

Protistor® Square-body Fuses PSC gR sizes 7x - 690 VAC Main characteristics



6,9 gRB 71 PA 200



6,9 gRB 73 TTF 1000
+ MS7V1-5 UR



6,9 gRB 70 EF 400



6,9 gRB 73 DIIA 1000

Ferraz Shawmut PSC-gRB 690 VAC fuse-links provide maximum flexibility in equipment design and ultimate protection for today's power conversion equipment.

This range is a fast acting, full range fuses engineered to provide state of the art protection for power semiconductors such as diodes, thyristors.

These square body fuse-links are available in various body sizes with a broad range of ampere ratings allowing the greatest flexibility in equipment design.

They have pure silver fuse elements embedded in solidified sand which provides optimized I^2t and high breaking capacity. All contact surfaces are plated and all hardware non-magnetic.

All fuses are standard with a low voltage blown fuse indicator. This indicator can operate a microswitch which is easily mounted directly on to the fuse in service.

Feature

- Full range (gR curve), fast acting
- Highly current limiting.
- High breaking capacities
- Very low I^2t
- Worldwide mounting acceptance.
- Superior cycling ability.
- High withstanding in rush current and overloads

Ratings

AC: up to 1000 A 690 VAC
150 kA IR

DC: Consult Factory

Applications

Protection of rectifiers, inverters, static switch, AC & DC drives and UPS systems.

AC: Tested to IEC 60269.4

approvals

Features/Benefits

Wide range of mounting styles

Broad range of ampere ratings in each body size for design flexibility

IEC 60269-4 compliance for fuses for worldwide semiconductor applications



Protistor® Square-body Fuses PSC gR sizes 7x - 690 VAC Main characteristics

Voltage	Size	Type	Rating In (A)	Pre-Arcing I ² t @ 1ms kA ² s	Total I ² t @ 690V kA ² s	PN: Power losses (W)				Breaking capacities (kA)
						End contacts		Blades		
						0,8 In	In	0,8In	In	
690V	70	gRB	50	0,12	0,7	9	17	9	17	150
		gRB	63	0,27	1,6	9	18	9	18	
		gRB	80	0,47	2,8	11	22	11	22	
		gRB	100	1,06	6,2	12	23	12	23	
		gRB	125	1,9	11,2	13	26	13	26	
		gRB	160	4,2	25	15	29	15	29	
		gRB	200	7,5	44	17	33	17	34	
		gRB	250	13,5	79	20	39	20	40	
		gRB	315	24	142	23	46	24	47	
	gRB	350	41	240	23	46	24	47		
	gRB	125	1,06	6,2	18	35	18	35		
	gRB	160	2,4	14	19	38	19	38		
	gRB	200	5	29,5	21	41	21	42		
	gRB	250	9,5	56	23	46	24	48		
	gRB	315	18,5	108	27	53	27	54		
	gRB	350	23	140	29	58	30	60		
	gRB	400	38	225	30	59	31	61		
	gRB	450	62	360	30	59	31	61		
	gRB	500	78	460	32	64	34	67		
	gRB	200	4,2	25	23	45	23	45		
	gRB	250	8,5	50	25	49	25	50		
	gRB	315	17	100	28	55	29	57		
	gRB	350	23	140	29	58	30	60		
	gRB	400	34	200	32	63	33	65		
	gRB	450	47	280	34	67	35	70		
	gRB	500	68	400	35	69	36	72		
	gRB	550	84	495	38	75	39	78		
	gRB	630	124	730	41	81	43	86		
	gRB	700	155	910	45	89	48	95		
	gRB	315	12	69	33	66	34	67		
	gRB	350	17	100	34	68	35	69		
	gRB	400	27	160	36	71	37	73		
	gRB	450	34	200	40	79	41	82		
	gRB	500	47	280	42	84	43	86		
	gRB	550	68	400	42	84	44	87		
	gRB	630	102	600	45	89	47	94		
	gRB	700	139	820	47	94	50	100		
	gRB	800	227	1330	48	96	52	104		
	gRB	900	280	1640	55	109	60	119		
	gRB	1000	385	2270	58	115	64	127		


Time/current characteristics
Cut off characteristics
Total I²t and total operating time
Other curves

} see following pages

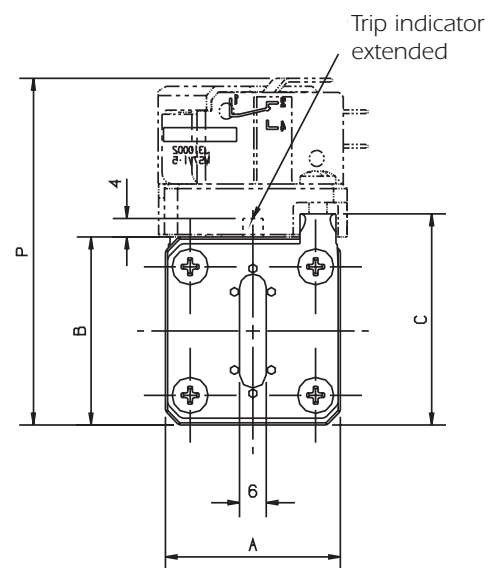
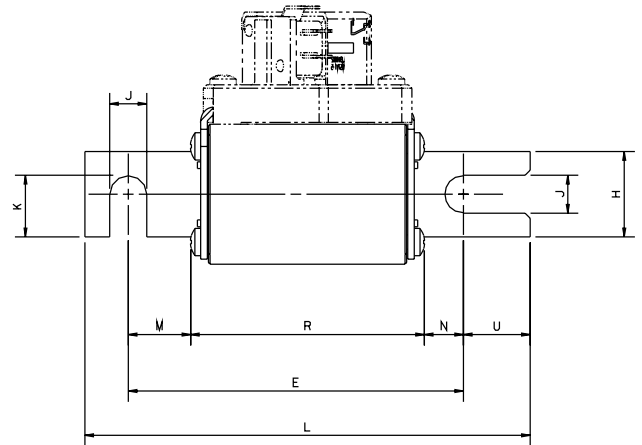
Protistor® Square-body Fuses PSC gR sizes 7x - 690 VAC German 70-73 End contacts

Size	Designation	Reference Number	Weight (g)	Catalog Number		
70*	6,9 gRB 70 D11A 050		370			
	6,9 gRB 70 D11A 063					
	6,9 gRB 70 D11A 080					
	6,9 gRB 70 D11A 100	Q302027		PC70GB69V100D1A		
	6,9 gRB 70 D11A 125					
	6,9 gRB 70 D11A 160	R301591		PC70GB69V160D1A		
	6,9 gRB 70 D11A 200	S301592		PC70GB69V200D1A		
	6,9 gRB 70 D11A 250	Z301943		PC70GB69V250D1A		
	6,9 gRB 70 D11A 315	J301584		PC70GB69V315D1A		
	6,9 gRB 70 D11A 350	W302124		PC70GB69V350D1A		
	6,9 gRB 71 D11A 125	B302658		PC71GB69V125D1A		
	6,9 gRB 71 D11A 160	C302659		PC71GB69V160D1A		
	6,9 gRB 71 D11A 200	C302682		PC71GB69V200D1A		
6,9 gRB 71 D11A 250	R302143	PC71GB69V250D1A				
71*	6,9 gRB 71 D11A 315		540			
	6,9 gRB 71 D11A 350	T302214		PC71GB69V350D1A		
	6,9 gRB 71 D11A 400					
	6,9 gRB 71 D11A 450	R301637		PC71GB69V450D1A		
	6,9 gRB 71 D11A 500	A301737		PC71GB69V500D1A		
	72**	6,9 gRB 72 D11A 200			800	
		6,9 gRB 72 D11A 250		T302697		
6,9 gRB 72 D11A 315		V302698				
6,9 gRB 72 D11A 350		E302500	PC72GB69V350D1A			
6,9 gRB 72 D11A 400		V302215	PC72GB69V400D1A			
6,9 gRB 72 D11A 450		Q302671	PC72GB69V450D1A			
6,9 gRB 72 D11A 500						
6,9 gRB 72 D11A 550		L301724	PC72GB69V550D1A			
6,9 gRB 72 D11A 630						
6,9 gRB 72 D11A 700						
73**	6,9 gRB 73 D11A 315		1150			
	6,9 gRB 73 D11A 350					
	6,9 gRB 73 D11A 400					
	6,9 gRB 73 D11A 450					
	6,9 gRB 73 D11A 500	W302216		PC73GB69V500D1A		
	6,9 gRB 73 D11A 550	R302672		PC73GB69V550D1A		
	6,9 gRB 73 D11A 630					
	6,9 gRB 73 D11A 700	F301765		PC73GB69V700D1A		
	6,9 gRB 73 D11A 800					
	6,9 gRB 73 D11A 900					
6,9 gRB 73 D11A 1000	S302673	PC73GB69V10CD1A				

Packaging: *3 pieces
** 1 piece

Microswitches:	MS 7V 1-5		Réf.J310002	Standard NO-NC
	MS 7V 1-5 UR		Réf.Z310039	Standard NO-NC
	MS 7V 1-5 BS		Réf.K310003	Low level NO-NC
	MS 7V 1-9 BS		Réf.P310007	Double pole NO-NC-low level
	MS 7V 1-5 ET		Réf.S310010	Low level NO-NC-IP 50

Microswitches supplied separately



Size	A	B	C	E ^{1,3}	H	J	K	L	M	N	P	R
70	39,8	41,8	46,5	100,4	25	10,5	17,7	133,4	18,5	11,5	81,4	70,4
	1.57"	1.65"	1.83"	3.95"	0.98"	0.41"	0.70"	5.25"	0.73"	0.43"	3.20"	2.77"
71	51	51	56,5	100,4	25	10,5	17,7	133,4	18,5	11,5	91	70,4
	2.00"	2.00"	2.22"	3.95"	0.98"	0.41"	0.70"	5.25"	0.73"	0.45"	3.68"	2.77"
72	60	60	65,5	100,4	32	11,1	21,2	133,4	18,5	11,5	93,6	70,4
	2.36"	2.36"	2.58"	3.95"	1.26"	0.44"	0.83"	5.25"	0.73"	0.45"	3.69"	2.77"
73	74,4	74,4	78,5	100,4	40	10,5	25,2	133,4	18	11	114,4	70,4
	2.93"	2.93"	3.09"	3.95"	1.58"	0.41"	1.00"	5.25"	0.71"	0.43"	4.50"	2.77"

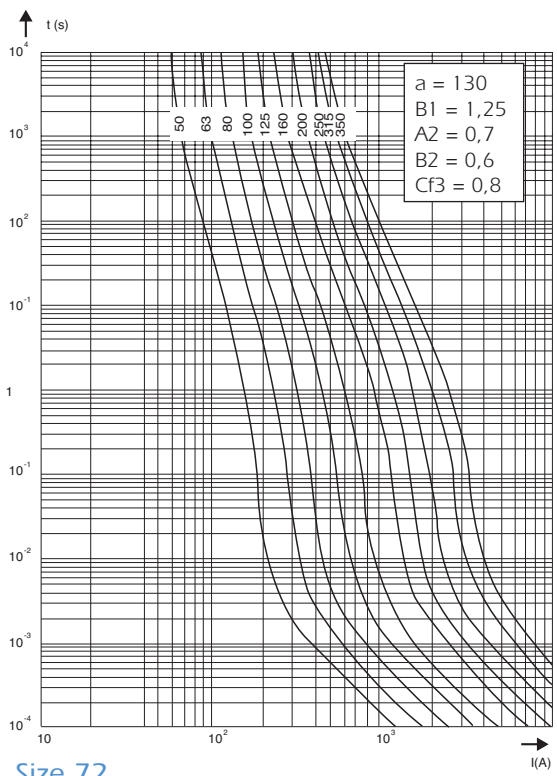
Fuse holder solution, see Fuse gear section.



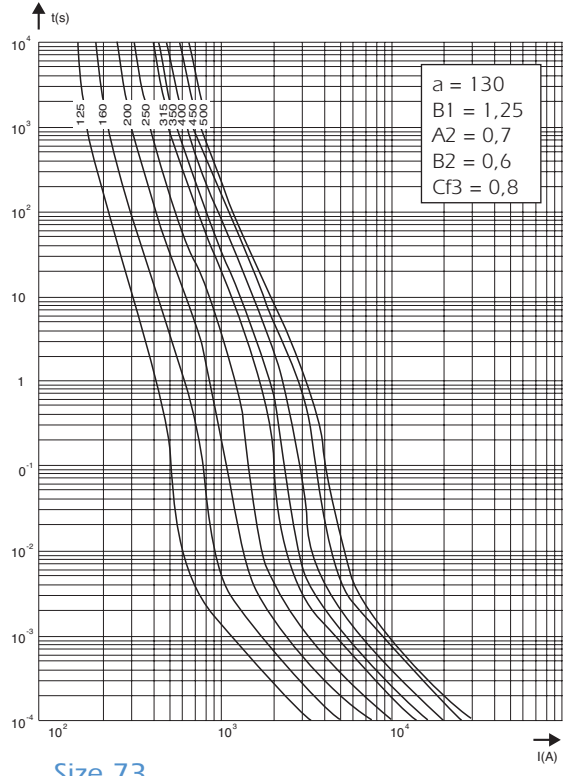
Protistor® Square-body Fuses PSC gR sizes 7x - 690 VAC Curves set

Times/Current Characteristics

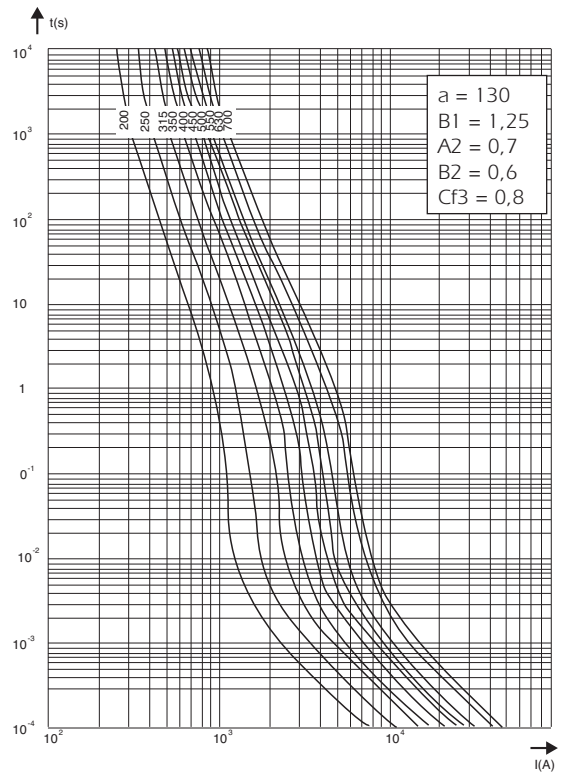
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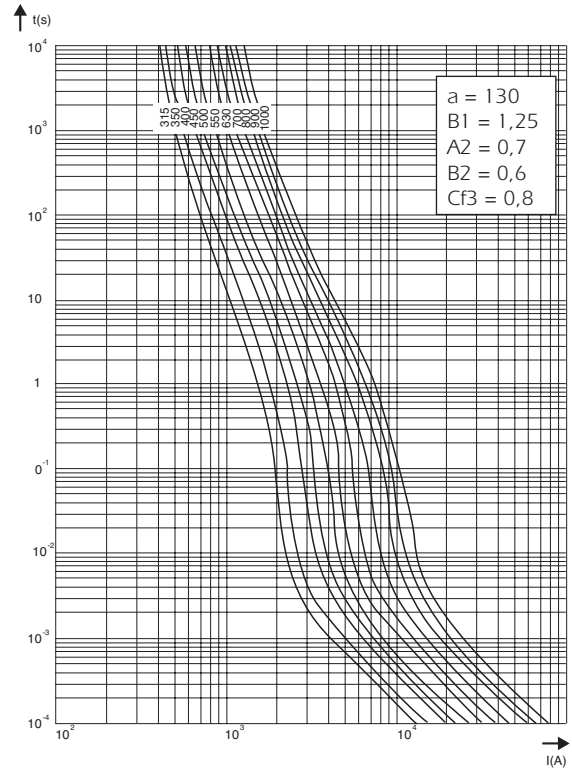
Size 71



Size 72



Size 73

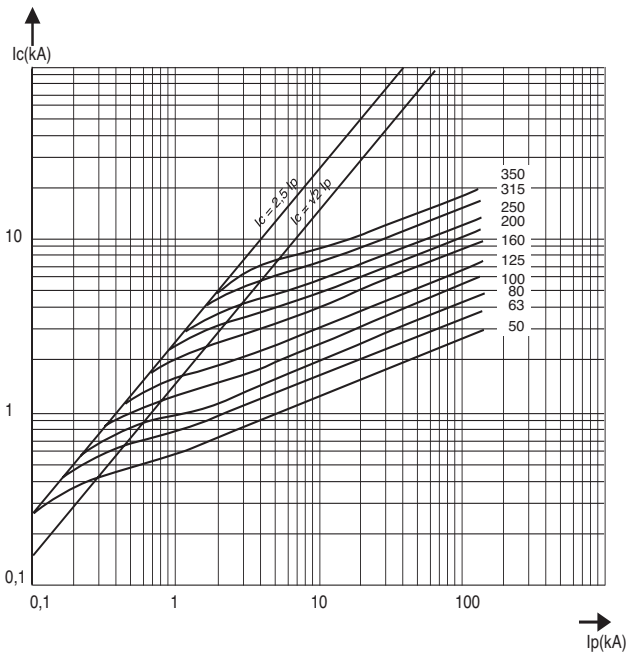




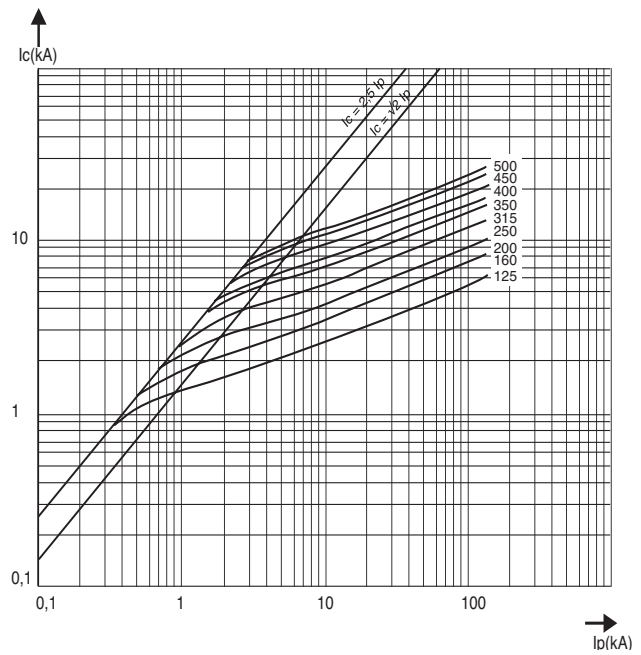
Protistor® Square-body Fuses PSC gR sizes 7x - 690 VAC Curves set

Cut off characteristics Peak let thru current

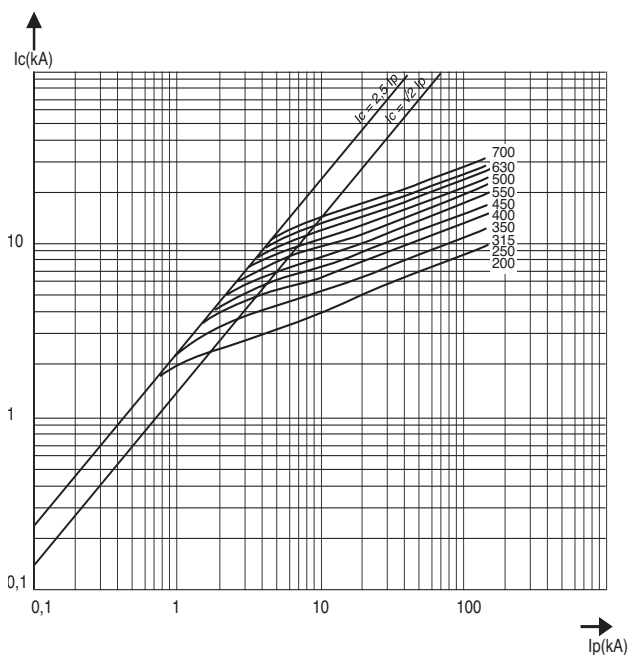
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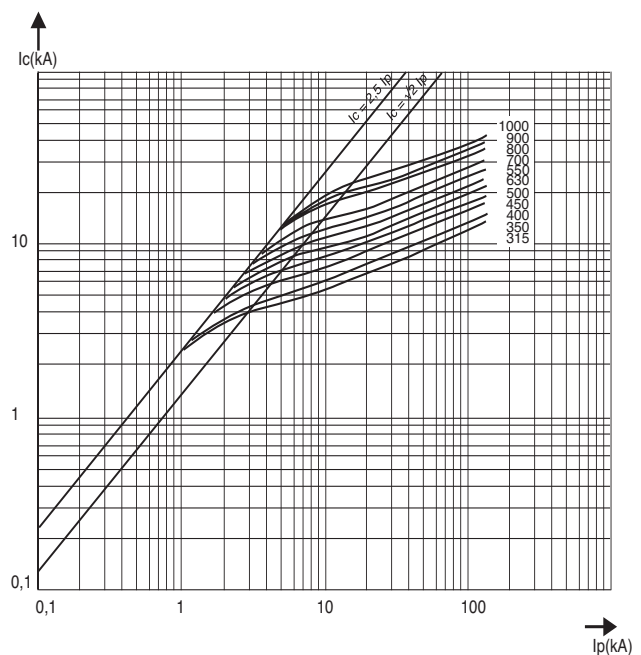
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Size 72



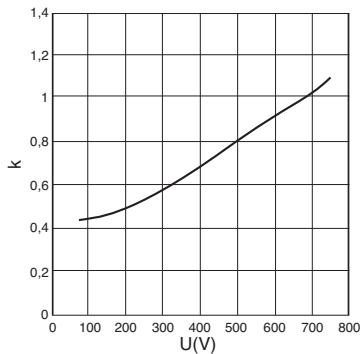
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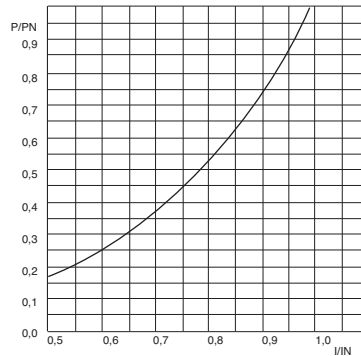


Protistor® Square-body Fuses PSC gR sizes 7x - 690 VAC Curves set

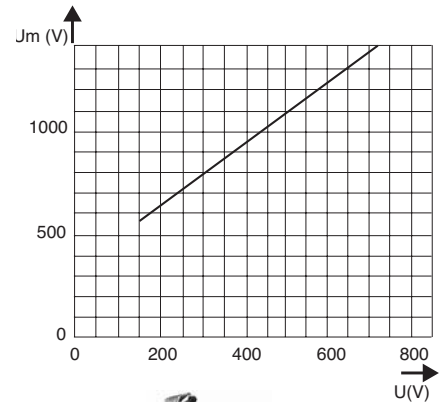
$k=f(U)$
Multiplier coefficient
to calculate total I^2t
and total operating time



P/PN
Multiplier coefficient
to calculate the power
losses at various currents



Peak arc voltage



PA terminals fuse holder

Size	1 pole	2 poles	3 poles	4 poles	wall	separators	fuse shields
70	T218241	G218759	W219278	H222486	Z213669	V216724	K200822
71	A223008	G200796	Y201340	H201855	J214690	N217753	M222513
72	E211075	V211595	D212109	R212627	J214690	N217753	Y211621
73	X213644	B214154	F214664	K215174	Q215708	M218787	X212655



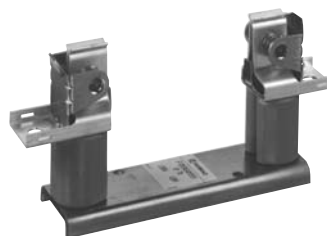
End contacts TTF terminal fuse holders

Size	1 pole
70/71	C301233
72/73	E301235



French blades EF terminal fuse holders

Size	SP/SE/SF
70	F096099
71	V098711
72	W098712
73	C209187



Din blades 110 mm DI N 43653 terminal fuse holders

Size	Fuses holders
70/71/72/73	L091941



Warning: for all holders, please check maximum fuse and fuse holders operating limit. in Gear and Fuse gear section
Tightning torque see Gear and Fuse gear section.

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						AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
					Non inductive circuit			Inductive circuit : L/R = 25ms					
					30V	110V	250V	30V	110V	250V			
MS 3V 1-5	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 3V 1-5 UR				DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A			
MS 7V 1-5	1500V	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 UR				DC	3 A	0,5 A	0,25 A	3 A	0,2 A	0,1 A			
MS 3V 1-5 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 3V 1-9 BS				DC	3 A	0,5 A	0,25 A	3 A	0,2 A	0,1 A			
MS 7V 1-5 BS	1500V	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 1-9 BS				DC	3 A	0,5 A	-	2 A	0,2 A	-			
MS 3V 1-5 ET	1000V	10 V	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	10 mA	3 A	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

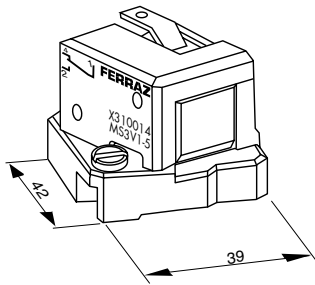
Warning: microswitch systems exclusively designed for FERRAZ SHAWMUT.
PSC Fuses fitted a patented trip-indicator, saving use of EDV



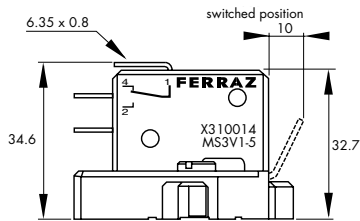
Protistor® Square-body Fuses PSC aR sizes 3x - 450V to 700 VAC Microswitches for PSC 3x & 7x

Indication systems for PSC Fuse sizes 30 to 73 MS 3V...

These patented indication systems are exclusively hand resettable.



(fig. 1)

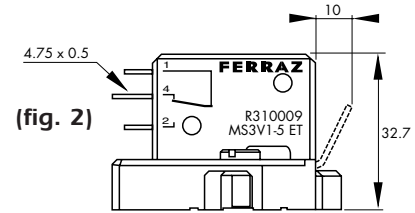


Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
30, 31 32, 33	MS 3V 1-5 (fig.1)	X310014	Standard NO-NC	34	3 pieces	MS3 V1-5
	MS 3V 1-5 UR	Y310038				MS3 V1-5UR
	MS 3V 1-5 BS (3)	K310013	Low level NO-NC	34	3 pieces	MS3-V1-5BS
	MS 3V 1-9 BS (4)	P310011	Double pole Low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

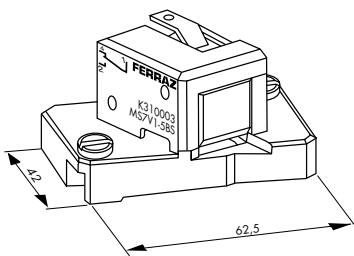
(9) Watertightness class



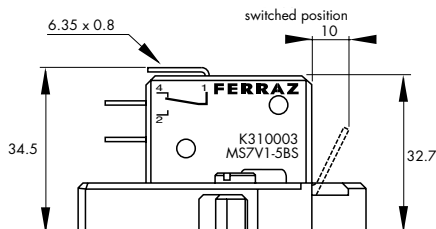
(fig. 2)

MS 7V...

Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
70, 71 72, 73	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
	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)

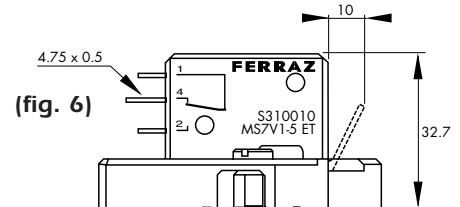


(7) Same as fig. 5

(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)

Semiconductor (AC) fuses

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

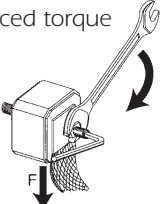
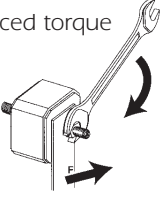
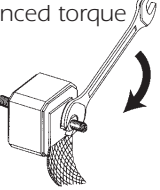
Metric studs for threaded terminal fuses



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	10	13.5
	M10x30 & M10x50	15	26
	M12x35 & M12x50	15	46
Balanced torque 	M8x30 & M8x35	10	13.5
	M10x30 & M10x50	15	26
	M12x35 & M12x50	15	46
Unbalanced torque 	M8x30 & M8x35	10	13.5
	M10x30 & M10x50	15	26
	M12x35 & M12x50	15	46

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