DD-Frame Series Circuit Breakers

Features

- Hydraulic-Magnetic Technology
- 100% Rating Capability Independent of Ambient Temperature
- Up to Six Poles
- UL, VDE, CE and CCC Approved
- Ratings up to 100A AC and 400A DC
- Optional Trip Alarm Switch and Auxiliary Switch
- Wide Range of Circuits, Mountings, Terminations and Time Delays Available
- Optional Mid-Trip Indication (Standard handle)
- Two Colour Handle Indication (Two Tone Flush Rocker)
- Precision Tripping

Applications

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

Technical Data

Product Type	Circuit Breaker	Circuit Breaker	Circuit Breaker
Approvals	UL 489 / CSA	IEC/EN60947-2,VDE,CE,CCC	UL489A,IEC/EN60947-2,VDE,CE
Number of Poles	1, 2, 3	1, 2	1, 2- 5 (parallel)
Operating Voltages	120/240VAC, 240VAC, 80VDC	240VAC, 80VDC	80VDC
Current Ratings	0.1-80A AC, 0.1-100A DC	0.1-50A AC, 0.1-100A DC	20 - 400A
Interrupting Capacity	5kA (240VAC)	10kA (120VAC)	10kA (DC)

Product Type	Circuit Breaker	Circuit Breaker	Switch
Approvals	IEC / EN60934, VDE, CE	UL 1077 / CSA	UL508, IEC/EN60947-3, VDE, CE
Number of Poles	1 - 4	1 - 4	1, 2
Operating Voltages	240/415VAC, 80VDC	277/480VAC, 80VDC	120/240VAC, 240VAC
Current Ratings	0.1-100A (1p), 0.1-70A (2-4p)	0.1-100A(1p), 0.1-70A (2-4p)	15 - 50A
Interrupting Capacity	3kA (AC), 5kA (DC)	2kA (AC), 5kA (DC)	600A (for 1 s)
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	-40°C to +85°C		
Aux Switch Ratings	10A @ 120VAC; 6A @ 240VAC; 0.5A @ 110VDC		

Time Delay Data (Standard Delays)

Curve Code	% Rated Current Trip times 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	-

DD-Frame Series Circuit Breakers

Example Code: D-2AAAXASAS1500BXX-XXXXXBDVAX2-X

Long Code

Group 0: Frame	**Code**	**Description**			**Comments**			
	D	D-Frame						
Group 1: Type	**Code**	**Description**			**Comments**			
	2	D-Frame DD-Type						
Group 2: Mounting	**Code**	**Description**			**Comments**			
	A	Front mount rectangular aperture toggle handle type			See figure 2.1. Warning: Maximum penetration depth into the product by the mounting screw is 6mm.			
	D	Centre lock mounting			See figure 2.2. Baton handle only.			
	S	Front mount rectangular aperture flush rocker handle type			See figure 2.3. Warning: Maximum penetration depth into the product by the mounting screw is 6mm.			
	G	Rail and surface mount.			See figure 4.6			
	Z	Special - specify						
Group 3: Handle or Pole Blank (Reduced Handle)	**Code**	**Description**			**Comments**			
	A	Toggle handle (Standard)			See figure 3.1. For mounting A.			
	C	Cut-off handle			See figure 3.2. For mounting A. Only 1 handle per unit.			
	E	Baton handle			See figure 3.3. For mounting D. Only 1 handle per unit.			
	H	Flush rocker handle			See figure 3.4. For mounting S. Only 1 handle per unit.			
	M	Two tone flush rocker handle			See figure 3.5. For mounting S. Only 1 handle per unit.			
	W	No handle, blank front plate			For reduced handle version, on pole(s) without handle.			
	2	Standard handle, mid-trip			See figure 3.6. For mounting A.			
	Q	Push to reset handle			See figure 3.4. For mounting S.			
	R	Two tone push to reset handle			See figure 3.4. For mounting S.			
	Z	Special - specify						
Group 4: Main Terminal Description	**Code**	**Description**			**Comments**			
	AX	M5 or 10-32 stud terminal			See figure 4.1. 60A max.			
	MX	M6 or 1/4-20 stud terminal			See figure 4.1. 100A max.			
	2X	Plug-in terminal (Ø6.25mm X 21.5mm)			See figure 4.2. 50A max.			
	3X	Plug-in terminal (Ø7.80mm X 21.5mm)			See figure 4.3. 100A max.			
	4X	M5 or 10-32 flush rear screw terminal			See figure 4.4. 50A max.			
	5X	Double quick connect terminal (0.8mm X 6.35mm)			See figure 4.5. 50A max.			
	DX	Top & bottom quick-connect terminals (0.8mm x 6.35mm)			See fig.4.6. For mounting G only			
	LX	Top & bottom clamp terminals.			See fig.4.6. For mounting G only			
	V1	Bridge terminal for 2 pole parallel construction (on M6 or ¼ - 20 stud terminal) 4P & 5P						
	W1	Bridge terminal for 3 pole parallel construction (on M6 or ¼ - 20 stud terminal) 4P & 5P						
	X1	Bridge terminal for 2 pole parallel construction with M8 nut for lug (on M6 ¼-20 stud terminal)						
	ZZ	Special - specify						
Group 5: Number of Poles	**Code**	**Description**	**Code**	**Description**	**Code**	**Description**	**Code**	**Description**
	1	1 pole metric	**4**	4 pole metric	**A**	1 pole imperial	**D**	4 pole imperial
	2	2 pole metric	**5**	5 pole metric	**B**	2 pole imperial	**E**	5 pole imperial
	3	3 pole metric	**6**	6 pole metric	**C**	3 pole imperial	**F**	6 pole imperial
Group 6: Rated Voltage and Frequency	**Code**	**Description**		**Comments**				
	J	240V 50/60Hz			**R**	277/480V 50/60Hz		3 phase multi-wire system.
	K	277V 50/60Hz			**M**	80V DC / 240V 50/60Hz		AC/DC version. With AC and DC curves.
	N	80V DC			**L**	80V DC / 277V 50/60Hz		AC/DC version. With AC and DC curves.
	S	120/240V 50/60Hz		3 wire centre tap supply. 120V per phase.	**H**	125V DC		
	T	110V DC						
	Q	240/415V 50/60Hz		3 phase multi-wire system.	**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 0.1 – 400A.			
	0100	1A						
	1000	10A						
	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			Total load 100A 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 100A 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.			
	H1	Dual control relay trip construction, with auxiliary switch			Fly leads (wire terminals) for relay trip coil (Group 12). Curves AH, BH, CH, AE, BE, CE not possible.			
	ZZ	Special - specify						
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.			
	M	Integrated micro-switch housing (Parallel bridge)			Required for parallel bridged units (1 pole per bridged unit). See figure 10.1.			
	X	Not applicable			No auxiliary switch – flat base plate			
	Z	Special - specify						

DD-Frame Series Circuit Breakers

Long Code

Group 11: Voltage and Current Coil Ratings (Du-con / shunt / relay)	**Code**	**Description**	**Code**	**Description**	**Code**	**Description**	**Code**	**Description**
	A1	12V AC 50/60Hz	**A5**	220-240V AC 50/60Hz	**B2**	48V DC		
	A2	24V AC 50/60Hz			**B3**	80V DC	**XX**	Not applicable
	A3	65V AC 50/60Hz	**B0**	12V DC			**ZZ**	Special - specify
	A4	110-125V AC 50/60Hz	**B1**	24V DC				

Group 12: Terminals for Shunt, Relay and Dual Control Construction	**Code**	**Description**	**Comments**
	B	M5 or 10-32 screw terminal	See figure 12.1. 50A max.
	C	Quick connect terminal (0.8mm X 6.35mm)	See figure 12.2. 25A max.
	D	Flying leads (wire terminals)	See figure 12.3. 15A max.
	E	M5 or 10-32 stud terminal	See figure 12.4. 60A max.
	X	Not applicable	
	Z	Special - specify	

Group 13: Voltage for Illuminated Rocker	**Code**	**Description**	**Comments**
	X	Not applicable	
	Z	Special - specify	

Group 14: Terminal for Illuminated Rocker	**Code**	**Description**	**Comments**
	X	Not applicable	
	Z	Special - specify	

Group 15: Handle Colour	**Code**	**Description**	**Comments**
		For toggle handle type	Toggle handle type
	W	White	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).
	B	Black	
	R	Red	
		For flush rocker handle	Flush rocker handle
	W	White (ON) / white (OFF)	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).
	B	Black (ON) / black (OFF)	
		For two tone rocker handle	Two tone rocker handle
	W	Black face, white indicator + marking	The colour code describes the indication colour. The face colour is black and the indicator indicates the off or tripped position. See figure 3.5. 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. If the pole has no handle because of it being a reduced handle version, use code XXX. (Group 15, 16 & 17)
	G	Black face, green indicator + marking	
	Y	Black face, yellow 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 or 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**	**Code**	**Description**	**Comments**
	A	Black front plate standard marking	I – O and ON - OFF and ampere rating	**2**	Black front plate no marking, with test button	Test button for mechanical trip
	B	Black front plate no marking		**Z**	Special - specify	
	1	Black front plate standard marking, with test button	Test button for mechanical trip			

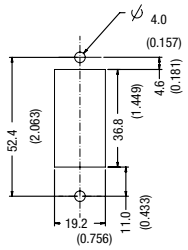
Group 19: Inter-phase Barrier and Terminal Cover	**Code**	**Description**	**Code**	**Description**	**Comments**
	A	Small inter-phase barrier	**3**	Large inter-phase barrier and terminal cover	Inter-phase barriers and terminal covers may be required for multi-pole products with UL listed and UL recognized approvals. See DD-Frame Technical Guide.
	B	Large inter-phase barrier	**4**	Z inter-phase barrier and terminal cover	
	C	Z inter-phase barrier	**X**	Not applicable	
	1	Terminal cover (s)	**Z**	Special - specify	
	2	Small inter-phase barrier and terminal cover	5	Rail adaptor barrier. Group 4. DX and LX only	

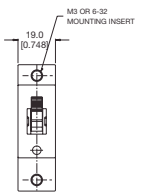
Group 20: Approvals / Marks	**Code**	**Description**	**Comments**	**Code**	**Description**	**Comments**
	1	UL recognized, CSA, VDE, CE	UL 1077, normally IEC/EN 60934	**5**	UL recognized and UL 1500	Marine ignition protection
	2	UL listed, CSA, VDE, CE	UL 489, normally IEC/EN 60947-2	**A**	UL recognized 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 / CRCC	Required for products exported to Peoples Republic of China.
	X	Not applicable	
	Z	Special - specify	

For options not listed, please contact CBI for assistance

DD-Frame Series Circuit Breakers





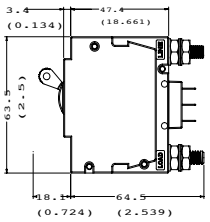
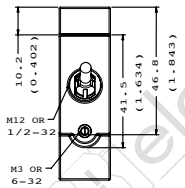


Figure 2.1



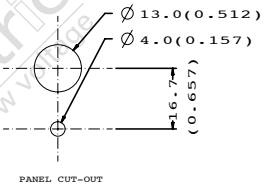
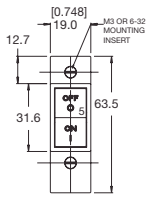
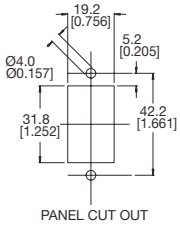


Figure 2.2





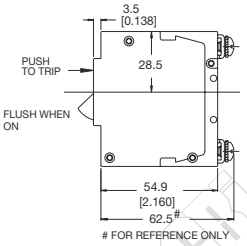
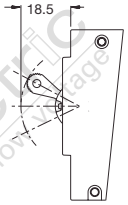


Figure 2.3



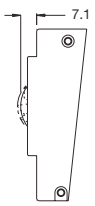
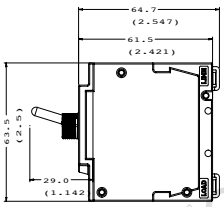


Figure 3.1 Figure 3.2



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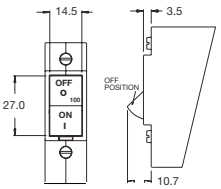
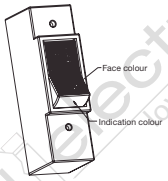


Figure 3.4



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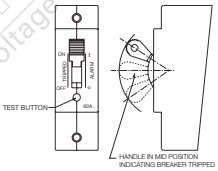

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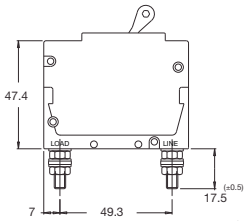


Figure 4.1

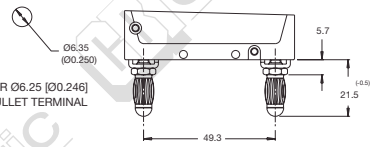


Figure 4.2

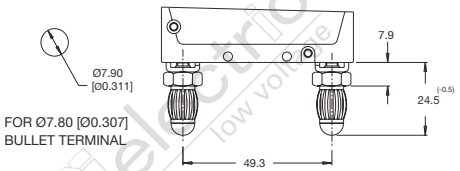
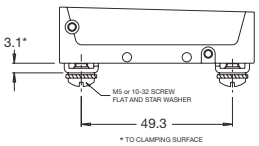


Figure 4.3



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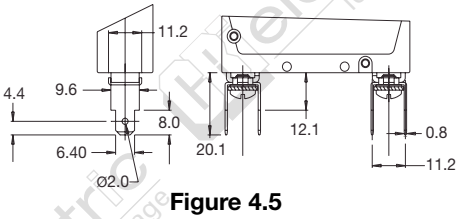

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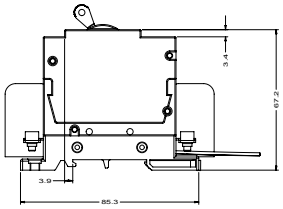

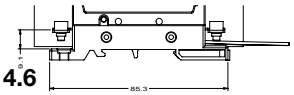

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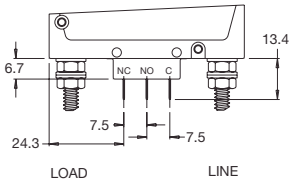
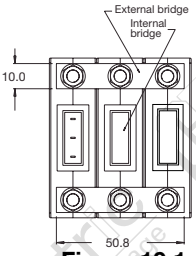


Figure 9.1



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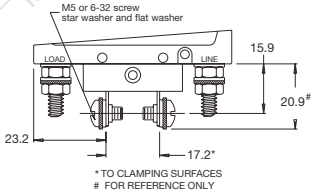

Figure 12.1

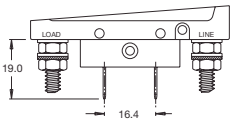

Figure 12.2

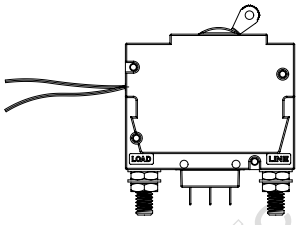

Figure 12.3

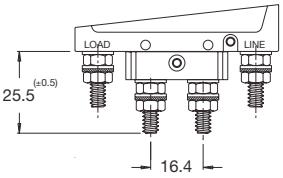

Figure 12.4

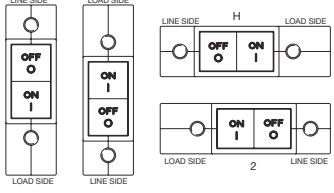

Figure 17.1

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