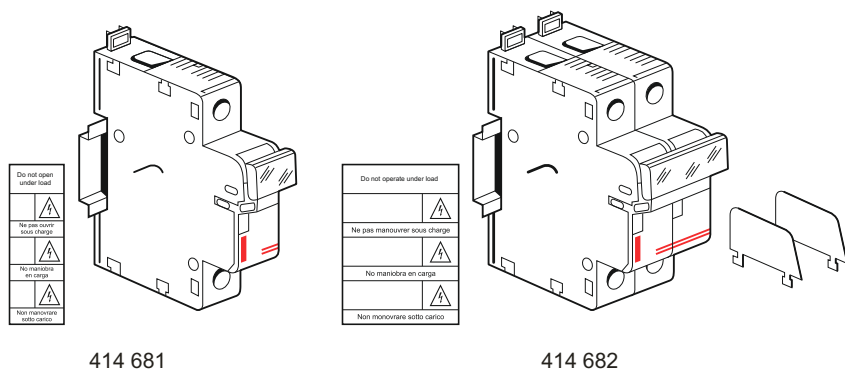


Modular fuse carriers for photovoltaic applications

Catalogue number(s): 4146 81/82



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1. GENERAL FEATURES

1-1 Brief description

- Single pole (1P) and 2-pole (2P) photovoltaic (PV) fuse carrier for isolating and protecting DC circuits from PV panels for applications up to 1000 V.
- For 10 x 38 mm cylindrical fuses
- Supplied with dividers (4146 82) and safety labels: "Do not operate under load"

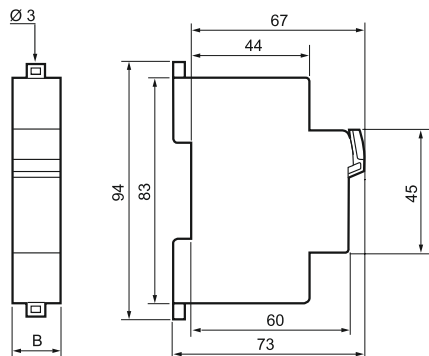
1-2 Use

- Use recommended according to recommendations in guide UTE C 15-712-1
- Use with fuses specifically designed for the DC side of PV applications

Recommended use:

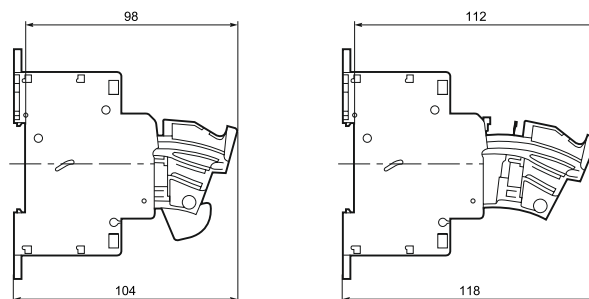
- 1P fuse carrier: For installations with polarised PV panels (with earthing of one of the polarities), protection of the poles not connected to earth for each PV string
- 2P fuse carrier: For protection of both poles of each string of non-polarised PV panels

2. OVERALL DIMENSIONS



	1 pole	2 poles
B	17.7	35.5

2. OVERALL DIMENSIONS (continued)



3. TECHNICAL FEATURES

	4146 81	4146 82
Operating voltage (Ue)*	1000 V ---	1000 V ---
Operating current (Ie)	20 A	20 A
Number of protected poles	1	2
Utilisation category	DC 20B	DC 20B
Max. short-circuit current (Isc)	50 kA	50 kA
Rated impulse withstand voltage Uimp	6 kV	6 kV
Degree of pollution	2	2
Usage temperature	-5°C +40°C	-5°C +40°C
Storage temperature	-25°C +70°C	-25°C +70°C
Mechanical performance	IK04	IK04
Protection	IP2X	IP2X

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3-1 APPARATUS DOWNGRADING

It can be justified to downgrade the apparatus when the conditions of use become more hard :

- Room temperature higher than 35° C : To downgrade the fuse of a grade by 10° C (UTE guide C 20-051, NF IEC 60 943, guide to over heating)

- Juxtaposed apparatus and simultaneous operations

To apply to the base rated current the corresponding coefficient :

Number of juxtaposed poles	Coefficient
1 - 2 or 3 pôles	1
4 - 5 or 6 pôles	0,8
7 - 8 or 9 pôles	0,7
10 pôles and more	0,6

(NF C 63-421 / NF EN 60439-1, table 1)

Permanent mode (more than 8 hours per day) : It can be to downgrade the base of a size.

4. MATERIALS

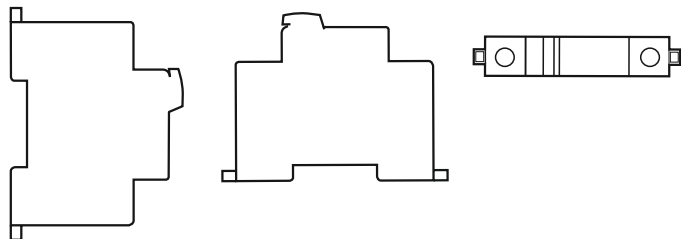
Housing	Reinforced polybutylene terephthalate	Density	1.62 to 1.70
		Max. tensile stress	> 100 MPa
		Bending modulus	> 9.50 GPa
		Glow-wire	960°C/5 s
		Oxygen index	> 30
		Colour	Grey RAL 7035
Screws	Zinc-plated bichromate steel		
Contacts	Copper with silver track		

5. INSTALLATION

Mounting: - On EN 50.022 or EN 60.715 symmetrical rail
- With Ø 3 screws on plate at each end with clips disengaged

Power supply: Via the top or the bottom

Operating position: Vertical or horizontal or side



Subject to use fuses Legrand brand

Connection: "Solar" cables

5. INSTALLATION (continued)

	1P/2P
Permitted conductors - Flexible with cable ends - Flexible	1.5 to 10 mm ² 4 to 10 mm ²
Tools required - Flat screwdriver - Phillips screwdriver	Ø 4 to 5.5 mm PZ2
Tightening torque - Min. - Max. - Recommended	1.8 Nm 3 Nm 2.2 Nm

Cage terminals, with pozidriv mixed disengageable and captive screws

6. CONFORMITY

Products conform to standards:

- EN/IEC 60269-1
- EN/IEC 60947-3: classification DC20B (Do not operate under load)

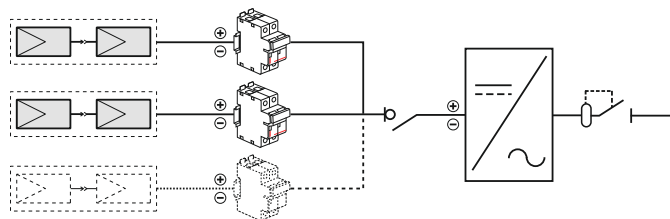
Comply with the installation obligations and recommendations of standard NF C 15-100 and guide UTE C 15-712-1

7. SETUP

7-1 General principle

7-1-1 Installations with non-polarised PV panels

For PV installations based on the use of non-polarised panels, neither of the polarities of the panels is connected to earth. Both the polarities of the panels must be protected.



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7-1-2 Installations with polarised PV panels

For PV installations based on the use of polarised panels, one of the polarities of the panels is connected to the earth of the installation (in accordance with the recommendations of the manufacturers of the PV panels)

For each string of polarised panels, the conductors must be protected as follows:

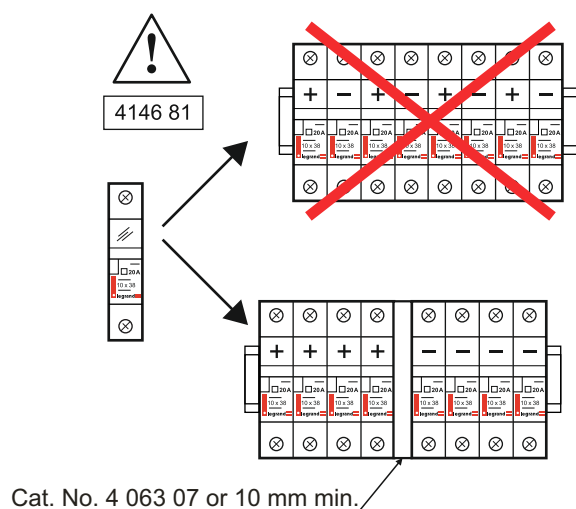
- Conductors not connected to earth: protection by single pole fuse carrier
- Panels with direct connection to earth (direct earthing with no intermediate resistor): protection of all these conductors with a single fuse and a single pole fuse carrier

Cables connected to earth:

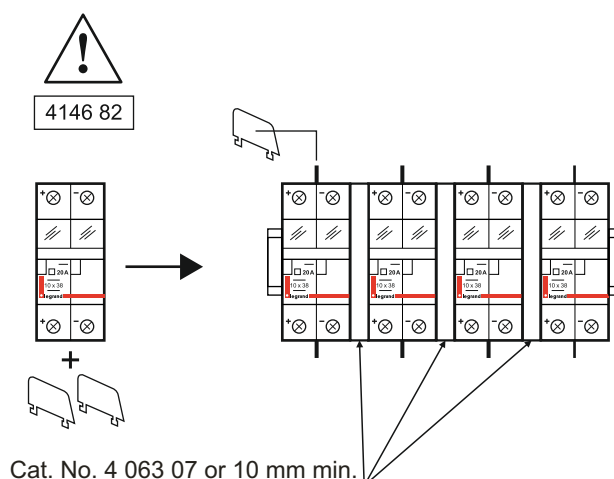
Polarised panels must be earthed at a single point for all the conductors of the PV generator (PV strings associated with the same inverter or the same MPPT). This point must be located upstream of the inverter's breaking and isolating device (isolating switch) in order to maintain the earthing of the panels even during maintenance of the inverter and the panels. The cross-section of the earthing conductor must be appropriate for the protection device breaking the fault current (min. 4 mm² copper or equivalent). The rating of the protection device must be chosen according to the technology of the PV modules and the area of the PV array.

7-2 Usage limits

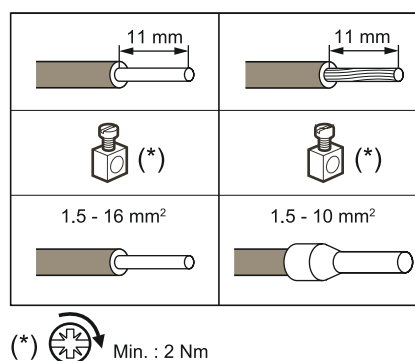
Single pole fuse carrier



- 2-pole fuse carrier



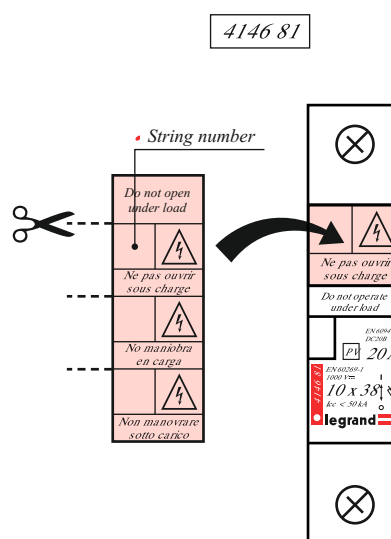
7-3 Connections



7-4 Labelling and safety markings

In accordance with guide UTE C 15-712, a "do not open under load" label must be affixed to the fuse carriers

1P fuse carrier

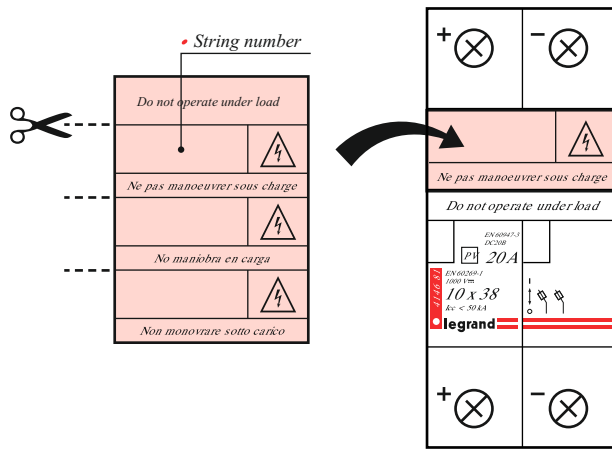


Modular fuse carriers for photovoltaic applications

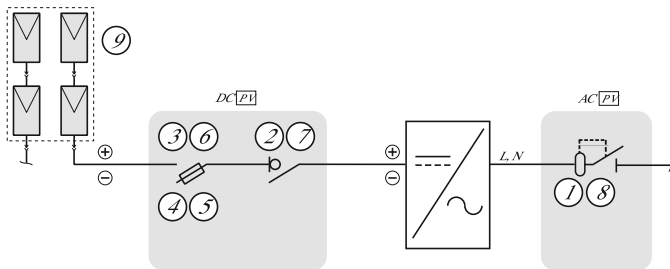
Catalogue number(s): 414 681/82

- 2P fuse carrier

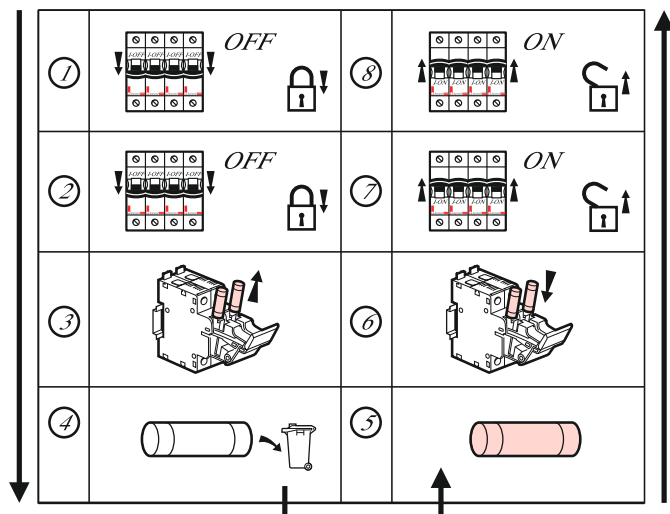
4146 82



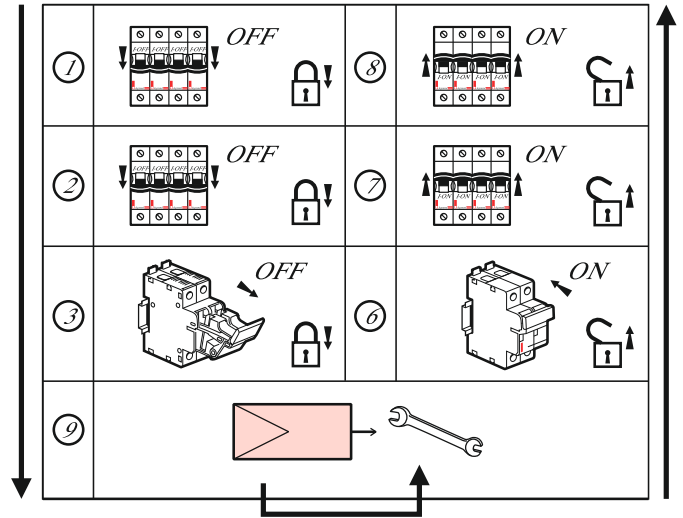
8. MAINTENANCE



Replacement of fuses

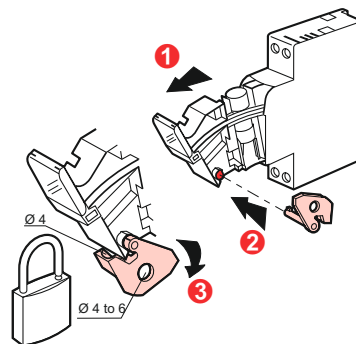


Maintenance on panels

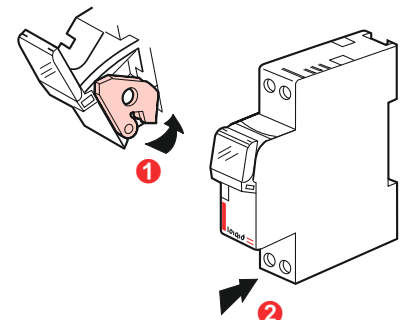


9. ACCESSORIES

9-1 Padlocking accessory Cat. No. 057 99

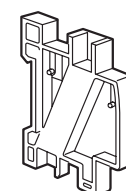


Ø5 mm padlock Cat. No. 4 063 13
Ø6 mm padlock Cat. No. 227 97



9-2 Separation module (0.5 module)

Cat. No. 4 063 07

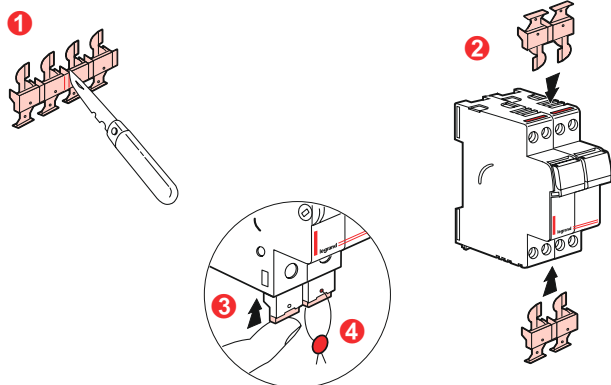


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9-3 Sealable screw cover (4 separable poles) Cat. No. 4 063 04

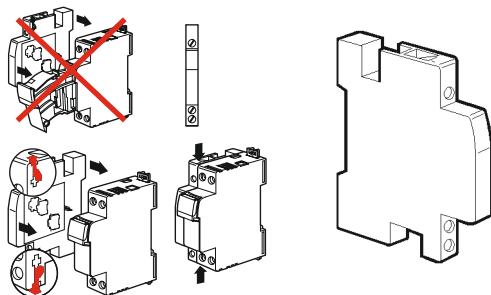
Cat. No. 4 063 04



9-4 Auxiliary

N/C + N/O early break and signalling auxiliary
5 A – 250 V (0.5 module)

Cat. No. 057 96

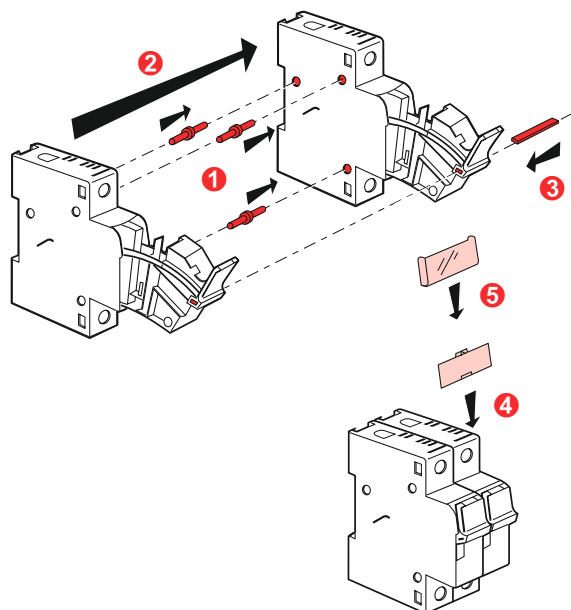


9-5 Joining assembly

2-pole Cat. No. 057 92

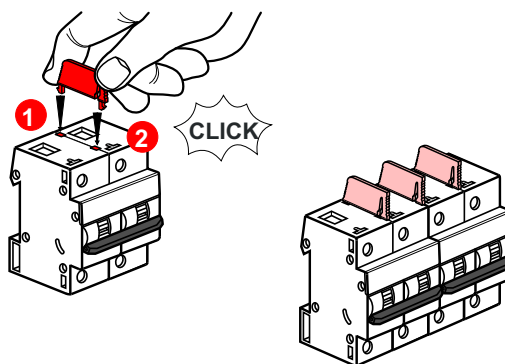
3-pole Cat. No. 057 93

4-pole Cat. No. 057 94



9-6 Pole separation divider

Cat. No. 4 063 05



9-7 Universal prong-type busbars 4 049 26/37

Can be used up to 1000 V to group together strings of photovoltaic panels with same polarity on the DC side with single pole fuse carriers Cat. No. 4146 81.

Note: The ends of the busbars must be equipped with the protection accessory Cat. No. 4 049 89.
Insert a spacing module Cat. No. 4 063 07 between 2 consecutive units with different polarities.

