

Driver Feedback Sign Installation Guide

Below is an installation guide for RTC Manufacturing Inc.'s Driver Feedback Signs. **Note: For safety purposes, always disconnect the Battery/Solar or AC Power wiring when moving and connecting wiring in an electrical environment.**

Please follow the steps below.

I. DETERMINE ENCLOSURE TYPE

RTC has two Driver Feedback Sign enclosure types, detailed below. Identify the enclosure type that you are installing and follow the steps for the appropriate enclosure on the following pages.

TYPE 1: RTC's DFS Standalone Power Enclosure is a low-profile, all-inclusive cabinet that integrates the radar display board, batteries, mounted solar panel, and solar regulator. It has additional room for the optional AP22 Time Switch, Guardian, and M2M cellular modem. The enclosure is manufactured with the popular RTC hinge bracket for quick and easy installation on any pole type. You can see a field-installed photo below.



TYPE 2: RTC's DFS Add-On Enclosure is an ultra-thin radar display enclosure that requires power from a separate cabinet. This option is designed to add a DFS to an existing school zone flasher system with full AP22, Guardian, and M2M capability. You can see a field-installed photo below.





DFS STANDALONE ENCLOSURE INSTALLATION STEPS

STEP ONE: IDENTIFY CONTENTS

First, verify that you've ordered and received the standalone enclosure. This enclosure should have latches and hinge open.

Inside the enclosure will be a component panel with any components that were ordered for the DFS (AP22, M2M cellular modem, DFS communication circuit board, and/or Guardian board). If any or all of these components were ordered, they will be pre-wired together with the actual radar board. You will also notice battery quick-connect wiring leads and ring terminals to wire to the battery terminals later in the installation. The RTC Hinge Bracket will be secured to the back of the enclosure and a 3/16" Allen wrench will be taped to the bracket.

The batteries for the DFS will be shipped separately. The solar panel/mount and mounting gimbal or pole cap (for top-of-pole or side-of-pole mounting locations, respectively) will also be shipped separately.

STEP TWO: MOUNT THE HINGE BRACKET

The RTC Hinge Bracket is designed to make the mounting of the DFS quick and easy. Use the 3/16" Allen wrench to loosen and remove the bracket screw, then lift to remove the pole-side of the bracket. Using banding material, mount this side of the bracket (male hinge pins facing up) to the pole at the desired height and orientation*.

**Note: The radar shall be oriented at the center of oncoming traffic ~100' up the roadway. The manufacturer suggests that the radar be placed no lower than 3' above the roadway and 5' off the ground. MUTCD requires regulatory and warning signs to be no lower than 7' off the ground.*

If you are planning on running solar wiring through the pole, you can use the hole in the bracket as a template to drill a hole in the proper location.

STEP THREE: MOUNT THE SOLAR PANEL

Note: Solar Panels shall be installed facing directly south at 45° (southern states) or 60° (northern states) angles to the sky and be free from any shade obstruction (bridges, trees, poles, etc.) to get proper usage. Solar panels installed improperly will lead to battery drainage and eventual damage.

A) For round pole, top-of-pole mounting, secure the solar panel mount to the top-of-pole gimbal by removing the nut and washers on the gimbal bolts, sliding the two bolts on the gimbal through the holes on the solar mount (use the top hole and one of the bottom three holes to orient the solar panel at the proper angle, and then using the previously removed nut and washers to tighten the solar panel mount to the gimbal (nut – lock washer – washer – solar mount – gimbal). Run the solar wiring through the wire grip on the gimbal. Then put the gimbal on the top of the pole and face the solar panel directly south. Use the set-screws on the gimbal to secure the gimbal to the pole. Finally, tighten the wire grip on top of the gimbal.



B) For side-of-pole mounting, use banding to secure the side-of-pole bracket to the pole as far up the pole as possible. The solar panel should face directly south. Loosen the two nuts on the mounting bracket to adjust the angle of the solar panel and then tighten the nuts. Tighten the two nuts once the proper angle has been set. If desired, run the solar wiring through the wire grip on the top-of-pole cap. Secure the top-of-pole cap to the pole using the set-screws on the cap. The short distance between the ears on the cap should fit flush with the solar mount. Finally, tighten the wire grip on top of the cap.

STEP FOUR: MOUNT THE DFS ENCLOSURE

Set the female bracket hinge openings on the back of the DFS Enclosure on top of the hinge pins that are now attached to the pole. The weight of the enclosure should be fully supported by the bracket.

STEP FIVE: INSTALL & CONNECT BATTERIES

Place the batteries on top of the shelves in the enclosure. Disconnect the white battery lead quick-connector. Use the pre-crimped ring terminals to connect the wires to the batteries. Once all of the batteries have been wired, reconnect the white battery quick-connector. The DFS should power up and run a brief start-up cycle.

STEP SIX: CONNECT SOLAR WIRING

Run the solar wiring through the opening in the hinge bracket and enclosure. Cut to size and/or crimp the solar wires to forks, if necessary. Then, connect the negative wire to SOLAR (-) and the positive wire to SOLAR (+) on the Guardian board.

STEP SEVEN: PROGRAM TIME SWITCH ADDRESS AND TIGHTEN BRACKET

Using the keypad on the time switch, press 22*. This will take you to the time switch address screen. The time switch address is made up of a Master Group, Group, and Location Number. The address and modem IMSI pairing in the field must match the address and IMSI pairing in RTC Connect. Use the numbers on the keypad to enter the correct Master Group, Group, and Location number, using the * key to advance the cursor.

Once the time switch is properly addressed, you can close the enclosure and tighten the hinge bracket using the screw and Allen wrench.



DFS ADD-ON ENCLOSURE INSTALLATION STEPS

STEP ONE: IDENTIFY CONTENTS

First, verify that you've ordered and received the add-on enclosure. This unit is primarily the sign, radar board, hinge bracket, and small housing on the back of the sign. These parts will all be assembled and shipped together. There will be a power wiring harness and (if cellular communication is being utilized) a specialty harness coming from out of the housing, through the hinge bracket. A separate RTC comm board will also be needed if M2M cellular communication is going to be used with the DFS.

STEP TWO: MOUNT THE HINGE BRACKET

The RTC Hinge Bracket is designed to make the mounting of the DFS quick and easy. Since the power and specialty harnesses have limited wiring length, its imperative that the cabinet you are powering the sign from is directly behind (or as close as possible to) the RTC Hinge Bracket / DFS.

Use the 3/16" Allen wrench to loosen and remove the bracket screw, then lift to remove the pole-side of the bracket. Using banding material, mount this side of the bracket (male hinge pins facing up) to the pole at the desired height and orientation*.

**Note: The radar shall be oriented at the center of oncoming traffic ~100' up the roadway. The manufacturer suggests that the radar be placed no lower than 3' above the roadway and 5' off the ground. MUTCD requires regulatory and warning signs to be no lower than 7' off the ground.*

If you are planning on running solar wiring through the pole, you can use the hole in the bracket as a template to drill a hole in the proper location.

STEP THREE: MOUNT THE DFS ENCLOSURE

Set the female bracket hinge openings on the back of the DFS Enclosure on top of the hinge pins that are now attached to the pole. The weight of the enclosure should be fully supported by the bracket.

STEP FOUR: INSTALL THE RTC COMM BOARD (IF NECESSARY)

Note: Before you begin working with cabinet wiring, disconnect power.

If cellular communication is being used for the Driver Feedback Sign, an RTC Comm Board needs to be installed in the cabinet and incorporated into the RTC cabinet system via specialty harness. Use the provided screws to secure the RTC Comm Board inside the cabinet.



STEP FIVE: WIRE THE POWER HARNESS AND SPECIALTY HARNESS (IF NECESSARY)

Note: Before you begin working with cabinet wiring, disconnect Battery/Solar or AC power.

The specialty harness and power harnesses can be connected first in the cabinet providing power and threaded through the pole to the back of the sign or vice versa, depending on your choice.

Regardless of which side gets connected first, make the following specialty harness connections (only if M2M communication is being utilized):

- Harness Label "GATEWAY J1" (part #504598) is connected to the pin header J1 on the RTC Comm board. It has a branch labeled "MODEM" that connects to the modem power and DB9. It has another branch labeled "RADAR" that passes through the pole and connects to the "DB9 PWR" on the back of the radar board.
- Harness Label "GATEWAY J2" (part #504599) is connected to the pin header J2 on the RTC Comm board. It connects to the J1 pin header on the Guardian board (if applicable) and also branches off to the DB9 on the AP22 Time Switch (if applicable). If there is an existing harness for AP22/Guardian/M2M communication, the new harness replaces the old one (part #507403H[2]).

The Power Harness also needs to be passed through the pole. The red wire connects to Load (+) on the solar regulator and the black wire connects to Load (-). The other end of the power harness connects to the Power pin header on the back, lower, center of the radar board (should be shipped preconnected).

STEP SIX: RECONNECT POWER

Reconnect power to the cabinet. The DFS should power up and run a brief start-up cycle.



DATA RETREIVAL AND SETTINGS CHANGES IN RTC-CONNECT.COM

If a modem is being used with your Driver Feedback System, speed data/analytics and settings changes can be done through RTC-Connect.com

At this time, if a modem is not being used, speed data/analytics are unavailable and settings changes cannot be made.

To access RTC-Connect.com we recommend using an updated version of Google Chrome. Once you've browsed to <https://www.RTC-Connect.com>, you'll encounter a log-in screen. Upon purchase of modems, you will receive an Agency Name and Password for RTC Connect. You can log in using the Agency Name and Password or a unique username and password created within the software. *For more detailed information on RTC Connect, please download the software help guide at the bottom of RTC Connect web pages, or directly from the RTC-Traffic.com website.*

ADDING GROUPS AND LOCATIONS

Once you've logged in, you'll need to begin the process of adding groups and locations to the agency. Click on "EDIT" in the navigation menu, then click on Groups.

Groups are made up of one or more Locations that have the exact same time switch scheduling. If your Driver Feedback Signs do not incorporate AP22 Time Switches, you can just add one Group. If your Driver Feedback Signs do incorporate AP22s, create a Group for every unique time switch relay schedule that exists in your agency.

To add a Group, click on the plus (+) icon next to "Groups" in the blue navigation panel. Fill out the Group Name, Master Group Number, and Group Number Fields, then click the yellow "Create New Group" button. You should see the Group Name appear in the Groups column of the navigation panel. Repeat this process for all of the Groups in your agency.

After the necessary Group(s) have been created, click on "EDIT" in the navigation menu, then click on Locations. A Location represents an individual device, in this case a Driver Feedback Sign.

Click the plus (+) icon next to "Locations" in the blue navigation panel. Fill out the appropriate fields, giving your location a unique name and being sure to assign it to the correct Group you created previously. Remember, all Locations within a Group will be given the same relay scheduling (if applicable).

When creating a location, it is important to assign the correct modem IMSI number that was shipped with the DFS to the Location. When installing the devices in the field and creating the Locations in RTC Connect, pairing the IMSI number will ensure the communication methods are targeted at the correct Driver Feedback sign.

For more information on the other Edit Location fields, please download the Software Help Guide at the bottom of the page.

Once the Add Location fields have been filled out, click the yellow "Create Location" button. Repeat this process for all of the Driver Feedback Signs in the agency.



EDITING SETTINGS

After all Groups and Locations have been created, click on “DEVICES” in the navigation menu, then click on “Driver Feedback Signs.”

In the blue selection panel, you should see a list of the Driver Feedback Sign Location names. If you don't see all of the names, check to make sure the correct modem IMSI number has been chosen on the Edit Location page.

Click on a Location name in the blue selection panel. On the right side of the screen, you'll see the user-definable settings. Use the drop-down menus to select the speed limits for during school hours (time switch relay ON times) and during non-school hours (time switch relay OFF times). If no time switch is present at the location, the location will use the non-school hours settings.

The Speed Limit is the speed that the display digits will begin blinking and the strobe will activate (if enabled). It is also the detected speed that will be considered a “Violator” in the software. The min/max display speeds are the speed range that the sign display digits.

Clicking the “Advanced” button allows you to adjust the sensitivity of the radar (50 is recommended) and toggle between displaying the strongest signal detected (usually the closest, largest vehicle) and the fastest speed detected.

Clicking “Update” saves the settings to the database and retrieves the latest DFS data from the sign. **The settings will be sent to the sign during the next time switch relay change.** This will take place automatically if the location is running a day plan with steps or can be done immediately by issuing a Manual ON/OFF step.

Be sure to adjust the settings for each Driver Feedback Sign by selecting it from the blue selection panel.

RETRIEVING / VIEWING DATA

The Driver Feedback Sign syncs its data with RTC Connect manually once every 24 hours. You can manually sync the data by clicking on the yellow “Update” button.

You can view the different graphs and data displays by clicking on the different tabs in the center of the web page. You can view different dates and number of days at a time by adjusting the parameters found beneath the graphs. Data at the sign is collected in 5-minute bins. You can adjust the granularity of displayed data into 5, 10, or 15 minute segments using the granularity tool.

On the All Data tab, clicking the yellow “Generate Report” button exports whatever data is displayed in the graph into spreadsheet form. You can manipulate the data from within the spreadsheet.