

# Pole Mounting Signs with Integrated Solar



Thank you for purchasing an **ATS sign with the Integrated Solar Sign Option**. This guide will show you how to set up and install your new Integrated Solar sign and pole mounting bracket on a pole. The Integrated Solar Option provides power to the sign using a solar panel and one or more lithium batteries, and is available for **SpeedAlert 18 Radar Message Signs, InstAlert 18 Variable Message Signs**, and **Shield 12** or **Shield 15 Radar Speed Signs**.

## Before you take to the road

**IMPORTANT:** Perform the following setup steps in your shop, before you take the Pole-mounted sign with Integrated Solar to the roadside:

- Step 1 *Choosing a site*, on the next page
- Step 2 *Installing the Your Speed sign attachment*, on page 4
- Step 3 *Attaching the bracing arms to the pole bracket*, on page 4
- Step 4 *Attaching the mounting arm to the solar panel*, on page 5

## At the roadside

- Step 5 *Aiming the solar panel*, on page 7
- Step 6 *Mounting on a pole and turning the sign on*, on page 8

See also

*If you need to recharge the sign*, on page 9



## What's included

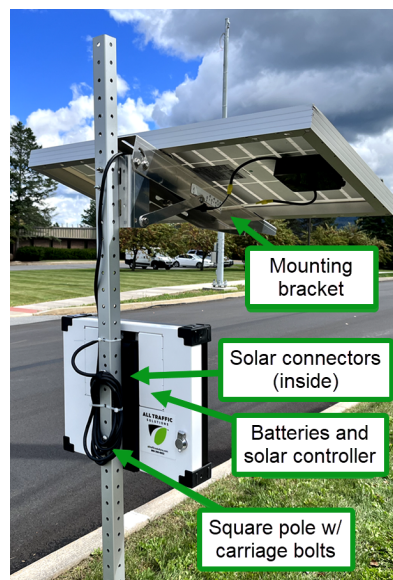
Upon receiving your shipment, check to ensure that you have all of the items ordered. For complete details, consult the bill of materials supplied with your delivery. If you notice any damage or missing items, contact ATS [Customer Support](#) immediately.

What's included	What you'll need
The Pole-mounted sign with Integrated Solar includes the following:	
<ul style="list-style-type: none"><li>» An ATS SpeedAlert 18 Radar Message Sign, an InstAlert 18 Variable Message Sign, or a Shield 12 or Shield 15 Radar Speed Sign with the Integrated Solar Option,</li><li>» For speed signs, a Your Speed faceplate,</li><li>» A sign mounting bracket and fasteners,</li><li>» One or two lithium batteries, depending on your order,</li><li>» The Single-Arm Solar Panel Mounting Bracket, including mounting arm, with attached bracing arms, pole bracket, two panel clamps, two 5/16" (8 mm) nut and bolt sets, and two stainless steel banding straps,</li><li>» A 50-watt to 100-watt solar panel and wiring harness,</li><li>» An external AC charger,</li><li>» This setup guide.</li></ul>	<ul style="list-style-type: none"><li>» To attach the bracing arms to the pole bracket and adjust the nuts and bolts, you'll need a 1/2" wrench (13 mm) and socket wrench and socket.</li><li>» To attach the mounting bracket and panel to the pole, you'll need a power drill or socket wrench with a 5/16" (8 mm) socket and flathead screwdriver, and step ladder.</li><li>» A compass app and smart phone or compass.</li><li>» Internet access.</li></ul>

## The Integrated Solar Option

All of the components of the solar charging system, with the exception of the solar panel, have been incorporated inside the sign, for a convenient and compact design.

The solar controller and batteries are installed securely inside the battery compartments of the sign, as shown in [Figure 1, below](#). The solar controller receives power from the solar panel and conditions it for charging the batteries. The integrated solar option has been designed for use with lithium batteries only and sized appropriately for use with the solar panel provided with your sign.



*Figure 1, Integrated Solar Sign components*

Under normal use, the sign's batteries should be fully maintained by the solar panel. However, if the batteries do become depleted, turn the sign off and leave it in full sun until it's recharged. Otherwise, you'll need to use the external AC charger to recharge the batteries more quickly. See [If you need to recharge the sign, on page 9](#).

In the Integrated Solar Option, typically two batteries are connected directly together, forming the equivalent of a single large, balanced battery. In the case of the Shield 12, only one battery is included, and the other compartment is used for the solar controller.

Signs with the integrated solar option feature a keyed ON/OFF switch, which provides secure power control without the need to unmount the sign to access the power push-button located inside the mounting bracket channel. The power button inside the mounting channel is disabled.


## Step 1 Choosing a site

Next, you'll need to set up a site for your Pole-mounted sign with Integrated Solar. Here are the basic steps and options you'll need to perform:


- A. **Select a street location:** Carefully consider the physical characteristics of the roadway to ensure optimal performance of the sign and solar panel. See [The site you select for the Pole-mounted sign with Integrated Solar will vary with your requirements, however you should generally adhere to the following guidelines;](#) on the facing page.


- B. **Create and assign a Site in TraffiCloud to hold your data:**

**Option 1:** If you have a Traffic Suite Software subscription,

- i. On the TraffiCloud Web portal, click **Sites** and then click the plus sign  to create a new Site,
- ii. Assign the site to your device: On the **Equipment** page for your device, go to **General > Assigned Site**.

**Option 2:** If you have a license to use the TraffiCloud mobile app, on the navigation menu, tap the **Site**.

**Management** tab and then click the **Plus** button 

**Option 3:** If you'll be using the TraffiCloud Sign Manager application on your PC, on the TraffiCloud Web portal, click **Sites** and then click the plus sign  to create a new Site. Then, assign your data to this Site when you upload it using the application.

For detailed instructions:

- See the video "Creating and Assigning Sites" (select a video based on your sign type) from the [TraffiCloud Training Hub](#).
- If you have the Traffic Suite Software, in the *TraffiCloud User Guide* see "Creating a Site" and "Assigning a Site to your device."

The site you select for the Pole-mounted sign with Integrated Solar will vary with your requirements, however you should generally adhere to the following guidelines:

Guideline	What to do
<b>Choose the distance from intersections</b>	Place the Pole-mounted sign with Integrated Solar at least 300 ft. (90 m) away from any intersection (avoid locations near stop signs or traffic lights).
<b>Choose a flat location</b>	Choose a location on a flat straight road section, directly adjacent to the roadway, where the line of sight from the Pole-mounted sign with Integrated Solar to the vehicles being counted will be uninterrupted by other traffic lanes, parked vehicles, or sidewalks.  Consider how the location may develop with time, such as growth of trees or construction of other new structures that may block the Pole-mounted sign with Integrated Solar or solar panel.
<b>Ensure appropriate sunlight</b>	Choose a location where the solar panel can be installed higher up on the pole and will remain unobstructed in terms of sunlight throughout the day.
<b>Choose the distance from the roadway</b>	Ideally, place the Pole-mounted sign with Integrated Solar within 12 ft. (3.7 m) of the roadway.
<b>Set the mounting height</b>	Attach the Pole-mounted sign with Integrated Solar to the pole at a height anywhere from 5 ft. 6 in. at the bottom of the device to 8 ft. (between 1.7 m and 2.5 m) at the top of the device.
<b>Choose your pole type</b>	You can secure the pole bracket to any type of pole using banding straps, lag screws, or nuts and bolts. The included banding straps are sized to mount the Pole-mounted sign with Integrated Solar either to a 2-in. (5-cm) Telespar-type pole, a 4-in.- to 5-in. (10-cm to 13-cm) diameter round metal pole, or a 4-in. x 4-in. (10 cm x 10 cm) wooden pole. For larger poles, you'll need longer banding straps, available from hardware stores.
<b>Avoid stop-and-go traffic</b>	Avoid locations with frequent tailgating or stopped traffic, as data accuracy is significantly impacted by these traffic conditions.
<b>Use a stable structure</b>	Mount Deploy the Pole-mounted sign with Integrated Solar on firm ground a stable and firm structure. Avoid structures locations that are likely to be affected by wind or rain.

## Step 2 Installing the Your Speed sign attachment

Use these steps for detailed instructions about installing the **Your Speed** sign attachment, which ships in the transport position.

### To set the sign attachment in the deployed position:

- Remove the 3/4" (19 mm) Torx bolts (wrench included) and washers from the **Your Speed** sign attachment and set them aside. If there is no concern about tampering, you can use the long thumb screws in place of the Torx bolts.
- Reposition the Your Speed sign with its bottom running along the top of the LED display.
- Place a washer over each hole in the sign and push the Torx bolts through the holes, as shown, in the Your Speed sign attachment and the LED display frame.
- Reinstall the fasteners to finish installing the Your Speed sign attachment.



## Step 3 Attaching the bracing arms to the pole bracket

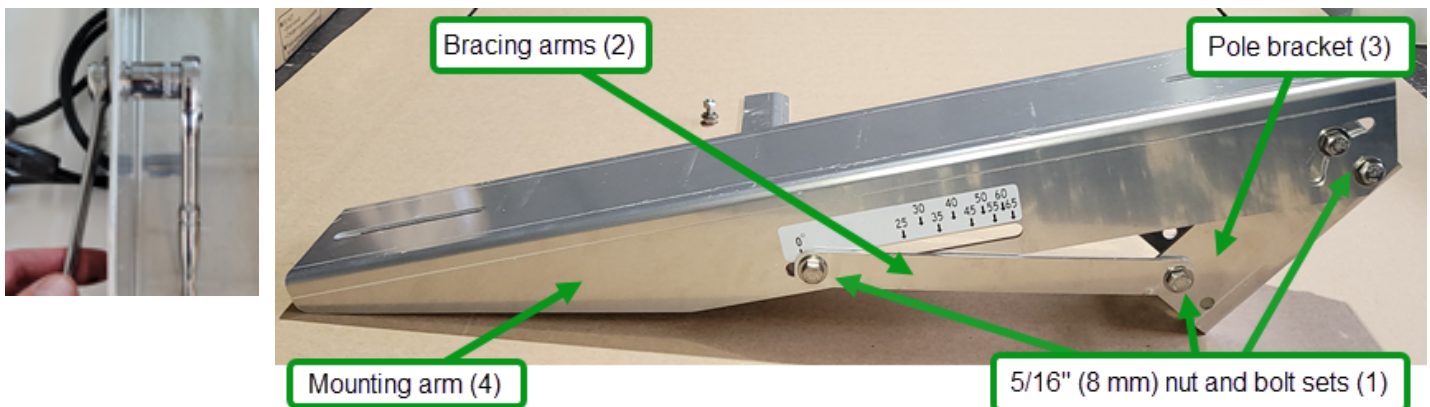
Use the instructions in this step for details about attaching the bracing arms between the mounting arm and the pole bracket, as shown in *Figure 4*, below.

- Place the mounting arm assembly on a flat, protected surface. Here's how it looks when shipped:



*Figure 2, Mounting arm assembly, as shipped*

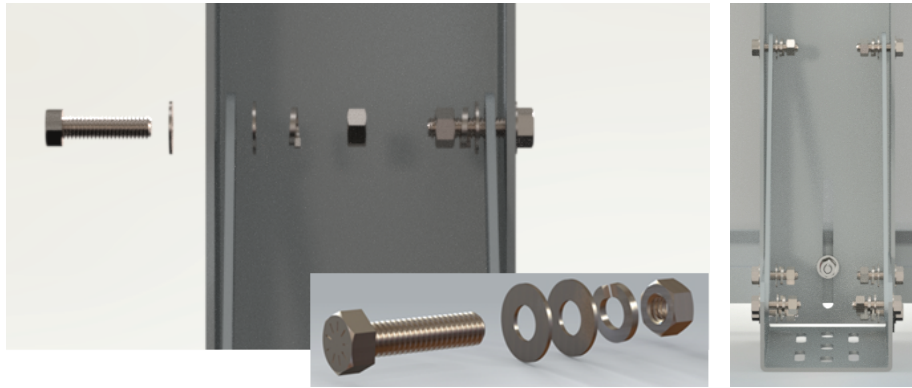
- Loosen all of the nut and bolt sets (1) until just a few threads are showing at the end of each bolt. The nuts and bolts fasten the bracing arms (2) and pole bracket (3) to the mounting arm (4), and the panel clamps to the mounting arm.



*Figure 3, Using 1/2" (13 mm) wrenches*

*Figure 4, Mounting bracket parts*

- C. Lift one of the bracing arms and the pole bracket and attach the two together using one of the additional nut and bolt sets included with the mounting assembly, as shown [Figure 4, on the previous page](#) and [Figure 5, below](#).



*Figure 5, Expanded view of the nuts and bolts*



**NOTE:** Leave the pole bracket, mounting bracket, and bracing arms loosely connected until you're ready to aim the panel. See [Step 5 Aiming the solar panel, on page 7](#).

- D. Repeat this procedure for the other side of the mounting bracket.

## Step 4 Attaching the mounting arm to the solar panel

Use the instructions in this step for details about attaching the mounting arm to the solar panel and for installing the banding straps.



**Mounting arm orientation:** For 50-watt solar panels, install the arm vertically (from top to bottom), as shown in [Figure 9, on the next page](#). For larger solar panels, you'll need to secure the mounting arm to the solar panel horizontally and use the included longer panel clamps.



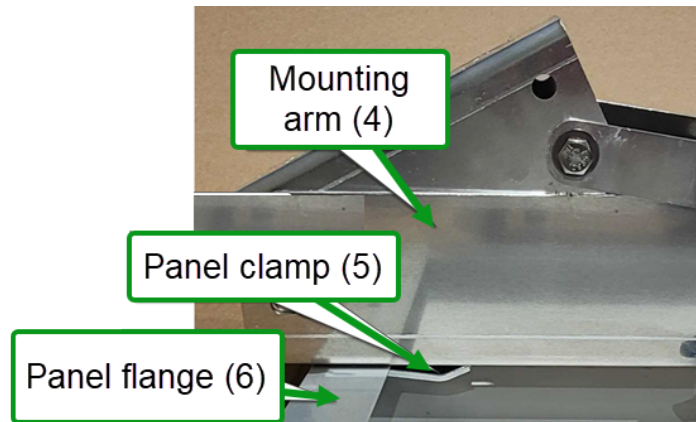
*Figure 6, Larger solar panel*



*Figure 7, Large panel clamp*

**To attach the mounting arm to the solar panel:**

- A. Place the solar panel face down on a flat, protected surface.
- B. Center the mounting arm assembly (4) on the back of the panel and position one of the panel clamps (5) under the panel flange (6). Make sure the panel and mounting arm are perpendicular to each other.



*Figure 8, Mounting arm, clamp, and flange*

- C. Place the clamp (5) under the flange (6), and insert a 5/16" (8 mm) bolt with a flat washer through the long slot in the center of the mounting arm.
- D. Mount the flat washer and lock washer onto the bolt through the mounting arm. Finger-tighten the nut onto the bolt.
- E. Repeat the previous steps to attach the other end of the mounting bracket to the panel with the second panel clamp.

**To install the banding straps on the pole bracket**

- A. Insert the stainless steel banding straps through the slots on the back of the pole bracket, as shown in *Figure 9*, below.
- B. If you'll be installing the solar panel over the top of the post, finger-tighten the banding strap couplings together.



*Figure 9, Assembled panel and mounting bracket with banding straps*

## Step 5 Aiming the solar panel

The solar panel mounting bracket allows for full adjustment to best position the solar panel towards the Sun. It is optimal to position your solar panel towards due Solar South (not magnetic South), if you are in the northern hemisphere and towards due Solar North (not magnetic North) if you are in the southern hemisphere.

Regardless of whether you are in the northern or southern hemisphere, Solar North and South are the position of the Sun in the sky at exactly the midpoint between sunrise and sunset.



Figure 10, The solar panel angle gauge

### To set the solar panel angle:

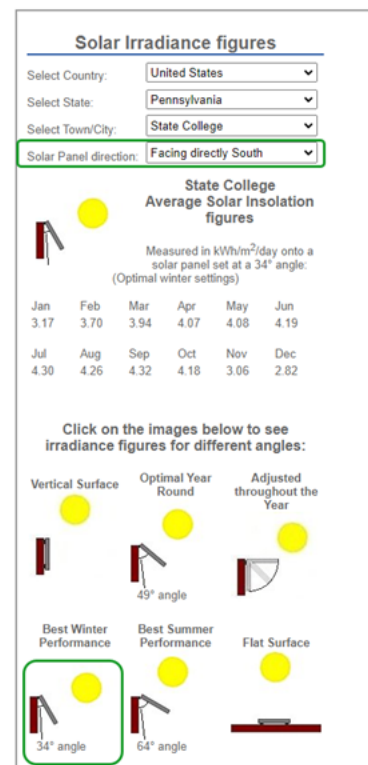
- Determine the latitude of the planned site. You can easily obtain latitude using mapping software or by doing an internet search for "latitude *your\_city*" where *your\_city* is the name of the city or region where the panel is being installed.
- Once you have the latitude of the site, you can determine the solar panel tilt angle. The tilt is intended to absorb as much direct sunlight as possible. To determine the number of degrees for the angle, do either of the following:
  - Add 15 degrees to the latitude of the site. For example, if the latitude of the site is 41 degrees then the solar panel should be installed at an angle 56 degrees below horizontal.
  - Go to the *Solar Electricity Handbook* website to determine your optimum angle here:

<http://www.solarelectricityhandbook.com/solar-irradiance.html>

Under Solar Irradiance figures on the Web page, select your country, state, city and solar panel angle (**Facing Directly South**), and then click the **Best Winter Performance** option (bottom left in the figure). For State College, Pennsylvania, the recommended angle is 34 degrees. Subtract 34 degrees from 90 degrees to determine your bracket angle setting (56 degrees).

The optimum tilt angle for solar panels varies from winter to summer as Earth tilts on its axis, but we recommend setting our solar panels for the best winter performance.

- Slide the bracing arms on the bracket to set the angle from horizontal until the lower bolts align with the planned tilt angle shown on the gauge (see [Figure 10, above](#)). Exact precision for the angle setting is not necessary for adequate solar panel efficiency to power the sign and battery.



- D. Now you can tighten all of the nuts and bolts with the 1/2" (13 mm) wrenches, as shown.

### To aim the panel to Solar South or Solar North:

- Use a compass app (or Google Maps) to aim the panel towards Solar South or Solar North, as required.



Figure 11, Aiming the panel to Solar South with a compass app

## Step 6 Mounting on a pole and turning the sign on

Use the instructions in this section to mount your Pole-mounted sign with Integrated Solar on a pole.

**CAUTION:** To reduce the risk of vandalism, the sign should be 7 to 10 feet above the roadway and the solar panel higher than 10 feet.

### To mount the solar panel on a pole:

- A. If you are installing the on a round pole, open the banding straps, wrap them around the pole at the preferred height, and tighten them enough to hold the panel in place, leaving some slack for the next step. A power drill or screwdriver and hex bit work best to tighten the straps.

If you are installing the Pole-mounted sign with Integrated Solar on a U-shaped or square pole, pass the carriage bolts through the pole and bracket so that the nuts are on the inside, and tighten them enough to hold the panel in place, leaving some slack for the next step.

- B. Recheck your orientation towards Solar South or Solar North, depending on your hemisphere, and make sure the panel is properly aimed.
- C. Tighten the banding straps the rest of the way.



### To install the Pole-mounted sign with Integrated Solar mounting bracket:

- A. If you are mounting the Pole-mounted sign with Integrated Solar on a round pole, thread two stainless steel banding straps (not included for the sign) through the sign mounting bracket, and then tighten the bracket and straps around the pole. Thread the ends of each banding strap together and then tighten them onto the pole.
- B. If you are mounting the Pole-mounted sign with Integrated Solar on a U-shaped or square pole, bolt the sign mounting bracket to the pole using the supplied carriage bolts or U bolts and wing nuts.

The wing nuts will be concealed inside the back of the sign to prevent tampering.





## To mount the Pole-mounted sign with Integrated Solar:

- Set the top channel on the back of the Pole-mounted sign with Integrated Solar onto the tab at the top of the mounting bracket.
- Rotate the Pole-mounted sign with Integrated Solar down until it's flush with the bracket.
- Push the locking pin up to lock the Pole-mounted sign with Integrated Solar into place.
- Twist to connect the solar connector from the panel to the solar connector on the sign. The male and female ends will snap together.
- Strap the excess cable to the pole.



## To power on the sign:

- Lift the key switch cover on the back of the sign and turn the barrel-style key to the **ON** (horizontal) position.



The sign will go through start-up and self-check sequences. Once the self-check is complete, the sign is operational. A green LED on the top-left corner flashes every 10 seconds to indicate when the sign is powered on. The batteries and solar panel included in the Integrated Solar Option will now power your sign.

## If you need to recharge the sign

Solar charging is typically strong enough to keep sign batteries adequately charged, but battery health can be compromised by lack of direct sunlight – from cloudy or hazy conditions to excessive shade, to snow, leaves, pollen, or dust buildup on the panel. To avoid the need for recharging, locate the panel where you know there will be good sunlight and keep the panel clean. If you do need to recharge the sign, use the instructions below to ensure optimum battery health, recharging, and storage.

### What you'll need

You'll need the sign and included battery charger (as shown in *Figure 12*, on the next page).

### Powering down the sign

**IMPORTANT: Before recharging the batteries, turn off the sign to discharge the power circuits and to ensure that no current is flowing during the charging process.**

#### To power down the sign:

- Lift the key switch cover, insert the key and turn it to the **OFF** (vertical) position.

### Recharging the sign

**WARNING: RISK OF ELECTRIC SHOCK AND EQUIPMENT DAMAGE.** The charger is not intended for outdoor use. Only charge the system in a sheltered environment, such as a garage.

#### To recharge the sign:

**WARNING: RISK OF FIRE.** Do NOT attempt to individually charge the paired batteries included. Never mix unequally charged batteries in the same system.

**NOTE:** Charge the sign for **24 hours** to return the standard two-battery configuration to a 100% charge. For single-battery configurations, charge for 18 hours.

- Unlock the sign and lift it off the mounting bracket.
- Twist to disconnect the solar connectors. See *Figure 13, Connecting the charger and sign* on the next page.

- C. Plug the two-pronged plug end of the charger cable into a standard 120-VAC electrical outlet.
- D. Connect the solar connector dongle to the charger cable, as shown here. The male and female ends will snap together.



Figure 12, Connecting the charger cable to the solar adapter dongle

- E. Twist to connect the solar connector (pigtail) on the sign to the solar connector on the charger, as shown here. **DO NOT** connect the charger to the round port on the bottom half of the sign. The sign begins charging.

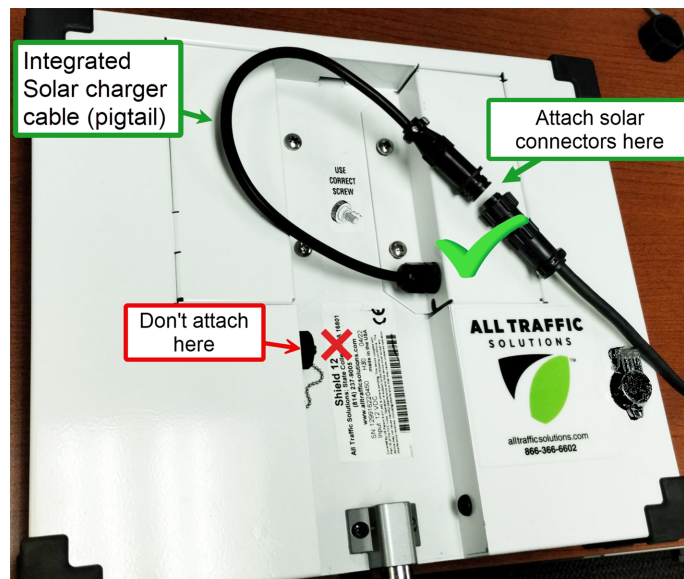


Figure 13, Connecting the charger and sign



**Note:** The charger may take a couple of minutes to recognize the batteries, due to the presence of the solar controller. Do not be alarmed if it does not start charging immediately.

- F. **Charge the sign for 24 hours** to return the standard two-battery configuration to a 100% charge. For single-battery configurations, charge for 18 hours.



**Note:** In Integrated Solar configurations, the LED on the charger cable cannot be relied on to indicate a full charge. When the LED turns from red to green it only indicates a 50% to 85% charge level.

## Powering back on and reinstalling the sign

Once the sign is recharged, you'll need to power it back on and then reinstall it:

### To power the sign back on:

- Lift the key switch cover, insert the key and turn it to the **ON** (horizontal) position.



In the unlikely event that the sign will not power back on after you've recharged it for 18 hours (single-battery configurations) or 24 hours (dual-battery configurations), please review [Powering back on and reinstalling the sign above](#). If everything looks correct and the sign still will not power back on, please see [Contacting Customer Support below](#).

### Storing the sign

- If you'll be storing the sign for any length of time, power it down again to avoid draining the batteries prior to next use.

## Contacting Customer Support

For support for your All Traffic Solutions products,

- visit the Customer Support page at <https://www.alltrafficsolutions.com/support/>,
- send email to [support@alltrafficsolutions.com](mailto:support@alltrafficsolutions.com), or
- call 1-866-366-6602, Option 2, anytime between 8:00 a.m. and 6:00 p.m. Eastern Time, Monday to Friday.



### Technical documentation and training

To view technical documentation, please click the Help icon [?](#) at the top right of the TrafficCloud Web page.

For online training resources, please click or scan the QR code at right to visit our **TrafficCloud Training Videos Hub**. To discuss additional TrafficCloud training options, please contact Customer Support.





# ATS PRODUCT WARRANTIES

All Traffic Solutions (ATS) is committed to providing the best value in all our products. To underscore this ongoing commitment, all ATS-manufactured signs purchased on or after January 1, 2019, come standard with a 3-year manufacturer's warranty. Products eligible for the 3-year manufacturer's warranty are Shield 12 and Shield 15 radar speed signs, SpeedAlert 18 and SpeedAlert 24 radar message displays and InstAlert 18 and InstAlert 24 variable message signs.

We also offer the ATS Premier Care Plan with your current ATS TraffCloud® Remote Management Software subscription.

## WARRANTY COMPARISON

### ATS Premier Care Plan & ATS 3-Year Manufacturer's Warranty

All sign batteries are discounted under the Premier Care Plan. All accessories are discounted under Premier Care except:

- Trailer-related items
- Laptops and tablets
- Solar panels
- Carrying cases

Feature	Premier Care Plan	ATS 3-Year Manufacturer's Warranty
<b>Hardware defect repair</b>	Entire product lifespan, provided the product has an active Premiere Care subscription	Three years from the date of delivery
<b>Dedicated Customer Support Center</b>	Comprehensive hardware and software troubleshooting support	Troubleshooting to determine hardware defects
<b>Remote diagnostics by ATS Support Team</b>	Remote access to signs for performing comprehensive hardware and software diagnostics	Not included
<b>Software and firmware updates</b>	Included	Not included
Shipping to and from ATS repair center <i>(manufacturer defect repairs only)</i>	No charge	No charge
<b>Shipping to and from ATS repair center (non-manufacturer defect repair)</b>	Customer pays shipping	Customer pays shipping
<b>Damage resulting from misuse, abuse, or using the product in ways it was not intended</b>	Covered at 50% of standard ATS repair rates	Standard ATS repair charges apply
<b>Vandalism</b>	Covered at 50% of standard ATS repair rates	Standard ATS repair charges apply
<b>Battery and accessory discounts</b>	50% off the regular price	No discounts
<b>LFP battery replacement</b>	1 year + 50% off additional or replacement batteries	1 year
<b>SLA battery replacement</b>	1 year + 50% off additional or replacement batteries	3 months
<b>Trailer battery</b>	1 year	6 months
<b>Power case batteries</b> <i>(Must be sent back to ATS for repair)</i>	1 year + 50% off replacement batteries	6 months
<b>Accidents</b>	Covered at 50% of standard ATS repair rates	Standard ATS repair charges apply
<b>Damage due to incorrect installation or operation</b>	Covered at 50% of standard ATS repair rates	Standard ATS repair charges apply
<b>Acts of nature</b>	Covered at 50% of standard ATS repair rates	Standard ATS repair charges apply
<b>Normal wear and tear such as frayed cords or cables, broken connectors, scratched or broken enclosures</b>	Covered at 50% of standard ATS repair rates	Standard ATS repair charges apply