

# Limitor® - PTS Back-up Fuses

with Low Power Dissipation and Thermal Striker

## 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.

The Limitor®-PTS HV fuse-link range is dedicated to protect transformers in combination with air or gas insulated switchgear against the thermal and dynamic effects of short-circuits.

For the Limitor®-PTS range, Mersen innovates with new fuse-element designs to reduce power losses and new thermal striker to prevent overheating in the fuse compartment of the switch gear.

Mersen uses the best materials : fuse-elements are in pure silver, caps are in copper coated with silver and body is in ceramic.

### Features Benefits

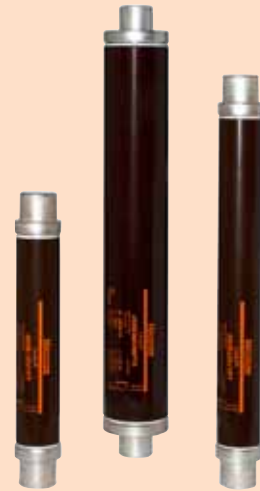
- Low switching voltage
- Large current ratings range
- Very low power losses
- Energy efficiency
- New thermal striker patented by Mersen to prevent overheating
- Medium striker 80N / 30mm
- New cap design for a better compatibility with all types of clips and easier assembly
- Outdoor and indoor use
- Coordination with IEC 60787, IEC 62271-105 and VDE 0670 T303

### Applications

- Best used in SF6 insulated switch gear and compact switch gear
- HV Transformer protection

### Technical Data

|                                    | 6/12 kV<br>292mm | 6/12 kV<br>442mm | 10/24 kV<br>442mm | 20/36 kV<br>537mm |
|------------------------------------|------------------|------------------|-------------------|-------------------|
| Rated current                      | 10 ... 160 A     | 100 ... 160 A    | 10 ... 125 A      | 10 ... 80 A       |
| Rated voltage range U <sub>n</sub> | 3/7.2 kV         | 3/7.2 kV         | 10/24 kV          | 20/36 kV          |
| Nominal voltage of transformer     | 10 kV            | 10 kV            | 20 kV             | 30 kV             |
| Package                            | 1                | 1                | 1                 | 1                 |



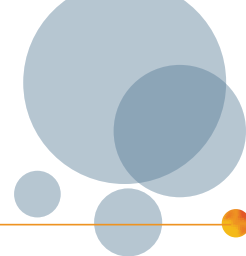
### Standards

IEC 60282-1  
VDE 0670 part 4  
VDE 0670 part 402  
DIN 43625



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with Low Power Dissipation and Thermal Striker



## Product range



45DB120V63PTS2

### Rated voltage 6 / 12 kV, length 292mm

| Catalog number | Reference number | Rated current $I_n$ | Clearing $I^2t$ at Rated Voltage | Breaking capacity $I_b$ | Minimum breaking current $I_s = I_{min}$ | Cold resistance | Power dissipation at $I_n$ | Weight |
|----------------|------------------|---------------------|----------------------------------|-------------------------|--|-----------------|----------------------------|--------|
|----------------|------------------|---------------------|----------------------------------|-------------------------|--|-----------------|----------------------------|--------|

#### Ø 56mm

|                |          |        |                        |       |       |        |      |        |
|----------------|----------|--------|------------------------|-------|-------|--------|------|--------|
| 45DB120V10PTS2 | R1032945 | 10 A   | 3000 A <sup>2</sup> s  | 65 kA | 35 A  | 227 mΩ | 29 W | 1.6 kg |
| 45DB120V16PTS2 | S1032946 | 16 A   | 3700 A <sup>2</sup> s  | 65 kA | 64 A  | 66 mΩ  | 21 W | 1.6 kg |
| 45DB120V20PTS2 | T1032947 | 20 A   | 4700 A <sup>2</sup> s  | 65 kA | 90 A  | 51 mΩ  | 25 W | 1.6 kg |
| 45DB120V25PTS2 | V1032948 | 25 A   | 4920 A <sup>2</sup> s  | 65 kA | 95 A  | 40 mΩ  | 29 W | 1.6 kg |
| 45DB120V32PTS2 | W1032949 | 31.5 A | 7000 A <sup>2</sup> s  | 65 kA | 110 A | 30 mΩ  | 39 W | 1.6 kg |
| 45DB120V40PTS2 | X1032950 | 40 A   | 14 kA <sup>2</sup> s   | 65 kA | 134 A | 20 mΩ  | 46 W | 1.6 kg |
| 45DB120V50PTS2 | Y1032951 | 50 A   | 25.3 kA <sup>2</sup> s | 65 kA | 190 A | 15 mΩ  | 62 W | 1.6 kg |

#### Ø 65mm

|                |          |      |                      |       |       |         |      |        |
|----------------|----------|------|----------------------|-------|-------|---------|------|--------|
| 45DB120V63PTS2 | M1018313 | 63 A | 57 kA <sup>2</sup> s | 80 kA | 260 A | 11.9 mΩ | 58 W | 2.1 kg |
| 45DB120V80PTS2 | N1018314 | 80 A | 90 kA <sup>2</sup> s | 80 kA | 280 A | 9.6 mΩ  | 82 W | 2.1 kg |

#### Ø 78mm

|                 |          |       |                       |       |       |        |       |        |
|-----------------|----------|-------|-----------------------|-------|-------|--------|-------|--------|
| 45DB120V100PTS2 | P1018315 | 100 A | 145 kA <sup>2</sup> s | 80 kA | 350 A | 7.5 mΩ | 105 W | 2.3 kg |
|-----------------|----------|-------|-----------------------|-------|-------|--------|-------|--------|

#### Ø 86mm

|                 |          |       |                      |       |       |        |       |        |
|-----------------|----------|-------|----------------------|-------|-------|--------|-------|--------|
| 45DB120V125PTS2 | Q1018316 | 125 A | 296 A <sup>2</sup> s | 80 kA | 440 A | 5.3 mΩ | 110 W | 2.5 kg |
|-----------------|----------|-------|----------------------|-------|-------|--------|-------|--------|

### Rated voltage 6 / 12 kV, length 442mm

| Catalog number | Reference number | Rated current $I_n$ | Clearing $I^2t$ at Rated Voltage | Breaking capacity $I_b$ | Minimum breaking current $I_s = I_{min}$ | Cold resistance | Power dissipation at $I_n$ | Weight |
|----------------|------------------|---------------------|----------------------------------|-------------------------|--|-----------------|----------------------------|--------|
|----------------|------------------|---------------------|----------------------------------|-------------------------|--|-----------------|----------------------------|--------|

#### Ø 78mm

|                 |          |       |                       |       |       |        |       |        |
|-----------------|----------|-------|-----------------------|-------|-------|--------|-------|--------|
| 45DB120V100PTS3 | R1018317 | 100 A | 150 kA <sup>2</sup> s | 80 kA | 350 A | 7.5 mΩ | 95 W  | 3.3 kg |
| 45DB120V125PTS3 | S1018318 | 125 A | 300 kA <sup>2</sup> s | 80 kA | 440 A | 5.4 mΩ | 105 W | 3.3 kg |
| 45DB120V160PTS3 | V1018320 | 160 A | 500 kA <sup>2</sup> s | 80 kA | 660 A | 4.1 mΩ | 145 W | 3.3 kg |

### Rated voltage 10 / 24 kV, length 442mm

| Catalog number | Reference number | Rated current $I_n$ | Clearing $I^2t$ at Rated Voltage | Breaking capacity $I_b$ | Minimum breaking current $I_s = I_{min}$ | Cold resistance | Power dissipation at $I_n$ | Weight |
|----------------|------------------|---------------------|----------------------------------|-------------------------|--|-----------------|----------------------------|--------|
|----------------|------------------|---------------------|----------------------------------|-------------------------|--|-----------------|----------------------------|--------|

#### Ø 56mm

|               |          |        |                        |       |       |        |      |        |
|---------------|----------|--------|------------------------|-------|-------|--------|------|--------|
| 45DB240V10PTS | Z1032952 | 10 A   | 2000 A <sup>2</sup> s  | 65 kA | 36 A  | 386 mΩ | 48 W | 2.3 kg |
| 45DB240V16PTS | A1032953 | 16 A   | 2340 A <sup>2</sup> s  | 65 kA | 73 A  | 127 mΩ | 42 W | 2.3 kg |
| 45DB240V20PTS | B1032954 | 20 A   | 3900 A <sup>2</sup> s  | 65 kA | 91 A  | 97 mΩ  | 53 W | 2.3 kg |
| 45DB240V25PTS | C1032955 | 25 A   | 6500 A <sup>2</sup> s  | 65 kA | 113 A | 73 mΩ  | 60 W | 2.3 kg |
| 45DB240V32PTS | D1032956 | 31.5 A | 7000 A <sup>2</sup> s  | 65 kA | 125 A | 57 mΩ  | 84 W | 2.3 kg |
| 45DB240V40PTS | E1032957 | 40 A   | 14.2 kA <sup>2</sup> s | 65 kA | 161 A | 41 mΩ  | 96 W | 2.3 kg |

#### Ø 65mm

|               |          |      |                      |       |       |         |      |        |
|---------------|----------|------|----------------------|-------|-------|---------|------|--------|
| 45DB240V50PTS | X1018322 | 50 A | 39 kA <sup>2</sup> s | 65 kA | 230 A | 27.4 mΩ | 82 W | 3.1 kg |
|---------------|----------|------|----------------------|-------|-------|---------|------|--------|

#### Ø 78mm

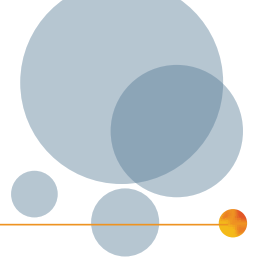
|               |          |      |                      |       |       |         |       |        |
|---------------|----------|------|----------------------|-------|-------|---------|-------|--------|
| 45DB240V63PTS | Y1018323 | 63 A | 63 kA <sup>2</sup> s | 65 kA | 250 A | 21.6 mΩ | 102 W | 3.3 kg |
| 45DB240V80PTS | Z1018324 | 80 A | 99 kA <sup>2</sup> s | 65 kA | 280 A | 17.3 mΩ | 153 W | 3.3 kg |

#### Ø 86mm

|                |          |       |                       |       |       |         |       |        |
|----------------|----------|-------|-----------------------|-------|-------|---------|-------|--------|
| 45DB240V100PTS | A1018325 | 100 A | 159 kA <sup>2</sup> s | 65 kA | 350 A | 13.6 mΩ | 200 W | 4.1 kg |
| 45DB240V125PTS | B1018326 | 125 A | 290 kA <sup>2</sup> s | 65 kA | 440 A | 10.1 mΩ | 254 W | 4.1 kg |

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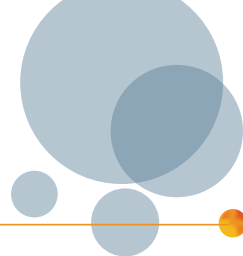
## Product range

### Rated voltage 20 / 36 kV, length 537mm

| Catalog number | Reference number | Rated current $I_n$ | Clearing $I^2t$ at Rated Voltage | Breaking capacity $I_b$ | Minimum breaking current $I_s = I_{min}$ | Cold resistance | Power dissipation at $I_n$ | Weight |
|----------------|------------------|---------------------|----------------------------------|-------------------------|--|-----------------|----------------------------|--------|
| <b>Ø 56mm</b>  |                  |                     |                                  |                         |  |                 |                            |        |
| 45DB360V10PTS  | F1032958         | 10 A                | 2000 A <sup>2</sup> s            | 31.5 kA                 | 34 A                                     | 529 mΩ          | 66 W                       | 2.7 kg |
| 45DB360V16PTS  | G1032959         | 16 A                | 2340 A <sup>2</sup> s            | 31.5 kA                 | 66 A                                     | 190 mΩ          | 67 W                       | 2.7 kg |
| 45DB360V20PTS  | H1032960         | 20 A                | 3900 A <sup>2</sup> s            | 31.5 kA                 | 95 A                                     | 153 mΩ          | 84 W                       | 2.7 kg |
| 45DB360V25PTS  | J1032961         | 25 A                | 6500 A <sup>2</sup> s            | 31.5 kA                 | 110 A                                    | 118 mΩ          | 100 W                      | 2.7 kg |
| <b>Ø 65mm</b>  |                  |                     |                                  |                         |  |                 |                            |        |
| 45DB360V32PTS  | K1032962         | 31.5 A              | 7000 A <sup>2</sup> s            | 20 kA                   | 135 A                                    | 82 mΩ           | 119 W                      | 3.7 kg |
| 45DB360V40PTS  | L1032963         | 40 A                | 14200 A <sup>2</sup> s           | 20 kA                   | 200 A                                    | 63 mΩ           | 176 W                      | 3.7 kg |
| <b>Ø 86mm</b>  |                  |                     |                                  |                         |  |                 |                            |        |
| 45DB360V50PTS  | M1032964         | 50 A                | 40000 A <sup>2</sup> s           | 20 kA                   | 225 A                                    | 40 mΩ           | 183 W                      | 6.5 kg |
| 45DB360V63PTS  | C1018327         | 63 A                | 65000 A <sup>2</sup> s           | 36 kA                   | 260 A                                    | 31.9 mΩ         | 165 W                      | 6.5 kg |
| 45DB360V80PTS  | F1018330         | 80 A                | 112 kA <sup>2</sup> s            | 36 kA                   | 350 A                                    | 24.2 mΩ         | 230 W                      | 6.5 kg |

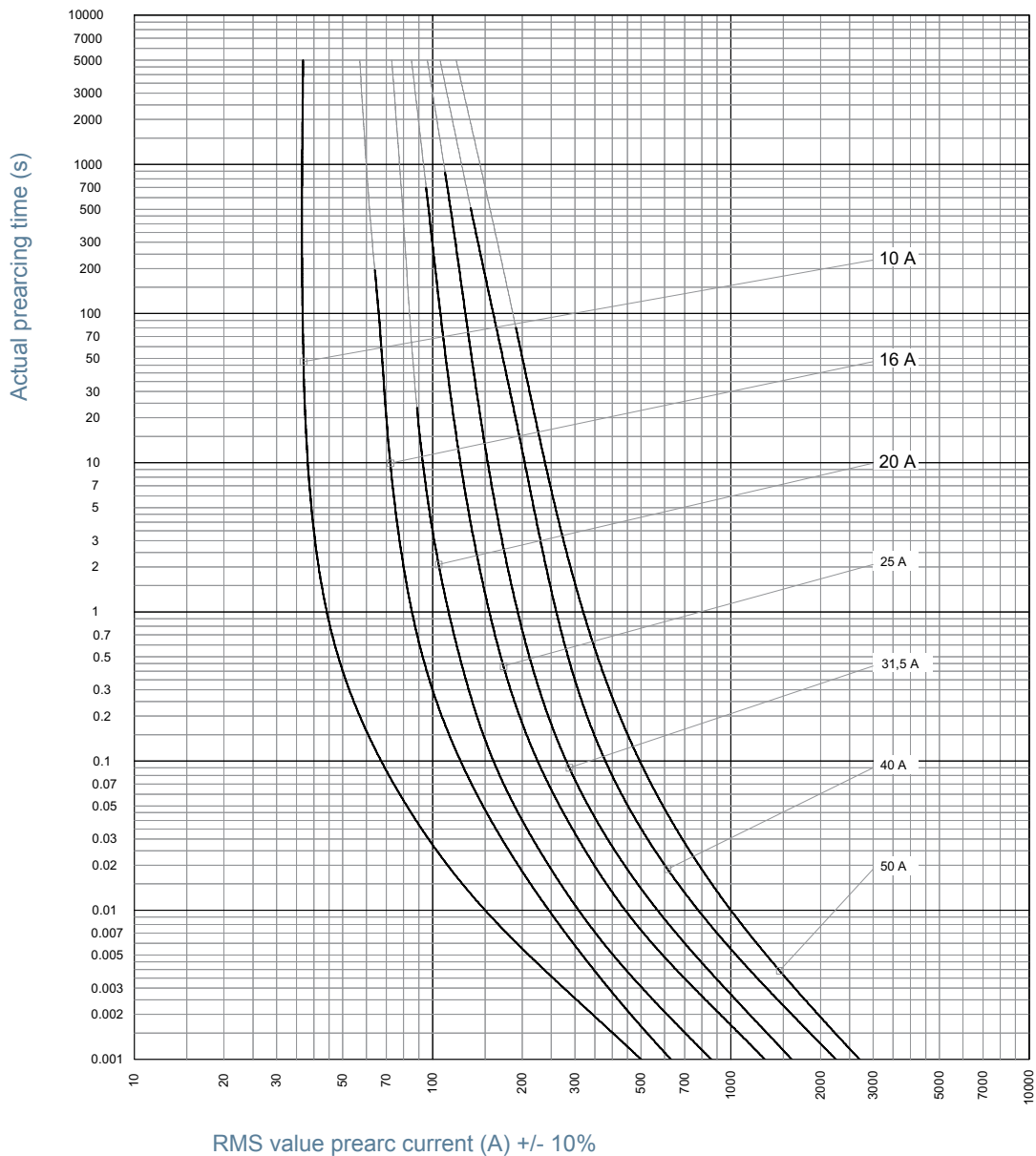
# Limitor<sup>®</sup> - PTS Back-up Fuses

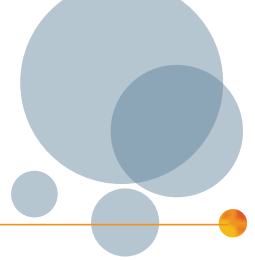
with Low Power Dissipation and Thermal Striker



## Time current characteristic curves

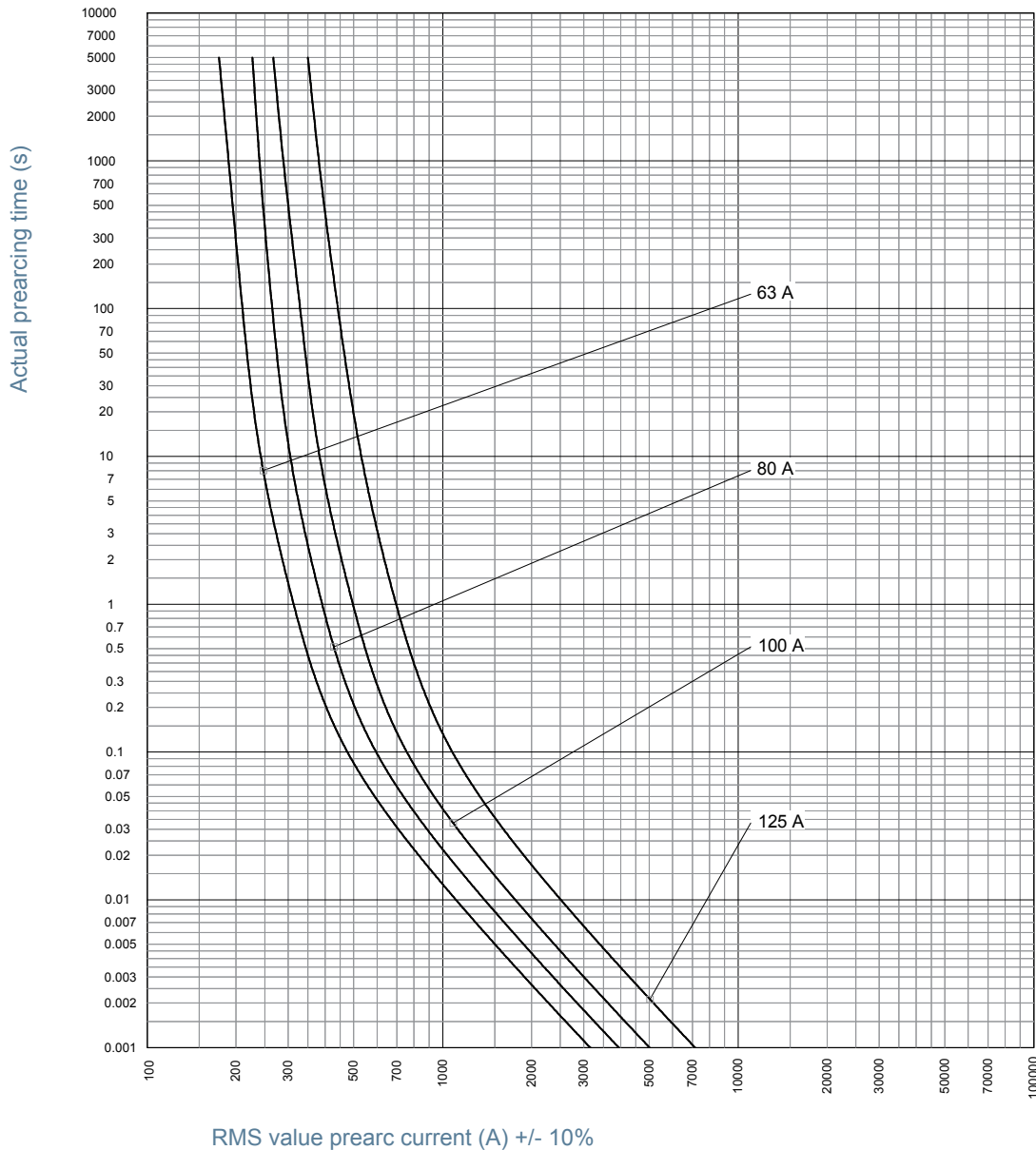
Limitor<sup>®</sup>-PTS 6/12kV 292mm 10-50A

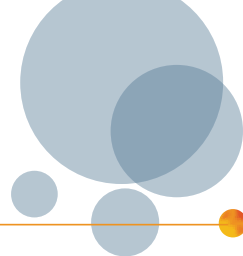




**Time current characteristic curves**

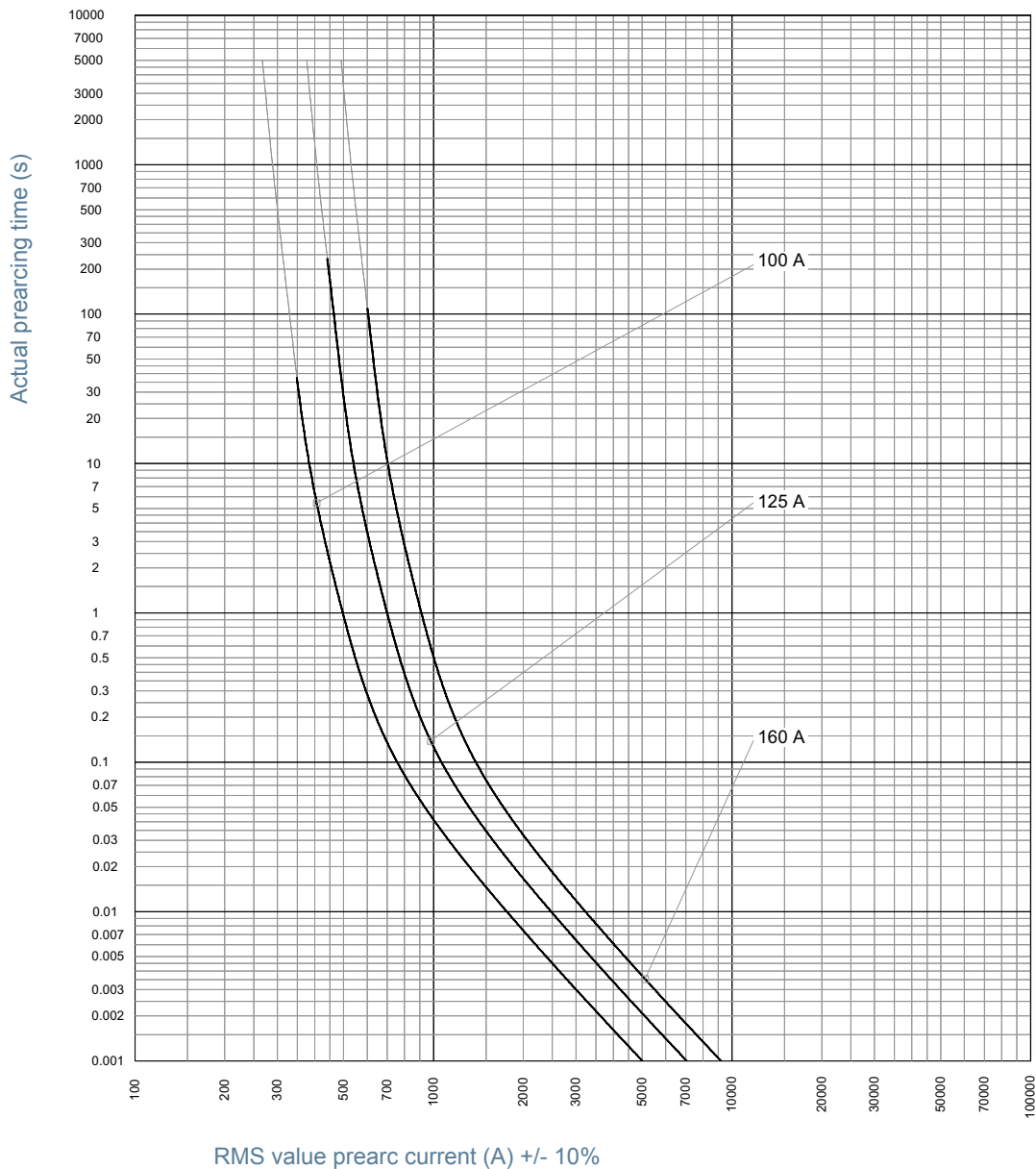
Limitor®-PTS 6/12kV 292mm 63-125A

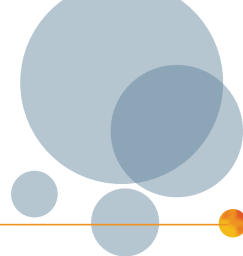




## Time current characteristic curves

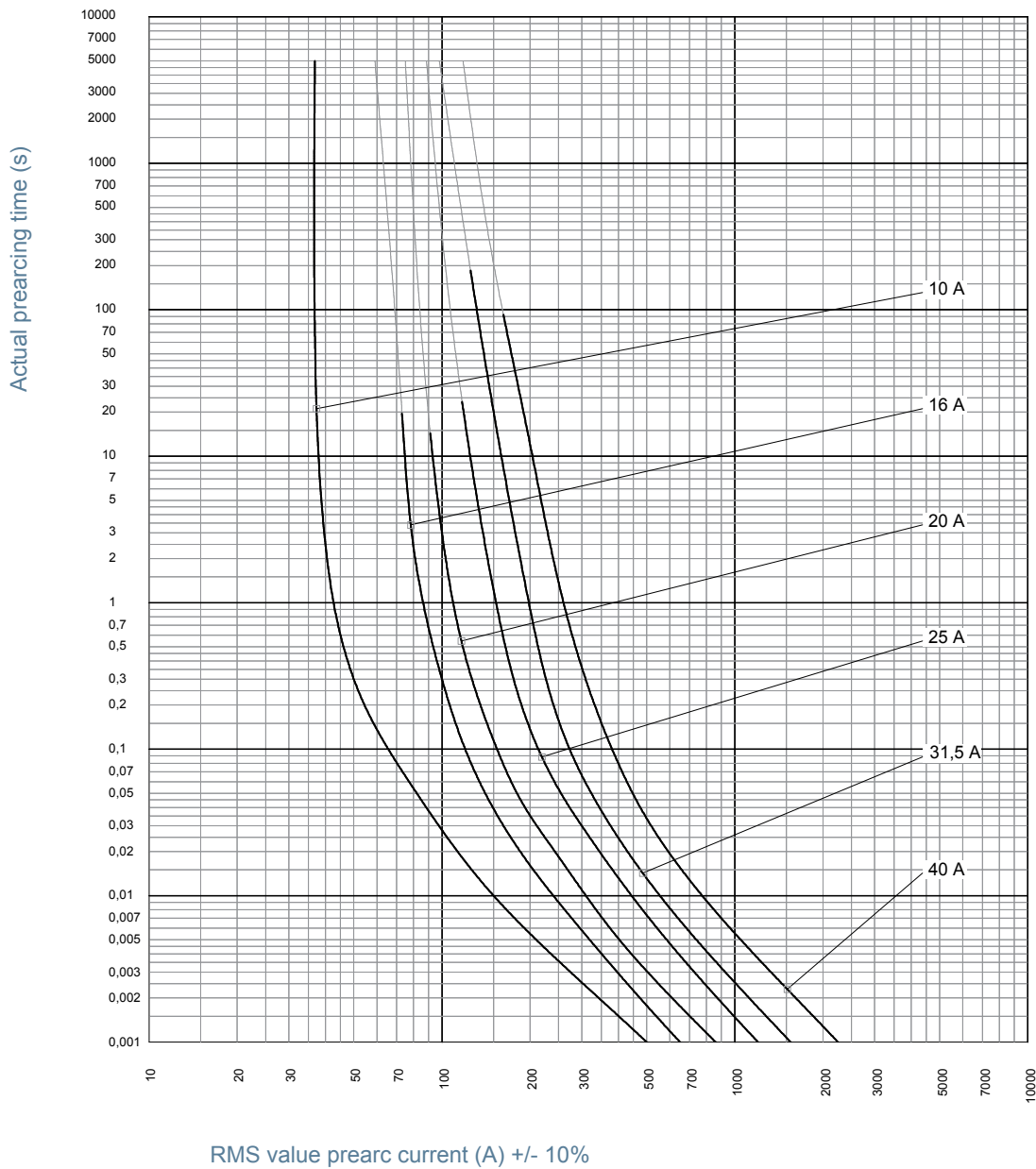
Limitor<sup>®</sup>-PTS 6/12kV 442mm 100-160A





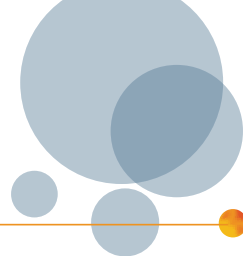
**Time current characteristic curves**

Limitor®-PTS 10/24kV 442mm 10A-40A



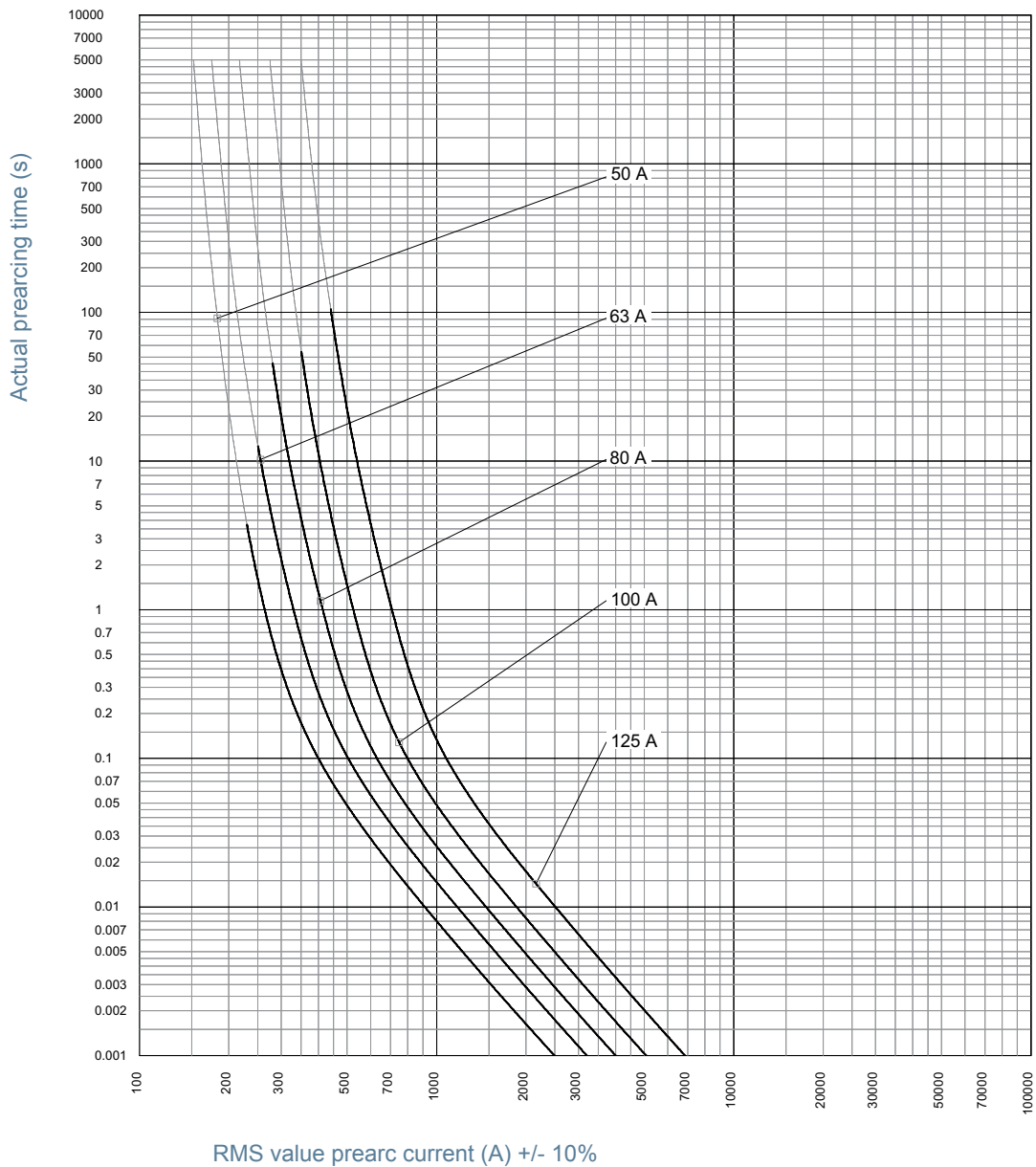
# Limitor<sup>®</sup> - PTS Back-up Fuses

with Low Power Dissipation and Thermal Striker

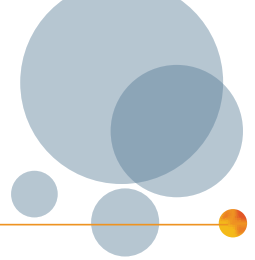


## Time current characteristic curves

Limitor<sup>®</sup>-PTS 10/24kV 442mm 50-125A

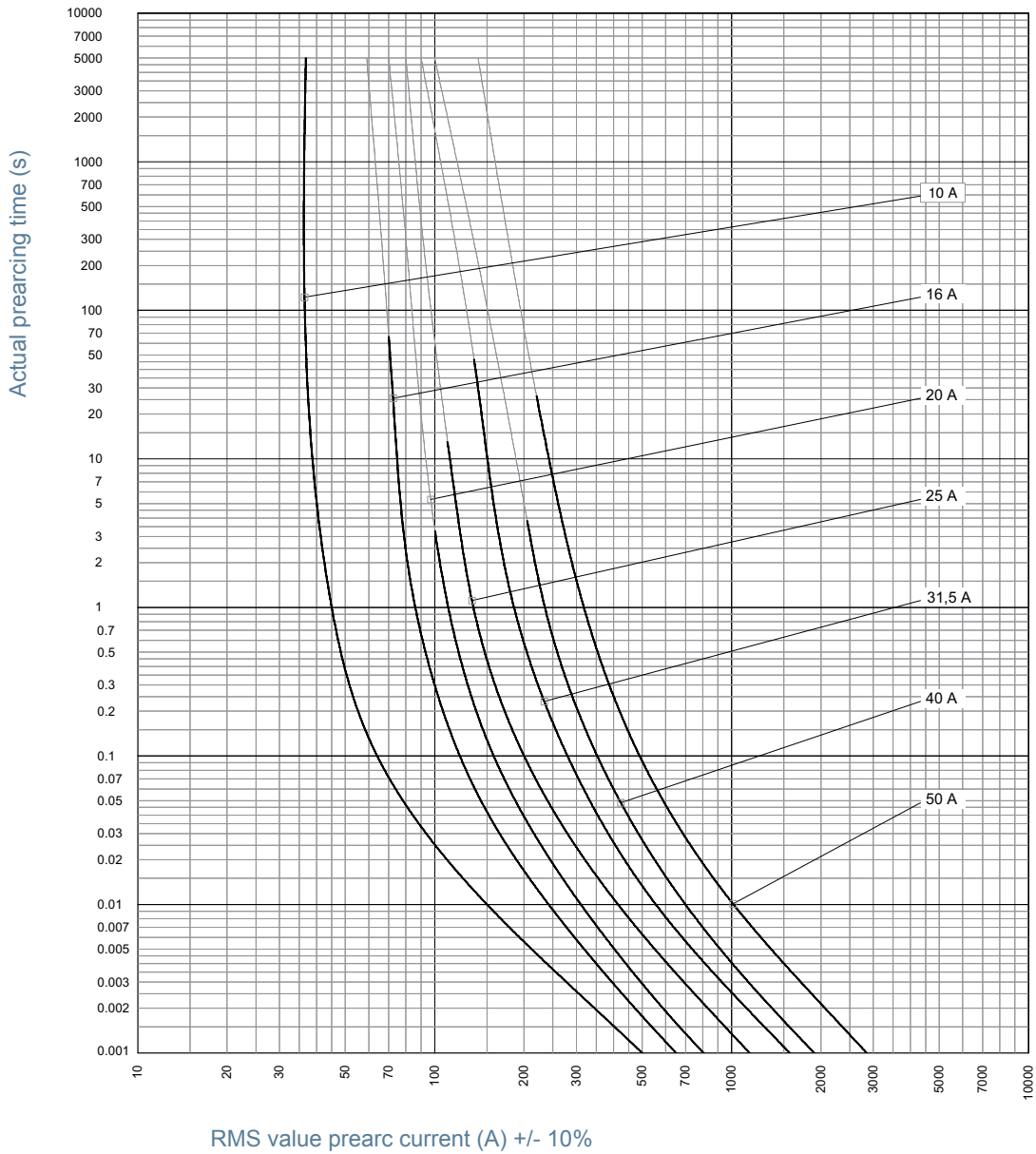


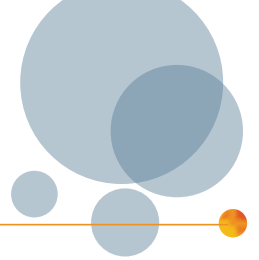




**Time current characteristic curves**

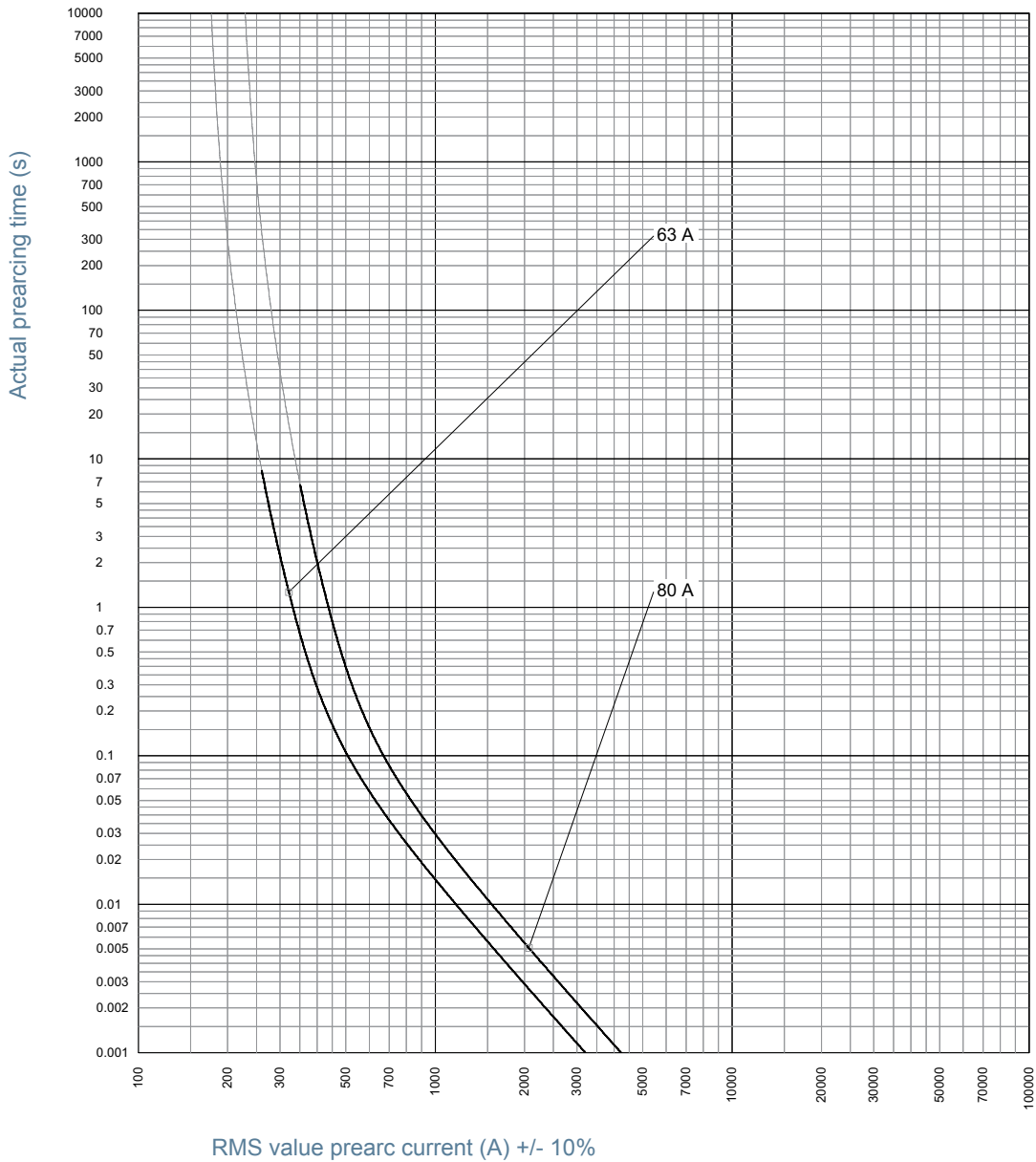
Limitor<sup>®</sup>-PTS 20/36kV 537mm 10-50A





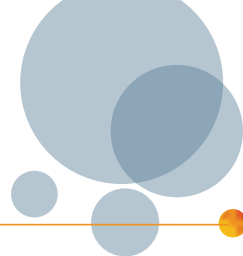
**Time current characteristic curves**

Limitor®-PTS 20/36kV 537mm 63-80A



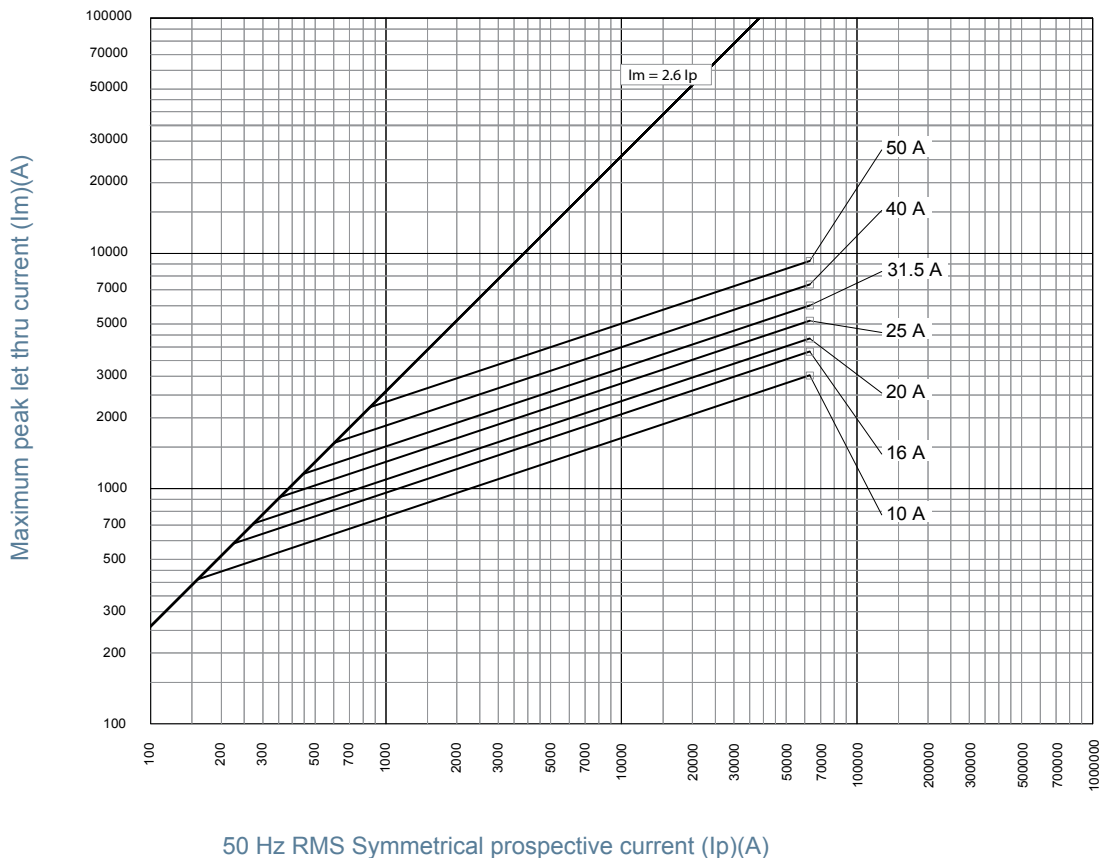
# Limitor<sup>®</sup> - PTS Back-up Fuses

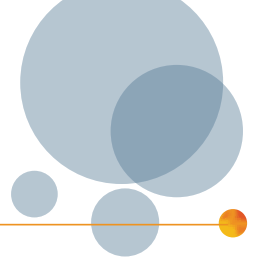
with Low Power Dissipation and Thermal Striker



## Current limiting diagram

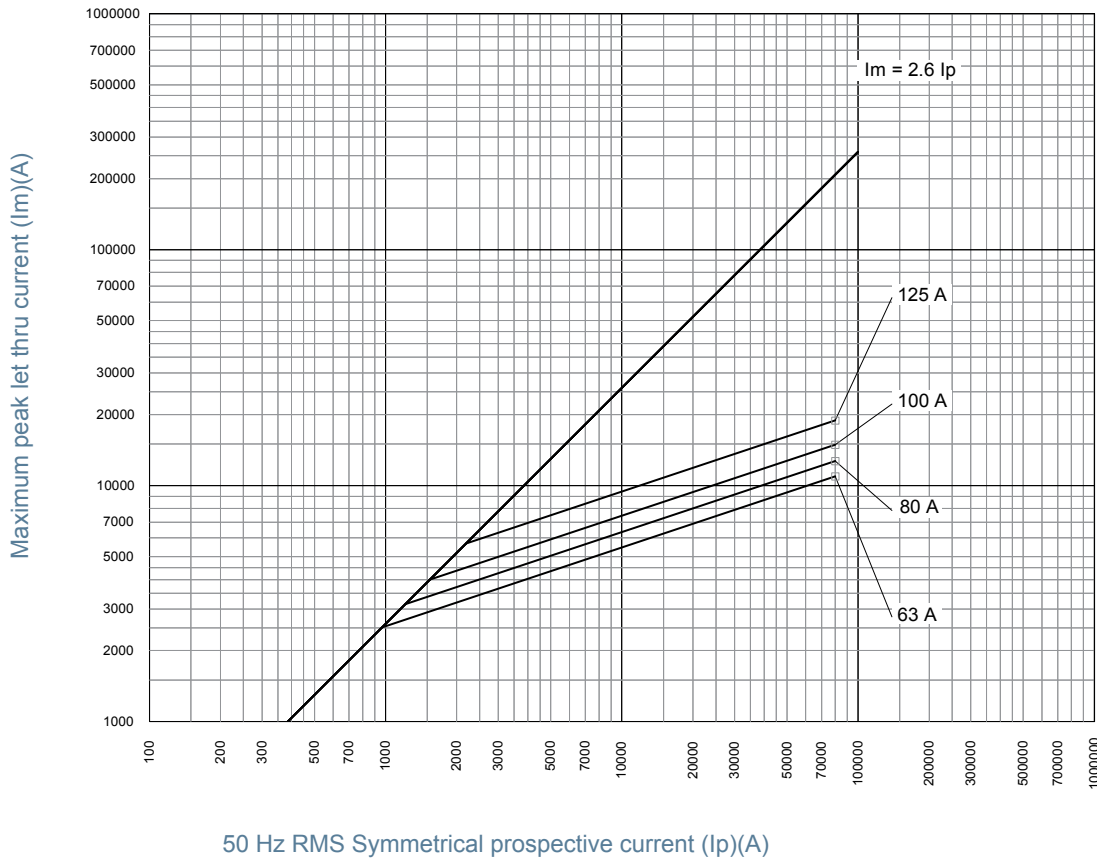
Limitor<sup>®</sup>-PTS 6/12kV 292mm 10-50A





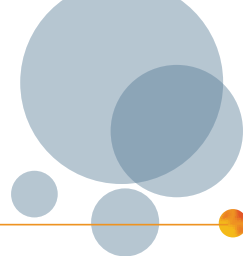
**Current limiting diagram**

Limitor<sup>®</sup>-PTS 6/12kV 292mm 63-125A



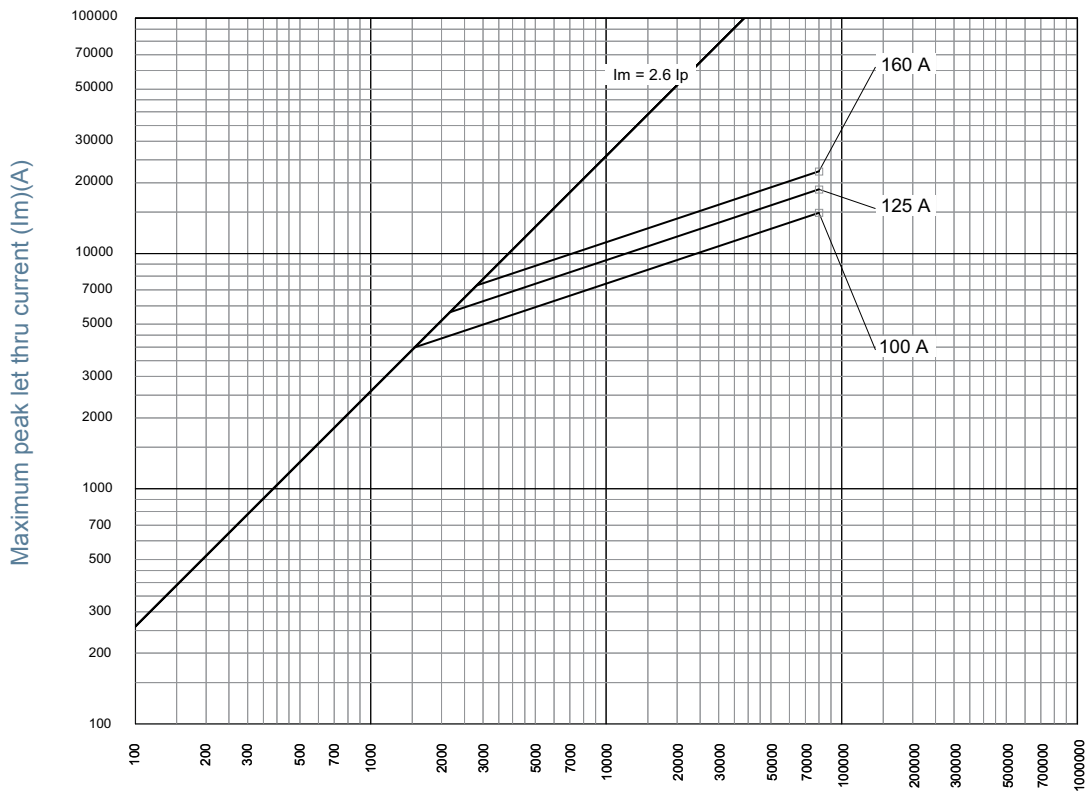
# Limitor<sup>®</sup> - PTS Back-up Fuses

with Low Power Dissipation and Thermal Striker

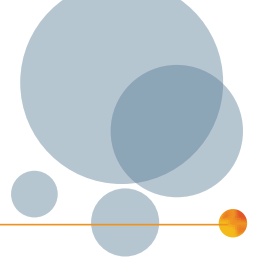


## Current limiting diagram

Limitor<sup>®</sup>-PTS 6/12kV 442mm 100-160A

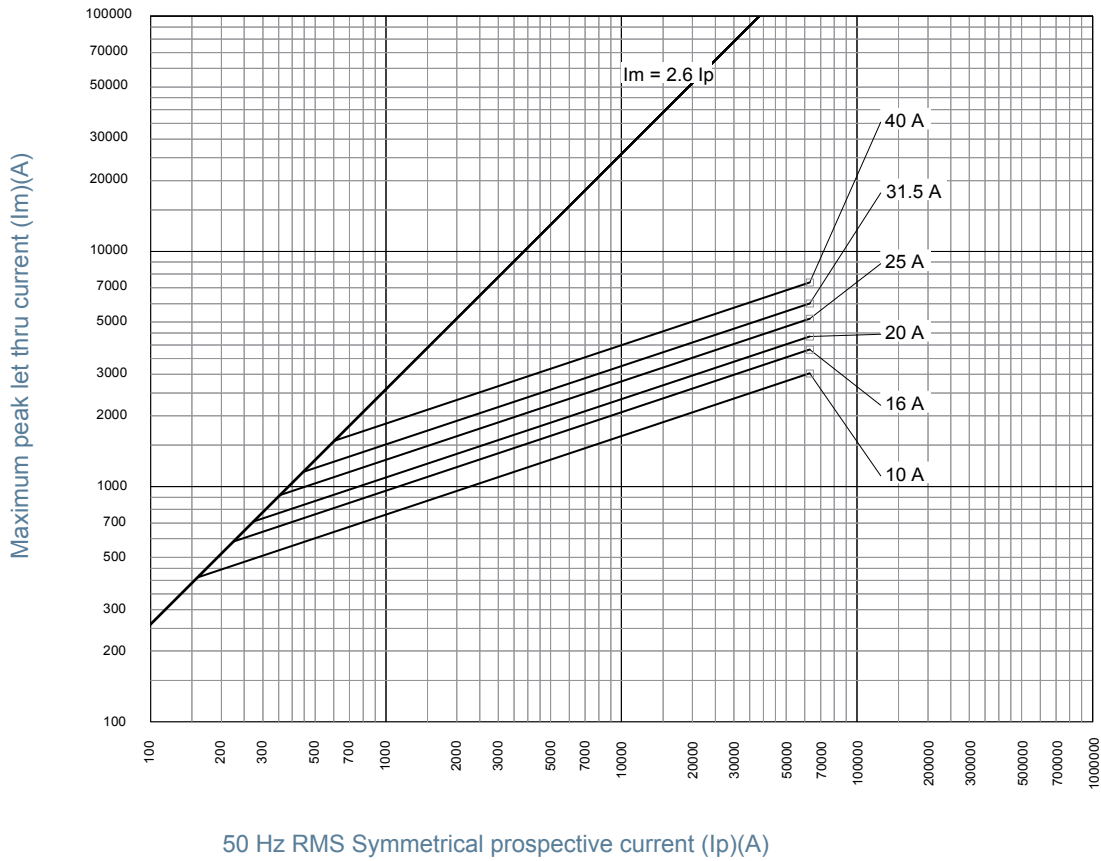


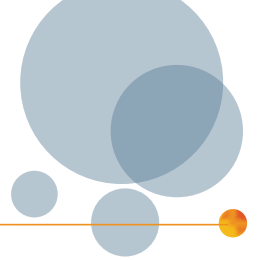
50 Hz RMS Symmetrical prospective current ( $I_p$ )(A)



**Current limiting diagram**

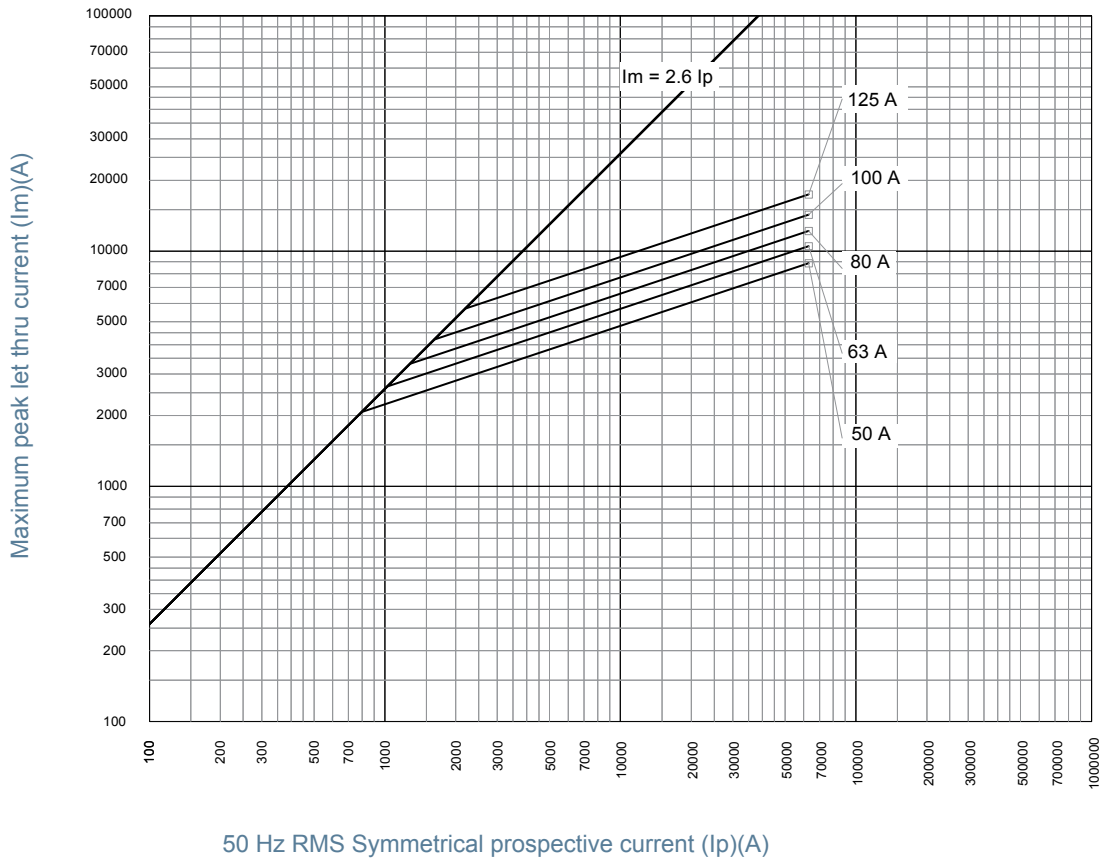
Limitor<sup>®</sup>-PTS 10/24kV 442mm 10A-40A

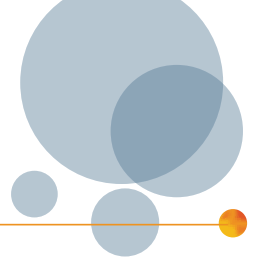




**Current limiting diagram**

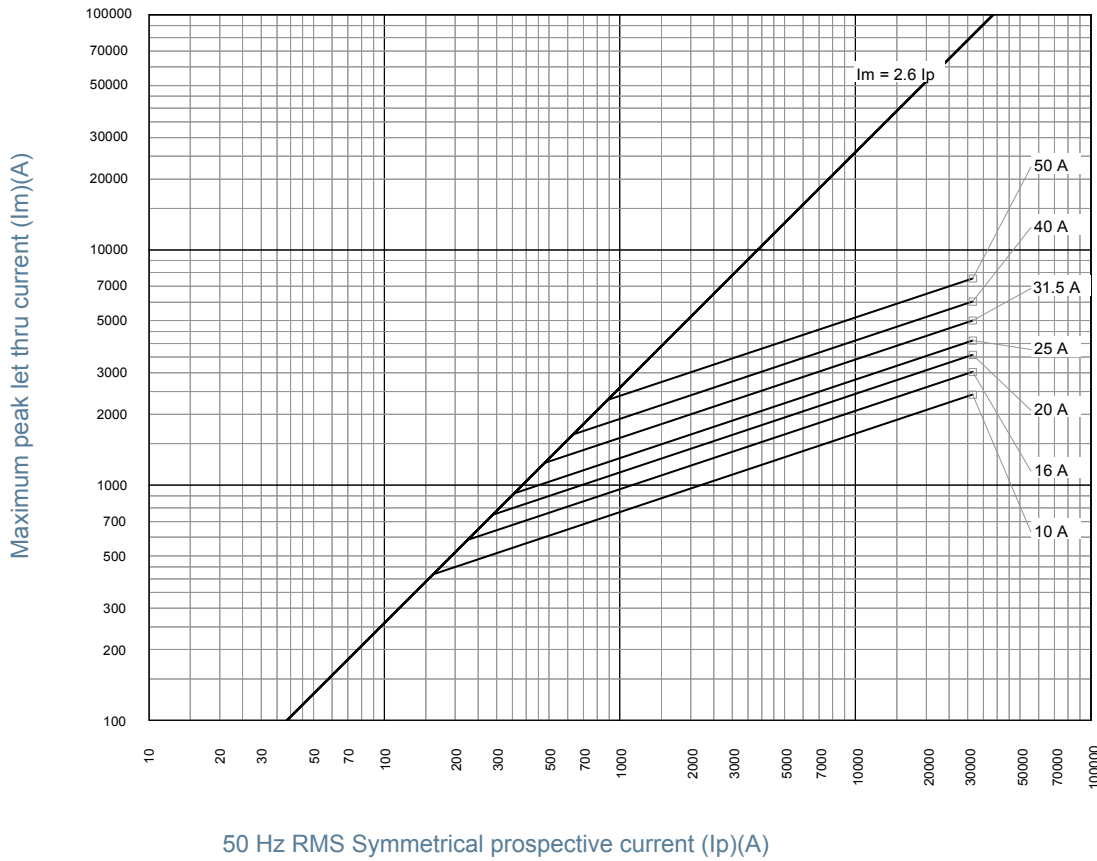
Limitor®-PTS 10/24kV 442mm 50-125A



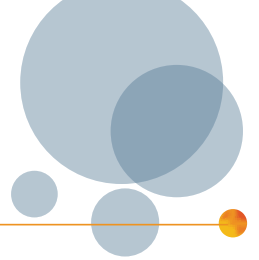


**Current limiting diagram**

Limitor<sup>®</sup>-PTS 20/36kV 537mm 10-50A







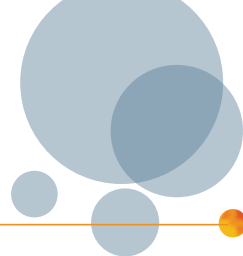
**Current limiting diagram**

Limitor<sup>®</sup>-PTS 20/36kV 537mm 63-80A



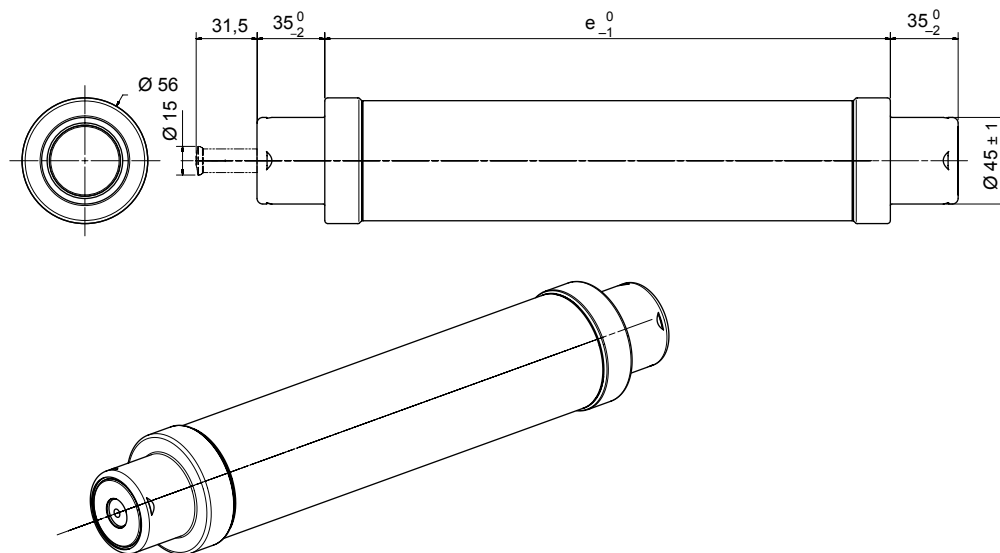
# Limitor<sup>®</sup> - PTS Back-up Fuses

with Low Power Dissipation and Thermal Striker



## Dimensions

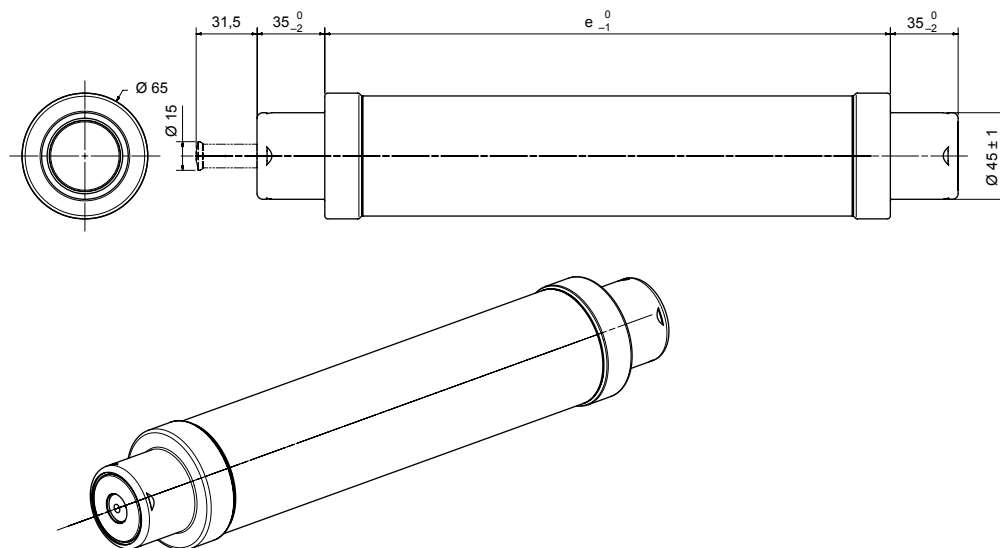
IEC HV fuse-link Limitor<sup>®</sup> PTS  $\varnothing$  56mm (-)



| Rated voltage | e   |
|---------------|-----|
| 6/12 kV       | 292 |
| 12/24 kV      | 442 |
| 20/36 kV      | 537 |

Dimensions in mm

IEC HV fuse-link Limitor<sup>®</sup> PTS  $\varnothing$  65mm (1022427b)

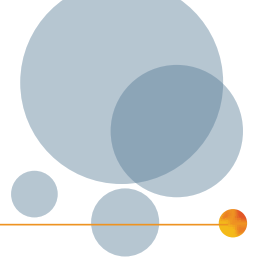


| Rated voltage | e   |
|---------------|-----|
| 6/12 kV       | 292 |
| 10/24 kV      | 442 |
| 20/26 kV      | 537 |

Dimensions in mm

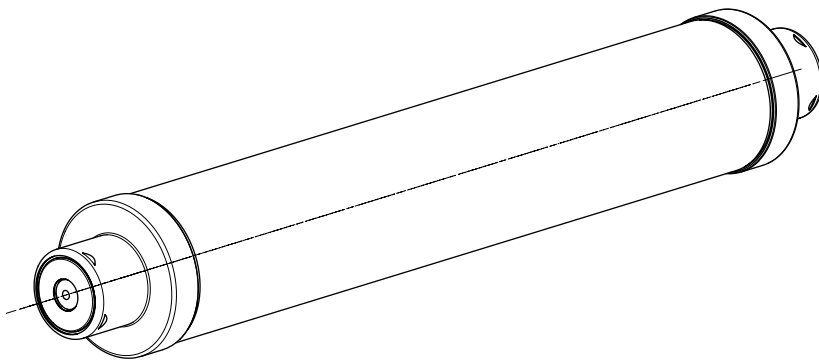
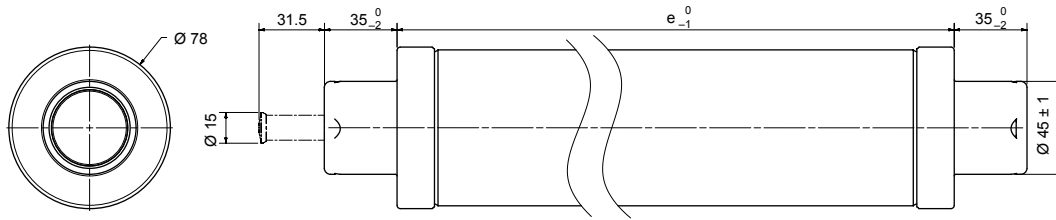
# Limitor® - PTS Back-up Fuses

with Low Power Dissipation and Thermal Striker



## Dimensions

IEC HV fuse-link Limitor® PTS  $\varnothing$  78mm (1018911b)

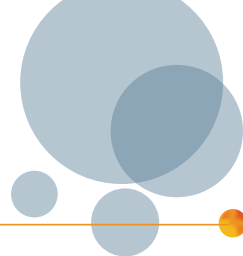


| Rated voltage | e   |
|---------------|-----|
| 6/12 kV       | 292 |
| 6/12 kV       | 442 |
| 10/24 kV      | 442 |
| 20/36 kV      | 537 |

Dimensions in mm

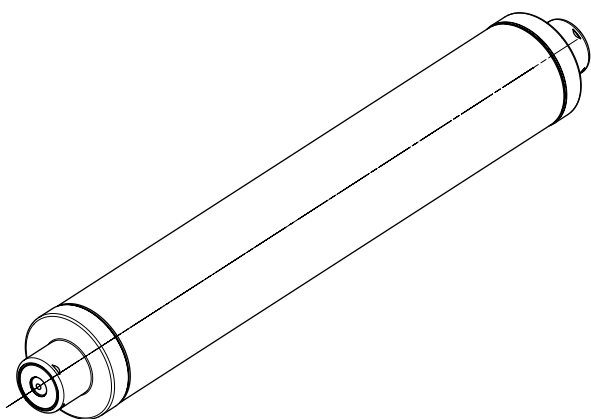
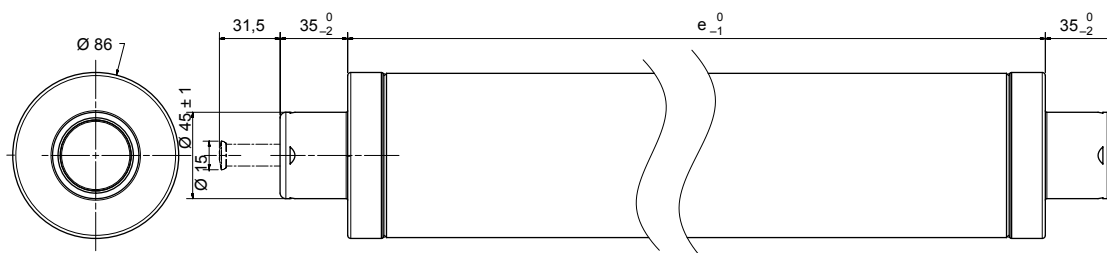
# Limitor<sup>®</sup> - PTS Back-up Fuses

with Low Power Dissipation and Thermal Striker



## Dimensions

IEC HV fuse-link Limitor<sup>®</sup> PTS  $\varnothing$  86mm (1013996e)

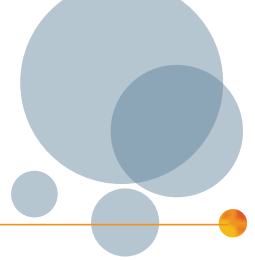


| Rated voltage | e   |
|---------------|-----|
| 6/12 kV       | 292 |
| 10/24 kV      | 442 |
| 20/36 kV      | 537 |

Dimensions in mm

# Limitor® - PTS Back-up Fuses

with Low Power Dissipation and Thermal Striker



## Selection table

| Rated voltage range of fuse-link [kV] |                          | 6/12                          |                                |  | 10/24                         |                                |  | 20/36                         |                                |  |
|---------------------------------------|--------------------------|-------------------------------|--------------------------------|--|-------------------------------|--------------------------------|--|-------------------------------|--------------------------------|--|
| Service voltage of transformer [kV]   |                          | 10                            |                                |  | 20                            |                                |  | 30                            |                                |  |
| Relative short-circuit voltage        | Transformer output [kVA] | Transformer rated current [A] | Rated current of fuse-link [A] | Power dissipation of HV fuse-links at rated current of transformer [W] | Transformer rated current [A] | Rated current of fuse-link [A] | Power dissipation of HV fuse-links at rated current of transformer [W] | Transformer rated current [A] | Rated current of fuse-link [A] | Power dissipation of HV fuse-links at rated current of transformer [W] |
| Uk = 4%                               | 100                      | 5.8                           | 16                             | 2.4  | 2.9                           | 10                             | 3.3  | 1.9                           | 6.3                            | 2.8  |
|                                       | 125                      | 7.2                           | 16                             | 3.6  | 3.6                           | 10                             | 5  | 2.4                           | 10                             | 3  |
|                                       | 160                      | 9.2                           | 20                             | 4.5  | 4.6                           | 16                             | 2.9  | 3.1                           | 10                             | 4.7  |
|                                       | 200                      | 11.4                          | 25                             | 5.3  | 5.8                           | 16                             | 4.6  | 3.8                           | 16                             | 3  |
|                                       | 250                      | 14.4                          | 31.5                           | 6.7  | 7.2                           | 16–25                          | 3.8–7.2  | 4.8                           | 16                             | 4.5  |
|                                       | 315                      | 18.2                          | 40                             | 8.6  | 9.1                           | 25                             | 6.2  | 6.1                           | 20                             | 5.6  |
|                                       | 400                      | 23.1                          | 50                             | 10.7   | 11.6                          | 25–31                          | 8.3–10.2   | 7.7                           | 25                             | 6.5  |
|                                       | 500                      | 28.9                          | 63                             | 10.4   | 14.4                          | 31.5                           | 13   | 9.6                           | 25                             | 10   |
| Uk = 5%                               | 630                      | 36.4                          | 80                             | 13.1   | 18.2                          | 40                             | 15.2   | 12.1                          | 31.5                           | 12.3   |
|                                       | 800                      | 46.2                          | 100                            | 20.8   | 23.1                          | 50                             | 15.9   | 15.4                          | 40                             | 16.9   |
| Uk = 6%                               | 1000                     | 57.7                          | 125                            | 18.3   | 28.9                          | 63                             | 22.7   | 19.2                          | 40–50                          | 17.3–27.6  |
|                                       | 1250                     | 72.2                          | 125                            | 26.3   | 36.1                          | 63                             | 24.1   | 24.1                          | 40                             | 46.9   |
|                                       | 1600                     | 92.4                          | 160                            | 42.1   | 46.1                          | 80                             | 36.9   | 30.8                          | 50                             | 51.7   |
|                                       | 2000                     | –                             | –                              | –  | 57.8                          | 100                            | 48.1   | 38.6                          | 63                             | 45.7   |