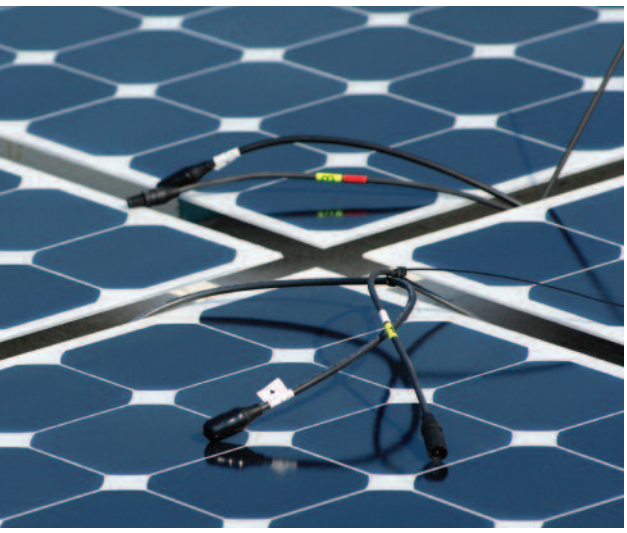
SUNNECTOR™ Solar Assemblies & Harnesses

High reliability solar connectivity solutions designed and manufactured specifically for harsh environments

COOPER Interconnect



SUNNECTOR™ Solar Assemblies & Harnesses

Pre-made to the highest standards, our Whip & Jumper assemblies save you time and money

Pre-made Whip & Jumper assemblies are ideal for speeding solar panel installation while being constructed to deliver long-term reliability that will decrease call-backs and warranty service.

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Cooper Interconnect has a long legacy of providing high reliability connectivity solutions in extremely harsh environments. Sunnector solar products were developed to deliver outstanding value and reliability that we are known for to the solar industry.

- Manufactured in controlled conditions utilizing high efficiency equipment, reducing job site risk and potential warranty claims
- Designed specifically to withstand harsh environmental exposure and abuse
- Quick and easy solar system installation reduces costs
- Whip and Jumper assemblies are available in a variety of cable options, configurations, and styles
- Harness assemblies are available in customized configurations to meet specific application requirements

SUNNECTOR™ Whip & Jumper Assembly Applications:

- Combiner Boxes
- Modules
- Junction Boxes
- Solar Kits
- Portable Power Systems
- Traffic Signals & Signage
- Weather Transmitters

Delivering convenience and quality in harnesses custom manufactured to your specifications

Our Sunnector™ custom configured Harness Assemblies are constructed using only the highest quality wire, components and manufacturing processes for durability and longevity.

For use in:

- Rural Installations
- Residential
- Commercial

SUNNECTOR™
Parallel Circuit Array & Home Run Harness Assembly Applications:

- Inverters
- Sub-Combiners
- Pull-Through Boxes

For use in:

- Industrial
- Utility

SUNNECTOR™ Whip & Jumper Assemblies

Reduce installation time with pre-fabricated assemblies

Cooper Interconnect's full line of Sunnector assemblies are the preferred choice for smart installers and contractors.

Application

Sunnector pre-fabricated jumpers and whips save time and money by providing various configurations that allow quick connections for a wide variety of solar applications.

Both whips and jumpers are manufactured under controlled conditions utilizing the highest quality materials. They are designed to work with rigid & flexible thin-film, monocrystalline and multicrystalline PV modules.

Whips are ideal for OEM applications including combiner boxes, mini-inverters, modules and adapters. They are also ideal for solar powered safety, hazard or signaling device assemblies.

In residential and commercial rooftop installations, the use of jumpers reduces the amount of on-site assembly and testing.

Jumpers are also ideal for off-grid self-contained solar power systems frequently found in rural or highly inaccessible locations.

All whips and jumpers are 100% continuity tested to ensure dependable service. Both are available in many standard lengths.

SUNNECTOR™ Whip & Jumper Assemblies
Features & Benefits

COOPER Interconnect

Superior components means high quality performance

Specially constructed to last years in the field and reduce overall installation times. Pre-marked assembly allows easy site lay out.

Solar Whip Assemblies

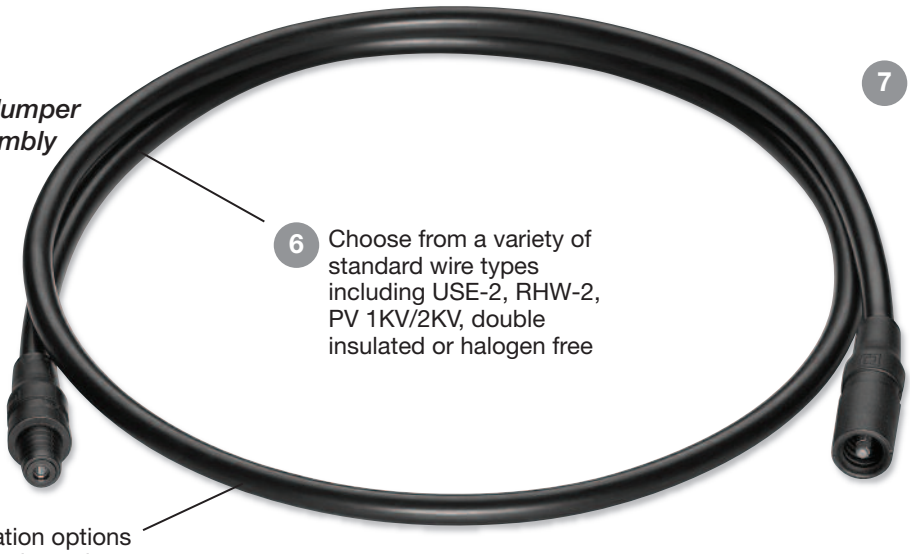
1 Choose from the highest quality connector types like MC3, MC4 and SolarLok® or Cooper Interconnect's own top quality equivalents

2 All whips & jumpers are 100% tested to ensure performance in the field

3 Choose from different wire sizes capable of delivering 20A, 25A or 35A

4 Ends provided with your choice of hardware including ring terminals, fork terminals, Fast-ons or as wire only, blunt cut or partially stripped

Solar Jumper Assembly



5 Jumper configuration options include male to male, male to female, female to female and interseries connectivity

6 Choose from a variety of standard wire types including USE-2, RHW-2, PV 1KV/2KV, double insulated or halogen free

7 Cooper Interconnect maintains excellent production standards including those meeting IPC-620A

SolarLok is a registered trademark of Tyco Electronics.

Solar Connectivity

Project Name:	Prepared By:
Project Number:	Date:
Catalog Number:	Type:

SUNNECTOR™ Solar Whip & Jumper Assemblies

600V, 1000V and 2000V DC
20A, 25A or 35A
IP67 or IP68

Male & Female Assemblies

FEATURES

- Compatible with rigid & flexible thin-film, monocrystalline and multicrystalline PV modules.
- IP67 or IP68 waterproof rated dependent on connector type.
- UV and ozone resistant.
- Fully tested for Continuity and Hi-pot for dependable field performance.
- Pre-built assemblies are designed specifically for grid-tied, off-grid and OEM applications.
- Delivered pre-assembled, facilitating quicker installation.
- Optional ID labeling available to communicate point to point connections in the field.

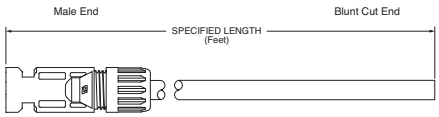
Whip Assembly

Whip Assemblies

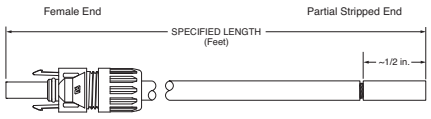
20A, 25A or 35A Current Capacity

*#10 AWG wire – 35A current capacity**
*#12 AWG wire – 25A current capacity**
*#14 AWG wire – 20A current capacity**

- Designed for exposed or concealed wet or dry locations
- Sunlight resistant
- Rated for direct burial
- Rodent proof jacket
- Temperature range: -40°C to +90°C



Male MC4 Whip Assembly, Blunt Cut End



Female MC4 Whip Assembly, Partial Stripped End

**Recommended (not to exceed). Each system is unique and the design should consider all factors including current derating.*

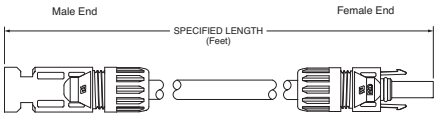
Jumper Assembly

Jumper Assemblies

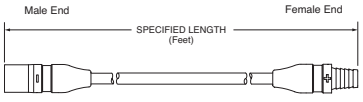
20A, 25A or 35A Current Capacity

*#10 AWG wire – 35A current capacity**
*#12 AWG wire – 25A current capacity**
*#14 AWG wire – 20A current capacity**

- Designed for exposed or concealed wet or dry locations
- Sunlight resistant
- Rated for direct burial
- Rodent proof jacket
- Temperature range: -40°C to +90°C



Male MC4 to Female MC4 Jumper Assembly



Male MC3 to Female MC3 Jumper Assembly

**Recommended (not to exceed). Each system is unique and the design should consider all factors including current derating.*

TESTING & CODE COMPLIANCE

- Connectors UL certified to UL6703 & UL1703, TUV certified, IP67 or IP68 rated
- Wire/Cable UL certified to UL4703/UL854

MATERIAL CHARACTERISTICS

- RoHS compliant
- Cross linked polyethylene wire (XLPE or XLP)
- Flammability meets UL 94 requirements; V0 rated

Solar Connectivity

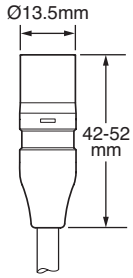
Project Name:	Prepared By:
Project Number:	Date:
Catalog Number:	Type:

SUNNECTOR™ Solar Whip & Jumper Assemblies

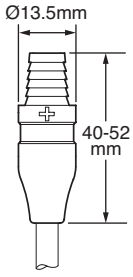
600V, 1000V and 2000V DC
20A, 25A or 35A
IP67 or IP68

Connection Types

M3 Connections (MC3 Cable Style)

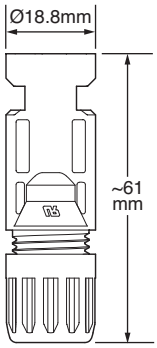


Male

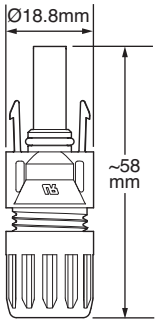


Female

M4 Connections (MC4 Cable Style)

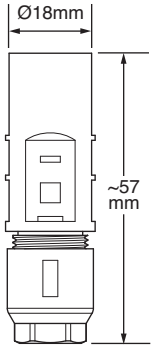


Male

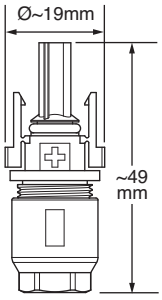


Female

S Connections (SolarLok®)

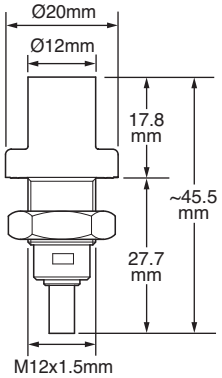


Male

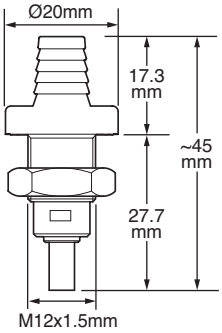


Female

P3 Connections (MC3 Panel Style)

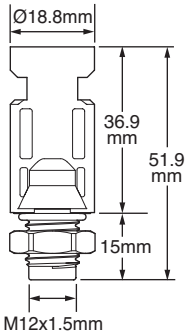


Male

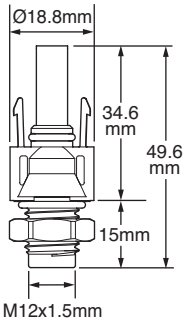


Female

P4 Connections (MC4 Panel Style)



Male



Female

Whip & Jumper Assemblies Catalog Number Matrix

Sample Number:
M3M126B-M3F20 =
MC3 male to MC3 female jumper, 12 AWG, 600V rated, black wire, 20 feet long.

[ ][ ][ ][ ] – [ ][ ][ ]

Assembly End 1 Connector Type
M3M = MC3 Male
M3F = MC3 Female
M4M = MC4 Male
M4F = MC4 Female
SM = SolarLok® Male
SF = SolarLok® Female
P3M = MC3 Male Panel
P3F = MC3 Female Panel
P4M = MC4 Male Panel
P4F = MC4 Female Panel

Wire AWG
14 = #14 AWG
12 = #12 AWG
10 = #10 AWG

Wire Voltage Rating
6 = 600V DC
1 = 1000V DC
2 = 2000V DC

Cable Jacket Color
B = Black
BW = Black/White Stripe
W = White
R = Red
(Other colors available, consult customer service)

Assembly End 2 Type
Finish, for Whips:
BC = Blunt Cut Wire
PS = Partial Stripped Wire
Connector, for Jumpers:
M3M = MC3 Male
M3F = MC3 Female
M4M = MC4 Male
M4F = MC4 Female
SM = SolarLok® Male
SF = SolarLok® Female
P3M = MC3 Male Panel
P3F = MC3 Female Panel
P4M = MC4 Male Panel
P4F = MC4 Female Panel

Length (feet)
1-999

Options
A = Overmolded Ends
B = Cooper Interconnect Equivalents
(Leave blank for no options)

SUNNECTOR™ Parallel Circuit Array & Home Run Harness Assemblies

Sophisticated solar constructions require clever solutions

An efficient layout of a solar field nets optimum performance and generate returns for many years. Sunnector custom assemblies simplify your project and eliminates on site waste.

Application

Custom made Parallel Circuit Array and Home Run (Sub-Array) harnesses provide flexibility while delivering cost savings to any large solar installation.

Sunnector Parallel Circuit Array harness assemblies feature a proprietary junction system that allows multiple arrays to be connected in parallel, providing labor savings and improving connection quality by eliminating multiple adapters and double terminations.

Parallel Circuit harnesses are ideal for Thin Film type modules, where low current can be electrically paralleled to optimize electrical output.

Sunnector Home Run harnesses are designed for high current connection and power delivery to combiner boxes, sub-combiners, or inverters used with mono-crystalline and poly-crystalline modules.

Fully tested Sunnector Home Run harnesses arrive terminated, bundled and spooled, replacing on-site long wire runs, bundling, attachment, and connector termination.

Home Run harnesses can also be manufactured with easy-to-read identification on each leg and on spools; spools can also be labeled for proper job site placement.

SUNNECTOR™ Harness Assemblies
Features & Benefits

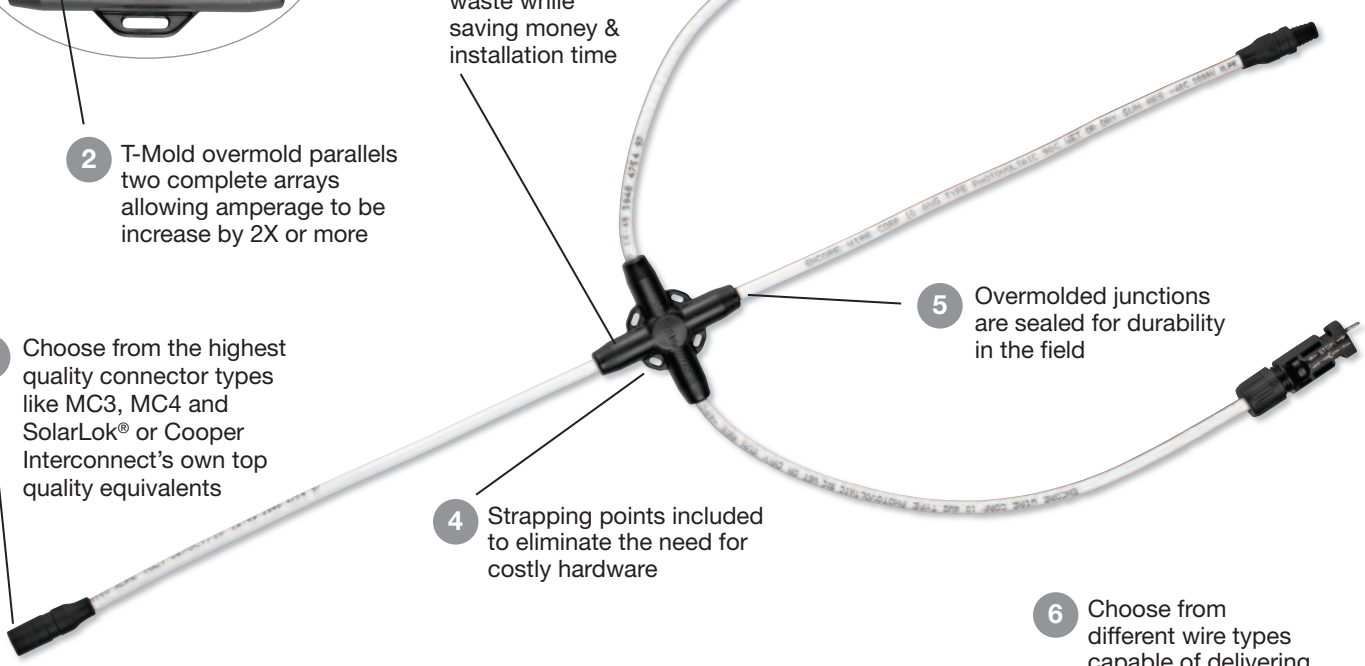
COOPER Interconnect

Engineered solutions designed specifically for each individual job

Intelligent cabling solutions provide the best overall value and provide design flexibility to get the job done right.

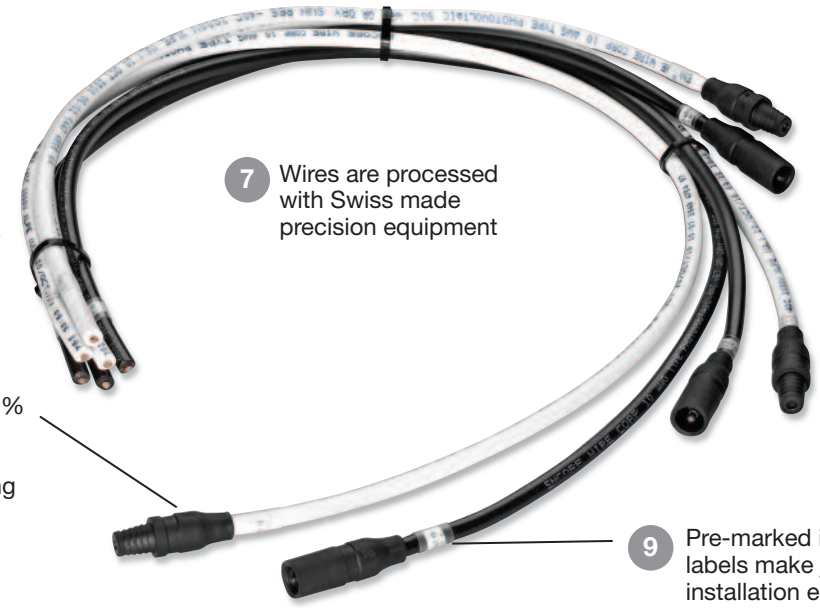
Custom Parallel Circuit Array Harness

1. Proprietary new junction connection system reduces waste while saving money & installation time
2. T-Mold overmold parallels two complete arrays allowing amperage to be increase by 2X or more
3. Choose from the highest quality connector types like MC3, MC4 and SolarLok® or Cooper Interconnect's own top quality equivalents
4. Strapping points included to eliminate the need for costly hardware
5. Overmolded junctions are sealed for durability in the field
6. Breakouts are available in any configuration and length



Custom Solar Home Run Harness

6. Choose from different wire types capable of delivering 20A, 25A or 35A
7. Wires are processed with Swiss made precision equipment
8. Assemblies are 100% fully factory tested and offer superior weatherproof sealing
9. Pre-marked identification labels make job site installation easy and safe
10. Inline circuit protection is available with PV rated fuses and fuse holders



Solar Connectivity

Project Name:	Prepared By:
Project Number:	Date:
Catalog Number:	Type:

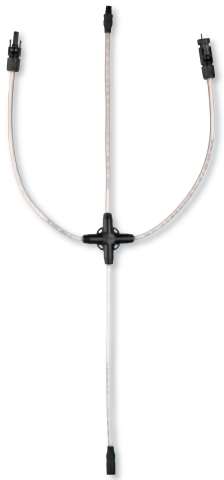
SUNNECTOR™ Solar Parallel Circuit Harness Assemblies

600V, 1000V and 2000V DC
20A, 25A or 35A
IP67 or IP68

Custom Parallel Circuit Array Harness Assemblies

FEATURES

- Unique solution that is specifically designed to optimize the electrical outputs of thin film modules.
- Provides a better solution by eliminating the need for costly adapters, double the connectors and failure points.
- Proprietary molding and sealing process stems from years of research and performance in harsh environments.
- Superior sealing performance of overmolded connectors/junctions.
- Pre-assembled, delivered to job site.
- Fully tested for Continuity and Hi-pot for dependable field performance.
- Improved durability and strain relief over traditional wiring.
- Custom T- or X-Mold strapping points permit attachment of harnesses without clamps.
- Proven high-performance materials.
- UV and ozone resistant.
- All X-Mold and T-Mold harnesses are available with termination points in the connector of your choice.
- Harnesses can reliably connect as many 374† modules per harness (when utilizing #10 AWG PV wire).
- ID labeling available to communicate point to point connections in the field.



X-Mold Parallel Circuit Array Harness Assembly

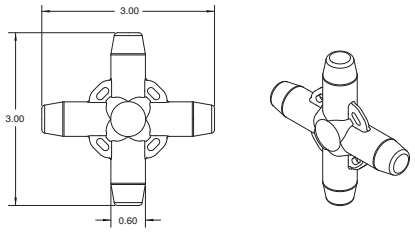
Parallel Circuit Array Harness Assemblies

20A, 25A or 35A Current Capacity

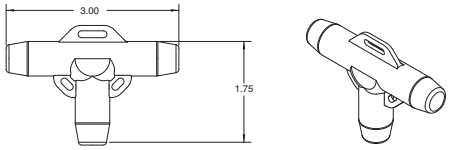
*#10 AWG wire – 35A current capacity**
*#12 AWG wire – 25A current capacity**
*#14 AWG wire – 20A current capacity**

- Designed for exposed or concealed wet or dry locations
- Sunlight resistant
- Rated for direct burial
- Rodent proof jacket
- Temperature range: -40°C to +90°C

**Recommended (not to exceed). Each system is unique and the design should consider all factors including current derating.*



Custom Harness Assembly T-Mold Junction



Custom Harness Assembly T-Mold Junction

T-Mold Parallel Circuit Array Harness Assembly

X-Mold Option

T-Mold Option

Custom Harness Assembly Ordering Information

Ordering Sunnector Parallel Circuit Array Harness Assemblies only requires a few simple steps:

- Describe the type of assembly required with cable type, connector type and module type
- Provide a system diagram with electrical parameters and module locations
- Type of packaging and labeling needed
- Testing required

Cooper Interconnect will do the rest by providing a full submittal package and a solar map, if required.

Whether you need to create complex or simple systems, contact your local Cooper Interconnect Sales Representative and we will help you develop the most efficient system possible.

†*The number of modules listed is only for reference and is not meant to be an electrical guide.*

TESTING & CODE COMPLIANCE

- Connectors UL certified to UL6703 & UL1703, TUV certified, IP67 or IP68 rated
- Wire/Cable UL certified to UL4703/UL854

MATERIAL CHARACTERISTICS

- RoHS compliant
- Cross linked polyethylene wire (XLPE or XLP)
- Flammability meets UL 94 requirements; V0 rated

COOPER Interconnect

Project Name:	Prepared By:
Project Number:	Date:
Catalog Number:	Type:

SUNNECTOR™ Solar Parallel Circuit Harness Assemblies

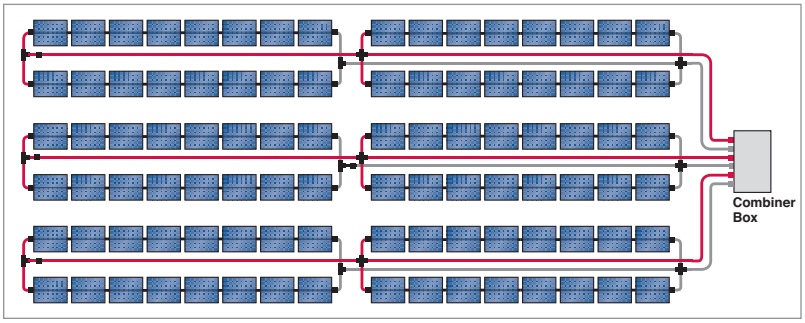
600V, 1000V and 2000V DC
20A, 25A or 35A
IP67 or IP68

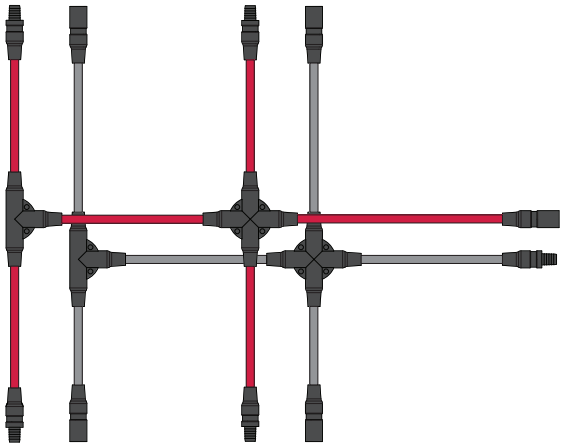
Custom Parallel Circuit Array Harness Assembly Configurations

Combination X-Mold & T-Mold Junction Parallel Circuit Array Harnesses

- Ideal for installations where modules are electrically paralleled with multiple arrays integrating to one combiner box or inverter
- The X-Mold junction conveniently merges module arrays while allowing multiple connection points on each leg
- Module arrays with low current output are easily paralleled to optimize the maximum current output while providing design flexibility and cost and labor savings

The example shown below represents how 98 modules can be connected using a Sunnector Custom Parallel X- and T-Mold junction harness to provide a 3 string circuit to the combiner box. No need to run 24 discrete wires back to the combiner.

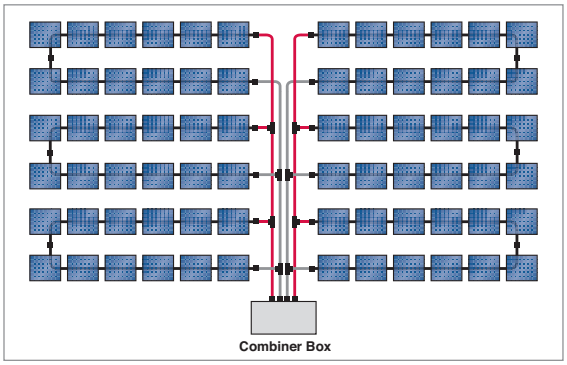


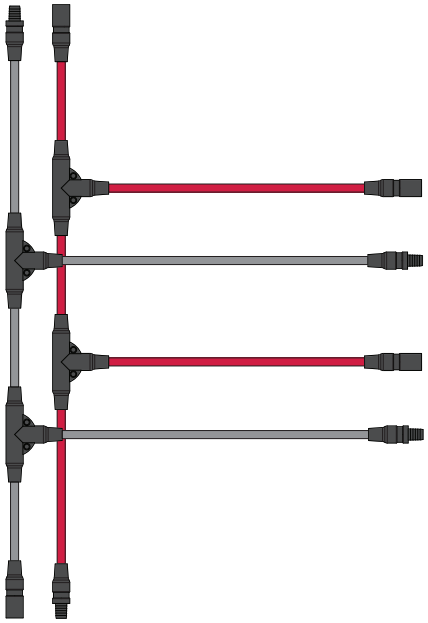


T-Mold Junction Parallel Circuit Array Harnesses

- Harnesses made with T-Mold junctions provide a quick and easy way to connect module arrays to a combiner box
- Suitable for use for residential, commercial and utility scale projects, harnesses are available with an unlimited number of branches
- Module arrays with low current output are easily paralleled to optimize the maximum current output while providing design flexibility and cost and labor savings

The example shown below represents how 72 modules can be connected using only 2 Sunnector parallel harnesses: simple, cost effective and reliable.





Solar Connectivity

Project Name:	Prepared By:
Project Number:	Date:
Catalog Number:	Type:

SUNNECTOR™ Solar Home Run Harness Assemblies

600V, 1000V and 2000V DC
20A, 25A or 35A
IP67 or IP68

Custom Home Run Harness Assemblies

FEATURES

- Designed for high current connection and power delivery to combiner boxes, sub-combiners, or inverters used with mono-crystalline and poly-crystalline modules.
- Pre-built assemblies are designed specifically for each job and application.
- IP67 or IP68 waterproof rated dependent on connector type.
- UV and ozone resistant.
- Fully tested for Continuity and Hi-pot for dependable field performance.
- Overmolded connectors/junctions deliver superior sealing performance.
- Improved durability and strain relief over traditional wiring.
- Save money and time by facilitating quicker installation.
- Proven high-performance TPE, PPO and PC materials.
- All Home Run harnesses are available with termination points in the connector of your choice.
- Available with #14, #12 or #10 AWG wires.
- ID labeling available to communicate point to point connections in the field.
- Delivered pre-assembled; job site delivery is also available.

Home Run Harness Assembly

Home Run Harness Assemblies

20A, 25A or 35A Current Capacity

#10 AWG wire – 35A current capacity*
#12 AWG wire – 25A current capacity*
#14 AWG wire – 20A current capacity*

**Recommended (not to exceed). Each system is unique and the design should consider all factors including current derating.*

- Designed for exposed or concealed wet or dry locations
- Sunlight resistant
- Rated for direct burial
- Rodent proof jacket
- Temperature range: -40°C to +90°C

Custom Labeling Options

Custom Harness Assembly Ordering Information

Ordering Sunnector Home Run Harness Assemblies only requires a few simple steps:

- Describe the type of assembly required with cable type, connector type and module type
- Provide a system diagram with electrical parameters and module locations
- Type of packaging and labeling needed
- Testing required

Cooper Interconnect will do the rest by providing a full submittal package and a solar map, if required.

Whether you need to create complex or simple systems, contact your local Cooper Interconnect Sales Representative and we will help you develop the most efficient system possible.

TESTING & CODE COMPLIANCE

- Connectors UL certified to UL6703 & UL1703, TUV certified, IP67 or IP68 rated
- Wire/Cable UL certified to UL4703/UL854

MATERIAL CHARACTERISTICS

- RoHS compliant
- Cross linked polyethylene wire (XLPE or XLP)
- Flammability meets UL 94 requirements; V0 rated

COOPER Interconnect

Project Name:	Prepared By:
Project Number:	Date:
Catalog Number:	Type:

SUNNECTOR™ Solar Home Run Harness Assemblies

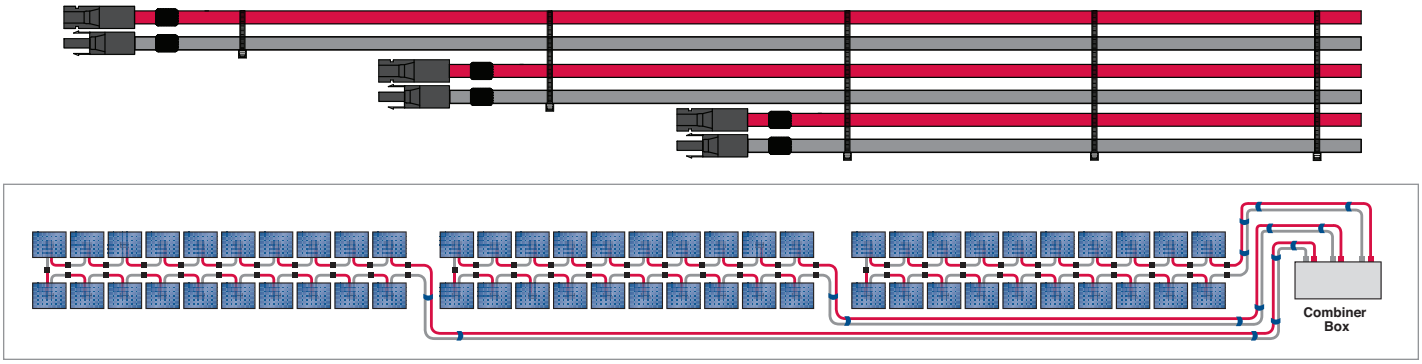
600V, 1000V and 2000V DC
20A, 25A or 35A
IP67 or IP68

Custom Home Run Harness Assembly Configurations

Custom Home Run Harnesses

- Cooper Interconnect Home Run harnesses are one of the most functional products for large utility scale or commercial systems
- Gathers individual strings from the module array and are bundled, labeled and conveniently coiled on a spool for quick and easy unreeling
- Eliminates the need for unreeling individual wires, cutting, stripping, terminating, labeling, tie-wrapping and assembling connectors

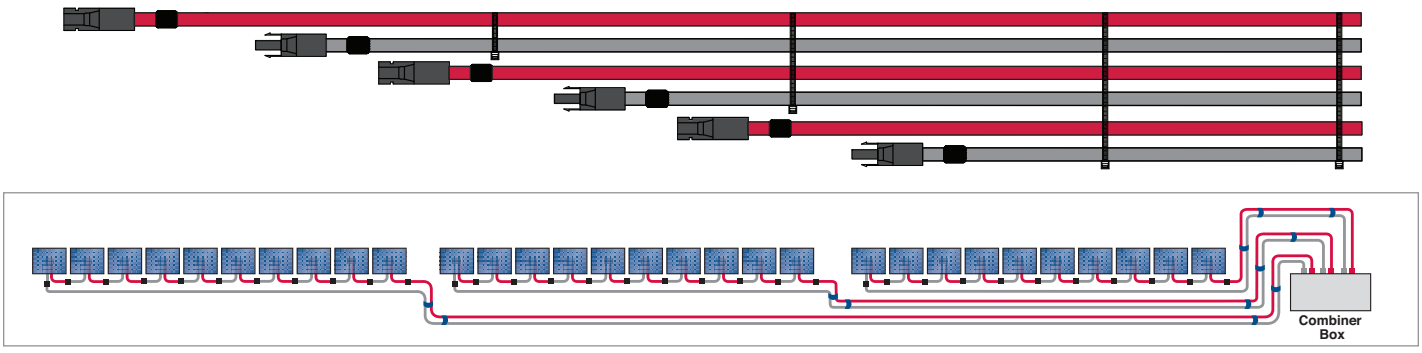
The example shown below represents how 60 crystalline modules can be connected using only 3 Sunnector parallel harnesses: simple, cost effective and reliable.



Custom Home Run Harnesses

- Spools can be placed at the combiner box and unreeled in one fast and easy process
- Easy to read, long lasting labels make connection to the modules and combiner box a snap
- Most commonly available from 2-8 strings (4 to 16 discrete wires), Cooper Interconnect can provide any length and/or breakout you require

The example shown below represents how 30 high current crystalline modules can be connected using only 3 Sunnector parallel harnesses. This pre-spooled Home Run Harness was installed with only 6 connections.



Custom Options & Manufacturing

Over 50 years of thoughtful design, efficient manufacturing and proven solutions

From large scale utility grid-connected installations to residential and commercial packages, Cooper Interconnect delivers turnkey solutions to your job site.

The options you need for ultimate flexibility

We understand that every solar installation is unique. That's why Sunnector harnesses offer a wide array of custom options so we can create the perfect solution for your needs that is convenient, dependable and safe.

Inline circuit protection
Permits module array protection from over current conditions and protects the entire system from damage. Featuring convenient strapping points, inline fuse holders can now be mounted with little effort.

Custom marked ID labels
Communicates point to point connections to installers in the field. Available with black ink on white or yellow markers, or white ink on black markers. Typical markings include array, module or combiner location, or we can create a custom mark including nearly anything like company name, brand, logo or part number.

Color coded bands
Ideal for indicating a wire's positive or negative polarity, and less expensive than buying multiple wire colors or different polarity connectors. Color coded bands provide a clear reference and helps eliminate incorrect wiring in the field.

Multiple packaging options
Choose the way you want Sunnector harnesses packaged. We have the flexibility to deliver creative solutions like spooled, reeled, bagged, cartoned, palletized or gaylorded assemblies. In respecting the environment, we also use recycled and reusable materials for less waste and better sustainability.

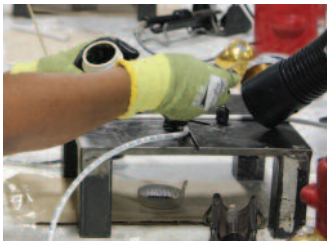
Custom Overmolds
Sometimes a small change to an overmold can deliver big savings in the field. Our experience in building our own tools and dies makes creating a new molded junction, adapter or strain relief component easy. We are accomplished in adding simple features like retention hooks or tamper proof features.

Other Options
Some other options include custom connector manufacturing, color coded wire and customer specific testing. Nearly any request can be fulfilled, just ask!

Built in reliability from quality manufacturing processes

Sunnector assemblies are built in controlled conditions by highly trained personnel utilizing top-quality high precision Swiss-made equipment. All Sunnector assemblies and harnesses are fully tested for continuity and hi-pot to assure years of reliable solar system performance.

Proprietary splicing and sealing process
With a history of over 50 years of building products for the harshest environments, Cooper Interconnect understands the abuse a cable assembly must withstand to deliver reliable service for many years in relentless outdoor elements. The collaborative efforts of design engineering, manufacturing engineering, material experts, production gurus and supply partners together with our extensive group of diverse customers have resulted in the development of a proprietary method for producing solar harnesses that results in years of lasting service.



A Full Line of Solutions

COOPER Interconnect

Cooper Industries offers a full range of products and solutions for the Solar Industry

Cooper Industries' solar solutions are used in homes, offices, infrastructure, industrial settings and other applications worldwide. These products and solutions from various Cooper divisions were specifically designed for the solar industry.

COOPER Power Systems **Power Transformers**

Cooper Power Systems provides products and services to connect large, utility-grade solar photovoltaic and stirling energy system installations to the grid. Our substation products such as capacitors, arresters, relays and automation communication systems provide required power factor adjustments and interconnection systems to ensure electricity generated by the solar installation meets grid interconnection requirements.

COOPER Crouse-Hinds COOPER Bussmann **Combiner Boxes**

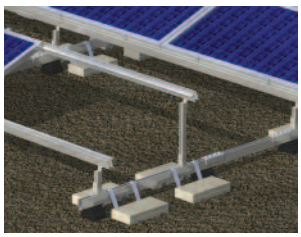
The Cooper Crouse-Hinds and Cooper Bussmann combiner boxes provide a convenient means in one housing to combine and connect conductors from several arrays and/or solar panels into one main bus or feed. Choose from a variety of configurations and solutions that range from housing only to complete assemblies up to 1000Vdc or with integrated disconnects, to complete systems with inverter electronics.

COOPER Bussmann **PV Surge Protective Devices and Solar PV Fuses**

Cooper Bussmann Surge Protection Made Simple™ PV-SPDs are the only, true UL 1449 3rd Edition Recognized SPDs. Available for 600Vdc, 1000Vdc and 1200Vdc systems with built-in overcurrent protection that eliminates the need for additional fuse installation and wiring. The 10x38mm Solar PV fuse protects systems up to 1000Vdc in ratings from 1 to 20 amps with unique protection that safely clears high faults and opens under the low-fault current conditions (1.3 x fuse rating) common with solar panels.

COOPER Interconnect **Cabling & Connectivity**

Sunnector assemblies are the essential backbone of the overall photovoltaic solar systems. Pre-fabricated assemblies optimize electrical output while saving money and time over traditional piece-by-piece field installations. Reliability, durability and consistent performance is assured through a combination of special material selection plus years of manufacturing experience and product performance in a variety of harsh environments.



COOPER B-Line **Monolithic Mounting System**

Cooper B-Line's ARISTA™ Monolithic Mounting System for solar PV commercial rooftop applications is designed with limited components and features pre-assembled fittings for significant installation time and labor savings, plus it eliminates field adjustment. It will accommodate virtually any PV panel size in either portrait or landscape mounting, is code compliant in both the U.S. and Canada and structurally validated via wind tunnel testing.

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to your smart phone to visit us online:
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