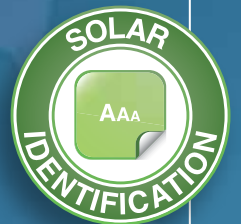
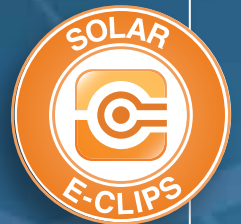


Solar Energy



## Solar Advantage

Fastening and Identification Solutions for Solar Applications

**HellermannTyton**



# About HellermannTyton

HellermannTyton is a leading global manufacturer of fastening and identification solutions for the solar industry. In addition to leadership in industry code compliance, HellermannTyton provides high-quality products that improve efficiency by reducing installation times and labor costs. We are proud to manufacture products at our North American headquarters in Milwaukee, Wisconsin.



we know solar

## Powerful Capabilities

Through our highly skilled engineering and design team, agile manufacturing abilities and expert materials knowledge, HellermannTyton brings unique resources and capabilities to the solar industry. Our engineers utilize the latest technologies to deliver innovative solutions to our customers. With our position in the global marketplace and a large distribution network, we can deliver those solutions when and where you need them.

## Proven Performance in Solar

We understand the tough environmental conditions that affect solar installations, and our products have a record of proven performance on all types of solar applications - including residential, commercial and utility scale projects. We have a long history of providing high quality, customized fastening solutions to industries that demand the highest standards while operating in the harshest of environments. We bring those high performance and quality standards to the solar industry – which explains why HellermannTyton is approved and installed on some of the largest solar installations in North America.

## Setting New Industry Standards...Literally

Our knowledge of codes and regulations for photovoltaic labeling is unmatched. We are working to deliver clearer, safer, and easier to understand National Electrical Code (NEC) labeling requirements to the solar industry. Our Solar Identification solutions make it possible to go from label creation to code compliance in minutes. HellermannTyton also chairs the National Electrical Manufacturers Association (NEMA) committee 5FB.2 which is working on ways to better evaluate cable tie performance and ratings for outdoor/UV exposure.

## Your Ultimate Resource

Collaboration with solar industry experts and customers has led HellermannTyton to develop specific products for use in all types of solar applications. Whether it is an existing product or a solution developed especially for your application, we are the proven and preferred cable fastening, protection and identification solutions resource for the solar energy market.



# The Solar Advantage

## Product Depth and Breadth

The product portfolio of HellermannTyton grows each day with each new challenge to design and manufacture customized solutions. Constant market analysis enables us to identify emerging technologies and stay ahead of market trends. Our design experts continually look for ways to innovate and develop new products for the solar industry.

HellermannTyton has developed the most complete line of solar fastening and identification products on the market today. We provide our customers with the **Solar Advantage**, products that include **Solar Ties** and **Solar E-Clips** that allow for easy and flexible routing of wire and cable bundles in solar installations. Our **Solar Identification** printers, labels and software systems provide unique and flexible photovoltaic (PV) labeling solutions.

# what we offer



## Solar Ties

Don't use just any cable tie for a solar application, use HellermannTyton Solar Ties. With environmentally matched materials to suit different regions and environmental conditions, Solar Ties allow for secure wire and PV cable bundling. HellermannTyton uses raw materials of only the highest quality to meet the high demands and standards of the solar industry. Solar Ties are offered in a variety of materials, sizes and tensile strengths to accommodate any application.



## Solar E-Clips

For every fastening challenge, HellermannTyton has a solution. Solar E-Clips allow for easy and flexible routing of PV cable, with or without pre-drilled holes. Edge Clips secure cables to metal or plastic frame rail edges. C Clips fasten cable to tubular frame rails or pre-drilled holes, and allow for easy insertion of cable. The Solar E-Clips line includes fir tree mount solutions that install quickly and securely. A UV stabilized mounting base with special adhesive mounts to any flat surface and provides a strong seal against moisture and environmental conditions. All Solar E-Clips products are engineered from specially formulated UV stabilized materials.



## Solar Identification

Meeting National Electrical Code (NEC) and passing inspection on time are of the utmost importance when constructing solar installations. HellermannTyton is the industry leader in offering unique and tailored solutions that make proper labeling fast and easy. Our Solar Identification line of products offers a complete solution. From versatile, portable printers to pre-printed labels, our products are designed to meet NEC codes. HellermannTyton's feature-rich TagPrint® Pro software simplifies the process of creating and printing labels by offering pre-saved code-compliant label templates and flexible data importing and printing options. The TagPrint® Xpress Solar mobile app offers installers the ultimate in convenience for PV labeling and NEC code reference.





## Designed for Success

**Our engineers are asking all of the right questions to ensure product success. These considerations can also help customers choose Solar Ties and Solar E-Clips appropriate for their applications.**

- Humidity level (dry to submersed)
- UV exposure (intermittent to constant)
- Temperature range (variable to constant)
- Wind exposure (light to strong, infrequent to frequent)
- Chemical exposure
- Corrosion resistance
- Bundle size range
- Initial loading, final loading , static loading (tensile strength)
- Dynamic loading (deformation under load, time, and thermo-cycling)
- Desired extraction force
- Intended service life
- Serviceability - Should it be releasable to allow for maintenance?

# what we offer

## Material Intelligence

From concept to completion, HellermannTyton has dedicated staff for every phase of product production. Our materials engineers partner with raw material manufacturers to identify and develop materials for applications in solar installations. Our solar industry product offering is presented to our customers as “environmentally matched” options. Because of our superior knowledge of materials, our designers and engineers know how factors such as region, climate and substrate material will affect the performance of our products. We pass that information along to our customers so they can make the most informed purchasing decisions.



## Design Expertise

Sometimes the right solutions for our customers are not available in our existing product line. That is when our design and manufacturing capabilities really shine. At HellermannTyton, we take a comprehensive approach to solving our customers' needs. Our experienced engineering and design teams take into account a host of variables during the design process. In addition to considerations about the product's specified use, extensive thought is also given to how product cost and code compliance will affect the customer. Because we own our molds and manufacturing facilities, HellermannTyton is positioned to be especially responsive to the needs of our customers, while maintaining the highest quality standards and competitive pricing.

## Code and Standard Specialists

With solar energy technologies and capabilities evolving rapidly, it is important to have strong industry connections and an in-depth understanding of code compliance. HellermannTyton is uniquely equipped to partner with our solar industry customers. Our product development team members are industry experts and sit on some of the most influential committees affecting the solar industry. Affiliations include involvement on Code Making Panel 4 of the 2014 National Electrical Code (NEC) Committee, Code Making Panel 4 of the 2017 NEC Committee, as well as a longstanding presence with the National Electrical Manufacturers Association (NEMA). Simply put, we aren't just aware of regulations affecting the solar industry; we are involved in writing the rules.

## Solar Network

In addition to our extensive traditional distribution base, we have built relationships with distributors and suppliers who specialize in serving the needs of OEM partners and contractors in the solar industry. With strategic locations in over 35 countries, worldwide, HellermannTyton has the ability to deliver the best to our customers through global resources channeled to local implementations.





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## Solar Advantage Materials

Polyamide, acetal and stainless steel materials have distinct characteristics and perform differently based on regional location, temperature and humidity levels. Our materials engineers and designers have identified and developed an offering of environmentally matched products in materials suited for use in solar installations.

**PA66UV** This Polyamide 6.6 material contains carbon black, which acts as a UV stabilizer, for prolonged life under UV exposure. Products made of PA66UV are suitable for use in inland areas with moderate humidity levels.

**PA66HIRHSUV** This modified Polyamide 6.6 material has impact modifiers that increase flexibility, impact strength and improve resistance to moisture fluctuations. A carbon black UV stabilizer increases the longevity of the product under UV exposure. Products made from PA66HIRHSUV are suitable for use in inland areas with moderate humidity levels.

**PA11** Made from the castor plant, this renewable, engineered plastic material provides excellent resistance to UV rays and chemicals, such as metal oxides. Polyamide 11 material is less hygroscopic, which means it does not attract or absorb as much water as PA66 materials. Products made of PA11 are suitable for use in both coastal areas with high humidity and dry, desert-like locations.

**PA12** This engineered plastic polyamide material possesses properties and characteristics similar to PA11, but is slightly more stable in coastal, humid and dry locations. Polyamide 12 has the lowest water absorption properties of all polyamides.

**POM (Polyacetal)** Also known as acetal, this high performance engineered thermoplastic material is highly UV resistant and is 100% non-hygroscopic, which means it does not absorb or lose moisture. While being suitable for use in all regions, acetal's non-hygroscopic nature makes it ideal for use in extremely dry or humid environments as its performance will not degrade in these conditions.

**Stainless Steel (304 & 316)** Stainless steel is highly resistant to corrosion, UV radiation and extreme temperatures. Both 304 and 316 grade stainless steel are well suited for extreme environments. 316 grade stainless steel provides increased pitting and corrosion resistance, which makes it ideal for use in coastal areas.

## Let us be your guide...

Because HellermannTyton products have been proven in use on solar installations, large and small, throughout North America, our solar sales representatives have the experience and knowledge necessary to help you choose the perfect products based on your region, environment and application.

To contact a solar sales representative, call **800-537-1512** today.

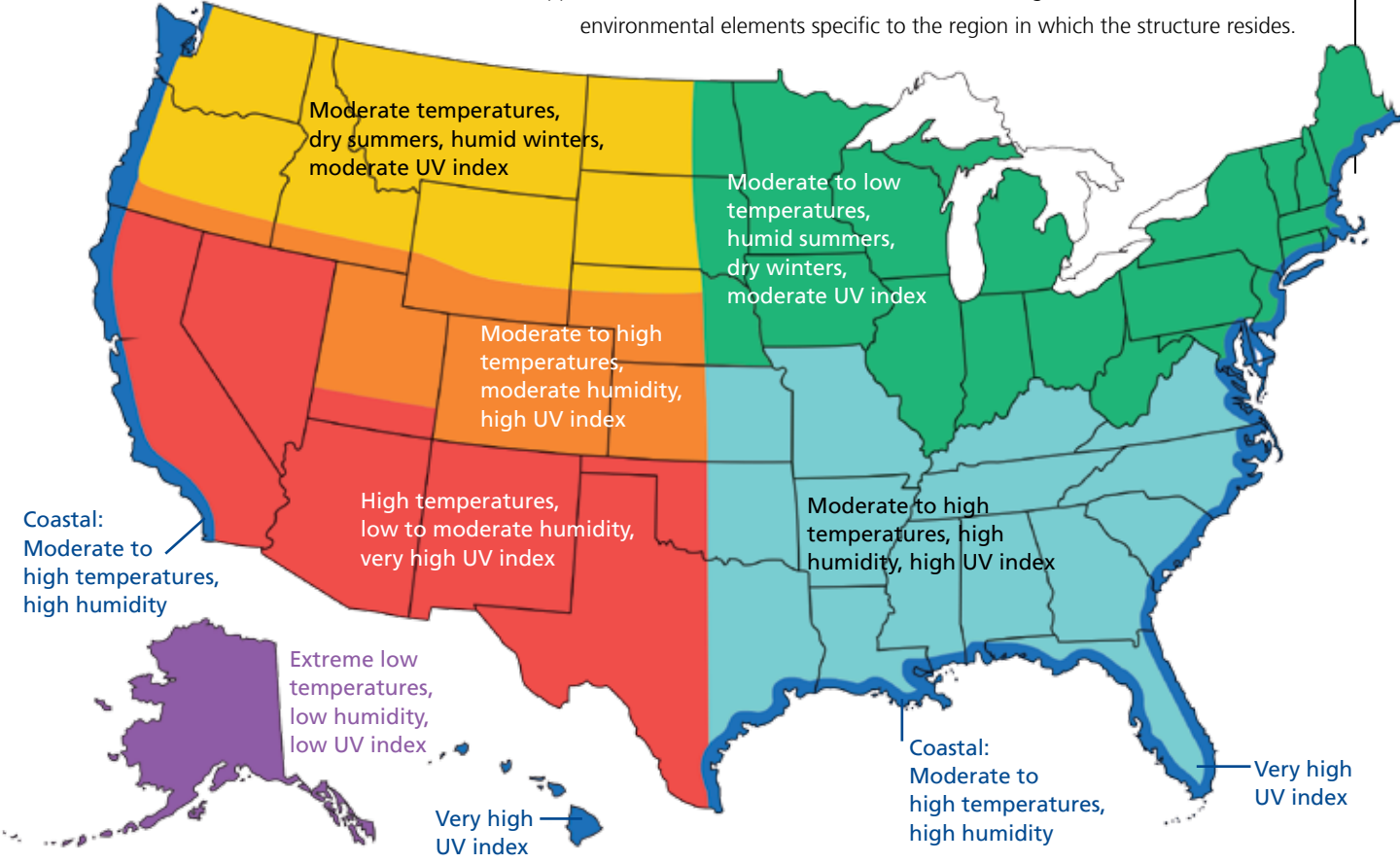




# we know materials

## Climate Considerations

Choosing the right solar installation products not only includes identifying the application, but careful consideration should also be given to the climate and the environmental elements specific to the region in which the structure resides.



## Solar Advantage Material Suitability

The chart below indicates how solar fastening materials perform with different substrate materials under different environmental conditions.

MATERIALS	SUBSTRATE COMPATIBILITY		HUMIDITY TOLERANCE	TEMPERATURE RANGE	UV RESISTANCE	SUITABLE CONDITIONS
	Aluminum	Galvanized Steel				
PA66UV	***	*	*	-40 °F to +185 °F (-40 °C to +85 °C) continuous	**	Moderate humidity, Inland areas
PA66HIRHSUV	***	***	***	-40 °F to +230 °F (-40 °C to +110 °C) continuous	***	Moderate humidity, Inland areas
PA11	***	*****	***	-40 °F to +203 °F (-40 °C to +95 °C) continuous	****	Dry, High humidity, Coastal areas
PA12	***	*****	*****	-40 °F to +203 °F (-40 °C to +95 °C) continuous	****	Dry, High humidity, Coastal areas
POM (Acetal)	***	*****	*****	-40 °F to +203 °F (-40 °C to +95 °C) continuous	**	Dry, High humidity, Coastal areas
Stainless Steel	****	*****	*****	-112 °F to +1000 °F (-80 °C to +538 °C)	*****	Dry, High humidity, Coastal areas

# Solar Ties



HellermannTyton offers a wide selection of high quality Solar Ties manufactured in materials suited for solar applications. Solar Ties are offered in a variety of environmentally matched materials based on your region and climate conditions.

Some things to consider when choosing a Solar Tie:

- Substrate material
- Humidity level
- Temperature
- Exposure to salt spray



Solar Ties can be used to secure one or multiple PV cables throughout an installation.

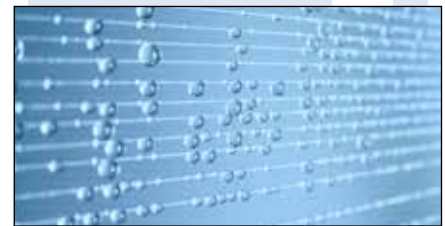


Stainless Steel Solar Ties provide maximum tensile strength while also being the most resistant to temperature, humidity, corrosion and chemicals.



## Did you know?

**Water Content in Polyamide**  
(PA6.6, PA11, PA12)



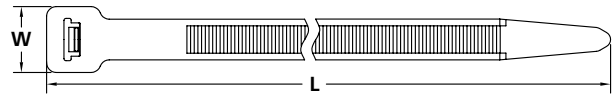
Polyamide is a hygroscopic material, which means that it absorbs and releases water. The mechanical properties of polyamide are significantly affected by its water content – especially flexibility and minimum tensile strength. Polyamide is most stable at optimum atmospheric conditions of 73° F (23° C) and 50% relative humidity. Under these conditions, the degree of water saturation of PA6.6 is around 2.5%. For PA11 and PA12, the water saturation rate under these conditions is 1.0% and 0.7%, respectively.

### UV Stabilized Solar Ties (PA66UV)

Used in the solar industry and other applications, HellermannTyton offers Solar Ties made of UV stabilized PA6.6 material. This material provides additional protection against UV radiation for long-term outdoor use and is available in various styles, tensile strengths and bundle diameters.



Material Data	
Material	<b>Polyamide 6.6 UV-stabilized (PA66UV)</b>
Operating Temperature	<b>-40 °F to +185 °F (-40 °C to +85 °C)</b>
Flammability	<b>UL94 V2</b>



Product Selection									
Article No.	Part No.	Type	Min. Tensile Strength	Length (L)	Width (W)	Max Bundle Diameter	Color	Pkg. Qty	Drawing
			lbs. (N)	in. (mm)	in. (mm)	in. (mm)			
112-03060	T30R0UVC2	T30R	30 (135)	5.8 (148.0)	0.14 (3.6)	1.4 (35.0)	Black	100	
111-00439	T30R0UVM4	T30R	30 (135)	5.8 (148.0)	0.14 (3.6)	1.4 (35.0)	Black	1000	
112-05060	T50R0UVC2	T50R	50 (225)	8.0 (202.0)	0.18 (4.6)	1.97 (50.0)	Black	100	
111-04913	T50R0UVM4	T50R	50 (225)	8.0 (202.0)	0.18 (4.6)	1.97 (50.0)	Black	1000	
112-05460	T50L0UVC2	T50L	50 (225)	15.35 (390.0)	0.18 (4.6)	4.3 (110.0)	Black	100	
111-05478	T50L0UVM4	T50L	50 (225)	15.35 (390.0)	0.18 (4.6)	4.3 (110.0)	Black	1000	
111-00400	T120R0UVC2	T120R	120 (535)	15.2 (387.0)	0.3 (7.6)	4.1 (105.0)	Black	100	

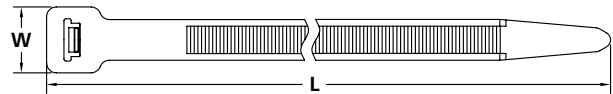
Installation tools – EVO7, MK7HT, MK7P, MK9, MK9P. Dimensions are approximate and subject to technical changes. Use **Part No.** for ordering and **Type** for specification purposes.

### Impact Modified Heat/UV Stabilized Solar Ties (PA66HIRHSUV)

Manufactured from a specially formulated impact modified, heat and UV stabilized PA6.6 material, these Solar Ties offer increased flexibility, impact strength, heat and UV resistance to endure moisture fluctuations. These cable ties feature inside serrations providing a positive hold onto wire and cable bundles. The head design guarantees high tensile strength, as well as a low insertion force. The bent tail allows for quick and simple installation by hand.



Material Data	
Material	<b>Polyamide 6.6 high impact modified, heat and UV stabilized (PA66HIRHSUV)</b>
Operating Temperature	<b>-40 °F to +230 °F (-40 °C to +110 °C)</b>
Flammability	<b>UL94 HB</b>



Product Selection									
Article No.	Part No.	Type	Min. Tensile Strength	Length (L)	Width (W)	Max Bundle Diameter	Color	Pkg. Qty	Drawing
			lbs. (N)	in. (mm)	in. (mm)	in. (mm)			
111-00931	111-00931	T50R	50 (225)	8.0 (202.0)	0.18 (4.6)	1.97 (50.0)	Black	500	
111-01128	111-01128	T50L	50 (225)	15.35 (390.0)	0.18 (4.6)	4.3 (110.0)	Black	1000	
111-12054	T120R0HIRH5	T120R	120 (535)	15.2 (387.0)	0.3 (7.6)	4.1 (105.0)	Black	500	
111-01196	111-01196	T250M	250 (1115)	22.3 (565.3)	0.49 (12.5)	5.9 (150.0)	Black	25	
111-25300	T255M0HIRX2	T255M	250 (1115)	22.0 (560.0)	0.5 (12.6)	6.3 (160.0)	Black	25	

Installation tools – EVO7, MK7HT, MK7P, MK9, MK9HT, MK9P. Dimensions are approximate and subject to technical changes. Use **Part No.** for ordering and **Type** for specification purposes.



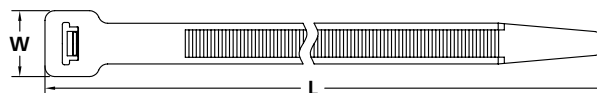
# Bundling and Securing

## PA11 Solar Ties

These inside serrated Solar Ties are manufactured from Polyamide 11 which provides excellent UV, chemical and moisture resistance, allowing a longer lifespan in outdoor use. This material is recommended for applications exposed to metal oxides. The tie strap has smooth edges to prevent bundle damage.



Material Data	
Material	<b>Polyamide 11, UV-resistant (PA11W)</b>
Operating Temperature	<b>-40 °F to +203 °F (-40 °C to +95 °C)</b>
Flammability	<b>UL94 HB</b>



Product Selection		Type	Min. Tensile Strength	Length	Width	Max Bundle	Color	Pkg. Qty	Drawing
Article No.	Part No.		lbs. (N)	in. (mm)	in. (mm)	in. (mm)			
111-01264	111-01264	GL200	45 (200)	8.0 (202.0)	0.19 (4.8)	1.97 (50.0)	Black	100	
111-01265	111-01265	GL250	56 (250)	9.9 (252.0)	0.19 (4.8)	2.6 (65.0)	Black	100	
111-01266	111-01266	GL300	56 (250)	11.6 (301.0)	0.19 (4.8)	3.2 (80.0)	Black	100	

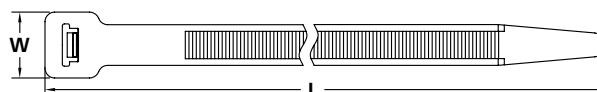
Installation tools – EVO7, MK7HT, MK7P. Dimensions are approximate and subject to technical changes. Use **Part No.** for ordering and **Type** for specification purposes.

## PA12 Solar Ties

These inside serrated Solar Ties are manufactured from Polyamide 12 which provides excellent UV, chemical and moisture resistance, allowing a longer lifespan in outdoor use. Polyamide 12 material absorbs slightly less moisture than Polyamide 11, yet is equally resistant to metal oxides. The bent tail allows for quick and simple installation through the head of the tie. The tie strap has smooth edges to prevent bundle damage.



Material Data	
Material	<b>Polyamide 12 (PA12)</b>
Operating Temperature	<b>-40 °F to +203 °F (-40 °C to +95 °C)</b>
Flammability	<b>UL94 HB</b>



Product Selection		Type	Min. Tensile Strength	Length	Width	Max Bundle	Color	Pkg. Qty	Drawing
Article No.	Part No.		lbs. (N)	in. (mm)	in. (mm)	in. (mm)			
111-01560	111-01560	T50R	45 (220)	8.0 (202.0)	0.18 (4.6)	1.97 (50.0)	Black	100	
111-01564	111-01564	T50R	45 (220)	8.0 (202.0)	0.18 (4.6)	1.97 (50.0)	Black	1000	
111-01562	111-01562	T50L(US)	45 (220)	15.35 (390.0)	0.185 (4.7)	4.3 (110.0)	Black	100	
111-01561	111-01561	T50L(US)	45 (220)	15.35 (390.0)	0.185 (4.7)	4.3 (110.0)	Black	1000	
111-01563	111-01563	T50XL(US)	45 (220)	18.4 (467.6)	0.19 (4.8)	5.28 (134.0)	Black	100	

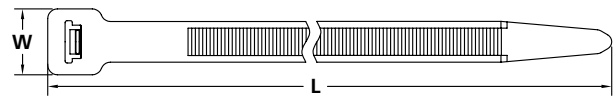
Installation tools – EVO7, MK7HT, MK7P. Dimensions are approximate and subject to technical changes. Use **Part No.** for ordering and **Type** for specification purposes.

## POM (Polyacetal) Solar Ties

Made of non-hygroscopic acetal, these Solar Ties are extremely UV and chemical resistant. Because the acetal material is non-hygroscopic, meaning it will not absorb or lose moisture, these ties are ideal for use in areas with extremely dry or humid conditions, as the material will remain stable and performance will not be affected over time.



Material Data	
Material	<b>Polyacetal (POM)</b>
Operating Temperature	<b>-40 °F to +203 °F (-40 °C to +95 °C)</b>
Flammability	<b>UL94 HB</b>



Product Selection		Type	Min. Tensile Strength lbs. (N)	Length in. (mm)	Width in. (mm)	Max Bundle in. (mm)	Color	Pkg. Qty	Drawing
Article No.	Part No.								
111-01569	111-01569	T50R	45 (220)	8.0 (202.0)	0.18 (4.6)	1.97 (50.0)	Black	1000	
111-01571	111-01571	T50L	45 (220)	15.0 (390.0)	0.18 (4.6)	4.30 (110.0)	Black	1000	

Installation tools – EVO7, MK7HT, MK7P. Dimensions are approximate and subject to technical changes. Use **Part No.** for ordering and **Type** for specification purposes.



## Cable Tie Application Tools

HellermannTyton's cable tie application tools are designed to save time and increase productivity while minimizing the risk of repetitive-stress injuries. With superior performance and an advanced ergonomic design, the EVO7 features patent-pending Tension/Lock/Cut (TLC) technology that creates a true flush cut with a smooth, comfortable application process. HellermannTyton MK9 and MK9SST tools also offer reliable cable tie installation. The MK9SST accommodates all HellermannTyton stainless steel ties and comes standard with padded foam grips for comfort and control.



# Bundling and Securing

## Stainless Steel Solar Ties

HellermannTyton's stainless steel Solar Ties are designed for use in applications where corrosion, vibration, weathering, radiation and temperature extremes are a concern. Stainless steel Solar Ties secure cables, poles and pipes in harsh environments and are appropriate for indoor, outdoor and underground uses.

### 304 Material

Grade 304 stainless steel cable ties are designed for general purpose bundling requirements.

Material Data		<b>RoHS</b>
Material	<b>Stainless Steel (SS304)</b>	
Operating Temperature	<b>-112 °F to +1000 °F (-80 °C to +538 °C)</b>	
Flammability	<b>Non-burning</b>	



Product Selection									
Article No.	Part No.	Type	Min. Tensile Strength	Length	Width	Max Bundle	Color	Pkg. Qty	Drawing
			lbs. (N)	in. (mm)	in. (mm)	in. (mm)			
111-93088	MBT8S-S	MBT8SS	202 (900)	7.9 (201.0)	0.18 (4.6)	2.0 (50.0)	Metal	100	
111-93148	MBT14S-S	MBT14SS	202 (900)	14.3 (362.0)	0.18 (4.6)	4.0 (102.0)	Metal	100	
111-93208	MBT20S-S	MBT20SS	202 (900)	20.5 (521.0)	0.18 (4.6)	6.0 (152.0)	Metal	100	
111-93278	MBT27S-S	MBT27SS	202 (900)	27.0 (685.0)	0.18 (4.6)	8.0 (203.0)	Metal	100	

Installation tool – MK9SST. Dimensions are approximate and subject to technical changes. Use **Part No.** for ordering and **Type** for specification purposes.

### 316 Material

Grade 316 stainless steel material is highly resistant to corrosion and widely used in marine environments where chemicals, salts, acids and temperature extremes may affect the bundling application.

Material Data		<b>RoHS</b>
Material	<b>Stainless Steel (SS316)</b>	
Operating Temperature	<b>-112 °F to +1000 °F (-80 °C to +538 °C)</b>	
Flammability	<b>Non-burning</b>	

Product Selection									
Article No.	Part No.	Type	Min. Tensile Strength	Length	Width	Max Bundle	Color	Pkg. Qty	Drawing
			lbs. (N)	in. (mm)	in. (mm)	in. (mm)			
111-93089	MBT8S	MBT8S	202 (900)	7.9 (201.0)	0.18 (4.6)	2.0 (50.0)	Metal	100	
111-93149	MBT14S	MBT14S	202 (900)	14.3 (362.0)	0.18 (4.6)	4.0 (102.0)	Metal	100	
111-93209	MBT20S	MBT20S	202 (900)	20.5 (521.0)	0.18 (4.6)	6.0 (152.0)	Metal	100	
111-93279	MBT27S	MBT27S	202 (900)	27.0 (685.0)	0.18 (4.6)	8.0 (203.0)	Metal	100	

Installation tool – MK9SST. Dimensions are approximate and subject to technical changes. Use **Part No.** for ordering and **Type** for specification purposes.





# solar e-clips

Solar E-Clips include a wide selection of Edge Clips, C Clips and mounts to accommodate user preferences for bundling and routing applications. Made of materials that stand up to the harshest of environments, Solar E-Clips are designed for easy placement and removal for faster installations and reduced labor costs.

Solar E-Clips Applications:

- Solar farms
- Municipal projects
- Commercial rooftops
- Residential systems



Type: T50REC4A, Part: 156-00635

Edge Clip Assemblies can be used to secure PV cable bundles of varying widths.



Type: T50REC5B, Part: 156-00468

Depending on wire routing needs, Edge Clip Assemblies are available to route cables parallel or perpendicular (as seen above) to frame rails.



Type: EC39, Part: 151-00174

Edge Cable Clips route single or multiple cable bundles to frame rail edges. The reclosable clip allows cables to be removed and reinserted as needed.



Type: MSC2, Part: 151-00982

Metal Edge Clips feature a large thumb surface to allow for quick and easy installation.



Type: T50SOSFT6LG-E, Part: 157-00107

The Cable Tie with Fir Tree Mount easily inserts into pre-drilled holes and adjusts to secure PV cable bundles up to 1.4" in diameter.



Type: SC6.6, Part: 151-00927

C Clip with Fir Tree inserts easily into pre-drilled holes and holds one PV cable. Cable can be removed and reinserted as needed.

*While all Solar E-Clips products are made of UV stable material, HellermannTyton has the ability to customize these products for your specific preferences and applications.*



# Bundling and Securing

## Edge Clip and UV Stabilized Cable Tie Assemblies

Designed specifically to route cables by securing them to a metal or plastic frame rail edge, Edge Clips and UV Stabilized Cable Tie Assemblies eliminate the need for mounting holes and mechanical fasteners. Edge Clips are easy to secure and the extraction force is high due to the integrated metal clamp that holds the Edge Clip in place. This allows cable ties to firmly hold the cable, preventing chafing of the cable and ensuring long-term reliability.



### Cable Tie Material Data

Material	<b>Polyamide 6.6 heat stabilized (PA66UV)</b>	
Operating Temperature	<b>--40 °F to +185 °F (-40 °C to +85 °C)</b>	
Flammability	<b>UL94V-2</b>	

### Edge Clip Material Data

Material	<b>Polyamide 6.6 high impact modified, heat stabilized, UV stabilized (PA66HIRHSUV)</b>	
Operating Temperature	<b>-40 °F to +230 °F (-40 °C to +110 °C)</b>	
Flammability	<b>UL94 HB</b>	

### Product Selection

Article No.	Part No.	Type	Min. Tensile Strength	Length	Max Bundle	Panel Thickness Minimum	Panel Thickness Maximum	Color	Pkg. Qty	Drawing
			lbs. (N)	in. (mm)	in. (mm)	in. (mm)	in. (mm)			
<b>1-3 mm Edge Thickness</b>										
156-00468	156-00468	T50REC5B	50 (225)	8.0 (202.0)	2.0 (45.0)	0.04 (1.0)	0.12 (3.0)	Black	100	
156-00589	156-00589	T50REC5A	50 (225)	8.0 (202.0)	2.0 (45.0)	0.04 (1.0)	0.12 (3.0)	Black	100	
156-00588	156-00588	T50REC4B	50 (225)	8.0 (202.0)	2.0 (45.0)	0.04 (1.0)	0.12 (3.0)	Black	100	
156-00635	156-00635	T50REC4A	50 (225)	8.0 (202.0)	2.0 (45.0)	0.04 (1.0)	0.12 (3.0)	Black	100	
<b>3-6 mm Edge Thickness</b>										
156-00592	156-00592	T50REC23	50 (225)	8.0 (202.0)	2.0 (45.0)	0.12 (3.0)	0.24 (6.0)	Black	100	
156-00593	156-00593	T50REC24	50 (225)	8.0 (202.0)	2.0 (45.0)	0.12 (3.0)	0.24 (6.0)	Black	100	
156-00590	156-00590	T50REC19	50 (225)	8.0 (202.0)	2.0 (45.0)	0.12 (3.0)	0.24 (6.0)	Black	100	
156-00591	156-00591	T50REC20	50 (225)	8.0 (202.0)	2.0 (45.0)	0.12 (3.0)	0.24 (6.0)	Black	100	

Use **Part No.** for ordering and **Type** for specification purposes.

## Edge Cable Clips

HellermannTyton's Edge Cable Clips allow for versatile routing of cables. A reclosable locking feature allows the solar cable to be inserted and removed from the clip. Edge Cable Clips attach to metal or plastic edges without the need for mounting holes.

Material Data	
Material	<b>Polyamide 6.6 high impact modified (PA66HIR)</b>
Operating Temperature	<b>-40 °F to +176 °F (-40 °C to +80 °C)</b>
Flammability	<b>UL94 HB</b>



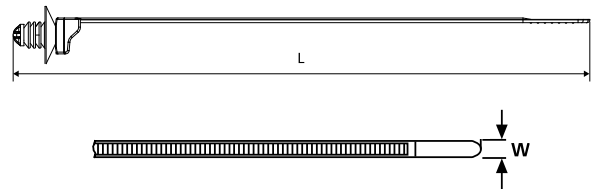
Product Selection								
Article No.	Part No.	Type	Panel Thickness Min	Panel Thickness Max	Max Bundle	Color	Pkg. Qty	Drawing
			in. (mm)	in. (mm)	in. (mm)			
151-00234	151-00234	EC41	0.12 (3.0)	0.24 (6.0)	0.87 (22.0)	Black	750	
151-00174	151-00174	EC39	0.04 (1.0)	0.12 (3.0)	0.63 (15.9)	Black	250	

Use **Part No.** for ordering and **Type** for specification purposes.

## Cable Tie with Fir Tree Mount

The Cable Tie with Fir Tree Mount provides a low insertion force and a high extraction force. This tie is designed with outside serrations and a smooth inside surface to protect cable insulation. A unique head design allows for a firm hold on bundles as small as .06" in diameter. An integrated disc covers mounting holes for added water protection. Manufactured of impact-modified Polyamide 6.6 material, it offers increased flexibility, heat resistance and UV stabilization.

Material Data	
Material	<b>Polyamide 6.6 high impact modified, heat and UV stabilized (PA66HIRHSUV)</b>
Operating Temperature	<b>-40 °F to +230 °F (-40 °C to +110 °C)</b>
Flammability	<b>UL94 HB</b>



Product Selection												
Article No.	Part No.	Type	Tensile Strength	Length L	Width W	Max Bundle Diameter	Panel Thickness Minimum	Panel Thickness Maximum	Mounting Hole Diameter	Color	Pkg. Qty	Drawing
			lbs. (N)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)			
157-00107	157-00107	T50SOS-FT6LG-E	50 (225)	6.3 (165.0)	0.18 (4.6)	1.4 (35.0)	0.03 (0.7)	0.28 (7.0)	0.25 - 0.28 (6.3 - 7.0)	Black	1000	

Use **Part No.** for ordering and **Type** for specification purposes.



# Bundling and Securing

## C Clip with Fir Tree

The C Clip with Fir Tree mount is ideal for panels with pre-drilled holes and is manufactured of an impact-modified Polyamide 6.6 material for increased flexibility, heat resistance and UV stabilization. This assembly is easy to install and does not require a mechanical fastener, saving time and labor costs.

Material Data	
Material	<b>Polyamide 6.6 high impact modified, heat and UV stabilized (PA66HIRHSUV)</b>
Operating Temperature	<b>-40 °F to +230 °F (-40 °C to +110 °C)</b>
Flammability	<b>UL94 HB</b>



Product Selection								
Article No.	Part No.	Type	Panel Thickness Minimum	Panel Thickness Maximum	Max Bundle Diameter	Mounting Hole Dia.	Color	Pkg. Qty.
			in. (mm)	in. (mm)	in. (mm)	in. (mm)		
151-00927	151-00927	SC6.6	0.03 (0.7)	0.25 (6.35)	0.3 (7.6)	0.26 (6.6)	Black	100



Use **Part No.** for ordering and **Type** for specification purposes.

## C Clips

C Clips secure solar cables to tubular frame rails. The solar cable simply snaps into the open C-shaped clip while a cable tie is fastened to the tubular frame rail. Cable can be removed from the clip and reinserted without additional fasteners.



Material Data	
Material	<b>Polyamide 6.6 heat stabilized (PA66HS)</b>
Operating Temperature	<b>-40 °F to +221 °F (-40 °C to +105 °C)</b>
Flammability	<b>UL94 HB</b>



Material Data	
Material	<b>Polyamide 6.6 high impact modified, heat stabilized, UV resistant (PA66HIRHS)</b>
Operating Temperature	<b>-40 °F to +230 °F (-40 °C to +110 °C)</b>
Flammability	<b>UL94 HB</b>



Material Data	
Material	<b>Polyamide 6.6 UV-stabilized (PA66UV)</b>
Operating Temperature	<b>-40 °F to +185 °F (-40 °C to +85 °C)</b>
Flammability	<b>UL94 V2</b>



Product Selection										
Article No.	Part No.	Type	Min. Tensile Strength	Length	Width	Max Bundle	Hose Clip Diameter	Color	Pkg. Qty.	Drawing
			lbs. (N)	in. (mm)	in. (mm)	in. (mm)	in. (mm)			
156-00155*	156-00155	T50SVC65	50 (225)	6.0 (155.0)	0.19 (4.7)	1.4 (35.0)	0.26 - 0.32 (6.5 - 8.0)	Black	500	
156-00306**	156-00306	T50ROC1B	50 (225)	7.9 (200.0)	0.18 (4.6)	1.8 (45.0)	0.16 - 0.4 (4.0 - 10.0)	Black	500	
156-00594***	156-00594	T50ROC2	50 (225)	7.9 (200.0)	0.18 (4.6)	1.8 (45.0)	0.26 - 0.3 (6.5 - 7.5)	Black	500	

Use **Part No.** for ordering and **Type** for specification purposes. \*Clip and cable tie are PA66HS. \*\*Clip is PA66HIRHS and cable tie is PA66HS. \*\*\*Clip is PA66HIRHS and cable tie is PA66UV.

## Metal Edge Clip

Developed for solar applications, our corrosion-resistant 304 stainless steel Metal Edge Clip features smooth, rounded edges that will not abrade wire or cable. The Metal Edge Clip accommodates one or two PV cables and works with frames 1 to 3 mm thick. A large thumb surface provides easy insertion.



Material Data	
Material	<b>Stainless Steel (SS)</b>
Operating Temperature	<b>-112 °F to +1000 °F (-80 °C to +538 °C)</b>
Flammability	<b>Non-burning</b>



Product Selection									
Article No.	Part No.	Type	Panel Thickness Min. in. (mm)	Panel Thickness Max. in. (mm)	Cable Diameter Min. in. (mm)	Cable Diameter Max. in. (mm)	Length in. (mm)	Width in. (mm)	Bag Qty.
151-00982	151-00982	MSC2	0.04 (1.0)	0.12 (3.0)	0.2 (5.0)	0.3 (7.6)	0.95 (24.0)	0.5 (13.0)	100

Use **Part No.** for ordering and **Type** for specification purposes.

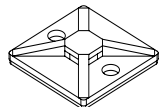
## UV Stabilized Mounting Base with Special Adhesive

Made from UV stabilized material, this mounting base is used in conjunction with Solar Ties to secure cables and wire bundles. This mounting base can be used directly on a solar panel, frame or a converter box. Specifically designed for extreme environments, the VHB acrylic adhesive resists UV light and seals against moisture and environmental conditions, while providing a strong bond to the surface.



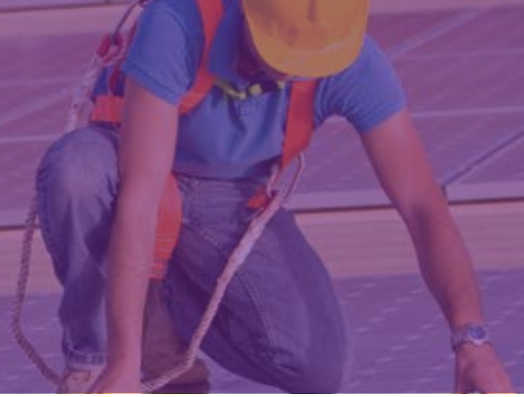
Material Data	
Material	<b>Polyamide 6.6 UV-stabilized (PA66UV)</b>
Operating Temperature	<b>-40 °F to +185 °F (-40 °C to +85 °C)</b>
Flammability	<b>UL94 V2 (excluding adhesive)</b>



Product Selection									
Article No.	Part No.	Type	Cable Tie Width Max	Length	Width	Height	Color	Pkg. Qty	Drawing
			in. (mm)	in. (mm)	in. (mm)	in. (mm)			
151-00646	151-00646	MB4A	0.18 (4.6)	1.12 (28.5)	1.12 (28.5)	0.23 (5.8)	Black	500	

Use **Part No.** for ordering and **Type** for specification purposes.

# protection products



HelaGuard nylon conduits utilize materials that are highly resistant to UV rays, making it ideally suited for use in solar applications. Slit construction helps ease installation and offers easy access to wires and cables during and post installation. HelaGuard HG-HISL series conduit is made of PA12 nylon which offers superior protection against UV rays. HG-SWSL is made of PA6 nylon which contains additives that help enhance its resistance to UV without sacrificing its flexibility. HG-DC series HelaGuard conduit offers a unique interlocking construction that not only makes installations fast and easy, but also provides a dual layer of nylon PA6 material to fend off UV radiation.

## Standard Weight Nylon Slit Conduit HG-SWSL Series, PA6

A standard weight corrugated conduit with a center slit opening that eases installation and maintenance of wire and cable bundles. Easy to cut and use, the material is highly resistant to solvents and oils, and offers abrasion resistance and a high fatigue life.

Material Data	
Material	Polyamide 6 (PA6)
Operating Temperature	-40 °F to +248 °F (-40 °C to +120 °C)
Operating Temp Moving	-4 °F to +212 °F (-20 °C to +100 °C)
Flammability	UL94 V2



HG-SWSL Series, PA6

Product Selection													
Part No.	Nominal Size (Ø)		Pitch	Type	Outside Diameter Ø (OD)		Inside Diameter Ø (ID)		Inside Bend Radius		Package Quantity per Reel		
	in	(mm)			in	(mm)	in	(mm)	in	(mm)	Color	ft	(m)
166-90270	3/8	(16.0)	F (Fine)	HG-SWSL0380	0.63	(15.8)	0.47	(11.8)	1.38	(35.0)	Black	100	(30.5)
166-90271	1/2	(21.0)	F (Fine)	HG-SWSL0500	0.84	(21.2)	0.66	(16.7)	1.78	(45.0)	Black	100	(30.5)
166-90272	3/4	(28.0)	F (Fine)	HG-SWSL0750	1.13	(28.5)	0.90	(22.8)	1.97	(50.0)	Black	100	(30.5)
166-90273	1	(34.0)	C (Coarse)	HG-SWSL1000	1.36	(34.5)	1.11	(28.1)	2.36	(60.0)	Black	50	(15.2)
166-90274	1-1/4	(42.0)	C (Coarse)	HG-SWSL1250	1.68	(42.5)	1.40	(35.5)	2.76	(70.0)	Black	50	(15.2)
166-90275	1-1/2	(54.0)	C (Coarse)	HG-SWSL1500	2.15	(54.5)	1.86	(47.2)	3.15	(80.0)	Black	50	(15.2)

Use **Part No.** for ordering and **Type** for specification purposes.

## High Impact Standard Weight Nylon Slit Conduit

### HG-HISL Series, PA12

A durable conduit with a center slit opening that eases installation and maintenance of wire and cable bundles. Material offers superior impact resistance, making it ideal for protecting wire and cable bundles in conditions with continual movement or bending. This material is highly resistant to UV light, solvents and oils.

Material Data	
Material	<b>Polyamide 12 (PA12)</b>
Operating Temperature	<b>-58°F to +230°F (-50°C to +110°C)</b>
Flammability	<b>Self-extinguishing according to EN IEC 61386</b>



HG-HISL Series, PA12

#### Product Selection

Part No.	Nominal Size (Ø)		Pitch	Type	Outside Diameter Ø (OD)		Inside Diameter Ø (ID)		Inside Bend Radius		Color	Package Quantity per Reel	
	in	(mm)			in	(mm)	in	(mm)	in	(mm)		ft	(m)
166-90270	3/8	(16.0)	F (Fine)	HG-HISL0380	0.63	(15.8)	0.47	(11.8)	1.38	(35.0)	Black	100	(30.5)
166-90271	1/2	(21.0)	F (Fine)	HG-HISL0500	0.84	(21.2)	0.66	(16.7)	1.78	(45.0)	Black	100	(30.5)
166-90272	3/4	(28.0)	F (Fine)	HG-HISL0750	1.13	(28.5)	0.90	(22.8)	1.97	(50.0)	Black	100	(30.5)
166-90273	1	(34.0)	C (Coarse)	HG-HISL1000	1.36	(34.5)	1.11	(28.1)	2.36	(60.0)	Black	50	(15.2)
166-90274	1-1/4	(42.0)	C (Coarse)	HG-HISL1250	1.68	(42.5)	1.40	(35.5)	2.76	(70.0)	Black	50	(15.2)
166-90275	1-1/2	(54.0)	C (Coarse)	HG-HISL1500	2.15	(54.5)	1.86	(47.2)	3.15	(80.0)	Black	50	(15.2)

Use **Part No.** for ordering and **Type** for specification purposes.

## Standard Weight Double Slit Nylon Conduit

### HG-DC Series, PA6

A standard weight corrugated conduit with two slit openings that eases installation and maintenance of wire and cable bundles. The interlocking construction is excellent for retrofitting projects. PA6 material is highly resistant to solvents and oils, and offers UV and abrasion resistance.

Material Data	
Material	<b>Polyamide 6 (PA6)</b>
Operating Temperature	<b>-40°F to +248°F (-40°C to +120°C)</b>
Flammability	<b>Self-extinguishing according to EN IEC 61386</b>



HG-DC Series, PA6

#### Product Selection

Part No.	Nominal Size (Ø)		Pitch	Type	Outside Diameter Ø (OD)		Inside Diameter Ø (ID)		Inside Bend Radius		Color	Package Quantity per Reel	
	in	(mm)			in	(mm)	in	(mm)	in	(mm)		ft	(m)
166-11808	3/8	(16.0)	F (Fine)	HG-DC0380	0.63	(15.8)	0.41	(10.3)	3.94	(100.0)	Black	164	(50)
166-11809	1/2	(21.0)	F (Fine)	HG-DC0500	0.84	(21.2)	0.55	(13.9)	4.73	(120.0)	Black	164	(50)
166-11810	3/4	(28.0)	C (Coarse)	HG-DC0750	1.13	(28.5)	0.81	(20.5)	6.70	(170.0)	Black	164	(50)
166-11811	1	(34.0)	C (Coarse)	HG-DC1000	1.36	(34.5)	1.05	(26.6)	7.09	(180.0)	Black	82	(25)
166-11812	1-1/4	(42.0)	C (Coarse)	HG-DC1250	1.68	(42.5)	1.26	(32.0)	7.88	(200.0)	Black	82	(25)
166-11813	1-1/2	(54.0)	C (Coarse)	HG-DC1500	2.15	(54.5)	1.70	(43.0)	9.45	(240.0)	Black	82	(25)

Use **Part No.** for ordering and **Type** for specification purposes.



## We're working to simplify NEC code compliance

Let's face it. NEC code compliance can be a complicated process, and each inspector may have a different interpretation of a given code. HellermannTyton is leading the way in code simplification, and working to streamline the photovoltaic labeling process to make it easier for contractors to properly label installations and pass inspections.



## Perception can confuse reality.

**We're working to clarify future labeling code statements to minimize confusion.**

**Take the perception of using engraved phenolic plates versus labels...**

**The Guideline** The 2014 National Electrical Code (NEC) and the 2012 International Fire Code (IFC) have been updated to reflect the growing needs of the installer at both the commercial and residential levels. This includes more detail on labeling, which is an important part of any installation. The NEC indicates that the markings must be of sufficient durability to withstand the environment, while the IFC states that adhesive vinyl signs are acceptable if properly adhered. NEC 2014 label requirements are backward compatible to the NEC 2008 and NEC 2011 codes. Municipalities that are still using older revisions of the NEC code can use the new NEC 2014 labels without risk.

**The Reality** Many local municipalities still require the use of engraved plates, but the market is changing to better protect first responders and emergency personnel. Adhesive vinyl labels that are red with white text, reflective, and meet UL969 standards are described in the new codes and are designed to be more visible, more durable, and work on more applications.

**The Perception** Today, many local inspectors and the Authority Having Jurisdiction (AHJ) believe that only engraved phenolic plates are acceptable, but neither the NEC nor the IFC specify the use of engraved markers. Many installers are now able to use (code acceptable) adhesive label options that are in accordance with the dimensional, functional, and verbiage requirements needed to ensure a safe and informative installation. As always, the installer must check local codes before deciding the best and most cost effective way to label the installation.

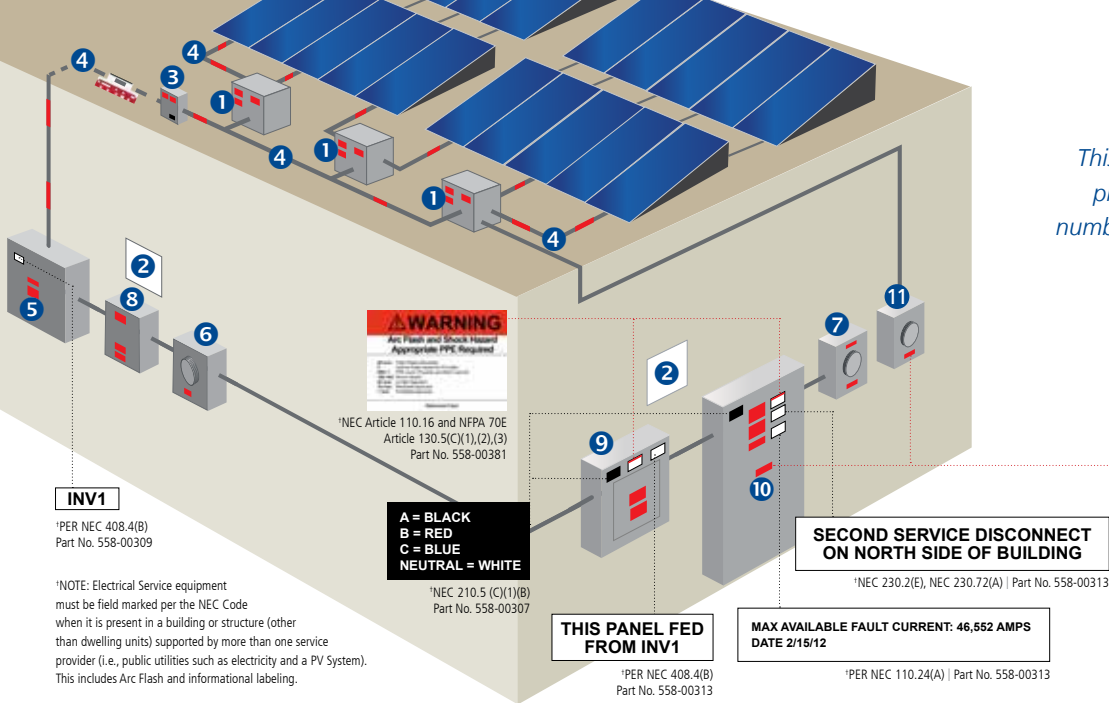
**The Situation** The primary concern with engraved or etched signage (phenolic plates), is the lack of flexibility, high cost, and lead times which can delay inspections. Typical phenolics, from a trophy shop, are not made with UV stable materials. Printing labels on site, as needed, or purchasing pre-printed inventory saves time and reduces labor costs without sacrificing UV stability and outdoor durability.

**The Option** HellermannTyton's solar installation labels are UV durable and feature an ultra-bond adhesive for both powder coat and baked enamel surfaces. Pre-printed with the most common legends to meet the requirements of the AHJ, the labels are manufactured using ultraviolet resistant ink, permanent acrylic adhesive, and a base material to withstand environmental elements.

**The Benefit** HellermannTyton offers a line of the most commonly used regulatory solar identification labels on large utility and scaled PV installations.

- Significant cost & time savings
- Tested to UL969 standard
- Made with UV stable inks & materials for durability and weather resistance
- Adhere to baked enamel & powder coat painted surfaces
- Supplied with an aggressive adhesive to ensure long life
- Meet NEC & IFC standards for printed text, character height, color and outdoor UV stability

This diagram is an illustration of one photovoltaic labeling scenario. The number and type of labels needed will vary based on the project scope and its related specifications. Check with AHJ for local requirements.



**INV1**

\*PER NEC 408.4(B)  
Part No. 558-00309

\*NOTE: Electrical Service equipment must be field marked per the NEC Code when it is present in a building or structure (other than dwelling units) supported by more than one service provider (i.e., public utilities such as electricity and a PV System). This includes Arc Flash and informational labeling.

\*NEC Article 110.16 and NFPA 70E  
Article 130.5(C)(1),(2),(3)  
Part No. 558-00381

**A = BLACK  
B = RED  
C = BLUE  
NEUTRAL = WHITE**

\*NEC 210.5(C)(1)(B)  
Part No. 558-00307

**THIS PANEL FED FROM INV1**

\*PER NEC 408.4(B)  
Part No. 558-00313

**SECOND SERVICE DISCONNECT ON NORTH SIDE OF BUILDING**

\*NEC 230.2(E), NEC 230.72(A) | Part No. 558-00313

**MAX AVAILABLE FAULT CURRENT: 46,552 AMPS  
DATE 2/15/12**

\*PER NEC 110.24(A) | Part No. 558-00313

**PHOTOVOLTAIC SYSTEM  
EQUIPPED WITH  
RAPID SHUTDOWN**

\*NEC Article 690.56(C) | Part No. 596-00474  
Reflective Material Required.

**1 Combiner Box, Circuits / Conduit Combiner Box / Enclosures / EMT Enclosures**

**WARNING**  
**ELECTRICAL SHOCK HAZARD**  
DO NOT TOUCH TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

NEC 690.17(E) | Part No. 596-00497

**WARNING**  
**ELECTRICAL SHOCK HAZARD**  
THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED

NEC 690.35(F) | Part No. 596-00588

**WARNING**  
**TURN OFF PHOTOVOLTAIC AC DISCONNECT PRIOR TO WORKING INSIDE PANEL**

NEC 110.27(C) & OSHA 1910.145(h)(7)  
Part No. 596-00499

**2 Building / Structure**

**CAUTION**  
DO NOT ENTER THIS ROOM UNLESS YOU ARE A QUALIFIED PERSON AND YOU HAVE BEEN ADVISED BY THE PHOTOVOLTAIC SYSTEM MANUFACTURER THAT IT IS SAFE TO ENTER

NEC 690.56(B) | Part No. 558-00350

**3 DC Disconnect / Breaker / Recombiner Box**

**WARNING**  
**ELECTRICAL SHOCK HAZARD**  
THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED

NEC 690.35(F) | Part No. 596-00588

**WARNING**  
**ELECTRICAL SHOCK HAZARD**  
DO NOT TOUCH TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION  
DC VOLTAGE IS ALWAYS PRESENT WHEN SOLAR MODULES ARE EXPOSED TO SUNLIGHT

NEC 690.17(E) | Part No. 596-00496

RATED AC OPERATING CURRENT: \_\_\_\_\_  
MAX RATED AC OPERATING CURRENT: \_\_\_\_\_  
RATED AC OPERATING VOLTAGE: \_\_\_\_\_  
MAX RATED AC OPERATING VOLTAGE: \_\_\_\_\_  
RATED SHORT CIRCUIT CURRENT: \_\_\_\_\_  
MAXIMUM SYSTEM VOLTAGE: \_\_\_\_\_

FOR MARKING DC BACKUP SYSTEMS | Part No. 596-00240

**PHOTOVOLTAIC  
DC DISCONNECT**

IFC 605.11.3, NEC 690.15 & NEC 690.13(B)  
Part No. 596-00238

**PHOTOVOLTAIC SYSTEM  
DC DISCONNECT**  
OPERATING CURRENT: \_\_\_\_\_  
OPERATING VOLTAGE: \_\_\_\_\_  
MAXIMUM SYSTEM VOLTAGE: \_\_\_\_\_  
SHORT CIRCUIT CURRENT: \_\_\_\_\_

NEC 690.53 | Part No. 596-00241

RATED MAX POWER-POINT CURRENT: \_\_\_\_\_  
RATED MAX POWER-POINT VOLTAGE: \_\_\_\_\_  
MAXIMUM SYSTEM VOLTAGE: \_\_\_\_\_  
MAXIMUM CIRCUIT CURRENT: \_\_\_\_\_  
MAX RATED OUTPUT CURRENT OF THE CHARGE CONTROLLER IF INSTALLED: \_\_\_\_\_

NEC 690.53 | Part No. 596-00253

**4 EMT / Conduit Raceways**

*\*(Reflective Material Required)*

**WARNING: PHOTOVOLTAIC  
POWER SOURCE**

NEC 690.31(G)(3)(4) | Part No. 596-00206

**WARNING  
PHOTOVOLTAIC POWER SOURCE**

NEC 690.31(G)(I) | Part No. 596-00257

**5 Inverter**

**WARNING**  
**ELECTRICAL SHOCK HAZARD**  
IF A GROUND FAULT IS INDICATED NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED

NEC 690.5(C) | Part No. 596-00498

**WARNING**  
**BIPOLAR PHOTOVOLTAIC ARRAY. DISCONNECTION OF NEUTRAL OR GROUNDED CONDUCTORS MAY RESULT IN OVERVOLTAGE ON ARRAY OR INVERTER**

NEC 690.31(I) | Part No. 596-00590

**PHOTOVOLTAIC AC DISCONNECT**  
MAXIMUM AC OPERATING CURRENT: \_\_\_\_\_  
NOMINAL OPERATING AC VOLTAGE: \_\_\_\_\_

NEC 690.54 | Part No. 596-00239

**6 Production / Net Meter**

**WARNING**  
**ELECTRICAL SHOCK HAZARD**  
IF A GROUND FAULT IS INDICATED NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED

NEC 690.5(C) | Part No. 596-00498

**7 Production / Net Meter (Bi-directional)**

**CAUTION: SOLAR ELECTRIC  
SYSTEM CONNECTED**

NEC 690.15 & NEC 690.13(B) | Part No. 596-00613

**WARNING DUAL POWER SOURCE  
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM**

NEC 705.12(D)(3) & NEC 690.64 | Part No. 596-00495

**8 AC Disconnect / Breaker / Points of Connection**

**PHOTOVOLTAIC  
AC DISCONNECT**

IFC 605.11.3, NEC 690.15, NEC 690.13(B)  
Part No. 596-00237

**WARNING**  
**ELECTRICAL SHOCK HAZARD**  
DO NOT TOUCH TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

NEC 690.17(E) | Part No. 596-00497

NOMINAL OPERATING AC VOLTAGE: \_\_\_\_\_  
NOMINAL OPERATING AC FREQUENCY: \_\_\_\_\_  
MAXIMUM AC POWER: \_\_\_\_\_  
MAXIMUM AC CURRENT: \_\_\_\_\_  
MAX OVERCURRENT DEVICE RATING FOR AC MODULE PROTECTION: \_\_\_\_\_

NEC 690.52 | Part No. 596-00252

**PHOTOVOLTAIC AC DISCONNECT**  
MAXIMUM AC OPERATING CURRENT: \_\_\_\_\_  
NOMINAL OPERATING AC VOLTAGE: \_\_\_\_\_

NEC 690.13(B) | Part No. 596-00239

**Requirements for Electrical Installations (Field Marking)**

**NEC 110.16** Electrical equipment that are in other than dwelling units shall be field marked to warn qualified persons of a potential Arc Flash hazard.

**NEC 110.24(A)** Service equipment in other than dwelling units shall be legibly field marked with the available fault current.

**NEC 110.27(C)** Entrances to rooms or other guarded locations that contain exposed live parts shall be marked with conspicuous warning signs forbidding unqualified persons to enter.

**NEC 230.2(E)** Where a building or structure is supported by more than one service, add a plaque to denote all other services.

**NEC 210.5(C)(1)(B)** Branch Circuits: The identification methods used for conductors originating within each branch circuit shall be documented in a manner that is readily available or shall be permanently posted at each branch-circuit panelboard or distribution equipment.

**NEC 408.4(B)** All switchboards and panelboards supplied by a feeder in other than one or two family dwellings shall be marked to indicate the device or equipment where the power supply(s) originates.

# Photovoltaic System LABELING REQUIREMENTS

NEC 2014 ARTICLE 690 AND IFC 2012

## Adhesive Fastened Signs

ANSI Z535.4 – 2011 *Product Safety Signs and Labels*, provides guidelines for the design and durability of safety signs and labels for application to electrical equipment. **NEC 110.21(B)(1)**

The label shall be suitable for the environment where it is installed. **NEC 110.21(B)(3)**

Where required elsewhere in this code, all field applied labels, warnings and markings should comply with ANSI Z535.4.

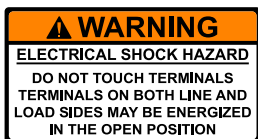
### NEC 110.21(B) FIELD MARKING

Adhesive fastened signs may be acceptable if properly adhered. Vinyl signs shall be weather resistant. **IFC 605.11.1.3**

### 9 Breaker Panel / Pull Boxes



NEC 690.5(C) | Part No. 596-00498



NEC 690.17(E) | Part No. 596-00497



NEC 110.27(C) & OSHA 1910.145(f)(7) | Part No. 596-00499



NEC 705.12(D)(3) & NEC 690.64 | Part No. 596-00495

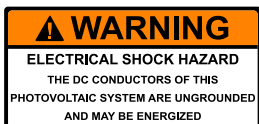


NEC 705.12(D)(2)(3b) | Part No. 596-00589



NEC 705.12(D)(3-4) & NEC 690.64 | Part No. 596-00587

### 10 Main Service Disconnect



NEC 690.35(F) | Part No. 596-00588



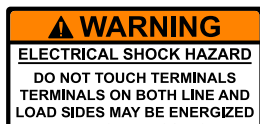
NEC 690.10(C) | Part No. 596-00591



NEC 690.33(E)(2) | Part No. 596-00244



NEC 690.54 | Part No. 596-00239



NEC 690.17(E) | Part No. 596-00497



NEC 110.27(C) and OSHA 1910.145(f)(7) | Part No. 596-00499



NEC 690.15 & NEC 690.13(B) | Part No. 596-00243



NEC 690.15 & NEC 690.13(B) | Part No. 596-00613

### 11 Main Service Disconnect



NEC 690.15 & NEC 690.13(B) | Part No. 596-00243

**NEC 705.12(D)(2)(3b)** Where two sources, one a utility and the other an inverter, are located at opposite ends of a busbar that contains loads, a permanent warning label shall be applied to the distribution equipment adjacent to the back-fed breaker from the inverter that displays the following or equivalent wording.

**NEC 705.12(D)(3-4)** Equipment containing overcurrent devices in circuits supplying power to a busbar or conductor supplied from multiple sources shall be marked to indicate the presence of all sources.

**NFPA 2012 130.5(C)** Same as NEC 110.16 but includes additional label information that is required after 9/30/2011. Check latest 2012 NFPA Arc Flash requirements.

**OSHA 1910.145(f)(7)** Warning tags are used to represent a hazard level between "Caution" and "Danger".

## Labeling Requirements for Article 690

**NEC 690.13(B)** Each photovoltaic system disconnecting means shall be permanently marked to identify it as a photovoltaic system disconnect.

**NEC 690.15, IFC 605.11.3** If the equipment is energized from more than one source, the disconnecting means must be grouped and identified.

**NEC 690.16(B)** Non-load break rated disconnect means shall be marked.

**NEC 690.17(E)** Where all terminals of the disconnecting means may be energized in the open position, a warning label shall be mounted on or adjacent to the disconnecting means.

**NEC 690.31(B)** Identification and Grouping Photovoltaic system conductors shall be identified and grouped. The means of identification shall be permitted by separate color coding, marking tape, tagging or other approved means.

**NEC 690.31(G)(3)(4), IFC 605.11.1.2** Labels shall appear at every section of the wiring system that is separated by enclosures, walls, partitions, ceilings or floors. Spacing between labels not to exceed 10 feet (3M).

**NEC 690.33(E)(2)** Interruption Current: be a type that requires the use of a tool to open will be marked "Do Not Disconnect Under Load".

**NEC 690.35(F)** A PV power source shall be labeled at each junction box, combiner box or disconnect, and device where energized, ungrounded circuits may be exposed during service.

**NEC 690.31(G)(1)** Where circuits are embedded in build up, laminate or membrane roofing materials not covered by PV modules and associated equipment, the location of the circuits shall be clearly marked.

**NEC 690.31(I)** Bipolar photovoltaic systems shall be clearly marked with a permanent, legible warning notice indicating that the disconnection of the grounded conductor(s) may result in overvoltage on the equipment.

**NEC 690.5(C)** A label shall appear on the utility interactive inverter or be applied by the installer near the ground fault indicator at a visible location.

**NEC 690.52** AC modules shall be marked with identification terminals or leads with the ratings as shown on the label.

**NEC 690.53** A permanent label for the direct-current PV power source shall be provided by the installer at the PV disconnecting means.

**NEC 690.54** All interactive system points of interconnection with other sources shall be marked at an accessible location at the disconnecting means as the power source and with the rated AC output current and the nominal operating AC voltage.

**NEC 690.55** PV power systems employing energy storage shall also be marked with the maximum operating voltage, including any equalization voltage and polarity of the grounded circuit conductor.

**NEC 690.56(C)** Each Rapid Shutdown Switch shall be permanently marked to identify it as a Photovoltaic Rapid Shutdown. The sign or placard shall be marked as "PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN" using white letters that are 3/8" tall on a red background and shall be reflective.

**NEC 690.64** Points of connection shall be in accordance with NEC 705.12.

# solar identification



HellermannTyton offers the most comprehensive and innovative line of identification products for the solar industry. In order to meet the needs of our customers, HellermannTyton has developed a variety of flexible labeling and printing solutions. Solar Identification printers, labels and software are designed to help contractors quickly label electrical panels, boxes and conduit for faster installations that pass inspection the first time.

*Flexibility to label and print the way you want, when you want.*



## Solar Labels

HellermannTyton provides you with all the label options you need for code-compliant photovoltaic labeling. Choose from a complete line of pre-printed NEC 2014 and NEC 2011 labels. For voltage and current labeling, we offer variable print label options with a partially printed template. Or, you can choose to print your own labels using printable continuous vinyl label rolls with our TagPrint Pro label template software and your choice of printer.



## Printing Systems

With a choice in printing options, HellermannTyton provides you with the power to choose when and where you want to print. Our TT130SMC and TT230SMC thermal transfer printers are portable enough to take to the job site and powerful enough to quickly create all the PV labels you need.



## TagPrint® Pro Software

The latest version of our popular open-system label creation software makes proper PV labeling easier than ever. TagPrint Pro 3.0 can be used with any thermal transfer printer to create labels quickly and easily. Simply select a pre-saved label template or easily customize your own labels. There is no other label creation software solution like it on the market!



### Tap into NEC Code Compliance.

For the ultimate in NEC code reference and labeling convenience, download the TagPrint® Xpress Solar mobile app from the App Store<sup>SM</sup> or Google Play<sup>TM</sup> today. See page 41 for more information.

App Store is a service mark of Apple Inc. Google Play is a trademark of Google Inc.

### NEC 2014 Labels

HellermannTyton pre-printed solar installation labels have a special adhesive for use on both enamel and powder coat paint surfaces. Labels are printed with UV stable ink that is covered by a UV stable laminate. Labels meet the requirements of UL969. NEC 2014 labels can be used to meet NEC 2014 code and are backward compatible to NEC 2011.



596-00495



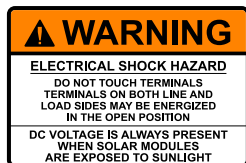
596-00587



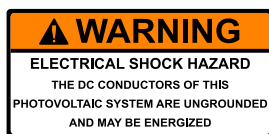
596-00589



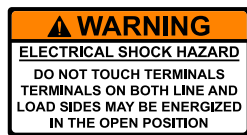
596-00499



596-00496



596-00588



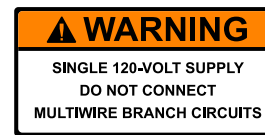
596-00497



596-00498



596-00590



596-00591

Material Data	
Material	443/552 UV Stable Flexible White Vinyl w/ Acrylic Laminate
Operating Temperature	-40 °F (-40 °C) to +174 °F (+79 °C)
Min. Application Temp.	+50 °F (+10 °C)
Liner	78# White Bleached Paper
Certifications	UL969

#### Product Selection

Article No.	Part No.	Type	Description	Width in. (mm)	Height in. (mm)	Pkg. Qty. (Per Roll)	Pkg. Type
596-00497	596-00497	WESHLBL	WARNING - ELECTRICAL SHOCK HAZARD	3.75 (95.25)	2.0 (50.80)	50	RL
596-00496	596-00496	WESHLBDC	WARNING - ELECTRICAL SHOCK HAZARD W/DC	3.75 (95.25)	2.5 (63.50)	50	RL
596-00498	596-00498	WGCME	WARNING - GROUNDED CONDUCTORS MAY BE ENERGIZED	4.12 (104.60)	2.0 (50.80)	50	RL
596-00588	596-00588	WDCCU	WARNING - DC CONDUCTORS MAY BE ENERGIZED	4.12 (104.60)	2.0 (50.80)	50	RL
596-00499	596-00499	WTOPVLBL	WARNING - TURN OFF PV AC PRIOR TO WORKING INSIDE PANEL	4.12 (104.60)	2.0 (50.80)	50	RL
596-00495	596-00495	WDPSLBL	WARNING - DUAL POWER SOURCE	4.12 (104.60)	0.75 (19.05)	50	RL
596-00587	596-00587	CBACKFED	CAUTION - PHOTOVOLTAIC SYSTEM CIRCUIT BREAKER IS BACKFED	4.12 (104.60)	0.75 (19.05)	50	RL
596-00590	596-00590	BIPOLARPV	WARNING- BIPOLAR PHOTOVOLTAIC ARRAY	3.75 (95.25)	2.0 (50.80)	50	RL
596-00589	596-00589	IOCOD	WARNING - INVERTER OUTPUT CONNECTION	4.12 (104.60)	0.75 (19.05)	50	RL
596-00591	596-00591	120VOLT	WARNING - 120 VOLT SUPPLY	3.75 (95.25)	2.0 (50.80)	50	RL

Use **Part No.** for ordering and **Type** for specification purposes.

## Pre-Printed Solar Labels

## NEC 2014 Solar Label Convenience Packs

HellermannTyton makes it easier than ever for solar installers to meet PV labeling codes. Solar Label Convenience Packs allow installers to quickly and economically purchase high quality pre-printed NEC 2014 code-compliant solar installation labels.

Packaged in 10-count quantities to meet the needs of smaller scale solar installations and independent contractors, Solar Label Convenience Packs are available in HellermannTyton's most popular pre-printed NEC 2014 code-compliant solar label formats.







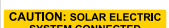


Each Solar Label Convenience Pack contains 10 solar installation labels. Choose from a variety of regular and reflective pre-printed labels. For enhanced durability, clear laminate overlay labels are also available in a convenience pack.



Product Selection		Description	Labels Per Pack	Width		Length		50/RL Cross Reference	Label
Article No. / Part No.	Type			in.	mm	in.	mm		
596-00665	WDPSLBL10	Solar Label, Warning - Dual Power Source Label, Vinyl, Orange/White	10	4.12	104.65	0.75	19.05	596-00495	
596-00661	WESHLBDC10	Solar Label, Warning - Electrical Shock Hazard Label w/DC, Vinyl, Orange/White	10	3.75	95.25	2.50	63.50	596-00496	
596-00660	WESHLBL10	Solar Label, Warning - Electrical Shock Hazard Label, Vinyl, Orange/White	10	3.75	95.25	2.00	50.80	596-00497	
596-00663	WGCM10	Solar Label, Warning - Grounded Conductors Energized Label, Vinyl, Orange/White	10	4.12	104.65	2.00	50.80	596-00498	
596-00664	WTOPVLBL10	Solar Label, Warning - Turn Off PV Label, Vinyl, Orange/White	10	4.12	104.65	2.00	50.80	596-00499	
596-00666	CBACKFED10	Solar Label, Caution - PV System Backfed Label, Vinyl, Yellow/White	10	4.12	104.65	0.75	19.05	596-00587	
596-00662	WDCCU10	Solar Label, Warning - DC Conductors Energized Label, Vinyl, Orange/White	10	4.12	104.65	2.00	50.80	596-00588	
596-00668	IOCOD10	Solar Label, Warning - Inverter Output Connection Label, Vinyl, Orange/White	10	4.12	104.65	0.75	19.05	596-00589	
596-00667	BIPOLARPV10	Solar Label, Warning - Bipolar PV Array Label, Vinyl, Orange/White	10	3.75	95.25	2.00	50.80	596-00590	
596-00669	120VOLT10	Solar Label, Warning - 120-Volt Supply Solar Label, Vinyl, Orange/White	10	3.75	95.25	2.00	50.80	596-00591	

Use **Part No.** for ordering and **Type** for specification purposes.

## Pre-Printed Solar Labels

Product Selection									
Article No. / Part No.	Type	Description	Labels Per Pack	Width		Length		50/RL Cross Reference	Label
				in.	mm	in.	mm		
596-00675	MPVSD10	Pre-Printed Reflective Solar Label, MAIN PV DISCONNECT, Red	10	5.5	139.70	1.75	44.45	596-00243	
596-00671	DNDL10	Pre-Printed Reflective Solar Label, DO NOT DISCONNECT UNDER LOAD, Red	10	6.5	165.10	1.00	25.40	596-00244	
596-00674	SOLARD10	Pre-Printed Reflective Solar Label, SOLAR DISCONNECT, Red	10	6.5	165.10	1.00	25.40	596-00246	
596-00678	PVPSR10	Pre-Printed Reflective Solar Label, WARNING: PHOTOVOLTAIC POWER SOURCE, Red	10	6.5	165.10	1.00	25.40	596-00206	
596-00676	MPVACDIS10	Pre-Printed Reflective Solar Label, MAIN PV AC DISCONNECT, Red	10	5.5	139.70	1.75	44.45	596-00255	
596-00677	PSEWRS10	Pre-Printed Reflective Solar Label, Photovoltaic System with Rapid Shutdown, Red	10	5.5	139.70	1.75	44.45	596-00474	
596-00672	CSESC10	Pre-Printed Reflective Solar Label, Caution - Solar Electric System Connected, Yellow	10	6.5	165.10	1.00	25.40	596-00613	
596-00673	CSCIRLBL10	Pre-Printed Reflective Solar Label, Caution - Solar Circuit, Yellow	10	6.5	165.10	1.00	25.40	596-00615	
596-00670	LAM110	Solar Label UV Laminate Label, Clear	10	4.2	106.68	2.25	57.15	596-00242	

Use **Part No.** for ordering and **Type** for specification purposes.



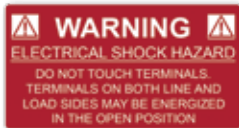
# Pre-Printed Solar Labels

## NEC 2011 Labels

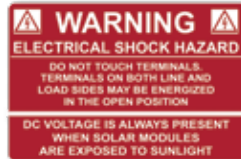
HellermannTyton pre-printed solar installation labels have a special adhesive for use on both enamel and powder coat paint surfaces. Labels are printed with UV stable ink that is covered by a UV stable laminate. Labels meet the requirements of UL969. NEC 2011 labels can be used to meet the NEC 2011 code and are backward compatible to NEC 2008.



Material Data	
Material	443/552 UV Stable Flexible White Vinyl w/ Acrylic Laminate
Operating Temperature	-40 °F (-40 °C) to +174 °F (+79 °C)
Min. Application Temp.	+50 °F (+10 °C)
Liner	78# White Bleached Paper
Certifications	UL969



596-00233



596-00232



596-00234



596-00258



596-00235



596-00231



596-00236

Product Selection							
Article No.	Part No.	Type	Description	Width in. (mm)	Height in. (mm)	Pkg. Qty. (Per Roll)	Pkg. Type
596-00233	596-00233	WESHLBL	WARNING - ELECTRICAL SHOCK HAZARD	3.75 (95.25)	2.0 (50.80)	50	RL
596-00232	596-00232	WESHLBDC	WARNING - ELECTRICAL SHOCK HAZARD W/DC	3.75 (95.25)	2.5 (63.50)	50	RL
596-00234	596-00234	WGCME	WARNING - GROUNDED CONDUCTORS MAY BE ENERGIZED	4.12 (104.60)	2.0 (50.80)	50	RL
596-00258	596-00258	WDCCU	WARNING - DC CONDUCTORS MAY BE ENERGIZED	4.12 (104.60)	2.0 (50.80)	50	RL
596-00235	596-00235	WTOPLBL	WARNING - TURN OFF PV AC PRIOR TO WORKING INSIDE PANEL	4.12 (104.60)	2.0 (50.80)	50	RL
596-00231	596-00231	WDPSLBL	WARNING - DUAL POWER SOURCE	4.12 (104.60)	0.75 (19.05)	50	RL
596-00236	596-00236	CBACKFED	CAUTION - PV SYSTEM CIRCUIT BREAKER IS BACKFED	4.12 (104.60)	0.75 (19.05)	50	RL

Use **Part No.** for ordering and **Type** for specification purposes.



## Reflective Solar Labels

Reflective solar labels are designed to be easy to see by first responders who are looking to identify and isolate the PV system. Reflective labels can be seen through smoke and in darkness using reflected light. HellermannTyton pre-printed reflective solar labels meet fire safety and NEC regulations.



**WARNING: PHOTOVOLTAIC POWER SOURCE**

596-00206

**DO NOT DISCONNECT UNDER LOAD**

596-00244

**SOLAR DISCONNECT**

596-00246

**PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN**

596-00474

**MAIN PHOTOVOLTAIC SYSTEM DISCONNECT**

596-00243

**MAIN PHOTOVOLTAIC SYSTEM AC DISCONNECT**

596-00255

**CAUTION: SOLAR ELECTRIC SYSTEM CONNECTED**

596-00613

**CAUTION: SOLAR CIRCUIT**

596-00615

Material Data

Material	242/552 UV Stable Reflective Vinyl w/ Acrylic Laminate
Operating Temperature	-40 °F (-40 °C) to +174 °F (+79 °C)
Min. Application Temp.	+50 °F (+10 °C)
Liner	Polyethylene Coated Paper
Certifications	UL969

Product Selection

Article No.	Part No.	Type	Description	Width in. (mm)	Height in. (mm)	Pkg. Qty. (Per Roll)	Pkg. Type
596-00244	596-00244	DNDCUL	DO NOT DISCONNECT UNDER LOAD	6.5 (165.1)	1.00 (25.40)	50	RL
596-00613	596-00613	CSESC	CAUTION - SOLAR ELECTRIC SYSTEM CONNECTED	6.5 (165.1)	1.00 (25.40)	50	RL
596-00615	596-00615	CSCIRLBL	CAUTION - SOLAR CIRCUIT	6.5 (165.1)	1.00 (25.40)	50	RL
596-00246	596-00246	SOLARD	SOLAR DISCONNECT	6.5 (165.1)	1.00 (25.40)	50	RL
596-00243	596-00243	MPVSD	MAIN PHOTOVOLTAIC SYSTEM DISCONNECT	5.5 (139.7)	1.75 (44.45)	50	RL
596-00255	596-00255	MPVACDIS	MAIN PHOTOVOLTAIC SYSTEM AC DISCONNECT	5.5 (139.7)	1.75 (44.45)	50	RL
596-00474	596-00474	PSEWRS	PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN	5.5 (139.7)	1.75 (44.45)	50	RL
596-00206	596-00206	PVPSR	WARNING: PHOTOVOLTAIC POWER SOURCE	6.5 (165.1)	1.00 (25.40)	50	RL

Use **Part No.** for ordering and **Type** for specification purposes.

**HellermannTyton makes it easy to pass inspection.** In addition to our full line of pre-printed NEC 2014 and NEC 2011 labels, TagPrint® Pro 3.0, TagPrint® Xpress Solar include label templates to meet NEC 2014 and NEC 2011.



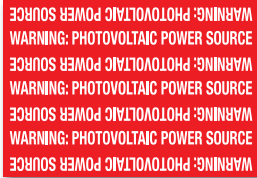
# Pre-Printed Solar Labels

## Reflective Solar Circuit Markers

These photovoltaic caution and power source markers are pre-printed, non-adhesive, coiled markers that can be opened and snapped over cables for long-term, reflective, permanent identification. Made of a UV stable vinyl, the coiled markers come 25 per bag and will fit on all standard PV cables or electrical metallic tubing (EMT) conduits.



596-00251



596-00208



596-00249



596-00207



Material Data		
Material	Vinyl	
Operating Temperature	18 °F to +200 °F (-29 °C to +93 °C)	

Product Selection							
Article No.	Part No.	Type	Description	Width in. (mm)	Height in. (mm)	Pkg. Qty.	Pkg. Type
596-00249	596-00249	CSCSNAP4R	CAUTION - SOLAR CIRCUIT for use on .25" OD PV Cables	4.00 (101.60)	2.0 (50.8)	25	PK
596-00251	596-00251	CSCSNAP72	CAUTION - SOLAR CIRCUIT for EMT conduits up to 1" in OD	7.25 (182.22)	5.0 (127.0)	25	PK
596-00207	596-00207	PVPSSNAP4R	WARNING: PHOTOVOLTAIC POWER SOURCE for use on .25" OD PV Cables	4.00 (101.60)	2.0 (50.8)	25	PK
596-00208	596-00208	PVPSSNAP72R	WARNING: PHOTOVOLTAIC POWER SOURCE for EMT conduits up to 1" in OD	7.25 (182.22)	5.0 (127.0)	25	PK

Use **Part No.** for ordering and **Type** for specification purposes.

## Reflective Rooftop Label

Designed to meet NEC 2014 Section 690.4(F) as interpreted by the International Association of Electrical Inspectors (IAEI), HellermannTyton offers an aluminum and vinyl label designed for use on almost any type of roof shingle. Mount via a pre-cut aluminum plate with aluminum clips (both supplied with label) to standard tar shingles, or bend, shape and fasten with construction adhesive or grommet screws on composite or wooden roofing. Label text is reflective to meet IFC requirements.

Material Data		
Material	242/552 UV Stable Reflective Vinyl w/ Acrylic Laminate on Aluminum	
Operating Temp.	-40 °F (-40 °C) to +175 °F (+79 °C)	
Min. Application Temp.	+50 °F (+10 °C)	
Liner	Polyethylene Coated Paper	
Certifications	UL969	

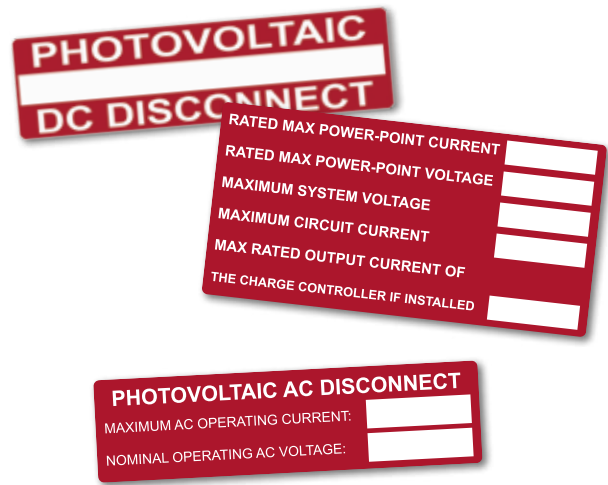


Product Selection							
Article No.	Part No.	Type	Description	Width in. (mm)	Height in. (mm)	Pkg. Qty.	Pkg. Type
596-00257	596-00257	PVPSRTM	PHOTOVOLTAIC POWER SOURCE	6.75 (171.45)	2.75 (69.85)	1	PK

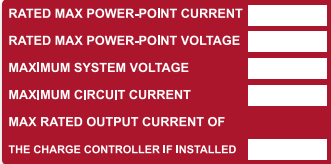



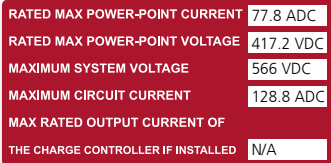
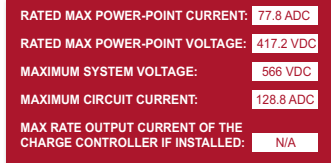
Use **Part No.** for ordering and **Type** for specification purposes.

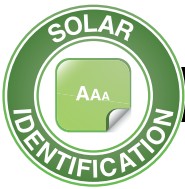
## Variable Print Photovoltaic Labeling

HellermannTyton Solar Identification systems offer diverse methods for printing photovoltaic labels. Nothing could be easier than opening and printing a pre-saved label template using TagPrint® Pro 3.0 or the TagPrint® Xpress Solar mobile app. While you can use pre-printed labels for most PV labeling requirements, some information will require the use of variable print or blank, print-on-demand labels. Variable data labels are designed to ease the process of labeling specific voltage and current levels, which are unique to each installation.



Depending on preference, HellermannTyton Solar Identification systems offer different ways to create a variable data label. The chart below illustrates how to create a DC breaker label to meet NEC 690.53.

Method	<b>1</b> Using TagPrint Pro 3.0 or TagPrint Xpress Solar app, TT230SMC or TT130SMC thermal transfer printers and pre-printed solar label 558-00253	<b>2</b> Using TagPrint Pro 3.0 or TagPrint Xpress Solar app, TT230SMC or TT130SMC thermal transfer printers and red continuous vinyl label 558-00312
Beginning Label		
Printer System		
Final Label		
Additional Requirements	TagPrint Pro 3.0 or TagPrint Xpress Solar app	TagPrint Pro 3.0 or TagPrint Xpress Solar app



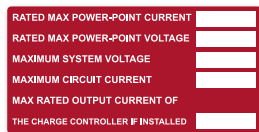
# Printable Solar Labels

## Printable Solar Labels

Designed with cross-laminated UV stable materials, these variable print solar installation labels are designed to accept printing from any standard thermal transfer printer using a resin-based ink ribbon for the best durability. Print your voltage information directly on the label and then laminate with an optional clear acrylic laminate material for added protection. These labels can be used to print disconnecting means and breaker series directly on the labels for a more professional result and a smoother inspection process.



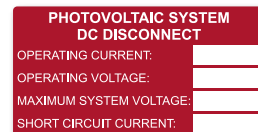
Material Data	
Material	840/926 UV Stable White Polyester w/ Clear Acrylic Laminate
Operating Temperature	-40 °F (-40 °C) to +302 °F (+150 °C)
Min. Application Temp.	+50 °F (+10 °C)
Liner	55# Paper
Certifications	UL969



596-00253



596-00240



596-00241



596-00239



596-00237



596-00238



596-00242



596-00252

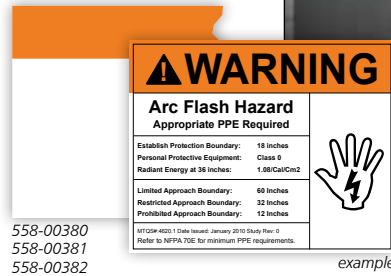
Product Selection		Article No.	Part No.	Type	Description	Width in. (mm)	Height in. (mm)	Pkg. Qty. (Per Roll)	Pkg. Type
596-00253	596-00253	DC2011	DC MODULE LABEL	4.0 (101.60)	2.0 (50.80)	50	RL		
596-00240	596-00240	ACRATING	DC BACKUP SYSTEM LABEL	4.0 (101.60)	2.0 (50.80)	50	RL		
596-00241	596-00241	DCRATING	DC RATING LABEL	3.75 (95.25)	2.0 (50.80)	50	RL		
596-00239	596-00239	PVACDIS	PV AC DISCONNECT RATING	3.75 (95.25)	1.0 (25.40)	50	RL		
596-00237	596-00237	ACDISCT	PHOTOVOLTAIC - AC DISCONNECT	3.75 (95.25)	1.0 (25.40)	50	RL		
596-00238	596-00238	DCDISCT	PHOTOVOLTAIC - DC DISCONNECT	3.75 (95.25)	1.0 (25.40)	50	RL		
596-00252	596-00252	AC2011	AC MODULE LABEL	4.0 (101.60)	2.0 (50.80)	50	RL		
596-00242	596-00242	LAM1	CLEAR LAMINATE, UV STABLE	4.2 (106.60)	2.25 (57.15)	50	RL		

Use **Part No.** for ordering and **Type** for specification purposes. If using a TT130SMC printer, select label widths up to 2" (50.8 mm). All other HellermannTyton thermal transfer printers will work with label widths up to 4" wide (101.6 mm). For a listing of Printable Solar Labels designed to fit the TT130SMC, see page 44.

## Banded Colored Continuous Rolls

Banded colored continuous rolls come with a stripe (band) for easy printing of warning labels. Available in different widths, these labels are designed for use with TagPrint® Pro software and HellermannTyton thermal transfer printers and can be customized, produced on demand and cut to any length.

Material Data	
Material	840/926 UV Stable White Polyester w/Clear Polyester Laminate
Operating Temp. Range	-40 °F (-40 °C) to +302 °F (+150 °C)
Min. Application Temp.	+50 °F (+10 °C)
Certification	UL969



Product Selection		Article No.	Part No.	Type	Description	Width in. (mm)	Length ft. (m)	Pkg. Qty. ft.	Pkg. Type
		558-00380	558-00380	HT2OE50250UV	2" White Polyester with .5" Orange Stripe on Continuous Roll	2.0 (50.8)	250.0 (76.2)	250	RL
		558-00381	558-00381	HT3OE75250UV	3" White Polyester with .75" Orange Stripe on Continuous Roll	3.0 (76.2)	250.0 (76.2)	250	RL
		558-00382	558-00382	HT4OE10250UV	4" White Polyester with 1.0" Orange Stripe on Continuous Roll	4.0 (101.6)	250.0 (76.2)	250	RL

Use **Part No.** for ordering and **Type** for specification purposes. If using a TT130SMC printer, select label widths up to 2" (50.8 mm). All other HellermannTyton thermal transfer printers will work with label widths up to 4" wide (101.6 mm).

## Pre-Printed Header Labels

These labels come with pre-printed color headers so that only one color of ribbon is needed to complete the message panel. Labels can be used with TagPrint Pro label software and HellermannTyton thermal transfer printers to reduce labor, eliminate minimum orders and allow the user to create labels on demand.

Material Data	
Material	840/926 UV Stable White Polyester w/Clear Polyester Laminate
Operating Temp. Range	-40 °F (-40 °C) to +302 °F (+150 °C)
Min. Application Temp.	+50 °F (+10 °C)
Certification	UL969

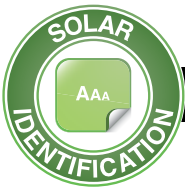


Label represents 596-00644 & 596-00645.



Product Selection		Article No.	Part No.	Type	Description	Width in. (mm)	Height in. (mm)	Pkg. Qty. (Per Roll)	Pkg. Type
		596-00634	596-00634	3X2WARNINGUV	White with Orange WARNING Header	3.00 (76.20)	2.0 (50.80)	250	RL
		596-00635	596-00635	3X2CAUTIONUV	White with Yellow CAUTION Header	3.00 (76.20)	2.0 (50.80)	250	RL
		596-00648	596-00648	3X2DANGERUV	White with Red DANGER Header	3.00 (76.20)	2.0 (50.80)	250	RL
		596-00633	596-00633	4X6WARNINGUV	White with Orange WARNING Header	4.00 (101.60)	6.0 (152.40)	250	RL
		596-00636	596-00636	4X6CAUTIONUV	White with Yellow CAUTION Header	4.00 (101.60)	6.0 (152.40)	250	RL
		596-00646	596-00646	4X6DANGERUV	White with Red DANGER Header	4.00 (101.60)	6.0 (152.40)	250	RL
		596-00645	596-00645	WV55X275UV	Orange WARNING Header, Yellow Voltage Safety Symbol	5.50 (139.70)	2.75 (69.85)	250	RL
		596-00644	596-00644	WV275X135UV	Orange WARNING Header, Yellow Voltage Safety Symbol	2.75 (69.85)	1.35 (34.29)	250	RL

Use **Part No.** for ordering and **Type** for specification purposes. If using a TT130SMC printer, select label widths up to 2" (50.8 mm). All other HellermannTyton thermal transfer printers will work with label widths up to 4" wide (101.6 mm).



# Printable Solar Labels

## Solid Colored Continuous Rolls

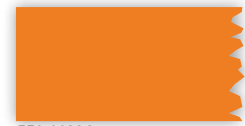
Solid colored continuous rolls are available in a variety of colors and printing widths. Designed to optimize custom printing on demand, these rolls allow maximum flexibility for printing unique sizes and text using the TagPrint® Pro label printing software and HellermannTyton thermal transfer printers. Continuous rolls allow you to have the labels that you need, when you need them, including at the time of inspection, and can be cut to size.



Material Data	
Material Number	1500
Material	Continuous Vinyl
Adhesive	Acrylic
Temperature Range	-40 °F (-40 °C) to +180 °F (+82 °C)
Certifications	UL969



558-00309



558-00336



558-00308



558-00307



558-00310

Product Selection							
Article No.	Part No.	Type	Description	Width in. (mm)	Length ft. (m)	Pkg. Qty. ft.	Pkg. Type
558-00309	558-00309	HT1WH250	White Vinyl on Continuous Roll	1.0 (25.4)	250.0 (76.2)	250	RL
558-00313	558-00313	HT2WH250	White Vinyl on Continuous Roll	2.0 (50.8)	250.0 (76.2)	250	RL
558-00350	558-00350	HT4WH250	White Vinyl on Continuous Roll	4.0 (101.6)	250.0 (76.2)	250	RL
558-00310	558-00310	HT1YE250	Yellow Vinyl on Continuous Roll	1.0 (25.4)	250.0 (76.2)	250	RL
558-00314	558-00314	HT2YE250	Yellow Vinyl on Continuous Roll	2.0 (50.8)	250.0 (76.2)	250	RL
558-00346	558-00346	HT3YE250	Yellow Vinyl on Continuous Roll	3.0 (76.2)	250.0 (76.2)	250	RL
558-00358	558-00358	HT4YE250	Yellow Vinyl on Continuous Roll	4.0 (101.6)	250.0 (76.2)	250	RL
558-00308	558-00308	HT1RD250	Red Vinyl on Continuous Roll	1.0 (25.4)	250.0 (76.2)	250	RL
558-00312	558-00312	HT2RD250	Red Vinyl on Continuous Roll	2.0 (50.8)	250.0 (76.2)	250	RL
558-00006	558-00006	HT3RD250	Red Vinyl on Continuous Roll	3.0 (76.2)	250.0 (76.2)	250	RL
558-00370	558-00370	HT4RD250	Red Vinyl on Continuous Roll	4.0 (101.6)	250.0 (76.2)	250	RL
558-00307	558-00307	HT1BK250	Black Vinyl on Continuous Roll	1.0 (25.4)	250.0 (76.2)	250	RL
558-00311	558-00311	HT2BK250	Black Vinyl on Continuous Roll	2.0 (50.8)	250.0 (76.2)	250	RL
558-00336	558-00336	HT1OE250	Orange Vinyl on Continuous Roll	1.0 (25.4)	250.0 (76.2)	250	RL
558-00337	558-00337	HT2OE250	Orange Vinyl on Continuous Roll	2.0 (50.8)	250.0 (76.2)	250	RL
558-00338	558-00338	HT3OE250	Orange Vinyl on Continuous Roll	3.0 (76.2)	250.0 (76.2)	250	RL

Use **Part No.** for ordering and **Type** for specification purposes. If using a TT130SMC printer, select label widths up to 2" (50.8 mm). All other HellermannTyton thermal transfer printers will work with label widths up to 4" wide (101.6 mm).

## Reflective Colored Continuous Rolls

These reflective vinyl rolls can be used to design labels that conform to NEC solar installation requirements. Designed for use with TagPrint Pro software and any HellermannTyton thermal transfer printing system, reflective continuous vinyl rolls can be printed and cut to size.

Material Data	
Material	509 Red Reflective Continuous Vinyl
Operating Temp.	-40 °F (-40 °C) to +176 °F (+80 °C)
Min. Application Temp.	+50 °F (+10 °C)
Liner	3.2 mil 50# bleached kraft paper
Certifications	ASTM D 903, ASTM D2979

Product Selection							
Article No.	Part No.	Type	Description	Width in. (mm)	Length ft. (m)	Pkg. Qty. ft.	Pkg. Type
558-00377	558-00377	HT1RDRF250	Red Reflective Vinyl on Continuous Roll	1.0 (25.4)	250.0 (76.20)	250	RL
558-00372	558-00372	HT2RDRF250	Red Reflective Vinyl on Continuous Roll	2.0 (50.8)	250.0 (76.20)	250	RL
558-00373	558-00373	HT3RDRF100	Red Reflective Vinyl on Continuous Roll	3.0 (76.2)	100.0 (30.48)	100	RL
558-00407	558-00407	HT4RDRF100	Red Reflective Vinyl on Continuous Roll	4.0 (101.6)	100.0 (30.48)	100	RL

Use **Part No.** for ordering and **Type** for specification purposes. If using a TT130SMC printer, select label widths up to 2" (50.8 mm). All other HellermannTyton thermal transfer printers will work with label widths up to 4" wide (101.6 mm).

## Code-compliant Labeling YOUR WAY

In addition to pre-printed NEC labels, HellermannTyton provides installers with several options for code compliant solar installation labeling. Choose the method that best meets your needs.

### Design and print customized PV labels, in the office or on the job site.

TagPrint® Pro software works with any thermal transfer printer to design and print all required labels for NEC code-compliant solar installations.



Use TagPrint Pro 3.0 and the TT230SMC or TT130SMC for medium to high-volume print jobs. Both printers include a cutter and will print on a variety of label stocks, including continuous vinyl stock up to 4" (101.6 mm) wide.

### Reference PV labeling codes, print labels and optimize workflow, from the palm of your hand.



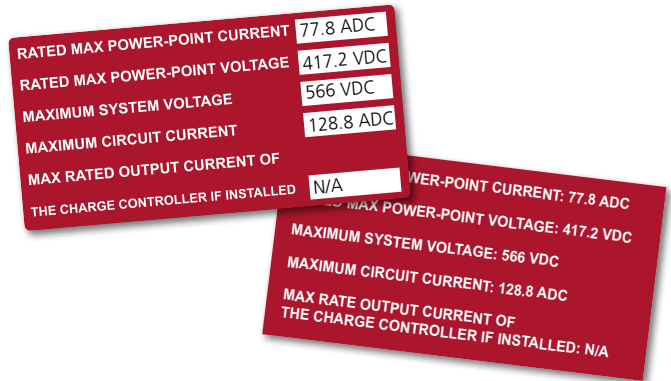
TAP INTO CODE COMPLIANCE

The TagPrint® Xpress Solar mobile app is a code reference and labeling tool designed specifically for solar installers. The app provides an easy guide to NEC 2014 and allows for ultra-efficient wireless printing on any HellermannTyton thermal transfer printer.



- Print NEC 2014 labels, wirelessly.
- Make printing faster and easier with multiple printers.
- Optimize workflow with multiple users.
- NEC code reference tool helps ensure passed inspections.

*Download the app for FREE from the App Store or Google Play.*



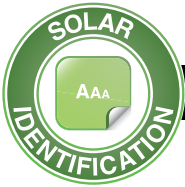
### PV labeling convenience for solar installations, large and small.

Solar Label Convenience Packs allow installers to quickly and economically purchase high quality pre-printed NEC 2014 code-compliant solar installation labels.



Packaged in 10-count quantities to meet the needs of smaller scale solar installations and independent contractors, Solar Label Convenience Packs are available in HellermannTyton's most popular pre-printed NEC 2014 code-compliant solar label formats.

Choose from a variety of regular and reflective pre-printed labels. For enhanced durability, clear laminate overlay labels are also available in a convenience pack.



# Labeling Software

## TagPrint® Pro 3.0

TagPrint Pro 3.0 is HellermannTyton's exclusive powerful, multi-functional and easy-to-use label design and printing software. Easily create and print solar installation labels with pre-loaded solar label templates. Designed for use with HellermannTyton thermal transfer printing systems, TagPrint Pro 3.0 offers "What You See Is What You Get" (WYSIWYG) label creation.

Product Selection			
Article No.	Part No.	Pkg. Qty.	Description
556-00035	556-00035	1	TagPrint Pro 3.0 - Single User
556-00042	556-00042	1	TagPrint Pro 3.0 - Single User Upgrade
556-00036	556-00036	1	TagPrint Pro 3.0 - 2-3 Network User
556-00037	556-00037	1	TagPrint Pro 3.0 - 2-5 Network User



## TagPrint Pro Features:

**Familiar Task-based Navigation** TagPrint Pro 3.0 has a ribbon interface that offers quick and easy access to the commands that are needed to complete a task. Commands are organized in logical groups, which are collected together under tabs. Each tab relates to a type of activity, such as "Label", "Table", "Print" and "Utility".

**Batch Printing** TagPrint Pro 3.0 has a "print-later" feature for the purpose of batching under one file name in a simple print utility. Using built-in Macros, design each label and then define print options for execution at time of printing. Access the project file and concurrently print labels to a single printer or multiple printers.

**At-a-glance Interface** Whether it is one label or a page of labels, the TagPrint Pro 3.0 interface was designed to allow ease-of-control over print jobs from a single screen. Information is viewable at a glance so a user can view object properties, data information, and actual label layout at the same time. When changes are made, information is updated.

**Built-in Security** TagPrint Pro 3.0 offers a built-in security system for the restriction of use or protection of data. This feature allows the user to lockout or password protect label designs and data tables from unauthorized label editing. Available for purchase as a single-user or network license.

**Expanded Import Capabilities and "Live Sync"** TagPrint Pro 3.0 has the ability to import a database that has been exported from another program (i.e., CAD) or connect to existing database (i.e., Excel) files with the added ability to sync up to that database at timed intervals set by the user. If enabled, this feature allows variable information to be updated automatically so that print data is fully controlled from one location without a manual refresh at each computer terminal.

**Editing Convenience** Label designs can be edited in Portrait or Landscape mode, as well as show the direction of label feed next to the design.

**"PIN" Favorites** TagPrint Pro 3.0 allows the user to "pin" saved label designs and data tables making them immediately available in the file menu.

**Editing Convenience** TagPrint Pro 3.0 is available as a single-user license or as a network version which allows a user to share printers, label designs, and data tables from multiple workstations within a single location.



## TagPrint® Xpress Solar

The TagPrint® Xpress Solar mobile app is a code reference and labeling tool designed specifically for the solar market. The app provides an easy guide through the most recent National Electrical Code (NEC) for photovoltaic installations and allows for ultra-efficient wireless printing of required labels.



## TagPrint Xpress Solar Benefits:



### Print NEC 2014 labels, wirelessly.

All labels required by NEC 2014 are pre-saved as visual templates in the app. Designed for use with HellermannTyton thermal transfer printers, the app turns a mobile device into a wireless mobile print command center, eliminating the need for a laptop or desktop computer.

### NEC code reference tool helps ensure passed inspections.

TagPrint Xpress Solar displays labels visually, for easy selection. Installers can also search for required labels by application (ex: Inverter). The detailed NEC code reference feature helps to ensure installers have all required labels per NEC and International Fire Code (IFC), to pass inspection the first time.



### Make printing faster and easier with multiple printers.

For fast, high-volume printing, TagPrint Xpress Solar allows users to network several printers.

For example, an installer can print all labels required for a solar installation with the use of three HellermannTyton printers loaded with different label stock, one with a 1" orange banded roll, one with a 1" red reflective roll and one with printable solar labels.

### Optimize workflow with multiple users.

Any user with the app installed on their mobile device can access the same printers, increasing printing efficiency and workflow. No more labeling bottlenecks!

TagPrint Xpress Solar offers installers a new way to print labels and a better way to work.



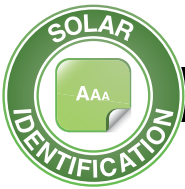
For more information, download the FREE app from the App Store or Google Play.

#### Important notes:

The print function is only compatible with HellermannTyton brand printers.

The TagPrint Xpress Solar mobile app requires Apple® iOS 6 or Android™ 4.0 (Ice Cream Sandwich) or later operating system.

App Store is a service mark of Apple Inc. Google Play is a trademark of Google Inc.



# Thermal Transfer Printers

## TT230SMC Thermal Transfer Printer

The TT230SMC printer is ideal for small to medium volume users looking for an easy-to-use and functional thermal transfer printer. The TT230SMC is Ethernet ready and includes an integrated cutter for use with continuous vinyl label rolls. Each printer comes with a label "caddy" that holds large label rolls behind the printer, for easier dispensing and printing. An optional carrying case can be used to safely transport the printer to remote job sites.



TT230SMC

Material Data	
Dimensions of printer	Width – 7.95" (201 mm) Height – 6.81" (172 mm) Depth – 10.16" (258 mm)
Weight	5.2 lbs (2.36kg)
Power supply	100-240V
Operation temperature	+50F to +95F (+10C to +35C)
Print density	300 dpi
Media diameter	Total diameter - 8.27" (210 mm) Core diameter - 3.0" (76.2 mm) Winding direction - Inside or outside
Material thickness	.0028" - .007" (.06 mm - .19 mm)
Operating system	Windows 2000 / XP / Vista / 7 / 8

Product Selection				
Article No.	Part No.	Type	Description	Pkg. Qty
556-00240	556-00240	TT230SMC	TT230SMC Printer with Cutter	1
556-00256	556-00256	TT230SMCKIT	TT230SMC Printer Kit*	1
556-00232	556-00232	RPH TT230SM	Replacement Print Head	1
556-00233	556-00233	RPS TT230SM	Replacement Power Supply	1
556-00231	556-00231	CASE 230SM	Optional Carrying Case	1
556-00235	556-00235	LABEL HOLDER	LABEL HOLDER	1
556-00189	556-00189	TTWHITEOUT	White Ribbon on 1" Core, Coated Side Out, 4.33" x 984'	1
556-00190	556-00190	TTWHITEOUTSM	White Ribbon on 1/2" Core, Coated Side Out, 4.33" x 242'	1

Use **Part No.** for ordering and **Type** for specification purposes. \*Includes the TT230SMC printer with cutter, TagPrint® Pro 3.0 software, black ribbon, white ribbon, caddy and hard-shell carrying case.

## Features & Benefits

- 300dpi thermal transfer print head
- Print speed up to 3" (76.2 mm) per second
- Integrated cutter - TT230SMC only
- 2mb flash / 8mb SDRAM
- Easy set up and loading without adjustments
- Label holder included with purchase
- Highly accurate, adjustable gap sensor
- Low calibration waste
- No complicated settings
- Lightweight / minimal footprint
- Approvals: CE, FCC, Class A, cULus, UL, GS, TUV-GS, LCC, C-Tick, BSMI, RoHS

## Printing Specifications

- Prints on ShrinkTrak, continuous vinyl rolls, foam nameplate labels, adhesive labels, TipTags and self laminating labels
- TT230SMC printer with cutter not recommended for use with ShrinkTrak or foam nameplate labels.
- Uses standard 1/2" core HellermannTyton ribbons: (TT100OUTSM, TT822OUTSM, TTDTHOUTSM, TTHSTOUTSM, TT900OUTSM)
- Maximum print width – 4.17" (106 mm)
- Minimum print width – 1.0" (25.4 mm)

### TT130SMC Compact Thermal Transfer Printer

Designed with space and portability in mind, the TT130SMC thermal transfer printer's compact footprint allows for highly efficient printing in applications in which space is tight or when portability is important. The smaller size and optional hard-shell carrying case make it easy to transport to remote job sites. The printer accommodates label roll stock up to 2" wide, to satisfy most solar installation labeling requirements. The TT130SMC includes an Ethernet port that allows the user to connect to an existing network or to a wireless router for portable printing. For ultimate print efficiency and workflow management, users can connect several TT130SMC printers together and use TagPrint® Pro label software or the TagPrint® Xpress mobile application to create a multiple printer network. Optional label "caddy" holds larger label rolls. The carrying case includes space for two printers, as well as a wireless router, cables and label stock.



TT130SMCKIT

Material Data	
Dimensions of printer	Width - 5.50" (140 mm) Height - 6.98" (177 mm) Depth - 11.0" (241 mm)
Weight	5.6 lbs (2.54 kg)
Power supply	100-240V Output: DC 24V 2.5A
Operation temperature	+50F to +95F (+10C to +35C)
Print density	300 dpi
Media diameter	Total diameter - 8.27" (210 mm) Core diameter - 3.0" (76.2 mm) Winding direction - Inside or outside
Material thickness	.0028" - .007" (.06 mm - .19 mm)
Operating system	Windows 2000 / XP / Vista / 7 / 8

Product Selection				
Article No.	Part No.	Type	Description	Pkg. Qty
556-00250	556-00250	TT130SMC	TT130SMC Printer with Cutter	1
556-00254	556-00254	TT130SMCKIT	TT130SMC Printer Kit*	1
556-00257	556-00257	2TT130SMCKIT	2 Printer TT130SMC Printer Kit**	1
556-00251	556-00251	TT130RPHEAD	TT130SMC Print Head	1
556-00252	556-00252	TT130PWRSPLY	TT130SMC Power Supply	1
556-00255	556-00255	TT130SMCCORD	TT130SMC Replacement Power Cord	1
556-00253	556-00253	TT130SMCCASE	Optional Carrying Case	1
556-00235	556-00235	Label Holder	Label Holder	1
556-00205	556-00205	TTWHITEOUTSM-2	White Ribbon 2" X 154', 1/RL	1
556-00206	556-00206	TT822OUTSM-2	Black Ribbon 2" X 242', 1/RL	1

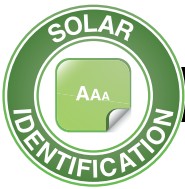
Use **Part No.** for ordering and **Type** for specification purposes. \*Includes the TT130SMC printer with cutter, TagPrint® Pro 3.0 software, black and white ribbon, caddy and hard-shell carrying case. \*\*Includes two (2) TT130SMC printers with cutter, TagPrint Pro 3.0 software, (2) black ribbon, (2) white ribbon, (2) caddies and (1) hard-shell carrying case.

### Features & Benefits

- Lightweight, compact design makes it easy to transport to remote job sites
- Connect several printers together for ultimate printing efficiency
- 300 dpi print head for quality print results
- Fast print speed up to 3" (76.2mm) / second
- Easy to set up and load
- Optional label caddy holds larger rolls
- Highly accurate sensor reduces label waste
- Includes USB 2.0 port and Ethernet port for connection to network or wireless router
- 4mb flash / 8mb SDRAM
- Approvals; CE, FCC, Class A, cULus, UL, GS, TUV-GS, LCC, C-Tick, BSMI, RoHS

### Printing Specifications

- Prints on media up to 2" (50.8 mm) wide.
- Uses 1/2" core HellermannTyton ribbons.
- Maximum print width - 2.13" (54.1 mm)
- Minimum print width - .59" (15.0 mm)



# Thermal Transfer Printers

## TT130SMC Compatible Printable Solar Labels

Designed in a “one across” landscape format to fit into the compact TT130SMC thermal transfer printer, these labels allow for code-compliant marking of variable information including disconnecting means, breaker series and voltage data. Made with cross-laminated UV stable materials, labels are ideal for use in solar installation applications. Use with the TT130SMC or any HellermannTyton thermal transfer printer.

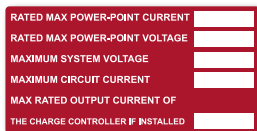


TT130SMC with optional label caddy.

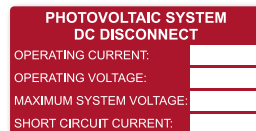
Material Data	
Material	840/926 UV Stable White Polyester w/ Clear Polyester Laminate
Operating Temperature	-40 °F (-40 °C) to +302 °F (+150 °C)
Min. Application Temp.	+50 °F (+10 °C)
Liner	55# White Bleached Paper
Certifications	UL969



Designed to fit common types of AC and DC breaker boxes. Print the breaker series or disconnecting means directly on the labels.



596-00653



596-00654



596-00655



596-00650



596-00651



596-00652



596-00242

Product Selection							
Article No.	Part No.	Type	Description	Width in. (mm)	Height in. (mm)	Pkg. Qty. (Per Roll)	Pkg. Type
596-00650	596-00650	ACDISC-1	Printable Solar Label, PHOTOVOLTAIC AC DISCONNECT, Red	1.0 (25.4)	3.75 (95.25)	50	RL
596-00651	596-00651	DCDISC-1	Printable Solar Label, PHOTOVOLTAIC DC DISCONNECT, Red	1.0 (25.4)	3.75 (95.25)	50	RL
596-00652	596-00652	PVACDIS-1	Printable Solar Label, PV AC RATING LABEL, Red	1.0 (25.4)	3.75 (95.25)	50	RL
596-00655	596-00655	AC2011-1	Printable Solar Label, AC MODULE LABEL, Red	2.0 (50.8)	4.0 (101.60)	50	RL
596-00653	596-00653	DC2011-1	Printable Solar Label, DC MODULE LABEL, Red	2.0 (50.8)	4.0 (101.60)	50	RL
596-00654	596-00654	DCRATING-1	Printable Solar Label, DC RATING LABEL, Red	2.0 (50.8)	3.75 (95.25)	50	RL
596-00242	596-00242	LAM1	Clear Laminate, UV Stable	4.2 (106.6)	2.25 (57.15)	50	RL

Use **Part No.** for ordering and **Type** for specification purposes. While One Across Printable Solar Labels are designed for use in the TT130SMC, they can be used in all HellermannTyton thermal transfer printers.

# enclosure products

## Enclosure Products for combiner boxes, inverters and control panels

HellermannTyton offers a comprehensive line of enclosure products and tools to increase efficiency and enhance installation organization and durability throughout the solar construction project.



### Pro-Duct Wiring Duct

HellermannTyton offers a full line of wire duct, including solid, standard slotted and high-density slotted duct. Pro-Duct solid wall duct is designed for straight wire runs where breakouts are not required. Standard slotted Pro-Duct features break-away fingers which provide additional access for wire leads. High density slotted wall Pro-Duct comes with narrow fingers to reduce fanning of the wires for a neater appearance.



### Braided Sleeving

HellermannTyton braided sleeving provides durable and lightweight abrasion, cut and debris protection for cable assemblies and wire bundles. The braided construction enables the material to expand beyond its nominal size to accommodate variations in bundle sizes and shapes. Braided sleeving is resistant to harsh environments such as chemical salts, solvents, de-icing fluids, and petroleum products, as well as being resilient against UV light. The unique physical weave construction of Braided Sleeving makes it extremely flexible yet it will not trap moisture or humidity.



### Spiralwrap

Flexible and extremely durable, HellermannTyton's Spiralwrap provides effective wire routing and secure protection, even around corners and bends. Spiralwrap protective sheathing easily wraps around a group of cables to provide protection and organization. UL recognized, Spiralwrap is reusable and resistant to most chemicals and is available in a variety of sizes and colors for specific routing needs.



### Heat Shrink Tubing

HellermannTyton heat shrink tubing contracts when heat is applied, allowing wire or cable to unify with the protective layer for maximum protection. Heat shrink tubing is a tough and flexible solution, ideal for insulating and protecting wires and cables from abrasion and environmental hazards. HellermannTyton offers this non-printable tubing in a variety of sizes, colors and shrink ratios.



### Convuluted Tubing

HellermannTyton's line of slit convoluted tubing provides flexible-yet-rigid support that protects wire and cables from abrasion and pinching. Convoluted tubing efficiently routes wire and cables while providing excellent protection against vibration, wear, water, snow, ice and the effects of heat, cold and sunlight. HellermannTyton offers slit convoluted tubing in a variety of sizes, protecting bundles up to 2" in diameter.



### Standard Cable Ties and Assemblies

HellermannTyton manufactures a full line of high quality cable ties in a variety of styles, sizes, materials and colors to bundle and secure wire and cable at converter boxes, inverters and control panels. For faster installations, we offer cable ties with integrated fasteners. Available fastener styles include button head, arrowhead and screw mount.

# standards

## Commitment to Quality

Our passion for designing and manufacturing high-quality products runs deep. HellermannTyton's commitment to quality also includes maintaining highly efficient facilities that minimize waste and our impact on the environment. With a dedication to continuous process improvement, at HellermannTyton, quality is at the heart of everything we do.



HellermannTyton's customers benefit greatly from our experience and focus on quality. Nowhere is our commitment to quality more evident than in our stringent quality assurance testing practices which we refer to as "design optimization". Design optimization starts with designing a quality product with our customer's specific needs in mind. Then we optimize the product's design throughout a rigorous quality testing process, which includes simulation testing, validation and field testing.

The quality testing process doesn't end when the product leaves our warehouse. Through customer and market feedback, combined with the latest design and manufacturing technologies, we provide advanced solutions of the highest quality.



# ISO 9001

## ISO 9001

The International Standards Organization (ISO) establishes worldwide standards for products and services in recognition of increasing globalization of markets. The ISO program determines the requirements for the quality assurance programs. HellermannTyton has achieved ISO 9001 certifications at all of its U.S. locations.

# ISO/TS 16949

## ISO/TS16949

ISO / TS16949 is a recognized quality supplier standard for manufacturers servicing the automotive industry. HellermannTyton has achieved and maintains registration to this standard.

# ISO 14001

## ISO 14001

ISO 14001 is a voluntary standard for Environmental Management Systems established by the International Organization for Standardization. Its goal is to provide benchmarks for reviewing and improving environmental performance. HellermannTyton takes an active role in this process of continuous improvement.



## International Electro-Technical Commission (IEC)

Representatives from key industry manufacturers participate in creating standards that provide continuous improvement for products and services. HellermannTyton chairs the committee that created the UL 62275 standard (replacing UL 1565) for Wire Positioning Devices.



## RoHS / WEEE

The scope of the European Union's Restriction of Hazardous Substances (RoHS) and the Waste Electrical and Electronic Equipment (WEEE) directives covers all electrical and electronic equipment and their components sold into the European Union. Many of those products are manufactured in our North American operations.

Located in 35 countries, HellermannTyton brings the best to its customers through global resources channeled to local implementations. Flexibility, agility, and ability to create value-added, market driven solutions are the hallmarks of every HellermannTyton company across the world.



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SOUTH AFRICA | SPAIN | SWEDEN | THAILAND | UNITED ARAB EMIRATES | UNITED KINGDOM | UNITED STATES

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# HellermannTyton

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email: info@htamericas.com.mx

**ISO 9001 certified**

## **Warranty Policy**

HellermannTyton products are warranted to be free from defects in material and workmanship at the time sold by us; but our obligation under this warranty and that of the seller is limited to the replacement of the product, and neither we nor the seller are bound by any other warranty, expressed, implied or statutory. Under no circumstances are we or the seller liable for any loss, damage, expenses or consequential damages of any kind arising out of the use or inability to use these products. All are sold with the understanding that the user will test them in actual use and determine their adaptability for the intended uses.