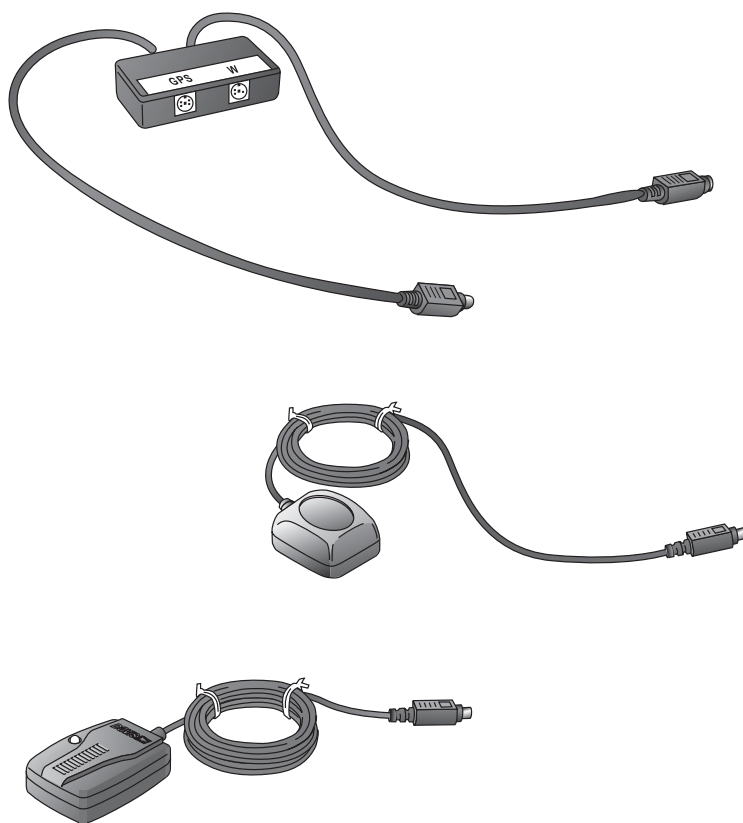# DriveRight®

GPS/Wireless System
Installation Manual

Includes:

GPS/Wireless Interface Module (#8127)

GPS Module (#8128)

Wireless On-Board Module (#8129)

Regulatory Compliance

E Mark

This product complies with the essential protection requirements of the EC EMC Vehicle Directive 95/54/EC.

CE EC EMC Compliance

This product complies with the essential protection requirements of the EC EMC Directive 89/336/EC.

FCC Part 15.247

FCC ID: OUR-XBEEPRO

IC RSS-210

IC ID: 4214A-XBEEPRO

FCC Part 15 Class B Registration Warning

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to try to correct the interference by one or more of the following measures:

· Reorient or relocate the receiving antenna.

· Increase the separation between the equipment and receiver.

· Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

· Consult the dealer or an experienced radio/TV technician for help.

Changes or modification not expressly approved in writing by Davis Instruments may void the warranty and void the user's authority to operate this equipment.

GPS/Wireless System Installation Manual

This manual provides the instructions necessary to install the DriveRight GPS/ Wireless Interface Module (#8127), GPS Module (#8128), and the Wireless On-Board Module (#8129) with your DriveRight 600 or 600E device.

Refer to the *DriveRight 600 User's Guide* or the *DriveRight 600E User's Guide*, and the *DriveRight Fleet Management Software Online Help* for instructions on how to configure and use the components in the GPS/Wireless System.

Note: The GPS Module must be enabled in the DriveRight device prior to installation via the DriveRight Fleet Management Software (FMS) for the module to function.

The Wireless On-Board Module itself must be configured in the Fleet Management Software for your fleet before installation in a vehicle. See the *FMS Online Help System* for information configuring both of these modules.

Some components of the GPS/Wireless System may have compatibility issues with certain DriveRight devices. The compatibility limitations in the product families are indicated in the chart below:

Device	GPS Device	Wireless Device
DriveRight 600 #8156	GPS Module #8157	Wireless On-Board Module #8129[*]
DriveRight 600E #8126	GPS Module #8128[*]	Wireless On-Board Module #8129[*]

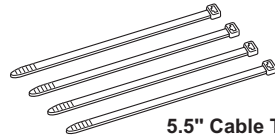[*]*Requires one #8127 GPS/Wireless Interface Module per vehicle installation.*

Note: The GPS Module (#8128) is only compatible with the DriveRight 600E device (#8126). It cannot be used with older DriveRight devices. The GPS/Wireless Interface Module (#8127) and Wireless On-Board Module (#8129) are compatible with both DriveRight 600 and 600E devices but not with earlier DriveRight models.

Components and Mounting Hardware

The following mounting hardware kit is included with GPS/Wireless Interface Module (#8127) and can be used with all three components:
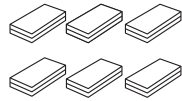
Velcro® Tape (6 pair)

5.5" Cable Ties (4)
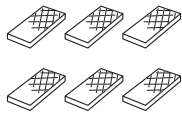
Double-Sided Foam Tape (6 strips)
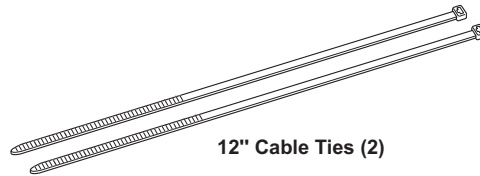
12" Cable Ties (2)

The GPS/Wireless Interface Module (#8127) should come with the mounting hardware (above) and the component shown below:
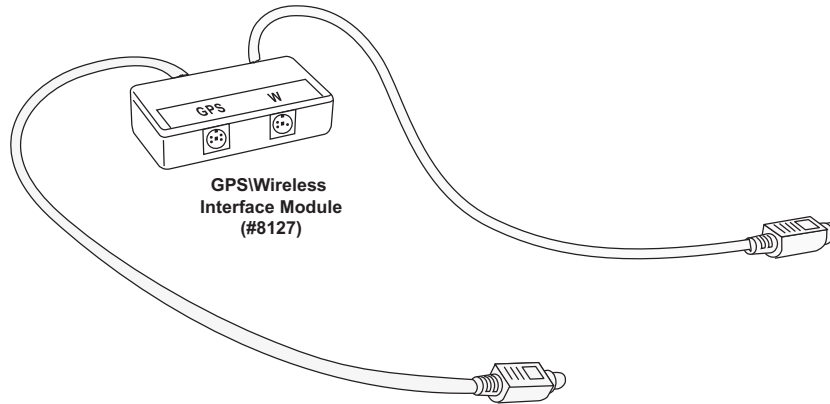
GPS\Wireless Interface Module (#8127)

The GPS Module (#8128) is sold separately and comes with the component shown below:
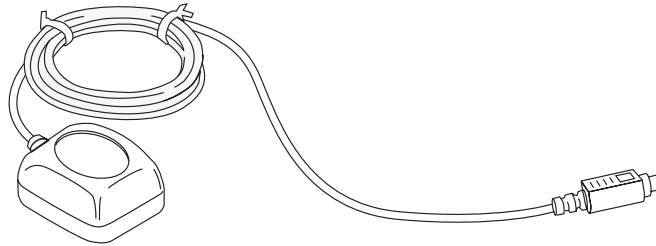
**GPS Module
(#8128)**

The Wireless On-Board Module (#8129) is also sold separately and comes with the component shown below:
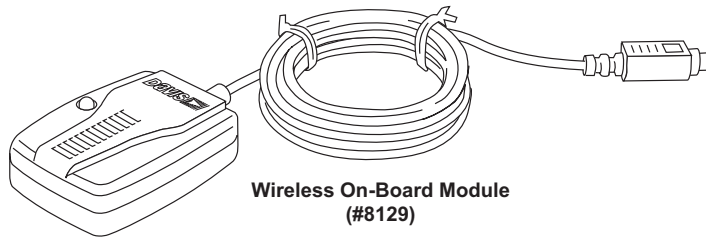
**Wireless On-Board Module
(#8129)**

GPS/Wireless System Wiring Diagram

The following wiring diagrams display all the possible wiring solutions for connecting the GPS/Wireless Interface Module, GPS Module, and Wireless On-Board Module to an existing DriveRight 600 or 600E system.
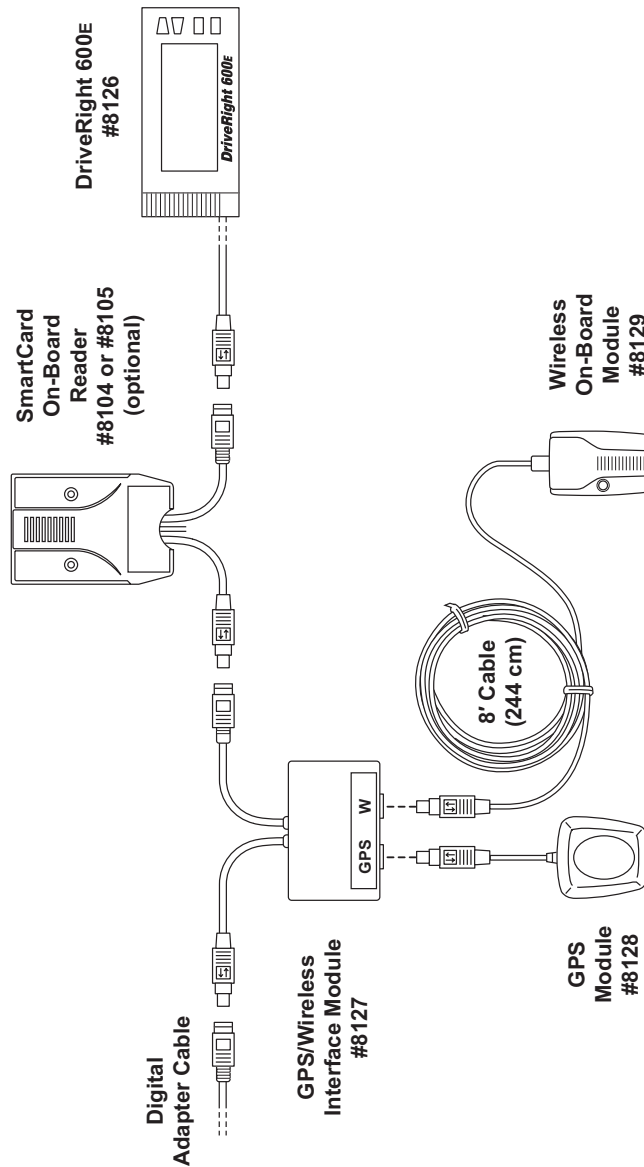
Wiring the GPS/Wireless System with a DriveRight 600E
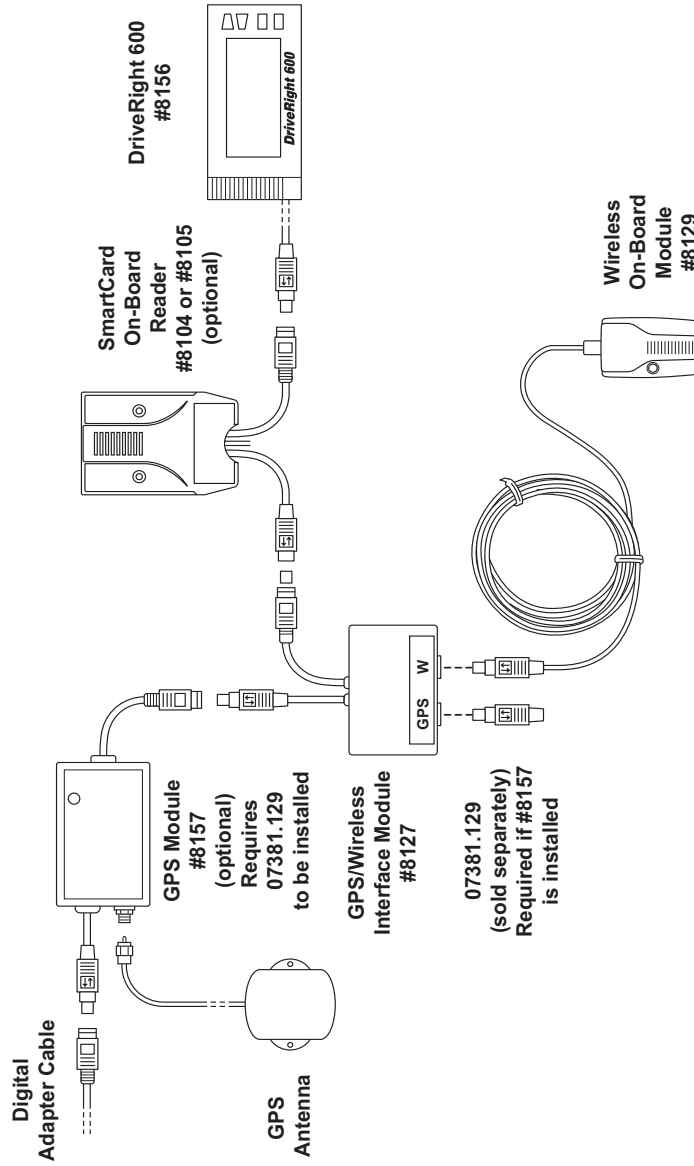
Wiring the GPS/Wireless System with a DriveRight 600

Note: If installing the GPS/Wireless System with a DriveRight 600, use an #8157 GPS Module instead of the #8128 GPS Module and connect it to the GPS Wireless Interface Module as shown on the previous page. Make sure to plug part #07381.129 (sold separately) into the connector labeled "GPS" on the GPS/Wireless Interface Module. If connecting the GPS/Wireless System to a DriveRight 600 without a GPS Module present, the plug is not needed as part of the installation. Contact Davis instruments or your local retailer or distributor for details. See "Contacting Davis Technical Support" on page 14 for more information.

Making Connections

The GPS/Wireless Interface Module can be installed with either the GPS Module, the Wireless On-Board Module or both. The instructions below assume an installation involving all three modules. Modify your own installation as necessary.

1. Connect the GPS Module to the GPS/Wireless Interface Module by plugging the male connector of the GPS Module cable into the socket labeled "GPS" on the GPS/Wireless Interface Module.

2. Connect the Wireless On-Board Module to the GPS/Wireless Interface Module by plugging the male connector on the Wireless On-Board Module cable into the socket labeled "W" on the GPS/Wireless Interface Module.

3. Disconnect the DriveRight 600E, or 600 device or optional SmartCard On-Board Reader cable from the Digital Input Adapter Cable or optional #8157 GPS Module.

4. Connect the male connector from the GPS/Wireless Interface Module cable to the female connector on the Digital Adapter Cable or optional #8157 GPS Module.

5. Connect the female connector on the GPS/Wireless Interface Module to the male connector on the DriveRight 600E, 600, or optional SmartCard On-Board Reader cable.

See the diagrams below for help on disconnecting and connecting the cables properly:

Disconnecting Cables:
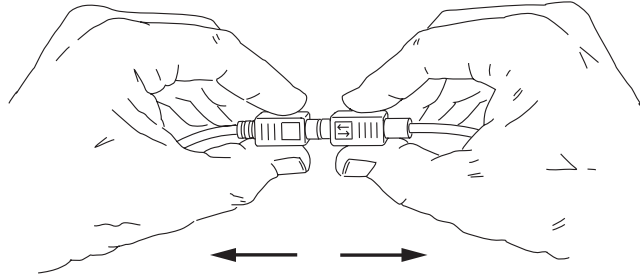
Hold both cables by their connector housing and pull apart.
The housing of the male connector slides to separate the cables.

Connecting Cables:

Slide
Connector Housing
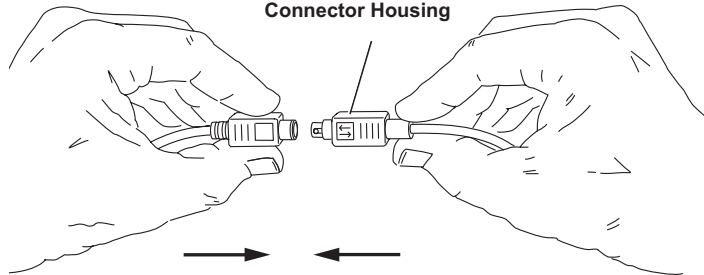
Hold the female connector and push the male connector from behind the housing, allowing
the housing to slide back. The cables lock together when a connection is made.

Installing the GPS/Wireless System

See the installation diagram below for correct placement and installation of all the components in the GPS/Wireless System into a vehicle:

**Wireless
On-Board Module
#8129**

**Cable must enter
unit from the top**

**GPS Module
#8128**

**Situated line-of-sight
to the sky**

GPS   W

**GPS/Wireless
Interface Module
#8127**
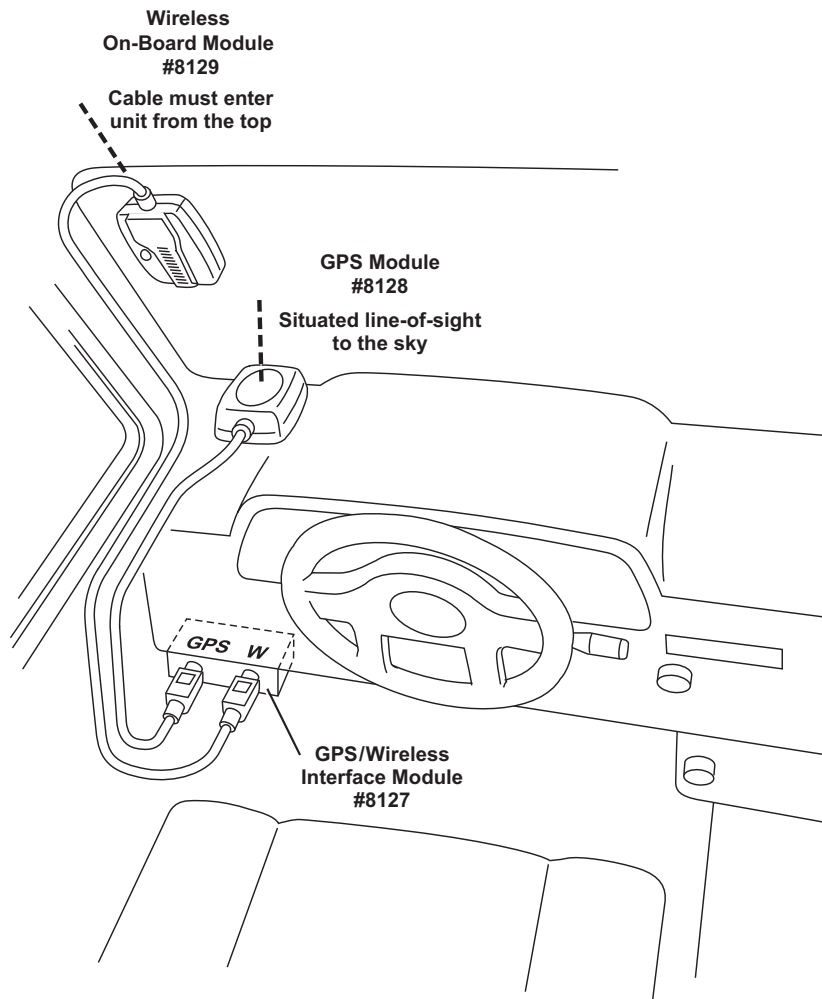
Note: If using a DriveRight 600 with a #8157 GPS Module, place the #8157 GPS antenna in the same location as the #8128 GPS Module shown in the drawing above.

1. Place the GPS/Wireless Interface Module under the dashboard of the vehicle, near the DriveRight 600E device or SmartCard On-Board Reader.
2. Secure the GPS/Wireless Interface Module in place using the provided cable ties, two pieces of velcro tape, or two pieces of double-sided tape.

3. Mount the GPS Module on top of the dashboard. Special requirements that should be taken into account when mounting the GPS Module are:

- Locate the module so that it has a clear view of the sky. Any metal obstructions may interfere with satellite reception. Davis recommends placing the GPS Module on the deep left corner of the dashboard. See the graphic on the previous page for more information.
- The module must be at least three (3) feet away from any cellular or CB antenna. Close proximity to a transmitting antenna may degrade or disrupt GPS reception.

4. Secure module by using two pieces of velcro tape or two pieces of double-sided tape.

Note: Davis does not recommend mounting the GPS Module or Wireless On-Board Module outside of the vehicle.

5. Route the GPS Module cable to the GPS/Wireless Interface Module and plug the connector into the correct socket.

6. Mount the Wireless On-Board Module on a corner of a windshield. Special requirements that should be taken into account when mounting the Wireless On-Board Module are:

- Locate the module in the upper left corner of the windshield so that it won't obstruct the driver's field of view. Dress the cable down the left side of the windshield glass.
- Make sure the Wireless On-Board Module cable is mounted to the glass with the cable at the top. This correctly orients the antenna within the module.
- Mount the module so that its nearest edge is at least 1" from the left windshield pillar.
- The module must be at least three (3) feet away from any cellular or CB antenna. Close proximity to a transmitting antenna may degrade or disrupt wireless transmission.

7. Secure module by using two pieces of velcro tape or two pieces of double-sided tape.

8. Route the Wireless On-Board Module to the GPS/Wireless Interface Module and plug the connector into the correct socket.

Wireless Download System Overview

The DriveRight Wireless Download System includes three products. These products work together to give your DriveRight fleet the ability to download data directly from the DriveRight devices to the FMS database in the fleet office, without any actions by your fleet drivers. With this system, there is no need for the drivers to carry the DriveRight device or SmartCard into the fleet office. The data moves wirelessly from the vehicle to the FMS Database.

Wireless On-Board Module (#8129)

This module installs in the vehicle and connects to the DriveRight device through the GPS\Wireless Interface Module (#8127). Once the vehicle is parked in the fleet parking lot, this module communicates with a Base Station for Wireless Download System (#8130) and moves the DriveRight data to the FMS database.
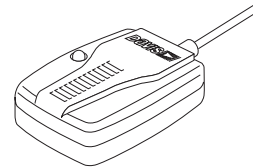
Base Station for Wireless Download System (#8130)

The Base Station for Wireless Download System connects to a computer running FMS using a USB connection. It communicates with all the Wireless On-Board Modules (#8129) installed in your fleet and moves the data from the DriveRight devices to the FMS database. Using FMS, this operation can be performed daily for all the vehicles in your fleet, or only for selected vehicles. You can also initiate a manual download from selected vehicles or your whole fleet.
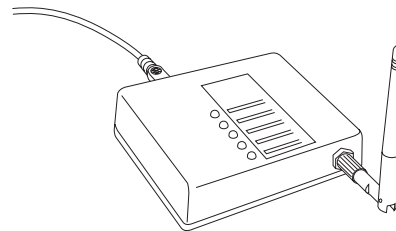
Configuration Cable for Wireless On-Board Module (#8131)

This Configuration Cable for Wireless On-Board Module connects to the PC running FMS using an USB connection. It connects a single Wireless On-Board Module (#8129) to a computer so that it can be configured for initial use in your fleet.
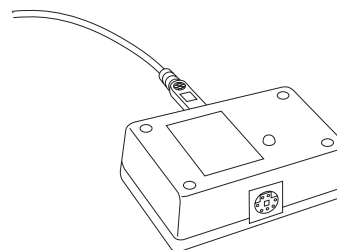
Wireless Download System Network Set Up

The following diagram is of a sample Wireless Download System network.

8129s installed in your
fleet communicate
with 8130 Base Station

Wireless On-Board
Module #8129
(connected to PC
for configuration
before installation)

Configuration Cable
for Wireless On-Board
Module #8131

Base Station
for Wireless Download
System #8130

USB
Port
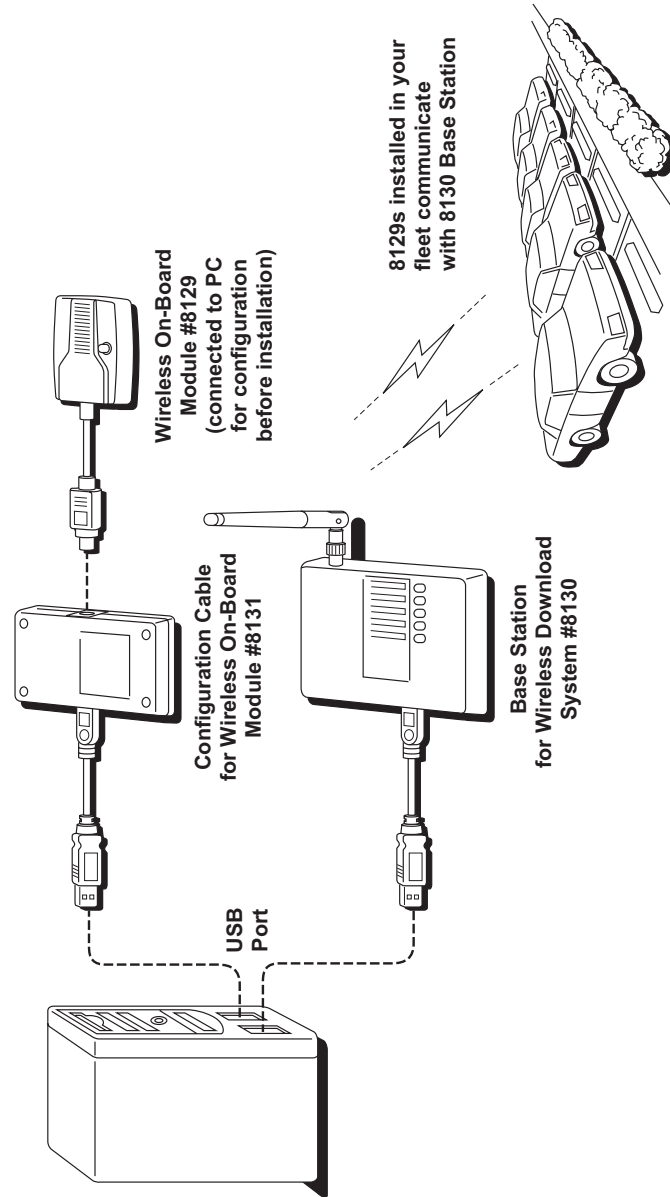
Product Specifications

For the GPS\Wireless Interface Module (#8127)

Size . . . . 3.25'' x 2.00'' x 1.00'' (97 mm x 61 mm x 23 mm)

Weight . . . . 11 oz (0.3 kg)

Operating Range . . . . -40°F to +176°F (-40°C to +80°C)

Storage Range . . . . -40°F to +185°F (-40°C to +85°C)

Input Power . . . . +12Vdc to +16Vdc regulated, 60-270 mA

Typical Standby Current 3mA

Typical Operating Current. 60-270mA

Memory Backup . . . . Lithium cell, estimated 5 year service life

Cable Connection

    Module to adapter cable . . . . Male 8-pin Mini-DIN / 14'' (355 mm)

    Module to DriveRight 600E . . . . Female 8-pin Mini-DIN / 24'' (609 mm)

Cable Length

    Module to adapter cable . . . . 14'' (355 mm)

    Module to DriveRight 600E . . . . 24'' (609 mm)

For the GPS Module (#8128)

Size . . . . 2.38'' x 2.38'' x 1.00'' (58 mm x 48 mm x 27 mm)

Weight . . . . 4.0 oz (0.113 kg)

Operating Range . . . . -40°F to +176°F (-40°C to +80°C)

Storage Range . . . . -40°F to +194°F (-40°C to +90°C)

Input Power . . . . +5Vdc

Typical Operating Current. 60mA

Typical Standby Current . . . . 0mA (module is turned off when logout interval has elapsed.)

Frequency . . . . 1575.42 MHz (L1)

Cable

    Length . . . . 78'' (2 m)

    Connector. . . . . 6-pin locking Mini-DIN

GPS Module Receiver Specifications

    Frequency . . . . 1575.42 MHz (L1)

    Number of Channels. 16

    Position Accuracy . . . . <3 m

    Velocity Accuracy . . . . 0.1 mph (0.05 m/s) typical

    Dynamic Limits

      Acceleration. . . . . 2 G max

      Jerk . . . . 4 m/s^3

Startup Time To First Location Fix

    DriveRight unplugged for:

    0 - 5 minutes. 15 seconds

    More than 5 minutes, less than 4 hours. 40 seconds

    More than 4 hours. . . . . 120 seconds

Update interval . . . . <1.0 seconds

Re-Acquisition Time, (after 60 second) . . . . 10 seconds

For the Wireless On-Board Module (#8129)

Size (l x w x h) . . . . 2.50'' x 1.75'' x 0.83'' (64 mm x 45 mm x 21 mm)

Weight . . . . 4.0 oz (0.113 kg)

Operating Range . . . . -40°F to +176°F (-40°C to +80°C)

Storage Range . . . . -40°F to +194°F (-40°C to +90°C)

Input Power 3.3V

Typical Standby Current 10mA

Typical Transmit Current. 270mA

Cable

    Length . . . . 96'' (2.4 m)

    Connector. . . . . 7-pin locking Mini-DIN

Wireless Transmitter Specifications

    Frequency . . . . ISM 2.4GHz

    Protocol . . . . IEEE 805.15.4

    Channels 12

    Line of Sight Range . . . . 600' (200 m)

    Output Power . . . . 60mW (18dBm) (US)
                                               10mW (10dBm) (Europe)

    Receiver Sensitivity . . . . -100dBM (1% packet error rate)

Contacting Davis Technical Support

If you have questions or encounter problems installing or operating your GPS\Wireless Interface Module, GPS Module, or Wireless On-Board Module, please contact Davis Technical Support.

Note: Please do not return items to the factory for repair without prior authorization.

Phone Support

(510) 732-7814 – Monday - Friday, 7:00 a.m. - 5:30 p.m. Pacific Time.

(510) 670-0589 – Fax to Technical Support.

E-mail Support

support@davisnet.com – E-mail to Technical Support.

info@davisnet.com – E-mail to Davis Instruments.

Web Support

www.davisnet.com – Copies of User Manuals and Installation Manuals are available on the "Support" page. Watch for FAQs and other updates.