









The DD-Frame is a compact yet very powerful circuit breaker. Using hydraulic-magnetic technology which ensures that breaker performance is unaffected by ambient temperature, the CBI DD-Frame series is suitable for various applications in telecom and datacom equipment. These applications include being the main breaker for battery applications, power supplies, distribution breaker for larger loads in DC branch protection, lighting control, UPS, inverters and DC power switching and in power distribution units (PDU). The DD-Frame is also available as a switch.

Due to its robustness and ability to withstand harsh environmental conditions, the DD-Frame breaker is also used in military applications, railway infrastructure, railway signalling and rolling stock and also in renewable energy solutions for protection in combiner boxes and other battery and storage applications.

DD-Frame profile

The DD-Frame is available in various configurations and can be structured to suit specific requirements. Available in 1 to 6 poles, this robust and versatile circuit breaker comes in both AC and DC configurations with a choice of various time delay characteristics.

Among the common configurations are the front mount standard handle and flush rocker handle options. As for the termination, metric and imperial stud terminals, plug-in (bullet terminal), screw, and clamp terminal configurations are available. The breaker comes with the option of an auxiliary switch and trip alarm. Customer specific configurations, DIN rail mount and various other options are available.

The DD-Frame compact and precision circuit breaker is made of high quality thermoset material, which offers increased electrical and mechanical endurance. The self-cleaning mechanism of the contact actuators ensures that the circuit breaker contacts are kept clean and operate smoothly, offering longer life span.

Approvals

The DD-Frame circuit breaker is CE & CCC compliant and carries various approvals such as VDE, cURus, EAC and CCC. It is also recognised to UL1077 and UL508, and listed to UL489 and UL489A. Compliant with AS / NZS 60947-2.



(UL489A) (UL489)











Note:

The DD-Frame replaces CBI's old version of the D-Frame, and is similar in fit and form, with enhanced features.

Hydraulic-Magnetic Circuit Breakers are unaffected by ambient temperature and carries 100% rated current



Features

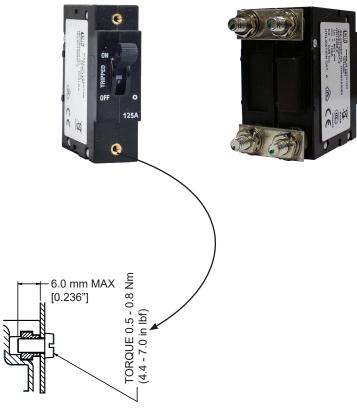
- · AC and DC circuit breaker
- · Hydraulic-magnetic technology
- 100% rating capability independent of ambient temperature
- Up to six poles
- VDE, EAC and CCC approved, CE certified
- UL compliant (Listed / recognised)
- Ratings 0.1 A to 100 Aac and 400 Adc (Specific certifications)
- Precision tripping characteristics
- Wide range of circuits, mountings, terminations and time delays
- Two colour handle indication (Two tone flush rocker)
- Optional mid-trip indication (Standard handle)
- Optional auxiliary switch and trip alarm
- Optional remote switching (see RAU data sheet)

Applications

- AC and DC branch circuit installations
- Power conditioning
- Telecom DC and Datacom power distribution
- Alternative energy equipment
- UPS equipment
- Lighting control
- Mobile power generation equipment
- Battery protection
- Railway signaling and infrastructure protection

DD-Frame HCR (High Current Rating)

CBI-electric: low voltage offers a higher current rated product, capable of handling current ratings up to 125 A in a single pole, 250 A in a two pole configuration, and 300 A in a three pole configuration at 60 Vdc.







Technical Data

Product Type	DD-Frame					
Ambient Operating Temperature	-40°C to +85°C					
Endurance	10000 operations; 1500 with current, 8500 without current (IEC60947-2 Clause 7.2.4.2)* 1000 operations DC, 6000 operations AC (IEC60934 Clause 9.11)* 10000 operations; 6000 with current, 4000 without current (UL489 Clause 7.1.5)* As per UL 489 or minimum of 1000 operations with current (UL489 A Clause 12)* 6000 operations with current (UL1077 Clause 22)*					
Dielectric Strength	1000 - 2000 Vac for one minute (IEC60947-2 Clause 8.3.3.3, IEC60934 Clause 9.7)* 1000 Vac plus twice the rated voltage for one minute (UL489 Clause 7.1.9, UL489A Clause 8, UL1077 Clause 23)*					
Rated Impulse Withstand Voltage	4 kV (IEC60947-2 Clause 8.3.3.2)*					
Weight	102 g per pole, 160 g with auxiliary switch (unpacked)					
Altitude	Certification tests done at altitude ≈ 2000 metres. Will operate at higher altitudes.					
Shock	100 G to MIL-STD-202G, test method 213B, test condition 1					
Vibration	10 G to MIL-STD-202G test method 204D, test condition A					
Flammability	I3 - Ignition does not persist at 850°C after glow wire is withdrawn with an oxygen index of ≥ 28					
Toxicity	F1 - Smoke index of ≤ 20 which determines the fume class					
Pollution Degree	PD2 - Normally only non-conductive pollution occurs. Temporary conductivity caused by condensation is to be expected.					

^{*} Refer to the standard for details

Product Type	Circuit Breaker	Circuit Breaker	Circuit Breaker	Circuit Breaker
Approvals	UL489	IEC / EN 60947-2, GB14048.2, CE	UL489A, IEC / EN 60947-2, GB14048.2, CE	UL489 A IEC60947-2, CE
Number of Poles	1, 2, 3	1, 2, 3, 4	2 - 5 (parallel)	1, 2, 3
Maximum Voltages	120 Vac, 120 / 240 Vac, 240 Vac, 80 Vdc	240 / 415 Vac, 80 Vdc	80 Vdc	60 Vdc
Current Ratings	0.1 - 80 Aac, 0.1 - 100 Adc	0.1 - 60 Aac, 0.1 - 100 Adc	110 - 400 A	125 A, 250 A, 300 A
Interrupting Capacity	5 kA (AC & DC)	5 kA (AC), 10 kA (DC)	5 kA (DC)	5 kA (DC)
HIC	10 kA (AC & DC)		10 kA (DC)	

Product Type	Circuit Breaker	Circuit Breaker	Switch
Approvals	IEC / EN 60934, CE	UL1077, cURus	UL508, IEC / EN 60947-3, CE
Number of Poles	1 - 4	1 - 6	1, 2
Maximum Voltages	240 / 415 Vac, 80 Vdc	277 / 480 Vac, 80 Vdc	120 / 240 Vac, 240 Vac
Current Patings	0.1 A - 100 A (1 p),	0.1 A - 100 A (1 p),	50 A
Current Ratings	0.1 A - 70 A (2 - 3 p)	0.1 A - 70 A (2 - 4 p)	50 A
Interrupting Capacity	3 kA (AC), 5 kA (DC)	2 kA (AC), 5 kA (DC)	0.6 kA (for 1 switch)

Verify approvals for specific ratings in accordance with the relevant test certificate

Aux Switch Specification							
Gold DB3	EN61058 0.1 A @ 250 Vac & 0.1 A @ 80 Vdc and UL1054 0.1 A @ 125/250 Vac & 0.1 A @ 30 Vdc & 0.3 A @ 60 Vdc						
Silver DB2	EN61058 10 A @ 250 Vac & 0.1 A @ 80 Vdc and UL1054 10 A @ 125/250 Vac						
Silver V4D	EN61058-1 10 A @ 250 Vac						



Torque Table

Description	Size	Torque Value		
Front Inserts	M3	0.5 - 0.8 Nm		
Front inserts	6 - 32	4.4 - 7 in/lbf		
	M5	2.0 - 2.8 Nm		
Rear Studs	10 - 32	18 - 24 in/lbf		
Real Studs	M6	3.5 - 4.0 Nm		
	1/4 - 20	30 - 35 in/lbf		
Clamp Screws (DIN Rail mounting)	M3.5	1.2 - 1.5 Nm		
Flush Rear Screws	M5	1.7 - 2.3 Nm		
riusii Redi Sciews	10 - 32	15 - 20 Nm		

DD-Frame Series Circuit Breakers Ordering Information

Group 1:	Code		Desc	ription		Commer	nts		
Frame	D			Frame		Commen	11.5		
Group 2:	Code			ription		Commer	nts		
Туре	2			e, DD-Type					
Group 3:	Code			ription	Comments				
Mounting	Α	Fr		tangular aperture		Standard (toggle)	handle type		
	G			irface mount	DIN and mini rail and surface mount (Auxiliary switch not available)				
	S	Front mount, re	ctangular ape	erture, flush rocker handle type				,	
Group 4:	Code		Desc	ription		Commer	nts		
Handle Type or	2		Standard ha	ındle, mid-trip		Toggle			
Blank for Reduced Handle	Α		Standar	d handle		Toggle			
	С		Cut-off	f handle		Single pole	only		
	Н		Flush roc	ker handle		Use with group 3, code S. Reduced	handle up to	three pole only	
	М		Flush rocker h	andle, two tone		Use with group 3, code S. Reduced	handle up to	three pole only	
	W		Blank pole	- No handle		For reduced handle version, o			
	Q			dle, push-to-reset		Use with group 3, code S. Reduced		. ,	
	R	Flush re		push-to-reset, two tone		Use with group 3, code S. Reduced	<u>.</u>	three pole only	
Group 5: Termination	Code			ription	Comments				
Termination	3X	Plug-in (bullet) terminal (Ø 7.80 mm X 21.5 mm)				125 A max			
	4X	Flush rear screw terminal, M5 or 10-32				50 A max			
	5X	Double quick		terminal (0.8 mm X 6.35 mm)		50 A ma			
	AX	Stud terminals, M5 or 10-32				60 A ma	X		
	DX	Quick connect terminals (0.8 mm x 6.35 mm), top & bottom for mounting version G				30 A max. For rail mounting G in group 3 only.			
	LX	Clamp term	inal, top & bot	tom for mounting version G	30 A max. For rail mounting G in group 3 only.				
	MX		Stud terminals	s, M6 or 1/4-20		125 A m	эх		
Group 6:	Code	Description	Code	Description	Code	Description	Code	Description	
Total No. of Poles	1	1 pole metric	4	4 pole metric	Α	1 pole imperial	D	4 pole imperial	
	2	2 pole metric	5	5 pole metric	В	2 pole imperial	Е	5 pole imperial	
	3	3 pole metric	6	6 pole metric	С	3 pole imperial	F	6 pole imperial Comments	
Group 7: Rated Voltages	Code	Description	1	Comments	Code				
and Frequency -	Н	125 Vdc		0.1 A - 60 A Max (Single pole only)	N	80 Vdc			
Main Circuit	J	120 Vac; 240 Vac (Apply to listed single pole products)		50 / 60 Hz	R	120 / 240 Vac, 240 Vac, 240 / 415 Vac, 277 / 480 Vac (Apply to recognised multipole products)		50 / 60 Hz	
	К	240 Vac; 277 Vac (Apply to recognised single pole products)		50 / 60 Hz	S	120 / 240 Vac, 240 Vac or 240 / 415 Vac (Apply to listed multipole products)		50 / 60 Hz	
	L	AC & DC Application for single pole units (80 Vdc, 240 Vac & 277 Vac)		AC / DC version. With AC and DC curves. (50 / 60 Hz)	V 60 Vdc			No trip alarm, No mid-trip	
	М	AC & DC Application f units (80 Vdc, 240 Vac Vac & 277 / 480	c, 240 / 415	AC / DC version. With AC and DC curves. (50 / 60 Hz)					

^{*} Note: For RAU (D5 & D7) long codes, please refer to RAU data sheet



DD-Frame Series Circuit Breakers Ordering Information

Group 8:	Code	Description	System	Pulse Tolerance (X In)	Code	Description	System	Pulse Tolerance (X In)	
Time Delay		Long delay 50 / 60 Hz			Short dolay 50 / 60 Hz				
Characteristics (Pulse Tolerance @	AD	AS & Dual rated	AC and DC	8 - 10	СН	CS & high inrush	AC	12 - 15	
10 ms)	BD	Medium delay 50 / 60 Hz BS & Dual rated	AC and DC	8 - 10	AS	Long delay 50 / 60 Hz	AC or DC	8 - 10	
	CD	Short delay 50 / 60 Hz CS & Dual rated	AC and DC	6 - 8	BS	Medium delay 50 / 60 Hz	AC or DC	8 - 10	
	AE	Long delay 50 / 60 Hz AH & inertia delay	AC	28 - 35	cs	Short delay 50 / 60 Hz	AC or DC	6 - 8	
	BE	Medium delay 50 / 60 Hz BH & inertia delay	AC	28 - 35	AW	Long delay 50 / 60 Hz AD & inertia delay	AC and DC	16 - 20	
	CE	Short delay 50 / 60 Hz CH & inertia delay	AC	21 - 35	BW	Medium delay 50 / 60 Hz BD & inertia delay	AC and DC	16 - 20	
	Al	Long delay 50 / 60 Hz AS & inertia delay	AC or DC	16 - 20	cw	Short delay 50 / 60 Hz CD & inertia delay	AC and DC	12 - 15	
	ВІ	Medium delay 50 / 60 Hz BS & inertia delay	AC or DC	16 - 20	НЗ	Short delay	DC	6 - 8	
	CI	Short delay 50 / 60 Hz CS & inertia delay	AC or DC	12 - 15	OP	Instantaneous trip 50 / 60 Hz	AC or DC	None	
	AH	Long delay 50 / 60 Hz AS & high inrush	AC	16 - 20	ох	Switch 50 / 60 Hz	AC and DC		
	ВН	Medium delay 50 / 60 Hz BS & high inrush	AC	16 - 20					
Group 9:	Code		Descr			Comme	nts		
Main Circuit Current	XXXX	No		oltage trip poles					
	100		1.		Specific A rating possible from 0.1 A – 400 A				
	1000 K400		10 400						
Group 10:	Code		Descri		Comments				
Circuit	AX		Swi	tch					
Configuration (Circuit Breaker's	BX	Circuit b	reaker (series	trip current sensing)					
Internal Construction)	DX	Switch with relay trip	o, voltage sens (4 terr	sing - centre terminal construction ninal)		Select the type of termin	nation on group	13	
	GX			nunt trip construction - 3rd terminal de (3 terminal)	Circuit	breaker to handle main current, seco type of termination		vates remote trip; select	
	HX			relay trip construction (4 terminal)		Select the type of termin	nation on group	13	
	KX			h auxilairy switch	Hendle week to wild a sint of our destrict the time of				
	LA LB			th mid trip handle ip handle and aux switch	Handle goes to mid point when electrically tripped Handle goes to mid point when electrically tripped				
	LX			rip handle and trip alarm	H:	andle goes to mid point when electric			
	MX			MID trip (Reversed function - Latch	Handle goes to OFF position when tripped and send a trip alarm				
Group 11:	Code		Descri			Comme	nts		
Auxiliary and	А	Gold tips, equally	y spaced term	inals, 2.75 mm (0.108") - DB3		Not available on	Rail mount		
Alarm Switches Types & Options	В		* .	nials, 2.75 mm (0.108") - DB2		Not available on	Rail mount		
(Refer to	С			, 4.75 mm (0.189") - V4D		Not available on	Rail mount		
Aux switch specification on page 3)	К	Reversed - Link from the	e load side of t	lls, 2.75 mm (0.108") <i>Microswitch</i> he citcuit breaker to the C (Common) ux switch - DB2	OPTION K Aux switch terminal not cropped				
page 3)	L	circuit brea	aker to the NC	0.108") Link from the load side of the (Normally close) - V4D	OPTION L Aux switch terminal not cropped				
	М			or all parallel bridge poles		Use this code for ALL para	allel bridged pro	oducts	
	N	side of the circu	it breaker to th	2.75 mm (0.108") Link from the load ne NC (Normally close) - DB2		OPTION N Aux switch te	rminal not crop	pped	
	Р	Reversed - Link from the	e load side of t entact of the A	lls, 2.75 mm (0.108") <i>Microswitch</i> he circuit breaker to the C (Common) ux switch - DB2	OPTION A; NC (Normally close) terminal cropped				
	R	R Silver tips, equally spaced terminals, 2.75 mm (0.108") Link from the load side of the circuit breaker to the NO (Normally open) contact of the Aux switch - DB2				OPTION I; NC (Normally close) terminal cropped			
	Х		Not app	licable					

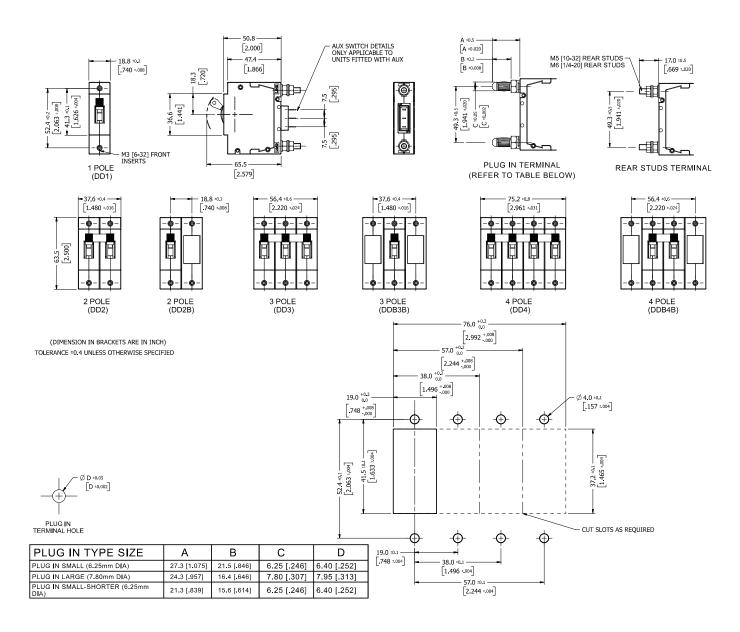


DD-Frame Series Circuit Breakers Ordering Information

Group 12: Voltage and	Code		de	Description	Code	Description	Code	Description	
Current Ratings	XX	Not applicable A	.3	65 Vac 50 / 60 Hz	B0	12 Vdc	B3	80 Vdc	
for Dual Control, Shunt and Relay	A1	12 Vac 50 / 60 Hz A	4	110 - 125 Vac 50 / 60 Hz	B1	24 Vdc	Recor	mmended pulse duration:	
Trip Construction	A2	24 Vac 50 / 60 Hz A	.5	220 - 240 Vac 50 / 60 Hz	B2	48 Vdc		20 ms to 40 ms	
Group 13:	Code	Des	cription				Comments		
Terminal Options for Dual Control.	Х	Not a	applicabl	e					
Shunt and Relay	В	Screw termin	nal, M5 c	or 10 - 32					
Coils	С	Quick connect termin	nals (0.8	mm X 6.35 mm)					
	D	Flying leads		<u> </u>					
	E	Stud termina							
Group 14:	Code		cription				Comments		
RMU	X		applicabl				Comments		
Group 15:	Code		cription				Comments		
Customer Specific	X		applicabl				Comments		
•	S								
Group 16:		Customer S	<u> </u>				Cammanta		
Handle Colour	Code		cription				Comments		
	X		handle	1.					
	В	Black handle		<u> </u>		Not applicable	e on the two to	ne version	
	G	Green handl							
	W	White handle		<u> </u>					
	R	Red handle							
	Y	Yellow handl	<u> </u>						
Group 17: Handle Markings	Code	Description					Comments		
naticile Markings	X	No handle (n/a)							
	D	I – O and ON - OFF				For products requiring VDE & UL approvals			
	Н	I – O and ON - OFF and ampere rating							
	- 1	Push-to-reset and ampere rating				3 option S only. Group 4 options Q or R only. Flush rocker or two tone rocker handle.			
Group 18: Mounting	Code	Description			Code	Description		Comments	
Orientation for	Х	No handle (n/a)			Н	Horizontal (line at		If the breaker needs to be	
Marking	1	Vertical (reverse mounting, line at the bottom)			V	Vertical (standard mounti top)	ng, line at the	reverse fed, the printing will be upside down and codes 1 or 2 should be selected.	
	2	Horizontal (line at th						
Group 19: Front Plate	Code	Description		Comments	Code	Description	1	Comments	
Marking and Test Button	1	Standard marking, with test button standard handle	n, .	Test button for mechanical trip	А	Standard marking, stan	dard handle	I – O and ON - OFF and ampere rating	
	2	No marking, with test button, rocker handle		Test button for mechanical trip	В	No marking, rocker	handle		
Group 20:	Code	Description		Comments	Code	Description		Comments	
Inter-phase Barrier and Terminal	Х	Not applicable			Α	Inter-phase barrier			
Cover	1	Terminal cover(s)			В	Inter-phase barrier	- large	Inter-phase barriers and	
	2	Inter-phase barrier & terminal cov - small	er		С	Inter-phase barrier - Z	type large	terminal covers may be required for multi-pole	
	3	Inter-phase barrier & terminal cov - large	er		D	Inter-phase barrier - Z	type small	products with UL listed and UL recognised approvals. See DD-Frame Technical Guide.	
	4	Inter-phase barrier & terminal cov - Z type							
Group 21: Approvals	Code		cription				Comments		
(Product Normally	1	CUR, UL recognised UI		*	Normally UL1077 and / or IEC / EN 60934				
Approved to)	2	CUL, UL listed UL48				Normally UL489			
	3	UL listed (UL489A)		·		DC (te	lecommunicati	on)	
Group 22: Safety Marks	Code	Des	cription				Comments		
Salety Warks	×	Not a	applicabl	е					
	С	GB14048.2 / GB 17701			CCC				
							·		

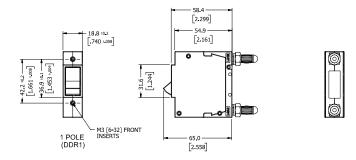


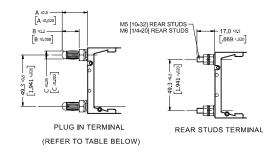
Outline Dimensions: Panel Cutout Standard Handle

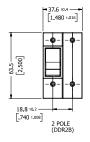


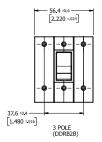


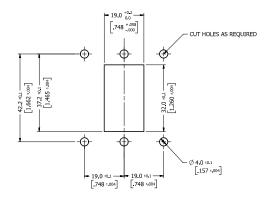
Outline Dimensions: Panel Cutout Standard Handle













PLUG IN TYPE SIZE	Α	В	С	D
PLUG IN SMALL (6.25mm DIA)	27.3 [1.075]	21.5 [.846]	6.25 [.246]	6.40 [.252]
PLUG IN LARGE (7.80mm DIA)	24.3 [.957]	16.4 [.646]	7.80 [.307]	7.95 [.313]
PLUG IN SMALL-SHORTER (6.25mm DIA)	21.3 [.839]	15.6 [.614]	6.25 [.246]	6.40 [.252]

TOLERANCE ±0.4 UNLESS OTHERWISE SPECIFIED (DIMENSION IN BRACKETS ARE IN INCH)

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Data Sheet

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