

1. Introduction

This instruction sheet covers the installation and termination of the Solarlok* connectors and accessory.

2. Supporting Documents

2.1. Customer Drawings

Dimensions and material specifications for this product can be found in the following customer drawings

- PN 1394461 Photovoltaic Connector Pin 1 pos.
- PN 1394462 Photovoltaic Connector Socket 1 pos.
- PN 1534226 Interlock Clip
- PN 2106207 Solarlok Locking Collar (UL / NEC Certified)
- PN 1534611, PN 1740277 T-Distributor

2.2. Product Specification

Performance results for the Solarlok products can be found in Product Specification 108-18701.

2.3. Application Specification

Connectors shall be assembled per Application Specifications 114-18488, 114-18022 and 114-74013 to ensure correct connector assembly and crimp quality. Please refer to Solarlok Application Specification 114-94061 for additional details on contact termination.

3. Tools

The following tools are available for the contact crimping:

Tyco Electronics-Part Number.	Wire Size	Description
4-1579002-2	2.5 + 4.0 + 6.0 mm ²	Solarlok Insulation Stripper
1-1579004-1	2.5 mm ²	Hand-Crimptool (complete) for Solarlok screw machined contacts
1-1579004-2	4.0 + 6.0 mm ²	Hand-Crimptool (complete) for Solarlok screw machined contacts
2-1579004-0	AWG 10	Hand-Crimptool (complete) for Solarlok screw machined contacts
1-1579004-9	AWG 12	Hand-Crimptool (complete) for Solarlok screw machined contacts
1-1579004-8	AWG 14	Hand-Crimptool (complete) for Solarlok screw machined contacts
1-1102855-3	For all wire sizes	Extraction tool for screw machined contacts
1579000-4	For all wire sizes	Adapter for Crimphead (To use with the Electric Terminator CS200)
539630-1	For all wire sizes	Electric Terminator CS 200 (Semi-automatic)
7-1579001-8	2.5 mm ²	Crimphead for Solarlok screw machined contacts
7-1579001-9	4.0 + 6.0 mm ²	Crimphead for screw machined contacts
8-1579001-2	AWG 10	Crimphead for screw machined contacts
5-1579001-5	AWG 12	Crimphead for screw machined contacts
2-1579005-1	2.5 mm ²	Basic Tool short (to use as hand tool together with a Crimphead)
2-1579005-2	4 - 6 mm ² (AWG12-10)	Basic Tool long (to use as hand tool together with a Crimphead)

- Solarlok- Bag PN 1534858

4. Accessories

4.1. T-Distributor

The T-Distributor is used for connecting a parallel circuit or coupling. Take care to ensure that the max. overall current is not exceed. The T-Distributor must always be fully completely connected!



CAUTION: Do not disconnect the connector under load (see 5.3.4)!

Disconnect circuit from load before unplugging connectors.

Cable assemblies should be labeled using Label 1718077-1.

4.2. Interlock Clip and Solarlok Locking Collar

For application of the interlock clip and the application of the Solarlok Locking Collar see **Instruction Sheet 408-10296**



Figure 1 a:



Figure 1 b:

5. Assembly Procedure for Solarlok Plug connector

CAUTION: This connector must be used only to interconnect firmly fixed cables.

Do not disconnect under load.

Current path must only be disconnected using approved disconnect devices.

Cable assemblies shall be labeled with PN 1718077-1.



To protect against shock, ensure that conductors and their associated connectors are separated from opposite polarity components.

5.1. Caution any kind of pollution (dust, humidity, etc.) during the assembly process can degrade contact and connector performance. This applies in particular to the seals and the crimping of the contacts. A clean/dry assembly environment is therefore essential.

5.2. Termination of the cable wires / crimping of the contacts

The connectors accept different contacts for various wire gauges. Possible wire gauges are 2.5 mm², 4.0 mm² and 6mm² (6mm² only Tyco Electronics Solar wire), 14 AWG, 12 AWG, and 10 AWG. The tools to be used are selected based upon the wire gauge. For the application specification, please refer to 114-94061.

To identify the needed contact Part Number (See the following **Table 1**)

Only Cables released from Tyco Electronics are permitted to use with Solarlok Components!

Table 1

Available Crimp Contacts for SOLARLOK Interconnection System			
Wire Gauges	Pin Contact	Socket Contact	Solarlok Crimp Tool
2.5 mm ²	0-1987280-1; or 4-1105300-1	1987281-1; or 4-1105301-1	2.5 mm ²
4 mm ²	0-1987280-2; or 5-1105300-1	1987281-2; or 5-1105301-1	4 mm ²
6.0 mm ²	0-1987280-4; or 7-1105300-2	1987281-3; or 7-1105301-2	6 mm ²
14 AWG	0-1987280-1; or 4-1105300-1	1987281-1; or 4-1105301-1	14 AWG
12 AWG	0-1987280-2; or 5-1105300-1	1987281-2; or 5-1105301-1	12 AWG
10 AWG	0-1987280-4; or 7-1105300-2	1987281-3; or 7-1105301-2	10 AWG

*) Part Number outdated

5.3. Assembling of the Connectors



The usage of any type of lubricant or oil is not allowed!

Unconnected connectors must always be protected from pollution (e.g. dust, humidity, foreign particle, etc.).

The usage of Tyco Electronics Dust caps is recommended (refer to Application Specification 114-18488 for details).



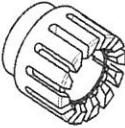

In case of replacement of cables or components or of assembling / disassembling of the cable entry gland, new pinch rings and seals have to be used. If a visible deformation appears at the clamping area of the cable, the cable end needs to be trimmed to remove the deformed area.

5.3.1 Selection of Cable Connectors

The cable connectors are delivered as Kits, containing all necessary parts including the Crimp Contacts. There are different Cable Connector Kits available. The correct Kit selection needs to be done according to the Outside Diameter of the cable, Wire Gauge and Polarity (See the followings Table 2)

Only Cables released from Tyco Electronics are permitted to use with Solarlok Components!

Table 2

Available Connector Kits for SOLARLOK Interconnection System					
Wire Gauges	Polarity	Male	Female	Cable Diameter	Pinch Ring Style
2.5 mm ²	+	0-1394461-1	0-1394462-1	Cable Diameter (Outside) from 5.5mm up to 7.8mm	1987056-1 
2.5 mm ²	-	0-1394461-2	0-1394462-2		
2.5 mm ²	N	6-1394461-1	-		
4.0 mm ²	+	0-1394461-3	0-1394462-3		
4.0 mm ²	-	0-1394461-4	0-1394462-4		
4.0 mm ²	N	6-1394461-2	-		
6.0 mm ²	+	6-1394461-5	5-1394462-5		
6.0 mm ²	-	6-1394461-6	5-1394462-6		
6.0 mm ²	N	6-1394461-4	-		
2.5 mm ²	+	0-1394461-7	4-1394462-6	Cable Diameter (Outside) from 4.5mm up to 5.5mm	1740379-2 
2.5 mm ²	-	0-1394461-8	4-1394462-7		
2.5 mm ²	N	6-1394461-3	-		
4.0 mm ²	+	7-1394461-0	4-1394462-8		
4.0 mm ²	-	7-1394461-1	4-1394462-9		
4.0 mm ²	N	7-1394461-2	-		

When assembling the connectors, the following sequence must be followed:

5.3.2 Stripping the Wire (see Application Spec. 114-94061 (see Fig. 3))

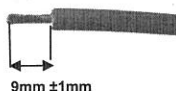


Figure 3

5.3.2.1 Insert the stripped wire into the wire crimp barrel until it stops. While holding the wire in place, squeeze tool handles together until ratchet releases (see Fig. 4)



Figure 4

For further information, please refer to **TE Application Specification 114-94061**.

Make sure that the contact is correctly positioned in the applicator or hand tool. For easier handling, use the locator.

- For pre-assembled connectors, start with chapter 5.3.2.4

5.3.2.2 Press seal into the connector housing until it stops (see Fig. 5 and 6).



Figure 5 Components of connector housing



Figure 6 Pre assembled seal

5.3.2.3 Screw backshell nut onto connector housing (2 to 3 turns max. see Fig. 7)



Figure 7 Assembled Connector Housing

5.3.2.4 Push contact with cable into the connector housing until you hear the contact click into plastic housing; pull back slightly to ensure the contact is locked (Figure 8)



Figure 8 Contact assembly

5.3.2.5 Screw backshell nut with a torque wrench with slotted insert (TE-PN: 523229-1) onto the connector housing. Tighten backshell nut to an initial torque of max. $1.3^{+0.2}$ Nm (see Fig. 9 and 10)



Figure 9
Tighten back shell nut to a initial torque of max. $1.3^{+0.2}$ Nm



Figure 10
Label female connector with label
"Do not disconnect under load".

5.3.3 Connector Mating

When mating the Solarlok connectors, ensure the following:

Connectors labeled with a $+$ or $-$ are keyed and can only be mated to similarly marked and keyed connectors.



Caution: The "neutral" designated pin-connectors incorporate no keying features and may be freely mated to either $+$ or $-$ keyed female connectors. The neutral product must not be used where maintaining polarity is critical. It is only admitted for serial connections. At Solarlok interconnection System the usage of the "neutral" designed pin connector is only necessary for the Junction box termination

The polarity of the "neutral" connector must be labeled with PN 1718078-1 or -2 nearby the connector.

When mating the connector, the following must always be followed:

The plus- and minus-coded connectors can only be mated to a similarly coded connector (see Fig. 10).

The connector is fully latched only when the latches are flush with the mating connector.

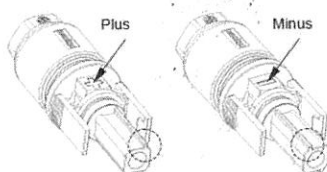


Figure 11 (Female connector)

5.3.4 Disconnecting



CAUTION: Unplugging Under Load Not Permitted: PV plug connections must not be un-plugged while under load. They can be placed in an unloaded state e.g. by switching off the DC/AC converter or breaking the AC circuit. Plugging and unplugging while under tension is not permitted.

Cable assemblies must be labeled using Label PN 0-1718077-1. Unmating of the connector:

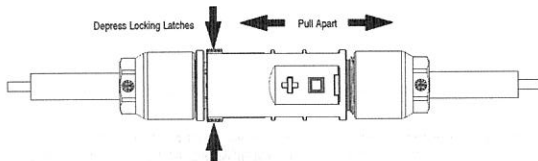


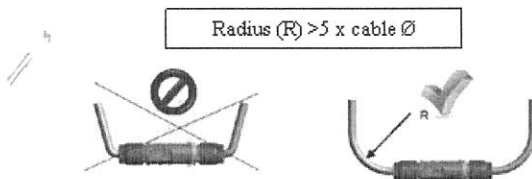
Figure 12

1. The locking mechanism is opened by depressing the latches as shown in Figure 11.
2. While depressing the latches, disconnect the connector by pulling the connectors halves apart.

5.3.5 Cable Routing

A minimum bending radius $R \geq 5 \times \text{cable } \varnothing$ must be maintained.

The cable must be routed in a way that the tensile stress on the conductor or connections is prevented.



6. Maximum operating conditions

max. system voltage: 1000V (for UL 600V)

max. current: 25A at 85°C

operating temperature: -40°C up to 115°C

Ambient temperature (per IEC 85°C / per UL 75°C) plus temperature rise caused by current