Technical Data **TD013172EN**

Effective May 2023
Supersedes October 2022

Time current curves: Magnum PXR and Power Defense SB PXR 20/25 electronic trip units Standards: UL, CSA

Contents

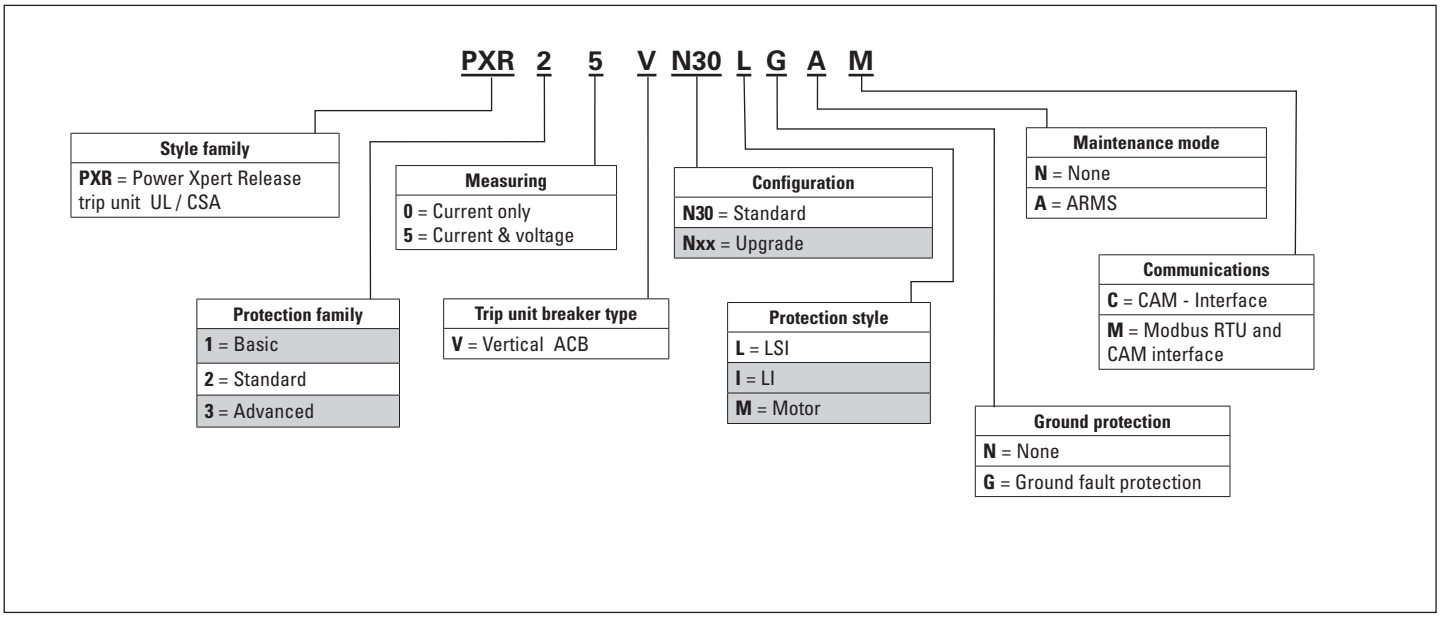
Powering Business Worldwide

Table 1. Revision notes

Note: Unless noted below, all curves remain unchanged from their prior revision.

Revision	Curve number	Page	Date
1. Magnum PXR™ initial release.			11/16/2021
2. Curve updates for timing and pickup changes.		5, 6, 7, 8	04/07/2022
3. Added notes on pages 11 and 22 and text edits to title page and text boxes on curve drawings.			10/18/2022
4. Updated instantaneous curves to reflect a total clearing time of 50 ms and updated notes to clarify the fixed instantaneous trip feature.		3, 11, 22	05/05/2023

Table 2. Electronic trip unit catalog number convention



Note: This information is provided only as an aid to understand the catalog numbers. It is not to be used to build catalog numbers for trip units as all combinations may not be available.

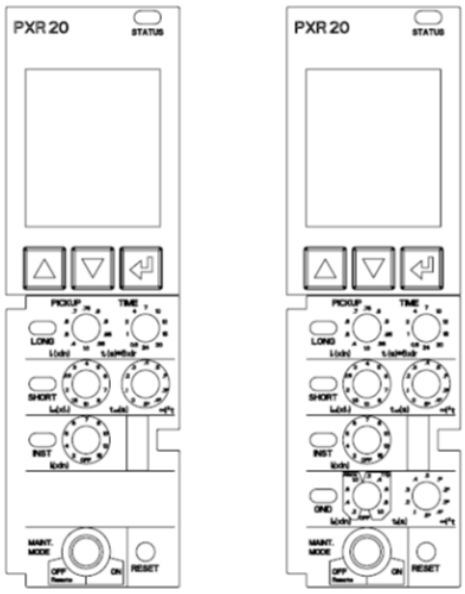
Table 3. Curve notes

1.	These curves apply for 50Hz and 60Hz applications and an ambient of -20°C to +55°C.
2.	These curves are comprehensive for Magnum PXR™ and Power Defense SB (PD-SB) style circuit breakers including all frame sizes, ratings and constructions stated.
3.	The total clearing times shown include the response time for the trip unit, the breaker opening and the interruption of the current. The bottom of the time band is the minimum commit to trip time.
4	The end of the curve is determined by the application or the interrupting rating of the circuit breaker.
5.	All electronic trip units have an over temperature protection feature that will trip the breaker when the internal temperature of the ETU is over 95ºC.
6.	All time current data is based on 3 phase testing.
7.	For Short and Ground protection with ZSI enabled and no auxiliary power, ZSI tripping times for 3 phase faults will be a minimum of 33ms and a maximum of 75ms for 60Hz and 80ms for 50Hz. With aux power the numbers are reduced by 10ms.

Table 4. Breaker trip unit catalog numbers

Breaker catalog number characters 13/14	Trip unit description	Trip unit catalog number
NN	Non – auto / switch	-
2A	PXR 20 LSI	PXR20VN30LNNC
2C	PXR 20 LSIG	PXR20VN30LGNC
2F	PXR 20 LSIG with Arcflash Reduction Maintenance System and Modbus RTU	PXR20VN30LGAM
2H	PXR 20 LSI with Arcflash Reduction Maintenance System and Modbus RTU	PXR20VN30LNAM
2Q	PXR 25 LSI with Arcflash Reduction Maintenance System and Modbus RTU	PXR25VN30LNAM
2S	PXR 25 LSIG with Arcflash Reduction Maintenance System and Modbus RTU	PXR25VN30LGAM

Labels

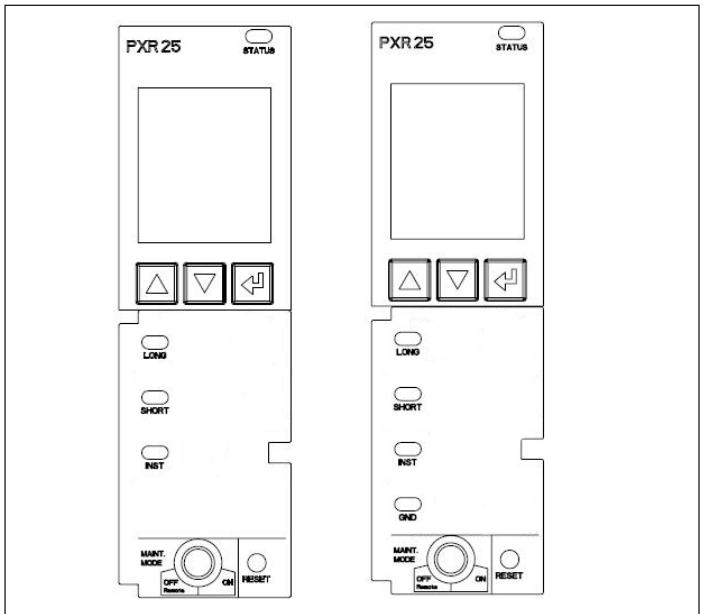


PXR 20 - LSI protection

PXR 20 - LSIG protection

Figure 1. PXR 20 trip unit front labels.

Note: Trip unit drawings in Figure 1 are representative of the face plates provided. Values on the trip unit dials will change based upon the specific breaker and trip unit. Refer to the time current curve of the breaker or the trip unit user guide for the specific settings.



PXR 25 - unit with LSI and LSIG protection and maintenance mode pictured.

Figure 2. PXR 25 trip unit front labels.

Curves

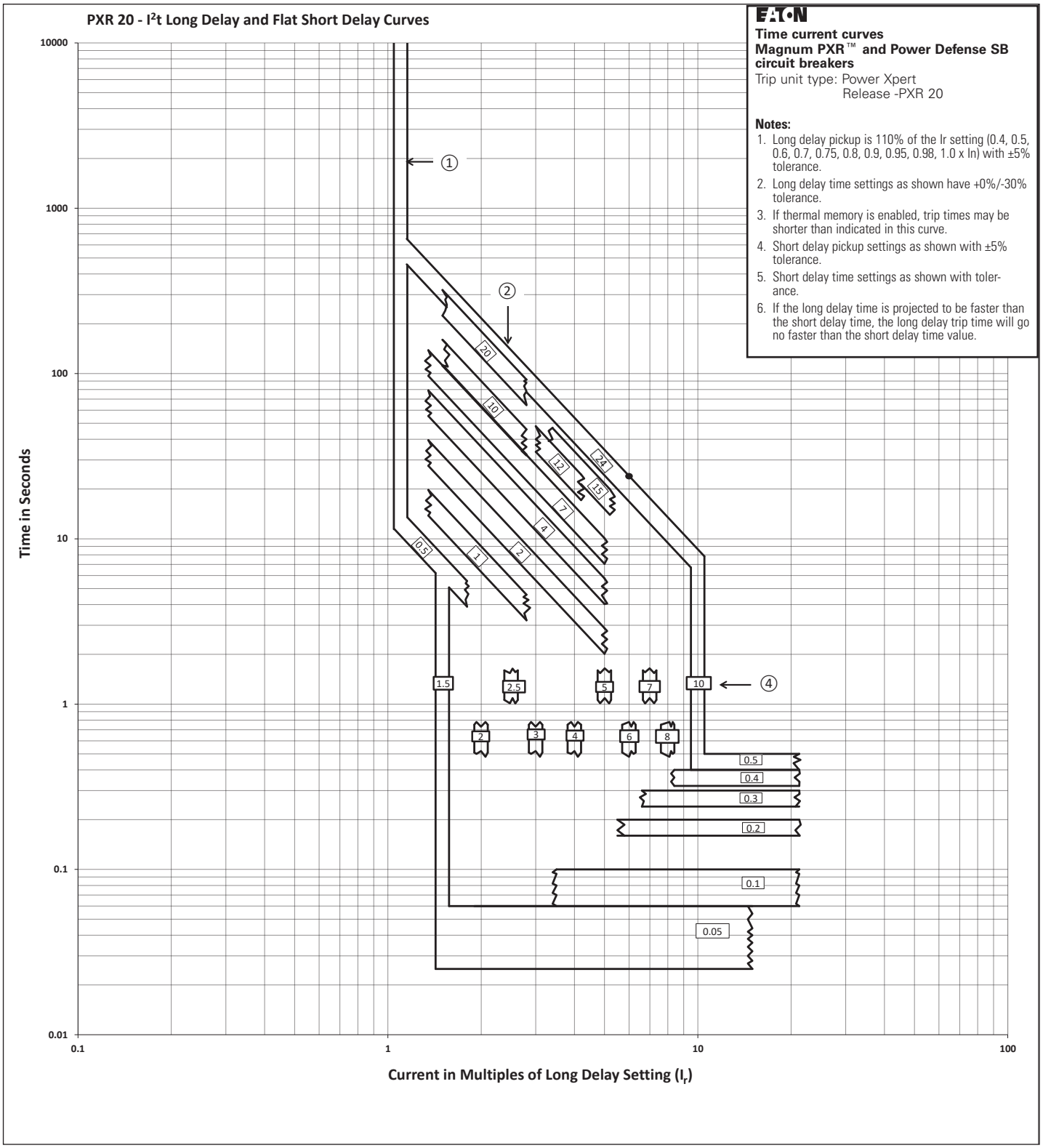


Figure 3. PXR 20 - I²t long delay and flat short delay. **May 2023**

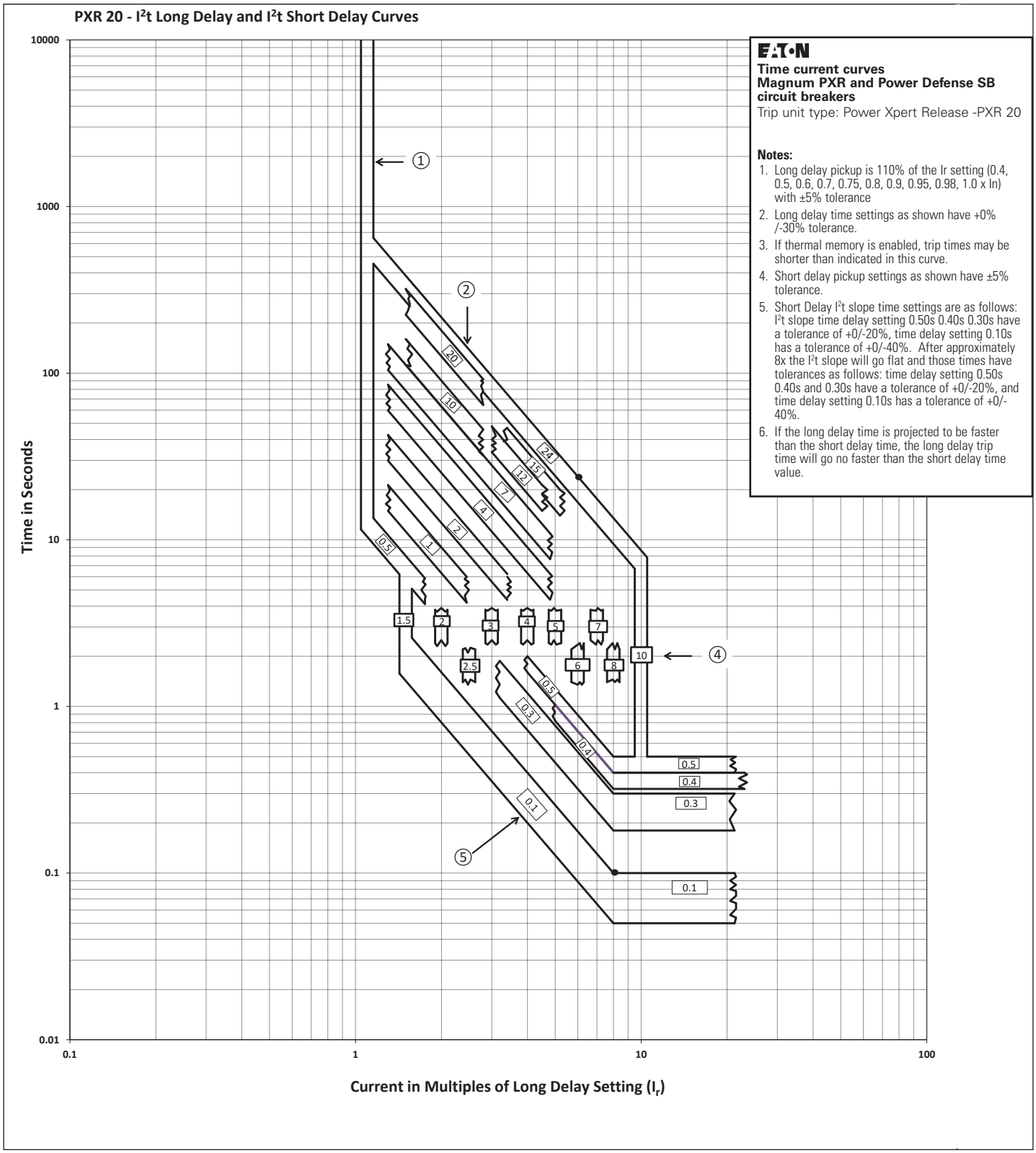


Figure 4. PXR 20 - I²t long delay and I²t short delay.

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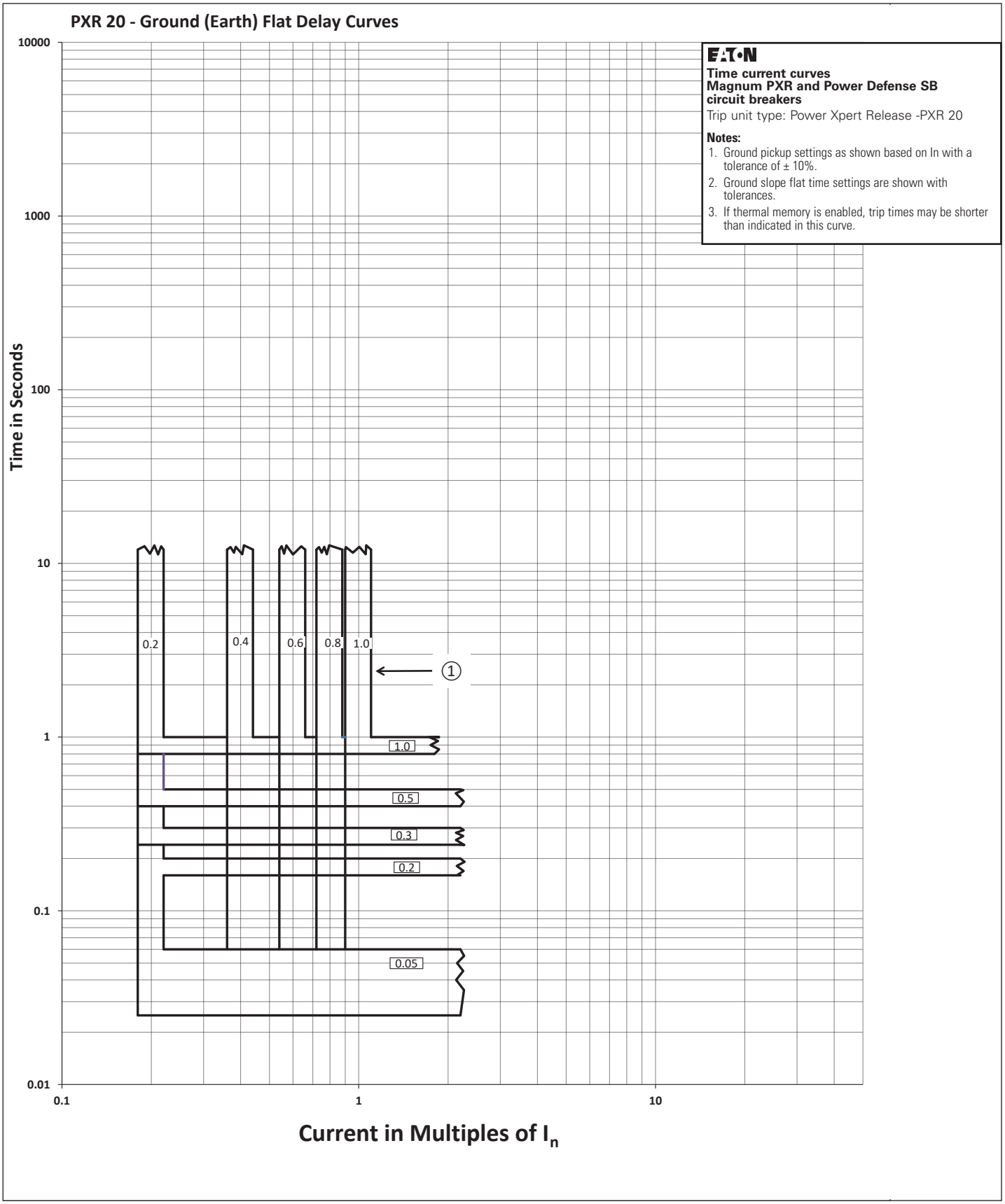

Figure 5. PXR 20 - ground (earth) flat delay.

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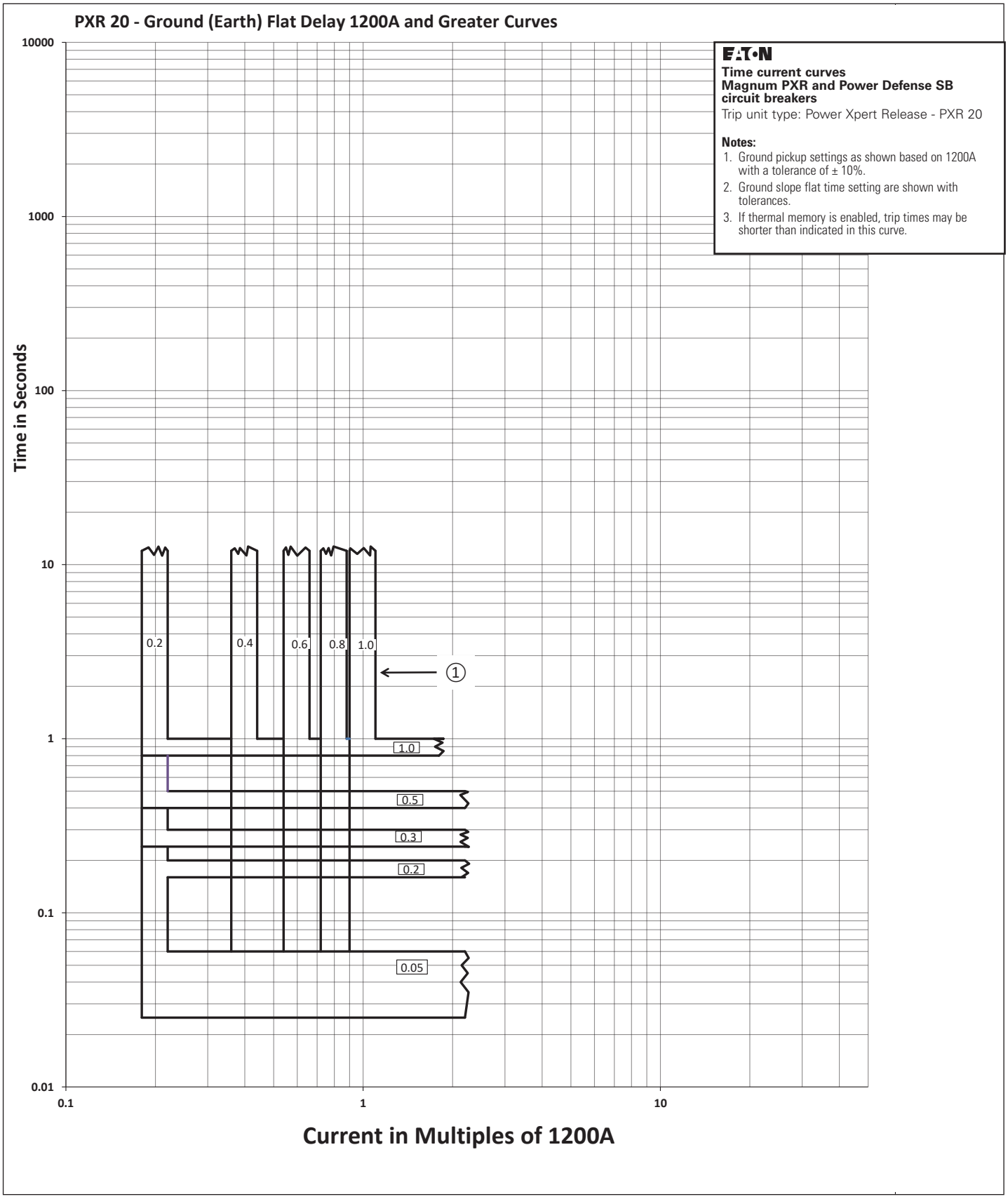

Figure 6. PXR 20 - ground (earth) flat delay 1200A frames and greater. **May 2023**

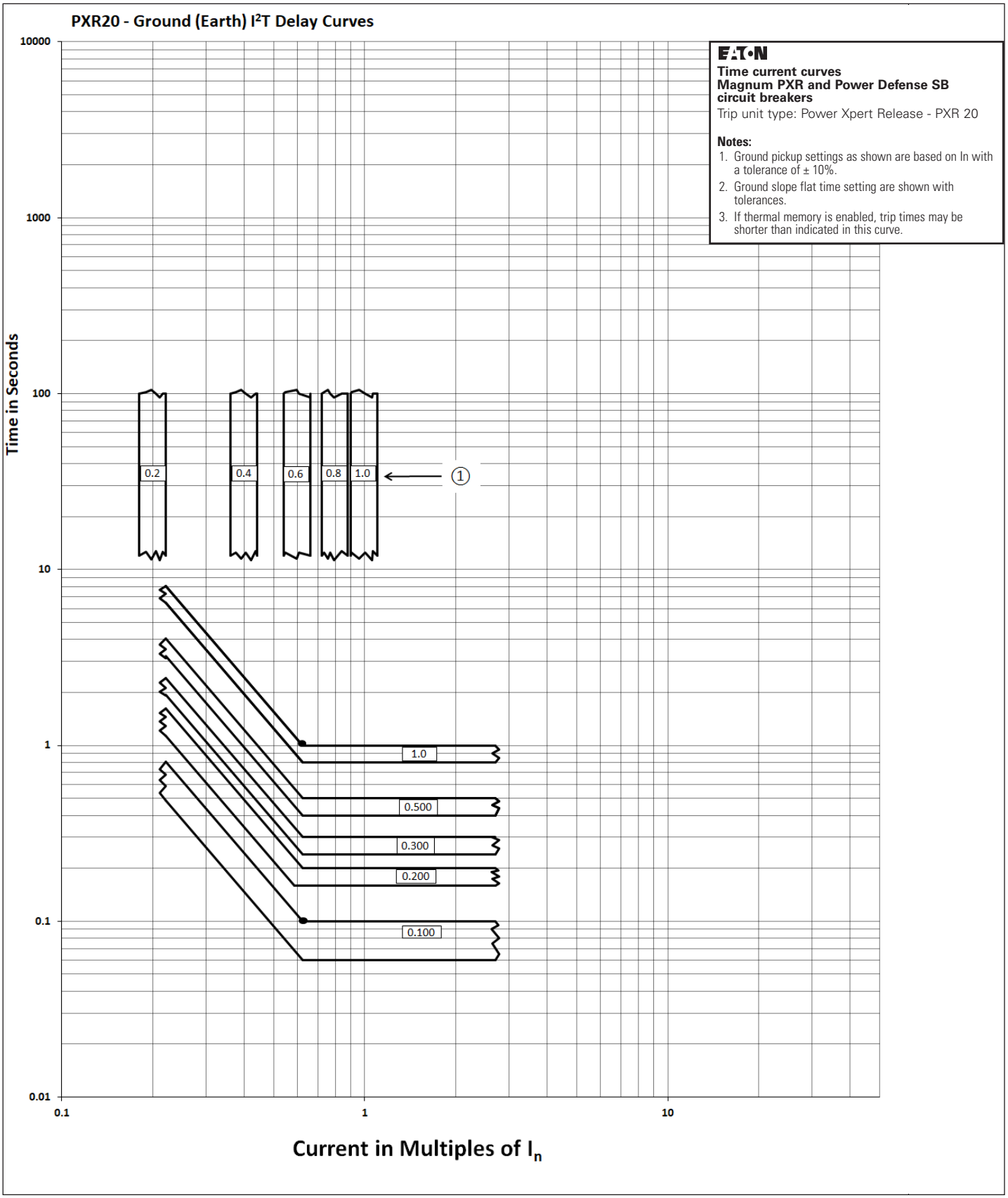

Figure 7. PXR 20 - ground (earth) I²t delay.

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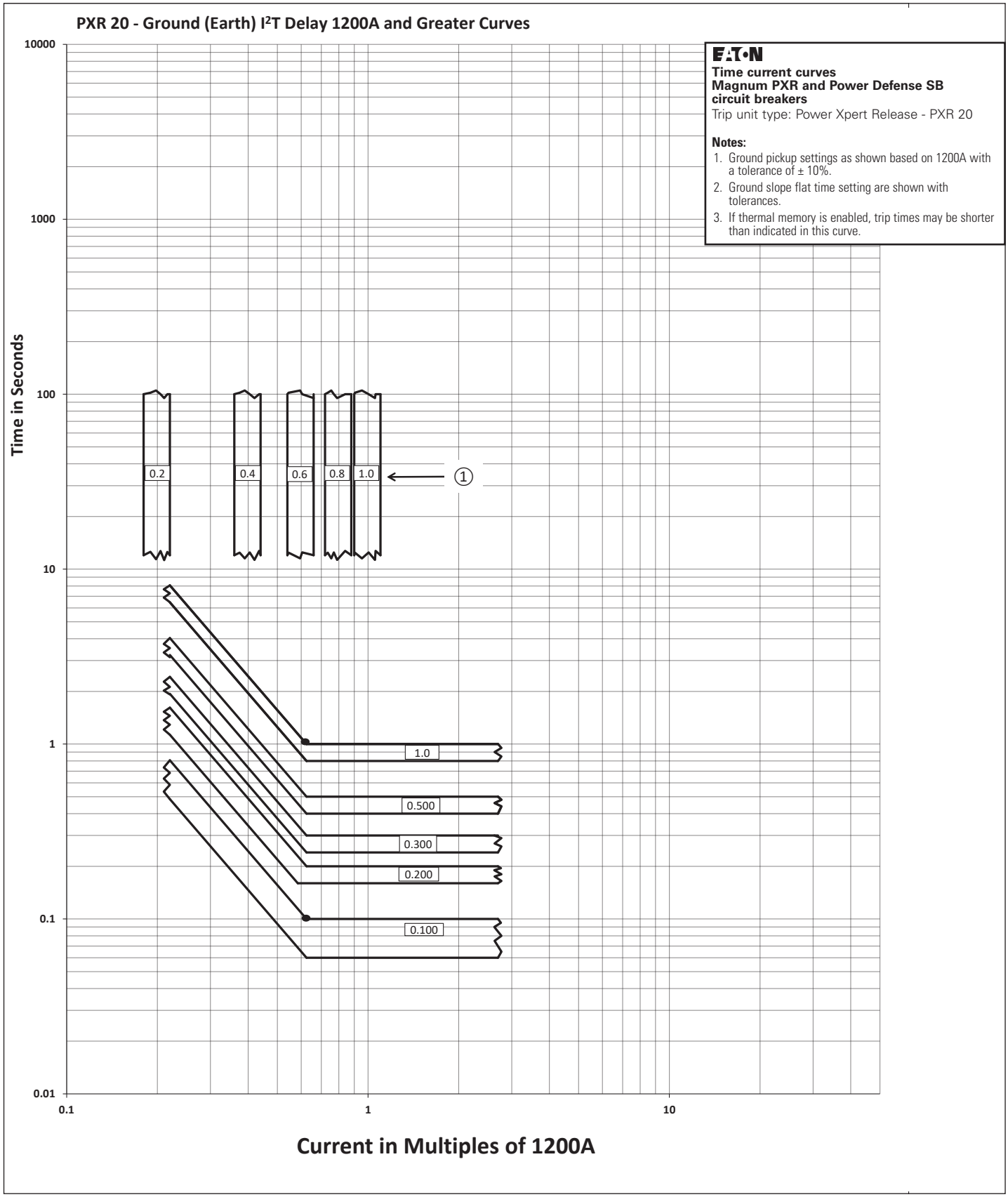
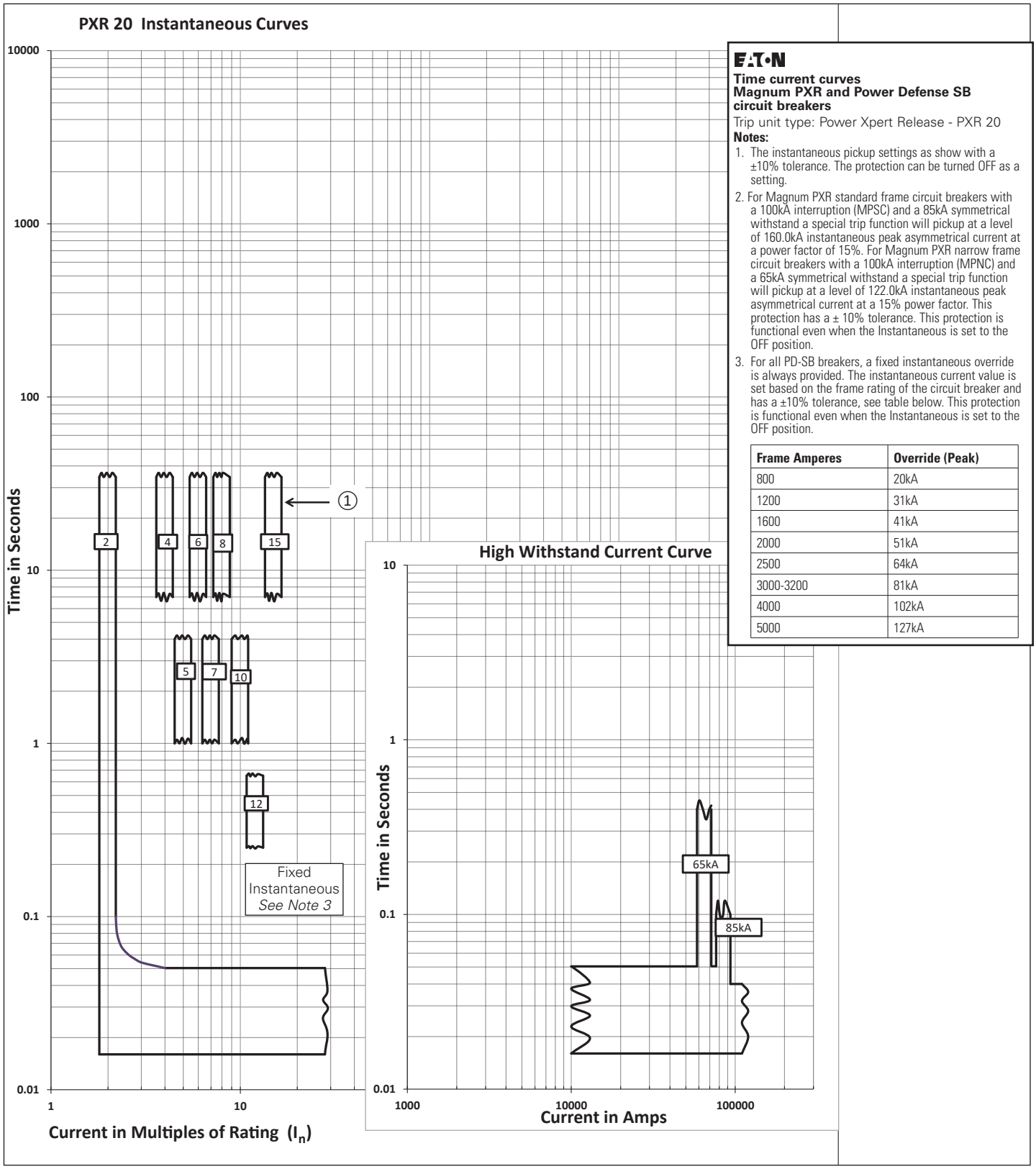


Figure 8. PXR 20 - ground (earth) I²t delay 1200A frames and greater. **May 2023**



Time current curves
Magnum PXR and Power Defense SB circuit breakers

Trip unit type: Power Xpert Release - PXR 20

Notes:

1. The instantaneous pickup settings as show with a ±10% tolerance. The protection can be turned OFF as a setting.
2. For Magnum PXR standard frame circuit breakers with a 100kA interruption (MPSC) and a 85kA symmetrical withstand a special trip function will pickup at a level of 160.0kA instantaneous peak asymmetrical current at a power factor of 15%. For Magnum PXR narrow frame circuit breakers with a 100kA interruption (MPNC) and a 65kA symmetrical withstand a special trip function will pickup at a level of 122.0kA instantaneous peak asymmetrical current at a 15% power factor. This protection has a ± 10% tolerance. This protection is functional even when the Instantaneous is set to the OFF position.
3. For all PD-SB breakers, a fixed instantaneous override is always provided. The instantaneous current value is set based on the frame rating of the circuit breaker and has a ±10% tolerance, see table below. This protection is functional even when the Instantaneous is set to the OFF position.

Frame Amperes	Override (Peak)
800	20kA
1200	31kA
1600	41kA
2000	51kA
2500	64kA
3000-3200	81kA
4000	102kA
5000	127kA

Figure 9. PXR 20 - instantaneous and high withstand current override.

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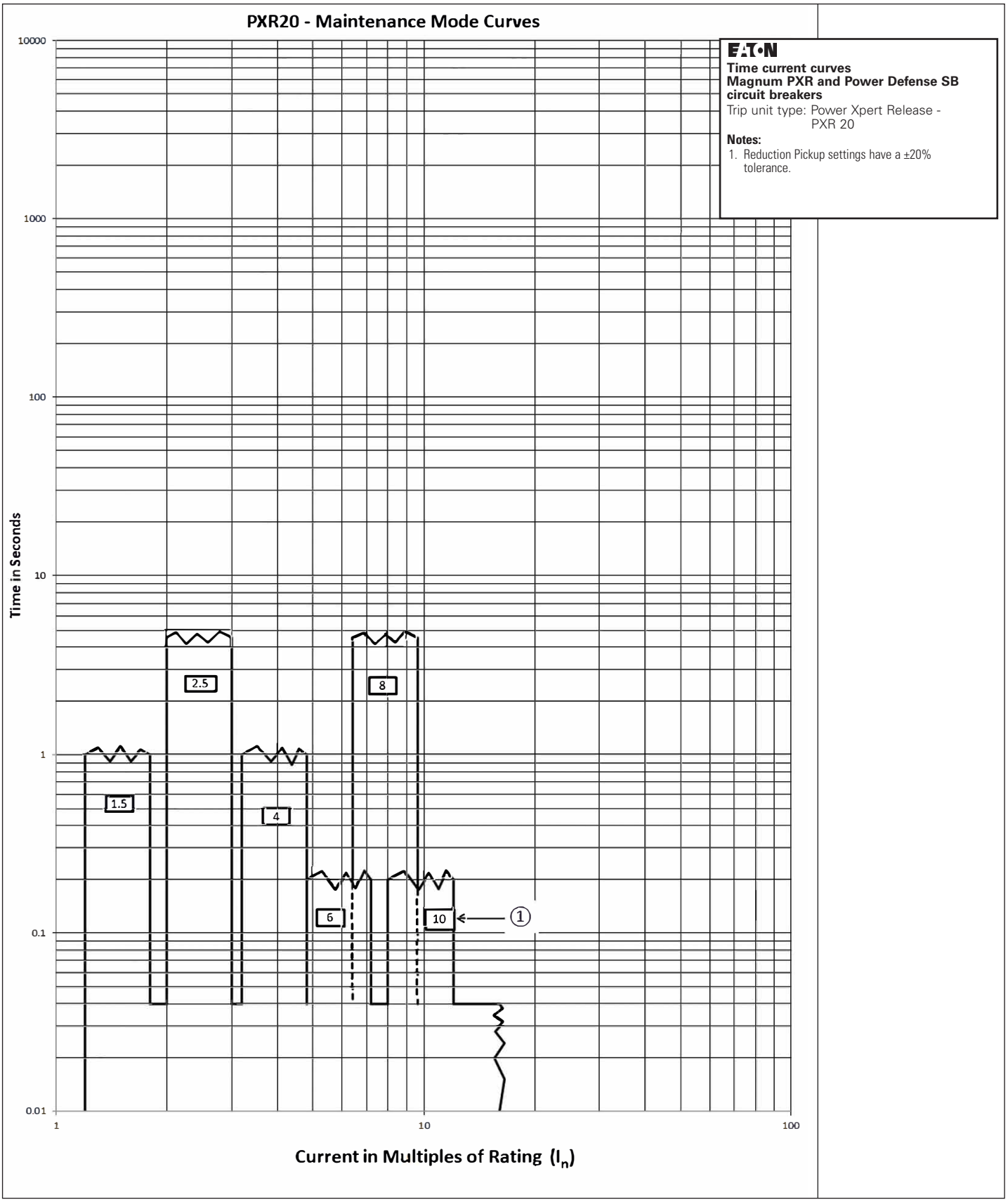

Figure 10. PXR 20 - maintenance mode.

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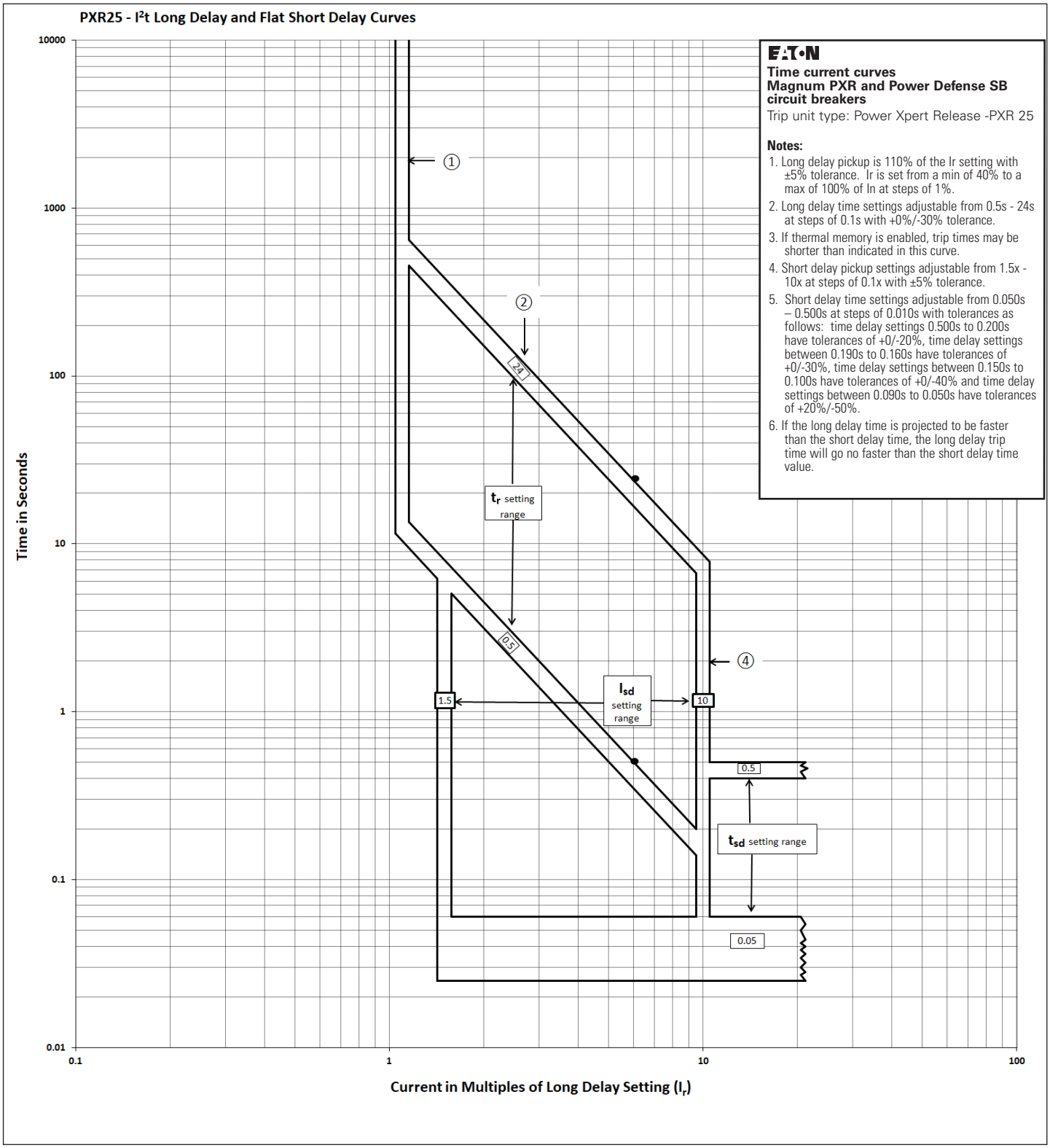

Figure 11. PXR 25 - I²t long delay and flat short delay.

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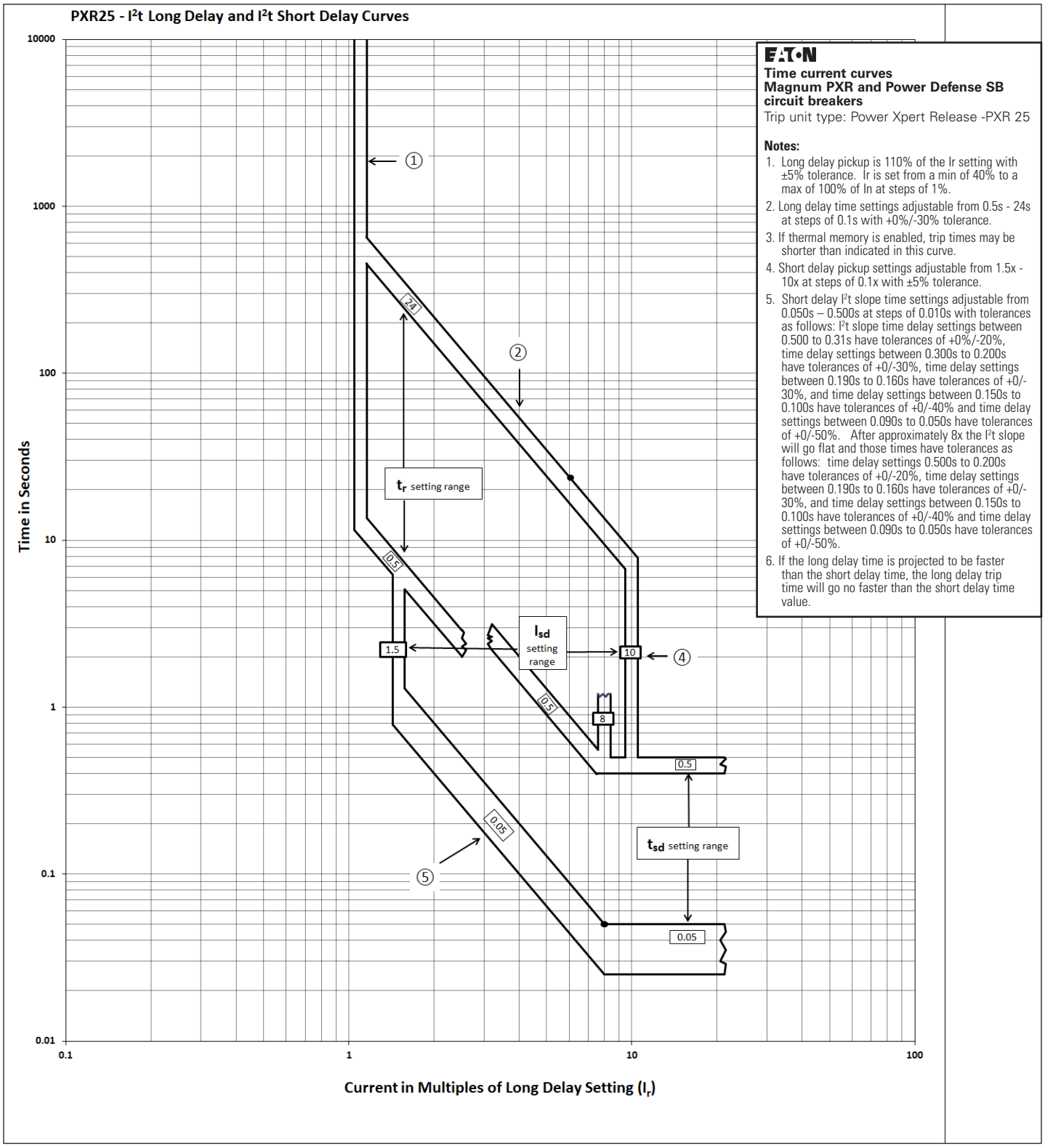

Figure 12. PXR 25 - I²t long delay and I²t short delay.

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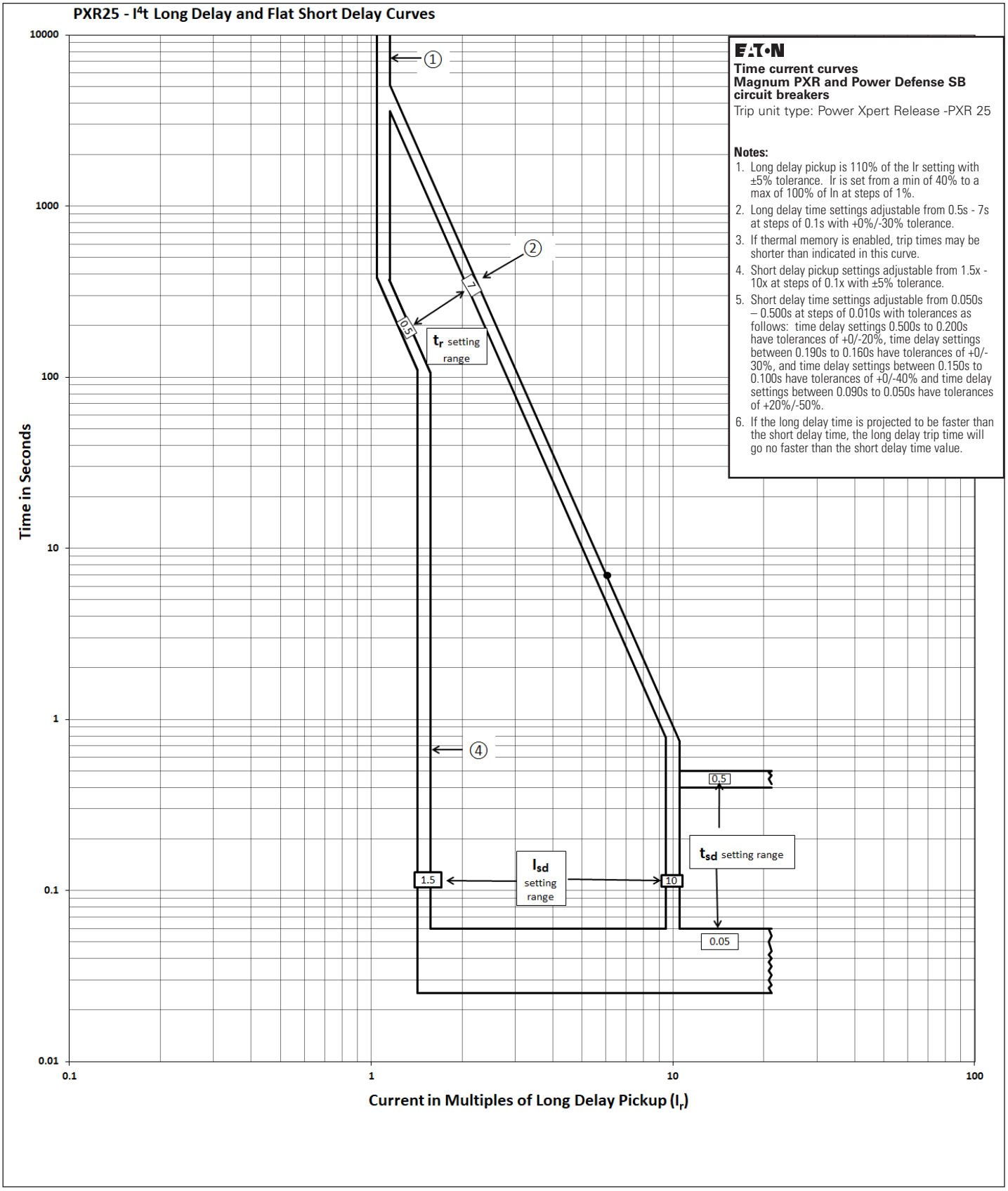

Figure 13. PXR 25 - I⁴t long delay and flat short delay.

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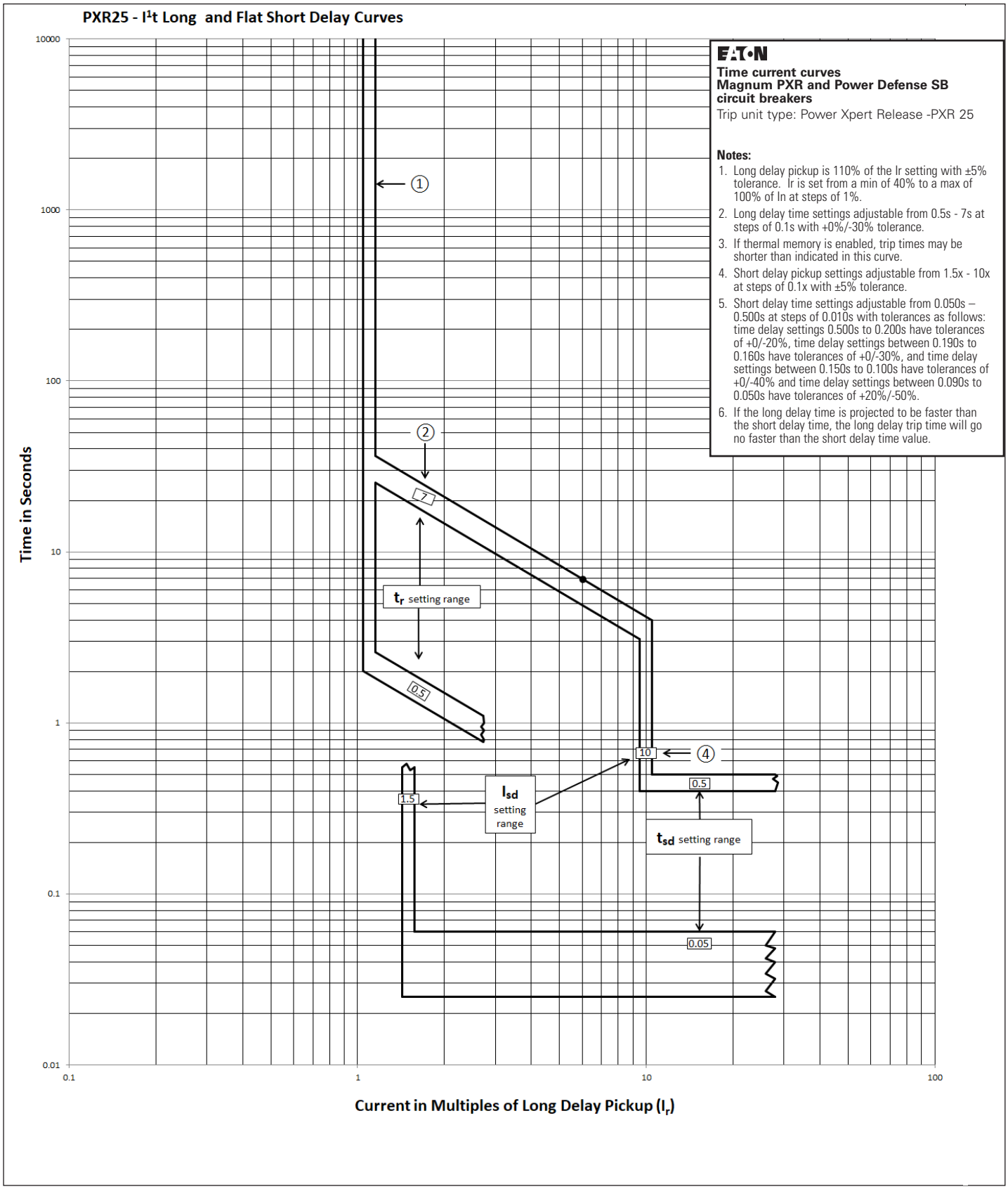

Figure 14. PXR 25 - I²t long delay and flat short delay.

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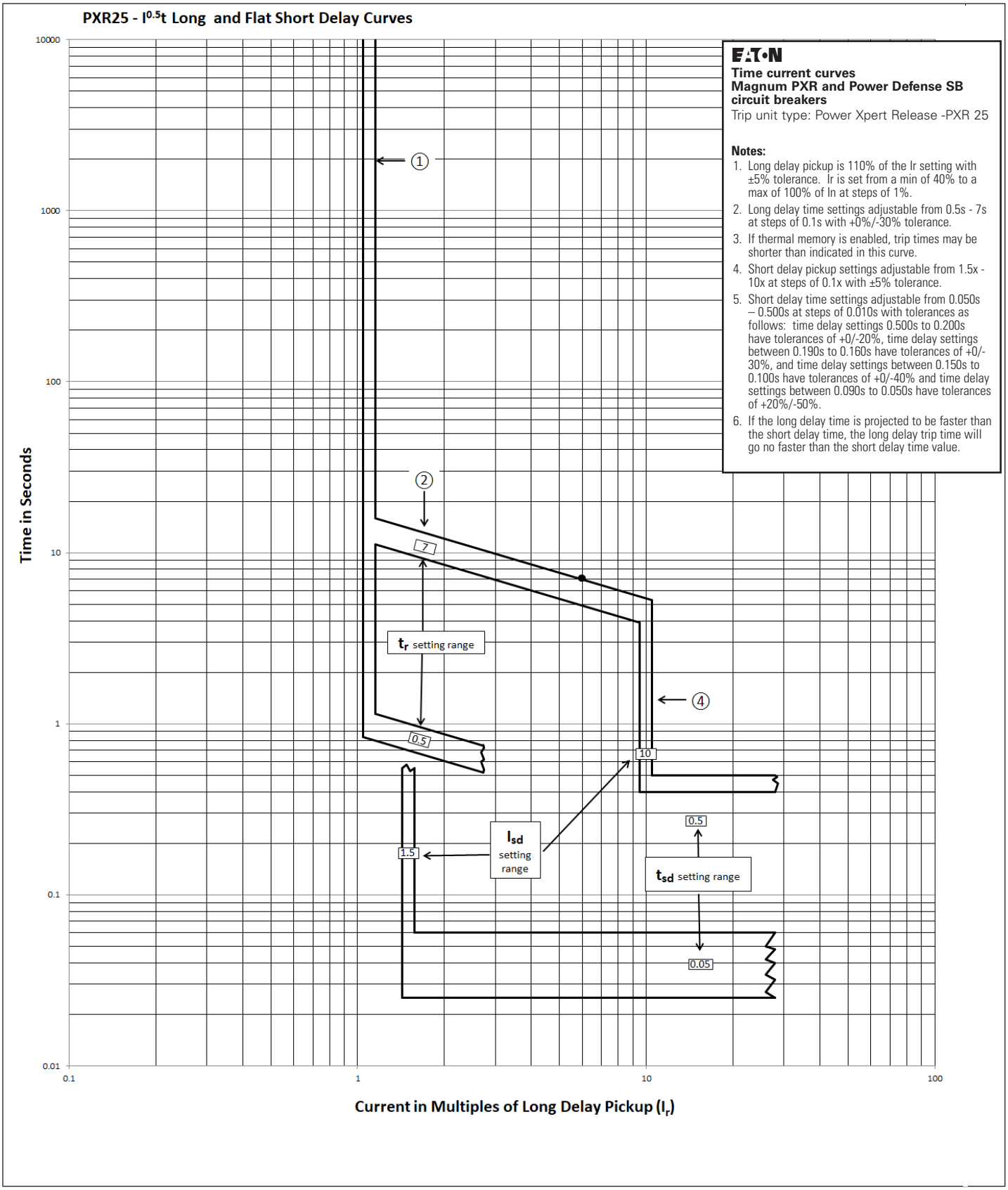

Figure 15. PXR 25 - $I^{0.5}t$ long delay and flat short delay.

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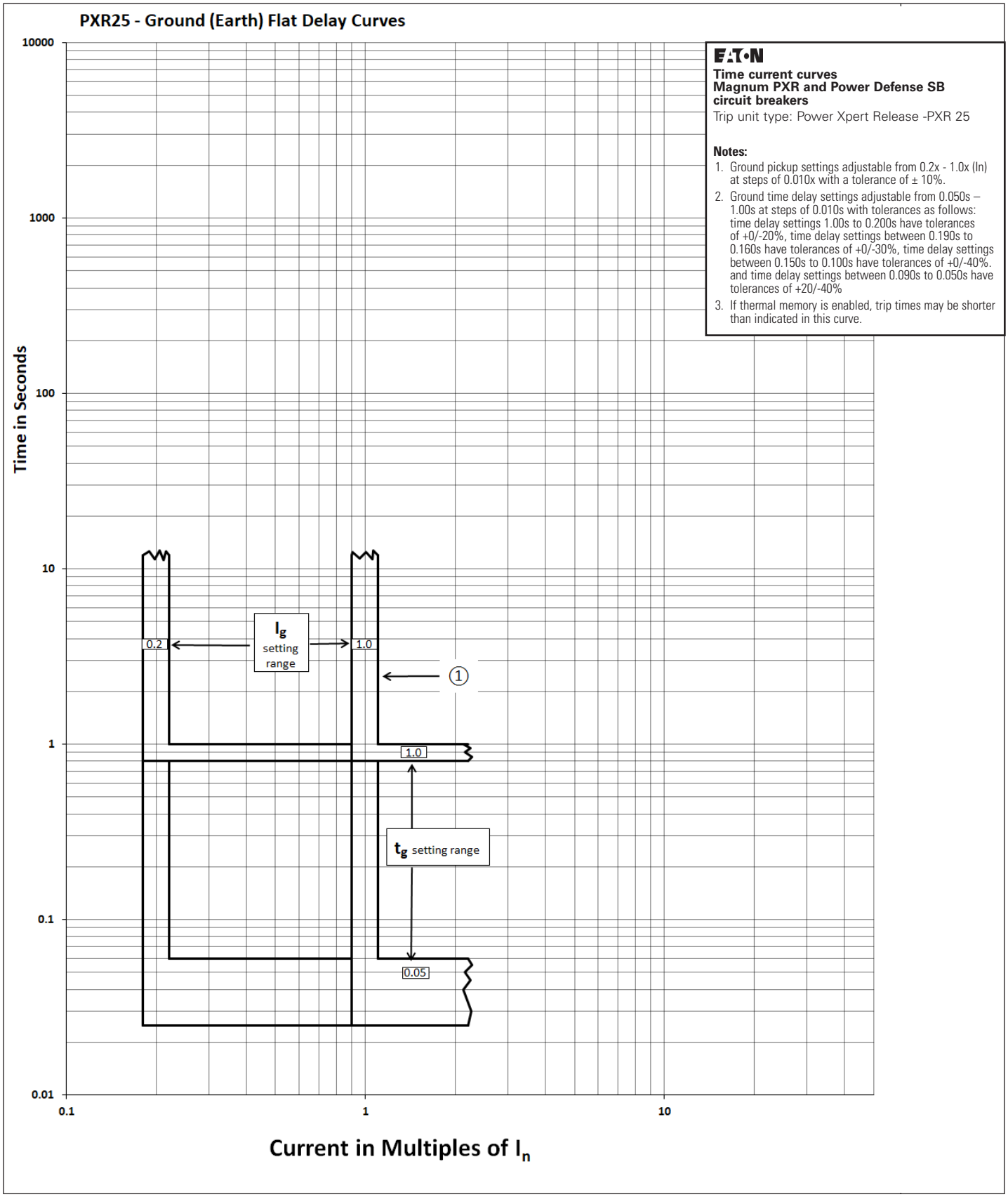

Figure 16. PXR 25 - ground (earth) flat delay delay.

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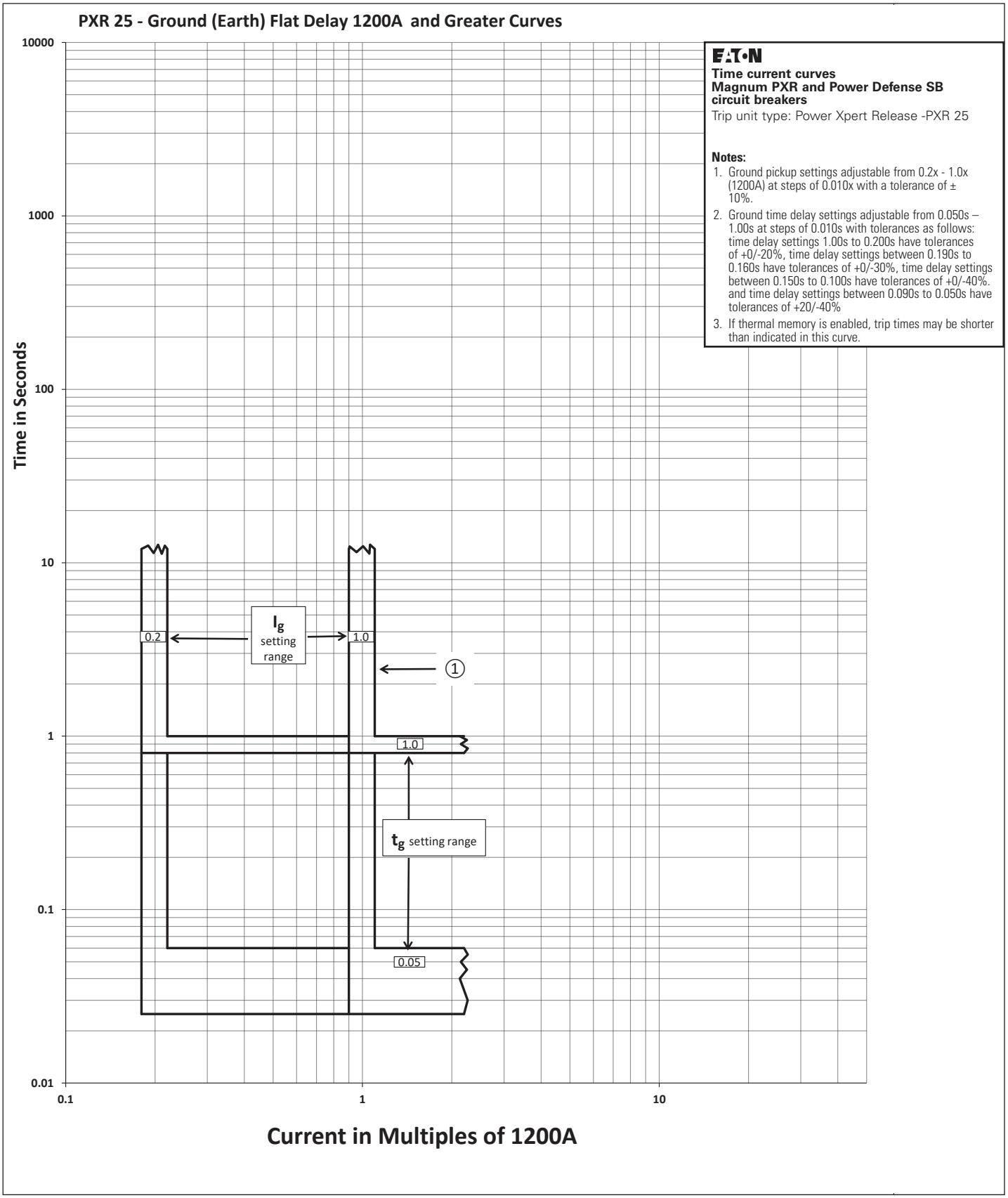

Figure 17. PXR 25 - ground (earth) flat delay frames 1200A or greater.

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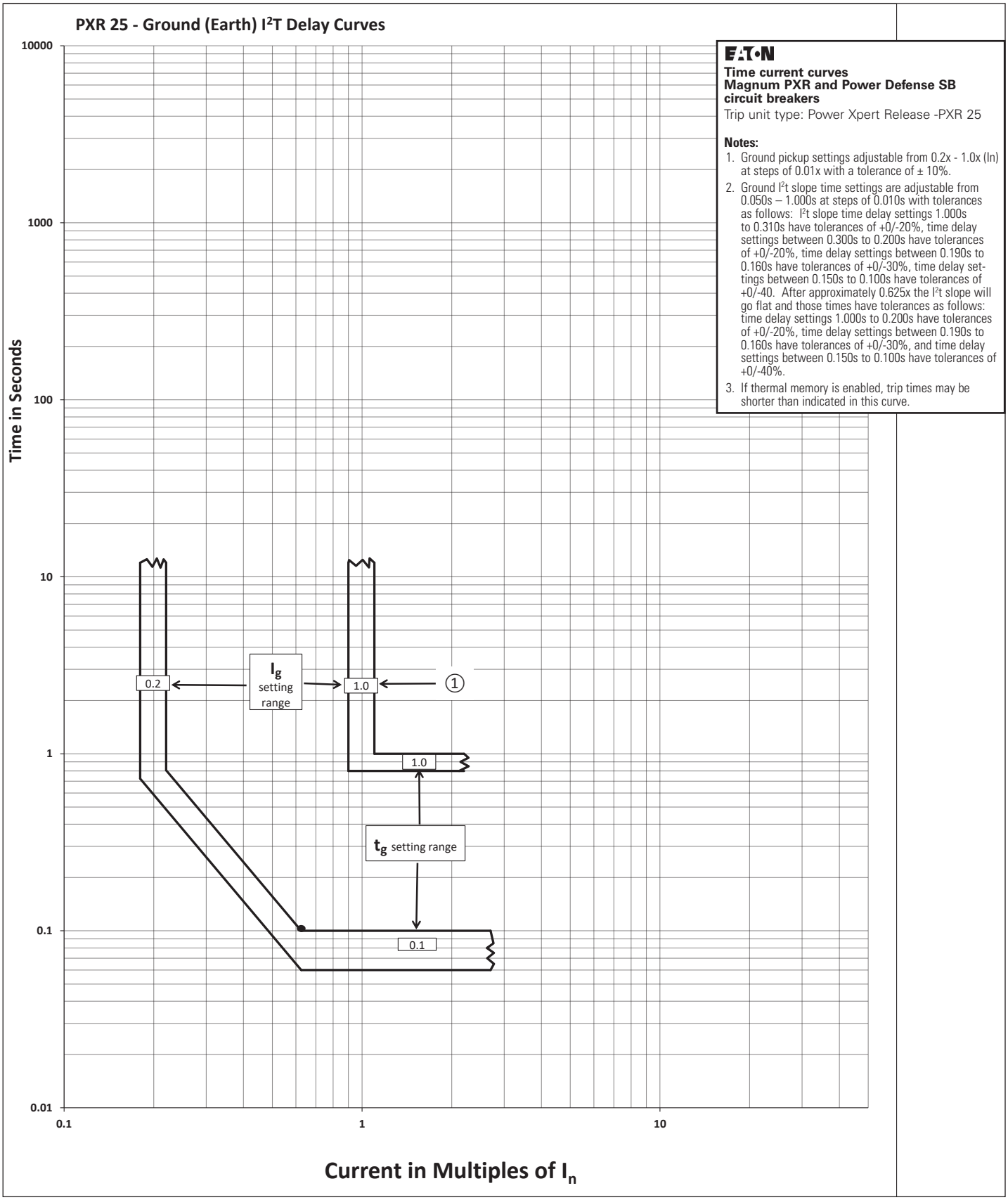

Figure 18. PXR 25 - ground (earth) I²t delay.

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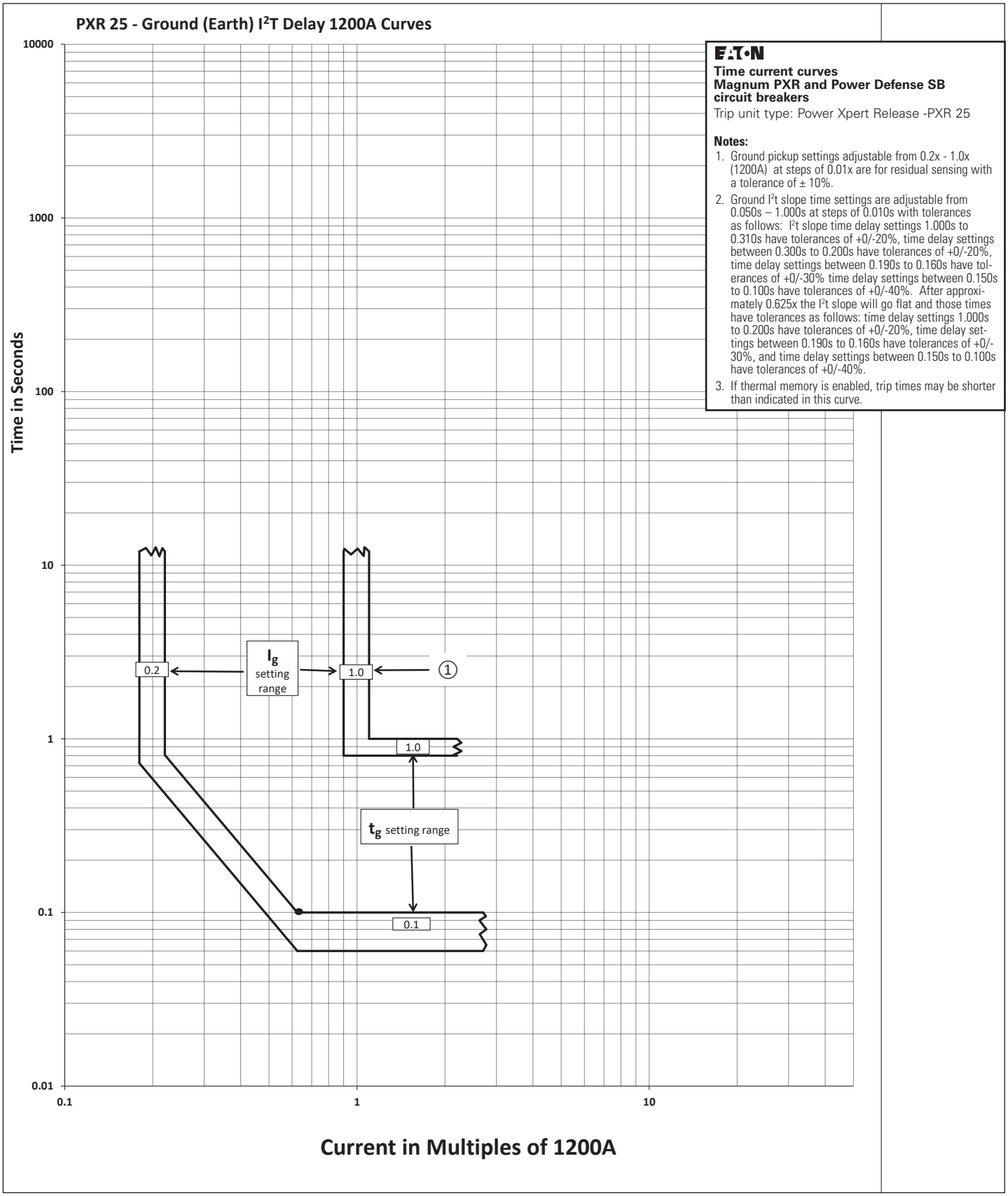

Figure 19. PXR 25 - ground (earth) I²t delay frames 1200A and greater.

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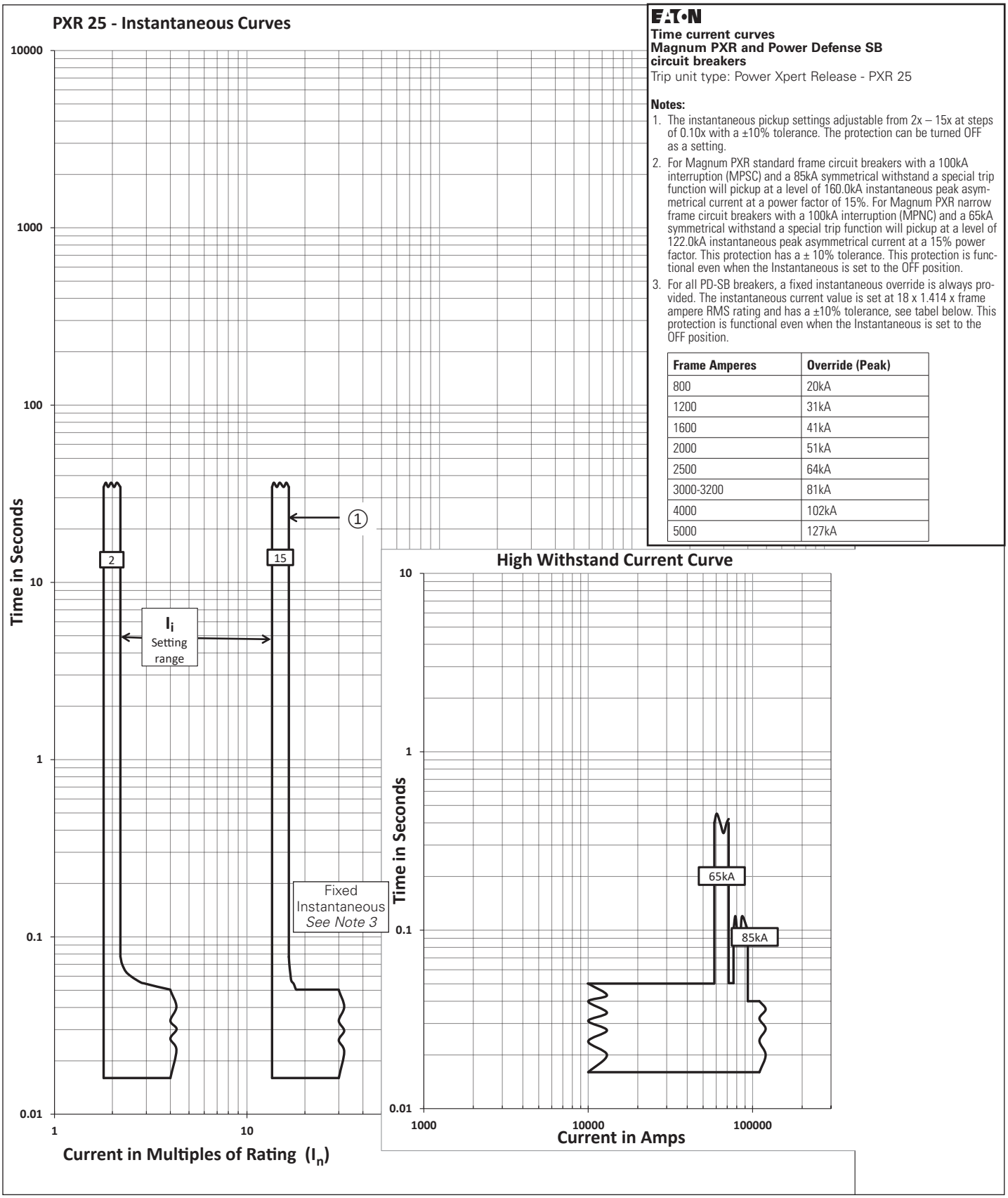

Time current curves
Magnum PXR and Power Defense SB circuit breakers
Trip unit type: Power Xpert Release - PXR 25

Notes:

1. The instantaneous pickup settings adjustable from 2x – 15x at steps of 0.10x with a ±10% tolerance. The protection can be turned OFF as a setting.
2. For Magnum PXR standard frame circuit breakers with a 100kA interruption (MPSC) and a 85kA symmetrical withstand a special trip function will pickup at a level of 160.0kA instantaneous peak asymmetrical current at a power factor of 15%. For Magnum PXR narrow frame circuit breakers with a 100kA interruption (MPNC) and a 65kA symmetrical withstand a special trip function will pickup at a level of 122.0kA instantaneous peak asymmetrical current at a 15% power factor. This protection has a ± 10% tolerance. This protection is functional even when the Instantaneous is set to the OFF position.
3. For all PD-SB breakers, a fixed instantaneous override is always provided. The instantaneous current value is set at 18 x 1.414 x frame ampere RMS rating and has a ±10% tolerance, see tabel below. This protection is functional even when the Instantaneous is set to the OFF position.

Frame Amperes	Override (Peak)
800	20kA
1200	31kA
1600	41kA
2000	51kA
2500	64kA
3000-3200	81kA
4000	102kA
5000	127kA

Figure 20. PXR 25 - instantaneous and high withstand current override. **May 2023**

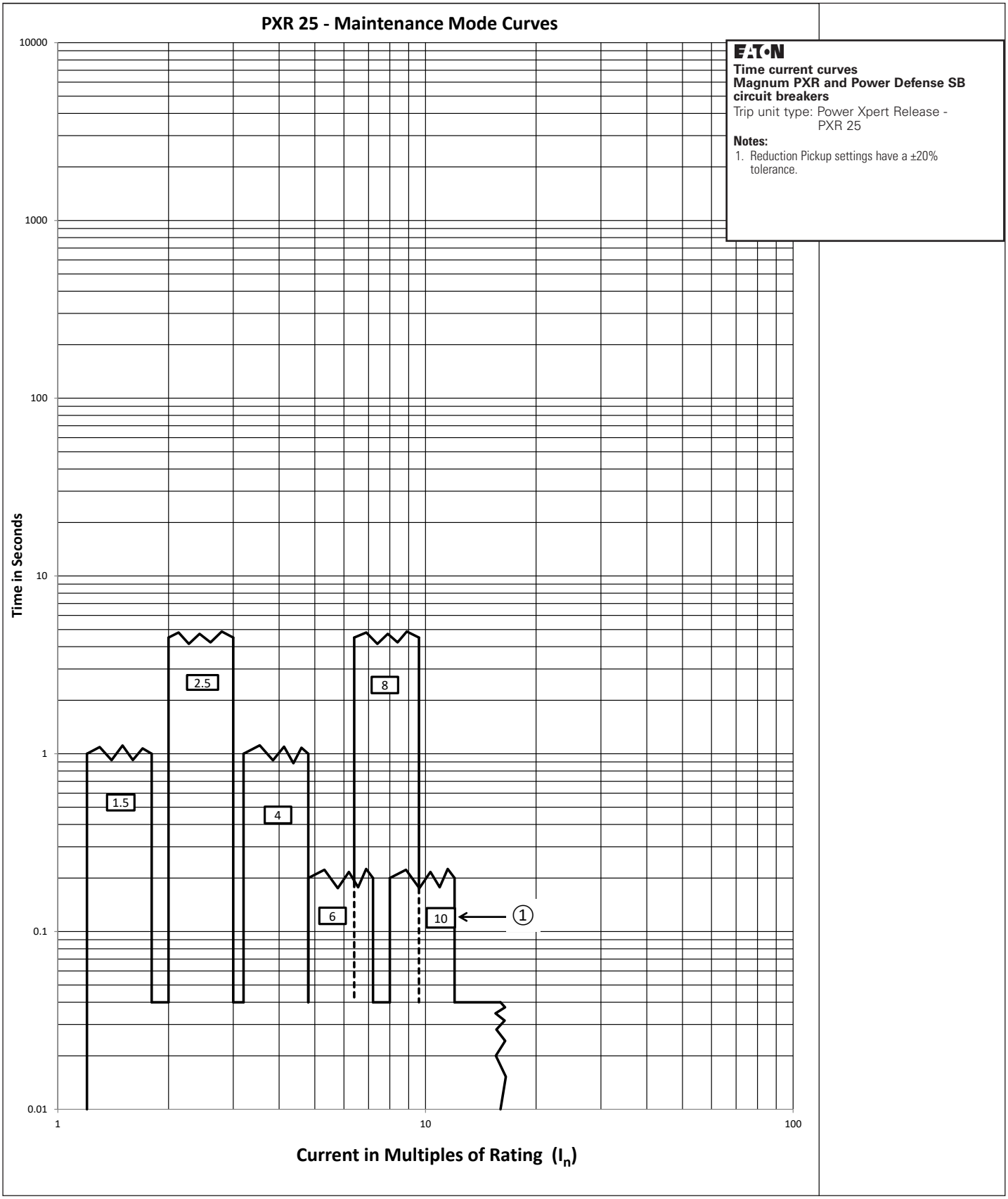

Figure 21. PXR 25 - maintenance mode.

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Time current curves: Magnum PXR and Power Defense SB PXR 20/25 electronic trip units Standards: UL, CSA

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