Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Main characteristics

Recognized

650 to 1300VAC / 63 to 2800A.

- Exceptionally low I^2T, Watt losses.
- Non-magnetic construction, highly reliable low voltage.
- Indicator system.
- Conformity to UL, CSA investigated, IEC, DIN and VDE standards.
- Increased technical performance
- Higher ratings.
- Reduction in volume and weight.
- This fuse preselection table indicates, for each size:
  -rated current (or rating) In
  - pre-arcing I^2t (I^2tp) at 1 ms
  - total operating I^2t (I^2t_t) at 1000 V and 850V(I)f=50Hz, cos φ =0.15, and for a total operating time from 8 to 10 ms
  - dissipated power Pn at
  the rated current In, and
  at 0.8 In, in steady state
  - breaking capacity at various voltages, checked by tests made in accordance with IEC and American standards.

Estimated breaking capacity: 300 kA

PSC 650 to 1300VAC US and European standard

Size	Nominal Voltage U_N (VAC)		Ampere Rating (A)	Pre-arcing I^2t @ 1ms (kA_2s)	Total I^2t @ 1000V (*) @ Un (kA_2s)	Power (W)		Tested Breaking capacity	
	IEC	UL				End contacts	Blades	IEC	USA
70	1250	1300	50	0,116	0,7	16	16	100kA @ 1250V	100kA @ 1300V
			63	0,210	1,2	26	26		
			80	0,470	2,7	27	27		
			100	0,830	4,8	30	30		
			125	1,30	7,5	38	38		
			160	2,55	15	45	45		
			200	4,7	27	54	56		
			250	9,6	55	58	61		
	1200	1300	280	14	82	61	64	100kA @ 1200V	100kA @ 1300V
			315	20	115	66	72		
	1100	1200	350	28	158	68	75	150kA @ 1100V	150kA @ 1200V
			400	39	224	81	90		
			450	62	356	82	82		
	1000	1100	500	84	483	83	83	120kA @ 1000V	120kA @ 1100V
	800	900	550	128	576(*)	83	83	100kA @ 800V	100kA @ 900V
	750	800	630	176	730(*)	91	91	100kA @ 750V	100kA @ 800V
71	1250	1300	160	2,6	15	46	46	100kA @ 1250V	100kA @ 1300V
			200	4,7	27	54	54		
			250	8,9	51	61	61		
			280	12	68	68	70		
			315	16	92	73	76		
			350	22	127	76	80		
			400	38	220	76	80		
			450	47	270	87	95		
		1300 (TTI)	500	68	390	90	X		150kA @ 1300V
	1100	1200	500	68	390	X	100	150kA @ 1100V	150kA @ 1200V
			550	84	485	98	112		
			630	125	725	105	X		
	1000	1100	630	125	725	X	120	150kA @ 1000V	150kA @ 1100V
			700	180	1040	105	105		
	900	950	800	290	1540(*)	116	116	100kA @ 900V	100kA @ 950V
	800	850	900	446	2010(*)	120	120	100kA @ 800V	100kA @ 850V

(1) at 850 V
(2) does not exist with blades

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Main characteristics

PSC 650 to 1300VAC US and European standard

Size	Nominal Voltage U_N (VAC)		Ampere Rating (A)	Pre-arcing I^2t @ 1ms (kA_2s)	Total I^2t @ 1000V (*) @ Un (kA_2s)	Power (W)		Tested Breaking capacity Estimated B.C 300 kA	
	IEC	UL				End contacts	Blades	IEC	USA
72	1250	1300	280 315 350 400 450 500 550 630	10 15 21 32,5 44 57 68 105	60 87 120 190 255 330 390 610	72 76 77 80 87 94 110 113	72 76 77 80 89 98 120 X	100kA @ 1250V	100kA @ 1300V
	1100	1200	630 700 800	105 145 215	610 815 1240	X 122 125	125 140 146	150kA @ 1100V	150kA à 1200V
	1000	1100	700 800 900	145 215 312	815 1240 1800	X X 130	140 146 152	150kA @ 1000V	150kA @ 1100V
	850	900	1000	439	2150(*)	136	136	100kA @ 850V	100kA @ 900V
73	1250	1300	315 350 375 400 450 500 550 630 700 800	12 17 19 25 35,5 44 57 84 110 190	68 100 110 145 205 255 330 485 640 1090	84 86 93 99 110 116 125 135 136	84 86 93 100 112 120 132 X X	100kA @ 1250V	100kA @ 1300V
	1200	1300	700 900	110 250	640 1090	X 150	146 X	100kA @ 1200V	100kA @ 1300V
	1100	1200	800	190	1090	X	148	150kA @ 1100V	150kA @ 1200V
	1000	1100	900 1000 1100	250 370 445	1440 2130 2555	X 152 168	170 168 208	150kA @ 1000V	150kA @ 1100V
	950	1000	1100	445	2430(*)	168	X	150kA @ 950V	150kA @ 1000V
	900	1000	1000 1100 1250 1400	370 445 585 755	1920(*) 2280(*) 3080(*) 4100(*)	X X 186 210	174 208 X X	150kA @ 900V	150kA @ 1000V
	850	900	1400	755	3700(*)	210	X	150kA @ 850V	150kA @ 900V
	690	700	1500 1600	1180 1430	4750(*) 5740(*)	200 203	X X	180kA @ 690V	180kA @ 700V
	600	650	1800	2040	7150(*)	206	X	120kA @ 600V	120kA @ 650V
2 x 72	1250		630 700 800 900 1000 1100	60 84 130 176 228 272	348 480 760 1020 1320 1560	160 162 168 183 197 231		100kA @ 1250V	
	1100		1250 1400	426 568	2440 3260	237 256		100kA @ 1100V	
	1000		1600	860	4895	262		100kA @ 1000V	
	900		1800	1250	6350(*)	275		100kA @ 900V	
	750		2000	1760	7570(*)	285		100kA @ 750V	
	650		2200 2500	2410 3470	8350(*) 12000(*)	320 340		100kA @ 650V	
2 x 73	1250		800 900 1000 1100 1250	100 142 176 228 336	580 820 1000 1300 1900	195 208 231 244 262		100kA@ 1250V	
	1100		1400 1600 1800	440 760 1000	2600 4400 5800	283 286 315		100kA @ 1100V	
	1000		2000	1480	8500	319		120kA @ 1000V	
	950		2200	1780	9632(*)	353		100kA @ 950V	
	900		2500	2340	12075(*)	390		110kA @ 900V	
	850		2800	3000	15000(*)	440		100kA @ 850V	
	600		3000 3200	4980 5720	15700(*) 19030(*)	405 426		200kA @ 600V	
	550		3600	8160	25200(*)	430		200kA @ 550V	

(1) at 850 V

(2) does not exist with blades

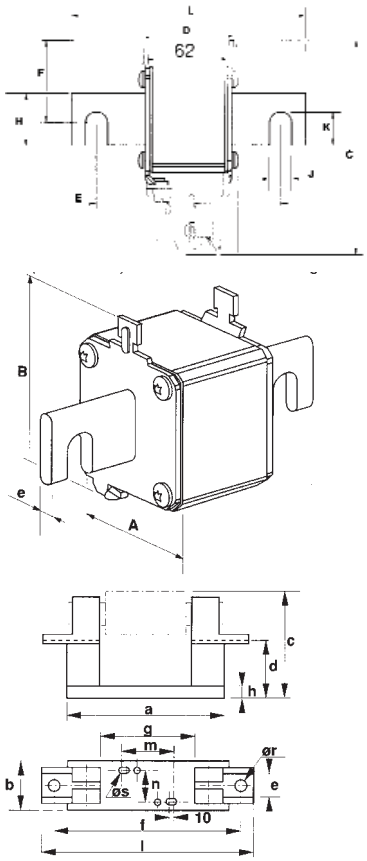
12/04

Ferraz Shawmut

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
IEC Terminals - French 70 - 73 Blades

Size	Designation	Reference Number	Weight (g)	Pack.	Base	I/I_N*	Catalog Number
70	12,5 URD 70 E F 0063	P300600	380	3	SP 70	1	PC70UD13C63EF
	12,5 URD 70 E F 0080	Q300601				1	PC70UD13C80EF
	12,5 URD 70 E F 0100	R300602				1	PC70UD13C100EF
	12,5 URD 70 E F 0125	S300603				0,95	PC70UD13C125EF
	12,5 URD 70 E F 0160	T300604				0,90	PC70UD13C160EF
	12,5 URD 70 E F 0200	V300605				0,85	PC70UD13C200EF
	12,5 URD 70 E F 0250	W300606				0,80	PC70UD13C250EF
	12 URD 70 E F 0280	L300712				0,80	PC70UD12C280EF
	12 URD 70 E F 0315	X300607				0,75	PC70UD12C315EF
	11 URD 70 E F 0350	Y300608				0,75	PC70UD11C350EF
71	12,5 URD 71 E F 0160	C300750	570	3	SE 71	1	PC71UD13C160EF
	12,5 URD 71 E F 0200	Z300609				1	PC71UD13C200EF
	12,5 URD 71 E F 0250	A300610				1	PC71UD13C250EF
	12,5 URD 71 E F 0280	M300713				0,95	PC71UD13C280EF
	12,5 URD 71 E F 0315	B300611				0,95	PC71UD13C315EF
	12,5 URD 71 E F 0350	C300612				0,90	PC71UD13C350EF
	12,5 URD 71 E F 0400	D300613				0,90	PC71UD13C400EF
	12,5 URD 71 E F 0450	E300614				0,85	PC71UD13C450EF
	11 URD 71 E F 0500	F300615				0,85	PC71UD11C500EF
	11 URD 71 E F 0550	G300616				0,80	PC71UD11C550EF
	10 URD 71 E F 0630	H300617				0,80	PC71UD10C630EF
72	12,5 URD 72 E F 0280	J300618	800	3	SE 72	1	PC72UD13C280EF
	12,5 URD 72 E F 0315	K300619				1	PC72UD13C315EF
	12,5 URD 72 E F 0350	L300620				1	PC72UD13C350EF
	12,5 URD 72 E F 0400	M300621				1	PC72UD13C400EF
	12,5 URD 72 E F 0450	N300622				0,95	PC72UD13C450EF
	12,5 URD 72 E F 0500	P300623				0,90	PC72UD13C500EF
	12,5 URD 72 E F 0550	Q300624				0,85	PC72UD13C550EF
	11 URD 72 E F 0630	R300625				0,85	PC72UD11C630EF
	10 URD 72 E F 0700	S300626				0,80	PC72UD10C700EF
	10 URD 72 E F 0800	T300627				0,80	PC72UD10C800EF
73	12,5 URD 73 E F 0315	V300628	1150	1	SF50-73	1	PC73UD13C315EF
	12,5 URD 73 E F 0350	W300629				1	PC73UD13C350EF
	12,5 URD 73 E F 0400	X300630				1	PC73UD13C400EF
	12,5 URD 73 E F 0450	Y300631				1	PC73UD13C450EF
	12,5 URD 73 E F 0500	Z300632				1	PC73UD13C500EF
	12,5 URD 73 E F 0550	A300633				0,95	PC73UD13C550EF
	12,5 URD 73 E F 0630	B300634				0,95	PC73UD13C630EF
	12 URD 73 E F 0700	C300635				0,90	PC73UD12C700EF
	11 URD 73 E F 0800	D300636				0,90	PC73UD11C800EF
	10 URD 73 E F 0900	E300637				0,85	PC73UD10C900EF
	9 URD 73 E F 1000	F300638				0,85	PC73UD90V10CEF
	9 URD 73 E F 1100	G300639				0,80	PC73UD90V11CEF

Fuse holders and microswitches supplied separately



Pull out grip PM7 (V097676) in size 70-71-72

* I/I_N : Ratio "maximum continuous permissible RMS current I_N" for a fuse fitted into the bases.

Connections defined as per IEC 60269-1 and for a calm ambience of 30°C.

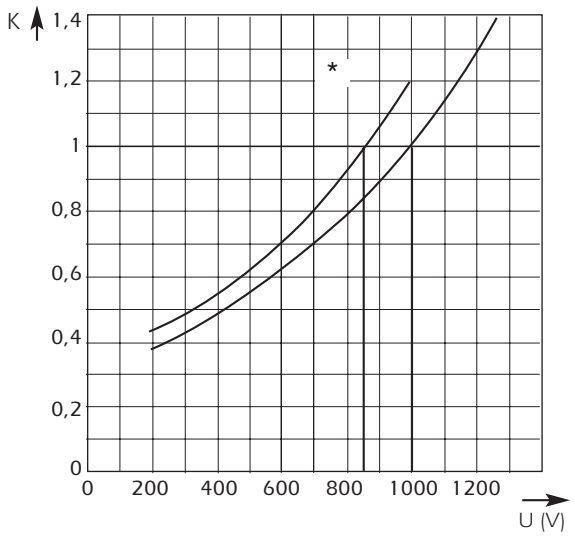
	A	B	C	D	$E^{\pm 1,3}$	$L^{\pm 1,3}$	F	H	J	k	e
70	40	62	96	67	100	123,4	38	18	9	11	6
71	51	69	103	68	110	133,4	39	25	10,5	16	6
72	60	78	112	68	114,4	149,4	43	32	13	21,2	6
73	74,5	92,5	127	68	114,4	149,4	57	40	13	19,5	6

Note: dimensions in mm

Fuse holders	Ref. N°	Cat. N°	a	b	c	d	e	f	g	h	l	m	n	r	s	Weight (g)
SP 70	F096099	SP70	148	42	92	47,5	26	168	88	10	188	60	28	8,5	5,5	400
SE 51-71	V098711	SE71	148	42	103	47	32	182	85	8,5	214	60	28	10,5	5,5	470
SE 52-72	W098712	SE72	150	54	114	49	42	204	80	10	240	45	35	12,5	8,5	940
SF 53-73	C209187	SF50-73	160	60	142	55	40	210	80	10	250	40	35	18	9	2000

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Multiplier coefficient



Left: Mean curve indicating variation of total I^2t (I^2t_t) and total operating time T_t in accordance with working voltage U.

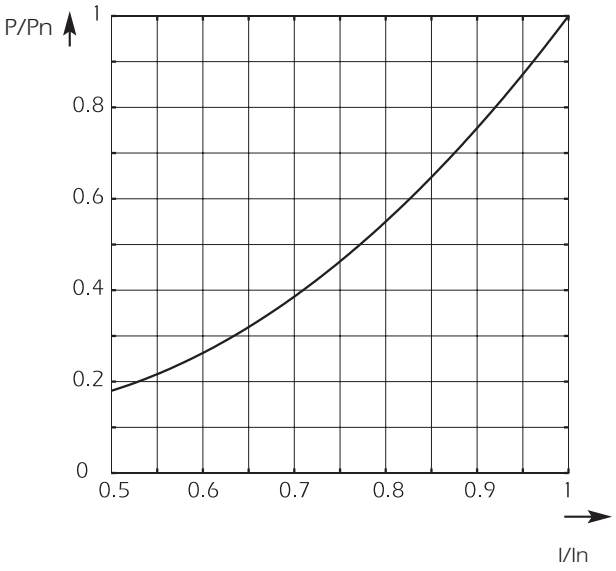
Example:
Fuse 350 A in size 70.
I_p = 10 000 A U = 1100 V

At 1000 V
I^2t_t = 115 000 A^2s T_t = 7 ms

At 1100 V
I^2t_t = 115 000 x 1.13 = 130 000 A^2s
T_t = 7 x 1.13 = 7.9 ms

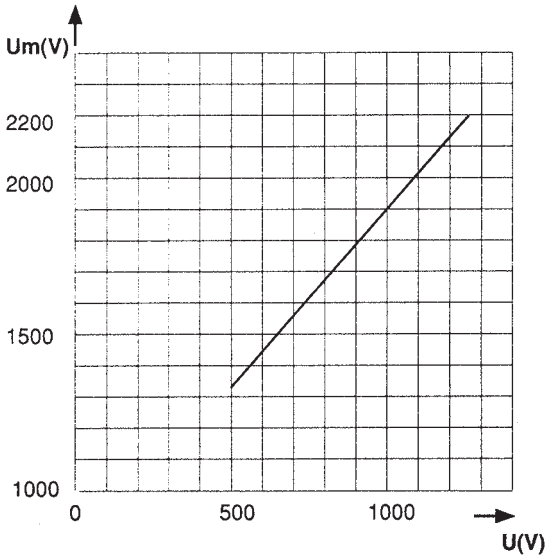
* curve for fuses with I^2t published at 850VAC

Dissipated power



Above left: Curve enabling calculation of dissipated power P by a fuse rated I_N, as a function of the RMS current I, in multiples of I_N, in steady state.

Arc voltage



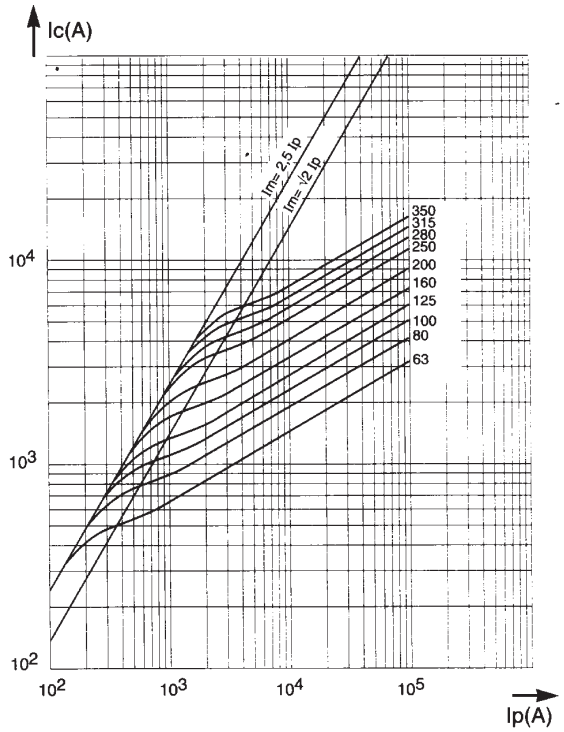
Above right: Curve indicating peak arc voltage Um which may appear across fuse terminals as a function of working voltage U at cos φ = 0.15

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Size 70

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



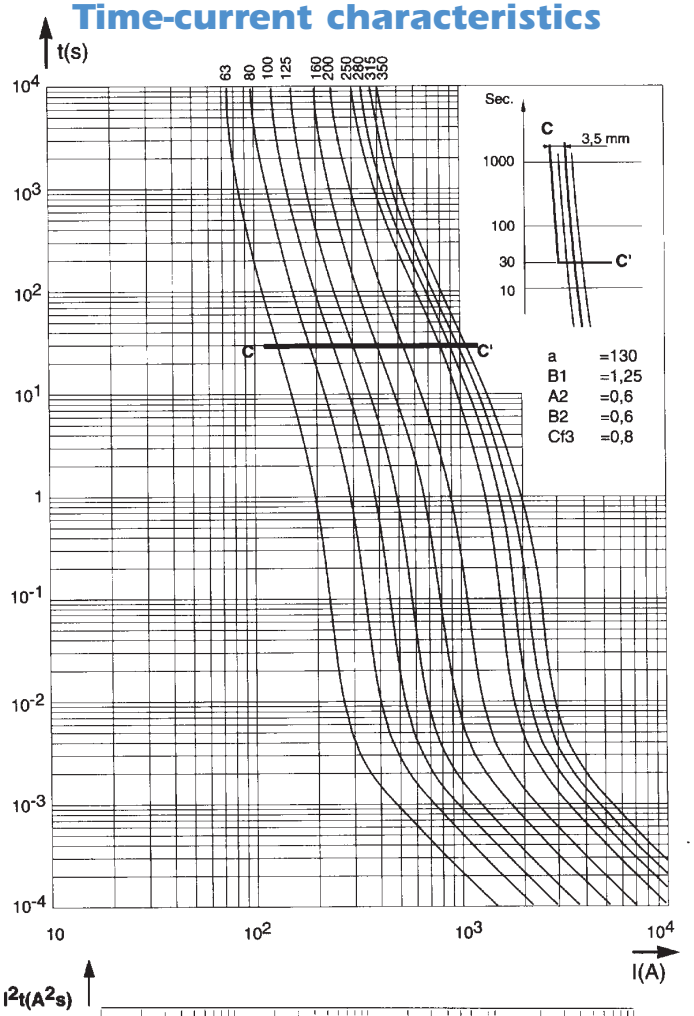
Time-current characteristics

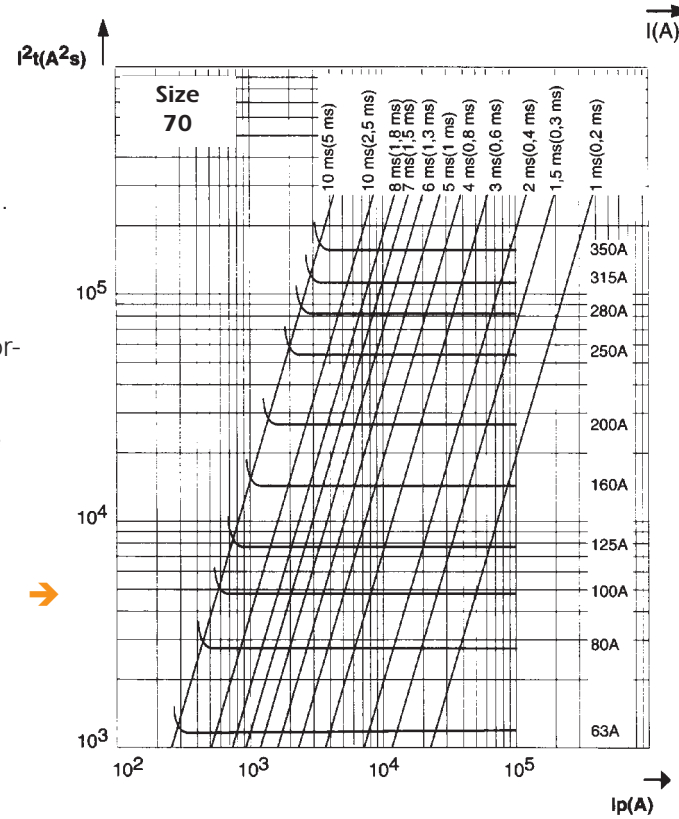
Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Time-current characteristics

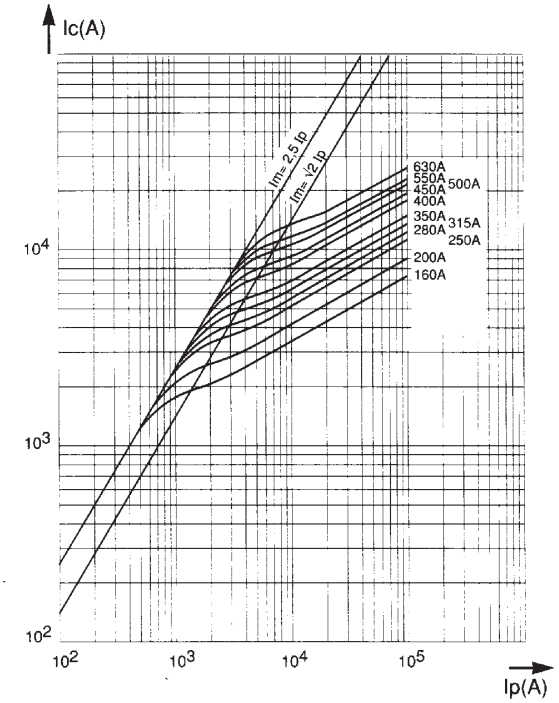




Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



Time-current characteristics

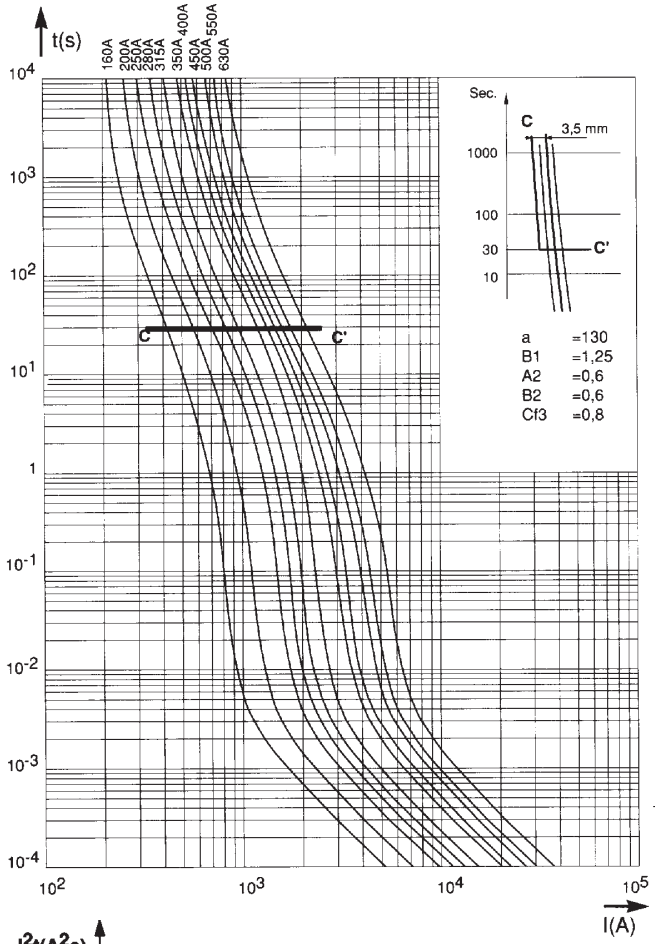
Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.

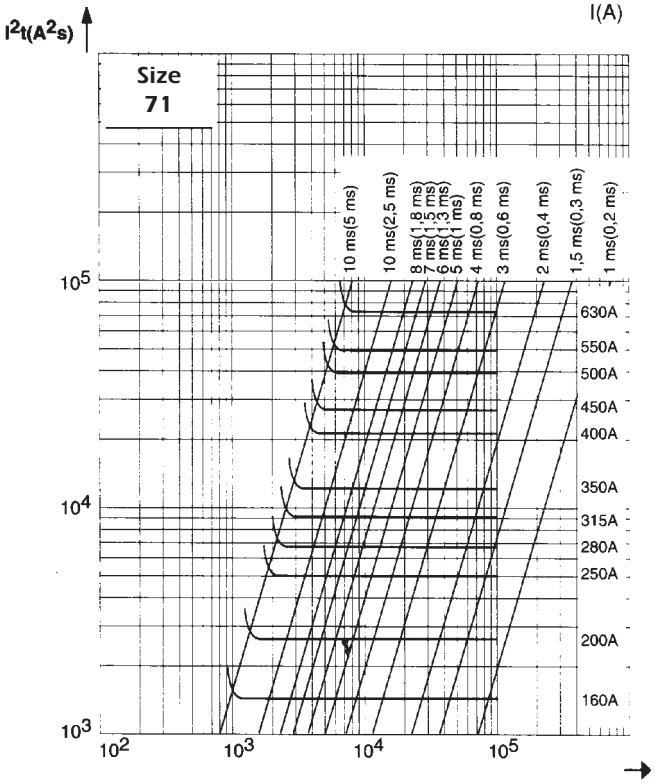
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Size 71
Time-current characteristics



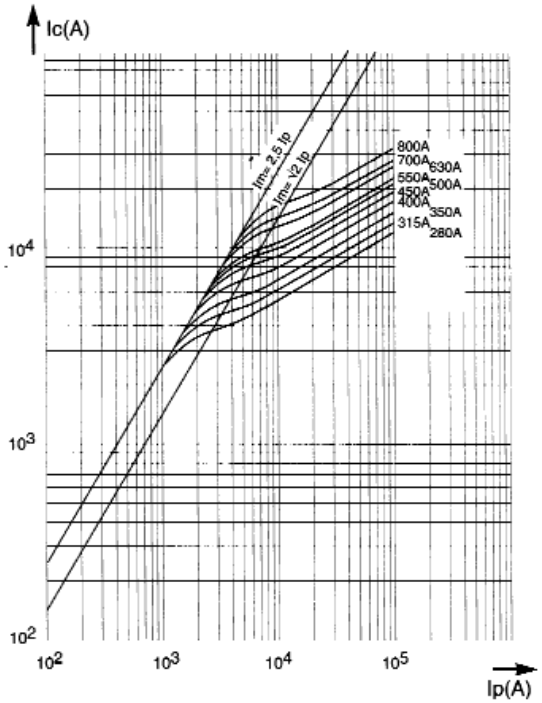


Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Size 72

Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



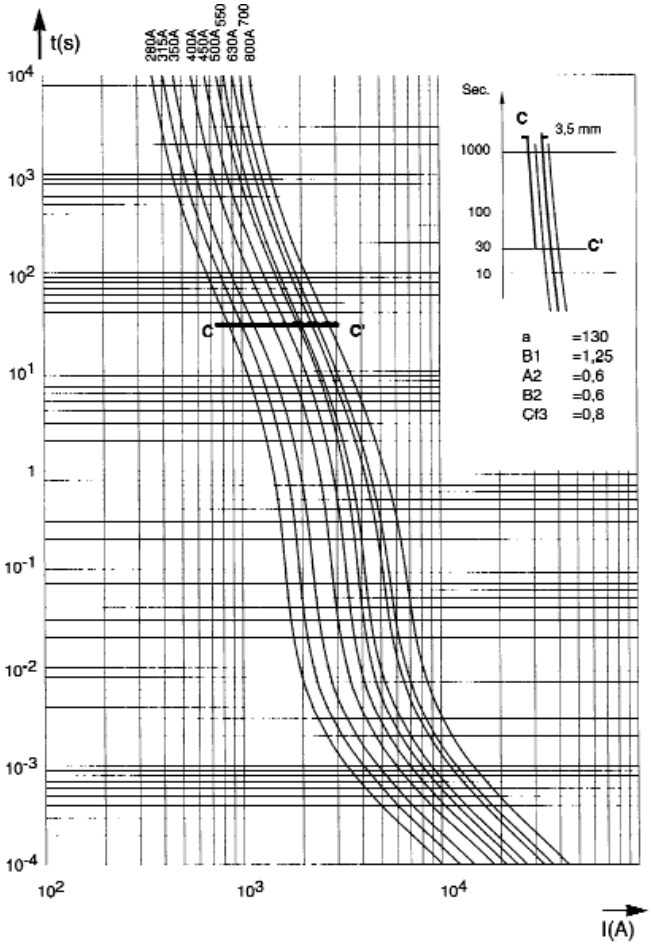
Time-current characteristics

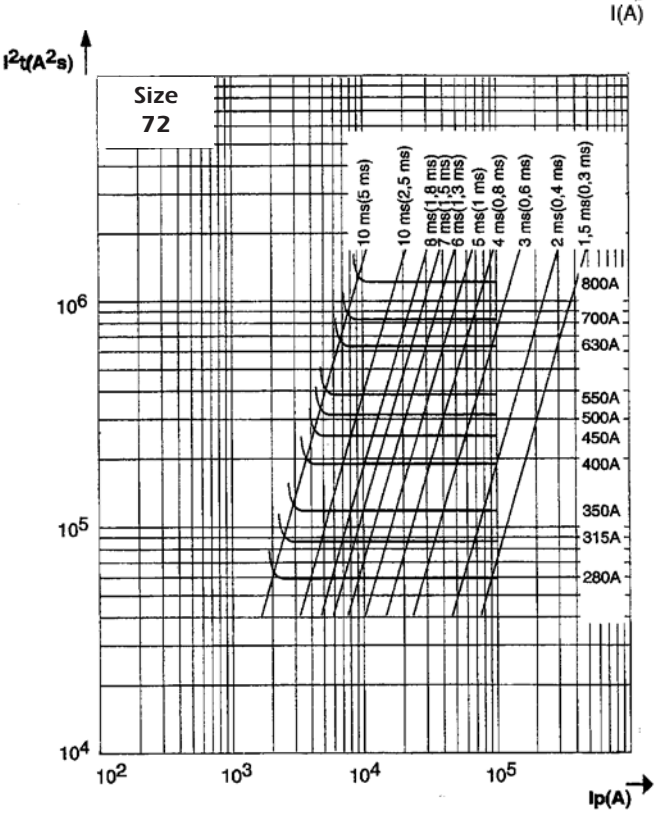
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Time-current characteristics



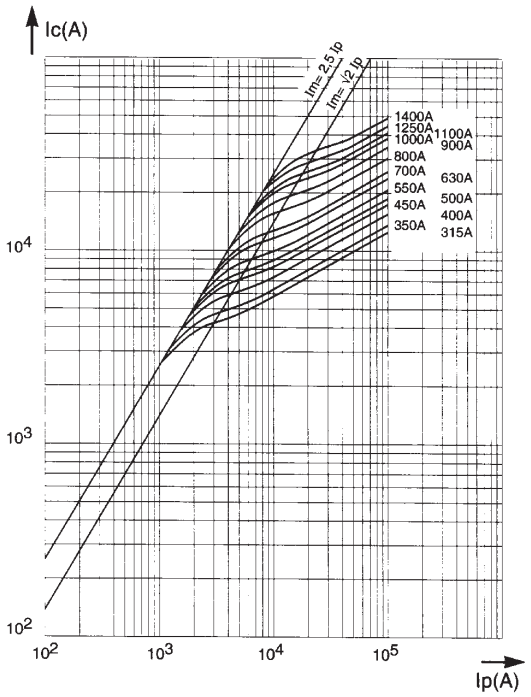


Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Size 73

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



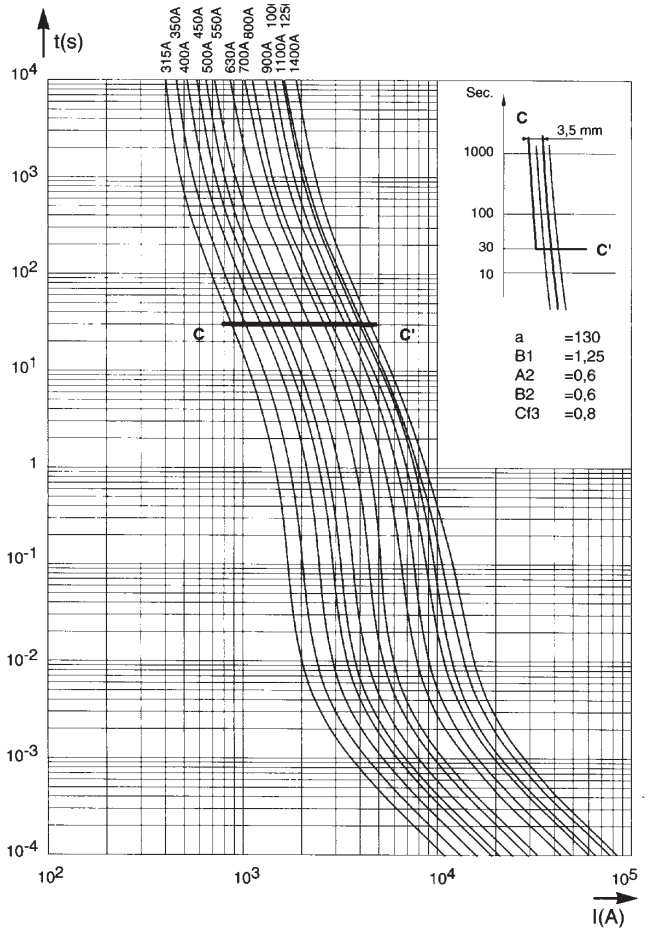
Time-current characteristics

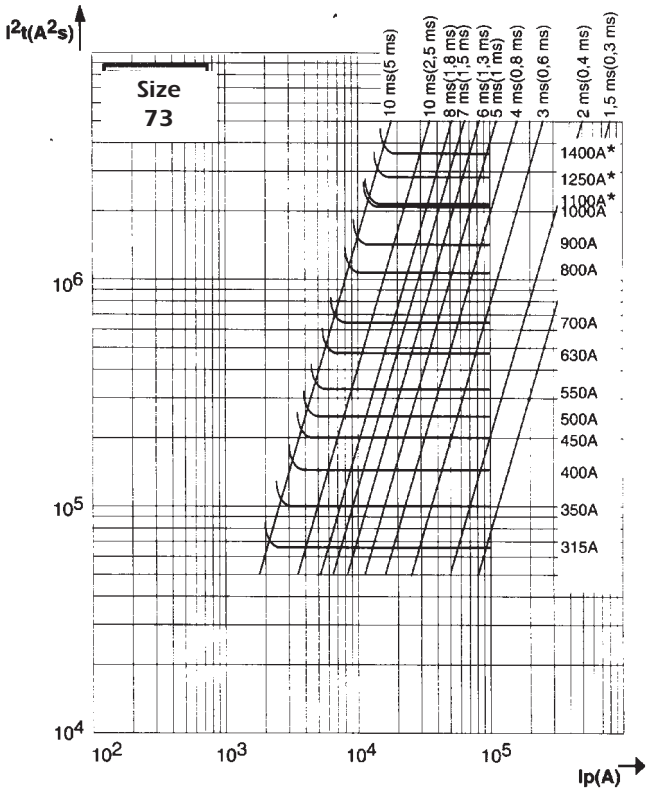
Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Time-current characteristics



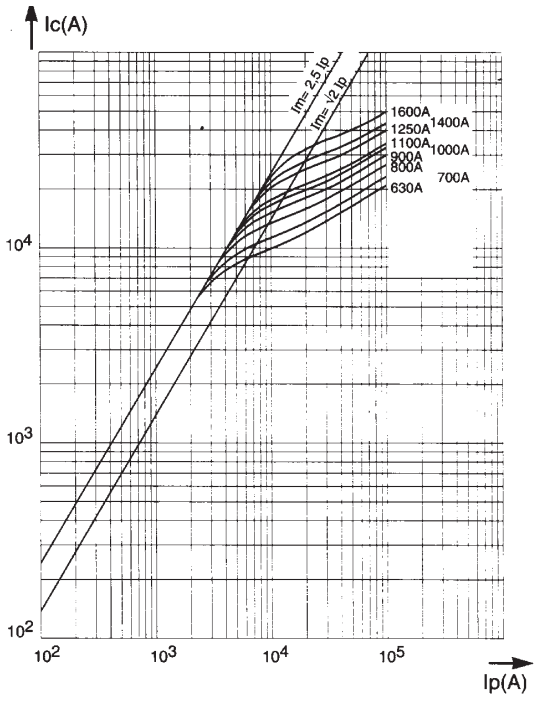


Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Size 2x72

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



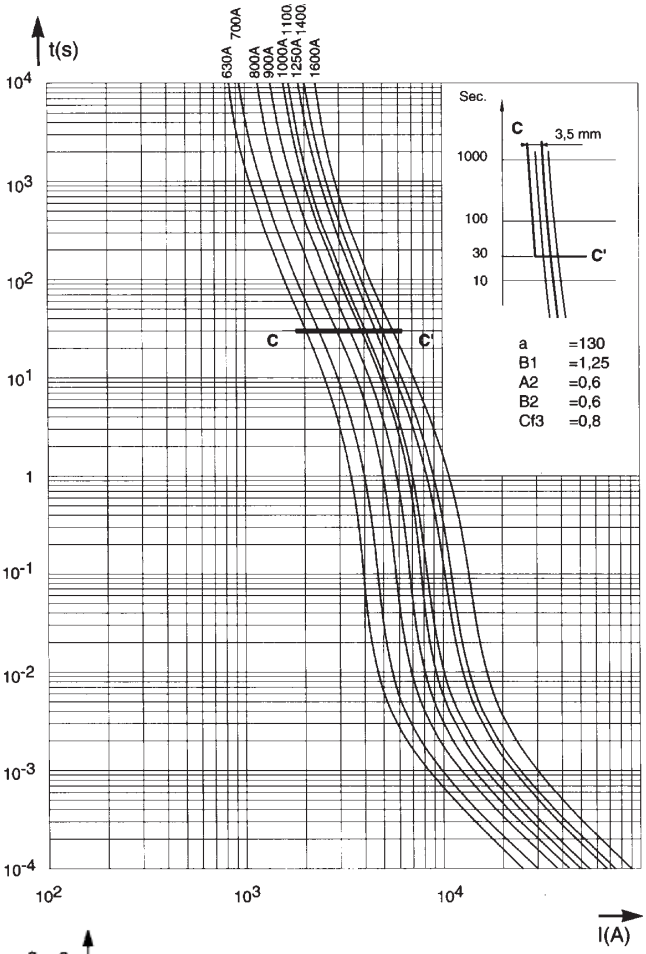
Time-current characteristics

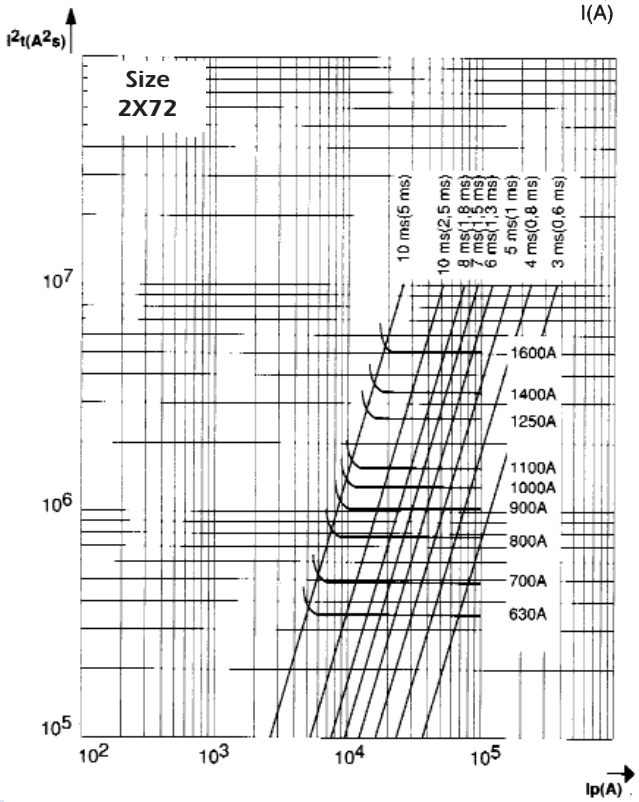
Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Time-current characteristics

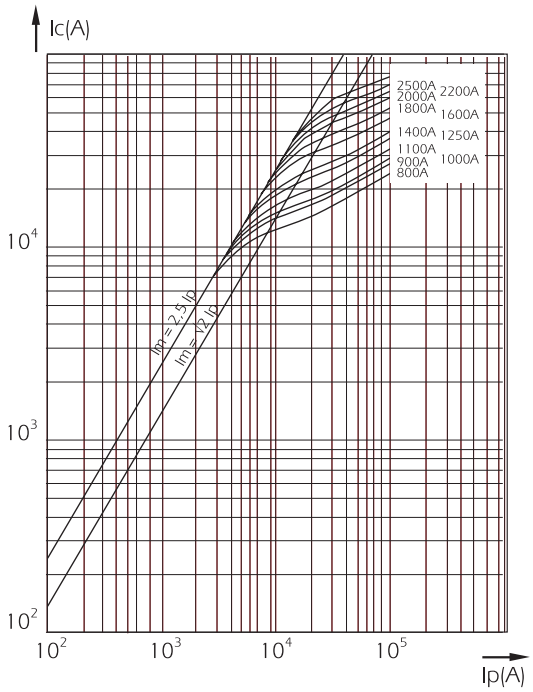




Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



Time-current characteristics

Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.

- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

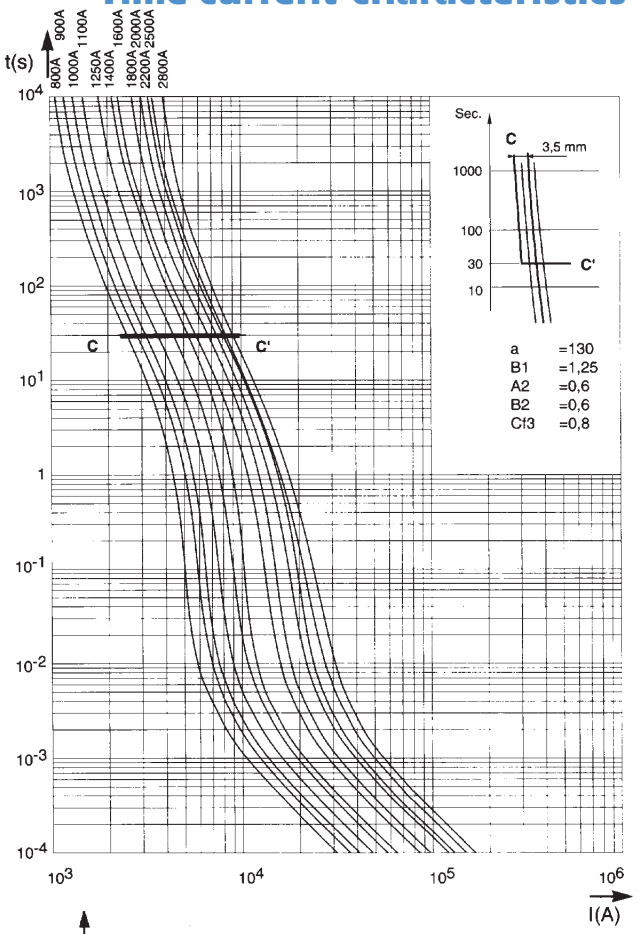
Maximum values of total operating I²t and total operating times

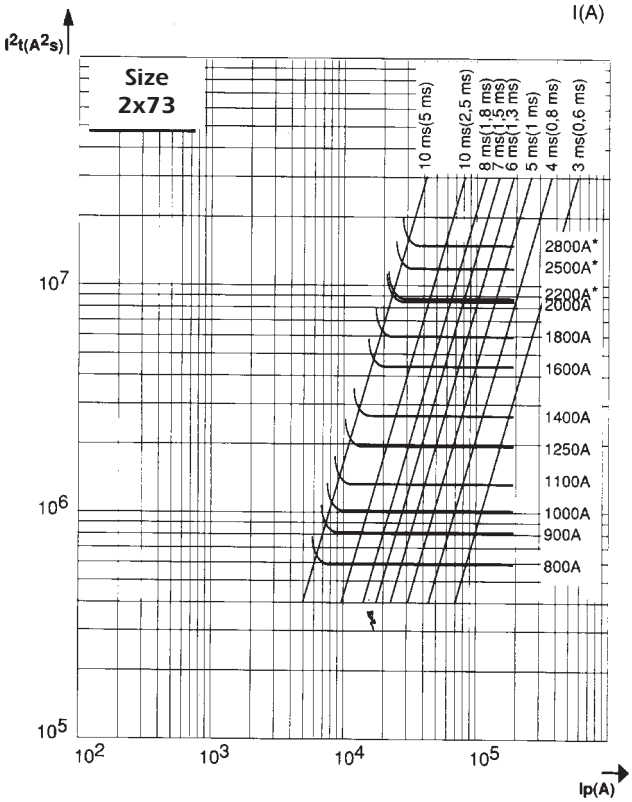
Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.

The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Size 2x72

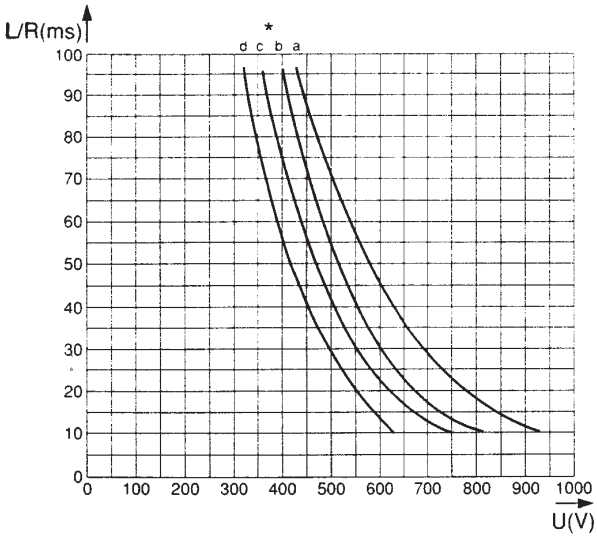
Time-current characteristics

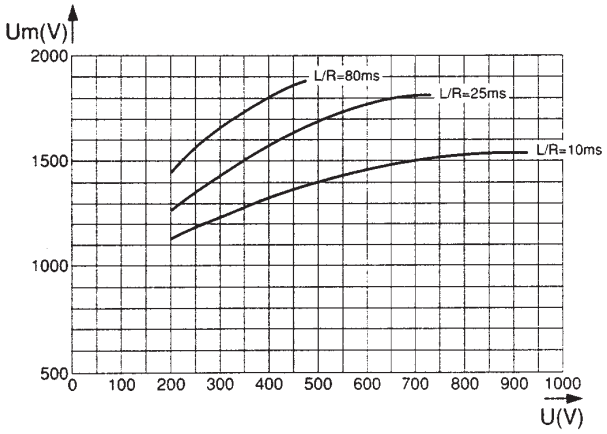




Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

DC working voltage possibilities





Top: Curves indicating the maximum time constant L/R of the fault path as a function of the DC voltage U, for the rated currents in the sizes indicated in the table.

Ipm (1) values indicate the minimum breaking current in Amperes (A).

Remark: When the fault current di/dt is very large, this condition can be exceeded. It is the case for faults occurring in voltage commutated inverters.

Below: Curves indicating peak arc voltage Um which may appear across fuse terminals as a function of the DC working voltage U, for various time constant L/R of fault path.

Rated current I_N(A)	Curves (*) and Ipm (1) corresponding to the rating											
	70		71		72		73		2x72		2x73	
	*Ipm	(A)	*Ipm	(A)	*Ipm	(A)	*Ipm	(A)	*Ipm	(A)	*Ipm	(A)
63	a	270										
80	a	400										
100	a	520										
125	a	700										
160	a	950	a	950								
200	a	1300	a	1300								
250	a	1800	a	1800								
280	b	2200	a	2000	a	1800						
315	b	2600	a	2300	a	2200	a	2000				
350	c	3000	a	2700	a	2600	a	2400				
400			b	3500	a	3200	a	3000				
450			b	4000	a	3800	a	3500				
500			c	4800	a	4600	a	3900				
550			c	5200	b	5000	a	4400				
630			c	6400	b	6200	a	5300	a	4400		
700					c	6800	a	6000	a	5200		
800					c	8000	b	8000	a	6400	a	6000
900							b	9000	a	7600	a	7000
1000							c	11000	a	9200	a	7800
1100							c	12000	b	10000	a	8800
1250							c	13500	b	12400	a	10600
1400							c	15000	c	13600	a	12000
1600									c	16000	b	16000
1800											b	18000
2000											c	22000
2200											c	24000
2500											d	27000
2800											d	30000

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches PSC 3x &7x

- MICROSWITCH SYSTEMS ADAPTED
  TO THE FOLLOWING FERRAZ SHAWMUT FUSES ONLY:
- PSC sizes 30, 31, 32, 33, 2x32, 2x33 / 70, 71, 72, 73, 272, 273
  except plain blades
- PSC LR sizes 33, 233, 73, 273
- PERMANENT INDICATION OF FUSE STATE: CONDUCTIVE
  BLOWN
- MANUAL RESETTING
- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS
- BS TYPE FOR USE IN CORROSIVE ATMOSPHERE
- MS 3V 1-5 UR AND MS 7V 1-5 UR TYPE UL ARE RECOGNIZED

MS 7V 1-5

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Breaking Capacity Non inductive circuit 30V	110V	250V	Inductive circuit : L/R = 25ms 30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
MS 3V 1-5 MS 3V 1-5 UR	1000 V	20 V 50 mA	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8,5 kV	14 kV	H.B
MS 7V 1-5 MS 7V 1-5 UR	1500V			DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 BS MS 3V 1-9 BS	1000 V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 BS MS 7V 1-9 BS	1500V			DC	3 A	0,5 A	0,25 A	3 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 ET	1000V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 ET	1500V			DC	3 A	0,5 A	-	2 A	0,2 A	-	12 kV	20 kV	

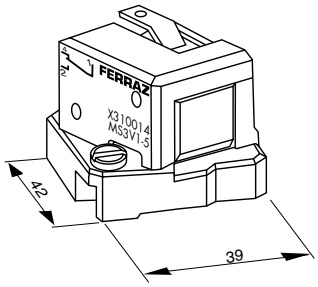
* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals

Warning: microswitch systems exclusively designed for FERRAZ SHAWMUT.
PSC Fuses fitted a petented trip-indicator, saving use of EDV

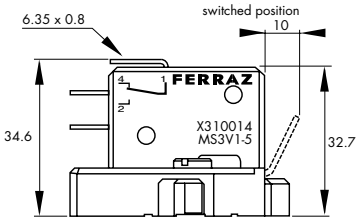
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches for PSC 3x &7x

Indication systems for PSC Fuse sizes 30 to 73

MS 3V...



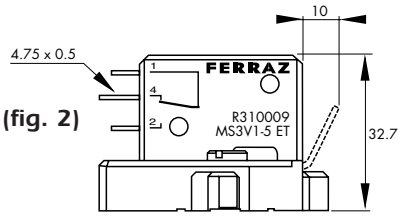
(fig. 1)



These patented indication systems are exclusively hand resettable.

Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
30, 31	MS 3V 1-5 (fig.1)	X310014	Standard NO-NC	34	3 pieces	MS3 V1-5
	MS 3V 1-5 UR	Y310038				MS3 V1-5UR
	MS 3V 1-5 BS (3)	K310013	Low level NO-NC	34	3 pieces	MS3-V1-5BS
32, 33	MS 3V 1-9 BS (4)	P310011	Double pole Low level	44	3 pieces	MS3V1-9BS
	MS 3V 1-5 ET (fig.2)	S310009	Low level NO-NC IP 50 (9)	34	3 pieces	MS3V1-5 ETANCHE

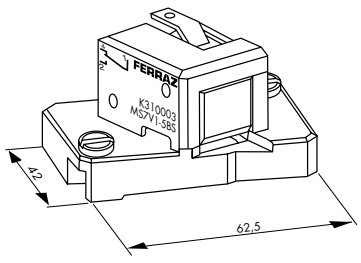
(3) Same as fig.1
(4) Same dimensions as figure 1 but with 2 microswitches side by side
(9) Watertightness class



(fig. 2)

MS 7V...

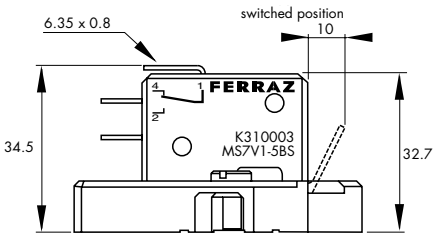
Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
70, 71	MS 7V 1-5 (fig.5)	J310002	Standard NO-NC	45	3 pieces	MS7 V1-5
	MS 7V 1-5 UR	Z310039				MS7 V1-5UR
	MS 7V 1-5 BS (3)	K310003	Low level NO-NC	45	3 pieces	MS7-V1-5BS
72, 73	MS 7V 1-9 BS (4)	P310007	Double pole Low level	55	3 pieces	MS7V1-9BS
	MS 7V 1-5 ET (fig.6)	S310010	Low level NO-NC IP 50 (9)	55	3 pieces	MS7V1-5 ETANCHE

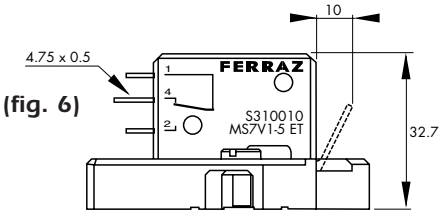


(fig. 5)

(7) Same as fig. 5
(8) Same dimensions as figure 5 but with 2 microswitches side by side
(9) Watertightness class

Warning: Microswitch systems exclusively designed for FERRAZ SHAWMUT PSC fuses fitted with a patented trip-indicator, saving use of EDV.





(fig. 6)

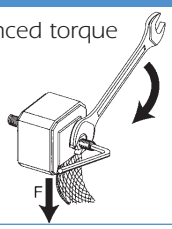
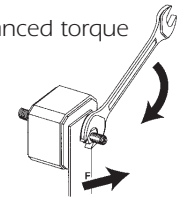
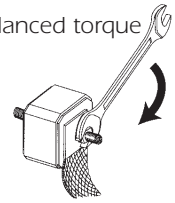
Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Metric-studs

Metric studs for threaded terminal fuses

Type and fuse size	Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
 Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STU M8x30 M8x35
Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STU M10x30 M10x50
Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STU M12x35 M12x50
 Size 2	HC stud pair M10x50	W098804	45	6 pairs	STU M10x50
Size 3	HC stud pair M12x50	X098805	45	6 pairs	STU M12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

(1) Factory limit on torque at 20°C ambient: +0, -2Nm; except on 46Nm value (+0, -4Nm)