



START HERE

To install your Top of Pole Solar Power Kit

Your guide to install and
connect a TrafficCalm Top of Pole
Solar Power Kit

Applies to:

M75-SPTOP-030W

M75-SPTOP-060W

M75-SPTOP-100W

M75-SPTOP-150W

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Build America, Buy America Compliant



At TrafficCalm, we take immense pride in contributing to the development and improvement of America's roadways. Our commitment to the "Build America, Buy America" initiative is unwavering. We're pleased to share that our Radar Speed Signs, Flashing Sign Systems, and Intelligent Warning Systems are not only manufactured in the United States but are also constructed from materials produced substantially within our great nation.

For those seeking further information, services, or inquiries regarding our American-made traffic safety solutions, please do not hesitate to contact us. We're here to support your initiatives and help make America's roadways safer for all.

Thank you for choosing TrafficCalm as your trusted partner in enhancing transportation safety across the United States.

ISO 9001: QUALITY STANDARDS



ISO 9001 certification signifies TrafficCalm's unwavering commitment to exceptional quality and continual improvement.

It reflects our dedication to delivering outstanding products and services, ensuring customer satisfaction and operational excellence. Our certification is a mark of reliability and consistency, demonstrating our commitment to excellence in the traffic safety industry.

1 About this Manual

1.1 Purpose of Manual

This manual provides the installation and setup instructions for the TrafficCalm Top of Pole Solar Power Kits. This manual is intended for use by installers, maintenance personnel, and others who are responsible for the installation and maintenance.

1.2 Manual Conventions

The conventions listed in Table 1-1 help to make this manual easier to use by presenting a uniform approach to the descriptions, phrases, and nomenclature.

1.3 Related Document

Other documents pertaining to Top of Pole Solar Power Kit. The supplemental installation guides for the Driver Feedback Signs and accessories not listed in this manual.

1.4 Manual Organization

This manual is divided into five sections and three appendixes.

Section 1. About This Manual

Contains information about the organization and content of this manual.

Section 2. Safety Information

Contains important information about the safety messages, safety considerations, and procedures for installing this equipment.

Section 3. Description

Describes the Top of Pole Solar Mount kit and related accessories.

Section 4. Assembly

Describes the assembly of parts for installing bracket, panel, & post mounting

Appendix A. 60W Wiring Diagram

Appendix B. 100W/150W Wiring Diagram

Appendix C. Parts List

Revision Block.

Past and Current revision and changes

Table 1-1. Manual Conventions

Element	Convention	Example
Acronyms	Uppercase	LED
Abbreviations	Lowercase	ms (milliseconds)
	...except where standard Usage is uppercase	Mb (megabits) MB (megabytes)
Model names	First or formal reference; initial caps	M75-SPTOP-100W
	Subsequent use or informal reference:	Top of Pole Solar power kit

2 Safety Information

We provide important safety information and warnings to assist you in understanding and avoiding potential harm to yourself, and possible damage to equipment during the installation of the Top of Post Solar kit. Although we have included many potential hazards you may encounter during the installation of this equipment, we cannot predict all of the possible hazards and this list should not be a substitute for your judgment and experience.

Please read and observe all safety information and instructions in this manual before installing the system equipment. Also, save this installation manual for future reference.

If you are unsure about any part of this installation or of the potential hazards discussed, please contact your supervisor immediately.

2.1 Intended Use

Top of Pole Solar Power Kit is intended to be used to power the TrafficCalm Driver Feedback Sign system.

2.2 Technical Support

If you have questions about the system, its use, or operation, please contact your local partner or call the TrafficCalm Technical Service department at 1-855-738-2722, in the U.S.A. Technical service hours: Monday through Thursday, 7:00 AM to 5:00 PM and Friday from 7:00 AM to 12:00 PM Pacific Standard Time.

2.3 Safety Messages

We include safety messages in this manual to help you protect your safety and the safety of others. This section contains important information to help you recognize and understand these safety messages.

Please read all messages before proceeding with the installation of this equipment.

2.3.1 Safety Message Format

Safety messages are designed to alert you to potential hazards that can cause personal injury to you or others. They can also indicate the possibility of property damage.

Each safety message box contains the safety alert symbol ; and one of three signal words:

DANGER, WARNING, or CAUTION; plus a safety message.

The signal words and symbols, and their meanings, are shown below:



DANGER

The safety message is in this box.

DANGER indicates a potentially hazardous situation, which, if not avoided, will result in death or serious injury and/or property damage.



WARNING

The safety message is in this box.

WARNING indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury and/or property damage.



CAUTION

The safety message is in this box.

CAUTION indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury and/or property damage.

In addition to the symbols and words explained above, each safety message identifies the hazard, describes what you can and should do to avoid the risk of exposure to the hazard, and tells the probable consequences of not avoiding the hazard.

2.4 Safety Messages Contained in This Manual

The following safety messages appear in this manual:



WARNING

Battery acid may cause skin irritation and eye injury. **To reduce the risk of burns or other acid related injury resulting from handling lead-acid batteries:**

- Wear gloves, goggles, and an apron when handling batteries
- Beware of cracked battery cases
- Handle batteries with care.



WARNING

To reduce the risk of burns or other acid-related injury resulting from exploding batteries:

- Always use the recommended charging systems with this product.**



WARNING

To reduce the risk associated with contamination of water supplies resulting from improper disposal of batteries containing lead and acid:

- Please dispose of batteries in accordance with all local government laws and regulations.**

**CAUTION**

An accidental short circuit may instantly heat conductive jewelry, tools, and surrounding objects to skin-searing temperatures.

To reduce this risk when working around batteries:

-Keep tools, jewelry, and other conductive objects away from the battery terminals.

**WARNING**

To reduce the risk of impact hazards resulting from falls, accident with a passing vehicle, and/or from unstable equipment:

-Use appropriate work zone traffic control methods, equipment, and procedures.

**CAUTION**

Strain or back injury may result from lifting equipment improperly. **To reduce the risk of strain or back injury, use proper lifting techniques and have adequate help.**

**CAUTION**

To avoid the possibility of injury due to falling or unstable equipment:

-Be certain the Solar Panel is mounted to an appropriately rated pole or equivalent mounting surface.

-Use appropriately rated mounting hardware.

2.5 Safety Considerations

Please consider the following safety issues before servicing Top of Pole Solar Power Kits.

Although we have compiled this list of common safety considerations, it should not be considered as complete. It is not intended to take the place of your good judgment, training, and experience. Choose the right equipment for the job. If you are unsure of which safety equipment is recommended or appropriate for the job, ask your supervisor or foreman.

2.5.1 Personal Safety Equipment and Clothing

Personal safety equipment and clothing including high visibility vests, hard hats, gloves, electrical shock or electrocution protection clothing and equipment, safety shoes, safety glasses, face shields, goggles, and hearing protection devices are just some of the items available to you.

2.5.2 Electrical Shock

As a trained installer of electrical equipment you are aware of the dangers associated with servicing electrical devices. Always be sure that the power to the equipment, and all associated equipment, is turned off before beginning any procedure. Use the equipment, techniques, and procedures that you learned during your training or apprenticeship or other electrical industry recognized safety procedures.

2.5.4 Battery Safety

**WARNING**

Batteries may produce an explosive gas under some conditions. This gas may easily be ignited by a spark or flame as you work near the battery. To reduce this risk of explosion:

- Disconnect the battery**
- Work in a well-ventilated area**
- Avoid the use of devices that create sparks or use open flames**
- Use appropriate personal safety equipment and clothing**

**WARNING**

Battery acid may cause skin irritation and eye injury. **To reduce the risk of burns or other acid related injury resulting from handling lead-acid batteries:**

- Wear gloves, goggles, and an apron when handling batteries**
- Beware of cracked battery cases**
- Handle batteries with care.**

**WARNING**

To reduce the risk of burns or other acid-related injury resulting from exploding batteries:

- Always use the recommended charging systems with this product.**

**WARNING**

To reduce the risk associated with contamination of water supplies resulting from improper disposal of batteries containing lead and acid:

- Please dispose of batteries in accordance with all local government laws and regulations.**

⚠ CAUTION

An accidental short circuit may instantly heat conductive jewelry, tools, and surrounding objects to skin-searing temperatures.

To reduce this risk when working around batteries:

-Keep tools, jewelry, and other conductive objects away from the battery terminals.

2.5.5 Mechanical Safety**⚠ WARNING**

To reduce the risk of impact hazards resulting from falls, accident with a passing vehicle, and/or from unstable equipment:

-Use appropriate work zone traffic control methods, equipment, and procedures.

⚠ CAUTION

Strain or back injury may result from lifting equipment improperly. **To reduce the risk of strain or back injury, use proper lifting techniques and have adequate help.**

⚠ CAUTION

To avoid the possibility of injury due to falling or unstable equipment:

-Be certain the Solar Panel is mounted to an appropriately rated pole or equivalent mounting surface.

-Use appropriately rated mounting hardware.

3 Description

These solar panel systems are specifically designed to be used with the Trafficalm Flashing Sign Systems. They provide a reliable and sustainable power source for your signs, enhancing visibility and safety. Before installation, make sure you have the necessary components: either a top-of-pole slip fitter or a Slimline Controller/Collaborator (ordered separately)

Top of Pole Kits Integration**1. Choose Your System:**

- o Select the appropriate solar panel system based on your power requirements (30, 60, 100, or 150 Watt kits).
- o These kits are not standalone solutions; they integrate seamlessly with our Slimline Controller and Collaborators.

2. Mounting Options:

- o Use a top-of-pole slip fitter or the Slimline Controller/Collaborator to securely mount the solar panels.
- o The slip fitter provides flexibility for adjusting the panel angle to maximize solar exposure.

3. Solar Charge Controller:

- o The 100 and 150 Watt kits come with a solar charge controller.
- o Install the controller inside the Slimline "Hub" to manage the power generated by the panels.

4. Battery Considerations:

- o Note that the solar panel kits covered in the manual do not include a battery.
- o If assembling a Slimline system, purchase a compatible battery separately.

5. Installation Challenges:

- o Keep in mind that each installation may have unique challenges when aiming the solar panel.
- o Ensure proper alignment and orientation for optimal performance.

3.1 Included Hardware**Solar Panel and Mount**

- A 60W, 100W, or 150W solar panel (depending on what was ordered)
- qty 1 NPT/SAE threaded 1-1/2" post extension
- qty 2 single threaded 1-1/2" support pipes
- qty 1 x-pipe fitting
- qty 2 Pelco end caps
- qty 1 x-pipe threaded cap (aluminum)
- qty 2 standard drilled channel brackets
- qty 3 NPT threaded lock rings
- qty 2 serrated pipe clamp assemblies
- qty 1 Post Top Hub with lock ring
- Assorted assembly hardware
- Wiring harness, panel to controller
- qty 2 weather tight wiring seals
- Solar Controller (applies to 100 and 150 Watt models only)

See Appendix D: Part List for more details**3.2 Required Maintenance**

Although this system is designed to require little maintenance, the system will perform most efficiently if a small amount of maintenance is performed. Inspect and clean the solar panel periodically. Check for local vegetation shading the panel and prune back as needed.

4 Assembly

4.1 Panel Bracket

Before Assembly

Ensure all set screws and lock rings are loosened or removed. Irreparable thread damage can occur if set screws are left exposed in the thread.

They will all be used later, set aside in a safe location

Assemble the Post Top Bracket

1. On all three pipe extensions install lock rings to the straight cut threads (SAE), as seen below



2. Fully thread the two single threaded pipes to the x-pipe fitting, directly across from one another, as seen below.

3. Fully thread the straight threaded (SAE) side of the double threaded pipe to the x-pipe fitting at a 90° angle to the pipes assembled in step 1, result seen below



4. on the non-threaded side of the x-pipe, install the reducing coupler upside down to the lowest thread point for maximum room when rotating solar panel. see reference below.



5. It is now okay to tighten the lock rings and set screws on this assembly, no further adjustment will be required

This assembly provides the structural support to the solar panel. It is important that all parts be threaded and tightened sufficiently

4.2 Panel Preparation

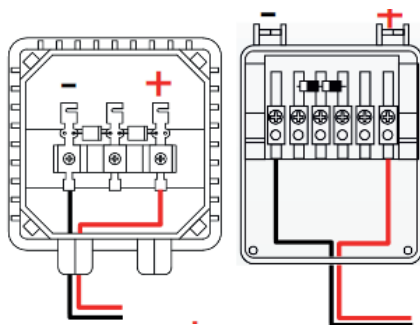
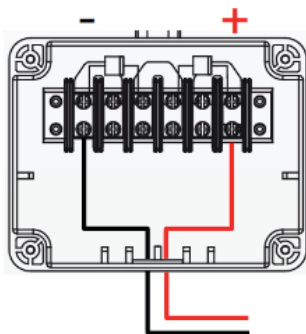
Before Assembly

Following this sequence is critical. There are components that cannot be accessed if installed out of order

Assemble the Panel Wiring Harness

The panel harness features a single cable consisting of two wires- red and black. The wiring harness features fast connections at the panel end to expedite installation.

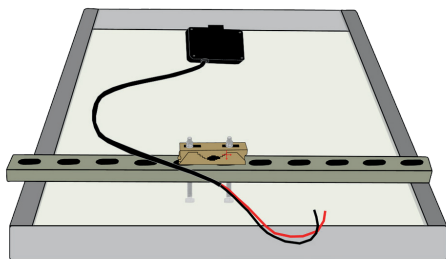
1. Unless already done, remove one full "tap-out" from the bottom of the junction box with a flat screwdriver and hammer to accommodate cable ingress
2. Open the panel's junction box to access the wiring location terminals
3. Install one side of the length of conduit to box
4. Connect the black wire to the negative terminal labeled (-), and the red wire to the positive terminal labeled (+). Supplemental guides will be provided where needed
5. Allow the harness to hang loosely and proceed



4.3 Assemble the mounting structure to the panel option 1

The mounting structure features basic hardware components assembled to the panel's frame, and integrates the frame for support.

1. Assemble toothed clamps to universally drilled cross supports with four 3" long x 1/4" bolts and four 1/4" nuts.
2. Assemble the qty 2 universally drilled supports across the height of the panel as shown below



3. The cross support bolts can be fully secured to the solar panel frame. The nuts are sprung to assist with assembly. Ensure the spring is fully compressed and the bolt is tightened sufficiently to prevent loosening.

Do not assemble the panel to the support structure yet.

4.3.1 Assemble the mounting structure to the panel option 2

Due to the ever changing nature of solar panel manufacturing, you may be provided with a panel of different dimensions that will require a install using the following method:

1. Position the Unistrut U Channel with the solid side facing downwards. Align it on the backside of the solar panel along the pre-drilled holes (refer to figure 4A). Ensure the holes on the Unistrut align with those on the solar panel. Note that the Unistrut doesn't have to span the entire length of the solar panel to function properly.
2. At the points where the holes on the Unistrut and solar panel align, place a Washer fender on the Unistrut side. Assemble using a 3/4" Hex Bolt, 1/4" flat washer, 1/4" split washer, and Nut from the U-bolt clamp package (see figure 4B for reference).
3. Insert the channel spring nuts into the U channel, with the spring side facing downwards, at the desired hinge point of the solar panel.
4. Attach the clamps to the spring nut using the 3 1/4" Bolts and a flat washer (refer to figure 4C).



Figure 4A



Figure 4B



Figure 4C

4.4 Assemble To Post

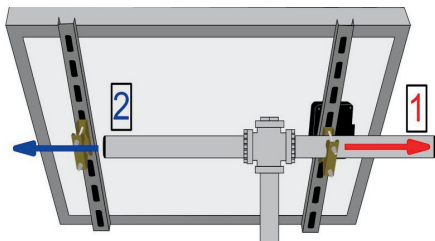
Before proceeding, we recommend completing as much assembly as possible on the ground before hoisting the assembly onto the pole.

At this stage, the solar panel is ready to be connected to the SlimLine Controller or Collaborator Hub already installed on the pole. If additional assembly is needed before mating to the pole, proceed at your discretion.

To attach the mounting structure to the pole top hub (Controller or Collaborator), use the double-threaded pipe assembled on page 4. Thread it into the pole top Hub, ensuring you loosen the set screw on the Hub before securing the structure. Thread the assembly onto the Hub as much as possible without tightening the set screw just yet

Mating the solar panel to the mounting structure

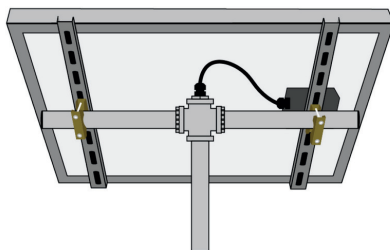
1. With the serrated clamps fully assembled, but loose, slide one side onto one side of mounting structure as shown below



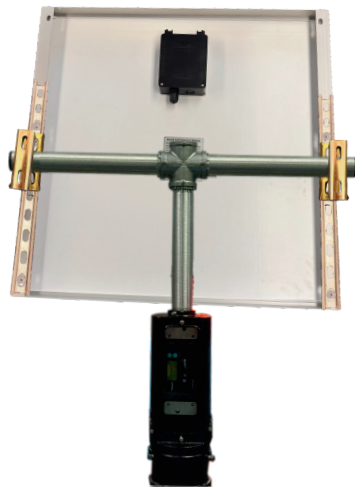
2. Slide the panel the opposite direction to capture both serrated clamps on the mounting structure's horizontal pipes
3. Tighten all bolts just tight enough to allow for adjustment, but not slack.
4. To maximize solar panel aiming, consider the following best practices
 - The angle of the panel should equal the geographical latitude of the installation
 - The panel should face geographical (not magnetic) south
 - If heavy snow cover is expected, a steeper angle may be more effective beyond matching the latitude
 - If shadowing is expected throughout the day, rotate the panel toward the best exposure to sunlight.
5. With the panel aimed as best as possible, securely tighten all the clamps and screws previously left loose.

4.5 Final Assembly

1. Tighten all clamps and set screws to prevent movement, especially considering wind. The clamping components are robust, so apply sufficient torque for tightness.
2. Route the solar panel cable down the center tube and connect it to the Slimline Controller or Collaborator hub.
3. For 100 Watt and 150 Watt Kits, install the included stand-alone solar charger inside the Slimline hub.
4. All connections occur within the hub and are detailed in the accompanying manual.
5. This completes the assembly and installation of your Top of Pole Solar Panel Kit. For further instructions, consult additional literature included with the Controller.



**Fully Assembled
option 1**



**Fully Assembled
option 2**

Warranty Statement



TraffiCalm Systems provides the following warranty for its traffic calming solutions whether sold directly by TraffiCalm or by an authorized TraffiCalm distribution partner.

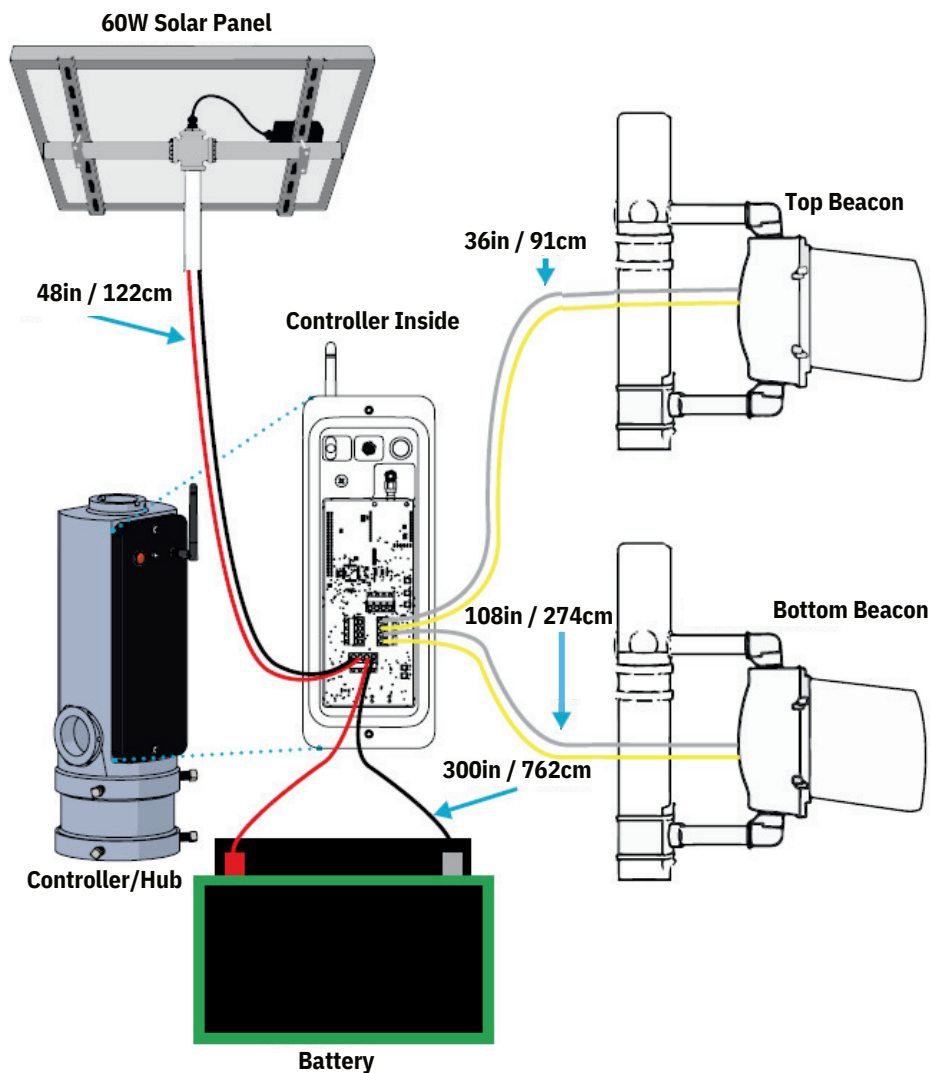
- TraffiCalm Systems warrants the product, excluding batteries, will be free of defect in materials and workmanship for a period of five (5) years beginning on the day the end user receives the product. Warranty is only valid if the product is ineffective for its intended purpose due to defects in materials or workmanship.
- Warranty is only valid if the product is installed, operated and maintained in accordance with the manufacturer's instructions and recommendations (available upon request).
- TraffiCalm's sole responsibility, and the purchaser's and users' exclusive remedy, shall be that TraffiCalm will either repair or furnish replacements for defective parts.
- Replacement parts will carry the unexpired warranty of the parts they replace. Any repairs conducted on out-of-warranty items will carry a 90 day warranty.
- Claims made under this warranty will be honored only if TraffiCalm is notified of a failure within the warranty period, reasonable information requested by TraffiCalm is provided, and TraffiCalm is permitted to verify the cause of the failure.
- TraffiCalm assumes no liability for any incidental or consequential damages, in any way related to the product regardless of the legal theory on which the claim is based.
- TraffiCalm Flashing Sign Systems are designed, tested, and warranted to operate as a matched component system. The warranty is voided if all system components for controllers, collaborators, and LED rings are not TraffiCalm equipment and third party devices are substituted without prior written approval from TraffiCalm.

This warranty does not cover damage resulting from:

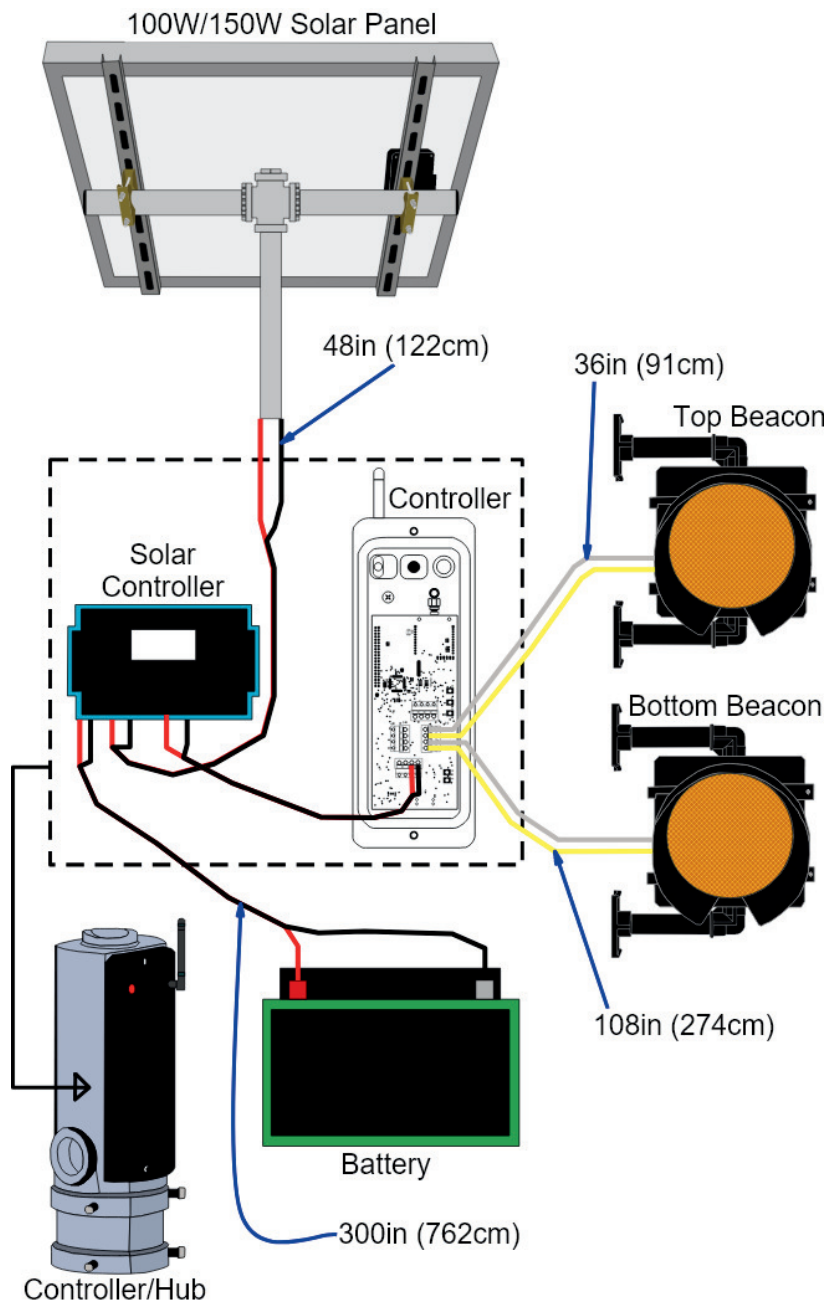
- o Accidents, vandalism, impact with a foreign object, or acts of God.
- o Product modifications made by someone not authorized by TraffiCalm
- o Failure of Customer to follow TraffiCalm's published operating instructions,
- o Failure to follow TraffiCalm's published site selection and installation instructions,
- o Removal or relocation of the unit,
- o Electrical work external to the unit, virus/hacker activity, and external computer errors.

THIS WARRANTY IS MADE IN LIEU OF ALL OTHER WARRANTIES AND CONDITIONS, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY.

Appendix A: 60W Wiring Diagram



Appendix B: 100W/150W Wiring Diagram



Appendix C: Parts List

Applies to all

Part#	QTY	Part Description	Visual
029-05196-0000	2	Support tube	
029-05172-0000	1	12" pipe nipple	
029-05174-0000	1	Reducer bushing	
029-05179-0000	4	channel spring nut	
029-05178-0000	2	U bolt clamp	
029-05176-0000	4	Locknut	
029-05175-0000	1	x pipe fitting	
017-02545-0000	2	Tube cap	
016-00000-0315	4	fender washer	
016-0004E-0335	4	screw cap	
016-0004K-M312	4	hex bolt	
016-00100-M304	8	split lock washer	
016-00414-0300	8	flat washer	
029-05197-0022	2	Unistrut 22"	

Applies only to M75-SPTOP-030W

029-05197-0028	2	Unistrut 15"	
042-SPTOP-030W	1	Sub power cable	
029-04948-0000	1	SOLAR PANEL 30W 12 V MULTICRYSTALLINE	

Appendix C: Parts List (Cont.)

Applies only to M75-SPTOP-060W

042-SLIML-0025	1	Sub power cable	
029-04152-0000	1	SOLAR PANEL 55-65W 12V MULTICRYSTALLINE	

Applies only to M75-SPTOP-100W

042-SLIML-0025	1	Sub power cable	
029-05007-0000	1	100W/12v Multi-crystalline panel w/ pro charge box	
029-04165-0000	1	VOYAGER CHRG CNTRL 20A PWM WATERPROOF	
015-03304-0000	2	BRACKET, VOYAGER CHRG CNTRL, SL MOUNT	
016-00011-0306	8	SCR PHP 6-32 X 3/8" SST *ROHS	
042-02257-0000	1	SUB CABLE, MC4 TO SV CNTRL	
042-02259-0000	1	SUB CABLE VOYAGER	

Applies only to M75-SPTOP-100W

042-SLIML-0025	1	Sub power cable	
029-03577-0001	1	SOLAR PANEL 150W-MIN 12V MULTICRYSTALLINE	
029-04165-0000	1	VOYAGER CHRG CNTRL 20A PWM WATERPROOF	
015-03304-0000	2	BRACKET, VOYAGER CHRG CNTRL, SL MOUNT	
016-00011-0306	8	SCR PHP 6-32 X 3/8" SST *ROHS	
042-02257-0000	1	SUB CABLE, MC4 TO SV CNTRL	
042-02259-0000	1	SUB CABLE VOYAGER	

Appendix C: Parts List (Cont.)

Necessary and Optional Mounting Hardware

Part#	Part Description	Visual
M85-SATOP-0000	4.5" Pole Mnt Top Nat Comes with fittings to secure the Flashing Sign M75-SA300-CTL/CLB/BSC 2/3 units to top. When used with one of these Solar panel mounts then the lock ring and hex nipple will not be used.	
M85-SATOP-4MNT	When used with one of these Solar panel mounts the lock ring and hex nipple will not be used.	
M85-SATOP-0025	2.5" - 2 7/8" Slip Fitter Mnt. When used with one of these Solar panel mounts the lock ring and hex nipple will not be used.	
M75-SA300-CTLZ / CLBZ or M75-SA30A- CTLZ / CLBZ	come with this terminal housing to mount one of these solar options and is not a separate item to order.	

NOTES

[illegible]

NOTES

[illegible]



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**For Any Further Assistance Please Call
our Technical Service Department at:
855-738-2722**

Revision	Reason	Owner/Date
A	Initial release	XX-XXXXXXX
D	New format revision, Updated information and Diagrams	DS-20240521