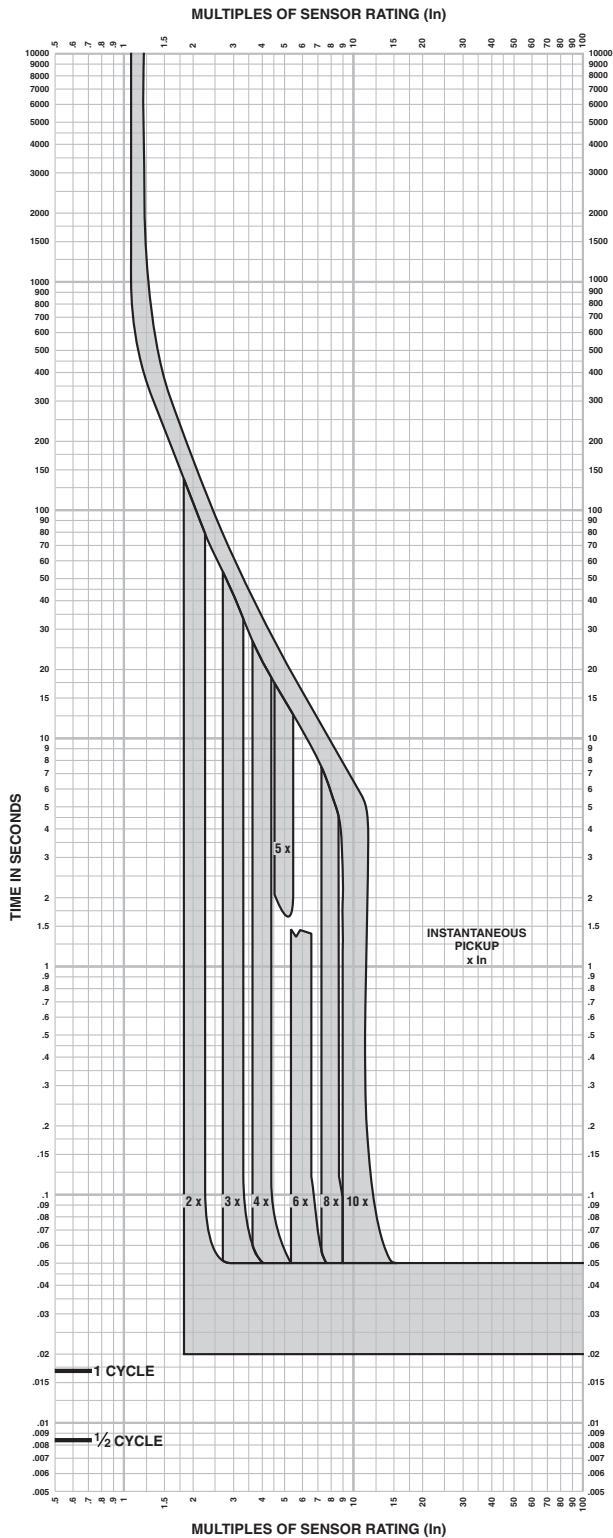


Section 13—Trip Curves

Basic Electronic Trip Unit ET 1.0I, M-Frame 800 A Characteristic Trip Curve



ELECTRONIC TRIP 1.0
CHARACTERISTIC TRIP CURVE NO. 613-14
Long-time Pickup and Delay
Instantaneous Pickup and Delay
2x–10x

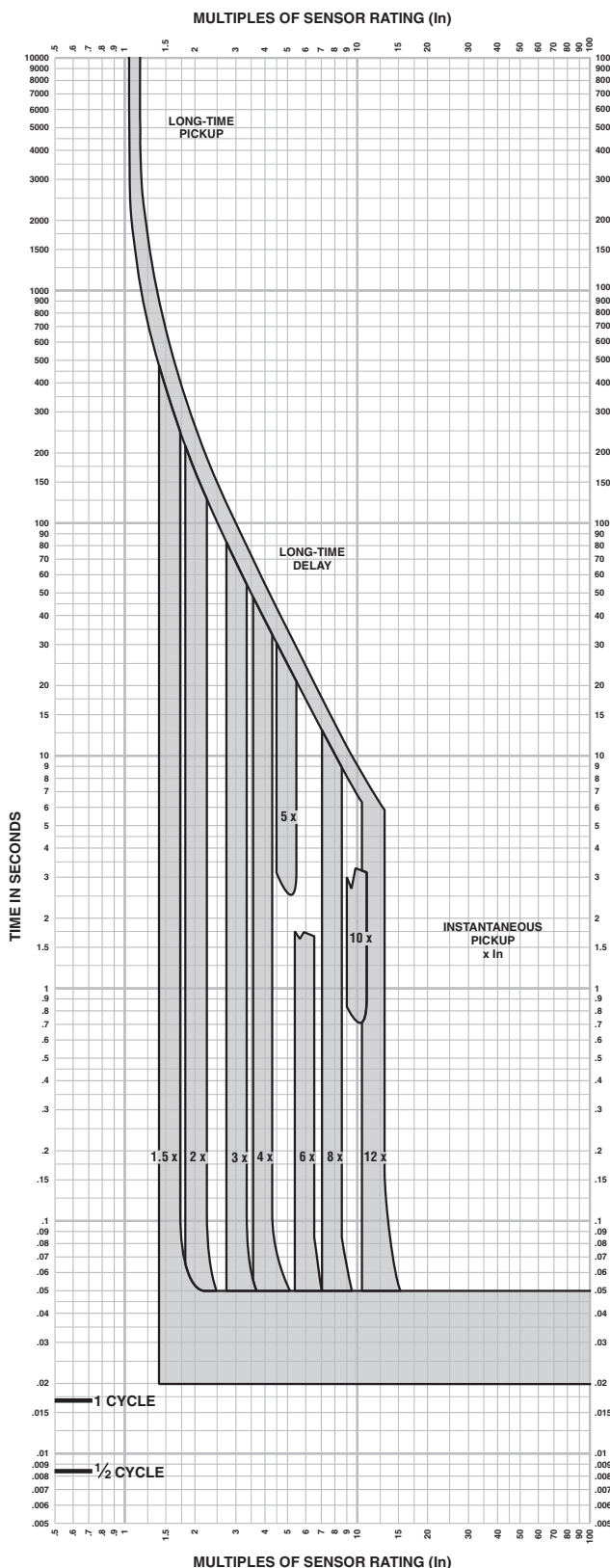
The time-current curve information is to be used for application and coordination purposes only.
Curves apply from -25°C to +70°C (-13°F to +158°F) ambient temperature.
Instantaneous override values are given on 613-10.

- Notes:**
1. There is a thermal-imaging effect that can act to shorten the long-time delay. The thermal-imaging effect comes into play if a current above the long-time 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 a 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 20 minutes is required between overloads to completely reset thermal-imaging.
 2. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.

PowerPact™ M-, P- and R-Frame, and Compact™ NS630b–NS3200 Circuit Breakers

Section 13—Trip Curves

Basic Electronic Trip Unit 1.0I P- and R-Frame Characteristic Trip Curve



ELECTRONIC TRIP 1.0I CHARACTERISTIC TRIP CURVE NO. 613-12

Long-time Pickup and Fixed Delay
Instantaneous Pickup
1.5x–12x

The time-current curve information is to be used for application and coordination purposes only.

Curves apply from -25°C to +70°C
(-13°F to +158°F) ambient temperature.

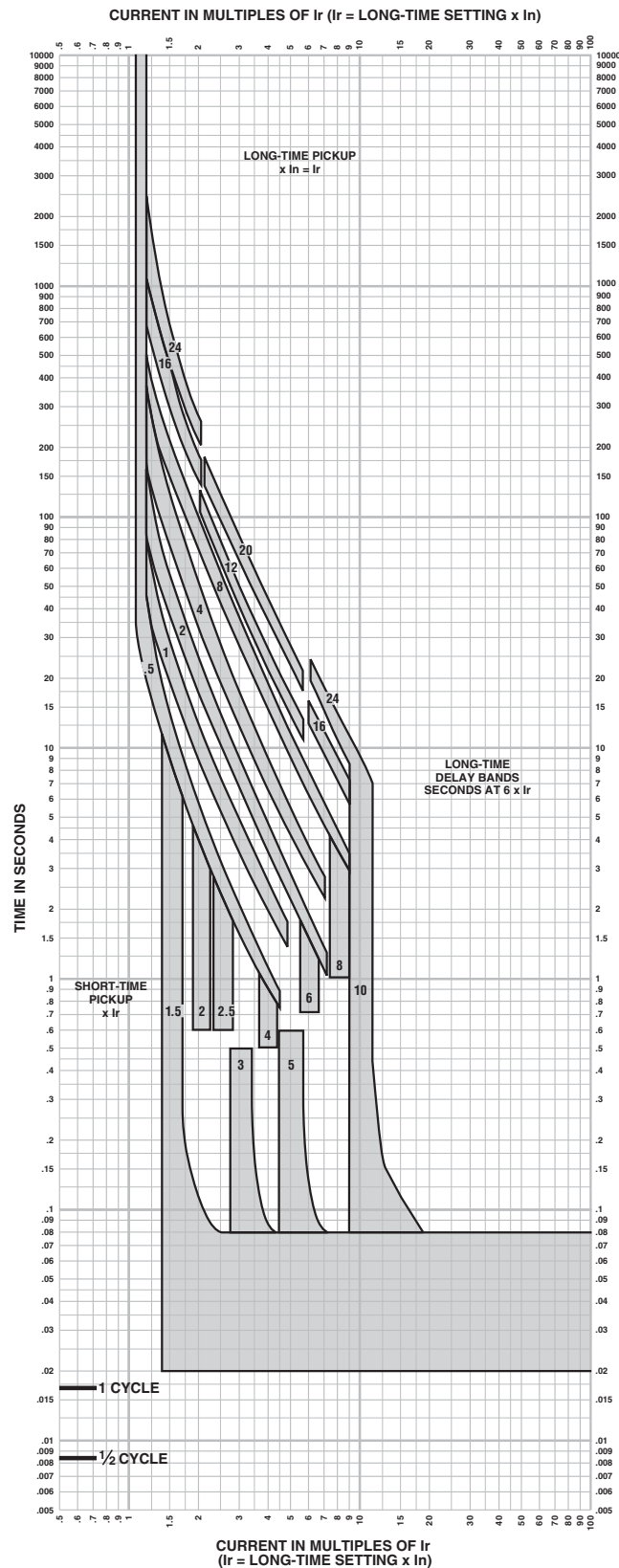
Instantaneous override values are given on 613-10.

Notes:

1. There is a thermal-imaging effect that can act to shorten the long-time delay. The thermal-imaging effect comes into play if a current above the long-time 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 a 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 20 minutes is required between overloads to completely reset thermal-imaging.
2. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.

PowerPact™ M-, P- and R-Frame, and Compact™ NS630b–NS3200 Circuit Breakers
Section 13—Trip Curves

Micrologic 2.0A NS630b–NS3200 Trip Unit Characteristic Trip Curve



Micrologic 2.0A Trip Unit
Characteristic Trip Curve No. 613-9
Long-Time Pickup and Delay
Short-Time Pickup with No Delay

The time-current curve information is to be used for application and coordination purposes only. Curves apply from -25°C to $+70^{\circ}\text{C}$ (-13°F to $+158^{\circ}\text{F}$) ambient temperature.

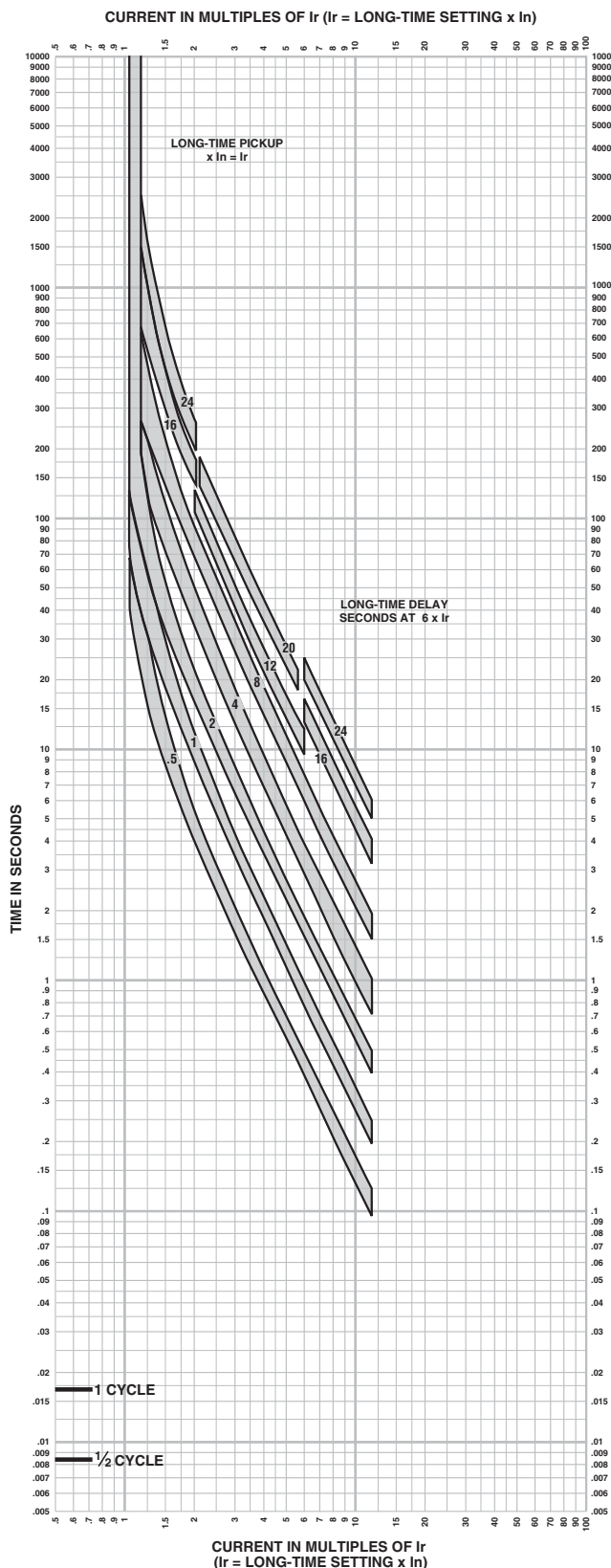
Notes:

1. There is a thermal-imaging effect that can act to shorten the long-time delay. The thermal-imaging effect comes into play if a current above the long-time 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 a 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 twenty minutes is required between overloads to completely reset thermal-imaging.
2. The end of the curve is determined by the short-time setting.
3. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of current.
4. Overload indicator illuminates at 100%.

PowerPact™ M-, P- and R-Frame, and Compact™ NS630b–NS3200 Circuit Breakers

Section 13—Trip Curves

Micrologic 3.0A P-Frame and R-Frame Trip Unit Characteristic Trip Curve



Micrologic 3.0A Trip Unit Characteristic Trip Curve No. 613-6 Long-Time Pickup and Delay

The time-current curve information is to be used for application and coordination purposes only.

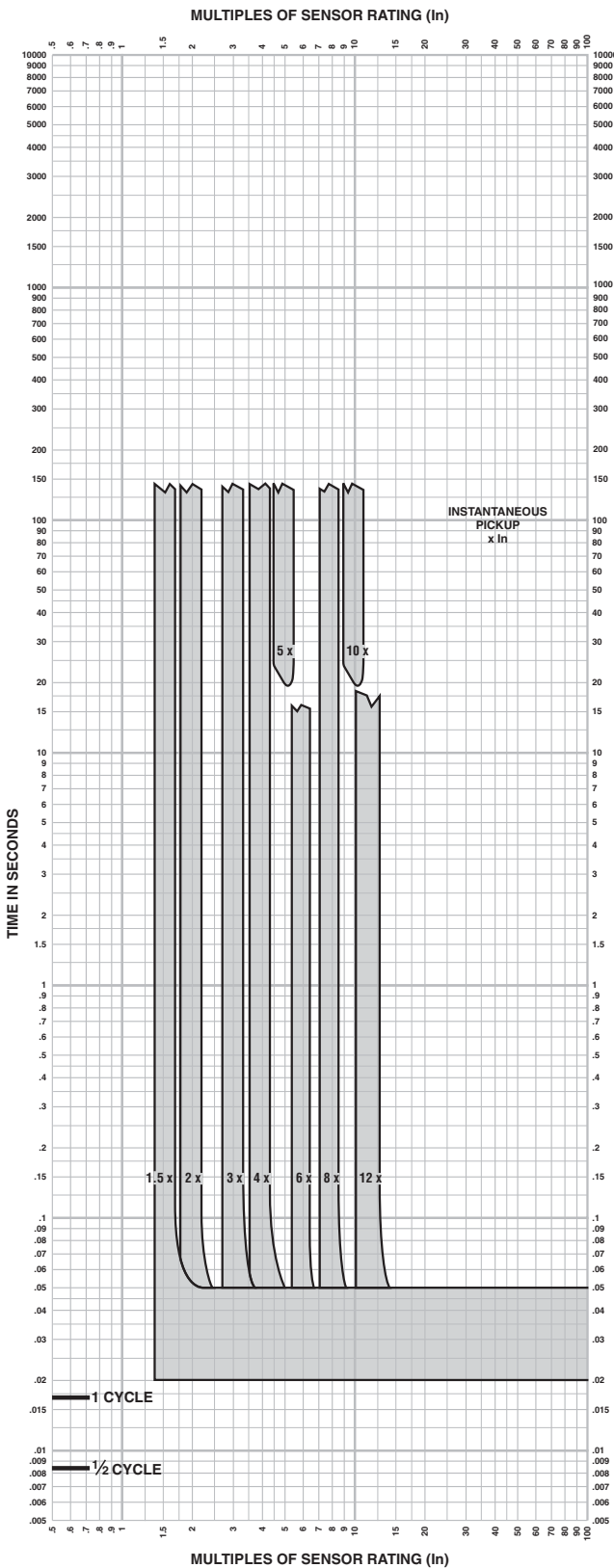
Curves apply from -25°C to $+70^{\circ}\text{C}$
(-13°F to $+158^{\circ}\text{F}$) ambient temperature.

Notes:

1. There is a thermal-imaging effect that can act to shorten the long-time delay. The thermal-imaging effect comes into play if a current above the long-time 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 a 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 twenty minutes is required between overloads to completely reset thermal-imaging.
2. The end of the curve is determined by the instantaneous setting of the circuit breaker.
3. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of current.
4. See trip curve 613-8 on page 176 for instantaneous pickup trip curve.

PowerPact™ M-, P- and R-Frame, and Compact™ NS630b–NS3200 Circuit Breakers
Section 13—Trip Curves

Micrologic 3.0A P-Frame and R-Frame Trip Unit Characteristic Trip Curve



Micrologic 3.0A Trip Unit
Characteristic Trip Curve No. 613-8
Instantaneous Pickup, 1.5X to 12X

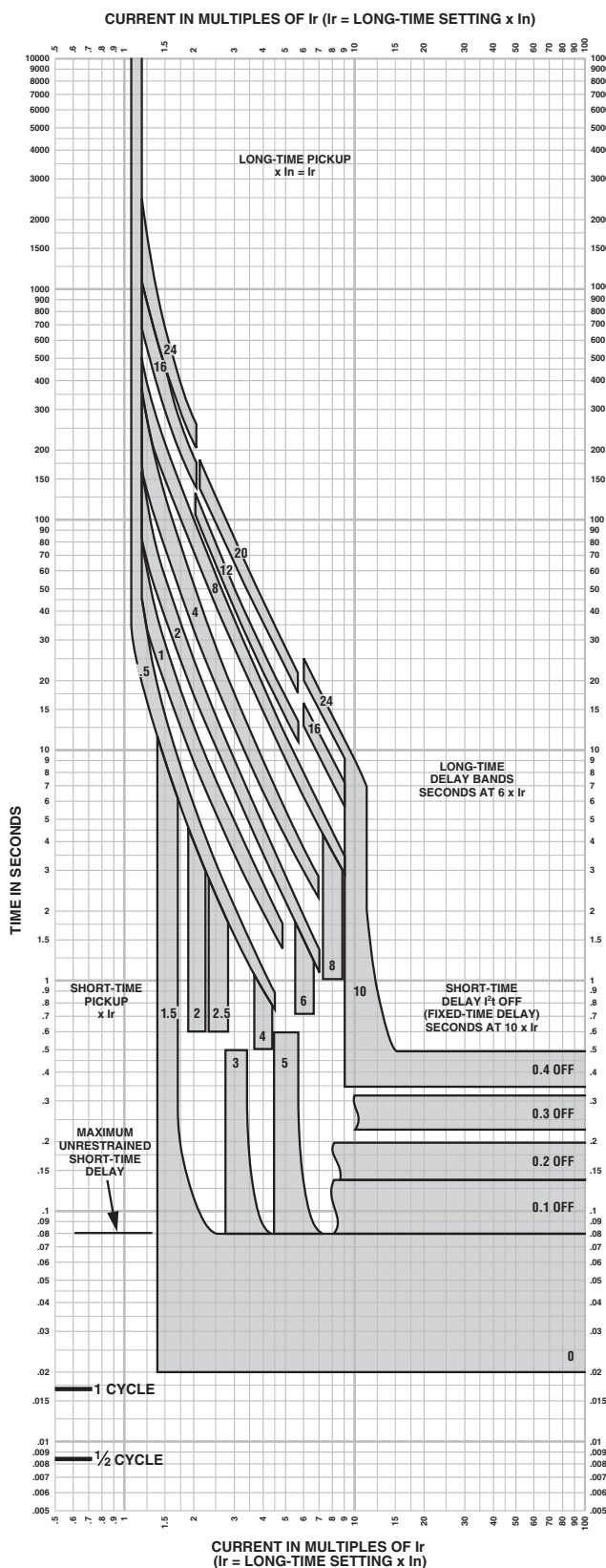
The time-current curve information is to be used for application and coordination purposes only. Curves apply from -25°C to +10°C (-13°F to +158°F) ambient temperature. Instantaneous override values are given on 613-10.

- Notes:**
- 1. The end of the curve is determined by the interrupting rating of the circuit breaker.
 - 2. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of current.
 - 3. The instantaneous region of the trip curve shows maximum total clearing times. Actual clearing times in this region can vary depending on the circuit breaker mechanism design and other factors. The actual clearing time can be considerably faster than indicated. Contact your local sales office for additional information.
 - 4. See trip curve 613-6 on page 175 for long-time pickup and delay trip curves.

PowerPact™ M-, P- and R-Frame, and Compact™ NS630b–NS3200 Circuit Breakers

Section 13—Trip Curves

Micrologic 5.0/6.0 P-Frame, R-Frame and NS630b–NS3200 A/P/H Trip Unit Characteristic Trip Curve



Micrologic 5.0/6.0 A/P/H Trip Units Characteristic Trip Curve No. 613-4

Long-Time Pickup and Delay
Short-Time Pickup and I^2t OFF Delay

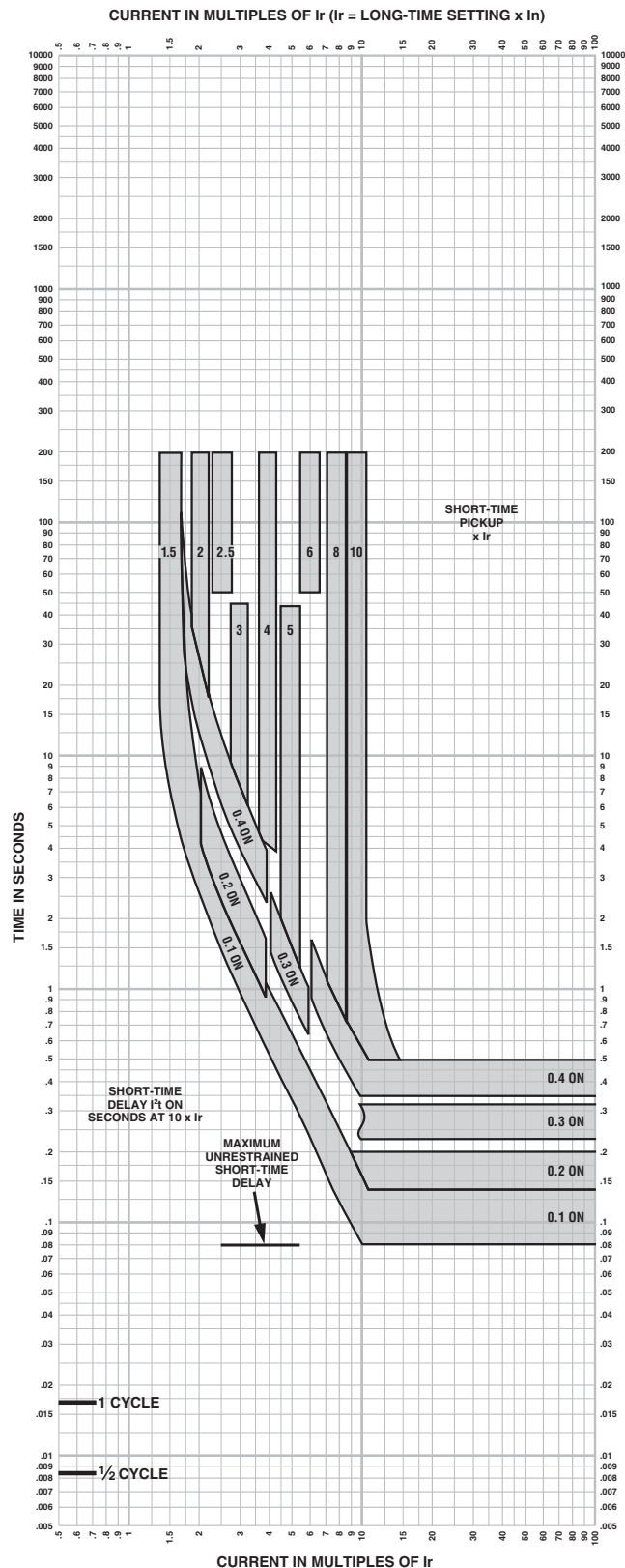
The time-current curve information is to be used for application and coordination purposes only. Curves apply from -25°C to $+70^\circ\text{C}$ (-13°F to $+158^\circ\text{F}$) ambient temperature.

Notes:

1. There is a thermal-imaging effect that can act to shorten the long-time delay. The thermal-imaging effect comes into play if a current above the long-time 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 a 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 twenty minutes is required between overloads to completely reset thermal-imaging.
2. The end of the curve is determined by the interrupting rating of the circuit breaker.
3. With zone-selective interlocking ON, short-time delay utilized, and no restraining signal, the maximum unrestrained short-time delay time band applies regardless of the setting.
4. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.
5. For a withstand circuit breaker, instantaneous can be turned OFF. See trip curve 613-7 on page 179 for instantaneous trip curve. See table on page 183 for instantaneous override values.
6. Overload indicator illuminates at 100%.

PowerPact™ M-, P- and R-Frame, and Compact™ NS630b–NS3200 Circuit Breakers
Section 13—Trip Curves

Micrologic 5.0/6.0 P-Frame, R-Frame and NS630b–NS3200 A/P/H Trip Units Characteristic Trip Curve



Micrologic 5.0/6.0 A/P/H Trip Units
Characteristic Trip Curve No. 613-5
Short-Time Pickup and I^2t ON Delay

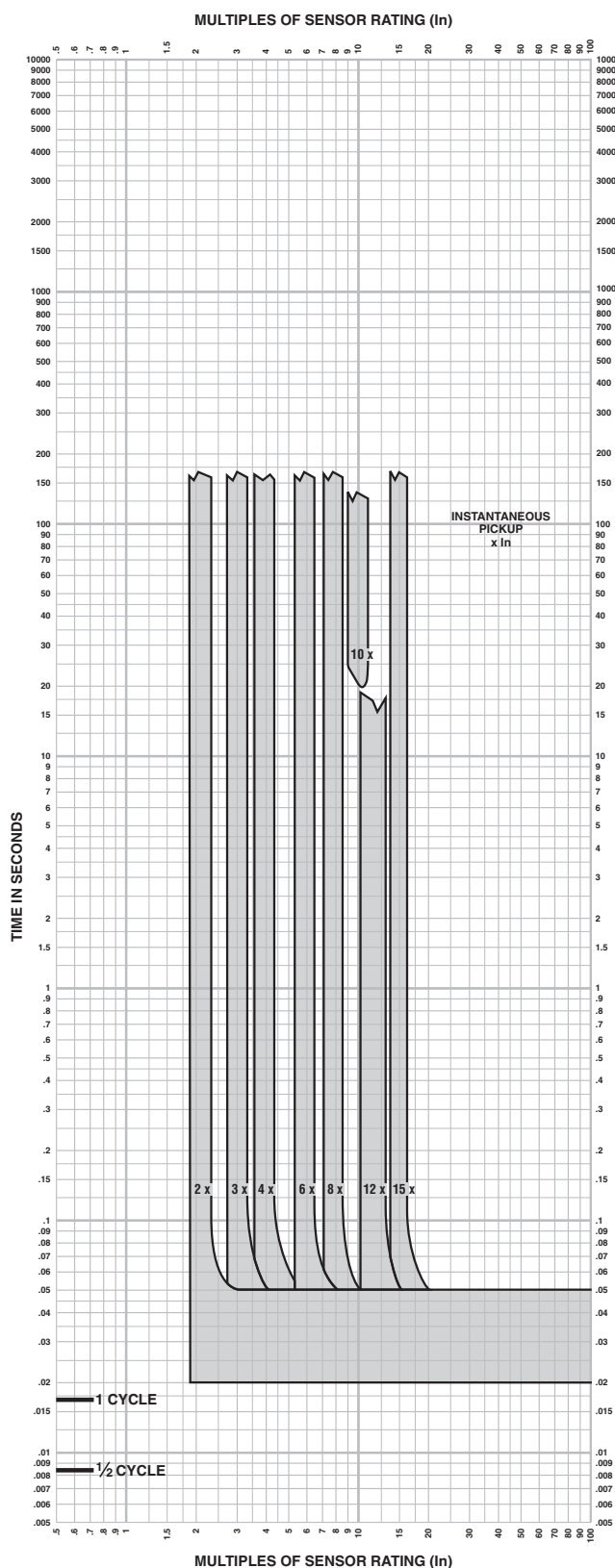
The time-current curve information is to be used for application and coordination purposes only.
Curves apply from -25°C to +70°C (-13°F to +158°F) ambient temperature.

- Notes:**
1. There is a thermal-imaging effect that can act to shorten the long-time delay. The thermal-imaging effect comes into play if a current above the long-time 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 a 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 twenty minutes is required between overloads to completely reset thermal-imaging.
 2. The end of the curve is determined by the interrupting rating of the circuit breaker.
 3. With zone-selective interlocking ON, short-time delay utilized, and no restraining signal, the maximum unrestrained short-time delay time band applies regardless of the setting.
 4. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of current.
 5. For withstand circuit breaker, instantaneous can be turned OFF. See trip curve 613-7 on page 179 for instantaneous trip curve. See table on page 183 for instantaneous override values.
 6. See Trip Curve 613-4 on page 177 for long-time pickup and delay trip curve.

PowerPact™ M-, P- and R-Frame, and Compact™ NS630b–NS3200 Circuit Breakers

Section 13—Trip Curves

Micrologic 5.0/6.0 P-Frame, R-Frame and NS630b–NS3200 A/P/H Trip Units Characteristic Trip Curve



Micrologic 5.0/6.0 Trip Units Characteristic Trip Curve No. 613-7 Instantaneous Pickup, 2X to 15X and OFF

The time-current curve information is to be used for application and coordination purposes only.

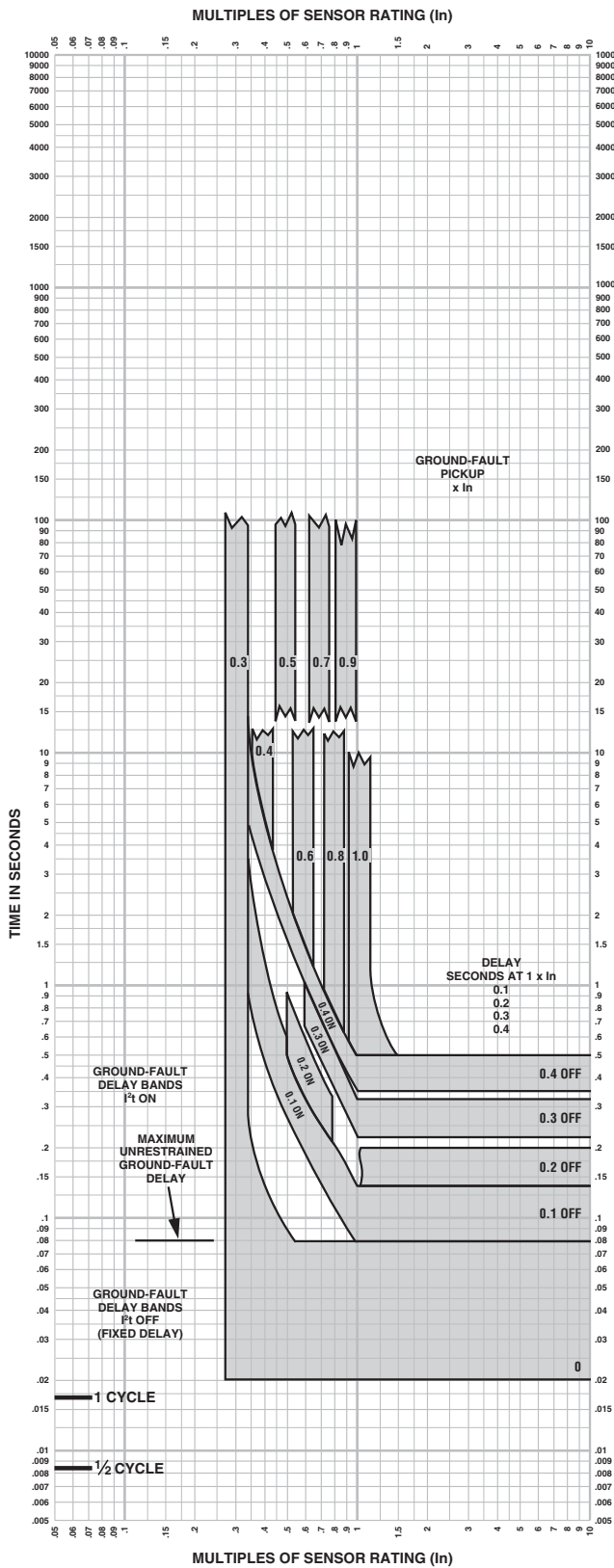
Curves apply from -30°C to +60°C
(-22°F to +140°F) ambient temperature.

Notes:

1. The end of the curve is determined by the interrupting rating of the circuit breaker.
2. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of current.
3. The instantaneous region of the trip curve shows maximum total clearing times. Actual clearing times in this region can vary depending on the circuit breaker mechanism design and other factors. The actual clearing time can be considerably faster than indicated. Contact your local sales office for additional information.
4. For a withstand circuit breaker, instantaneous can be turned OFF. See trip curve 613-7 on page 179 for the instantaneous trip curve. See table on page 183 for the instantaneous override values.
5. See trip curve 613-4 on page 177 and trip curve 613-5 on page 178 for long-time pickup, long-time delay, short-time pickup and short-time delay trip curves.

PowerPact™ M-, P- and R-Frame, and Compact™ NS630b–NS3200 Circuit Breakers
Section 13—Trip Curves

Micrologic 6.0 P-Frame, R-Frame and NS630b–NS3200 A/P/H Trip Units with Adjustable
Ground-fault Pickup and Delay Characteristic Trip Curve



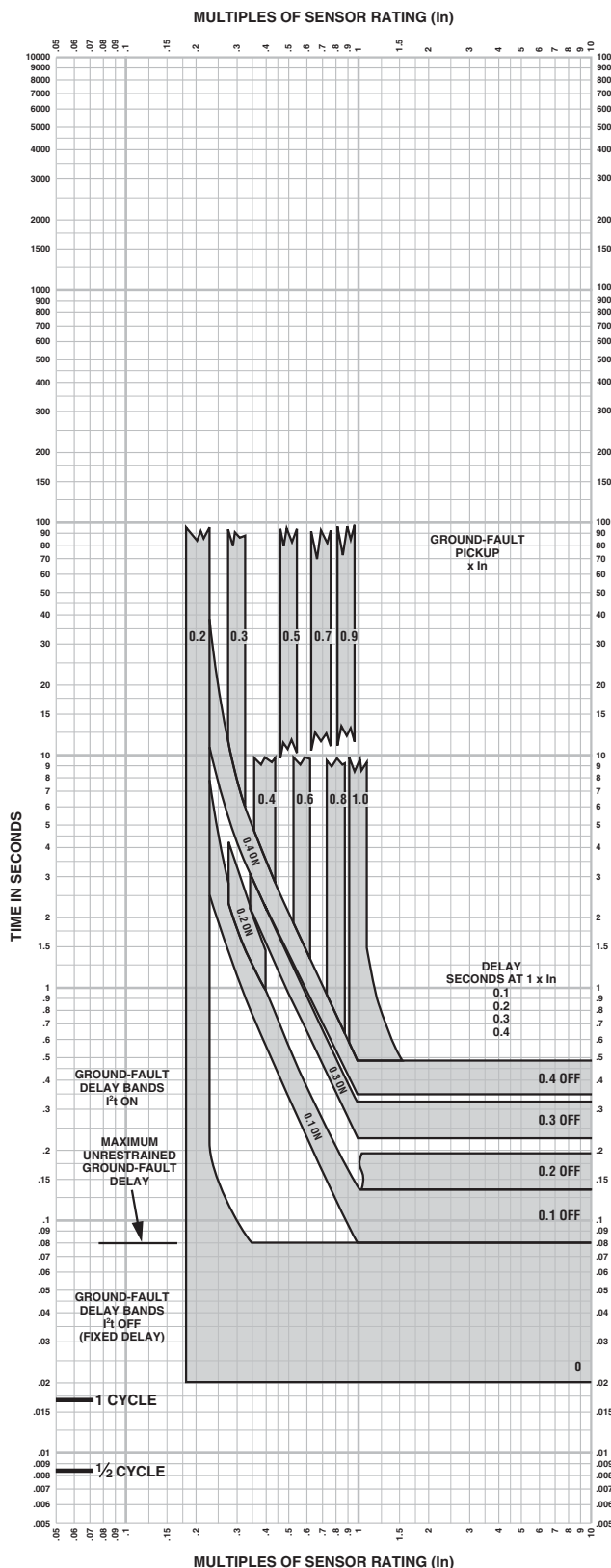
Micrologic 6.0 A/P/H Trip Units
with Adjustable Ground-Fault Pickup and
Delay
Characteristic Trip Curve No. 613-1
Ground Fault I^2t OFF and ON
 $I_n \leq 400$ A

The time-current curve information is to be used
for application and coordination purposes only.
Curves apply from -25°C to +70°C
(-13°F to +158°F) ambient temperature.

PowerPact™ M-, P- and R-Frame, and Compact™ NS630b–NS3200 Circuit Breakers

Section 13—Trip Curves

Micrologic 6.0 P-Frame, R-Frame and NS630b–NS3200 A/P/H Trip Units with Adjustable Ground-fault Pickup and Delay Characteristic Trip Curve



**Micrologic 6.0 A/P/H Trip Units
with Adjustable Ground-Fault Pickup and
Delay
Characteristic Trip Curve No. 613-2
Ground Fault I^2t OFF and ON
 $400 \text{ A} < I_n \leq 1200 \text{ A}$**

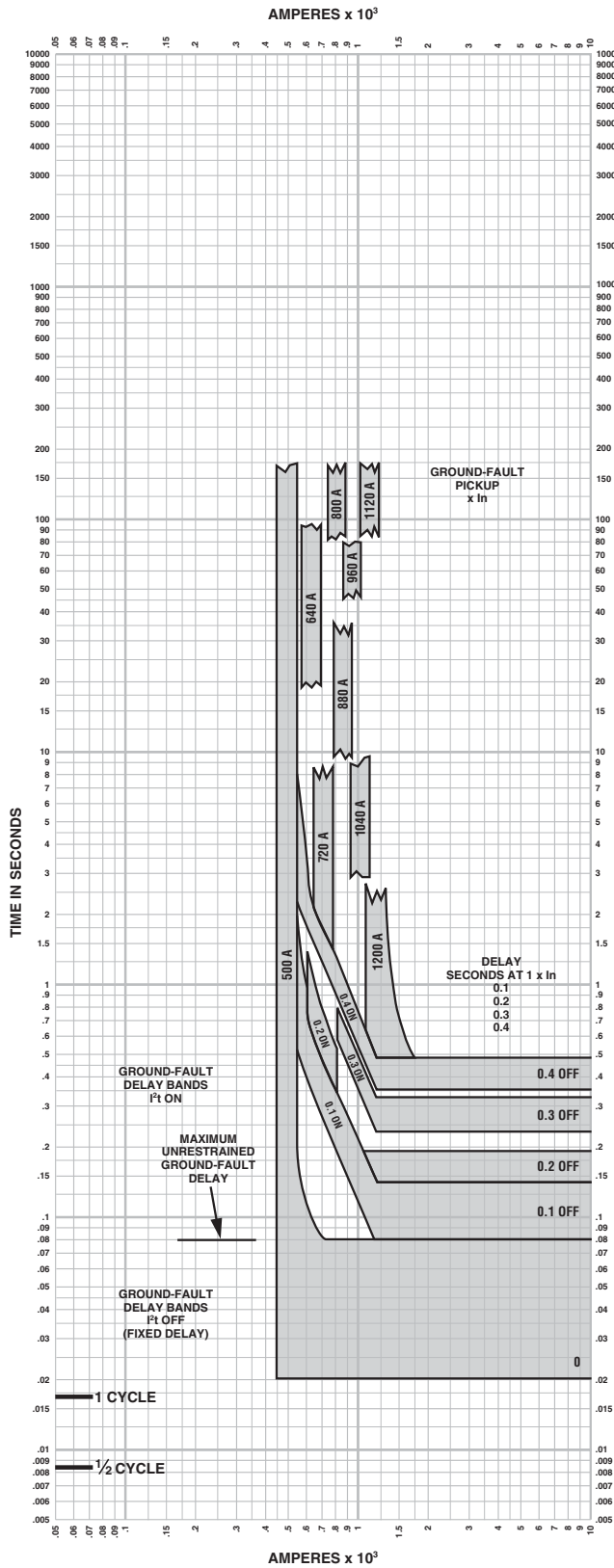
The time-current curve information is to be used for application and coordination purposes only.

Curves apply from -25°C to $+70^\circ\text{C}$
(-13°F to $+158^\circ\text{F}$) ambient temperature.

PowerPact™ M-, P- and R-Frame, and Compact™ NS630b–NS3200 Circuit Breakers

Section 13—Trip Curves

Micrologic 6.0 P-Frame, R-Frame and NS630b–NS3200 A/P/H Trip Units with Adjustable Ground-fault Pickup and Delay Characteristic Trip Curve



Micrologic 6.0 A/P/H Trip Units
with Adjustable Ground-Fault Pickup and
Delay
Characteristic Trip Curve No. 613-3
Ground Fault I_nt OFF and ON
I_n > 1200 A

The time-current curve information is to be used for application and coordination purposes only.
Curves apply from -25°C to +70°C
(-13°F to +158°F) ambient temperature.

PowerPact™ M-, P- and R-Frame, and Compact™ NS630b–NS3200 Circuit Breakers

Section 13—Trip Curves

Table 103: Instantaneous Override Values Characteristic Trip Curve

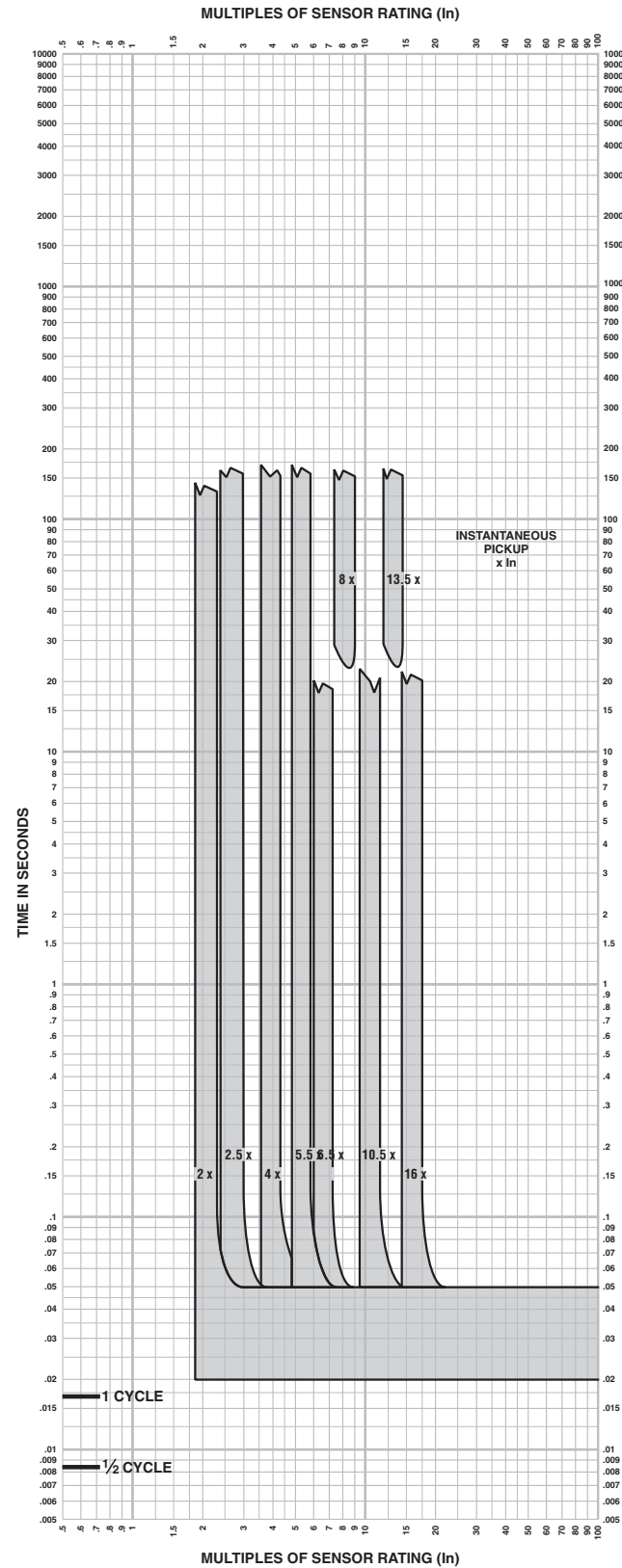
UL/IEC Circuit Breaker	Instantaneous Override ¹ (kA Peak) ²	UL/IEC Circuit Breaker	Instantaneous Override ¹ (kA Peak) ²
RG 600	130 ± 10%	MG300	20 ± 15%
RG 800	130 ± 10%	MG350	20 ± 15%
RG 1000	130 ± 10%	MG400	20 ± 15%
RG 1200	130 ± 10%	MG450	20 ± 15%
RG 1600	130 ± 10%	MG500	20 ± 15%
RG 2000	130 ± 10%	MG600	20 ± 15%
RG 2500	130 ± 10%	MG700	20 ± 15%
RJ 600	90 ± 15%	MG800	20 ± 15%
RJ 800	90 ± 15%	MJ300	20 ± 15%
RJ 1000	90 ± 15%	MJ350	20 ± 15%
RJ 1200	90 ± 15%	MJ400	20 ± 15%
RJ 1600	90 ± 15%	MJ450	20 ± 15%
RJ 2000	90 ± 15%	MJ500	20 ± 15%
RJ 2500	90 ± 15%	MJ600	20 ± 15%
RK 600	130 ± 10%	MJ700	20 ± 15%
RK 800	130 ± 10%	MJ800	20 ± 15%
RK 1000	130 ± 10%	IEC Circuit Breaker	Instantaneous Override ¹ (kA Peak) ²
RK 1200	130 ± 10%		
RK 1600	130 ± 10%	NS 800bN	130 ± 10%
RK 2000	130 ± 10%	NS1000bN	130 ± 10%
RK 2500	130 ± 10%	NS1250bN	130 ± 10%
RL 600	90 ± 15%	NS1600bN	130 ± 10%
RL 800	90 ± 15%	NS2000N	130 ± 10%
RL 1000	90 ± 15%	NS2500N	90 ± 15%
RL 1200	90 ± 15%	NS 3200N	90 ± 15%
RL 1600	90 ± 15%	NS 800bH	90 ± 15%
RL 2000	90 ± 15%	NS1000bH	90 ± 15%
RL 2500	90 ± 15%	NS1250bH	55 ± 10%
PG 250	55 ± 10%	NS1600bH	55 ± 10%
PG 400	55 ± 10%	NS2000H	55 ± 10%
PG 600	55 ± 10%	NS2500H	55 ± 10%
PG 800	55 ± 10%	NS3200H	55 ± 10%
PG 1000	55 ± 10%	NS630bN	55 ± 10%
PG 1200	55 ± 10%	NS800N	55 ± 10%
PJ 250	15 ± 10%	NS1000N	55 ± 10%
PJ 400	22 ± 10%	NS1250N	55 ± 10%
PJ 600	22 ± 10%	NS1600N	55 ± 10%
PJ 800	22 ± 10%	NS630bH	55 ± 10%
PJ 1000	22 ± 10%	NS800H	55 ± 10%
PJ 1200	22 ± 10%	NS1000H	55 ± 10%
PK 250	55 ± 10%	NS1250H	55 ± 10%
PK 400	55 ± 10%	NS1600H	55 ± 10%
PK 600	55 ± 10%	NS630bL	55 ± 10%
PK 800	55 ± 10%	NS800L	55 ± 10%
PK 1000	55 ± 10%	NS1000L	55 ± 10%
PK 1200	55 ± 10%	NS1250L	55 ± 10%
PL 250	20 ± 10%	NS1600L	55 ± 10%
PL 400	22 ± 10%		
PL 600	22 ± 10%		
PL 800	22 ± 10%		
PL 1000	22 ± 10%		
PL 1200	22 ± 10%		

¹ Faults at or above instantaneous override value will be cleared at 25 msec or less.

² Test X/R=4.9; divide by 2.1 for nominal RMS

PowerPact™ M-, P- and R-Frame, and Compact™ NS630b–NS3200 Circuit Breakers
Section 13—Trip Curves

Basic Electronic Trip Unit 1.0M, P-Frame 600 A MDP Characteristic Trip Curve



Basic Electronic Trip Unit 1.0M, 600 A
Characteristic Trip Curve No. 613-13
Instantaneous Pickup, 2X to 16X

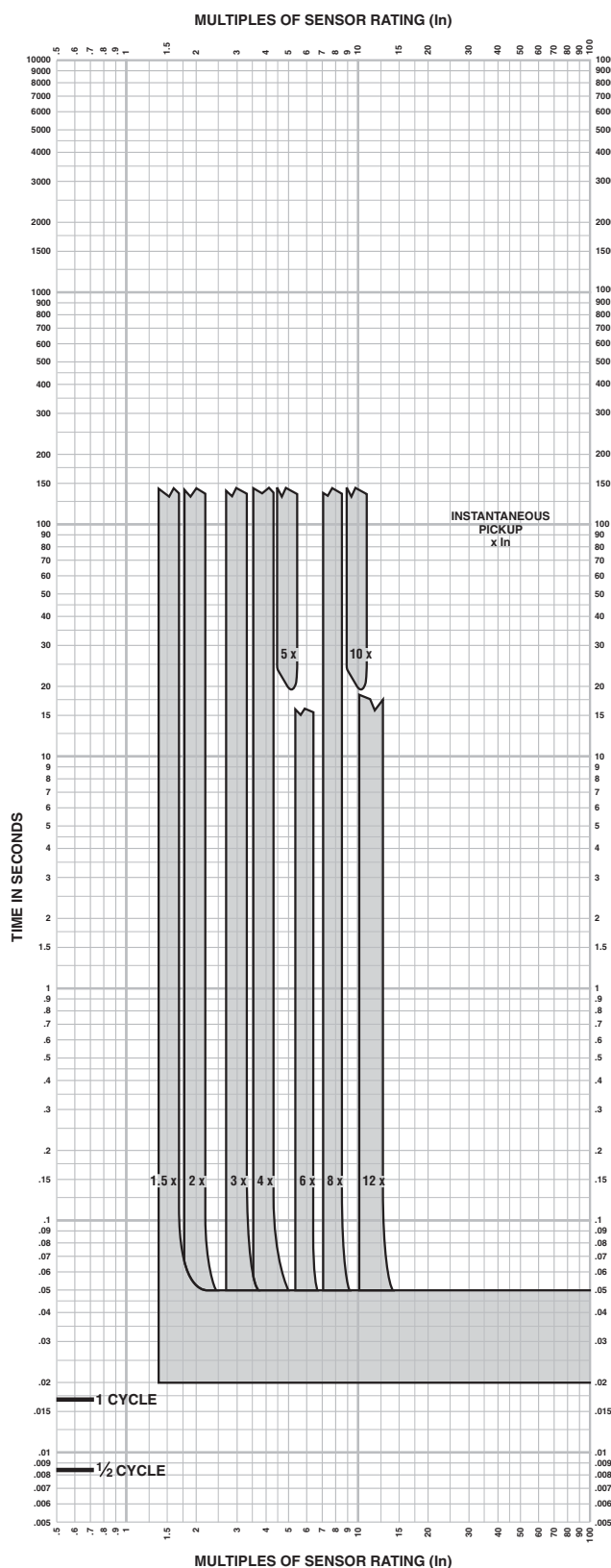
The time-current curve information is to be used for application and coordination purposes only.
Curves apply from -25°C to +70°C (-13°F to +158°F) ambient temperature.
Instantaneous override values are given on page 183.

- Notes:**
1. The end of the curve is determined by the interrupting rating of the circuit breaker.
 2. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of current.
 3. The instantaneous region of the trip curve shows maximum total clearing times. Actual clearing times in this region can vary depending on the circuit breaker mechanism design and other factors. The actual clearing time can be considerably faster than indicated. Contact your local sales office for additional information.

PowerPact™ M-, P- and R-Frame, and Compact™ NS630b–NS3200 Circuit Breakers

Section 13—Trip Curves

Basic Electronic Trip Unit 1.0M P-Frame 800–1200A MCP Characteristic Trip Curve



Basic Electronic Trip Unit 1.0M 800 A–1200 A

Characteristic Trip Curve No. 613-11 Instantaneous Pickup, 1.5X to 12X

The time-current curve information is to be used for application and coordination purposes only.

Curves apply from -25°C to +70°C (-13°F to +158°F) ambient temperature.

Instantaneous override values are given on page 183.

Notes:

1. The end of the curve is determined by the interrupting rating of the circuit breaker.
2. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of current.
3. The instantaneous region of the trip curve shows maximum total clearing times. Actual clearing times in this region can vary depending on the circuit breaker mechanism design and other factors. The actual clearing time can be considerably faster than indicated. Contact your local sales office for additional information.