



**Circuit Breaker Time / Current Curves
(Phase Current)**

Magnum MDSX / SBSE and MDDX/MDSE Circuit Breakers
Response: Instantaneous Trip
This curve is for 50Hz or 60Hz applications.

Notes:

1. If Long Delay Thermal Memory is enabled, trip times may be shorter than indicated on this chart.
2. The end of the curve is determined by the application and interrupting rating of the circuit breaker.
3. This curve is shown as a multiple of the Rating Plug (I_n).
4. The Instantaneous settings have conventional 100% $\pm 10\%$ as their pick up points.
5. Total clearing times shown include the response times of the trip unit, the circuit breaker opening and the interruption of the current.
6. The adjustable range of the instantaneous setting is $2xI_n$ through $10xI_n$. The M1 setting can extend the range according to the rating plug value as shown below. An OFF setting is available.

	M1 Setting
Standard Frame (MDSX/SBSE): 200A through 1200A 1600A, 2000A	2 to 14x I_n 2 to 12x I_n
Double Wide Frame (MDSX/SBSE MDDX/MDSE): 2000A, 2500A 3000A, 3200A, 4000A, 5000A	2 to 14x I_n 2 to 12x I_n

7. For Magnum Standard Frame MDSX (Current Limiting Power Circuit Breaker) and the SBSE (Standard Frame Power Circuit Breaker), an additional High Instantaneous Trip Module is provided in the circuit breaker even when Instantaneous is set to the OFF position.

The circuit breaker's Short Delay rating of 30kA, as marked on the circuit breaker label, is compliant to test methods and Standards. This current value equates to a first peak asymmetrical current value of 65kA.
8. For Magnum Double Wide Frame MDSX (Current Limiting Power Circuit Breaker) and the SBSE (Double Wide Frame Power Circuit Breaker), an additional High Instantaneous Trip Module is provided in the circuit breaker even when Instantaneous is set to the OFF position.

The circuit breaker's Short Delay rating of 50kA, as marked on the circuit breaker label, is compliant to test methods and Standards. This current value equates to a first peak asymmetrical current value of 105kA.
9. For Magnum Double Wide frames MDDX and MDSE an additional High Instantaneous Trip Module is provided in the circuit breaker even when the Instantaneous is set to OFF.

The circuit breaker's Short Delay rating of 100kA as marked on the label is compliant to the test methods and Standards. This current value equates to the first peak asymmetrical current value of 210kA.
10. These curves are comprehensive for the complete family of Magnum Circuit Breakers, including all frame sizes, ratings and constructions. The total Instantaneous clearing times shown are conservative and consider the maximum response times of the trip unit, the circuit breaker opening and the interruption of the current under factors that contribute to the worst case conditions, like: maximum rated voltages, single phase interruption and minimum power factor. Faster clearing times are possible depending on the specific system conditions, the type of Magnum circuit breaker applied and if any arc reduction settings are employed. Contact Eaton Corporation for additional information.

