

Series C® L-Frame



Typical Series C L-Frame Circuit Breaker

- All Series C L-frame circuit breakers are HACR rated.
- L-frame circuit breakers are available as individual components (Frame, Trip Unit, Terminals), or factory assembled complete breakers. OPTIM circuit breakers are available as factory assembled only.
- L-frame circuit breakers with non-interchangeable trip units are suitable for reverse feed use.

Interrupting Capacity Ratings

UL489 Interrupting Capacity Ratings^①

Circuit Breaker Type	Number of Poles	Interrupting Capacity (RMS Symmetrical Amperes) (kA)							Page Number
		Volts Ac (50/60 Hz)					Volts Dc		
		240	277	480	600	125	250 ^{②③}	500	
LDB	2, 3	65	—	35	25	—	22	—	58
LD	2, 3, 4	65	—	35	25	—	22	—	57, 59
CLD	2, 3, 4	65	—	35	25	—	22	—	58, 61
HLD	2, 3, 4	100	—	65	35	—	25	—	57, 59
CHLD ^④	2, 3, 4	100	—	65	35	—	25	—	61
LDC	2, 3, 4	200	—	100	50	—	30	—	57, 60
CLDC ^④	2, 3, 4	200	—	100	50	—	30	—	62

IEC 947-2 Interrupting Capacity Ratings^①

Circuit Breaker Type	Number of Poles		Interrupting Capacity (Symmetrical Amperes) (kA)				Page Number
			Volts Ac (50/60 Hz)			Volts Dc	
			240	415	690	250 ^{②③}	
LDB	2, 3	I_{CU} I_{CS}	85 85	45 45	20 10	20 10	58
LD	2, 3, 4	I_{CU} I_{CS}	85 85	45 45	20 10	20 10	57, 59
CLD ^④	2, 3, 4	I_{CU} I_{CS}	85 85	45 45	20 10	20 10	58, 61
HLD	2, 3, 4	I_{CU} I_{CS}	100 100	70 70	25 13	20 10	57, 59
CHLD ^④	2, 3, 4	I_{CU} I_{CS}	100 100	70 70	25 13	20 10	61
LDC	2, 3, 4	I_{CU} I_{CS}	200 100	100 75	35 18	20 10	57, 60
CLDC ^④	2, 3, 4	I_{CU} I_{CS}	200 100	100 75	35 18	20 10	62

① Utilization category A circuit breakers.
 ② L/R = 8 milliseconds minimum.
 ③ 2-pole circuit breaker or two poles of 3-pole circuit breaker. Incorporating Thermal-Magnetic trip unit only.
 ④ 100% rated breakers

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L-Frame Digitrip Selection Guide

Trip Unit Type	Digitrip RMS 310	Digitrip OPTIM 550	Digitrip OPTIM 750	Digitrip OPTIM 1050	
RMS Sensing	Yes	Yes	Yes	Yes	
Breaker Type					
Frame	L	L	L	L	
Ampere Range	300-600A	200-600A	200-600A	200-600A	
Interrupting Rating @ 480V	35, 65, 100 (kA)	35, 65, 100 (kA)	35, 65, 100 (kA)	35, 65, 100 (kA)	
Protection					
Ordering Options	LS, LSG	LSI, LSIG	LSI, LSI(A), LSIG	LSI(A), LSIG	LSI(A), LSIG
Fixed Rated Plug (I_n)	Yes	Yes	Yes	Yes	Yes
Overtemperature Trip	Yes	Yes	Yes	Yes	Yes
Long Delay Protection (L)					
Adjustable Rating Plug (I_n)	Yes	Yes	No	No	No
Long Delay Pickup	0.5-1.0 (I_n) ^①	0.5-1.0 (I_n) ^①	0.4-1.0 x (I_n)	0.4-1.0 x (I_n)	0.4-1.0 x (I_n)
Long Delay Time I^2T	12 Seconds	12 Seconds	2-24 Seconds	2-24 Seconds	2-24 Seconds
Long Delay Time I^4T	No	No	1-5 Seconds	1-5 Seconds	1-5 Seconds
Long Delay Thermal Memory	Yes	Yes	Yes	Yes	Yes
High Load Alarm	No	No	0.5-1.0 x I_r	0.5-1.0 x I_r	0.5-1.0 x I_r
Short Delay Protection (S)					
Short Delay Pickup	200-800% x (I_n)	200-800% x (I_n)	150-800% x (I_r)	150-800% x (I_r)	150-800% x (I_r)
Short Delay Time I^2T	100 ms	No	100-500 ms	100-500 ms	100-500 ms
Short Delay Time Flat	No	Inst-300 ms	100-500 ms	100-500 ms	100-500 ms
Short Delay Time Zone Selective Interlocking	No	No	No	Yes	Yes
Instantaneous Protection (I)					
Instantaneous Pickup	No	200-800% x (I_n)	200-800% x (I_n)	200-800% x (I_n)	200-800% x (I_n)
Discriminator	No	No	Yes	Yes	Yes
Instantaneous Override	Yes	Yes	Yes	Yes	Yes
Ground Fault Protection (G)					
Ground Fault Alarm	No	No	20-100% x (I_s)	20-100% x (I_s)	20-100% x (I_s)
Ground Fault Pickup	Varies by Frame	Varies by Frame	20-100% x (I_s)	20-100% x (I_s)	20-100% x (I_s)
Ground Fault Delay I^2T	No	No	100-500 ms	100-500 ms	100-500 ms
Ground Fault Delay Flat	Inst-500 ms	Inst-500 ms	100-500 ms	100-500 ms	100-500 ms
Ground Fault Zone Selective Interlocking	No	No	No	Yes	Yes
Ground Fault Thermal Memory	Yes	Yes	Yes	Yes	Yes
System Diagnostics					
Status LEDs	Yes	Yes	Yes	Yes	Yes
Cause of Trip LEDs	No	No	Yes	Yes	Yes
Magnitude of Trip Information	No	No	Yes	Yes	Yes
Remote Signal Contact – Ground Alarm	Yes	Yes	No	Yes	Yes
Local Auxiliary and Bell Alarm Contact	Optional	Optional	Optional	Included	Included
System Monitoring					
Digital Display	No	No	Yes ^②	Yes ^②	Yes ^②
Current	No	No	Yes	Yes	Yes
Power and Energy	No	No	No	No	Yes
Power Quality-Harmonics	No	No	No	No	Yes
Power Factor	No	No	No	No	Yes
Communications					
Cutler-Hammer PowerNet	No	No	No ^③	Yes	Yes
Testing					
Testing Method	Test Set		OPTIMizer, BIM, Cutler-Hammer PowerNet		

① Adjust by rating plug.

② By OPTIMizer/BIM.

③ Cutler-Hammer PowerNet kit for field upgrade.

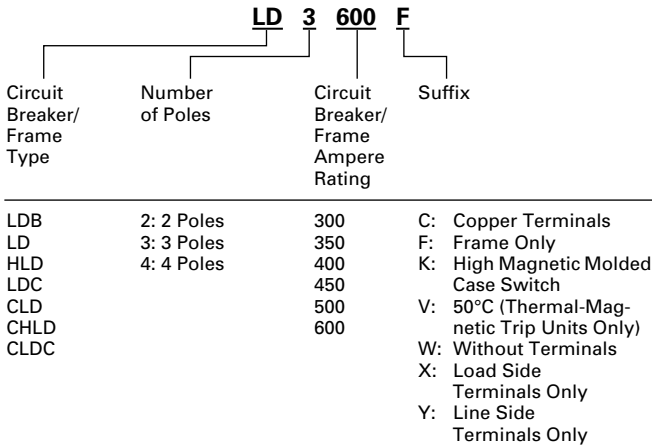
BIM = Breaker Interface Module
(A) = GF Alarm I_s = Sensor Rating I_n = Rating Plug I_r = Long Delay Pickup Setting

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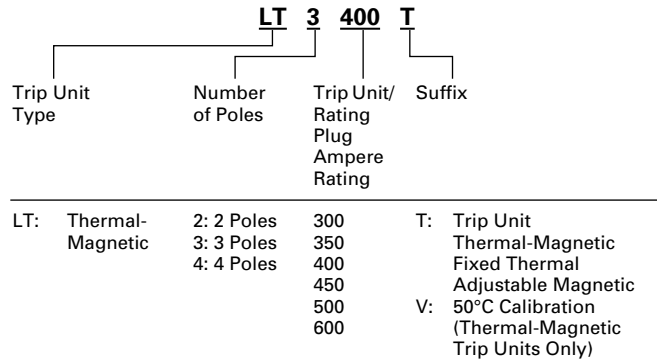
Catalog Numbering System

This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

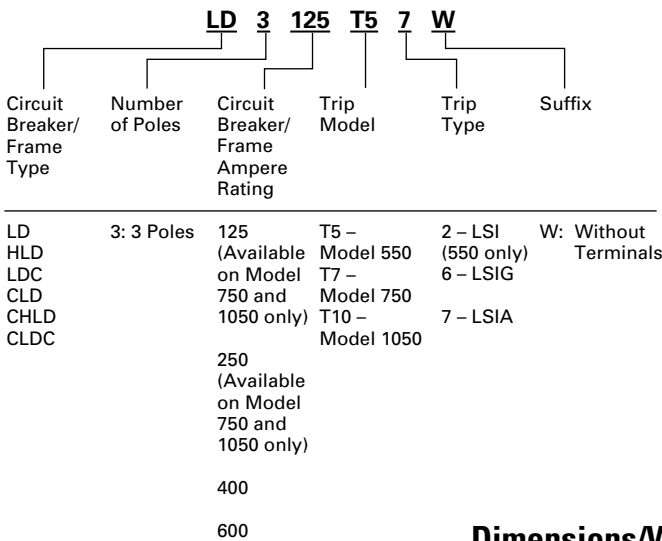
Circuit Breaker/Frame Catalog Number



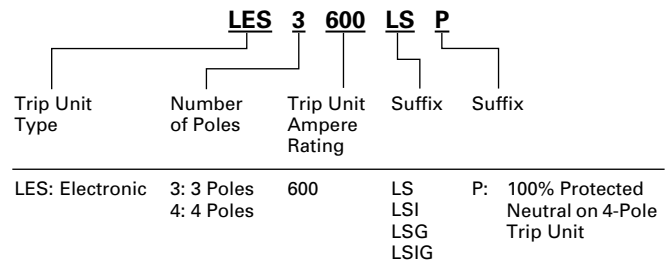
Thermal-Magnetic Trip Unit Catalog Number



OPTIM Circuit Breaker/Frame Catalog Number



Digitrip RMS 310 Trip Unit Catalog Number



Dimensions/Weights

Dimensions, Inches (mm)

Number of Poles	Width	Height	Depth
2, 3	8.25 (210)	10.75 (274)	4.062 (103)
4	11 (279)	10.75 (274)	4.062 (103)

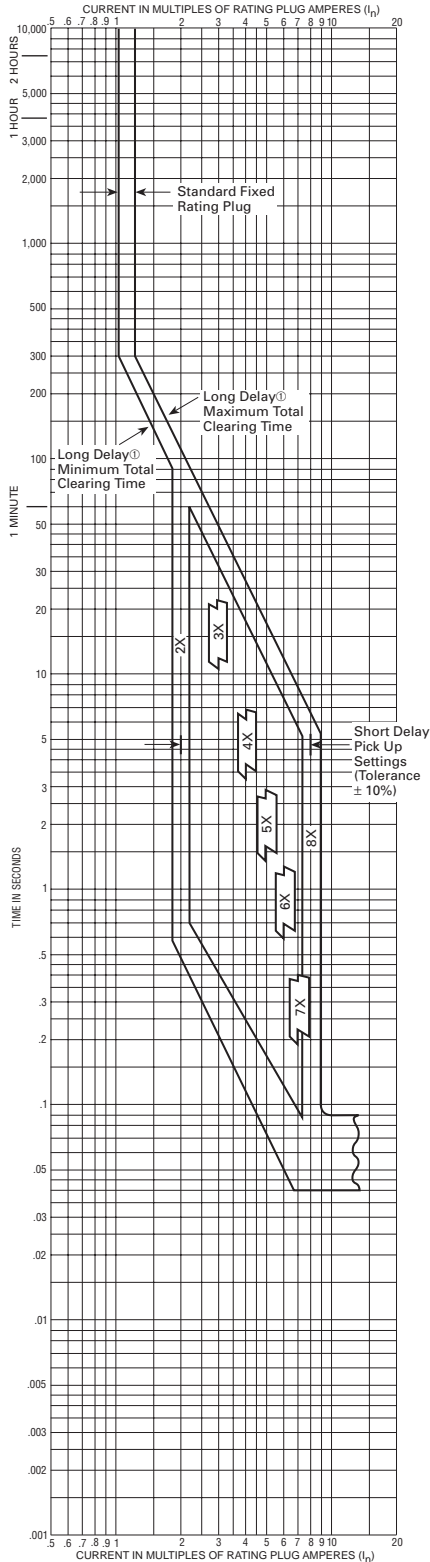
Approximate Shipping Weight, Lbs. (kg)

Breaker Type	Complete Breaker			Frame Only			Trip Unit		
	Number of Poles			Number of Poles			Number of Poles		
	2	3	4	2	3	4	2	3	4
LD, HLD, LDC	18 (8.172)	20 (9.080)	25 (11.340)	14 (6.356)	15 (6.810)	20 (9.072)	3 (1.361)	4 (1.814)	5 (2.268)
LDB	18 (8.172)	20 (9.080)	25 (11.340)	–	–	–	–	–	–



AB DE-ION Circuit Breakers

Types LD, HLD, CLD, and CHLD Equipped With Type LES Digitrip RMS 310 Trip Units,
 Types LES3600LS, LES3600LSG, LES4600LS, LES4600LSE, LES4600LSP



Circuit Breaker Time/Current Curves (Phase Current) ④

Series C® L-Frame Circuit Breakers
 Equipped With Type LES Digitrip RMS 310 Trip Units

Catalog Types LES3600LS, LES3600LSG, LES4600LS, LES4600LSE, and LES4600LSP
 Digitrip RMS 310 Trip Units for use with Circuit Breaker Types LD, HLD, CLD, and CHLD
 3 and 4 Poles

Fixed Short Delay Time	Typical Trip Unit Nameplate

Available Rating Plugs

Amperes Rating (I_n)	Type	Rating Plug Catalog Number	Short Delay Pickup Range Amperes
600	Fixed	6LES600T	1200-4800
500	Fixed	6LES500T	1000-4000
400	Fixed	6LES400T	800-3200
350	Fixed	6LES350T	700-2800
300	Fixed	6LES300T	600-2400
300, 400, 500, 600	Adjustable	A6LES600T1	600-4800

Interrupting Ratings @ 50/60 Hz RMS Sym. Amperes (kA)

Breaker Type	UL/CSA Volts	240		380		415	
		I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}
LD, CLD	kA	65	33	40	20	40	20
HLD, CHLD	kA	100	50	65	33	65	33

Utilization Category A
 $U_{imp} = 8kV$

Notes

Digitrip RMS 310 trip units are suitable for functional field testing with test kit Cat. No. STK2. For field testing using primary injection methods, follow NEMA AB4-1991 publications.

Calibration response in short delay pick-up range is same for 1, 2 or 3 poles in series.

There is a memory effect that can act to shorten the long delay. The memory effect comes into play if a current above the long delay pick-up value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in shorter time than normal. The amount of time delay reduction is inverse to the amount of time that has elapsed since the previous overload. Approximately five minutes is required between overloads to completely reset the memory.

- Curve accuracy applies from $-20^{\circ}C$ to $+55^{\circ}C$ ambient. For possible continuous ampere derating for ambient above $40^{\circ}C$, refer to Cutler-Hammer.
- For high fault current levels a fixed instantaneous override is provided at 5500A. (Tolerance $\pm 15\%$).
- The end of the curve is determined by the interrupting rating of the circuit breaker. See above tabulation.
- For ground fault time/current curves see SC-5661-93.

