

# **ALL TRAFFIC**

## **SOLUTIONS**



### **SA18 SpeedAlert Radar Message Sign**

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# **SpeedAlert Radar Message Sign Introduction**

## SpeedAlert SA18 Radar Message Sign and Speed Dependent Messaging

### SpeedAlert SA24 Radar Message Signs

The SpeedAlert Radar Message Sign is an extremely flexible sign that can be used for messaging, as a speed display and for ATS Speed Dependent Messaging. The unit is ideal anywhere public messaging is necessary and beneficial including emergency incident management, road condition information, event information and parking management. It can communicate equally well to vehicular and pedestrian traffic. With large digits, the SpeedAlert can calm traffic on any road. It collects traffic data (volume of vehicles by speed and time of day) at all times, no matter the display mode. The sign provides easy mounting and programming and offers a wide variety of options to suit your needs.

There are two versions of the SpeedAlert: The SpeedAlert 24 with a 24"x 60" display area and 24" speed digits, or the SpeedAlert 18 with an 18"x30" display area and 18" digits. Both signs can display text and graphics.



### ATS Speed Dependent Messaging

The ATS Dependent Messaging System utilizes the radar in the SpeedAlert Radar Message Sign to control the message sign's display. For each of five speed ranges you select the message that will display when a vehicle triggers the speed display - speed limit or less, three ranges above the speed limit or no vehicles. The messages can include the speed limit, the vehicle's speed and a message particular to the difference between the speed limit and the vehicle's speed. The system is available in both the SpeedAlert 24 and SpeedAlert 18.



# **Radar Message Sign Quick Starts**

## Quick Start - SpeedAlert 18 in Speed Display Mode on Pole

Power, setup and deploy a SpeedAlert 18

### Unpack the unit

Remove the unit and charger kit from the boxes. Any extra batteries will also be in the box, along with an Android device if purchased.

### Charge the battery

Remove the batteries from the battery compartment on the back of the SpeedAlert 18 (See next step). The battery will arrive partially charged and needs to be fully charged before use. Plug battery into charger and plug charger into wall outlet. Some batteries charge directly from the same connector as in the unit, and others have a specific charging connector. Use the connector that mates with the charger. Light on charger is red while charging and changes to green when charging is complete. The SA18 can use either the 10Ah or 16Ah LFP battery.



### Rotate the “YOUR SPEED” Sign into position (SpeedAlert 18)

With the supplied tamper proof Torx wrench, remove bolts and washers (2 each) on the outside edge of the “YOUR SPEED” sign. Do not remove the center bolt, as the sign rotates around this bolt. Rotate the “YOUR SPEED” sign to its upright position. Return the washers and the bolts to the holes in the bottom of the sign and tighten with the Torx wrench to secure the sign. Reverse steps to rotate the sign back down for transport. If not worried about tampering, the tamper proof screws can be replaced with the provided thumb screws. Make sure to not confuse these with the battery cover screws as they are too long for the battery compartments and will damage the unit if used for the battery covers.

**NOTE:** During operation in the Speed Limit Sign mode, replace the “YOUR SPEED” sign with a “SPEED LIMIT” sign to prevent confusion. More information on this mode is provided in the operation section.

**NOTE:** During operation in “stealth mode” with data collection on but with the display off the “YOUR SPEED” sign can be removed.



## Install LFP Battery

Remove the mounting plate with the provided key. Remove one of the battery covers and install the LFP Battery. First plug the battery connector into the unit connector. Slide the battery into the compartment with the removal strap accessible. Make sure to use the short thumb screws for the battery cover. Batteries can be installed in either side, or both sides for longer deployments.



## On-Board Controls set the speed limit (if applicable) and display mode.

The SA18 and iA18 on-board controls are located under the mounting bracket. Remove the mounting bracket and locate the control panel. There are three buttons on the back of the sign to provide control over the sign mode and the settings for the selected mode. The **Power** button turns the unit on or places it in standby. When supplied with power it will always return to the last mode and settings for this mode. If the unit will be stored for a period, disconnect the battery or it will get drained over time

Set the speed limit by pressing the **Speed Limit** button until the desired speed displays on the front display. The first press shows the current speed setting, and then each press increments the speed limit by 5 MPH (KPH for metric units.)

Set the display mode by pressing the **Display Mode** button until the mode displays on the front of the unit. See the next section.

**Note:** After 5 minutes after powering the unit on, these buttons will automatically deactivate to prevent unwanted tampering. To reactivate the buttons the unit must be powered off and then powered back on.



## Select Speed Display Mode

The **Display Mode** button scrolls through the sign modes. For the quick start, select the speed display mode where the sign will display passing vehicle speeds. Press the Display Mode button till seeing Speed Disp. For information on the other modes, go to the On Board Controls section.



Speed Display

## Fasten Mounting Bracket to Existing Pole

Remove the mounting bracket from the unit by unlocking it and lifting it out of the unit. Attach the bracket to a pole with carriage bolts, nuts and washers (included), U-bolts or bands. Put the nuts on the bracket side of the pole so they are covered up by the unit when it is locked in place to prevent tampering. Using the lower slot, adjust the bracket so the bracket is level from side to side.



## Hang the Unit

Hang the unit by hooking the notch in the top of the mounting bracket area on the sign onto the tab on the top of the mounting bracket. Tilt the unit down and lock the unit into place by pushing the lock pin into place. The unit is now operational. For removal, unlock the pin lock, tip the unit out and lift off the mounting bracket tab.

## Ready to go

Your SpeedAlert 18 is installed and will display vehicle speeds.

## Quick Start - Create a Message with ATS Mobile for Android

### Log In

Type in the email address and password associated with the mobile device account, then tap *Login*. This email and password has been emailed from All Traffic Solutions. Contact ATS if you do not have a login and password. The initial log-in must be performed while the Android device has WiFi or cellular access to the internet. Once the initial log-in is successful, a wireless internet connection will not be necessary for subsequent log-ins within 30 days as long as you check the box to *remember username for 30 days*.



### Connect to a Sign

After logging in, the next screen is the connection screen. Tap the *Search for Signs* button in the lower right corner to find all the signs within bluetooth range of the PDA. Once the list of available signs is populated, select the sign to connect to and tap *Connect*. Once connected, you will see the home screen with the available main functions for the connected sign.



## Create and Display a Message

To create messages and manage messages on an instALERT or SpeedAlert, touch the *Messages* button on the home screen.

To create a new message, touch the *Create Messages* button. Within each screen, select the type of message you want - 3 lines, 2 lines, 1 line, mixed lines, graphics, Your Speed, Speed Limit or clock. Type the desired text into the white text boxes. Set the duration and blink rate for each screen with the drop down list of selections. You can justify the text with the justification icons.

Once you have completed the first screen, tap on screens 2 and 3 to add additional screens and create these screens in the same manner. To remove screens tap on the X icons on the screen tab. Once you have completed the message, save it with the *Save* button. You can preview the message with the *Preview* button. From the preview screen, you can send the message to the connected message sign with the *Display Now on Sign* button. You can also display the message on the sign from the main creation screen by tapping the *Display Message Now* button.

To edit the current message displaying on the sign, tap the *Get Current Message* button.

The screen power graphic shows how much power each screen will use. If battery life is a concern then make sure that the majority of screens in each message fall somewhere in the green area. Using a blink rate is an easy way to lower the power usage.



## Now Showing

The *Now Showing* button on the home screen allows you to scroll up and down through the list of messages stored in the sign's memory. Once you scroll to a message that you would like to display tap the *Display Now on Sign* button. The messages on the sign are added using the Manage Messages button. See the ATS Mobile instructions for more information.



## Quick Start - Create a message with SmartApps on PC

To display a message on an instALERT or SpeedAlert using SmartApps with a cellular remote connection or with a local USB or Bluetooth connection

### Log into SmartApps

Open the SmartApps interface by going to [www.apps.alltrafficsolutions.com](http://www.apps.alltrafficsolutions.com). If connecting remotely, log in with user name and password. If connecting locally, first install and run ATS Assist. See the information sheet that came with the unit for download instructions for ATS Assist. Connect the message sign to the PC with a USB cable or through Bluetooth. Go to [www.apps.alltrafficsolutions.com](http://www.apps.alltrafficsolutions.com) and log in by clicking the *Work Offline* button that will be available when ATS Assist is running.



### Create the message

Click the *Messages* tab, and create the desired message and save it on the server if connected remotely or on the PC if connected locally. Either *Edit* an existing message or *Add* a new message.



## Select sign to receive message

Go to the *Equipment Management* tab and click *Settings* for the sign to receive the message. There may be multiple signs available under *Remote Equipment* for selection for remote systems. For locally connected signs, select the sign under *Equipment connected to PC*.



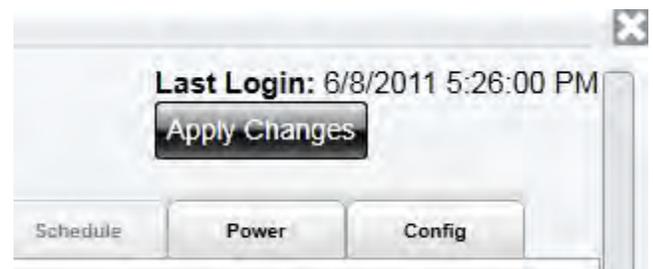
## Select the message to be displayed

On the Settings *Messages* tab, move the new message that you created in the Messages tab from the *Messages on Server* or *Messages on PC* list to the *Messages on Equipment* list by highlighting it and using the right arrow button. Preview any message by clicking on the message to highlight it and then clicking the *Preview* button below the list that contains the message. Once the message is moved to the *Messages on Equipment* list, select this message in the *Active* dropdown menu as the active message.



## Apply message

For all systems, click the *Apply Now* button in the top right corner to send the message to the sign. Locally connected signs will change almost immediately. For locally connected signs, there is also a *Display Now* button on the *Message Preview* tab. Remotely connected signs will change the next time the sign calls into the server for setting updates. This can be up to 15 minutes, depending upon where the sign is in its call-in cycle.



## Quick Start - SA18 on ATS-5 Trailer Deployment

This Quick Start shows how to set up an ATS-5 Trailer with a message sign.

Unpack the trailer if it arrived in a crate.

### Place ATS-5 Trailer in location and lower jacks

Park trailer on a stable surface, rotate all 4 jacks down and stabilize trailer. Aim trailer as directly as possible towards targeted motorists and level with the jacks. **DO NOT RAISE DISPLAY UNTIL ALL 4 JACKS ARE DOWN AND SUPPORTING THE TRAILER.**



### Raise Solar Panel

Raise solar panel, if applicable. For the new model, pull lock pins on either side of the panel, rotate the panel into position and replace pins. The panel can be positioned level or at an angle, which can be used if the angle faces the sun better in a particular location, and in the winter to help snow melt off the panel. For the old model, loosen the wing nut and pull the pin on both sides, rotate the panel and replace the pins and tighten the wing nuts.



New Model - Pin in level or tilted position

Old Model with Wing Nut

### Raise the Display

Make sure all four jacks should be lowered. Raise the SpeedAlert display. Move handle from the travel position (or from storage in the battery box - stored under the tongue) to the lifting position by removing the handle lock pin, sliding the handle out, and replacing the lock pin. Remove the lock pins holding the message sign down on both sides. Carefully lift the frame and replace both of the sign lock pins.



Lock Pin

Handle Pin

## Store lift handle and tongue

Store the lifting handle and trailer tongue in the battery box. Place the handle in position first, followed by the tongue. Make sure none of these components contact the terminals of the battery or wiring.



## Power the SpeedAlert 18 and Select Mode

Turn the SpeedAlert on with the switch.



## On-Board Controls set the speed limit (if applicable) and display mode.

The SA18 and iA18 on-board controls are located under the mounting bracket. Remove the mounting bracket and locate the control panel. There are three buttons on the back of the sign to provide control over the sign mode and the settings for the selected mode.

Once programming is complete replace the mounting bracket to prevent tampering with the controls.

The **Power** button is bypassed when the unit is powered by the trailer power harness.

**Note:** On older units, after 5 minutes after powering the unit on, these buttons will automatically deactivate to prevent unwanted tampering.

To reactivate the buttons the unit must be powered off and then powered back on.



## Select Speed Display Mode

The **Display Mode** button scrolls through the sign modes. For the quick start, select the speed display mode where the sign will display passing vehicle speeds. Press the Display Mode button till seeing Speed Disp. Set the speed limit by pressing the **Speed Limit** button until the desired speed displays on the front display. The first press shows the current speed setting, and then each press increments the speed limit by 5 MPH (KPH for metric units.)

Units will record traffic data no matter the message displayed if this option was purchased.

For information on the other modes, go to the On Board Controls section.



Speed Display

## Select Message Mode

**Single Message Mode:** This is the standard single message mode that displays one message at a time. Load messages into the signs memory using either the TraffiCloud, Android with ATS Mobile or PC, or select one of the factory preloaded messages. Scroll through messages in the signs memory using the Speed Limit button until the desired message is displayed. Units will record traffic data no matter the message displayed if this option was purchased. For information on the other modes, go to the On Board Controls section.



Single Message

# Powering the Radar Message Sign

## Pole Mount with Lithium Battery - SpeedAlert 18 and instALERT 18

Installing Lithium batteries in the SpeedAlert 18 or instALERT 18. These units use safe Lithium Iron Phosphate batteries.

### Charge the battery

Remove the batteries from the battery compartment on the back of the unit (See next steps). The battery will arrive partially charged and needs to be fully charged before use. Plug battery into charger and plug charger into wall outlet. Some batteries charge directly from the same connector as in the unit, and others have a specific charging connector. Use the connector that mates with the charger. Light on charger is red while charging and changes to green when charging is nearly complete. The SA18 can use either the 10Ah or 16Ah LFP battery.



Unlock the mounting bracket lock and lift the bracket away from the unit by raising it at the bottom and sliding the bracket's tab out of the slot in the SpeedAlert at the top.



### Install LFP Battery and Turn on Power

Install the charged LFP Battery and turn the power on to the unit. Make sure to use the short thumb screws for the battery cover. Set the speed limit for the road and the display mode if setting these using the on-board controls. See the On-Board Controls section for more information. Once installed on the bracket the controls are covered to prevent tampering.



### Start Up

Every time you connect the Shield's battery and press power, the display performs a start up test. Once these screens are done the unit is ready for use and will enter the last mode it was set to.

## PowerCase or Vehicle Power - SpeedAlert and instALERT

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The instALERT 18 and 24 or SpeedAlert 18 and 24 can be powered by the ATS Powercase or with 12VDC vehicle power.

### PowerCase PC-26 and PC-36 and SA24 or iA24

Plug the sign's power cable into the receptacle on the PowerCase. Line up the word "Insert" on the plug with the triangle indicator on the Powercase receptacle. Insert and twist. The unit can be plugged into the PowerCase when the charger is plugged in if the unit needs to be run longer than the batteries will last, or if the PowerCase has not been charged.

**Note:** If using an older PowerCase with a cigarette lighter-style receptacle, it will be necessary to either use adapter harness 4000567 (sold separately), or have ATS upgrade the POWERcase to accept the newer twist lock plug.

### PowerCase PC-26 and PC-36 and SA18 or iA18

Attach the supplied power cable to the covered power connector above the on board controls.

Plug the other end of the sign's power cable into the receptacle on the PowerCase. Line up the word "Insert" on the plug with the triangle indicator on the PowerCase receptacle. Insert and twist. The unit can be plugged into the PowerCase when the charger is plugged in if the unit needs to be run longer than the batteries will last, or if the PowerCase has not been charged.

**Note:** If using an older PowerCase with a cigarette lighter-style receptacle, it will be necessary to either use adapter harness 4000567 (sold separately), or have ATS upgrade the POWERcase to accept the newer twist lock plug.

### Recharging the Powercase

Either PowerCase can be charged using 120VAC, and the PC-36 can be charged from a vehicle with its on board inverter. The Powercase can be used while it is being recharged.

To recharge the POWERcase batteries with 120VAC, open the Powercase. Insert the plug from the charger into a 120VAC receptacle. When the batteries are charged, wind up the cord (PC-36) or wind it up on the clamps (PC-26) and close the Powercase.

To recharge the POWERcase PC36 batteries using vehicle power, open the POWERcase and plug the 12V power cable's cigarette lighter plug from the inverter into the vehicle's receptacle. Then plug the charger into the inverter.

The charger LEDs glow red for charging, red and green for almost charged, and green for fully charged.

**ALWAYS LEAVE THE POWER CASE OPEN WHEN RECHARGING THE BATTERIES TO PREVENT A BUILD UP OF EXPLOSIVE GASES.**

### Vehicle Power

There are 2 ways to get power from the vehicle.

**Vehicle 12VDC Power:** Using adapter harness 4000567 (sold separately) to convert the twist lock plug into a cigarette lighter plug, plug the sign into a standard cigarette lighter socket providing 10A @ 12VDC. When powered on, the sign will display its name, the battery level of the power supply and the time. It will then display the last message displayed.

**Receiver Power Supply adapter:** To use the vehicle's trailer power cord adapter plug the sign's plug into the receptacle of the adapter, and then plug the trailer connector into the trailer power outlet on the vehicle. The lights of the vehicle need to be on for the unit to work with the trailer power cord adapter.

**Note:** The vehicle power outlet or trailer wiring must be able to supply sufficient current to operate the sign. If a low battery indicator appears on the sign, there is a problem with the power supply capacity. ATS recommends using a dedicated Powercase to eliminate this possibility. If a vehicle is used to power the sign, it may need to be running so the vehicle battery does not get run down.

# Pole mounted Solar with SLA (Sealed Lead Acid) Battery - Shield 12 & 15, SpeedAlert 18, instALERT 18

Mounting solar panels on pole and connecting SpeedSentry, Shield and SpeedAlert signs.

## Solar Panel

- The solar panels work with the solar controller located in the system's battery compartment or in the trailer's battery box. The controller continually recharges the batteries up to full whenever sufficient sunlight generates a charging current. It prevents overcharging the batteries and draining the batteries during low-light periods.
- Appropriate panel size for solar assist depends on display sign model, traffic volume, geographic location, battery capacity and operating times. Actual performance depends on application and mounting location. Contact All Traffic Solutions for help in selecting an appropriately sized panel and battery combination.
- Place panels in direct sunlight and tilt them toward toward true south to maximize their effectiveness. To calculate the best angle of tilt in the winter when there are the least sun hours, take your latitude, multiply by 0.89, and add 24 degrees. The result is the angle from the horizontal at which the panel should be tilted.
- Mount the speed display unit so the display remains out of direct sunlight whenever possible for optimal viewing.
- ATS uses Sealed Lead Acid batteries for solar systems, as charging lithium batteries in extreme hot or cold temperatures can damage the battery.

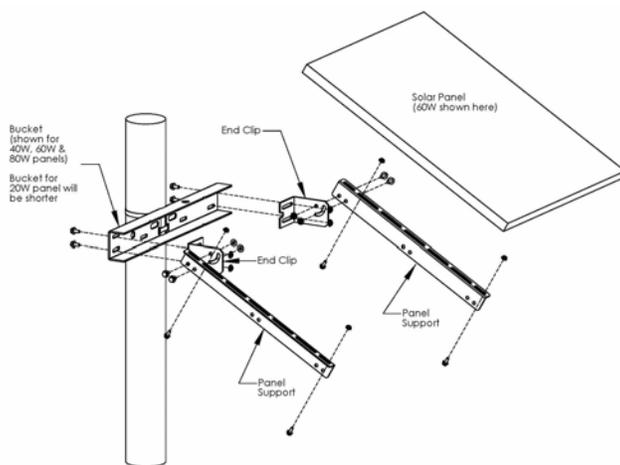
## Mounting the Solar Panel to a pole

### Notes:

- Solar panels will all mount similarly, though actual bolt positioning on the Panel Supports may vary.
- Bracket shown banded to a standard 4.5" diameter pole. Bracket can also be mounted with U-bolts (not provided).

### Installation Steps

1. Lay solar panel face down on a protective surface and attach panel supports with supplied hardware (**HHMS\* 1/4-20 x .75 (qty4), lock washer 1/4 (qty4), washer 1/4 (qty8), nut 1/4-20 (qty4)**) and finger tighten.
2. Attach end clips to bucket using supplied hardware (**HHMS 5/16-20 x .75 (qty4), lock washer 5/16 (qty4), washer 5/16 (qty8), nut 5/16-18 (qty4)**) and finger tighten.
3. Attach panel supports to end clip with supplied hardware (**HHMS 5/16-20 x .75 (qty4), lock washer 5/16 (qty4), washer 5/16 (qty8), nut 5/16-18 (qty4)**) and finger tighten.
4. Attach bucket to pole using U-bolt or banding.
5. Adjust the tilt angle to the recommended angle above.



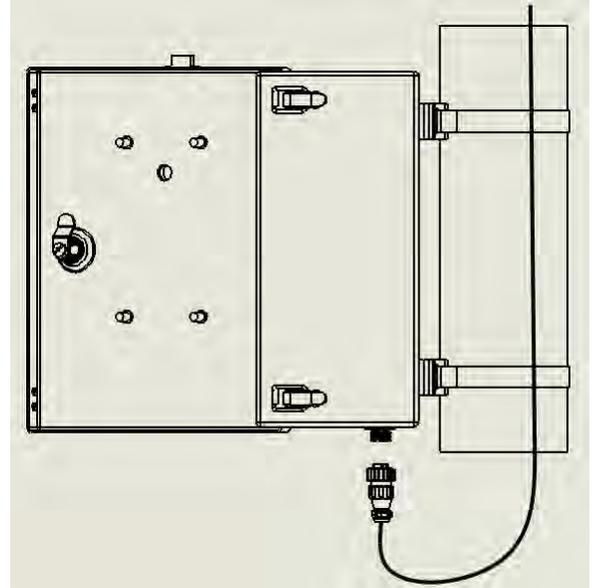
6. Tighten all hardware until the lock washer is flat.
7. Tie power cord to pole with nylon ties and connect to the solar panel connector on the battery box.

\*Hex Head Machine Screw

## Shield 12, Shield 15 and SpeedAlert 18 Solar Battery Box Mount

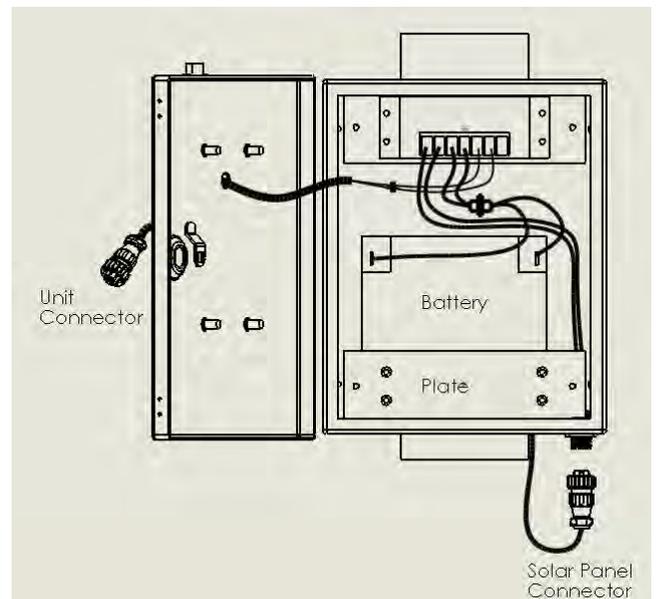
**IMPORTANT: Do not use the internal lithium battery when connecting Shield or SpeedAlert unit to the lead acid battery in the solar cabinet. This could drain the lithium battery very low and cause permanent damage.**

1. Remove all internal lithium batteries from the unit that will be used.
2. Install solar panel on pole using instructions above. Make sure the power cord coming from the solar panel will reach the preferred location of the solar cabinet.
3. Attach solar cabinet to pole using  $\frac{3}{4}$ " width banding.
4. Connect solar cable to connector on bottom of box.



## Install Battery into Box

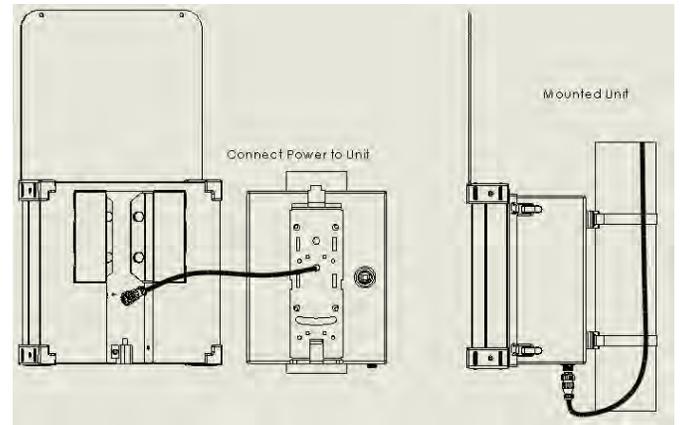
1. Attach Sealed Lead Acid battery cable to the battery, connecting the black lead to the black terminal and the white lead to the red terminal with the included hardware. Place SLA battery inside cabinet, and slide all the way to the left.
2. Place aluminum plate over the battery and attach with the long screws.
3. Attach the black plastic circular plug coming from the battery to the circular receptacle connected to the battery terminals on the solar controller.
4. Make sure that the green charging light on the solar charge controller comes on.
5. Close cabinet door and use key to turn lock. Close two draw latch clamps on the side of the box.



## Attach Unit to Solar Battery Box

1. Attach exterior power connector to the auxiliary power connector on the Shield, SpeedAlert or instALERT unit.
2. Make sure the unit powers on. Change any settings using the units on-board controls if necessary.
3. Push any power cable slack back into the cabinet and attach Shield unit to mounting bracket and lock in place with push lock.

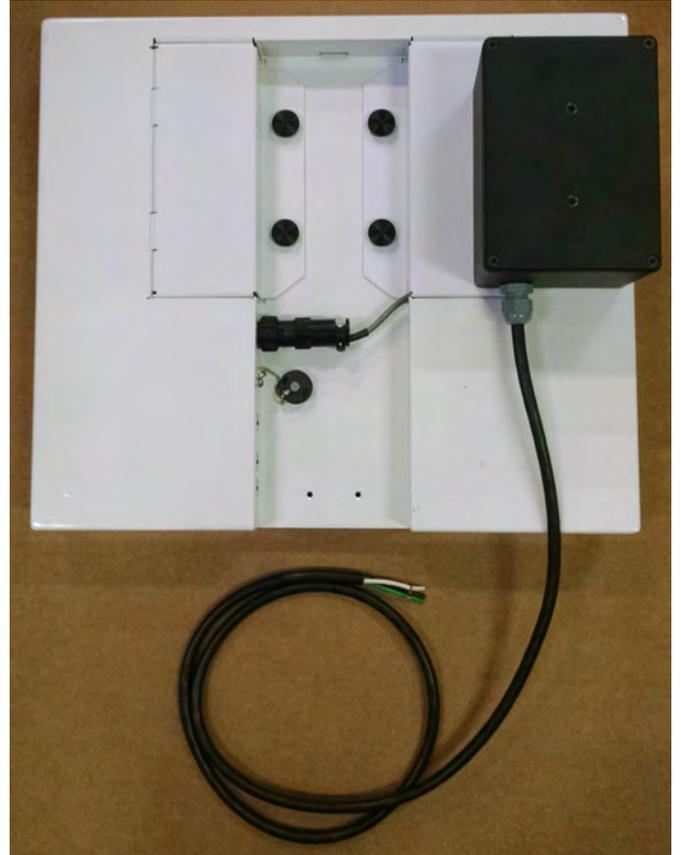
The mounting bracket for the unit can also be placed directly on the pole, so the battery box and unit are mounted separately. If this is done, the cable coming out of the door of the solar cabinet can be moved to the hole in the bottom of the solar cabinet. Make sure the cable from the battery box will reach the unit in the desired location. Put the plug from the hole in the bottom in the front door hole, and reinstall the screws that held the mounting bracket.



## AC Power - Shield 12, 15 and SpeedAlert 18

### Shield AC Supply

The unit's 120VAC supply is attached to the back of the unit.. The power is connected to the unit using the alternate power connector above the on-board controls. **CAUTION: High voltages present in AC Supply. Follow all applicable electrical codes when connecting the unit to the power line. Ground enclosure according to all applicable codes. Disconnect AC power before installation. Service should only be done by qualified personnel.**



### Mount the Display

Mount the display per the mounting instructions.

### Connect power to the AC supply.

Connect line, neutral and ground to the AC supply. Either use the supplied cord exiting the power supply, or use alternate wiring. If alternate wiring is used, be sure to use the white and black leads and connector on the supplied cord as a pigtail so the special power supply connector can be retained. Clip these leads with sufficient length to enable them to be connected to supply lines with wire nuts.



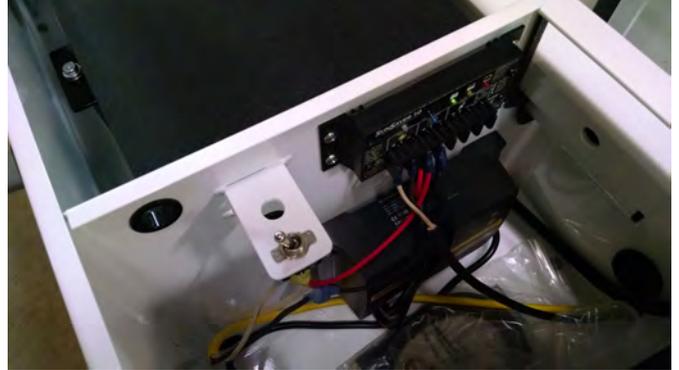
## ATS-5 Trailer Power for SpeedAlert, instALERT or Shield

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Trailer Power system and connecting units to trailer power

### Power the SpeedAlert 18 and Select Mode

Turn the SpeedAlert on with the switch. The display will come on to the same mode it was in when turned off.



### Trailer Power for Message Signs - Older signs

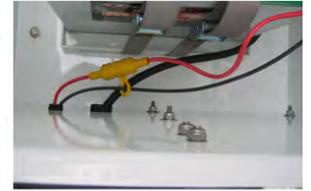
Older signs have the message sign power cord routed into the battery compartment. It is plugged into the mating receptacle to turn the power on or off. Line up the word *insert* on the plug with the triangle on the receptacle. Insert the plug and turn to lock.



instALERT Power Plug  
in Battery Enclosure

## Trailer Batteries

The trailer system voltage is 12VDC. The standard power supply is one pair of 235 Amp Hour deep cycle 6V batteries in series for 12VDC operation. With the proper battery power cable, a second pair of 235 Amp Hour batteries can be connected in parallel with the first pair. A 20A slow blow fuse is installed between the batteries and the load. Using batteries, cables or chargers not supplied by All Traffic Solutions will void the product warranty. The battery power level can be determined by looking at the power level displayed on the message sign start up, on ATS Mobile or using the SmartApps either locally or remotely.



## Trailer Battery Charging

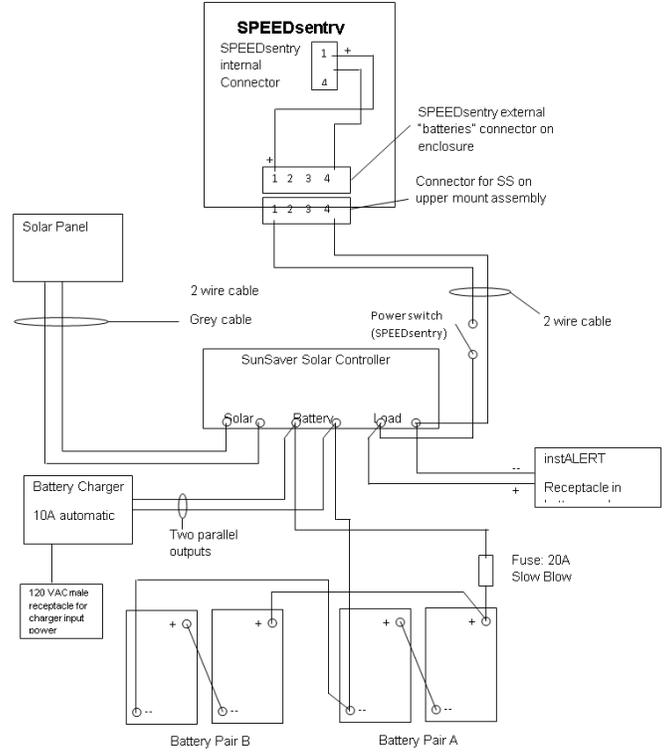
To charge the trailer batteries, connect a 120VAC supply to the external AC plug on the battery enclosure. The red light on the charger indicates charging in process, and the green light indicates a full charge.



Charger plug, 120VAC only

# ATS-5 Trailer Wiring Diagram

ATS Compact Trailer Wiring Diagram



The ATS trailer is a **12 VDC** system, comprising up to 2 pairs of 6VDC batteries in series.  
 The switch only controls the SPEEDsentry. The instALERT is simply plugged into the receptacle.

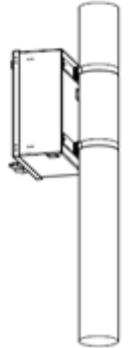
## AC Power - Shield, instALERT or SpeedAlert High Current

### AC Power for Speed Displays

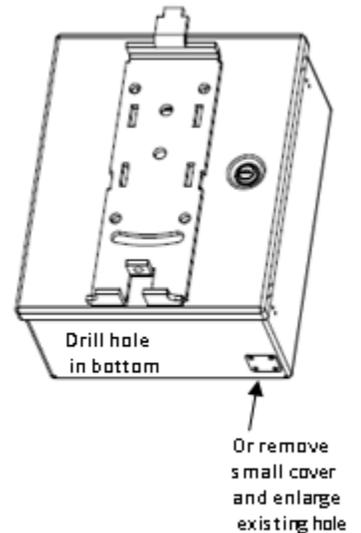
**CAUTION: High voltages present in AC Supply. Follow all applicable electrical codes when connecting the SPEEDsentry to the power line. Ground enclosure according to all applicable codes. Disconnect AC power before installation. Service should only be done by qualified personnel.**

### AC Power connections for Shield 12 and Shield 15, SpeedAlert or instALERT 18

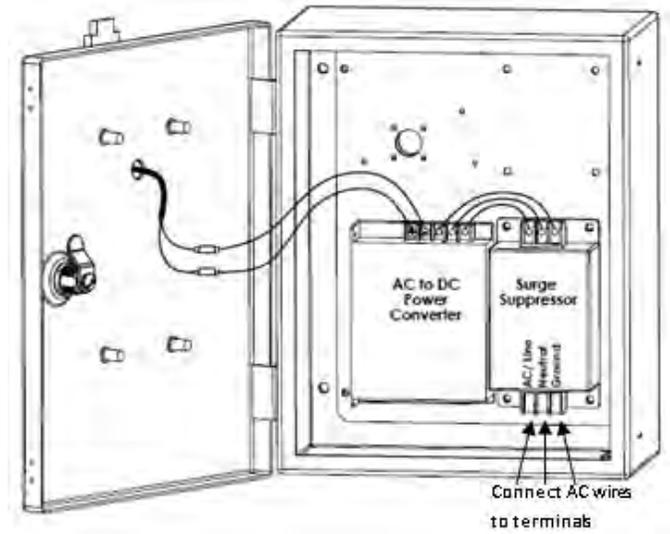
Mount AC supply to pole with band straps. Unit is NEMA 4 rated, but a sheltered mounting area is preferable to an exposed mounting area.



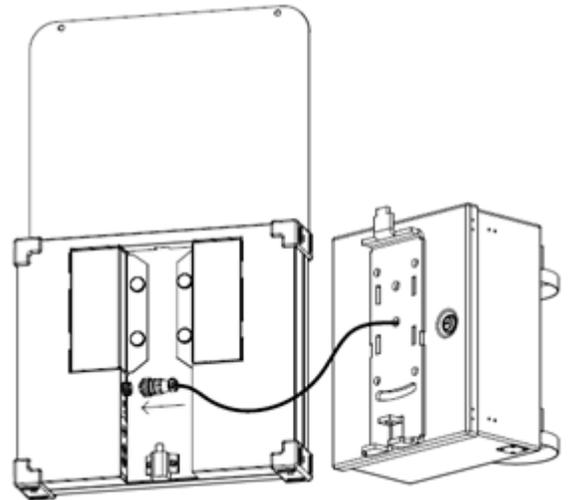
Drill a hole in the desired location on the enclosure to route the live AC wires. The bottom of the enclosure is recommended so that water does not seep in. Use the appropriate electrical cord grip (not provided) to secure the wires. Alternately if available, the square cover can be removed from the bottom of the box and the existing hole can be enlarged to whatever diameter necessary.



Attach #6 stud ring lugs to the ends of the AC line and connect each wire to the appropriate terminal on the surge suppressor.



Connect outer power cord to Shield power receptacle and mount Shield to attached bracket.



# Deployment

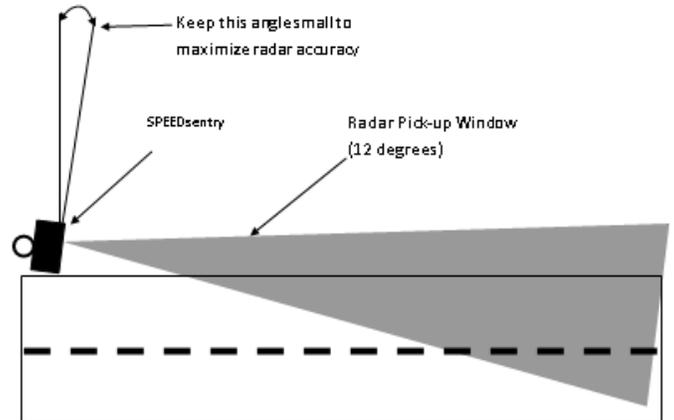
## Setup - SpeedAlert 18 Radar Message Sign

This section covers the setup and installation of the SpeedAlert 18 unit, including identifying a proper location, mounting the unit, hooking up the power, and positioning the “YOUR SPEED” sign. The SpeedAlert 18 offers flexibility in mounting and relocating the unit. The unit can be pole mounted with internal lithium batteries, lead acid battery with solar, AC or mounted on a trailer. The display is the same regardless of the power option. The universal mounting bracket allows multiple options for mounting including carriage bolts on a square or U channel pole (included), U-bolts (not included), or metal bands (not included).

### Identify Location

The sign mounts to a pole, a vehicle hitch, or a trailer. Pole-mounting options include a 4” aluminum pole, a U-channel pole, square pole and other available poles. Choose a location near enough to the road to allow the sign to face oncoming traffic as directly as possible. Pointing the unit with a smaller angle ensures greater accuracy of the radar. Mount the unit at a height of 6’ to 8’ to the center of the display for optimal performance. Avoid mounting the unit with direct sunlight on the face whenever possible. No matter the mounting option you choose, make sure the location prevents the unit from interfering with traffic.

NOTE: These same considerations also apply if you use a ATS-5 trailer.



### Install LFP Battery and Turn on Power

Install the LFP Battery and turn the power on to the unit. Make sure to use the short thumb screws for the battery cover. Set the speed limit for the road and the display mode if setting these using the on-board controls. See the On-Board Controls section for more information. Once installed on the bracket the controls are covered to prevent tampering. For other power options see the Power section of the instructions.



### Rotate the “YOUR SPEED” Sign into position (SpeedAlert 18)

With the supplied tamper proof Torx wrench, remove bolts and washers (2 each) on the outside edge of the “YOUR SPEED” sign. Do not remove the center bolt, as the sign rotates around this bolt. Rotate the “YOUR SPEED” sign to its upright position. Return the washers and the bolts to the holes in the bottom of the sign and



tighten with the Torx wrench to secure the sign. Reverse steps to rotate the sign back down for transport. If not worried about tampering, the tamper proof screws can be replaced with the provided thumb screws. Make sure to not confuse these with the battery cover screws as they are too long for the battery compartments and will damage the unit if used for the battery covers.

**NOTE:** During operation in the Speed Limit Sign mode, replace the “YOUR SPEED” sign with a “SPEED LIMIT” sign to prevent confusion. More information on this mode is provided in the operation section.

**NOTE:** During operation in “stealth mode” with data collection on but with the display off the “YOUR SPEED” sign can be removed. Make sure to keep track of all the hardware from the assembly that allows sign rotation.

### Fasten Mounting Bracket to Existing Pole

Remove the mounting bracket from the unit by unlocking it and lifting it out of the unit. Attach the bracket to a pole with carriage bolts, nuts and washers, U-bolts or bands. Put the nuts on the bracket side of the pole so they are covered up by the unit when it is locked in place to prevent tampering. Using the lower slot, adjust the bracket so the bracket is level from side to side.



## Bracket adjustment for tilted poles

If needed you can also insert 1/4-20 bolts into the jack holes to lift the bracket off a tilted pole to make the unit align to the road and improve visibility. Use the provided thumbscrews or other screws, but make sure they do not extend too far and prevent the unit from sitting flush on the mounting bracket.



## Hang the Unit

Hang the unit by hooking the notch in the top of the mounting bracket area on the sign onto the tab on the top of the mounting bracket. Tilt the unit down and lock the unit into place by pushing the lock pin into place. The unit is now operational. For removal, unlock the lock pin, tip the bottom of the unit out and lift off the mounting bracket tab.

## Trailer Mounting or Mounting using Custom Brackets

NOTE: Always disconnect the power cord before removing the sign from the trailer. The SpeedAlert 18 mounts to the ATS-5 trailer using tamper proof hardware. In most cases the unit will come pre-mounted unless otherwise specified. In the case that the unit needs to be dismantled, remove the mounting bracket with the key, disconnect the power cable, and unscrew the 4 tamperproof screws using the supplied torx key. The tapped holes on the back of the unit can also be used to mount the unit to customer made brackets or to retrofit the unit to existing trailers for trade-in applications.



# Controls and Settings

## Control and Interface Options Explained

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### Control Options for all ATS Signs

There are multiple ways to control each ATS Sign. This chapter provides an introduction to the various methods and where to find instructions for each method.

### On-Board Controls

All signs have some version of on-board controls so that the most basic sign settings can be adjusted without any interface device. On speed displays the speed limit and display mode can be set. On message signs, the display mode and message can be selected. These controls are covered in each sign specific manual.

### PC with Bluetooth or USB Connection

A PC can be used to change any settings on the sign. The standard method, included with all signs, uses the provided USB cable to connect to the signs. Optional wireless bluetooth communication is available for all units to simplify this connection. The software used on the PC is a local version of the ATS web-based SmartApps interface. **The first time you use this interface, you must be connected to the internet so that the SmartApps website can be opened and a local version of the web page installed on your PC.** This allows for use whether there is an internet connection available or not. The web-based software connects to the unit with ATS Assist software which must be installed on the computer that will be connected to the sign.

For details on PC controls, see the PC with Local SmartApps Control Manual.

### ATS Mobile

ATS Mobile is an app for Android devices. It will work on most android devices, whether a phone or tablet. ATS Mobile communicates with the sign using bluetooth wireless technology. It also talks to the ATS servers using wifi or cellular connections so that your traffic data and messages are stored, managed and backed up on the server. With ATS Mobile you can change just about any setting on the signs and download traffic data. A standard set of reports is available to analyze traffic data collected using ATS Mobile on the SmartApps website if subscribed to SmartApps or if the unit has the traffic data option.

For complete information on ATS Mobile, see the ATS Mobile for Android Instructions.

### SmartApps Web-Based Remote Communication

SmartApps is the All Traffic Solutions web-based interface used to manage all ATS products and a department's traffic safety program. The subscription SmartApps service provides online web-based remote equipment management through the sign's included cellular connection. The service includes mapping of equipment and data locations, remote alerts, imaging and reporting on collected data. A limited version of the SmartApps interface is used for a PC connected locally to the sign with a USB cable or Bluetooth, one of the options mentioned above. All equipment can be upgraded to the SmartApps remote service. Call All Traffic Solutions for more information.

For complete information on SmartApps, see the SmartApps Web-Based Management Instructions.

## **PDA - Archive**

Older signs and some Factory Recertified signs can be controlled using a Windows based PDA and the Pocket ATS Software. Most settings on the sign can be controlled using Pocket ATS Software. When traffic data is collected with the PDA it must be synced to a PC and analyzed using a client based version of ATS software.

For complete information on Pocket ATS, see the Pocket ATS for PDA with Windows Mobile Instructions.

## **Client Based PC Software - Archive**

For legacy units (most before October 2010) there is software that must be installed on a PC. Using this software, sign settings can be modified and traffic data can be analyzed. The PC is connected to the sign with a USB or serial cable. There is no bluetooth wireless option for the client based software Contact ATS with questions regarding this legacy software.

# On-Board Controls

## SpeedAlert 18 and instALERT 18 On-Board Controls

### On-Board Controls set the speed limit (if applicable) and display mode.

The SA18 and iA18 on-board controls are located under the mounting bracket. Remove the mounting bracket and locate the control panel. There are three buttons on the back of the sign to provide control over the sign mode and the settings for the selected mode.

The **Power** button turns the unit on or places it in standby. When supplied with power it will always return to the last mode and settings for this mode. If the unit will be stored for a period, disconnect the battery or it will get drained over time

Set the speed limit by pressing the **Speed Limit** button until the desired speed displays on the front display. The first press shows the current setting, and then each press increments the speed limit by 5 MPH (KPH for metric units.)

Set the display mode by pressing the **Display Mode** button until the mode displays on the front of the unit. See the next section for details on the mode.

**Note:** After 5 minutes after powering the unit on, these buttons will automatically deactivate to prevent unwanted tampering. To reactivate the buttons the unit must be powered off and then powered back on.



### Power On / Off

When the sign is powered on it will go through a startup routine and display the introduction messages. The unit does not lose data when the power is disconnected.



All Traffic Solutions

Unit Name and Battery Level Time

### Select the Mode

The **Display Mode** button scrolls through the sign modes. The Speed Limit button scrolls through settings applicable to the selected mode. All modes will display, but some require the internal radar of the SA18 as noted.

**1. Move Sign:** The first press always accesses the *Move Sign* function if the sign is subscribed to the TrafficCloud. This function makes the sign call in and tell the server that the sign has been moved to a new location. To



activate this function, press the top button for 5 seconds. The next press of the Display Mode button displays the current sign mode setting. To leave this mode in effect, let the sign revert in about 5 seconds to the current display for this mode. To select another mode, press the button until the desired mode is displayed and let the sign revert to the display for this selected mode.

**2. Schedule Mode:** After the move sign mode, the sign can be taken out of schedule mode if enabled.

Schedule mode is entered through SmartApps, ATS Mobile or with the PC. If the sign is not in schedule mode, it offers the following additional modes:

**3. Single Message Mode:** This is the standard single message mode that displays one message at a time. Load messages into the sign's memory using either the TraffiCloud, ATS Mobile or PC. Scroll through all messages in the sign's memory using the Speed Limit button. Units with radar will record traffic data no matter the message displayed.

**4. All Message Mode:** The sign will display all the messages in the sign's memory in the order they are saved. This lets the sign display messages with many screens by combining multiple messages into one display. All Messages Mode only displays the messages loaded using the multiple message load function and not the single display now message. Units with radar will record traffic data no matter the message displayed.

**5. Dependent Message Mode (SA18 Radar Message Sign only):** In this mode, the sign gets speed data from the internal radar and displays speed dependent messages. The Speed Limit button sets the speed limit, scrolling through speeds in 5 MPH increments. To set the speed, stop scrolling at the desired speed and let the sign revert to the current display for this mode. To select the dependent message group use the TraffiCloud, Android with ATS Mobile or PC.

**6. Speed Display Mode (SA18 Radar Message Sign only):** The sign will display passing vehicle speeds using the internal radar. The Speed Limit button sets the speed as it does in the dependent message mode, along with the demo option.

**7. Display Off (Stealth) Mode (SA18 Radar Message Sign only):** In this mode the sign will collect data with no display at all. It is the same as having a blank message on the sign. The "Your Speed" sign may be removed if desired to make the unit less noticeable.

**8. Speed Limit Mode:** The sign will display the speed limit. The Speed Limit button sets the speed limit as it does in the dependent mode option.

## Demo Mode

If you are in Speed Display, Dependent Message or Speed Limit mode, the Speed Limit button will set the speed limit. As the sign rolls over from 150 MPH to 5 MPH, there is a demo mode option to display preset speed numbers when there are no vehicles present. Demo mode will be active at the last set speed limit for demoing dependent messages. To take it out of demo mode, select a new speed limit. Demo speeds are recorded as data, so do not put the sign into demo mode if the data will affect a current traffic study.

## Move Sign Activation

When using SmartApps Remote Management, the sign can be triggered to tell the server that it has moved. To send the *move sign* signal, press the mode button and the first option is to move the sign. Press the other button for 5 seconds to trigger the signal. Remember to reactivate the buttons if they have timed out and stopped operating.



# Care & Maintenance

## Warranty

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### All Traffic Solutions Warranty

All Traffic Solutions warrants this product to the original purchaser to be free of manufacturing defects for a period of 1 year and ATS reserves the right to repair or replace the warranted part or parts at its sole discretion. The following items are specifically not covered under warranty.

- The warranty does not cover misuse or abuse that includes using the product in ways for which it was not intended and vandalism.
- The warranty does not cover damage to the product due to incorrect installation or operation nor does it cover normal wear and tear such as frayed cords or cables, broken connectors, scratched or broken enclosures.
- This warranty does not cover batteries that are allowed to freeze.
- The warranty is void if any physical changes are made to the product by anyone but an ATS authorized service representative.
- During the warranty period, there will be no charge for parts or labor. If components require factory service, purchaser shall return failed parts to the factory or authorized service location, freight prepaid. ATS will pay to return the parts.
- If damage to the product during the warranty period is determined to be due of a non-warranted nature, ATS reserves the right to charge for damages resulting from abuse or extraordinary environmental damage to the product at rates normally charged for repairing such products not covered under warranty
- ATS is not responsible for any consequential damages and as an expressed warning, the user should be aware that harmful personal contact may be made with the product in the event of violent maneuvers, collisions, or other circumstances even though the device(s) are used according to instructions. ATS specifically disclaims any liability for injury caused by the product in all such circumstances.

**ALL TRAFFIC  
SOLUTIONS**



*A sign of the future.™*

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# Battery Maintenance and Warnings

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## Battery Maintenance for Lithium Ion and Lead Acid Batteries

### Lead Acid Battery Maintenance

**Battery maintenance:** In order to maximize the life of your batteries and their ability to hold a charge, you should follow several important steps in using and storing lead acid batteries

- Batteries should be placed on charge immediately after use regardless of the discharge status. Failure to do so will shorten the battery's life.
- The less the battery is drained before recharging, the longer the expected life of the battery. Charging the battery more often, with a lower discharge, will extend its life.
- Whenever the batteries are not in use, even if they are mostly charged, it is always recommended to fully charge the battery to maintain the charge and preserve the battery's life. If the batteries are going to be stored for an extended period of time, they should be fully charged before being stored and charged up regularly (at least monthly.) Store the battery in a cool area, not directly on concrete.
- Charge the battery in a cool location. The cooler the battery is, the better it will charge.
- During use, keep the battery as cool as possible. This will extend the battery's charge. If you have a choice between a shaded location and a direct sun location, choose the shade if practical. This is not possible if using a solar panel.
- To recharge the batteries, plug a 120V extension cord into the plug in the side of the battery box. This will charge all the enclosed batteries. The display on the installed battery charger will indicate when the batteries are fully charged. Use of any battery charger other than the unit supplied will void the warranty.
- **In the winter, it is important that the batteries are protected from freezing.** It is best to store the batteries where there is no chance of freezing. If this is not possible, keep the batteries charged while in storage. A fully charged battery can resist freezing better than one with a low charge. If the trailer is to be stored inside and the solar panel will not be able to maintain the charge on the system it is necessary to charge the batteries regularly. **Batteries that are allowed to freeze are not covered under warranty.**
- If your trailer is equipped with a solar panel, the panel should always be connected to the solar controller, which will allow the batteries to remain fully charged whenever the trailer is in transit or in storage outdoors. Keep the solar panel clean for optimal charging.
- If flooded trailer batteries are removed from the battery box, they must be stored upright.
- For flooded trailer batteries, check the battery water level when charging. If it is low, fill **using distilled water only.**
- Clean excessive corrosion on the terminals with a mixture of baking soda and water. Make sure battery terminals are tight.
- To test the charger: Measure the voltage on the batteries. Plug in the charger and the voltage should go higher.
- To test the solar panel: On a sunny day, check the voltage on the solar connection on the solar controller. It should be higher than the voltage on the batteries.

### Lead Acid Battery Warnings

**Lead based batteries can be dangerous. Note the following precautions:**

- **Always charge batteries in a ventilated area.**
- **Never smoke or allow a spark or fire in the vicinity of a charging battery.**
- **The batteries should only be charged with the provided automatic charger to prevent overcharging. The display on the battery charger will indicate when the batteries are fully charged. Use of any**

**battery charger other than the unit supplied will void the warranty.**

- **Do not use the charger if any of the cords or electrical connections on the charger or battery are damaged. Contact ATS for replacement of damaged parts.**
- **Never try to charge a battery with any physical damage.**
- **Be careful of shorting the terminals of the battery inadvertently with a tool, jewelry or any other conductive item. Shorting the terminals could cause the battery to explode.**
- **Monitor charger and battery frequently during charging to make sure both are functioning properly.**
- **Do not allow the batteries to freeze. Batteries that have been frozen are not covered under warranty.**
- **Never attempt to charge a frozen battery.**

## Options

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### Options available for all Shield Radar Speed Displays, instALERT Variable Message Signs and SpeedAlert Radar Message Signs

TraffiCloud Remote Management System - Includes

- Data Logging for all units with radar
  - Track vehicle speeds and record approximate total vehicle counts and counts by speed range
  - Download data remotely with SmartApps using the cellular link, or locally with a USB cable or via a Bluetooth wireless connection
- Pictures: All units have a camera installed. Pictures are taken upon thresholds you set, and can be downloaded locally or remotely. To use the pictures option you must enable the Pictures Hardware.
- Speed Dependent Messaging: Standard in SpeedAlert units or combine a speed display and an instALERT Variable Message Sign. Provides speed dependent messages specific to the vehicle's speed.
- Speed-dependent relay contact closure
- Tamper alarm with remote alerts

Speed Displays and Radar Message Signs:

- Violator strobe option (speed displays only): Flashing strobe integrated into display to attract attention of violators
- Metric display, two digit on 12" units and including hundreds digit on SHIELD 15.
- "YOUR SPEED" full wrap sign.
- Violator horn speed-dependent alert for workers or pedestrians near the sign, warning of vehicles traveling at excessive speed in their vicinity

Message signs:

- POWERcase rugged portable power supplies: PC 36 with 36 Amp Hour battery, 120 VAC battery charger, 12VDC inverter for in-vehicle charging; or PC 26 with 26 Amp Hour battery and 120 VAC battery charger
- Portable post to mount display anywhere
- Hitch mount to mount display to a vehicle

Contact ATS for more information on any of these options. All units can be upgraded and in some cases traded-in on new equipment