C-Frame MKIV Series Circuit Breakers

Features

- Hydraulic-Magnetic Technology
- Two Colour Handle Indication (Two Tone Flush Rocker)
- 100% Rating Capability Independent of Ambient Temperature
- Up to Four Poles
- UL, VDE, CE and CCC approved
- Ratings up to 50A
- Optional Trip Alarm Switch and Auxiliary Switch
- Wide Range of Circuits, Mountings, Terminations and Time Delays
- Optional Mid-Trip Indication (Standard handle)
- Precision tripping

Applications

- Telecom DC Power Distribution
- UPS equipment
- Mobile Power-Generation Equipment
- Power Conditioning Equipment
- Alternative Energy Equipment
- Lighting Control
- Marine Protection

Technical Data

Product Type	Circuit Breaker	Circuit Breaker	Circuit Breaker
Approvals	UL 489 / CSA	UL 489A	UL 1077 / CSA
Number of Poles	1, 2	1, 2	1 - 4
Operating Voltages	120/240VAC	80VDC	240VAC, 277VAC, 80VDC
Current Ratings	0.05 - 20A	0.05 - 50A	0.05 - 50A, 0.1 - 30A, 0.05 - 50A DC
Interrupting Capacity	5kA	5kA	2kA (AC), 7.5kA (DC)
Product Type	Circuit Breaker	Circuit Breaker	Switch
Approvals	IEC/EN 60934, VDE, CE, CCC	UL 1500	UL 508
Number of Poles	1 - 4	1, 2	1 - 4
Operating Voltages	240/415VAC, 80 VDC	120/240VAC, 65VDC	240VAC, 277VAC, 80VDC
Current Ratings	0.05 - 50A/0.1 - 30A, 0.05 - 50A DC	0.05 - 50A	0.05 - 50A
Interrupting Capacity	2kA (AC), 4kA (DC)	1.5kA	-
Vibration Resistance	10G to MIL-STD-202G Method 204D, Test Condition A		
Shock Resistance	100G to MIL-STD-202G Method 213B, Test Condition A		
Operating Temp. Range	-40ºC to +85ºC		

Time Delay Data (Standard Delays)

Curve Code	% Rated Current Trip Time in Seconds							
	Limits	**125%**	**150%**	**200%**	**300%**	**400%**	**700%**	**1200%**
AS	Min - Max	80 - 560	48 - 260	21 - 80	7 - 32	3.5 - 17	0.014 - 4	<0.06
BS	Min - Max	12 - 100	5.5 - 40	2 - 14	0.55 - 5	0.21 - 2.8	0.0085 - 0.98	<0.06
CS	Min - Max	0.6 - 10	0.3 - 3.5	0.13 - 1	0.031 - 0.2	0.014 - 0.075	0.0059 - 0.024	<0.04
OP	Max	May Trip	0.04	0.035	0.02	0.019	0.016	-

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Long Code

Example Code: C-BCA211NBS3000BXX-XXXXXBDVBX3-X

Group 0: Frame	**Code**	**Description**	**Comments**
	C	C-Frame	
Group 1: Type	**Code**	**Description**	**Comments**
	B	C-Frame MKIV	
	G	C-Frame MKIV UL1500	
Group 2: Mounting	**Code**	**Description**	**Comments**
	3	Snap-in mount edges beveled	See figure 2.1.
	B	Snap-in mount edges flush	See figure 2.2.
	2	Front mount round aperture, fleet	See figure 2.3. Warning: Maximum penetration depth into the product by the mounting screw is 5.4mm.
	C	Front mount round aperture, dome	See figure 2.4. Required for UL listed products. Maximum penetration depth into the product by the mounting screw is 5.4mm.
	S	Front mount rectangular aperture flush rocker handle type	See figure 2.5. Warning: Maximum penetration depth into the product by the mounting screw is 5.4mm.
	Z	Special - specify	
Group 3: Handle or Pole Blank (Reduced Handle)	**Code**	**Description**	**Comments**
	A	Toggle handle (Standard))	See figure 3.1. For mountings 3, B, 2, C.
	C	Cut-off handle	See figure 3.2. For mountings 3, B, 2, C. Only 1 handle per unit.
	H	Flush rocker handle	See figure 3.3. For mounting S. Only 1 handle per unit.
	M	Two tone flush rocker handle	See figure 3.4. For mounting S. Only 1 handle per unit.
	Y	No handle, blank front plate	For reduced handle version, on pole(s) without handle.
	Q	Push to reset handle	See figure 3.3.
	R	Two tone push to reset handle	See figure 3.3.
	2	Standard handle, mid-trip	See figure 3.5. For mountings 3, B, 2, C
	Z	Special - specify	

Group 4: Main Terminal Description	**Code**	**Description**	**Comments**	**Code**	**Description**	**Comments**	
	CX	Rear quick connect terminal (0.8mm X 6.35mm)	See figure 4.1. 30A max.	**42**	30° bent screw terminal, bus connected (M5 or 10-32)	See figure 4.4. 50A max.	
	21	Screw terminal, bus connected (M4 or 8-32)	See figure 4.2. 30A max.	**51**	30° bent screw terminal, upturned ears (M4 or 8-32)	See figure 4.5. 30A max.	
	22	Screw terminal, bus connected (M5 or 10-32)	See figure 4.2. 50A max.	**52**	30° bent screw terminal, upturned ears (M5 or 10-32)	See figure 4.5. 50A max.	
	31	Screw terminal, upturned ears (M4 or 8-32)	See figure 4.3. 30A max.	**61**	Marine screw terminal (M4 or 8-32)	See figure 4.6. 30A max.	
	32	Screw terminal, upturned ears (M5 or 10-32)	See figure 4.3. 50A max.	**62**	Marine screw terminal (M5 or 10-32)	See figure 4.6. 50A max.	
	41	30° bent screw terminal, bus connected (M4 or 8-32)	See figure 4.4. 30A max.	**ZZ**	Special - specify		

Group 5: Number of Poles	**Code**	**Description**	**Code**	**Description**	**Code**	**Description**	**Code**	**Description**	
	1	1 pole metric	**3**	3 pole metric	**A**	1 pole imperial	**C**	3 pole imperial	
	2	2 pole metric	**4**	4 pole metric	**B**	2 pole imperial	**D**	4 pole imperial	
Group 6: Rated Voltage and Frequency	**Code**	**Description**	**Comments**						
	J	240V 50/60Hz							
	K	277V 50/60Hz							
	E	65V DC							
	N	80V DC							
	S	120/240V 50/60Hz	3 wire centre tap supply. 120V per phase.						
	Q	240/415V 50/60Hz	3 phase multi-wire system.						
	R	277/480V 50/60Hz	3 phase multi-wire system.						
	M	80V DC / 240V 50/60Hz	AC/DC version. With AC and DC curves.						
	L	80V DC / 277V 50/60Hz	AC/DC version. With AC and DC curves.						
	Z	Special - specify							

Group 7: Time Delay	**Code**	**Description**	**System**	**Pulse Tolerance (X In)**	**Code**	**Description**	**System**	**Pulse Tolerance (X In)**
	AS	Long delay	AC or DC	8 - 10	**BW**	BD & inertia delay	AC and DC	16 - 20
	AI	AS & inertia delay	AC or DC	16 - 20	**CS**	Short delay	AC or DC	6 - 8
	AH	AS & high inrush	AC	16 - 20	**CI**	CS & inertia delay	AC or DC	12 - 15
	AE	AH & inertia delay	AC	28 - 35	**CH**	CS & high inrush	AC	12 - 15
	AD	AS & Dual rated	AC and DC	8 - 10	**CE**	CH & inertia delay	AC	21 - 35
	AW	AD & inertia delay	AC and DC	16 - 20	**CD**	CS & Dual rated	AC and DC	6 - 8
	BS	Medium delay	AC or DC	8 - 10	**CW**	CD & inertia delay	AC and DC	12 - 15
	BI	BS & inertia delay	AC or DC	16 - 20	**OP**	Instantaneous trip	AC or DC	None
	BH	BS & high inrush	AC	16 - 20	**H3**	Short delay	AC or DC	6 - 8
	BE	BH & inertia delay	AC	28 - 35	**OX**	Switch	AC or DC	
	BD	BS & Dual rated	AC and DC	8 - 10	**ZZ**	Special - specify		

Group 8: Main Circuit Current	**Code**	**Description**	**Comments**
	050M	50mA	Examples only. Any ampere rating possible, from 0.05 - 50A.
	0100	1A	
	1000	10A	
	1500	15A	
	XXXX	No current, for voltage trip poles	
Group 9: Circuit Configuration	**Code**	**Description**	**Comments**
	AX	Switch	
	BX	Series trip	
	CA	Relay trip current sensing, offset terminal construction	Total load 50A max.
	DX	Relay trip voltage sensing, centre terminal construction	See Group 11 for voltage options.
	EX	Shunt tap current sensing, 3rd terminal close to load side	Total load 50A max.
	FX	Shunt tap voltage sensing, 3rd terminal close to load side	See Group 11 for voltage options.
	GX	Dual control shunt trip construction, 3rd terminal close to load side	Curves AH, BH, CH, AE, BE, CE not possible. See Group 11 for voltage options (Voltage coil normally at line voltage).
	HX	Dual control relay trip construction (4 terminal)	Curves AH, BH, CH, AE, BE, CE not possible. See Group 11 for voltage options.
	JX	Switch with auxiliary switch	See figure 9.1.
	KX	Series trip, with auxiliary switch	See figure 9.1.
	LX	Series trip, with trip-alarm	Trip-alarm requires mid-trip handle.
	ZZ	Special - specify	

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Long Code

Group 10: Auxiliary and Alarm Switches	**Code**	**Description**			**Comments**			
	A	One change-over gold plated tips, equally spaced terminals			0.02 to 0.1A.			
	B	One change-over silver plated tips, equally spaced terminals			10A max.			
	X	Not applicable			No auxiliary switch – flat base plate			
	Z	Special - specify						
Group 11: Voltage and Current Coil Ratings (Du-con / shunt / relay)	**Code**	**Description**	**Code**	**Description**	**Code**	**Description**	**Code**	**Description**
	A4	110-125VAC 50/60Hz	B1	24VDC			XX	Not applicable
	A5	220-240VAC 50/60Hz	B2	48VDC			ZZ	Special - specify
	B0	12V DC	B3	80VDC				
Group 12: Terminals for Shunt, Relay and Dual-control Construction	**Code**	**Description**			**Comments**			
	A	M4 or 8-32 screw terminal			See figure 12.1. 40A max.			
	B	M5 or 10-32 screw terminal			See figure 12.1. 50A max.			
	C	Quick connect terminal			See figure 12.2. 30A max.			
	X	Not applicable						
	Z	Special - specify						
Group 13: Voltage for Illuminated Rocker	**Code**	**Description**			**Comments**			
	X	Not applicable						
Group 14: Terminal for Illuminated Rocker	**Code**	**Description**			**Comments**			
	X	Not applicable						
Group 15: Handle Colour	**Code**	**Description**			**Comments**			
		For toggle handle type			The colour code describes the colour of the handle. After selecting the appropriate colour code, select the marking code. After selecting the appropriate marking, the orientation of print may be specified. If the pole has no handle because of it being a reduced handle version, use code XXX (Group 15, 16 & 17).			
	W	White						
	B	Black						
	R	Red						
		For flush rocker handle			The colour code describes the colour of the ON and OFF actuation buttons. After selecting the appropriate colour code, select the marking code. After selecting the appropriate marking, the orientation of print may be specified. If the pole has no handle because of it being a reduced handle version, use code XXX (Group 15, 16 & 17).			
	W	White (ON) / white (OFF)						
	B	Black (ON) / black (OFF)						
	G							
		For two tone rocker handle			The colour code describes the indication colour. The face colour is black and the indicator indicates the off or tripped position. See figure 3.4. After selecting the appropriate colour code, select the marking code. The marking colour is the same as the indicator colour. After selecting the appropriate marking, the orientation of print may be specified.			
	G	Black face, green indicator + marking						
	W	Black face, white indicator + marking						
	R	Black face, red indicator + marking						
	X	No handle						
	Z	Special - specify						
Group 16: Handle Marking	**Code**	**Description**			**Comments**			
	A	Blank no marking						
	B	I - O			For products requiring VDE approvals (IEC/EN 60934 & IEC/EN60947-2).			
	C	ON - OFF			For products requiring UL approvals.			
	D	I – O and ON - OFF			For products requiring VDE & UL approvals.			
	E	Ampere rating						
	F	I – O and ampere rating						
	G	ON - OFF and ampere rating						
	H	I – O and ON - OFF and ampere rating						
	I	Push to reset and ampere rating			Group 2 option S only. Group 3 options Q or R only. Flush rocker or two tone rocker handle.			
	X	No handle						
	Z	Special - specify						
Group 17: Handle Orientation	**Code**	**Description**			**Code**	**Description**	**Comments**	
	V	Vertical (standard mounting, line @ top)			**2**	Horizontal (line @ right)	If the breaker needs to be reverse fed, the printing will be upside down and codes 1 and 2 should be selected. See figure 17.1.	
	H	Horizontal (line @ left)			**X**	No handle		
	1	Vertical (reverse mounting, line @ bottom)			**Z**	Special - specify		
Group 18: Front Plate Colour and Test Button	**Code**	**Description**			**Comments**			
	B	Black front plate no marking			A test button is standard on the rocker handle version. If a test button is not required, it is black and non-functioning.			
	2	Black front plate no marking, with test button						
	Z	Special - specify						
Group 19: Inter-phase Barrier and Terminal Cover	**Code**	**Description**			**Comments**			
	A	Small inter-phase barrier			Inter-phase barriers may be required for multi-pole products with UL listed and UL recognized approvals. See C-Frame MKIV Technical Guide.			
	C	Z inter-phase barrier						
	X	Not applicable						
	Z	Special - specify						
Group 20: Approvals / Marks	**Code**	**Description**	**Comments**		**Code**	**Description**	**Comments**	
	1	UL recognized, CSA, VDE, CE	UL 1077, IEC/EN 60934		**5**	UL recognized and UL 1500	Marine ignition protection	
	2	UL listed, CSA, VDE, CE	UL 489, IEC/EN 60934		**A**	UL recognized only	UL 1077	
	3	UL listed (UL 489A), VDE	DC (telecommunication)		**B**	CE mark only		
	4	UL recognized, CSA	UL1077 / CSA		**Z**	No approvals		
Group 21: Safety Marks	**Code**	**Description**			**Comments**			
	C	CCC			Required for products exported to Peoples Republic of China.			
	X	Not applicable						
	Z	Special - specify						

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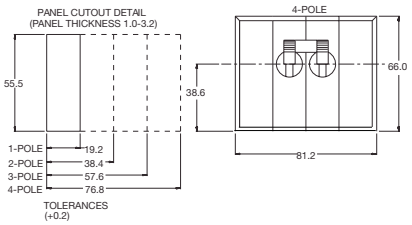


Figure 2.1

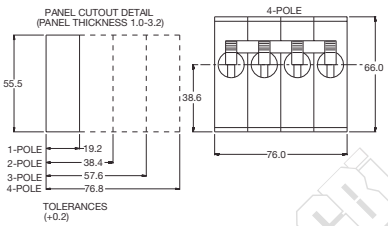


Figure 2.2

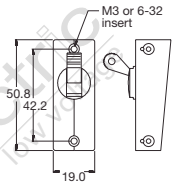


Figure 2.3

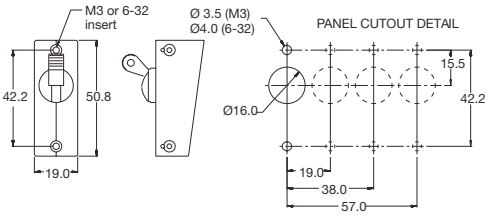


Figure 2.4

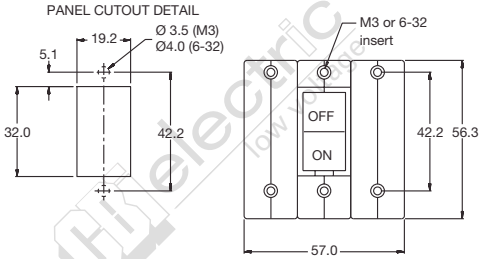


Figure 2.5

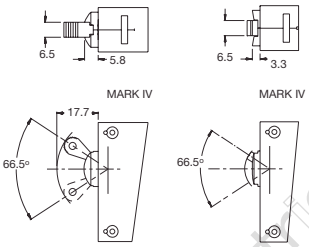


Figure 3.1

Figure 3.2

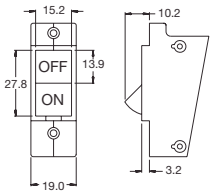


Figure 3.3

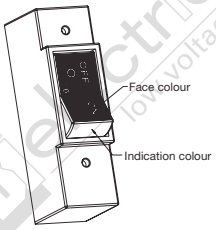


Figure 3.4

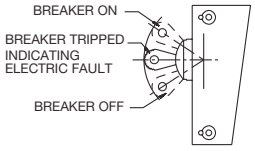


Figure 3.5

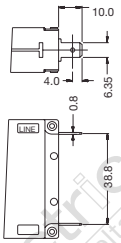
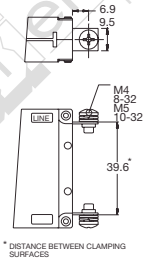


Figure 4.1



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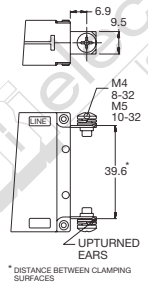


Figure 4.3

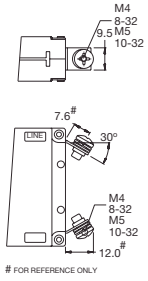
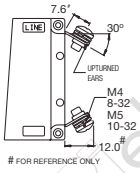


Figure 4.4



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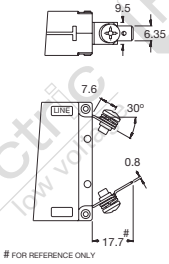

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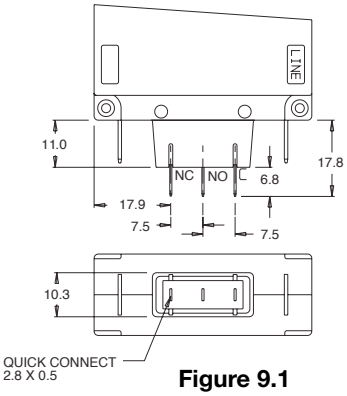


Figure 9.1

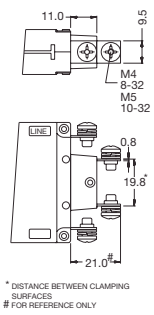


Figure 12.1

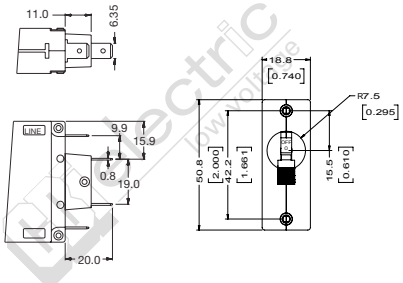
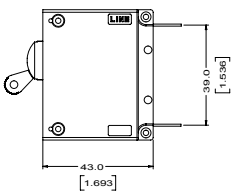
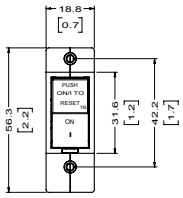


Figure 12.2





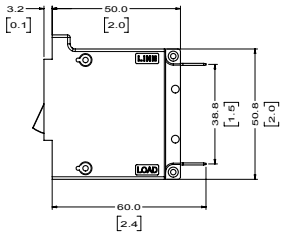


Figure 17.1

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