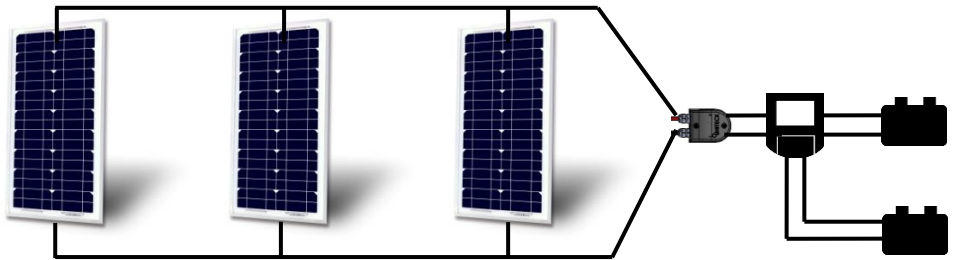


UNISUN - UNICONNECT



Unisun : high-performance solar modules



Uniconnect : fast solar connection kits

IMPORTANT



- Dust and dirt on the glass face reduce power production. Clean regularly your panel, using a soft cloth or a soft brush and soapy water (corrosive products banished).
- Setting up Unisun modules in direct contact with the roof (without Unifix mounting bracket) is banished.
- Panel coupling: couple panels with equivalent powers (3 panels maximum).

Dear customers, thank you very much for purchasing. Please read carefully and thoroughly all the instructions before using the product.

Unisun is the high-performance monocrystalline module range for leisure applications (boating, camper van), off-grid or signs.

Their multi-layer structure ensures an exceptional performance even in case of low sunshine or heat conditions. Their high transmissibility tempered glass and their anodized aluminium frame preserve them from external attacks (impacts, oxidation, corrosion).

With their anti hot-spot system, the panels are protected against the hotspot effects that can occur with cells occupation.

The Unisun range is composed of compact panels which optimize the available space. Adjustable for more power, connecting them in series or parallel is facilitated by their MC4-type solar connectors.

For the module/solar charge controller/battery connection, we recommend the Uniconnect ready-to-use kits which optimize your electrical performances and make your installation easier:

- Uniconnect 1.6 = 1 module connection
- Uniconnect 2.6 = 2 modules connection
- Uniconnect 3.6 = 3 modules connection

SAFETY INSTRUCTIONS

- Take appropriate measures to prevent accidents during the mounting work.
- If the module or the bracket are exposed to sunlight for a long time, there is a risk of burns. Protect yourself.
- Once the work is achieved, check that your mounting brackets and modules are perfectly fixed.
- During the maintenance, please disconnect the solar system. Connection cables must never be powered up: risk of electrical arc.

RECOMMENDATIONS

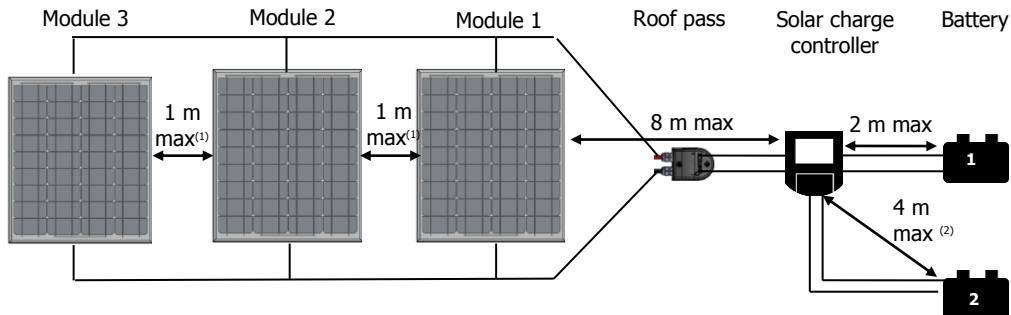
- Set the Unisun modules on surfaces presenting a sufficient lift. Consider the extra charge with module + bracket.
- The placement of the sensors influences your electrical performances. Choose the optimal inclination and orientation depending on your environment. Avoid shadow areas or objects sources of shade.
- Dust and dirt on the glass face reduce power production. Clean regularly your panel, using a soft cloth or a soft brush and soapy water (corrosive products are banished).
- Check regularly the quality of your module connections.

UNISUN PANELS : OVERVIEW AND WIRING

Before fixing and connecting, please respect :

- the maximum distances (indicated below between each element)
- the connection order

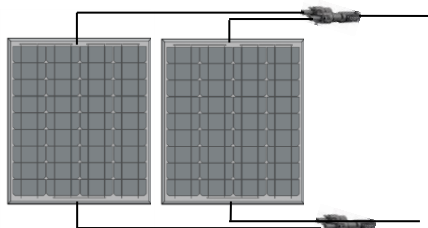
Unisun + Uniconnect Wiring



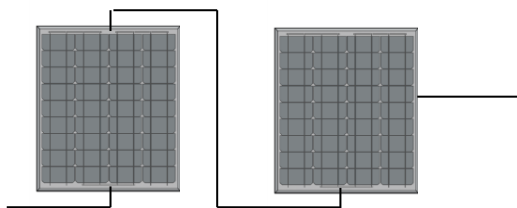
⁽¹⁾ The distance between modules can be extended with one additional meter by adding a 612B and a 612R Unicable (additional cables not provided with Uniconnect kits, optional).

⁽²⁾ Battery connexion kit 2 (not provided with Uniconnect kit, optional)

Series/parallel connection



Parallel connection
for more output power (W)
 $12V/50W + 12V/80W = 12V/110W$



Series connection
for your 24V batteries :
 $12V/50W + 12V/50W = 24V/50W$

Connection order



❶ Connection : solar charge controller → battery



❷ Connection : module → solar charge controller

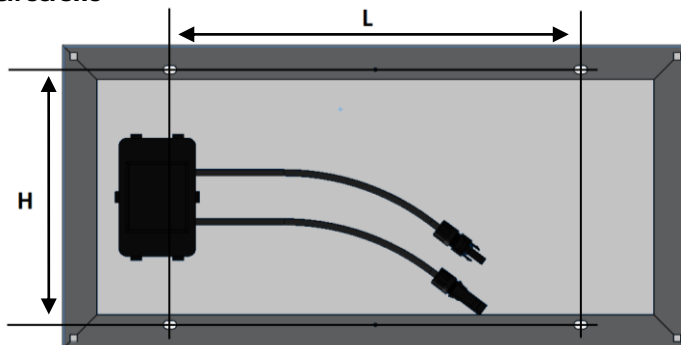


❸ Connection : solar charge controller → electrical device

To disconnect, follow the opposite order. For more details, refer to the manual of your solar charge controller.

UNISUN PANELS : TECHNICAL SPECIFICATIONS

Distance between screws



	Unisun 5.12M	Unisun 10.12P	Unisun 10.12M	Unisun 20.12M	Unisun 20.24M	Unisun 50.12M	Unisun 80.12M	Unisun 100.12M	Unisun 145.12M
Distance of fixation W x H (mm)	140 x 195	289x188	120x34 183x34	420x260 120x260	420x260 120x260	420 x 500 120 x 500	860 x 500 127 x 500	860 x 500 127 x 500	1100 x 626 600 x 626

COMPLIANCE STATEMENT

UNITECK testifies that the modules described in this manual :

UNISUN 5.12M / 10.12P / 10.12M / 20.12M / 50.12M / 80.12M / 100.12M / 145.12M are manufactured in compliance with the European directives.

It complies with the harmonised standards:

- IEC 61215 & IEC 61730

CE date of tagging: January 2013.

01/01/2013

Société Uniteck

132 rue Pierre Simon Marquis de Laplace

34500 Béziers

Yoann Fourmond

General Manager

WARRANTY

The warranty covers all defects or manufacturing flaws for 1 year from the day of purchase (pieces and workforce).

The warranty does not cover:

- the normal wear of the pieces (for ex.: cables, etc.).
- incidents due to a bad use, fall, disassembly, or any other damage due to the transport.

In case of failure, return the device to your supplier, and join :

- a dated proof of purchase (cashier's receipt, bill...).
- an explanatory note of the failure.

Caution : Our after-sales service does not accept postage due returns.

After the warranty, our after-sales service ensures repairs after acceptance of a quotation.

After-sales service contact : Uniteck-132 rue Pierre Simon Marquis de Laplace

34500 Béziers -France

E-mail: sav@uniteck.fr Fax: +33 (0)4 88 04 72 20

UNISUN PANELS : TECHNICAL SPECIFICATIONS

	UNISUN 5.12M	UNISUN 10.12P	UNISUN 10.12M	UNISUN 20.12M	UNISUN 20.24M
Performance					
Max power (Pm)*	5 W	10 W	10 W	20 W	20 W
Power range*	0/+3%	0/+3%	0/+3%	0/+3%	0/+3%
Operating voltage	12 V	12 V	12V	12 V	24 V
Technology	Mono.	Poly.	Mono.	Mono.	Mono.
Voltage at maximum power (Vmp)*	17,4 V	17,4 V	17,6 V	17,6 V	35,2 V
Intensity at maximum power (Imp)*	0,29 A	0,57 A	0,57 A	1,14 A	0,57 A
Open circuit voltage (Voc)	21,6 V	21,6 V	21,77 V	21,7 V	43,54 V
Short circuit current (Icc/Isc)	0,32 A	0,65 A	0,65 A	1,26 A	0,65 A
Min. intensity charge controller IMR (=IMP +25%)	0,36 A	0,71 A	0,71 A	1,43 A	0,71 A
Solar cells efficiency	18 %	17 %	18,4%	15,8 %	18,4 %
Solar module efficiency	7,5 %	8,8 %	12,5 %	10,8 %	12,5 %
Temperature sensitivity					
Operating temperature	-40 °C to +85°C	-40 °C to +85°C	-40 °C to +85°C	-40 °C to +80 °C	-40 °C to +85°C
NOCT/TUC**	45 +/- 2°C	45 +/- 2°C	45 +/- 2°C	45 +/- 2°C	45 +/- 2°C
Temperature ratio :					
- Pm :	-0,48 %/°C	-0,47 %/°C	-0,48%/C°	-0,50 %/°C	-0,48%/C°
- Voc :	-0,34 %/°C	-0,34 %/°C	-0,34%/C°	-0,35 %/°C	-0,34%/C°
- Icc :	0,037 %/°C	0,045 %/°C	0,037%/C°	-0,060 %/°C	0,037%/C°
Mechanical characteristics					
Cells dimensions	62,5 x 15,6mm	78 x 26 mm	62,5 x 31,25 mm	62,5 x 62,5mm	125 x 15,5 mm
Number of cells	36 (4x9)	36 (4x9)	36 (4x9)	36 (4x9)	72 (4x18)
Module dimension	216 x 306 x 18 mm	310 x 368 x 18 mm	310 x 383 x 35 mm	660 x 310 x 35 mm	310 x 660 x 35 mm
Cable length	-	-	900 mm	300 mm	900 mm
Module weight	0,8 kg	1,5 kg	1,5 kg	2,5 kg	2,5 kg

* Under standard test conditions (STC) : sunshine - 1 000 W/m², AM 1.5, cells temperatures (25 °C)

** Nominal operating cell temperature : sunshine - 800 W/m²,
With an ambient temperature of 25 °C and a wind of 1 m/s.

UNISUN PANELS : TECHNICAL SPECIFICATIONS

	UNISUN 50.12M	UNISUN 80.12M	UNISUN 100.12M	UNISUN 145.12M
Performance				
Max power (Pm)*	50 W	80 W	100 W	145 W
Power range*	0/+3%	0/+5%	0/+3%	0/+3%
Operating voltage	12 V	12 V	12 V	12 V
Technology	Monocrystalline	Monocrystalline	Monocrystalline	Monocrystalline
Voltage at maximum power (Vmp)*	18,5 V	17,5V	18,7 V	18,15 V
Intensity at maximum power (Imp)*	2,7 A	4,57 A	5,43 A	7,99 A
Open circuit voltage (Voc)	22,7 V	21,9 V	22,4 V	21,72 V
Short circuit current (Icc/Isc)	2,84 A	4,95 A	5,66 A	8,41 A
Min. intensity charge controller IMR (=IMP +25%)	3,38 A	5,71 A	6,78 A	9,98 A
Solar cells efficiency	18,8 %	15,8 %	18,5 %	18.4%.
Solar module efficiency	14,2 %	12,10 %	15,5 %	15.2%
Temperature sensitivity				
Operating temperature	-40 °C to +80 °C	-40 °C to +80 °C	-40 °C to +85 °C	-40 °C to +85 °C
NOCT/TUC**	45 +/- 2°C	45 +/- 2°C	45 +/- 2°C	45 +/- 2°C
Temperature ratio :				
- Pm :	-0,50 %/°C	-0,50 %/°C	-0,48 %/°C	-0,48 %/°C
- Voc :	-0,35 %/°C	-0,35 %/°C	-0,34 %/°C	-0,34 %/°C
- Icc :	0,060 %/°C	0,060 %/°C	0,037 %/°C	0,037 %/°C
Mechanical characteristics				
Cells dimensions	125 x 62,5 mm	156 x 78 mm	125 x 125 mm	156 x 156 mm
Number of cells	36 (4x9)	36 (4x9)	36 (4x9)	36 (4x9)
Module dimension	640 x 550 x 35 mm	960 x 550 x 35 mm	1200 x 550 x 35 mm	1482 x 676 x 35 mm
Cable length	300 mm	300 mm	500 mm	500 mm
Module weight	4,5 kg	7,5 kg	8,0 kg	11,5 kg

* Under standard test conditions (STC) : sunshine - 1 000 W/m², AM 1.5, cells temperatures (25 °C)

** Nominal operating cell temperature: sunshine - 800 W/m²,
With an ambient temperature of 25 °C and a wind of 1 m/s.

UNICONNECT KIT : MODULE WIRING

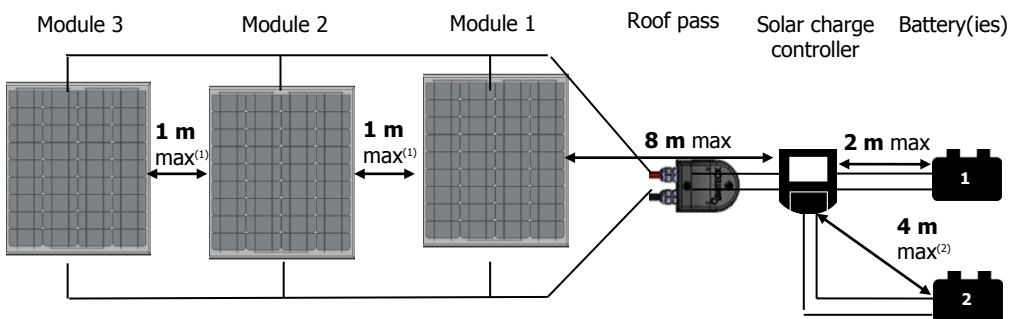
For the connection module/solar charge controller/battery, we recommend the Uniconnect ready-to-use kits:

- Uniconnect 1.6 = 1 module connection
- Uniconnect 2.6 = 2 modules connection
- Uniconnect 3.6 = 3 modules connection

Uniconnect kits are equipped with flexible solar cables with a tinned copper core resistant to extreme conditions (from -40°C to 120°C, UV, immersion...). With its 6 mm² section, it optimizes the output power of your installation by assuring a minimal voltage drop.

It easily and rapidly fits with panels (MC4-type solar connectors). They include a fuse kit to protect your installation and your battery and are supplied with a waterproof roof-pass (UV resistant), battery terminals and cable guides.

OVERVIEW OF THE UNICONNECT WIRING



	Connection inter-module		Connection module /charge controller		Connection Charge controller/battery	Guide cables
	Unicable 612 B + 612 R (1 meter)	Bypass kit	Unicable 681 B + 681 R (8 meters)	Roof Pass ⁽³⁾	Connection kit battery 1 With battery terminals + fuse protection kit	Guides cables ⁽⁴⁾
Uniconnect 3.6	x 2	x 2	x1	x1	x1	x 2
Uniconnect 2.6	x 1	x 1	x1	x1	x1	x 4
Uniconnect 1.6	-	-	x1	x1	x1	x 6

⁽¹⁾ The distance between modules can be extended with one additional meter by adding a 612B and a 612R Unicable (additional cables not provided with Uniconnect kits, optional).

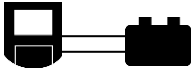
⁽²⁾ Battery connexion kit 2 (not provided with Uniconnect kit, optional)

⁽³⁾ The roof pass is made to be stuck. To ensure sealing, use the adhesive included in the Unifix 1C kit or a sealing adhesive.

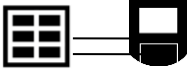
⁽⁴⁾ Cable guides allows you to guide and fix your cables

UNICONNECT KIT : MODULE WIRING

Please respect the following connection order :



❶ Connection : solar charge controller -> battery



❷ Connection : module -> solar charge controller



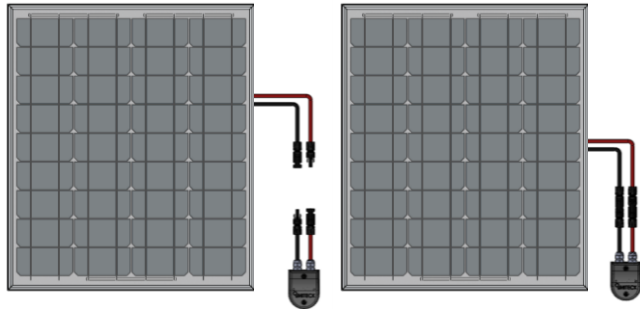
❸ Connection : solar charge controller -> electrical load

To disconnect, please follow the opposite order. For more details, refer to the manual of your photovoltaic solar charge controller.

ZOOM INTER-MODULE CONNECTION (SERIES CONNECTION)

Uniconnect 1.6

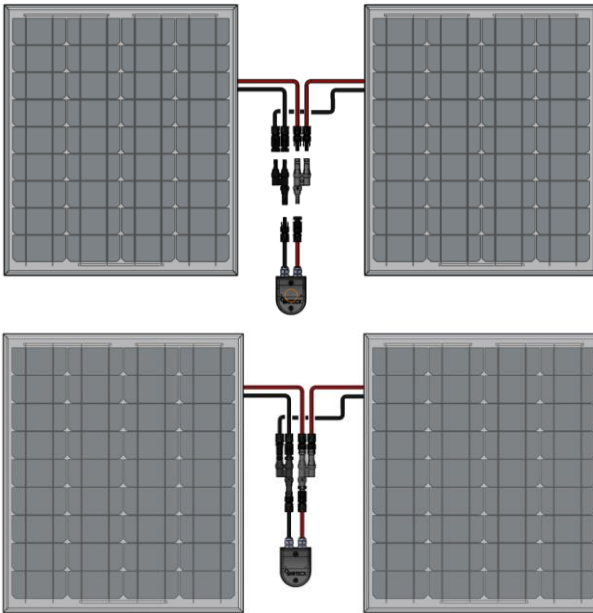
	x2
	x2
	x2



NB : For the panel connection, remove plugs placed at the end of your cables. Keep them for protecting your cables when you disconnect your modules (ex. : for your cleaning/maintenance operations).

Uniconnect 2.6

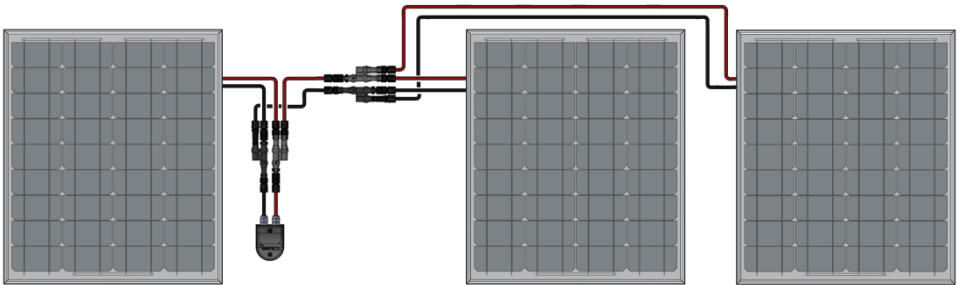
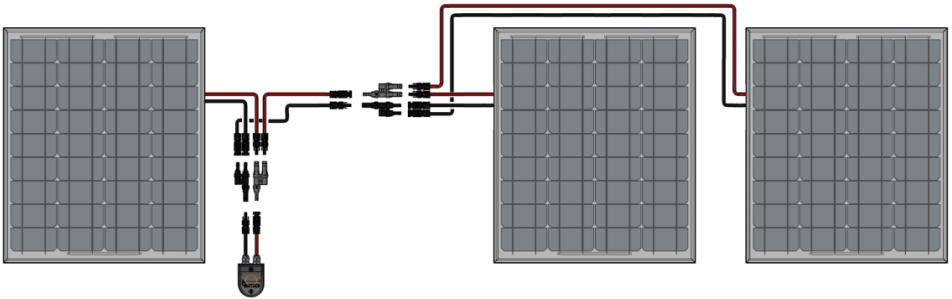
	x1
	x1
	x3
	x3
	x 4



nb : For the pannel connection, remove plugs placed at the end of your cables. Keep them for protecting your cables when you disconnect your modules (ex. : for your cleaning/maintenance operations)

Uniconnect 3.6

	x2
	x2
	x4
	x4
	X6

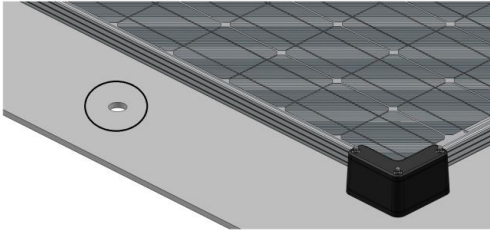


nb : For the pannel connection, remove plugs placed at the end of your cables. Keep them for protecting your cables when you disconnect your modules (ex. : for your cleaning/maintenance operations)

UNICONNECT KIT : ROOF PASS INSTALLATION

Follow these instructions :

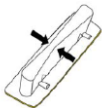
- Drill the wall with a hole saw. Diameter between 15 and 20mm.



- Roof pass fixing :

- For a vehicle use with Unifix 1C kit:

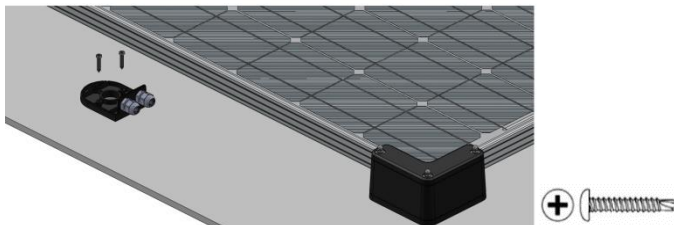
Clean the selected area with the degreaser supplied with the Unifix 1C kit (do not use alcohol/ white spirit...).



Apply the adhesive supplied with your Unifix 1.C bracket on the white area shown (see image below). Then place it on the drilled place.

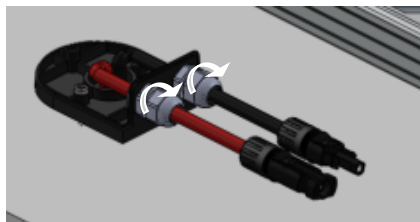
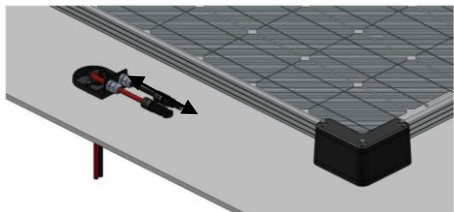


- For a use on roof/wall: fix your roof pass using 2 self-strapping screws.

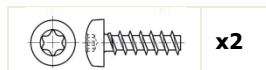
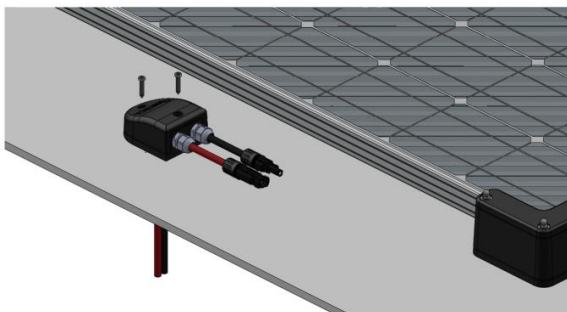


UNICONNECT KIT : ROOF PASS INSTALLATION

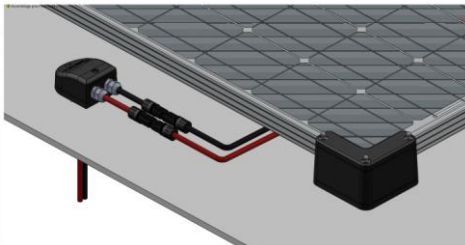
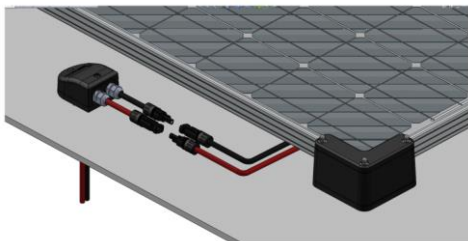
- Pass the cables. Keep a sufficient length for your wiring. Tighten the nuts from the gland to ensure impermeability.



- Close the cover with 2 plastic screws.







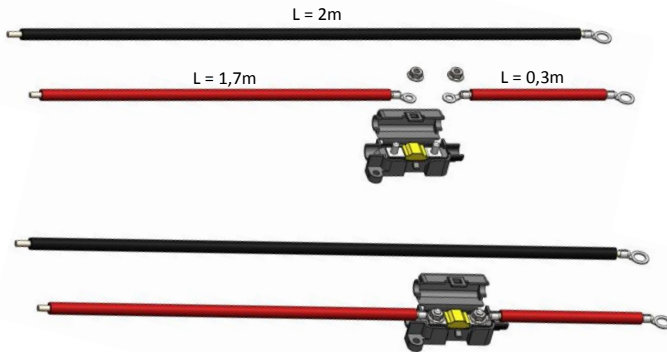
- Connect the connectors together. (No risk of mistakes, the connectors are polarized).



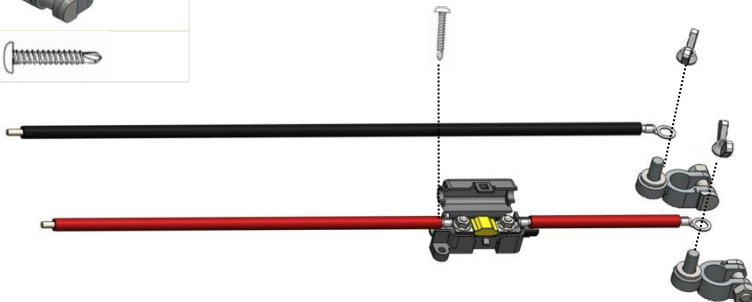
UNICONNECT KIT : BATTERY KIT N°1 ASSEMBLY

- Battery kit n°1 : Assemble the red cables and the fuse kit.

 D8 Terminal L= 2m	x 1
 L= 1,7m D5 Terminal	x 1
 L=0,3 D5 Terminal/ D8 Terminal	x 1
	x 1







- Battery kit n°1 : Add the terminals using the wing nut. If desired, you can fix the fuse kit with the provided self-tapping screw.

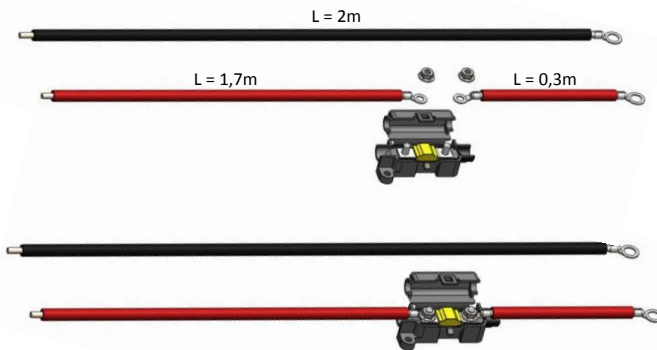


UNICONNECT KIT : BATTERY KIT ASSEMBLY N°2 (OPTIONAL)

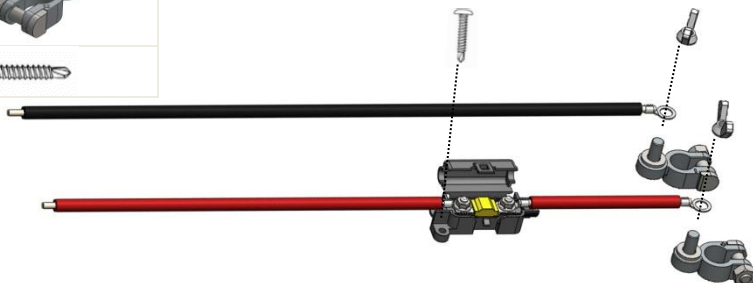
With its 2 battery outputs, the battery kit n°2 (optional) links the Unisolar 20-24D, which has 2 battery outputs, to your second battery. Its 4 m cable makes easier the connection between your Unisolar charge controller and your starter battery (located in the engine compartment).

- Put the red cables and the fuse kit together.

 D8 Terminal L= 4m	x 1
 L= 3,2m D5 Terminal	x 1
 L=0,8 D5 Terminal/ D8 Terminal	x 1
	x 1

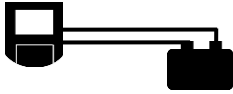


- Add terminals using the wing nut. If desired, you can fix the fuse kit using the provided self-tapping screw.

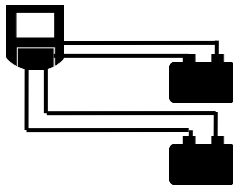


UNICONNECT KIT : BATTERY KIT ASSEMBLY N°2 (OPTIONAL)

- Battery kit n°1 : Link your connection kit to the battery output of your solar charge controller and then to your battery 1.



- Battery kit n°2 (optional) : link your connection kit to the second battery of your Unisolar 20-24D solar charge controller and then to your battery 1.



UNICONNECT KIT : TECHNICAL SPECIFICATIONS

UNICONNECT

Cables section

6 mm²

Conductor

Flexible class 5/6

Outer sheath

Fireproof rubber

EM8 type, without halogen type E16 with low smoke and corrosive gases in case of fire

Cable resistance

- water
- operating temperature
- in short circuit (5 sec)
- uv
- impacts

AD7 (immersion)

-40 °C/+120 °C

250 °C

Yes

Average impact (AG2)

Cable norms

EN 60332-1 / EN 50267-1 / EN 50267-2 / EN61034 /
IEC 60332-1 / IEC60754-1 / IEC 60754-2 / IEC 61034

Module connector

MC4-type

Battery connection

Connector

Battery terminals

Fuse

- rating
- centre distance

60 A

30 mm