

Limitor[®] - NF/UTE Back-up Fuses

7,2kV to 24kV - Type FR

HIGH VOLTAGE IEC FUSES

NF/UTE HV BACK-UP FUSES FOR TRANSFORMERS



FR-type fuses are designed to protect HV/LV power distribution transformers. Designed to be coordinated with other equipment, these current limiting fuse-links interrupt fault currents before they reach their peak. The fault current is interrupted inside the fuse-link body and although this is very fast, there is no sign of it outside.

The 24kV fuses were specially designed with very low power losses, for use in SF6-insulated or compact air-insulated fused switchgear combinations

The main elements in these fuses are: a barrel of class F insulating synthetic material, nickel plated aluminium end contacts, pure silver fuse elements and a composite material fuse element holder to withstand high temperatures.

Thanks to their structure, based on a synthetic material, FR fuse-links are the perfect answer to the stress involved in use inside HV bays and fuse-link chambers.

TECHNICAL DATA

	7,2kV 520mm	12kV 520mm	24kV 520mm
Rated current	6.3 ... 125 A	6.3 ... 100 A	6.3 ... 63 A
Rated voltage U ⁿ	7.2 kV	12 kV	24 kV
Rated voltage of transformer	6 kV	10 kV	20 kV
Breaking capacity I ₁	12.5 kA	12.5 kA	12.5 kA
Peak arc voltage	20 kV	34 kV	58 kV
Package	3	3	3

FEATURES & BENEFITS

- Superior mechanical strength
- Outstanding withstand to operating stresses
- 100% synthetic structure
- Reduce power losses by 30 to 40% (24kV)
- Average type striker: force 1 ±0.5 Joules
- High breaking capacity
- High current limitation
- EDF Approval which guarantees high performances and quality of fuses manufactured (24kV)
- In accordance with:
IEC 62271-105
IEC 62271-107
IEC 60787
IEC/TR 62655

APPLICATIONS

- HV Transformers protection
- Fused switch gear combination
- Best used in SF6 insulated switch gear and compact switch gear
- For indoor use
- Operating temperature: -25°C to +40°C

STANDARDS

- IEC 60282-1
- UTE C64-210



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PRODUCT RANGE



FR72V63

Rated voltage 7.2kV, length 520mm, Ø 55mm

Catalog number	Item number	Rated voltage AC (IEC)	Rated current I _n	Minimum breaking current I ₃ = I _{min}	Power dissipation at I _n	Operating I ² t at Rated Voltage	Package	Weight
without striker								
FR72V6,3	Z227584	7.2 kV	6.3 A	31.5 A	12 W	0.3 kA ² s	3	2.1 kg
FR72V16	A227585	7.2 kV	16 A	80 A	26 W	1.6 kA ² s	3	2.1 kg
FR72V32	B227586	7.2 kV	32 A	160 A	44 W	6 kA ² s	3	2.1 kg
FR72V43	C227587	7.2 kV	43 A	215 A	61 W	12 kA ² s	3	2.1 kg
FR72V63	D227588	7.2 kV	63 A	315 A	71 W	24 kA ² s	3	2.1 kg
55AL72V80	H087982	7.2 kV	80 A	360 A	100 W	45 kA ² s	3	2.1 kg
55AL72V100	K088927	7.2 kV	100 A	450 A	130 W	80 kA ² s	3	2.1 kg
55AL72V125	N088953	7.2 kV	125 A	582 A	130 W	200 kA ² s	3	2.1 kg
with striker								
FR72V6,3P	E227589	7.2 kV	6.3 A	31.5 A	12 W	0.3 kA ² s	3	2.1 kg
FR72V16P	F227590	7.2 kV	16 A	80 A	26 W	1.6 kA ² s	3	2.1 kg
FR72V32P	G227591	7.2 kV	32 A	160 A	44 W	6 kA ² s	3	2.1 kg
FR72V43P	H227592	7.2 kV	43 A	215 A	61 W	12 kA ² s	3	2.1 kg
FR72V63P	J227593	7.2 kV	63 A	315 A	71 W	24 kA ² s	-	2.1 kg
55AL72V80P	J085453	7.2 kV	80 A	360 A	100 W	45 kA ² s	3	2.1 kg
55AL72V100P	K085454	7.2 kV	100 A	450 A	130 W	80 kA ² s	3	2.1 kg
55AL72V125P	M085456	7.2 kV	125 A	582 A	130 W	200 kA ² s	3	2.1 kg



FR120V63

Rated voltage 12kV, length 520 mm, Ø 55mm

Catalog number	Item number	EDF Number	Rated voltage AC (IEC)	Rated current I _n	Minimum breaking current I ₃ = I _{min}	Power dissipation at I _n	Operating I ² t at Rated Voltage	Package	Weight
without striker									
FR120V6,3	X210240	-	12 kV	6.3 A	31.5 A	25 W	0.3 kA ² s	3	2.1 kg
FR120V16	Y210241	73.02.136	12 kV	16 A	80 A	53 W	1.6 kA ² s	3	2.1 kg
FR120V32	Z210242	73.02.137	12 kV	32 A	160 A	89 W	6 kA ² s	3	2.1 kg
FR120V43	A210243	-	12 kV	43 A	215 A	123 W	12 kA ² s	3	2.1 kg
FR120V63	B210244	73.02.138	12 kV	63 A	315 A	142 W	24 kA ² s	3	2.1 kg
55AL120V80	K088973	-	12 kV	80 A	360 A	100 W	100 kA ² s	3	2.1 kg
55AL120V100	L088974	-	12 kV	100 A	450 A	130 W	180 kA ² s	3	2.1 kg
with striker									
FR120V6,3P	D210246	-	12 kV	6.3 A	31.5 A	25 W	0.3 kA ² s	3	2.3 kg
FR120V16P	E210247	73.02.136	12 kV	16 A	80 A	53 W	1.6 kA ² s	3	2.3 kg
FR120V32P	F210248	73.02.137	12 kV	32 A	160 A	89 W	6 kA ² s	3	2.3 kg
FR120V43P	G210249	-	12 kV	43 A	215 A	123 W	12 kA ² s	3	2.3 kg
FR120V63P	H210250	73.02.138	12 kV	63 A	315 A	142 W	24 kA ² s	3	2.3 kg
55AL120V80P	Q085436	-	12 kV	80 A	360 A	100 W	100 kA ² s	3	2.3 kg
55AL120V100P	R085437	-	12 kV	100 A	450 A	130 W	180 kA ² s	3	2.3 kg

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PRODUCT RANGE

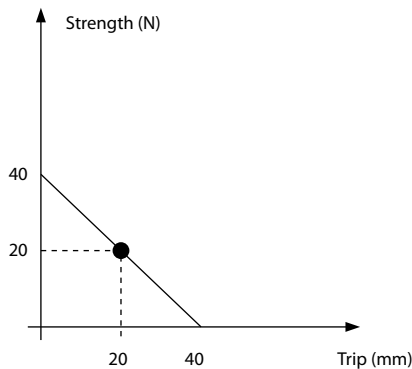


FRECO240V63

Rated voltage 24kV, length 520 mm, Ø 55mm

Catalog number	Item number	Rated voltage AC (IEC)	Rated current I_n	Minimum breaking current $I_3 = I_{min}$	Power dissipation at I_n	Operating I^2t at Rated Voltage	Package	Weight
without striker								
FR240V6,3	S1047965	24 kV	6.3 A	31.5 A	25 W	0.32 kA ² s	3	2.1 kg
FRECO240V10	S1045205	24 kV	10 A	50 A	25 W	1.3 kA ² s	3	2.1 kg
FRECO240V16	B1043534	24 kV	16 A	80 A	35 W	4.7 kA ² s	3	2.1 kg
FRECO240V20	V1045207	24 kV	20 A	100 A	43 W	7.5 kA ² s	3	2.1 kg
FRECO240V25	X1045209	24 kV	25 A	125 A	46 W	10.1 kA ² s	3	2.1 kg
FRECO240V31,5	L1047361	24 kV	31.5 A	157.5 A	53 W	18.8 kA ² s	3	2.1 kg
FRECO240V43	H1043540	24 kV	43 A	215 A	70 W	38 kA ² s	3	2.1 kg
FRECO240V50	Z1045211	24 kV	50 A	250 A	91 W	39.3 kA ² s	3	2.1 kg
FRECO240V63	Y1048384	24 kV	63 A	315 A	120 W	66.5 kA ² s	3	2.1 kg
with striker								
FR240V6,3P	T1047966	24 kV	6.3 A	31.5 A	25 W	0.32 kA ² s	3	2.1 kg
FRECO240V10P	T1045206	24 kV	10 A	50 A	25 W	1.3 kA ² s	3	2.1 kg
FRECO240V16P	G1043539	24 kV	16 A	80 A	35 W	4.7 kA ² s	3	2.1 kg
FRECO240V20P	W1045208	24 kV	20 A	100 A	43 W	7.5 kA ² s	3	2.1 kg
FRECO240V25P	Y1045210	24 kV	25 A	125 A	46 W	10.1 kA ² s	3	2.1 kg
FRECO240V31,5P	M1047362	24 kV	31.5 A	157.5 A	53 W	18.8 kA ² s	3	2.1 kg
FRECO240V43P	L1043543	24 kV	43 A	215 A	70 W	38 kA ² s	3	2.1 kg
FRECO240V50P	A1045212	24 kV	50 A	250 A	91 W	39.3 kA ² s	3	2.1 kg
FRECO240V63P	Z1048385	24 kV	63 A	315 A	120 W	66.5 kA ² s	3	2.1 kg

CHARACTERISTICS OF TRIP INDICATOR

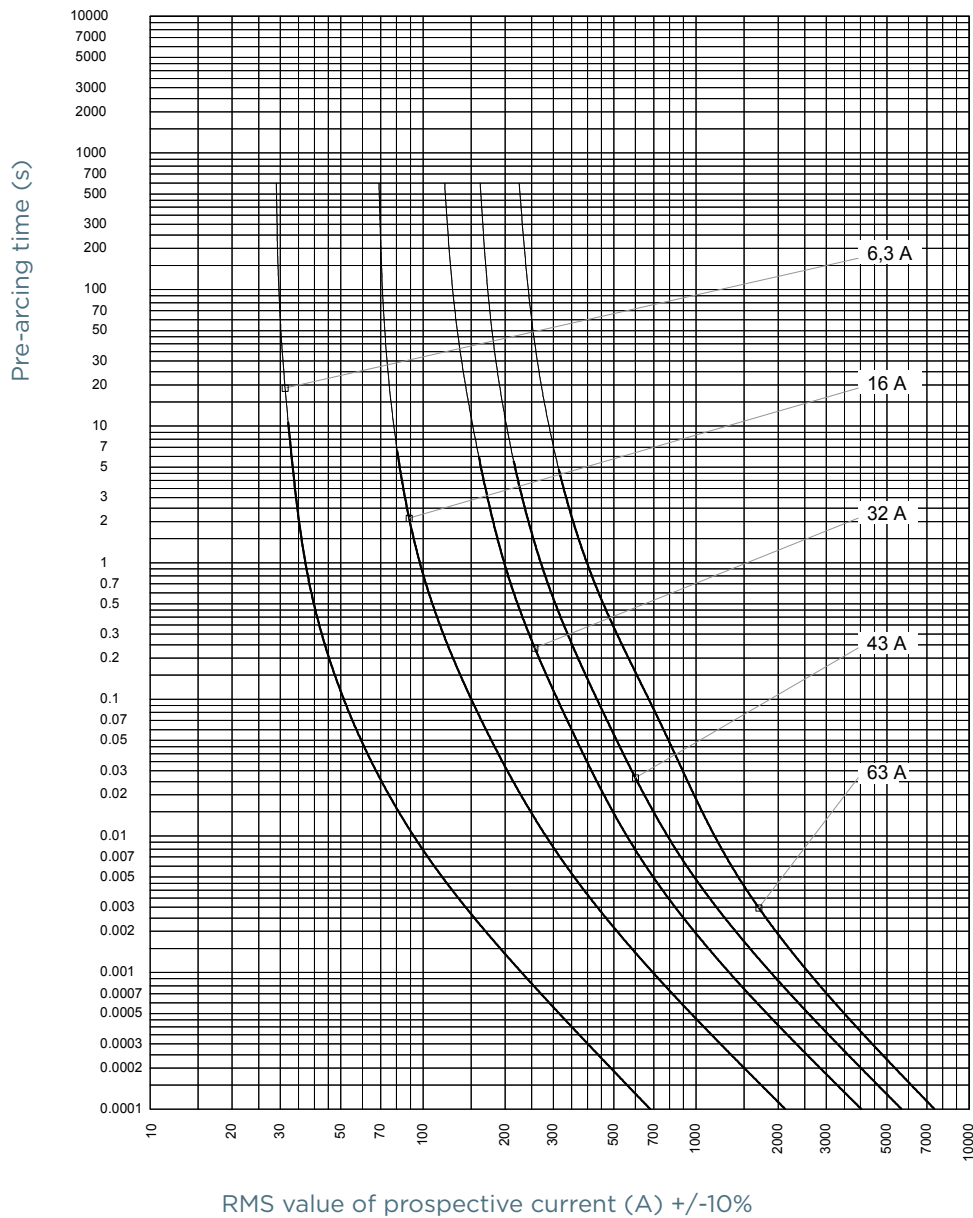


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TIME CURRENT CHARACTERISTIC CURVES

Limitor® NF/UTE 7.2kV, 12kV, 6.3 - 63A without striker

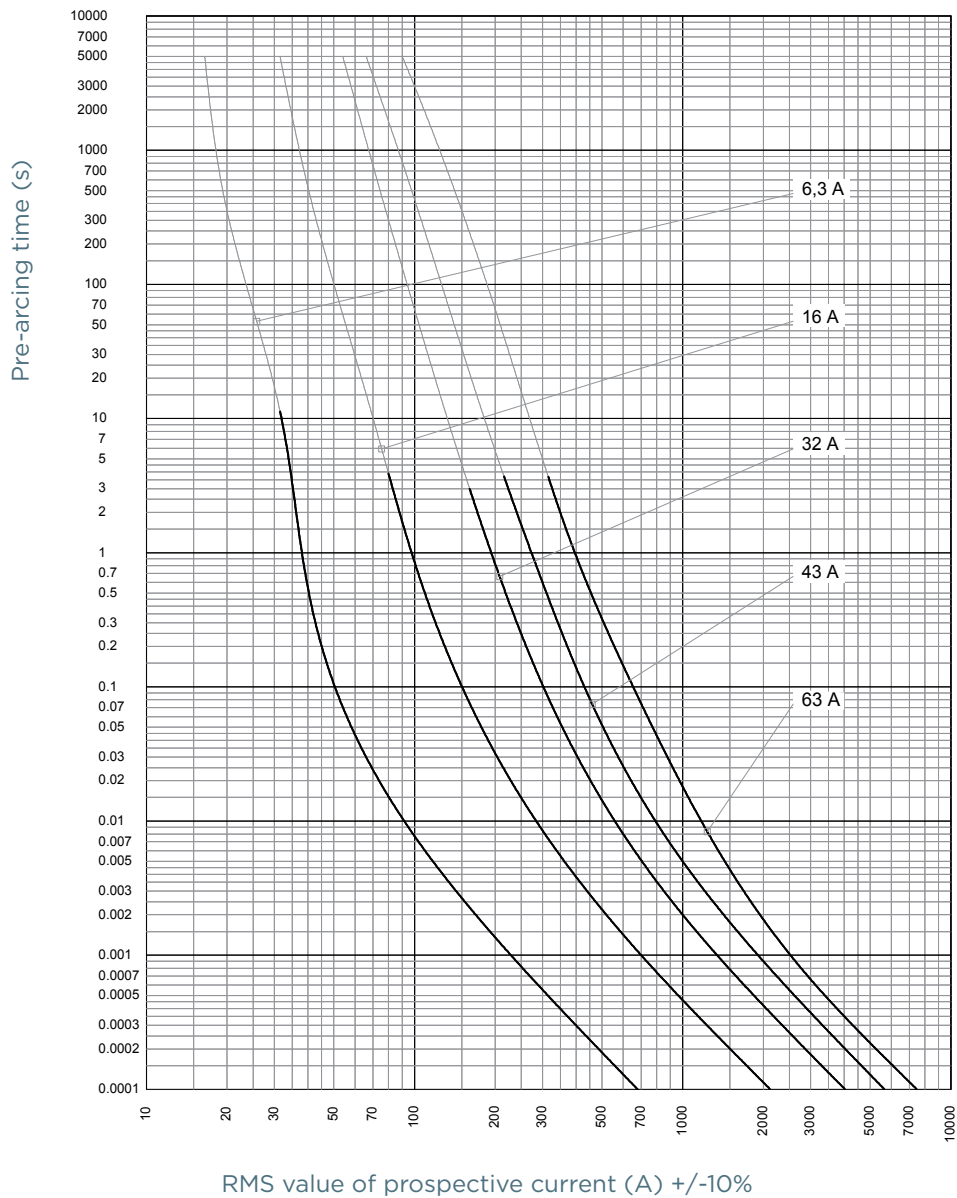


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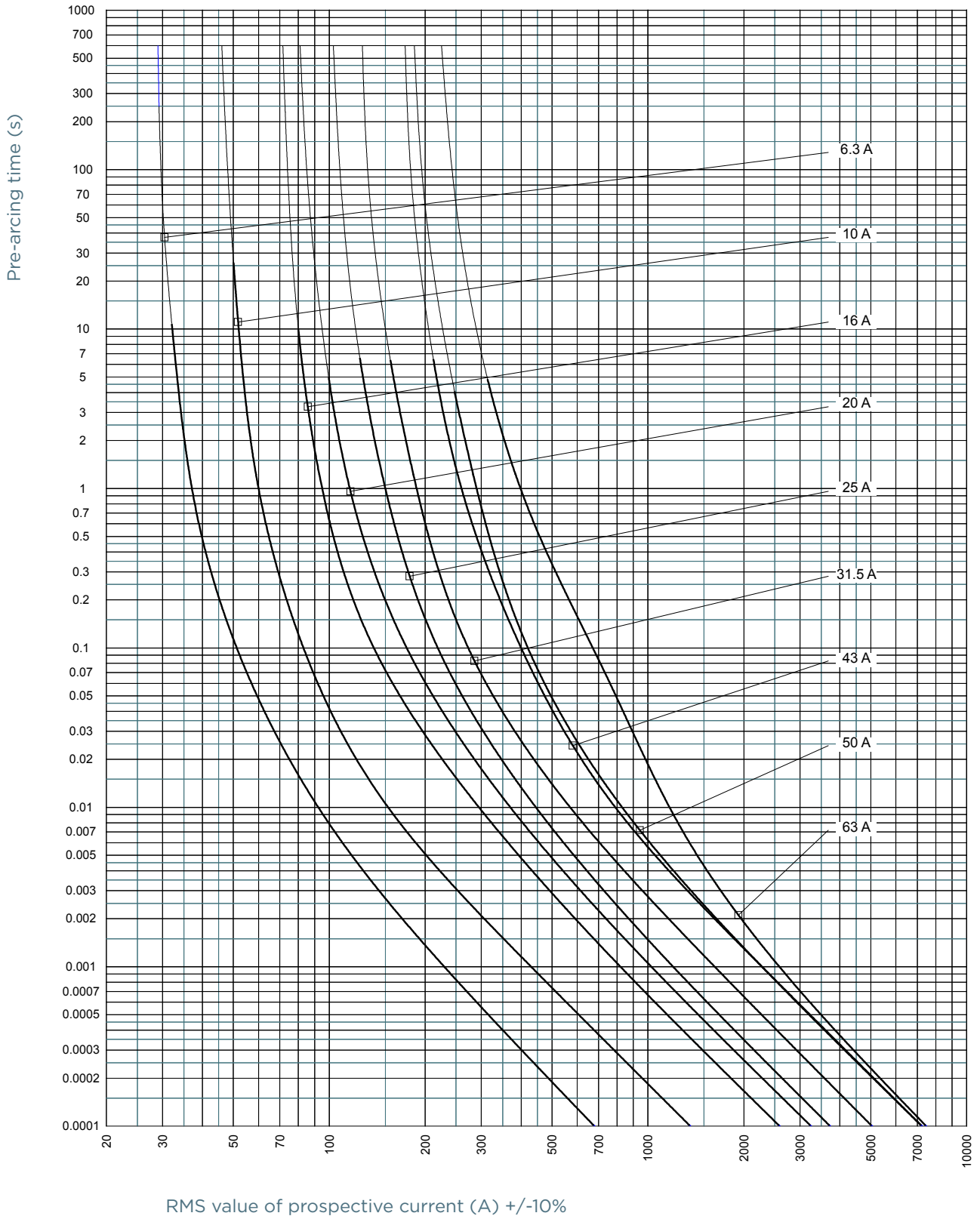
TIME CURRENT CHARACTERISTIC CURVES

Limitor[®] NF/UTE 7.2kV, 12kV, 6.3 - 63A with striker



TIME CURRENT CHARACTERISTIC CURVES

Limitor® NF/UTE 24kV 6.3 - 63A without striker



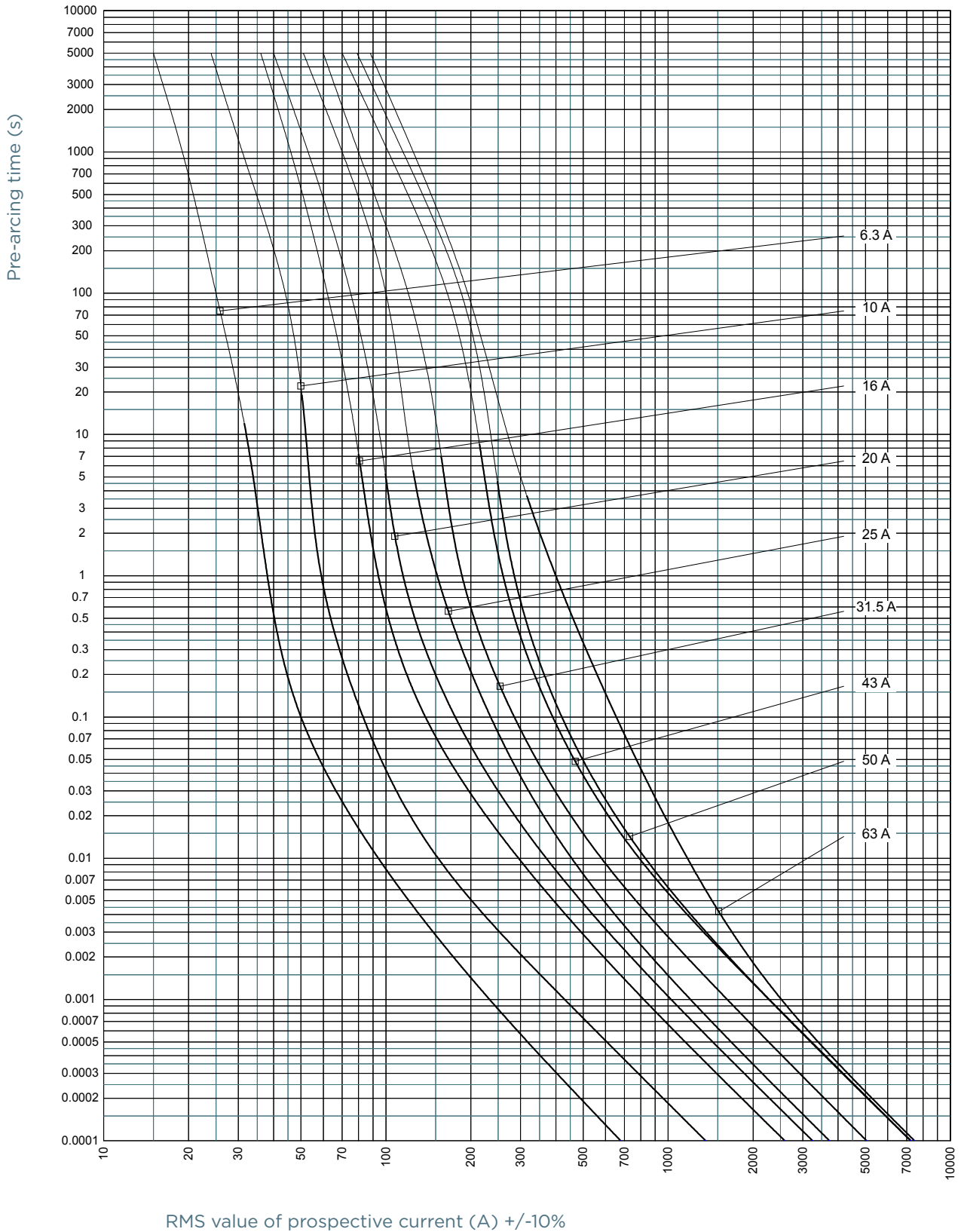
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TIME CURRENT CHARACTERISTIC CURVES

Limitor[®] NF/UTE 24kV 6.3 - 63A with striker



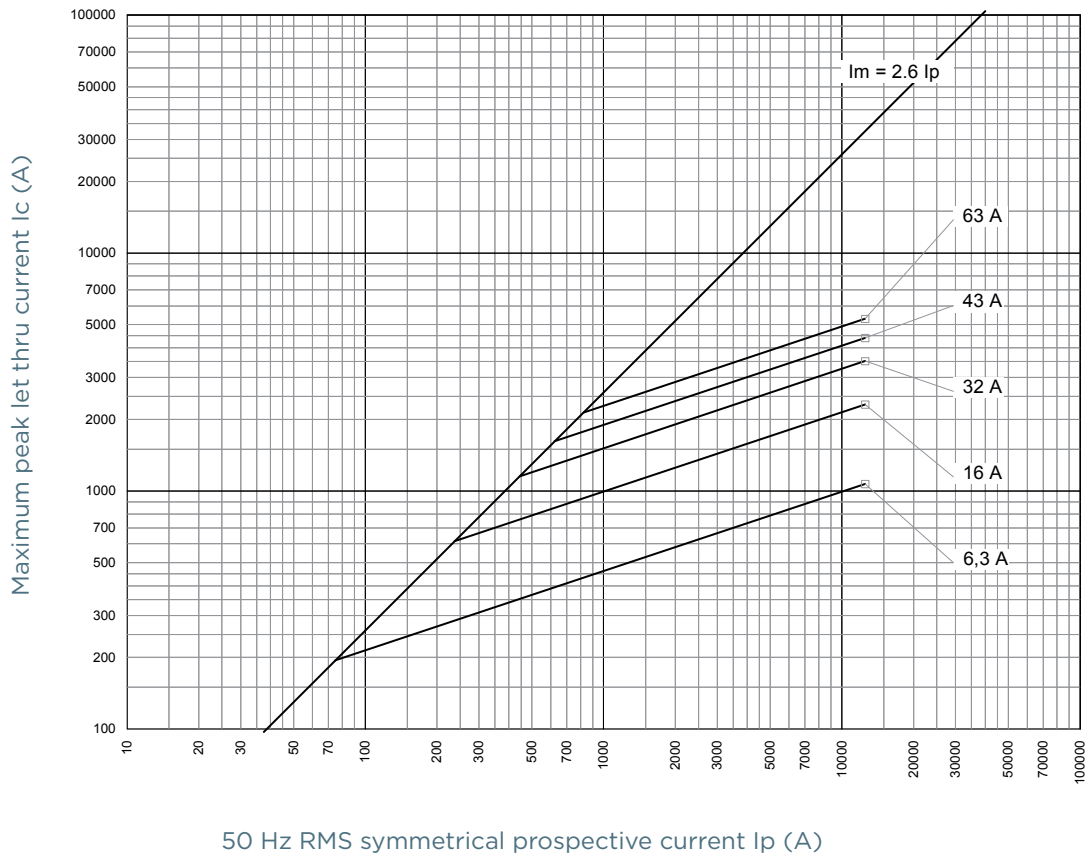
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CUT-OFF CURRENT CHARACTERISTIC

Limitor® NF/UTE 7.2kV, 12kV, 6.3 - 63A without striker

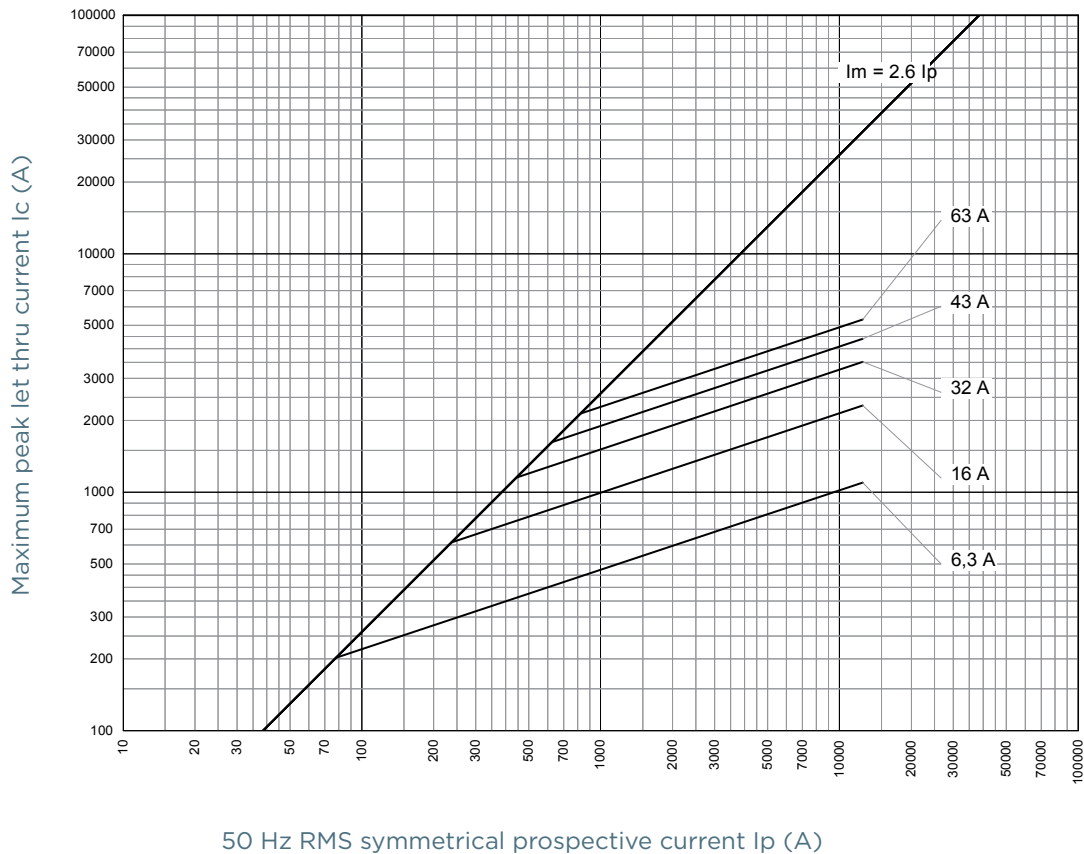


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7,2kV to 24kV - Type FR

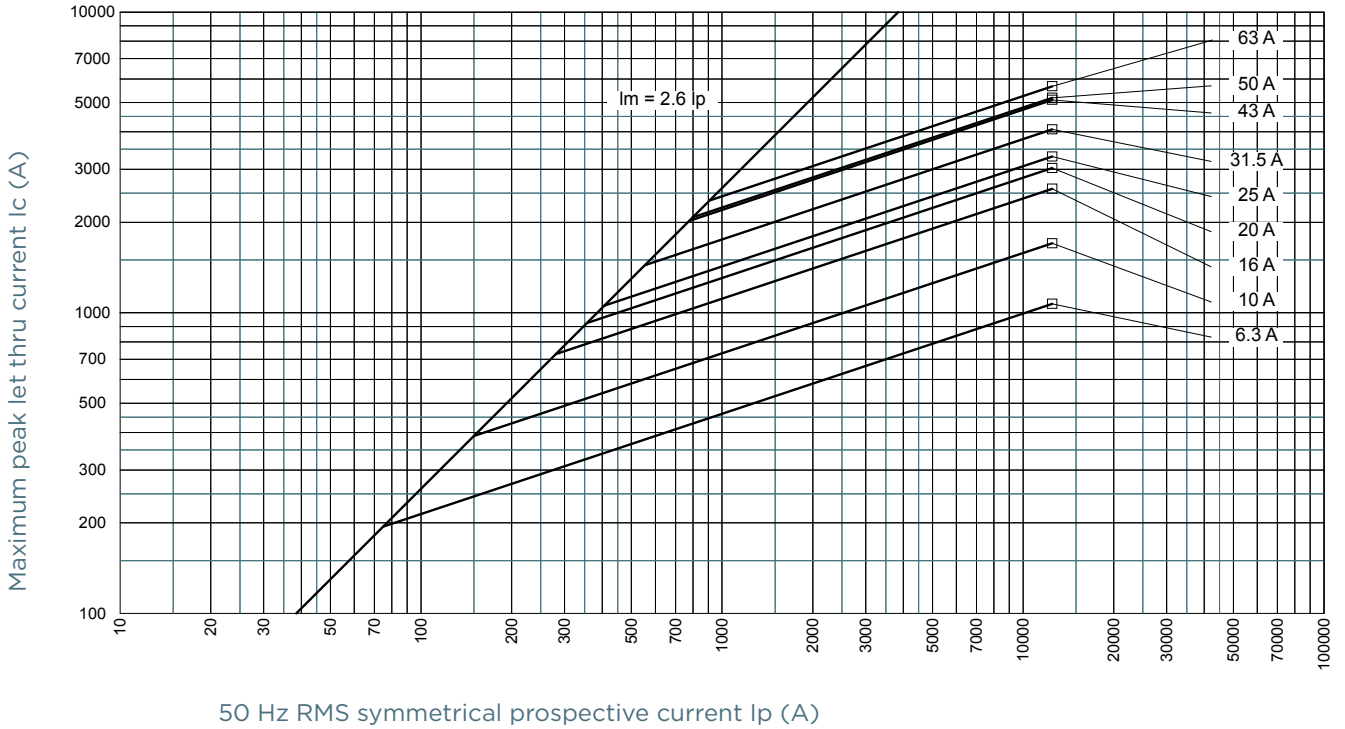
CUT-OFF CURRENT CHARACTERISTIC

Limitor[®] NF/UTE 7.2kV, 12kV, 6.3 - 63A with striker

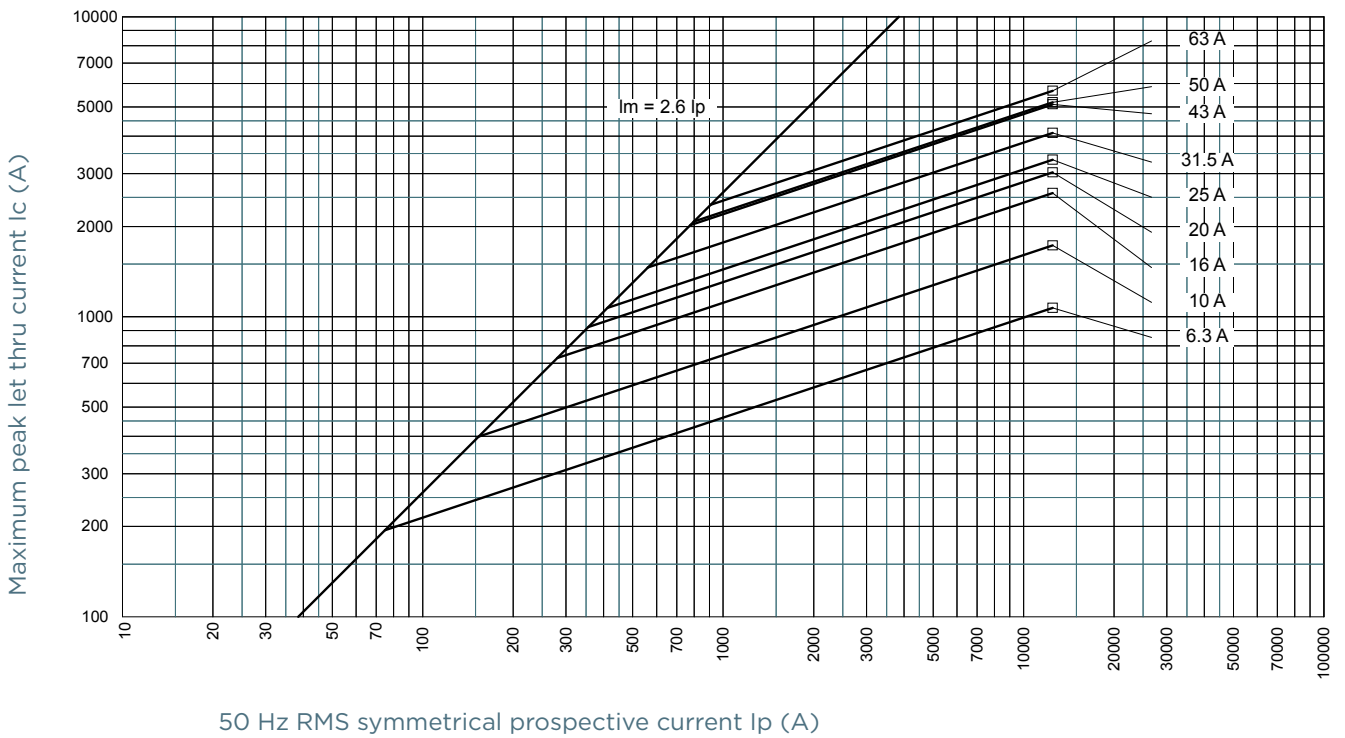


CUT-OFF CURRENT CHARACTERISTIC

Limitor[®] NF/UTE 24kV 6.3 - 63A without striker



Limitor[®] NF/UTE 24kV 6.3 - 63A with striker

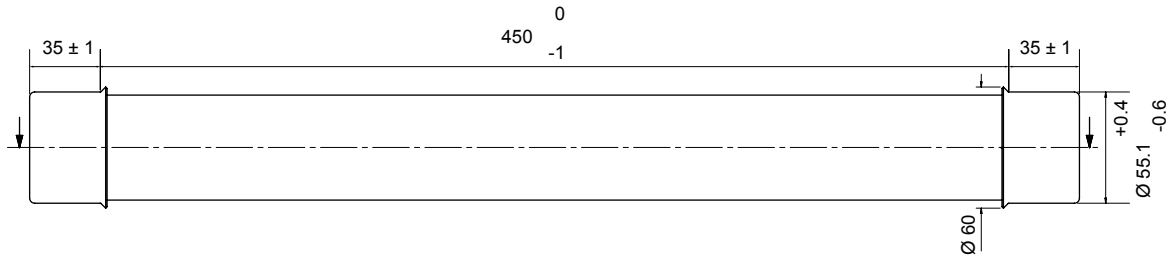


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DIMENSIONS

IEC HV fuse-link Limitor® NF/UTE Type FR 55mm (113500)



Dimensions in mm

SELECTION TABLE

Rated voltage range of fuse-link [kV]		3/7.2		6/12		10/24		10/24		20/36	
Service voltage of transformer [kV]		6		10		15		20		30	
Relative short-circuit voltage	Transformer output [kVA]	Transformer rated current [A]	Rated current of fuses [A]	Transformer rated current [A]	Rated current of fuses [A]	Transformer rated current [A]	Rated current of fuses [A]	Transformer rated current [A]	Rated current of fuses [A]	Transformer rated current [A]	Rated current of fuses [A]
Uk = 4%	25	2	6.3	1	6.3	1	6.3	1	6.3		
	50	5	16	3	6.3	2	6.3	1	6.3	1	6.3
	63	6	16	4	16	2	6.3	2	6.3	1	6.3
	80	8	16	5	16	3	6.3	2	6.3	2	6.3
	100	10	16	6	16	4	6.3	3	6.3	2	6.3
	125	12	32	7	16	5	16	4	6.3	2	6.3
	160	15	32	9	16	6	16	5	16	3	6.3
	200	19	32	12	32	8	16	6	16	4	6.3
	250	24	43	14	32	10	16	7	16	5	16
	315	30	63	18	32	12	32	9	16	6	16
	400	38	63	23	43	15	32	12	32	8	16
	500	48	80	29	63	19	32	14	32	10	16
Uk = 5%	630	61	100	36	63	24	43	18	32	12	32
	800	77	125	46	80	31	63	23	43	15	32
	1000			58	100	38	63	29	63	19	32
	1250							36	63		

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