Typical Series C N-Frame Circuit Breaker

- All N-frame circuit breakers are suitable for reverse feed use.

Interrupting Capacity Ratings

UL489 Interrupting Capacity Ratings①

Circuit Breaker Type	Number of Poles	Interrupting Capacity (Symmetrical Amperes) (kA) Volts Ac (50/60 Hz) 240	277	480	600	125	Page Number
ND	2, 3, 4	65	–	50	25	–	77, 83
CND②	2, 3, 4	65	–	50	25	–	80, 84
HND	2, 3, 4	100	–	65	35	–	78, 83
CHND②	2, 3, 4	100	–	65	35	–	81, 84
NDC	2, 3, 4	200	–	100	50	–	79, 83
CNDC②	2, 3, 4	200	–	100	50	–	82, 84

IEC 947-2 Interrupting Capacity Ratings①

Circuit Breaker Type	Number of Poles	Interrupting Capacity (Symmetrical Amperes) (kA) Volts Ac (50/60 Hz) 240	415	690	Page Number
ND	2, 3, 4				77, 83
I_{cu}		85	50	20	
I_{cs}		85	50	10	
CND②	2, 3, 4				80, 84
I_{cu}		85	50	20	
I_{cs}		85	50	10	
HND	2, 3, 4				78, 83
I_{cu}		100	70	25	
I_{cs}		100	50	13	
CHND②	2, 3, 4				81, 84
I_{cu}		100	70	25	
I_{cs}		100	50	13	
NDC	2, 3, 4				79, 83
I_{cu}		200	100	35	
I_{cs}		100	50	18	
CNDC②	2, 3, 4				82, 84
I_{cu}		200	100	35	
I_{cs}		100	50	18	

① Utilization Category A circuit breakers.
② 100% rated breakers.

N-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	N		N	N	N
Ampere Range	400A-1200A		400A-1200A	400A-1200A	400A-1200A
Interrupting Rating @ 480V	50, 65, 100 (kA)		50, 65, 100 (kA)	50, 65, 100 (kA)	50, 65, 100 (kA)
Protection					
Ordering Options	LS, LSG	LSI, LSIG	LSI, LSIG, LSI(A)	LSI(A), LSIG	LSI(A), LISG
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	No	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	Yes	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 Frame②	Varies by Frame②	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	Yes②	Yes②	Yes②
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	No③	Yes	Yes
Testing					
Testing Method	Test Set		OPTIMizer, BIM, Cutler-Hammer PowerNet	OPTIMizer, BIM, Cutler-Hammer PowerNet	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

Type HND Electronic Circuit Breakers with Non-Interchangeable Trip Units

Order as individual components: Breaker Frame, Rating Plug, Terminals

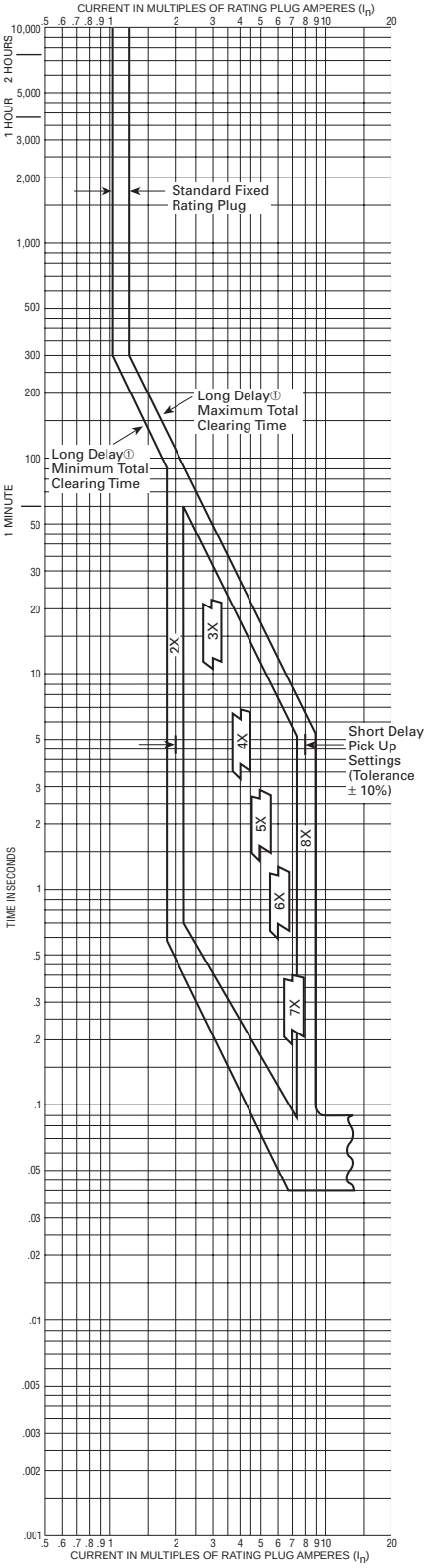
Maximum Continuous Ampere Rating @ 40°C	Digitrip RMS 310 Circuit Breaker Frame Only				Digitrip RMS 310 Rating Plug Only			Standard Terminals Only① See Page 85 for Optional Terminals
	High Interrupting Capacity 600 Volt Ac Rated 65 kAIC @ 480 Vac				Ampere Rating	Fixed Rating Plugs	Adjustable Rating Plug	
	Standard	Options					Adjustable Ampere Ratings Catalog Number	
	Adjustable Short Time Delay with I^2t Short Delay Ramp	Independently Adjustable Short Time Pickup and Delay	Adjustable Short Time Pickup with I^2t Short Delay and Ground Fault Protection	Independently Adjustable Short Time Pickup and Delay and Ground Fault Protection				
	Catalog Number							
2-Pole								
800	**HND2800T33W**	**HND2800T32W**	**HND2800T35W**	**HND2800T36W**	400 450 500 600 700 800	**8NES400T** **8NES450T** **8NES500T** **8NES600T** **8NES700T** **8NES800T**	Adjustable Settings are: 400, 500, 600, 800 **A8NES800T1**	**TA700NB1** **TA700NB1** **TA700NB1** **TA700NB1** **TA700NB1** **TA1000NB1**
3-Pole								
800	**HND3800T33W**	**HND3800T32W**	**HND3800T35W**	**HND3800T36W**	400 450 500 600 700 800	**8NES400T** **8NES450T** **8NES500T** **8NES600T** **8NES700T** **8NES800T**	Adjustable Settings are: 400, 500, 600, 800 **A8NES800T1**	**TA700NB1** **TA700NB1** **TA700NB1** **TA700NB1** **TA700NB1** **TA1000NB1**
4-Pole②								
800	**HND4800T33W**	**HND4800T32W**	–	–	400 450 500 600 700 800	**8NES400T** **8NES450T** **8NES500T** **8NES600T** **8NES700T** **8NES800T**	Adjustable Settings are: 400, 500, 600, 800 **A8NES800T1**	**TA700NB1** **TA700NB1** **TA700NB1** **TA700NB1** **TA700NB1** **TA1000NB1**
2-Pole								
1200	**HND212T33W**	**HND212T32W**	**HND212T35W**	**HND212T36W**	600 700 800 900 1000 1200	**12NES600T** **12NES700T** **12NES800T** **12NES900T** **12NES1000T** **12NES1200T**	Adjustable Settings are: 600, 800, 1000, 1200 **A12NES1200T1**	**TA700NB1** **TA700NB1** **TA1000NB1** **TA1000NB1** **TA1000NB1** **TA1200NB1**
3-Pole								
1200	**HND312T33W**	**HND312T32W**	**HND312T35W**	**HND312T36W**	600 700 800 900 1000 1200	**12NES600T** **12NES700T** **12NES800T** **12NES900T** **12NES1000T** **12NES1200T**	Adjustable Settings are: 600, 800, 1000, 1200 **A12NES1200T1**	**TA700NB1** **TA700NB1** **TA1000NB1** **TA1000NB1** **TA1000NB1** **TA1200NB1**
4-Pole②								
1200	**HND412T33W**	**HND412T32W**	–	–	600 700 800 900 1000 1200	**12NES600T** **12NES700T** **12NES800T** **12NES900T** **12NES1000T** **12NES1200T**	Adjustable Settings are: 600, 800, 1000, 1200 **A12NES1200T1**	**TA700NB1** **TA700NB1** **TA1000NB1** **TA1000NB1** **TA1000NB1** **TA1200NB1**

Instruction Leaflet/FRED Number 29C106

① Two terminals are required per pole.
② Neutral is in right pole.

AB DE-ION Circuit Breakers

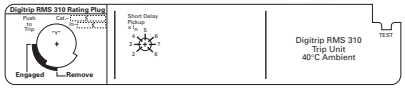
Types ND, CND, HND, CHND, NDC, CNDC Equipped With Type NES Digitrip RMS 310 Trip Units With I²t Ramp Short Time Delay (Phase Protection)



Circuit Breaker Time/Current Curves (Phase Current)
Series C® N-Frame Circuit Breakers
Equipped With Type NES Digitrip RMS 310 Trip Units

The NES Digitrip RMS 310 Trip Units are AC only devices that employ microprocessor based technology that provides true RMS current sensing means for proper correlation with thermal characteristics of conductors and equipment. They are used with Circuit Breaker Types ND, CND, HND, CHND, NDC, and CNDC.

I²t Ramp Short Time Delay **Typical Trip Unit Nameplate**



Frame Rating Amperes (Max.)	**Available Rating Plugs** Ampere Rating (I_n)	Type	Catalog Number	Short Delay Pickup Range Amperes
800	800	Fixed	8NES800T	1600-6400
	700	Fixed	8NES700T	1400-5600
	630	Fixed	8NES630T④	1260-5040
	600	Fixed	8NES600T	1200-4800
	550	Fixed	8NES550T	1100-4400
	500	Fixed	8NES500T	1000-4000
	450	Fixed	8NES450T	900-3600
	400	Fixed	8NES400T	800-3200
	400, 500, 600, 800	Adj.	A8NES800T1	800-6400
	400, 500, 630, 800	Adj.	A8NES800T2④	800-6400
1200	1200	Fixed	12NES1200T	2400-9600
	1000	Fixed	12NES1000T	2000-8000
	900	Fixed	12NES900T④	1800-7200
	800	Fixed	12NES800T	1600-6400
	700	Fixed	12NES700T	1400-5600
	630	Fixed	12NES630T④	1260-5040
	600	Fixed	12NES600T	1200-4800
	600, 800, 1000, 1200	Adj.	A12NES1200T1	1200-9600

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

Breaker Type	UL/CSA 240V	480V	600V	IEC 947-2 220-240V	380-415V
ND, CND	65	50	25	65	50
HND, CHND	100	65	35	100	65
NDC, CNDC	200	100	50	200	100

I_{CS} = .25 I_{CU}
I_{CW} = 15 kA @ .5S
U_{imp} = 8kV

Notes

Curve accuracy applies from -20°C to +55°C ambient. For possible ampere derating for ambient above 40°C, refer to Cutler-Hammer.

Digitrip RMS 300 trip units are suitable for functional field testing with test kit Cat. No. STK2. For field testing using primary injection methods, follow NEMA publication AB-4-1991.

For ground fault time-current curves see SC-5377-92A.

① 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.

② For high fault current levels a fixed instantaneous override is provided at 14000A (Tolerance ±15%).

③ The end of the curve is determined by the interrupting rating of the circuit breaker. See above tabulation.

④ Not UL/CSA Listed.