radarsign®
MAKING ROADS SAFER

# TC-400 | TC-400A
# Radar Speed Sign Installation Manual


Certified Quality System
ISO 9001:2015

MUTCD Compliant
Radar Speed Signs

Proudly Engineered &
Manufactured in the USA

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| **Customer Support**: | Call 678-965-4814 or 678-520-5152 or email customerservice@radarsign.com |
| **Shipping Address:** | 1220 Kennestone Circle, Suite 130 Marietta, GA 30066 |
| **Sales Information:** | Call 678-965-4814 or 678-520-5152 or email sales@radarsign.com |
| **RMA Instructions:** | Please make sure to fill out and submit an RMA Request form with all returns. |

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

## 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 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.**

- The radar speed sign should be installed no more than 5 feet from the road curb. At more than 6 feet from the road, the sign will take the eyes of the driver an unsafe distance from the roadway, and will result in displayed speeds that are LOWER than the actual speed


- Do not install the radar speed sign in a curve or after a curve. The sign should be installed in the straightaway of the 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.


- The sign should be positioned perpendicular to the road with the radar pointing directly at the curb, not at the center of the road, for maximum vehicle detection. Signs rotated toward the center of the road will not perform as well.


- 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. (solar models only)


- The radar speed sign should be installed on the same side of the street as oncoming traffic. If installed on the wrong side of the road, the angle of the sign could result in poor detection of the on-coming traffic, and also result in the sign displaying speeds of vehicles travelling in the opposite direction.

- The radar speed sign should be installed 7-10 feet off the ground. Do not install the radar speed sign lower than 4 feet off the ground. Doing so will result in much of the radar speed signal being absorbed by the road, reducing your detection range.

- Prior to the radar speed sign installation, look for any obstructions (telephone poles, large tree limbs, other signage, etc.) that might interfere with proper operation of the sign.

- Installing the sign on the same side of the street as parallel parking of vehicles could affect the radar performance of the radar speed sign. 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 result in a greatly reduced length of time vehicles will be detected, and will display speeds that are LOWER than actual speed. (the cosign effect).

## Best Practices for Radar Speed Sign Installation

Our signs are designed to be water resistant when vertically installed and mounted properly on an approved 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.
- Do not leave the sign in storage for months. The batteries will naturally discharge and will damage the batteries.

## Best Practices for Use of the TC-400 | TC-400A

**These guidelines and recommendations provide the best practices for the use of the TC-400.**

### Installation (TC400 Battery Power only)

- **Utilize multiple Go Brackets**: To create a traffic calming circuit, install Radarsign Go brackets on existing poles at multiple locations. This enables personnel to quickly and efficiently relocate the TC-400 to areas in need of traffic calming in a regular rotation. The signs can then be moved with NO TOOLS, just a key is required.

### Batteries (TC-400 Battery Power only)

- **Initial charge:** To ensure your batteries have full charge, use the enclosed charger to charge both battery packs before deploying the radar speed sign. An initial charge time of 6 hours at room temperature for each is recommended.
- **Order extra batteries**: One set can be charging, ready to replace a depleted set at a moment's notice. One set of backup batteries can serve multiple Radarsign devices.
- **Preserve battery power**: To get a longer life from you power source, set the feedback device to turn off during overnight hours if traffic in that location is minimal. Also set the minimum display speed at, or slightly below, the speed limit of the road. For example, if your street has a speed limit of 30 mph, set the minimum display speed no lower than 25 mph. Setting the speed limit at 10 mph will turn the display on for virtually all traffic, and simply run the battery for people who are not speeding.
- **Preserve battery life**: Be sure to store and charge batteries in a temperature controlled environment. Charging and storing the batteries outside in the cold and hot temperatures will diminish the overall life and performance of the battery packs.
- **Maintenance:** Batteries will generally last for 5-7 years if regularly charged. Do not wait until your batteries are completely exhausted to recharge.

### Data Collection and Reporting (optional)

- **Operate in stealth mode first:** A suggested strategy for initial TC-400 deployment would be to operate in stealth mode (feedback display off) for up to one week; then turn the feedback display on for one week. Using the Streetsmart traffic data reporting program (optional), take the data collected from the sign, and compare the information from both weeks. This will give you a baseline of the speeding problem (week one). It will show you the overall effect of the radar sign alert display on the speeds of drivers. It will also show the time of day and day of week that speeding is the worst. You can see how many drivers are more than 5 mph over the speed limit, how many are more than 10 mph over the speed limit, and how many are 15 mph over the speed limit. This information can be used to deploy police resources intelligently.
- **Share the data:** Sometimes law enforcement officers deploy a radar speed sign to a neighborhood based on citizen complaints about speeding. Officials often learn that, despite resident reports, drivers are actually complying with the speed limit. Historically, a citizen's evaluation of vehicle speed tends to be quite inaccurate. Still, residents are concerned about the safety of their pets and children. To alleviate their fears and build goodwill within the community, share what the StreetSmart data has revealed. This can be done via social media or through a direct person-to-person visit. If the data reveals a speeding problem that needs further action, share that information as well, along with the agency plan for addressing the problem.

### Implementation

- **Establish goals and criteria.** Whether it be sub-arterial roadways, school zones, or neighborhood streets, decide in advance how and where your Radarsign TC-400 will be used. These devices will become quite popular among citizens and business owners so you can expect significant demand for their use. Establish your community guidelines and remain consistent.
- Some issues to consider when establishing usage parameters:
    - The number of speeding violations or speeding-related accidents in the area
    - The number of pedestrians
    - The number of vehicles traveling on the street
    - Use the Maximum Speed Cutoff option to discourage "sign racing."

## TC-400 | Battery Power Model

### Contents of TC-400 | Battery Power Radar Speed Sign

- 1 radar and display housing with YOUR SPEED faceplate
- 1 battery housing
- 2 lithium iron battery packs
- 1 AC battery charger
- 2 keys on Radarsign keychain (used to lock the radar speed sign display to the battery housing). The keys are attached to the sign handle.
- 1 stainless steel Go Bracket for mounting your radar speed sign on existing poles
- 1 set of Go Bracket hardware set; Contains 2 stainless steel carriage bolts (3" long) with lock washers and nuts

### TC-400 | Battery Power Model Installation Instructions

Using the keys attached on the housing handle, open the TC-400 cabinet and remove the radar speed sign from the housing by lifting off the hinges.

1. Remove the packaging, the battery charger, and the batteries from the battery housing.

   To ensure your batteries have full charge, use the enclosed charger to charge both battery packs before deploying the radar speed sign. An initial charge time of 6 hours at room temperature for each is recommended. If the charger light turns green sooner, that is OK too.

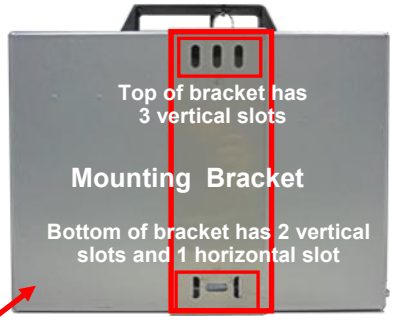
   *Maintenance Note: Batteries will generally last for 5-7 years if regularly charged.*
   ***Do not wait until your batteries are completely exhausted to recharge.***

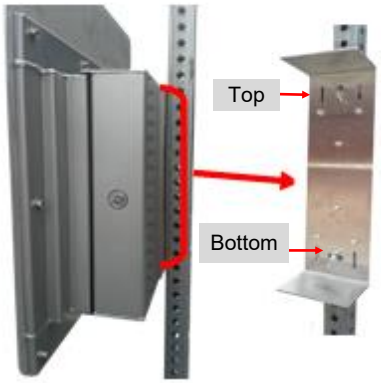

2. Remove the Go Bracket from the back of the battery housing.

3. Install the Go Bracket to your existing pole. The hardware included should allow you to mount the bracket to a 2" x 2" square post, or a U-Channel post. The Go Bracket is a universal bracket, allowing for longer bolts, and has slots for ½" pipe clamps, banding, or strapping material. *(If the pole is round or larger than the 3" bolt can support, please obtain a longer bolt, or use a pipe clamp, banding, or strapping to mount the bracket. All are customer supplied.)*

   Whatever method you choose, be sure to secure the bracket with the hardware as shown in the photo to the right. This will provide you the maximum protection against theft of the radar speed sign.

   **NOTE:** The Go Bracket has a TOP (3 vertical slots) and BOTTOM (2 vertical slots and 1 horizontal slot). When installing, make sure you mount the bracket with the top side up.

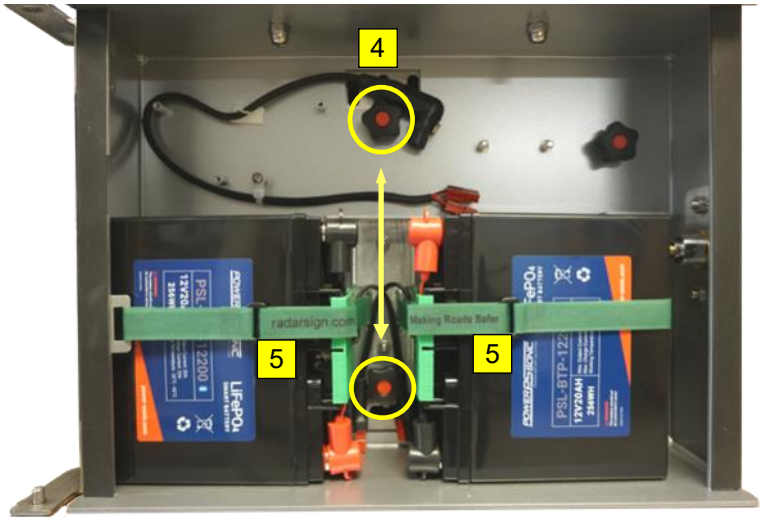



*Many users will purchase additional mounting brackets and leave them on existing poles around town. They are small and unobtrusive. This allows the creation of a circuit to rotate the radar speed sign on a regular basis, multiplying the value of your investment. Mounting and un-mounting the radar speed sign can be completed in about 1 minute, with **NO TOOLS!***

## TC-400 | Battery Power Model

4. Mount the battery housing on the Go Bracket, securing it with 2 of the screw knobs (black handle with red center) provided. A third spare is included with your housing. *If using banding clamps, make sure the driver cam is* ***inside*** *the battery housing.*

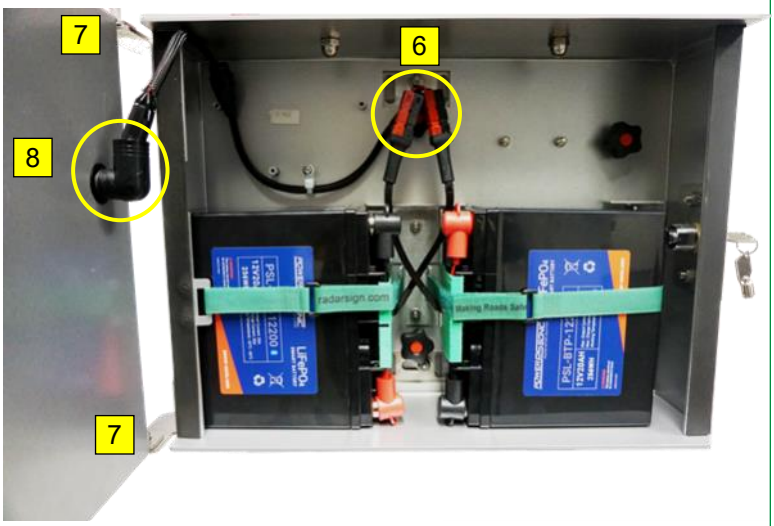



5. Insert and secure the battery packs into the battery housing with the Velcro strapping as shown.

6. Connect the battery pack(s) to the radar speed sign power cord.

7. Mount the radar speed sign display on the hinges on the battery housing.

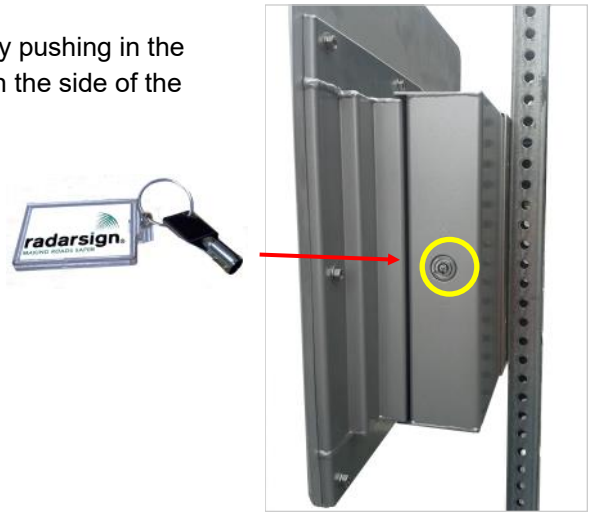
8. Connect the battery power cord to the back of the radar speed sign display housing.




*One (1) battery pack should provide approximately 5-7 days of operation of the radar speed sign. With two battery packs, you should get approximately 10-14 days of operation of the radar speed sign. With colder temperatures, the operation time will drop proportionately.*

***Each battery pack will need 12 hours to fully re-charge.***
*You may prefer to purchase an additional battery pack to operate the sign while your 2 other packs are being re-charged.*

9. Lock the front of the radar speed sign to the battery housing by pushing in the lock mechanism until you hear a click and the lock is flush with the side of the housing.



## TC-400A | AC Power Model

### Contents of TC-400A | AC Power Radar Speed Sign

- 1 radar speed sign with YOUR SPEED faceplate
- 1 universal pivot mounting bracket

### TC-400A | AC Power Radar Speed Sign Installation Instructions

**Step 1:** Select a location that can support a pole, column or wall mount. The sign should always be placed facing oncoming traffic.

**Step 2:** Mount the Radar Speed Sign using the Universal Pivot Mounting Bracket

**Features of the Universal Pivot Mounting Bracket**:

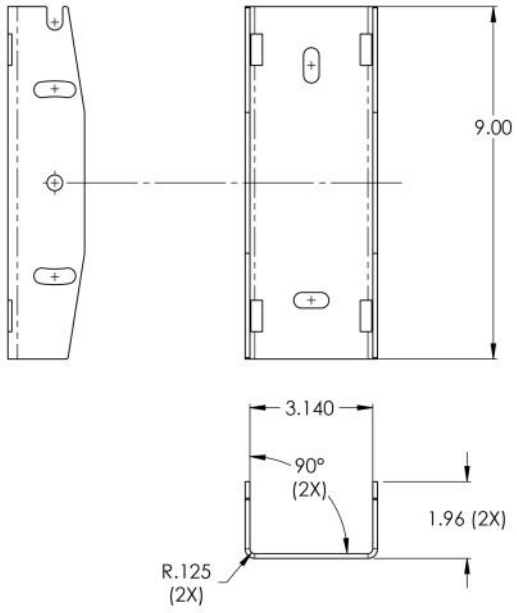
- Allows the installation of the radar speed sign using bolts or banding solutions
- Provides up to eight degrees of pivot up or down which allows placement of the speed sign on an uphill or downhill slope.
- Allows adjustment of the radar speed sign position for poles that have a slight side to side tilt after installation.
- Ease of installation: The design of the bracket allows you to attach the mounting side bracket and then utilize the U-shape slot on the top of the pole/column/wall bracket to hang the sign while you finish the installation.

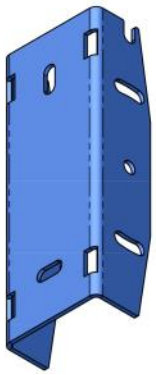
**Tool and Materials Required** *(customer supplied)*:

- 7/16" wrench
- Nuts, bolts or banding clamps for pole mounting

**Installation**

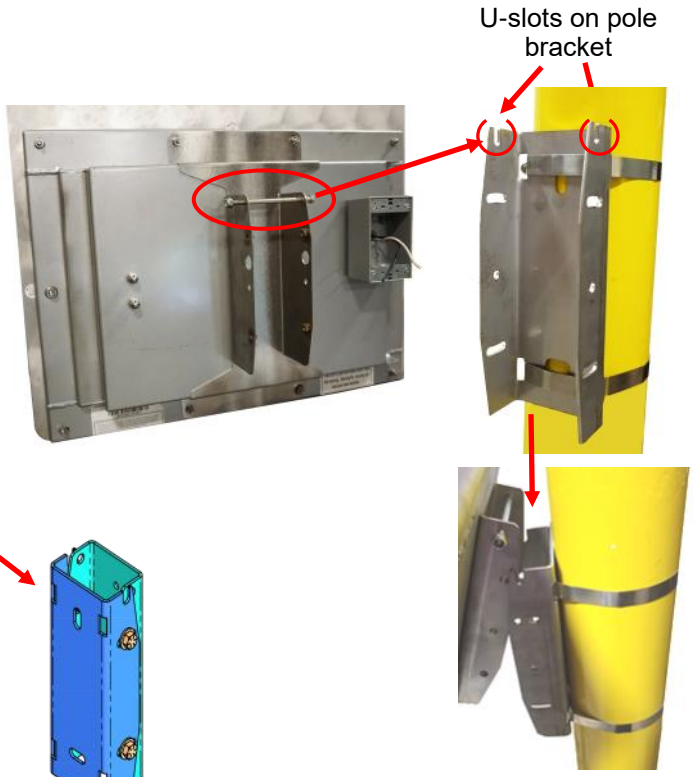
- Mark pole/column/wall with pencil or tape at the minimum height level for bottom of sign. The top of the sign should be at least 4 feet from the ground level.
- Attach the mounting side of the bracket to the pole/column/wall. Depending on what type of installation you are using you can use bolts or banding *(customer supplied)*.



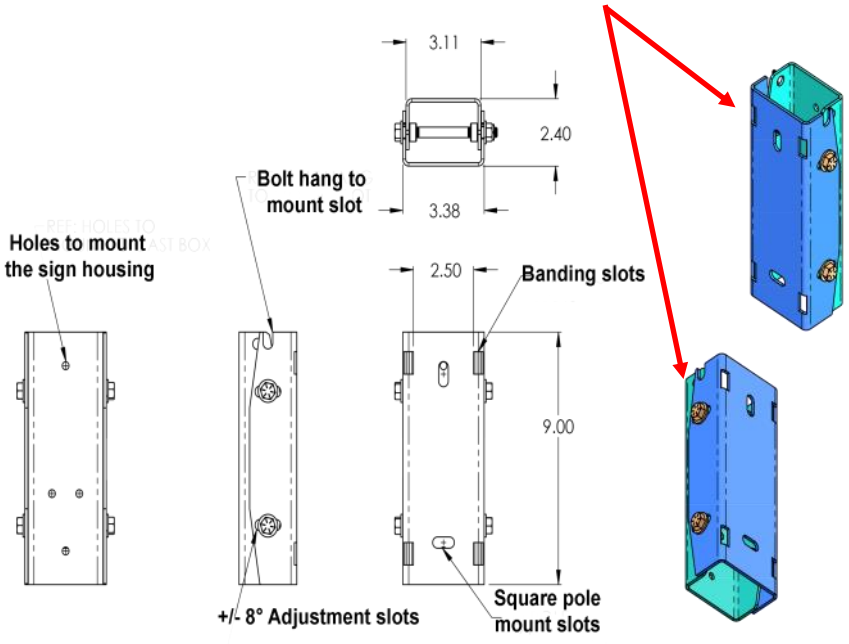



Mounting side

## TC-400A | AC Power Model




- When you are ready to hang the radar speed sign onto the pole/column/wall, place the ¼” x 4” bolt (supplied) into the top holes of the housing bracket (a long screwdriver will also work).
- Lift the sign and place the bolt into the U-slot on the pole/column/wall bracket. This will hold the sign so that the side bolts (supplied) can be installed.
- Install the (4) 1/4" bolts x 5/8" length hex head bolt, lock washers, and flat washers (supplied), 2 on each side of bracket.




- Once the sign is securely installed, the 4” bolt from the top hole can be removed.

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### Optional Sign Mounting Lock

An **optional** sign mounting lock is available to use with the Universal Mount Bracket to secure the radar speed sign to the pole.

- Unlock the lock on 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.
- Attach lock to the end of the lock set bar and lock.

## TC-400A | AC Power Model

### A/C Power Connections for the TC-400A


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 outlet box on the back of radar speed sign
2. Remove outlet cover plug and run the incoming AC power wires through a flexible non-metallic conduit connector (customer supplied)
3. Connect the exposed black and white wires
4. When wiring is complete and has been inspected, cycle the AC power on and observe the sign display. The sign will flash its serial number and code version, and resume normal operation as indicated by blinking of the blue LED in the center of the display.

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### Radar Speed Sign Settings:

The factory settings of the radar speed sign are probably not the same as you would like to have for your installation.

The factory settings are: Min Speed: 15
Max Speed: 50
Speed Limit: 25

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 Customer Resource Center )

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### Customer Resource Center

Radarsign software downloads, installation manuals, operation manuals, troubleshooting/repair/upgrade information and forms, product sheets, spec sheets, and more can be found on our website.

Just scan the QR code to the right. →

Password: **safety**

**For additional assistance:**

*Email:* **customerservice@radarsign.com**
*Phone:* **678-965-4814** and ask for technical support.

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

## Limited Warranty Agreement

Radarsign, LLC warrants this product against defects in materials and workmanship to the *original (end user)* purchaser for a period of two (2) years from the date of shipment; This warranty is limited to the repair or replacement of the product.

- Warranty is only valid if the product is installed, operated, and maintained according to the manufacturer's instructions and recommendations.
- Replacement parts are covered by the unexpired warranty of the parts they replace.
- Claims made under this warranty will be honored only if Radarsign, LLC is notified of a failure within the warranty period, reasonable information requested by Radarsign is provided, and Radarsign is allowed to verify the cause of the failure.
- To obtain warranty service, the purchaser must first call Radarsign, LLC for an RMA number; then return the product to Radarsign, LLC for repair or replacement.
- Purchaser shall prepay shipping charges for products returned to Radarsign, LLC.
- Radarsign, LLC will pay for return of the products to purchaser located within North America. Purchasers from a country outside or North America shall pay all shipping charges, duties, and taxes for products returned to Radarsign, LLC for warranty or after warranty repair.
- Radarsign, LLC makes no other warranty of any kind with regard to this product. Radarsign, LLC shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this product.
- Within ninety (90) days of receipt should the product fail for any reason other than damage due to customer negligence, acts of God or vandalism, Radarsign 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 customer is responsible for inbound shipping. Radarsign will pay for return shipping to the customer for the entire warranty period if customer is located within North America. Customers from a country outside or North America shall pay all shipping charges, duties, and taxes for products returned to Radarsign, LLC for warranty or after warranty repair.
- Radarsign, LLC warrants that this product is new. Radarsign, LLC makes no other warranty, either expressed or implied, with respect to this product. Radarsign, LLC specifically disclaims the implied warranties of merchantability and fitness for a particular purpose.
- 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 .
- The remedies provided herein are customer's sole and exclusive remedies. In no event shall Radarsign, LLC be liable for any lost profits, direct, indirect, special, incidental or consequential damages, whether based on contract, tort or any other legal theory.

### This warranty does not cover damage from:

- Accidents, malicious abuse, theft, vandalism, impact with a foreign object or acts of God
- Unauthorized modification of the product
- Failure of customer to follow Radarsign's published site selection, installation, transport and/or storage instructions in the Installation Manual for your sign model. The Installation Manual is available in the Customer Resource Center* (https://www.radarsign.com/customer-resource-center/). Password: safety
- Customer's removal or relocation of the sign
- Electrical work external to the unit, virus/hacker activity, and external computer errors
- Improper solar panel installation or improper use of battery charging equipment

This warranty is limited to a repair or replacement of the product. To obtain warranty service, the purchaser must first call Radarsign, LLC for an RMA number, then return the product to Radarsign, LLC for repair or replacement.