2\*\*\***



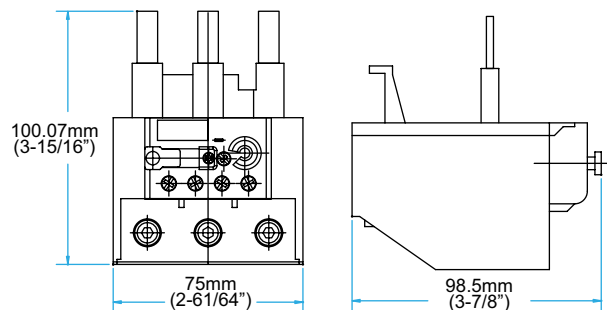
**320-B3\*\*\***



**320-B4\*\*\***



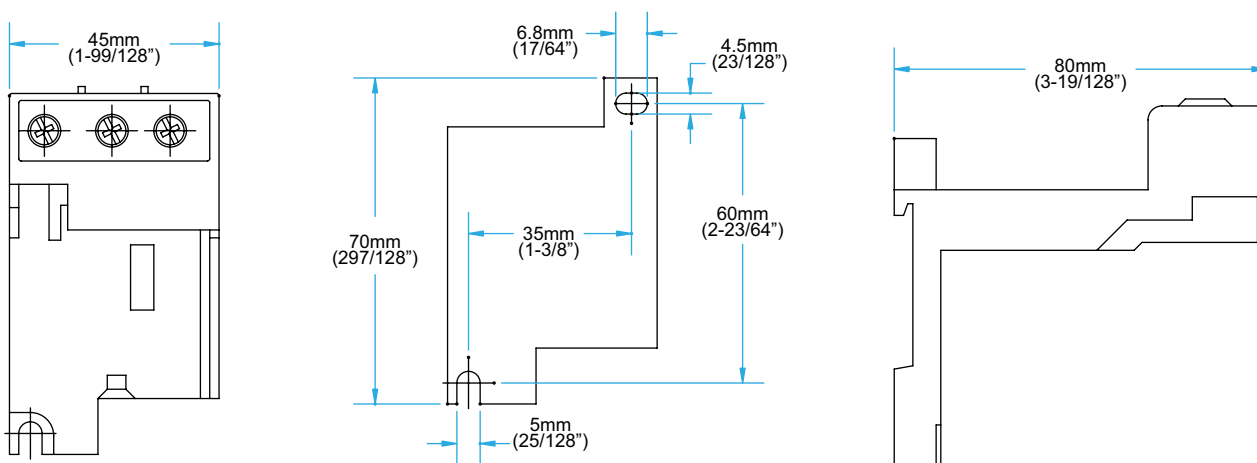
**320-B5\*\*\***



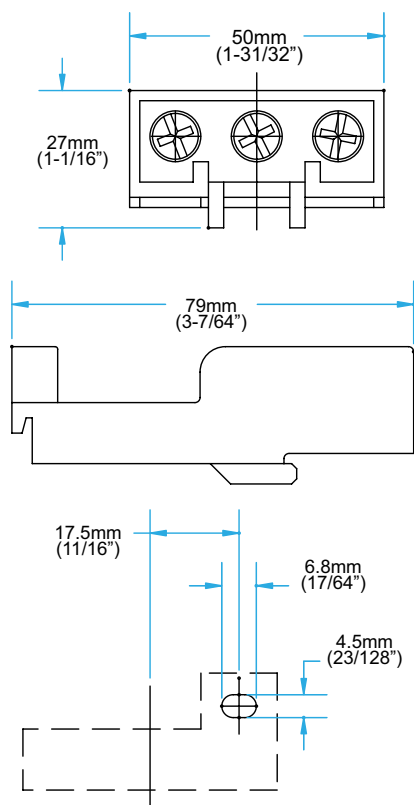
**VISIT [WWW.C3CONTROLS.COM](http://WWW.C3CONTROLS.COM)  
TO DOWNLOAD CAD DRAWINGS**

**SERIES 320 SEPARATE MOUNTING ADAPTERS**

**320-BSMA2 SEPARATE MOUNTING ADAPTER FOR USE WITH 320-B2\*\*\***



**320-BSMA4 SEPARATE MOUNTING ADAPTER  
FOR USE WITH 320-B3\*\*\* OR 320-B4\*\*\***



**320-BSMA5 SEPARATE MOUNTING ADAPTER  
FOR USE WITH 320-B5\*\*\***

