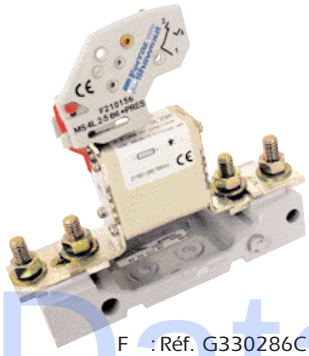
# Protistor® Square-body Fuses
# PSC gGR sizes 000/00
# gGR - 690 VAC DIN 00/000 (full range)



F : Réf. D302108
MC: Réf. F210156C



F : Réf. G330286C
PF : Réf. Q098040C
MC: Réf. F210156C

## gGr: two functions

## A combination of:
## Power supply cable protection (gG curve)

- Compliance with the standardized gate values for gG curves as per EN 60269-2,
- Low power dissipation, similar to a gG fuse, no current derating in holders,
- No derating for variable currents,
- Good withstand to overloads,
- Same thermal definition as a gG curve,
- Unnecessary to dimension the cable cross sectional area large in comparison to UR protection,
- Range designed for the new voltage of 690V ± 10%.

## Power semi-conductor protection (Fast R curve)

- Fast curve for fault currents and short-circuit currents under 20 In,
- Tested breaking capacity 100 kA (00) or 170 kA (000) at 690 V,
- Very current limiting, which in turn limits electrodynamic forces in the circuit downstream,
- Low $I^2t$
- Compact footprint: only one fuse instead of two or a relay plus a fuse,
- DC performances 360 to 550V for I/R = 10 ms,
  Semi-conductor protection checked in the same way as a fuse.

Datasheet.Live

## Applications: "off-board" protection

- AC and DC speed governor,
- Soft starter,
- Static relay,
- Current regulator,
- Inverter (IGBT module disconnector in parallel),

Battery.

## Connection technologies offered

- Solid blades (as per DIN 43620) with visual blown fuse indicator and striker to actuate a micros-witch, MS4L2-5B + PRES (ref. F210156C or G210157C),
- DIN 80 brackets (as per DIN 43653) with visual blown fuse indicator and striker indicator to actuate a microswitch, MS4L2-5B + PRES.
- With these two technologies the designer can choose a fuse according to the types of holders desired.

# Protistor® Square-body Fuses
# PSC gGR sizes 000/00
# gGR - 690 VAC DIN 00/000 (full range)

- EN 60269-2-1 compliant
- Compliance with gG gate values on melting and not melting
- Low dissipated power
- No derating for variable current
- Good withstand to repeated overloading
- Withstand to exceptional overloads (same as Protistor fuses)
- Cable protection



## Functionalities

Two functions:
- to protect cables from overloads,
- to protect semi-conductors from short-circuits.

## Electrical characteristics

### Size 000

| Voltage Rating (VAC) | Size | Current Rating In (A) | Prearcing I²t @ 1 ms I²tp (A²s) | Total I²t (A²s) | | Power losses @ In (W) | Tested breaking capacity | Estimated breaking capacity |
|---|---|---|---|---|---|---|---|---|
| | | | | @ Un | @ 400V | | | |
| | | 16 | 45 | 280 | 230 | 2.5 | | |
| | | 20 | 60 | 380 | 310 | 3 | | |
| | | 25 | 130 | 830 | 700 | 3.5 | | |
| | | 32 | 210 | 1350 | 1150 | 4 | 100 kA | 200 kA |
| 690 | 000 | 40 | 350 | 2200 | 1900 | 5 | @ | @ |
| | | 50 | 550 | 3500 | 3000 | 6 | 690 V | 690 V |
| | | 63 | 1000 | 6100 | 5150 | 7 | | |
| | | 80 | 1700 | 11000 | 9200 | 8 | | |
| | | 100 | 3900 | 25000 | 21000 | 9 | | |

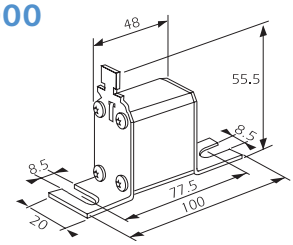
### Size 00

| Voltage Rating (VAC) | Size | Current Rating In (A) | Prearcing I²t @ 1 ms I²tp (A²s) | Total I²t (A²s) | | Power losses @ In (W) | Tested breaking capacity | Estimated breaking capacity |
|---|---|---|---|---|---|---|---|---|
| | | | | @ Un | @ 400V | | | |
| | | 16 | 45 | 280 | 230 | 2.5 | | |
| | | 20 | 60 | 390 | 290 | 3.2 | | |
| | | 25 | 120 | 750 | 560 | 4 | | |
| | | 32 | 240 | 1550 | 1150 | 5 | | |
| | | 40 | 350 | 2250 | 1680 | 5.5 | | |
| | | 50 | 540 | 3500 | 2600 | 6.5 | 100 kA | 200 kA |
| 690 | 00 | 63 | 1060 | 6750 | 5000 | 7.6 | @ | @ |
| | | 80 | 1900 | 12100 | 9000 | 9.5 | 690 V | 690 V |
| | | 100 | 3900 | 24150 | 18000 | 11 | | |
| | | 125 | 6950 | 45000 | 33500 | 13 | | |
| | | 160 | 13500 | 82000 | 61000 | 16 | | |
| | | 200 | 27600 | 160000 | 120000 | 18 | | |

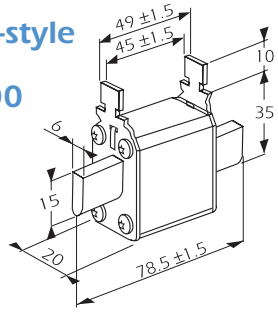
# Protistor® Square-body Fuses
# PSC gGR sizes 000/00
# gGR - 690 VAC DIN 00/000 (full range)

## Size 000

### German standard DIN 43653/000 DIN 80

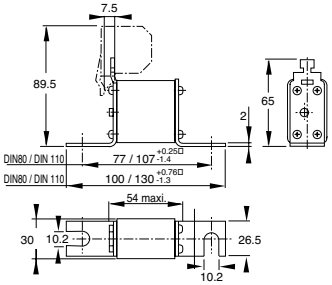



### German blade-style fuse standard DIN 43620/000

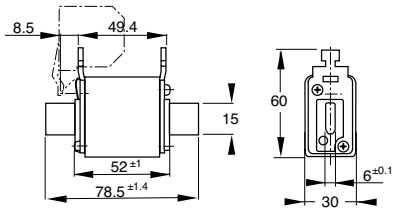



## Size 00

### German standard 43653/00 - DIN 80




### German blade-style fuse standard 43620/00




**No derating:**
I/In = Irms of use/fuse rating
In the different holders = no derating

**Microswitches:**
Ref. F210156: 6.3 mm clips
Ref. G210156: 2.8 mm clips

| Current (A) | Designation | Ref. Number | I/In* | Weight (g) | Pack. | Catalog Number |
|---|---|---|---|---|---|---|
| 16 | 6,9 gGR 000 D08L 016 | H302112 | 1 | 120 | 3 | DN000GR69V16L |
| 20 | 6,9 gGR 000 D08L 020 | J302113 | 1 | 120 | 3 | DN000GR69V20L |
| 25 | 6,9 gGR 000 D08L 025 | K302114 | 1 | 120 | 3 | DN000GR69V25L |
| 32 | 6,9 gGR 000 D08L 032 | L302115 | 1 | 120 | 3 | DN000GR69V32L |
| 40 | 6,9 gGR 000 D08L 040 | M302116 | 1 | 120 | 3 | DN000GR69V40L |
| 50 | 6,9 gGR 000 D08L 050 | N302117 | 1 | 120 | 3 | DN000GR69V50L |
| 63 | 6,9 gGR 000 D08L 063 | P302118 | 1 | 120 | 3 | DN000GR69V63L |
| 80 | 6,9 gGR 000 D08L 080 | Q302119 | 1 | 120 | 3 | DN000GR69V80L |
| 100 | 6,9 gGR 000 D08L 100 | R302120 | 1 | 120 | 3 | DN000GR69V100L |
| Microswitch | | F210156 | | | | MS4L2-5B6PRES |
| | | G210157 | | | | MS4L2-5B2PRES |
| 16 | 6,9 gGR 000 PV 016 | X302102 | 1 | 150 | 3 | NH000GR69V16PV |
| 20 | 6,9 gGR 000 PV 020 | Y302103 | 1 | 150 | 3 | NH000GR69V20PV |
| 25 | 6,9 gGR 000 PV 025 | Z302104 | 1 | 150 | 3 | NH000GR69V25PV |
| 32 | 6,9 gGR 000 PV 032 | A302105 | 1 | 150 | 3 | NH000GR69V32PV |
| 40 | 6,9 gGR 000 PV 040 | B302106 | 1 | 150 | 3 | NH000GR69V40PV |
| 50 | 6,9 gGR 000 PV 050 | C302107 | 1 | 150 | 3 | NH000GR69V50PV |
| 63 | 6,9 gGR 000 PV 063 | D302108 | 1 | 150 | 3 | NH000GR69V63PV |
| 80 | 6,9 gGR 000 PV 080 | E302109 | 1 | 150 | 3 | NH000GR69V80PV |
| 100 | 6,9 gGR 000 PV 100 | F302110 | 1 | 150 | 3 | NH000GR69V100PV |
| Microswitch | | F210156 | | | | MS4L2-5B6PRES |
| | | G210157 | | | | MS4L2-5B2PRES |
| Extractor handle | | P215592 | | | 1 | NH HANDLE |
| 20 | 6,9 gGR 00 D08L 020 | T330297 | 1 | 140 | 3 | DN00GR69V20L |
| 25 | 6,9 gGR 00 D08L 025 | V330298 | 1 | 140 | 3 | DN00GR69V25L |
| 32 | 6,9 gGR 00 D08L 032 | W330299 | 1 | 140 | 3 | DN00GR69V32L |
| 40 | 6,9 gGR 00 D08L 040 | X330300 | 1 | 140 | 3 | DN00GR69V40L |
| 50 | 6,9 gGR 00 D08L 050 | Y330301 | 1 | 140 | 3 | DN00GR69V50L |
| 63 | 6,9 gGR 00 D08L 063 | G330286 | 1 | 140 | 3 | DN00GR69V63L |
| 80 | 6,9 gGR 00 D08L 080 | H330287 | 1 | 140 | 3 | DN00GR69V80L |
| 100 | 6,9 gGR 00 D08L 100 | J330288 | 1 | 140 | 3 | DN00GR69V100L |
| 125 | 6,9 gGR 00 D08L 125 | K330289 | 1 | 140 | 3 | DN00GR69V125L |
| 160 | 6,9 gGR 00 D08L 160 | L330290 | 1 | 140 | 3 | DN00GR69V160L |
| 200 | 6,9 gGR 00 D08L 200 | M330291 | 1 | 140 | 3 | DN00GR69V200L |
| Microswitch | | F210156 | | | | MS4L2-5B6PRES |
| | | G210157 | | | | MS4L2-5B2PRES |
| 20 | 6,9 gGR 00 PV 020 | N330292 | 1 | 210 | 3 | NH00GR69V20PV |
| 25 | 6,9 gGR 00 PV 025 | P330293 | 1 | 210 | 3 | NH00GR69V25PV |
| 32 | 6,9 gGR 00 PV 032 | Q330294 | 1 | 210 | 3 | NH00GR69V32PV |
| 40 | 6,9 gGR 00 PV 040 | R330295 | 1 | 210 | 3 | NH00GR69V40PV |
| 50 | 6,9 gGR 00 PV 050 | S330296 | 1 | 210 | 3 | NH00GR69V50PV |
| 63 | 6,9 gGR 00 PV 063 | A330280 | 1 | 210 | 3 | NH00GR69V63PV |
| 80 | 6,9 gGR 00 PV 080 | B330281 | 1 | 210 | 3 | NH00GR69V80PV |
| 100 | 6,9 gGR 00 PV 100 | C330282 | 1 | 210 | 3 | NH00GR69V100PV |
| 125 | 6,9 gGR 00 PV 125 | D330283 | 1 | 210 | 3 | NH00GR69V125PV |
| 160 | 6,9 gGR 00 PV 160 | E330284 | 1 | 210 | 3 | NH00GR69V160PV |
| 200 | 6,9 gGR 00 PV 200 | F330285 | 1 | 210 | 3 | NH00GR69V200PV |
| Microswitch | | F210156 (only) | | | | MS4L2-5B6PRES |
| Extractor handle | | P215592 | | | 1 | NH HANDLE |

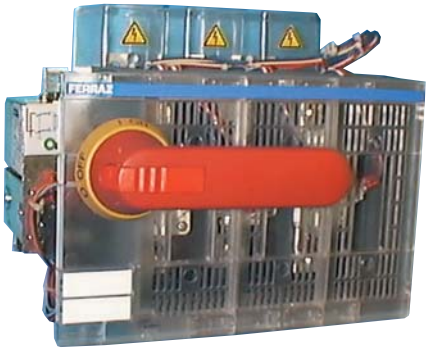
## 690 V gGR fuse holders and supports

| Type of fuse | Nb. poles | References for mounting on 35 mm DIN rail | References for panel mounting |
|---|---|---|---|
| Solid blades size 000/00 IPXX | 1 | R216192 | F215170 |
| | 2 | F218758 | A217212 |
| | 3 | V219277 | F217723 |
| | 4 | Z223007 | S219275 |
| Solid blades size 000/00 IP20 w/o microswitch | 1 | S218240 | - |
| | 3 | S229119 | - |
| DIN 80 bracket size 000 IPXX | 1 | - | C220710 |
| DIN 80 bracket size 00 IPXX | 1 | - | Q098040 |
| DIN 80 blades size 000 IP20 w/o microswitch | 1 | B227218 | |
| DIN 80 blades size 000 IP20 for microswitch | 1 | C227219 | - |
| DIN 80 blades size 00 IP20 w/o microswitch | 1 | V227672 | - |
| DIN 80 blades size 00 IP20 for microswitch | 1 | W227673 | - |
| ITCP range | 1 | | |

# Protistor® Square-body Fuses
# PSC gGR sizes 000/00
# gGR - 690 VAC DIN 00/000 (full range)



F : Réf. D302108C
MC: Réf. F210156C



F : Réf. G330286C
PF : Réf. Q098040C
MC: Réf. F210156C



ITCP : Réf. G210410A
F : Réf. M330291C

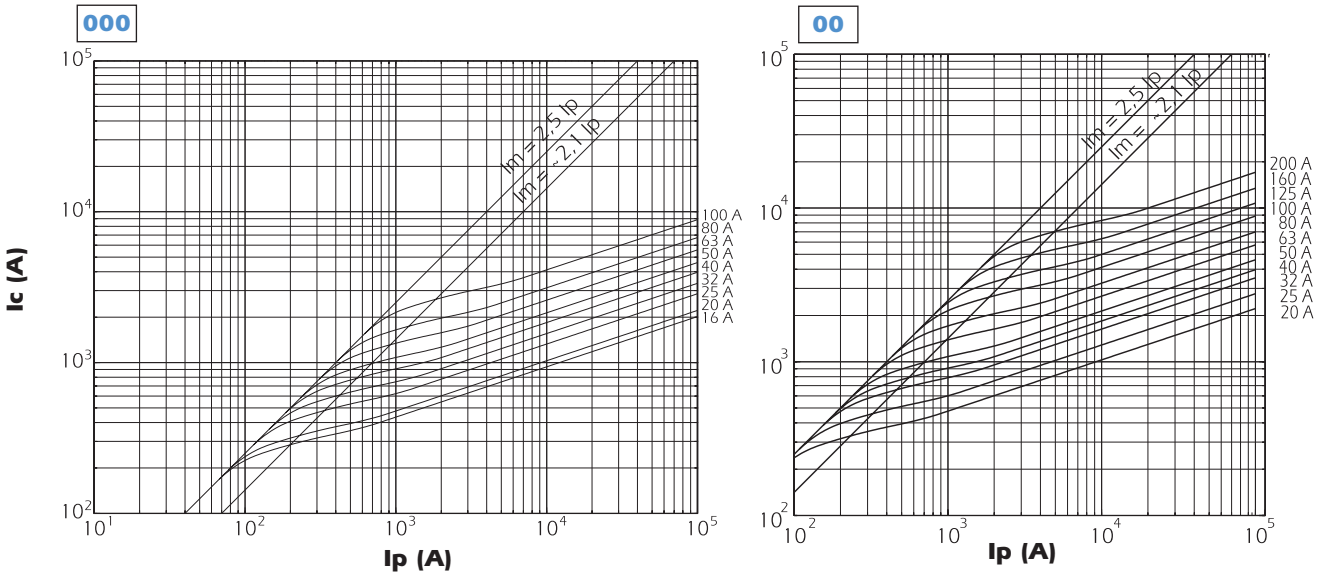
## Choice and references of gGR fuse holders

| | Type of support | Characteristics | Nb. Poles | Solid blade size 000/00 Reference Number | Solid blade size 000/00 Fuse extraction handle | DIN 80 bracket Size 000 | DIN 80 bracket Size 00 | Fuse microswitch (2) |
|---|---|---|---|---|---|---|---|---|
| CEI 60269-2 | Fuse holders | No protection (1) Screw connection for eye lug or bar for 35 mm DIN rail | 1<br>2<br>3<br>4 | R216192<br>F218758<br>V219277<br>Z223007 | P215592 | | | F2101546 or G210157 |
| | | No protection (1) Screw connection for eye lug or bar on panels | 1<br>2<br>3<br>4 | F215170<br>A217212<br>F217723<br>S219275 | P215592 | C220710 | Q098040 | F210156 or G210157 |
| | | Protect led to **IP20** Screw connection for eye lug or bar for DIN rail | 1<br>3 | S218240<br>S229119 | P215592 | W/o microswitch B227218 | C227219 | |
| | | | 1 | | | For microswitch V227672 | W227673 | |
| CEI 60947-3 | Switch disconnector | Horizontal Linocur AC23 | 2<br>3 | N216626<br>N222882<br>B218685<br>C201781<br>Y212035<br>W213574 | P215592<br>P215592<br>P215592 | | | F210156 or G210157 |
| | Switch with front control handle | ITC 160M III 00 Front handle Inside/outside Complete | 3 | K227824 | P215592 | | | |
| | | ITC 250 III 00 front Handle | 3 | F210409 | P215592 | | | |
| | Switch with side control handle | ITC 160M III 00 Side handle Outside Complete | 3 | J227823 | P215592 | | | |
| | ITCP | ITCP | 3 | | P215592 | G210410 | G210410 | |

(1) No protection against accidental contact with live parts IPXX.
(2) F210156C microswitch: 6.3 mm clips
G210157C microswitch: 2.8 mm clips

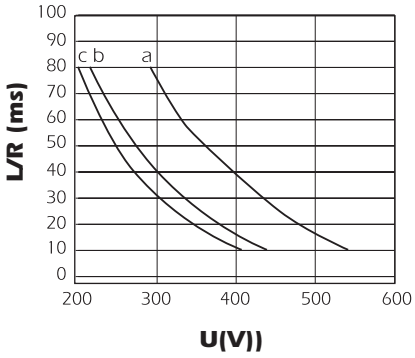
# Protistor® Square-body Fuses
# PSC gGR sizes 000/00
# gGR - 690 VAC DIN 00/000 (full range)

## Amplitude of current interrupted



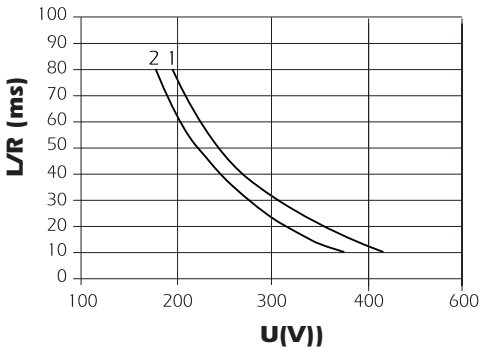

## DC working voltage possibilities

### Size 00



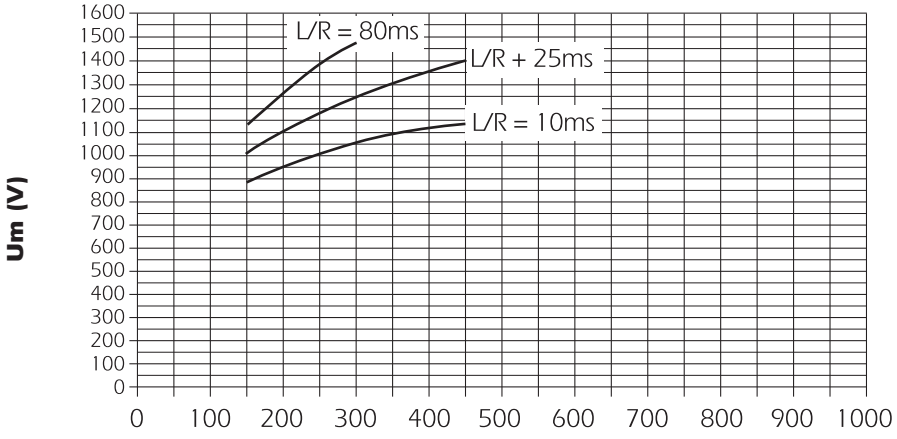

| In | Curve |
|---|---|
| 16 A | a |
| 20 A | a |
| 25 A | a |
| 32 A | a |
| 40 A | a |
| 50 A | a |
| 63 A | a |
| 80 A | b |
| 100 A | c |
| 125 A | c |
| 160 A | b |
| 200 A | c |

### Size 000




| In | Curve |
|---|---|
| 16 A | 1 |
| 20 A | 1 |
| 25 A | 1 |
| 32 A | 1 |
| 40 A | 1 |
| 50 A | 1 |
| 63 A | 2 |
| 80 A | 2 |
| 100 A | 2 |

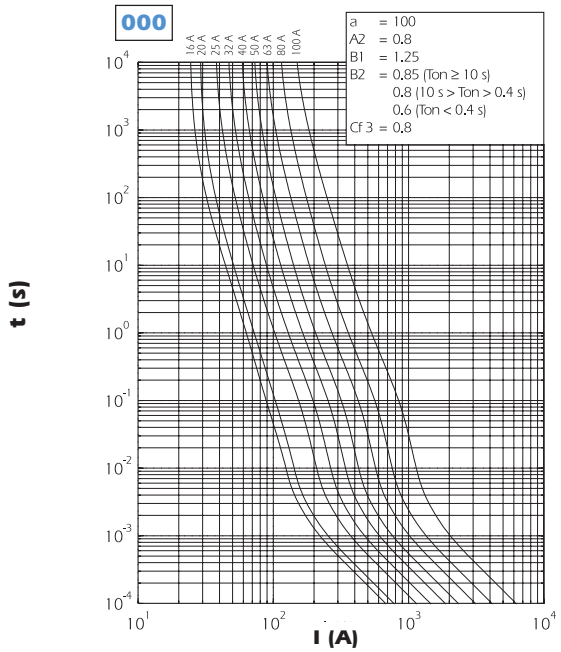
### Size 00 and Size 000

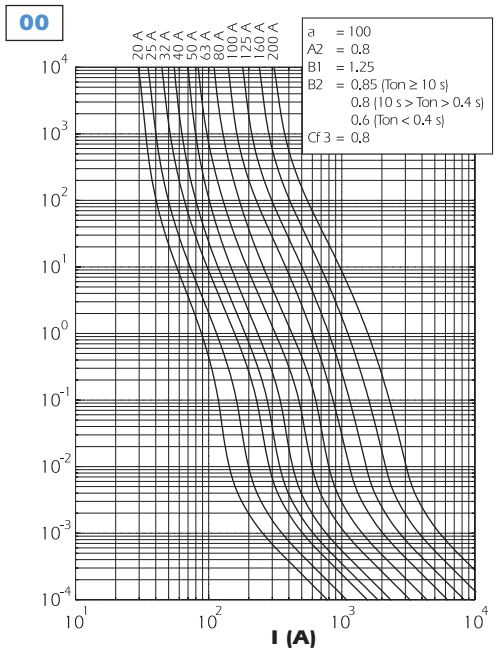


# Protistor® Square-body Fuses
# PSC gGR sizes 000/00
# gGR - 690 VAC DIN 00/000 (full range)

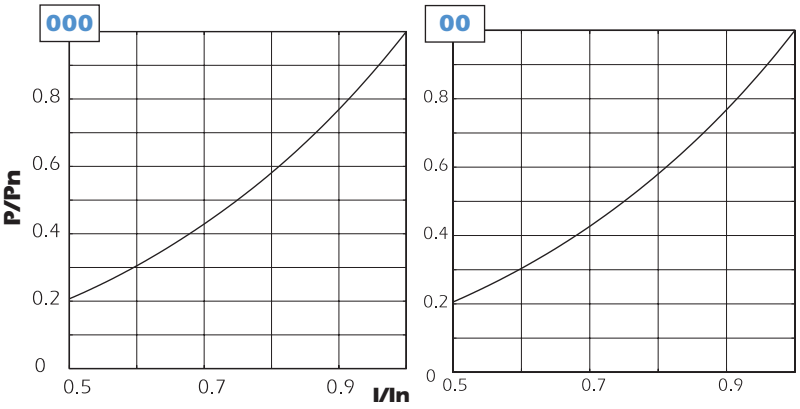
## Time/current characteristics

TOLERANCE ON PRE-ARCING CURRENT +/- 8%

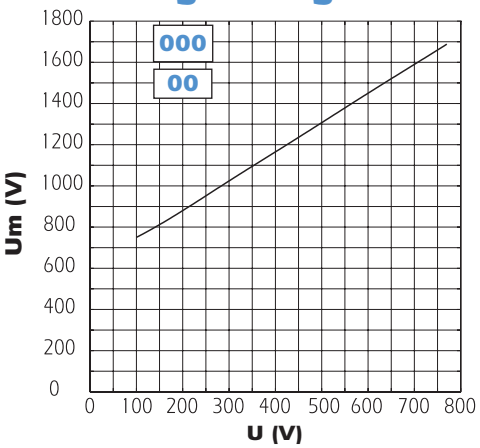


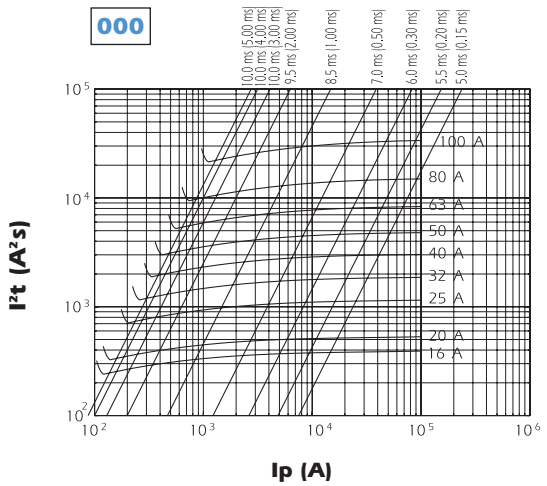

## Dissipated power

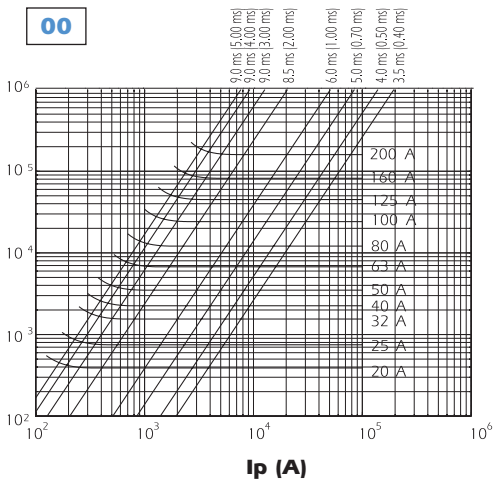



## Breaking voltage




## Maximum total operating I²t and total operating time



# Protistor® Square-body Fuses
# PSC gR/aR sizes 000/00
# Microswitches for PSC sizes 000/00 and NH

MICROSWITCH SYSTEMS ADAPTED TO THE FOLLOWING FUSES:

- PSC sizes 000/00 (brackets) DIN43653
- NH Fuses (palin blades) see details in "General Purpose IEC Fuses" section
- NH plain blades 690 VAC Protistor square-body Fuses

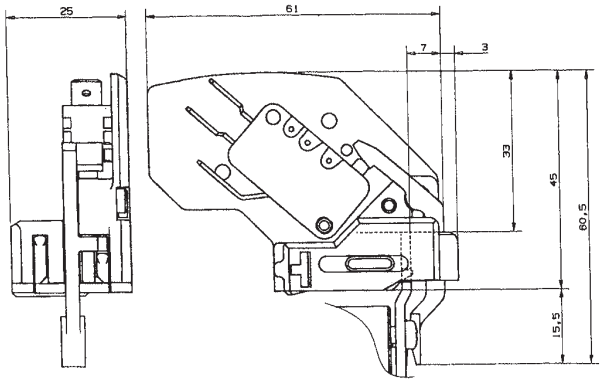
MS 4L 2-5

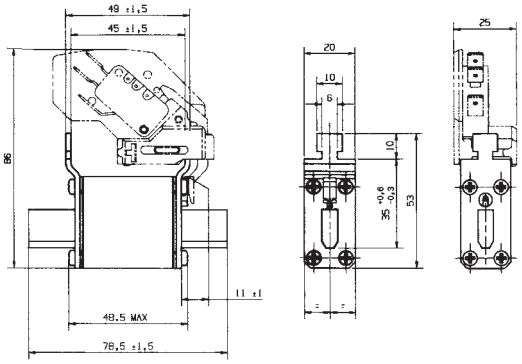


## Main Characteristics

| Code | AC Insulation voltage rating (***) | Positive operating voltage/current | Current rating | Current | Interrupting rating Non inductive circuit | | | Inductive circuit : L/R = 25ms | | | AC voltage withstand test (*) | Impulse voltage test Uimp1.2/50 µs (**) | Fire class according to UL 94 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 30V | 110V | 250V | 30V | 110V | 250V | | | |
| MS 4L 2-5 B2 | 1000 V | 20 V | 5 A | 50 Hz | 4A | 4A | 5A | - | 5A | 5 A | 12 kV | 16 kV | V0 |
| + Pres | | 100 mA | | DC | - | - | - | - | 2 A | 0,4 A | 8 kV | 13 kV | |
| MS 4L 2-5 B6 | 1000 V | 20 V | 10 A | 50/60 Hz | 10 A | 10 A | 10 A | 10 A | 10 A | 10 A | 8 kV | 10 kV | V0 |
| + Pres | | 50 mA | | DC | 8 A | 0,4 A | 0,2 A | 4 A | 0,2 A | 0,1 A | | | |

* 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




| Designation | Ref. Number | Weight (g) | Pack. | Catalog Number |
|---|---|---|---|---|
| MS 4L 2-5 B6 + PRES (Fig. 1) (1) | F210156 | 30 | 3 | MS 4L2-5B6PRES |
| MS 4L 2-5 B2 + PRES (Fig. 2) (2) | G210157 | 26 | 3 | MS 4L2-5B2PRES |

Automatically resettable, these microswitch systems indicate fuse presence (PRES) and proper mounting.
In case of improper mounting or fuse melting, this is indicated (terminal 1-4 closed)

Fig.1

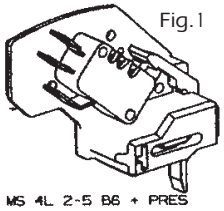
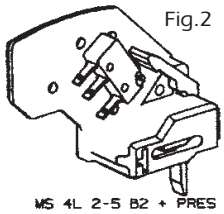



Fig.2




(1) 6.3 mm clips
(2) 2.8 mm clips