



Photovoltaic systems

Connections and wiring

A range of solutions for creating safe and reliable connections with the most common inverters / junction boxes.

FROM PAGE 26 TO PAGE 50

26	Cabur Solar connectors. For connection with the most common inverters and junction boxes
27	Composition and materials
29	Electro-thermal tests
30	Line 3
34	Line 4
36	Accessories
37	Joint with MC connectors
38	Solarlok® connectors. For connection to Inverter and photovoltaic panels equipped with TYCO connectors
42	Connection to connectors. With Cabur Solar Y joints and Tyco mobile connectors
43	Tools for perfect photovoltaic connections
44	Tools. Matrices for crimper UMCT3149
45	Tools. Recommendations for correct use
47	First installation kit
48	Wires for small and large photovoltaic systems
49	Technical characteristics for FG21M21 IMQ certified wires
50	Technical characteristics for PV1-F TÜV certified wires

Cabur Solar connectors

For connection with the most common inverters and junction boxes

With Cabur Solar connectors, connections are simple and effective for the most common inverters/junction boxes.

There are essentially two categories or groups:

- Line 3, with 3mm diameter metal contacts;
- Line 4, with 4mm diameter metal contacts;

These lines can in turn be divided into:

- mobile connectors, male and female;
- panel connectors, male and female;
- Y connectors for forked lines;
- caps and accessories.

All Cabur Solar connectors feature:

- maximum voltage: 1,000 VDC;
- contact resistance: < 5 mΩ;
- contact material: tin-plated copper;
- insulation: PPO;
- degree of protection: IP67 (IEC 60529);
- temperature range: -40°C +85°C;
- flammability class: UL94-V0.

To guarantee correct fixing according to standards, Cabur recommends the use of the professional UMCT crimper, together with the matrix IS3153 for Line 3 connectors and IS3154 for Line 4 connectors, or the IS3161 crimper (see pages 43-46).

To ensure the guarantee's effectiveness, the use of Cabur Solar tools, in conformance with the standards and instructions found in Cabur official documentation, is an essential requirement.



The line includes mobile and panel connectors certified TÜV.



Fast, simple, and effective: connection in just three steps

1. Insert the stripped wire into the contact to be crimped -CRIMP IT-.
2. Insert the wire complete with contact into the connector and push hard until you hear the typical CLICK which indicates that the plastic and metal parts are hooked together. Do not make any joints without checking that the plastic and metal parts are hooked together.
3. Screw on the wire gland washer manually until it is firmly home to guarantee IP67.



Cabur Solar connectors

Composition and materials

Line 3 and 4 mobile male-female connectors

These are composed of 4 basic parts (figs. 1 and 4):



Fig. 1 - Exploded view of the panel connector body. The product is provided assembled)

1. A metallic contact known as a PIN (fig. 4) made of tinned copper and formed using a moulding technique. It has two wings necessary to anchor it to the electric wire. This is done by crimping or mechanically, using matrix **IS3153-IS3154** in the relevant pliers **UMCT3149**, which, by bending the wings on the metallic core of the photovoltaic wire (figs. 2, 3), ensures correct and safe anchoring in accordance with **CEI EN 60352-2**. Perfect insulation of the metallic contact can be further guaranteed by placing caps **IS51400** and **IS52400**



Fig. 2 - Wire crimped onto PIN

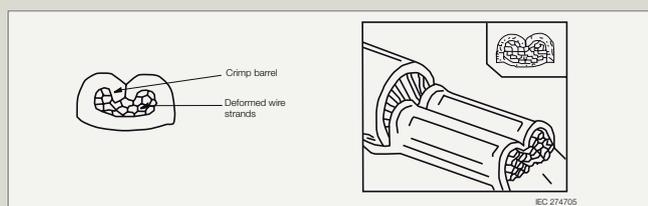


Fig. 3 - Wire crimped onto PIN

onto the connector. The PIN can be male or female and have a diameter of 3 or 4 mm. The male PIN with 3mm diameter has a cap which insulates the head to ensure insulation degree **IP20**. The male 4mm PIN, which remains deeply set into the insulating cavity of the relative connector, does not need an insulating cap (fig. 4).

2. A rubber washer for waterproofing the internal part of the connector, preventing the penetration of external agents such as humidity, dust, and oils, by squeezing the insulating sleeve of the electric wire.



Fig. 4 - series 3 (right hand pair) and series 4 (left hand pair) PINS

3. A rigid PPO plastic washer with a conical cavity that, after being screwed onto the main body of the connector, forces the reeds together, compressing the rubber sheath onto the wire insulation and hence acting to help ensure **IP67** protection established on the basis of Technical Standard **CEI EN 60529**.

4. A main body made of PPO plastic which holds the metallic PIN crimped onto the wire. The male connector holds the male metallic contact (PIN) while the female connector holds the female metallic contact (PIN). The male PIN penetrates the female PIN (as for every other electrical-mechanical connecting device), while the opposite is true for the plastic connector (the insulating sleeve): the female penetrates the male. For this reason, the outer surface of the female connector of Line 3 has two red rubber rings which act as insulating washers against the penetration of external atmospheric agents. Similarly, the female connector of Line 4 has a red rubber ring for the same purpose. The Line 3 connector, being shorter, is more exposed to atmospheric agents and for this reason is provided with a double ring, unlike Line 4 which has only one, as it can penetrate deeper into the relative male and is hence better protected from outside agents.

The male and female connectors hook together mechanically by means of two pointed anchored elastic wings on the female connectors which must be inserted in the special slots on the insulating body of the male connectors. Everything is rigidly and firmly connected and accidental unhooking of the two connectors, or the chance interruption of the line from the photovoltaic field, is impossible. Disconnection is possible only by pressing on the two male wings with the fingers and simultaneously pulling the female out of the male manually, without the aid of any tool.

Cabur Solar connectors

Male-female panel connectors of Lines 3 and 4

These are composed of 3 parts (fig. 5):



Fig. 5 – Exploded view of the connector body. The product is provided assembled.

1. A **metallic contact** that is the same as the PIN on the mobile version.
2. A **main body made of PPO plastic** holding the metallic PIN crimped onto the wire which has a red rubber ring located between the surface of the connector and the wall of the box or sheet metal where the connector is installed. This ring acts to create a compressed washer between the connector and the panel able to protect both from being penetrated by atmospheric agents and hence guaranteeing **IP67** protection as in CEI EN 60529. Compression of the insulating ring occurs through tightening the relevant hexagonal nut to fix the panel. The mobile male connectors are hooked to the female panel connectors (or vice versa) as previously described for the connection between flying connectors. Everything is rigidly connected and there is no possibility of accidentally unhooking the two connectors and accidentally breaking the line coming from the photovoltaic system. Disconnection is only possible by pressing the two male wings and simultaneously pulling the female body out of the male body.
3. A **hexagonal nut** used to lock the connector against the steel surface of the panel. These connectors are in plastic and therefore the nut must not be tightened with too much force otherwise the thread would immediately be flattened.

For panel connectors, always attach the **DO NO DISCONNECT UNDER LOAD** sticker near the connector on the surface of the box where it will be fitted.

Rubber-plastic mobile connectors for Line 3

These are appropriate for connections to both mobile and panel MC3 connectors. This means they can be used for connections for both photovoltaic panels (if provided with the appropriate retention hook), and for inverters (without retention hook). Both connectors, male and female, consist of:

- a metallic tin-plated copper PIN
- a rubber-plastic insulating body
- a washer to obtain IP67
- a closing washer

As the main body of the connector is made of two materials, it ensures speed and simplicity during assembly thanks to the plastic side as well as universal joints thanks to the rubber side. Using these connectors it is possible to connect to any type of photovoltaic device (panel, inverter, string box, etc.) and provide IP67 joints, with the use of Cabur Solar line tools. The joint is done by following the same operations provided for the other connectors of Line 3. The rubber side has a series of grooves which when combined with the similar grooves on the MC3 connectors, ensure their mechanical retention. The presence of the retention hook which is lowered onto the mobile MC3 connector guarantees an even stronger mechanical coupling. The choice of hook will depend on the dimensions of the MC3 connector to be used -- shorter for 40 mm mobile MC3 models and longer for 50 mm models.



Fig. 6 - Exploded view of the rubber connector.

Cabur Solar connectors

Electro-thermal tests

The electro-thermal tests carried out for various joints at the KEMA labs in Holland demonstrate the efficiency of Cabur Solar connectors.

The 5 images below show the results obtained from a joint created by the male-female coupling of IS14240 and IS24241 connectors from Line 4.

The results were excellent. The joint, subjected to amperage increasing from 10, to 20, 30, 40, and 50A did not show any signs of overheating which could make usage dangerous.

The thermograms show a generally linear thermal gradient, equal to $1^{\circ}\text{C}/\text{A}$ such that, even for amperages which exceed the maximum allowed 30 A, the joint remains "cold", demonstrating low thermal generation due to the Joule effect. Consequently, there is a low contact resistance and hence low dissipation of electrical power, which has the final consequence of increasing the overall performance of the photovoltaic system. Similar results were obtained for all the other joints, both for Line 3 and Line 4 connectors.

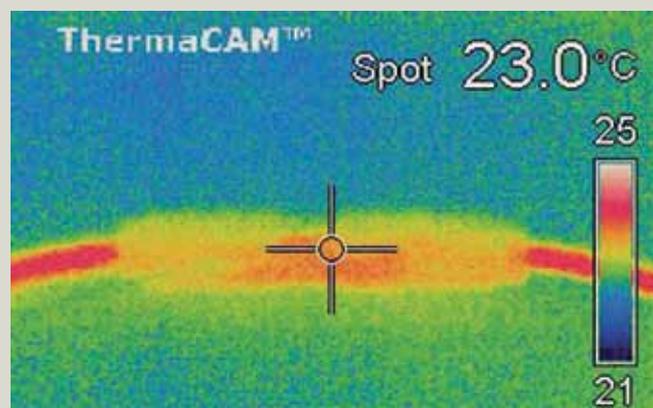


Fig. 1 - Thermogram at 10 A

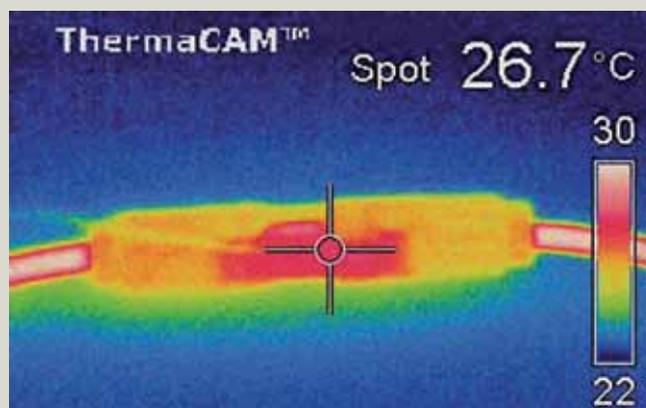


Fig. 2 - Thermogram at 20 A

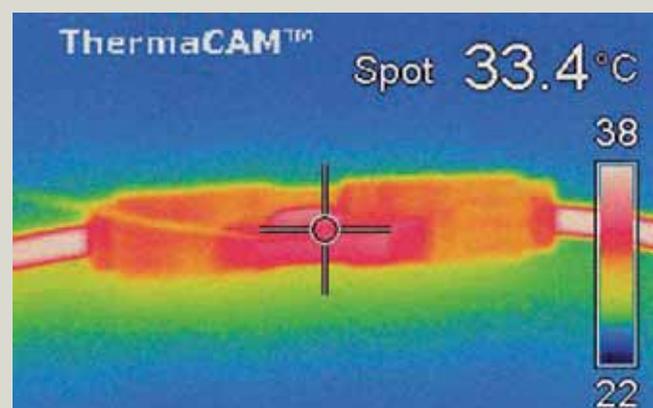


Fig. 3 - Thermogram at 30 A

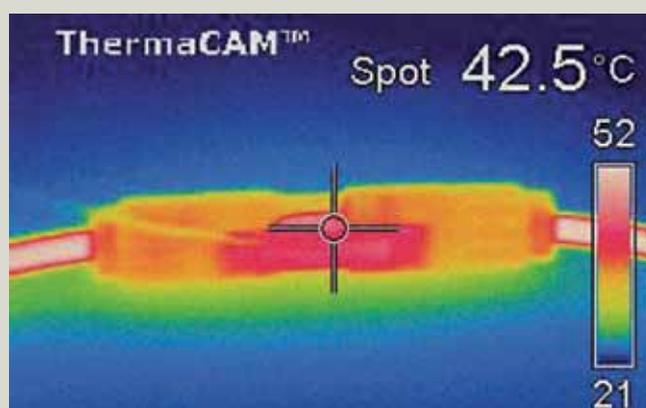


Fig. 4 - Thermogram at 40 A

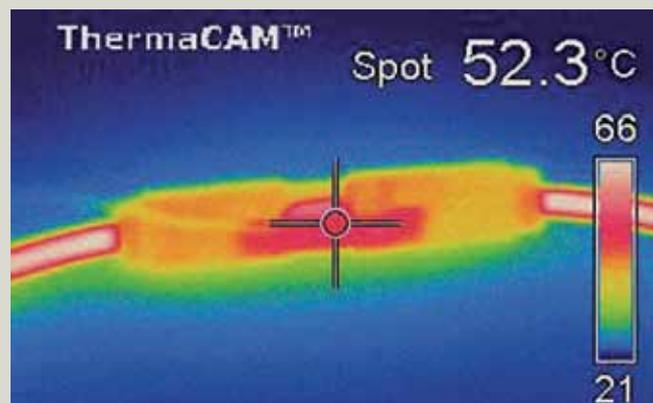


Fig. 5 - Thermogram at 50 A

WARNING!

The maximum usable current for all Cabur Solar Line connectors is 25 A.

The thermograms shown here demonstrate extreme situations which illustrate the quality of the product. They are not intended to suggest or guarantee project conditions.

Cabur Solar connectors

Line 3



Normal packaging: the code refers to packets composed of plastic and metal parts (outer shell + PIN)

Use	On string boxes and/or inverters		Extensions (wire/wire connections)	
	Code	Code	Code	Code
Code	IS13112	IS23113	IS13242	IS23243
ID number	KX03PM4060	KX03PF4060	KX03VM4060	KX03VF4060
Application	Panel	Panel	Flying connector	Flying connector
Connector type	Male	Female	Male	Female
PIN diameter	3 mm	3 mm	3 mm	3 mm
Section of crimpable wires	4 mm ² 6 mm ²	4 mm ² 6 mm ²	4 mm ² 6 mm ²	4 mm ² 6 mm ²
Pliers	UMCT3149	UMCT3149	UMCT3149	UMCT3149
Matrix	IS3153	IS3153	IS3153	IS3153
Features of metallic PIN	Tin-plated copper	Tin-plated copper	Tin-plated copper	Tin-plated copper
Contact resistance	Rc < 5 mΩ	Rc < 5 mΩ	Rc < 5 mΩ	Rc < 5 mΩ
PIN type	Moulded	Moulded	Moulded	Moulded
Shell features	Plastic (PPO)	Plastic (PPO)	Plastic (PPO)	Plastic (PPO)
Maximum applicable voltage	1,000 VDC	1,000 VDC	1,000 VDC	1,000 VDC
Maximum applicable current	25 A	25 A	25 A	25 A
Admitted operating temperature range	- 40° < T < +85°	- 40° < T < +85°	- 40° < T < +85°	- 40° < T < +85°
Degree of protection	IP67	IP67	IP67	IP67
Flammability class	UL94-V0	UL94-V0	UL94-V0	UL94-V0
Certifications obtained	TÜV	TÜV	TÜV	TÜV
Quantity per pack	100	100	100	100
Packaging	One box contains 10 sachets. Every sachet contains 10 plastic shells and 10 metallic contacts (PINS)			

Plastic shell only

Code	Code	Code	Code
ISPAN3M	ISPAN3F	ISVOL3M	ISVOL3F
Packaging	One packet contains 100 plastic shells		

Metallic contact (PIN) only

Code	Code	Code	Code
ISPIN34060M	ISPIN34060F	ISPIN34060M	ISPIN34060F
Packaging	One packet contains 10 sachets and each sachet contains 10 PINS for a total of 100 PINS		

Metallic contact on roll only

Code	Code	Code	Code
IS0701207	IS0701209	IS0701207	IS0701209
Packaging	Ribbon with 2,000 PINS for wires with a 4 mm ² or 6 mm ² section		Ribbon with 2,000 PINS for wires with a 4 mm ² or 6 mm ² section

Pre-wired connectors available on demand. For information contact the Cabur sales network

Pre-wired connectors



Cabur Solar connectors

Line 3



Normal packaging: the code refers to packets composed of plastic and metal parts (outer shell + PIN)

Use	Only for connections with photovoltaic panels with short-type MC3 (40 mm)		Only for connections with photovoltaic panels with long-type MC3 (50 mm)	
Code	IS15240	IS25241	IS15242	IS25243
ID number	KX03VM2540GC	KX03VF2540GC	KX03VM4060GL	KX03VF4060GL
Application	Flying connector with short retention hook		Flying connector with long retention hook	
Connector type	Male	Female	Male	Female
PIN diameter	3 mm	3 mm	3 mm	3 mm
Section of crimpable wires	2.5 mm ² 4 mm ²	2.5 mm ² 4 mm ²	4 mm ² 6 mm ²	4 mm ² 6 mm ²
Pliers	UMCT3149	UMCT3149	UMCT3149	UMCT3149
Matrix	IS3153	IS3153	IS3153	IS3153
Features of metallic PIN	Tin-plated copper	Tin-plated copper	Tin-plated copper	Tin-plated copper
Contact resistance	Rc < 5 mΩ	Rc < 5 mΩ	Rc < 5 mΩ	Rc < 5 mΩ
PIN type	Moulded	Moulded	Moulded	Moulded
Shell features	Plastic (PPO)	Plastic (PPO)	Plastic (PPO)	Plastic (PPO)
Maximum applicable voltage	1,000 VDC	1,000 VDC	1,000 VDC	1,000 VDC
Maximum applicable current	25 A	25 A	25 A	25 A
Admitted operating temperature range	- 40° < T < +85°	- 40° < T < +85°	- 40° < T < +85°	- 40° < T < +85°
Degree of protection	IP67	IP67	IP67	IP67
Flammability class	UL94-V0	UL94-V0	UL94-V0	UL94-V0
Certifications obtained	-	-	-	-
Quantity per pack	100	100	100	100
Packaging	One box contains 10 sachets. Every sachet contains 10 plastic shells and 10 metallic contacts (PINS)			

Plastic shell only

Code	ISVOL3GM	ISVOL3GF	ISVOL3GML	ISVOL3GFL
Packaging	One packet contains 100 plastic shells			

Metallic contact (PIN) only

Code	ISPIN34060M	ISPIN34060F	ISPIN34060M	ISPIN34060F
Packaging	One packet contains 10 sachets and each sachet contains 10 PINS for a total of 100 PINS			

Metallic contact on roll only

Code	-	-	IS0701207	IS0701209
Packaging	-		Ribbon with 2,000 PINS for wires with a 4 mm ² or 6 mm ² section	

Pre-wired connectors available on demand. For information contact the Cabur sales network

Hooks

IS15000 short hook (1)

IS15001 long hook (2)

(1)



(2)



For joints with MC connectors, see page 37 (except pre-wired connectors).

Cabur Solar connectors

Line 3



Normal packaging: the code refers to packets composed of plastic and metal parts (outer shell + PIN)

Use	For connections with photovoltaic panels with short-type MC3 (40 mm) or to connect to inverters that use MC3 (remove the hook from the Cabur connector when it is connected to the inverter)		For connections with photovoltaic panels with long-type MC3 (50 mm) or to connect to inverters that use MC3 (remove the hook from the Cabur connector when it is connected to the inverter)	
Code	IS15341	IS25342	IS15342	IS25343
ID number	KX03VM4060GC	KX03VF4060GC	KX03VM4060GL	KX03VF4060GL
Application	Flying connector with short retention hook	Flying connector with short retention hook	Flying connector with long retention hook	Flying connector with long retention hook
Connector type	Male	Female	Male	Female
PIN diameter	3 mm	3 mm	3 mm	3 mm
Section of crimpable wires	4 mm ² 6 mm ²	4 mm ² 6 mm ²	4 mm ² 6 mm ²	4 mm ² 6 mm ²
Pliers	UMCT3149	UMCT3149	UMCT3149	UMCT3149
Matrix	IS3153	IS3153	IS3153	IS3153
Features of metallic PIN	Tin-plated copper	Tin-plated copper	Tin-plated copper	Tin-plated copper
Contact resistance	Rc < 5 mΩ	Rc < 5 mΩ	Rc < 5 mΩ	Rc < 5 mΩ
PIN type	Moulded	Moulded	Moulded	Moulded
Shell features	Rubber-Plastic (PPO)	Rubber-Plastic (PPO)	Rubber-Plastic (PPO)	Rubber-Plastic (PPO)
Maximum applicable voltage	1,000 VDC	1,000 VDC	1,000 VDC	1,000 VDC
Maximum applicable current	25 A	25 A	25 A	25 A
Admitted operating temperature range	- 40° < T < +85°	- 40° < T < +85°	- 40° < T < +85°	- 40° < T < +85°
Degree of protection	IP67	IP67	IP67	IP67
Flammability class	UL94-V0	UL94-V0	UL94-V0	UL94-V0
Certifications obtained	-	-	-	-
Quantity per pack	100	100	100	100

Packaging One box contains 10 sachets. Every sachet contains 10 plastic shells and 10 metallic contacts (PINS)

Plastic shell only

Code	ISVOL3MGPGC	ISVOL3FGPGC	ISVOL3MGPGL	ISVOL3FGPGL
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Packaging One packet contains 100 plastic shells

Metallic contact only

Code	ISPIN34060M	ISPIN34060F	ISPIN34060M	ISPIN34060F
-------------	-------------	-------------	-------------	-------------

Packaging One packet contains 10 sachets and each sachet contains 10 PINS for a total of 100 PINS

Metallic contact on roll only

Code	IS0701207	IS0701209	IS0701207	IS0701209
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Packaging Ribbon with 2,000 PINS for wires with a 4 mm² or 6 mm² section

Pre-wired connectors available on demand. For information contact the Cabur sales network

Hooks

IS15000 short hook (1)

IS15001 long hook (2)

(1)



(2)



For joints with MC connectors, see page 37 (except pre-wired connectors).

Cabur Solar Y connectors

Line 3



Normal packaging: the code refers to packets composed of plastic and metal parts (outer shell + PIN)

Use	To create parallel connections between strings of panels with short-type MC3 connectors (40 mm)		To create parallel connections between strings of panels with long-type MC3 connectors (50 mm)	
Code	IS41310S	IS42320S	IS41310L	IS42320L
ID number	KX03MFFGS	KX03FMMGS	KX03MFFGL	KX03FMMGL
Application	Flying connector	Flying connector	Flying connector	Flying connector
Connector type	Male/Female-Female	Female/Male-Male	Male/Female-Female	Female/Male-Male
PIN diameter	3 mm	3 mm	3 mm	3 mm
Section of crimpable wires	All	All	All	All
Pliers	NO	NO	NO	NO
Matrix	NO	NO	NO	NO
Features of metallic PIN	Tin-plated copper	Tin-plated copper	Tin-plated copper	Tin-plated copper
Contact resistance	Rc < 5 mΩ	Rc < 5 mΩ	Rc < 5 mΩ	Rc < 5 mΩ
PIN type	Moulded	Moulded	Moulded	Moulded
Shell features	Plastic (PPO)	Plastic (PPO)	Plastic (PPO)	Plastic (PPO)
Maximum applicable voltage	1,000 VDC	1,000 VDC	1,000 VDC	1,000 VDC
Maximum applicable current	25 A	25 A	25 A	25 A
Admitted operating temperature range	- 40° < T < +85°	- 40° < T < +85°	- 40° < T < +85°	- 40° < T < +85°
Degree of protection	IP67	IP67	IP67	IP67
Flammability class	UL94-V0	UL94-V0	UL94-V0	UL94-V0
Certifications obtained	-	-	-	-
Quantity per pack	30	30	30	30
Packaging	One box contains 6 sachets. Every sachet contains 5 Y joints.			
Plastic shell only				
Code	-	-	-	-
Packaging	-			
Metallic contact (PIN) only				
Code	-	-	-	-
Packaging	-			
Metallic contact on roll only				
Code	-	-	-	-
Packaging	-			

Pre-wired connectors available on demand. For information contact the Cabur sales network

Hooks

IS15000 short hook (1)

IS15001 long hook (2)

(1)



(2)



For joints with MC connectors, see page 37 (except pre-wired connectors).

Cabur Solar connectors

Line 4



Normal packaging: the code refers to packets composed of plastic and metal parts (outer shell + PIN)

Use	On string boxes and/or inverters		Extensions (wire/wire connections) and for connection to photovoltaic and inverter panels with MC4	
Code	IS14110	IS24111	IS14240	IS24241
ID number	KX04PM4060	KX04PF4060	KX04VM4060	KX04VF4060
Application	Panel	Panel	Flying connector	Flying connector
Connector type	Male	Female	Male	Female
PIN diameter	4 mm	4 mm	4 mm	4 mm
Section of crimpable wires	4 mm ² 6 mm ²	4 mm ² 6 mm ²	4 mm ² 6 mm ²	4 mm ² 6 mm ²
Pliers	UMCT3149	UMCT3149	UMCT3149	UMCT3149
Matrix	IS3154	IS3154	IS3154	IS3154
Features of metallic PIN	Tin-plated copper	Tin-plated copper	Tin-plated copper	Tin-plated copper
Contact resistance	Rc < 5 mΩ	Rc < 5 mΩ	Rc < 5 mΩ	Rc < 5 mΩ
PIN type	Moulded	Moulded	Moulded	Moulded
Shell features	Plastic (PPO)	Plastic (PPO)	Plastic (PPO)	Plastic (PPO)
Maximum applicable voltage	1,000 VDC	1,000 VDC	1,000 VDC	1,000 VDC
Maximum applicable current	25 A	25 A	25 A	25 A
Admitted operating temperature range	- 40° < T < +85°	- 40° < T < +85°	- 40° < T < +85°	- 40° < T < +85°
Degree of protection	IP67	IP67	IP67	IP67
Flammability class	UL94-V0	UL94-V0	UL94-V0	UL94-V0
Certifications obtained	TÜV	TÜV	TÜV	TÜV
Quantity per pack	100	100	100	100

Packaging One box contains 10 sachets. Every sachet contains 10 plastic shells and 10 metallic contacts (PINS)

Plastic shell only

Code	ISPAN4M	ISPAN4F	ISVOL4M	ISVOL4M
Packaging	One packet contains 100 plastic shells			

Metallic contact (PIN) only

Code	ISPIN44060M	ISPIN44060F	ISPIN44060M	ISPIN44060F
Packaging	One packet contains 10 sachets and each sachet contains 10 PINS for a total of 100 PINS			

Metallic contact on roll only

Code	IS0601207	IS0601209	IS0601207	IS0601209
Packaging	Ribbon with 2,000 PINS on roll.		Ribbon with 2,000 PINS on roll.	

Pre-wired connectors available on demand. For information contact the Cabur sales network

Pre-wired connectors



For joints with MC connectors, see page 37 (except pre-wired connectors).

Cabur Solar connectors

Line 4



Normal packaging: the code refers to packets composed of plastic and metal parts (outer shell + PIN)

Use	Extensions (wire/wire connections) and for connection to photovoltaic and inverter panels with MC4		Y connectors	
Code	IS14242	IS24243	IS41410	IS42420
ID number	KX04VM100	KX04VF100	KX04MFF	KX04FMM
Application	Flying connector	Flying connector	Flying connector	Flying connector
Connector type	Male	Female	Male/Female-Female	Female/Male-Male
PIN diameter	4 mm	4 mm	4 mm	4 mm
Section of crimpable wires	10 mm ²	10 mm ²	All	All
Pliers	UMCT3149	UMCT3149	NO	NO
Matrix	IS3110	IS3110	NO	NO
Features of metallic PIN	Tin-plated copper	Tin-plated copper	Tin-plated copper	Tin-plated copper
Contact resistance	Rc < 5 mΩ	Rc < 5 mΩ	Rc < 5 mΩ	Rc < 5 mΩ
PIN type	Shrouded	Shrouded	Moulded	Moulded
Shell features	Plastic (PPO)	Plastic (PPO)	Plastic (PPO)	Plastic (PPO)
Maximum applicable voltage	1,000 VDC	1,000 VDC	1,000 VDC	1,000 VDC
Maximum applicable current	25 A	25 A	35 A	35 A
Admitted operating temperature range	- 40° < T < +85°	- 40° < T < +85°	- 40° < T < +90°	- 40° < T < +90°
Degree of protection	IP67	IP67	IP67	IP67
Flammability class	UL94-V0	UL94-V0	UL94-V0	UL94-V0
Certifications obtained	TÜV pending	TÜV pending	-	-
Quantity per pack	100	100	30	30
Packaging	One box contains 10 sachets. Every sachet contains 10 plastic shells and 10 metallic contacts (PINS).		One box contains 6 sachets. Every sachet contains 5 Y joints.	

Plastic shell only

Code	-	-	-	-
Packaging				

Metallic contact (PIN) only

Code	-	-	-	-
Packaging				

Metallic contact on roll only

Code	-	-	-	-
Packaging				

Pre-wired connectors available on demand. For information contact the Cabur sales network

Pre-wired connectors



For joints with MC connectors, see page 37 (except pre-wired connectors).

Cabur Solar connectors

Accessories



Use	Ring to block manual unhooking of Cabur Line 3 and 4 photovoltaic connectors	Unhooking key to unhook photovoltaic connectors
Code	IS15BLOCK	IS15SBLOCK
ID number	IS15BLOCK	IS15SBLOCK
Application	Plastic ring inserted manually at the time of connection	This accessory makes it possible to unhook connectors after connection using accessory IS15BLOCK. It's easy to use and means only authorised personnel with the appropriate tools can perform the unhooking procedure.
Connector type	All Cabur Solar Line 3 and 4 connectors	All Cabur Solar Line 3 and 4 connectors
Material	PP0	Aluminium
Quantity per pack	50	2
Packaging	Every sachet contains 50 blocking rings	Every sachet contains 2 unhooking keys

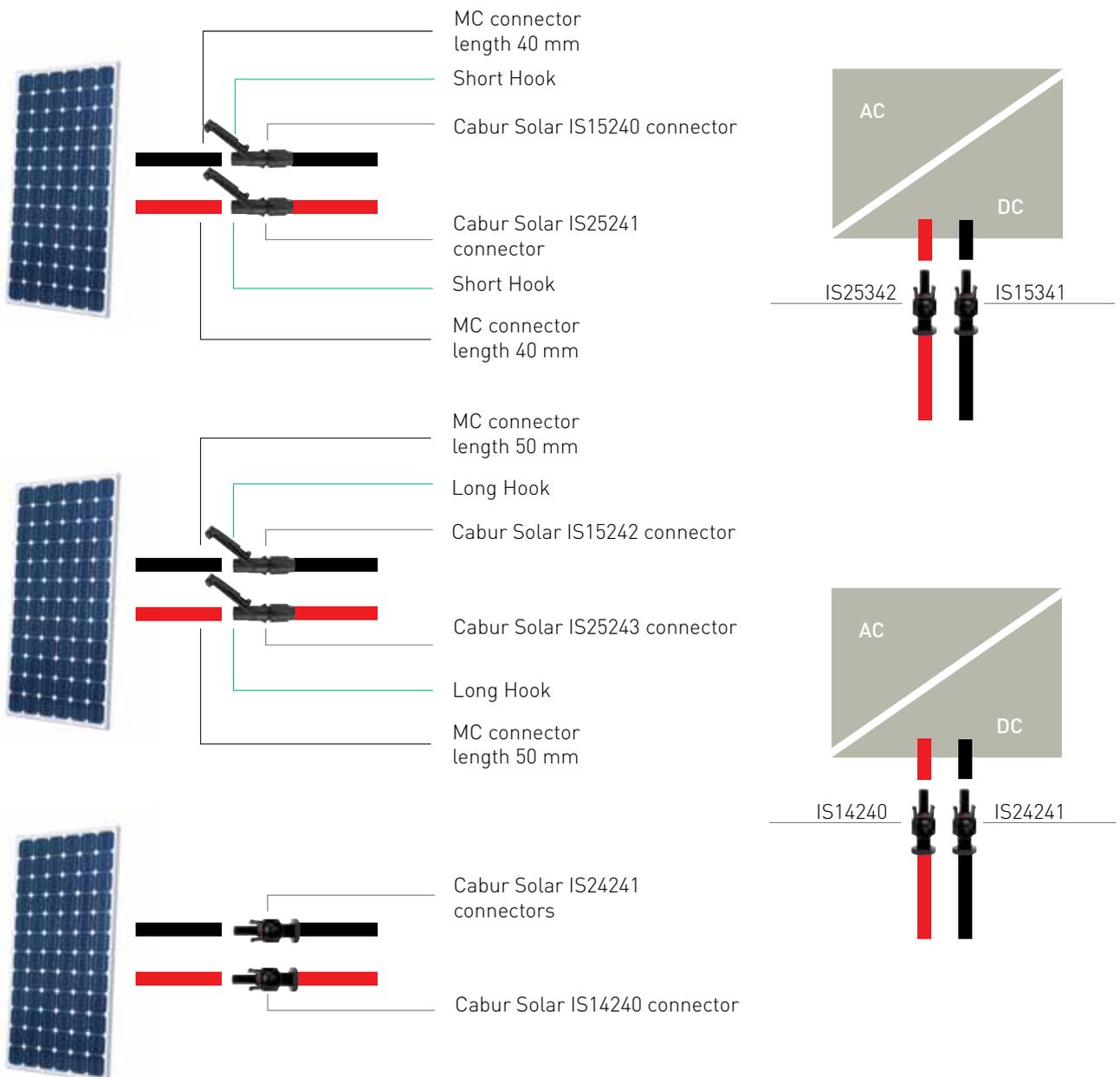


Use	Caps for Line 4 Connectors	
Code	IS51400	IS52400
ID number	KXCSTAF	KXCSTAM
Connector type	Female	Male
Admitted operating temperature range	- 40° < T < +90°	- 40° < T < +90°
Degree of protection	IP67	IP67
Flammability class	UL94-V0	UL94-V0
Quantity per pack	50	50
Packaging	One packet contains 50 caps	

Cabur Solar connectors Joint with MC connectors

When the short (40 mm) rubber mobile Line 3 connectors exit from the PV panel, connection must be done using Cabur IS15240 and IS25241 mobile connectors, both provided with IS15000 retention hooks, which ensure proper hooking between the two PV connectors and is included in the package. When the male/female pair of rubber mobile Line 3 connectors exits from the photovoltaic panel, but long type (50 mm), it is necessary to connect them using a pair of Cabur IS15242 and IS25243 mobile connectors, along with IS15001 long retention hook, included in the package. Finally, if the pair of MC4 Line mobile connectors exits the

panel, the connection should be performed using the pair of Cabur mobile connectors IS14240 and IS24241 (see figure below). In regards to connection to Inverters and/or string boxes in the case in which the male and female pair of panel connectors from the MC3 Line are combined, it is necessary to use Cabur IS15341 and IS25342 mobile connectors. If the panel connectors are from the MC4 line, it is necessary to use a pair of Cabur IS14240 and IS24241 mobile connectors. For connection with TYCO mobile connectors exiting from the panels, procure the male and female with the same polarity as indicated in the figures below.



Solarlok® connectors

For connection to inverters and photovoltaic panels equipped with TYCO connectors

Solarlok® delivers a flexible, easy-to-use system solution for reliable interconnections from solar modules to the inverter. The entire concept is based on the reliable and efficient management of individual interconnecting system components.

The security of the coupling is guaranteed by polarity keyed housings, shrouded and silver plated contacts to be crimped, and a connection system with release on the application of

pressure. In addition, the wide operating temperature range and fulfilment of worldwide standards for photovoltaic connection systems make these products strong and reliable.

Apart from the 4 and 6 mm² connectors, the Cabur offer includes a set of professional tools, for specific use with Solarlok connectors and a first-installation KIT complete with all necessary accessories for connecting a photovoltaic system.



Technical features

- Secure coupling achieved using coding keys
- Multiple insertion and removal cycles
- Wide operating temperature range
-40 °C < T < +90 °C
- TÜV and UL approved
- Continuous 1,000 VDC voltage
- Continuous 25A current
- IP 67 protection degree

Solarlok® connectors

For connection to inverters and photovoltaic panels equipped with TYCO connectors



Normal packaging: the code refers to packets composed of plastic and metal parts (outer shell + PIN)

Application	For connection to photovoltaic panels (to create simple joints and/or extensions use male and female connectors with the same polarity)		For connection to photovoltaic panels (to create simple joints and/or extensions use male and female connectors with the same polarity)		For connection to female connectors, both positive and negative
Code	IS401394462	IS301394461	IS301394462	IS401394461	IS261394461
ID number	KXSUN04FPNEG	KXSUN04MPPPOS	KXSUN04FPPOS	KXSUN04MPNEG	KXSUN04MPNEU
Application	Flying connector	Flying connector	Flying connector	Flying connector	Flying connector
Polarity	Negative	Positive	Positive	Negative	Positive-Negative
Connector type	Female	Male	Female	Male	Male
PIN diameter	2.5 mm	2.5 mm	2.5 mm	2.5 mm	2.5 mm
Section of crimpable wires	4 mm ²	4 mm ²	4 mm ²	4 mm ²	4 mm ²
Pliers	UMCT3149	UMCT3149	UMCT3149	UMCT3149	UMCT3149
Matrix	IS3152	IS3152	IS3152	IS3152	IS3152
Features of metallic PIN	Tin-plated copper	Tin-plated copper	Tin-plated copper	Tin-plated copper	Tin-plated copper
Contact resistance	Rc < 5 mΩ	Rc < 5 mΩ	Rc < 5 mΩ	Rc < 5 mΩ	Rc < 5 mΩ
PIN type	Shrouded	Shrouded	Shrouded	Shrouded	Shrouded
Shell features	Plastic (PPO)	Plastic (PPO)	Plastic (PPO)	Plastic (PPO)	Plastic (PPO)
Maximum applicable voltage	1,000 VDC	1,000 VDC	1,000 VDC	1,000 VDC	1,000 VDC
Maximum applicable current	25 A	25 A	25 A	25 A	25 A
Admitted operating temperature range	- 40° < T < +90°	- 40° < T < +90°	- 40° < T < +90°	- 40° < T < +90°	- 40° < T < +90°
Degree of protection	IP67	IP67	IP67	IP67	IP67
Flammability class	UL94-V0	UL94-V0	UL94-V0	UL94-V0	UL94-V0
Certifications obtained	TÜV & UL	TÜV & UL	TÜV & UL	TÜV & UL	TÜV & UL
Quantity per pack	100	100	100	100	100
Packaging	Every packet contains 100 plastic shells and 100 metallic contacts (PINS)		Every packet contains 100 plastic shells and 100 metallic contacts (PINS)		Every packet contains 10 plastic shells and 10 metallic contacts (PINS)

Solarlok® connectors

For connection to inverters and photovoltaic panels equipped with TYCO connectors



Normal packaging: the code refers to packets composed of plastic and metal parts (outer shell + PIN)

Application	On string boxes and/or inverters		For connection to photovoltaic panels (to create simple joints and/or extensions use male and female connectors with the same polarity)		For connection to female connectors, both positive and negative
Code	IS301394738	IS401394738	IS651394462	IS651394461	IS461394461
ID number	KXSUNDCAC4POS	KXSUNDCAC4NEG	KXSUN06FPNEG	KXSUN06MPPPOS	KXSUN06MPNEU
Application	Panel	Panel	Flying connector	Flying connector	Flying connector
Polarity	Positive	Negative	Negative	Positive	Positive-Negative
Connector type	Male	Male	Female	Male	Male
PIN diameter	2.5 mm	2.5 mm	2.5 mm	2.5 mm	2.5 mm
Section of crimpable wires	4 mm ²	4 mm ²	6 mm ²	6 mm ²	6 mm ²
Pliers	UMCT3149	UMCT3149	UMCT3149	UMCT3149	UMCT3149
Matrix	IS3152	IS3152	IS3152	IS3152	IS3152
Features of metallic PIN	Tin-plated copper	Tin-plated copper	Tin-plated copper	Tin-plated copper	Tin-plated copper
Contact resistance	Rc < 5 mΩ	Rc < 5 mΩ	Rc < 5 mΩ	Rc < 5 mΩ	Rc < 5 mΩ
PIN type	Shrouded	Shrouded	Shrouded	Shrouded	Shrouded
Shell features	Plastic (PPO)	Plastic (PPO)	Plastic (PPO)	Plastic (PPO)	Plastic (PPO)
Maximum applicable voltage	1,000 VDC	1,000 VDC	1,000 VDC	1,000 VDC	1,000 VDC
Maximum applicable current	25 A	25 A	25 A	25 A	25 A
Admitted operating temperature range	- 40° < T < +90°	- 40° < T < +90°	- 40° < T < +90°	- 40° < T < +90°	- 40° < T < +90°
Degree of protection	IP67	IP67	IP67	IP67	IP67
Flammability class	UL94-V0	UL94-V0	UL94-V0	UL94-V0	UL94-V0
Certifications obtained	TÜV & UL	TÜV & UL	TÜV & UL	TÜV & UL	TÜV & UL
Quantity per pack	100	100	100	100	100
Packaging	Every packet contains 10 plastic shells and 10 metallic contacts (PIN)		Every packet contains 100 plastic shells and 100 metallic contacts (PINS)		Every packet contains 100 plastic shells and 100 metallic contacts (PINS)

Solarlok® connectors

For connection to inverters and photovoltaic panels equipped with TYCO connectors



Normal packaging: the code refers to packets composed of plastic and metal parts (outer shell + PIN)

For connection to photovoltaic panels (to create simple joints and/or extensions use male and female connectors with the same polarity)		For the creation of parallel connections between strings		For the creation of parallel connections between strings	
IS551394462	IS661394461	IS101534611	IS201534611	IS101740277	IS201740277
KXSUN06FPPPOS	KXSUN06MPNEG	KXSUNPOSSMM	KXSUNNEGSM	KXSUNPOSPFM	KXSUNNEGPFM
Flying connector	Flying connector	Flying connector	Flying connector	Flying connector	Flying connector
Positive	Negative	Positive	Negative	Positive	Negative
Female	Male	Male/Male-Male	Male/Male-Male	Female/Male-Male	Female/Male-Male
2.5 mm	2.5 mm	2.5 mm	2.5 mm	2.5 mm	2.5 mm
6 mm ²	6 mm ²	4 mm ² and 6 mm ²	4 mm ² and 6 mm ²	4 mm ² and 6 mm ²	4 mm ² and 6 mm ²
UMCT3149	UMCT3149	NO	NO	NO	NO
IS3152	IS3152	NO	NO	NO	NO
Tin-plated copper	Tin-plated copper	Tin-plated copper	Tin-plated copper	Tin-plated copper	Tin-plated copper
Rc < 5 mΩ	Rc < 5 mΩ	Rc < 5 mΩ	Rc < 5 mΩ	Rc < 5 mΩ	Rc < 5 mΩ
Shrouded	Shrouded	Shrouded	Shrouded	Shrouded	Shrouded
Plastic (PPO)	Plastic (PPO)	Plastic (PPO)	Plastic (PPO)	Plastic (PPO)	Plastic (PPO)
1,000 VDC	1,000 VDC	1,000 VDC	1,000 VDC	1,000 VDC	1,000 VDC
25 A	25 A	25 A	25 A	25 A	25 A
- 40° < T < +90°	- 40° < T < +90°	- 40° < T < +90°	- 40° < T < +90°	- 40° < T < +90°	- 40° < T < +90°
IP67	IP67	IP67	IP67	IP67	IP67
UL94-V0	UL94-V0	UL94-V0	UL94-V0	UL94-V0	UL94-V0
TÜV & UL	TÜV & UL	TÜV & UL	TÜV & UL	TÜV & UL	TÜV & UL
100	100	100	100	100	100

Every packet contains 100 plastic shells and 100 metallic contacts (PINS)

Every sachet contains 10 Y joints

Every sachet contains 10 Y joints

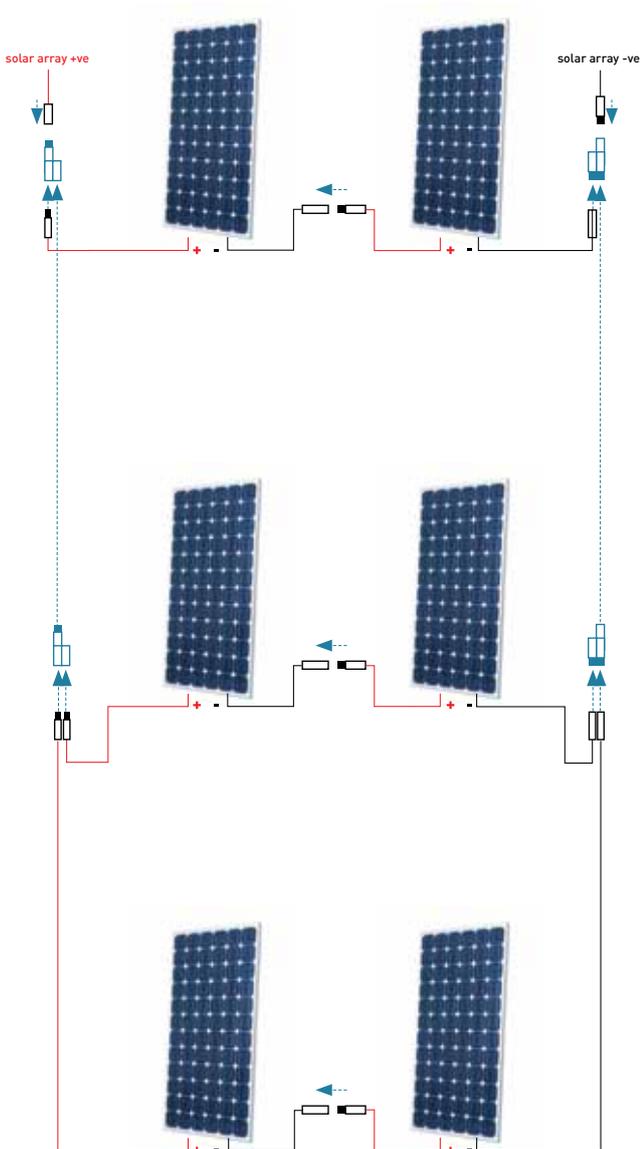
Connection to connectors

Connection with Cabur Solar Y joints

Y joints are particularly useful for coupling the strings of panels in amorphous technology (thin film), where there are often parallel connections on the line leading to the inverter. They are therefore connections with low current and high voltage, typical with thin film.

Connection with Tyco mobile connectors

For connection with TYCO mobile connectors exiting from the panels, procure the male and female with the same polarity as indicated in the figures below.



CASE A
Photovoltaic panel with exit wires, O-ring on the red female connector

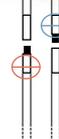
IS301394461 SC Ø = 4 mm²
IS651394461 SC Ø = 6 mm²



IS401394462 SC Ø = 4 mm²
IS651394462 SC Ø = 6 mm²

CASE B
Photovoltaic panel with exit wires, O-ring on the blue female connector

IS301394462 SC Ø = 4 mm²
IS551394462 SC Ø = 6 mm²



IS401394461 SC Ø = 4 mm²
IS661394461 SC Ø = 6 mm²

CASE C
Photovoltaic panel with junction box with no exit wires

IS401394462 SC Ø = 4 mm²
IS651394462 SC Ø = 6 mm²



IS301394462 SC Ø = 4 mm²
IS551394462 SC Ø = 6 mm²