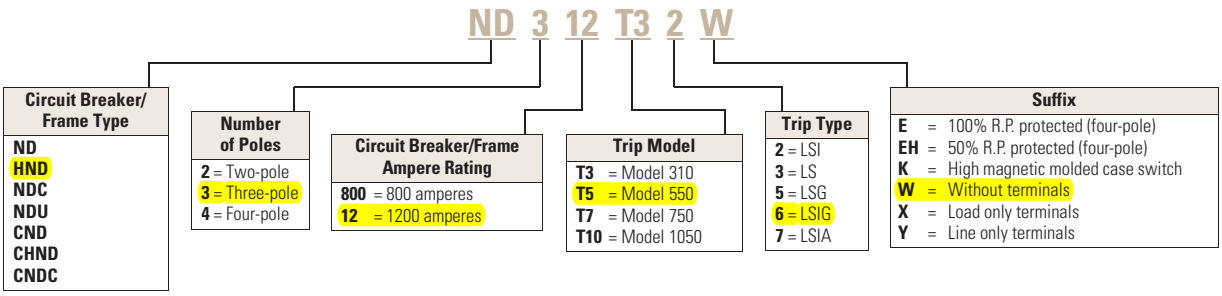
Catalog Number Selection

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



Product Selection

Digitrip OPTIM Electronic Circuit Breakers with Interchangeable Rating Plugs

Order as individual components: breaker frame (which includes trip unit), rating plug, terminals.

Digitrip OPTIM 550 Electronic Circuit Breakers with Interchangeable Rating Plugs

	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time Delay (I^2t or Flat Response)			Digitrip OPTIM Rating Plug Only	
Maximum Continuous Ampere Rating at 40°C	OPTIM 550 ② LSI Catalog Number	LSIG Catalog Number	LSIA Catalog Number	Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole Standard Interrupting Capacity 600 Vac Rated 50 kAIC at 480 Vac					
800	**ND3800T52W**	**ND3800T56W**	**ND3800T57W**	400	**ORPN80A400**
				450	**ORPN80A450**
				500	**ORPN80A500**
				550	**ORPN80A550**
				600	**ORPN80A600**
				700	**ORPN80A700**
				800	**ORPN80A800**
1200	**ND312T52W**	**ND312T56W**	**ND312T57W**	600	**ORPN12A600**
				700	**ORPN12A700**
				800	**ORPN12A800**
				1000	**ORPN12A100**
				1200	**ORPN12A120**
Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac					
800	**HND3800T52W**	**HND3800T56W**	**HND3800T57W**	400	**ORPN80A400**
				450	**ORPN80A450**
				500	**ORPN80A500**
				550	**ORPN80A550**
				600	**ORPN80A600**
				700	**ORPN80A700**
				800	**ORPN80A800**
1200	**HND312T52W**	**HND312T56W**	**HND312T57W**	600	**ORPN12A600**
				700	**ORPN12A700**
				800	**ORPN12A800**
				1000	**ORPN12A100**
				1200	**ORPN12A120**

Notes

① Long delay I^4t response selection limits short delay time to flat response.

② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

Accessories

Allowable Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

ND Frame Accessories

Description	Reference Page	Three-Pole Left	Three-Pole Center	Three-Pole Right	Four-Pole Left	Four-Pole Center	Four-Pole Right	Four-Pole Neutral
Internal Accessories (Only One Internal Accessory Per Pole) ①								
Alarm lockout (Make/Break)	**V4-T2-275**	■		■	■		■	
Alarm lockout (2Make/2Break)	**V4-T2-275**	■		■	■		■	
Auxiliary switch (1A, 1B)	**V4-T2-277**	■		■	■		■	
Auxiliary switch (2A, 2B)	**V4-T2-277**	■		■	■		■	
Auxiliary switch (3A, 3B)	**V4-T2-277**	■		■	■		■	
Auxiliary switch (1A, 1B) and alarm switch combination	**V4-T2-279**	■		■	■		■	
Auxiliary switch (2A, 2B) and alarm switch combination	**V4-T2-279**	■		■	■		■	
Shunt trip—standard	**V4-T2-283**	■			■			
Shunt trip—low energy	**V4-T2-284**	■			■			
Undervoltage release mechanism	**V4-T2-291**	■			■			
Eaton PowerNet communications kit (OPTIM 550)	**V4-T2-292**			■				
External Accessories								
Base mounting hardware	**V4-T2-310**	●	●	●	●	●	●	●
Interphase barriers	**V4-T2-312**	●	●	●	●	●	●	●
Terminal shield	**V4-T2-312**	■	■	■				
Non-padlockable handle block	**V4-T2-313**		■			■		
Padlockable handle lock hasp	**V4-T2-314**	❑		❑	❑		❑	
Key interlock kit	**V4-T2-315**	❑		❑	❑		❑	
Sliding bar interlock—requires two breakers	**V4-T2-316**	●	●	●				
Walking beam interlock—requires two breakers	**V4-T2-316**	●	●	●	●	●	●	●
Electrical (motor) operator	**V4-T2-318**	●	●	●	●	●	●	●
Plug-in adapters	**V4-T2-319**	●	●	●	●	●	●	●
Rear connecting studs	**V4-T2-320**	●	●	●	●	●	●	●
Panelboard connecting straps	**V4-T2-321**	●	●	●	●	●	●	●
Handle mechanisms	**V4-T2-417**	●	●	●	●	●	●	●
Handle extension	**V4-T2-432**	●	●	●	●	●	●	●
Solid-state (electronic) portable test kit	**V4-T2-324**	●	●	●	●	●	●	●
OPTIM System Components Three Poles								
Ground fault alarm unit	**V4-T2-323**							
Potential transformer module	**V4-T2-323**							
Breaker interface module (BIM)	**V4-T2-324**							
Digitrip OPTIMizer	**V4-T2-324**							
Auxiliary power module	**V4-T2-324**							
Modifications (Refer to Eaton)								
Special calibration	—	●	●	●	●	●	●	●
Moisture fungus treatment	**V4-T2-110**	●	●	●	●	●	●	●
Freeze-tested circuit breakers	—	●	●	●	●	●	●	●
Marine/naval application	—	●	●	●	●	●	●	●

Legend

■ Applicable in indicated pole position

❑ May be mounted on left or right pole—not both

● Accessory available/modification available

Note

① OPTIM 550 and 1050 are factory sealed and do not have the right pole available for accessories.

Technical Data and Specifications

UL 489 Interrupting Capacity Ratings ①

Circuit Breaker Type	Number of Poles	Interrupting Capacity (kA Symmetrical Amperes) Volts AC (50/60 Hz) 240	277	480	600
ND	2, 3, 4	65	—	50	25
CND ②	2, 3, 4	65	—	50	25
HND	2, 3, 4	100	—	65	35
CHND ②	2, 3, 4	100	—	65	35
NDC	2, 3, 4	200	—	100	65
CNDC ②	2, 3, 4	200	—	100	65
NDU ③	3	300 ④	—	150	75 ⑤

IEC 947-2 Interrupting Capacity Ratings ①

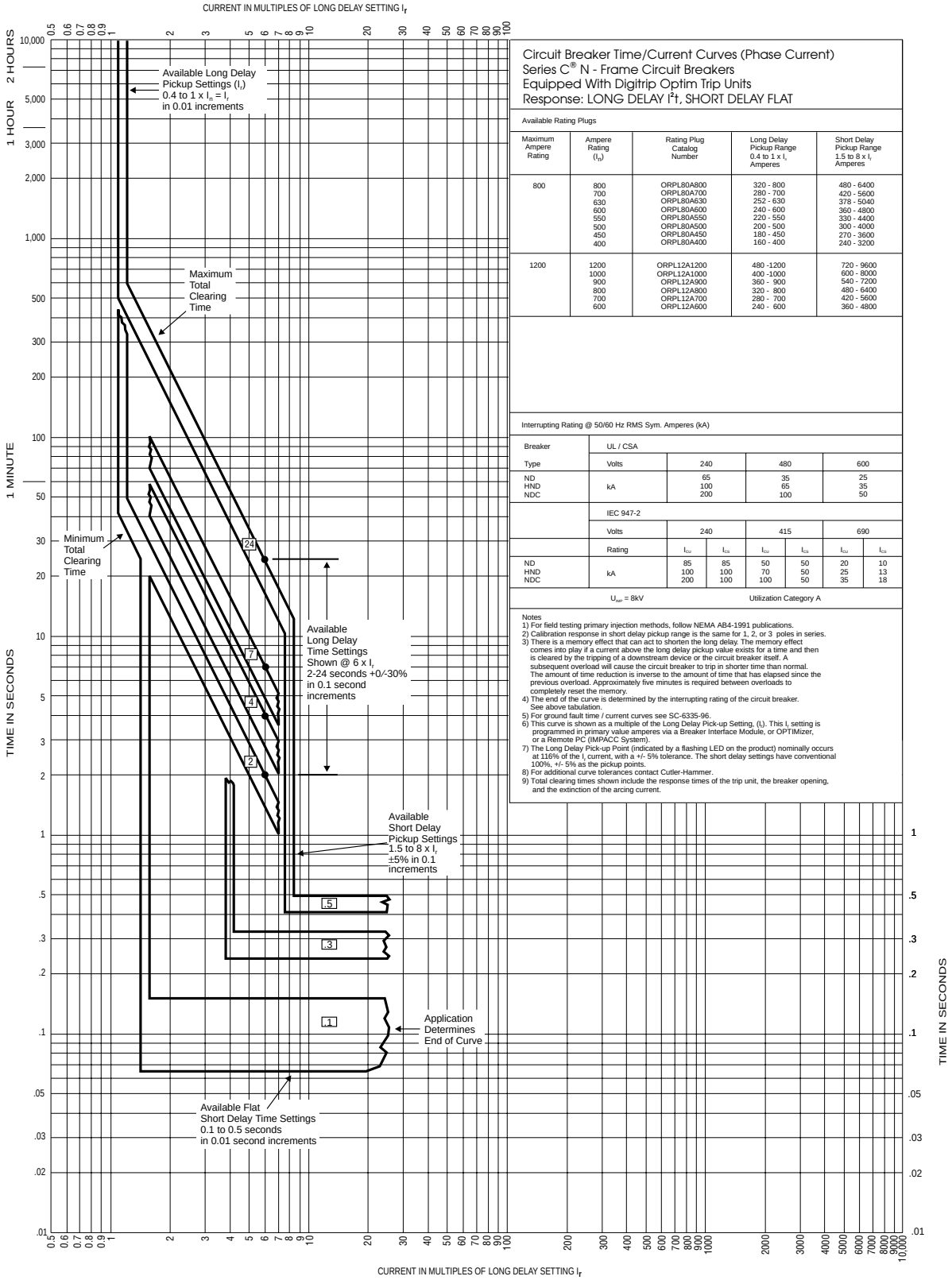
Circuit Breaker Type	Number of Poles	Interrupting Capacity (kA Symmetrical Amperes) Volts AC (50/60 Hz) 240	415	690
ND				
I_{cu}	2, 3, 4	85	50	20
I_{cs}	2, 3, 4	85	50	10
CND ②				
I_{cu}	2, 3, 4	85	50	20
I_{cs}	2, 3, 4	85	50	10
HND				
I_{cu}	2, 3, 4	100	70	25
I_{cs}	2, 3, 4	100	50	13
CHND ②				
I_{cu}	2, 3, 4	100	70	25
I_{cs}	2, 3, 4	100	50	13
NDC				
I_{cu}	2, 3, 4	200	100	35
I_{cs}	2, 3, 4	100	50	18
CNDC ②				
I_{cu}	2, 3, 4	200	100	35
I_{cs}	2, 3, 4	100	50	18

Notes

① Utilization Category A circuit breakers.
② 100% rated breakers.
③ 800 amperes maximum rating.
④ Successfully tested at 300 kAIC, although UL recognizes maximum of 200 kAIC at 240 Vac.
⑤ Successfully tested at 75 kAIC, although UL recognizes maximum of 65 kAIC at 600 Vac.

AB DE-ION Circuit Breakers

N-Frame Circuit Breakers Equipped with Digitrip OPTIM Trip Units; Long Delay I²t, Short Delay Flat



Circuit Breaker Time/Current Curves (Phase Current)
Series C® N - Frame Circuit Breakers
Equipped With Digitrip Optim Trip Units
Response: LONG DELAY I²t, SHORT DELAY FLAT

Available Rating Plugs

Maximum Ampere Rating	Ampere Rating (I_n)	Rating Plug Catalog Number	Long Delay Pickup Range 0.4 to 1 x I_r Amperes	Short Delay Pickup Range 1.5 to 8 x I_r Amperes
800	800 700 630 600 550 500 450 400	ORPL80A800 ORPL80A700 ORPL80A630 ORPL80A600 ORPL80A550 ORPL80A500 ORPL80A450 ORPL80A400	320 - 800 280 - 700 252 - 630 240 - 600 220 - 550 200 - 500 180 - 450 160 - 400	480 - 6400 420 - 5600 378 - 5040 360 - 4800 330 - 4400 300 - 4000 270 - 3600 240 - 3200
1200	1200 1000 900 800 700 600	ORPL12A1200 ORPL12A1000 ORPL12A900 ORPL12A800 ORPL12A700 ORPL12A600	480 -1200 400 -1000 360 - 900 320 - 800 280 - 700 240 - 600	720 - 9600 600 - 8000 540 - 7200 480 - 6400 420 - 5600 360 - 4800

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

Breaker Type	UL / CSA Volts	240	480	600
ND HND NDC	kA	65 100 200	35 65 100	25 35 50

	IEC 947-2 Volts	240		415		690	
	Rating	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}
ND HND NDC	kA	85 100 200	85 100 100	50 70 100	50 50 50	20 25 35	10 13 18

U_{imp} = 8kV Utilization Category A

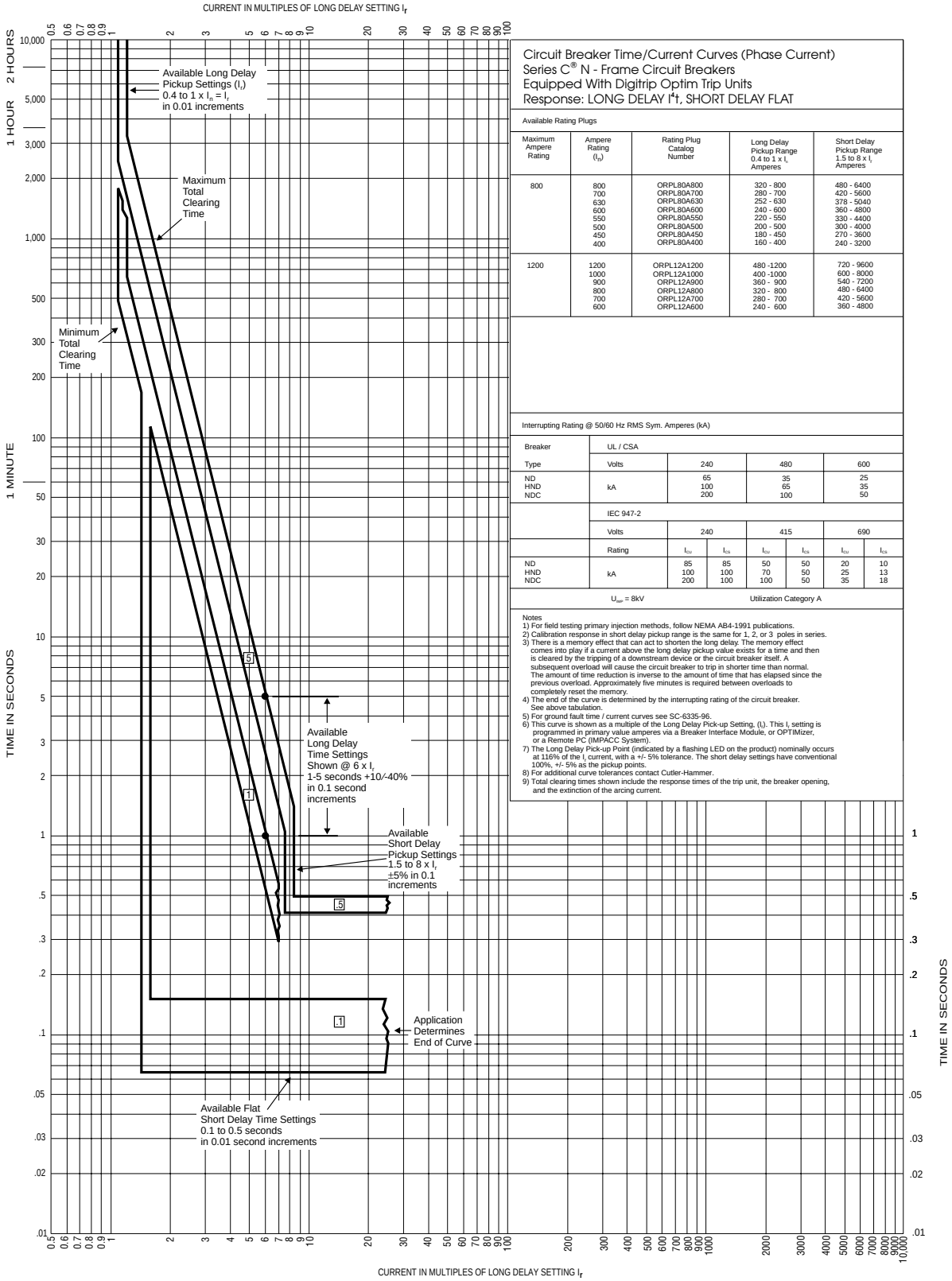
Notes
1) For field testing primary injection methods, follow NEMA AB4-1991 publications.
2) Calibration response in short delay pickup range is the same for 1, 2, or 3 poles in series.
3) There is a memory effect that can act to shorten the long delay. The memory effect comes into play if a current above the long delay pickup 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 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.
4) The end of the curve is determined by the interrupting rating of the circuit breaker. See above tabulation.
5) For ground fault time / current curves see SC-6335-96.
6) This curve is shown as a multiple of the Long Delay Pick-up Setting, (I_r). This I_r setting is programmed in primary value amperes via a Breaker Interface Module, or OPTIMizer, or a Remote PC (IMPACC System).
7) The Long Delay Pick-up Point (indicated by a flashing LED on the product) nominally occurs at 116% of the I_r current, with a +/- 5% tolerance. The short delay settings have conventional 100%, +/- 5% as the pickup points.
8) For additional curve tolerances contact Cutler-Hammer.
9) Total clearing times shown include the response times of the trip unit, the breaker opening, and the extinction of the arcing current.

Curve No. SC-6332-96

October 2006

AB DE-ION Circuit Breakers

N-Frame Circuit Breakers Equipped with Digitrip OPTIM Trip Units; Long Delay I^4t, Short Delay Flat



Circuit Breaker Time/Current Curves (Phase Current)
Series C® N - Frame Circuit Breakers
Equipped With Digitrip Optim Trip Units
Response: LONG DELAY I^4t, SHORT DELAY FLAT

Available Rating Plugs

Maximum Ampere Rating	Ampere Rating (I_n)	Rating Plug Catalog Number	Long Delay Pickup Range 0.4 to 1 x I_r Amperes	Short Delay Pickup Range 1.5 to 8 x I_r Amperes
800	800	ORPL80A800	320 - 800	480 - 6400
	700	ORPL80A700	280 - 700	420 - 5600
	630	ORPL80A630	252 - 630	378 - 5040
	600	ORPL80A600	240 - 600	360 - 4800
	550	ORPL80A550	220 - 550	330 - 4400
	500	ORPL80A500	200 - 500	300 - 4000
	450	ORPL80A450	180 - 450	270 - 3600
	400	ORPL80A400	160 - 400	240 - 3200
1200	1200	ORPL12A1200	480 -1200	720 - 9600
	1000	ORPL12A1000	400 -1000	600 - 8000
	900	ORPL12A900	360 - 900	540 - 7200
	800	ORPL12A800	320 - 800	480 - 6400
	700	ORPL12A700	280 - 700	420 - 5600
	600	ORPL12A600	240 - 600	360 - 4800

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

Breaker Type	UL / CSA Volts	240	480	600
ND	kA	65	35	25
HND		100	65	35
NDC		200	100	50

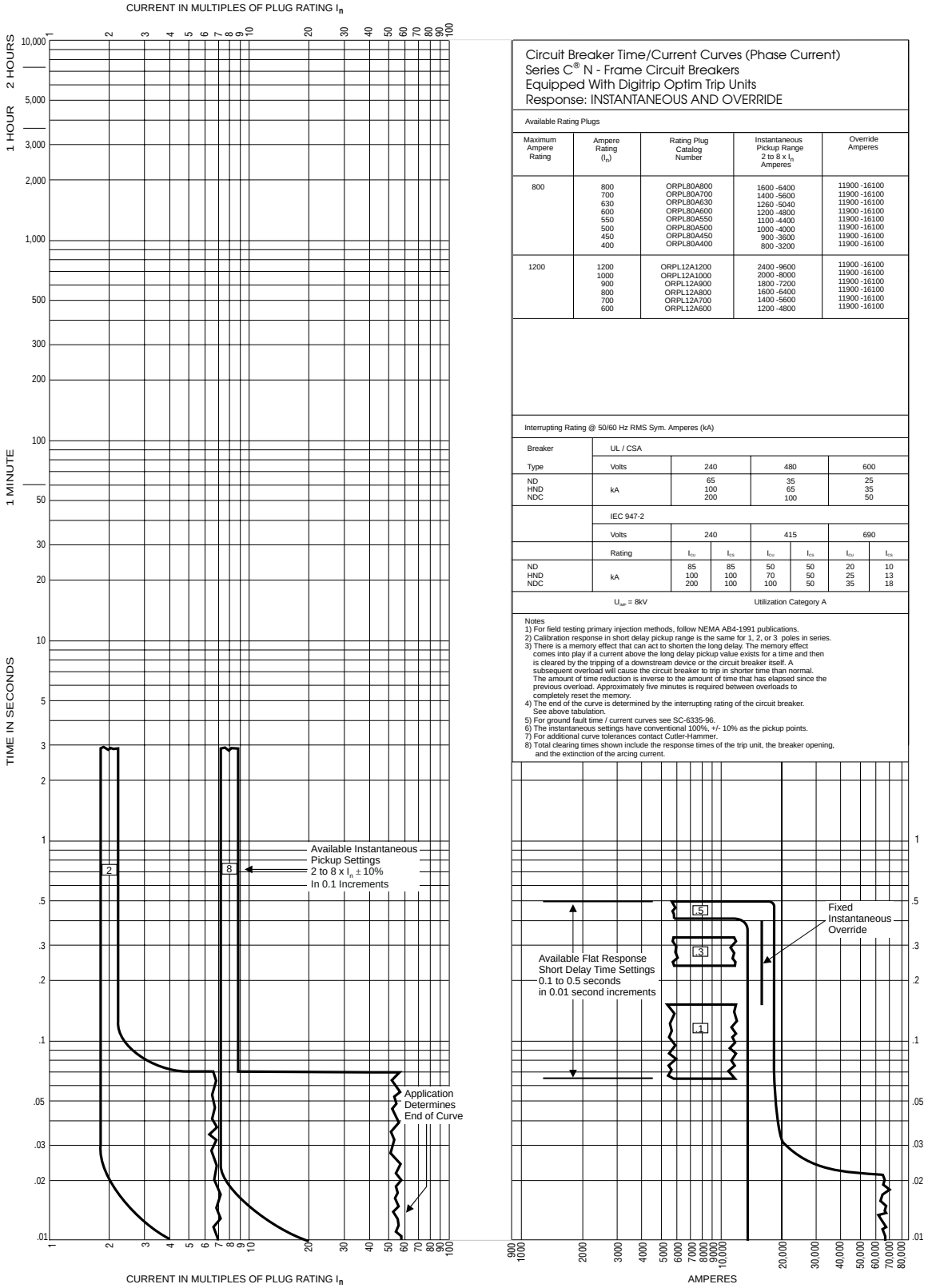
	IEC 947-2 Volts	240		415		690	
	Rating	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}
ND	kA	85	85	50	50	20	10
HND		100	100	70	50	25	13
NDC		200	100	100	50	35	18

U_{imp} = 8kV Utilization Category A

Notes
1) For field testing primary injection methods, follow NEMA AB4-1991 publications.
2) Calibration response in short delay pickup range is the same for 1, 2, or 3 poles in series.
3) 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 pickup 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 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.
4) The end of the curve is determined by the interrupting rating of the circuit breaker. See above tabulation.
5) For ground fault time / current curves see SC-6335-96.
6) This curve is shown as a multiple of the Long Delay Pick-up Setting, (I_r). This I_r setting is programmed in primary value amperes via a Breaker Interface Module, or OPTIMizer, or a Remote PC (IMPACC System).
7) The Long Delay Pick-up Point (indicated by a flashing LED on the product) nominally occurs at 116% of the I_r current, with a +/- 5% tolerance. The short delay settings have conventional 100%, +/- 5% as the pickup points.
8) For additional curve tolerances contact Cutler-Hammer.
9) Total clearing times shown include the response times of the trip unit, the breaker opening, and the extinction of the arcing current.

AB DE-ION Circuit Breakers

N-Frame Circuit Breakers Equipped with Digitrip OPTIM Trip Units; Instantaneous and Override



Circuit Breaker Time/Current Curves (Phase Current)
Series C® N - Frame Circuit Breakers
Equipped With Digitrip Optim Trip Units
Response: INSTANTANEOUS AND OVERRIDE

Available Rating Plugs

Maximum Ampere Rating	Ampere Rating (I_n)	Rating Plug Catalog Number	Instantaneous Pickup Range 2 to 8 x I_n Amperes	Override Amperes
800	800	ORPL80A800	1600 -6400	11900 -16100
	700	ORPL80A700	1400 -5600	11900 -16100
	630	ORPL80A630	1260 -5040	11900 -16100
	600	ORPL80A600	1200 -4800	11900 -16100
	550	ORPL80A550	1100 -4400	11900 -16100
	500	ORPL80A500	1000 -4000	11900 -16100
	450	ORPL80A450	900 -3600	11900 -16100
	400	ORPL80A400	800 -3200	11900 -16100
1200	1200	ORPL12A1200	2400 -9600	11900 -16100
	1000	ORPL12A1000	2000 -8000	11900 -16100
	900	ORPL12A900	1800 -7200	11900 -16100
	800	ORPL12A800	1600 -6400	11900 -16100
	700	ORPL12A700	1400 -5600	11900 -16100
	600	ORPL12A600	1200 -4800	11900 -16100

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

Breaker	UL / CSA						
Type	Volts	240		480		600	
ND HND NDC	kA	65 100 200		35 65 100		25 35 50	
	IEC 947-2						
	Volts	240		415		690	
	Rating	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}
ND HND NDC	kA	85 100 200	85 100 100	50 70 100	50 50 50	20 25 35	10 13 18
	U_{imp} = 8kV			Utilization Category A			

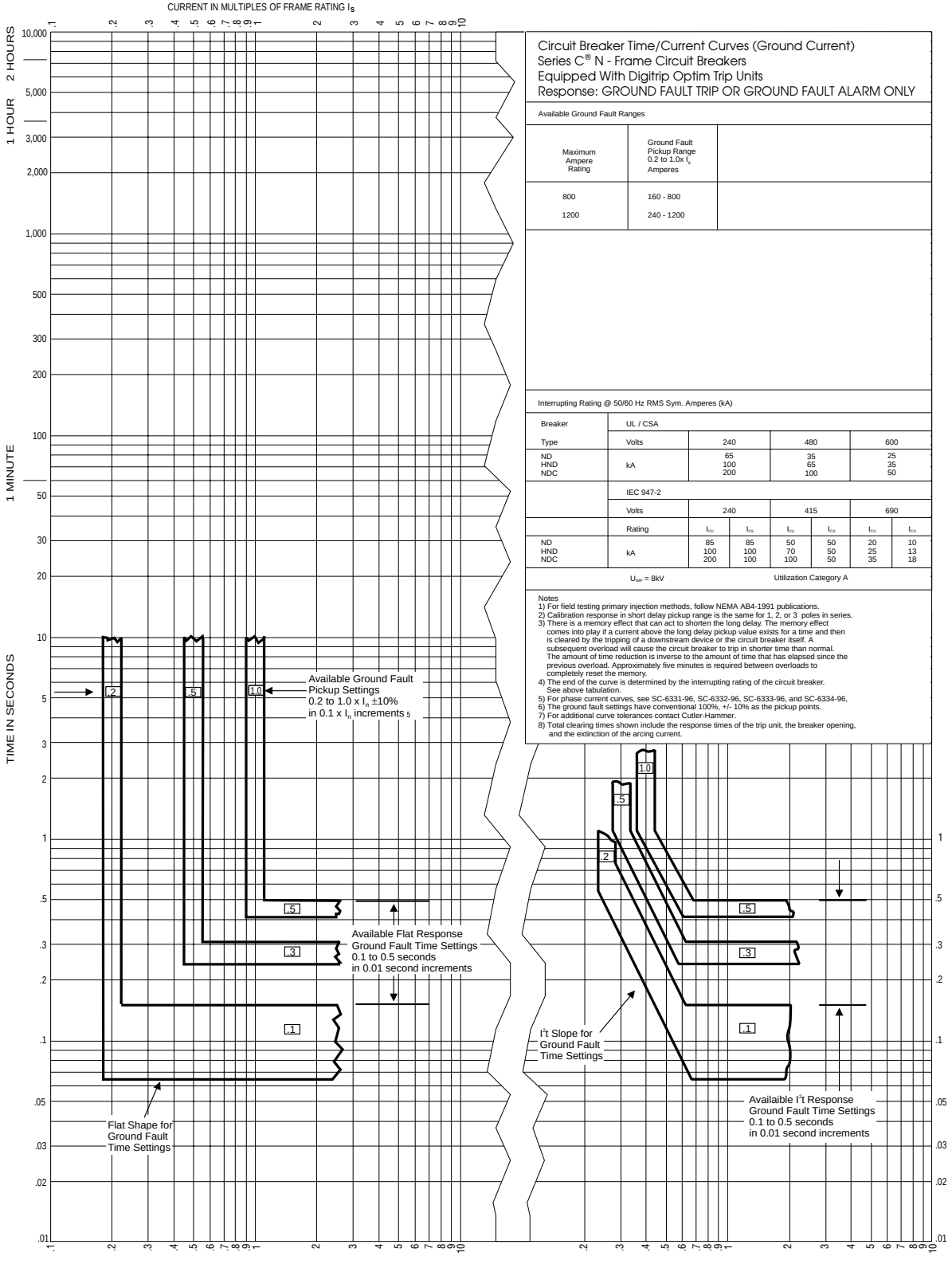
Notes
1) For field testing primary injection methods, follow NEMA AB4-1991 publications.
2) Calibration response in short delay pickup range is the same for 1, 2, or 3 poles in series.
3) There is a memory effect that can act to shorten the long delay. The memory effect comes into play if a current above the long delay pickup 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 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.
4) The end of the curve is determined by the interrupting rating of the circuit breaker. See above tabulation.
5) For ground fault time / current curves see SC-6335-96.
6) The instantaneous settings have conventional 100%, +/- 10% as the pickup points.
7) For additional curve tolerances contact Cutler-Hammer.
8) Total clearing times shown include the response times of the trip unit, the breaker opening, and the extinction of the arcing current.

Curve No. SC-6334-96

October 2006

AB DE-ION Circuit Breakers

N-Frame Circuit Breakers Equipped with Digitrip OPTIM Trip Units; Ground Fault or Ground Fault Alarm Only



Circuit Breaker Time/Current Curves (Ground Current)
Series C® N - Frame Circuit Breakers
Equipped With Digitrip Optim Trip Units
Response: GROUND FAULT TRIP OR GROUND FAULT ALARM ONLY

Available Ground Fault Ranges

Maximum Ampere Rating	Ground Fault Pickup Range 0.2 to 1.0x I_s Amperes	
800	160 - 800	
1200	240 - 1200	

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

Breaker	UL / CSA						
Type	Volts	240		480		600	
ND HND NDC	kA	65 100 200		35 65 100		25 35 50	
	IEC 947-2						
	Volts	240		415		690	
	Rating	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}
ND HND NDC	kA	85 100 200	85 100 100	50 70 100	50 50 50	20 25 35	10 13 18

U_{imp} = 8kV Utilization Category A

Notes
1) For field testing primary injection methods, follow NEMA AB4-1991 publications.
2) Calibration response in short delay pickup range is the same for 1, 2, or 3 poles in series.
3) 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 pickup 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 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.
4) The end of the curve is determined by the interrupting rating of the circuit breaker. See above tabulation.
5) For phase current curves, see SC-6331-96, SC-6332-96, SC-6333-96, and SC-6334-96.
6) The ground fault settings have conventional 100%, +/- 10% as the pickup points.
7) For additional curve tolerances contact Cutler-Hammer.
8) Total clearing times shown include the response times of the trip unit, the breaker opening, and the extinction of the arcing current.

Cutler-Hammer
Westinghouse & Cutler-Hammer Products
Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

Printed in U.S.A.

October 2006