



TC-600 Radar Speed Sign Installation Manual



Certified Quality System ISO 9001:2015







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Radarsign, LLC reserves the right to change the specifications without notice. Contact our sales department for special applications and configurations.

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SAFETY WARNINGS

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

ELECTRICAL SAFETY

To reduce the risk associated with electric shock resulting from contacting high voltage AC:

Turn power OFF before connecting wiring from our AC powered radar signs to the AC source.

To reduce the risk of electric shock related injury resulting from hazardous AC voltage:

Portions or this equipment derive power from sources that have high voltage levels. These must be serviced by qualified personnel who have previous training or certification to safely work on high voltage equipment. Consult a qualified electrician.

BATTERY SAFETY

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.

Batteries may produce explosive gas under some conditions. This gas may 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 clothing and equipment.

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

Always use the recommended charging systems with this product.

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.

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.

RADAR SAFETY

This product uses devices that radiate RF energy in the course of normal operation. Radar RF energy can be harmful to the eyes. To reduce exposure to the risk of RF energy:

Do not stare into the radar antenna.

Keep a minimum safe distance of 8 inches (20 cm) from the display face.

PERSONAL SAFETY

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

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

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 when lifting.

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

Be certain the radar speed sign is mounted to an appropriately rated pole or equivalent mounting surface. Use appropriately rated mounting hardware.

BEST PRACTICES PRIOR TO RADAR SPEED SIGN INSTALLATION

- Our signs are designed to be water resistant when vertically installed and mounted properly on an appropriate pole or mounting surface.
- Prior to installation the sign should be stored inside in a cool, dry place.
- · Do not store the sign outside.
- Do not store the sign in a horizontal position. Storing the radar speed sign horizontally outside where it is exposed to the weather voids the warranty.
- Do not leave the sign in a truck bed or laying on the ground.
- Do not drop the sign.

Sign is within

5 feet from the

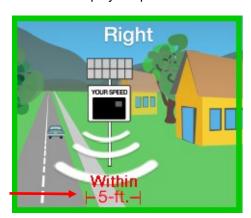
side of the road.

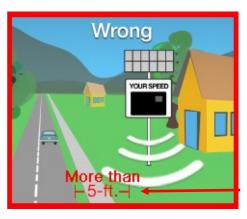
- Do not leave the sign in storage for months. The batteries will naturally discharge and will damage the batteries.
- Do not leave solar signs plugged in for more than 24 hours without being connected to a solar panel.

BEST PRACTICES FOR RADAR SPEED SIGN INSTALLATION

These guidelines and recommendations provide the best practices for radar speed sign installation to assure successful, accurate and effective traffic calming.

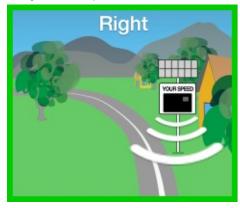
- Prior to the radar speed sign installation, look for any obstructions that might interfere with proper operation of the sign (telephone poles, large tree limbs, other signage, etc.).
- The radar speed sign should be installed no more than 5 feet from the road curb. Signs placed more than 5 feet from the road will result in displayed speeds that are LOWER than the actual speed.





Sign is more than 5 feet from the side of the road.

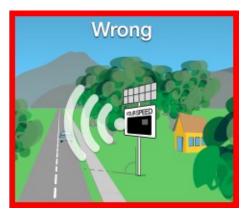
• Do not install the radar speed sign in a curve or after a curve. The sign should be installed in a straight section of road. A radar speed signal cannot "curve" with the road, and will not display speeds with enough time for drivers to see the alert and adjust their speed.





• For maximum vehicle detection the radar speed sign should be positioned perpendicular to the road with the radar pointing directly at the curb in the direction of oncoming traffic, not at the center of the road. Signs rotated toward the center of the road will not perform as well.





• SOLAR MODELS | Do not install a solar powered radar speed sign under a tree. Summer leaves on the tree could impact solar recharging. Make sure the solar panel is installed facing as close to South as possible at a 45° angle.





- The radar speed sign should be installed on the same side of the street as oncoming traffic. If installed on the opposite side of the road, the angle of the sign could result in poor detection of the oncoming traffic.
- The bottom of the radar speed sign should be installed 7-10 feet off the ground. Installing lower than 7 feet will reduce the detection range resulting in much of the radar speed signal being absorbed by the road.
- For streets with street parking: To prevent the radar signal from being blocked by parked vehicles, the radar speed sign should be installed high enough off the ground to detect oncoming traffic over the parked vehicles.
- If the radar speed sign is installed more than 12 feet above the roadway, the sign should not be tilted more than 3°-4° downward to detect vehicles. Doing so will greatly reduce the length of time vehicles are detected and will display speeds that are LOWER than the actual speed.

POLE OPTIONS

Radarsign does not recommend specific poles or hardware due to varying weather and terrain conditions. Users are responsible for choosing and installing a pole size that provides adequate support for the sign. Please check your local/city/county code requirements.

Recommended Pole Size:

Users are advised to consider various factors such as the size of the sign, the size of the regulator speed sign, and the size of the solar panel (for solar-powered signs) when determining the appropriate pole length.

· Minimum pole length: 11 feet

· Ideal length for solar sign: 12 to 14 feet

Compatible Round Poles (Outside Diameter): 2.375", 3", 3.5", 4", or 4.5"

Dual Pole Installation Options: U-channel, square telespar style posts, wood posts Users should contact Radarsign for proper hardware when considering dual pole installations

Special Considerations for Solar Models:

• Considerations: Solar models require larger, stronger poles due to the surface area of the sign (7.5-12 square feet, depending on the model) and the additional square footage of the solar panel.

Regulatory Signage Size Considerations:

- For both AC and Solar Signs, the size of the regulatory signage used should be taken into account.
- A 24" x 30" regulatory speed limit sign adds an additional 5 square feet of surface.
- A 30" x 36" regulatory speed limit sign adds an additional 7.5 square feet of surface.

BASE OPTIONS

A breakaway base should anchor the pole you select. Breakaway bases are designed to enhance safety by allowing the sign to break away or detach from the base upon impact. This design helps minimize damage to vehicles and reduces the risk of injury in case of accidents. There are several manufacturers of this type of system, and most city, county, and state DOT agencies require this type of pole base system for any sign mounted on a street right-of-way. Check your local/city/county code requirements. Install the base per manufacturer instructions.

INSTALLING & POSITIONING THE RADAR SPEED SIGN

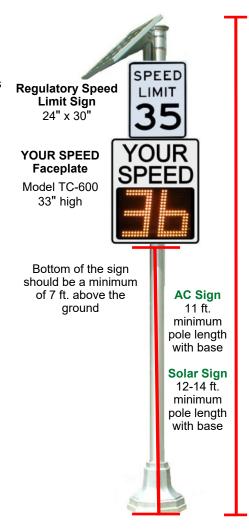
NOTE: The sign and pole should always be placed on the SAME SIDE of the road as on-coming traffic. This placement maximizes visibility and ensures that drivers can easily see and respond to the information displayed on the radar speed sign.

Base Installation

Install the base per manufacturer instructions.

Pole Installation Instructions

- Select the appropriate pole based on the guidelines provided above.
- Install the pole according to the manufacturer's instructions.
- Use a pencil or tape to mark the pole at the 7-foot height level. Seven feet is
 a minimum height recommended for compliance with most city and county
 regulations for street signs. This height is chosen to ensure the most accurate readings from the radar in detecting oncoming vehicles.
- When installing, position the BOTTOM of the radar speed sign a MINIMUM of 7 feet from the ground.



INSTALLING AND POSITIONING THE RADAR SPEED SIGN

IMPORTANT NOTE: Do not attach the "YOUR SPEED" faceplate to the radar speed sign until it is mounted on the pole. This makes the installation process easier.



Positioned Straight



Tilted Down



Tilted Up

Pivot Mounting Bracket

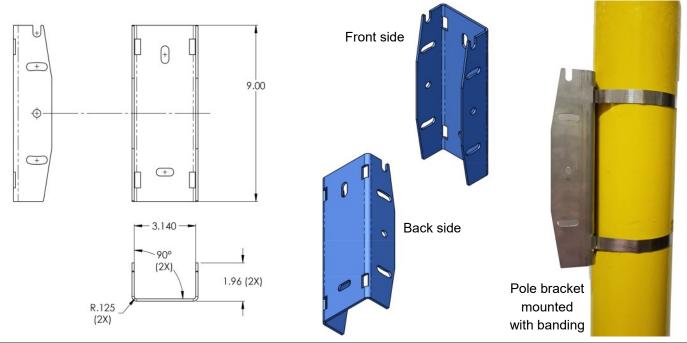
A pivot mounting bracket is standard with the purchase of the TC-600 model.

Pivot Mounting Bracket Features:

- Allows the installation of the radar speed sign using bolts or banding solutions.
- Provides an 8-degree forward and backward tilt for adjustments based on the geography of the installation location (uphill or downhill slope).
- Allows adjustment for poles with a slight side-to-side tilt after installation.
- The bracket design facilitates an easy installation process. Attach the pole side bracket first. Utilize the U-shape slot on the top of the pole bracket to hang the sign while completing the installation.

Pole Bracket

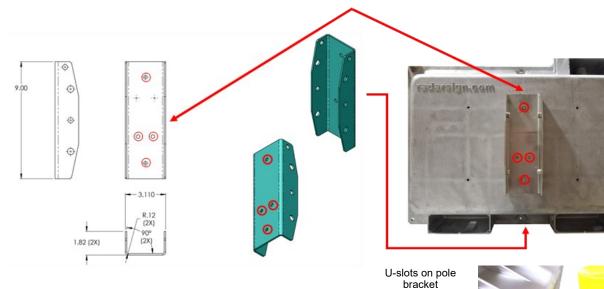
Attach the pole bracket to the pole. The pole bracket has the U-slots at the top of the bracket. Depending on the type of pole used, use bolts or banding (customer supplied).



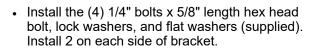
INSTALLING AND POSITIONING THE RADAR SPEED SIGN

Sign Bracket

• Attach the sign bracket to the sign housing using the (4) 1/4" bolts x 5/8" length hex head bolt and lock washers (supplied).



- When ready to hang the sign onto the pole, insert the ½" x 4" bolt (supplied) into the top hole of the housing bracket.
- Lift the sign and place the bolt into the U-slot on the pole bracket. This will hold the sign in place so that the side bolts (supplied) can be installed.

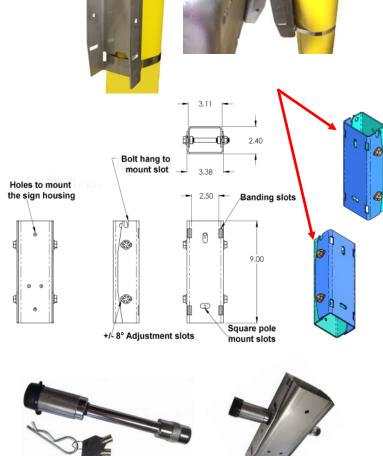


 Once the radar speed sign is securely installed and the angle has been adjusted to accommodate road conditions, the 4" bolt from the top hole can be removed.

Optional Sign Mounting Lock

An optional sign mounting lock is available to use with the universal mounting bracket to add an extra layer of security to safeguard the radar speed sign.

- Unlock the larger black end of the lock set and remove lock.
- Slide the lock set bar through the hole at the bottom of the sign mounting bracket.
- Re-attach lock to the end of the lock set bar and lock to secure the sign.



Bolt in top

hole

of housing

bracket

U-slots

on pole

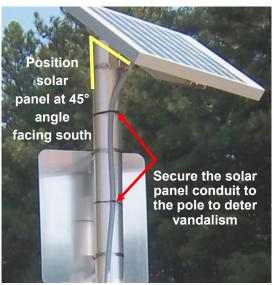
bracket

SOLAR MODEL | SOLAR PANEL INSTALLATION

To install your solar panel, please consult the specific installation instructions provided for the size of the solar panel you have ordered.

Best Practices for the Installation of Solar Panels

- Before installation, conduct a thorough site assessment to ensure the location receives adequate sunlight throughout the day. Check for any potential shading issues from nearby trees, buildings, or other obstructions.
- The solar panel should be positioned facing as close to south as
 possible at a 45° angle. Please use the enclosed compass and follow the instructions on the compass card to position the solar panel.
- Once the solar panel is installed, secure the solar panel conduit as close as possible to the pole to reduce the opportunity for vandalism.
- The solar panel should be washed with a mild dish detergent and soft cloth every 6 months for optimal performance.

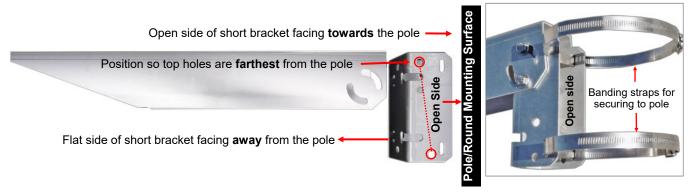


Small Solar Panel Mounting Bracket Installation (For use with a 50 watt solar panel)

The small solar panel mounting assembly has two brackets, a short stationary bracket and a long tapered bracket.

- Examine the short stationary bracket to identify the pre-drilled slots. These slots are designed to allow for two different orientations based on the type of pole being used, a round pole or a flat surface. installation on a flat surface.
- Secure the solar panel onto the long tapered bracket using the provided screws, nuts, and washers. Both the solar panel and mounting bracket have pre-drilled holes for easy alignment.

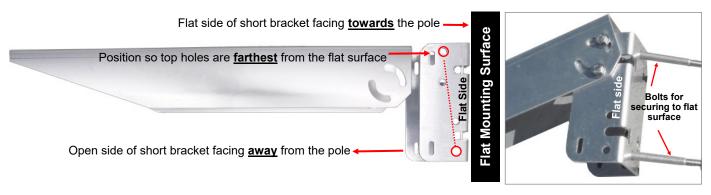
Installing a Small Solar Panel Bracket on a POLE OR ROUND SURFACE



- For installation on a pole or rounded surface, position the short bracket with its open side facing the mounting surface. Ensure that the end with round holes located farthest from the pole is oriented upward. This positioning allows sufficient space for pivoting the larger bracket without obstructing the banding clamps.
- Fasten the short bracket to the pole at the preferred height, oriented as closely to the south as possible, utilizing banding clamps (customers supplied).
- Connect the long tapered bracket, with the solar panel attached, to the short bracket using the four bolts provided. Ensure that the curved slots on the tapered bracket align with the two round holes at the top of the short bracket. Utilize the slots to adjust the solar panel to a 45° angle before fully tightening the bolts.
- Tighten all nuts on the mounting bracket and solar panel.

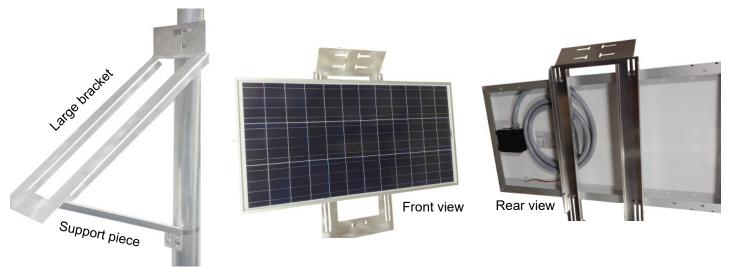
SOLAR MODEL | SOLAR PANEL INSTALLATION

Installing the Solar Bracket on a FLAT SURFACE



- For installation on a flat surface, position the short bracket with its flat side facing the mounting surface. Ensure that the end with the round holes that are farthest from the flat surface is pointed upward.
- Fasten the short bracket onto the flat surface at the preferred height, oriented as closely to the south as possible, using bolts (customers supplied).
- Connect the long tapered bracket, with the solar panel attached, to the short bracket using the four bolts provided. Ensure that the curved slots on the tapered bracket align with the two round holes at the top of the short bracket. Utilize the slots to adjust the solar panel to a 45° angle before fully tightening the bolts.
- Tighten all nuts on the mounting bracket and solar panel.

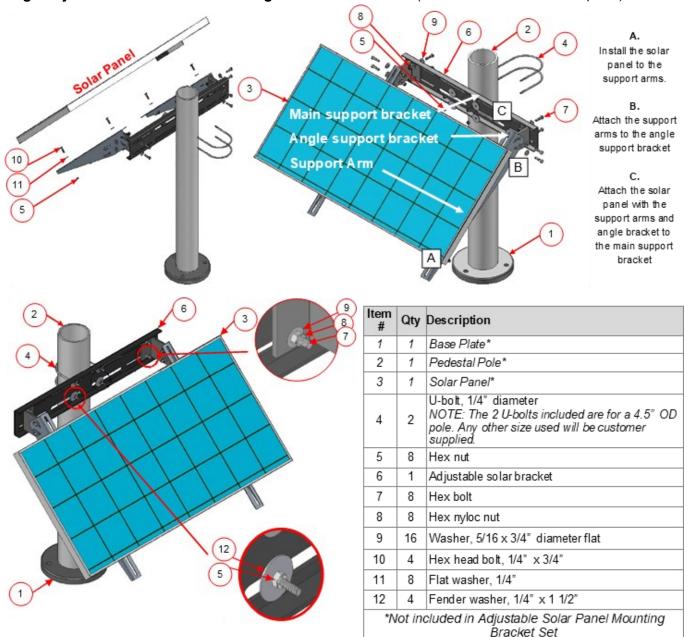
Large Fixed Solar Panel Mounting Bracket Installation (For use with 80 watt solar panel)



- Assemble the bracket by connecting the support piece to the larger bracket using two of the supplied bolts.
- Use the remaining four bolts and spacers to fasten the solar panel securely to the bracket. Ensure that all nuts on both the mounting bracket and solar panel are tightened.
- Attach the mounting bracket with the solar panel to either a pole or a flat mounting surface. Customers are responsible for providing appropriate clamps or hardware.
- Position the bracket on the pole at desired position with the solar panel facing as close to south as possible at a 45° angle and secure to pole.
- Tighten all nuts on mounting bracket and solar panel.

SOLAR MODEL | SOLAR PANEL INSTALLATION

Large Adjustable Solar Panel Mounting Bracket Installation (For use with a 90 solar watt panel)

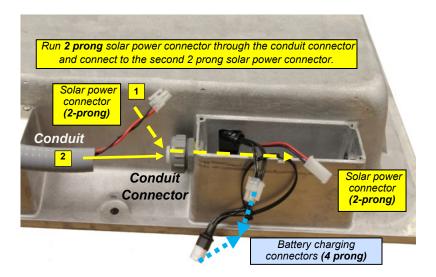


- Mount the solar panel bracket to a 4 1/2" OD round pole. It is advised to use a minimum 4½" OD pole due to wind resistance on the solar panel.
- The brackets come equipped with pre-drilled slots designed for easy mounting on 4½" diameter poles. Radarsign includes two banding clamps tailored to fit 4½" diameter poles. Should you opt to install the brackets on a larger pole, utilize the slots on the main support bracket mount and use suitable size banding clamps. Customers are responsible for providing clamps when installing on larger poles.
- The main support bracket can also be securely attached to a flat mounting surface by using the two 3/8 inch bolt holes located in the center of the bracket.
- Slide the bracket up the poleto the preferred height, oriented as closely to the south as possible and positioned at a 45° angle.
- Secure the bracket to the pole, making sure to tighten all nuts on both the mounting bracket and the solar panel for a secure installation.

MAKING THE POWER CONNECTIONS

Power Connections for an Solar Powered Sign (Stand alone signs only)

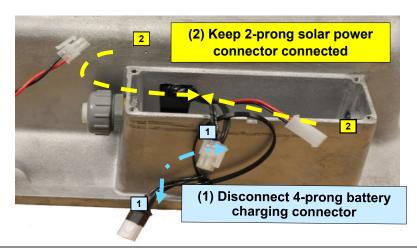
If a radar sign/beacon combo has been purchased, please refer to the Radar Sign/Beacon Installation Manual.



- 1. Slide power wires through flexible non-metallic conduit connector (FNMC-B connector/UL Approved) on the radar speed sign bell box.
- 2. Twist conduit into junction box connector until secure.
- 3. DO NOT CONNECT WIRING TO SIGN UNTIL STEP 6.
- 4. Ensure the conduit is as straight as possible. Extend the conduit along the pole and through the sign mounting clamps/brackets to reach the solar panel. It is crucial to firmly secure the conduit to the pole to minimize the risk of vandalism.
- 5. Bend conduit at a 90° angle 2"-3" from the junction box connector.
- 6. Connect the solar wiring **2 prong** male and female pins (from step 1) to power up the sign.
- 7. Allow the sign to run through a power-on test, typically lasting 15-20 seconds. Testing is complete when the Blue Blinky™, the blue LED light in the center of the sign display, changes from solid to blinking, indicating that the sign is operational with factory settings. If the sign does not power up or operate at this point, disconnect and check your solar connections in the solar panel junction box. They are most likely reversed.
- 8. Connect the batteries with the **4 prong** male and female pins. If you do not do this, your sign will operate only during the daytime using solar energy!

To Check Solar Panel Connection

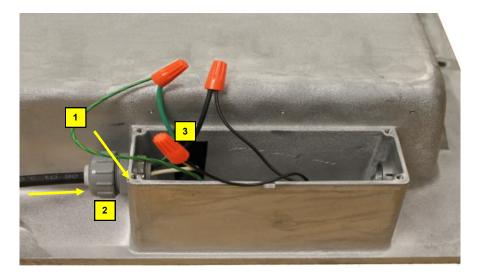
- 1. Disconnect 4-prong loop connector (1)
- 2. Keep the 2-prong wire connector from the solar panel connected. (2)
- 3. If the sign works, the wiring is correct.
- 4. If the sign is not operational, re-open the solar panel junction box located on the solar panel. Examine whether the wiring insulation has been pushed in too far, preventing contact with the copper strand. If the wiring has good contact then you may have the wires reversed.



MAKING THE POWER CONNECTIONS

Power Connections for an AC Powered Sign

The signs will accept direct connection to a power supply between 100v and 240v. Higher voltage supplies will require a customer supplied step-down transformer. Branch circuits should have a 5 amp circuit breaker installed for protection and power cycle convenience



- 1. Locate the open outlet box at bottom of radar speed sign
- 2. Run the incoming AC power wires through the flexible non-metallic conduit connector (FNMC-B connector/UL Approved) on the radar sign bell box. (See #1 and #2 on photo)
- 3. Connect the exposed black, black, and green wires (See # 3 on photo). Either of the two black wires can connect to the LINE or NEUTRAL incoming wires
- 4. When wiring is complete and has been inspected, cycle the AC power on. Observe the sign's display, which will initiate by flashing its serial number and code version. Following this, the sign will return to normal operation, as indicated by the Blue Blinky™, a blinking blue LED in the center of the display.

FINAL TOUCHES

Complete the installation by using the provided nuts to attach the "YOUR SPEED" faceplate to the radar speed sign. Exercise caution and avoid over-tightening.

For optimal effectiveness, it is strongly recommended to install a regulatory speed limit sign on the pole, either above or below the radar speed sign. Both the regulatory speed limit sign and extender brackets are available from Radarsign.

RADAR SPEED SIGN SETTINGS:

The radar speed sign is shipped with the following factory settings:

Speed Limit: 25

Minimum Display Speed: 5
Maximum Display Speed: 99

IMPORTANT NOTE: The factory settings of the radar speed sign will need to be adjusted for your specific installation.

RECOMMENDED SETTINGS:

Minimum Display Speed: 5 MPH below the posted speed limit;

Maximum Display Speed: no more than 20 MPH higher than the speed limit.

Using a Wi-Fi browser set up sign with correct time and date; then set initial parameters for sign operation. (See Operation Manual available in the <u>Customer Resource Center</u>)

CUSTOMER RESOURCE CENTER

Access Radarsign's software downloads, manuals, troubleshooting/repair/upgrade information, forms, product sheets, spec sheets, and more through the Customer Resource Center on our website. https://www.radarsign.com/customer-resource-center/ Password: safety

For additional assistance please call 678-965-4814 and ask for technical support or email: customerservice@radarsign.com





Customer Support: Call 678-965-4814 or email customerservice@radarsign.com

Shipping Address: 1220 Kennestone Circle, Suite 130 Marietta, GA 30066

Sales Information: Call 678-965-4814 or email info@radarsign.com

RMA Instructions: Please make sure to fill out and submit an **RMA Request form** with all returns.



Radarsign, LLC provides the following warranty for its traffic calming systems whether sold directly by Radarsign or by an authorized Radarsign distributor.

LIMITED PRODUCT WARRANTY

Radarsign, LLC ('we' or "us" or "our") warrants that our traffic calming system ("Product") is new and free from defects in materials and workmanship to the original purchaser (end user) ("Purchaser") (the "Product Warranty") for a period of two (2) years from the date of shipment ("Warranty Period"), regardless of whether such Product was purchased from us or by one of our authorized distributors. Our responsibility for defective Product is limited to repair, replacement or refund as described below in this Product Warranty statement. The above-referenced Warranty Period is inapplicable to TC-400 batteries which we warrant for a period of one (1) year.

Purchaser acknowledges this Product Warranty does not cover damage to a Product resulting from (a) accident, malicious abuse, theft, vandalism, impact with a foreign object or act of God; (b) unauthorized modification of the Product, (c) failure to comply with the site selection, installation, operation, maintenance, transportation and/or storage instructions and recommendations, as published in the Product Installation Manual made available at the <u>Customer Resource Center</u>* (https://www.radarsign.com/customer-resource-center/); (d) removal or relocation of the Product; (e) external electrical work to the Product, virus/hacker activity, and external computer errors; and (f) improper solar panel installation or improper use of battery charging equipment.

To obtain warranty service, the Purchaser must first call us for a Return Material Authorization ("RMA") number; then return the Product to us for repair or replacement. Claims made under this Product Warranty will only be honored if we are notified of failure within the Warranty Period, Purchaser provides information reasonably requested by us, and we are permitted to verify the cause of the Product failure.

Purchaser shall prepay shipping charges for Products returned to us. We will pay for return of the Products to Purchasers located in countries in North America. Purchasers of Products from countries outside of North America shall pay all shipping charges, duties, and taxes for Products returned to us for warranty repair or replacement and return of such repaired or replaced Products to Purchaser.

The Warranty Period for replacement parts is the longer of 90 days or the remainder of the initial warranty period.

Within ninety (90) days of receipt, should the Product fail for any reason other than damage due to Purchaser negligence, acts of God or vandalism, we will bear shipping costs for depot service both to and from the repair facility for Products sold with a United States shipping address. After 90 days, the Purchaser is responsible for inbound shipping. We will pay for return shipping to the customer for the entire Warranty Period if Purchaser is located within North America.

EXCEPT FOR THE WARRANTY SET FORTH IN THIS LIMITED WARRANTY AGREEMENT, NEITHER WE NOR ANY PERSON ON OUR BEHALF HAS MADE OR MAKES ANY EXPRESS OR IMPLIED REPRESENTATION OR WARRANTY WHATSOEVER, EITHER ORAL OR WRITTEN, INCLUDING ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE, NON-INFRINGEMENT OR PERFORMANCE OF GOODS OR PRODUCTS TO STANDARDS SPECIFIC IN THE COUNTRY OF IMPORT, WHETHER ARISING BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OF TRADE OR OTHERWISE, ALL OF WHICH ARE EXPRESSLY DISCLAIMED; WE ASSUME NO RESPONSIBILITY OR LIABILITY WHATSOEVER FOR THE PERFORMANCE OF THE PRODUCT OR THE ADEQUACY OF ANY SPECIFICATION OR DESIGN PROVIDED TO US BY OR ON BEHALF OF PURCHASERS; PURCHASER ACKNOWLEDGES THAT IT HAS NOT RELIED UPON ANY REPRESENTATION OR WARRANTY MADE BY US, OR ANY OTHER PERSON ON OUR BEHALF, EXCEPT AS EXPRESSLY PROVIDED IN THIS LIMITED WARRANTY AGREEMENT. Some states or provinces do not allow limitations on how long an implied warranty lasts, so the above limitation or exclusion may not apply to you.

PURCHASER'S EXCLUSIVE REMEDY UNDER THIS PRODUCT WARRANTY IS, AT OUR ELECTION, (I) CREDIT OF THE PURCHASE PRICE OF THE PRODUCT TO PURCHASER, OR (II) REPAIR OR REPLACEMENT OF THE DEFECTIVE PRODUCT BY US. IN NO EVENT SHALL WE BE LIABLE FOR ANY LOST PROFITS, INDIRECT, INCIDENTAL, SPECIAL, PUNITIVE, EXEMPLARY OR CONSEQUENTIAL DAMAGES, INCLUDING LOST BUSINESS, EARNINGS, PROFITS OR, GOODWILL, WHETHER BASED ON CONTRACT, TORT, OR ANY OTHER LEGAL THEORY, IN CONNECTION WITH THE FURNISHING, PERFORMANCE OF USE OF THE PRODUCT.