

# Special Purpose Fuses

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## PROTECTION OF SPECIAL APPLICATIONS



## Contents

MULTIMETER Fuse Links

CH gR SE (SPECIAL EDITION)

Fuse-link gG NV/NH 400V a.c. metering

Fuse-link gTr NV/NH 400V a.c. metering

DC fuses:

NH DC 80 V - Telecom fuse

NH DC 250 V

NH DC 440 V

NH DC 1000 V aR

NH DC 1100 V aR

NV Telecom fuse disconnectors

Fuse base PK00 1000V a.c./d.c. M8-M8

Fuse base PK1,2,3-100mm

Fuse base PK1L

Mining fuses:

Fuse-link aM NV/NH 1000V a.c.

Fuse-link aM NV/NH 1000V a.c.

Fuse-link gB NV/NH 00 1000V a.c.

Fuse-link gB NV/NH 01L 1000V a.c.

Non standard higher voltage gG fuses:

Fuse-link gG NV/NH 1000 V a.c.

Fuse-link gG NV/NH 1200 V a.c.

Safe work fuses

NH Power capacitor fuse

Fuses for TVSS products protection:

CH SRF class II

CH SRF 25kA class I

CH SRF class II - DC

Fuses for railway applications:

NH1S/394/DC 4000V aR-fuse link

NH2 S/394/ DC 4000V aR - fuse link

NH1 /350/DC 4000V aR-fuse link

NH1 /130/DC 1000V gR - fuse link

Fuses for high-voltage switchgear

Fuses for protection of forklift batteries TRB

Fuel Cell Protection Fuses

Minifuses

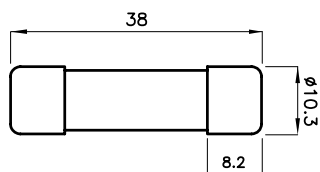
# MULTIMETER Fuse Links

## General characteristics

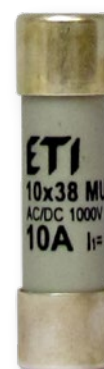
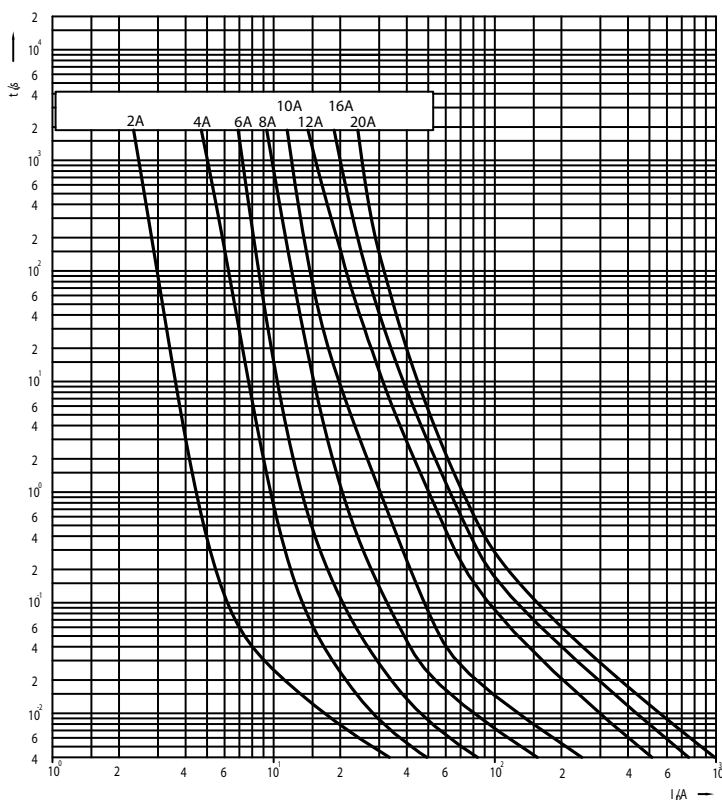
Rated voltage	1000V a.c./d.c.
Breaking capacity	30kA a.c./d.c.
Characteristics	gR
Standards	IEC 60269-4, UL 248-1, UL 248-13
Application	Multimeter fused

## CH10 MULTI

Size	$I_n$ [A]	Code No. standard indicator	Power dissipation [W]	Packaging [pcs]	Weight [g]
10x38	0,5	002625410	0,9 1,2 1,6 1,8 2,1 1,7 2,3 3,15	10/500	10
	1	002625411			
	2	002625400			
	4	002625401			
	6	002625402			
	8	002625403			
	10	002625404			
	12	002625405			
	16	002625406			
	20	002625407			



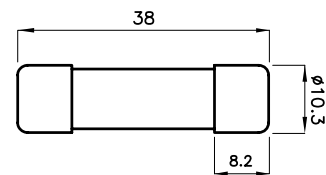
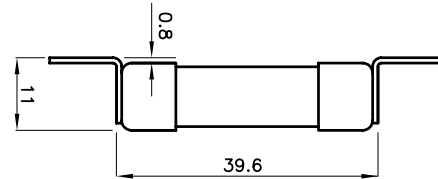
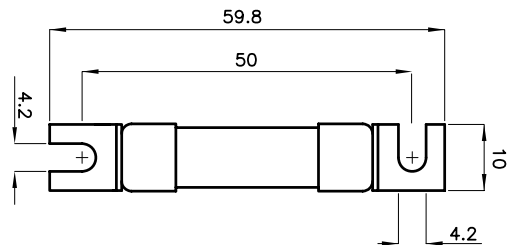
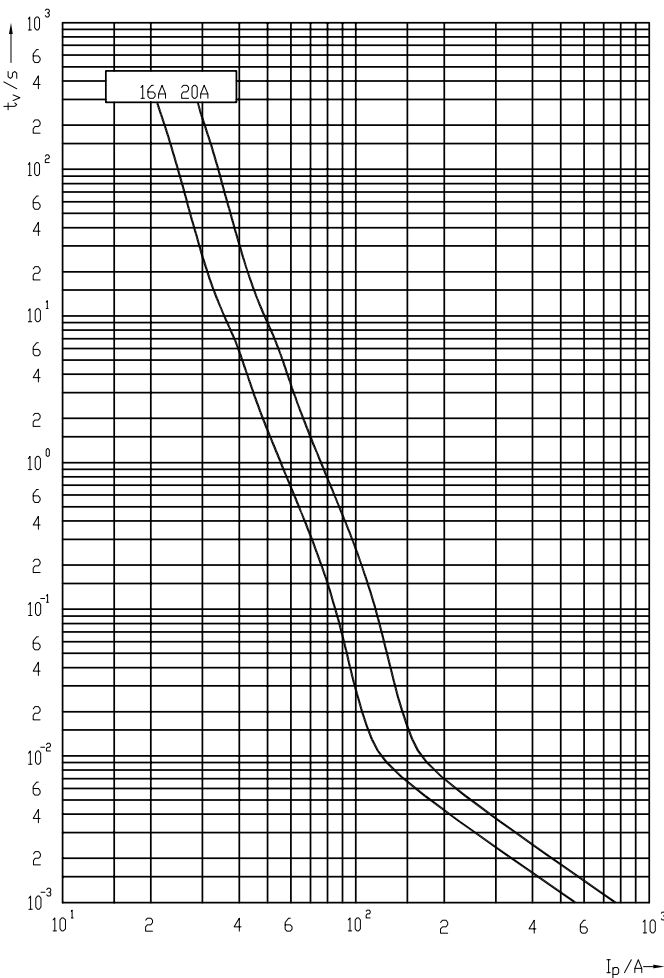
FUSED



# CH gR SE (SPECIAL EDITION)

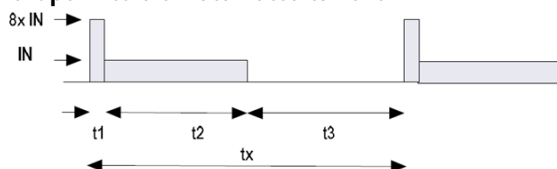
General characteristics	
Rated voltage	690V a.c.
Breaking capacity	100kA AC
Characteristic	gR, according to IEC 60269-4
Application	Fuses are fast acting, full range. Used in protection of the inverters, variable speed drives. Excellent cycling load capability (70 000 current cycling test).

CH 10x38gR SE 690V									
Size	$I_n$ [A]	Code Number "standard contacts"	Code Number "type SU contacts"	Pre-arcing Joule integral [A <sup>2</sup> s] L/R=10ms	Operating Joule integral [A <sup>2</sup> s] L/R=10ms	Power dissipation [0,8 x $I_n$ ] $P_d$ [W]	Power dissipation [ $1 \times I_n$ ] $P_d$ [W]	Packaging [pcs]	Weight [g]
10x38	16	002625046	002625048	32	166	1,6	2,8	10/500 SU:10/380	10/12
	20	002625047	002625049	80	340	1,7	2,9		



Simulating current of motor start  
70.000 current cycle test at  $T_{amb} = 70^\circ\text{C}$   
 $I_N = 6,5\text{A}$

Max. permissible motor rated current



# Fuse Link gG NV/NH 400V a.c. metering

General characteristics	
Rated voltage	400V a.c.
Breaking capacity	50kA a.c.
Standards	IEC 60269-1, IEC 60269-2
Characteristic	gG
Application	As metering fuse with strip fuse switch disconnecter and fuse switch disconnecter

NV/NH 400V a.c.					
Size	I <sub>n</sub> [A]	standard indicator	Power dissipation [W]	Packaging [pcs]	Weight [g]
1	80	004113835	5,2	1/26	500
	100	004113836	6,2		
	125	004113837	7,9		
	160	004113838	9		
	200	004113839	12		
	250	004113840	17		
2	80	004113842	5,2	1/16	600
	100	004113843	6,2		
	125	004113844	7,9		
	160	004113845	9		
	200	004113846	12		
	250	004113847	17		
	315	004113848	20		
3	400	004113849	24	1/9	1000
	200	004113851	12		
	250	004113852	17		
	315	004113853	20		
	400	004113854	24		
	500	004113855	27		
4a	630	004113856	32	1	2000
	630	004113858	51		
	800	004113859	61		
	1000	004113860	72		
	1250	004113861	90		

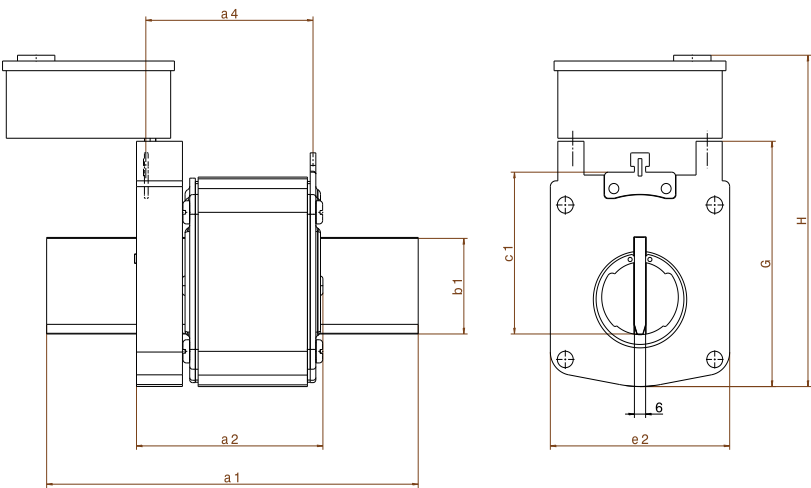
Amperemeter not included



# Fuse Link gTr NV/NH 400V a.c. metering

General characteristics	
Rated voltage	400V a.c.
Breaking capacity	25kA a.c.
Standards	IEC 60269-1, IEC 60269-2, DIN VDE 0636-21 (VDE 0636-21) 2015-03
Characteristic	gTr
Application	As metering fuse with strip fuse switch disconnecter and fuse switch disconnecter

NV/NH 400V a.c.						
Size	Nominal transformer power [kVA]	I <sub>n</sub> [A]	standard indicator	Power dissipation [W]	Packaging [pcs]	Weight [g]
1	100	144	004113865	11	1/26	500
	125	180	004113866	13		
	160	231	004113867	17		
2	100	144	004113872	11	1/16	600
	125	180	004113873	13		
	160	231	004113874	17		
	200	289	004113875	20		
	250	361	004113876	25		
3	125	180	004113881	13	1/9	1000
	160	231	004113882	17		
	200	289	004113883	20		
	250	361	004113884	25		
	315	455	004113885	32		
4a	400	577	004113886	40	1	2000
	250	361	004113890	25		
	315	455	004113891	32		
	400	577	004113892	40		
	500	722	004113893	54		
	630	909	004113894	71		
	800	1155	004113895	91		
	1000	1443	004113896	110		



Size	dimensions [mm]							
	a1	b1	c1	e1	G	H	a2	a4
1	135	24	40	52	67	112	75	65
2	150	30	48	60	74	119	75	65
3	150	32	60	74	89	134	75	65
4a	200	50	85	96	127	200	100	87

# Telecom Fuses

## FUSES FOR DC (Direct Current) APPLICATIONS -

### ETI solution for TELECOM Power Supply Circuits

ETI d.d. developed specially designed fuse-links for short circuit protection of d.c. telecom power supplies. They are typically installed into rectifier outputs, battery feeders or d.c.power distribution for protection of the load circuits.

All their characteristics are optimized to correspond to the operating conditions of telecom power supply equipment. Power dissipations and switching voltage provide optimal function and protection of telecom power supplies. The ETI TELECOM NH00 fuse-link is a high breaking capacity current limiting fuse-link with pure silver, age-resistant melting element.

## NH DC 80 V - Telecom fuse

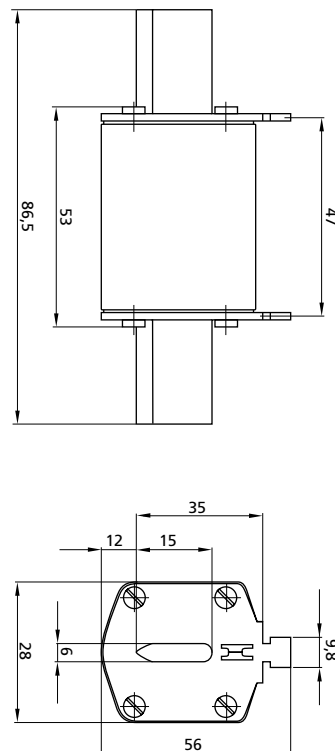
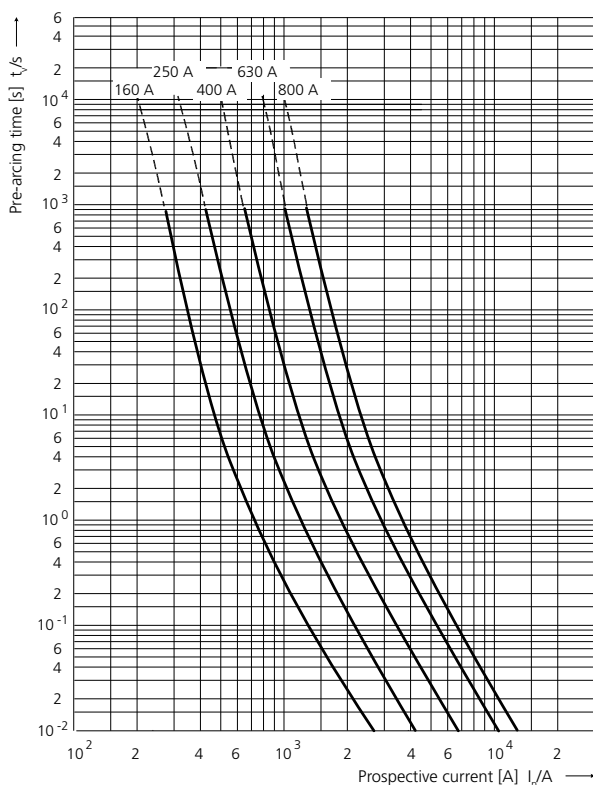
General characteristics	
Rated voltage	80 V d.c. (L/R = 20 ms)
Breaking capacity	25 kA d.c.
Standards	IEC 60269-1
Application	Fuse-link for battery and UPS protection. For installation in NV Telecom fuse disconnecter.

NH DC 80 V - Telecom fuse						
Size	I <sub>n</sub> [A]	Code No.		Power dissipation [W]	Packaging [pcs]	Weight [g]
		standard indicator	striker indicator			
00	160	004110106	004110101	9,0	3/90	173
	200	004110120	004110119	10,5		
	250	004110107	004110102	12,5		
	400	004110108	004110103	17,5		
	630	004110109	004110104	28,0		
	800	004110110	004110105	37,5		



Special Purpose Fuses

Time-current characteristics

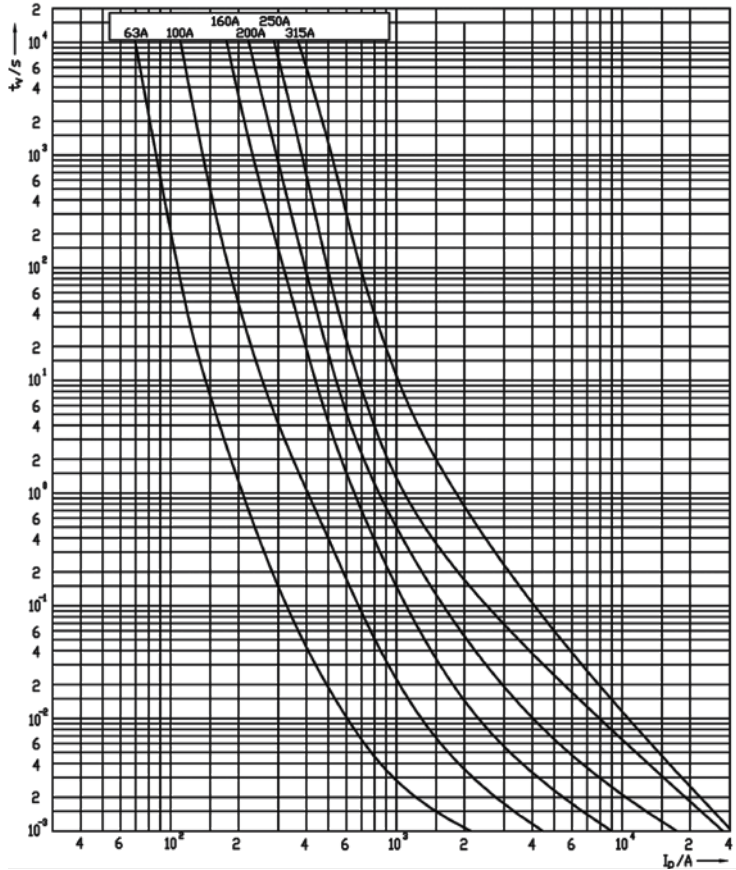
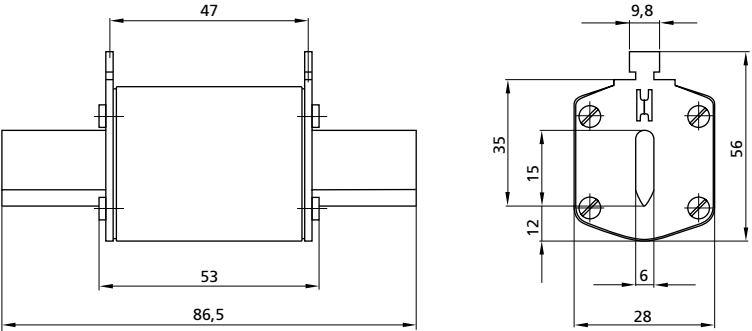




# NH DC 250 V

General characteristics	
Rated voltage	250 V d.c. (L/R = 20 ms)
Breaking capacity	25 kA d.c.
Standards	IEC 60269-1
Application	Fuse-link for DC application. For installation in NV Telecom fuse disconnect.

NH DC 250 V						
Size	$I_n$ [A]	Code No. standard indicator	Code No. striker indicator	Power dissipation [W]	Packaging [pcs]	Weight [g]
00	63	004110130	004110135	7,5	3	654
	100	004110131	004110136	8,6		
	160	004110132	004110137	13,8		
	200	004110140	004110141	18,5		
	250	004110133	004110138	21,2		
	315	004110134	004110139	24,0		





# NH DC 440 V

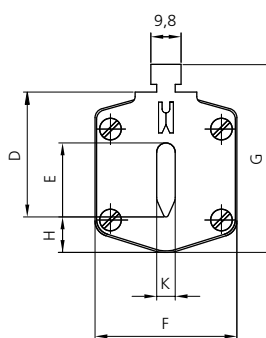
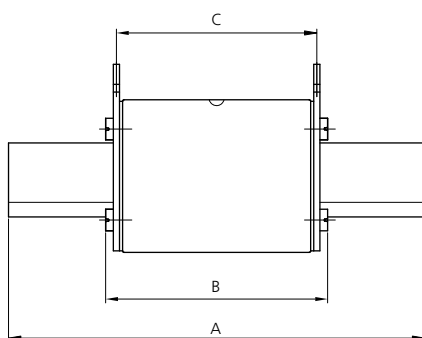
## General characteristics

Rated voltage	440 V d.c. (L/R = 20 ms)
Breaking capacity	50 kA d.c.
Standards	IEC 60269-1
Application	Fuse-link for DC application. Installation in PK or PT fuse bases.



## NH DC 440 V

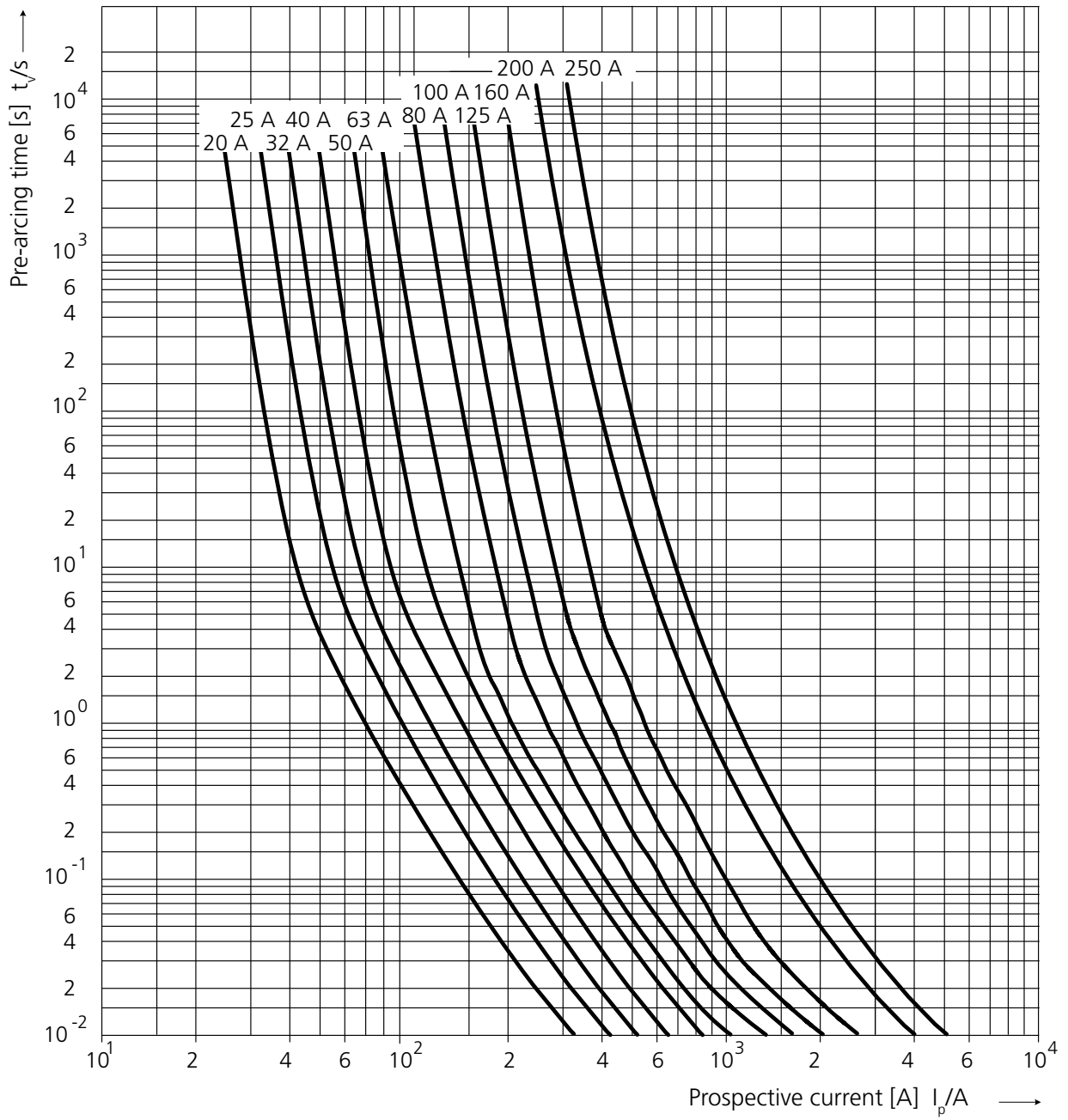
Size	I <sub>n</sub> [A]	Code No.	Power dissipation [W]	Pre-arcing Joule integral (I²t)	Operating Joule integral (I²t)	Packaging [pcs]	Weight [g]
00C	20	004110200	5,3	360	648	3/120	125
	25	004110201	6,4	710	1.278		
	32	004110202	7,6	920	1.656		
	40	004110203	9,4	1.440	2.592		
	50	004110204	11,3	2.820	5.076		
00	63	004110210	11,9	4.160	7.488	3/90	173
	80	004110211	10,6	4.670	8.406		
	100	004110212	12,2	9.360	16.848		
	125	004110213	15,3	14.750	26.550		
	160	004110214	17,1	27.880	50.184		
1C	20	004110220	6,1	360	648	3/45	233
	25	004110221	7,9	710	1.278		
	32	004110222	8,9	920	1.656		
	40	004110223	12,0	1.440	2.592		
	50	004110224	14,8	2.820	5.076		
	63	004110225	16,0	4.160	7.488		
	80	004110226	11,7	4.670	8.406		
	100	004110227	13,0	9.360	16.848		
	125	004110228	15,5	14.750	26.550		
1	160	004110229	17,1	27.880	50.184	3/24	430
	200	004110230	27,5	41.990	75.582		
	250	004110231	31,5	81.000	145.800		



type	dimensions [mm]								
	A	B	C	D	E	F	G	H	K
00 C	79	53	47	35	15	21	52	7,5	6
00	79	53	47	35	15	28	56	12	6
1 C	135	68	65	40	15	28	61	12	6
1	135	72	65	40	20	46	65	14	6



## Time-current characteristics



# NH DC 1000 V aR

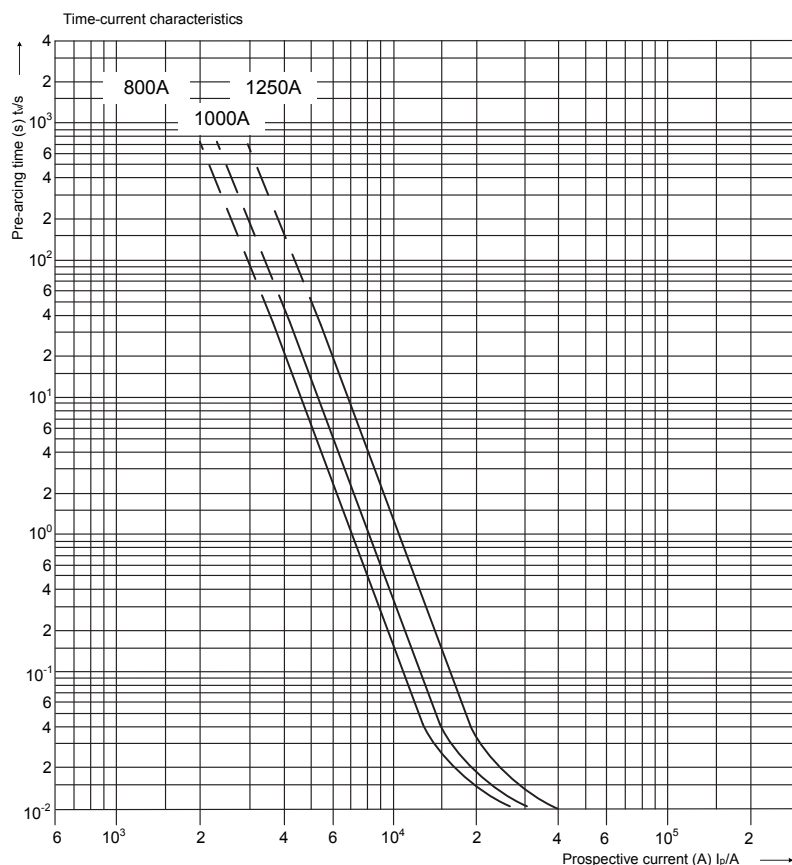
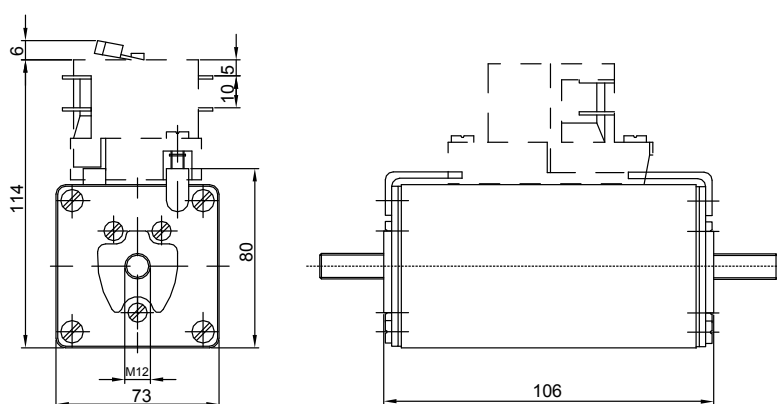


General characteristics	
Rated voltage	1000V d.c. (L/R=1ms)
Breaking capacity	30 kA d.c.
Standards	IEC 60269-4
Application	Fuse-link for DC application. Installation directly on copper rails.



NH DC 1000 V aR							
Size	$I_n$ [A]	Type with center trip indicator for microswitch MK	Power dissipation [W]	Pre-arcing Joule integral ( $I^2t$ ) L/R=1ms	Operating Joule integral ( $I^2t$ ) L/R=1ms	Packaging [pcs]	Weight [g]
3L	800	004305636	139	500.000	1.000.000	1	1500
	1000	004305637	154	900.000	1.600.000		
	1250	004305635	201	1.500.000	3.000.000		

Note: microswitch MK and adapter AMK2 must be ordered separately



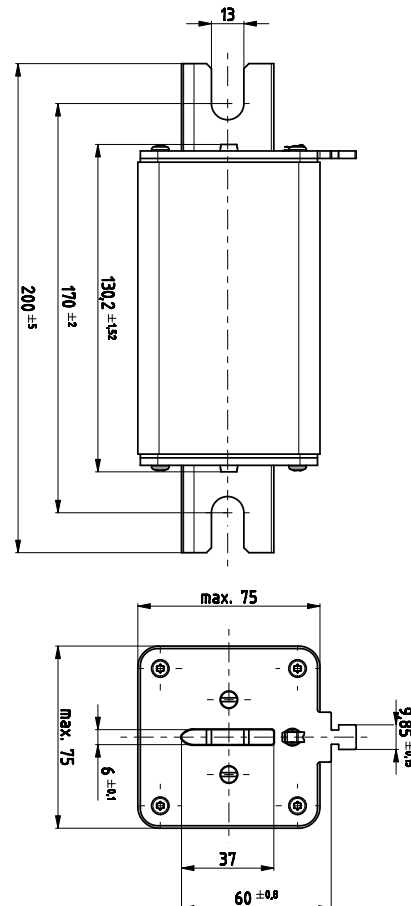
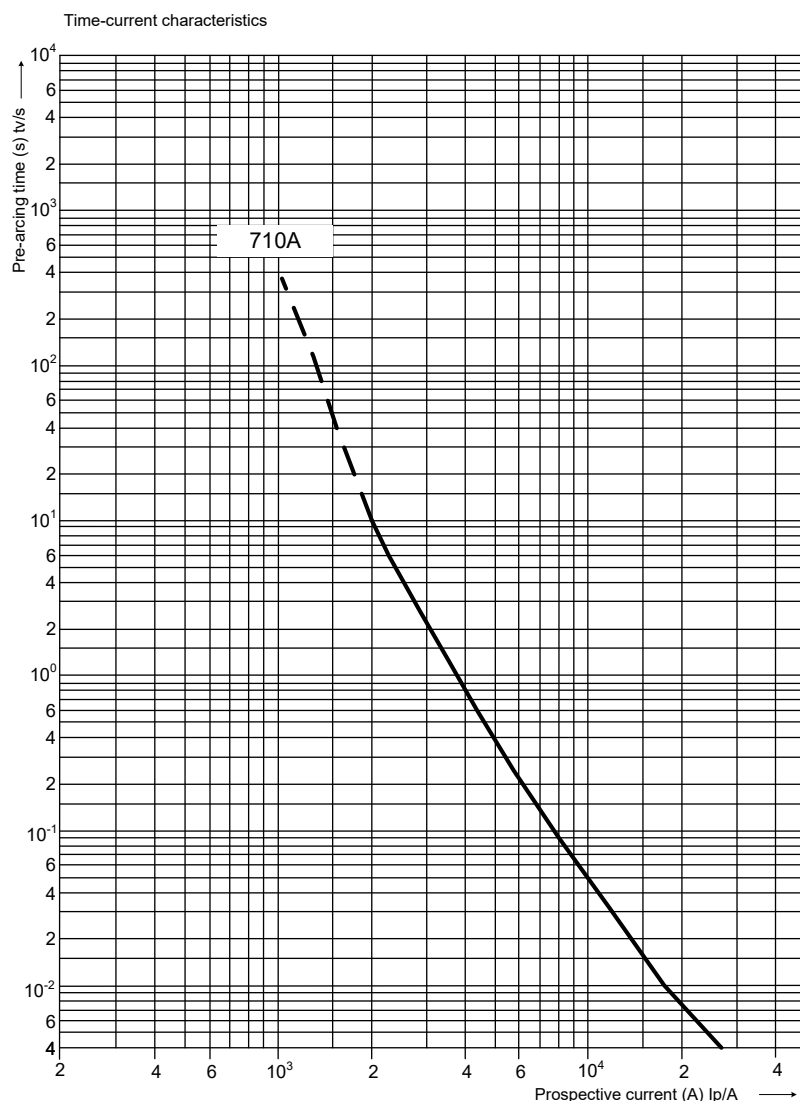
# NH DC 1100 V aR



General characteristics	
Rated voltage	1100V d.c. (L/R=10ms)
Breaking capacity	70kA d.c.
Characteristics	aR
Standards	IEC 60269-4
Application	Fuse link for battery charger.



NH DC 1100 V aR							
Size	$I_n$ [A]	U-170mm screw contact	Power dissipation [W]	Pre-arcing Joule integral ( $I^2t$ ) L/R=1ms	Operating Joule integral ( $I^2t$ ) L/R=1ms	Packaging [pcs]	Weight [g]
3L	710	004725339	81	160.000	700.000	1/9	1970

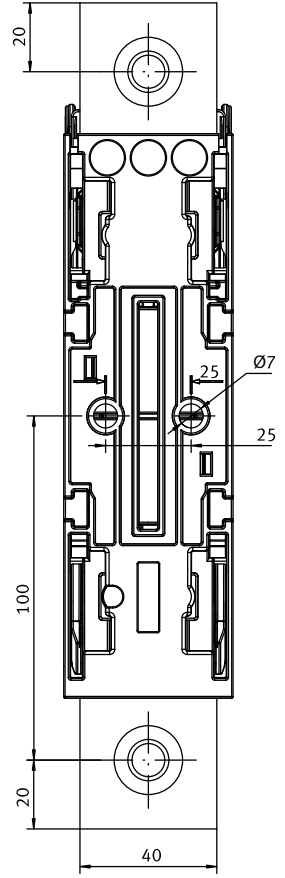


# NV Telecom fuse disconnectors

Technical data for NV Telecom fuse disconnectors				
Technical Specifications			KVL00 Telecom	
Electrical Characteristics				
Rated operational voltage	$U_e$	V	DC250	
Rated operational current	$I_e$	A	750	
Conventional free air thermal current with fuses	$I_{th}$	A	750	
Rated insulation voltage	$U_i$	V	800	
Rated conditional short-circuit current	-	kA <sub>eff</sub>	25	
Utilization category (Switch without load!)	$I_e$	A	DC 20-B/750 A	
Rated impulse withstand voltage	$U_{imp}$	kV	8	
Operating cycles with current	-	-	600	
Fuse links				
Size to DIN 43620	-	-	00	
Max. permis. power loss per fuse-link	$P_v$	W	35	
Mechanical characteristics				
Operating cycles without current	-	-	1000	
Weight	-	kg	0,75	
Cable connection				
Flat terminal	Bolt diameter	-	-	M12
	Cable lug (DIN 43620)	-	mm <sup>2</sup>	240
	Flat bar	-	mm	30x10
	Tightening torque	$M_a$	Nm	30-35
Type of protection				
Front side	Operational state	-	-	IP 20
Device fitted	Front cover open	-	-	IP 10
Operating conditions				
Ambient temperature	$T_u$	°C	-25 ... +55	
Rated operating mode	-	-	Continuous operation	
Actuation	-	-	dependent manual operation	
Mounting position	-	-	vertical, horizontal	
Altitude	-	m	≤ 2000	
Pollution degree	-	-	3	
Overvoltage category	-	-	III	

NV Telecom fuse disconnectors	
type	Code No.
KVL00 Telecom 1p M12, front connection	001690905
KVL00 Telecom 1p M12 MFM, front connection, striker pin (indication)	001690906





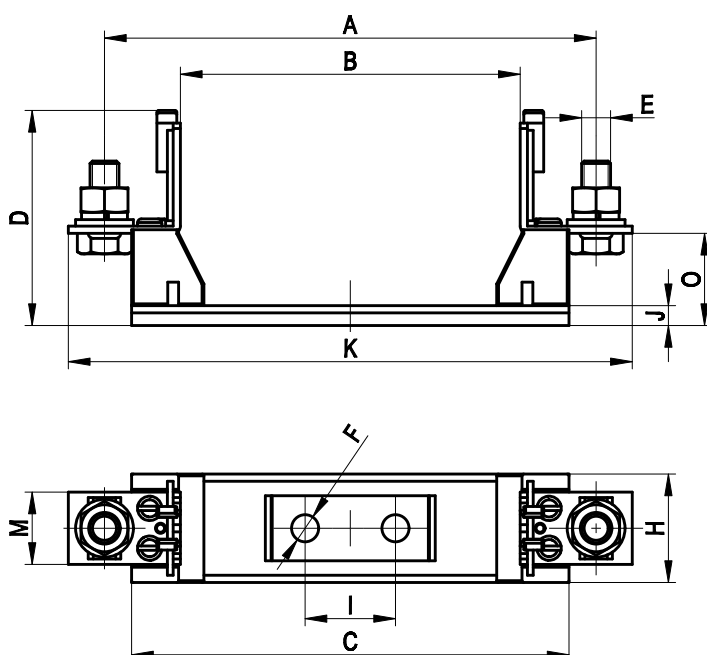
# Fuse base PK00-100mm

## General characteristics

Rated voltage	1000V a.c./d.c.
Rated current	160A
Insulation class	C-VDE 0110
Standards	EN 60269, IEC 60269, DIN VDE 0636, DIN 43620, DIN 43623

## Fuse base PK00 1000V M8-M8

Type	I <sub>n</sub> [A]	Code No.	Weight [g]	Packaging [pcs]
PK00 1000Va.c./d.c. M8-M8	160	004132026	190	3/120



Type	Dimensions [mm]											
	A	B	C	D	E	F	H	I	J	K	M	O
PK00 1000V M8-M8	136	94	121	58,5	M8	7,5	30	25	4,5	156	20	25,5



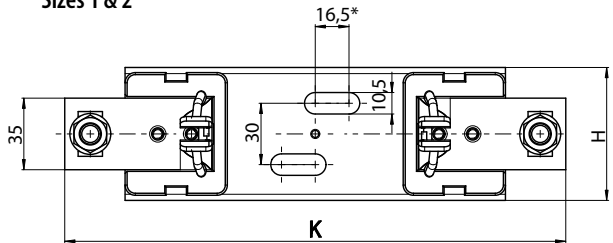
# Fuse base PK1,2,3-100mm

General characteristics	
Rated voltage	1000V a.c./d.c.
Rated current	250A, 400A, 630A
Terminal torque	32 Nm
Degree of protection	IP00
Standards	IEC 60269-2, DIN VDE 0636-21 (VDE 0636-21) 2015-03, DIN 43620
Application	For use with aM and gB fuse-links

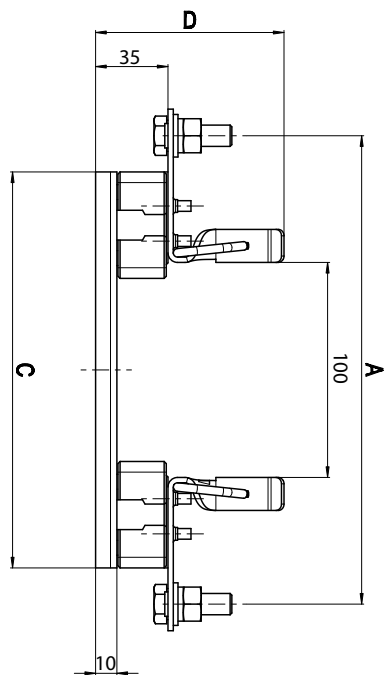
Fuse base PK-100mm					
Type	I <sub>n</sub> [A]	Cable lugs according to DIN 46235 [mm <sup>2</sup> ]	Code No.	Weight [g]	Packaging [pcs]
PK1-100 M10-M10 1p 1000V	250	25-150	004123400	623	3
PK2-100 M10-M10 1p 1000V	400	25-240	004123401	878	3
PK3-100 M12-M12 1p 1000V	630	25-300	004123402	1132	3



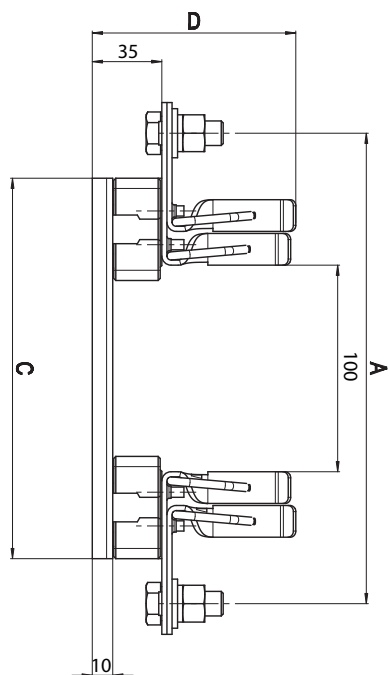
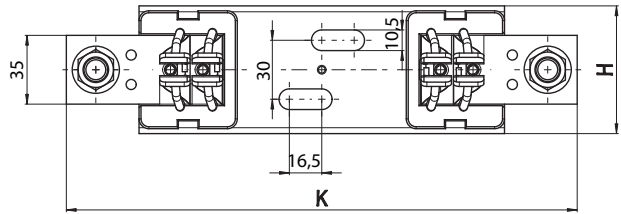
Sizes 1 & 2



\*PK1 1000V = 10,5



Size 3

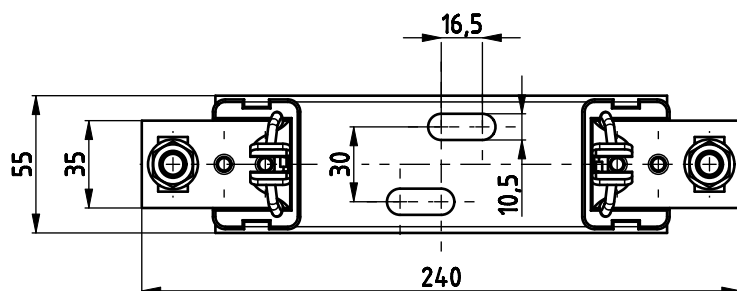
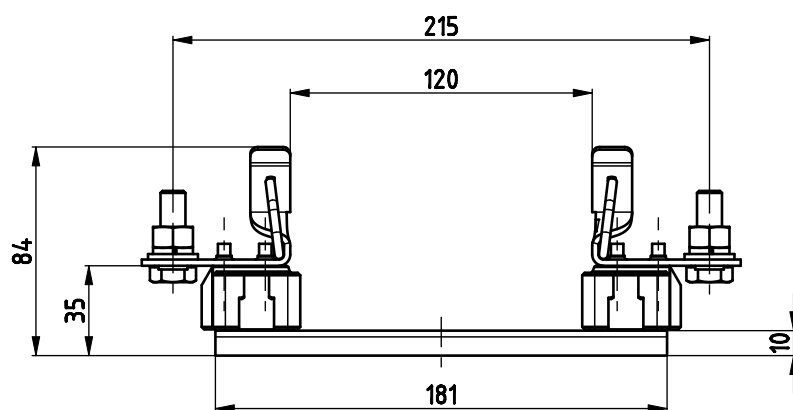


Type	Dimensions [mm]					
	A	C	D	E	H	K
PK1-100 M10-M10 1p 1000V	193	160	84	M10-M10	55,5	220
PK2-100 M10-M10 1p 1000V	220	186	90	M10-M10	65	245
PK3-100 M12-M12 1p 1000V	230	186	101	M12-M12	65	260

# Fuse base PK1L

General characteristics	
Rated voltage	1500V d.c.
Rated current	250A
Conv. free air thermal current with fuse links	250A
Max. permissible power dissipation per fuse link	32W
Max. breaking capacity per fuse link	200kA
Ambient temperature	-5...+40 °C
Rated operating mode	uninterrupted
Mounting position	vertical, horizontal
Pollution degree	3
Overvoltage category	III
Degree of protection	IP00 without covers; IP20 with covers fitted
Standards	DIN VDE 0636-21 (VDE 0636-21) 2015-03
Application	For use with gB fuse-links size 1L

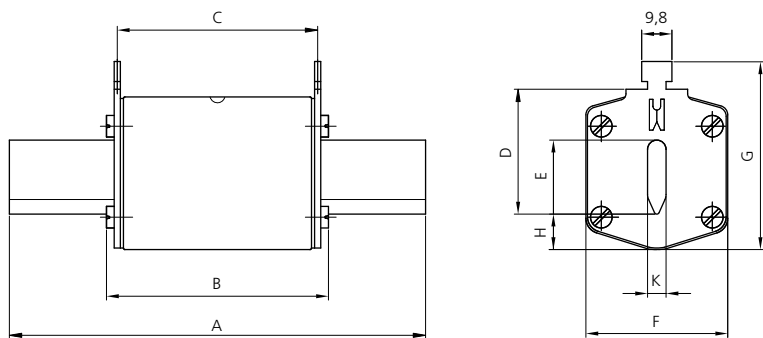
Fuse base PK-100mm					
Type	I <sub>n</sub> [A]	Cable lugs according to DIN 46235 [mm²]	Code No.	Weight [g]	Packaging [pcs]
PK1L M10-M10 1p 1500V	250	25-300	004132035	670	3



# Fuse-link aM NV/NH 1000V a.c.

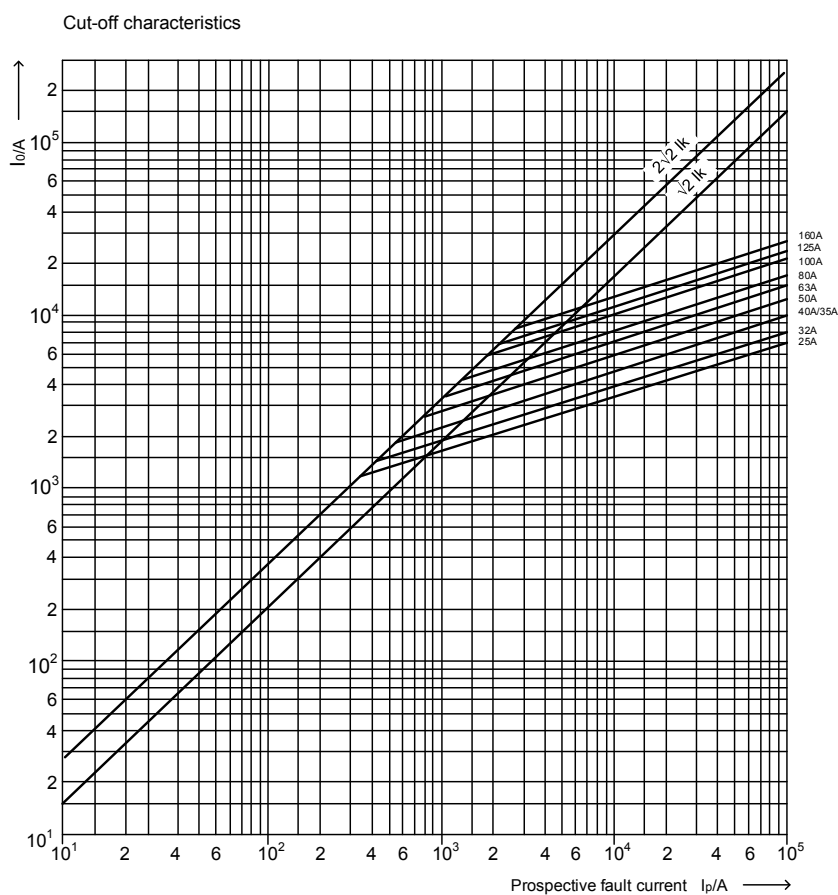
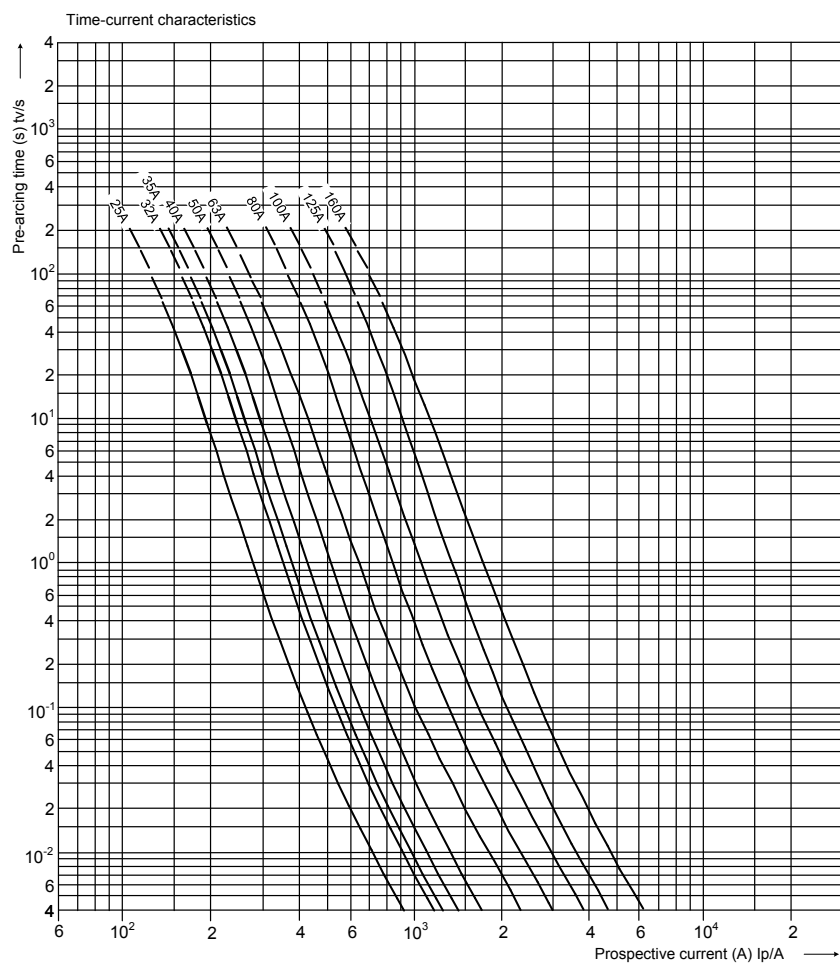
General characteristics	
Rated voltage	1000V a.c.
Breaking capacity	25kA a.c.
Standards	DIN VDE 0636-21 (VDE 0636-21) 2015-03
Characteristic	aM
Application	For equipment protection in mining industry. For relays, contactors and motors protection in case of short-circuit. Used with fuse base PK00 1000V.

1000V a.c. aM								
Size	I <sub>n</sub> [A]	Standard indicator	Pre-arcing Joule integral [A²s]	Operating Joule integral [A²s] at 635V	Operating Joule integral [A²s] at 1100V	Power dissipation [W]	Weight [g]	Packaging [pcs]
00	25	004182485	1.500	5.000	9.000	9	350	3/45
	32	004182486	2.500	9.500	15.000	10		
	35	004182487	3.500	12.000	20.000	10,5		
	40	004182488	4.000	15.000	25.000	11		
	50	004182489	7.000	23.000	40.000	13		
	63	004182490	11.000	40.000	60.000	15		
	80	004182491	17.000	63.000	100.000	17		
	100	004182492	32.000	110.000	170.000	19		
	125	004182493	45.000	150.000	230.000	21		
	160	004182494	65.000	230.000	400.000	25		



Size	Dimensions [mm]									
	A	B	C	D	E	F	G	H	I	K
00	117	92	85	35	15	30	60	12	6	





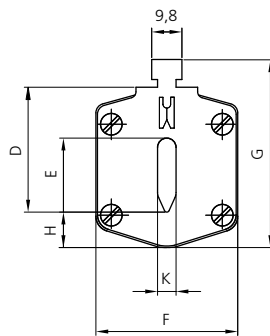
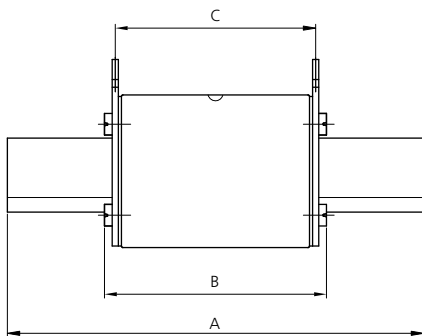
## Fuse-link aM NV/NH 1000V a.c.

### General characteristics

Rated voltage	1000V a.c.
Breaking capacity	25kA a.c.
Standards	DIN VDE 0636-21 (VDE 0636-21) 2015-03
Characteristic	aM
Application	For equipment protection in mining industry. For relays, contactors and motors protection in case of short-circuit. Used with fuse base PK1,2,3 - 100mm 1000V.

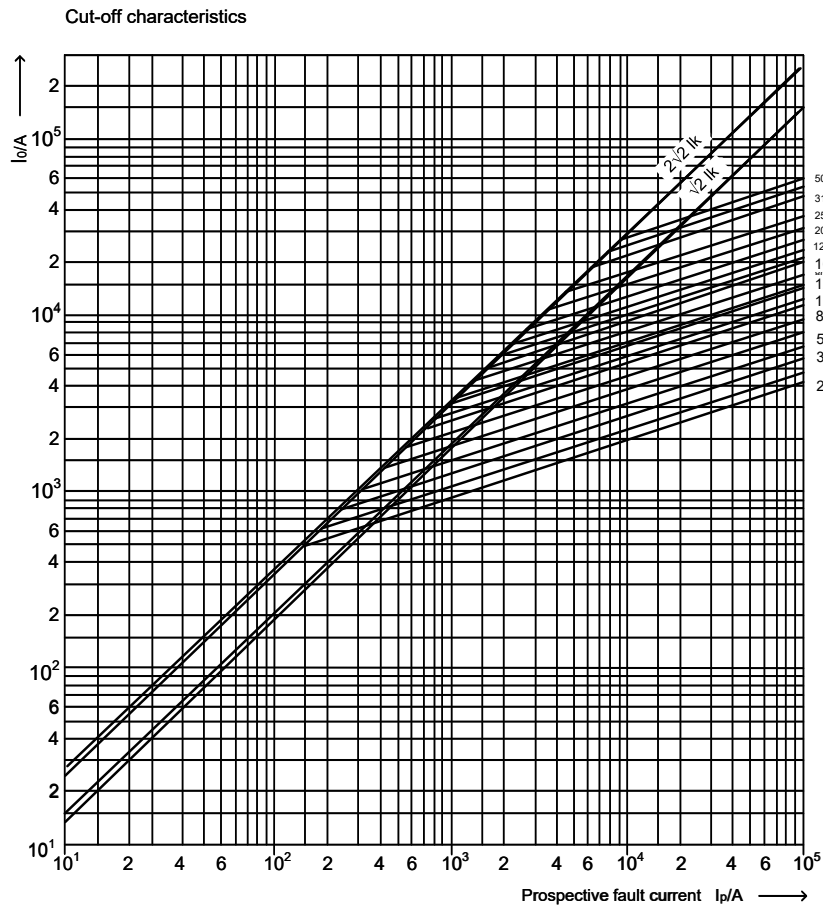
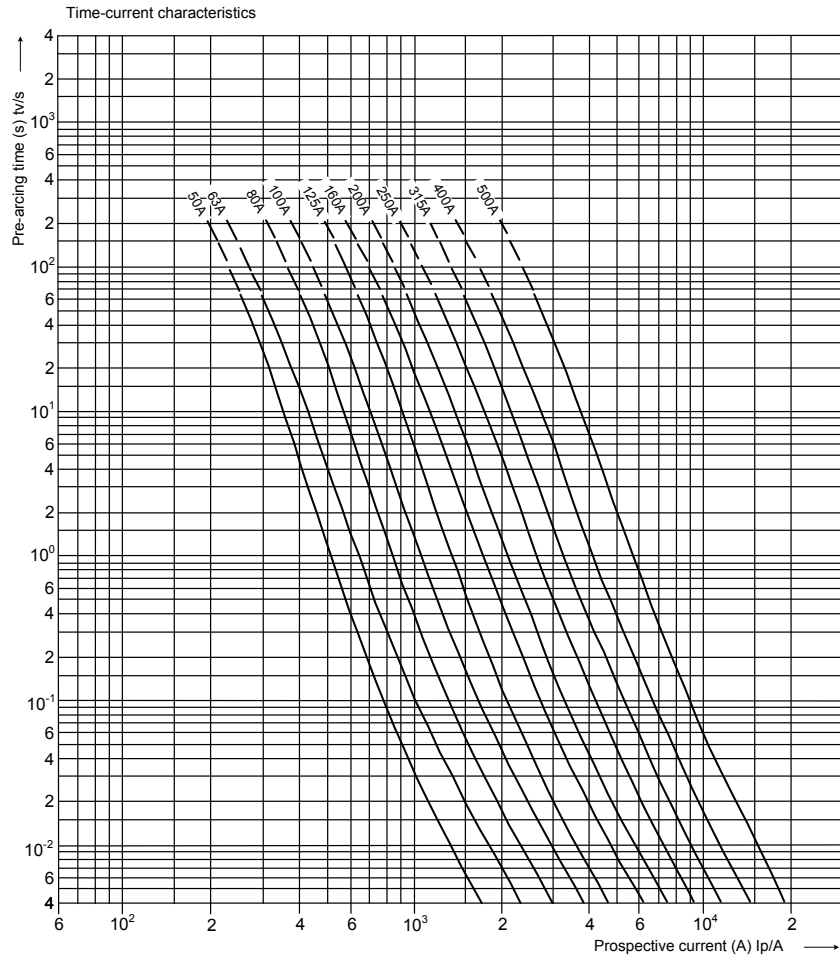
### 1000V a.c. aM

Size	I <sub>n</sub> [A]	Standard indicator	Pre-arcing Joule integral [A <sup>2</sup> s]	Operating Joule integral [A <sup>2</sup> s] at 635V	Operating Joule integral [A <sup>2</sup> s] at 1100V	Power dissipation [W]	Weight [g]	Packaging [pcs]
1	50	004184432	7.000	23.000	40.000	13	530	1/8
	63	004184433	11.000	40.000	60.000	15		
	80	004184434	17.000	63.000	100.000	17		
	100	004184435	32.000	110.000	170.000	19		
	125	004184436	45.000	150.000	230.000	21		
	160	004184437	65.000	230.000	400.000	25		
	200	004184438	110.000	400.000	600.000	28		
3	200	004186434	110.000	400.000	600.000	28	1000	1/8
	250	004186435	180.000	650.000	1.000.000	31		
	315	004186436	340.000	1.400.000	2.000.000	41		
	400	004186437	500.000	2.000.000	3.000.000	50		
	425	004186438	550.000	2.150.000	3.300.000	53		
	500	004186439	700.000	2.500.000	4.000.000	60		



Size	Dimensions [mm]									
	A	B	C	D	E	F	G	H	I	J
1	155	91	85	40	24	46	61	12	6	6
3	170	91	85	60	32	64	84	13	6	6



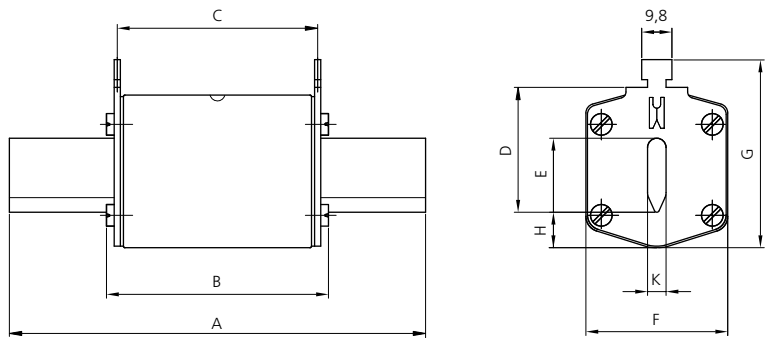


# Fuse-link gB NV/NH 00/78 1000V a.c.

General characteristics	
Rated voltage	1000V a.c.
Rated current	16 - 25A
Breaking capacity	25kA a.c.
Characteristic	gB
Standards	DIN-VDE 0636-21
Application	For equipment protection in mining industry, 'low spark' applications.



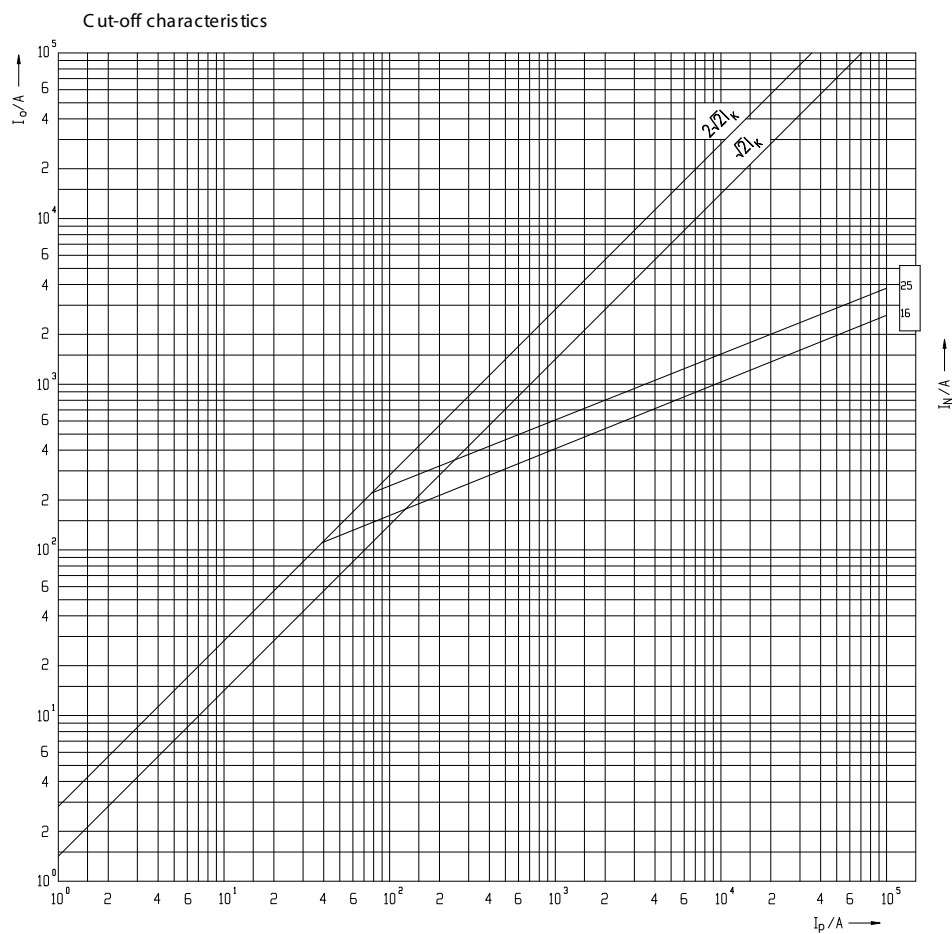
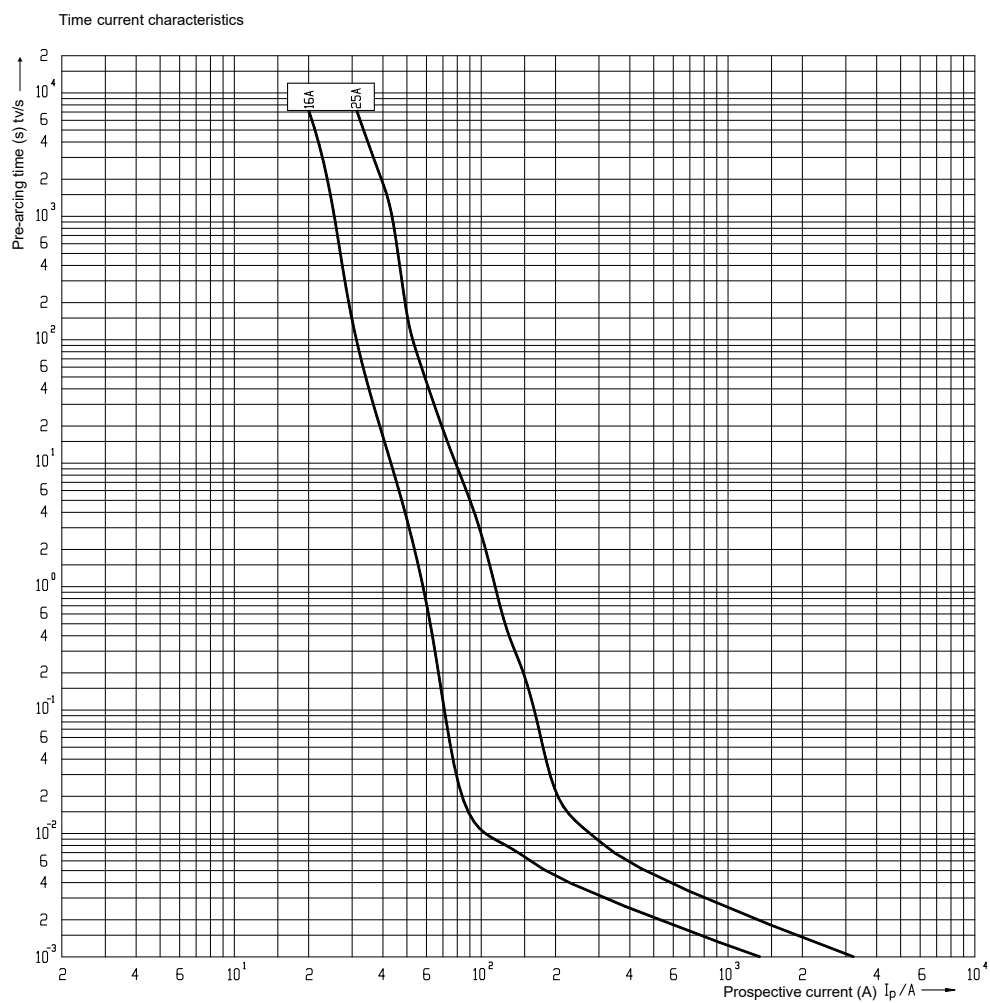
NV/NH gB 1000V a.c.							
Size	I <sub>n</sub> [A]	Standard indicator	Pre-arcing Joule integral [A²s]	Operating Joule integral [A²s]	Power dissipation [W]	Weight [g]	Packaging [pcs]
00	16	004182465	16	900	4,3	310	3/45
	25	004182467	60	2600	3,9		



Size	Dimensions [mm]								
	A	B	C	D	E	F	G	H	K
00	110	85	78	35	15	30	60	12	6





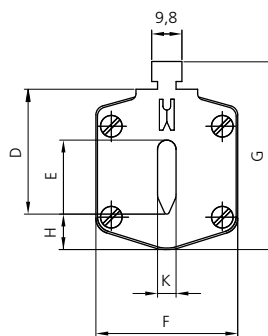
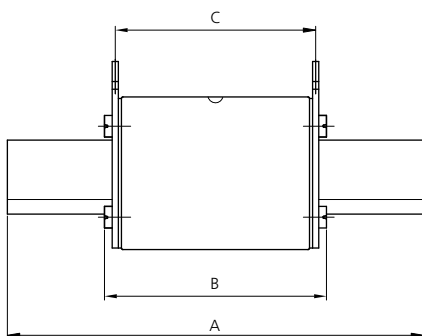


# Fuse-link gB NV/NH 00/85 1000V a.c.

General characteristics	
Rated voltage	1000V a.c.
Breaking capacity	25kA a.c. /100kA a.c. for 125A
Standards	DIN VDE 0636-21 (VDE 0636-21) 2015-03
Characteristic	gB
Application	For equipment protection in mining industry, "low spark" applications. Used with fuse base PK00 1000V.

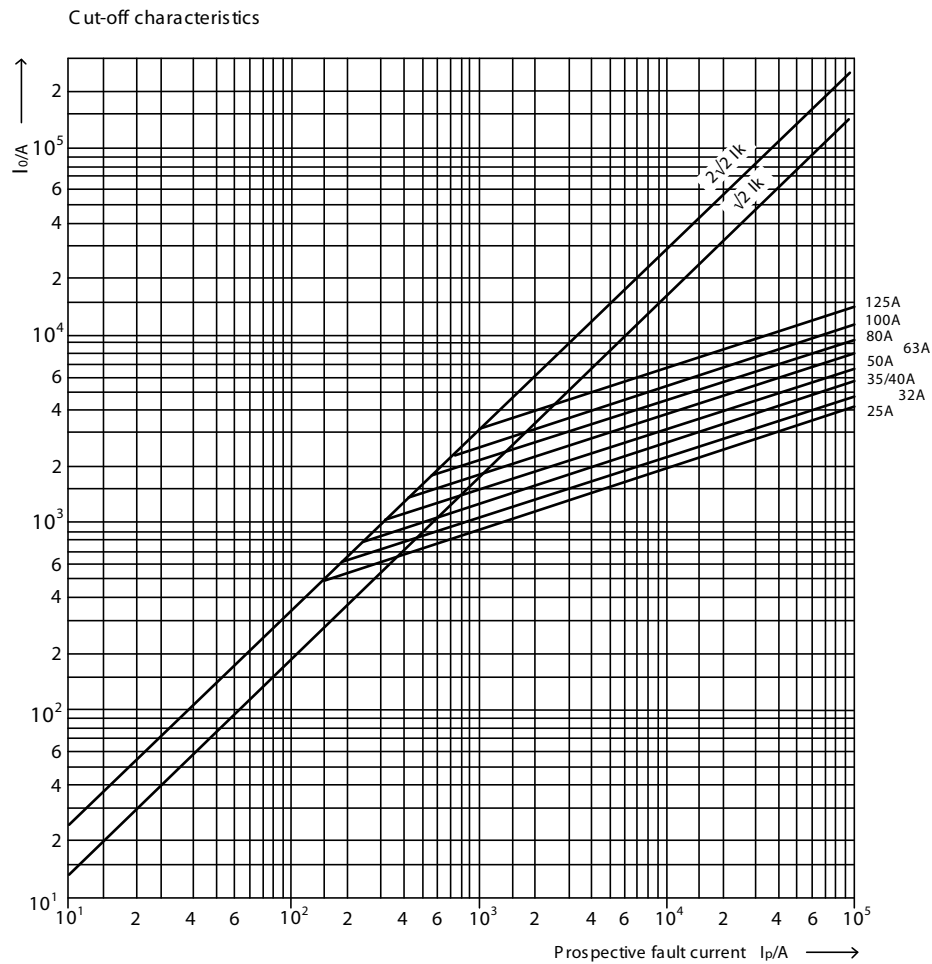
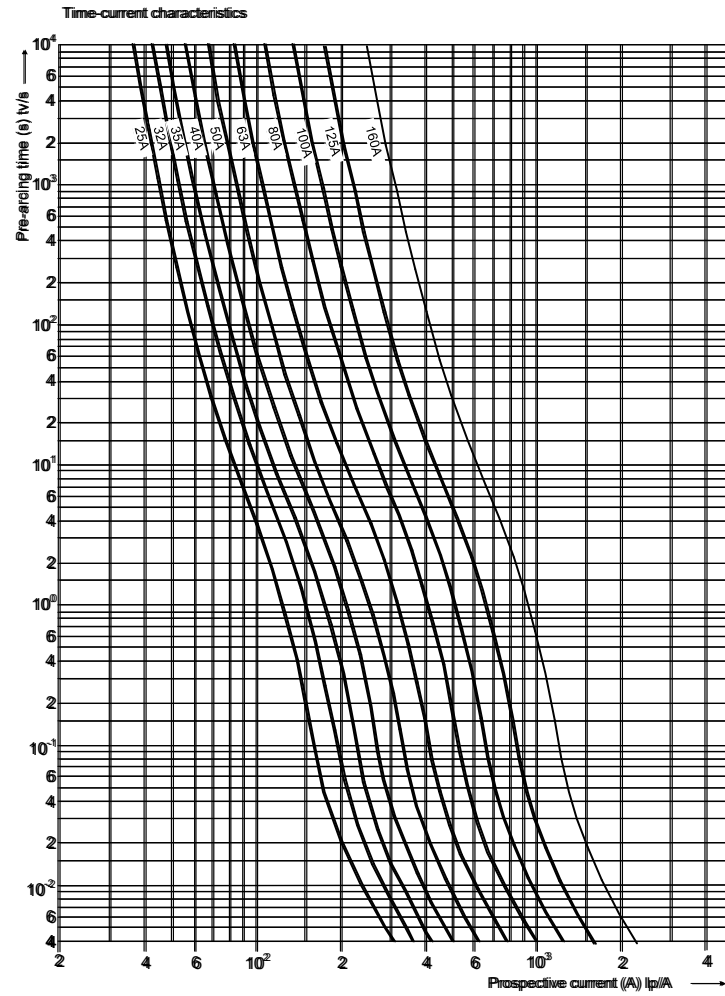


NV/NH gB 1000V a.c.									
Size	I <sub>n</sub> [A]	Standard indicator	Pre-arcing Joule integral [A²s]	Operating Joule integral [A²s] at 635V	Operating Joule integral [A²s] at 1100V	Power dissipation [W]	Cold resistance (mΩ) - Mean value	Weight [g]	Packaging [pcs]
00	25	004182475	110	1000	2900	4,2	5,51	350	3/45
	32	004182476	250	1600	4950	5,2	3,76		
	35	004182477	150	2500	4700	5,8	3,76		
	40	004182478	800	3000	4200	8,0	3,76		
	50	004182479	1200	4500	7000	5,6	1,88		
	63	004182480	1500	8000	23000	7,6	1,53		
	80	004182481	3200	12000	37000	8,6	1,09		
	100	004182482	4100	25000	48000	12,8	0,982		
	125	004182483	9100	30000	89000	15,0	0,728		
	160	004182484	18000		170000	17,0	0,516		



Size	Dimensions [mm]									
	A	B	C	D	E	F	G	H	I	J
00	117	92	85	35	15	30	60	12	6	



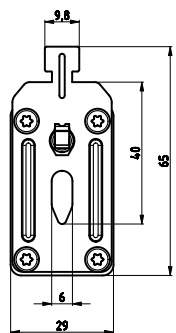
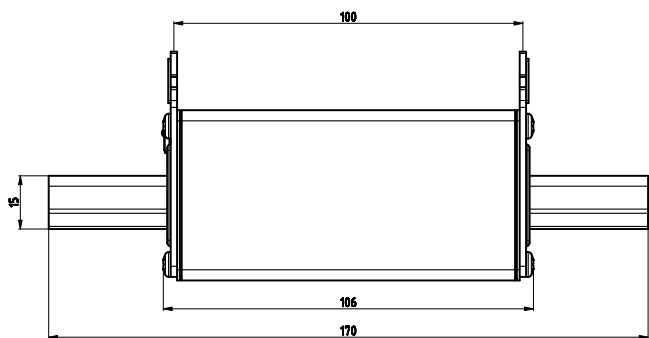


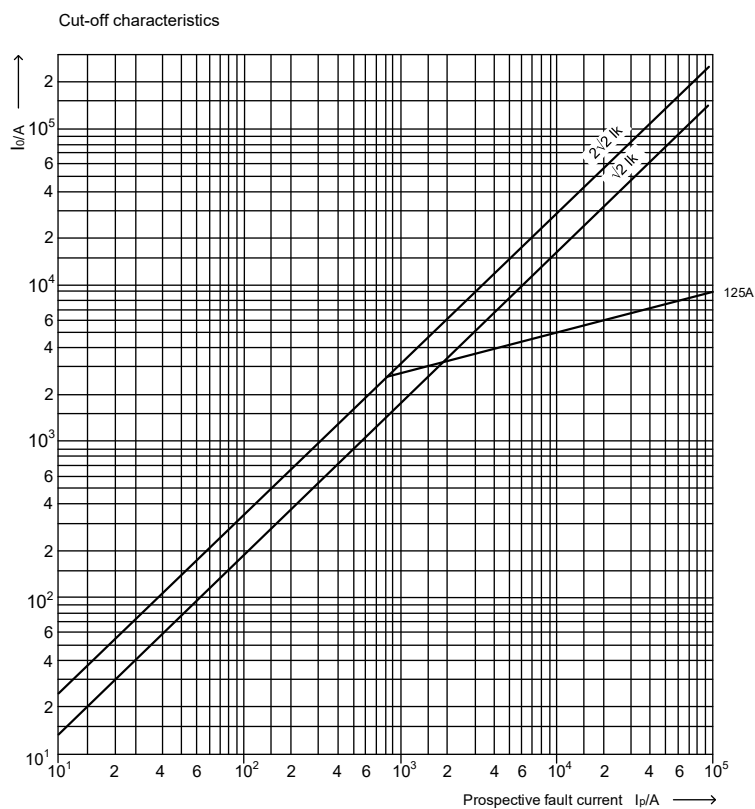
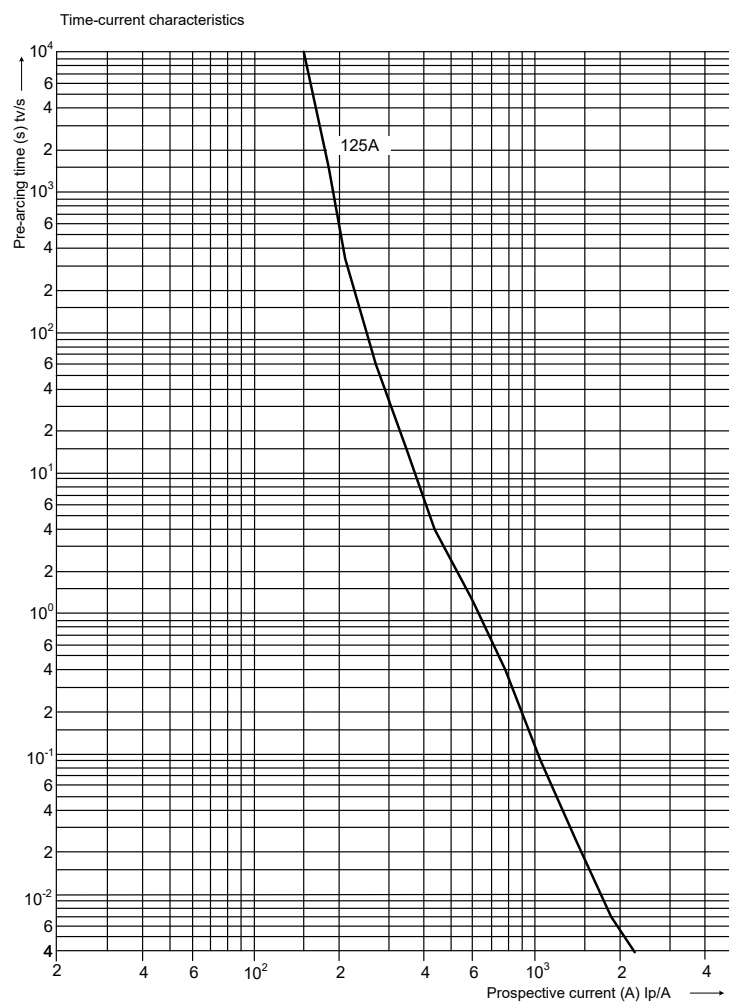
# Fuse-link gB NV/NH 01L 1000V a.c.

General characteristics	
Rated voltage	1000V a.c.
Breaking capacity	100kA a.c.
Standards	DIN VDE 0636-21 (VDE 0636-21) 2015-03
Characteristic	gB
Application	For equipment protection in mining industry.



NV/NH gB 1000V a.c.							
Size	$I_n$ [A]	Standard indicator	Pre-arcing Joule integral [A²s]	Operating Joule integral [A²s] at 1100V a.c.	Power dissipation [W]	Weight [g]	Packaging [pcs]
01L	125	004182495	7.000	75.000	18,2	410	3/30



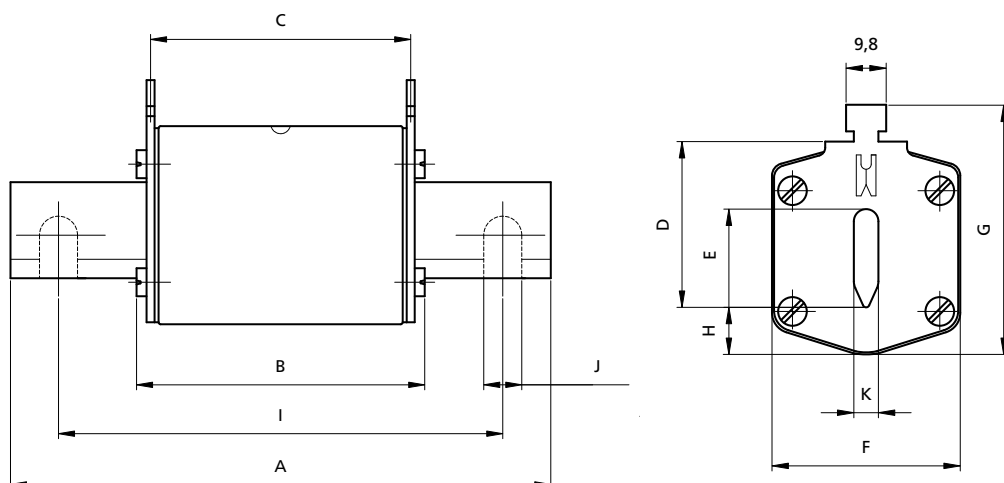


# Fuse-link gG NV/NH 1000 V a.c.

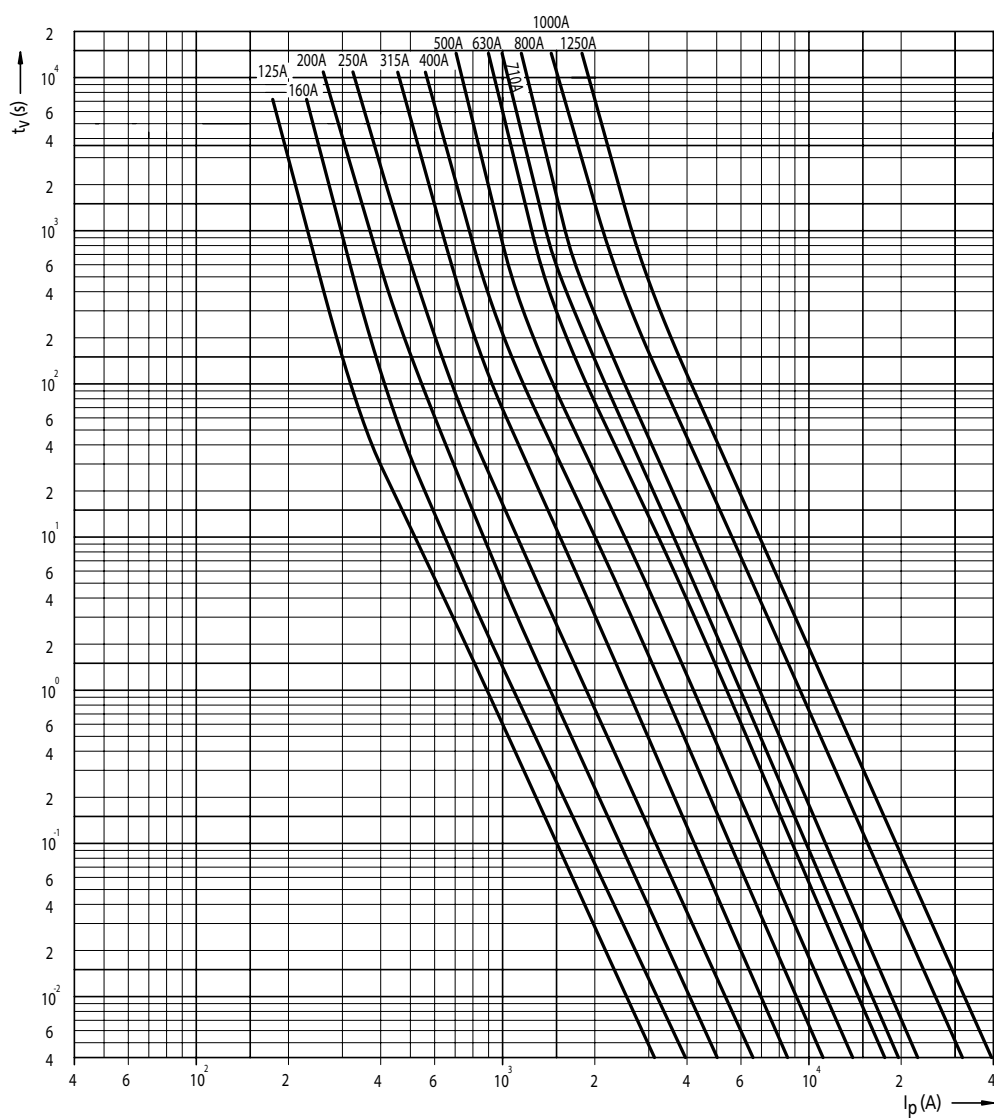
General characteristics	
Rated voltage	1000V a.c.
Breaking capacity	50 kA a.c.
Standards	IEC 60269-1:2005 / EN 60269-1:1998+A1:2005 IEC 60269-2:1986+Corr.1:1996+A11995+A2:2001 / EN 60269-2:1995+A1:1998+A2:2002 IEC 60269-2-1:2004 / HD 60269-2-1:2005
Characteristic	gG
Application	For cable protection, installation in fuse base PK1/1000V

1000V a.c. gG					
Size	I <sub>n</sub> [A]	Code No.	Power dissipation [W]	Weight [g]	Packaging [pcs]
1	10	004113703	1,9	487	3/24
	16	004113704	3,9		
	20	004113705	3,9		
	25	004113706	4,3		
	32	004113707	3,8		
	35	004113708	4,6		
	40	004113710	5,5		
	50	004113711	7,6		
	63	004113712	10		
	80	004113713	10,5		
	100	004113714	13,0		
	125	004113715	16,9		
	160	004113716	21		
	200	004113717	24,8		





Size	Dimensions [mm]								
	A	B	C	D	E	F	G	H	K
NV1/1000V	155	90	87	40	20	45	59	9	6



NV 1000V a.c. gG I/t characteristics



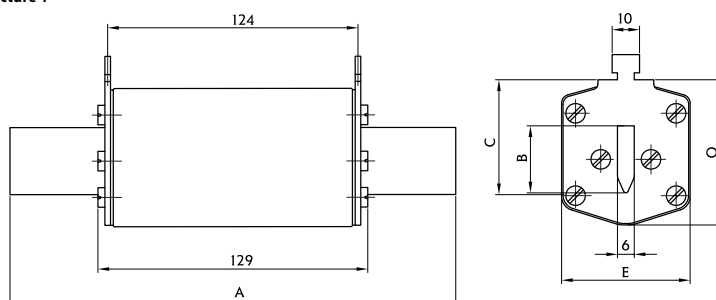
# Fuse-link gG NV/NH 1200 V a.c.

General characteristics	
Rated voltage	1200V a.c.
Breaking capacity	50 kA a.c.
Standards	IEC 60269-2
Characteristic	gG
Application	For installation in PK1XL,2XL,3L fuse bases.

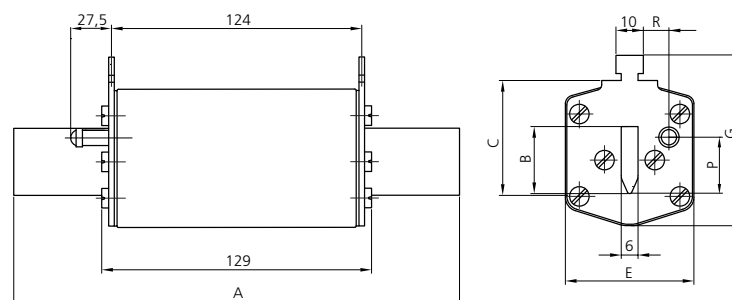
1200V a.c. gG						
Size	I <sub>n</sub> [A]	Standard indicator (pic.1)	Striker indicator - K (pic.2)	Power dissipation [W]	Weight [g]	Packaging [pcs]
1XL	6	004113721	004113796	3,2	750	1
	10	004113722	004113797	3,7		
	16	004113723	004113798	4,1		
	20	004113724	004113799	5,0		
	25	004113725	004113800	5,0		
	32	004113726	004113801	5,8		
	35	004113727	004113802	6,1		
	40	004113728	004113803	8,1		
	50	004113729	004113804	8,8		
	63	004113730	004113805	10,2		
	80	004113731	004113806	11,0		
	100	004113732	004113807	12,0		
	125	004113733	004113808	16,0		
	160	004113734	004113809	19,0		
	200	004113735	004113810	25,0		
2XL	32	004113736	004113811	5,8	1050	1
	35	004113737	004113812	6,1		
	40	004113738	004113813	8,1		
	50	004113739	004113814	8,8		
	63	004113740	004113815	10,2		
	80	004113741	004113816	11,0		
	100	004113742	004113817	12,0		
	125	004113743	004113818	16,0		
	160	004113744	004113819	19,0		
	200	004113745	004113820	25,0		
3L	250	004113746	004113821	30,0	1360	1
	315	004113747	004113822	35,0		
	80	004113748	004113823	11,0		
	100	004113749	004113824	12,0		
	125	004113750	004113825	16,0		
	160	004113751	004113826	19,0		
	200	004113752	004113827	25,0		
	250	004113791	004113828	30,0		
	315	004113792	004113829	35,0		
	355	004113790	-	37,0		
	400	004113793	004113830	40,0		
	500	004113794	004113831	50,0		
	630	004113795	004113832	70,0		



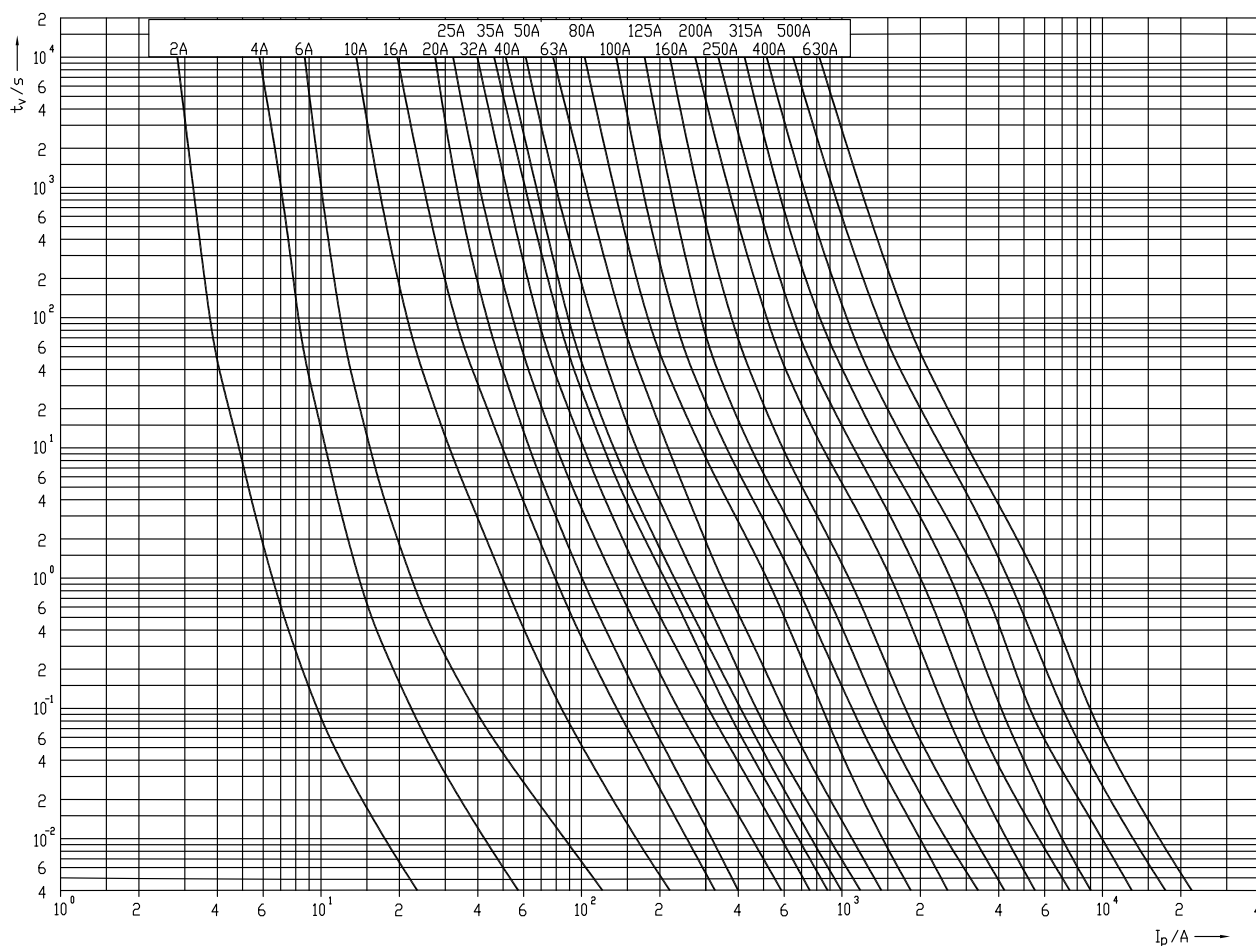
Picture 1



Picture 2



Size	Dimensions [mm]								
	A	B	C	E	G	P	R	M	O
1XL	194	24	40	46	61,5	20,5	13,7	50	52
2XL	209	30	48	54	71	27,3	16,2	59	61
3L	209	37	60	64	82	35,6	17,0	70	74



NV 1200V a.c. gG I/t characteristics

## Safe work fuses

### Fuse links SWF

ETI offer fuse links type SWF for protection against arc.

Characteristics of SWF fuse links:

- current limiting
- short operating time
- available in size 000,1,2,3 acc. standard DIN 43620
- marking like "SWF fuse link"
- standard with top indicator

By replacing NH fuse link with a characteristic gG acc. to VDE 0636-21 and IEC 60269-2 with faster fuse link type SWF acc. to VDE 0636-23 and IEC 60269-4, we can safeguard persons against electrical arc.

Because of higher power dissipation, we can use SWF fuse link only between maintenance under voltage. After that, we must replace it with a gG fuse link.

Damaged SWF fuse links must necessarily be replaced with new SWF fuse links.



### Arc energy

$$E_T \propto I_{RMS}^2 \times t$$

$E_T$ (protection with SWF fuse link)	$E_T$ (protection with gG fuse link)
1	∞ 30

Selection nominal current of SWF fuse link:

$$I_n (SWF) = I_n (gG)$$



SWF fuse links						
Size	I [A]	Type	Power Dissipation [W]	Code Nr.	Packaging [pcs]	Weight [g]
00 C	32	M00C/SWF/32A/500V	14	004711220	3	130
	35	M00C/SWF/35A/500V	15	004711221		
	40	M00C/SWF/40A/500V	16	004711222		
	50	M00C/SWF/50A/500V	17	004711223		
	63	M00C/SWF/63A/500V	20	004711224		
	80	M00C/SWF/80A/500V	23	004711225		
	100	M00C/SWF/100A/500V	26	004711226		
	125	M00C/SWF/125A/500V	34	004711227		
	160	M00C/SWF/160A/500V	40	004711228		

1	63	M1/SWF/63A/500V	20	004713220	3	420
	80	M1/SWF/80A/500V	23	004713221		
	100	M1/SWF/100A/500V	26	004713222		
	125	M1/SWF/125A/500V	34	004713223		
	160	M1/SWF/160A/500V	40	004713224		
	200	M1/SWF/200A/500V	44	004713225		
	224	M1/SWF/224A/500V	48	004713226		
	250	M1/SWF/250A/500V	53	004713227		

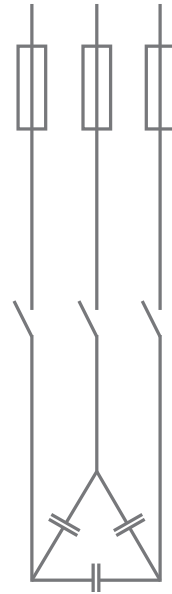
2	125	M2/SWF/125A/500V	34	004714225	3	660
	160	M2/SWF/160A/500V	40	004714226		
	200	M2/SWF/200A/500V	44	004714227		
	224	M2/SWF/224A/500V	48	004714228		
	250	M2/SWF/250A/500V	53	004714229		
	315	M2/SWF/315A/500V	63	004714230		
	350	M2/SWF/350A/500V	66	004714231		
	400	M2/SWF/400A/500V	70	004714232		

3	250	M3/SWF/250A/500V	53	004715230	3	870
	315	M3/SWF/315A/500V	63	004715231		
	350	M3/SWF/350A/500V	66	004715232		
	400	M3/SWF/400A/500V	70	004715233		
	425	M3/SWF/425A/500V	75	004715234		
	500	M3/SWF/500A/500V	96	004715235		

# NH Power capacitor fuse

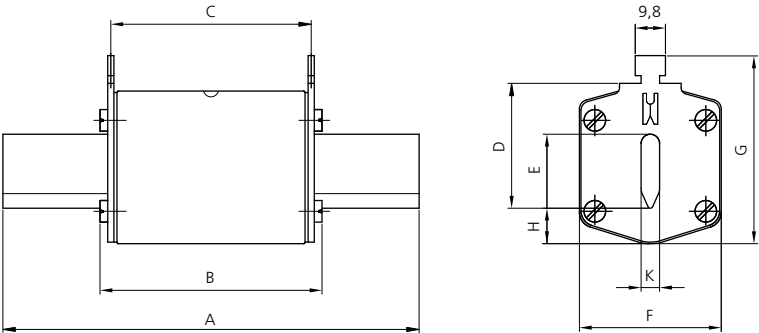
General characteristics	
Rated voltage fuse link	690V a.c.
System voltage	400V a.c.
Breaking capacity	100/120kA
Standards	IEC 60269-2
Description	Special designed fuse according to rated power of 3 phase capacitor at nominal voltage 400V a.c. 50Hz.
Application	Current protection in low voltage reactive power compensation systems with 3 phase capacitor steps.

Size	Rated Power [kVAr]	Standard indicator	Power dissipation	Weight	Packaging
	At 400V		Pd(W)	(g)	(pcs)
000	1	004117101	0,8	125	3/120
	1,5	004117102	0,8		
	2,5	004117103	1		
	3	004117104	1,3		
	4	004117105	1,3		
	5	004117106	1,7		
	10	004117107	2		
	12,5	004117108	2,6		
	15	004117109	2,7		
	20	004117110	4		
00	25	004117111	5	173	3/90
	30	004117112	6		
	40	004117113	7,6		
	50	004117114	9,1		



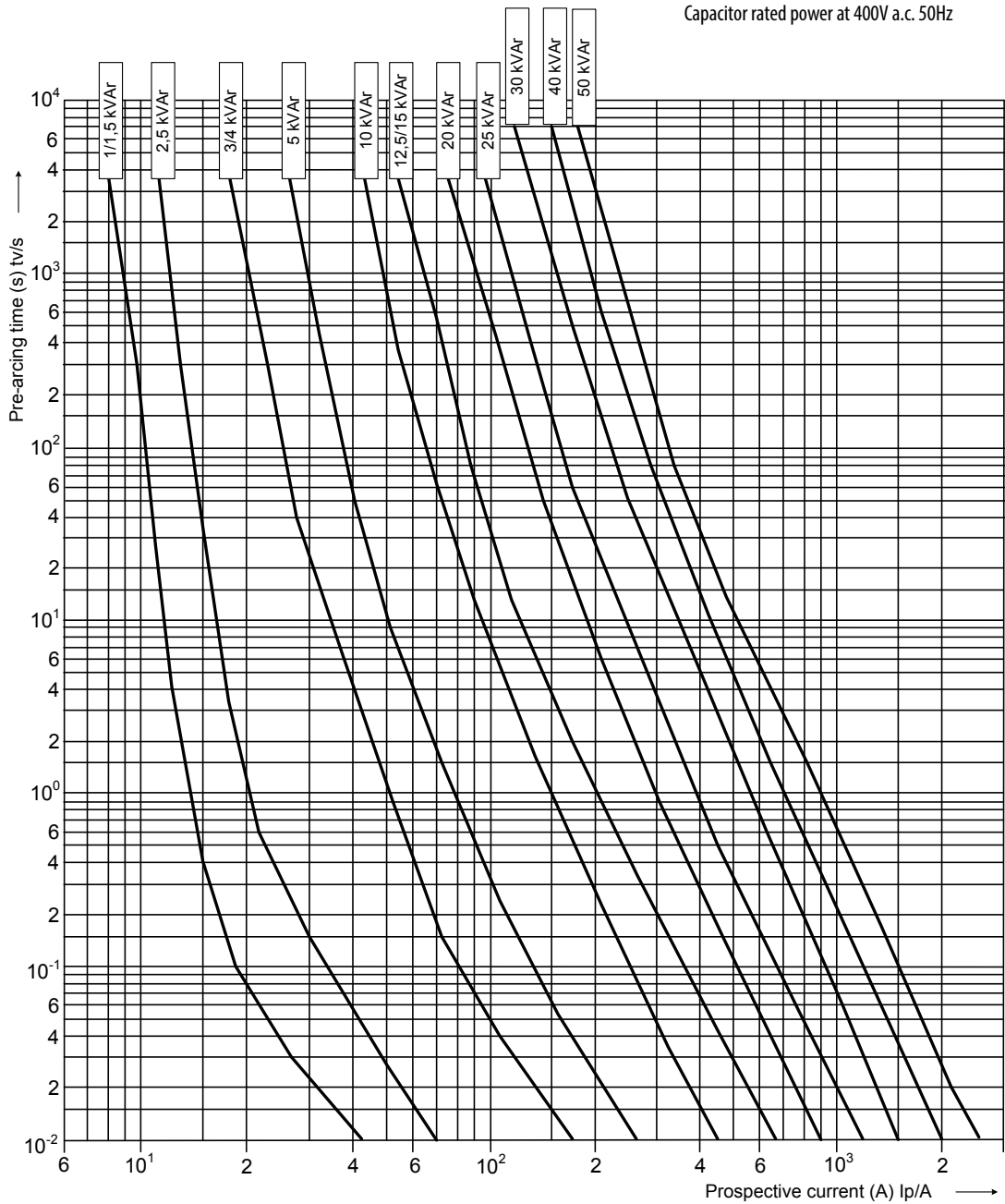
Automatic Power Factor Correction Banks

### Dimensions



type	dimensions [mm]								
	A	B	C	D	E	F	G	H	K
000	79	53	47	35	15	21	52	7,5	6
00	79	53	47	35	15	28	56	12	6

### I-t characteristics



# Fuses for TVSS products protection

## SRF Series Surge Fuse

Through the past few years, the transient voltage surge suppression (TVSS) industry has grown to one of the fastest-growing segments among power protection products. Newness from ETI is series of fuses named SRF (Surge Rated Fuses), intended for the protection of TVSS products. The SRF Series has been designed to survive 8/20  $\mu$ s or 10/350  $\mu$ s lighting surge pulses without operating, allowing the TVSS system to react to the surge. Surge fuses have either 8/20  $\mu$ s or 10/350  $\mu$ s ratings, not a continuous current rating.

These fuses are intended to be installed in series with the TVSS devices and do not normally carry current, except for the periodic random surges caused by TVSS breakdown during normal operation. Under AC short circuit conditions these SRF surge suppression fuses have extremely high capability for current limitation.

## Features / Benefits

- Rated voltage 600V a.c. (8/20  $\mu$ s) or 400V a.c. (10/350  $\mu$ s)
- Breaking capacity 200 kA (8/20  $\mu$ s) or 50kA (10/350  $\mu$ s)
- Available in Surge Ratings from 10 kA to 40 kA (8/20  $\mu$ s) and 25 kA (10/350  $\mu$ s)
- Designed to meet UL1449 Second Edition requirements,
- Comply with the applicable requirements in UL 248-1 Low Voltage Fuses – Part 1, General Requirements.

## Approvals

Recognized under the components program of Underwriters Laboratories for Special Purpose Fuses, File number UL E310767 (SRF 10).

## CH SRF class II

General characteristics	
Designed for	8/20 lighting surge pulses
Rated voltage	600V a.c.
Breaking capacity	200kA a.c.
Standards	Comply with the applicable requirements in UL 248-1 Low Voltage Fuses-Part1, General Requirements.
Application	These fuses are intended for installation in series with TVSS devices and do not normally carry current, except for the periodic random surges caused by TVSS breakdown during normal operation.

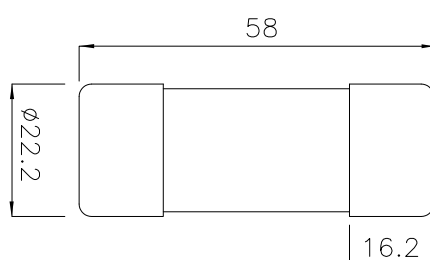


CH SRF 8/20 $\mu$ s								
Size	Type	Code No.	8x20 $\mu$ sec Surge rating [A]	Melting $I^2t$ [A <sup>2</sup> s]	Total $I^2t$ [A <sup>2</sup> s]	$I_{PEAK}$ at 130 kA	Packaging [pcs]	Weight [g]
14x51	CH14 SRF10-II	002636004	10.000	2.360	10.370	8.320	10/500	18,6
	CH14 SRF20-II	002636005	20.000	5.490	17.700	10.430		
	CH14 SRF30-II	002636006	30.000	16.750	39.880	13.540		
	CH14 SRF40-II	002636007	40.000	33.680	72.800	17.480		
22x58	CH22 SRF60-II	002646006	60.000	133.630	247.180	21.260	10/480	55

## CH SRF 25kA class I

General characteristics	
Designed for	10/350 lighting surge pulses
Rated voltage	400V a.c.
Breaking capacity	50kA a.c.
Standard	IEC 61643-11
Application	These fuses are intended for installation in series with TVSS devices and do not normally carry current, except for the periodic random surges caused by TVSS breakdown during normal operation.

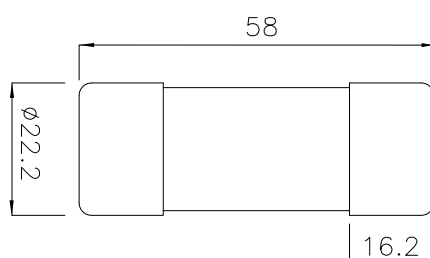
CH 22x58 SRF 25kA 10/350 $\mu$ s							
Size	Type	Code Number	10/350 $\mu$ sec Surge rating [A]	Pre-arcing Joule integral [A <sup>2</sup> s]	Operating Joule integral [A <sup>2</sup> s]	Packaging [pcs]	Weight [g]
22x58	CH22 SRF25-I	002646010	25.000	322.700	504.300	24/240	55



## CH SRF class II - DC

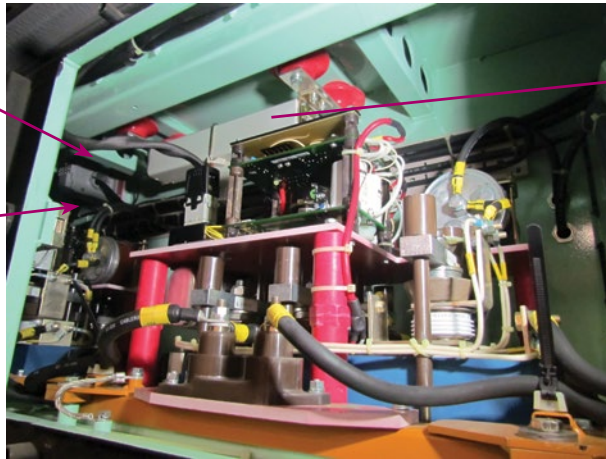
General characteristics	
Designed for	8/20 $\mu$ sec lighting surge pulses
Rated voltage	1000V d.c.
Breaking capacity	1000A d.c.
Fuses withstand not only a single shot of surge current, but a sequence of min.15 shots of surge current.	
Application	Use in typical DC application: PV Photovoltaic, battery supply, rectifier These fuses are intended for installation in series with TVSS devices and do not normally carry current, except for the periodic random surges caused by TVSS breakdown during normal operation.

CH 22x58SRF DC 8/20 $\mu$ s							
Size	Type	Code Number	8/20 $\mu$ sec Surge rating [A]	Pre-arcing Joule integral [A <sup>2</sup> s]	Operating Joule integral [A <sup>2</sup> s]	Packaging [pcs]	Weight [g]
22x58	CH22 SRF3-II-DC	002646015	3.000	660	1380	10/480	55
	CH22 SRF8-II-DC	002646016	8.000	6.930	8.730		
	CH22 SRF12-II-DC	002646017	12.000	85.500	86.500		





# Fuses for railway applications



## Advantages

ETI's Railway Fuses successfully combine two usually conflicting fuse requirements:

- ✓ **low operating joule integral**, necessary for the protection of semiconductors,
- ✓ **low power dissipation**, allowing for lower energy losses and thus **lower operating costs**, following the latest ecological trends.

These unique technical characteristics are achieved by a completely **new design of the ceramic body**, a special construction developed on the basis of long standing expert knowledge, which allows for significantly better cooling of the fuse.

The operation of fuses is especially **adapted for railway applications**, as they have **improved resistance to current cyclic loading**, a phenomenon that causes unnecessary fuse operating in these applications. This way, ETI's Railway Fuses help **decrease downtime** significantly, leading to further **cost savings** and **improved efficiency**.

The melting element inside Railway Fuses is made of silver, which makes them **highly insensitive to ageing** processes.

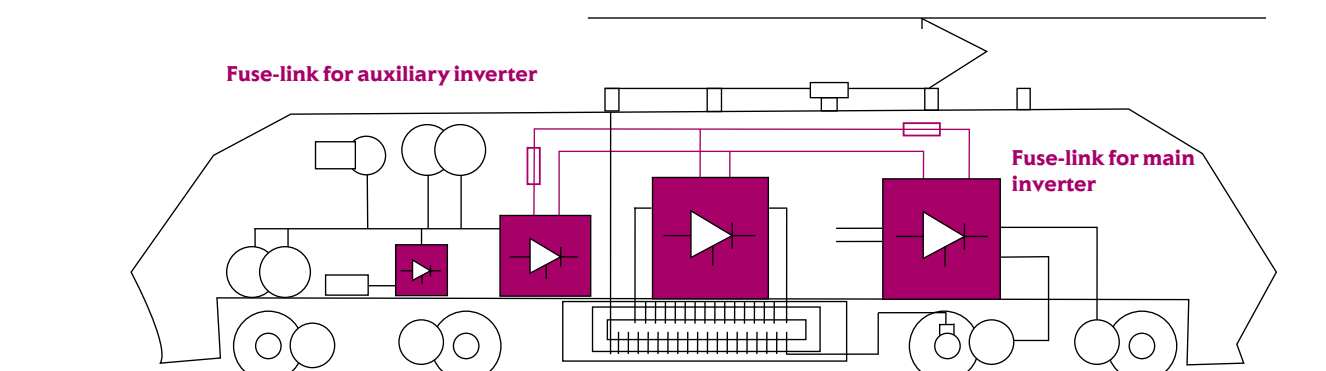
ETI Railway fuse-links ensure short circuit protection from minimum breaking capacity ( $5 \times I_n$ ) up to maximum breaking capacity 30kA d.c. at time constant 15ms.

## Application

Protection of DC link and semiconductor devices (diodes, thyristors, GTO) in railway inverters.

## Standards

ETI Railway Fuses comply with the IEC 60269-4 and IEC 60077-5 standards.



# NH1S/394/DC 4000V aR-fuse link

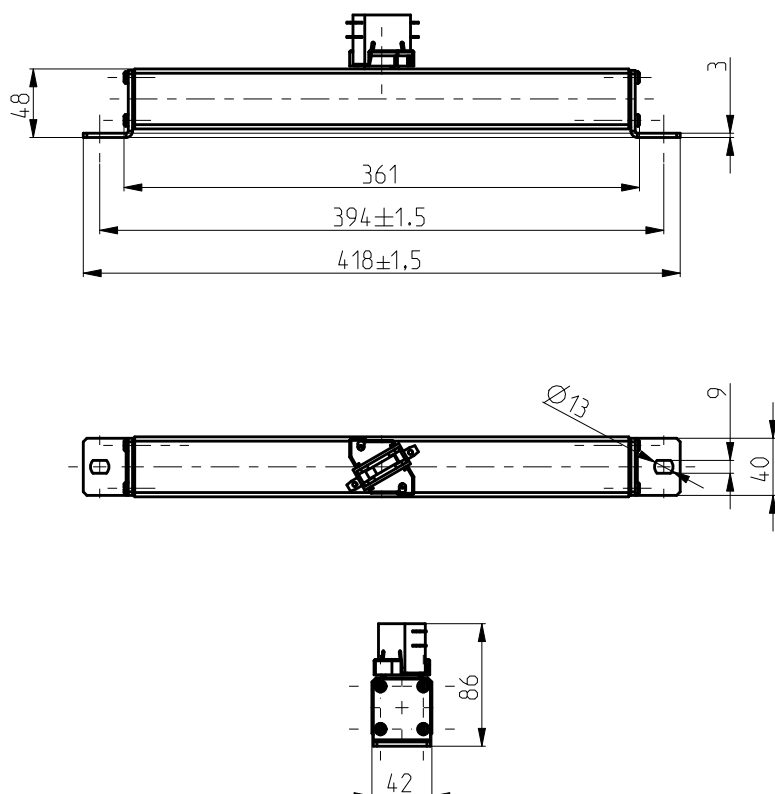
## General characteristics

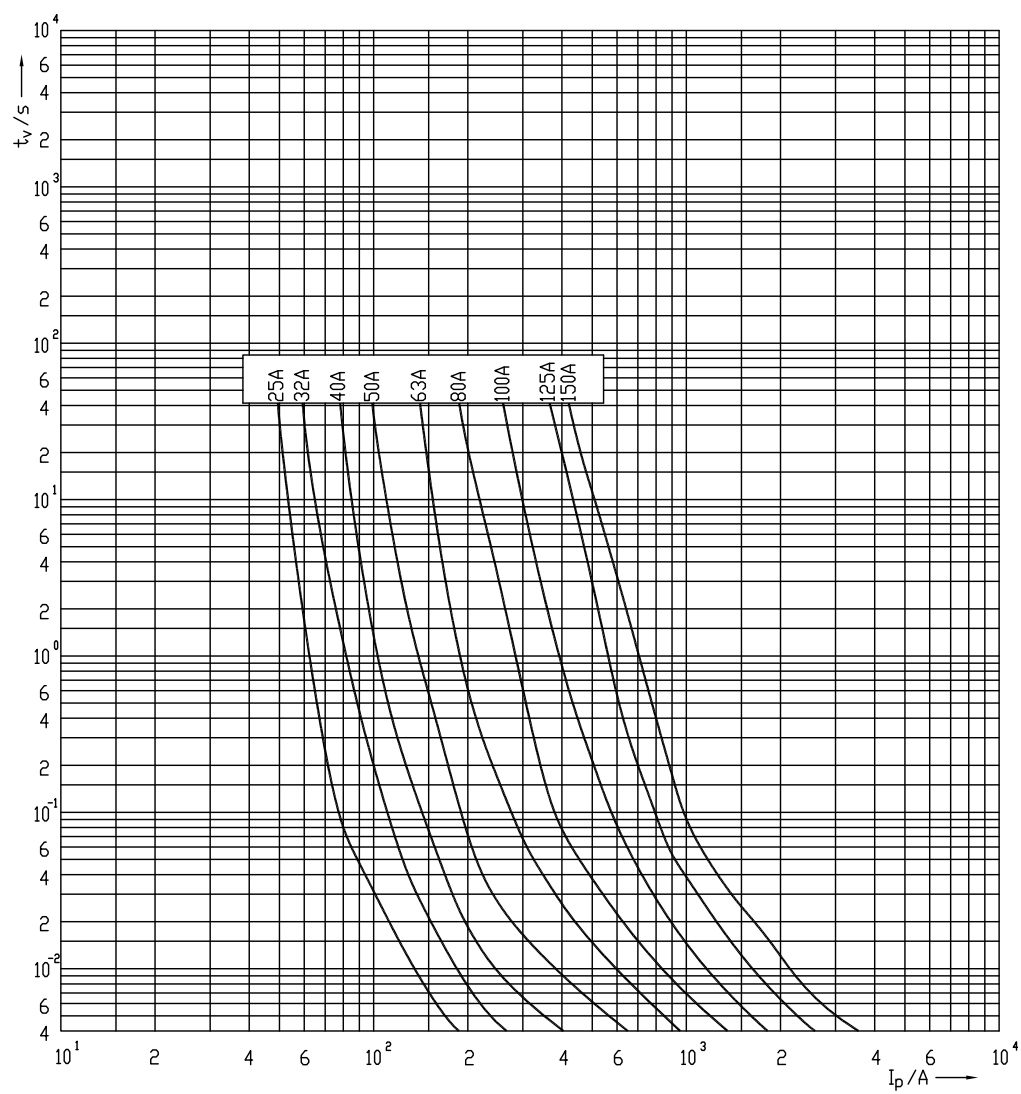
Rated voltage	4000V d.c. (L/R=15ms), rated test voltage 4200V d.c.
Breaking capacity	30kA d.c.
Characteristic	aR
Standards	IEC 60269-4, IEC 60077-5
Application	Heating system in railway wagon

## RAILWAY fuse link

I <sub>n</sub> [A]	Code No. Type with centre trip indicator for microswitch MK	Code No. Type without centre trip indicator for microswitch MK	Power dissipation [W]	Pre-arcing Joule integral [A²s]	Operating Joule integral [A²s] (L/R=15ms)	Weight [g]	Pack. [pcs]
25	004735615	004735627	43	28	150	1800	1/1
32	004735616	004735628	65	40	300		
40	004735617	004735629	88	63	600		
50	004735618	004735630	105	112	1.400		
63	004735619	004735631	105	252	2.500		
80	004735620	004735632	114	494	5.500		
100	004735621	004735633	115	1.147	10.000		
125	004735622	004735634	132	2.168	19.000		
150	004735623	004735635	155	3.388	31.000		

Note: microswitch MK and adapter AMK1 must be ordered separately



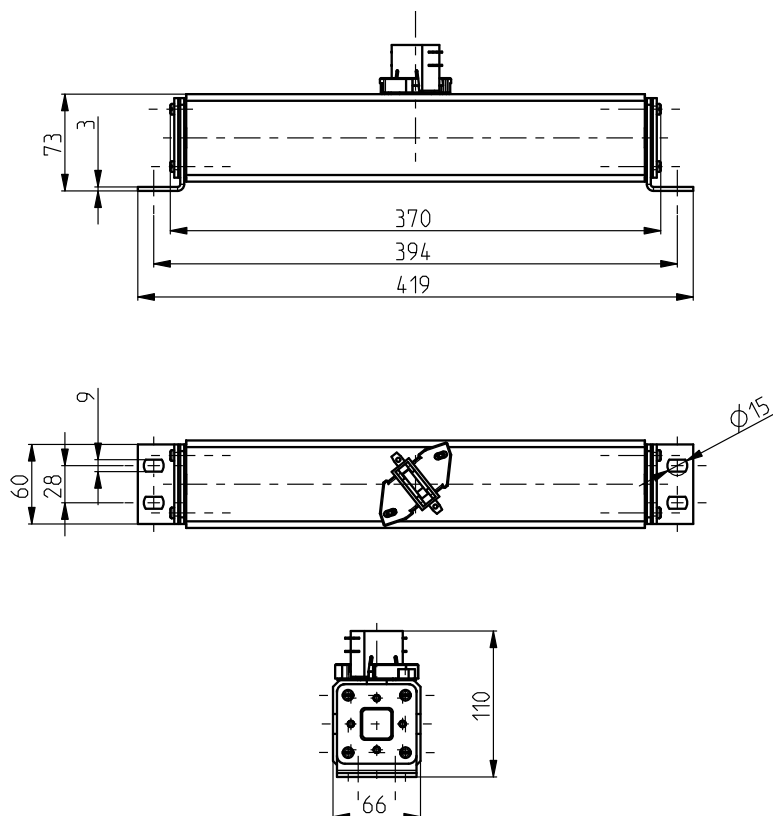


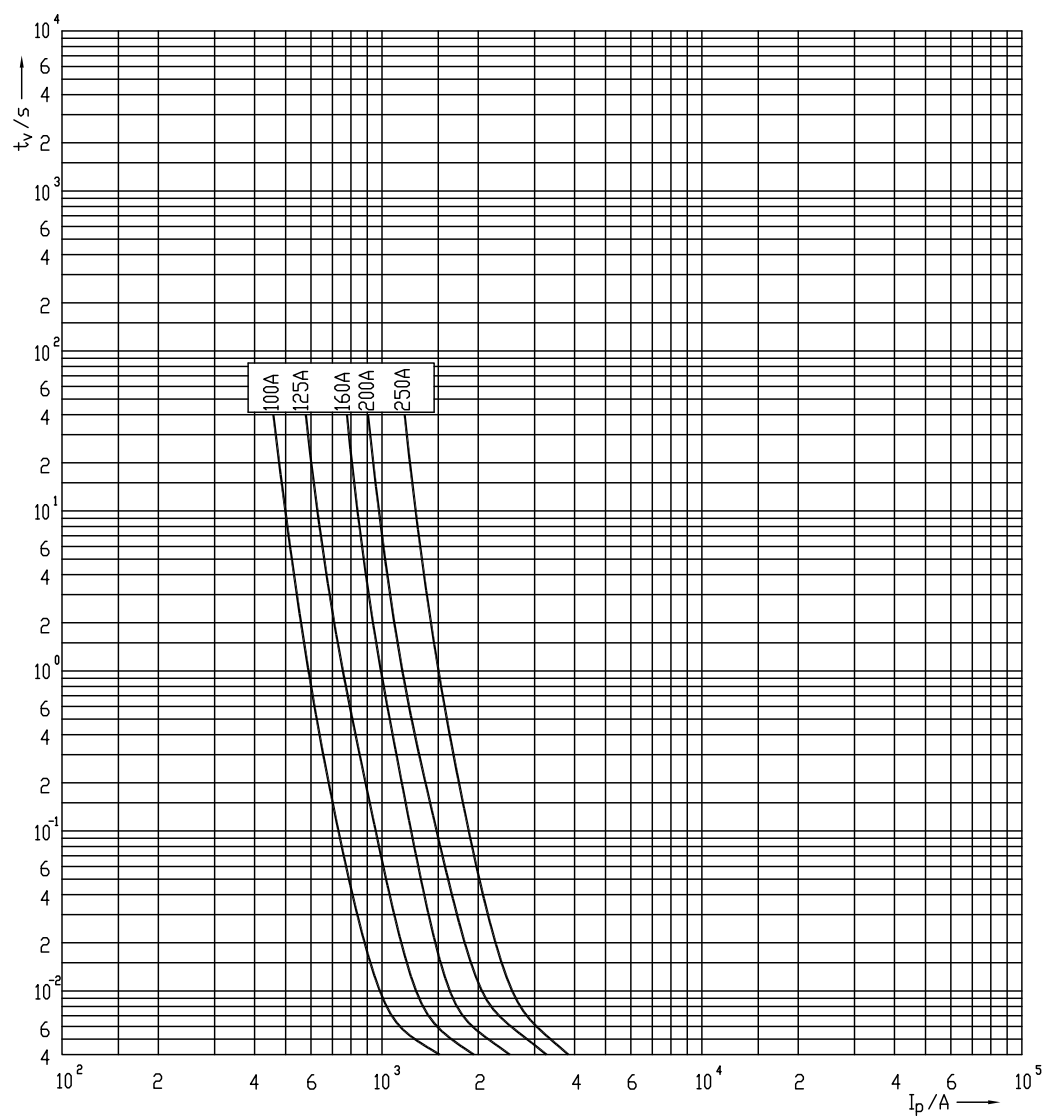
## NH2 S/394/ DC 4000V aR - fuse link

General characteristics	
Rated voltage	4000V d.c. (L/R=15ms), rated test voltage 4200V d.c.
Breaking capacity	30kA d.c.
Characteristic	aR
Standards	IEC 60269-4, IEC 60077-5
Application	Fuse link for DC link protection of railway inverter.

RAILWAY fuse link							
$I_n$ [A]	Code No. Type with centre trip indicator for microswitch MK	Code No. Type without centre trip indicator for microswitch MK	Power dissipation [W]	Pre-arcing Joule integral [A <sup>2</sup> s]	Operating Joule integral [A <sup>2</sup> s] (L/R=15ms)	Weight [g]	Pack. [pcs]
100	004735601	004735606	58	2.300	20.000	3500	1/1
125	004735602	004735607	82	3.700	33.000		
160	004735603	004735608	100	5.800	55.000		
200	004735604	004735609	127	10.000	100.000		
250	004735605	004735610	160	21.000	180.000		

Note: microswitch MK and adapter AMK2 must be ordered separately

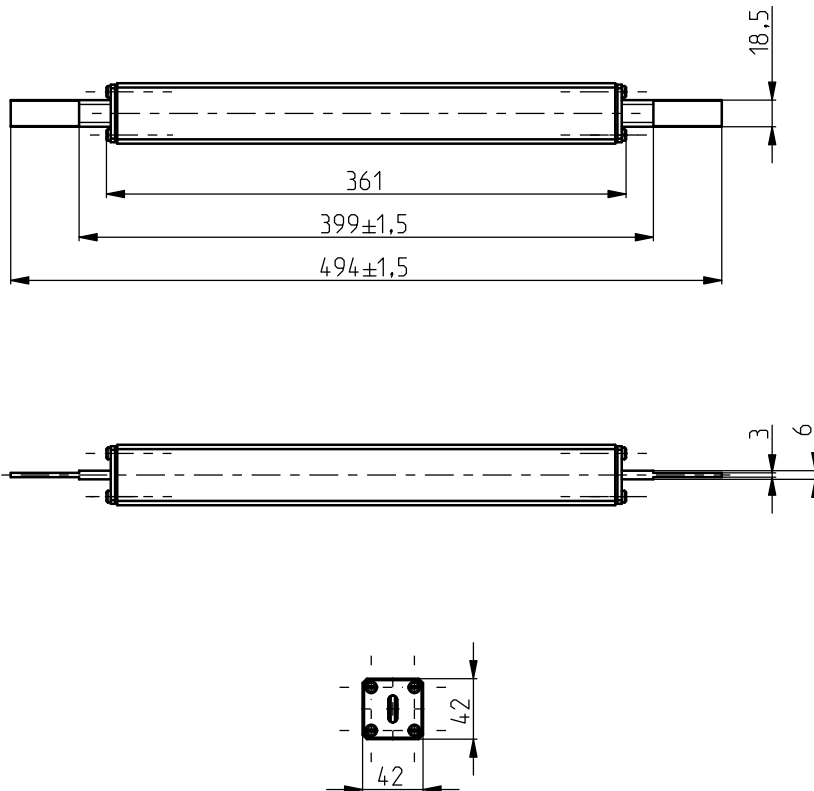


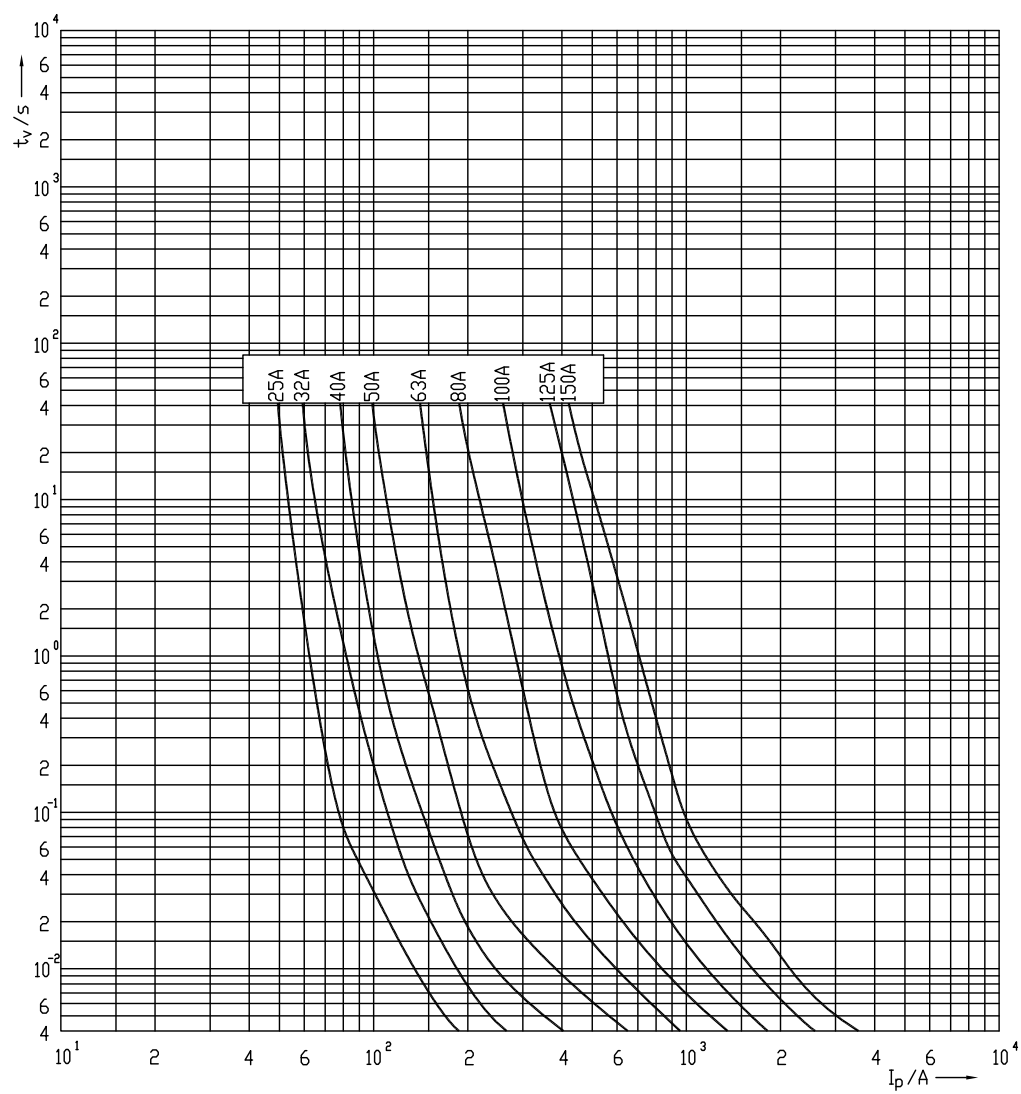


# NH1 /350/DC 4000V aR-fuse link

General characteristics	
Rated voltage	4000V d.c. (L/R=15ms)
Breaking capacity	30kA d.c.
Characteristics	aR
Standard	IEC 60269-4, IEC 60077-5
Application	Heating system in railway vagon

RAILWAY fuse link						
$I_n$ [A]	Code No.	Power dissipation [W]	Pre-arcing Joule integral [A <sup>2</sup> s]	Operating Joule integral [A <sup>2</sup> s] (L/R=15ms)	Weight [g]	Pack. [pcs]
25	004735636	43	28	150	1800	1/1
32	004735637	65	40	300		
40	004735638	88	63	600		
50	004735639	105	112	1.400		
63	004735640	105	252	2.500		
80	004735641	114	494	5.500		
100	004735642	115	1.147	10.000		
125	004735643	132	2.168	19.000		
150	004735644	155	3.388	31.000		



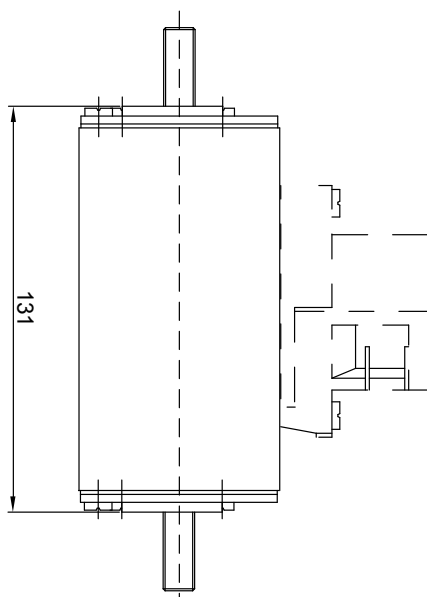
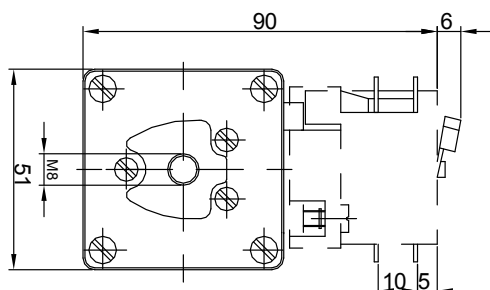


# NH1 / 130 / DC 1000V gR - fuse link

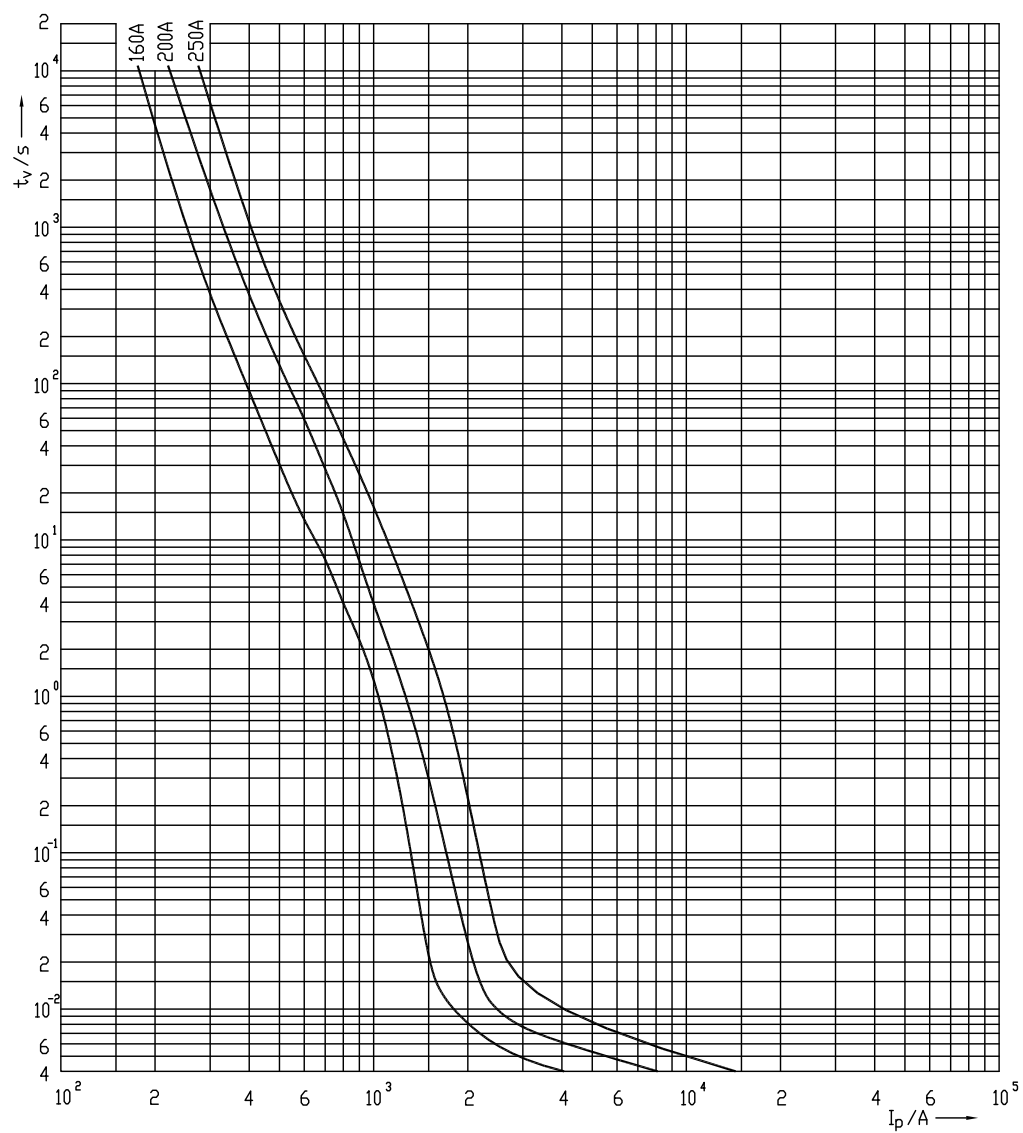
General characteristics	
Rated voltage	1000V d.c. (L/R=10ms)
Breaking capacity	30kA d.c.
Characteristic	gR
Standards	IEC 60269-4
Application	Railway inverter protection Installation directly on copper rails.

RAILWAY fuse link								
$I_n$ [A]	Code No.	Code No. Type with centre trip indicator for microswitch MK+AMK2	Power dissipation ( $0,7 \times I_n$ ) [W]	Power dissipation $I_n$ [W]	Pre-arcing Joule integral [A <sup>2</sup> s]	Operating Joule integral [A <sup>2</sup> s] (L/R=15ms)	Weight [g]	Pack. [pcs]
160	004303530	004303527	15,3	36,5	10.000	16.000	900	1/16
200	004303531	004303528	17,5	42,6	18.000	38.000		
250	004303532	004303529	23,6	56	30.000	60.000		

Note: microswitch MK and adapter AMK2 must be ordered separately



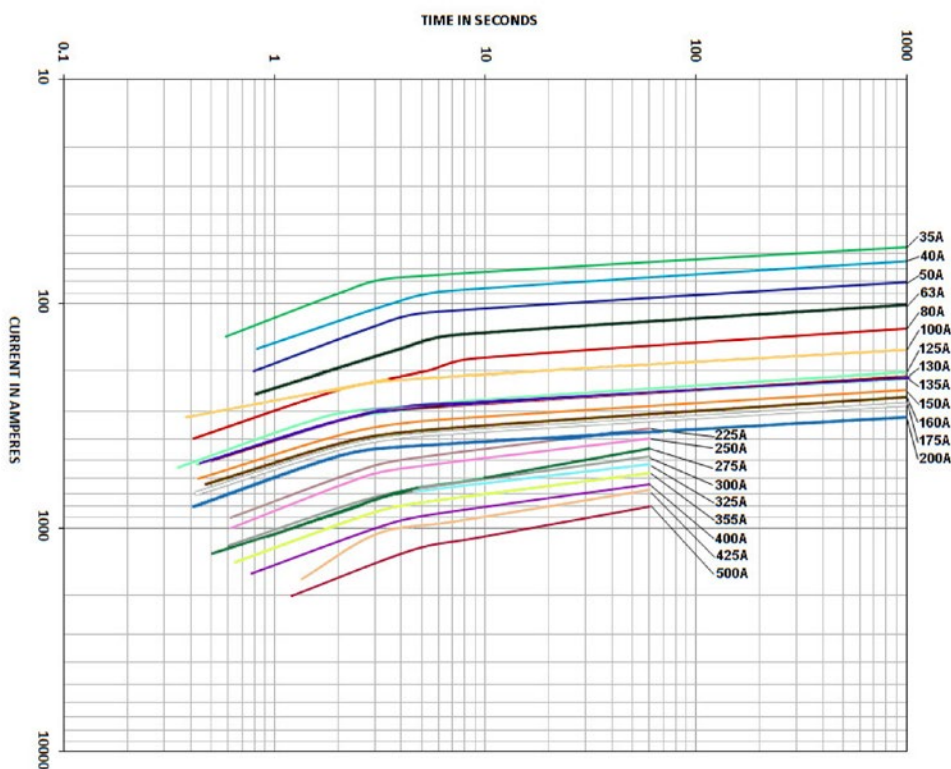




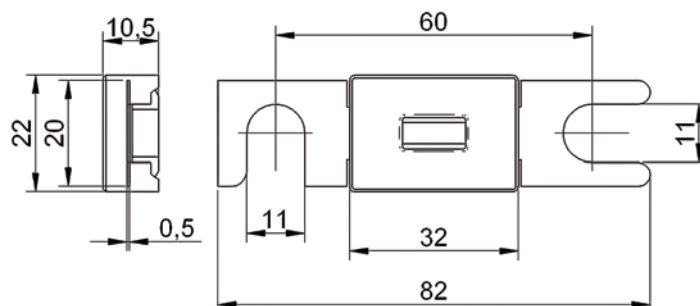
# Fuses for protection of forklift batteries TRB

General characteristics	
Rated voltage	80V d.c.
Standards	DIN 43560/1
Application	TRB fuse-links are used to protect the forklift battery

TRB fuse link				
I <sub>n</sub> [A]	Type	Code Nr.	Weight [g]	Packaging [pcs]
35	TRB 35A/80V	004341020	10	20
50	TRB 50A/80V	004341021		
63	TRB 63A/80V	004341022		
80	TRB 80A/80V	004341023		
100	TRB 100A/80V	004341024		
125	TRB 125A/80V	004341025		
160	TRB 160A/80V	004341026		
200	TRB 200A/80V	004341027		
250	TRB 250A/80V	004341028		
300	TRB 300A/80V	004341029		
355	TRB 355A/80V	004341030		
425	TRB 425A/80V	004341031		



Dimensions TRB fuses



# Fuel Cell Fuses

The characteristics of fuel cell fuses FCF are developed according to standard ISO 8820-7 to meet the needs of fuel cell protection. Fuse links are used in fuel cell applications up to the nominal voltage 450V d.c. and maximum breaking capacity 2000A at time constant up to 10ms. Minimum breaking capacity is  $2 \times I_n$  at nominal voltage.

Without the protection of the specially designed FCF, the high DC voltage could experience severe arcing, thermal incidents or other hazards in the event of the overload or short circuit on fuel cells.

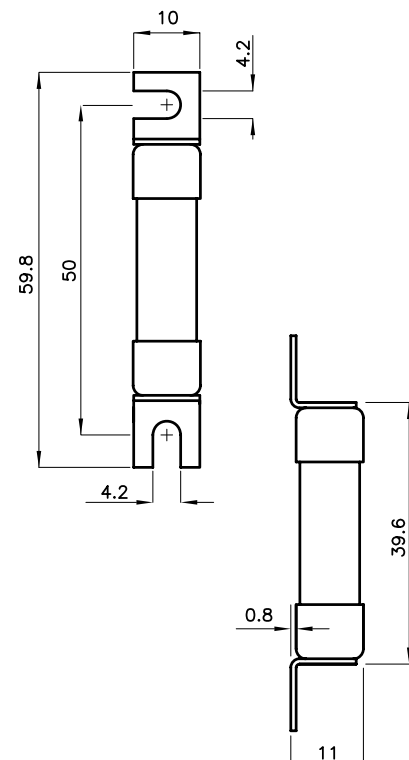
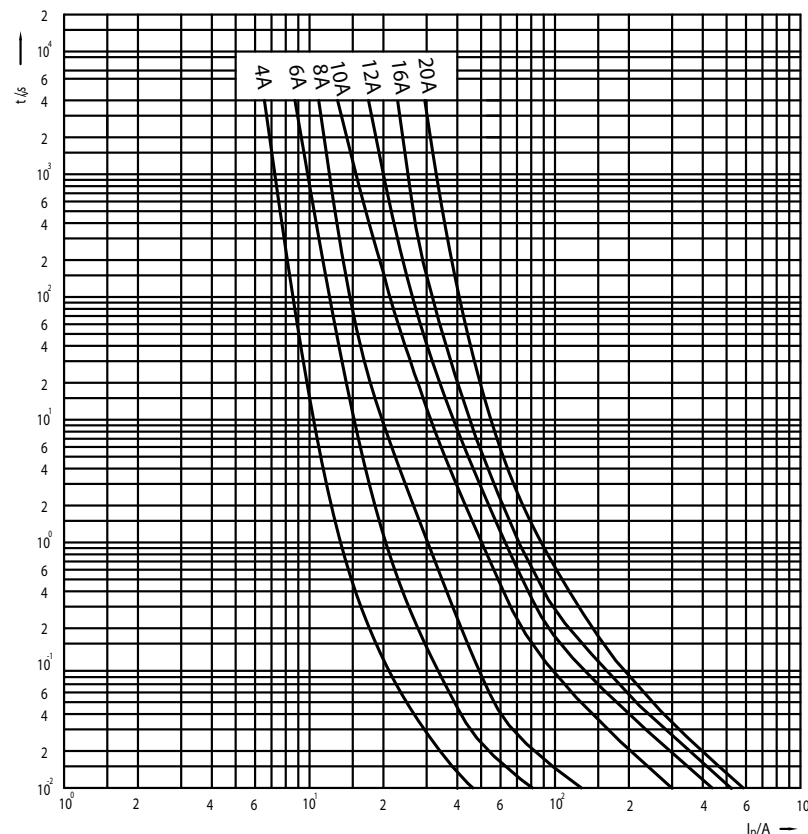
The design of FCF is based on DC fuses. It has been redesigned to fit the needs the fuel cell protection acc. to Standard ISO 8820-7 2007.

Fuel cell fuse-FCF is a reverse current protection device for a fuel cell of a power circuit and it protects the fuel cell from damage caused by reverse current into the fuel cell.

General characteristics	
Rated voltage	450V d.c. (L/R=10ms)
Breaking capacity	2kA d.c.
Standard	ISO 8820-7
Application	For protection of fuel cells



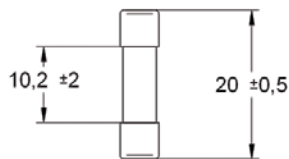
CH 10x38 FUEL CELL FUSE DC								
Size	$I_n$ [A]	Code No. type SU contacts 450V d.c.	Pre-arcing Joule integral [A <sup>2</sup> s] L/R=10ms	Operating Joule integral [A <sup>2</sup> s] L/R=10ms	Power dissipation [0,7 x $I_n$ ] $P_d$ [W]	Power dissipation [ $1 \times I_n$ ] $P_d$ [W]	Weight [g]	Packaging [pcs]
10x38	4	002626202	12	24	0,3	0,6	12	10/380
	6	002626204	26	52	0,4	0,9		
	8	002626206	9	21	0,6	1,3		
	10	002626208	22	55	0,6	1,35		
	12	002626210	61	111	0,6	1,35		
	16	002626212	105	237	0,8	1,8		
	20	002626214	215	371	1,0	2,2		



# Minifuses

General characteristics	
Rated voltage	250V a.c.
Characteristic	F (Fast operation)
Standard	IEC 60127-1, IEC 60127-2
Application	Miniature fuses F are used for protection electronic and telecommunication devices, as well as for semiconductors protection such as transistors, diods, tiristors...

CH Minifuse 5x20 F								
Size	I <sub>n</sub> [A]	Type	Code No	Breaking capacity [A]	Max. ΔV [mV]	Char.	Weight [g]	Packaging [pcs]
5x20	100mA	CH 5x20 F 100mA/250V	006710009	35A	3500	F	5	10
	125mA	CH 5x20 F 125mA/250V	006710010	35A	2000	F		
	160mA	CH 5x20 F 160mA/250V	006710011	35A	2000	F		
	200mA	CH 5x20 F 200mA/250V	006710012	35A	1700	F		
	250mA	CH 5x20 F 250mA/250V	006710013	35A	1400	F		
	315mA	CH 5x20 F 315mA/250V	006710014	35A	1300	F		
	400mA	CH 5x20 F 400mA/250V	006710015	35A	1200	F		
	500mA	CH 5x20 F 500mA/250V	006710002	35A	1000	F		
	630mA	CH 5x20 F 630mA/250V	006710016	35A	650	F		
	800mA	CH 5x20 F 800mA/250V	006710017	35A	240	F		
	1A	CH 5x20 F 1A/250V	006710003	35A	200	F		
	1,25A	CH 5x20 F 1,25A/250V	006710018	35A	200	F		
	1,6A	CH 5x20 F 1,6A/250V	006710019	35A	190	F		
	2A	CH 5x20 F 2A/250V	006710031	35A	170	F		
	2,5A	CH 5x20 F 2,5A/250V	006710021	35A	170	F		
	3,15A	CH 5x20 F 3,15A/250V	006710022	35A	150	F		
	4A	CH 5x20 F 4A/250V	006710023	35A	130	F		
	5A	CH 5x20 F 5A/250V	006710024	35A	130	F		
	6,3A	CH 5x20 F 6,3A/250V	006710025	63A	130	F		
	8A	CH 5x20 F 8A/250V	006710026	63A	120	F		
	10A	CH 5x20 F 10A/250V	006710027	63A	120	F		
	12A	CH 5x20 F 12A/250V	006710028	63A	120	F		
	15A	CH 5x20 F 15A/250V	006710029	63A	120	F		
	20A	CH 5x20 F 20A/250V	006710032	63A	120	F		
	25A	CH 5x20 F 25A/250V	006710033	63A	120	F		

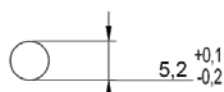
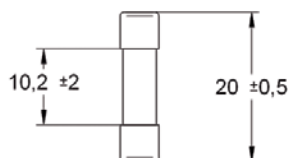


## Test currents of time

Rated current	Test current					
	2,1x I <sub>n</sub> max	2,75x I <sub>n</sub> min	max	4x I <sub>n</sub> min	max	10x I <sub>n</sub> max
32mA ... 100mA	30min	10ms	500ms	3ms	100ms	20ms
100mA ... 6,3A	30min	50ms	2s	10ms	300ms	20ms
pow. 6,3A ... 20A	30min	50ms	2s	10ms	400ms	40ms

General characteristics	
Rated voltage	250V a.c.
Characteristic	T (Delayed operation)
Standard	IEC 60127-1, IEC 60127-2
Application	Miniature fuses T are used for protection electronic and telecommunication devices

CH Minifuse 5x20 T								
Size	$I_n$ [A]	Type	Code No	Breaking capacity [A]	Max. $\Delta V$ [mV]	Char.	Weight [g]	Packaging [pcs]
5x20	32mA	CH 5x20 T 32mA/250V	006710034	35A	5000	T	5	10
	40mA	CH 5x20 T 40mA/250V	006710035	35A	4000	T		
	50mA	CH 5x20 T 50mA/250V	006710036	35A	3500	T		
	63mA	CH 5x20 T 63mA/250V	006710037	35A	3000	T		
	80mA	CH 5x20 T 80mA/250V	006710038	35A	3000	T		
	100mA	CH 5x20 T 100mA/250V	006710039	35A	2500	T		
	125mA	CH 5x20 T 125mA/250V	006710040	35A	2000	T		
	160mA	CH 5x20 T 160mA/250V	006710004	35A	1900	T		
	200mA	CH 5x20 T 200mA/250V	006710041	35A	1500	T		
	250mA	CH 5x20 T 250mA/250V	006710042	35A	1300	T		
	315mA	CH 5x20 T 315mA/250V	006710005	35A	1100	T		
	400mA	CH 5x20 T 400mA/250V	006710043	35A	1000	T		
	500mA	CH 5x20 T 500mA/250V	006710044	35A	900	T		
	630mA	CH 5x20 T 630mA/250V	006710045	35A	300	T		
	800mA	CH 5x20 T 800mA/250V	006710046	35A	250	T		
	1A	CH 5x20 T 1A/250V	006710006	35A	150	T		
	1,25A	CH 5x20 T 1,25A/250V	006710047	35A	150	T		
	1,6A	CH 5x20 T 1,6A/250V	006710048	35A	150	T		
	2A	CH 5x20 T 2A/250V	006710049	35A	150	T		
	2,5A	CH 5x20 T 2,5A/250V	006710050	35A	120	T		
	3,15A	CH 5x20 T 3,15A/250V	006710051	35A	100	T		
	4A	CH 5x20 T 4A/250V	006710052	40A	100	T		
	5A	CH 5x20 T 5A/250V	006710053	50A	100	T		
	6,3A	CH 5x20 T 6,3A/250V	006710054	63A	100	T		
	8A	CH 5x20 T 8A/250V	006710007	63A	100	T		
	10A	CH 5x20 T 10A/250V	006710008	63A	100	T		
	12A	CH 5x20 T 12A/250V	006710055	63A	90	T		
	15A	CH 5x20 T 15A/250V	006710056	63A	90	T		
	20A	CH 5x20 T 20A/250V	006710057	63A	90	T		
	25A	CH 5x20 T 25A/250V	006710058	63A	90	T		



### Test currents of time

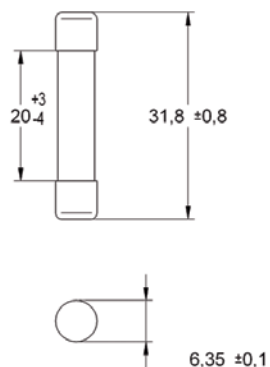
Rated current	Test current						
	$2,1 \times I_n$ max	$2,75 \times I_n$ min	$2,75 \times I_n$ max	$4 \times I_n$ min	$4 \times I_n$ max	$10 \times I_n$ min	$10 \times I_n$ max
32mA ... 100mA	2min	200ms	10s	40ms	3s	10ms	300ms
125mA ... 25A	2min	600ms	10s	150ms	3s	20ms	300ms

**General characteristics**

Rated voltage	250V a.c.
Characteristic	F (Fast operation)
Standard	IEC 60127-1, IEC 60127-2
Application	Miniature fuses F are used for protection electronic and telecommunication devices, as well as for semiconductors protection such as transistors, diodes, tiristors...

**CH Minifuse 6,3x32 F**

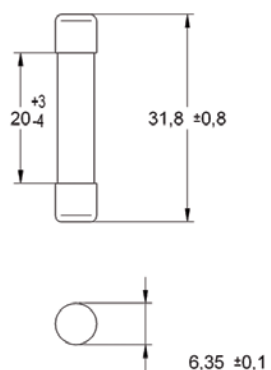
Size	$I_n$ [A]	Type	Code No	Breaking capacity [A]	Max. $\Delta V$ [mV]	Char.	Weight [g]	Packaging [pcs]
6,3x32	50mA	CH 6,3x32 F 50mA/250V	006710059	35	3700	F	5	10
	63mA	CH 6,3x32 F 63mA/250V	006710060	35	3700	F		
	80mA	CH 6,3x32 F 80mA/250V	006710061	35	3500	F		
	100mA	CH 6,3x32 F 100mA/250V	006710062	35	3500	F		
	125mA	CH 6,3x32 F 125mA/250V	006710063	35	2800	F		
	160mA	CH 6,3x32 F 160mA/250V	006710064	35	2500	F		
	200mA	CH 6,3x32 F 200mA/250V	006710065	35	2000	F		
	250mA	CH 6,3x32 F 250mA/250V	006710066	35	2000	F		
	315mA	CH 6,3x32 F 315mA/250V	006710067	35	1700	F		
	400mA	CH 6,3x32 F 400mA/250V	006710068	35	1500	F		
	500mA	CH 6,3x32 F 500mA/250V	006710069	35	1200	F		
	630mA	CH 6,3x32 F 630mA/250V	006710070	35	1100	F		
	800mA	CH 6,3x32 F 800mA/250V	006710071	35	800	F		
	1A	CH 6,3x32 F 1A/250V	006710072	35	350	F		
	1,25A	CH 6,3x32 F 1,25A/250V	006710073	100	250	F		
	1,6A	CH 6,3x32 F 1,6A/250V	006710074	100	250	F		
	2A	CH 6,3x32 F 2A/250V	006710075	100	180	F		
	2,5A	CH 6,3x32 F 2,5A/250V	006710076	100	180	F		
	3,15A	CH 6,3x32 F 3,15A/250V	006710077	100	150	F		
	4A	CH 6,3x32 F 4A/250V	006710078	200	150	F		
	5A	CH 6,3x32 F 5A/250V	006710079	200	150	F		
	6,3A	CH 6,3x32 F 6,3A/250V	006710080	200	150	F		
	8A	CH 6,3x32 F 8A/250V	006710081	200	120	F		
	10A	CH 6,3x32 F 10A/250V	006710082	200	100	F		
	12A	CH 6,3x32 F 12A/250V	006710083	200	100	F		
	15A	CH 6,3x32 F 15A/250V	006710084	200	100	F		
	20A	CH 6,3x32 F 20A/250V	006710085	200	100	F		
	25A	CH 6,3x32 F 25A/250V	006710086	200	100	F		

**Test currents of time**

Rated current	Test current					
	2,1x $I_n$ max	2,75x $I_n$ min	2,75x $I_n$ max	4x $I_n$ min	4x $I_n$ max	10x $I_n$ max
50mA ... 100mA	20min	2ms	200ms	1ms	30ms	5ms
pow. 100mA ... 25A	20min	20ms	1500ms	8ms	400ms	80ms

General characteristics	
Rated voltage	250V a.c.
Characteristic	T (Delayed operation)
Standard	IEC 60127-1, IEC 60127-2
Application	Miniature fuses T are used for protection electronic devices

CH Minifuse 6,3x32 T								
Size	$I_n$ [A]	Type	Code No	Breaking capacity [A]	Max. $\Delta V$ [mV]	Char.	Weight [g]	Packaging [pcs]
6,3x32	32mA	CH 6,3x32 T 32mA/250V	006710087	35	5500	T	5	10
	50mA	CH 6,3x32 T 50mA/250V	006710088	35	4400	T		
	63mA	CH 6,3x32 T 63mA/250V	006710089	35	3700	T		
	80mA	CH 6,3x32 T 80mA/250V	006710090	35	3500	T		
	100mA	CH 6,3x32 T 100mA/250V	006710091	35	3300	T		
	125mA	CH 6,3x32 T 125mA/250V	006710092	35	2800	T		
	160mA	CH 6,3x32 T 160mA/250V	006710093	35	2400	T		
	200mA	CH 6,3x32 T 200mA/250V	006710094	35	1900	T		
	250mA	CH 6,3x32 T 250mA/250V	006710095	35	1600	T		
	315mA	CH 6,3x32 T 315mA/250V	006710096	35	1400	T		
	400mA	CH 6,3x32 T 400mA/250V	006710097	35	1200	T		
	500mA	CH 6,3x32 T 500mA/250V	006710098	35	1000	T		
	630mA	CH 6,3x32 T 630mA/250V	006710099	35	1000	T		
	800mA	CH 6,3x32 T 800mA/250V	006710100	35	500	T		
	1A	CH 6,3x32 T 1A/250V	006710101	35	350	T		
	1,25A	CH 6,3x32 T 1,25A/250V	006710102	100	250	T		
	1,6A	CH 6,3x32 T 1,6A/250V	006710103	100	250	T		
	2A	CH 6,3x32 T 2A/250V	006710104	100	180	T		
	2,5A	CH 6,3x32 T 2,5A/250V	006710105	100	180	T		
	3,15A	CH 6,3x32 T 3,15A/250V	006710106	100	130	T		
	4A	CH 6,3x32 T 4A/250V	006710107	200	130	T		
	5A	CH 6,3x32 T 5A/250V	006710108	200	130	T		
	6,3A	CH 6,3x32 T 6,3A/250V	006710109	200	100	T		
	8A	CH 6,3x32 T 8A/250V	006710110	200	100	T		
	10A	CH 6,3x32 T 10A/250V	006710111	200	100	T		
	12A	CH 6,3x32 T 12A/250V	006710112	200	100	T		
	15A	CH 6,3x32 T 15A/250V	006710113	200	100	T		
	20A	CH 6,3x32 T 20A/250V	006710114	200	100	T		



### Test currents of time

Rated current	Test current					
	$2,1 \times I_n$ max	$2,75 \times I_n$ min	$2,75 \times I_n$ max	$4 \times I_n$ min	$4 \times I_n$ max	$10 \times I_n$ max
50mA ... 100mA	20s	2ms	200ms	1ms	30ms	5ms
pow. 100mA ... 20A	20s	20ms	1500ms	8ms	400ms	80ms

General characteristics	
Rated voltage	250V a.c.
Breaking capacity	1,5 kA
Characteristic	FF (Very fast operation), HF
Standard	IEC 60127-1, IEC 60127-2
Application	Miniature fuses HF are used for protection electronic devices. Miniature fuses FF are used for semiconductors protection such as transistors, diods, tiristors...

CH MiniFFuse 5x20 FF & HF								
Size	I <sub>n</sub> [A]	Type	Code No	Operating Joule integral I <sup>2</sup> t [A <sup>2</sup> s]	Power dissipation P <sub>d</sub> [W]	Char.	Weight [g]	Packaging [pcs]
5x20 FF	500mA	CH 5X20 FF 500mA/250V	006710115	0,12	0,4	FF	5	10
	630mA	CH 5X20 FF 630mA/250V	006710116	0,17	0,44	FF		
	800mA	CH 5X20 FF 800mA/250V	006710117	0,26	0,48	FF		
	1A	CH 5X20 FF 1A/250V	006710118	0,17	0,75	FF		
	1,25A	CH 5X20 FF 1,25A/250V	006710119	0,26	0,94	FF		
	1,6A	CH 5X20 FF 1,6A/250V	006710120	0,31	1,12	FF		
	2A	CH 5X20 FF 2A/250V	006710121	0,64	1,3	FF		
	2,5A	CH 5X20 FF 2,5A/250V	006710122	0,88	1,5	FF		
	3,15A	CH 5X20 FF 3,15A/250V	006710123	4,6	1,73	FF		
	4A	CH 5X20 FF 4A/250V	006710124	3,2	2	FF		
	5A	CH 5X20 FF 5A/250V	006710125	5,9	2,5	FF		
	6,3A	CH 5X20 FF 6,3A/250V	006710126	10	2,84	FF		
	8A	CH 5X20 FF 8A/250V	006710127	19	3,2	FF		
	10A	CH 5X20 FF 10A/250V	006710128	30	4	FF		
	12,5A	CH 5X20 FF 12,5A/250V	006710129	44	4,96	FF		
5x20 HF	50mA	CH 5X20 HF 50mA/250V	006710192	0,00022	0,2	HF		
	63mA	CH 5X20 HF 63mA/250V	006710193	0,00037	0,25	HF		
	80mA	CH 5X20 HF 80mA/250V	006710194	0,00073	0,26	HF		
	100mA	CH 5X20 HF 100mA/250V	006710195	0,0011	0,26	HF		
	125mA	CH 5X20 HF 125mA/250V	006710196	0,0018	0,31	HF		
	160mA	CH 5X20 HF 160mA/250V	006710197	0,0034	0,3	HF		
	200mA	CH 5X20 HF 200mA/250V	006710198	0,007	0,34	HF		
	250mA	CH 5X20 HF 250mA/250V	006710199	0,031	0,7	HF		
	315mA	CH 5X20 HF 315mA/250V	006710200	0,049	0,79	HF		
	400mA	CH 5X20 HF 400mA/250V	006710201	0,062	0,8	HF		
	500mA	CH 5X20 HF 500mA/250V	006710202	0,15	0,9	HF		
	630mA	CH 5X20 HF 630mA/250V	006710203	0,25	0,95	HF		
	800mA	CH 5X20 HF 800mA/250V	006710204	0,6	0,96	HF		
	1A	CH 5X20 HF 1A/250V	006710205	0,95	1	HF		
	1,25A	CH 5X20 HF 1,25A/250V	006710206	1,6	1	HF		
	1,6A	CH 5X20 HF 1,6A/250V	006710207	2,7	0,96	HF		
	2A	CH 5X20 HF 2A/250V	006710208	4,2	1	HF		
	2,5A	CH 5X20 HF 2,5A/250V	006710209	7,8	1	HF		
	3,15A	CH 5X20 HF 3,15A/250V	006710210	12	1,1	HF		
	4A	CH 5X20 HF 4A/250V	006710211	20	1,2	HF		
	5A	CH 5X20 HF 5A/250V	006710212	32	1,25	HF		
	6,3A	CH 5X20 HF 6,3A/250V	006710213	51	1,26	HF		
	8A	CH 5X20 HF 8A/250V	006710214	67	1,6	HF		
	10A	CH 5X20 HF 10A/250V	006710215	121	2	HF		

## Test currents of time

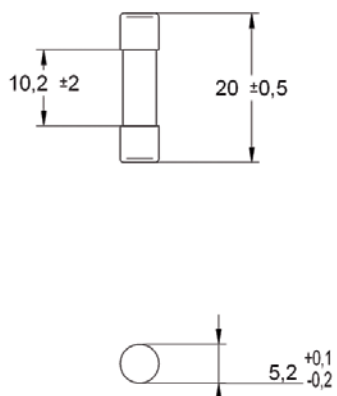
Rated current	Test current					
	2,1x I <sub>n</sub> max	2,75x I <sub>n</sub> min	max	4x I <sub>n</sub> min	max	10x I <sub>n</sub> max
500mA ... 12,5A FF	<1s	2ms	100ms	1ms	15ms	2ms
50mA ... 3,15A HF	<30min	10ms	2s	3ms	300ms	<20ms
54A ... 10A HF	<30min	10ms	3s	3ms	300ms	<20ms





General characteristics	
Rated voltage	250V a.c.
Breaking capacity	1,5 kA
Characteristic	HT (Delayed operation)
Standard	IEC 60127-1, IEC 60127-2
Application	Miniature fuses HT are used for protection electronic devices

CH Minifuse 5x20 HT								
Size	$I_n$ [A]	Type	Code No	Operating Joule integral $I^2t$ [A <sup>2</sup> s]	Power dissipation $P_d$ [W]	Char.	Weight [g]	Packaging [pcs]
5x20	100mA	CH 5x20 HT 100mA/250V	006710288	0,029	0,25	HT	5	10
	125mA	CH 5x20 HT 125mA/250V	006710289	0,045	0,28	HT		
	160mA	CH 5x20 HT 160mA/250V	006710290	0,08	0,34	HT		
	200mA	CH 5x20 HT 200mA/250V	006710291	0,14	0,34	HT		
	250mA	CH 5x20 HT 250mA/250V	006710292	0,074	0,38	HT		
	315mA	CH 5x20 HT 315mA/250V	006710293	0,12	0,35	HT		
	400mA	CH 5x20 HT 400mA/250V	006710294	0,31	0,34	HT		
	500mA	CH 5x20 HT 500mA/250V	006710295	0,49	0,38	HT		
	630mA	CH 5x20 HT 630mA/250V	006710296	0,78	0,38	HT		
	800mA	CH 5x20 HT 800mA/250V	006710297	1,5	0,28	HT		
	1A	CH 5x20 HT 1A/250V	006710298	2,3	0,25	HT		
	1,25A	CH 5x20 HT 1,25A/250V	006710299	3,6	0,31	HT		
	1,6A	CH 5x20 HT 1,6A/250V	006710300	5,9	0,32	HT		
	2A	CH 5x20 HT 2A/250V	006710301	12	0,38	HT		
	2,5A	CH 5x20 HT 2,5A/250V	006710302	23	0,45	HT		
	3,15A	CH 5x20 HT 3,15A/250V	006710303	25	0,44	HT		
	4A	CH 5x20 HT 4A/250V	006710304	51	0,4	HT		
	5A	CH 5x20 HT 5A/250V	006710305	80	0,5	HT		
	6,3A	CH 5x20 HT 6,3A/250V	006710306	135	0,63	HT		
	8A	CH 5x20 HT 8A/250V	006710307	205	0,8	HT		
	10A	CH 5x20 HT 10A/250V	006710308	352	1	HT		



### Test currents of time

Rated current	Test current					
	2,1x $I_n$ max	2,75x $I_n$ min	2,75x $I_n$ max	4x $I_n$ min	4x $I_n$ max	10x $I_n$ max
50mA ... 3,15A	<30min	1s	80s	95ms	5s	10ms-100ms
pow. 100mA ... 20A	<30min	1s	80s	150ms	5s	20ms-100ms

General characteristics	
Rated voltage	500V a.c.
Breaking capacity	1,5 kA
Characteristic	FF (Very fast operation), HF
Standard	IEC 60127-1, IEC 60127-2
Application	Miniature fuses HF are used for protection electronic devices. Miniature fuses FF are used for semiconductors protection such as transistors, diods, tiristors...

CH MiniFFuse 6,3x32 FF & HF								
Size	I <sub>n</sub> [A]	Type	Code No	Operating Joule integral I <sup>2</sup> t [A <sup>2</sup> s]	Power dissipation P <sub>d</sub> [W]	Char.	Weight [g]	Packaging [pcs]
6,3x32 FF	1A	CH 6,3x32 FF 1A/500V	006710130	0,14	0,4	FF	10	10
	1,25A	CH 6,3x32 FF 1,25A/500V	006710131	0,22	0,44	FF		
	1,6A	CH 6,3x32 FF 1,6A/500V	006710132	0,31	0,48	FF		
	2A	CH 6,3x32 FF 2A/500V	006710133	0,64	0,75	FF		
	2,5A	CH 6,3x32 FF 2,5A/500V	006710134	1,2	0,94	FF		
	3,15A	CH 6,3x32 FF 3,15A/500V	006710135	2	1,12	FF		
	4A	CH 6,3x32 FF 4A/500V	006710136	5	1,3	FF		
	5A	CH 6,3x32 FF 4A/500V	006710137	10	1,5	FF		
	6,3A	CH 6,3x32 FF 6,3A/500V	006710138	3	1,73	FF		
	8A	CH 6,3x32 FF 8A/500V	006710139	6,5	2	FF		
	10A	CH 6,3x32 FF 10A/500V	006710140	12	2,5	FF		
	12,5A	CH 6,3x32 FF 12,5A/500V	006710141	18	2,84	FF		
	16A	CH 6,3x32 FF 16A/500V	006710142	31	3,2	FF		
6,3x32 HF	315mA	CH 6,3x32 HF 315mA/500V	006710216	0,0025	0,2	HF		
	400mA	CH 6,3x32 HF 400mA/500V	006710217	0,0045	0,25	HF		
	500mA	CH 6,3x32 HF 500mA/500V	006710218	0,009	0,26	HF		
	630mA	CH 6,3x32 HF 630mA/500V	006710219	0,015	0,26	HF		
	800mA	CH 6,3x32 HF 800mA/500V	006710220	0,3	0,31	HF		
	1A	CH 6,3x32 HF 1A/500V	006710221	0,4	0,3	HF		
	1,25A	CH 6,3x32 HF 1,25A/500V	006710222	0,8	0,34	HF		
	1,6A	CH 6,3x32 HF 1,6A/500V	006710223	1,5	0,7	HF		
	2A	CH 6,3x32 HF 2A/500V	006710224	2,5	0,79	HF		
	2,5A	CH 6,3x32 HF 2,5A/500V	006710225	5	0,8	HF		
	3,15A	CH 6,3x32 HF 3,15A/500V	006710226	9	0,9	HF		
	4A	CH 6,3x32 HF 4A/500V	006710227	18	0,95	HF		
	5A	CH 6,3x32 HF 5A/500V	006710228	40	0,96	HF		
	6,3A	CH 6,3x32 HF 6,3A/500V	006710229	80	1	HF		
	8A	CH 6,3x32 HF 8A/500V	006710230	150	1	HF		
	10A	CH 6,3x32 HF 10A/500V	006710231	240	0,96	HF		
	12,5A	CH 6,3x32 HF 12,5A/500V	006710232	500	1	HF		
	16A	CH 6,3x32 HF 16A/500V	006710233	920	1	HF		
	20A	CH 6,3x32 HF 20A/500V	006710234	1500	1,1	HF		
	25A	CH 6,3x32 HF 25A/500V	006710235	3100	1,2	HF		

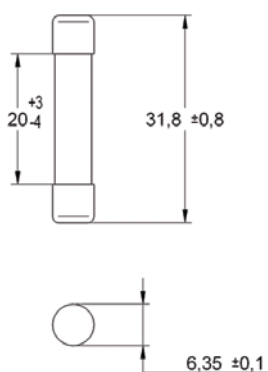
Test currents of time

Rated current	Test current					
	2,1x I <sub>n</sub> max	2,75x I <sub>n</sub>		4x I <sub>n</sub>		10x I <sub>n</sub> max
1A ... 5A FF	<1h	4ms	100ms	1ms	25ms	<5ms
6,3A ... 16A FF	<1h	4ms	300ms	1ms	25ms	<5ms
315mA ... 800mA HF	<30min	20ms	100ms	8ms	400ms	<20ms
1A ... 25A HF	<30min	100ms	300ms	20ms	1s	<50ms



General characteristics	
Rated voltage	500V a.c.
Breaking capacity	1,5 kA
Characteristic	HT (Delayed operation)
Standard	IEC 60127-1, IEC 60127-2
Application	Miniature fuses HT are used for protection electronic devices

CH Minifuse 6,3x32 HT								
Size	$I_n$ [A]	Type	Code No	Operating Joule integral $I^2t$ [A <sup>2</sup> s]	Power dissipation $P_d$ [W]	Char.	Weight [g]	Packaging [pcs]
6,3x32	100mA	CH 6,3x32 HT 100mA/500V	006710309	0,05	0,008	HT	10	10
	125mA	CH 6,3x32 HT 125mA/500V	006710310	0,08	0,01	HT		
	160mA	CH 6,3x32 HT 160mA/500V	006710311	0,12	0,012	HT		
	200mA	CH 6,3x32 HT 200mA/500V	006710312	0,2	0,017	HT		
	250mA	CH 6,3x32 HT 250mA/500V	006710313	0,35	0,018	HT		
	315mA	CH 6,3x32 HT 315mA/500V	006710314	0,5	0,2	HT		
	400mA	CH 6,3x32 HT 400mA/500V	006710315	0,8	0,25	HT		
	500mA	CH 6,3x32 HT 500mA/500V	006710316	0,32	0,26	HT		
	630mA	CH 6,3x32 HT 630mA/500V	006710317	0,6	0,26	HT		
	800mA	CH 6,3x32 HT 800mA/500V	006710318	1	0,31	HT		
	1A	CH 6,3x32 HT 1A/500V	006710319	1,5	0,3	HT		
	1,25A	CH 6,3x32 HT 1,25A/500V	006710320	3,1	0,34	HT		
	1,6A	CH 6,3x32 HT 1,6A/500V	006710321	5,2	0,7	HT		
	2A	CH 6,3x32 HT 2A/500V	006710322	10	0,79	HT		
	2,5A	CH 6,3x32 HT 2,5A/500V	006710323	19	0,8	HT		
	3,15A	CH 6,3x32 HT 3,15A/500V	006710324	37	0,9	HT		
	4A	CH 6,3x32 HT 4A/500V	006710325	68	0,95	HT		
	5A	CH 6,3x32 HT 5A/500V	006710326	130	0,96	HT		
	6,3A	CH 6,3x32 HT 6,3A/500V	006710327	215	1	HT		
	8A	CH 6,3x32 HT 8A/500V	006710328	370	1	HT		
	10A	CH 6,3x32 HT 10A/500V	006710329	620	0,96	HT		
	12,5A	CH 6,3x32 HT 12,5A/500V	006710330	1300	1	HT		
	16A	CH 6,3x32 HT 16A/500V	006710331	2500	1	HT		
	20A	CH 6,3x32 HT 20A/500V	006710332	3400	1,1	HT		
	25A	CH 6,3x32 HT 25A/500V	006710333	5600	1,2	HT		
	32A	CH 6,3x32 HT 32A/500V	006710334	3900	2,2	HT		



### Test currents of time

Rated current	Test current					
	$2,1 \times I_n$ max	$2,75 \times I_n$ min	$2,75 \times I_n$ max	$4 \times I_n$ min	$4 \times I_n$ max	$10 \times I_n$ max
315mA ... 800mA	<30min	400ms	80s	95ms	5s	10ms-300ms
1A ... 25A	<30min	400ms	80s	150ms	5s	20ms-300ms



