

Solar Power Option

Models: PVS220W-24, PVS220W-48,
PVS240W-24, and PVS240W-48



Description, Installation, and Operation Manual

Limited Warranty

This product is subject to and covered by a limited warranty, a copy of which can be found at www.fedsig.com/SSG-Warranty. A copy of this limited warranty can also be obtained by written request to Federal Signal Corporation, 2645 Federal Signal Drive, University Park, IL 60484, email to info@fedsig.com or call +1 708-534-3400.

This limited warranty is in lieu of all other warranties, express or implied, contractual or statutory, including, but not limited to the warranty of merchantability, warranty of fitness for a particular purpose and any warranty against failure of its essential purpose.



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Safety Messages

⚠ WARNING

It is important to follow all instructions shipped with this product. This device is to be installed by trained personnel who are thoroughly familiar with the country electric codes and will follow these guidelines as well as local codes.

Listed below are important safety instructions and precautions you should follow.

Important Notice

Federal Signal reserves the right to make changes to devices and specifications detailed in the manual at any time in order to improve reliability, function or design. The information in this manual has been carefully checked and is believed to be accurate; however, no responsibility is assumed for any inaccuracies.

Publications

Federal Signal recommends the following publications from the Federal Emergency Management Agency for assistance with planning an outdoor warning system:

- The “Outdoor Warning Guide” (CPG 1-17)
- “Civil Preparedness, Principles of Warning” (CPG 1-14)
- FEMA-REP-1, Appendix 3 (Nuclear Plant Guideline)
- FEMA-REP-10 (Nuclear Plant Guideline).

Planning

- If suitable warning equipment is not selected, the installation site for the siren is not selected properly or the siren is not installed properly, it may not produce the intended optimum audible warning. Follow Federal Emergency Management Agency (FEMA) recommendations.
- If sirens are not activated in a timely manner when an emergency condition exists, they cannot provide the intended audible warning. It is imperative that knowledgeable people, who are provided with the necessary information, are available at all times to authorize the activation of the sirens.
- When sirens are used out of doors, people indoors may not be able to hear the warning signals. Separate warning devices or procedures may be needed to effectively warn people indoors.
- The sound output of sirens is capable of causing permanent hearing damage. To prevent excessive exposure, carefully plan siren placement, post warnings, and restrict access to areas near sirens.
- Activating the sirens may not result in people taking the desired actions if those to be warned are not properly trained about the meaning of siren sounds. Siren users should follow FEMA recommendations and instruct those to be warned of correct actions to be taken.
- After installation, service, or maintenance, test the siren system to confirm that it is operating properly. Test the system regularly to confirm that it will be operational in an emergency.
- If future service and operating personnel do not have these instructions to refer to, the siren system may not provide the intended audible warning and service personnel may be exposed to death, permanent hearing loss, or other bodily injury. File these instructions in a safe place and refer to

Safety Messages

them periodically. Give a copy of these instructions to new recruits and trainees. Also give a copy to anyone who is going to service or repair the siren.

Installation and Service

- Electrocution or severe personal injury can occur when performing various installation and service functions such as making electrical connections, drilling holes, or lifting equipment. Therefore only experienced electricians should install this product in accordance with national, state and any other electrical codes having jurisdiction. Perform all work under the direction of the installation or service crew safety foreman.
- The sound output of sirens is capable of causing permanent hearing damage. To prevent excessive exposure, carefully plan siren placement, post warnings and restrict access to areas near the sirens. Sirens may be operated from remote control points. Whenever possible, disconnect all siren power including batteries before working near the siren.
- After installation or service, test the siren system to confirm that it is operating properly. Test the system regularly to confirm that it will be operational in an emergency.
- If future service personnel do not have these warnings and all other instructions shipped with the equipment to refer to, the siren system may not provide the intended audible warning and service personnel may be exposed to death, permanent hearing loss, or other bodily injury. File these instructions in a safe place and refer to them periodically. Give a copy of these instructions to new recruits and trainees. Also, give a copy to anyone who is going to service or repair the sirens.

Operation

Failure to understand the capabilities and limitations of your siren system could result in permanent hearing loss, other serious injuries or death to persons too close to the sirens when you activate them or to those you need to warn. Carefully read and thoroughly understand all safety notices in this manual and all operations-related-items in all instruction manuals shipped with equipment. Thoroughly discuss all contingency plans with those responsible for warning people in your community, company, or jurisdiction.

Read and understand the information contained in this manual before attempting to install or service the siren.

Solar modules generate DC electricity when exposed to light. Exposure to this voltage can result in serious injury or even death. Follow all safety precautions.

To stop production of electricity, cover panel surfaces with opaque material while working on system. Avoid touching terminals and/or wire ends until connections are made.

Pay careful attention to the notices located on the equipment.

General Description

Overview

This manual describes how to install the Solar Power option.

The Solar Power option provide an all inclusive solar powering option for all outdoor sirens. Solar powering of batteries is an efficient and economical method of powering remote sirens, alerting, or control equipment. Applications include, but are not limited to, remote tsunami sirens, muster stations, and tornado sirens.

The PVS240W-24 and PVS240W-48 provide 240 W of power for charging of batteries in 24 or 48 Vdc applications. These systems are equipped with solar regulators for accurate control, protection, and monitoring of the solar panels. These kits use four 60 watt highly efficient solar panels, each with junction boxes to allow ease of wiring.

The mounting hardware is aluminum for light weight and high strength, able to withstand wind loads up to 170 mph. The kit includes thirty feet of cable to allow wiring from the panels to the Battery Cabinet. The solar regulators support gel, sealed or flooded batteries with temperature compensation to extend battery life and improve system performance. Federal Signal determines the proper direction and tilt for each solar application based on location. Federal Signal recommends gel batteries for solar applications.

NOTE: The PVS220W-24 and PVS220W-48 are not longer available for sale. They are included in this manual for maintenance purposes only.

Features

The Solar Power option have the following features:

- Enables remote/unwired deployment of sirens
- Solar power provides continuous charging of batteries
- Radio connectivity for two-way activation and control
- Eliminates expensive trenching of power to remote sites
- Supports mechanical or electronic sirens
- Allows 25 to 60° of tilt for solar optimization
- 24 or 48 Vdc operation
- Wind loads up to 170 mph

Ordering Information

Table 1 Ordering Information

Part Number	Description
PVS240W-24	Solar Power Option UltraVoice (UV)
PVS240W-48	Solar Power Option Federal Controller (FC)

Specifications

Table 2 Side Pole Mount

Net Weight	115 pounds (52 kg)
Shipping Weight	153 pounds (69 kg)

Table 3 Top-of-Pole Mount

Net Weight	112 pounds (51 kg)
Shipping Weight	150 pounds (68 kg)

Installation

Installing the Solar Panel Bracket

⚠ DANGER

Electrocution or severe personal injury can occur when making electrical connections, drilling holes, or lifting equipment. Therefore, installation should be performed by experienced electricians in accordance with national and local codes.

Most bracket installations are one of two types: Side Pole Mount or Top Pole Mount. These two configurations make it possible to provide solar power in almost any situation. If the installations in this manual are not suitable, it may be practical to modify one of the configurations.

For best results, the solar modules must face true south. Consult FEMA CPG 1-17 and CPG 1-14 and your local Federal Signal representative to properly place your outdoor warning equipment.

Required Equipment

You need the following equipment.

Table 4 Required Tools

Checklist	Required Tools
	Large flat head screwdriver
	Medium flat head screwdriver
	Narrow (3/16-in) flat head screwdriver
	Medium cross head screwdriver
	Socket driver set with 7/16-in, 9/16-in and 3/4-in sockets
	7/16-in open end wrench
	9/16-in open end wrench
	Adjustable wrench
	Wire cutters
	Needle nose pliers
	Wire strip and crimp tool
	Electric drill with 1/4-in drill bit

Checklist	Required Tools
	Utility knife
	Measuring tape

Side Pole Installation

The bracket is typically mounted on a Class 2 utility pole (ANSI type wooden pole or equivalent) with a minimum horizontal ground stress rating of 3,700 pounds (1678 kg). Ensure that soil loads will conform to this size utility pole.

NOTE: Certain soil conditions may require guying for the pole. Check with proper building authorities.

To install a side pole mount solar bracket onto a wooden utility pole:

1. Uncrate and identify the various parts. You can use an empty box as a platform to protect assembly and modules from damage.
2. Place the solar modules face down with their junction boxes toward center for the modules or toward top for the 110 W panels.
3. Assemble the solar bracket onto the solar modules per final assembly drawing. Apply thread locking compound to all fastening hardware to ensure secure assembly.
4. Find the desired elevation on the pole. For best results, the solar modules must face true south. Mark the eight mounting holes on the pole for the bracket.
5. Drill a 3/8-inch pilot hole at each of the locations. Drill each hole at least 3-1/2 inch deep.
6. Using eight 1/2-inch stainless steel lag screws (minimum of 5 inches in length) or two sections of 3/4-inch wide stainless steel strapping, secure the solar bracket onto the pole.
7. Locate your site and find the latitude of your location. For the Northern Hemisphere, add or set the tilt angle at the value specified in the following table.

Latitude Range	Tilt Angle
90° to 60°	60°
60° to 25°	+15°
25° to 20°	+5°
20° to 0°	25°

NOTICE

Tilt angles are limited to a minimum of 25° and maximum of 60° degrees.

8. Find the vertical distance Y for your setup from the tilt angle charts.

For any other type of pole, such as a galvanized steel pole, install the side mount solar bracket as follows:

1. Uncrate and identify the various parts. Use an empty box as a platform to protect assembly and modules from damage.
2. Start by placing the solar modules face down with their junction boxes toward center for the modules or toward top for the 110 W panels.
3. Assemble the solar bracket onto the solar modules per final assembly drawing. Apply thread locking compound to all fastening hardware to ensure secure assembly.
4. Find the desired elevation on the pole. For best results, the solar modules must face true south. Mark the two placement locations on the pole for the bracket.
5. Secure the solar bracket by clamping it onto the pole by using two sections of $\frac{3}{4}$ -inch wide stainless steel strapping and the tilt angle charts.
6. Locate your site and find the latitude of your location. For the Northern Hemisphere, add or set the tilt angle at the following table.

Latitude Range	Tilt Angle
90° to 60°	60°
60° to 25°	+15°
25° to 20°	+5°
20° to 0°	25°

NOTICE

Tilt angles are limited to a minimum of 25° and maximum of 60° degrees.

7. Find the vertical distance Y for your setup from the tilt angle charts.

Figure 1 Placement of 60 W Module (Top View)

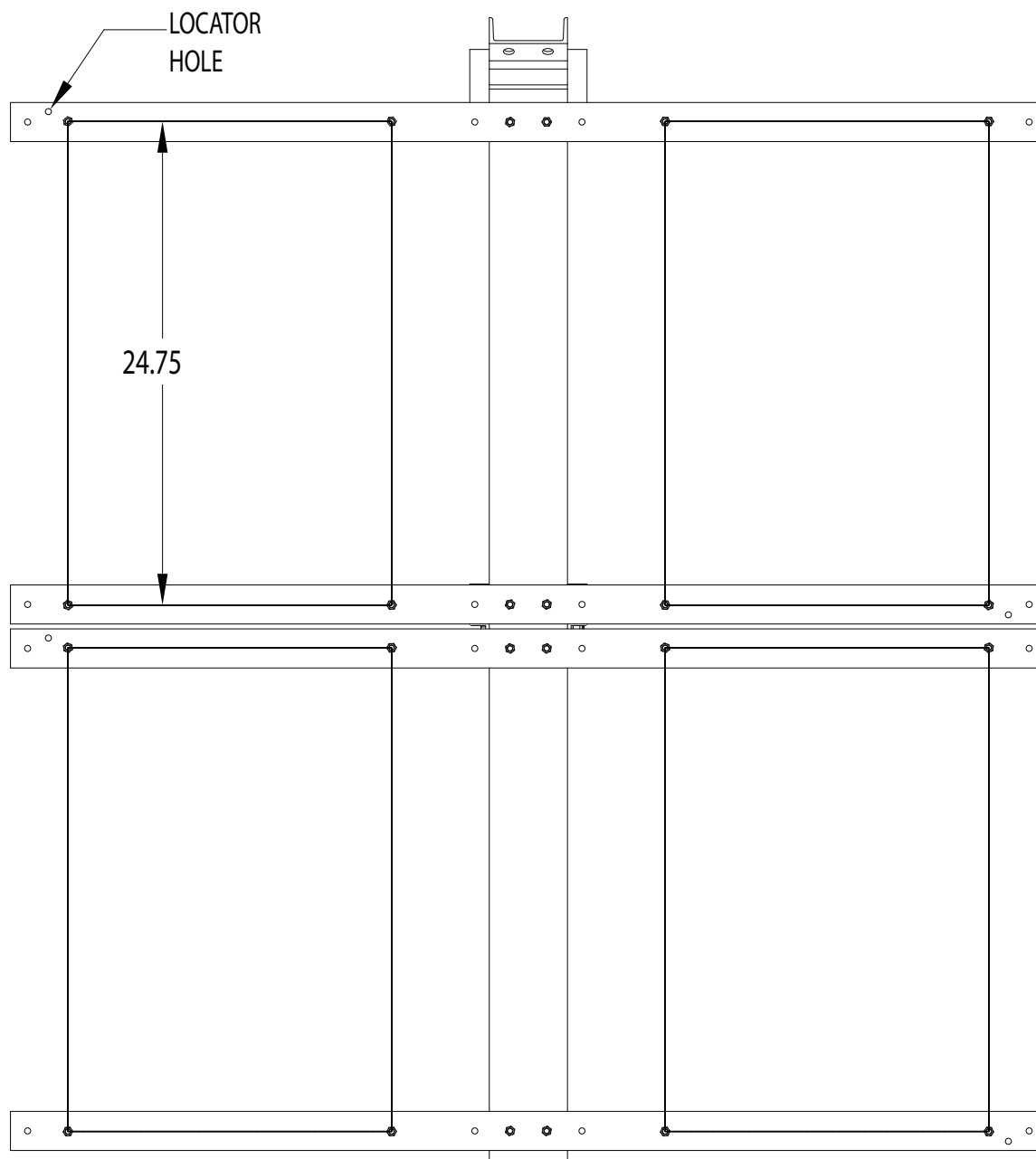
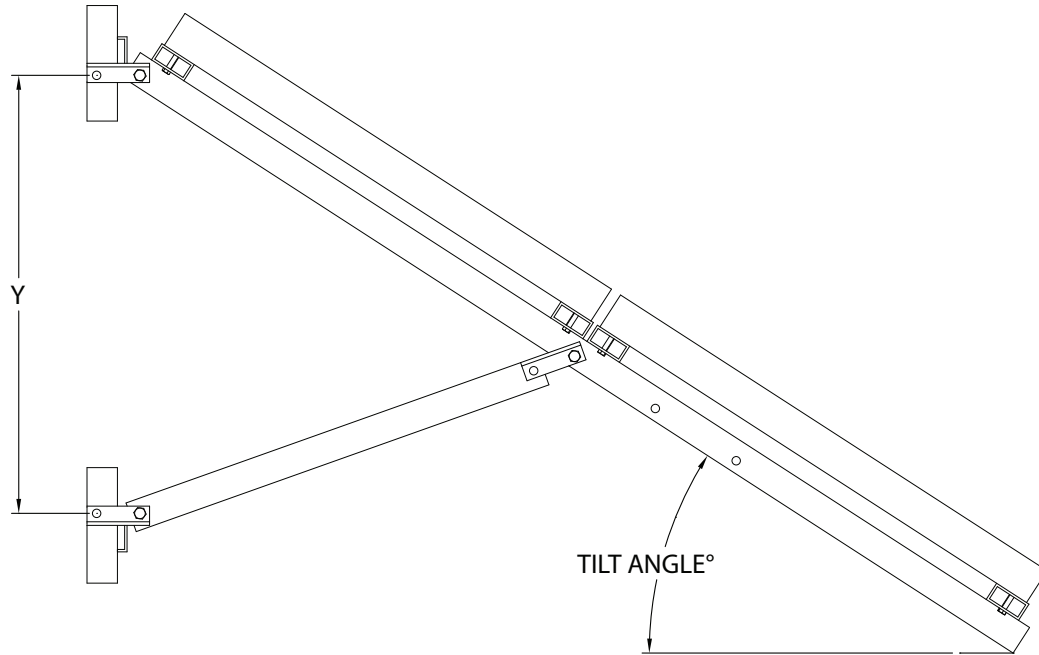


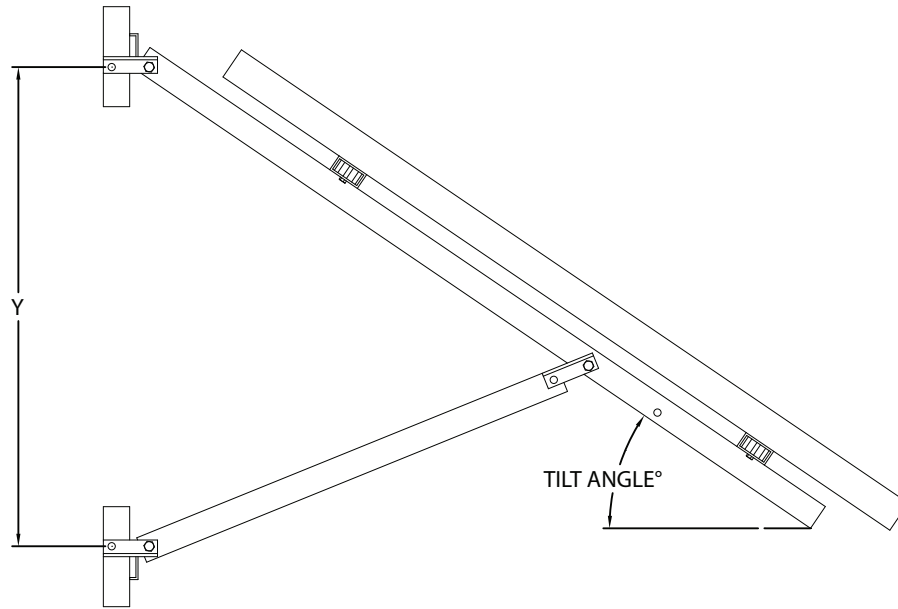
Figure 2 Side Pole Mount (60 W Modules)



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Tilt Angle from horizontal	Vertical Distance Y	Hole Number
25°	15.00 in (38.10 cm)	1
30°	20.50 in (52.07 cm)	1
35°	26.00 in (66.04 cm)	1
40°	26.00 in (66.04 cm)	2
45°	31.50 in (80.01 cm)	2
50°	33.50 in (85.09 cm)	3
55°	42.50 in (107.95 cm)	3
60°	48.00 in (121.92 cm)	3

Figure 3 Side Pole Mount (110 W Modules)



Tilt Angle from horizontal	Vertical Distance Y	Hole Number
30°	23.00 in (58.42 cm)	1
35°	30.00 in (76.20 cm)	1
40°	28.75 in (73.03 cm)	2
45°	37.50 in (95.25 cm)	2
55°	48.00 in (121.92 cm)	1
60°	51.25 in (130.18 cm)	1

Top-of-Pole Installation

To install a top-of-pole solar bracket:

1. Uncrate and identify the various parts. Use an empty box as a platform to protect assembly and modules from damage.
2. Start by placing the solar modules face down with their junction boxes toward center for the modules or toward top for the 110 W panels.
3. Assemble the solar bracket onto the solar modules per final assembly drawing. Apply thread locking compound to all fastening hardware to ensure secure assembly.

4. Locate your site and find the latitude of your location. For the Northern Hemisphere, add or set the tilt angle at the value specified in the following table.

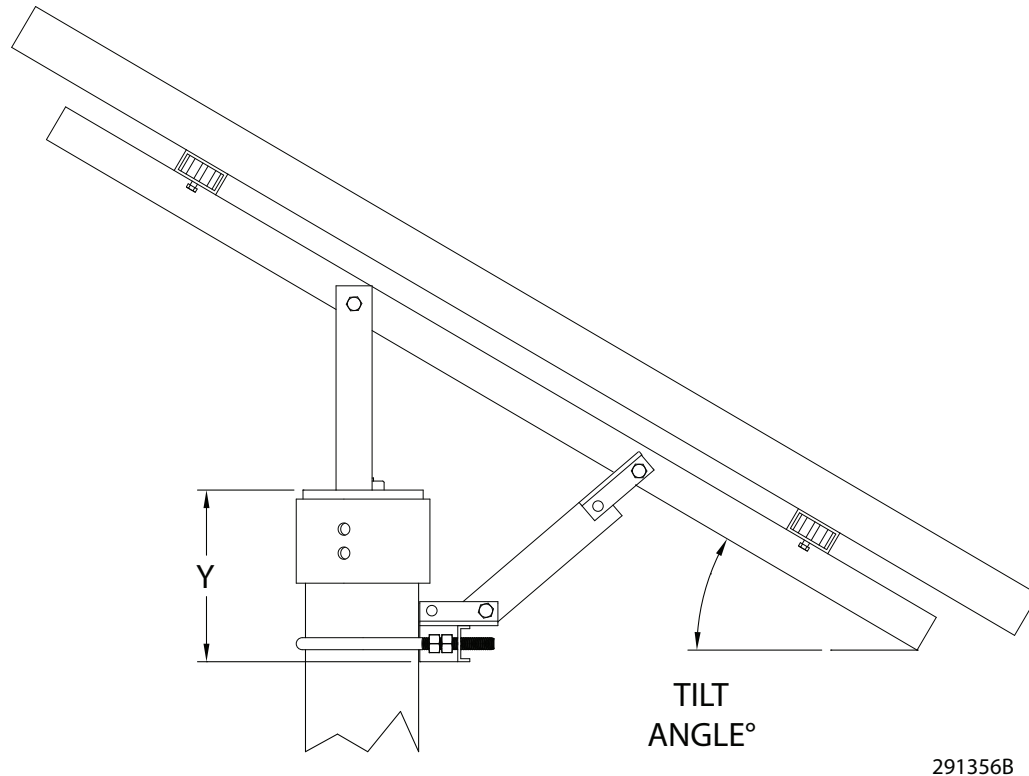
Latitude Range	Tilt Angle
90° to 60°	50°
60° to 25°	+15°
25° to 20°	+5°
20° to 0°	25°

NOTICE

Tilt angles are limited to a minimum of 25° and maximum of 50° degrees.

5. Find the vertical distance Y for your setup from the tilt angle chart. For best results, the solar modules must face true south.
6. Using the stainless steel u-bolt provided, secure the solar bracket onto the pole.

Figure 4 Top-of-Pole Mount



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Tilt Angle from horizontal	Vertical Distance Y
25°	5.00 in (12.70 cm)
30°	5.50 in (13.97 cm)
35°	6.25 in (15.88 cm)
40°	7.00 in (17.78 cm)
45°	7.50 in (19.05 cm)
50°	7.75 in (19.69 cm)

Power Supply and Wiring

Power Supply

Connect four 60 W, 12 V solar modules in series to supply a 48 Vdc power supply for the 2001-130, Equinox, 508-128, and Eclipse8 electro-mechanical siren controls.

Connect four 60 W, 12 V solar modules in series/parallel to supply a 24 Vdc power supply for the UV electronic siren controls.

Connect two 110 W, 12V solar modules in series/parallel to supply a 24 Vdc power supply for the UV electronic siren controls.

Wiring the 48 V Junction Box

To wire the junction box for the 48 V (60 W Modules):

1. Open the module junction box covers.
2. Knock out the appropriate junction box holes in the modules to allow addition of cable clamps. An additional knockout is required for the array output wires leading from the array to the Control Cabinet.
3. Coat module terminals with NO-OX-ID® or an equivalent corrosion inhibitor to prevent corrosion.
4. Cut the three-conductor cable 8-foot length (2.44 m) into three 32-inch (81.28 cm) sections.
5. Connect the black wires from the three-conductor cable sections as follows:
 - Negative (-) terminal of module A to positive (+) terminal of module B
 - Negative (-) terminal of module B to positive (+) terminal of module C
 - Negative (-) terminal of module C to positive (+) terminal of module D
6. Run one side of the two-conductor PV output cable 30-foot length (9.144 m) through the cable clamp, to module D junction box. Connect the black wire to the negative (-) terminal and butt splice the red wire to the red wire from the three-conductor cable within the junction box. Use wire tie wraps provided to secure the output cable to the bracket.

7. Measure the voltage between red (+) and black (-) wires at the end of the PV output cable with the modules exposed to sunlight. If the wiring is correct, the voltage measures between 60 and 92 Volts. If the voltage is not in this range, check the wire connections to ensure all steps were followed.
8. Close junction box covers.
9. Run the other side of the two-conductor PV output cable (30-foot length) down the pole to the Control Cabinet. Use wire tie wraps provided to secure the output cable. Form a drip loop where the cable enters the Control Cabinet. Run the cable through the ½-inch NPT aluminum cord grip provided and connect to solar regulator using the spade terminals.
10. Installation is now complete.

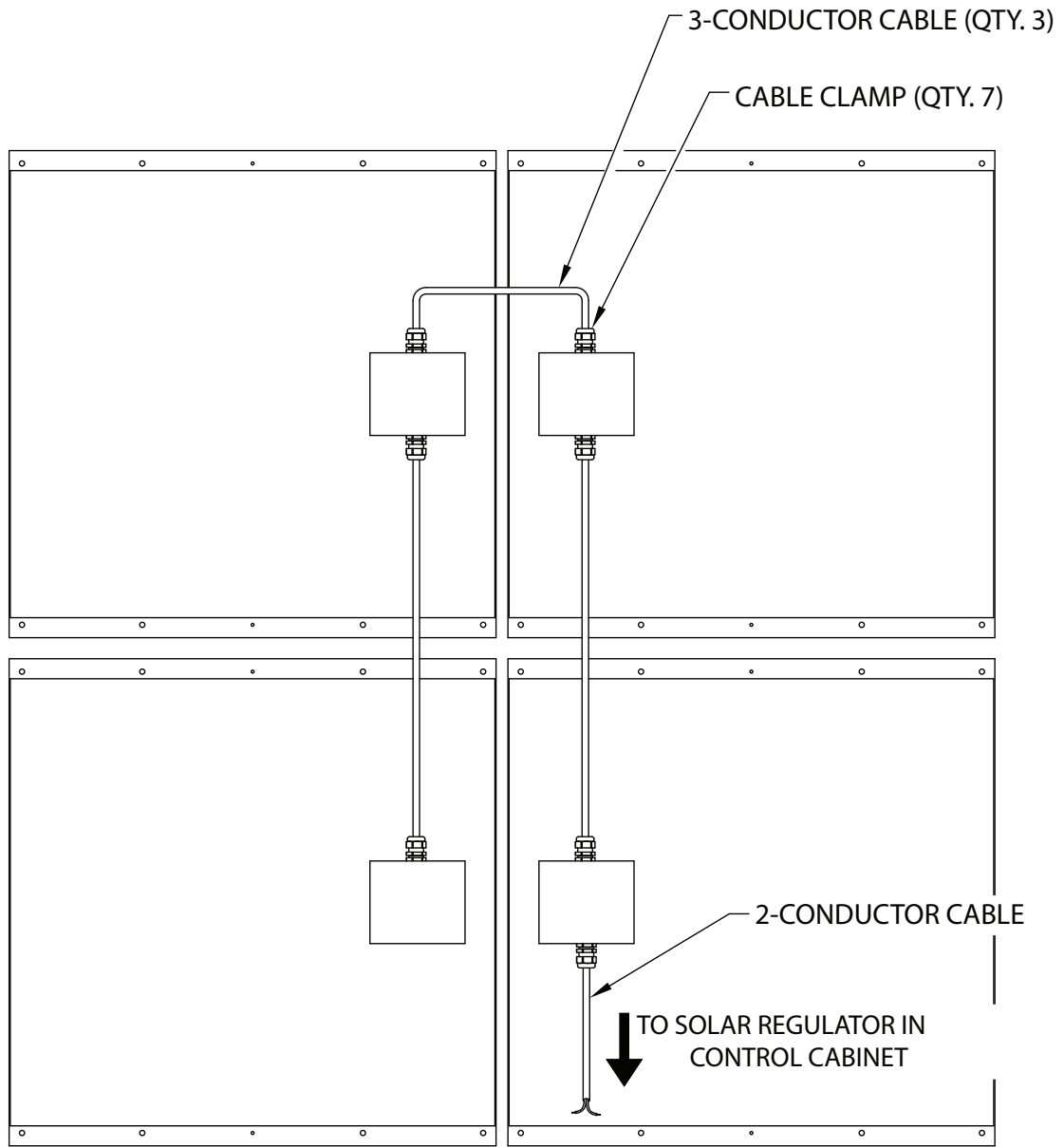
Wiring the 24 V Junction Box

To wire the junction box for the 24 V (60 W Modules):

1. Open the module junction box covers.
2. Knock out the appropriate junction box holes in the modules to allow addition of cable clamps. An additional knockout will be required for the array output wires leading from the array to the Control Cabinet.
3. Coat module terminals with NO-OX-ID or an equivalent corrosion inhibitor to prevent corrosion.
4. Cut a 32-inch (81.28 cm) section from the three-conductor cable 8-foot length (2.44 m).
5. Connect the white wire from the three-conductor section as follows:
 - Negative (-) terminal of module A to positive (+) terminal of module B
 - Negative (-) terminal of module C to positive (+) terminal of module D
6. Run the two-conductor PV output cable 30-foot length (9.144 m) through the cable clamp, to module D junction box. Connect the black wire to the negative (-) terminal and butt splice the red wire to the red wire from the three-conductor cable within the junction box. Use wire tie wraps provided to secure the output cable to the bracket.
7. Measure the voltage between red (+) and black (-) wires at the end of the PV output cable with the modules exposed to sunlight. If the wiring is correct, the voltage measures between 30 and 46 Volts. If the voltage is not in this range, check the wire connections to ensure all steps were followed.
8. Close junction box covers.

9. Run the two-conductor PV output cable (30-foot length) down the pole to the Control Cabinet. Use wire tie wraps provided to secure the output cable. Form a drip loop where the cable enters the Control Cabinet. Run cable through the ½-inch NPT aluminum cord grip provided and connect to solar regulator using the spade terminals.
10. Installation is now complete.

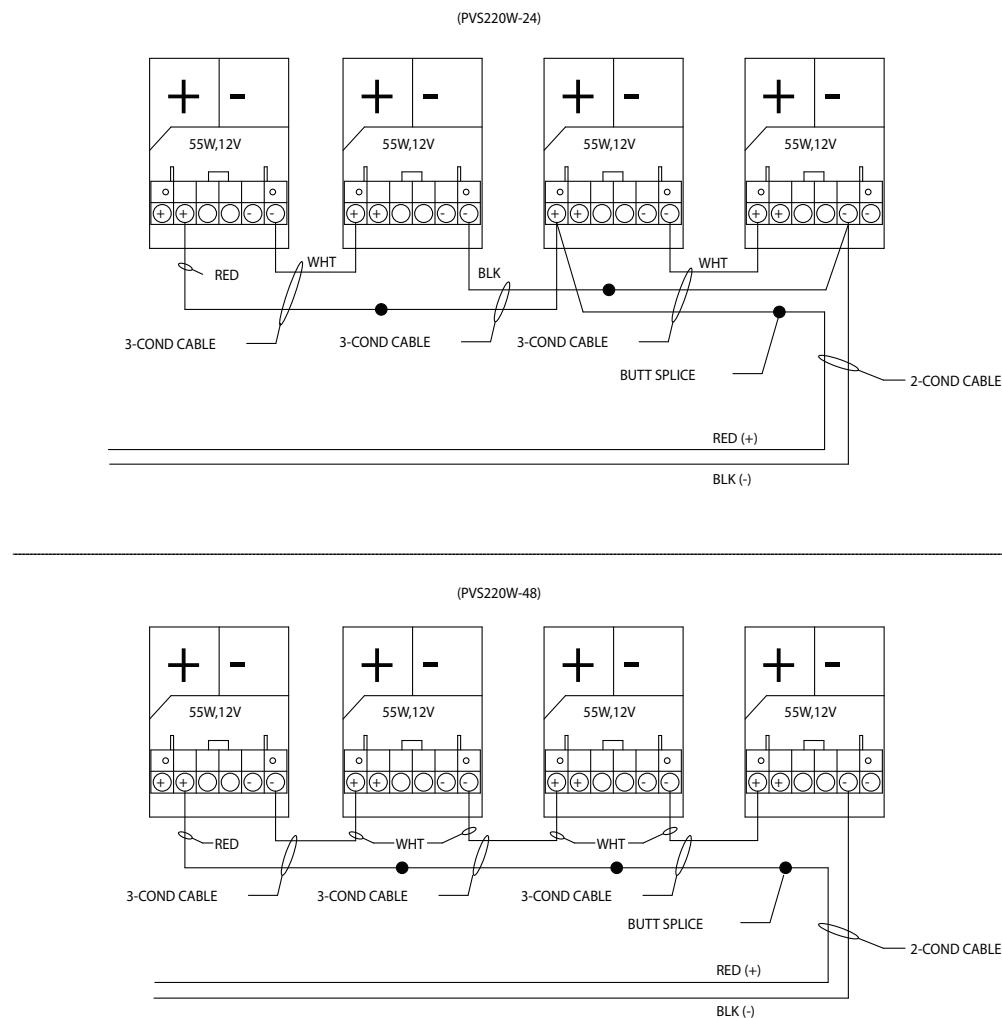
Figure 5 Module Wiring (back view)



(BACK VIEW)
MODULE WIRING

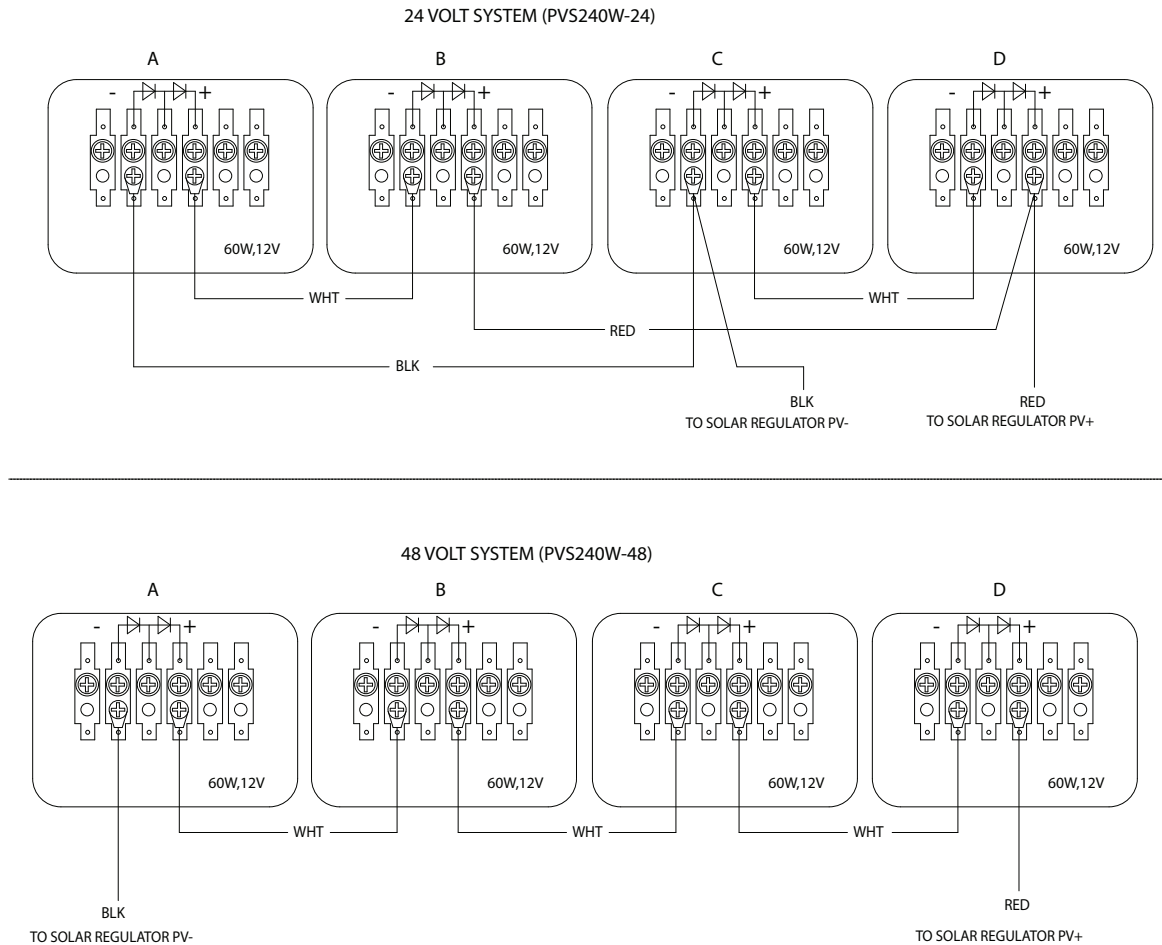
291357B

Figure 6 Wiring PVS220W Option



291358B

Figure 7 Wiring PVS240W Option



Wiring the 24 V Junction Box (110 W Modules, three conductors)

To wire the 24 V junction box (110 W modules, three conductors):

1. Open the module junction box covers.
2. Knock out the appropriate junction box holes in the modules to allow addition of cable clamps. An additional knockout will be required for the array output wires leading from the array to the Control Cabinet.
3. Coat module terminals with NO-OX-ID or an equivalent corrosion inhibitor to prevent corrosion.
4. Connect the white wire from the short three-conductor cable 3-foot length (91.44 cm) as follows:
 - Negative (-) terminal of module A to positive (+) terminal of module B
5. Run the long three-conductor PV output cable 60-foot length (18.288 m) through the cable clamp, to module B junction box. Connect the black wire to the negative (-) terminal and butt splice the red wire to the red wire from the three-conductor cable within the junction box. Use wire tie wraps provided to secure the output cable to the bracket.

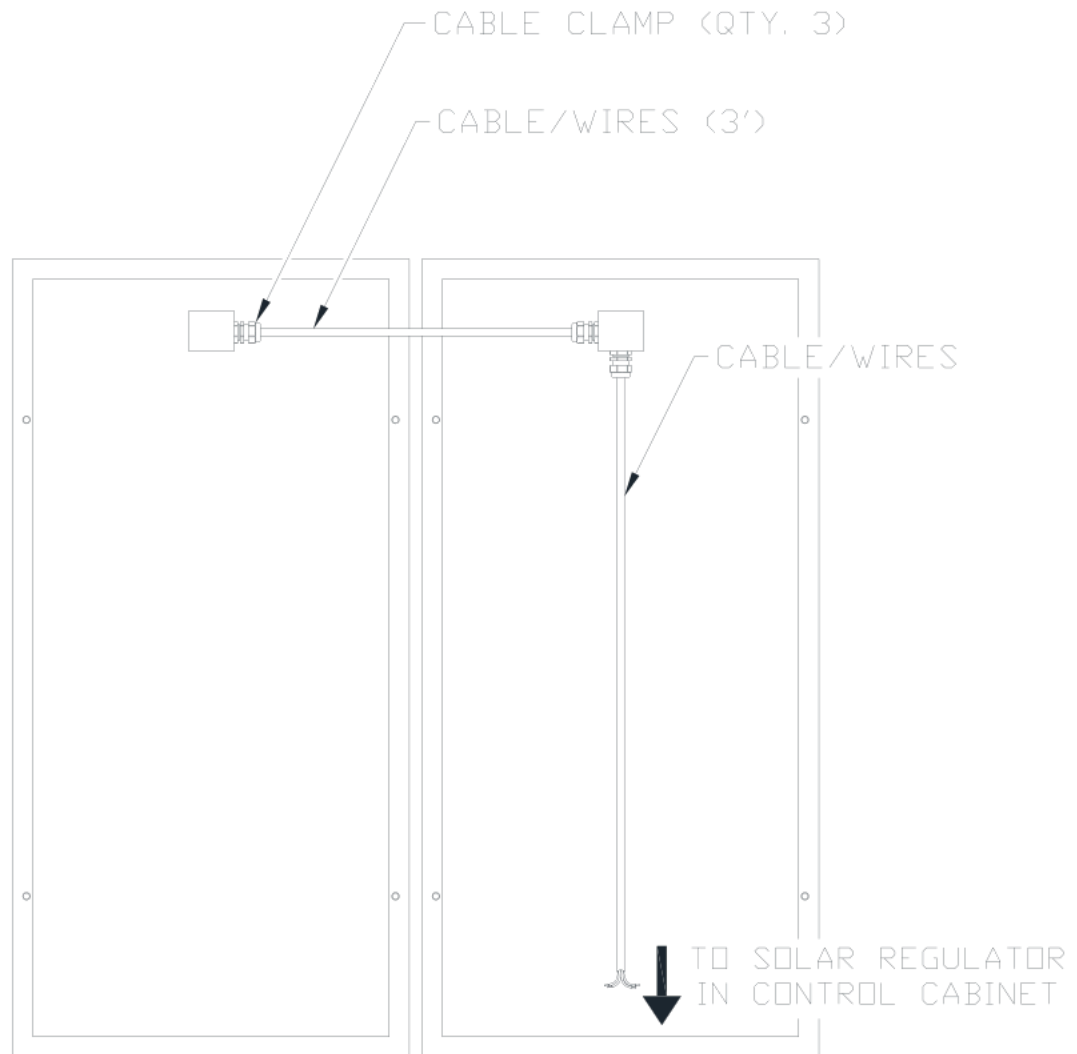
6. Measure the voltage between red (+) and black (-) wires at the end of the PV output cable with the modules exposed to sunlight. If the wiring is correct, the voltage measures between 30 and 46 Volts. If the voltage is not in this range, check the wire connections to ensure all steps were followed.
7. Close junction box covers.
8. Run the three-conductor PV output cable (60-foot length) down the pole to the Control Cabinet. Use wire tie wraps provided to secure the output cable. Form a drip loop where the cable enters the Control Cabinet. Run cable through the ½-inch NPT aluminum cord grip provided and connect to solar regulator using the spade terminals. Check the wire connections are made per diagram “Figure 24 Hawaii UltraVoice Wiring Diagram” on page 40.
9. Installation is now complete.

Wiring the Junction Box for 24 V (110 W Modules, four-wire)

To wire the junction box for the 24 V (110 W modules, four-wire Hawaii):

1. Open the module junction box covers.
2. Knock out the appropriate junction box holes in the modules to allow addition of cable clamps. An additional knockout will be required for the array output wires leading from the array to the Control Cabinet.
3. Coat module terminals with NO-OX-ID or an equivalent corrosion inhibitor to prevent corrosion.
4. Run the wires 60-foot length (18.288 m) for top mount or 30-foot (9.144 m) for side mount, with an additional 3-foot length (91.44 cm) through the cable clamp, to module B junction box. Connect the shorter wires to the positive (+) and negative (-) terminals of module B. Run the longer wires out and connect to terminals of module A. Use wire tie wraps provided to secure the output cable to the bracket.
5. Measure the voltage between the two sets of red (+) and black (-) wires at the end of the PV output wires with the modules exposed to sunlight. If the wiring is correct, the voltage on each set of wires measures between 15 and 23 Volts. With a jumper installed on terminal blocks in the UV Control Cabinet, the series combination of the two modules measures between 30 and 46 Vdc. If either of these voltage values is not obtained, check the wire connections are made per diagram “Figure 24 Hawaii UltraVoice Wiring Diagram” on page 40.
6. Close junction box covers.
7. Run the wires down the pole to the Control Cabinet. Use wire tie wraps provided to secure the output cable. Form a drip loop where the cable enters the Control Cabinet. Run cable through the ½-inch NPT aluminum cord grip provided and connect to solar regulator using the spade terminals.
8. Installation is now complete.

Figure 8 Module Wiring 110 W Panels

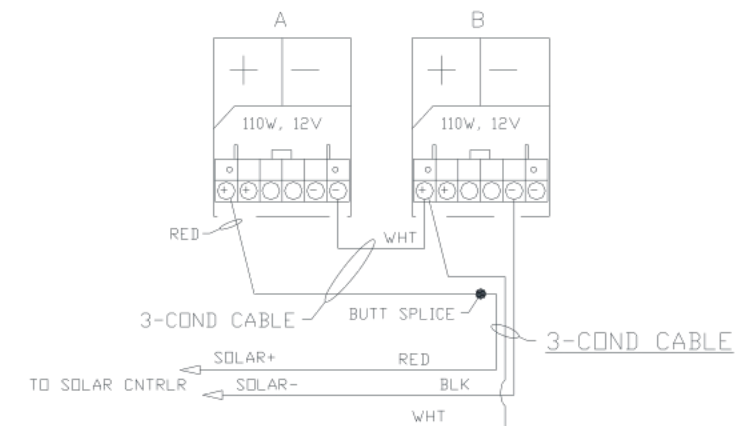


(BACK VIEW)
MODULE WIRING
110W PANELS

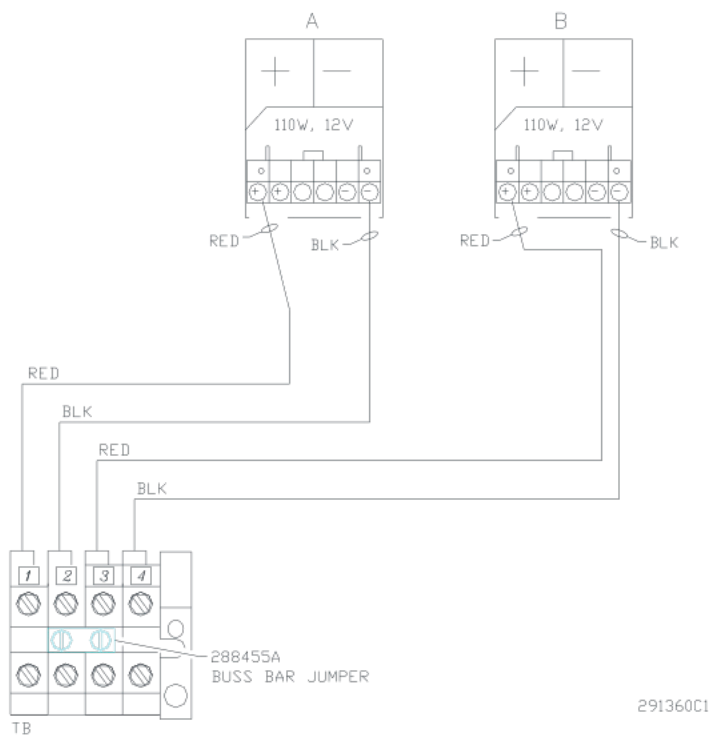
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Figure 9 Wiring PVS220W Option

24 VOLT SYSTEM: 288996 (PVS220W-24)

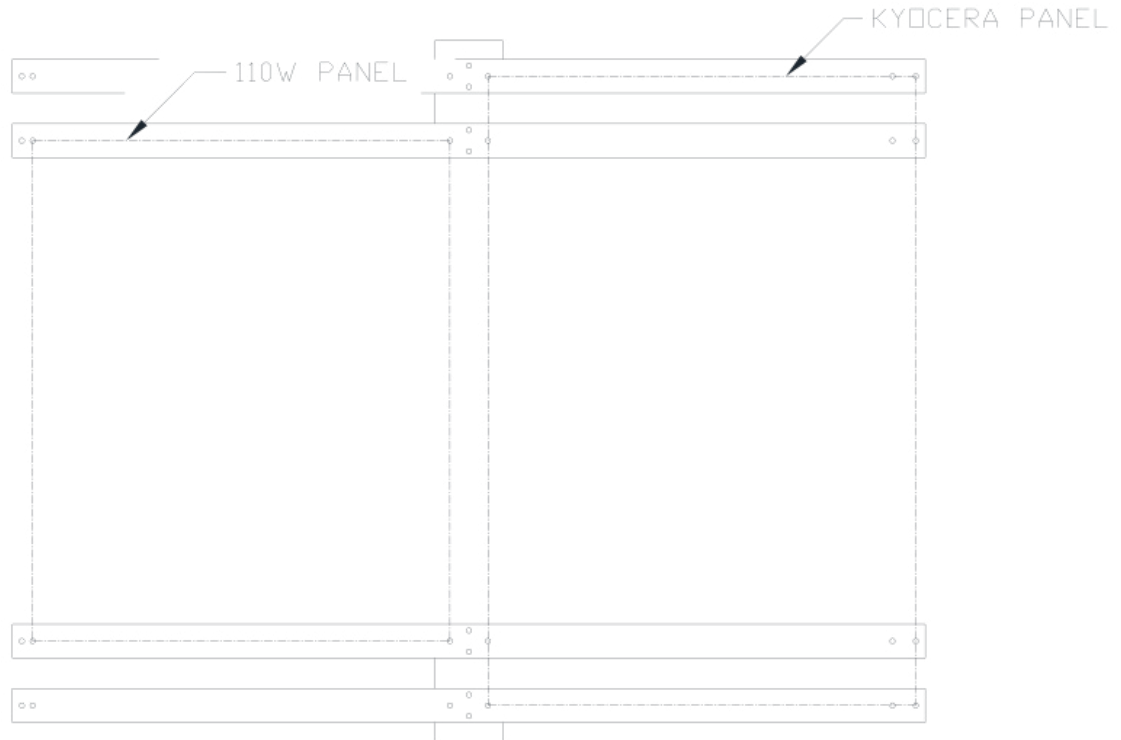


24V STANDARD VERSION WIRING



24V HAWAII VERSION WIRING

Figure 10 Module 110 W Placement



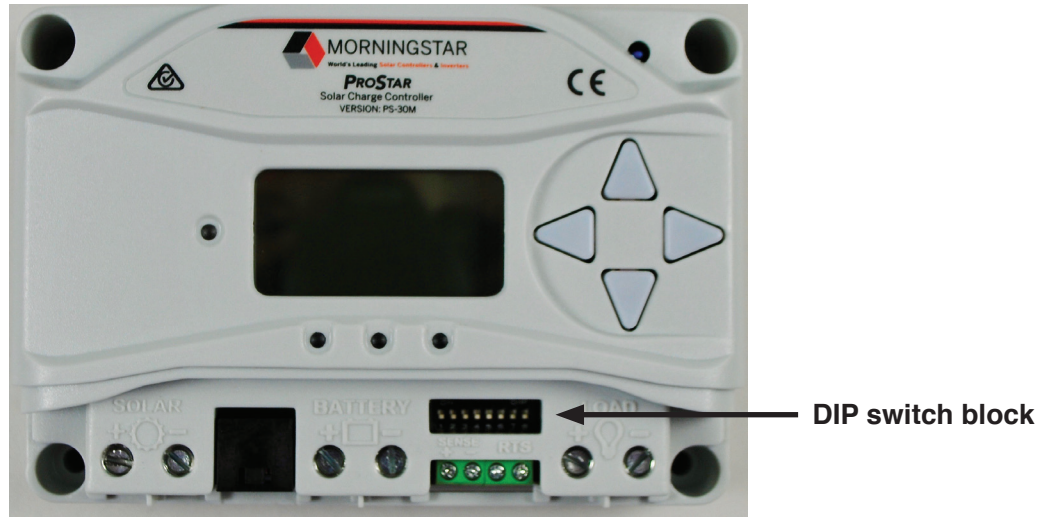
110W MODULE PLACEMENT
(TOP VIEW)

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Solar Regulator Settings—24 Vdc Operation

Federal Signal equipment can operate in solar only or in a multi-power configuration (by using Solar Panels and AC Battery Charger). For the Morningstar Prostar™ PS-30M Solar Regulator, Federal Signal recommends the following settings for solar only configuration. Make these setting by removing the front cover and adjusting the DIP switch block located on the bottom right of the PS-30M Solar Regulator.

Figure 11 PS-30M Solar Regulator



Solar Configuration Only

See “Figure 21 Two-Way Solar UltraVoice Wiring Diagram” on page 37 regarding charger sense wiring for Solar only configuration.

When used as solar only, the following settings are recommended for the PS-30M Solar Regulator. The settings are dependent on the battery type. Remove power prior to changing the switch settings.

NOTE: If you are not using the batteries listed in Table 5 or Table 6, see “Table 7 Settings for Switches” on page 26 for guidance.

The following table lists the recommended batteries.

Table 5 Recommended AGM and GEL Batteries

Federal Signal Part Number	Description
15500007	MK Model 8A24DT, 78 Ah at C/20, Size 24
15500007-01	MK Model 8A27DT, 92 Ah at C/20, Size 27
15500007-02	MK Model 8A31DT, 97.6 Ah at C/20, Size 31
15500007A-03	GEL 73 Ah Model 8G24
15500007A-04	GEL 88 Ah Model 8G27
15500007A-05	GEL 97 Ah Model 8G31

For the AGM and GEL batteries (see Table 5), set the dip switches as shown in Figure 12.

Figure 12 Solar Only for AGM and GEL Batteries

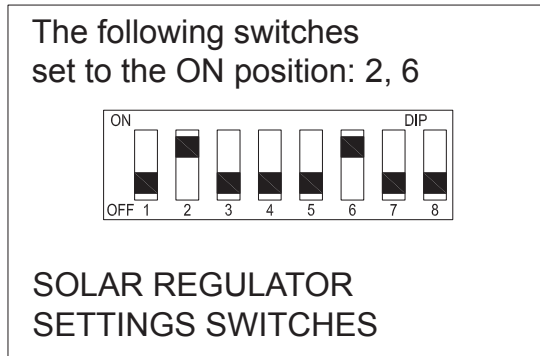


Table 6 Lead Acid Batteries

Federal Signal Part Number	Size	Manufacturer	Model	Capacity at C/20
IK-BATT-STD	Size 24	FVP	Model DC24-6	82 Ah
IK-BATT-EXT	Size 31	Delco	Model S2000	105 Ah

For the Lead Acid batteries (see Table 6), set the dip switches as shown in Figure 13.

Figure 13 Solar Only for Lead Acid Batteries

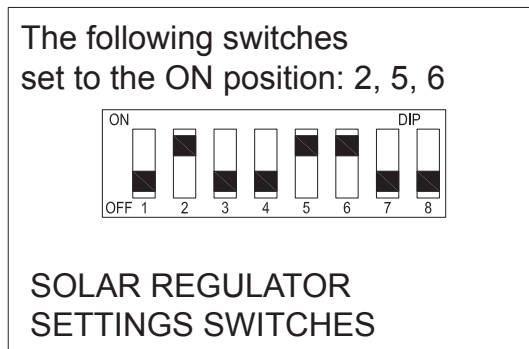


Table 7 Settings for Switches

Settings 4-5-6	Battery Type	Absorp. Stage (volts)	Float Stage (volts)	Equalize Stage (volts)	Absorp. Time (mins)	Equalize Time (mins)	Equalize Timeout (mins)	Equalize Interval (days)
off-off-off	1 - Sealed*	14.00	13.50		150			
off-off-on	2 - Sealed*	14.15	13.50	14.40	150	60	120	28
off-on-off	3 - Sealed*	14.30	13.50	14.60	150	60	120	28
off-on-on	4- AGM/ Flooded	14.40	13.50	15.10	180	120	180	28
on-off-off	5 – Flooded	14.60	13.50	15.30	180	120	180	28
on-off-on	6 – Flooded	14.70	13.50	15.40	180	180	240	28
on-on-on	8 – Custom	Custom	Custom	Custom	Custom	Custom	Custom	Custom

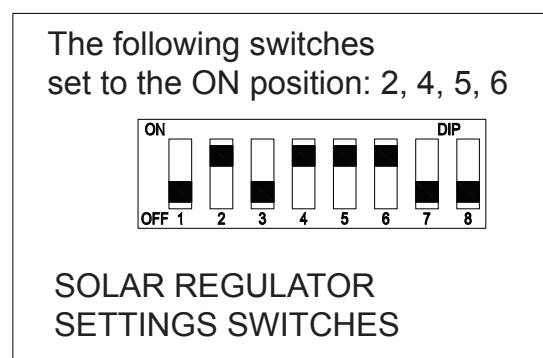
*Sealed battery type includes Gel and AGM batteries.

Solar Panels and AC Battery Charger

See “Figure 22 Two-Way Primary AC with Solar UltraVoice Wiring Diagram” on page 38 regarding charger sense wiring for this mode of operation. The PS-30M Solar Regulator requires a custom file to allow the unit to work properly with the 860000235 (-01) charger in a UV cabinet. If the custom file is not used, the Solar Power option causes the AC charger to go into a fault mode during certain charging modes. The fault is only a nuisance and does not affect system operation.

When used as a combination AC charging with solar backup, the following settings are recommended.

Figure 14 Solar Panel and AC Battery Charger for AGM, GEL, or Lead Acid Batteries



Note regarding custom file:

If servicing the PS-30M Solar Regulator, it may be necessary to load the custom configuration into the unit. Contact Technical Support at techsupport@fedsig.com or 800-524-3021 to obtain a copy of the released configuration file via email.

Programming the PS-30M

The programming requirements of the PS-30M:

- Windows Laptop running Windows® 7
- Downloading MSView: <https://www.morningstarcorp.com/msview/>
- USB MeterBus Adapter (UMC-1):
 - <https://www.morningstarcorp.com/products/usb-meterbus-adapter/>
 - <https://www.morningstarcorp.com/buy/>
- Configuration File : fedsig 8_28_18.pspwm

To program the PS-30M:

1. Load MSView on laptop.
2. Transfer the fedsig 8_28_18.pspwm configuration file to a folder on your computer.
3. Connect USB MeterBus Adapter (UMC-1) to USB port on laptop.

NOTE: Ensure PS-30M has batteries and solar panels connected prior to next step.

4. Connect USB MeterBus Adapter (UMC-1) to Serial port of PS-30M (black RJ-12 jack on PS-30M).
5. Open MSView™
6. Select Devices > Search for Connected Devices

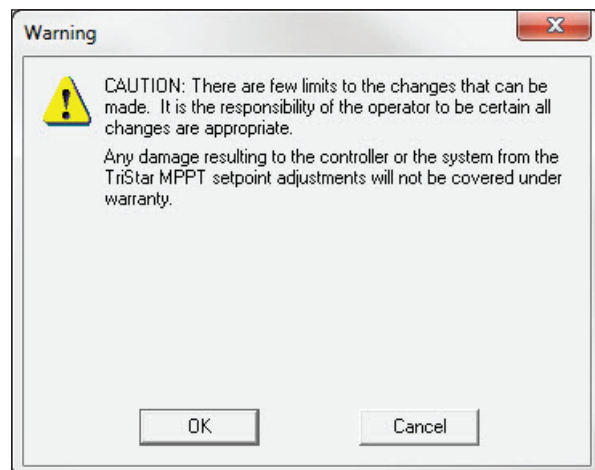
PS-30M appears

Now that connectivity has been established between the MSView software and the PS-30M, upload the configuration file:

To upload the configuration file:

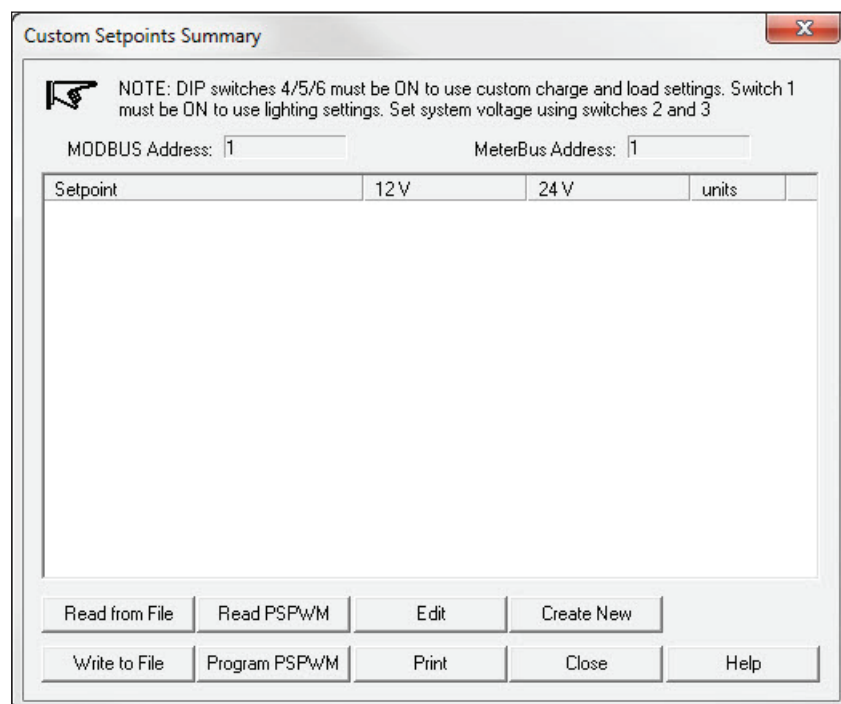
1. Select Tools > Prostar PWM Setup Wizard.

The Warning dialog box appears.



2. Click OK.

The Custom Setpoints Summary window appears.



3. Click the Read From File button.
4. Browse to location where fedsig 8_28_18.pspwm is saved.
5. Select the file and click Open.

You will automatically return to Custom Setpoints Summary dialog box.

6. Click the Program PSPWM button to load the file.

Now that the new configuration has been loaded, the PS-30M must be power cycled.

To power cycle:

1. Disconnect the batteries from the PS-30M.
2. Wait for 5 seconds.
3. Reconnect the batteries to the battery terminal of the PS-30M.

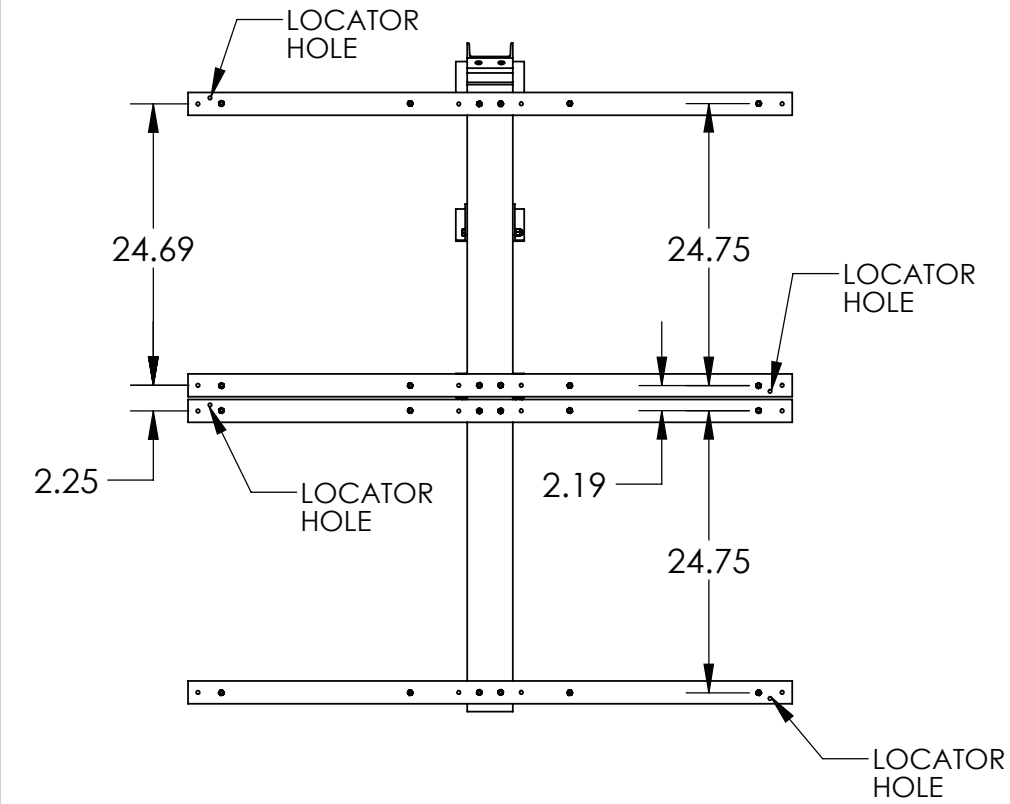
The PS-30M powers up and the display shows battery voltages and state of charge.

Getting Service

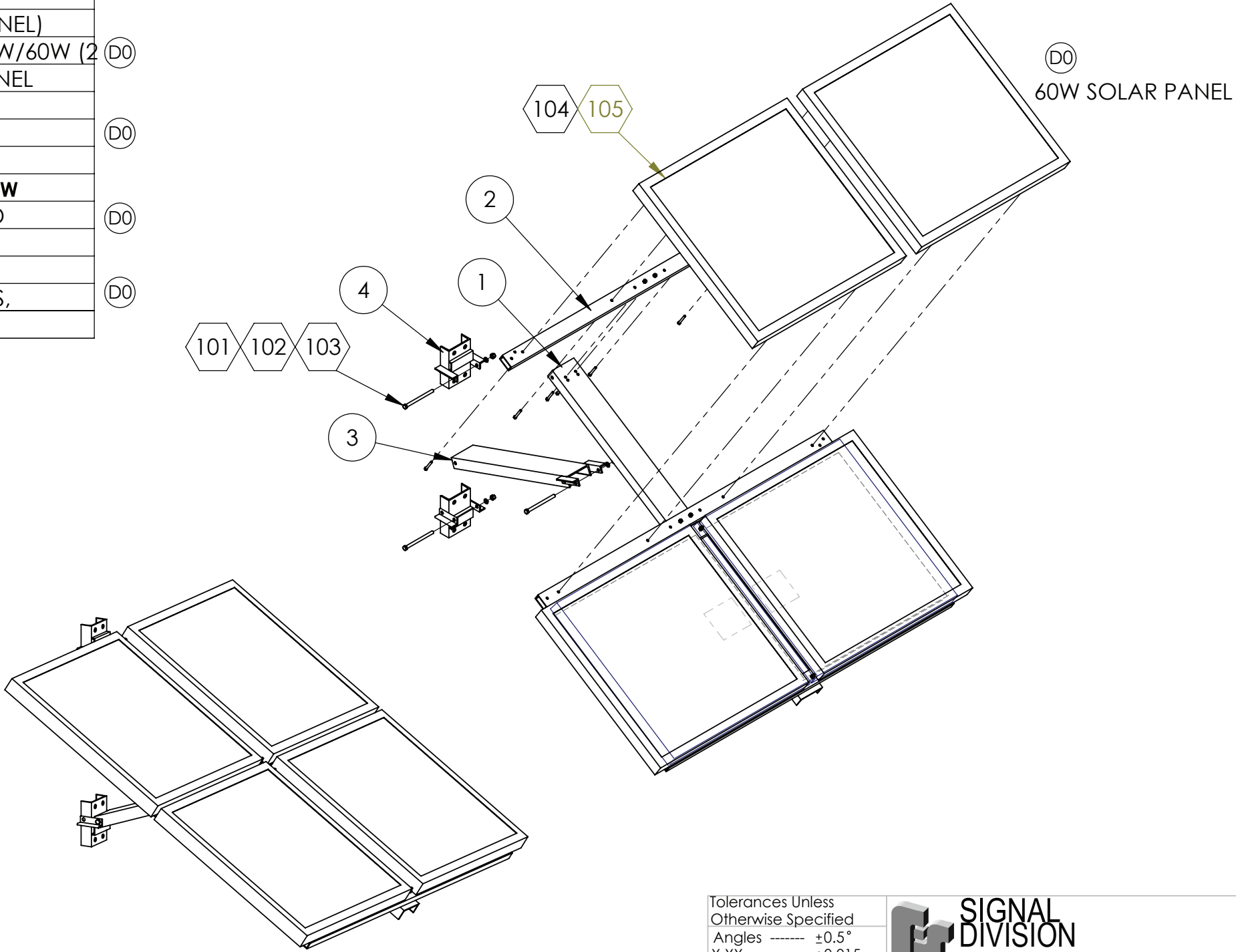
If you are experiencing any difficulties, contact Federal Signal Customer Support at: 800-548-7229 or 708-534-3400 extension 7511 or Technical Support at: 800-524-3021 or 708-534-3400 extension 7329 or through e-mail at: techsupport@fedsig.com. For instruction manuals and information on related products, visit: <http://www.fedsig.com/>

Figure 15 Final Assembly Solar Bracket 55 W or 60 W (4 Panel)

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	2881278C	CHANNEL, BASE, SOLAR 55W (4 PANEL)
2	4	2881279B	TUBING, RECTANGULAR, SOLAR 55W/60W (2
3	1	2881284A	ASSEMBLY, WELD, SUPPORT, CHANNEL
4	2	2881286A	CHANNEL, BRACKET, WELD
5	1	2881333	HARDWARE KIT
			HARDWARE KIT PARTS ARE LISTED BELOW
101	3	7002080A-80	SCREW,HEX,SS,3/8-16 X 5,FULL THRD
102	3	7058A013	NUT,EL STOP,HEX,LT SS,3/8-16
103	3	7074A046	LKWSHR, SPLT, SS, 3/8
104	24	7000A311-30	SCREW, MACH, 1/4-20, HEX HD, , SS,
105	24	7058A010	NUT, EL STOP, 1/4-20, , SS,



BRACKET ASSEMBLY



Tolerances Unless
Otherwise Specified

Angles ----- ±0.5°
X.XX ----- ±0.015
X.XXX ----- ±0.005

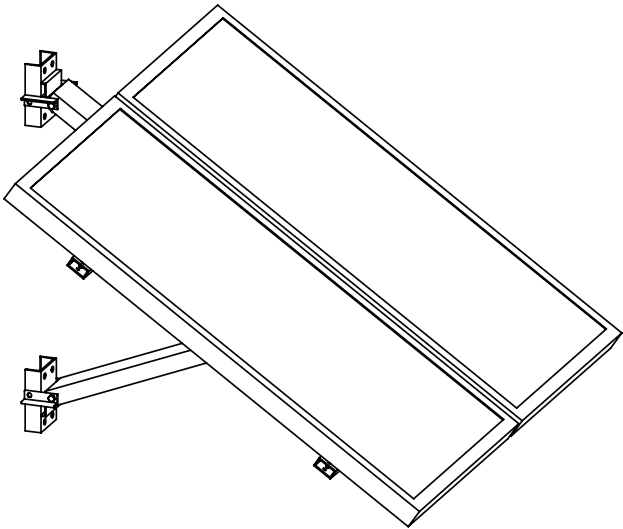
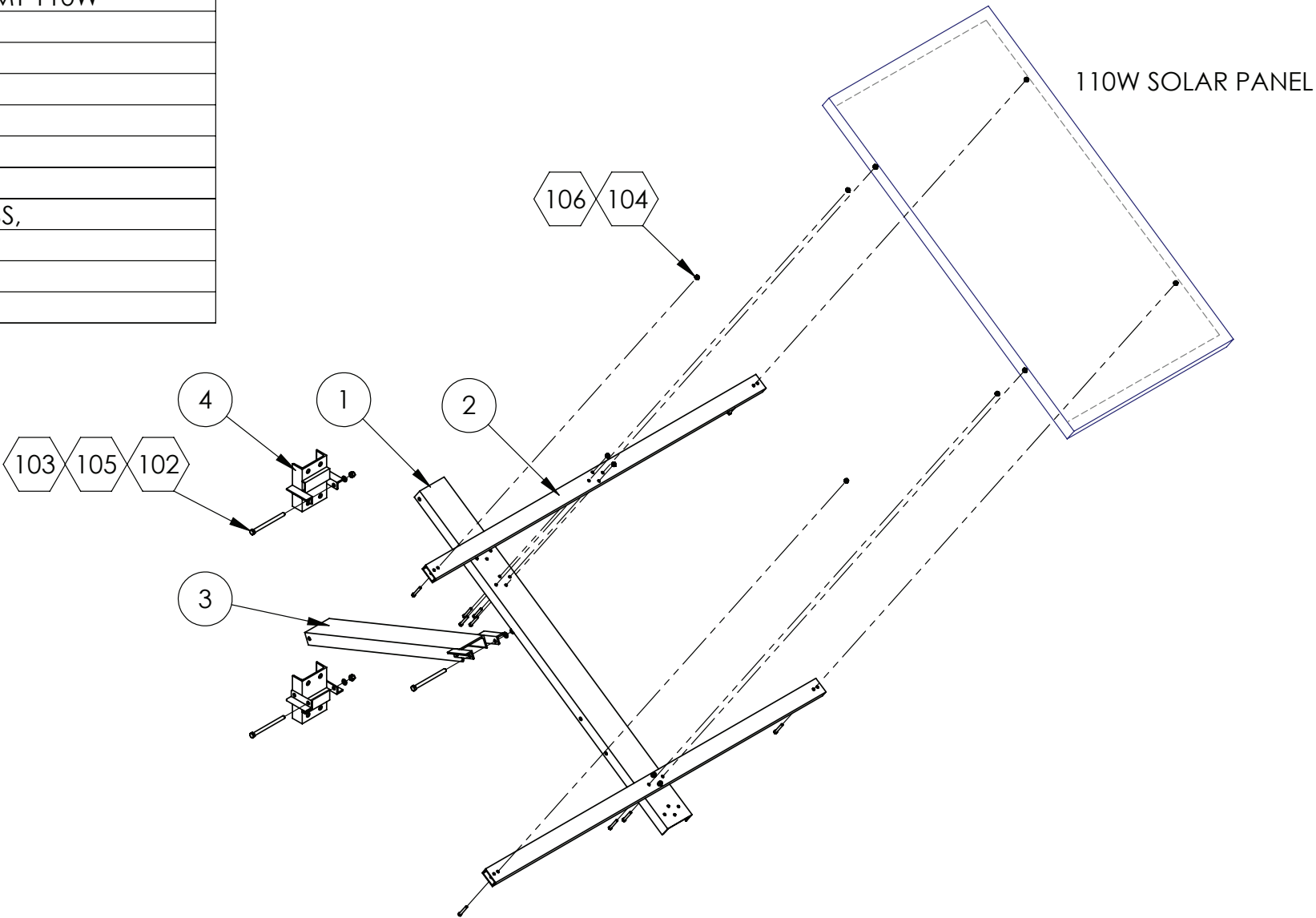
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				REMOVE BURRS, SHARP CORNERS AND EDGES							
				MATERIAL:	AS SPECIFIED			UNIT OF MEASURE	DRAWN BY: VT	CHKD. BY: SC	SCALE AT B SIZE:
								PC	DATE: 1/30/09	DATE: 2/2/09	NONE
				NAME:	FINAL ASSEMBLY, SOLAR BRACKET 55W/60W (4 PANEL)					DRAWING NUMBER:	
										2881287	
REV	CHANGE		DATE	BY							

Figure 16 Final Assembly Solar Bracket Side Mount 110 W

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	861000124A	CHANNEL, BASE, SOLAR SIDE MT 110W
2	2	861000053A	TUBING, RECTANGULAR, SOLAR 110W
3	1	861000126A	ASSY., WELD, SUPPORT, CHANNEL SIDE MT 110W
4	2	2881286A	CHANNEL, BRACKET, WELD
5	1	2881333B	HARDWARE KIT
			HARDWARE KIT PARTS ARE LISTED BELOW
101	12	7000A311-30	SCR,HEX HD,SS,1/4-20X1-7/8
102	3	7002080A-80	SCREW,HEX,SS,3/8-16 X 5,FULL THRD
103	3	7058A013	NUT, EL STOP, 3/8-16, 0.468/0.438" THK, SS,
104	12	7058050A	NUT,MACH SCR,KEPS,1/4-20
105	3	7074A046	LKWSHR, SPLT, SS, 3/8
106	12	7000A311-30	SCREW, MACH, 1/4-20, HEX HD, , SS,



A0	SEE ECR# 841	6/24/13	VT
REV	CHANGE	DATE	BY

FINISH:	NONE
REMOVE BURRS, SHARP CORNERS AND EDGES	
MATERIAL:	AS SPECIFIED
NAME:	FINAL ASSEMBLY, SOLAR BRACKET SIDE MOUNT 110W

Tolerances Unless Otherwise Specified
Angles ----- ±0.5°
X.XX ----- ±0.015
X.XXX ----- ±0.005

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DRAWN BY: VT DATE: 6/12/13	CHKD. BY: SAC DATE: 6/14/13	SCALE AT B SIZE: NONE
DRAWING NUMBER:		861000127A

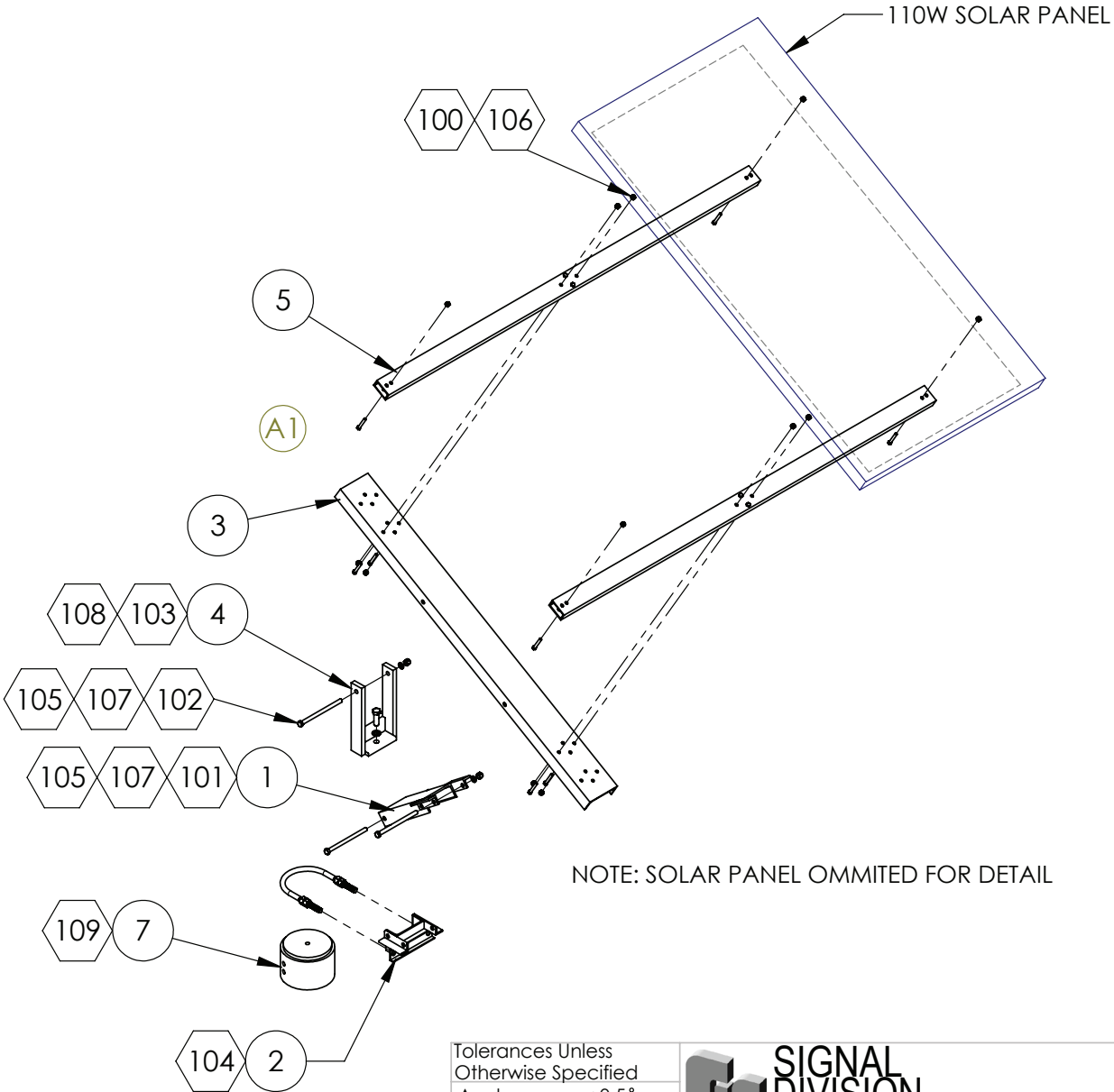
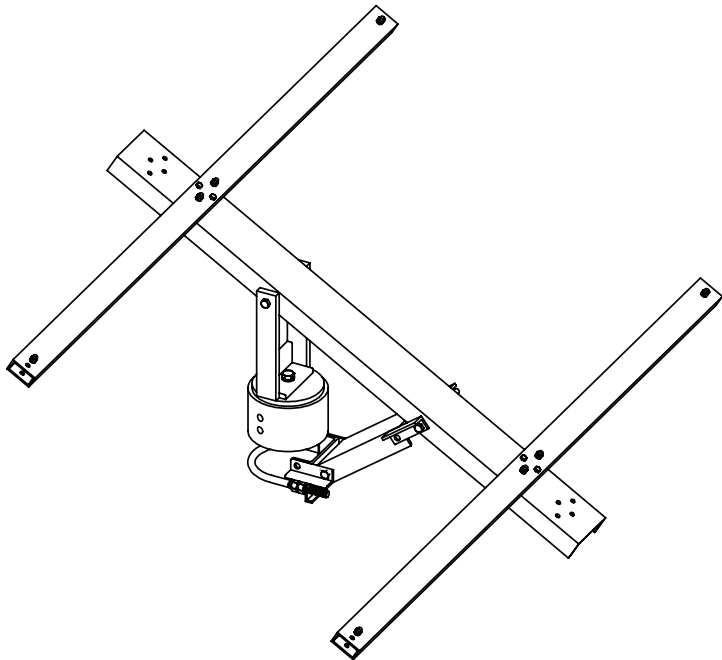
Figure 17 Final Assembly Solar Bracket Top-of-Pole Mount 110 W (2 Panel)

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	2881295A	ASSY, WELD, CHANNEL SUPPORT, TOP-OF-PO
2	1	2881298A	WELD ASSY, BRACKET, TOP-OF-POLE MOUNT
3	1	861000052A	CHANNEL, BASE, SOLAR 110W
4	1	2881294A	ASSEMBLY, WELD, BASE BRACKET
5	2	861000053A	TUBING, RECTANGULAR, SOLAR 110W
6	1	2881335	HARDWARE KIT
7	1	8570073A	WELDMENT ASSY, PIPE SLEEVE, SOLAR, PVS22
			HARDWARE KIT PARTS LISTED BELOW
100	12	7000A311-28	SCR,HEX HD,SS,1/4-20X1-7/8
101	2	7002080A-88	SCREW,HEX,SS,3/8-16 X 6-1/2
102	1	7002080A-96	SCREW,HEX,SS,3/8-16 X 6
103	1	7002A014-24	SCREW,CAP,HEX HD,SS,1/2-13 X 1-1/2
104	1	7003018A	BOLT, U, 1/2-13, , SS, FOR 4" PIPE
105	3	7058A013	NUT, EL STOP, 3/8-16, 0.468/0.438" THK, SS,
106	12	7058A010	NUT, EL STOP, 1/4-20, , SS,
107	3	7074A046	LKWSHR, SPLT, SS, 3/8
108	1	7074A059	WASHER, SPLT, 1/2, .873 OD, 0.135/0.125"
109	2	7000A338-104	SCREW HEX HD 1/2-13 SS

A2

A2

A2



NOTE: SOLAR PANEL OMMITED FOR DETAIL

Tolerances Unless Otherwise Specified
Angles ----- ±0.5°
X.XX ----- ±0.015
X.XXX ----- ±0.005



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					REMOVE BURRS, SHARP CORNERS AND EDGES					
					MATERIAL:	AS SPECIFIED	UNIT OF MEASURE	DRAWN BY: VT	CHKD. BY: SAC	SCALE AT B SIZE:
A2	SEE ECR # 2268	8/5/14					PC	DATE: 10/29/12	DATE: 10/30/12	NONE
A1	SEE ECR # 768	5/21/13			VT	NAME:		DRAWING NUMBER: 861000039A		
A0	REL. TO ECR # 113	10/30/12		VT	FINAL ASSEMBLY, SOLAR BRACKET TOP-OF-POLE MOUNT 110W (2 PANEL)					
REV	CHANGE	DATE	BY							

A2	SEE ECR # 2268	8/5/14	VT
A1	SEE ECR # 768	5/21/13	VT
A0	REL. TO ECR # 113	10/30/12	VT
REV	CHANGE	DATE	BY

Figure 18 DCB and DCFCB Solar Wiring

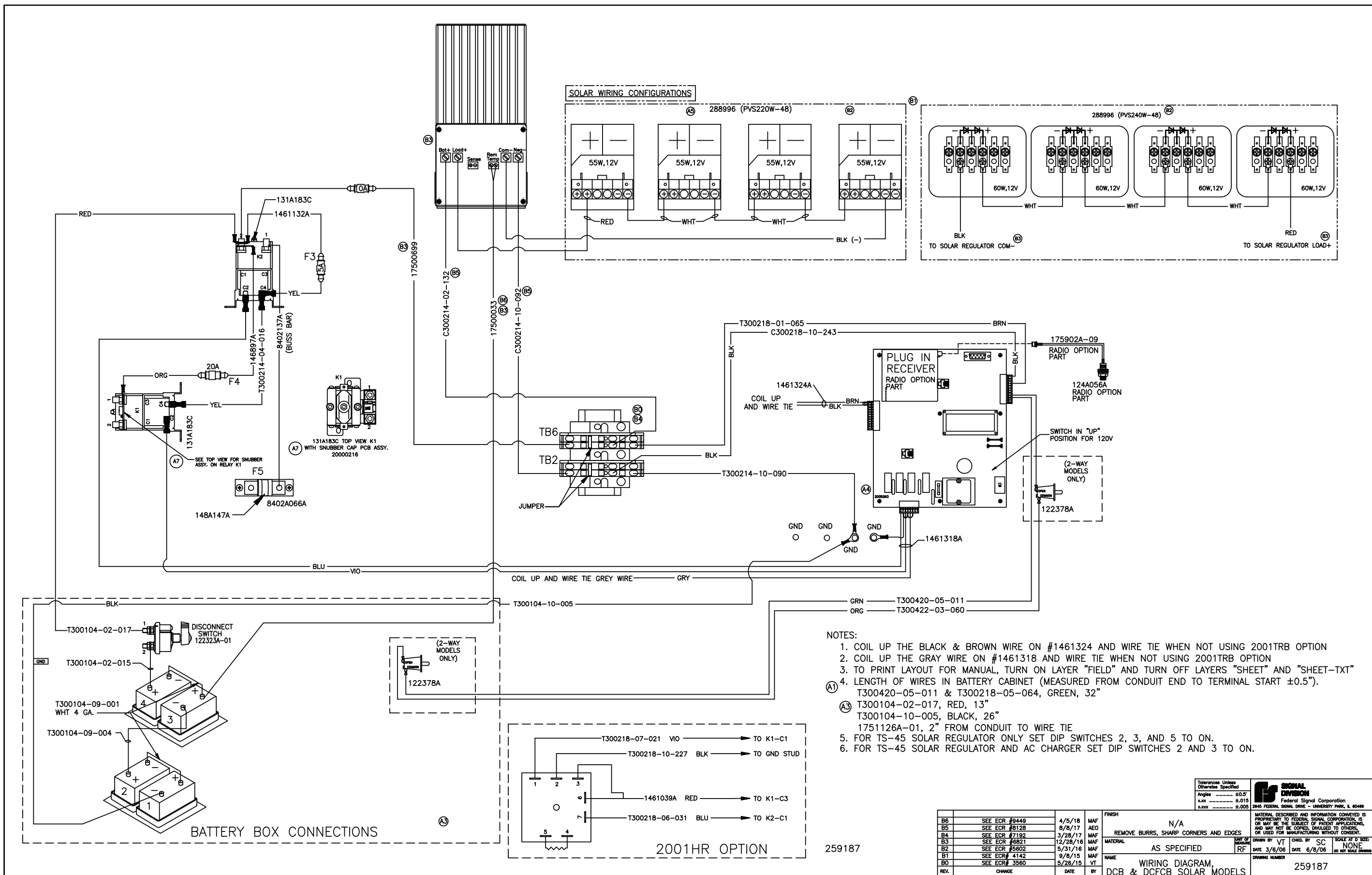


Figure 19 DCFCTB Solar Wiring

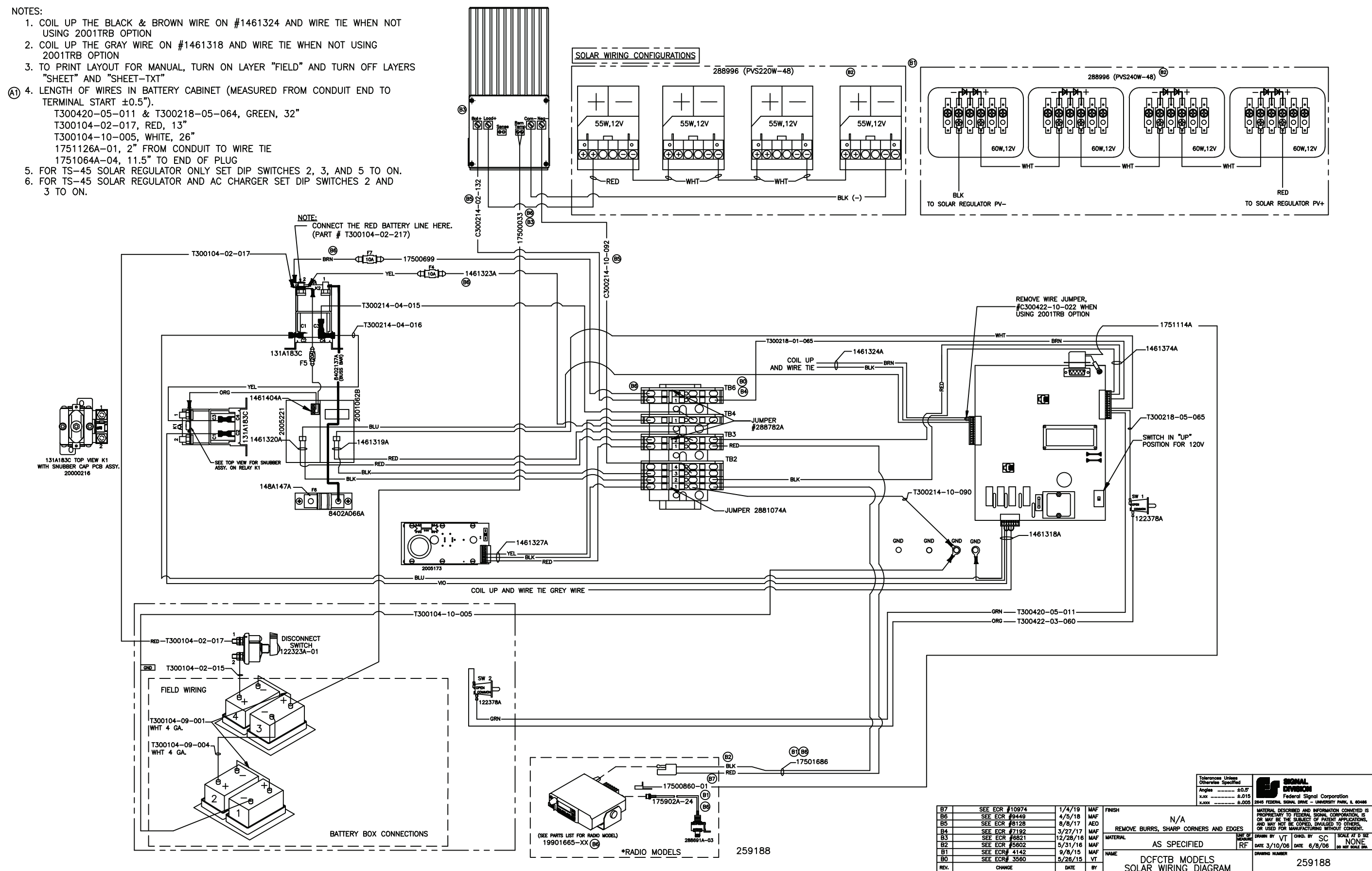


Figure 20 One-Way Solar UltraVoice Wiring Diagram

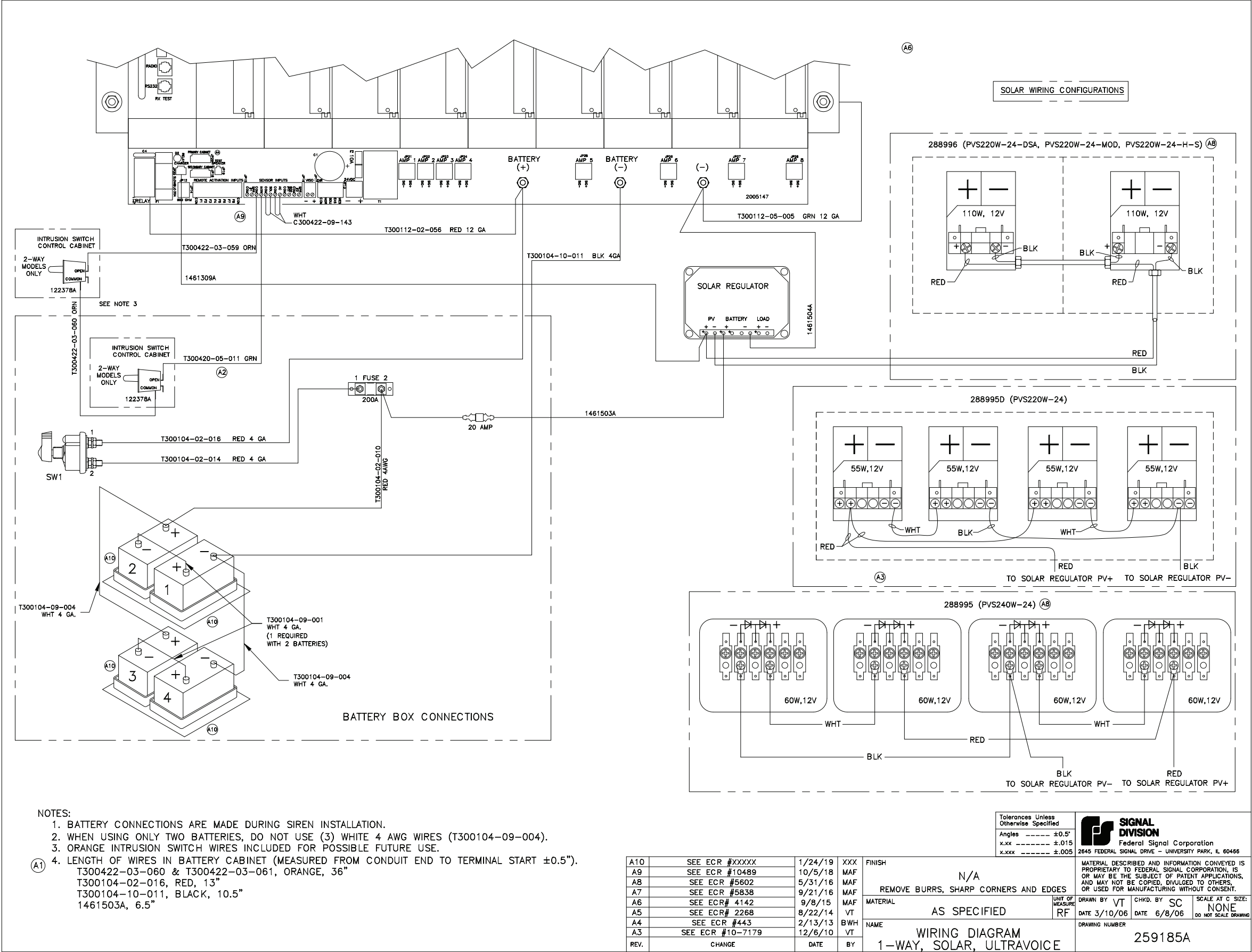


Figure 21 Two-Way Solar UltraVoice Wiring Diagram

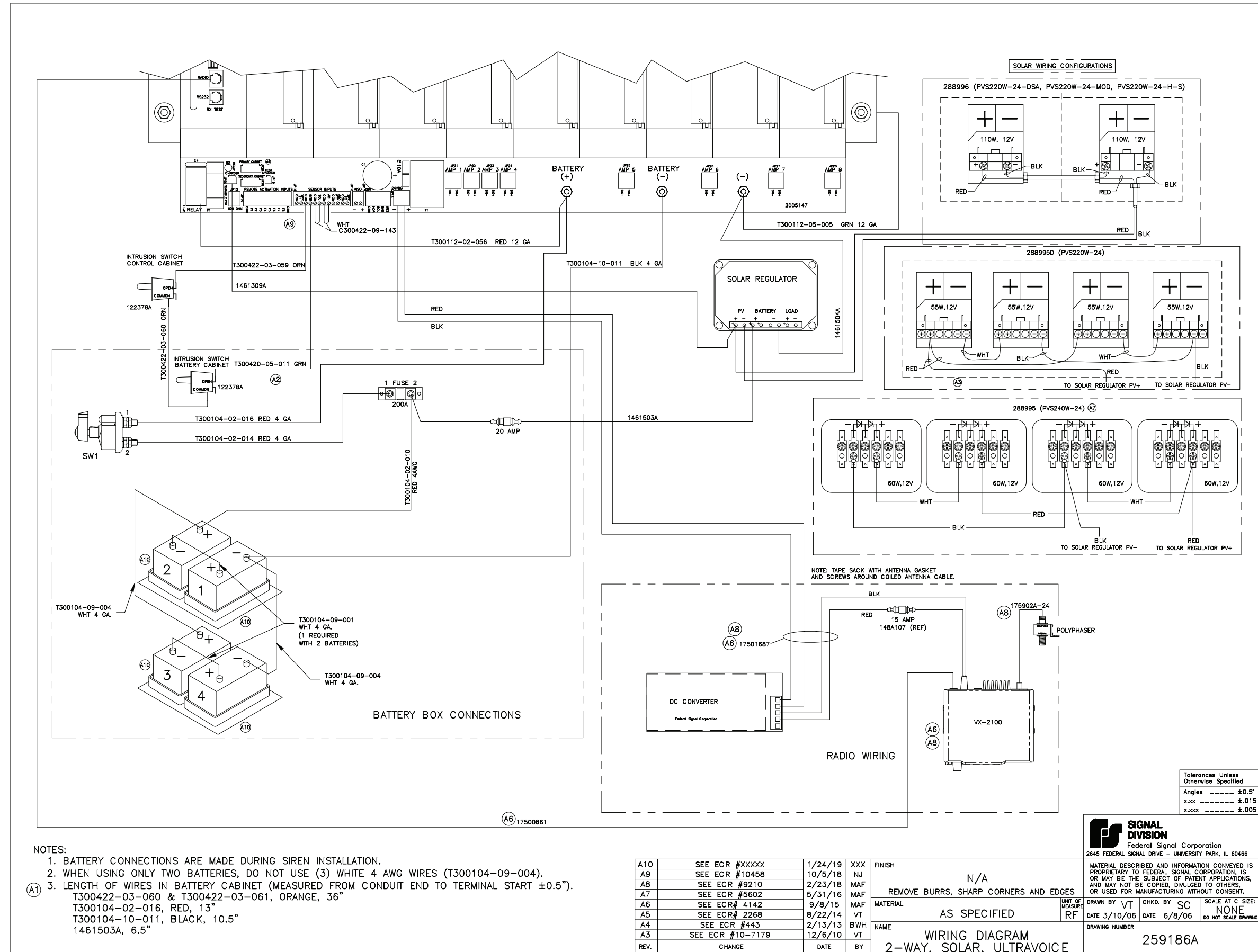


Figure 22 Two-Way Primary AC with Solar UltraVoice Wiring Diagram

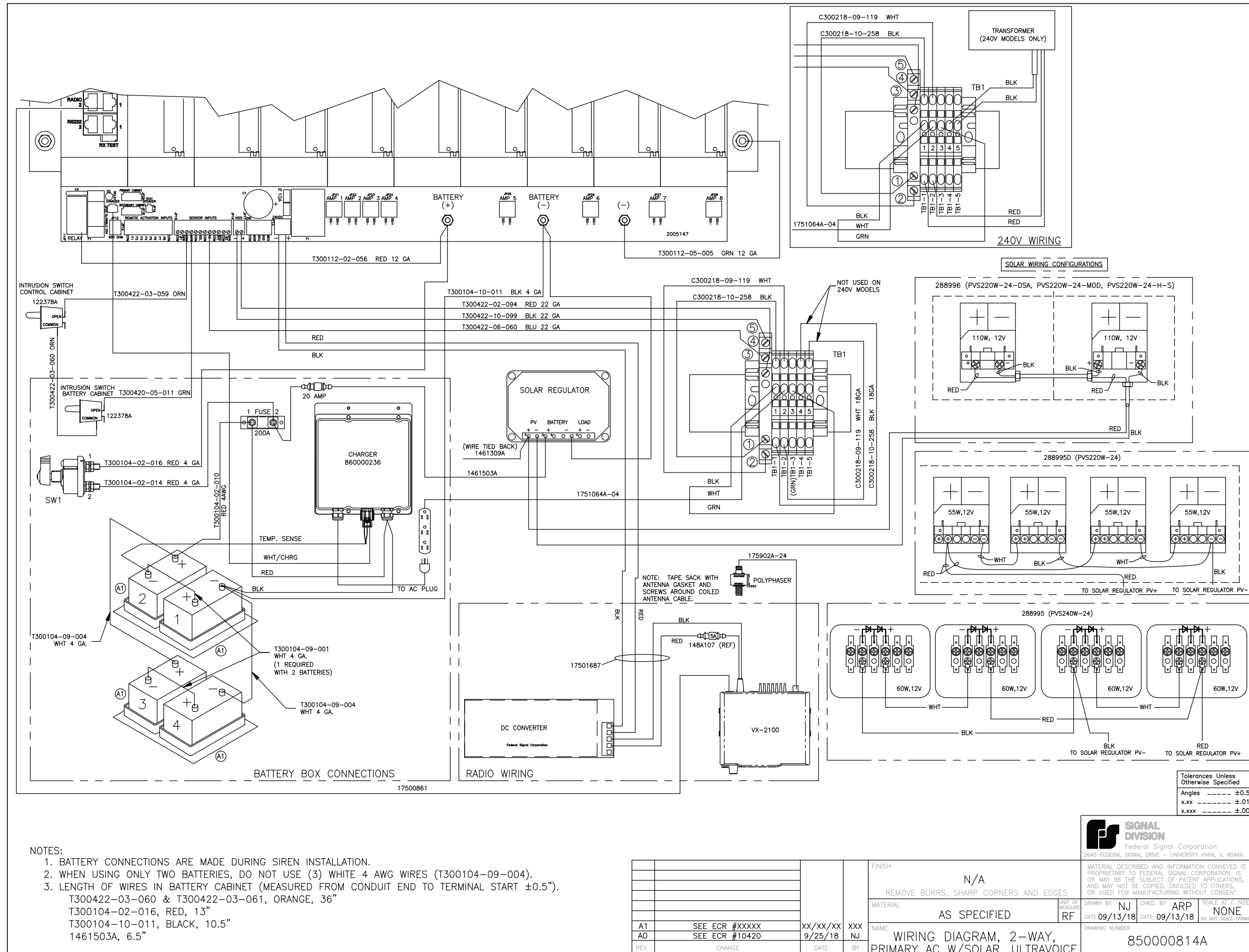


Figure 23 Two-Way Primary Solar with AC UltraVoice Wiring Diagram

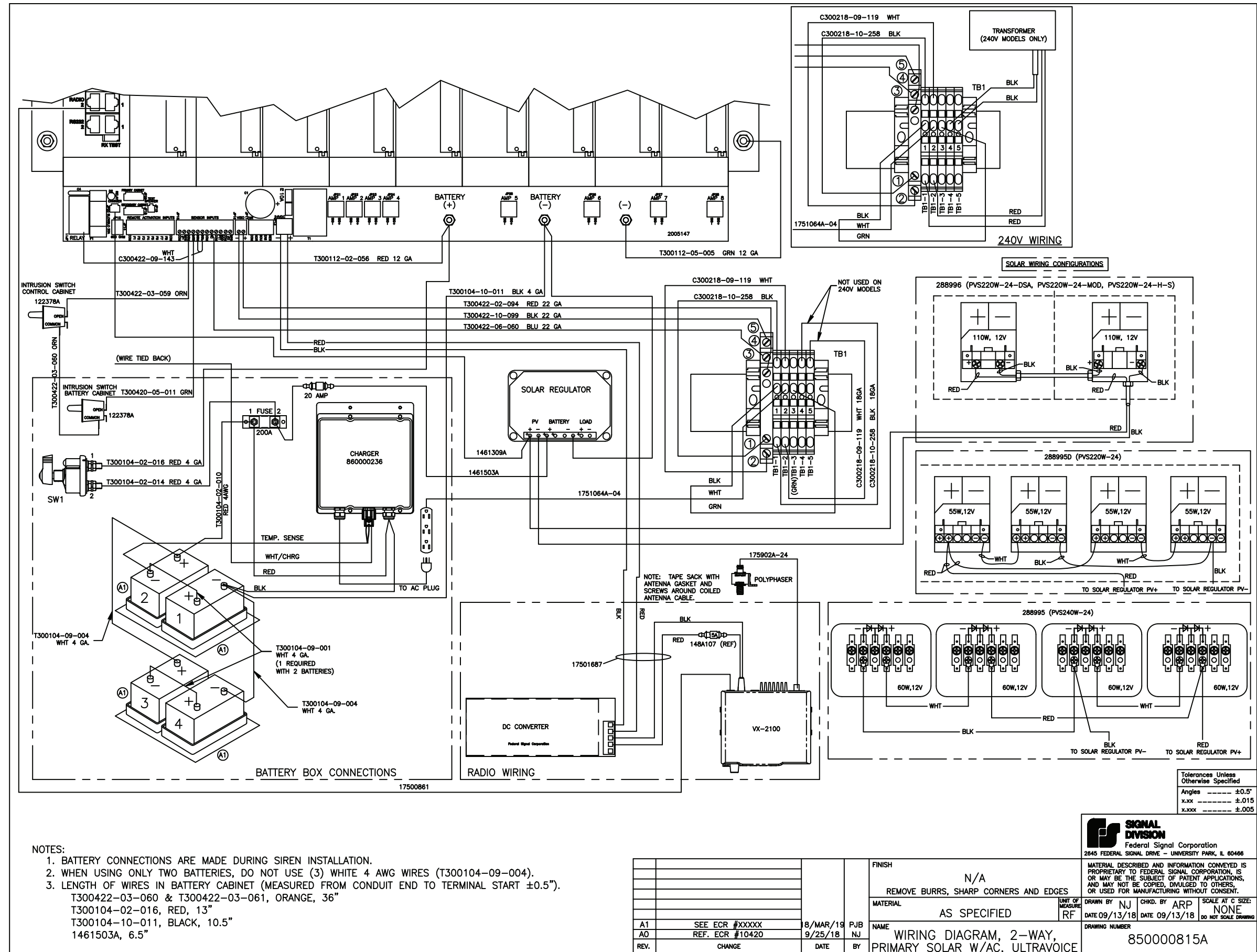
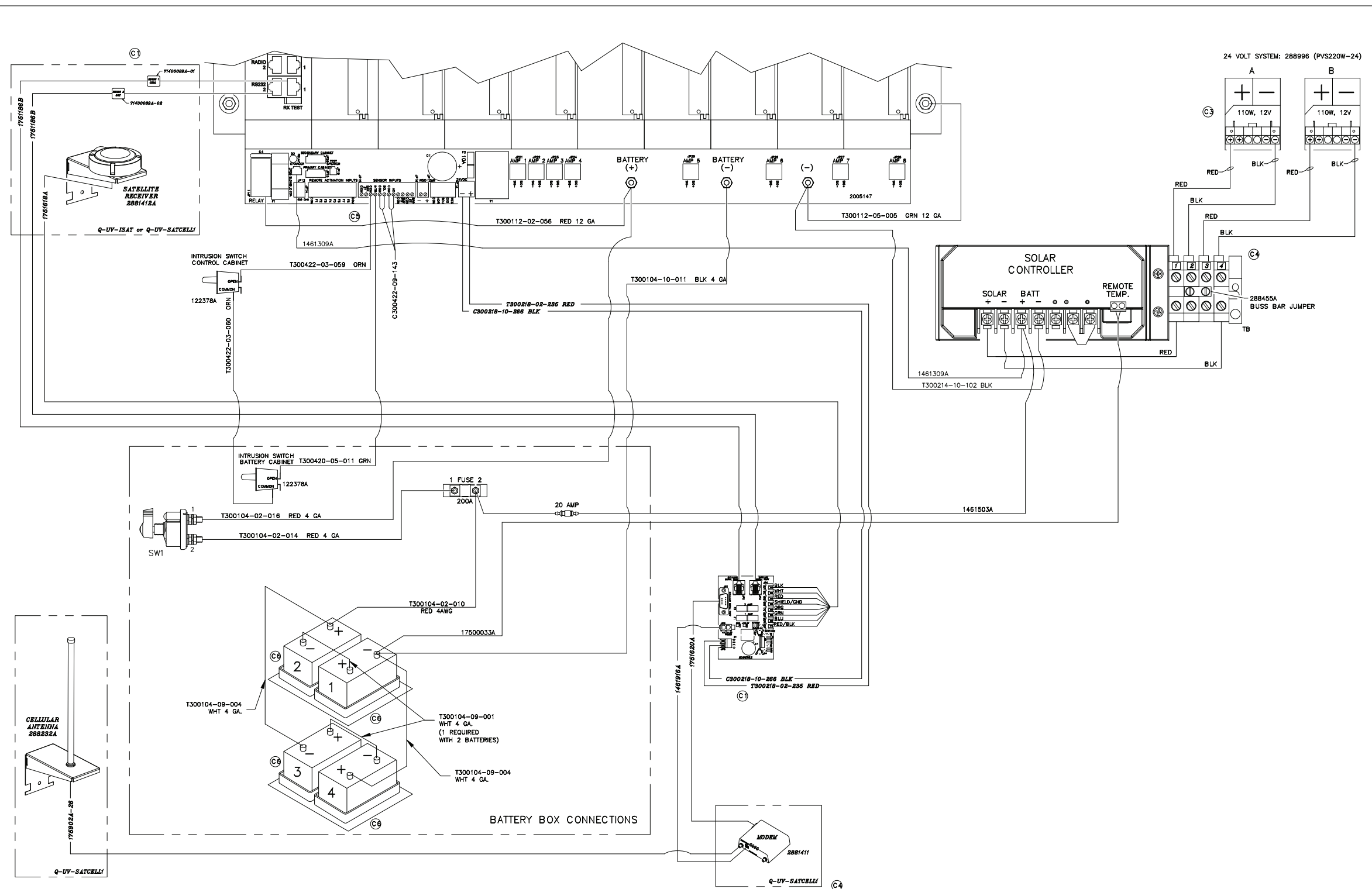


Figure 24 Hawaii UltraVoice Wiring Diagram

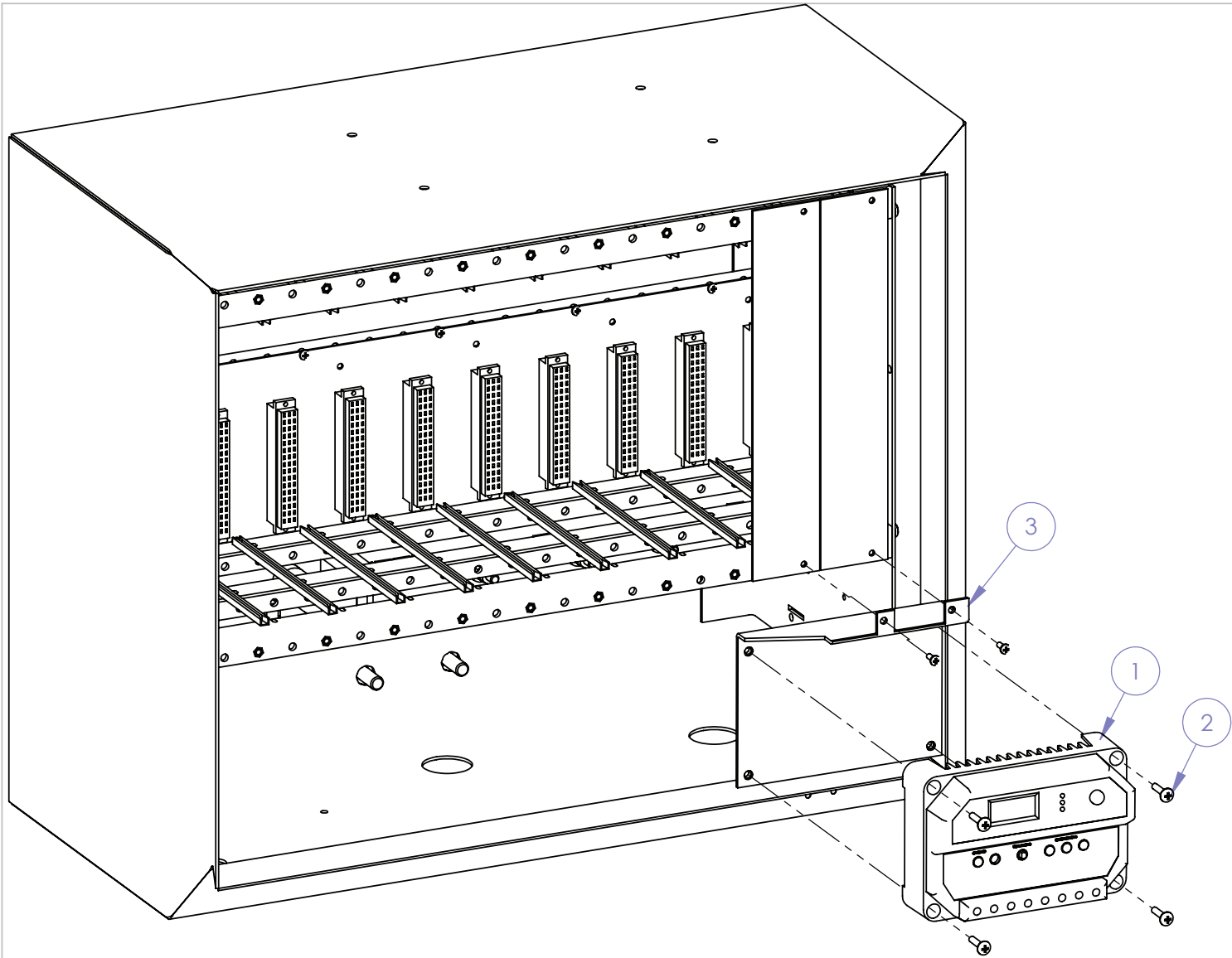


NOTES:

1. OPTIONS SHOWN IN ITALICIZED TEXT FOR REFERENCE.
2. BATTERY, SATELLITE RECEIVER & ANTENNA CONNECTIONS MADE DURING SIREN INSTALLATION.
3. WHEN USING ONLY TWO BATTERIES, DO NOT USE (3) WHITE 4 AWG WIRES (T300104-09-004).
4. LENGTH OF WIRES IN BATTERY CABINET (MEASURED FROM CONDUIT END TO TERMINAL START $\pm 0.5"$).
 - T300420-05-011, GREEN, 36"
 - T300104-02-016, RED, 13"
 - T300104-10-011, BLACK, 10.5"

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C6	SEE ECR# XXXXX	1/24/19	VT	FINISH		MATERIAL DESCRIBED AND INFORMATION CONVEYED IS PROPRIETARY TO FEDERAL SIGNAL CORPORATION, IS OR MAY BE THE SUBJECT OF PATENT APPLICATIONS, AND MAY NOT BE COPIED, DIVULGED TO OTHERS, OR USED FOR MANUFACTURING WITHOUT CONSENT.		
C5	SEE ECR# 2288	8/22/14		N/A				
C4	SEE ECR# 1605	2/12/14		REMOVE BURRS, SHARP CORNERS AND EDGES.				
C3	SEE ECR# 768	5/21/13		MATERIAL		UNIT OF MEASURE	DRAWN BY VT	CHKD. BY RW
C2	SEE ECR# 113	10/12/12		AS SPECIFIED		RF	DATE 5/25/12	DATE 12/14/12
C1	SEE ECR# 12-9359	8/7/12		NAME		DRAWING NUMBER		
C	REL. TO ECR# 12-8998	5/29/12	VT	WIRING DIAGRAM, HAWAII SOLAR IN UV		259298C		
REV.	CHANGE	DATE	BY					

Figure 25 Solar Assembly for the UltraVoice



ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	288964A-24	SOLAR REGULATOR, MORNING STAR, PROSTAR
2	4	7000A070-12	SCREW, MACH, 10-32, RND HD, PHIL, SS, 3/4
3	1	8600148A-01	BRKT ASSY, SOLAR, PROSTAR, UV
*	1	1461503A	WIRE LEAD,BATTERY (+),SOLAR,UV
*	1	1461504A	WIRE LEAD,SOLAR GND TO MOTHERBOARD
(B4) *	3	C300422-09-143	CUT WIRE,1/4NT:1/4NT,1.5"
(B4) NT SHWN	1	255379	MANUAL
(B4) **	1	288995	SOLAR KIT,SUNWIZE PVS220W-24/PVS240W-24
(B4) **	1	2881287	SOLAR BRACKET
(B4) **	1	2881336	KIT, CABLE AND CLAMP, SOLAR
(B4) **	2	7000A427-10	SCREWS,6-32,SS
(B4) REF	0	259185	WIRING DIA,UV 1-WAY,SOLAR
(B4) REF	0	259186	WIRING DIA,UV 2-WAY,SOLAR
REF	0	8600109	FINAL ASSY,UV 1-WAY
REF	0	8600111	FINAL ASSY, UV 2-WAY

* SHOWN ON WIRING DIAGRAM
** NOT SHOWN, SHIPPED DIRECT TO CUSTOMER

DELETIONS FOR SOLAR OPTION (1-WAY & 2-WAY)			DELETIONS (CONT.)		
QTY.	PART NUMBER	DESCRIPTION	QTY.	PART NUMBER	DESCRIPTION
1	120816	CHARGER,24V,10A	1	1751064A-04	CABLE,AC TERMINATED
1	1612393B	LABEL,DIN RAIL,UV	2###	C300218-09-119	WIRE,CUT,WHT,5"
2	229218A	BRKT,T-BLOCK,END	2###	C300218-10-258	WIRE,CUT,BLK,5"
4#	229282A	TERM. BLOCK,1-POLE,35MM DIN	1###	T300422-02-094	T-WIRE,RED,28"
1##	229283A	CAP,END,TERM BLOCK,1 POLE	1###	T300422-06-060	T-WIRE,BLUE,28"
1	229288A	GROUND TERM BLOCK,3 POS	1###	T300422-10-099	T-WIRE,BLACK,28"
1	288810A-04	DIN RAIL,ALUM,UNCOATED,4.00"	1	8549A193A	LIGHTNING PROTECTOR
1###	288454B	INPUT MODULE,120V	1	1461243A	WIRE LEAD,FUSED,POWER SUPPLY
2	7011A152-06	#8 SHT METAL SCREW,SS	(B2) 1	81461875B	LABEL,NAMEPLATE,UL
(B2) 6	7058050A	NUT,MACH SCREW,KEPS 1/4-20	1	1612875A-05	LABEL, ELECTRICAL RATINGS
1	8600112A-01	BRKT ASSY,PWR SUPPLY			

ONLY QTY 2 ON 1-WAY
ONLY 1-WAY MODELS
ONLY 2-WAY MODELS

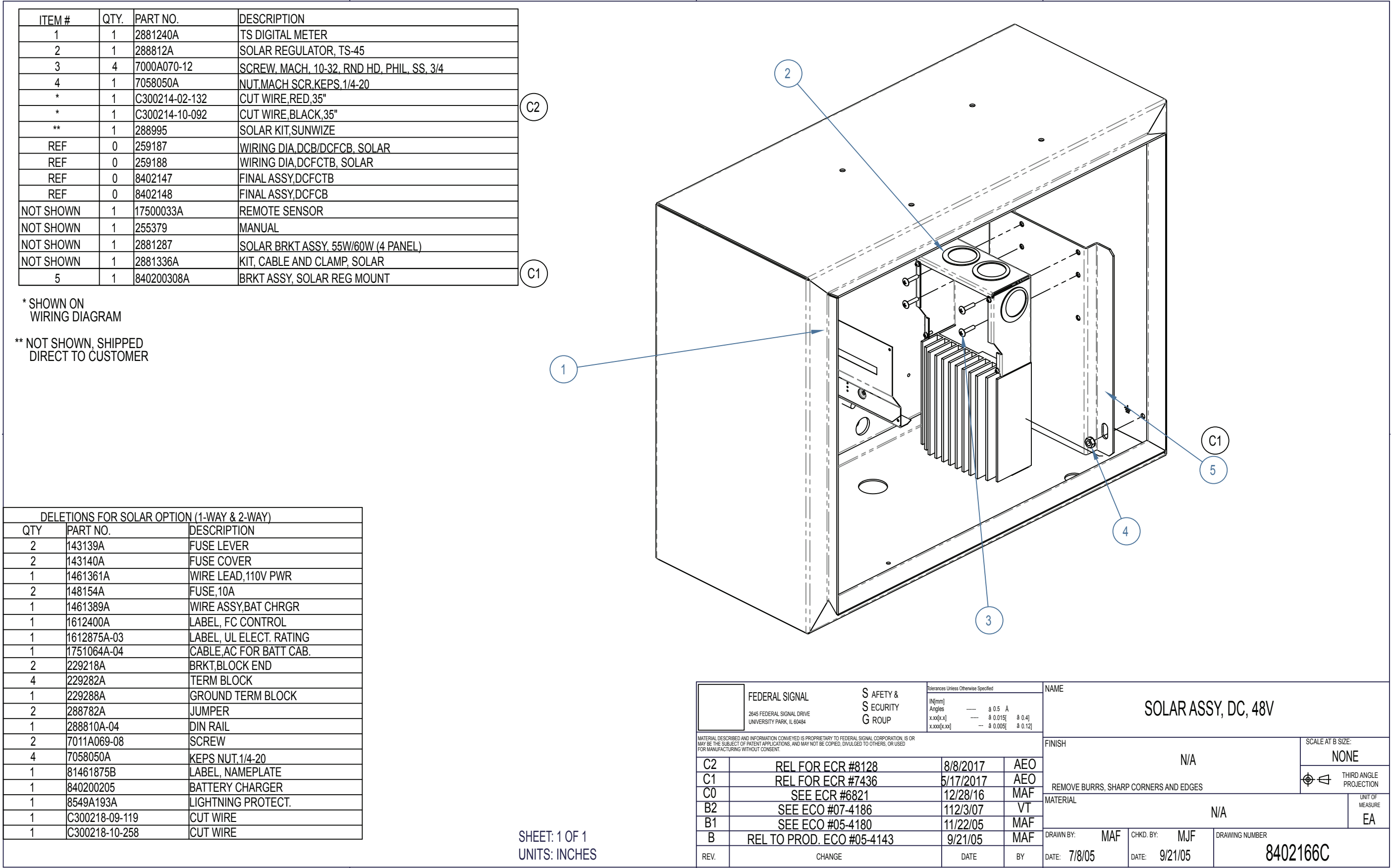
Tolerances Unless
Otherwise Specified
Angles ----- ±0.5°
X.XX ----- ±0.015
X.XXX ----- ±0.005

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		5/31/16	MAF	FINISH:	N/A		MATERIAL DESCRIBED AND INFORMATION CONVEYED IS PROPRIETARY TO FEDERAL SIGNAL CORPORATION, IS OR MAY BE THE SUBJECT OF PATENT APPLICATIONS, AND MAYNOT BE COPIED, DIVULGED TO OTHERS, OR USED FOR MANUFACTURING WITHOUT CONSENT.				
				REMOVE BURRS, SHARP CORNERS AND EDGES							
				MATERIAL:	UNIT OF MEASURE	DRAWN BY: MAF				CHKD. BY: MJF	SCALE AT B SIZE:
B4	SEE ECO #5602										
B3	SEE ECO #08-2746			2/26/08	VT	N/A				RF	DATE: 7/8/05
B2	SEE ECO #05-4180	11/22/05	MAF	NAME:	SOLAR ASSY,UV		DRAWING NUMBER: 8600124B				
B1	REL TO PROD ECO #05-4142	9/21/05	MAF								
REV	CHANGE	DATE	BY								

Figure 26 Solar Assembly for the DC Series Siren Control System



SHEET: 1 OF 1
UNITS: INCHES