

RoHS  
Ready 



# SOLARLOK Interconnection System

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At Tyco Electronics, we’re ready to support your RoHS requirements. We’ve assessed more than 1.5 million end items/components for RoHS compliance, and issued new part numbers where any change was required to eliminate the restricted materials. Part numbers in this catalog are identified as:

**RoHS Compliant** — Part numbers in this catalog are RoHS Compliant, unless marked otherwise. These products comply with European Union Directive 2002/95/EC as amended 1 January 2006 that restricts the use of lead, mercury, cadmium, hexavalent chromium, PBB, and PBDE in certain electrical and electronic products sold into the EU as of 1 July 2006.

**NOTE:** For purposes of this Catalog, included within the definition of RoHS Compliant are products that are clearly “Out of Scope” of the RoHS Directive such as hand tools and other non-electrical accessories.

**NOTE:** Information regarding RoHS compliance is provided based on reasonable inquiry of our suppliers and represents our current actual knowledge based on the information provided by our suppliers. This information is subject to change. For latest compliance status, refer to our website referenced at right.

**Getting the Information You Need**

Our comprehensive on-line RoHS Customer Support Center provides a forum to answer your questions and support your RoHS needs. A RoHS FAQ (Frequently Asked Questions) is available with links to more detailed information. You can also submit RoHS questions and receive a response within 24 hours during a normal work week. The Support Center also provides:

- Cross-Reference from Non-compliant to Compliant Products
- Ability to browse RoHS Compliant Products in our on-line catalog
- Downloadable Technical Data Customer Information Presentation
- More detailed information regarding the definitions used above
- So whatever your questions when it comes to RoHS, we’ve got the answers at [www.tycoelectronics.com/leadfree](http://www.tycoelectronics.com/leadfree)



## The SOLARLOK Concept

### System Features

#### Junction Box

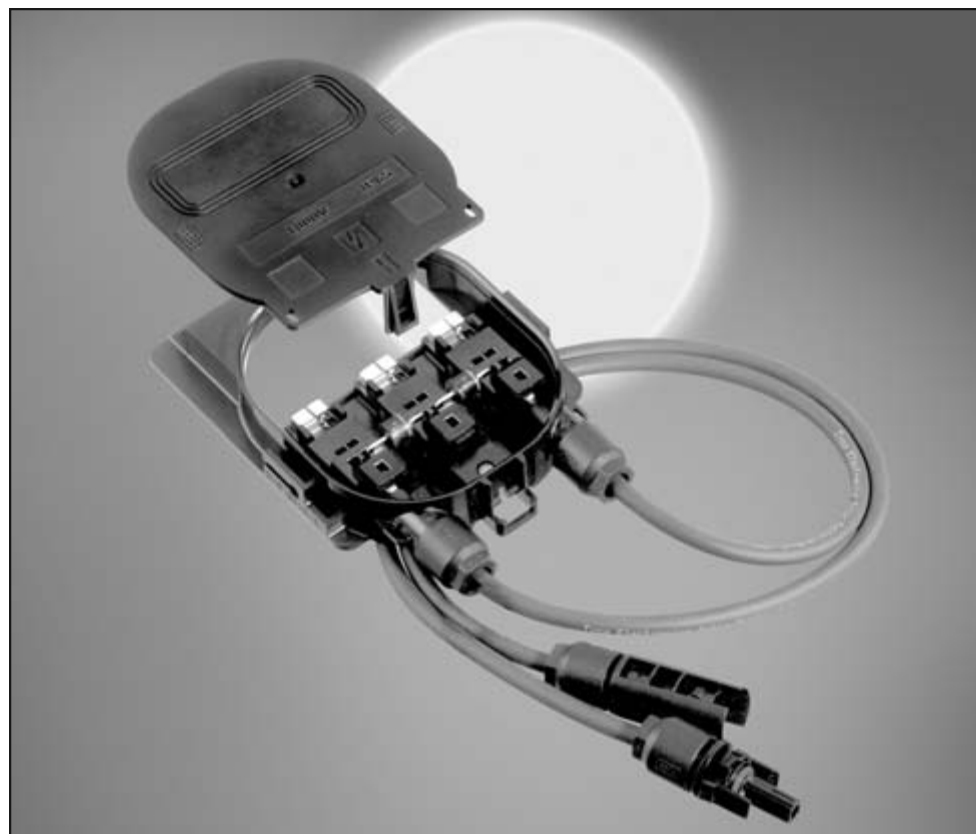
- Variable wiring options
- Easily accessible
- Simple, fast and cost-effective assembly
- Flat, low profile design
- High current carrying capacity
- Good thermal balance
- Connectorized or direct wire configurations
- Up to four outputs possible
- Up to six internal rails
- Customer-specific solutions
- TÜV and UL approved
- UL File No. E226440

#### Connector

- Simple on-site processing
- Mating safety provided by keyed housings
- Semi-automatic assembly capability possible
- Multiple plugging and unplugging cycles
- Accommodates solar cable with different insulation diameters
- High current carrying capacity
- Wide temperature operating range
- TÜV and UL approved
- UL File No. E226440

#### Solar Cable

- Dual wall insulation
- Electron beam cross-linked
- Excellent resistance to U.V., water, ozone, fluids, salt, general weathering
- Excellent resistance to abrasion
- Halogen free, flame retardant, low toxicity
- Very low smoke emissions
- Excellent flexibility and stripping performance
- Different cable diameters
- Operating Temperature from -40 °C up to +110 °C
- Voltage Rating up to 2600 V DC
- IEC 60228 Class 5 (stranded tin plated copper and flexible)
- TÜV or UL certified



### Simple and Reliable System Interconnection of Individual Solar Modules Right to the DC/AC Converters

Market expansion of the formerly regulated energy supply sector, increased global environmental awareness and governments committing themselves to more stringent environmental targets have opened up new opportunities for the photovoltaic industry.

Having served a niche market in the past, the photovoltaics industry now has the opportunity to move into mass production, realizing economies of scale and gaining a greater market share of the world's energy mix.

Tyco Electronics will be contributing to the establishment of this environmentally-friendly technology with the intro-

duction of its SOLARLOK connector system.

SOLARLOK delivers a flexible system solution for easy and reliable interconnections from photovoltaic modules to the DC/AC converter. The entire system concept is based on cost-effective and reliable processing of individual interconnection system components. This significantly reduces installation costs of the solar energy system.

The junction box concept is based on a flexible, open system structure, which allows serial as well as parallel interconnection via direct wire connect or separable connectors. Within the junction box up to six termination rails are available for photovoltaic foil connection.

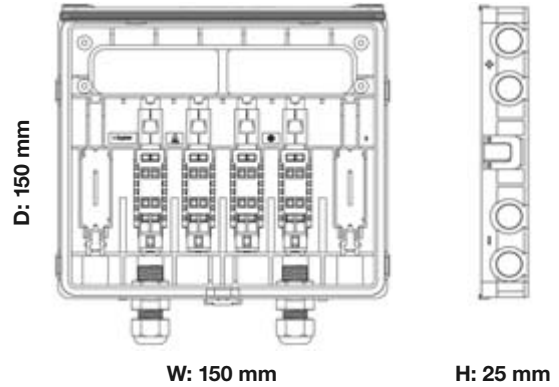
The male and female cable couplers were designed for high voltage and high current-

carrying capacity in addition to the well-established IP 67 sealing requirement in the photovoltaic industry. Mating safety is provided by polarity keyed housings, fully shrouded contacts, reliable high cycle life, and squeeze to release connection system. In addition, a wide temperature range and fulfillment of worldwide standards for photovoltaic connection systems complement the robust product specification.

The design of the male and female receptacle for the junction box and the DC/AC converter follow the cable coupler "click philosophy" for quick and secure mating even in difficult mounting positions.

If required by the customer, the junction box can be delivered pre-configured with diodes, jumpers, plug connectors, and solar cable pigtails.

**Large Junction Box — Serial Interconnection**

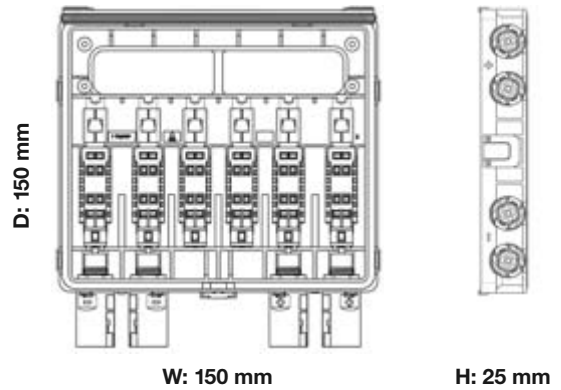


SERIAL INTERCONNECTION							
Configuration	Part Number	Package Quantity	Interconnection Options			Contact Rails	Diodes
			Plug Connector		Direct Wire		
			Plus Keyed	Minus Keyed			
	1-1394723-6	20			□□	□□□□□	
	2-1394723-5	20			□□	□□□□□	□□□□
	1394723-4	20			□□	□□□□□□	
	1394723-3	20	✓	✓		□□□□□□	

**Note:** The □ symbol represents unit quantity.

**Note:** All part numbers are RoHS compliant.

**Large Junction Box — Parallel Interconnection**

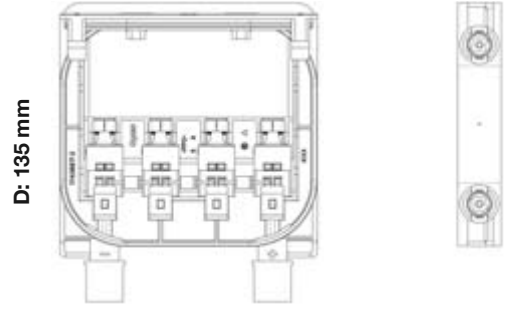
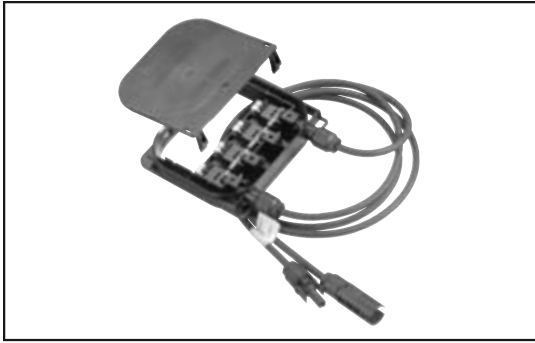


PARALLEL INTERCONNECTION							
Configuration	Part Number	Package Quantity	Interconnection Options			Contact Rails	Diodes
			Plug Connector		Direct Wire		
			Plus Keyed	Minus Keyed			
	1394723-5	20	✓	✓		□□□□□□	
	1394723-6	20			□□□□	□□□□□□	
	1394723-9	20			□□□□	□□□□	

**Note:** The □ symbol represents unit quantity.

**Note:** All part numbers are RoHS compliant.

**Medium Junction Box — Serial Interconnection**



D: 135 mm

W: 115 mm

H: 22.5 mm

**SERIAL INTERCONNECTION**

Configuration	Part Number	Package Quantity	Interconnection Options			Contact Rails	Diodes
			Plug Connector		Direct Wire		
			Plus Keyed	Minus Keyed			
	1740699-1	60			□□	□□□□	□□□ SL1010
	1740699-6*	35			□□	□□□□	□□□ SL1010
	1740700-1	60	✓	✓		□□□□	□□□ SL1010
	1740700-3**	35	✓	✓		□□□□	□□□ SL1010
	1740971-1	60			□□	□□□□	□□□ SL1515
	1740971-3*	35			□□	□□□□	□□□ SL1515
	1740972-1	60	✓	✓		□□□□	□□□ SL1515
	1740972-3**	35	✓	✓		□□□□	□□□ SL1515

\* Junction Box Assembly with two 100 cm long 4.0 mm<sup>2</sup> black solar cable and plug connector.

\*\* Junction Box Assembly with one 200 cm long 4.0 mm<sup>2</sup> black solar cable and two plug connectors.

**Note:** The □ symbol represents unit quantity. All part numbers are RoHS compliant.

**Medium Junction Box — Serial Interconnection** (Continued)



D: 135 mm



W: 115 mm



H: 22.5 mm

**SERIAL INTERCONNECTION**

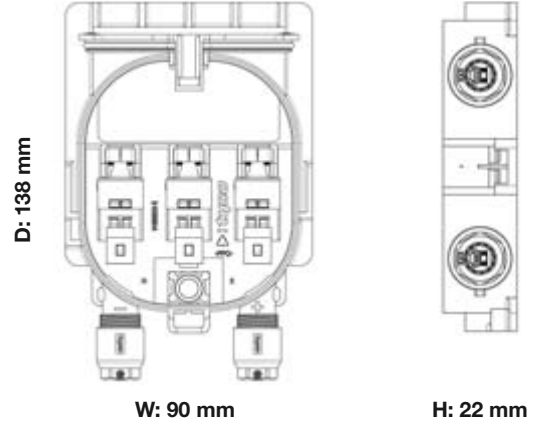
Configuration	Part Number	Package Quantity	Interconnection Options			Contact Rails	Diodes
			Plug Connector		Direct Wire		
			Plus Keyed	Minus Keyed			
	1740657-1	60			□□	□□□□	□□ SL1010 □ SL1515
	1740657-8*	35			□□	□□□□	□□ SL1010 □ SL1515
	1740658-1	60	✓	✓		□□□□	□□ SL1010 □ SL1515
	1740658-3**	35	✓	✓		□□□□	□□ SL1010 □ SL1515
	1740657-9	60			□□	□□□□	□□□ SL1515
	1-1740657-0*	35			□□	□□□□	□□□ SL1515
	1740658-4	60	✓	✓		□□□□	□□□ SL1515
	1740658-5**	35	✓	✓		□□□□	□□□ SL1515

\* Junction Box Assembly with two 100 cm long 4.0 mm<sup>2</sup> black solar cable and plug connector.

\*\* Junction Box Assembly with one 200 cm long 4.0 mm<sup>2</sup> black solar cable and two plug connectors.

**Note:** The □ symbol represents unit quantity. All part numbers are RoHS compliant.

**Small Junction Box — Serial Interconnection**



SERIAL INTERCONNECTION							
Configuration	Part Number	Package Quantity	Interconnection Options			Contact Rails	Diodes
			Plug Connector		Direct Wire		
			Plus Keyed	Minus Keyed			
	1740220-4	80			□□	□□	
	1740220-2	80			□□	□□	□
	1740425-3*	48			□□	□□	□
	1740220-3	80			□□	□□□	
	1740220-1	80			□□	□□□	□□
	1740425-1**	48			□□	□□□	□□

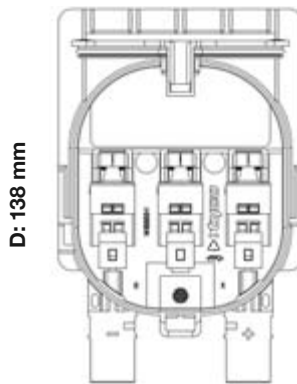
**Note:** The □ symbol represents unit quantity.

\* Junction Box Assembly with two 70 cm long 4.0 mm<sup>2</sup> black solar cable and plug connector.  
 \*\* Junction Box Assembly with two 85 cm long 4.0 mm<sup>2</sup> black solar cable and plug connectors.

**Note:** All part numbers are RoHS compliant.

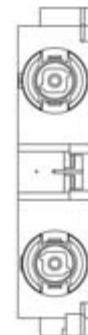


**Small Junction Box — Serial Interconnection** (Continued)



D: 138 mm

W: 90 mm



H: 22 mm

SERIAL INTERCONNECTION							
Configuration	Part Number	Package Quantity	Interconnection Options			Contact Rails	Diodes
			Plug Connector		Direct Wire		
			Plus Keyed	Minus Keyed			
	1418867-2	80	✓	✓		□□	
	1418867-5	80	✓	✓		□□	□
	1-1418867-3*	48	✓	✓		□□	□
	1418867-1	80	✓	✓		□□□	
	1418867-6	80	✓	✓		□□□	□□
	1-1418867-2**	48	✓	✓		□□□	□□

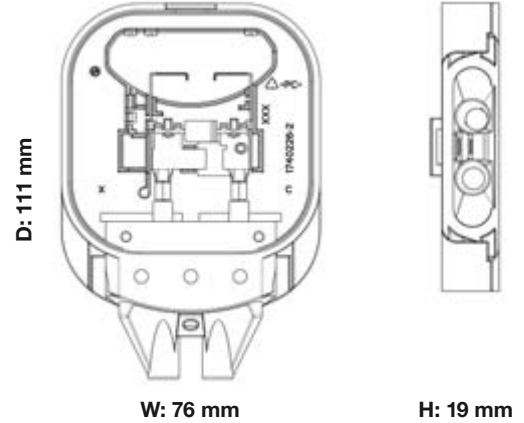
**Note:** The □ symbol represents unit quantity.

\* Junction Box Assembly with one 140 cm long 4.0 mm<sup>2</sup> black solar cable and two plug connectors.

\*\* Junction Box Assembly with one 170 cm long 4.0 mm<sup>2</sup> black solar cable and two plug connectors.

**Note:** All part numbers are RoHS compliant.

**Mini Junction Box — Serial Interconnection**






SERIAL INTERCONNECTION						
Configuration	Part Number	Package Quantity	Contact Rail Shape	Direct Wire	Contact Rails	Diodes
	1740863-1*	80	Straight	☐☐	☐☐	☐
	1740863-2*	80	Right-Angle	☐☐	☐☐	☐


**Note:** The ☐ symbol represents unit quantity.


\* Junction Box Assembly with two 85 cm long 4.0 mm<sup>2</sup> black solar cable and plug connector.

**Note:** All part numbers are RoHS compliant.

**Cable Coupler**

					<b>Package Quantity</b>		
	<b>Wire Size (mm<sup>2</sup>)</b>	<b>Female Cable Coupler</b>		<b>Male Cable Coupler</b>			
		<b>Plus Keyed</b>	<b>Minus Keyed</b>	<b>Plus Keyed</b>		<b>Minus Keyed</b>	
	2.5	1394462-1	1394462-2	1394461-1		1394461-2	100
4.0	1394462-3	1394462-4	1394461-3	1394461-4	100		
6.0	5-1394462-5	5-1394462-6	6-1394461-5	6-1394461-6	100		

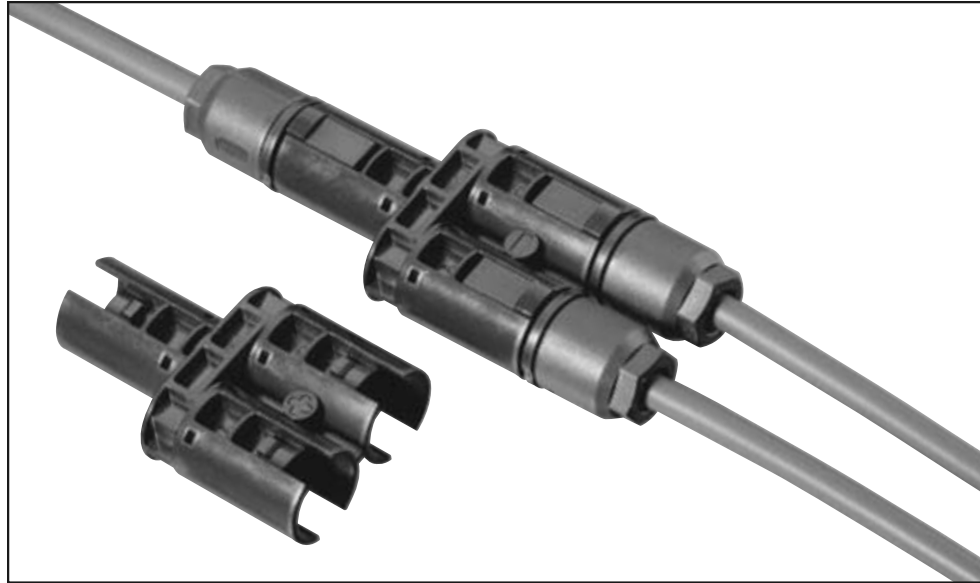
<b>Male Cable Coupler Not Keyed, only for Junction Box Serial Interconnection</b>		<b>Wire Size (mm<sup>2</sup>)</b>	<b>Male Cable Coupler</b>	<b>Package Quantity</b>
		2.5	6-1394461-1	100
		4.0	6-1394461-2	100
		6.0	6-1394461-4	100

	<b>Cable Coupler with Connector Latch Locking Clip</b>	<b>Package Quantity</b>
	<b>Connector Latch Locking Clip</b>	2008116-1

**Note:** All part numbers are RoHS compliant.

**T-Branch Connector**

**Parallel Interconnection  
using T-Branch Connector  
(Male-to-Male)**



T-Branch Connector		Part Number	Package Quantity
Plus Keyed	Minus Keyed		
✓		1534611-1	20
	✓	1534611-2	20

**Parallel Interconnection  
using T-Branch Connector  
(Female-to-Male)**



T-Branch Connector		Part Number	Package Quantity
Plus Keyed	Minus Keyed		
✓		1740277-1	20
	✓	1740277-2	20

**Note:** All part numbers are RoHS compliant.

**DC/AC Converter Receptacle**



O-Ring and Metal Nut



Flat Seal and Plastic Nut



With Cover

Wire Size		Keying		Part Number	Package Quantity	Remarks
2.5 mm <sup>2</sup> (AWG 14)	4.0 mm <sup>2</sup> (AWG 12)	Plus	Minus			
✓		✓		1394738-1	100	O-Ring and Metal Nut
✓			✓	1394738-2	100	
	✓	✓		1394738-3	100	
	✓		✓	1394738-4	100	

✓		✓		1740210-1	100	Flat Seal and Plastic Nut — Black
✓			✓	1740210-2	100	
	✓	✓		1740210-3	100	
	✓		✓	1740210-4	100	
✓		✓		1740210-7	100	Flat Seal and Plastic Nut — Red
✓			✓	1740210-8	100	Flat Seal and Plastic Nut — Blue
	✓	✓		1740210-9	100	Flat Seal and Plastic Nut — Red
	✓		✓	1-1740210-0	100	Flat Seal and Plastic Nut — Blue

✓	✓	✓	✓	1394739-1	100	Cover
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**Note:** All part numbers are RoHS compliant.

## AC Inverter Connector

### Product Facts

- **Current Rating:**  
30 A
- **Voltage Rating:**  
400 V
- **Protection Degree:**  
IP67 (mated)
- **No. of Positions:**  
5 Poles
- **Temperature Range:**  
-40 °C up to +50 °C
- **Wire Size Range:**  
2.5–6.0 mm<sup>2</sup>
- **Approvals:**
  - VDE certified
  - UL pending



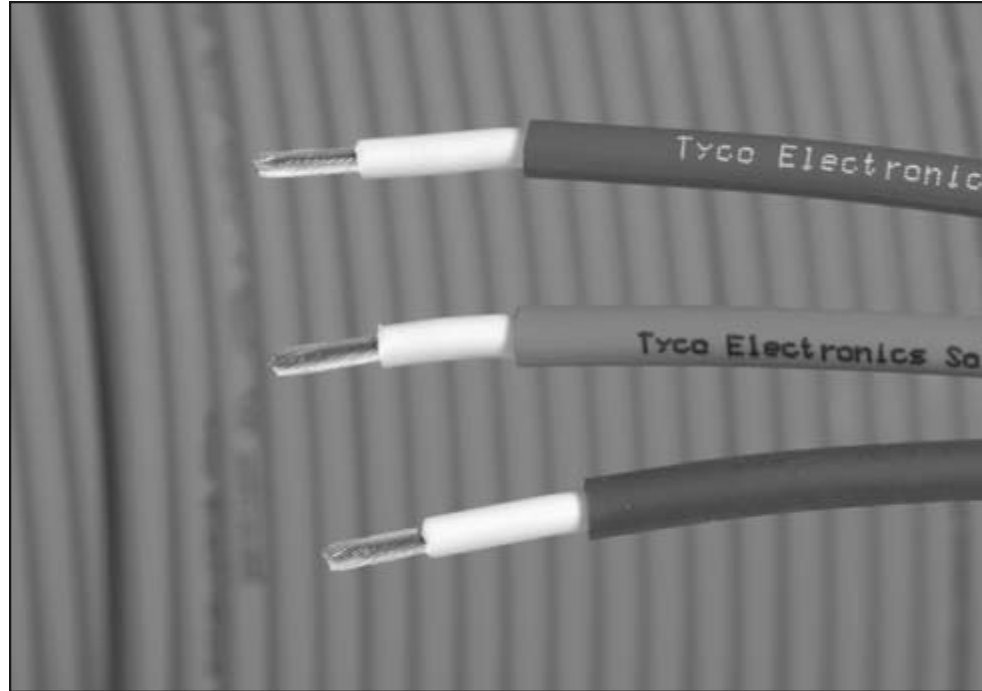
Configuration	5 Pole	Cable Length 200 mm (5 x 4 mm <sup>2</sup> )	Metal Nut	Plastic Nut	Part Number	Package Quantity
	✓	✓	✓		1740483-1	24
	✓	✓		✓	1740483-2	24
	✓				1740479-1	24
	✓	✓	✓		1740493-1	24
	✓	✓		✓	1740493-2	24

**Note:** All part numbers are RoHS compliant.

## Solar Cable

### Product Facts

- Dual wall insulation
- Electron beam cross-linked
- Excellent resistance to UV, water, ozone, fluids, salt, general weathering
- Excellent resistance to abrasion
- Halogen free, flame retardant, low toxicity
- Very low smoke emissions
- Excellent flexibility and stripping performance
- Wire size from 2.5 mm<sup>2</sup> up to 6.0 mm<sup>2</sup>



As part of expanding the SOLARLOK Product Line, Tyco Electronics has specified a wire that is designed to meet the harsh environmental conditions typical in the wiring of photovoltaic installations.

The flexible, dual wall, halogen free and cross linked solar wire offers long term stability and TÜV approval.

Its outstanding features include: high resistance against environmental conditions like humidity, UV-radiation and ozone.

In addition, it has excellent resistance to abrasion and temperature extremes.

The wire has a high dielectric withstanding voltage and with its fine-stranded, tin plated copper conductor, it is easy to handle and to strip.

### Standards

#### Approval:

- IEC 60228 Class 5 (stranded tin plated copper and flexible);
- TÜV certified



### Material and Finish

#### Conductor:

Stranded tin plated copper

#### Insulation:

Electron beam cross-linked Polyolefin

#### Sheath:

Electron beam cross-linked halogen free Polyolefin

#### Color:

Black, blue, red

### Mechanical Features

#### Max. Conductor Temperature

**Continuous:** +110 °C  
**At Short Circuit:** +250 °C

#### Min. Operating Temperature

**Free Installation:** -25 °C  
**Fixed Installation:** -40 °C

#### Wire Size Range:

2.5 mm<sup>2</sup> (AWG 14),  
4.0 mm<sup>2</sup> (AWG 12),  
6.0 mm<sup>2</sup> (AWG 10)

#### Min. Bending Radius:

5 x cable wire diameter,  
fixed installation

### Electrical Features

#### Voltage Rating U<sub>0</sub>/U:

1800/3000 V AC / 2600 V DC

#### Test Voltage for 5 Minutes:

6000 V

#### Max. Current Carrying Capacity (Free in Air):

36 A up to 116 A (size dependent)

## Solar Cable, 1-Pole

### Tyco Electronics Solar Cable, 1-Pole

- TÜV approved
- UL approved



Wire Size Range		Outer Diameter		Color	Old Part Number	New Part Number	Package Quantity (m)	Approvals
(mm <sup>2</sup> )	(AWG)	(mm)	(Inch)					TÜV
2.5	—	5.1	0.20	Black	956297-1	4-1899259-9	500	✓
					1-956297-1	4-1899259-5	100	✓
				Red	956297-2	5-1899259-0	500	✓
					1-956297-2	4-1899259-7	100	✓
				Blue	956297-3	5-1899259-1	500	✓
					1-956297-3	4-1899259-8	100	✓
4.0	—	5.7	0.22	Black	956298-1	5-1899259-5	500	✓
					1-956298-1	5-1899259-2	100	✓
				Red	956298-2	5-1899259-6	500	✓
					1-956298-2	5-1899259-3	100	✓
				Blue	956298-3	5-1899259-7	500	✓
					1-956298-3	5-1899259-4	100	✓
6.0	—	6.2	0.24	Black	956299-1	6-1899259-4	500	✓
					1-956299-1	6-1899259-1	100	✓
				Red	956299-2	6-1899259-5	500	✓
					1-956299-2	6-1899259-2	100	✓
				Blue	956299-3	6-1899259-6	500	✓
					1-956299-3	6-1899259-3	100	✓

Wire Size Range		Outer Diameter		Color	Part Number	Package Quantity (ft)	Approvals
(mm <sup>2</sup> )	(AWG)	(mm)	(Inch)				UL
—	14	—	0.17	Black	1986166-2	500	✓*
					1986166-3	2500	✓*
—	12	—	0.19	Black	1986165-2	500	✓*
					1986165-3	1600	✓*
—	10	—	0.21	Black	1986164-2	500	✓*
					1986164-3	1000	✓*

\* Technical Data upon request.

**Note:** All part numbers are RoHS compliant.

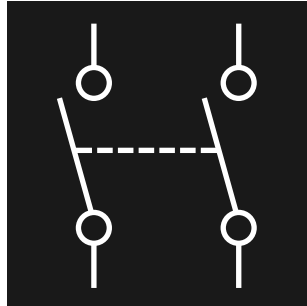


**Field Wiring, Switching and Protection**

**Product Features**

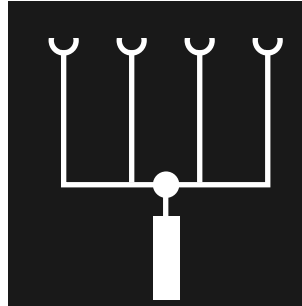
- Modular product concept
- One- /two-pole switches
- Current up to 80 A DC
- Voltage up to 1000 VDC
- Compact, standardized design
- Proven quality

**Switching**



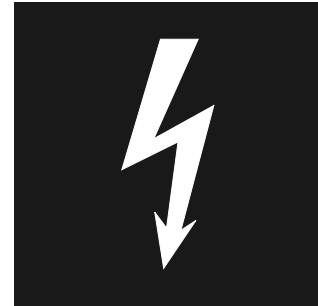
- One- /two-pole switch
- Main switch function
- Lockable
- Current up to 63 A DC
- Voltage up to 900 V U<sub>oc</sub>

**Collecting**



- 1 to 10 strings input
- Cable cross section up to 10 mm<sup>2</sup>
- SOLARLOK connectors
- Various cable glands
- Current up to 80 A DC
- Voltage up to 1000 V DC

**Protecting**



- Lightning protection



**Your Solution**



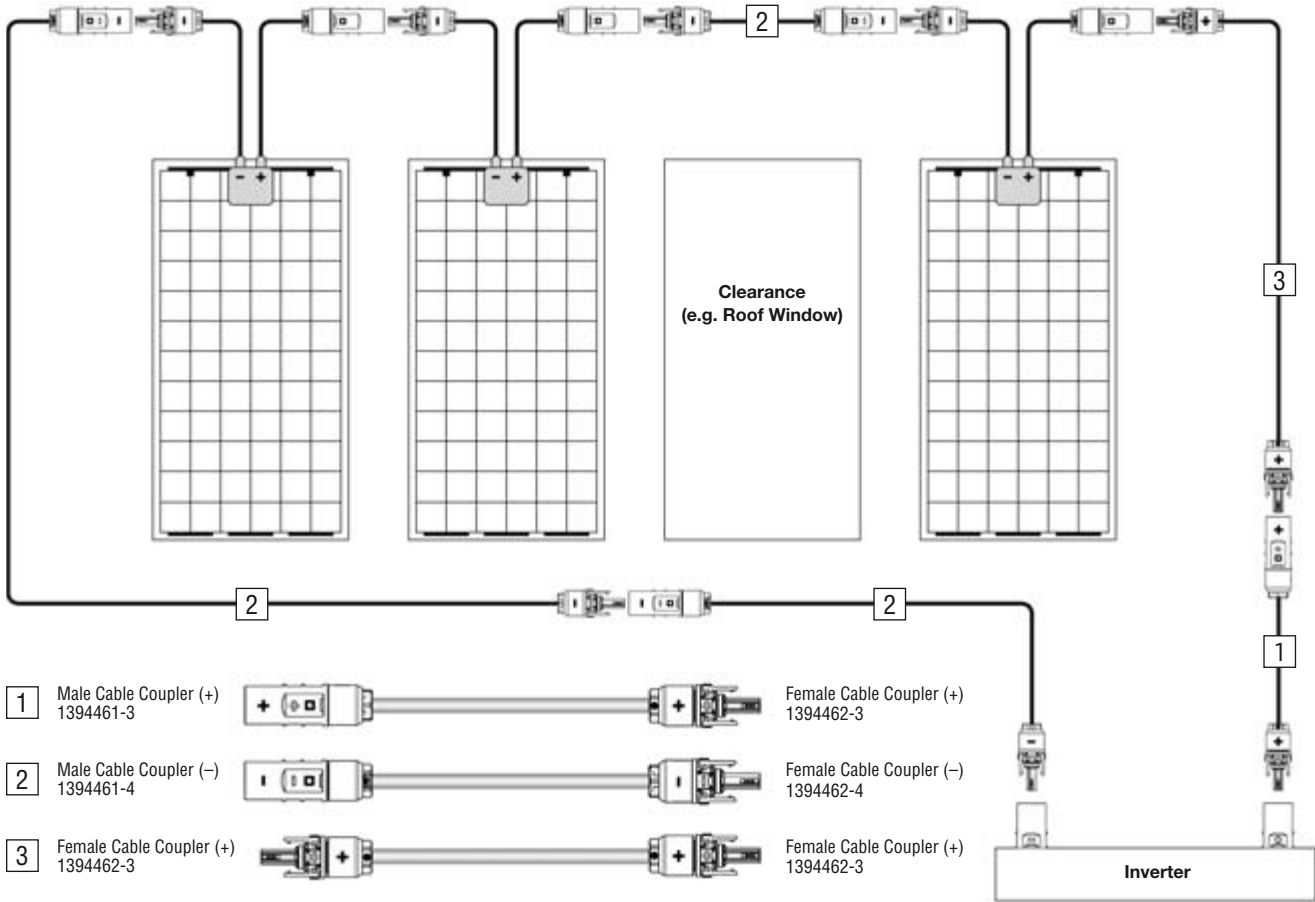
The photovoltaic integrator looks for best fit solutions to wire various types and sizes of solar generators.

The new product concept from Tyco Electronics provides this flexibility to photovoltaic integrators.

The modular product can be comprised of a switch, lightning protection, fuses or any combination of these or other commonly available components.

We can customize a product to fit your specific application. Please contact us with your requirements.

**Wiring Example with Extension Cables**



Configuration Example at 4.0 mm<sup>2</sup>.

**IEC/TÜV Applications**

**Cable Assembly**

**Wire Size:**  
4.0 mm<sup>2</sup>

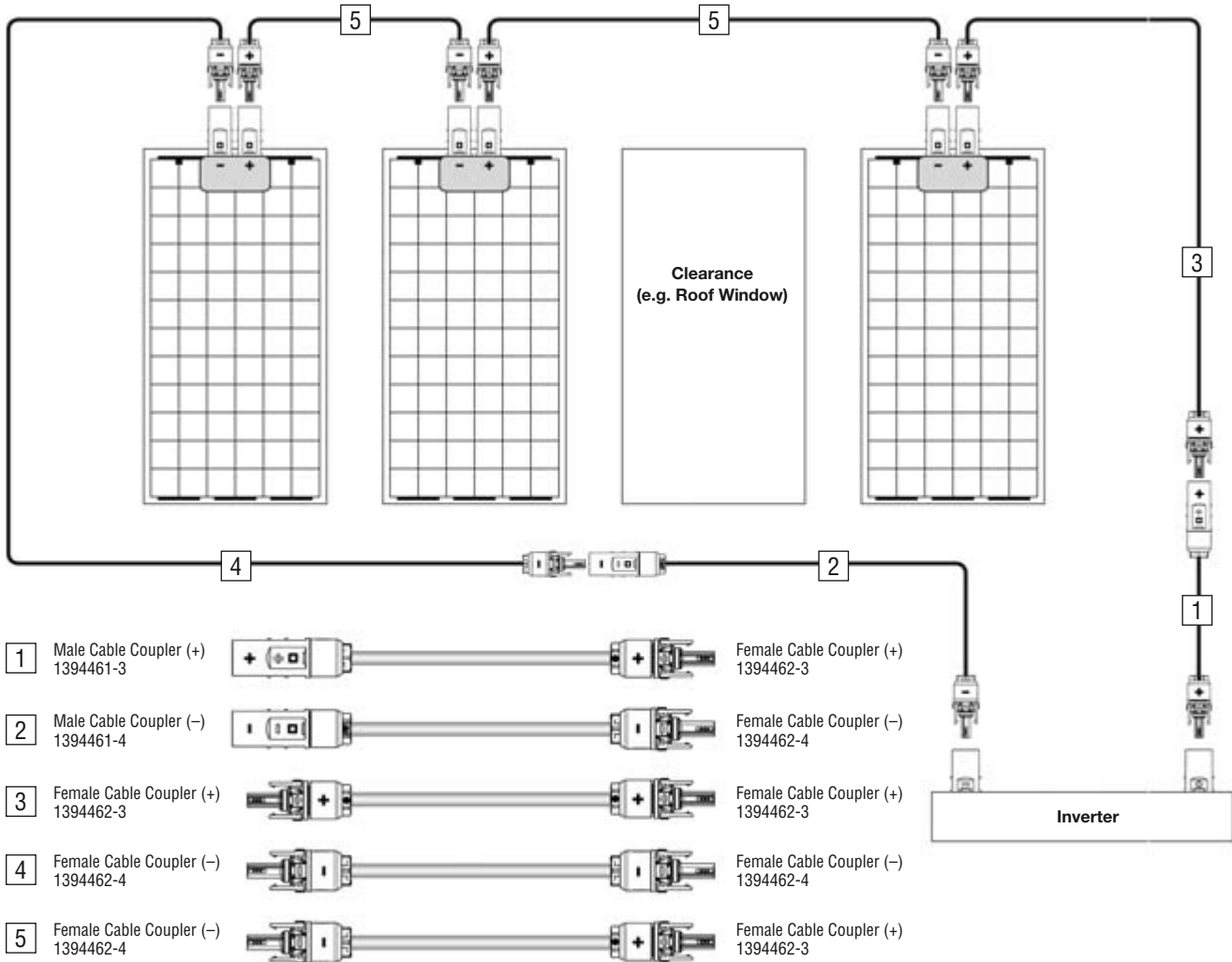
**Color:**  
Black

Cable Assembly Version	Part Numbers for Cable Length				
	1 m	3 m	5 m	10 m	20 m
<b>1</b>	—	—	1698664-1	1698664-2	1698664-3
<b>2</b>	1698665-1	1698665-2	1698665-3	1698665-4	1698665-5
<b>3</b>	1698726-1	—	1698728-1	1698728-2	1698728-3

More variants (cable length, wire diameter, color) upon request.

**Note:** All part numbers are RoHS compliant.

**Wiring Example with Extension Cables (Continued)**



Configuration Example at 4.0 mm<sup>2</sup>.

**IEC/TÜV Applications**

**Cable Assembly**

**Wire Size:**  
4.0 mm<sup>2</sup>

**Color:**  
Black

Cable Assembly Version	Part Numbers for Cable Length				
	1 m	3 m	5 m	10 m	20 m
1	—	—	1698664-1	1698664-2	1698664-3
2	1698665-1	1698665-2	1698665-3	1698665-4	1698665-5
3	1698726-1	—	1698728-1	1698728-2	1698728-3
4	1698727-1	—	1698727-2	1698727-3	1698727-4
5	on request	on request	on request	on request	on request

More variants (cable length, wire diameter, color) upon request.

**Note:** All part numbers are RoHS compliant.

## Wiring Example with Extension Cables for UL Applications



Configuration Example for 12 AWG.

## UL Applications

### Cable Assembly

**Wire Size:**  
12 and 10 AWG

**Color:**  
Black

Cable Assembly Version	Part Numbers for Cable Length				
	3 ft	5 ft	25 ft	50 ft	100 ft
12 AWG [1]	1986228-1	1986228-2	1986228-3	1986228-4	1986228-5
12 AWG [2]	1986229-1	1986229-2	1986229-3	1986229-4	1986229-5
12 AWG [3]	1986230-1	1986230-2	1986230-3	1986230-4	1986230-5
12 AWG [4]	1986231-1	1986231-2	1986231-3	1986231-4	1986231-5
12 AWG [5]	1986232-1	1986232-2	1986232-3	1986232-4	1986232-5
10 AWG [1]	1-1986228-1	1-1986228-2	1-1986228-3	1-1986228-4	1-1986228-5
10 AWG [2]	1-1986229-1	1-1986229-2	1-1986229-3	1-1986229-4	1-1986229-5
10 AWG [3]	1-1986230-1	1-1986230-2	1-1986230-3	1-1986230-4	1-1986230-5
10 AWG [4]	1-1986231-1	1-1986231-2	1-1986231-3	1-1986231-4	1-1986231-5
10 AWG [5]	1-1986232-1	1-1986232-2	1-1986232-3	1-1986232-4	1-1986232-5

More variants (cable length, gauge, connectors) upon request.

**Note:** All part numbers are RoHS compliant.

## SolKlip™ — Ground Clip

### Product Features

- Self-tapping screw
- Quick and easy mounting
- Four-point contact to wire
- Low interface resistance
- Toolless termination
- Re-terminateable up to 5 times
- UV resistant
- Weather-proof
- UL approved
- RoHS compliant



Tyco Electronics' newest innovation provides the photovoltaic installers with a solution for grounding PV panels and mounting frames. The Tyco Electronics SolKlip brings a new ground connection solution to the market by the utilizing well-known insulation displacement termination technology.

Existing solutions typically require the use of ring tongue crimp terminals which have to be crimped first at a specific location on the wire, a hole is then drilled into the mounting surface, and the product is finally mounted on the frame with a separate thread forming or self-tapping screw. The new Tyco Electronics SolKlip provides an extremely simplified solution for terminating a continuous-run ground wire.

Termination times are measured in seconds using the pre-mounted Tyco Electronics SolKlip thereby saving time and reducing wiring costs substantially. The four-point wire contact inherent in the design optimizes grounding performance and provides protection against contact problems due to its low interface resistance.

The Tyco Electronics SolKlip can be used with un-insulated copper wires from 12 AWG to 10 AWG. The retained-force nature of the contact provides a robust interface that minimizes vibration or thermally induced termination problems that often occur with traditional ground-screw connections. Termination of the wire is safely and easily accomplished toollessly by simply inserting the wire and closing the cover.

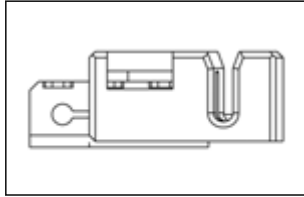
With a tensile strength of up to 36 kg, the UV-resistant enclosure provides a secure termination even in roughest environmental and assembly conditions. As an added benefit, the connection can be opened and re-terminated again up to five times.

Retrofitting the Tyco Electronics SolKlip on panels or frames can be done at any time by simply drilling a mounting hole in the frame and attaching the terminal to the frame using the integrated, self-tapping screw. This ensures a secure connection with the panel and/or frame.

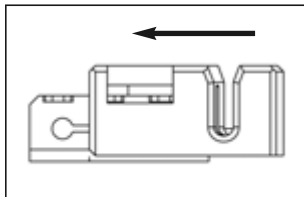
The patent-pending Tyco Electronics SolKlip ground terminal supplements the existing Tyco Electronics SOLARLOK product portfolio and offers the electrician yet another valuable component for simple and fast wiring of a PV-system.

**SolKlip™ — Ground Clip** (Continued)

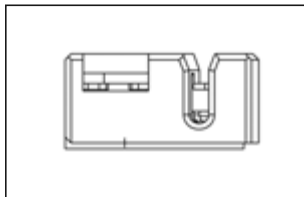
**3 Easy Steps to  
Ground Your PV System**



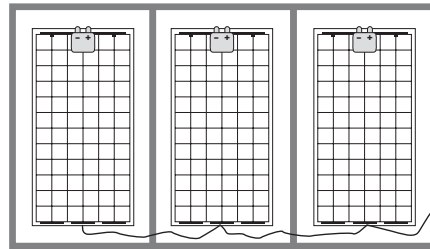
Insert ...



... Push ...



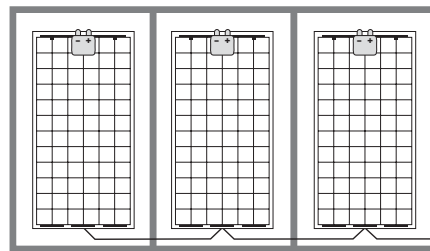
... Ready!



**Yesterday**



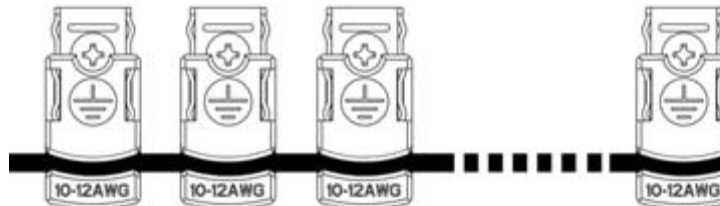
- Screw
- Washer
- Lock Washer
- Ring Tongue
- Screwdriver
- Drill
- Pliers



**Today**



- SolKlip



**Click**

**Click**

**Click**

**Description**

SolKlip ground clips are designed for solar panel grounding applications using solid un-insulated copper 10 AWG and 12 AWG.

**Applications**

Solar panels and related products that require grounding for safety reasons. Applications include: wire jumpers between solar panels, solar roof tiles and between panels and the AC/DC inverters.

**Electrical**

The electrical performance of this product will meet the tough requirements of photovoltaic grounding applications.

**Product Offering & Dimensions**

SolKlip for Solar Grounding Part No. 1954381-1 to handle 12–10 AWG solid, un-insulated ground wire.

**Application Tooling**

No special tooling required.

**Standards and Specifications**

SolKlip Grounding Clip: UL 467 pending, a requirement for UL 1703 solar panel listing. UL 486A-B pending, also a requirement as part of the UL 1703 approval listing.

**Materials**

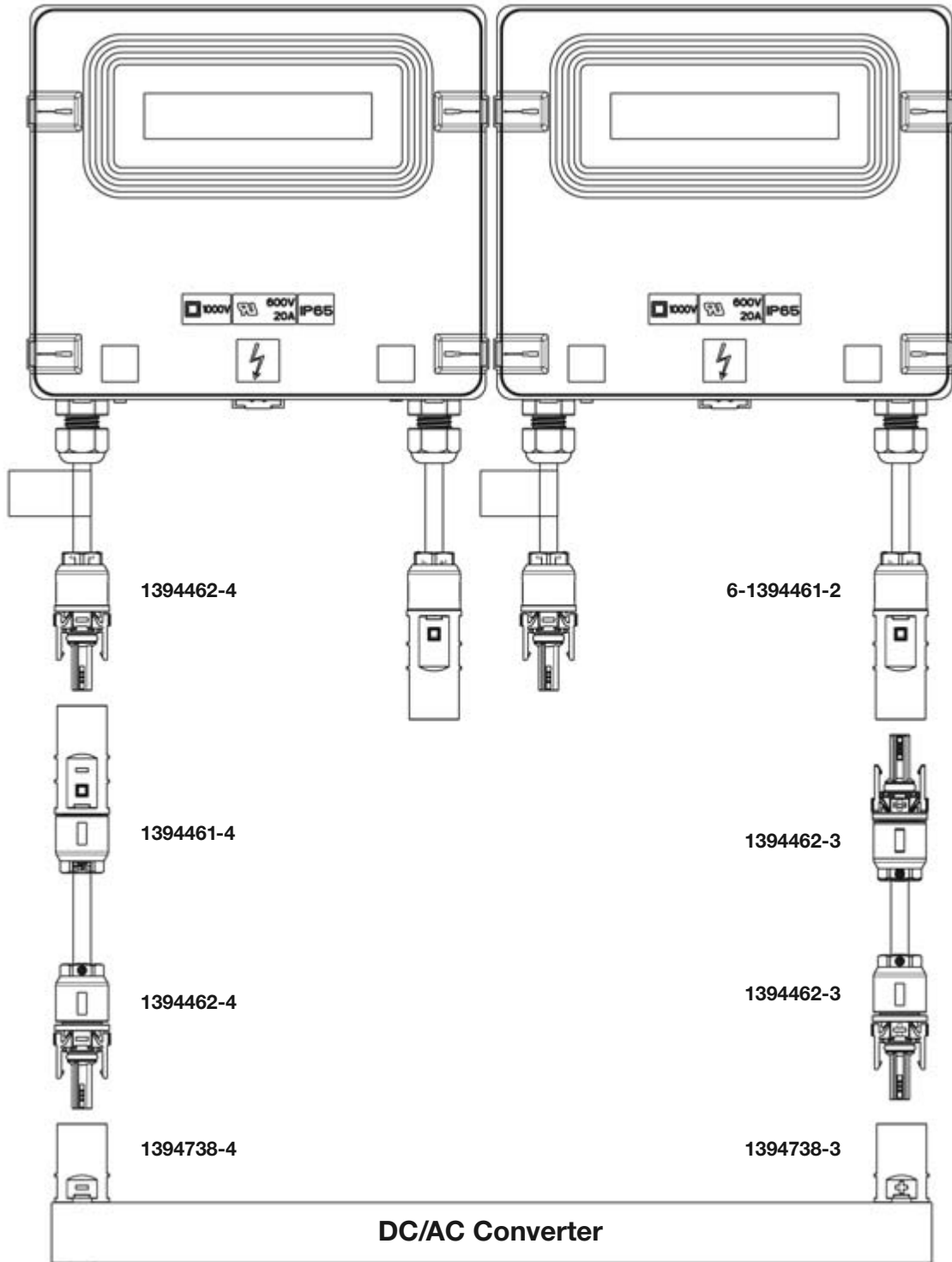
Housing: Durable PPT  
Contact: High conductivity copper alloy

**Mechanical**

The mechanical properties of this product will meet the tough requirements for grounding applications as specified in the UL requirements.

**Interconnection Examples**

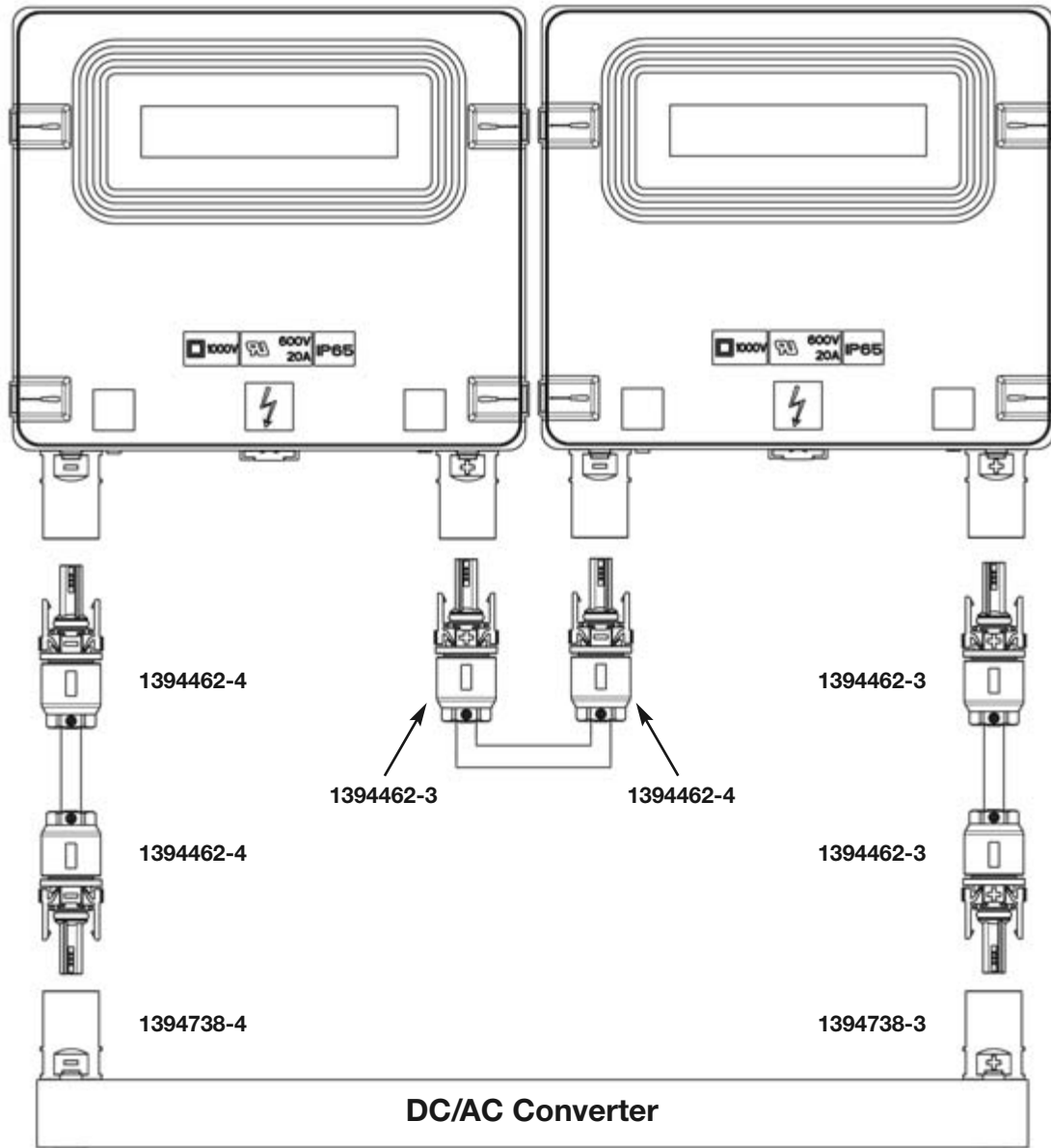
**Serial Interconnection for Junction Boxes with Cable Glands (4.0 mm<sup>2</sup> Wiring)**



**Note:** All part numbers are RoHS compliant.

**Interconnection Examples** (Continued)

**Serial Interconnection for Junction Boxes with Plug Connectors  
(4.0 mm<sup>2</sup> Wiring)**



**Note:** All part numbers are RoHS compliant.



**Application Tooling** (Continued)

**Cable Assembly Tooling**



**Hand Crimping Tool**

incl. Vario Crimp Head and Locator

Part Numbers

**1-1579004-1** (1.5 + 2.5 mm<sup>2</sup>)

**1-1579004-2** (4.0 + 6.0 mm<sup>2</sup>)

**Vario Crimp Head**

**7-1579001-8** (1.5 + 2.5 mm<sup>2</sup>)

**7-1579001-9** (4.0 + 6.0 mm<sup>2</sup>)



**Extraction Tool**

suitable for all wire sizes

Part No. **1102855-3**



**Insulation Stripper**

includes length stop for all wire sizes: 1.5 mm<sup>2</sup>, 2.5 mm<sup>2</sup>, 4.0 mm<sup>2</sup> and 6.0 mm<sup>2</sup>.

Suitable for Tyco Electronics Solar Cable.

Part No. **4-1579002-2**

**SOLARLOK  
Electric Terminator CS 200**

Base Machine:  
Part No. **539630-1**



**Adapter for Vario Crimp Head:**

Part No. **1579000-4**

**Vario Crimp Head**

**(1.5 and 2.5 mm<sup>2</sup>):**

Part No. **7-1579001-8**

**Vario Crimp Head**

**(4.0 and 6.0 mm<sup>2</sup>):**

Part No. **7-1579001-9**

**Note:** All part numbers are RoHS compliant.

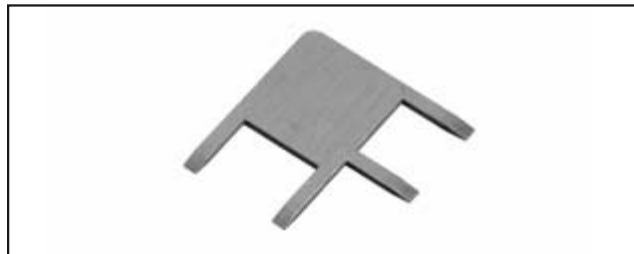
**Application Tooling** (Continued)

**Junction Box  
Assembly Tooling**



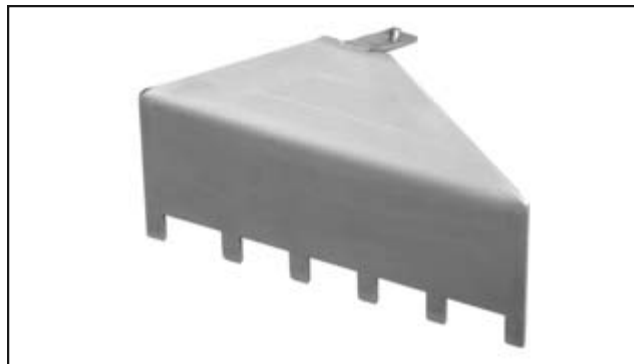
**Wire Spring Clamp Tool**

Part No. **1579007-2**



**Dioden/Jumper  
Spring Clamp Tool**

Part No. **1579007-5**



**Foil Spring Clamp Tool**

Part No. **1579007-3** Large Box

Part No. **1740969-1** Medium Box

Part No. **1740969-2** Small Box

**Field Service Kit**

Part No. **1534858-1**  
(Metric & AWG)



**Kit includes the following parts:**

- 100 Cable Coupler (Housings, Plus and Minus coded)
- Crimp Contacts (4.0 and 6.0 mm<sup>2</sup>)
- Strain Relief
- Seals
- **Hand Crimp Tool:**  
Part No. **1-1579004-2**
- **Extraction Tool:**  
Part No. **1102855-3**
- **Insulation Stripper:**  
Part No. **4-1579002-2**

**Note:** All part numbers are RoHS compliant.

## Assembly and Installation Guidelines

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### SOLARLOK Plug Connector

**Attention: This connector is to be used only to interconnect firmly fixed cables.**

**Do not disconnect under load.**

Current path should only be disconnected using approved disconnect devices.

Cable assemblies shall be labeled with Part No. **1394470-1**.

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

#### 1. General Comments

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 assembly environment is therefore essential.

#### 2. Termination of the Cable Wires and Crimping of the Contacts

SOLARLOK connectors use different crimp contacts for various wire gauges. Possible wire gauges are 1.5 mm<sup>2</sup>, 2.5 mm<sup>2</sup>, 4.0 mm<sup>2</sup>, 5.3 mm<sup>2</sup> und 6.0 mm<sup>2</sup> resp. AWG 16, AWG 14, AWG 12 and AWG 10.

The tools to be used are selected based upon the wire gauge.

For the application specification, please refer to specification # 114-74013.

#### 3. Handling of the Connectors

##### 3.1 Selection of Sealing Grommet for Cable Connectors

Use only appropriate wire gauges.

Besides the standard seal/pinch ring combination further five different seals are available.

- 4.0 mm grommet inner diameter (for insulation diameter from 3.2 to 4.3 mm), Part No. **1394465-5**
- 5.0 mm grommet inner diameter (for insulation diameter from 4.3 to 5.3 mm), Part No. **1394465-1**
- 6.0 mm grommet inner diameter (for insulation diameter from 5.3 to 6.2 mm), Part No. **1394465-2**
- 7.0 mm grommet inner diameter (for insulation diameter from 6.2 to 7.2 mm), Part No. **1394465-3**
- 8.0 mm grommet inner diameter (for insulation diameter from 7.2 to 8.0 mm), Part No. **1394465-4**

The grommet has to be matched with the outer diameter of the solar cable (see customer drawing, Part No. **1394461** and Part No. **1394462**) and the pinch ring (Part No. **1418677-2**) must be applied.

**Note:** All part numbers are RoHS compliant.

**Assembly and Installation Guidelines** (Continued)

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

- ① Stripping the Wire (please refer to application specification #114-74013)



Fig. 1

- ② 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.



Fig. 2

- ③ Place seal/pinch ring combination into the connector housing until it stops.

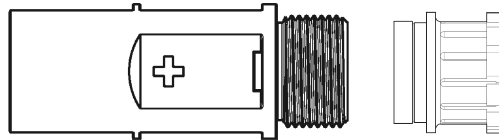


Fig. 3

- ④ Place backshell onto the connector housing.

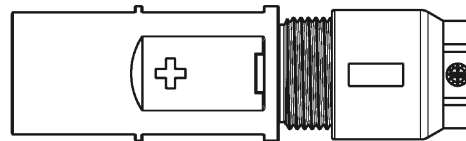


Fig. 4

- ⑤ Push contact with cable into the connector housing until you hear the contact is locked into position

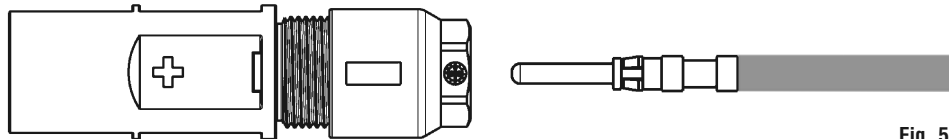


Fig. 5

- ⑥ Tighten backshell nut to 1.5 Nm

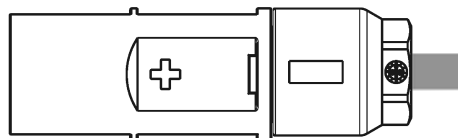


Fig. 6

**Assembly and Installation Guidelines** (Continued)

**3.2 Connector Latching**

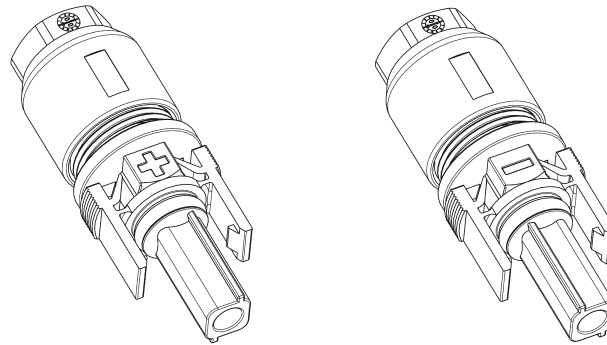
When mating the SOLARLOK connectors, ensure the following:

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

**CAUTION:**  
The “neutral” designated pin connectors incorporate no keying features and must only be used for Serial Interconnection of Photovoltaic Modules. The neutral product should not be used where maintaining polarity is critical.

The polarity of the “neutral” connector must be labeled with Part No. **1394725-1** or Part No. **1394725-2** nearby the connector.

- The connector system is fully latched only when the latches are flush with the mating connector.
- After the connector is fully latched, the optional latch locking clip may be snapped into place.



**Fig. 7**  
(Female Connector)

**3.3 Disconnecting**

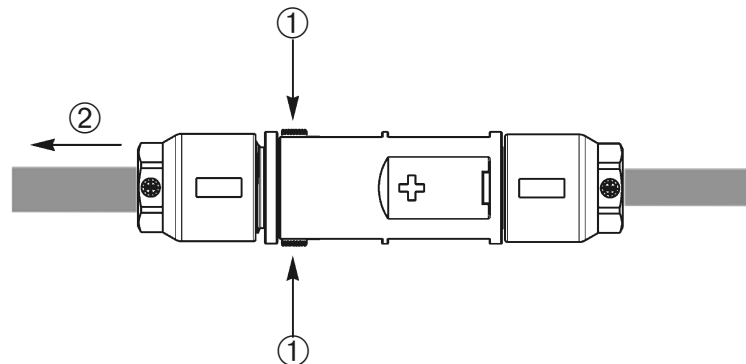
**CAUTION: This connector must not be disconnected under load.**

Disconnect circuit from load before unplugging connectors.

Cable assemblies should be labeled using Tyco Label, Part No. **1394470-1**.

**Unmating of the connector**

**CAUTION: Do not disconnect the connector under load!**



**Fig. 8**

- ① The locking mechanism is opened by depressing the latches.
- ② Pull out the connectors. While depressing the latches, disconnect the connector by pulling the connector halves apart.

**Note:** All part numbers are RoHS compliant.

**Assembly and Installation Guidelines** (Continued)

**3.4 DC/AC Converter Receptacle**

- ① Place a single wire seal onto the wire and strip wire (single wire seals are not available with every version).



Fig. 9

- ② Crimp the contact using the correct applicator for the wire gauge (# 114-74013)



Fig. 10

- ③ Place O-ring onto the connector housing; push in wire to stop until contact locks into the housing

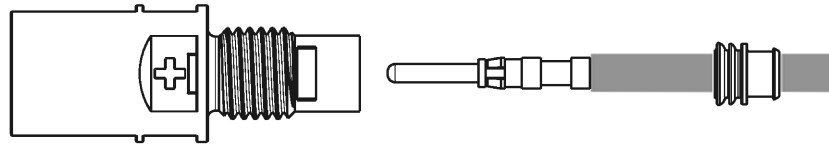


Fig. 11

- ④ Push seal into the housing

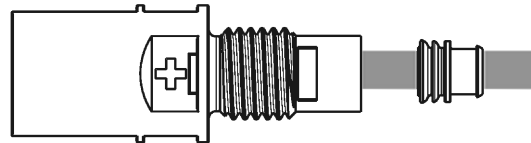


Fig. 12

- ⑤ Assembly of the cover cap (not available with every version) and mounting in front panel

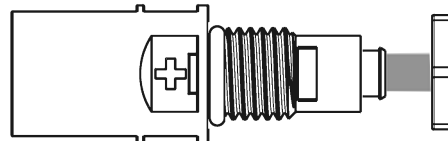


Fig. 13

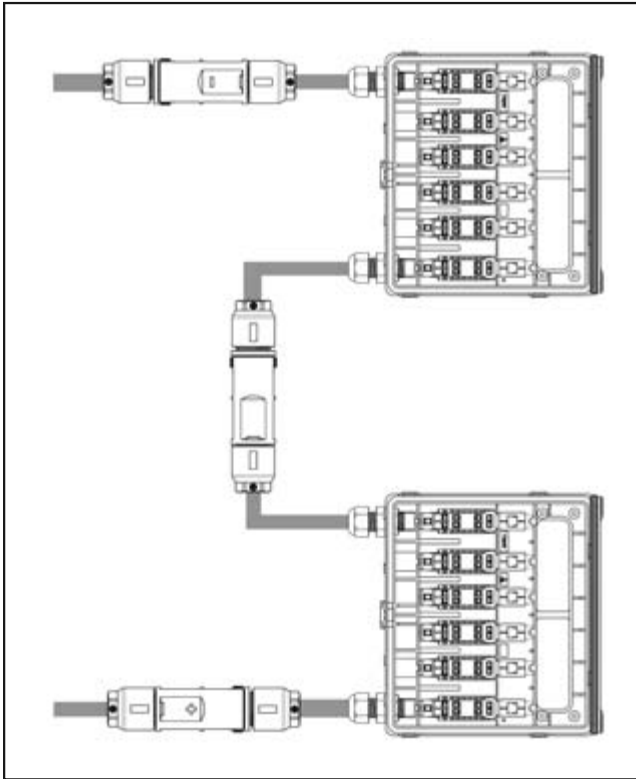
- Required panel mount hole diameter: Diameter 12.5 mm.
- The panel thickness must not be under 1.0 mm.
- For environmental protection of the unmated connector, use of the covering cap is recommended.

**Cover:**  
Part No. **1394739-1**

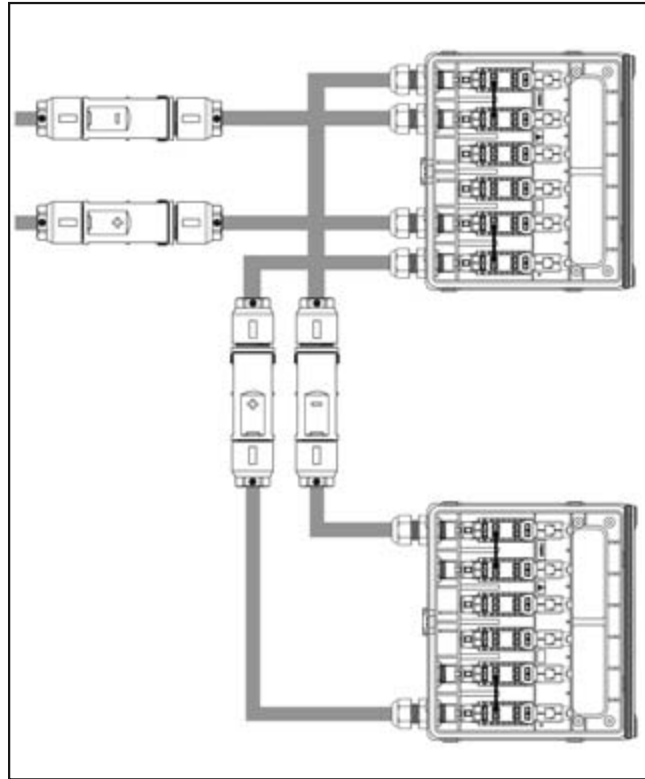
**Note:** All part numbers are RoHS compliant.

**Assembly and Installation Guidelines** (Continued)

**4. Application Examples**



**Fig. 14:** Serial (Wire Diagram)



**Fig. 15:** Parallel (Wire Diagram)

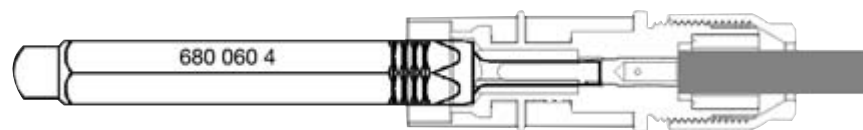
**5. Storage**

See Product Specification 108-18701

**6. Tooling**

- The following tools are available for the contact crimping (please specify wire gauge required):
  - Hand Tool, integral Locator and Die (Part No. **1-1105851-8**), use 'HVT' position on locator
  - Hand Tool, only (Part No. **539973-1**)
- An extraction tool (Part No. **1102855-3**) is needed to disassemble the connector components. This tool is used to unlock the contact retention features, after which the contact can be removed and re-used if necessary.

**Technical Description**



**Fig. 16**

**Note:** All part numbers are RoHS compliant.

## Technical Data (Junction Box and One Pole Plug Connectors)

### Materials

Socket and Pin Contacts:	CuZn
Housing:	PPO, weatherproof against UV radiation and ozone

### Color

Connector, Junction Box:	Black
--------------------------	-------

### Electrical Features

Withstanding Voltage:	1000 V DC
Current Rating:	up to 25 A
Contact Resistance:	$\leq 5 \text{ m}\Omega$
Contact Resistance (typical):	1 m $\Omega$
Protection Class:	II

### Mechanical Features

#### Junction Boxes

Dimensions:	Depending on junction box type
Temperature Range:	-40 °C to +105 °C
Wire Size Range:	up to AWG 12
Protection Degree:	IP 65, closed

#### Connector

Dimensions:	Diameter 18 mm, (diameter 0.71 inch)
Temperature Range:	-40 °C to +105 °C
Wire Size Range:	AWG 14, AWG 12, AWG 10 stranded wire
Protection Degree:	IP 67, mated
Contact Finish:	silver plated,
Mating Cycles:	50, silver plated
Unmating Force:	30–40 Newton
Additional Features:	Coded housing ensures mating safety Contact voltage-proof Connector with crimp technology

<b>Standards</b>	IEC 61215 Edition 2, 61646, IEC 61730, Protection Class II, UL 1703
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**Subject to Change.**



## Part Number Index

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1-956299-1	14	7-1579001-8	23	1740658-5	5	1-1986229-1	18
1-956299-2	14	7-1579001-9	23	1740699-1	4	1-1986229-2	18
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1394461-1	9	1-1579004-2	23	1740863-1	8	1986230-1	18
1394461-2	9	1579007-2	24	1740863-2	8	1986230-2	18
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6-1394461-5	9	1698665-1	16, 17	1740972-3	4	1-1986230-3	18
6-1394461-6	9	1698665-2	16, 17	6-1889259-2	14	1-1986230-4	18
1394462-1	9	1698665-3	16, 17	4-1899259-5	14	1-1986230-5	18
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1394462-3	9, 16, 17, 18, 21, 22	1698665-5	16, 17	4-1899259-8	14	1986231-2	18
1394462-4	9, 16, 17, 18, 21, 22	1698726-1	16, 17	4-1899259-9	14	1986231-3	18
5-1394462-5	9	1698727-1	17	5-1899259-0	14	1986231-4	18
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1394465-1	25	1698727-3	17	5-1899259-2	14	1-1986231-1	18
1394465-2	25	1698727-4	17	5-1899259-3	14	1-1986231-2	18
1394465-3	25	1698728-1	16, 17	5-1899259-4	14	1-1986231-3	18
1394465-4	25	1698728-2	16, 17	5-1899259-5	14	1-1986231-4	18
1394465-5	25	1698728-3	16, 17	5-1899259-6	14	1-1986231-5	18
1394470-1	25, 27	1740210-1	11	5-1899259-7	14	1986232-1	18
1394723-3	2	1740210-2	11	6-1899259-1	14	1986232-2	18
1394723-4	2	1740210-3	11	6-1899259-3	14	1986232-3	18
1394723-5	3	1740210-4	11	6-1899259-4	14	1986232-4	18
1394723-6	3	1740210-7	11	6-1899259-5	14	1986232-5	18
1394723-9	3	1740210-8	11	6-1899259-6	14	1-1986232-1	18
1-1394723-6	2	1740210-9	11	1954381-1	20	1-1986232-2	18
2-1394723-5	2	1-1740210-0	11	1986164-2	14	1-1986232-3	18
1394725-1	27	1740220-1	6	1986164-3	14	1-1986232-4	18
		1740220-2	6	1986165-2	14	1-1986232-5	18
		1740220-3	6	1986165-3	14	2008116-1	9

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## For More Information

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### Product Information Center (PIC)

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Our PIC team is there to help with any further questions.

With our experienced employees in the Product Information Center (PIC) we can offer you a reliable source of information and support for your technical queries.

**To contact your local Tyco Electronics subsidiary, please refer to the address page at right.**

### Product and Machine Literature

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Order quickly and easily by fax:

**For Fax No. see address page entry for your specific region.**

A large product range has extensive product literature. You can request flyers, catalogs and brochures for each of the product sectors of relevance to you.

### Tyco Electronics Online

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Internet Homepage:  
**[www.tycoelectronics.com](http://www.tycoelectronics.com)**



Electronic Internet Catalog:  
**<http://catalog.tycoelectronics.com>**

Our website is more than an Internet guide. It is constantly being added to and is an innovative and interactive source for applications tips, product updates and technical information of all types. With our innovative StepSearch software, which has been perfected over a period of several years you can conveniently surf your way through all our products.

### Need more information?

Call Technical Support at the numbers listed below.

Technical Support is staffed with specialists well versed in all Tyco Electronics products. They can provide you with:

- Technical Support
- Catalogs
- Technical Documents
- Product Samples
- Tyco Electronics Authorized Distributor Locations

**Americas**

**Argentina** – Buenos Aires  
 Phone: +54-11-4733-2200  
 Fax: +54-11-4733-2211

**Brasil** – São Paulo  
 Phone: +55-11-3611-1311  
 Fax: +55-11-3611-0397

**Canada** – Toronto  
 Phone: +905-475-6222  
 Fax: +905-474-5520

**Product Information Center:  
 (Technical Support)**  
 Phone: +905-470-4425  
 Fax: +905-474-5525

**Colombia** – Bogota  
 Phone: +57-1-231-9398  
 Fax: +57-1-660-0206

**Mexico** – Mexico City  
 Phone: +52-55-1106-0800  
 +01-800-733-8926  
 Fax: +52-55-1106-0901

**United States** – Harrisburg, PA  
 Phone: +717-564-0100  
 Fax: +717-986-7575  
**Product Information Center:  
 (Technical Support)**  
 Phone: +800-522-6752  
 Fax: +717-986-7575

**For Latin/South American  
 Countries not shown**  
 Phone: +54-11-4733-2015  
 Fax: +54-11-4733-2083

**Asia/Pacific**

**Australia** – Sydney  
 Phone: +61-2-9554-2600  
 Fax: +61-2-9502-2556  
**Product Information Center:  
 (Technical Support)**  
 Phone: +61-2-9840-8200  
 Fax: +61-2-9634-6188

**India** – Bangalore  
 Phone: +91-80-285-40800  
 Fax: +91-80-285-40820

**Indonesia** – Jakarta  
 Phone: +65-6482-0311  
 Fax: +65-6482-1012

**Japan** – Toyko  
 Phone: +81-44-844-8111  
 Fax: +81-44-812-3207  
**Product Information Center:  
 (Technical Support)**  
 Phone: +81-44-844-8013  
 Fax: +81-44-812-3200

**Korea** – Seoul  
 Phone: +82-2-3415-4500  
 Fax: +82-2-3486-3810

**Malaysia** – Kuala Lumpur  
 Phone: +60-3-78053055  
 Fax: +60-3-78053066

**New Zealand** – Auckland  
 Phone: +64-9-634-4580  
 Fax: +64-9-634-4586

**Philippines** – Makati City  
 Phone: +632-848-0171  
 Fax: +632-867-8661

**People's Republic of China**  
 Hong Kong  
 Phone: +852-2735-1628  
 Fax: +852-2735-0243

Shanghai  
 Phone: +86-21-2407-1588  
 Fax: +86-21-2407-1599

Taiwan – Taipei  
 Phone: +886-2-8768-2788  
 Fax: +886-2-8768-2268

**Singapore** – Singapore  
 Phone: +65-6482-0311  
 Fax: +65-6482-1012

**Thailand** – Bangkok  
 Phone: +66-2-955-0500  
 Fax: +66-2-955-0505

**Vietnam and Indochina** –  
 Ho Chi Minh City  
 Phone: +84-8 930-5546  
 Fax: +84-8 930-3443

**Europe/Middle East/Africa**

**Austria** – Vienna  
 Phone: +43-1 90 5 60-0  
 Fax: +43-1 90 5 60-1333

**Belgium** – Kessel-Lo  
 Phone: +32-16-35-23-00  
 Fax: +32-16-35-23-52

**Bulgaria** – Sofia  
 Phone: +359-2-971-2152  
 Fax: +359-2-971-2153

**Czech Republic** – Kurim  
 Phone: +420-5-41-162-111  
 Fax: +420-5-41-162-223

**Denmark** – Glostrup  
 Phone: +45-43-480-452  
 Fax: +45-43-441-414

**Egypt** – Cairo  
 Phone: +20-2-29 04 281  
 Fax: +20-2-41 92 334

**Estonia** – Tartu  
 Phone: +372-5138-274  
 Fax: +372-7400-779

**Finland** – Helsinki  
 Phone: +358-95-12-34-20  
 Fax: +358-95-12-34-250

**France** – Cergy-Pontoise  
 Phone: +33-1-3420-8888  
 Fax: +33-1-3420-8600

**Product Information Center:  
 (Technical Support)**  
 Phone: +33-1-3420-8943  
 Fax: +33-1-3420-8623

**Germany** – Bensheim  
 Phone: +49-6251-133-0  
 Fax: +49-6251-133-1600  
**Product Information Center:  
 (Technical Support)**  
 Phone: +49-6251-133-1999  
 Fax: +49-6251-133-1988

**Germany** – Langen  
 Phone: +49-6103-709-0  
 Fax: +49-6103-709-1223

**Germany** – Speyer  
 Phone: +49-6232-30-0  
 Fax: +49-6232-30-2243

**Germany - HTS Division** – Neunkirchen  
 Phone: +49-2247-305-0  
 Fax: +49-2247-305-122

**Greece** – Athens  
 Phone: +30-210-9370-396/397  
 Fax: +30-210-9370-655

**Hungary** – Budapest  
 Phone: +36-1-289-1000  
 Fax: +36-1-289-1010

**Ireland** – Dublin  
 Phone: +353-1-820-3000  
 Fax: +353-1-820-9790

**Israel** – Yokneam  
 Phone: +972-4-959-0508  
 Fax: +972-4-959-0506

**Italy** – Collegno (Torino)  
 Phone: +39-011-4012-111  
 Fax: +39-011-4031116

**Lithuania** – Vilnius  
 Phone: +370-5-2131-402  
 Fax: +370-5-2131-403

**Netherlands** – 's-Hertogenbosch  
 Phone: +31-73-624-62-46  
 Fax: +31-73-621-23-65  
**Product Information Center:  
 (Technical Support)**  
 Phone: +31-73-6246-999  
 Fax: +31-73-6246-998

**Norway** – Nesbru  
 Phone: +47-66-77-8886  
 Fax: +47-66-77-8855

**Poland** – Warsaw  
 Phone: +48-22-45-76-700  
 Fax: +48-22-45-76-720

**Romania** – Bucharest  
 Phone: +40-21-311-3479/3596  
 Fax: +40-21-312-0574

**Russia** – Moscow  
 Phone: +7-495-926-5506/07/08/09  
 Fax: +7-495-926-5505

**Russia** – St. Petersburg  
 Phone: +7-812-718-8192  
 Fax: +7-812-718-8193

**Slovenia** – Ljubljana  
 Phone: +386-1561-3270  
 Fax: +386-1561-3240

**South Africa** – Port Elizabeth  
 Phone: +2741-503-4500  
 Fax: +2741-581-0440

**Spain** – Barcelona  
 Phone: +34-93-291-0330  
 Fax: +34-93-201-7879  
**Product Information Center:  
 (Technical Support):**  
 Phone: +34-93-291-0330  
 Fax: +34-93-200-3779

**Sweden** – Upplands Väsby  
 Phone: +46-8-50-72-50-00  
 Fax: +46-8-50-72-50-01

**Switzerland** – Steinach  
 Phone: +41-71-447-0447  
 Fax: +41-71-447-0444

**Turkey** – Istanbul  
 Phone: +90-212-281-8181/2/3  
 Fax: +90-212-281-8184

**Ukraine** – Kiev  
 Phone: +380-044-206-2265  
 Fax: +380-044-206-2264

**United Kingdom** – Swindon  
 Phone: +44-8706-080-208  
 Fax: +44-1793-572-516  
**Product Information Center:  
 (Technical Support)**  
 Freephone GB: 0800-267-666  
 Phone: +44-8706-080-208  
 Fax: +44-208-420-8081

**For Middle East/African Countries  
 Not Shown**  
 Phone: +33-1-3420-8866  
 Fax: +33-1-3420-8300

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