C-Frame Series Circuit Breakers

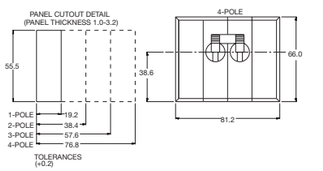


Figure 1.1

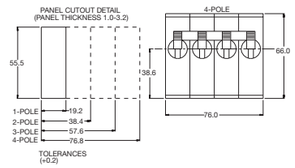


Figure 1.2

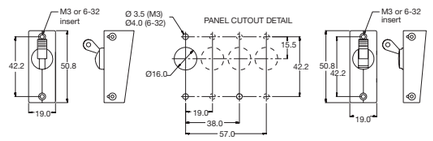


Figure 1.4

Figure 1.3

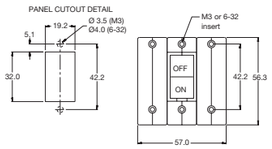


Figure 1.5

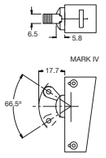


Figure 2.1

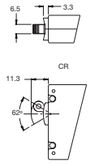


Figure 2.2

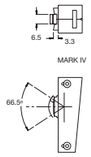


Figure 2.3

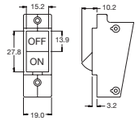


Figure 2.4

Figure 2.5

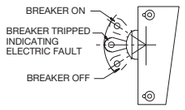


Figure 2.6

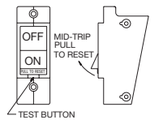


Figure 2.7

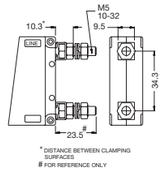


Figure 3.1

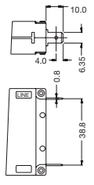


Figure 3.2

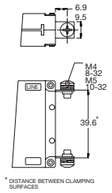


Figure 3.3

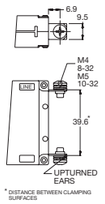


Figure 3.4

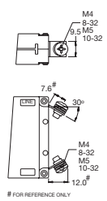


Figure 3.5

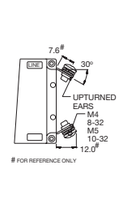


Figure 3.6

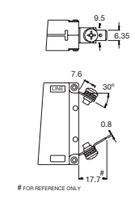


Figure 3.7

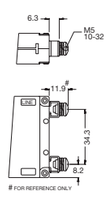


Figure 3.8

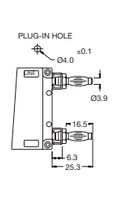


Figure 3.9

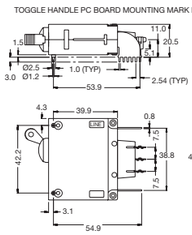


Figure 1.6

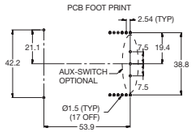


Figure 12.1

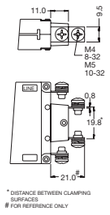


Figure 12.2

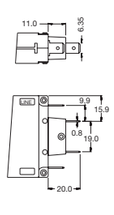
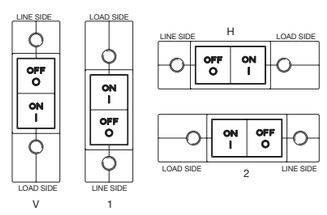


Figure 17.1



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June 2007/June Viljoen Print Design Print

DATA SHEET
CBE Range
low voltage

C-Frame Series Circuit Breakers

Features

- Hydraulic-Magnetic Technology
- 100% Rating Capability Independent of Ambient Temperature
- Up to Six Poles
- cULus, cURus, VDE and CE Approved
- Optional Trip Alarm and Auxiliary Switch
- Optional Mid Trip Indication
- Wide Range of Circuits, Mountings, Terminations and Time Delays Available
- Two Colour Handle Indication (Two Tone Flush Rocker)
- Motor Starting Applications to 30A

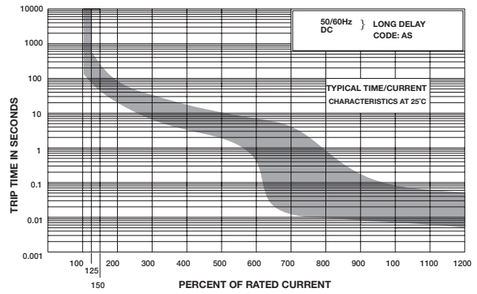
Applications

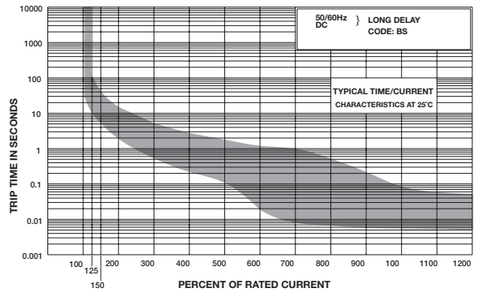
- Telecoms DC Power Distribution
- UPS Equipment
- Mobile Power-Generation Equipment
- Power Conditioning Equipment
- Alternative Energy Equipment
- Lighting Control
- Marine Protection

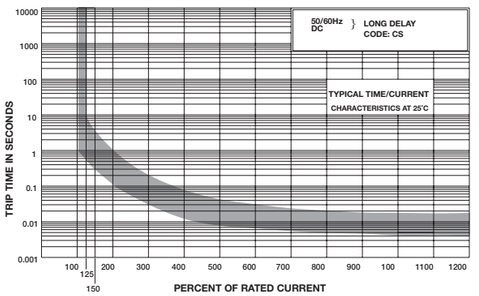
Technical Data

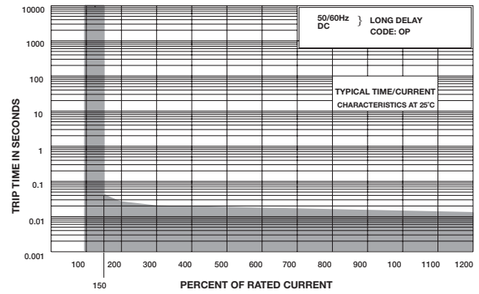
Product Type	Circuit Breaker	Circuit Breaker	Circuit Breaker	Circuit Breaker
Approvals	cULus 489[1]	UL489A	cURus[2], CE, VDE (EN60934)	cURus[2], CE, VDE (EN60934)
Number of Poles	1, 2	1,2	1,2	1 – 6 cURus / 1 – 4 VDE
Operating Voltages	120 V AC, 120/240V AC	80V DC	80V DC	240V AC
Current Ratings	0.05 – 20A	0.05 – 50A	0.05 – 50A	0.05 – 50A
Interrupting capacity	5kA	5kA	7.5kA cURus / 4kA VDE	2 kA & 5kA[3]
Product Type	**Circuit Breaker**	**Circuit Breaker**	**Circuit Breaker**	**Circuit Breaker**
Approvals	cURus[2]	cURus[2], UL1500	cURus[2], UL1500	cURus[4]
Number of Poles	1	1	1,2	1 – 3
Operating Voltages	277V AC	65V DC	120V AC, 120/240V AC	80V DC, 240V AC, 277V AC
Current Ratings	0.05 – 30A	0.05 – 50A	0.05 – 50A	0.05 – 50A
Interrupting capacity	2kA & 5kA[3]	1.5kA	1.5kA	–
Vibration Resistance	10G to MIL-STD-202F Method 204D Test A			
Shock Resistance	100G to MIL-STD-202F Method 213B Test A			
Operating Temperature Range	-40°C to +85°C			
Notes:	[1]UL489 & CSA 22.2 No 5-02, [2]UL1077 & CSA 22.2 No 235-M89, [3]5kA with back up fuse, [4]UL508 & CSA 22.2 No 14-M9			

Preferred Standard Delays









C-Frame Series Circuit Breakers

Long Code

Group 0: Frame

Code	Description	Comments
C	C-Frame	

Group 1: Type

Code	Description	Comments
A	C-Frame CR	UL Recognized VDE (60934) approvals only
B	C-Frame Mark IV	
G	C-Frame Mark IV UL 1500	UL Recognized approvals only

Group 2: Mounting

Code	Description	Comments
3	Snap-in mount edges beveled	See figure 1.1
B	Snap-in mount edges flush	See figure 1.2
2	Front mount round aperture	See figure 1.3
C	Front mount round aperture, dome	See figure 1.4, required for UL listed products, Mark IV only
S	Front mount rectangular aperture flush rocker handle type	See figure 1.5, available on C-Frame Mark IV only
P	PCB mount	See figure 1.6, with PCB mount terminals only
Z	Special specify	

Group 3: Handle or Pole Blank (Reduced Handle)

Code	Description	Comments
A	Standard handle	See figure 2.1; for mountings 3, B, 2, C
B	Short handle	See figure 2.2; for mountings 3, B, 2, CR only
C	Cut off handle	See figure 2.3; for mountings 3, B, 2, C Only 1 handle per Unit
H	Flush rocker handle	See figure 2.4; for mounting S, Mark IV Only 1 handle per Unit
M	Two tone flush rocker handle	See figure 2.5; for mounting S, Mark IV Only 1 handle per Unit
Y	No handle, Blank front plate	For reduced handle version, on pole(s) without handle
2	Standard handle, mid trip	See figure 2.6; for mountings 3, B, 2, C, Mark IV only
5	Flush rocker handle, mid trip pull to reset	See figure 2.7; for mounting S, Mark IV Only 1 handle per Unit
6	Two tone flush rocker handle, mid trip pull to reset	For mounting S; Mark IV Only 1 handle per Unit
Z	Special specify	

Group 4: Main Terminal Description

Code	Description	Comments
AX	M5 or 10-32 stud	See figure 3.1; 50A max. Mark IV only
CX	Rear quick connect terminal (0.8mm X 6.35mm)	See figure 3.2; 25A max.
21	Screw terminal, Bus connected (M4 or 8-32)	See figure 3.3; 40A max.
22	Screw terminal, Bus connected (M5 or 10-32)	See figure 3.3; 50A max.
31	Screw terminal, Upturned ears (M4 or 8-32)	See figure 3.4; 40A max.
32	Screw terminal, Upturned ears (M5 or 10-32)	See figure 3.4; 50A max.
41	300 Bent screw terminal, Bus connected (M4 or 8-32)	See figure 3.5; 40A max.
42	300 Bent screw terminal, Bus connected (M5 or 10-32)	See figure 3.5; 50A max.
51	300 Bent screw terminal, Upturned ears (M4 or 8-32)	See figure 3.6; 40A max.
52	300 Bent screw terminal, Upturned ears (M5 or 10-32)	See figure 3.6; 50A max.
61		See figure 3.7; 40A max.
62	Marine screw terminal (M5 or 10-32)	See figure 3.7; 50A max.
4X	M5 flush rear screw terminal	See figure 3.8; 50A max.; Mark IV only
PX	PCB terminal	See figure 1.6 50A max.; CR and Mark IV are different
4P	Plug-in terminal ø3.91mm x 19.05mm)	See figure 3.9; 50A max.; Mark IV only
ZZ	Special specify	

Group 5: Number of Poles

Code	Description	Code	Description	Note
1	1 pole metric	A	1 pole imperial	CR four pole max.
2	2 pole metric	B	2 pole imperial	
3	3 pole metric	C	3 pole imperial	
4	4 pole metric	D	4 pole imperial	
5	5 pole metric	E	5 pole imperial	
6	6 pole metric	F	6 pole imperial	

Group 6: Rated Voltage and Frequency

Code	Description	Comments
J	240V 50/60Hz	Common bus at 240V
K	277V 50/60Hz	Common bus at 277V
N	80V DC	Mark IV only
E	65V DC	
S	120/240V 50/60Hz	3 wire centre tap supply, 120V per phase, Mark IV only
Q	240/415V 50/60Hz	3 Phase multi wire system, Mark IV only
R	277/480V Hz	3 Phase multi wire system
M	80V DC / 240V 50/60z	AC/DC version only with AC and DC curves, Mark IV only
L	80V DC / 277V 50/60Hz	AC/DC version only with AC and DC curves, Mark IV only
Z	Special specify	

Group 7: Time Delay
(For details of time delay refer to the application guide or web site)

Code	Description	System	Pulse Tolerance	Code	Description	System	Pulse Tolerance
AS	Long delay	AC or DC	8 x In	CE	CH & inertia time delay	AC	35 x In
AI	AS & inertia wheel	AC or DC	20 x In	US	Ultra short time delay	AC or DC	None
AH	Long delay, high inrush	AC	20 x In	OP	Instantaneous trip	AC or DC	None
AE	AH & inertia wheel	AC	35 x In	AD	Long delay, Dual rated	AC and DC	8 x In
BS	Medium delay	AC or DC	8 x In	BD	Medium delay, Dual rated	AC and DC	8 x In
BI	BS & inertia wheel	AC or DC	20 x In	CD	Short delay, Dual rated	AC and DC	8 x In
BH	Medium delay, high inrush	AC	20 x In	AW	AD & inertia wheel, Dual rated	AC and DC	20 x In
BE	BH & inertia wheel	AC	35 x In	BW	BD & inertia wheel, Dual rated	AC and DC	20 x In
CS	Short delay	AC or DC	6 x In	CW	CD & inertia wheel, Dual rated	AC and DC	15 x In
CI	CS & inertia wheel	AC or DC	15 x In	OX	Switch		
CH	Short delay, high inrush	AC	15 x In	ZZ	Special specify		
H3	Short delay	AC or DC	6 x In				

Group 8: Main Circuit Current
(Example only, any ampere rating possible)

Code	Description
050M	50mA
0100	1A
1000	10A
1500	15A
5000	50A
XXXX	Not applicable

Group 9: Circuit Configuration

Code	Description	Comments
AX	Switch	
BX	Series trip	
CX	Relay trip Current sensing, centre terminal construction	30A max for the sensing coil; total current 50A max
DX	Relay trip Voltage sensing, centre terminal construction	
EX	Shunt trip current sensing, 3rd terminal close to load side	Total load 50A maximum
FX	Shunt trip voltage sensing, 3rd terminal close to load side	
GX	Dual control shunt trip construction, 3rd terminal close to load side	Voltage coil normally at line voltage; No AH, BH, CH, AE, BE, CE
HX	Dual control - relay trip construction (4 terminal)	No AH, BH, CH, AE, BE, CE
JX	Switch with auxiliary switch	Requires Auxiliary switch
KX	Series trip, with auxiliary switch	Requires Auxiliary switch
LX	Series trip, with trip-alarma	Trip alarm requires mid trip handle and Auxiliary switch
ZZ	Special specify	

DATA SHEET
CBE Range
CBI electric low voltage

C-Frame Series Circuit Breakers

Long Code

Group 10: Auxiliary and Alarm Switches

Code	Description	Comments
A	One change over gold tips, equally spaced terminals	0.02 to 0.1A and 30V max.
B	One change over silver plated tips, equally spaced terminals	Standard
X	Not applicable	No microswitch - Flat base plate
Z	Special specify	

Group 11: Dual control/ Relay trip Voltage and Current coil ratings

Code	Description	Code	Description	Comments
A4	110-125V AC 50/60Hz	C1	20mA	
A5	220-240V AC 50/60Hz	C2	100mA	
B0	12V DC	C3	1A	
B1	24V DC	XX	Not applicable	
B2	48V DC	ZZ	Special specify	
B3	80V DC			

Group 12: Terminals for Shunt, Relay and Dual control construction
(CR only code X)

Code	Description	Comments
A	M4/8-32 screw terminal	Figure 12.1; 40A max.
B	M5/10-32 screw terminal	Figure 12.1; 50A max.
C	Quick connect terminal	Figure 12.3; 25A max.
X	Not applicable	Only option for CR
Z	Special specify	

Group 13: Voltage for Illuminated Rocker

Code	Description	Note
X	Not applicable	

Group 14: Terminal for Illuminated Rocker

Code	Description
X	Not applicable

Group 15: Handle colour

Code	Description	Note
	For toggle handle type	The coding is dependent on the type of handle. For all handles excluding the flush rocker and two tone flush rocker handles, the colour code describes the colour of the handle. For the flush rocker handle the colour code describes the colour of the on and off actuation buttons by a single code. The two tone handle, the colour code describes the indication colour. The face colour is black and the indicator indicates the off or tripped position (see figure 2.6). After selecting the appropriate colour code select the marking code, the marking colour of the two tone handle is equivalent to the indicator colour. After selecting the appropriate marking the orientation of print may be specified. For the toggle handle types only codes V and H are applicable (see figure 17.1). If the pole has no handle because of it being a reduced handle version use code XXX.
G	Green with white marking	
W	White with black marking	
B	Black with white marking	
4	Blue with white marking	
Y	Yellow with black marking	
R	Red with white marking	
	For flush rocker handle	
W	White (On) / white (Off) black marking	
B	Black (On) / black (Off) white marking	
G	Green (On) / red (Off) white marking	
	For two tone rocker handle	
W	Black face / white indicator + marking	
R	Black face / red indicator + marking	
G	Black face / green indicator + marking	
X	No handle	
Z	Special specify	

Group 16: Handle Marking

Code	Description
A	No marking
B	I - 0
C	ON - OFF
D	I - 0 and ON - OFF
E	Ampere rating
F	I - 0 and ampere rating
G	ON-OFF and ampere rating
H	I-0 and ON-OFF and ampere rating
X	No Handle
Z	Special specify

Group 17: Handle Orientation

Code	Description	Comments
V	Vertical	See figure 17.1
H	Horizontal	See figure 17.1
I	Vertical 2	See figure 17.1
2	Horizontal 2	See figure 17.1
X	No handle	
Z	Special specify	

Group 18: Front plate colour and marking options

Code	Description	Comments
B	Black front plate no marking	
2	Black front plate no marking, with test button for mechanical trip	Test button is standard on rocker handle version, on the switch version the button is nonfunctioning and black in colour
Z	Special specify	

Group 19: Inter-phase barrier and terminal cover

Code	Description	Comments
A	Small inter-phase barrier	Interphase barriers may be required for multi-pole products that have UL approvals. Contact your nearest CBI sales office for assistance.
C	Z Inter-phase barrier	
X	Not applicable	
Z	Special specify	

Group 20: Approvals and typical safety marks
(Standard marks and approval basket covers most regions)

Code	Description	Comments
I	UL recognized, CSA, VDE	
2	UL Listed, CSA, VDE	
3	UL Listed (UL489A), VDE	
4	UL recognized, CSA	
Z	No approvals	
A	UL recognized, only	
X	Special specify	

Group 21: Optional safety marks

Code	Description	Comments
C	CCC Mark	Required for products exported to Peoples Republic of China
X	Not applicable	**Only required in specific cases where import into the country is prohibited, unless the product carries the mark.**
Z	Special specify	

For Options not listed please contact CBI for assistance

Example code: C-ASM4XBEBS2000AXX-XXXXXWHHBCZC