CBE Range

D-Frame Series Circuit Breakers

Features

- Hydraulic-Magnetic Technology
- 100% Rating Capability Independent of Ambient Temperature
- Up to Six Poles
- cULus, VDE and CE Approved
- Ratings up to 250A
- Optional Trip Alarm Switch and Auxiliary Switch
- Wide Range of Circuits, Mountings, Terminations and Time Delays Available
- Optional Mid Trip Indication
- Two Colour Handle Indication (Two Tone Flush Rocker)

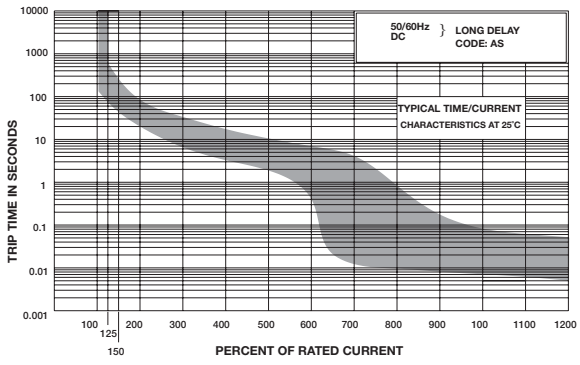
Applications

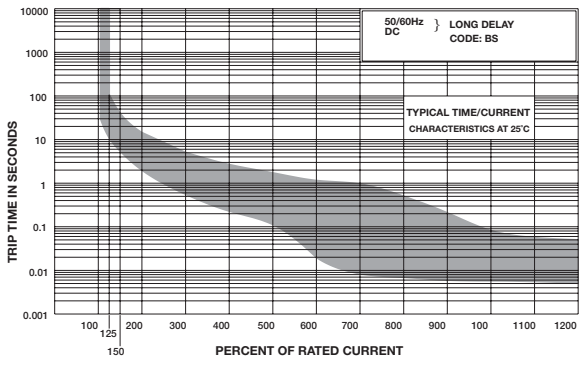
- AC and DC Branch Circuit Installations
- Telecom DC Power Distribution
- UPS Equipment
- Mobile Power-Generation Equipment
- Power Conditioning
- Alternative Energy Equipment
- Lighting Control
- Marine Protection

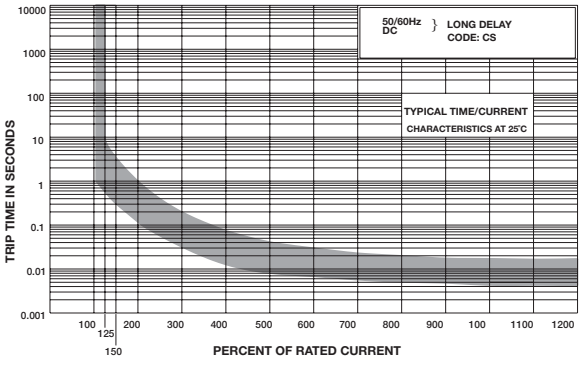
Technical Data

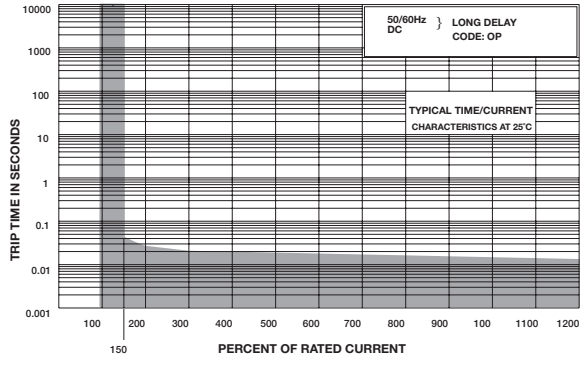
Product Type	Circuit Breaker	Circuit Breaker	Circuit Breaker
Approvals	cULus 489	CE, VDE (EN 60947-2)	UL489A, CE, VDE (EN60947-2)
Number of Poles	1, 2	1, 2	1, 3 (Parallel)
Operating Voltages	120 V AC, 80V DC, 120/240V AC	240V AC, 80V DC	80V DC
Current Ratings	0.1 – 80A AC, 100A DC (1p), 0.1 – 50A (2p)	0.1 – 50A AC, 0.1 – 100A DC 5kA	110 – 250A 10kA
Interrupting capacity	10kA, 5kA (2p)		
Product Type	**Switch**	**Circuit Breaker**	**Circuit Breaker**
Approvals	cULus 508, CE, VDE (EN60947-3)	cURus 1077	CE, VDE (EN 60934
Number of Poles	1, 2	1 to 6	1 to 4
Operating Voltages	120V AC, 120/240V AC	80V DC, 277V AC, 277/480 V AC	80V DC, 240V AC, 240/415V AC
Current Ratings	50A	0.02 – 100A (1p), 0.02 – 70A (2-6p)	0.01 – 100A (1p), 0 – 70A (2-4p)
Interrupting capacity	600 A (For 1 sec)	2kA AC, 5kA DC	3kA AC, 5kA DC
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		

Preferred Standard Delays









D-Frame Series Circuit Breakers

Long Code

Group 0: Frame

Code	Description
D	D-Frame

Group 1: Type

Code	Description	Comments
1	D-Frame D – Type	UL Recognized approvals only
2	D-Frame DD – Type	UL Listed and UL recognized approvals

Group 2: Mounting

Code	Description	Comments
A	Front mount rectangular aperture toggle handle type	See figure 1.1
B	Snap-in mount edges flush	See figure 1.2, available on D-Type only
D	Centre lock mounting	See figure 1.3, available on D-Type only
S	Front mount rectangular aperture flush rocker handle type	See figure 1.4, available on DD-Type only
Z	Special specify	

Group 3: Handle or Pole Blank (Reduced Handle)

Code	Description	Comments
A	Standard handle	See figure 2.1; for mountings A, B
B	Short handle	See figure 2.2; for mountings A, B; D-Type only
C	Cut off handle	See figure 2.3; for mountings A, B; only 1 handle per unit
D	Paddle handle	See figure 2.4; for mounting D; only 1 handle per unit
E	Baton handle	See figure 2.5; for mounting D; only 1 handle per unit
H	Flush rocker handle	See figure 2.6; for mounting S; only 1 handle per unit
M	Two tone flush rocker handle	See figure 2.7; for mounting S; only 1 handle per unit
W	No handle, Blank front plate, D-frame type	For reduced handle version, on pole without handle
2	Standard handle, mid trip	See figure 2.8; for mountings A, B
5	Flush rocker handle, mid trip pull to reset	See figure 2.9; for mounting S; only 1 handle per unit
6	Two tone flush rocker handle, mid trip pull to reset	See figure 2.10; for mounting S; 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; 60A max.
BX	Clamp terminal M3 or 6-32	See figure 3.2; 30A max.; D-Type only
CX	Rear quick connect terminal (0.8mm X 6.35mm)	See figure 3.3; 25A max.; D-Type only
MX	M6 or 1/4-20 stud terminals	See figure 3.4; 100A max.
2X	Plug in terminal (Ø6.25mm X 21.5mm)	See figure 3.5; 50A max.
3X	Plug in terminal (Ø7.80mm X 21.5mm)	See figure 3.6; 100A max.
4X	M5 or 10-32 flush rear screw terminal	See figure 3.7; 50A max.; DD-Type only
VI	Bridge terminal for 2 pole parallel construction	See figure 3.8 200A max.; DD-Type only
WI	Bridge terminal for 3 pole parallel construction	See figure 3.9; 250A max.; DD-Type only
XX	No Terminal	
ZZ	Special specify	

Group 5: Number of Poles

Code	Description	Code	Description
1	1 pole metric	A	1 pole imperial
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	
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 Hz	3 Phase multi wire system
M	80V DC / 240V 50/60z	AC/DC version only with AC and DC curves
L	80V DC / 277V 50/60Hz	AC/DC version only with AC and DC curves
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 wheel	AC	35 x In
A1	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	AC and DC	20 x In
BE	BH & inertia wheel	AC	35 x In	BW	BD & inertia wheel, Dual	AC and DC	20 x In
CS	Short delay	AC or DC	6 x In	CW	CD & inertia wheel, Dual	AC and DC	15 x In
CI	CS & inertia wheel	AC or DC	15 x In	OX	Switch (series V coil)		
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
5000	50A
K100	100A
XXXX	No current, for voltage trip poles

Group 9: Circuit Configuration

Code	Description	Comments
AX	Switch	
BX	Series trip	
CX	Relay trip Current sensing, centre terminal construction	50A max for the sensing coil; total current 100A max
DX	Relay trip Voltage sensing, centre terminal construction	
EX	Shunt trip current sensing, 3rd terminal close to load side	Total load 100A 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	
KX	Series trip, with auxiliary switch	
LX	Series trip, with trip-alarm	Trip alarm requires mid trip handle
ZZ	Special specify	

Group 10: Auxiliary and Alarm Switches

Code	Description	Comments
A	One change over gold tips, equally spaced terminals	0.02 to 0.1A Max 30V
B	One change over silver plated tips, equally spaced terminals	
M	Integrated micro switch housing, silver tips	Required for parallel bridged DD-Type on last pole. See figure 3.8 and 3.9
X	Not applicable	No auxiliary switch - Flat base plate
Z	Special specify	

D-Frame Series Circuit Breakers

Long Code

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

Code	Description	Code	Description
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

Code	Description	Comments
B	M5/10-32 screw terminal	Figure 12.1; 50A max.
C	Quick connect terminal	Figure 12.2; 25A max.
E	M5 studs terminal	Figure 12.3; 60A max.
X	Not applicable	
Z	Special specify	

Group 13: Voltage for Illuminated Rocker

Code	Description	Note
Z	Special specify	For illuminated handle versions please contact your nearest CBI office for assistance.
X	Not applicable	

Group 14: Terminal for Illuminated Rocker

Code	Description
Z	Special specify
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 2.7). 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 direction of print may be specified. For the toggle handle types only codes V and H are applicable (see figure 15.1). 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 15.1 The diagram only shows the flush rocker printing, which has the opposite printing position (ON/OFF) to other handle types if the breaker needs to be reverse fed then the printing will be upside down and codes 1and 2 should be selected.
H	Horizontal	
1	Vertical 1	
2	Horizontal 2	
X	No handle	
Z	Special specify	

Group 18: Front plate colour and marking options

Code	Description	Comments
A	Black front plate standard marking	I-0, ON-OFF and Amp rating
2	Black front plate no marking, with test button for mechanical trip	Test button is standard on mid trip rocker handle version
Z		

Group 19: Inter-phase barrier and terminal cover
(Interphase barriers and terminal covers are required for UL listed Approvals)

Code	Description	Comments
A	Small inter-phase barrier	Interphase barriers and terminal covers may be required for multi-pole products that have UL listed approvals and UL recognized approvals. See the application guide for the D/DD frame for details, or contact your nearest CBI sales office for assistance.
B	Large inter-phase barrier	
C	Z Inter-phase barrier	
1	Terminal cover(s)	
2	Small inter-phase barrier and terminal cover	
3	Large inter-phase barrier and terminal cover	
4	Z inter-phase barrier and terminal cover	
X	Not applicable	
Z	Special specify	

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

Code	Description	Comments
1	UL recognized, CSA, VDE, CE	For VDE, CE normally IEC/EN60934
2	UL Listed, CSA, VDE, CE	For VDE, CE normally IEC/EN60947-2
3	UL Listed (UL489A), VDE	
4	UL recognized, CSA	
A	UL recognized, only	
Z	No approvals	
X	Special specify	

Group 21: Optional safety marks

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

For Options not listed please contact CBI for assistance

Example code: D-2SM4XBSOX5000AXX-XXXXXWHHBCZC

D-Frame Series Circuit Breakers

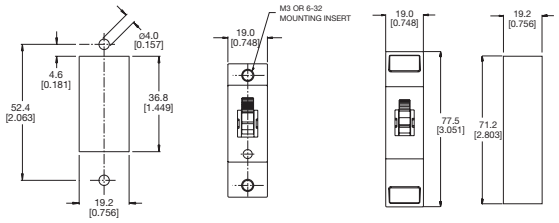


Figure 1.1

Figure 1.2

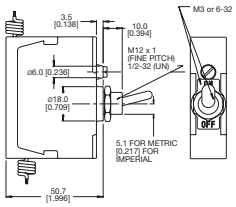


Figure 1.3

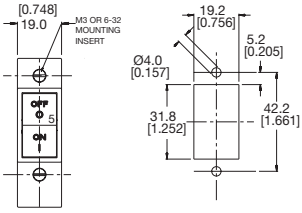


Figure 1.4

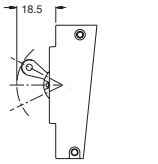


Figure 2.1

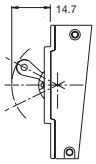
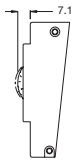


Figure 2.2



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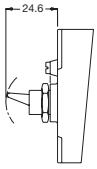

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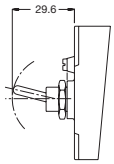

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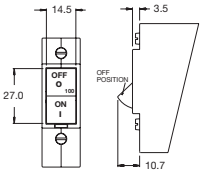

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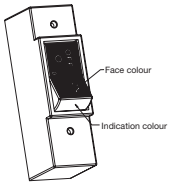

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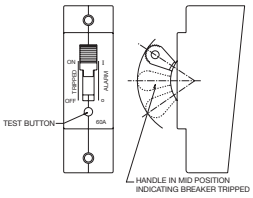

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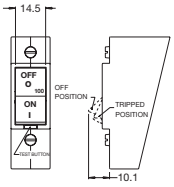

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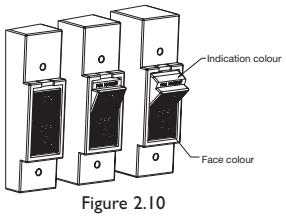

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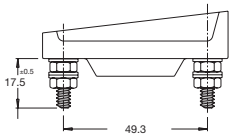
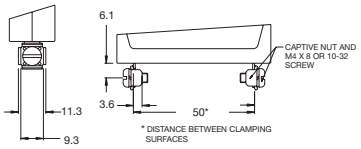


Figure 3.1



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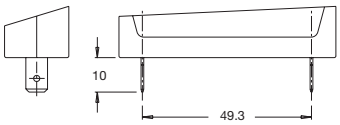

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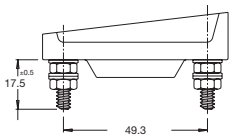

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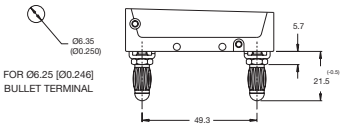

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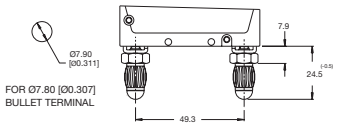

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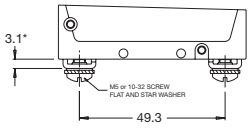

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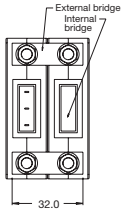

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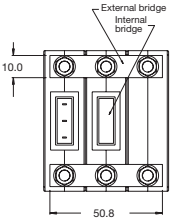

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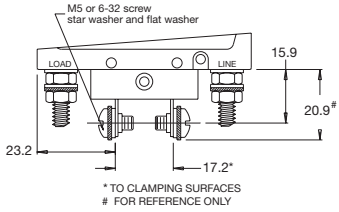
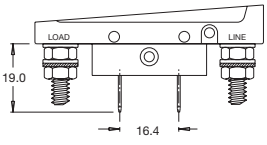


Figure 12.1



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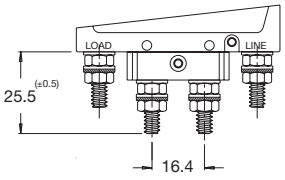

Figure 12.3

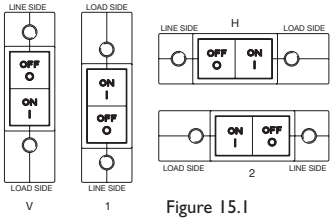

Figure 15.1

A member of the REUNERT Group

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Tel: +27 11 928 2000
Fax: +27 11 392 2354
E-mail: cbi@cbi-electric.com
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Circuit Breaker Industries Gmbh
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Landsberg Germany
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Fax: +49 8191 94729011
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