



fuse-links & fuse holders

**PHOTOVOLTAIC**





**df** PMX-PV 14x51  
50A  
485250 1100V DC

**df** NH1  
250A  
1000V DC  
354172

**df** NH2  
400A 1000V DC  
354175

**df** NH3  
500A 1000V DC  
354180

PHOTOVOLTAGIC FUSEHOLDER  
DO NOT OPERATE UNDER LOAD  
Maximum torque: 32 Nm  
Withstand rating 30 kA DC  
Use Photovoltaic Fuses  
Made in Spain

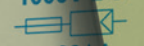
UL LISTED  
PHOTOVOLTAGIC FUSEHOLDER  
E359201  
DO NOT OPERATE UNDER LOAD  
Maximum torque: 32 Nm  
Withstand rating 30 kA DC  
Use Photovoltaic Fuses  
Made in Spain

**df**  
NH3 gPV  
**315 A**  
1000V DC  
  
I<sub>t</sub> = 30 kA  
IEC 60269-6  
373445

RoHS COMPLIANT  
UL  
CE  
Made in Spain

**df**  
NH2 gPV  
**200 A**  
1000V DC  
  
I<sub>t</sub> = 30 kA  
IEC 60269-6  
373350

RoHS COMPLIANT  
CE  
Made in Spain

**df**  
NH1 gPV  
**100 A**  
1000V DC  
  
I<sub>t</sub> = 30 kA  
IEC 60269-6  
373245

RoHS COMPLIANT  
UL  
CE  
Made in Spain

**df**  
200A  
600V DC  
I<sub>t</sub> = 30 kA

# PHOTONOPTIC

## FUSE LINKS

- PAGE 04 | gPV 10x38 & 14x51 600 & 1000V/1100 DC FUSE LINKS
- PAGE 05 | gPV 10x85 1200 & 1500V DC FUSE LINKS
- PAGE 06 | gPV NH1, NH2 & NH3 1000V DC FUSE LINKS

## FUSE HOLDERS & BASES

- PAGE 08 | PMX 10x38 & 14x51 1000V DC FUSE HOLDERS
- PAGE 10 | CLIP CONTACT FOR Ø10 FUSE BASES
- PAGE 11 | ST NH1, NH2 & NH3 1000V DC FUSE BASES

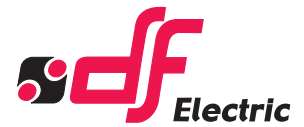
**df**  
PMX-PV  
10x38  
32A 1000V DC  
485152

491635  
gPV  
CE

20 A  
1000 V  
I<sub>t</sub> = 30 kA



# PHOTOVOLTAIC FUSE-LINKS



## gPV FUSE-LINKS FOR PHOTOVOLTAIC APPLICATIONS

PV fuse-links for photovoltaic installations from DF Electric have been developed to offer a compact, safety and economic protection solution in photovoltaic installations where, due to the increase of the power and technologic evolution, no-load voltages above 800V DC are reached. Also meet the requirements for instruments (multimeters) and traction equipment auxiliary circuits. The range comprises 10x38 & 14x51 fuse-links with rated currents between 1A and 20A. Rated voltage is 600 V DC or 1000V DC (direct current). Provide protection against overloads as well as short-circuits. Made with ceramic tube with high withstand to internal pressure and thermal shock, that allows a high breaking capacity in a reduced physical space. Contacts are made of silver plated copper and melting elements are made of pure silver in order to avoid the aging and thus keep unalterable the electric characteristics. For these fuse-links we recommend the utilization of PMX 1000V fuse holders in single pole version or two-pole version.

10x38	$I_n$ (A)	REFERENCE	BREAKING CAPACITY (kA)	PACKING Uni./BOX
1000V DC	1	491601	30	10/100
	2	491602	30	10/100
	3	491604	30	10/100
	4	491605	30	10/100
	5	491606	30	10/100
	6	491610	30	10/100
	8	491615	30	10/100
	10	491620	30	10/100
	12	491625	30	10/100
	15	491629	30	10/100
	16	491630	30	10/100
	20	491635	30	10/100



600V DC	1	491901	30	10/100
	2	491902	30	10/100
	3	491904	30	10/100
	4	491905	30	10/100
	5	491906	30	10/100
	6	491910	30	10/100
	8	491915	30	10/100
	10	491920	30	10/100
	12	491925	30	10/100
	15	491929	30	10/100
	16	491930	30	10/100
	20	491935	30	10/100
	25	491940	30	10/100
30	491944	30	10/100	
32	491945	30	10/100	



14x51	$I_n$ (A)	REFERENCE	BREAKING CAPACITY (kA)	PACKING Uni./BOX
1100V DC	15	491647	10	10/50
	20	491648	10	10/50
1000V DC	25	491650	30	10/50
	32	491655	30	10/50



STANDARDS  
IEC 60269-1  
IEC 60269-6  
UL 2579

APPROVALS



TECHNICAL

t-I CHARACTERISTICS

PAGE 13

TECHNICAL

AMBIENT TEMPERATURE  
DERATING FACTOR

PAGE 16

COMPATIBLE

PV FUSE HOLDERS FOR  
PHOTOVOLTAIC  
APPLICATIONS

PAGE 08

COMPATIBLE

CLIP CONTACT FOR  $\phi$ 10  
FUSE-LINKS

PAGE 10

# PHOTOVOLTAIC FUSE-LINKS

## gPV FUSE-LINKS FOR PHOTOVOLTAIC APPLICATIONS

10x85	$I_n$ (A)	REFERENCE	BREAKING CAPACITY (kA)	PACKING Uni./BOX
1500V DC	2	492202	10	4/24
	4	492205	10	4/24
	6	492210	10	4/24
	8	492215	10	4/24
	10	492220	10	4/24
	12	492225	10	4/24
1200V DC	16	492230	10	4/24
	20	492235	10	4/24
	25	492240	10	4/24

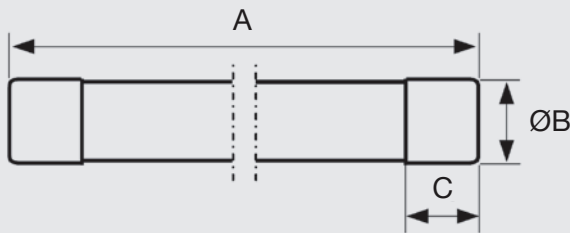
NEW



492225

## TECHNICAL gPV FUSE-LINKS FOR PHOTOVOLTAIC APPLICATIONS DIMENSIONS

10x38  
14x51  
10x85



SIZE	A	B	C
10x38	38	10,3	10
14x51	51	14,3	10
10x85	85	10,3	10

STANDARDS  
IEC 60269-1  
IEC 60269-6  
UL 2579

APPROVALS  
Cd-Pb FREE  
RoHS compliant

TECHNICAL  
t-I CHARACTERISTICS  
PAGE 14

TECHNICAL  
AMBIENT TEMPERATURE  
DERATING FACTOR  
PAGE 16

COMPATIBLE  
CLIP CONTACT FOR  $\phi 10$   
FUSE-LINKS  
PAGE 10

# PHOTOVOLTAIC FUSE-LINKS

## gPV FUSE-LINKS FOR PHOTOVOLTAIC APPLICATIONS

NH

1000V DC

NH gPV 1000V DC fuse-links for photovoltaic installations have been developed to offer a compact, safety and economic protection solution in second level panels of photovoltaic installations. The range comprises NH1 fuse-links with rated currents between 25A and 200A, NH2 with rated currents between 200A and 250A and NH3 fuse-links with rated currents between 200A and 400 A. Rated voltage is 1000V DC (direct current). They provide protection against overloads as well as short-circuits (gPV class according to IEC 60269 Standard), with a minimum fusing current of  $1,35 \cdot I_n$ . Made with ceramic body with high withstand to internal pressure and thermal shock. Contacts are made of silver plated copper or brass and melting elements are made of pure silver in order to avoid the aging and thus keep unalterable the electric characteristics. For these fuse-links we recommend the utilization of 1000V NH ST fuse bases.

	$I_n$ (A)	REFERENCE	BREAKING CAPACITY (kA)	PACKING Uni./BOX
NH1	25	373210	30	1/30
	32	373215	30	1/30
	40	373225	30	1/30
	50	373230	30	1/30
	63	373235	30	1/30
	80	373240	30	1/30
	100	373245	30	1/30
	125	373250	30	1/30
	160	373255	30	1/30
	200	373260	30	1/30



NH2	200	373350	30	1/15
	250	373360	30	1/15



NH3	200	373425	30	1/15
	250	373435	30	1/15
	315	373445	30	1/15
	355	373450	30	1/15
	400	373455	30	1/15



STANDARDS	APPROVALS
IEC 60269-1 IEC 60269-6 UL 2579	 

TECHNICAL	TECHNICAL
t-I CHARACTERISTICS	AMBIENT TEMPERATURE DERATING FACTOR
PAGE 13	PAGE 14

COMPATIBLE
NH FUSE BASES FOR PHOTOVOLTAIC APPLICATIONS
PAGE 10

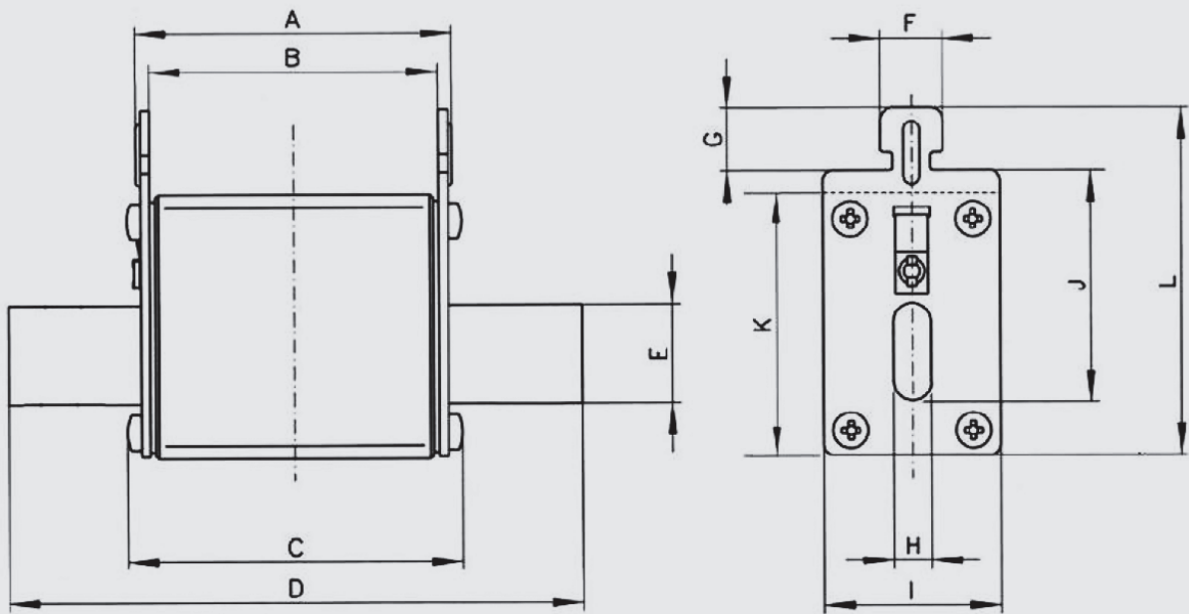
TECHNICAL

## gPV FUSE-LINKS FOR PHOTOVOLTAIC APPLICATIONS DIMENSIONS

NH1

NH2

NH3



SIZE	A	B	C	D	E	F	G	H	I	J	K	L
NH1	68	62	71,5	135	20	10	9,5	6	39	40	52	64
NH2	68	62	71,5	150	25	10	9,5	6	53	48	60	72
NH3	68	62	73	150	32	10	9,5	6	70	60	75	87

# PHOTOVOLTAIC FUSE HOLDERS

## PMX FUSE HOLDERS FOR PHOTOVOLTAIC APPLICATIONS

The first feature that PV Modular fuse holders offers, is the 1000V DC or 1100V DC rated voltages. They have been developed to offer a compact, safety and economic protection solution in photovoltaic installations where due to the increase of the power and technologic evolution, no-load voltages above 800V DC can be achieved. Modular fuse holders for 10x38 & 14x51 gPV fuses according IEC/EN 60269 standard. Compact design, with reduced distances. Manufactured with a high quality materials: Silver plated copper contacts and plastic materials with high temperature resistance and selfextinguishable. All the materials are according to the European Directive RoHS (Restriction of the use of certain hazardous substances in electrical material). UL certification (File E359201).

1000V DC	POLES	MODULES	REFERENCE	DESCRIPTION	I <sub>n</sub> (A)	U (V DC)	PACKING Uni./BOX
WITHOUT INDICATOR	1	1	485150	SINGLE-POLE	32	1000	12/192
	2	2	485151	TWO-POLES	32	1000	6/96
WITH INDICATOR	1	1	485152	SINGLE-POLE	32	1000	12/192
	2	2	485153	TWO-POLES	32	1000	6/96



NEW

485152

PATENTED DESIGN

1100V DC	POLES	MODULES	REFERENCE	DESCRIPTION	I <sub>n</sub> (A)	U (V DC)	PACKING Uni./BOX
WITHOUT INDICATOR	1	1,5	485250	SINGLE-POLE	50	1100	6/90
	2	3	485251	TWO-POLES	50	1100	3/45
WITH INDICATOR	1	1,5	485252	SINGLE-POLE	50	1100	6/90
	2	3	485253	TWO-POLES	50	1100	3/45



485250

PATENTED DESIGN

STANDARDS	APPROVALS
IEC 60269-1 IEC 60269-2 EN 60269-1 EN 60269-2 UL4248-18	 

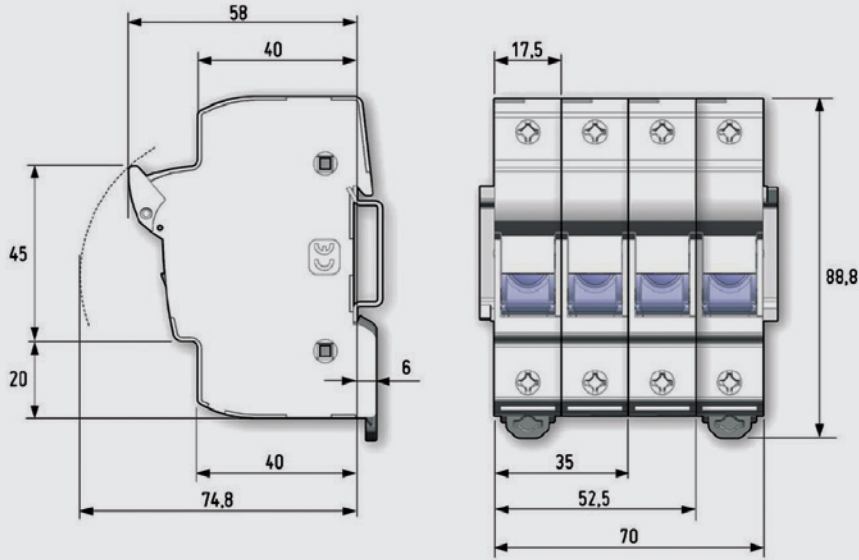
COMPATIBLE	COMPATIBLE
gPV FUSE-LINKS FOR PHOTOVOLTAIC APPLICATIONS	CONNECTION ACCESSORIES: PHASE BUSBARS AND ACCESSORIES
PAGE 04	SEE CYLINDRICAL



# PHOTOVOLTAIC FUSE BASES

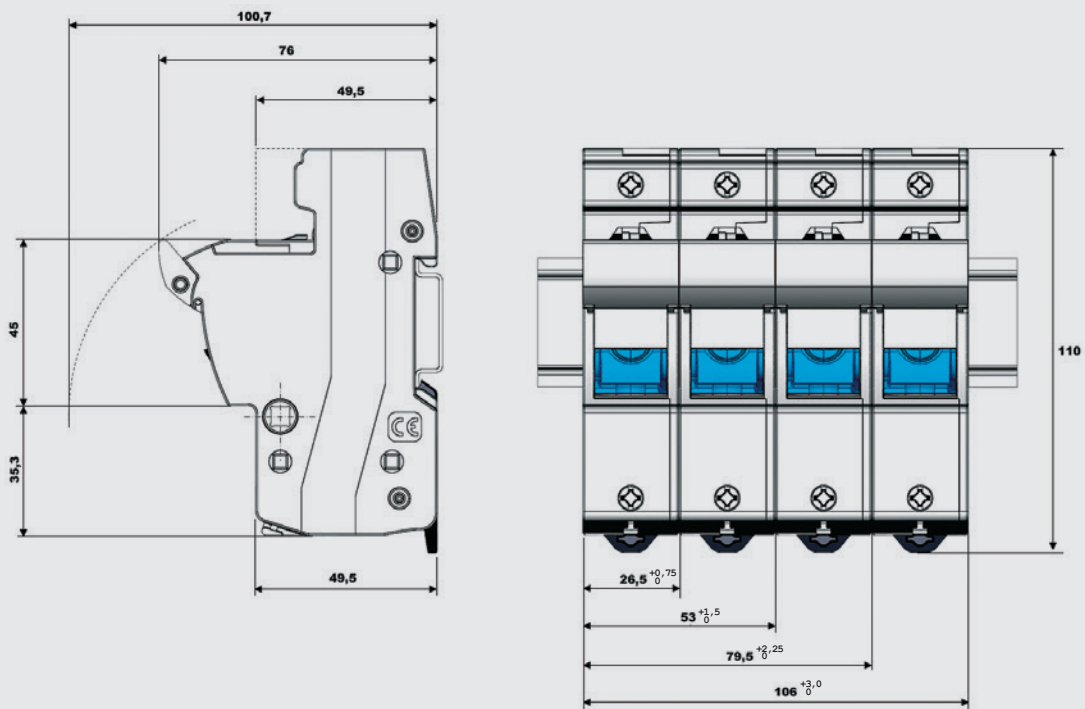
TECHNICAL  
**PV** FUSE HOLDERS FOR PHOTOVOLTAIC APPLICATIONS  
DIMENSIONS

10x38



TECHNICAL  
**PV** FUSE HOLDERS FOR PHOTOVOLTAIC APPLICATIONS  
DIMENSIONS

14x51



# PHOTOVOLTAIC FUSE BASES

## CLIP CONTACT FOR Ø10 FUSE-LINKS

Clip contact for Ø10 cylindrical fuse links. Screw fixation and PCB versions. Manufactured in tinned bronze. All the materials are according to the European Directive RoHS (Restriction of the use of certain hazardous substances in electrical material).

10x38  
10x85

REFERENCE	DESCRIPTION	$I_n$ (A)	$P_d$ max (W)	PACKING Uni./BOX
482001	Ø10 CLIP CONTACT SCREW FIXATION	25	4	50/200
482002	Ø10 CLIP CONTACT FOR PCB	25	4	50/200



482001



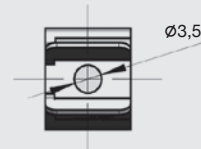
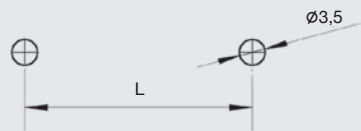
482002

## CLIP CONTACT FOR Ø10 FUSE-LINKS DIMENSIONS

10x38  
10x85

### Ø10 CLIP CONTACT SCREW FIXATION

SIZE	L (mm)
10x38	32
10x85	79,6



### Ø10 CLIP CONTACT FOR PCB

SIZE	L (mm)
10x38	42
10x85	89,6



# PHOTOVOLTAIC FUSE BASES

## ST 1000V DC NH FUSE BASES FOR PHOTOVOLTAIC APPLICATIONS

Fuse bases for NH fuse-links. Available in sizes NH1(250 A), NH2(400 A) and NH3(500 A). Manufactured with a high quality materials. Silver plated copper contacts. Plastic materials with high temperature resistance and self-extinguishable. All the materials are according to the European Directive RoHS. For DIN rail mounting or with screw fixing. Single-phase type. Connection by screws. Contacts with double spring in order to obtain an optimum operation. Wide range of accessories that enables IP20 protection index: contact covers, fuse link covers and partition walls. Multi-pole units can be made with connection accessories. Manufactured according IEC, VDE and DIN standards. UL certification (File E359201).

	DESCRIPTION	REFERENCE	U (VDC)	PACKING
<b>SINGLE POLE</b>				
<b>NH1</b> 250A	DIN RAIL-SCREW FIXING / SCREW CONNECTION	<b>354172</b>	1000	1
<b>NH2</b> 400A	DIN RAIL-SCREW FIXING / SCREW CONNECTION	<b>354175</b>	1000	1
<b>NH3</b> 500A	DIN RAIL-SCREW FIXING / SCREW CONNECTION	<b>354180</b>	1000	1



STANDARDS
IEC 60269-1 IEC 60269-2 EN 60269-1 EN 60269-2 UL4248

STANDARDS
VDE 0636 DIN 43620

APPROVALS

COMPATIBLE
gPV NH1 & NH3 FUSE-LINKS FOR PHOTOVOLTAIC APPLICATIONS
PAGE <b>06</b>

COMPATIBLE
TERMINAL COVERS, FUSE-LINKS COVERS AND IP20 PROTECTION KITS
SEE NH

# PHOTOVOLTAIC FUSE BASES

## NH FUSE BASES ACCESSORIES MICROSWITCHES FOR NH LINKS

NH1 NH2 NH3	REFERENCE	DESCRIPTION	PACKING Uni./BOX
	357010	MICROSWITCH FOR NH1 & NH3 FUSE LINKS	1/12



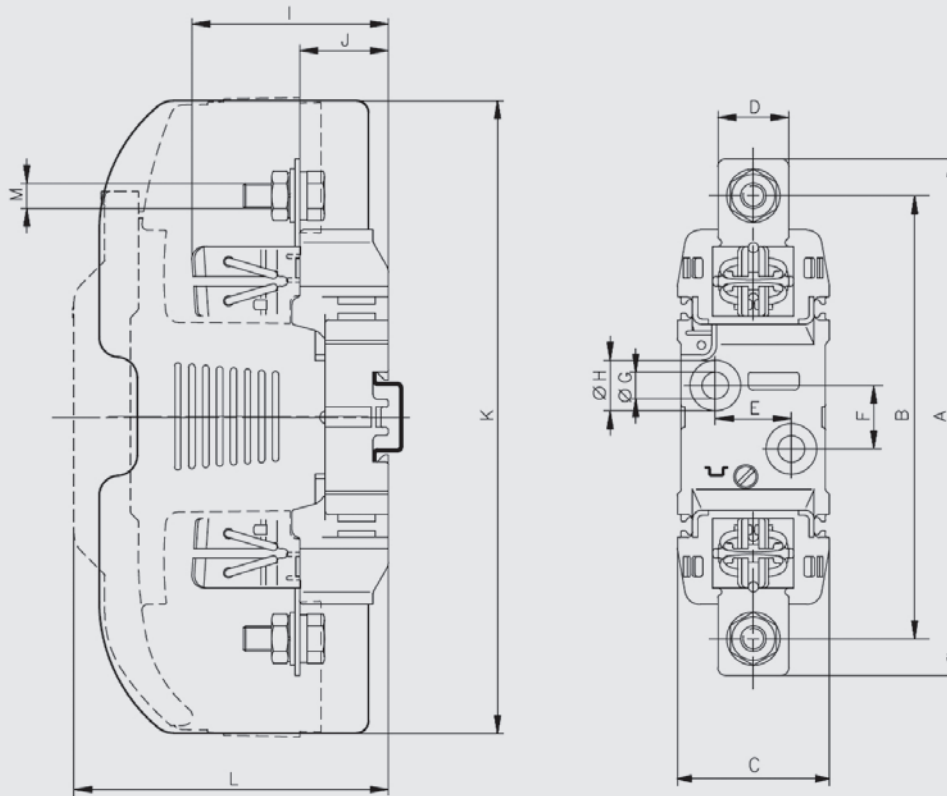
357010

## TECHNICAL ST 1000V DC NH FUSE BASES FOR PHOTOVOLTAIC APPLICATIONS DIMENSIONS

NH1  
250A

NH2  
400A

NH3  
500A



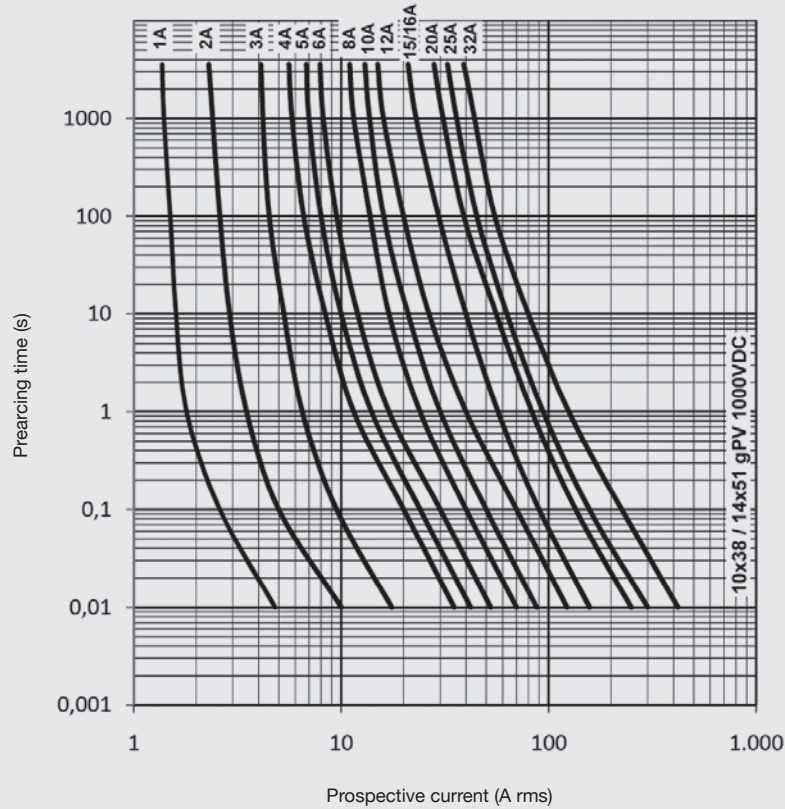
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M
NH1	200	175	48	28	30	25	10,1	20,5	77,5	35	250	106	M10
NH2	225	200	60	32	30	25	10,5	20,5	88	35	250	123	M12
NH3	240	210	60	38	30	25	10,5	20,5	97	35	270	143	M12



TECHNICAL **gPV** FUSE-LINKS FOR PHOTOVOLTAIC APPLICATIONS  
t-I CHARACTERISTICS & POWER DISSIPATION

10x38

14x51



RATED CURRENT (A)	REFERENCE		POWER DISSIPATION (W @ 0,7 In)		POWER DISSIPATION (W @ In)		PREARcing I <sup>2</sup> t (A <sup>2</sup> s)		OPERATING I <sup>2</sup> t (A <sup>2</sup> s)	
	1000V DC	600V DC	1000V DC	600V DC	1000V DC	600V DC	1000V DC	600V DC	1000V DC	600V DC
1	491601	491901	0,31	0,31	0,76	0,76	0,35	0,35	1,3	0,8
2	491602	491902	0,78	0,62	1,45	1,54	0,62	1,78	1,0	3,9
3	491604	491904	0,66	0,54	1,66	1,35	1,9	9,0	3,1	19,6
4	491605	491905	0,64	0,73	1,57	1,84	6,9	3,0	11	6,6
5	491606	491906	0,60	0,93	1,65	2,22	14	4,4	22	9,6
6	491610	491910	0,76	0,96	1,84	2,40	24	8,5	38	18,8
8	491615	491915	0,80	1,02	1,92	2,55	62	25	99	55,0
10	491620	491920	0,94	1,03	2,2	2,58	10	11	48	27,9
12	491625	491925	0,98	1,04	2,4	2,60	18	25	94	62,8
15	491629	491929	1,0	1,07	2,6	2,44	46	25	110	82,8
16	491630	491930	1,1	1,08	2,7	2,70	46	33	110	82,8
20	491635	491935	1,2	1,16	2,9	2,90	118	85	282	212
25	-	491940	-	1,10	-	2,74	-	280	-	460
30	-	491944	-	1,70	-	4,00	-	400	-	650
32	-	491945	-	1,76	-	4,40	-	400	-	650

10x38

14x51

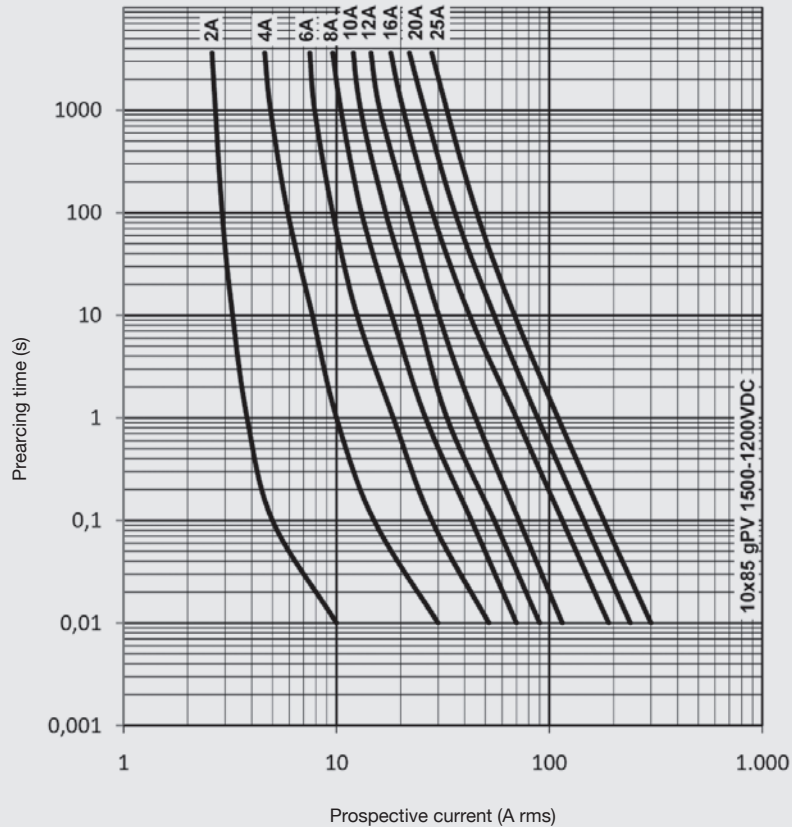
15	491647*	-	1,34	-	3,14	-	48	-	112	-
20	491648*	-	1,55	-	3,68	-	99	-	367	-
25	491650	-	1,6	-	3,8	-	275	-	650	-
32	491655	-	2,0	-	4,7	-	550	-	1300	-

\* 1100V DC

# PHOTOVOLTAIC FUSE-LINKS

TECHNICAL **gPV** FUSE-LINKS FOR PHOTOVOLTAIC APPLICATIONS  
t-I CHARACTERISTICS & POWER DISSIPATION

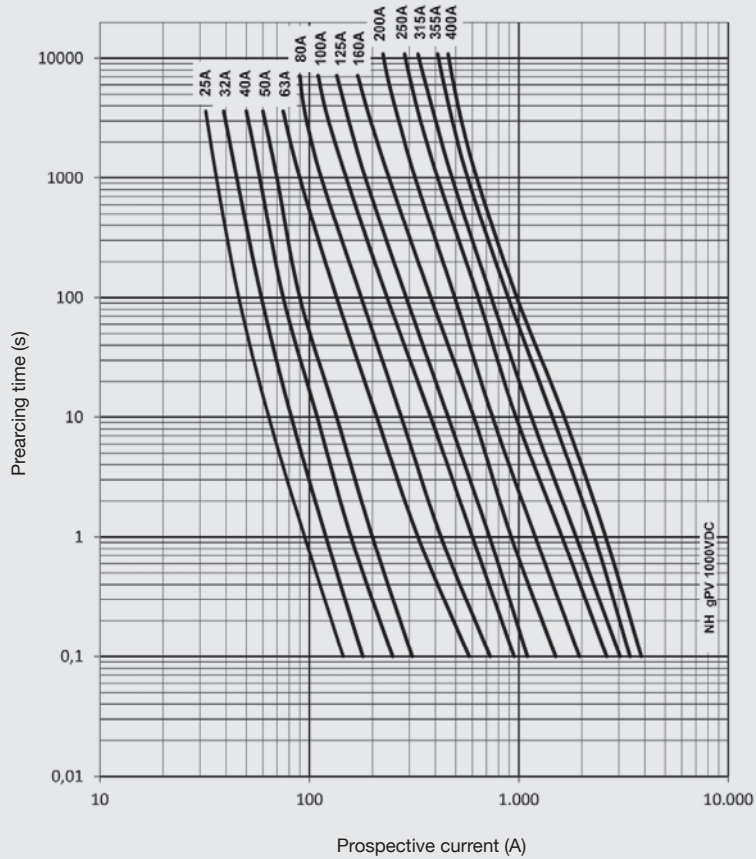
10x85



	RATED CURRENT (A)	REFERENCE	POWER DISSIPATION (W @ 0,7 In)	POWER DISSIPATION (W @ In)	PRE-ARCING I <sup>2</sup> t (A <sup>2</sup> s)	OPERATING I <sup>2</sup> t (A <sup>2</sup> s)
<b>1500V DC</b>	2	<b>492202</b>	1,28	3,42	0,8	1,1
	4	<b>492205</b>	1,16	2,91	13	17
	6	<b>492210</b>	1,10	2,65	65	84
	8	<b>492215</b>	1,16	2,79	175	225
	10	<b>492220</b>	1,81	4,38	209	269
	12	<b>492225</b>	1,83	4,43	400	515
<b>1200V DC</b>	16	<b>492230</b>	1,75	4,13	136	269
	20	<b>492235</b>	2,13	5,14	242	478
	25	<b>492240</b>	2,28	5,48	545	1075

TECHNICAL **gPV** FUSE-LINKS FOR PHOTOVOLTAIC APPLICATIONS  
t-I CHARACTERISTICS & POWER DISSIPATION

- NH1
- NH2
- NH3



	RATED CURRENT	REFERENCE	POWER DISSIPATION	POWER DISSIPATION	PREARCING $I^2t$	OPERATING $I^2t$
	(A)		(W @ 0,7 In)	(W @ In)	(A <sup>2</sup> s)	(A <sup>2</sup> s)
		1000V DC	1000V DC	1000V DC	1000V DC	1000V DC
<b>NH1</b>	25	373210	5,2	12,5	62	94
	32	373215	6,3	15,5	122	184
	40	373225	6,7	16,6	302	454
	50	373230	7,5	18	562	844
	63	373235	8,2	20	1210	1815
	80	373240	10	27	2250	3375
	100	373245	11	28	4000	6000
	125	373250	12,5	32	6500	9700
	160	373255	10,0	25,0	10300	19800
	200	373260	12,5	30,0	19900	38300
<b>NH2</b>	200	373350	11,4	28,0	18700	36400
	250	373360	13,0	33,3	36800	71500
<b>NH3</b>	200	373425	19,5	48,0	21700	31700
	250	373435	20,5	51,5	41000	60000
	315	373445	26,2	66,0	76000	111500
	355	373450	18,0	46,5	74700	130700
	400	373455	20,0	51,0	104400	182600

# PHOTOVOLTAIC FUSE-LINKS

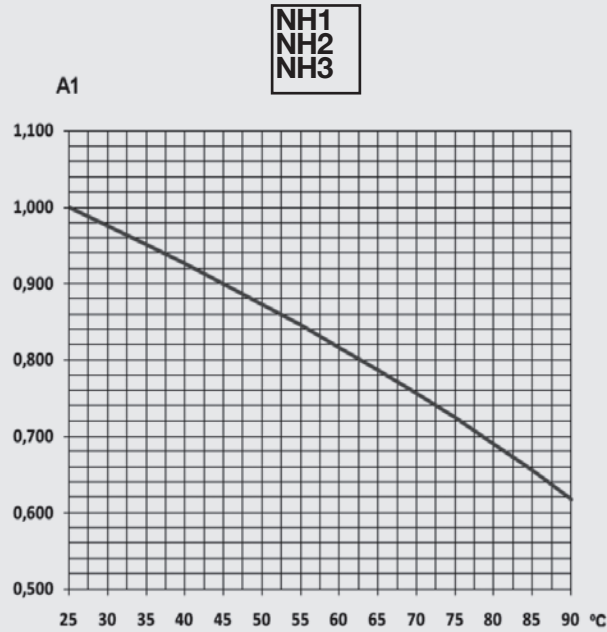
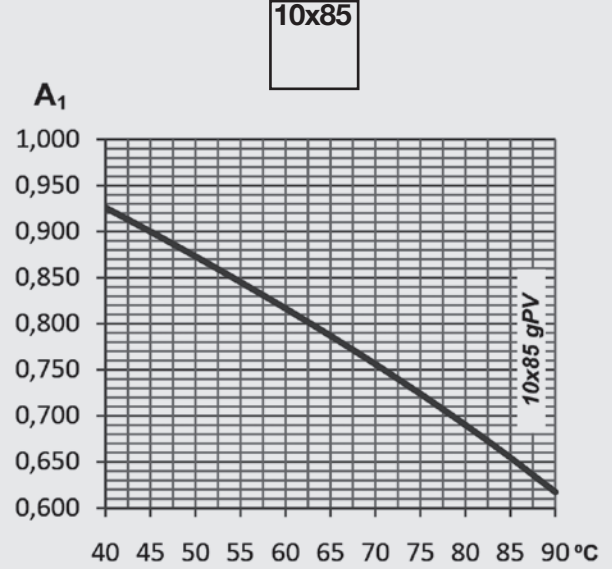
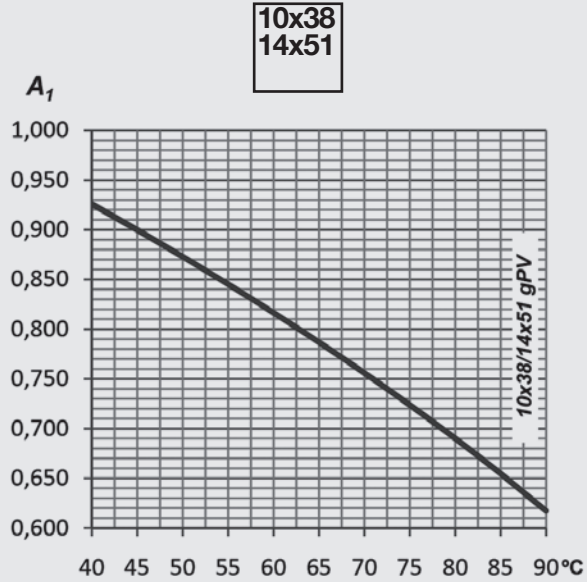
TECHNICAL

## gPV FUSE-LINKS FOR PHOTOVOLTAIC APPLICATIONS AMBIENT TEMPERATURE DERATING FACTOR

10x38  
14x51

10x85

NH1  
NH2  
NH3



$t_a$ (°C)	A1
40	0,92
45	0,90
50	0,87
55	0,85
60	0,82
65	0,79
70	0,76
75	0,72
80	0,69



# THE PROTECTION FORMULA

BY  **Electric**

## ELECTRONIC



## CYLINDRICAL



## PHOTOVOLTAIC



## RAPIDPLUS



## NH



## SPECIAL FUSES



## DOMESTIC



## D & DO



## TRANSFORMERS





### HEAD OFFICE & FACTORY

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08940 CORNELLA DE LLOBREGAT  
BARCELONA  
SPAIN  
Tel. +34 93 377 85 85  
Fax +34 93 377 82 82

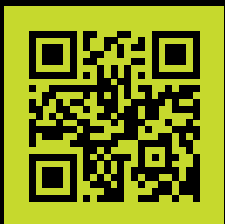
### EXPORT SALES

Tel. +34 93 475 08 64  
Fax +34 93 480 07 75  
export@df-sa.es

### NATIONAL SALES

Tel. 93 475 08 64  
Fax 93 480 07 76  
comercial@df-sa.es

[www.df-sa.es](http://www.df-sa.es)



# PROTECTING THE WORLD

