



## SOLARLOK Interconnection System

**OBSOLETE**  
NOT the LATEST  
REVISION



**Tyco Electronics**

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## 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

#### 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

#### 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 +120 °C
- Voltage Rating up to 2600 V DC
- IEC 60228 Class 5 (stranded tin plated copper and flexible)
- TÜV certified acc. to 2Pfg 1169/08.2007
- 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 introduction 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.

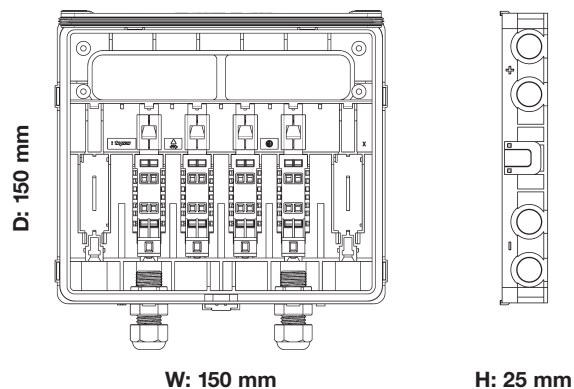
The junction box concept is based on a flexible, open system structure, which allows serial as well as parallel interconnection via direct wire connect or separable connectors. Within the junction box, up to six termination places rails are available for photovoltaic foil connection.

The male and female cable coupler was 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.

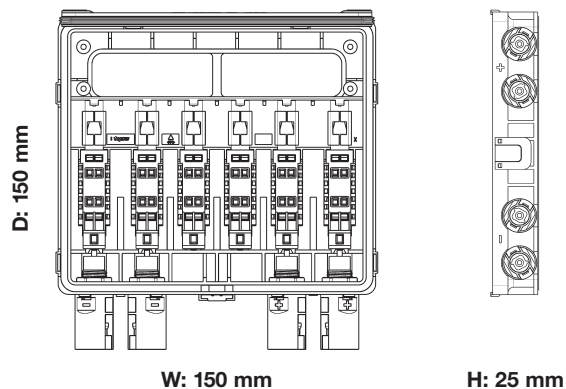
If required by the customer, the junction box can be delivered pre-configured with diodes, jumpers, plug connectors, and solar cable pigtails.

## Large Junction Box – Serial Interconnection



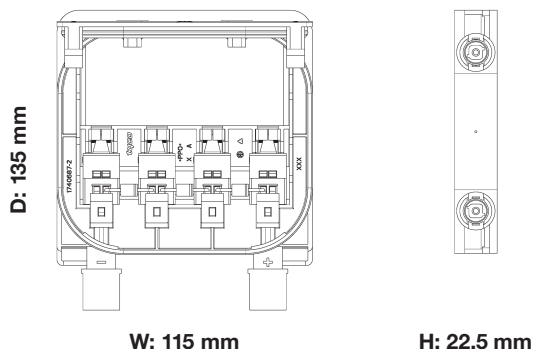
| SERIAL INTERCONNECTION                                                              |             |                  |                         |             |             |               |        |
|-------------------------------------------------------------------------------------|-------------|------------------|-------------------------|-------------|----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

## 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               | <input type="checkbox"/> | <input type="checkbox"/> |             | □□□□□□        |        |
|  | 1394723-6   | 20               |                          |                          | □□□□        | □□□□□□        |        |
|  | 1394723-9   | 20               |                          |                          | □□□□        | □□□□          |        |

## Medium Junction Box – Serial Interconnection

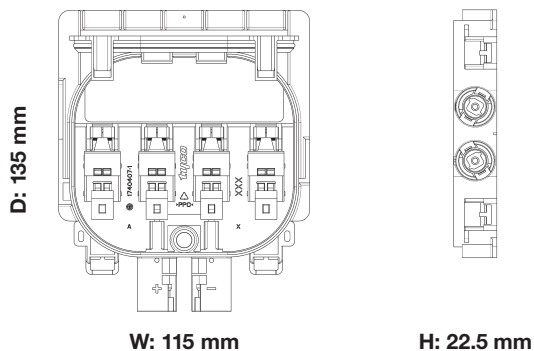


| SERIAL INTERCONNECTION                                                              |             |                  |                         |             |             |               |               |
|-------------------------------------------------------------------------------------|-------------|------------------|-------------------------|-------------|-------------|---------------|---------------|
| Configuration                                                                       | Part Number | Package Quantity | Interconnection Options |             |             | Contact Rails | Diodes        |
|                                                                                     |             |                  | Plug Connector          |             | Direct Wire |               |               |
|                                                                                     |             |                  | Plus Keyed              | Minus Keyed |             |               |               |
|    | 1740699-1   | 60               |                         |             | □□          | □□□□          | □□□<br>SL1010 |
|  | 1740699-6*  | 35               |                         |             | □□          | □□□□          | □□□<br>SL1010 |
|  | 1740700-1   | 60               | □                       | □           |             | □□□□          | □□□<br>SL1010 |
|  | 1740700-3** | 35               | □                       | □           |             | □□□□          | □□□<br>SL1010 |
|  | 1740971-1   | 60               |                         |             | □□          | □□□□          | □□□<br>SL1515 |
|  | 1740971-2*  | 35               |                         |             | □□          | □□□□          | □□□<br>SL1515 |
|  | 1740972-1   | 60               | □                       | □           |             | □□□□          | □□□<br>SL1515 |
|  | 1740972-3** | 35               | □                       | □           |             | □□□□          | □□□<br>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.

### Medium Junction Box – Serial Interconnection (continued)

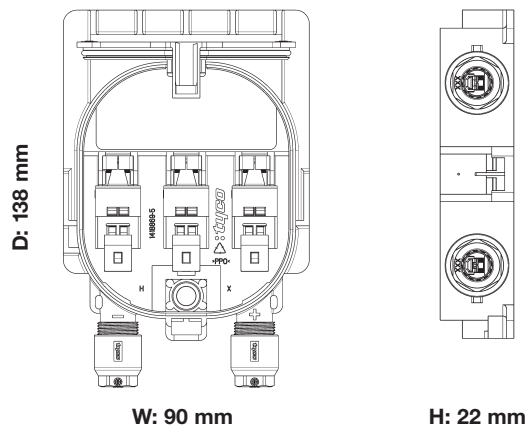


| SERIAL INTERCONNECTION                                                              |              |                  |                         |             |             |               |                             |
|-------------------------------------------------------------------------------------|--------------|------------------|-------------------------|-------------|-------------|---------------|-----------------------------|
| Configuration                                                                       | Part Number  | Package Quantity | Interconnection Options |             |             | Contact Rails | Diodes                      |
|                                                                                     |              |                  | Plug Connector          |             | Direct Wire |               |                             |
|                                                                                     |              |                  | Plus Keyed              | Minus Keyed |             |               |                             |
|    | 1740657-7    | 60               |                         |             | □□          | □□□□          | □□<br>SL1010<br>□<br>SL1515 |
|   | 1740657-8*   | 35               |                         |             | □□          | □□□□          | □□<br>SL1010<br>□<br>SL1515 |
|  | 1740658-1    | 60               | □                       | □           |             | □□□□          | □□<br>SL1010<br>□<br>SL1515 |
|  | 1740658-3**  | 35               | □                       | □           |             | □□□□          | □□<br>SL1010<br>□<br>SL1515 |
|  | 1740657-9    | 60               |                         |             | □□          | □□□□          | □□□<br>SL1515               |
|  | 1-1740657-0* | 35               |                         |             | □□          | □□□□          | □□□<br>SL1515               |
|  | 1740658-4    | 60               | □                       | □           |             | □□□□          | □□□<br>SL1515               |
|  | 1740658-5**  | 35               | □                       | □           |             | □□□□          | □□□<br>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.

## Small Junction Box – Serial Interconnection

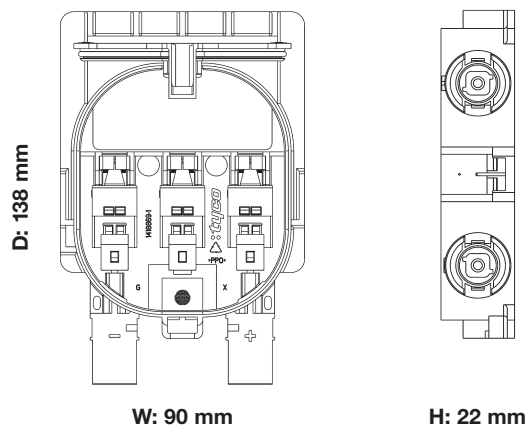


| SERIAL INTERCONNECTION                                                              |             |                  |                         |             |             |               |        |
|-------------------------------------------------------------------------------------|-------------|------------------|-------------------------|-------------|-------------|---------------|--------|
| 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               |                         |             | □□          | □□□           | □□     |

\*) 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.

### Small Junction Box – Serial Interconnection (continued)

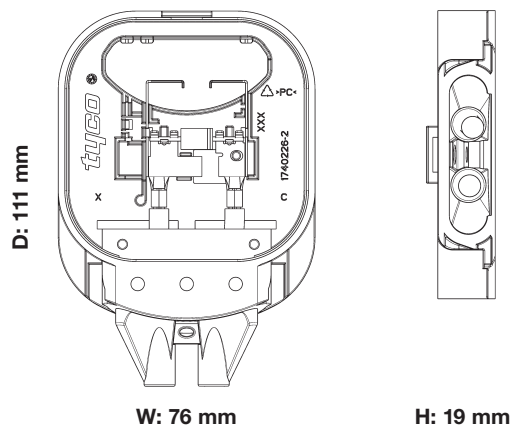


| SERIAL INTERCONNECTION                                                              |               |                  |                          |                          |             |                                                                            |                                                   |
|-------------------------------------------------------------------------------------|---------------|------------------|--------------------------|--------------------------|-------------|----------------------------------------------------------------------------|---------------------------------------------------|
| Configuration                                                                       | Part Number   | Package Quantity | Interconnection Options  |                          |             | Contact Rails                                                              | Diodes                                            |
|                                                                                     |               |                  | Plug Connector           |                          | Direct Wire |                                                                            |                                                   |
|                                                                                     |               |                  | Plus Keyed               | Minus Keyed              |             |                                                                            |                                                   |
|   | 1418867-2     | 80               | <input type="checkbox"/> | <input type="checkbox"/> |             | <input type="checkbox"/> <input type="checkbox"/>                          |                                                   |
|  | 1418867-5     | 80               | <input type="checkbox"/> | <input type="checkbox"/> |             | <input type="checkbox"/> <input type="checkbox"/>                          | <input type="checkbox"/>                          |
|  | 1-1418867-3*  | 48               | <input type="checkbox"/> | <input type="checkbox"/> |             | <input type="checkbox"/> <input type="checkbox"/>                          | <input type="checkbox"/>                          |
|  | 1418867-1     | 80               | <input type="checkbox"/> | <input type="checkbox"/> |             | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |                                                   |
|  | 1418867-6     | 80               | <input type="checkbox"/> | <input type="checkbox"/> |             | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | <input type="checkbox"/> <input type="checkbox"/> |
|  | 1-1418867-2** | 48               | <input type="checkbox"/> | <input type="checkbox"/> |             | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | <input type="checkbox"/> <input type="checkbox"/> |

\*) 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.

## Mini Junction Box – Serial Interconnection

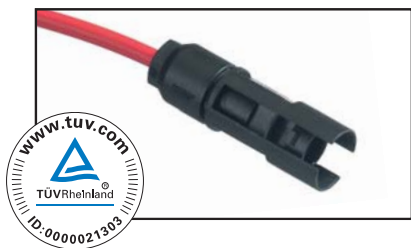


| SERIAL INTERCONNECTION                                                              |             |                  |                    |             |               |        |
|-------------------------------------------------------------------------------------|-------------|------------------|--------------------|-------------|---------------|--------|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

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

**Cable Coupler**


| Wire Size<br>(mm <sup>2</sup> ) | Female Cable Coupler |             | Male Cable Coupler |             | Package<br>Quantity |
|---------------------------------|----------------------|-------------|--------------------|-------------|---------------------|
|                                 | Plus Keyed           | Minus Keyed | Plus Keyed         | Minus Keyed |                     |
| 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                 |

**Male Cable Coupler  
Not Keyed, only for Junction  
Box Serial Interconnection**


| Wire Size<br>(mm <sup>2</sup> ) | Male Cable Coupler | Package<br>Quantity |
|---------------------------------|--------------------|---------------------|
| 2.5                             | 6-1394461-1        | 100                 |
| 4.0                             | 6-1394461-2        | 100                 |
| 6.0                             | 6-1394461-4        | 100                 |


**Cable Coupler  
with Connector Latch  
Locking Clip**

| Connector Latch<br>Locking Clip | Package<br>Quantity |
|---------------------------------|---------------------|
| 1534226-1                       | 100                 |

## 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               |

### 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><br>(AWG 14) | 4.0 mm <sup>2</sup><br>(AWG 12) | Plus                     | Minus                    |             |                  |                      |
| <input type="checkbox"/>        |                                 | <input type="checkbox"/> |                          | 1394738-1   | 100              | O-Ring and Metal Nut |
| <input type="checkbox"/>        |                                 |                          | <input type="checkbox"/> | 1394738-2   | 100              |                      |
|                                 | <input type="checkbox"/>        | <input type="checkbox"/> |                          | 1394738-3   | 100              |                      |
|                                 | <input type="checkbox"/>        |                          | <input type="checkbox"/> | 1394738-4   | 100              |                      |

|                          |                          |                          |                          |             |     |                                   |
|--------------------------|--------------------------|--------------------------|--------------------------|-------------|-----|-----------------------------------|
| <input type="checkbox"/> |                          | <input type="checkbox"/> |                          | 1740210-1   | 100 | Flat Seal and Plastic Nut – Black |
| <input type="checkbox"/> |                          |                          | <input type="checkbox"/> | 1740210-2   | 100 |                                   |
|                          | <input type="checkbox"/> | <input type="checkbox"/> |                          | 1740210-3   | 100 |                                   |
|                          | <input type="checkbox"/> |                          | <input type="checkbox"/> | 1740210-4   | 100 |                                   |
| <input type="checkbox"/> |                          | <input type="checkbox"/> |                          | 1740210-7   | 100 | Flat Seal and Plastic Nut – Red   |
| <input type="checkbox"/> |                          |                          | <input type="checkbox"/> | 1740210-8   | 100 | Flat Seal and Plastic Nut – Blue  |
|                          | <input type="checkbox"/> | <input type="checkbox"/> |                          | 1740210-9   | 100 | Flat Seal and Plastic Nut – Red   |
|                          | <input type="checkbox"/> |                          | <input type="checkbox"/> | 1-1740210-0 | 100 | Flat Seal and Plastic Nut – Blue  |

|                          |                          |                          |                          |           |     |       |
|--------------------------|--------------------------|--------------------------|--------------------------|-----------|-----|-------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1394739-1 | 100 | Cover |
|--------------------------|--------------------------|--------------------------|--------------------------|-----------|-----|-------|

## 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

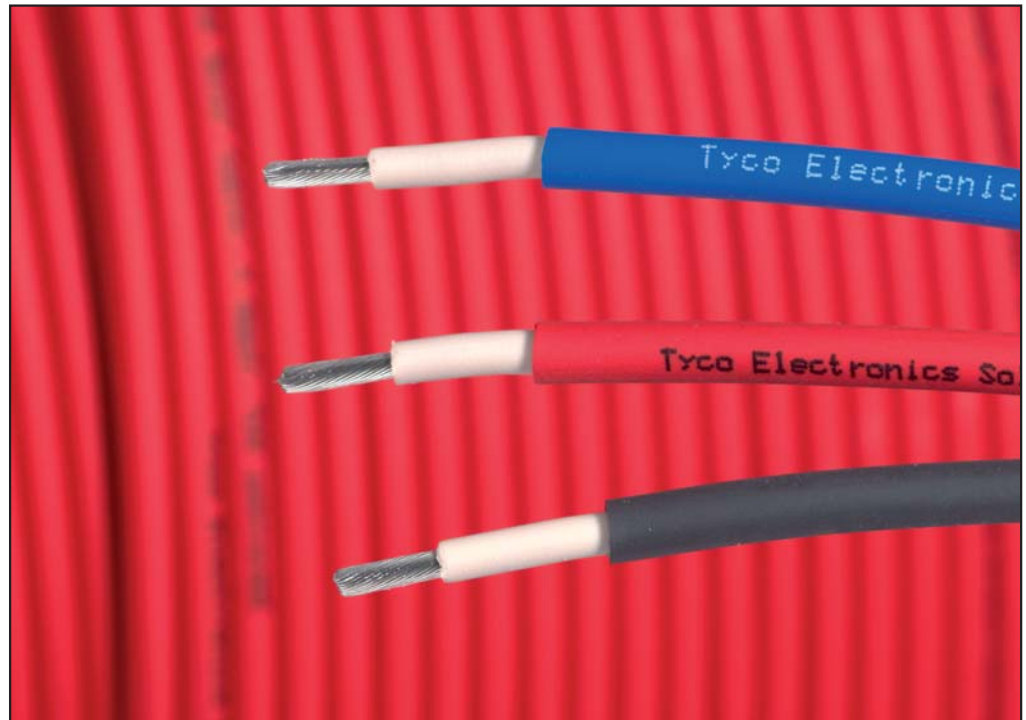


| Configuration                                                                       | 5 Pole                   | Cable Length<br>200 mm<br>(5 x 4 mm <sup>2</sup> ) | Metall Nut               | Plastic Nut              | Part Number | Package<br>Quantity |
|-------------------------------------------------------------------------------------|--------------------------|----------------------------------------------------|--------------------------|--------------------------|-------------|---------------------|
|  | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> |                          | 1740483-1   | 24                  |
|  | <input type="checkbox"/> | <input type="checkbox"/>                           |                          | <input type="checkbox"/> | 1740483-2   | 24                  |
|  | <input type="checkbox"/> |                                                    |                          |                          | 1740479-1   | 24                  |
|  | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> |                          | 1740493-1   | 24                  |
|  | <input type="checkbox"/> | <input type="checkbox"/>                           |                          | <input type="checkbox"/> | 1740493-2   | 24                  |

## 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 withstand 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 acc. to 2Pfg 1169/08.2007



### 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:** +120 °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 | Part Number | Package Quantity |        | Approbation |
|-----------------|-------|----------------|--------|-------|-------------|------------------|--------|-------------|
| (mm²)           | (AWG) | (mm)           | (Inch) |       |             | (m)              | (Feet) | TÜV         |
| 2.5             | –     | 5.1            | 0.20   | Black | 956297-4    | 500              | –      | □           |
|                 |       |                |        |       | 1-956297-4  | 100              | –      | □           |
|                 |       |                |        | Red   | 956297-5    | 500              | –      | □           |
|                 |       |                |        |       | 1-956297-5  | 100              | –      | □           |
|                 |       |                |        | Blue  | 956297-6    | 500              | –      | □           |
|                 |       |                |        |       | 1-956297-6  | 100              | –      | □           |
| 4.0             | –     | 5.7            | 0.22   | Black | 956298-4    | 500              | –      | □           |
|                 |       |                |        |       | 1-956298-4  | 100              | –      | □           |
|                 |       |                |        | Red   | 956298-5    | 500              | –      | □           |
|                 |       |                |        |       | 1-956298-5  | 100              | –      | □           |
|                 |       |                |        | Blue  | 956298-6    | 500              | –      | □           |
|                 |       |                |        |       | 1-956298-6  | 100              | –      | □           |
| 6.0             | –     | 6.2            | 0.24   | Black | 956299-4    | 500              | –      | □           |
|                 |       |                |        |       | 1-956299-4  | 100              | –      | □           |
|                 |       |                |        | Red   | 956299-5    | 500              | –      | □           |
|                 |       |                |        |       | 1-956299-5  | 100              | –      | □           |
|                 |       |                |        | Blue  | 956299-6    | 500              | –      | □           |
|                 |       |                |        |       | 1-956299-6  | 100              | –      | □           |

| Wire Size Range |       | Outer Diameter |        | Color | Part Number | Package Quantity |        | Approbation |
|-----------------|-------|----------------|--------|-------|-------------|------------------|--------|-------------|
| (mm²)           | (AWG) | (mm)           | (Inch) |       |             | (m)              | (Feet) | UL          |
| –               | 14    | –              | 0.17   | Black | 1986166-2   | –                | 500    | □*          |
|                 |       |                |        |       | 1986166-3   | –                | 2500   | □*          |
| –               | 12    | –              | 0.19   | Black | 1986165-2   | –                | 500    | □*          |
|                 |       |                |        |       | 1986165-3   | –                | 1500   | □*          |
| –               | 10    | –              | 0.21   | Black | 1986164-2   | –                | 500    | □*          |
|                 |       |                |        |       | 1986164-3   | –                | 1000   | □*          |

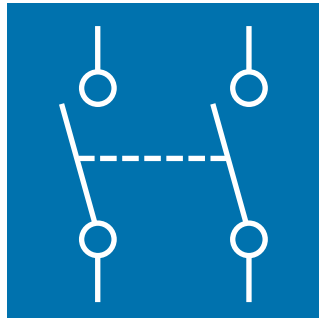
\*) Technical Data upon request.

## Field Wiring, Switching and Protection

### Product Features

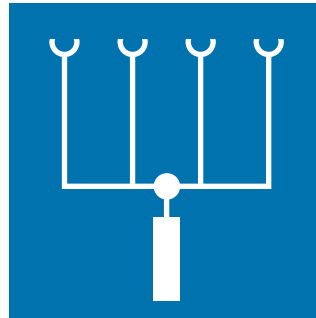
- Modular product concept
- One- / two-pole switches
- Current up to 80 A DC
- Voltage up to 1000 VDC
- Compact, standardized design
- Proven quality

### Switching



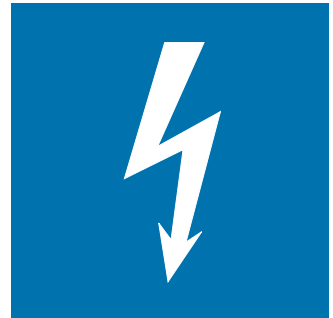
- One- / two-pole switch
- Main switch function
- Lockable
- Current up to 63 A DC
- Voltage up to 900 V  $U_{oc}$

### 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



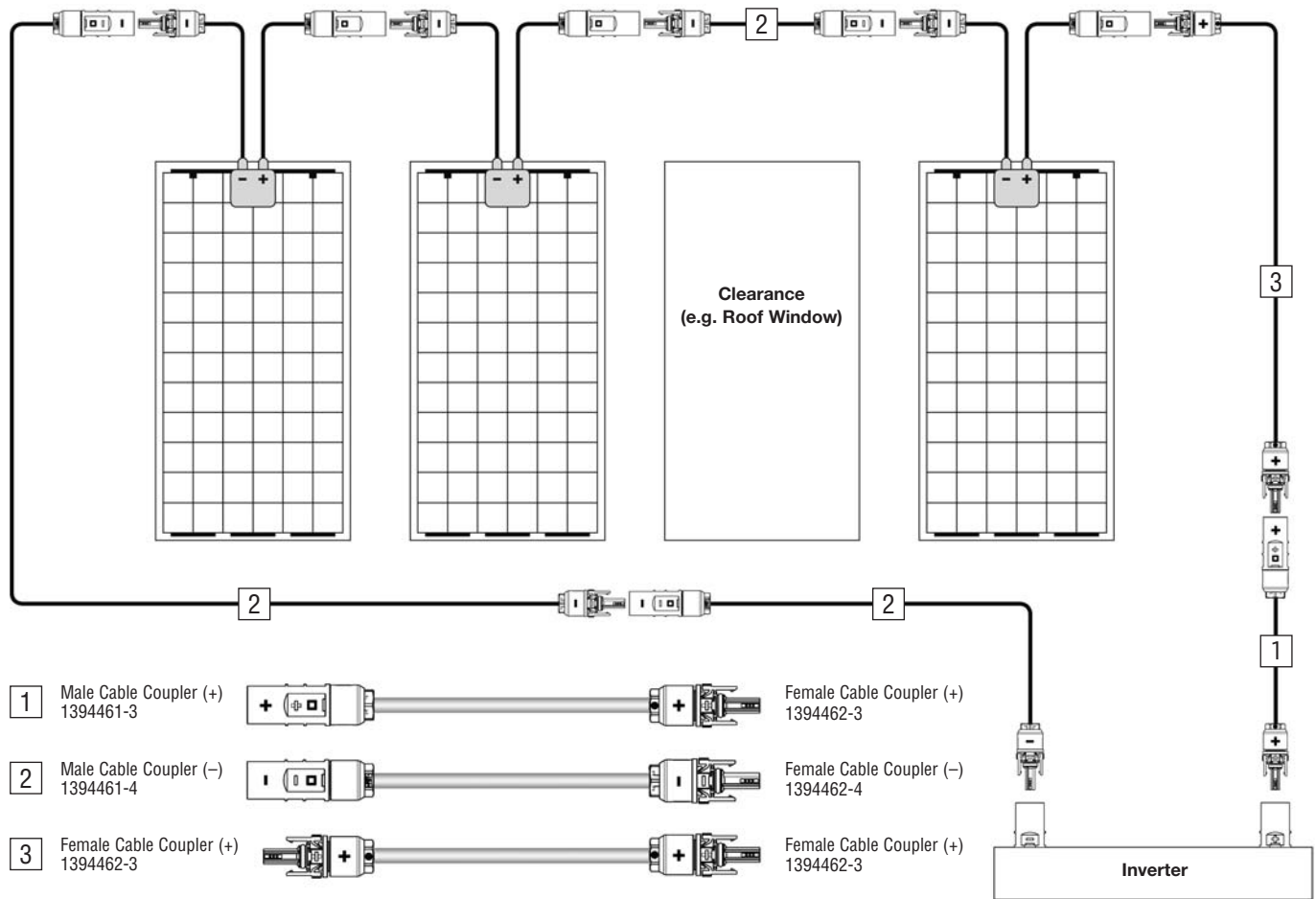
The photovoltaic integrator looks for best fit solutions to wire various types and sizes of solar generators.

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>.

### 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                      | 1987376-1                     | 1987376-2   | 1987376-3   | 1987376-4   | 1987376-5   |
| 2                      | 1-1987376-1                   | 1-1987376-2 | 1-1987376-3 | 1-1987376-4 | 1-1987376-5 |
| 3                      | 2-1987376-1                   | 2-1987376-2 | 2-1987376-3 | 2-1987376-4 | 2-1987376-5 |

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

Diagram illustrating the connection of three solar panels to an inverter using cable couplers. The panels are arranged in a row, separated by a clearance (e.g., Roof Window). The connections are as follows:

- String 1 (Left Panel):** Positive (+) terminal connects to the inverter positive (+) terminal via a male cable coupler (+) 1394461-3 and a female cable coupler (+) 1394462-3. Negative (-) terminal connects to the inverter negative (-) terminal via a male cable coupler (-) 1394461-4 and a female cable coupler (-) 1394462-4.
- String 2 (Middle Panel):** Positive (+) terminal connects to String 1 positive (+) via a male cable coupler (+) 1394461-3 and a female cable coupler (+) 1394462-3. Negative (-) terminal connects to String 1 negative (-) via a male cable coupler (-) 1394461-4 and a female cable coupler (-) 1394462-4.
- String 3 (Right Panel):** Positive (+) terminal connects to String 2 positive (+) via a male cable coupler (+) 1394461-3 and a female cable coupler (+) 1394462-3. Negative (-) terminal connects to String 2 negative (-) via a male cable coupler (-) 1394461-4 and a female cable coupler (-) 1394462-4.

The inverter is labeled "Inverter".

| Cable Assembly Version | Part Numbers for Cable Length |             |             |             |             |
|------------------------|-------------------------------|-------------|-------------|-------------|-------------|
|                        | 1 m                           | 3 m         | 5 m         | 10 m        | 20 m        |
| 1                      | 1987376-1                     | 1987376-2   | 1987376-3   | 1987376-4   | 1987376-5   |
| 2                      | 1-1987376-1                   | 1-1987376-2 | 1-1987376-3 | 1-1987376-4 | 1-1987376-5 |
| 3                      | 2-1987376-1                   | 2-1987376-2 | 2-1987376-3 | 2-1987376-4 | 2-1987376-5 |
| 4                      | 3-1987376-1                   | 3-1987376-2 | 3-1987376-3 | 3-1987376-4 | 3-1987376-5 |
| 5                      | 4-1987376-1                   | 4-1987376-2 | 4-1987376-3 | 4-1987376-4 | 4-1987376-5 |

17

## 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 integrator 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.

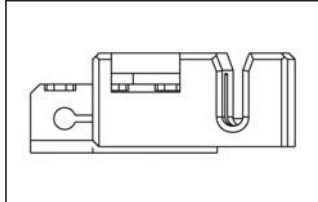
With a tensile strength of up to 36 kg, the UV-resistant enclosure provides a secure termination even in roughest environmental and assembly conditions. As an added benefit, the connection can be opened and re-terminated again up to five times.

Retrofitting the Tyco Electronics SolKlip on panels or frames can be done at any time by simply by drilling 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.

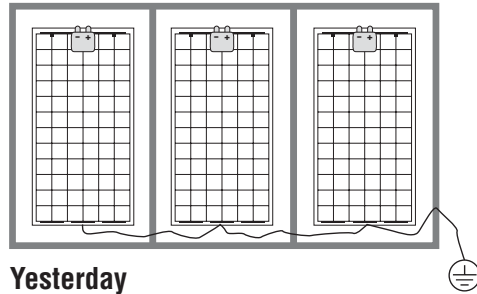
The patent-pending Tyco Electronics SolKlip ground terminal supplements the existing Tyco Electronics SOLARLOK product portfolio and offers the electrician yet another valuable component for simple and fast wiring of a PV-system.

## SolKlip™ – Ground Clip (continued)

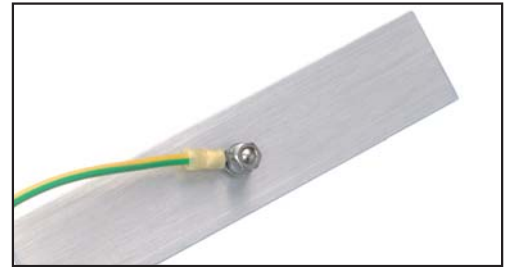
### 3 Easy Steps to Ground Your PV System



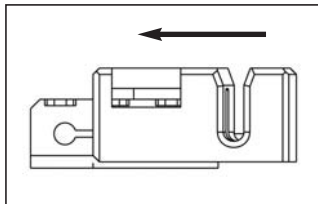
Insert ...



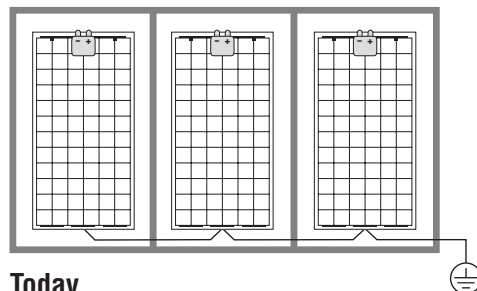
Yesterday



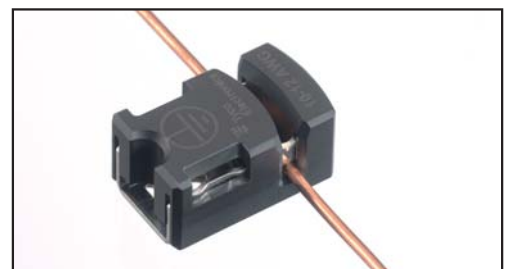
- Screw
- Washer
- Lock Washer
- Ring Tongue
- Screwdriver
- Drill
- Pliers



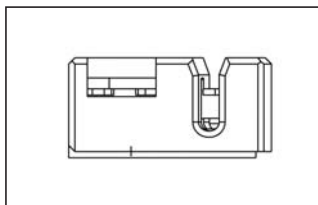
... Push ...



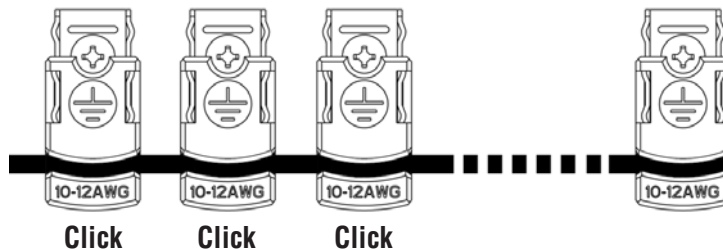
Today



- SolKlip



... Ready!



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

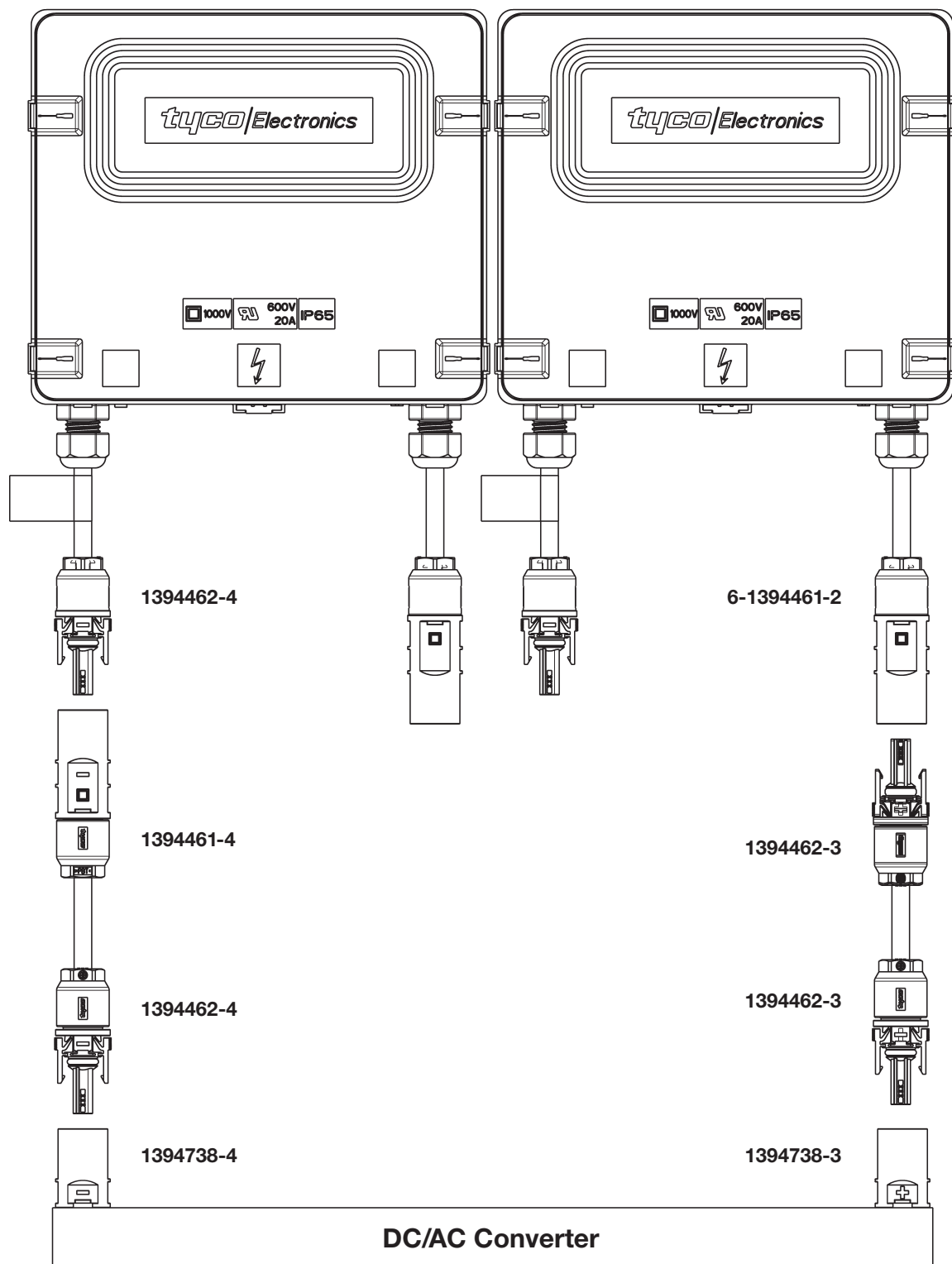
Contact: High conductivity copper alloy

#### Mechanical

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

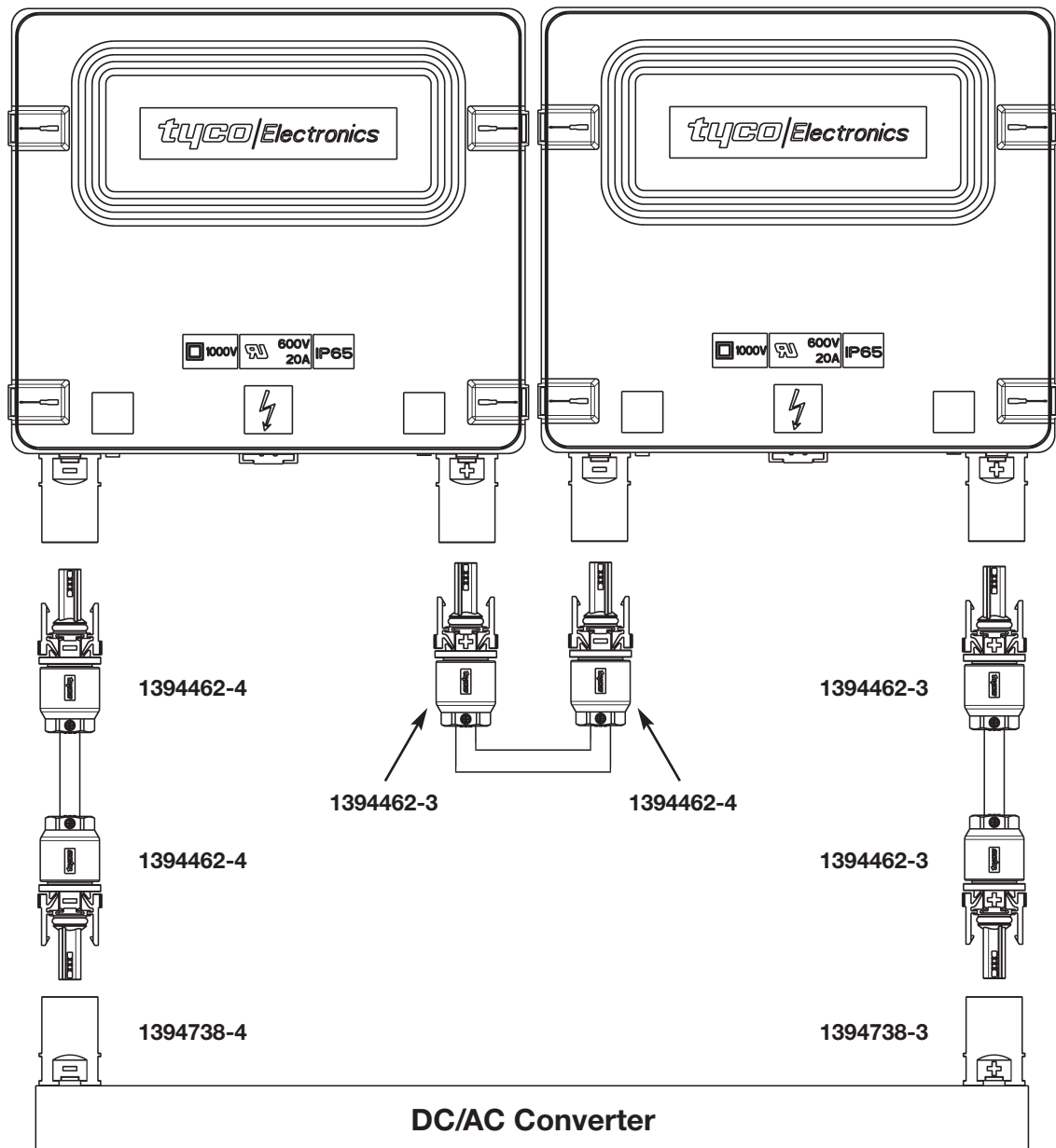
Interconnection Examples

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



Interconnection Examples (continued)

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



Application Tooling

**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>)



**Hand Crimping Tool**  
incl. Vario Crimp Head and Locator  
Part No. **1579004-8**  
(for 1.5 + 2.5 + 4.0 + 6.0 mm<sup>2</sup>)

**Die Set**  
Part No. **6-1579001-6**  
(for 1.5 + 2.5 + 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**

**Vario Crimp Head (AWG 10):**  
Part No. **8-1579001-2**

**Vario Crimp Head (AWG 12):**  
Part No. **5-1579001-5**

**Vario Crimpkopf (AWG 14):**  
Part No. **5-1579001-4**

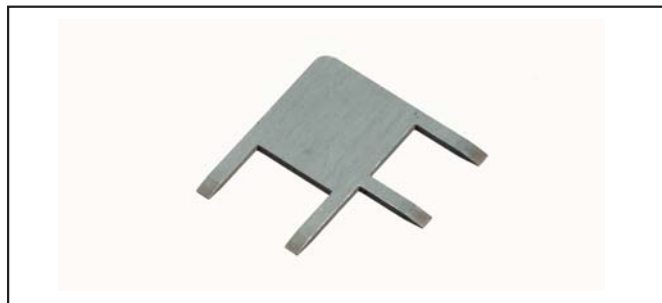
## Application Tooling (continued)

### Junction Box Assembly Tooling



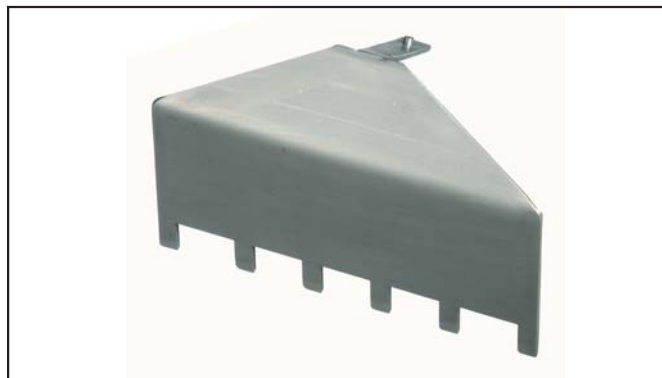
#### Wire Spring Clamp Tool

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 Wire)



#### 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**

## 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, oil, humidity, etc.) during the assembly process or to the unmated connector 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.

## 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.

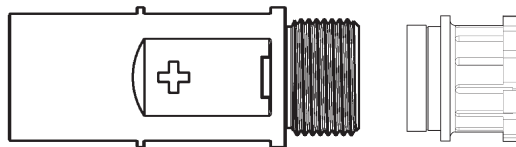


Fig. 3

- ④ Place backshell onto the connector housing.

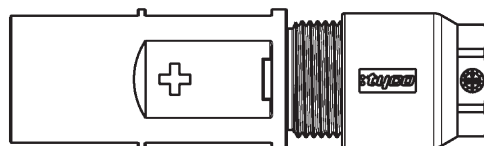


Fig. 4

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

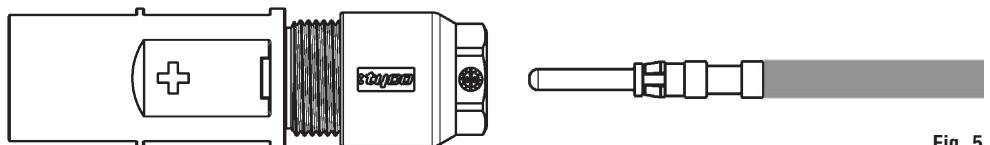


Fig. 5

- ⑥ Tighten backshell nut to 1.5 Nm

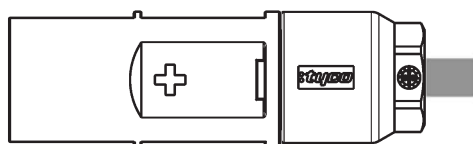


Fig. 6

## 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.

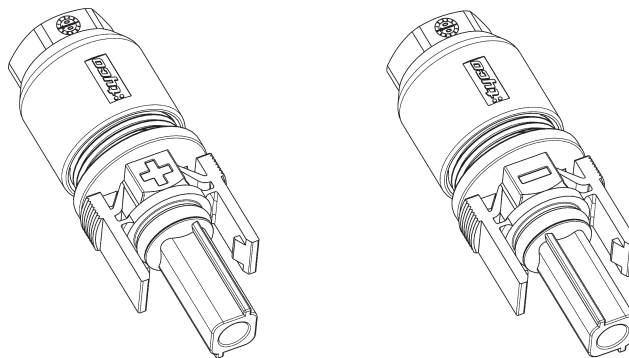


Fig. 7  
(Female Connector)

### 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 Electronics Label, Part No. **1394470-1**.

#### Unmating of the connector

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

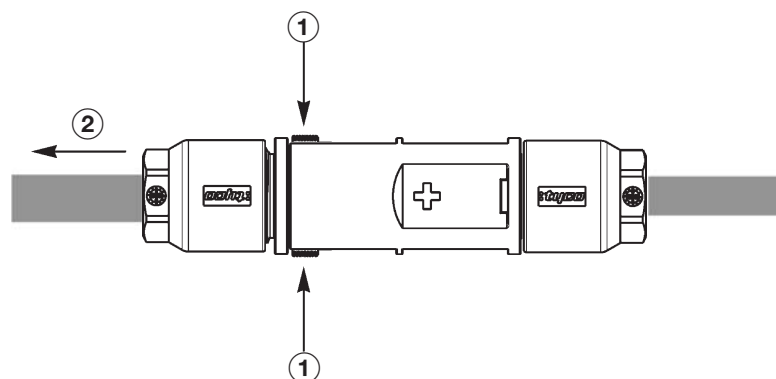


Fig. 8

- 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.

## 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

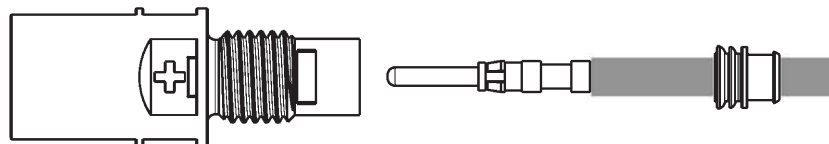


Fig. 11

- ④ Push seal into the housing

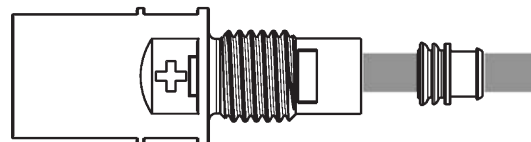


Fig. 12

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

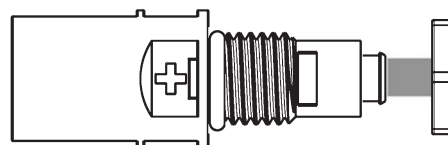


Fig. 13

- 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**

## Assembly and Installation Guidelines (continued)

### 4. Application Examples

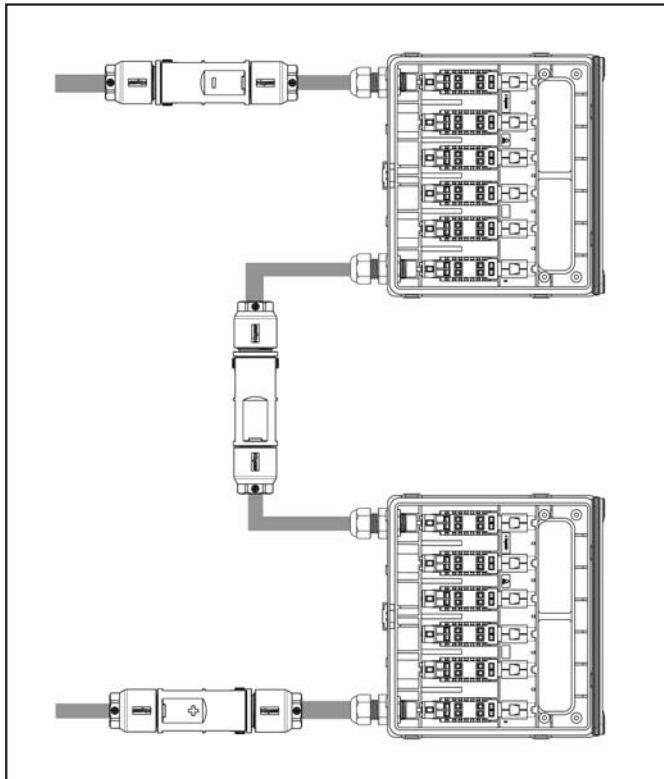


Fig. 14: Serial (Wire Diagram)

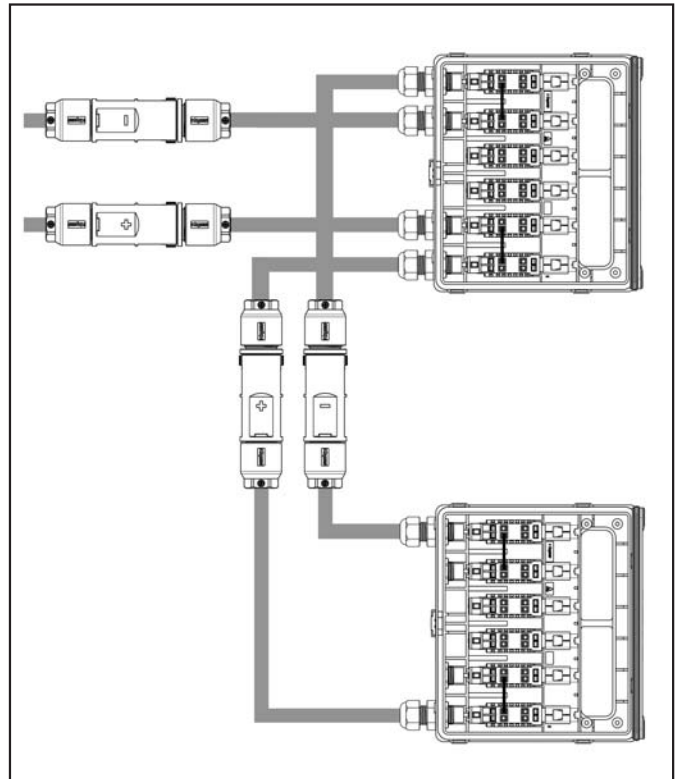


Fig. 15: Parallel (Wire Diagram)

### 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

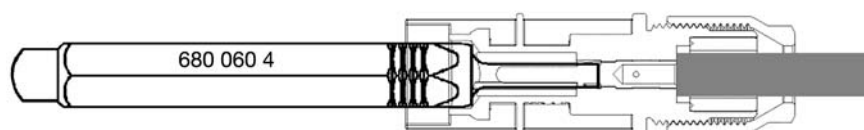


Fig. 16

## 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<br>Contact voltage-proof<br>Connector with crimp technology |

### Standards

IEC 61215 Edition 2, 61646, IEC 61730,  
Protection Class II, UL 1703

**Subject to Change.**

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Restriction on the Use of Hazardous Substances (RoHS)

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**Restriction on the Use  
of Hazardous Substances  
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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:

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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.

**Non-RoHS Compliant**

These part numbers are identified with a "◆" symbol. These products do not comply with the material restrictions of the European Union Directive 2002/95/EC.

**5 of 6 Compliant**

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- Downloadable Technical Data Customer Information Presentation
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Center 

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**Engineering Notes**

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