

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

without Controlled Power Dissipation

## 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<sup>®</sup>-PD HV fuses are back-up fuses as defined in the standard: IEC 60282-1 and VDE 0670 T402 and dedicated to protect transformers against the thermal and dynamic effects of short-circuit currents.

The VDE 0670 T402 defines fuses between 6.3A and 160A, for other ratings, thanks to consult Limitor<sup>®</sup>-P HV fuses range.

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.

### Features Benefits

- High breaking capacity
- High current limitation
- Low switching voltage
- Quick breaking
- Non-ageing
- medium striker 80N/30mm
- 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 and VDE 0670 T303
- Indoor and outdoor applications

### Applications

- HV Transformer protection

### Technical Data

	3/7,2kV 192mm	6/12kV 292mm	10/24kV 442mm	20/36kV 537mm
Rated current	6.3 ... 160 A	6.3 ... 160 A	6.3 ... 100 A	6.3 ... 63 A
Rated voltage range U <sub>n</sub>	3/7.2 kV	6/12kV	10/24 kV	20/36 kV
Nominal voltage of transformer	6 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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## Product range



45DB72V2P



45DB72V20PD



45DB72V125PD

### Rated voltage 3 / 7,2 kV, length 192mm

Catalog number	Reference number	Size	Rated current $I_n$	Clearing $I^2t$ at Rated Voltage	Breaking capacity $I_1$	Minimum breaking current $I_3 = I_{min}$	Cold resistance	Power dissipation at $I_n$	Weight
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#### ø56mm

45DB72V2P	N1000098	192	2 A	0.6 kA <sup>2</sup> s	63 kA	15 A	290 mΩ	1.8 W	1.1 kg
45DB72V4P	P1000099	192	4 A	0.8 kA <sup>2</sup> s	63 kA	20 A	270 mΩ	5 W	1.1 kg

#### Ø56mm

45DB72V6,3PD	S209293	192	6.3 A	0.8 kA <sup>2</sup> s	63 kA	20 A	256 mΩ	11 W	1.1 kg
45DB72V10PD	T209294	192	10 A	3 kA <sup>2</sup> s	63 kA	35 A	144 mΩ	19 W	1.1 kg
45DB72V20PD	W209296	192	20 A	3.9 kA <sup>2</sup> s	63 kA	80 A	32 mΩ	14.5 W	1.1 kg
45DB72V25PD	X209297	192	25 A	4.9 kA <sup>2</sup> s	63 kA	95 A	25 mΩ	20 W	1.1 kg
45DB72V32PD	Y209298	192	31.5 A	7 kA <sup>2</sup> s	63 kA	110 A	19 mΩ	23 W	1.1 kg
45DB72V40PD	Z209299	192	40 A	14 kA <sup>2</sup> s	63 kA	134 A	12.5 mΩ	30 W	1.1 kg
45DB72V50PD	A209300	192	50 A	25.3 kA <sup>2</sup> s	63 kA	190 A	9.2 mΩ	35 W	1.1 kg

#### Ø65mm

45DB72V63PD	M1000235	192	63 A	61.7 kA <sup>2</sup> s	63 kA	220 A	8.7 mΩ	60 W	1.4 kg
45DB72V80PD	N1000236	192	80 A	87.4 kA <sup>2</sup> s	63 kA	300 A	6.2 mΩ	85 W	1.4 kg

#### Ø78mm

45DB72V100PD	P1000237	192	100 A	180 kA <sup>2</sup> s	63 kA	350 A	5 mΩ	96 W	2 kg
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#### Ø88mm

45DB72V125PD	Q1000100	192	125 A	440 kA <sup>2</sup> s	63 kA	440 A	3 mΩ	75 W	2.4 kg
45DB72V160PD	Q1000238	192	160 A	654 kA <sup>2</sup> s	63 kA	610 A	2.3 mΩ	120 W	2.4 kg
45DB72V200P	S1000102	192	200 A	654 kA <sup>2</sup> s	63 kA	610 A	2.5 mΩ	200 W	2.4 kg

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

Catalog number	Reference number	Size	Rated current $I_n$	Clearing $I^2t$ at Rated Voltage	Breaking capacity $I_1$	Minimum breaking current $I_3 = I_{min}$	Cold resistance	Power dissipation at $I_n$	Weight
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#### Ø56mm

45DB120V6,3PD	R1000239	292	6.3 A	0.8 kA <sup>2</sup> s	63 kA	23 A	409 mΩ	19 W	1.6 kg
45DB120V10PD	S1000240	292	10 A	3 kA <sup>2</sup> s	63 kA	35 A	231 mΩ	29 W	1.6 kg
45DB120V16PD	T1000241	292	16 A	3.7 kA <sup>2</sup> s	63 kA	64 A	69 mΩ	21 W	1.6 kg
45DB120V20PD	V1000242	292	20 A	4.7 kA <sup>2</sup> s	63 kA	90 A	53 mΩ	25 W	1.6 kg
45DB120V25PD	W1000243	292	25 A	4.92 kA <sup>2</sup> s	63 kA	95 A	41 mΩ	31 W	1.6 kg
45DB120V32PD	X1000244	292	31.5 A	7 kA <sup>2</sup> s	63 kA	110 A	31 mΩ	39 W	1.6 kg
45DB120V40PD	Y1000245	292	40 A	14 kA <sup>2</sup> s	63 kA	134 A	20 mΩ	46 W	1.6 kg
45DB120V50PD	Z1000246	292	50 A	25.3 kA <sup>2</sup> s	63 kA	190 A	16.7 mΩ	62 W	1.6 kg

#### Ø65mm

45DB120V63PD	A1000247	292	63 A	63 kA <sup>2</sup> s	63 kA	220 A	11.7 mΩ	60 W	2.1 kg
45DB120V80PD	B1000248	292	80 A	87 kA <sup>2</sup> s	63 kA	345 A	8.7 mΩ	82 W	2.1 kg

#### Ø78mm

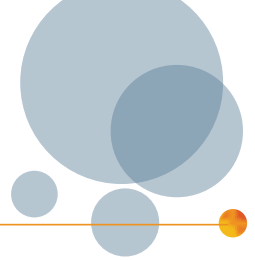
45DB120V100PD	C1000249	292	100 A	180 kA <sup>2</sup> s	63 kA	400 A	6.7 mΩ	96 W	3.1 kg
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#### Ø88mm

45DB120V125PD	D1000250	292	125 A	440 kA <sup>2</sup> s	63 kA	480 A	4.9 mΩ	117 W	3.7 kg
45DB120V160PD	E1000251	292	160 A	654 kA <sup>2</sup> s	63 kA	610 A	3.8 mΩ	175 W	3.7 kg

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## Product range

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

Catalog number	Reference number	Size	Rated current $I_n$	Clearing $I^2t$ at Rated Voltage	Breaking capacity $I_b$	Minimum breaking current $I_3 = I_{min}$	Cold resistance	Power dissipation at $I_n$	Weight
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#### Ø56mm

45DB240V6,3PD	F1000252	442	6.3 A	0.8 kA <sup>2</sup> s	63 kA	23 A	640 mΩ	32 W	2.3 kg
45DB240V10PD	G1000253	442	10 A	2 kA <sup>2</sup> s	63 kA	36 A	386 mΩ	48 W	2.3 kg
45DB240V16PD	H1000254	442	16 A	2.34 kA <sup>2</sup> s	63 kA	73 A	127 mΩ	43 W	2.3 kg
45DB240V20PD	J1000255	442	20 A	3.9 kA <sup>2</sup> s	63 kA	91 A	97 mΩ	53 W	2.3 kg
45DB240V25PD	K1000256	442	25 A	6.5 kA <sup>2</sup> s	63 kA	116 A	74 mΩ	64 W	2.3 kg
45DB240V32PD	L1000257	442	31.5 A	7 kA <sup>2</sup> s	63 kA	125 A	61 mΩ	85 W	2.3 kg
45DB240V40PD	M1000258	442	40 A	14.2 kA <sup>2</sup> s	63 kA	161 A	43 mΩ	103 W	2.3 kg

#### Ø65mm

45DB240V50PD	N1000259	442	50 A	24.2 kA <sup>2</sup> s	63 kA	230 A	35 mΩ	116 W	3.1 kg
45DB240V63PD	P1000260	442	63 A	46.4 kA <sup>2</sup> s	63 kA	350 A	25 mΩ	163 W	3.1 kg
45DB240V80PD	Q1000261	442	80 A	104 kA <sup>2</sup> s	63 kA	460 A	19 mΩ	196 W	3.1 kg

#### Ø88mm

45DB240V100PD	R1000262	442	100 A	140 kA <sup>2</sup> s	63 kA	420 A	14 mΩ	279 W	4.1 kg
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### Rated voltage 20 / 36 kV, length 537mm



45DB360V63PD

Catalog number	Reference number	Size	Rated current $I_n$	Clearing $I^2t$ at Rated Voltage	Breaking capacity $I_b$	Minimum breaking current $I_3 = I_{min}$	Cold resistance	Power dissipation at $I_n$	Weight
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#### Ø56mm

45DB360V2P	G1000115	537	2 A	0.6 kA <sup>2</sup> s	31.5 kA	15 A	755 mΩ	9 W	2.7 kg
45DB360V4P	H1000116	537	4 A	0.8 kA <sup>2</sup> s	31.5 kA	20 A	755 mΩ	32 W	2.7 kg

#### Ø56mm

45DB360V6,3PD	S209362	537	6.3 A	0.6 kA <sup>2</sup> s	31.5 kA	23 A	827 mΩ	39 W	2.7 kg
45DB360V10PD	T209363	537	10 A	2 kA <sup>2</sup> s	31.5 kA	34 A	463 mΩ	65 W	2.7 kg
45DB360V16PD	V209364	537	16 A	2.34 kA <sup>2</sup> s	31.5 kA	70 A	210 mΩ	67 W	2.7 kg
45DB360V20PD	W209365	537	20 A	3.9 kA <sup>2</sup> s	31.5 kA	100 A	147 mΩ	84 W	2.7 kg
45DB360V25PD	X209366	537	25 A	6.5 kA <sup>2</sup> s	31.5 kA	110 A	125 mΩ	100 W	2.7 kg

#### Ø65mm

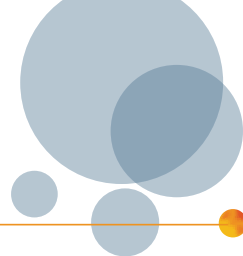
45DB360V32PD	Y209367	537	31.5 A	7 kA <sup>2</sup> s	31.5 kA	135 A	85 mΩ	119 W	3.7 kg
45DB360V40PD	Z209368	537	40 A	14.2 kA <sup>2</sup> s	20 kA	200 A	65 mΩ	176 W	3.7 kg

#### Ø88mm

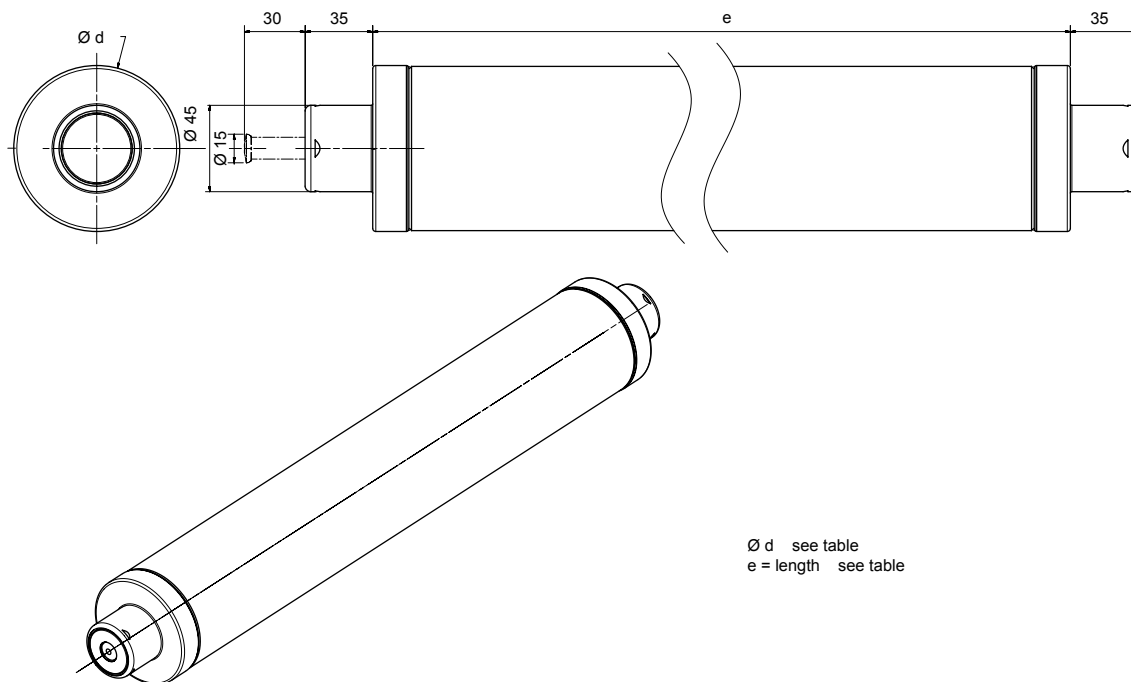
45DB360V50PD	J1000117	537	50 A	40 kA <sup>2</sup> s	20 kA	220 A	42 mΩ	183 W	6.5 kg
45DB360V63PD	K1000118	537	63 A	61.7 kA <sup>2</sup> s	20 kA	280 A	35 mΩ	271 W	6.5 kg

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## Dimensions



Ø d see table  
e = length see table

Dimensions in mm

## 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 gG [A]	Rated current of fuse-link gTr [A]	Transformer rated current [A]	Rated current of fuse-link gG [A]	Rated current of fuse-link gTr [A]	Transformer rated current [A]	Rated current of fuse-link gG [A]	Rated current of fuse-link gTr [A]	Transformer rated current [A]	Rated current of fuse-link gG [A]	Rated current of fuse-link gTr [A]
U <sub>k</sub> = 4%	50	4.8	16	-	2.9	10	-	1.5	6.3	-	1	-	-
	100	9.6	20-25	20-25	5.8	16	16	2.9	10	10	1.9	6.3	6.3
	125	12	25-31.5	25-31.5	7.2	16	16	3.6	10	10	2.4	10	10
	160	15.4	31.5-40	31.5-40	9.2	20-25	20-25	4.6	16	16	3.1	10	10
	200	19.2	40-50	40-50	11.5	25-31.5	25-31.5	5.8	16	16	3.8	16	16
	250	24.1	50-63	50-63	14.4	31.5-40	31.5-40	7.2	16-25	16-25	4.8	16-20	16-20
	315	30.3	63-80	63-80	18.2	40-50	40-50	9.1	25	25	6.1	20-25	20-25
	400	38.5	80-100	80-100	23.1	50-63	50-63	11.5	25-31.5	25-31.5	7.7	25	25
	500	48.1	100-125	100-125	28.9	63-80	63-80	14.4	31.5-40	31.5-40	9.6	25-31.5	25-31.5
U <sub>k</sub> = 5%	630	60.6	125-160	125-160	36.4	80-100	80-100	18.2	40-50	40-50	12.1	31.5-40	31.5-40
	800	77.1	160	160	46.2	100-125	100-125	23.1	63	63	15.4	40-50	40-50
	1000	96.3	160	160	57.7	125-160	125-160	28.9	63	63	19.2	40-50	40-50