



## Pre-printed Solar Installation Labels

## Photovoltaic Panel Installation Efficiencies with a Self-Adhesive UV Label

When an engraved plate is not specified or mandated, choose the more cost efficient option for meeting communication and durability requirements – Solar Installation Labels from HellermannTyton.

**The Guideline** The 2011 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 involved, while the IFC states that adhesive vinyl signs are acceptable if properly adhered.

**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 being 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 or 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 inspector must always check local codes before deciding the best and most cost effective way to label the installation.

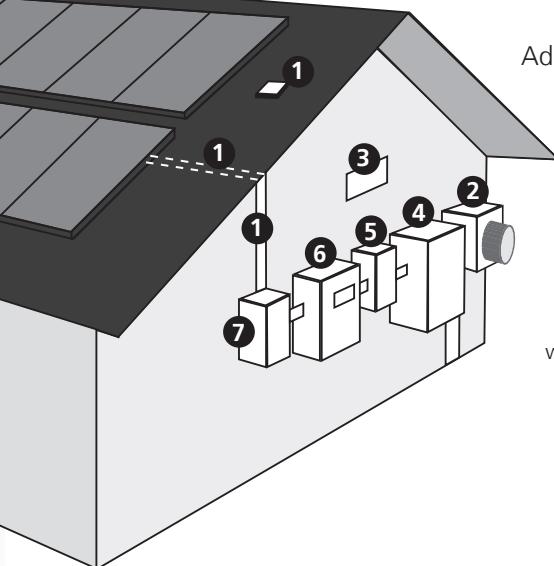
**The Situation** The primary concern with engraved or etched signage, phenolic plates, is the lack of flexibility, high cost, and lead times which can delay inspections. Typical phenolics, from a trophy shop, are not made with UV stable materials. Printing labels on site, as needed, or purchasing pre-printed 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
- Also Offering Continuous Vinyl Labels for Custom Printing Designs on Demand
- Meet NEC & IFC Standards for Printed Text, Character Height, Color and Outdoor UV Stability





Adhesive fastened signs may be acceptable if properly adhered.

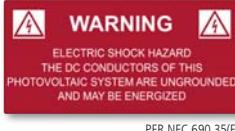
Vinyl signs to be weather resistant.  
IFC 605.11.1.3

The markings shall be of sufficient durability to withstand the environment involved. NEC 110.21

## ① Combiner Box, Circuits / EMT / Conduit Combiner Box / Enclosures / Raceways



PER NEC 690.17(4)



PER NEC 690.35(F)



PER NEC 110.27(C) & OSHA 1910.145(f)(7)



PER NEC 690.31(E)(3) & IFC 605.11.2

## ② Net Meter



PER NEC 690.5(C)

## ④ Main Service Disconnect



PER NEC 690.14(C)(2), IFC 605.11.1, IFC 605.11.4, NEC 690.15 & NEC 690.53



PER NEC 690.14(C)(2), IFC 605.11.1, IFC 605.11.4, NEC 690.15 & NEC 690.53



PER NEC 110.27(C) & OSHA 1910.145(f)(7)

NEC 690.31(E)(3), IFC 605.11.2

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).

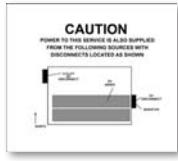
NEC 690.35(F)

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 690.4(F)

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.

## ③ Building / Structure



PER NEC 690.56(B)



PER NEC 690.17(4)



PER IFC 605.11.1



PER NEC 690.14(C)(2), IFC 605.11.1, IFC 605.11.4, NEC 690.15 & NEC 690.53

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 690.17(4)

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 110.27(C)

Entances to rooms or other guarded locations that contain exposed live parts shall be marked with conspicuous warning signs forbidding unqualified persons to enter.

OSHA 1910.145(F)(7)

Warning tags are used to represent a hazard level between "Caution" and "Danger".

## ④ Breaker Panel / Pull Boxes



PER NEC 690.5(C)



PER NEC 690.17(4)



PER NEC 110.27(C) & OSHA 1910.145(f)(7)



PER NEC 705.12(D)(4) & NEC 690.64



PER NEC 705.12(D)(4) & NEC 690.64



PER NEC 690.33(E)(2)



MAXIMUM AC OPERATING CURRENT: \_\_\_\_\_

MAXIMUM AC OPERATING VOLTAGE: \_\_\_\_\_

PER NEC 690.54



PER NEC 690.35(F)

## ⑤ AC Disconnect / Breaker / Points of Connection



PER IFC 605.11.1, IFC 605.11.1.4, NEC 690.15 & NEC 690.14(C)(2)



NOMINAL OPERATING AC VOLTAGE: \_\_\_\_\_

NOMINAL OPERATING AC FREQUENCY: \_\_\_\_\_

MAXIMUM AC POWER: \_\_\_\_\_

MAXIMUM AC CURRENT: \_\_\_\_\_

MAX OVERCURRENT DEVICE RATING: \_\_\_\_\_

FOR AC MODULE PROTECTION: \_\_\_\_\_

PER NEC 690.52



PER NEC 690.17(4)



MAXIMUM AC OPERATING CURRENT: \_\_\_\_\_

MAXIMUM AC OPERATING VOLTAGE: \_\_\_\_\_

PER NEC 690.14(C)(2)

## ⑥ Inverter



PER NEC 690.5(C)

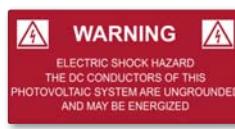


MAXIMUM AC OPERATING CURRENT: \_\_\_\_\_

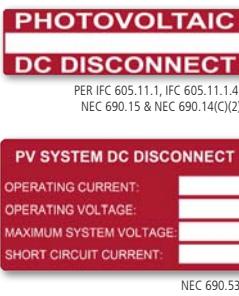
MAXIMUM AC OPERATING VOLTAGE: \_\_\_\_\_

PER NEC 690.54

## ⑦ DC Disconnect / Breaker



PER IFC 605.11.1, IFC 605.11.1.4, NEC 690.15 & NEC 690.14(C)(2)



OPERATING CURRENT: \_\_\_\_\_

OPERATING VOLTAGE: \_\_\_\_\_

MAXIMUM SYSTEM VOLTAGE: \_\_\_\_\_

SHORT CIRCUIT CURRENT: \_\_\_\_\_

PER NEC 690.53



DC VOLTAGE IS ALWAYS PRESENT WHEN SOLAR MODULES ARE EXPOSED TO SUNLIGHT

PER NEC 690.17(4)



RATED AC OPERATING CURRENT: \_\_\_\_\_

RATED MAX AC OPERATING CURRENT: \_\_\_\_\_

RATED AC OPERATING VOLTAGE: \_\_\_\_\_

RATED MAX AC OPERATING VOLTAGE: \_\_\_\_\_

RATED SHORT CIRCUIT CURRENT: \_\_\_\_\_

MAXIMUM SYSTEM VOLTAGE: \_\_\_\_\_

FOR MARKING DC BACKUP SYSTEMS



RATED MAX POWER-POINT CURRENT: \_\_\_\_\_

RATED MAX POWER-POINT VOLTAGE: \_\_\_\_\_

MAXIMUM SYSTEM VOLTAGE: \_\_\_\_\_

SHORT CIRCUIT CURRENT: \_\_\_\_\_

MAX RATED OUTPUT CURRENT OF THE CHARGE CONTROLLER IF INSTALLED: \_\_\_\_\_

PER NEC 690.53

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 690.54

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

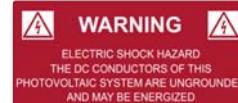
PV power systems employing energy storage shall also be marked with the maximum operating voltage, including any equalization voltage and polarity of the grounded circuit conductor.

## Pre-printed Solar Labels

HellermannTyton pre-printed and thermal transfer printable labels have a special high-bond adhesive for use on both enamel and powder coat painted surfaces. Labels are a laminated construction for maximum UV stability. Where required, labels are reflective per NEC and IFC standards. Labels meet the requirements of UL969.



Material Data	
Material	443/552 UV Stable Flexible White Vinyl w/ Acrylic Lamine
Operating Temperature	-40 °F (-40 °C) to 175 °F (79 °C)
Min. Application Temp.	50 °F (10 °C)
Liner	78# White Bleached Paper
Certifications	UL969



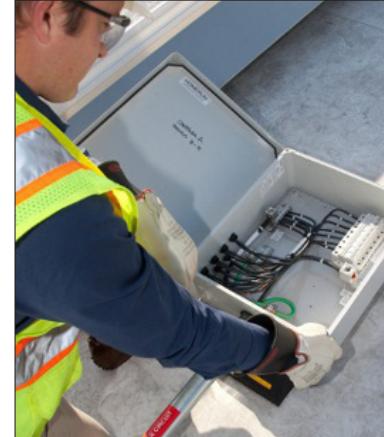
Product Selection				
Article No.	Part No.	Type	Roll Qty.	Description
596-00233	596-00233	WESHLBL	50	WARNING - ELECTRICAL SHOCK HAZARD 3.75" (95.25mm) X 2.0" (50.8mm)
596-00232	596-00232	WESHLBLDC	50	WARNING - ELECTRICAL SHOCK HAZARD W/DC 3.75" (95.25mm) X 2.5" (63.5mm)
596-00234	596-00234	WGCM	50	WARNING - GROUNDED CONDUCTORS MAY BE ENERGIZED 4.12" (104.6mm) X 2" (50.8mm)
596-00258	596-00258	WDCCU	50	WARNING - DC CONDUCTORS MAY BE ENERGIZED 4.12" (104.6mm) X 2" (50.8mm)
596-00235	596-00235	WTOPVLBL	50	WARNING - TURN OFF PV AC PRIOR TO WORKING INSIDE PANEL 4.12" (104.6mm) X 2" (50.8mm)
596-00231	596-00231	WDPSLBL	50	WARNING - DUAL POWER SOURCE 4.12" (104.6mm) X .75" (19.05mm)
596-00236	596-00236	CBACKFED	50	CAUTION - PV SYSTEM CIRCUIT BREAKER IS BACKFED 4.12" (104.6mm) X .75" (19.05mm)

Use Part No. for ordering and Type for specification.

## Pre-printed Reflective Solar Labels

Reflective labels are easier to read at night and are used to ensure fire safety and NEC regulations.

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



<b>DO NOT DISCONNECT UNDER LOAD</b> 596-00244	<b>CAUTION: SOLAR ELECTRIC SYSTEM CONNECTED</b> 596-00245	<b>CAUTION: SOLAR CIRCUIT</b> 596-00247	<b>MAIN PV SYSTEM DISCONNECT</b> 596-00243	<b>MAIN PV SYSTEM AC DISCONNECT</b> 596-00255
<b>SOLAR DISCONNECT</b> 596-00246		<b>PHOTOVOLTAIC POWER SOURCE</b> 596-00206		

Product Selection				
Article No.	Part No.	Type	Pkg. Qty.	Description
596-00244	596-00244	DNDCL	50	DO NOT DISCONNECT UNDER LOAD 6.5" (165.1mm) X 1" (25.4mm)
596-00245	596-00245	CSESC	50	CAUTION – SOLAR ELECTRIC SYSTEM CONNECTED 6.5" (165.1mm) X 1" (25.4mm)
596-00247	596-00247	CSCIRBL	50	CAUTION - SOLAR CIRCUIT 6.5" (165.1mm) X 1" (25.4mm)
596-00246	596-00246	SOLARD	50	SOLAR DISCONNECT 6.5" (165.1mm) X 1" (25.4mm)
596-00243	596-00243	MPVSD	50	MAIN PV SYSTEM DISCONNECT 5.5" (139.7mm) X 1.75" (44.45mm)
596-00255	596-00255	MPVACDIS	50	MAIN PV SYSTEM AC DISCONNECT 5.5" (139.7mm) X 1.75" (44.45mm)
596-00206	596-00206	PVPSR	50	PHOTOVOLTAIC POWER SOURCE 6.5" (165.1mm) X 1" (25.4mm)

Use Part No. for ordering and Type for specification.

## Caution Solar Circuit Markers

The Photovoltaic Power Source markers are a pre-printed, non-adhesive, coiled marker that can be opened and snapped over the cable for long-term, reflective, permanent identification. Designed with a UV stable vinyl, the coiled markers come 25 per bag and will fit on all standard PV cables or EMT conduits.

<b>CAUTION: SOLAR CIRCUIT</b> 596-00249	<b>CAUTION: SOLAR CIRCUIT</b> 596-00251	<b>PHOTOVOLTAIC POWER SOURCE</b> 596-00208
PHOTOVOLTAIC POWER SOURCE	PHOTOVOLTAIC POWER SOURCE	PHOTOVOLTAIC POWER SOURCE



Product Selection				
Article No.	Part No.	Type	Pkg. Qty.	Description
596-00249	596-00249	CSCSNAP4	25	CAUTION - SOLAR CIRCUIT 4" (101.6mm) X 2" (50.8mm) Use on .25" OD PV cables
596-00251	596-00251	CSCSNAP72	25	CAUTION - SOLAR CIRCUIT 7.2" (182.88mm) X 5" (127mm) For EMT conduits up to 1" in OD
596-00207	596-00207	PVPSSNAP4R	25	PHOTOVOLTAIC POWER SOURCE 4" (101.6mm) X 2" (50.8mm) Use on .25" OD PV cables
596-00208	596-00208	PVPSSNAP72R	25	PHOTOVOLTAIC POWER SOURCE 7.2" (182.88mm) X 5" (127mm) For EMT conduits up to 1" in OD

Use Part No. for ordering and Type for specification.

**Thermal Transfer  
Printable Solar Labels\***

Designed with cross-laminated UV stable materials, the variable imprintable 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 polyester laminate material for added protection. Even print your disconnecting means and breaker series directly on the labels for a more professional result, ensuring a smooth inspection process.

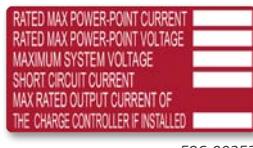


\*Requires TT230SM printer or equivalent to print data for the rating labels.

Material Data	
Material	840/926 UV Stable White Polyester w/ Clear Polyester Laminate
Operating Temperature	-40 °F (-40 °C) to 300 °F (150 °C)
Min. Application Temp.	50 °F (10 °C)
Liner	55# Paper
Certifications	UL969



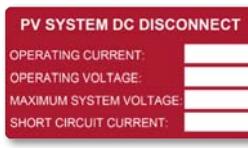
Designed to fit the common types of AC and DC breaker boxes, print the breaker series or disconnecting means directly on the labels.



596-00253



596-00240



596-00241



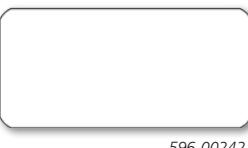
596-00239



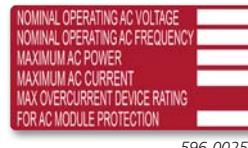
596-00237



596-00238



596-00242



596-00252

Product Selection				
Article No.	Part No.	Type	Roll Qty.	Description
596-00253	596-00253	DC2011	50	DC MODULE LABEL 4" (101.6mm) X 2" (50.8mm)
596-00240	596-00240	ACRATING	50	DC BACKUP SYSTEM LABEL 4" (101.6mm) X 2" (50.8mm)
596-00241	596-00241	DCRATING	50	DC RATING LABEL 3.75" (95.25mm) X 2" (50.8mm)
596-00239	596-00239	PVACDIS	50	PV AC DISCONNECT RATING 3.75" (95.25mm) X 1" (25.4mm)
596-00237	596-00237	ACDISCT	50	PHOTOVOLTAIC - AC DISCONNECT 3.75" (95.25mm) X 1" (25.4mm)
596-00238	596-00238	DDDISCT	50	PHOTOVOLTAIC - DC DISCONNECT 3.75" (95.25mm) X 1" (25.4mm)
596-00242	596-00242	LAM1	50	LAMINATE FOR AC/DC RATING LABEL 4.2" (106.6mm) X 2.25" (57.15mm)
596-00252	596-00252	AC2011	50	AC MODULE LABEL 4" (101.6mm) X 2" (50.8mm)

## Continuous Vinyl Labels

Continuous vinyl labels are available in a variety of colors and printing widths. Designed to optimize unique and custom printing on demand, vinyl labels allow the maximum flexibility for printing unique sizes and text using the Tagprint Pro label printing software and a thermal transfer printing system like the TT230SMC or TTM430 printer. Tagprint Pro comes with pre-made label designs for the most common solar labels so that no design work is required by the installer. Just open, edit as necessary, print, and the printer will automatically cut the label to size. In order that you have labels when you need them, including time of inspection, print what you need, using the continuous vinyl labels.



Material Data	
Material Number	1500
Material	Vinyl
Adhesive	Acrylic
Temperature Range	-40 °F (-40 °C) to 180 °F (82 °C)
Liner	5 Year Outdoor Rated



Using the suggested white ribbon, white text can be printed on red or black vinyl or a black ribbon can be used to print on the white vinyl.

Product Selection							
Article No.	Part No.	Type	Roll Width	Roll Length	Description	Pkg. Qty	Pkg. Type
558-00309	558-00309	HT1WH250	1" (25.4mm)	250' (76m)	White Vinyl on Continuous Roll	1	RL
558-00313	558-00313	HT2WH250	2" (50.8mm)	250' (76m)	White Vinyl on Continuous Roll	1	RL
558-00350*	558-00350	HT4WH250	4" (101.6mm)	250' (76m)	White Vinyl on Continuous Roll	1	RL
558-00310	558-00310	HT1YE250	1" (25.4mm)	250' (76m)	Yellow Vinyl on Continuous Roll	1	RL
558-00314	558-00314	HT2YE250	2" (50.8mm)	250' (76m)	Yellow Vinyl on Continuous Roll	1	RL
558-00308	558-00308	HT1RD250	1" (25.4mm)	250' (76m)	Red Vinyl on Continuous Roll	1	RL
558-00312	558-00312	HT2RD250	2" (50.8mm)	250' (76m)	Red Vinyl on Continuous Roll	1	RL
558-00307	558-00307	HT1BK250	1" (25.4mm)	250' (76m)	Black Vinyl on Continuous Roll	1	RL
558-00311	558-00311	HT2BK250	2" (50.8mm)	250' (76m)	Black Vinyl on Continuous Roll	1	RL

### Thermal Transfer Ribbons

556-00189	556-00189	TTWHITEOUT	4.33" (109.9mm)	984' (300m)	White Ribbon on 1" (25.4mm) Core, Coated Side Out	1	EA
556-00190	556-00190	TTWHITE-OUTSM	4.33" (109.9mm)	250' (76m)	White Ribbon on 1/2" (12.7mm) Core, Coated Side Out	1	EA
556-00101	TT822OUT	TT822	4.33" (109.9mm)	984' (300m)	Black Ribbon for TT1000 & TT1210	1	EA

Use Part No. for ordering and Type for specification.

\*The 4" wide 558-00350 is best used to design custom directories or plaques per NEC690.14(D)(4), NEC690.56(A) and NEC690.4(H).

## TagPrint™ Pro

Tagprint Pro label creation and printing software is powerful, multi-functional, and extremely easy to use. Create and print Solar Installation labels using continuous vinyl stock in the TT230SM printer with cutter. Tagprint Pro offers "What You See Is What You Get" (WYSIWYG) label creation. Pre-defined label templates also can be downloaded from the HellermannTyton website for instant sign and marker printing.

Product Selection			
Article No.	Part No.	Pkg. Qty.	Description
556-00022	556-00022	1	TAGPRINTPRO Version 2.0 - Full
556-00240	556-00240	1	TT230SMC Printer with Cutter
556-00231	556-00231	1	Optional Weatherproof Carrying Case
556-00236	556-00236	1	Optional Battery Pack for Printing On-site

Use Part No. for ordering and Type for specification.



Photo shows the TT230SMC (556-00240) printer with cutter.

## Reflective Rooftop Label

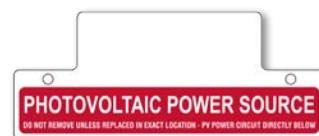
Designed to meet NEC2011 Section 690.4(F) as interpreted by the International Association of Electrical Inspectors (IAEI), HellermannTyton offers an aluminum and vinyl label designed for use on almost any type of roof shingle. Mount via a pre-cut aluminum plate with aluminum clips (both supplied with 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 Temperature	-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	Pkg. Qty.	Description
596-00257	596-00257	PVPSRTM	1	PHOTOVOLTAIC POWER SOURCE 6.75" (171.45mm) X 2.75" (69.85mm)

Use Part No. for ordering and Type for specification.



# HellermannTyton

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**TS16949:2002, ISO 9001:2000, and ISO14001 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.

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