

Limitor[®]- P Back-up Fuses

without Controlled Power Dissipation

HIGH VOLTAGE IEC FUSES

DIN HV BACK-UP FUSES FOR TRANSFORMERS



Mersen HV fuse-links have been used for reliable protection in high-voltage switchgear and controlgear and high-voltage systems for decades.

Limitor[®]-P HV fuses are back-up fuses as defined in the IEC 60282-1 standard and dedicated to protect transformers against effects of short-circuit currents.

To guarantee high quality, Mersen uses the best materials: fuse-elements are in pure silver, caps are in copper coated with silver and bodies are in ceramic.

TECHNICAL DATA

| | 3/7,2kV 192 mm | 6/12kV 292 mm 442 mm | 10/17,5kV 367 mm | 10/24kV 442 mm 537 mm | 20/36kV 537 mm |
|------------------------------|--------------------------|-----------------------------------|----------------------------|------------------------------------|--------------------------|
| Rated current | 2 ... 200 A | 1 ... 250 A | 6.3 ... 100 A | 1 ... 200 A | 2 ... 4 A |
| Rated voltage range U_n | 3/ 7.2 kV | 6/12kV | 10/17,5 kV | 10/24 kV | 30/36 kV |
| Rated voltage of transformer | 6 kV | 10 kV | 15 kV | 20 kV | 30 kV |
| Package | 1 | 1 | 1 | 1 | 1 |

FEATURES & BENEFITS

- High breaking capacity
- High current limitation
- Low switching voltage
- Quick breaking
- Medium striker 80N/30mm
- Indoor and outdoor applications
- Energy efficiency
- New cap design for a better compatibility with all types of clips and easier assembly
- Coordination with IEC 60787, IEC 62271-105, IEC/TR 62655

APPLICATIONS

- HV Transformer protection

STANDARDS

- IEC 60282-1
- VDE 0670 part 4
- DIN 43625



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PRODUCT RANGE



45DB72V2P

Limitor- P, Rated voltage 3 / 7,2 kV

| Catalog number | Item number | Rated current I_n | Clearing I^2t at Rated Voltage | Breaking capacity I_b | Minimum breaking current $I_3 = I_{min}$ | Cold resistance R_{20} (+/-10%) | Power dissipation at I_n | Package | Weight |
|----------------------------|-------------|---------------------|----------------------------------|-------------------------|--|-----------------------------------|----------------------------|---------|--------|
| Ø56mm, length 192mm | | | | | | | | | |
| 45DB72V2P | N1000098 | 2 A | 0.6 kA ² s | 63 kA | 15 A | 290 mΩ | 1.8 W | 1 | 1.2 kg |
| 45DB72V4P | P1000099 | 4 A | 0.8 kA ² s | 63 kA | 20 A | 270 mΩ | 5 W | 1 | 1.2 kg |
| Ø65mm, length 192mm | | | | | | | | | |
| 45DB72V63P | B209301 | 63 A | 41.2 kA ² s | 63 kA | 220 A | 8.75 mΩ | 60 W | 1 | 1.5 kg |
| 45DB72V80P | C209302 | 80 A | 84 kA ² s | 63 kA | 300 A | 6.25 mΩ | 85 W | 1 | 1.5 kg |
| 45DB72V100P | D209303 | 100 A | 93.6 kA ² s | 63 kA | 350 A | 5 mΩ | 96 W | 1 | 1.5 kg |
| Ø88mm, length 192mm | | | | | | | | | |
| 45DB72V160P | R1000101 | 160 A | 500 kA ² s | 63 kA | 435 A | 3 mΩ | 75 W | 1 | 2.6 kg |
| 45DB72V200P | S1000102 | 200 A | 654 kA ² s | 63 kA | 610 A | 2.5 mΩ | 200 W | 1 | 2.9 kg |

Limitor- P, Rated voltage 6 /12 kV

| Catalog number | Item number | Rated current I_n | Clearing I^2t at Rated Voltage | Breaking capacity I_b | Minimum breaking current $I_3 = I_{min}$ | Cold resistance R_{20} (+/-10%) | Power dissipation at I_n | Package | Weight |
|----------------------------|-------------|---------------------|----------------------------------|-------------------------|--|-----------------------------------|----------------------------|---------|--------|
| Ø56mm, length 292mm | | | | | | | | | |
| 45DB120V1P | T1000103 | 1 A | 0.2 kA ² s | 63 kA | 14 A | 1500 mΩ | 1.6 W | 1 | 1.7 kg |
| 45DB120V2P | V1000104 | 2 A | 0.4 kA ² s | 63 kA | 16 A | 510 mΩ | 2 W | 1 | 1.7 kg |
| 45DB120V4P | W1000105 | 4 A | 0.7 kA ² s | 63 kA | 22 A | 338 mΩ | 6 W | 1 | 1.7 kg |
| 45DB120V6,3P | F209305 | 6.3 A | 1 kA ² s | 63 kA | 30 A | 190 mΩ | 8 W | 1 | 1.7 kg |
| 45DB120V10P | G209306 | 10 A | 1.5 kA ² s | 63 kA | 42 A | 139 mΩ | 16 W | 1 | 1.7 kg |
| 45DB120V16P | H209307 | 16 A | 2 kA ² s | 63 kA | 54 A | 107 mΩ | 38 W | 1 | 1.7 kg |
| 45DB120V20P | J209308 | 20 A | 4 kA ² s | 63 kA | 73 A | 71 mΩ | 38 W | 1 | 1.7 kg |
| 45DB120V25P | K209309 | 25 A | 6 kA ² s | 63 kA | 93 A | 52 mΩ | 46 W | 1 | 1.7 kg |
| 45DB120V32P | L209310 | 31.5 A | 10 kA ² s | 63 kA | 105 A | 43 mΩ | 65 W | 1 | 1.7 kg |
| 45DB120V40P | M209311 | 40 A | 30 kA ² s | 63 kA | 125 A | 22.5 mΩ | 54 W | 1 | 1.7 kg |
| 45DB120V50P | N209312 | 50 A | 50 kA ² s | 63 kA | 160 A | 18 mΩ | 70 W | 1 | 1.7 kg |
| 45DB120V63P | P209313 | 63 A | 100 kA ² s | 63 kA | 230 A | 12 mΩ | 85 W | 1 | 1.7 kg |
| Ø65mm, length 292mm | | | | | | | | | |
| 45DB120V80P | Q209314 | 80 A | 150 kA ² s | 63 kA | 350 A | 10.6 mΩ | 114 W | 1 | 2.1 kg |
| Ø78mm, length 292mm | | | | | | | | | |
| 45DB120V100P | R209315 | 100 A | 200 kA ² s | 63 kA | 500 A | 8.5 mΩ | 156 W | 1 | 3.1 kg |
| Ø88mm, length 292mm | | | | | | | | | |
| 45DB120V125P | X1000106 | 125 A | 440 kA ² s | 63 kA | 480 A | 4 mΩ | 117 W | 1 | 3.7 kg |
| 45DB120V160P | Y1000107 | 160 A | 500 kA ² s | 63 kA | 560 A | 4 mΩ | 217 W | 1 | 3.7 kg |
| 45DB120V200P | Z1000108 | 200 A | 654 kA ² s | 63 kA | 610 A | 3.5 mΩ | 333 W | 1 | 3.7 kg |
| 45DB120V250P | Y1014919 | 250 A | - | 63 kA | 740 A | 3.7 mΩ | 335 W | 1 | 3.7 kg |
| Ø63mm, length 442mm | | | | | | | | | |
| 45DB120V10P-3 | G1006095 | 10 A | 1.5 kA ² s | 31.5 kA | 45 A | 133.6 mΩ | 15 W | 1 | 2.3 kg |
| 45DB120V40P-3 | L1006099 | 40 A | 12 kA ² s | 31.5 kA | 160 A | 27 mΩ | 57 W | 1 | 2.3 kg |
| 45DB120V63P-3 | N1006101 | 63 A | 42 kA ² s | 31.5 kA | 252 A | 14.2 mΩ | 78 W | 1 | 2.3 kg |
| Ø88mm, length 442mm | | | | | | | | | |
| 45DB120V80P-3 | P1006102 | 80 A | 120 kA ² s | 31.5 kA | 320 A | 9.4 mΩ | 83 W | 1 | 2.3 kg |
| 45DB120V100P-3 | Q1006103 | 100 A | 220 kA ² s | 31.5 kA | 400 A | 6.55 mΩ | 91 W | 1 | 3.2 kg |
| 45DB120V125P-3 | R1006104 | 125 A | 450 kA ² s | 31.5 kA | 500 A | 5.46 mΩ | 130 W | 1 | 4.2 kg |
| 45DB120V160P-3 | S1006105 | 160 A | 530 kA ² s | 31.5 kA | 640 A | 4.07 mΩ | 170 W | 1 | 4.2 kg |

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Limitor®- P Back-up Fuses

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PRODUCT RANGE



45DB175V6,3P

Limitor- P, Rated voltage 10 / 17,5

| Catalog number | Item number | Rated current I_n | Clearing I^2t at Rated Voltage | Breaking capacity I_b | Minimum breaking current $I_3 = I_{min}$ | Cold resistance R_{20} (+/-10%) | Power dissipation at I_n | Package | Weight |
|----------------------------|-------------|---------------------|----------------------------------|-------------------------|--|-----------------------------------|----------------------------|---------|--------|
| Ø56mm, length 367mm | | | | | | | | | |
| 45DB175V6,3P | V1000564 | 6.3 A | 1 kA ² s | 63 kA | 30 A | 245 mΩ | 11 W | 1 | 2.2 kg |
| 45DB175V10P | W1000565 | 10 A | 1.5 kA ² s | 63 kA | 43 A | 180 mΩ | 22 W | 1 | 2.2 kg |
| 45DB175V16P | X1000566 | 16 A | 2 kA ² s | 63 kA | 54 A | 150 mΩ | 53 W | 1 | 2.2 kg |
| 45DB175V20P | Y1000567 | 20 A | 4 kA ² s | 63 kA | 73 A | 102 mΩ | 56 W | 1 | 2.2 kg |
| 45DB175V25P | Z1000568 | 25 A | 6 kA ² s | 63 kA | 93 A | 78 mΩ | 73 W | 1 | 2.2 kg |
| 45DB175V32P | A1000569 | 31.5 A | 10 kA ² s | 63 kA | 105 A | 59 mΩ | 95 W | 1 | 2.2 kg |
| 45DB175V40P | B1000570 | 40 A | 30 kA ² s | 63 kA | 125 A | 33.8 mΩ | 79 W | 1 | 2.2 kg |
| 45DB175V50P | C1000571 | 50 A | 50 kA ² s | 63 kA | 205 A | 26 mΩ | 106 W | 1 | 2.2 kg |
| 45DB175V63P | D1000572 | 63 A | 100 kA ² s | 63 kA | 280 A | 18.4 mΩ | 130 W | 1 | 2.2 kg |
| Ø65mm, length 367mm | | | | | | | | | |
| 45DB175V80P | E1000573 | 80 A | 150 kA ² s | 63 kA | 350 A | 15 mΩ | 180 W | 1 | 2.6 kg |
| Ø78mm, length 367mm | | | | | | | | | |
| 45DB175V100P | F1000574 | 100 A | 200 kA ² s | 63 kA | 500 A | 13 mΩ | 280 W | 1 | 3.1 kg |

Limitor- P, Rated voltage 10 / 24 kV



45DB240V125P

| Catalog number | Item number | Rated current I_n | Clearing I^2t at Rated Voltage | Breaking capacity I_b | Minimum breaking current $I_3 = I_{min}$ | Cold resistance R_{20} (+/-10%) | Power dissipation at I_n | Package | Weight |
|----------------------------|-------------|---------------------|----------------------------------|-------------------------|--|-----------------------------------|----------------------------|---------|--------|
| Ø56mm, length 442mm | | | | | | | | | |
| 45DB240V1P | A1000109 | 1 A | 0.2 kA ² s | 63 kA | 14 A | 2170 mΩ | 2.2 W | 1 | 2.3 kg |
| 45DB240V2P | B1000110 | 2 A | 0.4 kA ² s | 63 kA | 16 A | 800 mΩ | 3.4 W | 1 | 2.3 kg |
| 45DB240V4P | C1000111 | 4 A | 0.7 kA ² s | 63 kA | 23 A | 545 mΩ | 10 W | 1 | 2.3 kg |
| 45DB240V6,3P | S209339 | 6.3 A | 1 kA ² s | 63 kA | 30 A | 297 mΩ | 13 W | 1 | 2.3 kg |
| 45DB240V10P | T209340 | 10 A | 1.5 kA ² s | 63 kA | 43 A | 220 mΩ | 26 W | 1 | 2.3 kg |
| 45DB240V16P | V209341 | 16 A | 2 kA ² s | 63 kA | 60 A | 197 mΩ | 73 W | 1 | 2.3 kg |
| 45DB240V20P | W209342 | 20 A | 4 kA ² s | 63 kA | 76 A | 132 mΩ | 76 W | 1 | 2.3 kg |
| 45DB240V25P | X209343 | 25 A | 6 kA ² s | 63 kA | 93 A | 96 mΩ | 89 W | 1 | 2.3 kg |
| 45DB240V32P | Y209344 | 31.5 A | 10 kA ² s | 63 kA | 105 A | 78 mΩ | 127 W | 1 | 2.3 kg |
| 45DB240V40P | Z209345 | 40 A | 30 kA ² s | 63 kA | 130 A | 45 mΩ | 114 W | 1 | 2.3 kg |
| 45DB240V50P | A209346 | 50 A | 50 kA ² s | 63 kA | 205 A | 35 mΩ | 147 W | 1 | 2.3 kg |
| 45DB240V63P | B209347 | 63 A | 100 kA ² s | 63 kA | 280 A | 24 mΩ | 170 W | 1 | 2.3 kg |
| Ø65mm, length 442mm | | | | | | | | | |
| 45DB240V80P | C209348 | 80 A | 150 kA ² s | 63 kA | 360 A | 20 mΩ | 233 W | 1 | 3.1 kg |
| Ø78mm, length 442mm | | | | | | | | | |
| 45DB240V100P | D209349 | 100 A | 200 kA ² s | 63 kA | 430 A | 18 mΩ | 400 W | 1 | 4.2 kg |
| Ø88mm, length 442mm | | | | | | | | | |
| 45DB240V125P | D1000112 | 125 A | 350 kA ² s | 40 kA | 760 A | 11.7 mΩ | 340 W | 1 | 4.3 kg |
| 45DB240V160P | E1000113 | 160 A | 500 kA ² s | 31.5 kA | 900 A | 9.45 mΩ | 515 W | 1 | 4.3 kg |
| 45DB240V200P | F1000114 | 200 A | 730 kA ² s | 31.5 kA | 1050 A | 7 mΩ | 740 W | 1 | 4.3 kg |
| Ø88mm, length 537mm | | | | | | | | | |
| 45DB240V80P-4 | B1008551 | 80 A | 120 kA ² s | 25 kA | 360 A | 17.5 mΩ | 185 W | 1 | 6.7 kg |
| 45DB240V100P-4 | C1008552 | 100 A | 220 kA ² s | 25 kA | 450 A | 13.1 mΩ | 234 W | 1 | 6.7 kg |

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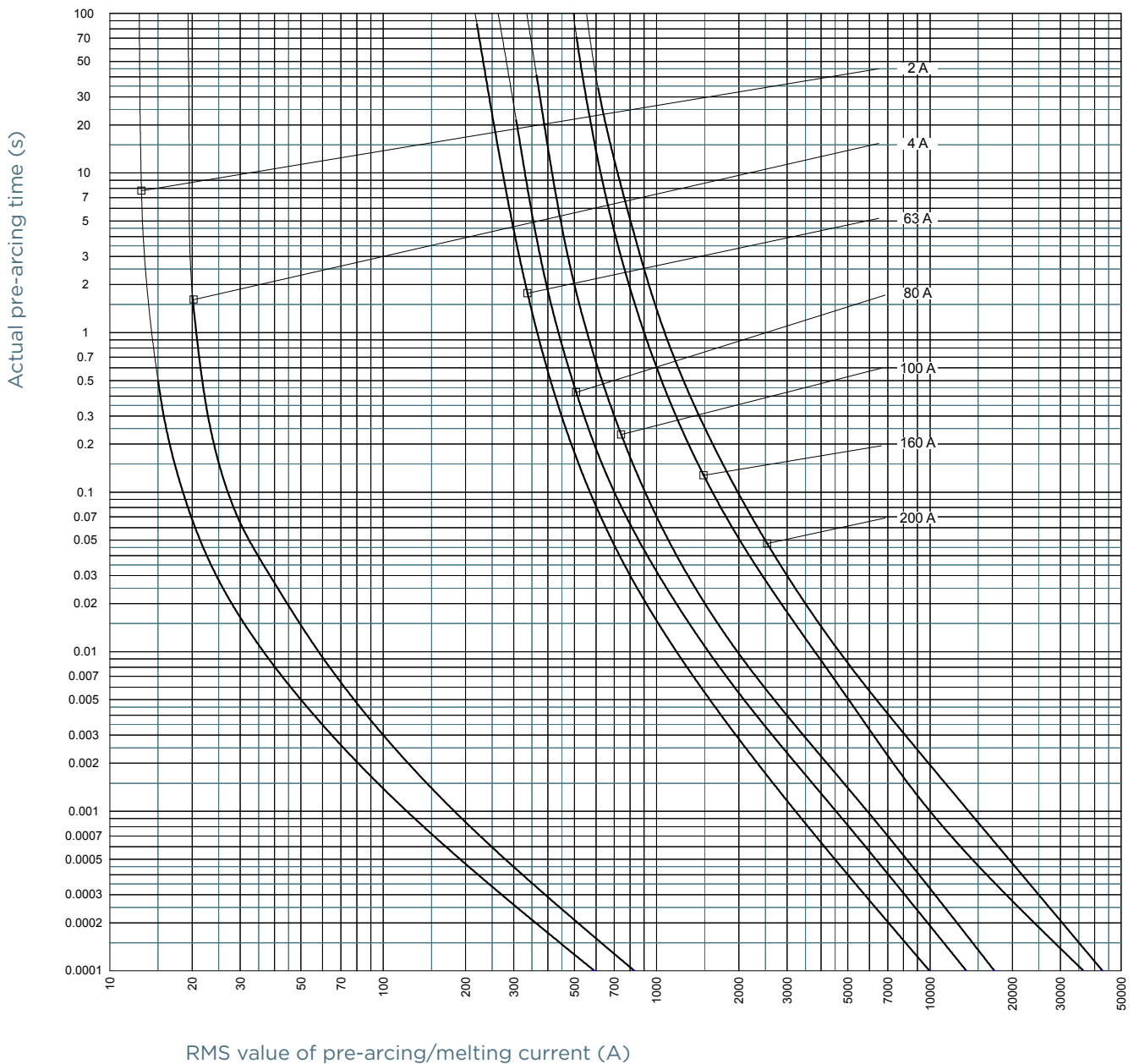
PRODUCT RANGE

Limiter-P, Rated voltage 20 / 36kV

| Catalog number | Item number | Rated current I _n | Pre-arcing I ² t | Clearing I ² t at Rated Voltage | Breaking capacity I _b | Minimum breaking current I ₃ = I _{min} | Cold resistance R ₂₀ (+/-10%) | Power dissipation at I _n | Package | Weight |
|----------------------------|-------------|------------------------------|-----------------------------|--|----------------------------------|--|--|-------------------------------------|---------|--------|
| Ø56mm, length 537mm | | | | | | | | | | |
| 45DB360V2P | G1000115 | 2 A | - | 0.6 kA ² s | 31.5 kA | 15 A | 950 mΩ | 9 W | 1 | 2.7 kg |
| 45DB360V4P | H1000116 | 4 A | - | 0.8 kA ² s | 31.5 kA | 20 A | 900 mΩ | 32 W | 1 | 2.7 kg |

TIME CURRENT CHARACTERISTIC CURVES

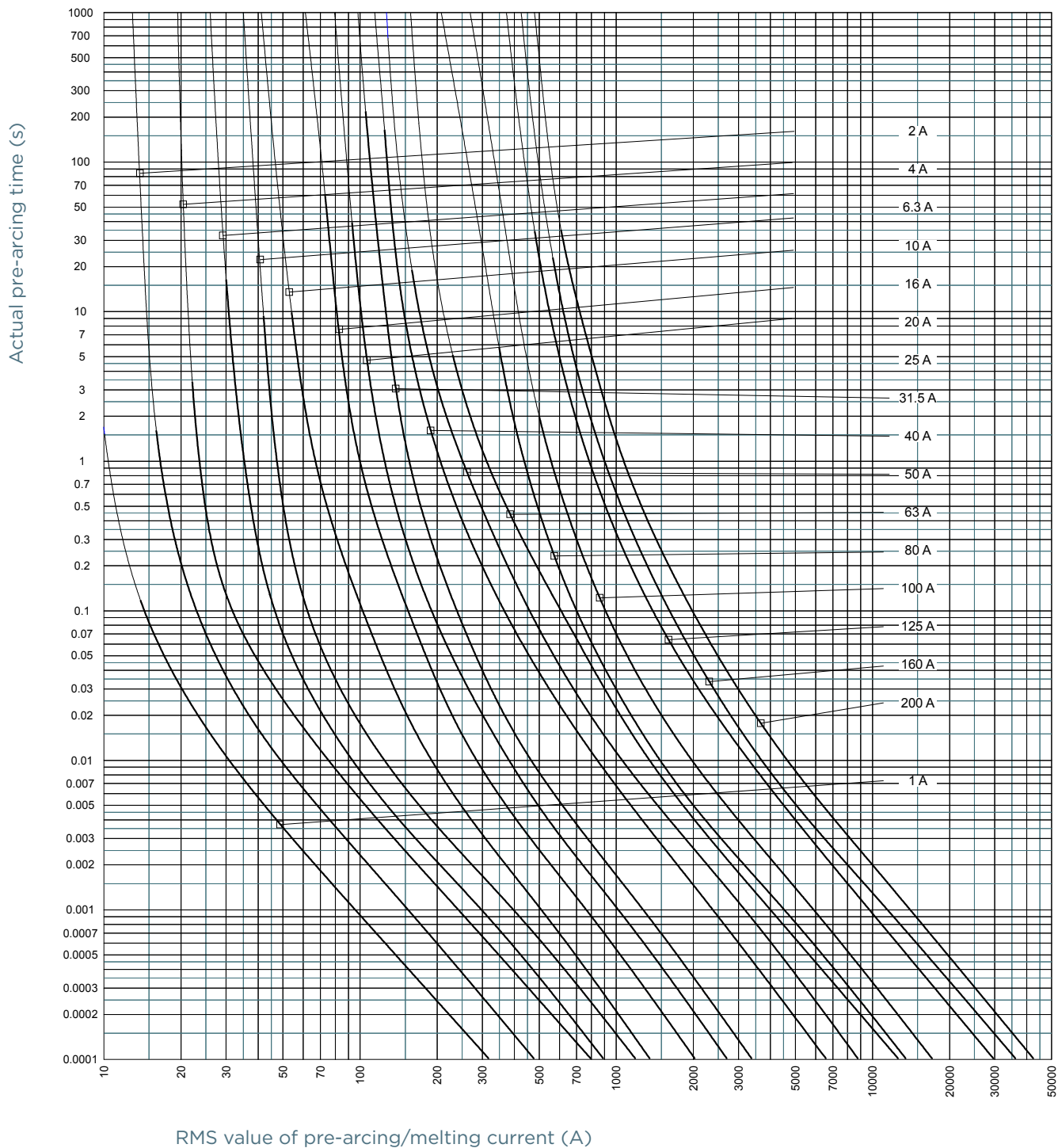
Limiter[®] P 7,2kV 192mm



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TIME CURRENT CHARACTERISTIC CURVES

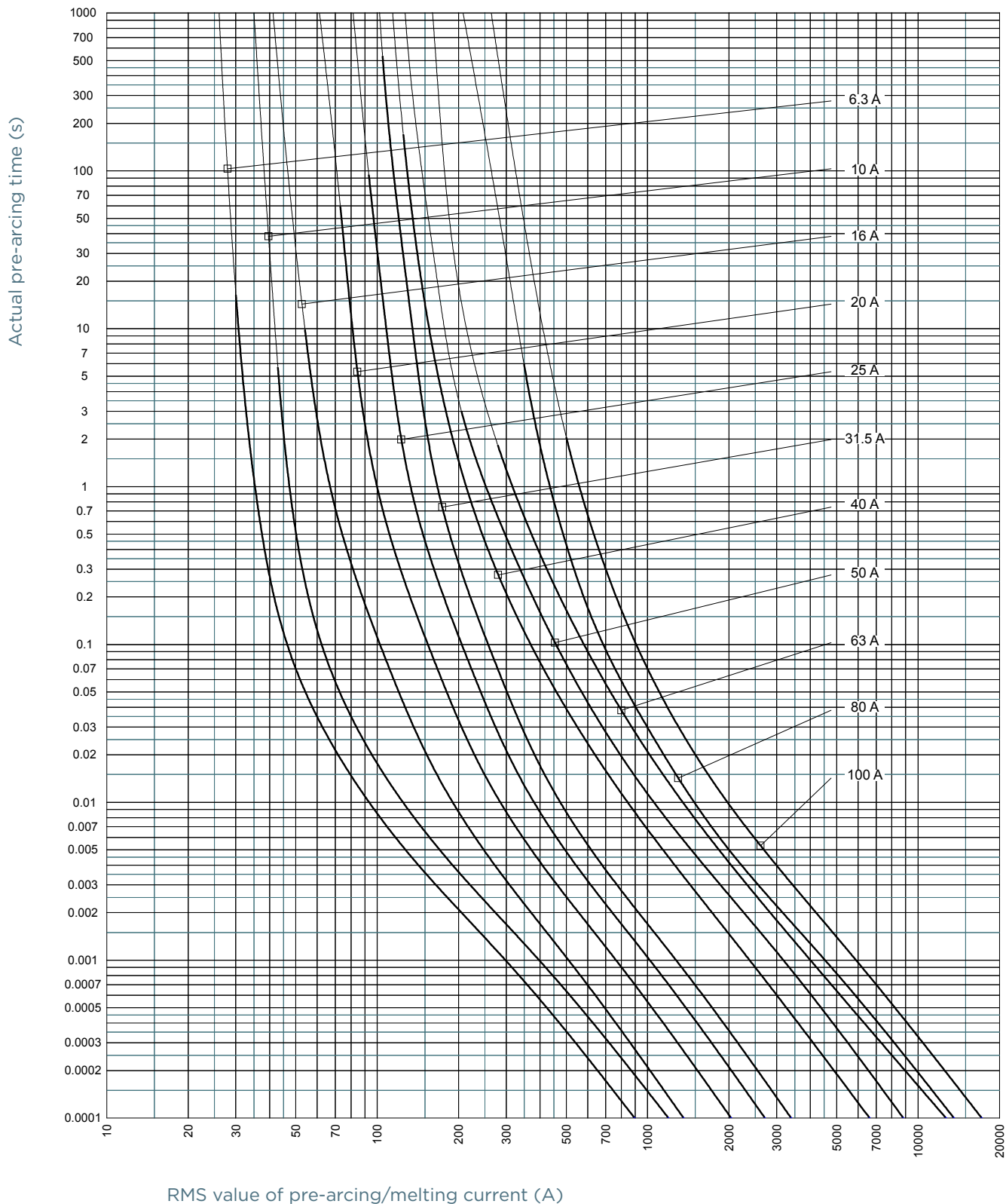
Limitor[®] P 12kV 292mm



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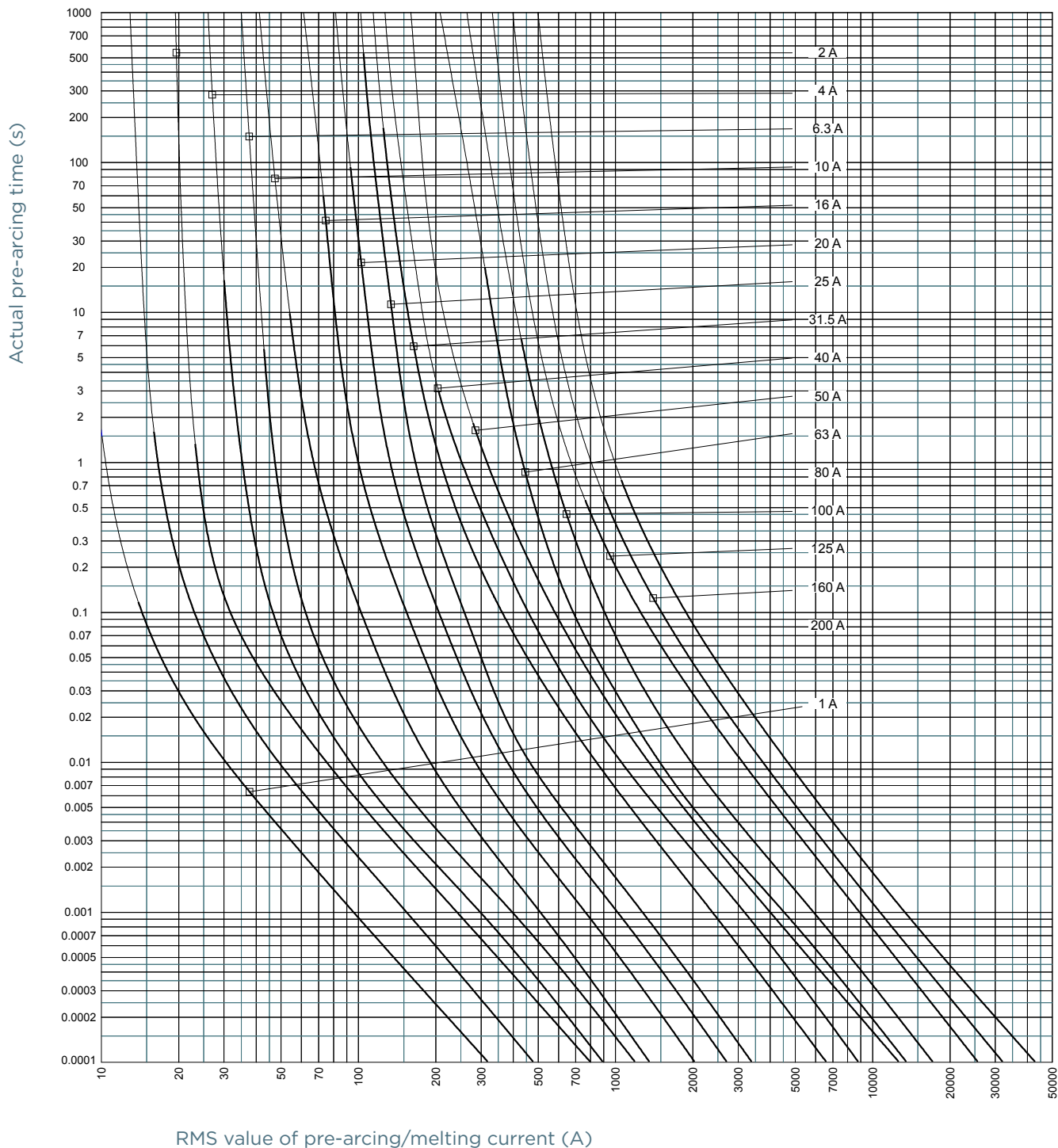
Limitor[®] P 17,5V 367mm



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TIME CURRENT CHARACTERISTIC CURVES

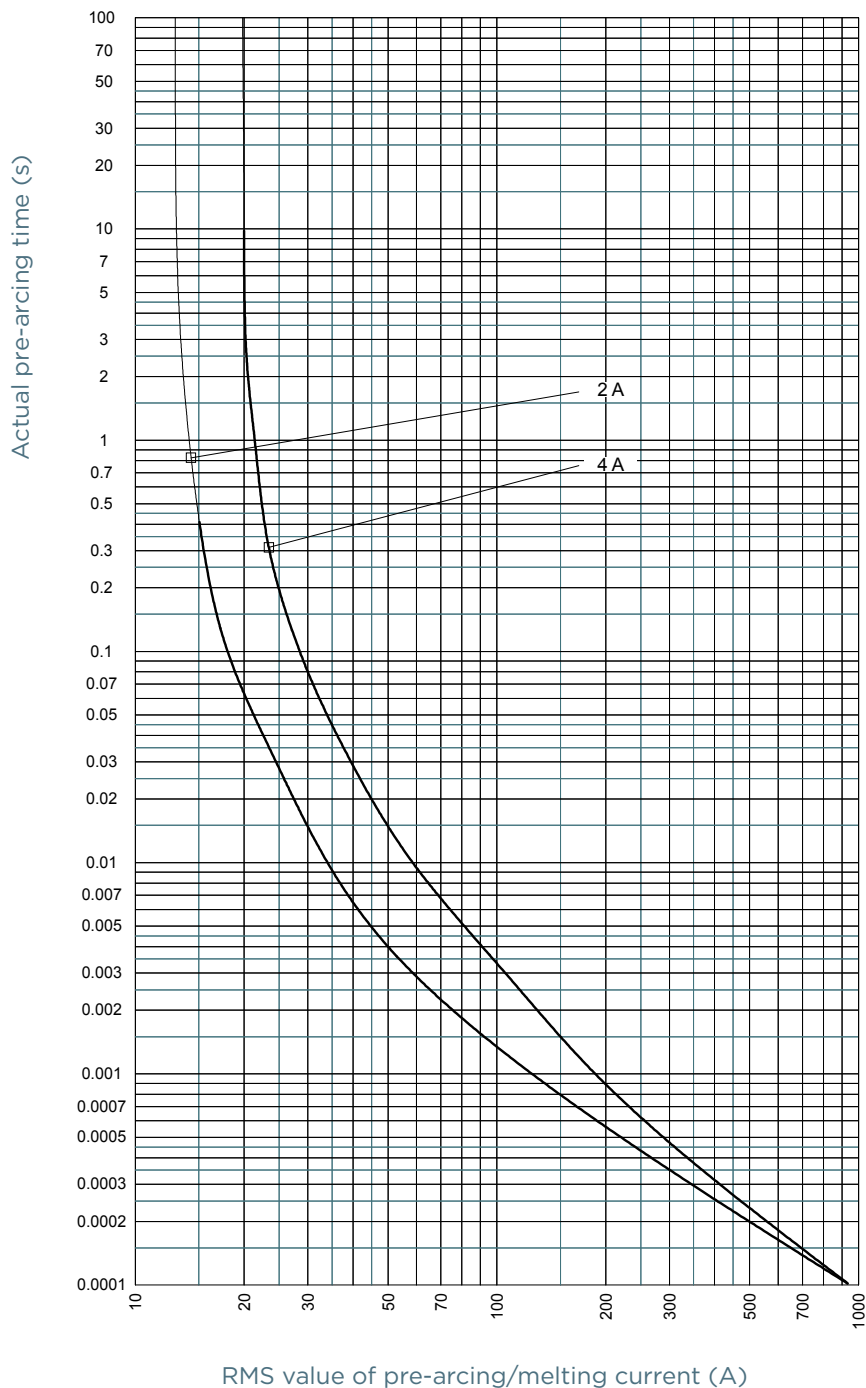
Limitor[®] P 24kV 442mm



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TIME CURRENT CHARACTERISTIC CURVES

Limitor[®] P 36kV 537mm

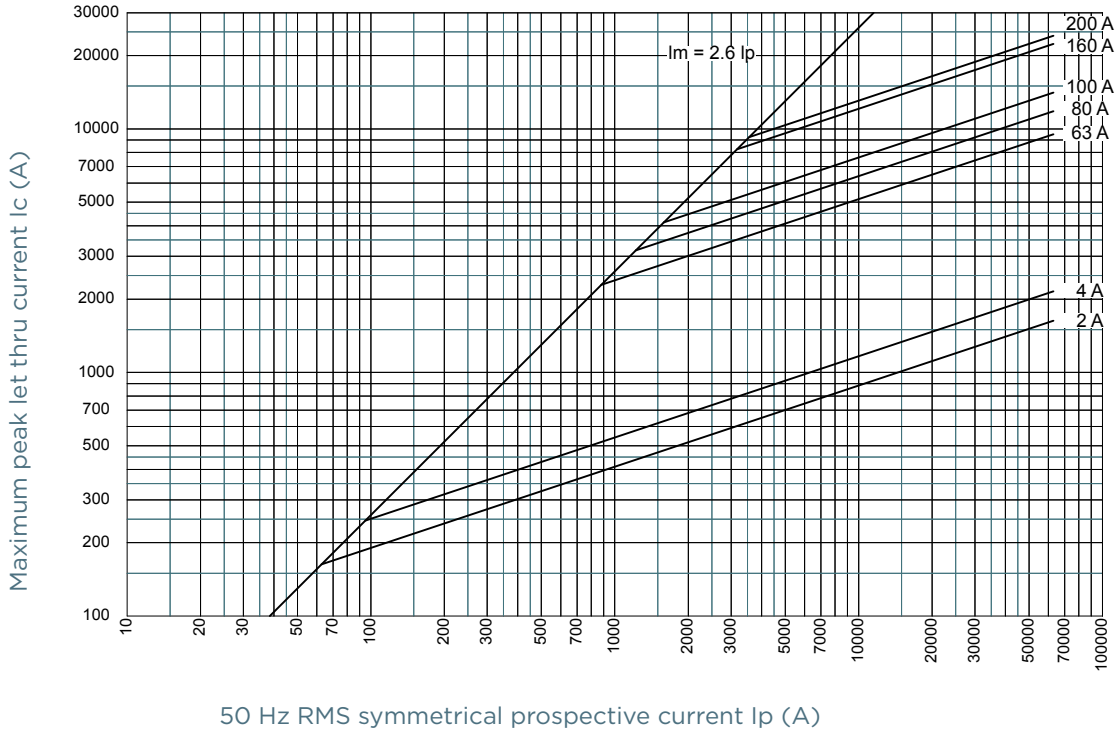


Limitor[®]- P Back-up Fuses

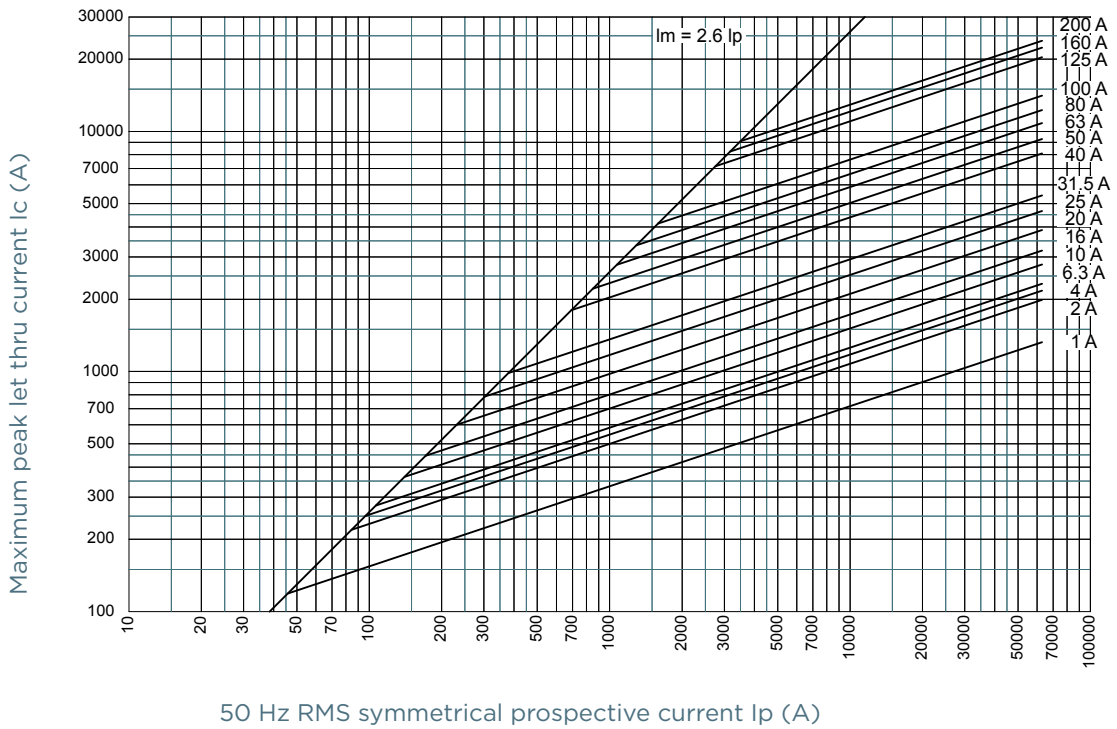
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CUT-OFF CURRENT CHARACTERISTIC

Limitor[®] P 7,2kV 192mm



Limitor[®] P 12kV 292mm



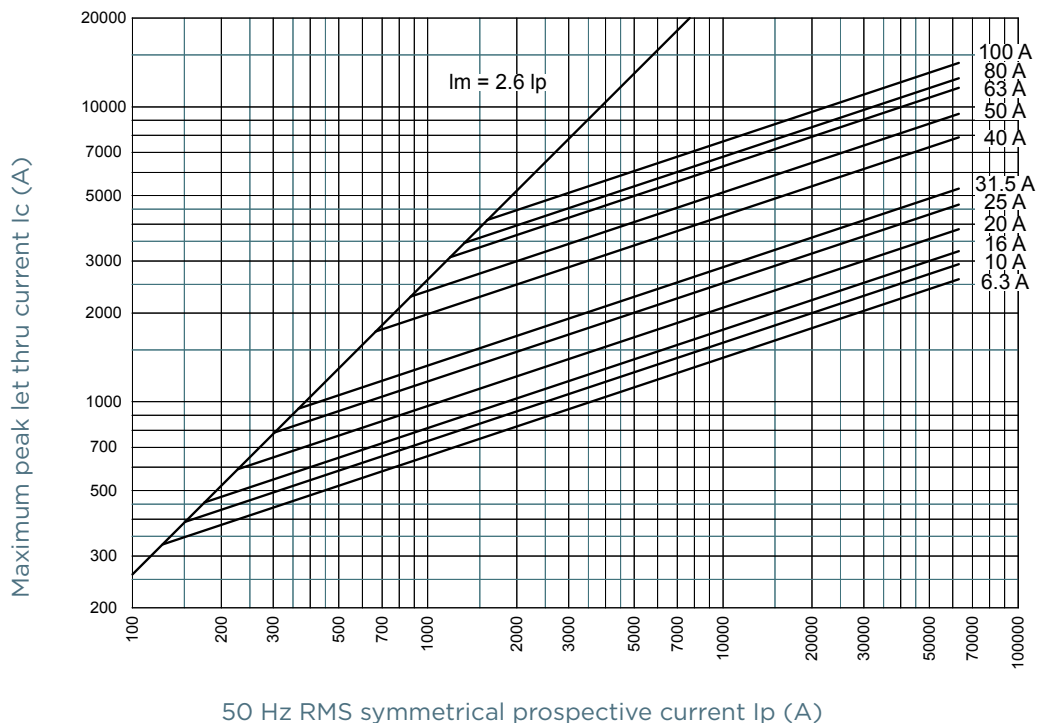
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Limitor[®]- P Back-up Fuses

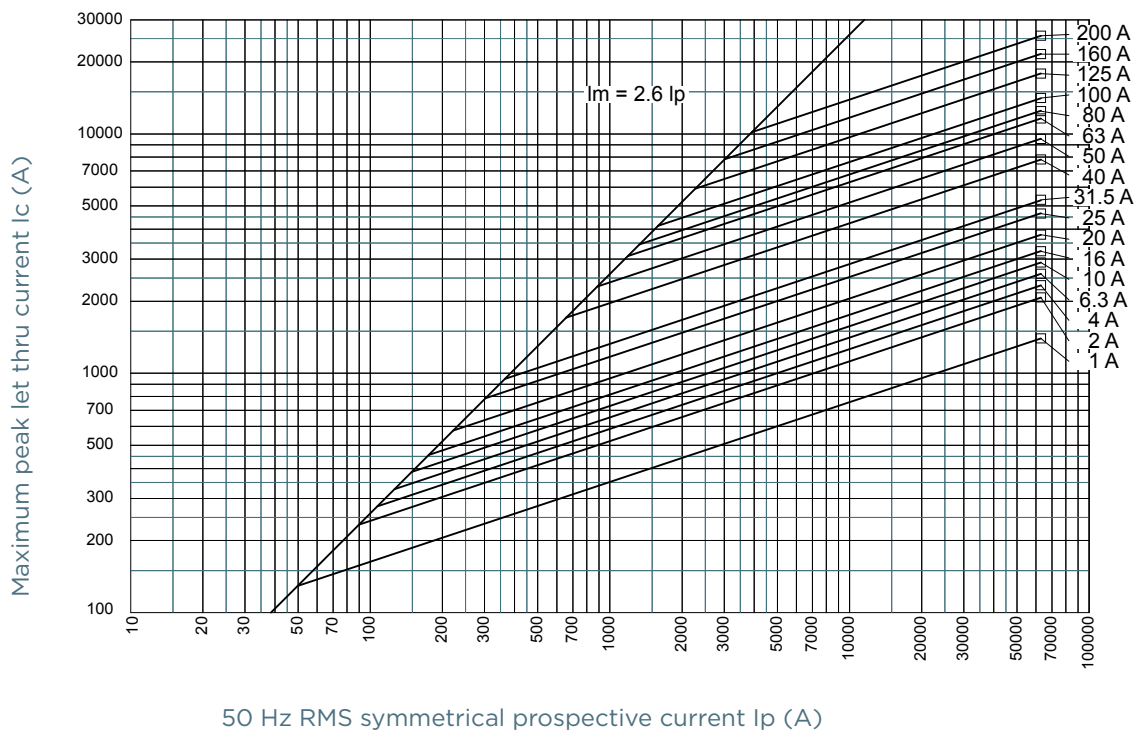
without Controlled Power Dissipation

CUT-OFF CURRENT CHARACTERISTIC

Limitor[®] P 17,5V 367mm



Limitor[®] P 24kV 442mm



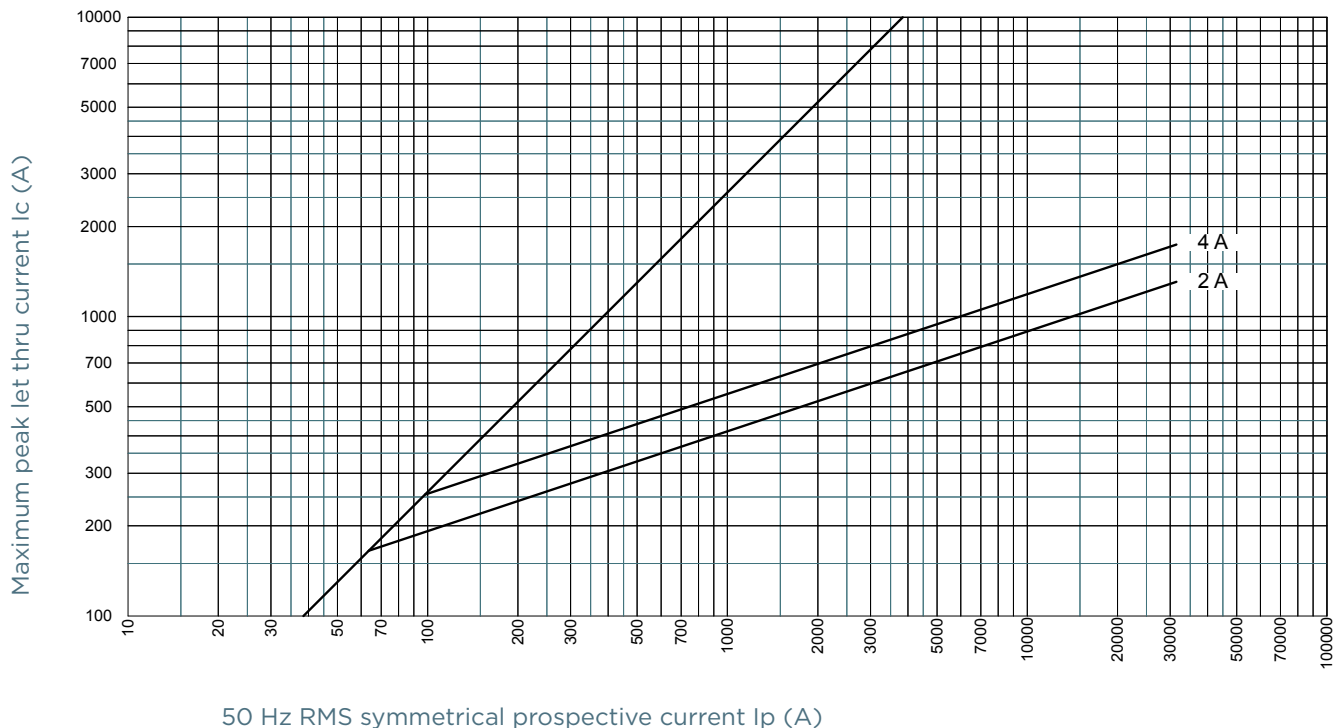
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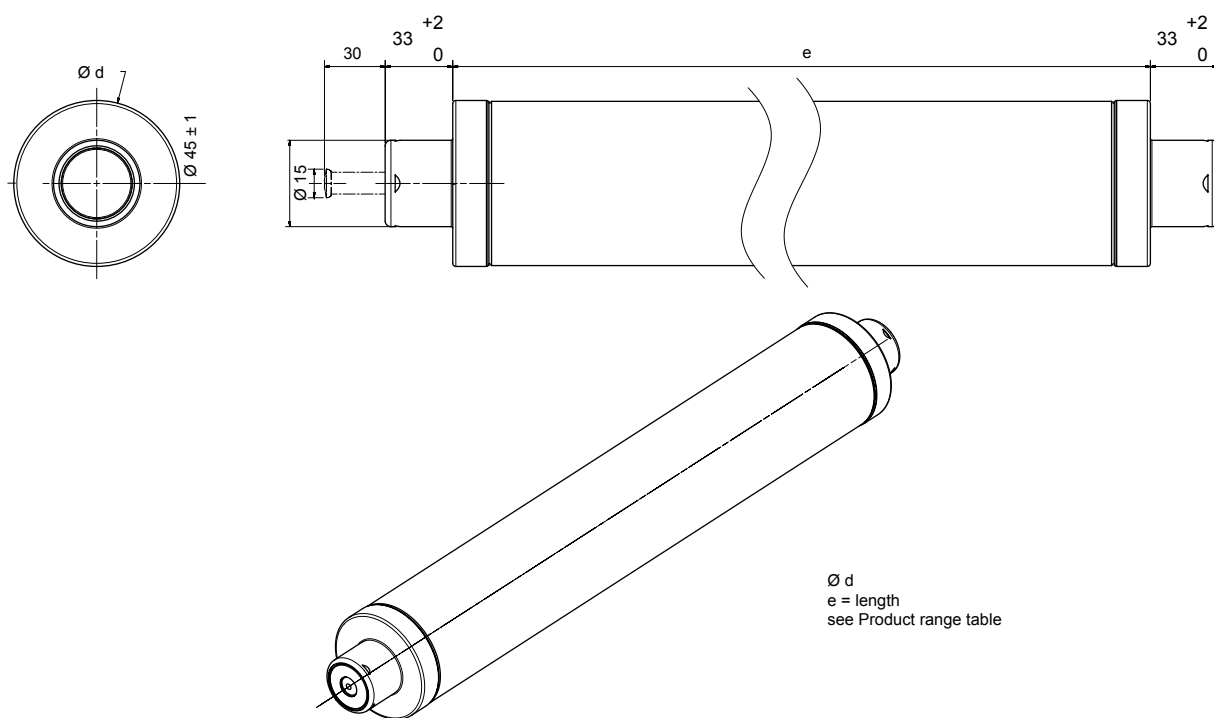
without Controlled Power Dissipation

CUT-OFF CURRENT CHARACTERISTIC

Limitor[®] P 36kV 537mm



DIMENSIONS



Dimensions in mm

Limiter[®]- P Back-up Fuses

without Controlled Power Dissipation

SELECTION TABLE

| Rated voltage range of fuse-link [kV] | | 3/7.2 | | 6/12 | | 10/24 | | 20/36 | |
|---------------------------------------|--------------------------|-------------------------------|--------------------------------|-------------------------------|--------------------------------|-------------------------------|--------------------------------|-------------------------------|--------------------------------|
| Service voltage of transformer [kV] | | 6 | | 10 | | 20 | | 30 | |
| Relative short-circuit voltage | Transformer output [kVA] | Transformer rated current [A] | Rated current of fuse-link [A] | Transformer rated current [A] | Rated current of fuse-link [A] | Transformer rated current [A] | Rated current of fuse-link [A] | Transformer rated current [A] | Rated current of fuse-link [A] |
| U _k = 4% | 50 | 4.8 | 16-20 | 2.9 | 10 | 1.5 | 4 | 0.96 | 2-6.3 |
| | 100 | 9.6 | 20-31.5 | 5.8 | 16-20 | 2.9 | 10 | 1.9 | 6.3-10 |
| | 125 | 12 | 25-40 | 7.2 | 20-25 | 3.6 | 10-16 | 2.4 | 10 |
| | 160 | 15.4 | 31.5-50 | 9.2 | 20-31.5 | 4.6 | 16-20 | 3.1 | 10 |
| | 200 | 19.2 | 40-63 | 11.5 | 25-40 | 5.8 | 16-20 | 3.8 | 10-16 |
| | 250 | 24.1 | 40-80 | 14.4 | 31.5-50 | 7.2 | 20-25 | 4.8 | 16-20 |
| | 315 | 30.3 | 50-100 | 18.2 | 40-63 | 9.1 | 20-31.5 | 6.1 | 16-25 |
| | 400 | 38.5 | 63-125 | 23.1 | 40-80 | 11.5 | 25-40 | 7.7 | 20-25 |
| | 500 | 48.1 | 80-160 | 28.9 | 50-100 | 14.4 | 31.5-50 | 9.6 | 20-31.5 |
| | 630 | 60.6 | 100-200 | 36.4 | 63-100 | 18.2 | 40-63 | 12.1 | 25-40 |
| U _k = 5% | 800 | 77.1 | 125-200 | 46.2 | 80-125 | 23.1 | 40-63 | 15.4 | 31.5-40 |
| | 1000 | 96.3 | 125-160 | 57.7 | 100-160 | 28.9 | 50-80 | 19.2 | 40-50 |
| U _k = 6% | 1250 | 120.3 | 160-200 | 72.2 | 125-200 | 36.1 | 63-100 | 24.1 | 40-50 |
| | 1600 | 154 | 200 | 92.4 | 125-200 | 46.2 | 80-100 | 30.8 | 50-63 |

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