Important Information

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

Applies to:
M75-SPTOP-000S
M75-SPTOP-000C
M75-SPTOP-000N

TRAFFICALM®

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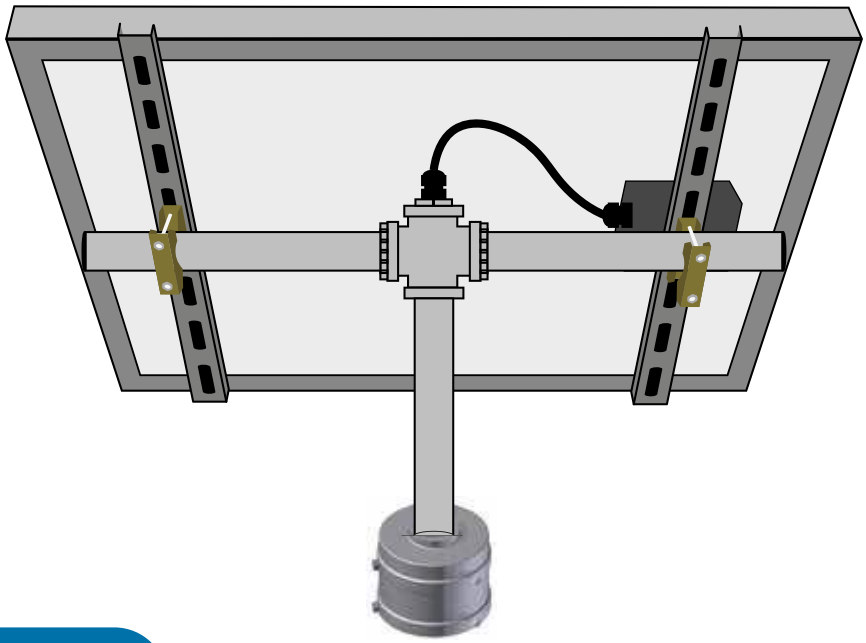
PN: 029-05280-0000 rev A

Fast Facts - *If you read one thing, let this be it.*

- This system is supplied as a complete kit to provide 12V power to a TraffiCalm device
- This design is specifically designed for mounting to the top of a 4.5” (OD) round post. If you’ve spec’d some other post, this kit was mis-ordered
- TraffiCalm has made every effort to supply the hardware necessary to install this kit to most standard road-side installations. However, it may be necessary to source other components (not included) for the variety of installations this kit could apply to.



What's included?

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)

Battery and Control Cabinet

- Qty 1, 2, or 4 35Ah AGM Batteries
- Powder coated enclosure
- Enclosure to post mounting bracket
- Sunsaver 10L or 20L Charge Controller
- Wiring harness

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, so don't dispose of them!

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 sen 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

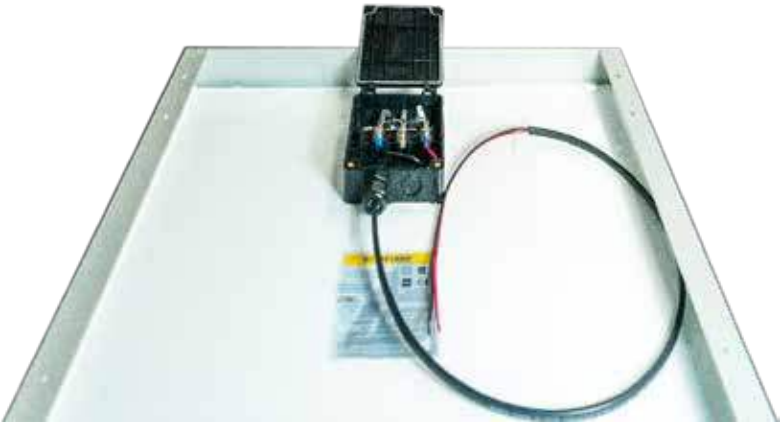
4. Across the bracket from this pipe, install the x-pipe threaded cap, fully seat it in the x-pipe
5. It is now okay to tighten the lock rings and set screws on this assembly, no further adjustment will be required

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

Before Assembly...
Following this sequence is critical. There are components that cannot be accessed past other install steps if done out of order.

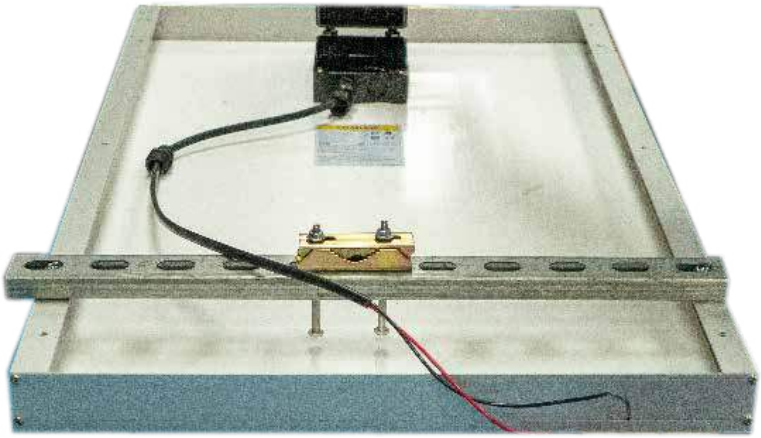
Assemble the Panel Wiring Harness
The panel harness features a single cable consisting of two wires- red and black. The wiring harness features fast connections at the panel end to expedite installation.

1. Unless already done, remove one full tapout 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. Each panel is different, and suppliers change the connection methods regularly. But in general connect the black wire as far left as possible, and the red wire as far right as possible. Supplemental guides will be provided where needed
5. Allow the harness to hang loosely and proceed



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

1. Assemble qty 4toothed 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, so ensure the spring is fully compressed and the bolt is tightened sufficiently to prevent loosening.
4. Do not assemble the panel to the support structure yet.

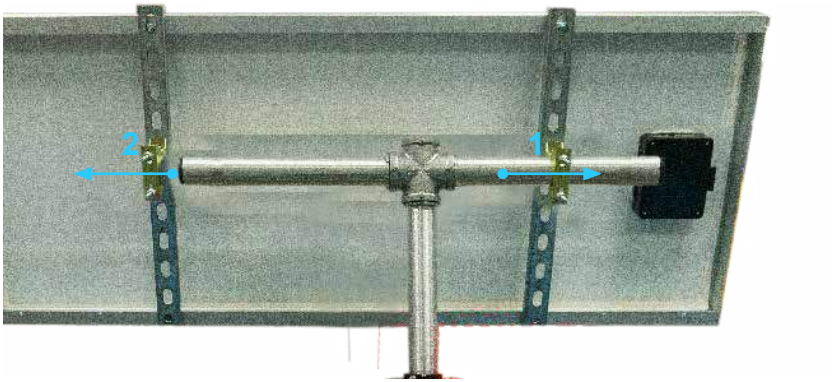
A Note Before Proceeding...
We recommend that as much assembly be accomplished on the ground before hoisting the assembly up on the pole. We have determined that at this point the solar panel is ready to be mated to the SlimLine Controller or Collaborator Hub already installed on the pole. If circumstances would benefit from more assembly before mating to the pole, proceed at your own discretion.

Mating the mounting structure to the pole top hub (Controller or Collaborator)
The mounting structure is supported by the double-threaded pipe assembled on page 4. This will thread into the pole top Hub. As mentioned before, loosen the set screw on the Hub before affixing the structure.

Thread the assembly to the Hub as much as possible. The result will appear as seen below. Do not tighten 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, rotating the panel toward the best exposure to sunlight is advisable.

Making sure it performs for years to come...

1. With the panel aimed as best as possible, all the clamps and set screws previously left loose can be tightened to prevent movement, especially consider loosening from wind.

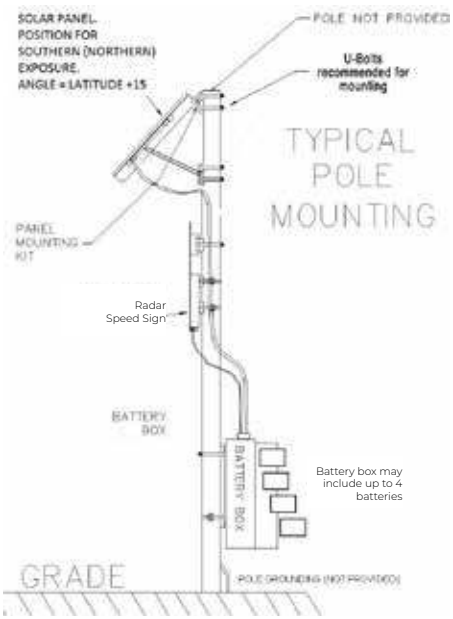
Installation Requirements

This section describes the components, tools, and information you must have available before installing TraffiCalm 35Ah, 70Ah, and 140Ah Solar Kits.

Equipment Requirements

In addition to the 12V Radar Speed Sign to be installed, you will need the following suggested items if you intend to follow these directions:

- Pole and Footing material
- Stainless steel banding and banding clips and application tool or adjustable steel banding for installing Battery Box & Sign
- Assorted hand tools.
- Socket set and drive handle.
- U-Bolts for installing solar panel



3.2 Installation of Solar Panel

NOTE

It is the installer's responsibility to ensure that this installation complies with local and national codes.

Use a pole of proper size with an appropriate footing for the soil and load conditions. ***Consult with a professional Civil engineer for proper pole selection and footing design for the local area.*** Assemble the solar panel mounting bracket using directions supplied with the mounting bracket components. Install the mounting bracket onto the pole with user supplied (U-Bolts).

In northern latitudes aim the bracket at true South, not magnetic south. True South is the direction facing the sun parallel to the shortest shadow of the day cast by the sign pole, which occurs at "Solar Noon". To estimate what time solar noon will occur in your area go to the NOAA web site with your longitude and latitude.

http://www.srrb.noaa.gov/highlights/sunrise/sunrise.html

Set the bracket angle using your current latitude +15 degrees as measured from horizontal (flat) to the final position. Example: If the latitude is 45-degrees, set the panel angle 60-degrees away from flat. You may be able to get a small amount of additional power by calculating the set angle using: Latitude *0.9 +29. This results in a steeper angle than the other method, optimizing collection around the noon hours during the winter months, which is when the most solar energy is available.

Install the solar panel onto the mounting bracket.

Battery Box Installation

Note: you may wish to cover the solar panel during daylight installation to prevent accidental short circuit of energized panel during installation.

Attach the "I" bracket to the battery box using the included hardware.

a. Attach the "I" bracket to the center holes of the battery box using two 3/8-16 x 1-1/4 inch bolts, two 3/8-inch flat washers, and two lock washers. (These bolts are hidden when the battery box is mounted on the pole.)
b. Install 3/8-16 x 1-inch bolts in the remaining four holes of the bracket with a flat washer and a lock washer on each bolt.

Attach the battery box to the pole with user-supplied 3/4-inch banding and a buckle in two places (as close to each cross arm of the bracket as possible).

Connect battery power to the Electronic Control System (ECS) see Figure 3-1 (15" DFB ECS

c. Connect the battery box red wire (+) to the panel + on the solar panel terminal block. Connect the battery box black wire to panel negative in the panel terminal block.

8. Connect the solar panel wires to the solar charger in the battery box. See Figure 3-3.

a. Make sure the opaque cloth is still covering the panel.

b. Connect the solar panel red wire to the positive (+) terminal of the solar charger "SOLAR +" terminal (4).

c. Connect the solar panel black wire to the solar charger "SOLAR –" terminal (3).

Check the panel operation and battery charging using a volt meter. During daylight hours, if the battery voltage rises above night levels, then the solar panel and charger are working.

Monitor the charge process through a full charge. If the charge voltage is excessive, then the charger may have failed and will damage the batteries unless action is taken to disconnect the solar panel until repairs are made.

The charger is temperature compensated. It is normal for the charge voltage to be higher when the weather is cold, and lower when the weather is hot. The normal full charge voltage varies -28mV per degree C of deviation from 25°C.

Note: The solar panel only provides power when illuminated by the sun. If the panel was covered during installation, remove the cover before performing this test.

For best results, start with a new fully charged battery. Never mix old and new batteries. ***Be sure to ground the solar panel rack and battery box properly according to code.***

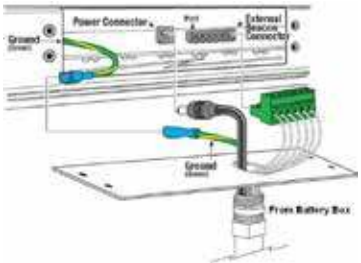


Figure 3-1. 15" Display ECS Access Panel

a. Route the supplied 5 foot conduit with DC power wire and ground cable from the battery box to the bottom of the ECS. It can be installed at either the top or bottom of the battery box, but if installed at the bottom, extra wire (#14 Red and Black, not supplied) will have to be spliced in to make up the extra length used.

b. At the bottom of the ECS, remove the access panel and route the power cord and green ground wire through the conduit receptor located on the access panel. Plug in the power connector to the power connector receptacle located inside the ECM. Connect the ground wire to the green wire located inside the ECS.

c. Secure the conduit to the conduit receptor.

d. Install the access panel cover.

Route solar panel wires to the battery box. See Figure 3-2.

a. Remove the battery box cover.

b. In the battery box, remove the two right side screws and loosen the two left side screws on the solar charger.

c. Pull the charger away from the mounts and allow it to hang out of the way.

d. Remove the insulation panel that was under the charger and store it in a safe place. (This gives access to the conduit fittings from inside of the enclosure.)

e. Install the wires and cable from the sign and solar panel (solar panel left, sign right) through the provided conduit fittings, and then tighten the conduit connectors onto the pre-installed fittings.

f. Replace the insulation panel removed earlier, and re-install the solar charger.

Figure 3-2. Remove Solar Charger from Battery Box

Connect ECS wires to solar charger in battery box. See Figure 3-3.

a. Connect the ground wire from the display to the solar charger mounting screw.

b. Connect the ECS power cable lead with the white stripe to the solar charger terminal marked "LOAD +", which is terminal 6.

c. Connect the other ECS power cable lead to the terminal marked "LOAD –", which is terminal 5.

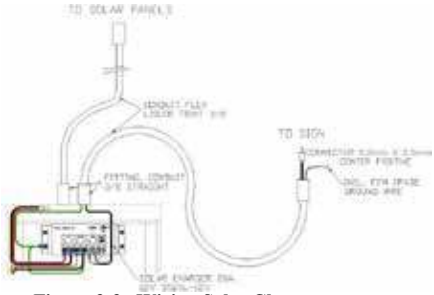


Figure 3-3. Wiring Solar Charger in Battery Box

Install the batteries in the battery box. Install the battery Ring Lug stubs onto the batteries first. Then connect the batteries to their respective connectors (one set provided per shelf) in the harness matching orange to orange and black to black. The operating voltage is 12VDC. At this point the display has power.

Connect the wires to the solar panel.

a. At the solar panel, make sure the opaque cloth is still covering the panel.

<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 this 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:

- Accidents, vandalism, impact with a foreign object, or acts of God.
- Product modifications made by someone not authorized by TraffiCalm
- Failure of Customer to follow TraffiCalm's published operating instructions,
- Failure to follow TraffiCalm's published site selection and installation instructions,
- Removal or relocation of the unit,
- 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.

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