

ATS 3 Trailer with Integrated Solar Option

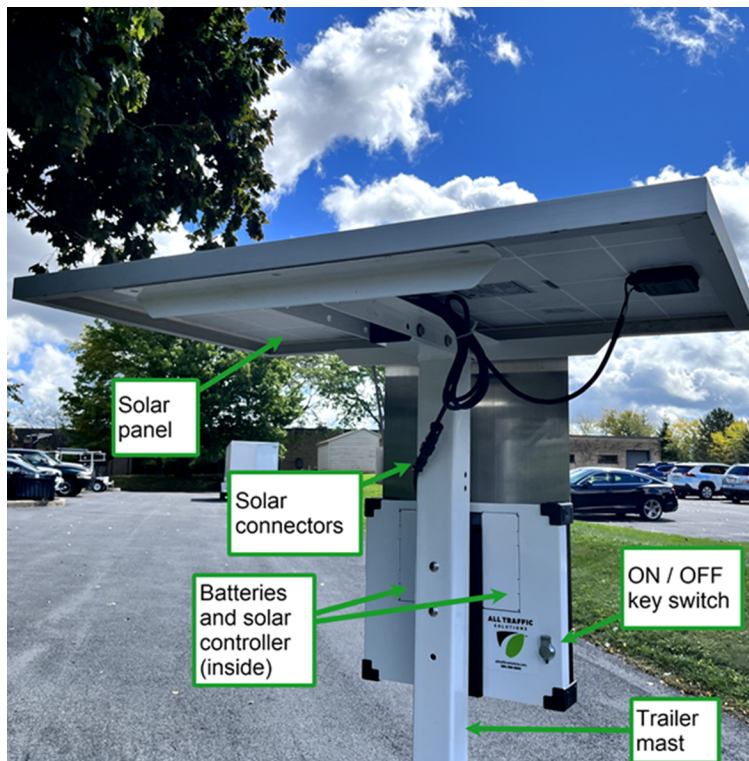
ALL TRAFFIC
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Thank you for purchasing an ATS 3 Trailer with the Integrated Solar Option and the Single-Arm Solar Panel Mounting Bracket. This guide will show you how to set up and install your new trailer. The Integrated Solar Option, which is powered by solar technologies and one or more lithium batteries, is available for SpeedAlert 18 Radar Message Signs, InstAlert 18 Variable Message Signs, and Shield 12 or Shield 15 Radar Speed Signs. The ATS 3 Trailer is compact and has a low tongue weight, making one-person deployment very manageable. See the figures below and *The Integrated Solar Option* below.



[Figure 1] ATS 3 Trailer and SA 18 with Integrated Solar



[Figure 2] Integrated Solar components (trailer mounted)

Before you begin

If you have a TrafficCloud Web subscription, the first thing you'll need to do to get started using your signs with TrafficCloud is to create at least one Site for each sign remotely, in advance, from your office. With TrafficCloud, you configure a sign's Site for everything from speed to messaging (if equipped), reports, alerts and more. Sites are the key to generating traffic reports, because TrafficCloud organizes traffic data for reports by Site. If necessary, you can also perform these steps after you install a sign at a physical location. See "Creating a Site" in the *Getting Started with TrafficCloud Guide* for your sign.

If you don't have a Web subscription, you can set up the sign in advance or while you're on location, using the onboard buttons on the sign. You can also set up a Site with TrafficCloud Sign Manager for Windows, over a USB or Bluetooth connection (pairing code "ATS"), and perform basic sign setup with the TrafficCloud Mobile app for Android over Bluetooth. See .

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. See [Figure 2] above.

The solar controller and batteries are installed securely inside the battery compartments of the sign. 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.

Under normal use, the sign's batteries should be fully maintained by the solar panel. However, if the batteries do become depleted, it's best to turn the sign off and leave it in full Sun until it's recharged. Alternatively, you can use the optional charger to recharge the batteries more quickly. See *Step 5: If you need to recharge the sign* on page 13. 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.


Check over the trailer

Upon receiving a new ATS 3 trailer, check to ensure that you have all of the items ordered. If you notice any damage or missing items, contact ATS [Technical Customer Support](#) immediately.

| What's included | What you'll need |
|--|---|
| <p>The ATS 3 trailer, includes the following:</p> <ul style="list-style-type: none"> » The mast and solar panel, including the joint bolt and shear nut, with washer and lock washer, and a bottle of Vibra-Tite threadlocker, » An ATS SpeedAlert 18 Radar Message Sign, InstAlert 18 Variable Message Sign, or Shield 12 or Shield 15 Radar Speed Sign (sold separately). » An axle lock bar (padlock not included), » This setup guide. All setup and quick start guides are also posted to the ATS Technical Customer Support page and if you have a TrafficCloud subscription, you can access additional guides on the ATS Start-Up page or from the TrafficCloud Help menu. <p>For complete details, consult the latest specification.</p> | <ul style="list-style-type: none"> » A vehicle equipped with a trailer hitch for towing. See <i>Towing checklist</i> on the facing page. » A 15/16" (24 mm) wrench, » A 1-1/8" (29 mm) wrench, » A partner for trailer hookup and to unfold the mast. |

Viewing this document online



NOTE: If you are reading this document online and have a medium- to large-screen monitor, it's best viewed in Adobe® Reader or Adobe Acrobat Pro, using the preset two-page view , rather than directly in a Web browser.

Safe trailering guidelines

IMPORTANT: Carefully read and follow all instructions marked with warnings and read and follow all of the instructions in your setup guide **BEFORE** you take your trailer on the road.

Warning symbols



WARNING: Warning symbols draw your attention to serious safety hazards, which can lead to injury, death, or damage to equipment.

Swaying



WARNING: Swaying is a moderate back and forth movement of a trailer behind a tow vehicle and can lead to dangerous whipping unless you slow down.

Whipping



WARNING: Whipping is the violent back and forth movement of a trailer behind a tow vehicle. Whipping can be caused by excessive speed for the driving conditions, turbulence, over-steering, passing vehicles, uneven roadways, or other issues. There is very little time to recover should whipping occur.



Combination disturbance



WARNING: A combination disturbance is swaying or whipping of a trailer AND the tow vehicle (the combination), caused by issues such as excessive speed for the driving conditions or load, turbulence, over-steering, passing vehicles, uneven roadways, or other issues. See *Safe trailering guidelines* on the previous page.

Flat tire



WARNING: In the event of a flat tire, DO NOT BRAKE. Take your foot off the gas pedal, slow down below 25 mph (40 kph), and drive to a safe location, where you can stop and change the tire. If necessary, you may need to drive on the flat until you can stop safely.

Wheel off the roadway




WARNING: If a wheel goes off the roadway, DO NOT BRAKE. Take your foot off the gas pedal, turn on your hazard lights, and slow down below 25 mph (40 kph). Then slowly steer back onto the roadway when it's safe to do so.

Towing checklist

Go over the following checklist before you go on the road:

| Checklist item | Ensure that |
|-------------------------|--|
| Your tow vehicle | <p>Ensure the following:</p> <ul style="list-style-type: none"> » the tow vehicle is equipped with a suitable trailer hitch and the vehicle is properly maintained. Consult your vehicle manufacturer, an authorized repair facility, or hitch installation company. » The vehicle has adequate towing capacity for the trailer, with a minimum load capacity of 500 lbs (227 kg). » You consult the vehicle owner's manual about vehicle capacity and towing instructions particular to the vehicle. » Any modifications to the vehicle are approved for towing by an authorized dealer or inspector. |
| Trailer hitch | <p>Ensure that the trailer hitch includes:</p> <ul style="list-style-type: none"> » a standard hitch mount with bracket for the safety chains, » a 2-inch (5-cm) ball, » a 12 VDC wiring socket. <p>Ensure that the trailer hitch and ball are securely installed and suited to the tow vehicle. Ensure that the coupler and ball are fastened together securely.</p> |
| Safety chains | <p>Ensure that the safety chains are</p> <ul style="list-style-type: none"> » crossed over under the tongue and hitch, » securely hooked to the tow vehicle, and » not dragging on the pavement. See <i>Lower the trailer onto the hitch</i> on page 8. |

| Checklist item | Ensure that |
|---|---|
|  | <p>WARNING: Pay close attention to safety chain hookup and do not tow the trailer without the safety chains attached.</p> <p>If the trailer tongue becomes detached from the hitch ball while you are driving, the safety chains can prevent a serious accident by supporting the tongue and keeping the trailer attached to your vehicle temporarily until you can come to an emergency stop.</p> |
| Electrical harnesses | Ensure that the electrical harnesses are properly connected and the signal, tail, and brake lights are working. |
| Tires | Ensure that all tires on the tow vehicle and trailer are properly inflated. Consult the information on the tire sidewalls and your vehicle's door decal for inflation pressures. |
| Sign | Ensure that the mast, sign, and solar panel assembly are in the travel position, parallel to the road. See <i>Rotate the sign</i> on page 7. |
| Loading | Never load cargo on the bed of the trailer. |

Safe driving practices

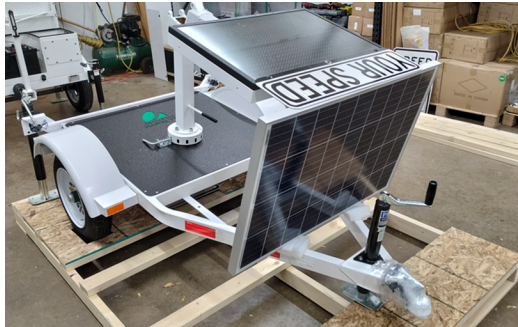
Use the following checklist for safe driving practices with a trailer:

| Condition | Best practice |
|-------------------------------------|---|
| Speed | <p>Slow down to avoid accidents and drive defensively. Drive slower than you would without a trailer. The maximum recommended speed with a trailer is 55 mph (90 kph).</p> <p>Anticipate slowdowns in traffic and stops and apply your brakes well in advance.</p> <p>Slow down for curves, road hazards, roadwork, and difficult weather conditions.</p> <p>Don't assume you can speed with the trailer. Driving at high speeds can result in sway and whipping if hazards are present.</p> <p>Your towing vehicle and trailer combination has much higher mass and length than your vehicle by itself. Allow extra distance between your vehicle and vehicles ahead and allow extra distance for braking.</p> |
| Assisted driving | Avoid using cruise control, overdrive, and other assisted driving technologies while towing a trailer. |
| What to avoid | <p>Never drink or consume drugs and drive.</p> <p>Never text and drive or allow mobile devices to become distractions while you are driving. Pull over or wait for stops as needed to use them.</p> |
| Passing and turning | <p>Remember, your car and trailer combination is longer than your vehicle alone. Allow adequate extra space when passing vehicles or making sharp turns, such as in parking lots or gas stations.</p> <p>Be vigilant when passing or being passed by other vehicles. Passing vehicles can cause turbulence leading to a combination disturbance.</p> |
| For longer trips | Inspect the vehicle and trailer connections at each stop. |
| Difficult weather conditions | In difficult weather conditions, adjust your driving for the conditions, allowing additional time and space between vehicles. |

| Condition | Best practice |
|-------------------|---|
| Backing up | If you need to back the trailer into position, practice beforehand, and have a partner assist you. Backing up with a trailer is a skill that can take time to learn. See <i>Tow the trailer to your location</i> on page 9. |

Step 1: First-time setup (if necessary)

Use the steps in this section for first-time setup if the trailer has been shipped to you. If the trailer has been delivered by an ATS representative, the mast should already be set upright, and you can skip to *Step 2: Deploy the trailer and message or speed sign* on the next page.



[Figure 3] Trailer folded view



[Figure 4] Unfolding the trailer mast

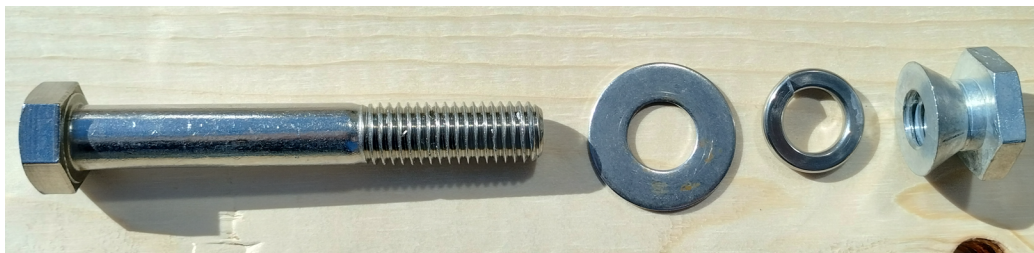
Unfold the mast

- Deploy all three jacks into position, supporting the trailer. The back jacks have spring-loaded latch pins that you pull to release from the stowed position, and then rotate into the vertical position. All of the jacks spin up and down with hand cranks.



WARNING: RISK OF CAPSIZING Before you unfold the mast, stabilize the trailer by rotating the jacks to vertical and lowering them to the ground. Correct deployment of the jacks prevents the trailer from flipping backwards, which could cause injury to personnel or damage to equipment.

- Unfold the mast into the upright position, as shown in [Figure 4] above. Unfolding the mast is best done with a partner.
- Insert the bolt (shown in [Figure 5] below) into the cylinder on the mast joint to hold the mast upright. Once unfolded and assembled, the hinge will be locked in that position. See [Figure 8] on the next page.



[Figure 5] Breakaway nut and bolt set



[Figure 6] Vibra-Tite threadlocker



WARNING: Vibra-Tite threadlocker contains ethyl 2-cyanoacrylate, ethylene di(acetate), and Methoxy Polyethylene Glycol 1000 Methacrylate, which pose slight to moderate risks to health or can cause fire. Wear appropriate safety gear and avoid contact with the skin and eyes, inhalation, or exposure to open flames or sparks (no smoking). Dispose of contents and the container in accordance with local, regional, national, and international regulations. For details, see the Vibra-Tite ebsite.

- D. Put the large washer and then the lock washer (shown above) on the end of the bolt.
- E. Apply a few drops of the supplied Vibra-Tite threadlocker (shown in *[Figure 6] on the previous page*) to the bolt where the breakaway nut will be tightened on. At 72 degrees F (22 C), initial curing time is 10-20 minutes and full curing time is 24 hours.
- F. Tighten the 5/8" breakaway nut onto the bolt using a 15/16" (24 mm) bolt wrench until the nut shears off.



WARNING: Do not remove the nuts and bolts in the hinge after assembly. Doing so will void the warranty.



[Figure 7] Mast joint, unfolded



[Figure 8] Mast joint, folded



[Figure 9] Speed limit sign

Install the static speed limit sign (if applicable)

If you have the optional static speed limit sign (see *[Figure 9] above*), use the supplied nuts and bolts to install it on the mast below the digital speed sign, and set the speed limit using the inter-changeable digits. The digits range from 5 through 65 for customers in the United States.

Step 2: Deploy the trailer and message or speed sign



WARNING: RISK OF INJURY OR ACCIDENT Before you transport the trailer and sign after erecting the mast, rotate the mast and sign into the "Travel Position", parallel to the direction of travel to avoid the risk of accident and injury due to wind drag, whipping, or vehicle-trailer combination disturbance. See *To rotate the sign:* on the facing page.



WARNING: RISK OF INJURY OR VEHICULAR DAMAGE Follow these instructions carefully, and always ensure correct and safe trailer hookup and driving with your trailer. See *Safe trailering guidelines*.

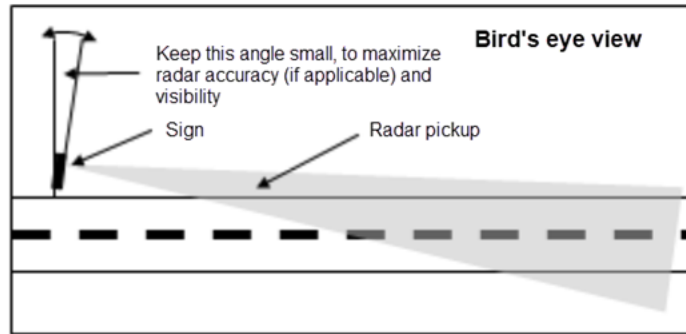
Rotate the sign

You'll need to rotate the sign in either of two circumstances:

- To place the mast and sign assembly in the travel position (see [Figure 10] below), so that you can transport it safely between locations after the mast and sign have been raised.
- To angle the trailer correctly toward the traffic lane (see [Figure 11] below). In the case of hills, you can also use the jacks to angle the sign up or down slightly.



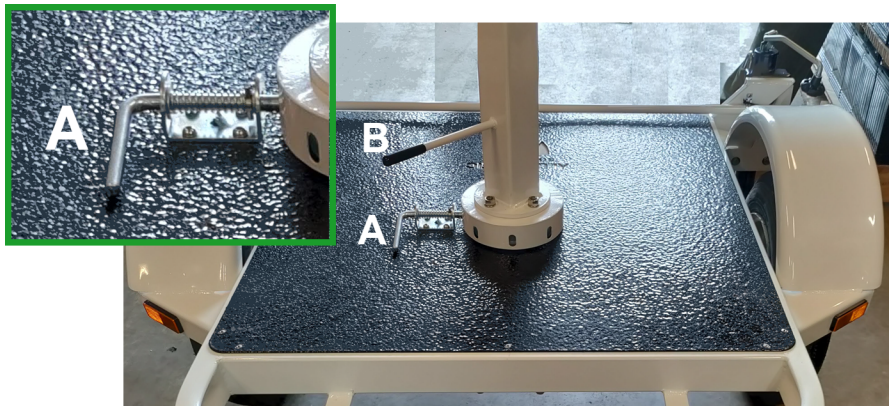
[Figure 10] Travel position



[Figure 11] Setting the sign angle

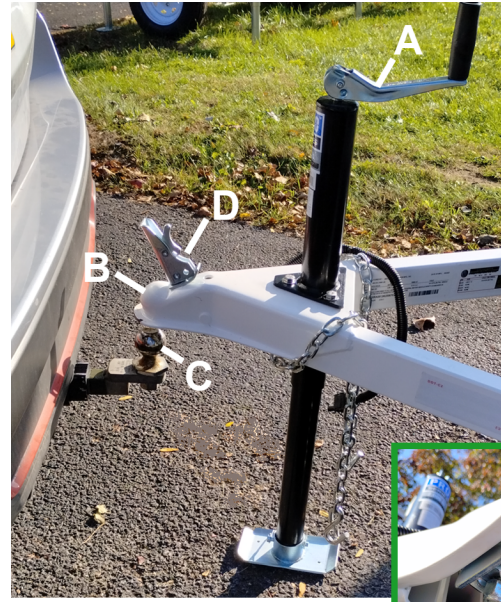
To rotate the sign:

- A. Pull the spring-loaded latch pin (A) to unlock the mast base.
- B. Keeping the latch pin retracted, grasp the mast rotation handle (B) and rotate the mast and sign as required. Do either of the following:
 - **Rotate the sign for transport:** To reduce wind resistance, rotate the mast, sign, and solar panel assembly sideways, into **Travel Position**, parallel to the roadway (see [Figure 10] above). The holes around the mast base are 30 degrees apart.
 - **Rotate the sign to set the display angle:** Use the same procedure to rotate the sign for optimum display towards traffic (see [Figure 11] above).
- C. Release the latch pin into the new hole to lock the mast in position.



Move the trailer and vehicle into position for hookup

- Move the trailer into position on a flat surface so that you can back your vehicle up to it. Using leverage, the trailer is easy to move around by hand on flat surfaces.
- On the front jack (A), as shown at right, turn the handle to lift the trailer until the coupler (B) is above the height of the hitch ball (C).
- Back the vehicle up to the trailer so that the hitch ball (C) is just in front of the coupler (B). Have a partner guide you or use a backup camera if it provides a clear view. When your vehicle is in position, turn off the engine.



Lower the trailer onto the hitch

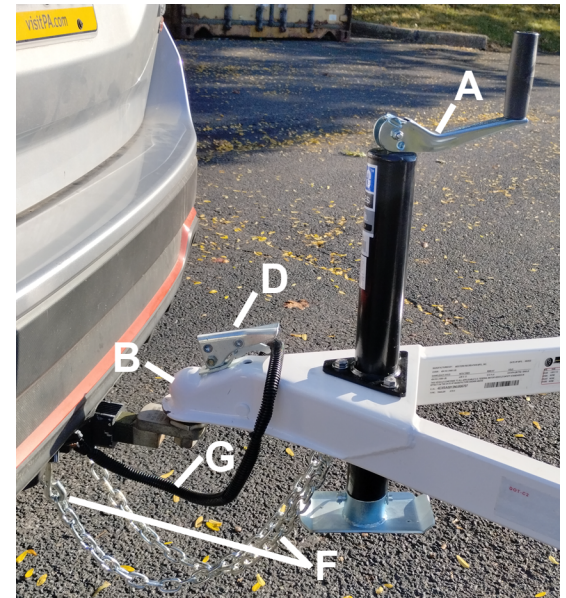
- Spin the front jack (A) down to lower the coupler (B) onto the hitch ball, as shown in this section.
- Close the tongue latch (D) over the ball.
- Important:** Ensure that the ball clamp (E) is securely wrapped around the ball. If necessary, release the tongue latch and reposition the tongue on the hitch ball, or adjust the ball clamp with a wrench.
- Optionally, lock the latch with a padlock (not included).
- Crank the jack (A) back up all the way before towing.
- Attach the trailer safety chains (F) to the hitch frame, crossing them under the tongue, and looping the S-hooks back onto the chain. Leave enough slack in the chains to allow for cornering, but make sure they don't drag on the pavement.



WARNING: Pay close attention to safety chain hookup and do not tow the trailer without the safety chains attached.

If the trailer tongue becomes detached from the hitch ball while you are driving, the safety chains can prevent a serious accident by supporting the tongue and keeping the trailer attached to your vehicle temporarily until you can come to an emergency stop.

- Connect the wiring harnesses (G).
- Working with a partner, check to ensure that the signal, taillights, and brake lights are functioning properly.
- Inspect the hitch connections to ensure that the hookup is complete, and then proceed to the next step. Once all preparations are completed, you are ready to take to the road.



Tow the trailer to your location



WARNING: RISK OF ACCIDENT, INJURY OR DEATH. Do not obstruct the roadway: Always choose a location for the trailer that is far enough away from moving vehicles so as not to interfere with or distract passing traffic. When possible, the trailer should be placed off the shoulder, behind barriers or behind traffic cones.

- A. Tow the trailer to your chosen location, ensuring that the surface is stable.
- B. **If you need to back up:** Hold one hand on the bottom of the steering wheel, and to turn the trailer to the left, move your hand on the steering wheel to the left. To turn the trailer right, move your hand on the steering wheel to the right. If the trailer turns the wrong way, pull ahead until the vehicle and trailer are in a straight line and start again.
- C. Once the trailer is in the desired position, you're ready to disconnect the trailer from the tow vehicle.

Unhitch the trailer

Use these instructions to unhitch the trailer, so that you can safely leave it at the roadside.

To disconnect the trailer:

- A. Disconnect the wiring harness.
- B. Disconnect the safety chains and hook them back onto the trailer.
- C. Open the tongue latch (D), as shown on the previous page.
- D. Using the front jack or by hand, lift the trailer off the hitch ball.
- E. Move the tow vehicle away from the trailer.
- F. Let the front jack back down to the desired position and fold down the handle again.

Position the trailer and turn the sign on

- A. To enhance accuracy and visibility, position the trailer so that the sign will be visible to motorists, yet the trailer is off the shoulder (see *Tow the trailer to your location* above). You can also adjust the angle of the mast and sign separately (see *Rotate the sign* on page 7).
- B. Lower all three jacks until the trailer is stable and level on the ground. You can raise the tires off the ground. Use a level if necessary.
 - i. For the jacks on the rear of the trailer, pull the spring pins to release them.
 - ii. Rotate the back jacks to vertical. You'll hear a click as they lock into place.
 - iii. For each jack, rotate the handle to lower the foot until it's supporting the trailer securely. Fold the jack handles back down for storage.
- C. Use the key switch on the back of the sign to turn it on. Lift up the cover and turn the barrel-style key to the ON position.

The sign will go through start-up and self-check sequences. Once the self-check is complete, the sign is fully operational. A green LED on the top-left corner flashes every 10 seconds to indicate when the sign is powered on.



Step 3: Configure the sign locally

If you have a TrafficCloud subscription, you can skip this step, and instead configure the sign online, setting the sign display options and assigning a Site. It's best to perform sign setup in advance, so that your traffic data is captured in TrafficCloud immediately. See the *Getting Started with TrafficCloud* guide for your sign.

If you don't have a TrafficCloud Web subscription or the TrafficCloud Mobile app for Android (over Bluetooth), you can configure your sign using the **Speed Limit** and **Display Mode** buttons, and TrafficCloud Sign Manager for Windows, connecting over the supplied USB A-to-mini B cable or over Bluetooth. The mini-B port is located above the buttons inside the mounting channel for Shields, SpeedAlert 18s, and InstAlert 18s, and inside the back of the sign for the SpeedAlert 24s and InstAlert 24s. For Bluetooth pairing, use code "ATS".



To configure the sign locally:

- Set the speed limit by pressing the **Speed Limit** button until the desired value displays. The first press displays the current speed limit.
- Verify or set the display mode on the sign.
- To change the mode, press the **Display Mode** (or **Display Settings**) button until the desired mode displays on the sign. For details about display modes, see the applicable figures and table below for your sign.



NOTE: To reduce the risk of tampering, the buttons deactivate five minutes after you power on the sign. To reactivate them, turn the ON/OFF key switch on and off.

SpeedAlert and InstAlert Display Modes

As mentioned, optionally you can use the sign's onboard buttons to configure a speed limit and other display settings. Here are the available modes with the SpeedAlert and InstAlert:



| Display Mode | Description |
|--------------------|--|
| MSG MODE | Single Message mode: Selects from the messages saved in the sign to display. |
| ALL MSGS | All Messages mode: Displays all of the messages saved in the sign in sequence. |
| DEP MSG | Dependent Messages mode: Displays a series of messages, with the content depending on how fast the approaching vehicle is traveling. Can be used as a timer, to display different messages based on the value of the internal timer. Often used for New Year's countdowns or casual race information. The timer is controlled with TrafficCloud Sign Manager. |
| SPEED DISP | Speed Display mode (Radar signs only): Displays the speeds of the approaching vehicle. |
| DISPLAY OFF | Display Off mode: Turns off but the display but the sign is still active and gathering sign status for InstAlerts, and traffic and other data for SpeedAlerts, if subscribed. Also, referred to as "stealth mode". |

| Display Mode | Description |
|--------------|--|
| SP LMT SIGN | Speed Limit Sign mode: Sets the Speed Limit to display. |

Shield Display Modes

Here are the sign modes available with the Shield if you use the **Display Mode** button on the sign:



| Shield modes | Description |
|--------------|--|
| c | Constant: The Shield continuously displays vehicle speeds as each vehicle passes, changing the speed display as the vehicle speed changes. Constant is the default (recommended) setting. |
| cS | Constant with strobe: The same as constant, however vehicles exceeding the Speed Limit set in the sign by 1 mph (or kph) trigger the Violator Alert strobe (if equipped). TrafficCloud subscribers typically set the strobe option to 10-15 mph above the Speed Limit set in the sign. |
| b | Blinking: The Shield blinks slowly, displaying changing speeds as the vehicle passes. TrafficCloud subscribers typically set the blink option to 10 mph above the Speed Limit set in the sign. |
| bS | Blinking with strobe: The Shield blinks constantly, and the Violator Alert strobe (if equipped) flashes when the sign detects a vehicle exceeding the Speed Limit by 1 mph (or kph). TrafficCloud subscribers can set the blinking and strobe options separately, with blinking typically set at 10 mph above the speed limit, and the strobe at 10-15 mph above the Speed Limit set in the sign. |
| dE | Demo: The Shield displays a simulation of vehicle approach speeds, from higher to lower, temporarily ignoring actual traffic readings. |
| oF | Display Off: The Shield collects traffic and status data, but the display is turned off. This mode, also referred to as "stealth mode", is recommended for performing traffic studies at a Site. |

Step 4: Secure the trailer

Use the axle lock bar and a padlock (not included) to prevent theft as well as rolling out of position.



[Figure 12] The axle lock bar installed

To secure the trailer:

- A. Remove the axle lock bar from the back of the trailer.



[Figure 13] Axle lock bar stowed



[Figure 14] Axle padlock (not included)

- B. Thread the axle lock bar through the trailer wheels (as shown in *[Figure 12]* above).
C. Thread the padlock through the holes at the end of the axle lock bar (as shown in *[Figure 16]* below) and lock it.



[Figure 15] The axle lock bar - T-bar end



[Figure 16] The axle lock bar - locking end

Step 5: If you need to recharge the sign

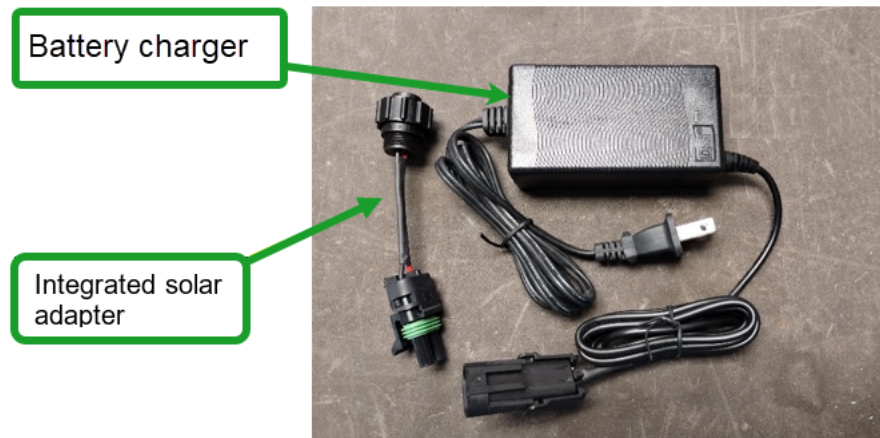
If you purchased the optional charger (see [Figure 17] below) with the Integrated Solar Option, take the trailer or sign into a protected environment, plug the charger into a standard 120-VAC outlet, and connect the charging end to the sign's solar connector cable.



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



WARNING: RISK OF FIRE. Do NOT attempt to individually charge the paired batteries included with the Integrated Solar Option. You should never mix unequally charged batteries in the same system.



[Figure 17] Battery charger and integrated solar adapter

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 right away.

Depending on the size of the batteries it may take up to 24 hours to fully charge the batteries.

We're here to help! If you have any concerns while using your new sign and trailer, please feel free to call our customer success specialists at 1-800-366-6602, option 2, or email us at support@alltrafficsolutions.com. For additional setup documentation, TrafficCloud subscribers should refer to the applicable *Getting Started with TrafficCloud* guide (click the **Getting Started Guides** link on your TrafficCloud **Help** menu). Non-subscribers should refer to *Step 3: Configure the sign locally* on page 10.

ALL TRAFFIC SOLUTIONS



All Traffic Solutions

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