

ZOLL®

Road Safety RS-4000 System Overview and Installation



111413

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Purpose

This guide provides an overview of the components of the RS-4000 system, suggestions on component location, mounting recommendations, and a suggested installation work flow.

Intended Audience

ZOLL designed this guide to aid experienced vehicle technicians. It provides an RS-4000 system overview, component functions, and ZOLL recommendations on component placement and setup.

Before You Start

A typical ambulance installation performed by two experienced installers takes approximately 4-6 hours. Supervisor vehicles, fire apparatus, and other non-standard vehicles may take longer due to their size and complexity.

Wiring Practices

You must make all the connections with solder or standard crimp connectors. Solder is preferred for all connections where practical.

Safety Precautions

Make sure to always follow vehicle manufacturer and up-fitter safety procedures and specifications on disassembly and reassembly of vehicle components such as torque specs, airbag disconnect, and testing of electrical system components. Personal injury hazards such as needle sticks and biological hazards may be present and the installers should be aware of the procedures to avoid injury.

Build Sheet

One per vehicle type (Form 3) will be available online at www.zoll.com - must have year, make, model, & engine size. Call ZOLL support for additional information: 1-800-663-3911 option 9.

Parts Inventory

Use *ZOLL-Hardware Identification + Inventory Sheet* (page 7) to inventory the ZOLL provided hardware. To order additional or replacement parts, such as Driver ID tags, contact ZOLL 1-800-474-4489.

Supplies Needed

- Cable ties
- Heat shrink tubing-(1/16"-1/2", various sizes)
- Electrical Tape (Scotch super 33+ recommended)
- JB Kwik epoxy
- Solder

Recommended Tools

- Drill (with screwdriver bits, 1/2" & 1" step-bits, and 5/16" nut driver)
- Utility knife
- Inline wire strippers and wire cutters
- Multi-meter
- 1/4" + 3/8" ratchets and extensions
- Soldering gun
- 3/8" drive deep socket assortment (10-18mm +21mm)
- Heat gun
- 1/4" drive standard & metric assortments (3/16"-7/8" and 5mm-12mm)
- Torx bits or Torx screwdriver kit
- Combination wrench assortment (1/4"-7/8" & 5mm-15mm)
- Fish tape or metal coat hanger for wire fishing

RS-4000 Overview

The ZOLL 4000 is an on-board computer and data acquisition system that monitors and reports vehicle speed, vehicle RPM, 16 additional user definable digital single ended inputs and 6 differential inputs. The on-board computer has a dedicated digital input for system tamper detection, a dedicated input for vehicle ignition sensing for a total of 22. There are 2 digital outputs. The digital outputs may be programmed to turn on vehicle components or other devices when a user defined parameter has been met or the on-board computer receives a user generated command from ZOLL Online.

The on-board computer internal memory configuration includes 32 GB data memory and 1 Gb RAM, 2 USB 2.0 ports, 2 Ethernet and 1 RS232 data port, as well as 1 802.11 b/g/n Wi-Fi capability.

The system identifies and databases activities by vehicle. Optional driver identification allows the system to also record and store activities by driver. The system administrator may set parameters to activate an audible alarm if the vehicle is operated without a valid driver identification logged onto the system.

Detailed system reports include summaries, events, violations, and second by second information.

Embedded Computer

System:

- Intel® Atom™ CPU n455 1.66 MHz
- 32 Bit Bus.
- Windows Embedded Standard Operating System.
- 1.0 Gb RAM Memory
- 32 Gb SATA Hard Drive

Communications:

- 2x USB 2.0 Ports
- 2x RJ45, Gigabit Ethernet Ports
- 1x DB9 (Male), RS-232

Video:

- 1x HD15 (Female), VGA

Wi-Fi:

- 802.11 b/g/n
- 150 Mb/s

User Interface

- 2 Line x 16 Characters Lighted LCD Display.
- Membrane Switch Pad with Up, Down, Left, Right and Enter Arrows.

Controller Area Network Buses (CAN)

Two CAN (OBD-II, J-1939) busses are available. One CAN bus is used for communications with the vehicles OBDII system. The other is a proprietary ZOLL CAN bus.

VCAN:

- HD15 (Male), Vehicle CAN

ZCAN: ZOLL CAN

- DB9 (Female), ZOLL CAN

Vehicle Dynamics

A GPS receiver and Accelerometer are incorporated to allow measure vehicle movement and safe operation.

GPS:

- Continuous Multiple Satellite WAAS Enabled Receiver
- Minimum Receiver Sensitivity -185dbW
- Acquisition time: 1s all data known; 38s ephemeris unknown; 45s no data; <2s Reacquisition.
- < 15 Meters Accuracy with GPS Standard Positioning Service, Velocity .1 knot RMS.
- < 3 Meters Accuracy with DGPS (WAAS)
- 999 knot, 3g Dynamics

Accelerometer:

- 3 Axis
- $\pm 1.5g$, $\pm 3g$, $\pm 6g$, $\pm 12g$

Inputs/ Outputs

Digital I/O

The RS-4000 incorporates 16 single ended digital Inputs, 6 differential digital Inputs, 1 analog input, and 2 digital outputs.

Single Ended Inputs:

16 single ended inputs are available referencing 0 VDC common.

- Input Voltage for Logic 1: 8-18VDC: Absolute Maximum: 40 Volts.
- Maximum Input Voltage for Logic 0: 0.75 VDC.
- Maximum Input Voltage for Logic 1: 5.0 VDC.

Differential Inputs:

6 optically isolated differential inputs are available that allow inputs from a floating common. The input is on when the difference between the two inputs is greater than 1.5 Volts and off when they are less than 1 Volt.

- Voltage Differential: 5-18VDC, Absolute Maximum: 24 Volts.
- Maximum Differential Input Voltage for Logic 0: 0.75 VDC.
- Minimum Differential Input Voltage for Logic 1: 5.0 VDC.

High Speed Inputs:

2 high speed digital inputs are used to measure Vehicle Speed and Engine RPM.

- Input Voltage for Logic 1: 8-18VDC: Absolute Maximum: 40 VDC.
- Maximum Differential Input Voltage for Logic 0: 0.75 VDC.
- Minimum Differential Input Voltage for Logic 1: 5.0 VDC.

Digital Outputs:

2 optically isolated digital (switched vehicle voltage) outputs available that use a 0 VDC common.

- Maximum Current: 1 Amp

Audio:

2 audio connections are incorporated. The output is used to give the driver audible warnings. The input is not currently used, but may be incorporated in future enhancements .

- 1x Audio Out
- 1x Audio In

Miscellaneous:

- Operating Power (Ignition On): 8-18 VDC @ TBD Watts Maximum
- Standby Power (Ignition Off): 8-18 VDC @ TBD Watts Maximum
- Maximum Input Voltage: 24VDC
- Dimensions: 9.652 x 8.068 x 2.815 in., 204.95 x 245.17 x 71.5mm
- Mass: 4.56 lbs., 2.07 Kg
- Operating Temperature: 14 to 176°F, -10 to 80°C
- Storage Temperature: -40 to 196°F, -40 to 90°C
- Shock Operating: 30g Peak Acceleration, 11(±1ms) Pulse Width
- Shock Not Operating: 30g Peak Acceleration, 11(±1ms) Pulse Width
- Vibration: Tested 5g @ 1-500Hz per IEC 68-2-6

Hardware Identification and Inventory Sheet



RS-4000 On-Board Computer



RS-2213 Driver ID Programmer Kit



RS-4902 Unsafe Reverse Spotter Switch Kit



USB 1-Wire Adapter



RS-3212 Driver ID Tag



RS-4201 Tri-Band Antenna



RS-4102
Digital I/O Pigtail



RS-4107
OBDII Adapter



RS-4103
Standard I/O Harness



RS-4105
Expansion Harness



RS-4101
Power/Audio
Harness



RS-4301 Audio
Speaker



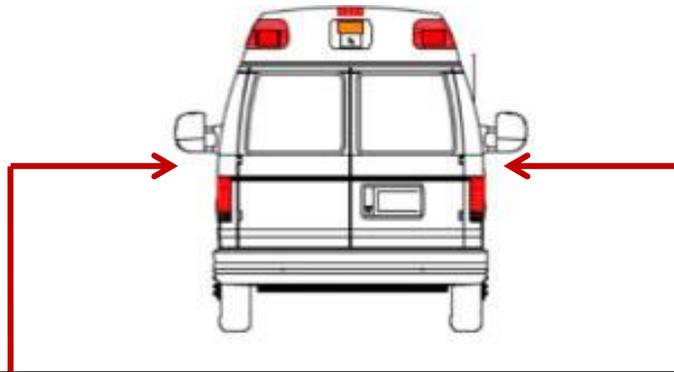
RS-3910 Seatbelt
Sensor



RS-4111
Fuse Kit

Component Locations and System Overview

Note: See Appendix A at the end of this document for a one-page version of the component locations and system overview diagram.

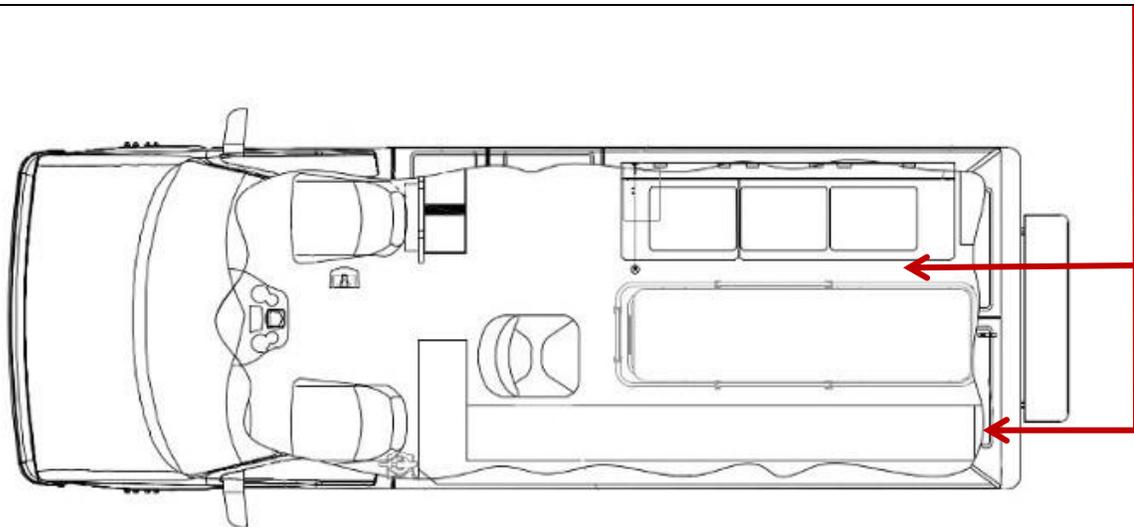


RS-4902 - Spotter Switches: When pressed by the vehicle spotter or ground guide, a tone alerts the driver that it is safe to back up the vehicle.

Typical Mounting Location- One switch mounted on the rear overhead panel with a clear sight line out the rear window, and one switch mounted outside the vehicle near the left or right taillight assembly depending on agency policy.

Note: Switches should be placed in similar positions on all vehicles in the fleet to assist the crew. Typical wire harness routing is through the center overhead or outboard exterior light voids.

Connects to: RS-4000 On-Board Computer via the Standard Digital Harness. See Appendix C for wiring assignments.



RS-4000 On-Board Computer -Records and stores event information. The on-board computer is the main control unit for inputs, outputs, and communication.

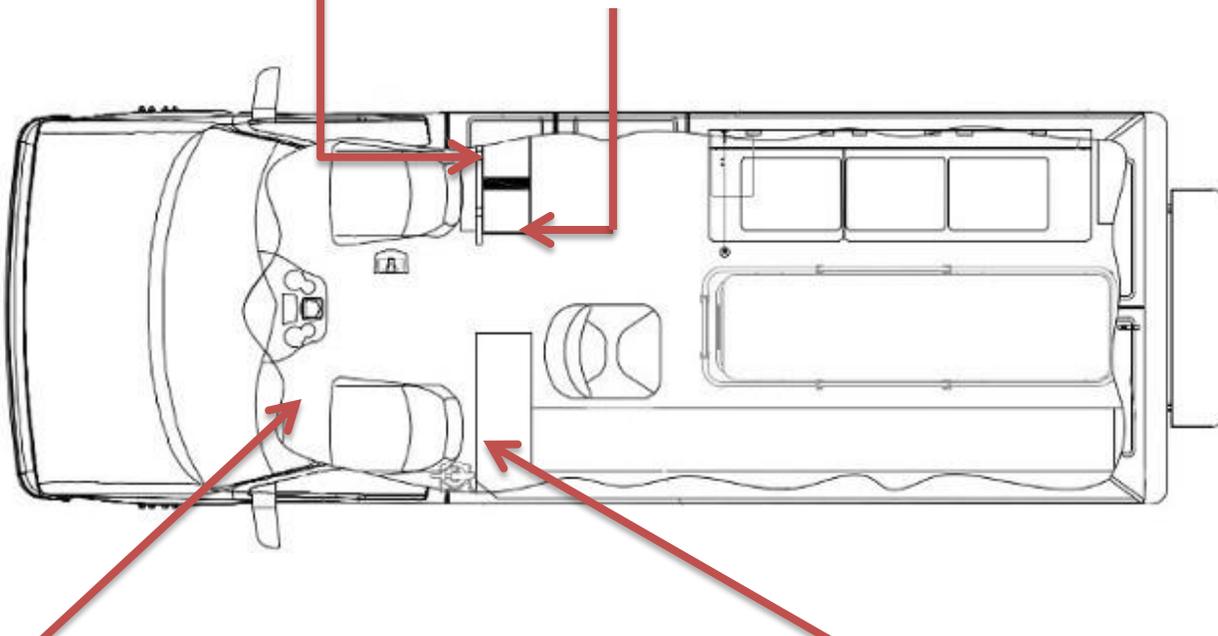
Preferred Mounting Location- Bulkhead mounting. The unit may be mounted in any of 24 three dimensional positions. See Appendix B for positions and their associated Orientation Index Number.

Acceptable Mounting Location- Under passenger seat or in the equipment cabinet if there is enough clearance and the harness will reach. The location should be within the OEM imposed length limit for the OBDII/CAN cable of 16 feet.

***Extensions to the cable are not recommended or supported by ZOLL.**



RS-4201 Tri-Band Antenna - The antenna should be mounted on the uppermost horizontal metal surface of the vehicle for best reception, and at least 18 inches from all existing antennas to avoid signal interference. A 3/4" hole is required.



RS-3211-1 Driver ID Receptacle- Used to read assigned Driver ID tags that associate a driver to the vehicle for reporting purposes.

Typical Mounting Location- Driver's side dash in close proximity to the ignition switch.

Note: The panel should not be greater than 3/16" thick and have sufficient room behind it to fit without interference.

Connects to: RS-4000 On-Board Computer via the Standard Digital harness.

RS-4301 Audio Speaker- Source of audible feedback including warning and violation tones.

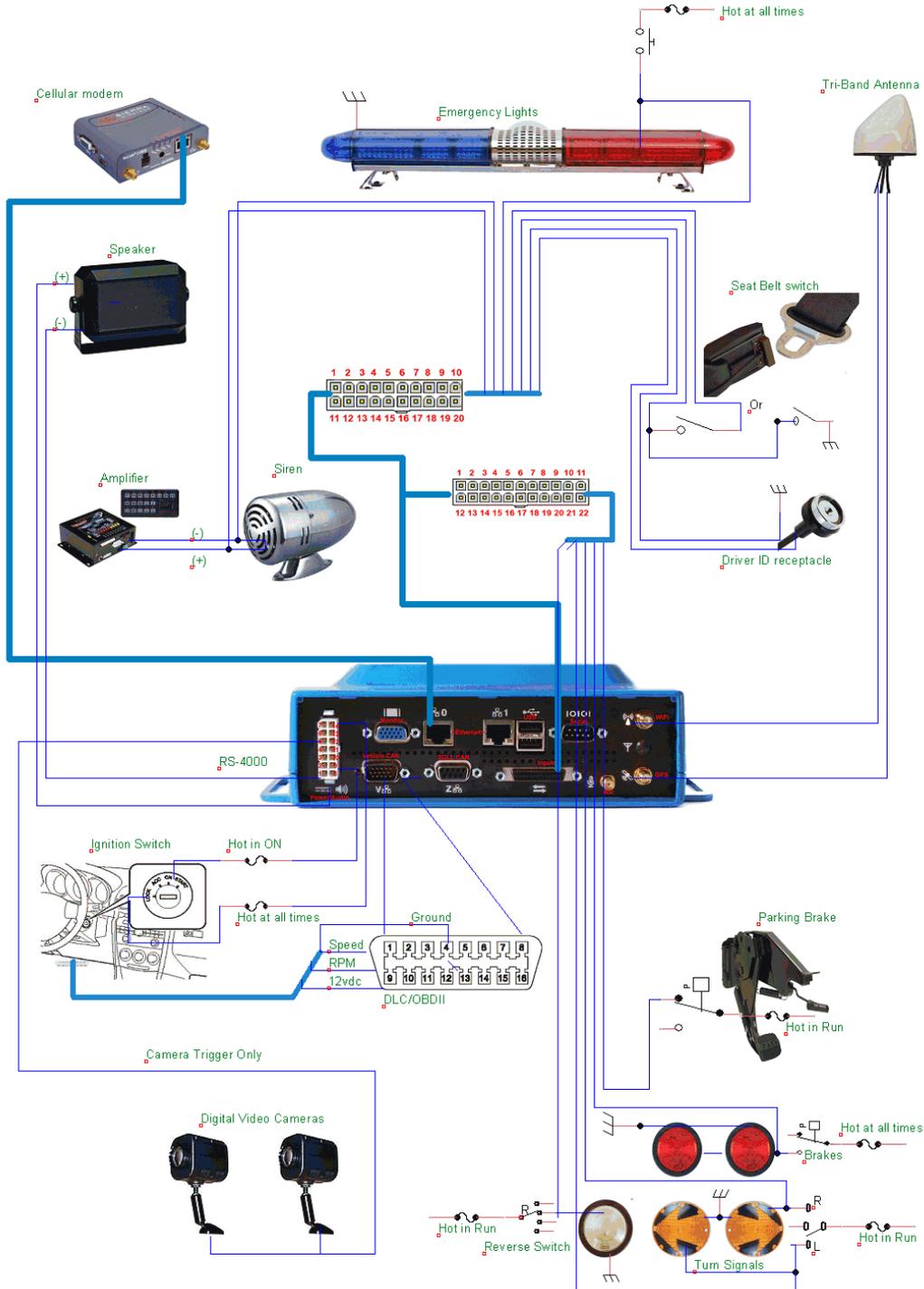
Typical Mounting Location- Driver's side headliner or bulkhead.

Note: Mounting the speaker in other locations further from the driver creating the need for higher volume settings.

Connects to: RS-4000 On-Board Computer via the Power/Audio harness.

Connectivity Overview

See Appendix C and Form 3 Build Sheet form for wiring assignments.



Hardware Installation

Two installers can perform the installation quickly and efficiently by following the below work flow.

STEP 1: Vehicle inspection

Complete a thorough interior and exterior inspection of the vehicle using the Vehicle Inspection Diagram (Form 1) and the ZOLL Road Safety Vehicle Inspection Form (Form 2). Before starting the installation, identify and document any damage or inoperable systems, and notify the responsible party. You can find forms 1 and 2 in the back of this document.

ROAD SAFETY
ZOLL

Customer: _____ Date: _____

Vehicle: _____ Year: _____ Make: _____ Model: _____

Damage Key

B -Bent	C -Cracked	D -Dent
DR -Dirty	L -Loose	M -Missing
R -Ripped	S -Scratch	ST -Stained

Notes:

ZOLL Road Safety
Vehicle Inspection Form

Vehicle # _____ Year: _____
Make: _____ Model: _____

VIN: _____

ZOLL Inspector: _____ Customer: _____

Pre-Installation Inspection		Post Installation Inspection	
AREA INSPECTED (see Vehicle Diagram)	DAMAGE *Yes / No	*Describe	Yes / No
Exterior Front			
Exterior Drivers Side			
Exterior Rear / Roof			
Exterior Passenger			
Seats / Belts			
Dash / Door Panels			
Headliner			
Flooring			
Vehicle Systems	Normal? Yes / * No	*Comments	Yes / No
Interior OEM Lights			
Horn / OEM Radio			
Emerg. Lts / Siren			
Emerg. Radios / PA			
Vehicle Starts			
Warning Lts Off			
Head Lights			
Turn Signals/Flasher			
Brake/Reverse Lts			
Other			
Notes / Comments			

SAMPLE FORM 2

STEP 2: Identify component installation locations

Identify vehicle connection points and plan the wire harness routing. Remove access panels as needed. Keep in mind the length of the harnesses when planning the mounting locations.

STEP 3: Mount the RS-4000 On-Board Computer in the vehicle

The On-Board Computer records and stores information and is the main control unit for inputs, outputs, and communication (Figure 1).

Typical mounting locations: Mounting the On-Board Computer in the equipment cabinet or on a bulkhead within the 16 foot OBD harness length is preferred to help protect the On-Board Computer from potential tampering and accidental spills. If mounting in the equipment cabinet is not possible, mounting it under the driver's or passenger seat is an acceptable alternative if space allows.

Note: Avoid locations where tampering, excessive heat, moisture, or electromagnetic fields could interfere with or damage the unit. The OEM imposed length limit for the OBDII/CAN cable is 16 feet. Extensions to the cable are not recommended or supported by ZOLL.



See **Appendix B, Orientation Index** for allowable mounting positions.

Figure 1

1. If you are going to mount the On-Board Computer under a seat, ZOLL recommends that you remove it for easier access, and verify adequate clearance.

Ensure that you disconnect all wiring from the seat per the manufacturer's recommendations before removing from it from the vehicle.

Ensure that you have clearance on the connector side to allow you to connect the wire harnesses and associated cabling.

2. Trial fit the RS-4000 On-Board Computer in its location prior to drilling (Figure 2).

Note: Prior to drilling through the floor or other mounting surface, check for clearance below, above, or behind to ensure nothing will be damaged by drilling or by the mounting screws in all seat positions.



Figure 2

STEP 4: Prepare harnesses for looming and appropriate routing

Locate and identify the connection points for the seatbelt, brakes, reverse, parking brake, turn signals, lights and siren, and camera controller (if used). Prepare the wire harnesses for looming and routing by separating the wires that will connect on the driver's side dash area from the wires that need to go to the rear electrical cabinet area. You can usually do this in two harnesses. See Appendix C and Form 3 Build Sheet for wiring assignments.

Separate the wires running to common locations, wrap with wire loom from the Mounting Hardware Kit as required, and run them to the locations to be connected. (See Build Sheet Form 3).

Make sure the wires do not interfere with moving parts or sharp edges and are long enough to reach the wire connection point.

RS-4101 Power/Audio Harness



Note: Locations for battery power, ground, ignition, and speaker connections made to this harness vary by vehicle. Refer to your Sample Install Form (Form 3) or applicable schematic diagram.

Typical Routing -Separate the speaker wires which will route aft to above and behind the driver's seat.

See Appendix C and Form 3 Build Sheet for wiring assignments.

RS-4103 Standard I/O Harness + RS-4105 Expansion Harness



Note: Locations for accessories connecting to the digital channels vary by vehicle. Refer to your Build Sheet (Form 3) or applicable schematic diagram. The digital inputs monitor the presence or absence of voltage and should be connected at a point in the circuit that goes from low to high voltage when turned on and off.

Typical Routing – Wiring for the brake and parking brake digital inputs may route with the Power/Driver ID, and the Speed /RPM OBDII/CAN Harness wiring. The input for seatbelt will route behind the driver's seat to wiring in the door trim panel area, or to the seatbelt buckle area if the RS-3910 seat belt sensor is used as required by certain vehicles.

See Appendix C and Form 3 Build Sheet for wiring assignments.

RS-4107 OBDII Adapter



Note: The vehicle Speed and RPM signals are obtained through the OBDII/CAN connection.

1. Locate and identify the vehicles OBDII port (driver's side dash) and unbolt the connector.
2. Mount the connector end of the ZOLL OBDII Harness in its place and connect the vehicle's port to the matching receptacle on the ZOLL OBDII cable. Secure all wiring to prevent interference with vehicle foot controls.

Typical Routing – Connect inline to the vehicle DLC connector. Route harness through the dash, through center console or floor trim panel to the RS-4000 location. Connect to the V CAN port on the RS-4000. Do not extend this cable to exceed the OEM 16' maximum length.

STEP 4: Mount the RS-4301 Audio Speaker (Figure 3)

The RS-4301 Audio Speaker delivers audible feedback tones to the driver so they can adjust their driving style to remain within agency safe driving guidelines.

Typical mounting location - On the driver's side headliner or bulkhead near the driver's head, easily heard. (Figure 3)



Figure 3

Note: Mounting the speaker on the passenger side or near the floor will decrease the effectiveness of the tones to the driver and may increase the likelihood of the unit being tampered with. (Speaker volume is not adjustable by the driver and must be done through ZOLL Online)

1. Check for clearance behind the panel for the screws that will secure the speaker.
2. Mark the location for the two mounting holes and the speaker wire access hole.
3. Using a 3/16" drill bit, drill the hole for speaker wire access and for the 2 mounting screws.
4. Pass the speaker wires through the access hole, and using two 8-32 machine screws and nuts, or if the panel is metal #10 self-tapping screws (Included) and securely mount the speaker to the panel.
5. Connect the speaker wires from the RS-401 Power/Audio Harness to the speaker connections.

STEP 5: Mount the RS-3211-1 Driver ID Receptacle

The RS-3211-1 Driver ID Receptacle (Figure 4) reads driver ID tags that associate a driver to the vehicle for reporting purposes.

Typical mounting locations – On the dash in close proximity of the ignition switch. Placement should allow the driver to reach it easily when sitting in the driver's seat.



Note: The panel should not be greater than 3/16” thick and have sufficient room behind it for the back end of the receiver and wiring to fit without interference.



Figure 4

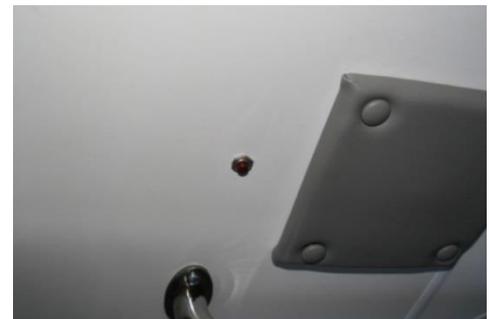
Drill a hole through the panel at the chosen location using a 13/16” or 20mm drill bit. See Appendix C and Form 3 Build Sheet for wiring assignments.

1. Feed the wires into the hole and through the mounting nut until the receiver is seated fully into the panel.
2. Pass the wires through a 15/16” or 24mm deep socket, position socket onto the nut and hand tighten only.
3. Connect the wires from the receiver to RS-4105 Expansion harness wires.

STEP 6: Mount the Spotter Switches (RS-4902 Kit)

When pressed by the vehicle spotter, a tone alerts the driver that it is safe to back up the vehicle.

Typical mounting locations- One switch mounted to the overhead panel (Figure 8a) near the rear doors allowing a clear sight line out the rear window, and one switch mounted on the outside of the vehicle on the left or right rear corner per customer’s preference. (Figure 8b).



Note: Effort should be made to have the switches placed in the same relative position throughout the entire fleet of similar

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vehicle types to assist the crew in locating them.

Figure 8a

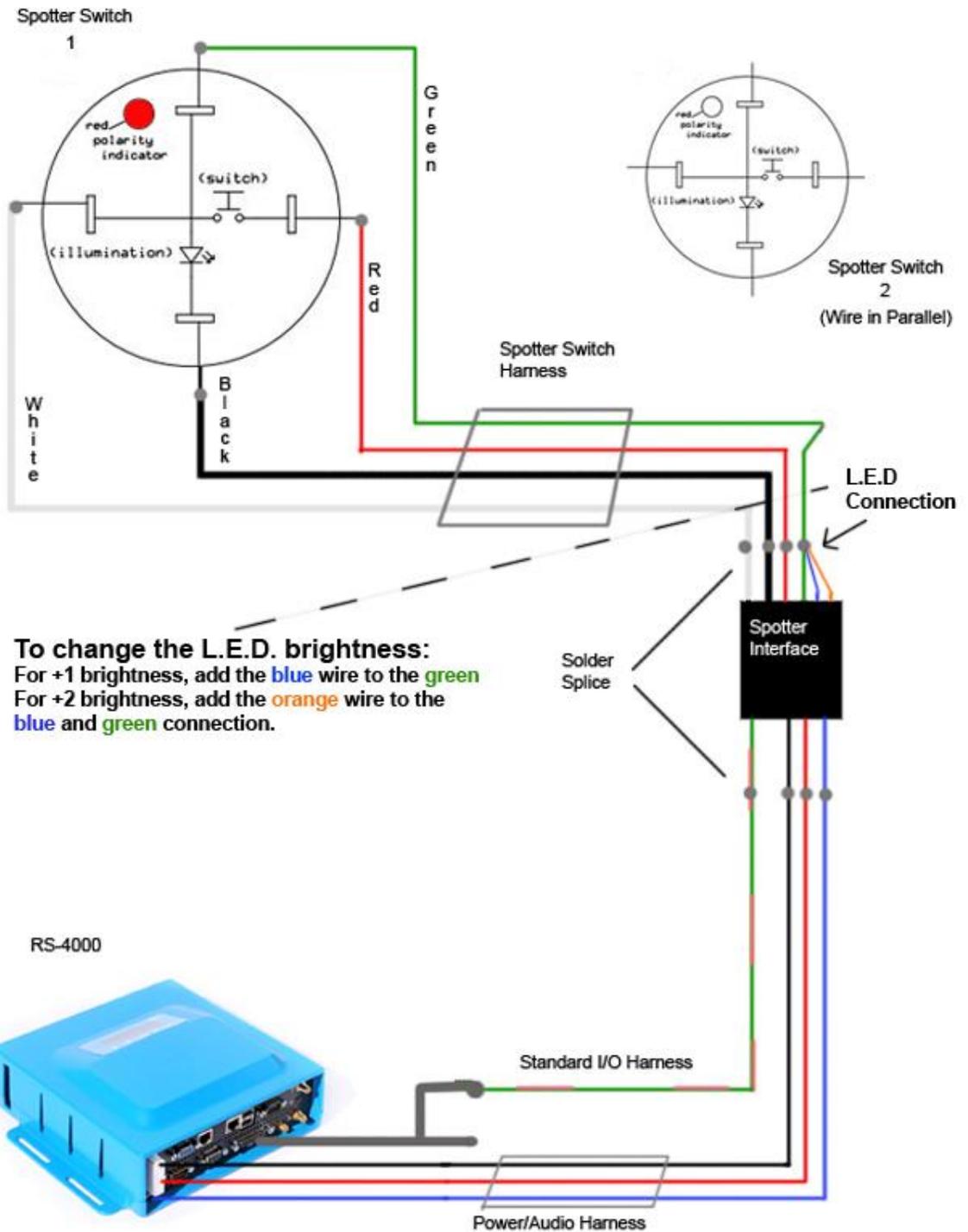
Typical routing for the switch wiring is from the RS-4000 On-Board Computer out of the forward cab through the overhead panel of the patient compartment to the interior switch location. Continue routing to the rear door header, across to the corner on the driver or passenger side, then down to the exterior switch location.



Figure 8b

1. Remove one of the interior light assemblies or access panels nearest the desired interior switch location in the patient compartment overhead to check for clearance prior to drilling the 5/8" diameter hole for the interior switch and to make the wiring connections.
2. After making connections to the switch, insert the switch into the hole and tighten the nut to hold the switch in place. (See Figure 8c for spotter switch connectivity.)
3. Remove the tail light assembly to check for clearance prior to drilling the 5/8" diameter hole and to make wiring connections to the exterior switch. *Note: The switch mounts from the outside.

Figure 8c Spotter Switch Connectivity



STEP 7: Connecting the seatbelt input

RS-3910- Seatbelt Sensor (Figure 9) is used in vehicles when their seatbelt monitoring circuit does not provide a useable signal to the RS-4000 On-Board Computer.

1. If you are using the vehicle's factory wiring: go to step 7-3
2. If you are using the RS-3910 Seatbelt Sensor: go to step 7-5
3. Locate and access the driver's seat belt wiring. Location varies by vehicle; refer to your Build Sheet(Form 3) and Appendix C.
4. The switch should be installed on the seatbelt latch assembly using two part epoxy (JB Weld-Quick). This part remains stationary and is usually secured to the floor or seat.

Figure 9



6. The actuator magnet is installed on the buckle itself using two part epoxy (JB Weld Quick). Both devices are installed facing the occupant of the seat.

7. When the seatbelt is fastened, the magnet should be no further than 1" (one inch) from the switch. It may be closer than 1" (one inch) but make sure the devices do not interfere with the locking or releasing of the seatbelt assembly.



8. After the JB Weld Quick epoxy has begun to harden the switch assembly may be covered with heat shrink tubing that surrounds the switch and latch assembly protecting it from damage.
9. See Appendix C and Form 3 Build Sheet for wiring assignments.

STEP 8: Mount the RS-4201 Tri-Band Antenna

The Tri-Band antenna allows communication between the vehicle and a network using a cellular data network connection. The antenna should be mounted on the uppermost horizontal surface of the vehicle for best reception, and at least 18 inches from all existing antennas to avoid signal interference.

1. Locate an appropriate spot. Access to the underside of the hole is necessary to secure the mounting hardware. Ensure there is clearance before drilling the $\frac{3}{4}$ " hole for the antenna (Figure 10). The surface should be no thicker than $\frac{1}{4}$ ".
2. Remove the nut, attach the included gasket, feed the cables through the hole, reattach the nut and tighten (5 ft. lbs. max) and run the coaxial cable to where it will be connected to the RS-4000.
3. Silicone may be added around the base of the antenna if deemed necessary to help prevent water intrusion.



Figure 10

STEP 9: Connecting a cellular modem or setup Wi-Fi

The preferred method of connectivity for the RS4000 is via an Ethernet cable to your vehicle's on-board cellular modem. The RS4000 may also be configured to download via Wi-Fi when in range of your Wi-Fi access point, such as in the vehicle parking area or service area. Wi-Fi connectivity limits the real time functionality of the system and data will only be available for viewing in ZOLLonline upon completion of a download while the vehicle is connected to the access point.

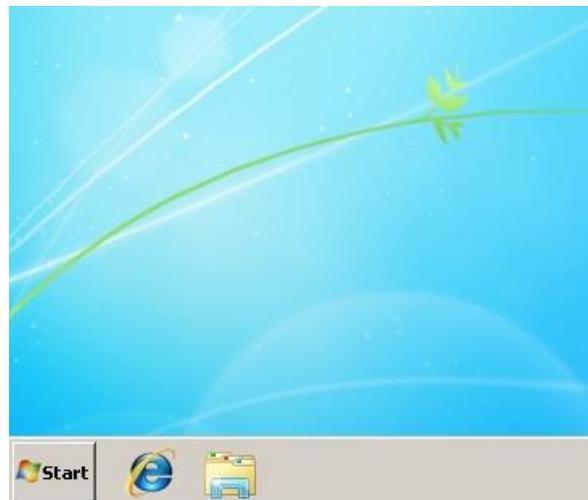
Ethernet Connection

1. To connect the RS4000 to the vehicle's cellular modem, route an Ethernet cable from one of the RS4000's Ethernet ports to an available Ethernet port on the cellular modem.

Wi-Fi Connection

1. To configure the RS4000 to download via Wi-Fi, a USB keyboard, USB mouse and standard VGA monitor must be connected to the RS4000.
2. Place the vehicle within range of your Wi-Fi access point, where you will normally plan to have the downloads occur.
3. Connect the keyboard, mouse, and monitor to the two USB ports and the VGA connector on the back of the RS4000. If the vehicle has been shut down for more than 90 seconds, restart the vehicle to bring the RS4000 out of hibernation. A Windows desktop should be present or will appear after the RS4000 boots up.

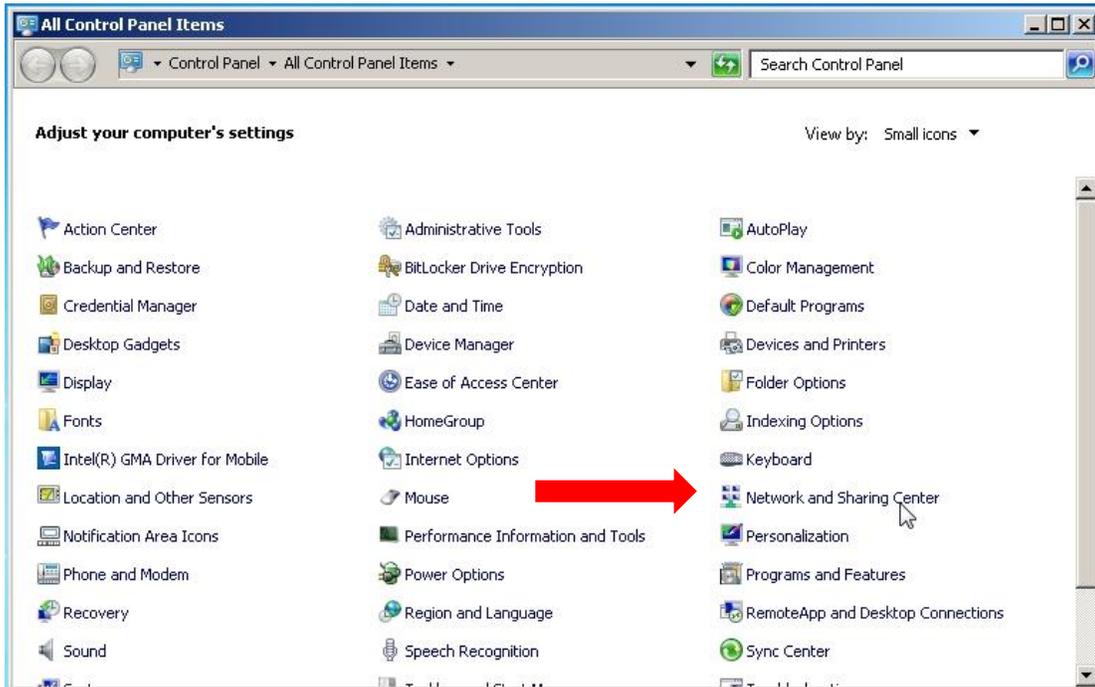
4. Click the **START** button in the lower right corner of the screen.



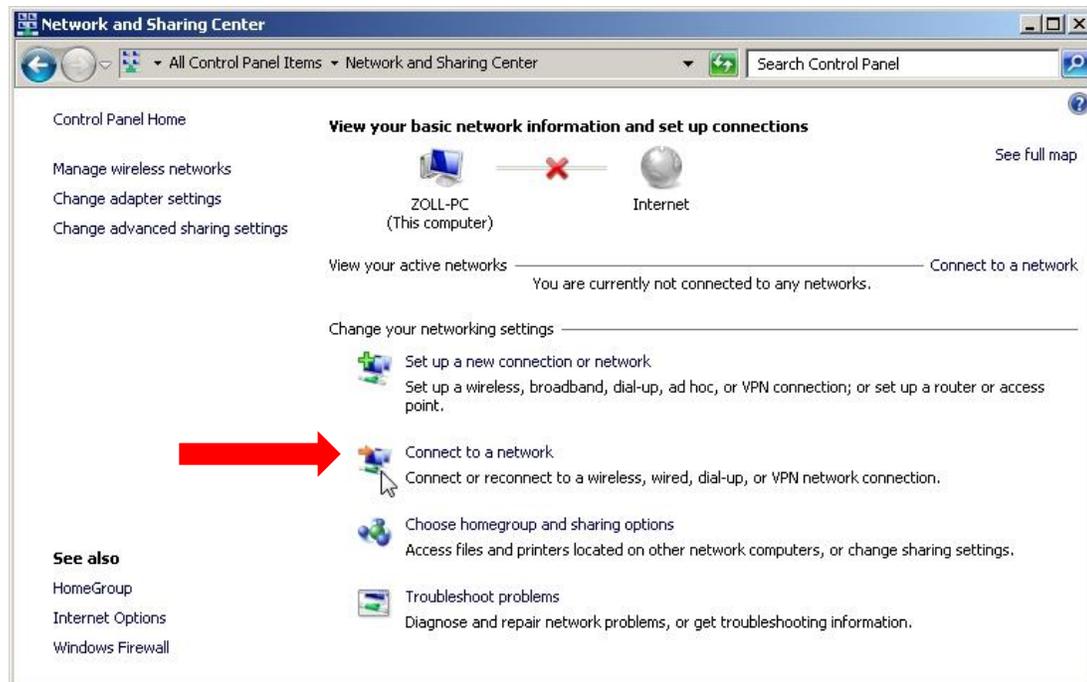
5. Click on **CONTROL PANEL**



6. Click on **NETWORK AND SHARING CENTER**



7. Click on **CONNECT TO A NETWORK**



- Find the name of your access point and select it. Note the SSID on your SAMPLE INSTALLATION FORM for future reference.



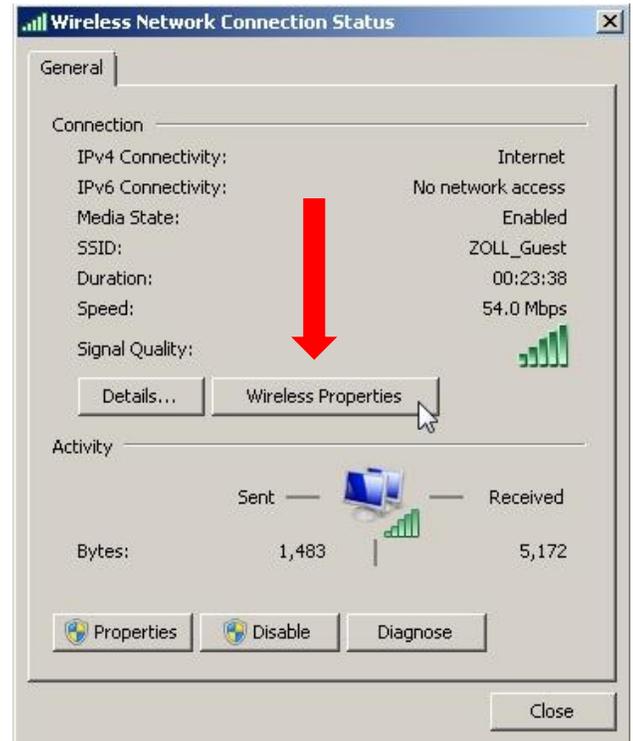
- Enter the network security key for the selected network, and then click OK.



- From the NETWORK AND SHARING CENTER screen, click on your connection in the VIEW YOUR ACTIVE NETWORKS portion of the screen.



11. Click on the WIRELESS PROPERTIES button.



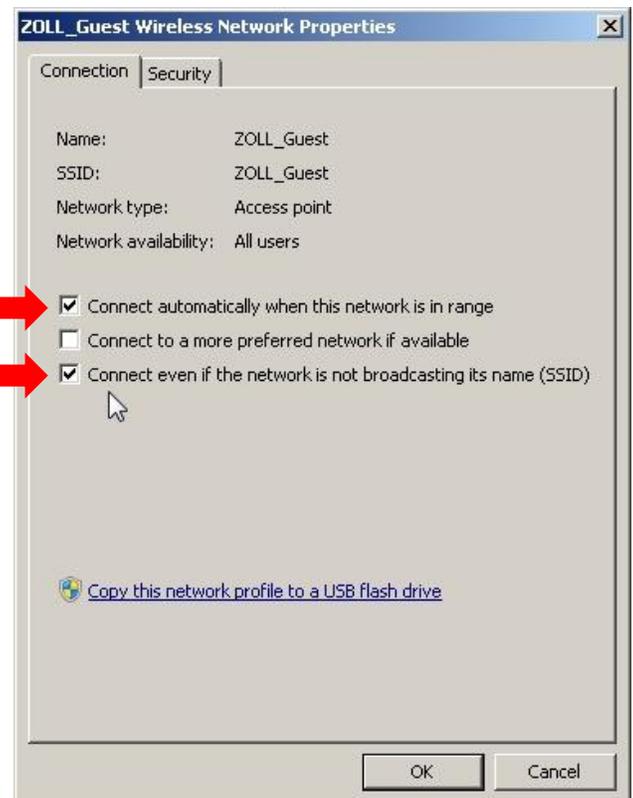
12. If not already checked, check the CONNECT AUTOMATICALLY WHEN THIS NETWORK IS IN RANGE box, and the CONNECT EVEN IF THE NETWORK IS NOT BROADCASTING ITS NAME (SSID). Then click OK.

13. Test your connectivity by opening Internet Explorer and navigating to a web page such as <http://www.zolldata.com/>

14. If your settings are correct the ZOLL Data webpage or whatever web page you entered should be displayed in the browser.

15. If you cannot display a web page, recheck your settings. (steps 4-12).

16. Once successful, close all open windows on the RS4000 desktop, disconnect the monitor, keyboard, and mouse. Connectivity setup is complete.



STEP 10: Completing the installation with ZOLL Online

Before you can put the RS-4000 On-Board Computer into service, it will first need to be configured through ZOLL Online. Refer to the ZOLL Online section (page 24) to get started with ZOLL Online.

Initial Setup of the RS-4000 On-Board Computer

1. See ZOLL Online steps on page 24.
2. Log in to ZOLL Online and configure following steps 6-18. This will allow you to set up a **vehicle name, vehicle class, audible tones, orientation index number, and calibration settings.**
3. When completed with ZOLL Online, ask an employee of the company for permission to move the vehicle or assist in a short road test to verify assignments are working correctly.

If any of the digital inputs appear to be backwards meaning they show up reversed in the reports, the **Polarity** needs to be changed in the Road Safety Configurations//Inputs screen. Select the **Vehicle Group**, and reverse the polarity for the input that is in error.

Positive Polarity= Input is ON when the voltage goes from LOW to HIGH

Negative Polarity= Input is ON when the voltage goes from HIGH to LOW

STEP 11: Test drive and final check with ZOLL Online

With permission, test drive the vehicle or ride along with a driver to verify that the appropriate tones are present if used. (Login, Seatbelt, Over force, and Over speed if safe to do so.)

If the vehicle was configured to communicate via the vehicle's cellular modem, data will be visible in ZOLL Online.

If the vehicle was configured for Wi-Fi downloads, return the vehicle to the download area so the RS4000 can connect and begin it's download before checking ZOLL Online for data.

ZOLL Online

1. Supported browsers

ZOLL Online supports the following browsers:

IE versions 8, 9, and 10

Chrome version 25

Safari 6

Firefox versions 17, 18 and 19

2. Creating your account

To use ZOLL Online you will need to sign up and create your company. In a supported browser, type: www.zollonline.com, or if you received an invitation, click the link in the e-mail.

3. Sign up

Items marked with an “*” are required, enter other information as needed.

Read the ZOLL Online terms of service, and check “I agree” before clicking “Sign Up”.

ZOLL Online

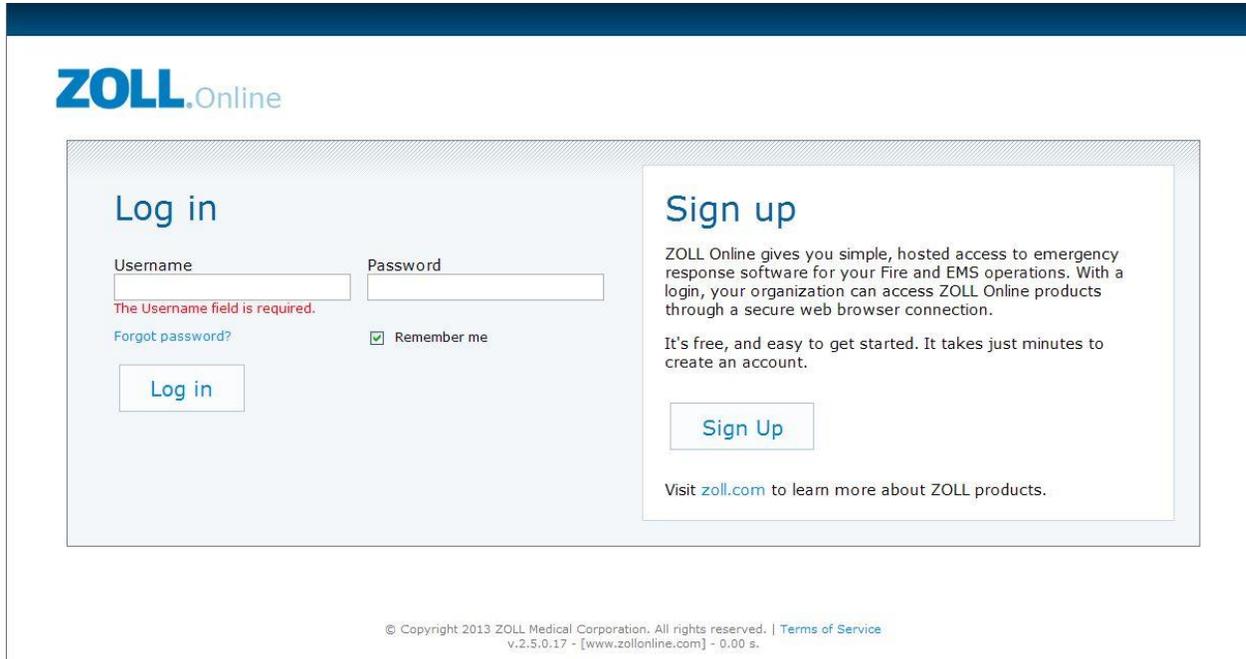
Sign up

It takes just minutes to sign up for ZOLL Online. We need just a few things to get started.
Areas marked with a * are required.

Email address *	<input type="text"/>	
Password *	<input type="password"/>	Retype password *
		<input type="password"/>
<small>Minimum required: 8 characters, 1 upper, and 1 number or special character.</small>		
First name *	<input type="text"/>	Last name *
	<input type="text"/>	<input type="text"/>
Company	<input type="text"/>	Invitation code
	<input type="text"/>	<input type="text"/>
<small>Leave this blank unless you received an invitation by email.</small>		
<input type="checkbox"/> I agree to the ZOLL Online terms of service *		
<input type="button" value="Sign Up"/> <input type="button" value="Cancel"/>		

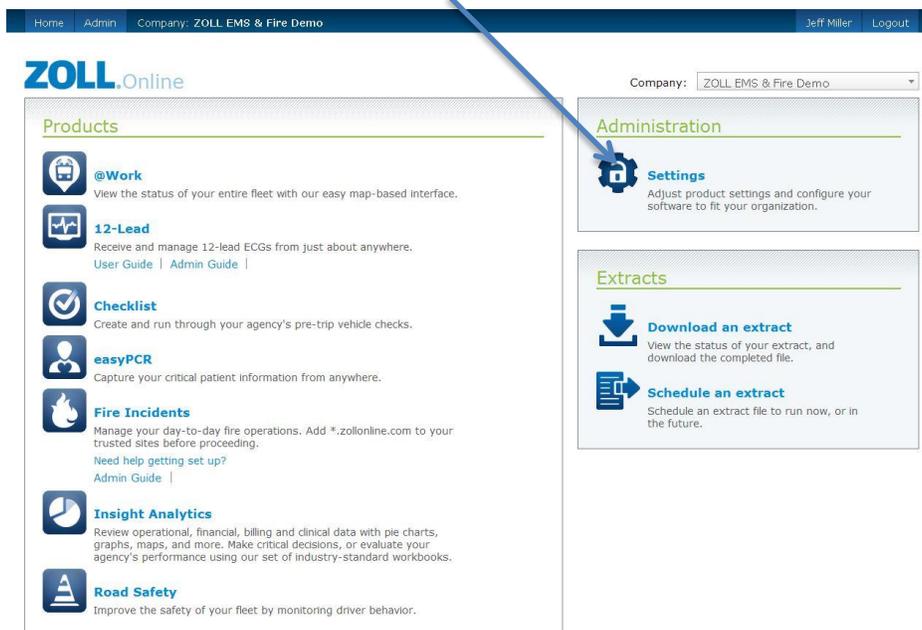
4. Log in to ZOLL Online

Now that your company is created, log in to www.zollonline.com to get started.



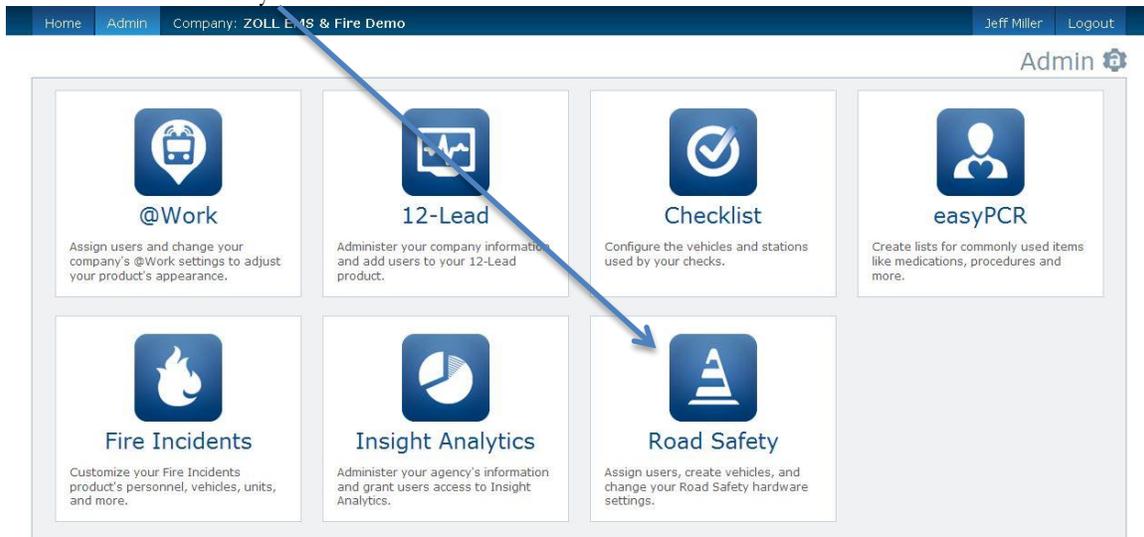
5. Main screen- Home page

You will need to enter some information about your company, people, and configure your vehicles before using ZOLL Online. To begin click Settings in the Administration window.



6. Product administration screen

Click Road Safety.



7. Road Safety Administration screen

This is where your setup begins. A logical setup begins with adding people first. Click People.



8. People screen

Click the  sign.

11802 Ridge Parkway, Suite 400
Broomfield, CO 80021 U.S.A
Tel: (303) 801- 0000
Fax: (303) 801- 0001
www.zoll.com

Add a person

Areas marked with a * are required.

PROFILE

They work here They need an account

First name *

Last name *

Enabled *

Enter the person's first name, last name, and select "Enabled". If they will be a user, select "They need an account" and an email invitation to your company will be sent to the email address you enter below.

*NOTE - Information entered here will also be available in the other ZOLL Online product screens, as will people entered in another ZOLL Online product will be available available here. If all the information is correct, no further changes will need to be made.

Add an email address

ACCOUNT INFORMATION

Username/Email address *

Email policy: An email address is required for your username, and should be in the format of yourname@yoursite.com.

Product access

Company Admin

12-Lead

User

Battery Manager

User

Checklist

User

easyPCR

User

Diversions

User

Fire Incidents

User

Billing

User

@Work

User

Insight Analytics

User

Road Safety

User

Place a check mark in each product the user will need access to. You can give the person either Customer **Administrator** permissions or Customer **User** permissions.

Customer Administrator User – This user is typically the person who set-up their company profile, and who started the process with their company using ZOLL Online. This user has all rights within their own company to change/modify any data or settings they may use within their company.

Customer User – This user is limited to what they see within the company they are associated with, and can do minimal items within their company (as set by their Customer Administrator).

Administrator

Select item

Administrator

User

Items marked with an * are required, enter other information as needed.

Click “SAVE” when done and you will be returned to the administration screen.

Next, complete your company’s profile. Select “Company Profile” to be taken to the Company Profile Screen.

*NOTE – If this information was previously entered for another product, you may skip this step.

9. Company profile

Items marked with an “*” are required, enter other information as needed.

Home Admin Company: ZOLL EMS & Fire Demo Jeff Miller Logout

Administration Road Safety Admin

Edit company profile

View, add or update general information about your organization, including contact info and items relevant for state and national reporting requirements. Areas marked with a * are required.

IDENTIFICATION

Company name * ZOLL EMS & Fire Demo

Company's legal name * ZOLL EMS& Fire Demo

Fire department FDID * 52020

ADDRESS

Address 11802 Ridge Parkway

Suite or apartment number Suite 400

Country United States

State/Province Colorado

City Broomfield

County Boulder

Postal code 80021

Enter your postal code with no spaces or dashes

PRIMARY CONTACT

Chad Ashmore

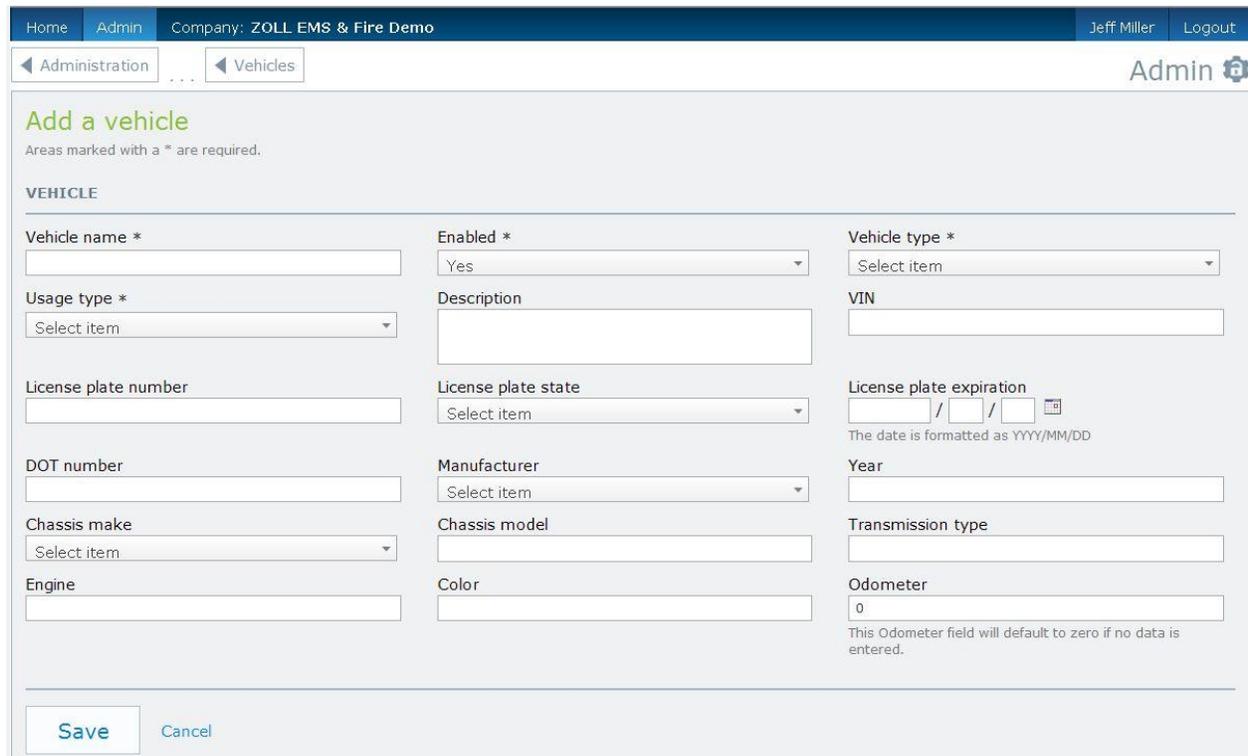
Save Cancel

Click “SAVE” when done and you will be returned to the administration screen. Click “Road Safety” again to be taken to the Road Safety Administration page to continue. Add your vehicles next.

10. Vehicle screen

Vehicles include all vehicle and apparatus types for your agency. When you add a vehicle, it will be available for selection in all of your applications. Click the  sign to be taken to the Add a vehicle screen.

*NOTE - Information entered here will also be available in the other ZOLL Online product screens, as will vehicles entered in another ZOLL Online product will be available here. If all the information is correct, no further changes will need to be made.



The screenshot shows the 'Add a vehicle' form within a web application. The top navigation bar includes 'Home', 'Admin', 'Company: ZOLL EMS & Fire Demo', 'Jeff Miller', and 'Logout'. Below the navigation, there are breadcrumb links for 'Administration' and 'Vehicles', and an 'Admin' button with a gear icon. The form title is 'Add a vehicle' with a note: 'Areas marked with a * are required.' The form is organized into a grid of fields:

- VEHICLE** (Section Header)
- Vehicle name ***: Text input field.
- Usage type ***: Dropdown menu with 'Select item'.
- License plate number**: Text input field.
- DOT number**: Text input field.
- Chassis make**: Dropdown menu with 'Select item'.
- Engine**: Text input field.
- Enabled ***: Dropdown menu with 'Yes' selected.
- Description**: Text input field.
- License plate state**: Dropdown menu with 'Select item'.
- Manufacturer**: Dropdown menu with 'Select item'.
- Chassis model**: Text input field.
- Color**: Text input field.
- Vehicle type ***: Dropdown menu with 'Select item'.
- VIN**: Text input field.
- License plate expiration**: Date picker with format 'YYYY/MM/DD' and a tooltip: 'The date is formatted as YYYY/MM/DD'.
- Year**: Text input field.
- Transmission type**: Text input field.
- Odometer**: Text input field with '0' entered. A tooltip below it says: 'This Odometer field will default to zero if no data is entered.'

At the bottom of the form are 'Save' and 'Cancel' buttons.

Items marked with an “*” are required, enter other information as needed.

Click “SAVE” when done and you will be returned to the administration screen. Click “Road Safety” again to be taken to the Road Safety Administration page to continue. Configure your settings next.

Click “CONFIGURE” to be taken to the Customize Road Safety screen.

11. Customize Menu screen

Begin by selecting Groups. Groups creates a classification of similar vehicle types that will allow you to apply similar device settings, alarms and more to all vehicles within the group.

The screenshot shows the ZOLL Admin interface. At the top, there is a navigation bar with 'Home', 'Admin', and 'Company: ZOLL EMS & Fire Demo'. On the right, it says 'Jeff Miller' and 'Logout'. Below the navigation bar is the 'Admin' section with a gear icon. The main content area is titled 'Customize Road Safety' and contains a list of configuration options:

- Groups**: Create a classification for a set of your company's vehicles to apply similar device settings, alarm settings and more.
- Alarms**: Customize alarm notifications for the driver, set warning ranges, and more. Apply your configuration to a group of vehicles.
- Devices**: Assign a device to a vehicle from your company's list. Specify serial number, data collection rate, and more.
- Inputs**: Configure the connection points for your Road Safety device inputs, and assign the configuration to a group of vehicles.
- Directional Sensitivity**: Configure turn and velocity change sensitivity. Use the configuration for a vehicle group.
- Driver Download**: Download the 1-wire driver to assign the driver Id tag for employees.
- Alerts**: Customize alert notifications for a list of recipients. Set an alert type, specify the type of message, and more.

A blue arrow points from the top left towards the 'Groups' option. At the bottom of the page, there is a version number 'v.2.5.0.17 - [enterpriseadmin.zollonline.com] - 0.00 s.' and a 'Feedback' button.

12. Customize screen- Add Group

The screenshot shows a web interface for adding a group. At the top, there is a navigation bar with 'Home', 'Admin', and 'Company: ZOLL EMS & Fire Demo'. On the right, it says 'Jeff Miller' and 'Logout'. Below the navigation bar, there is an 'Admin' button with a gear icon. The main content area is titled 'Customize Road Safety // Add Group' and includes a note: 'Areas marked with a * are required.' Under the heading 'GROUP', there are three input fields: 'Group name *' (a text box), 'Enabled' (a dropdown menu with 'Yes' selected), and 'Add Vehicle' (a dropdown menu with 'Select Item' selected). At the bottom of the form, there are 'Save' and 'Cancel' buttons.

Items marked with an “*” are required, enter other information as needed.

Click “SAVE” when done and then “Back to Road Safety” on the bottom of the screen and you will be returned to the Customize Road Safety screen. Select “Alarms” next.

13. Customize screen-Add Alarm

Add Alarms allows you to customize alarm notifications for the driver, set warning ranges, and more.

Apply these settings to a group of vehicles previously created. Click the  sign to be taken to the Add Alarm screen.

Select the Group (previously created), select your volume levels for Alarms and Warnings.

Items marked with an “*” are required, enter other information as needed.

The screenshot shows a web interface for adding an alarm. At the top, there is a navigation bar with 'Home', 'Admin', and 'Company: ZOLL EMS & Fire Demo'. On the right, it says 'Jeff Miller' and 'Logout'. Below the navigation bar, there is an 'Admin' button with a gear icon. The main content area is titled 'Customize Road Safety // Add Alarm' and includes a note: 'Areas marked with a * are required.' Under the heading 'ALARM', there are three input fields: 'Apply to group *' (a dropdown menu with 'Select Item' selected), 'Alarm Volume' (a slider with '0' at the start), and 'Warning volume' (a slider with '0' at the start). Below the 'ALARM' section, there is a 'DRIVER' section with two input fields: 'Log in time (seconds)' (a slider with '0 seconds' at the start) and 'Log off time (seconds)' (a slider with '0 seconds' at the start).

Adjust the time for the driver to log in and log off.

Set the Safety Warning Ranges

SAFETY WARNING RANGES

<p>Spotter time (seconds)</p> <input type="text" value="0"/> seconds	<p>Reverse action time (seconds)</p> <input type="text" value="10 - 50"/> seconds	<p>Safe reverse maximum</p> <input type="text" value="0"/> seconds
<p>Seatbelt off minimum distance</p> <input type="text" value="0"/> miles	<p>Seatbelt off delay (seconds)</p> <input type="text" value="1"/> seconds	<p>Over force</p> <input type="text" value="20% - 80%"/>
<p>Activate over force warning</p> <input type="text" value="0%"/>	<p>Over force delay (seconds)</p> <input type="text" value="1"/> seconds	

Set the Speed Warning Ranges

SPEED WARNING RANGES

<p>Over speed, non emergency</p> <input type="text" value="20MPH - 80MPH"/>	<p>Over speed, emergency</p> <input type="text" value="20MPH - 80MPH"/>	<p>Activate over speed warning</p> <input type="text" value="0%"/>
<p>Hard acceleration</p> <input type="text" value="0"/> ft/s/s	<p>Hard acceleration</p> <input type="text" value="0%"/>	<p>Hard deceleration</p> <input type="text" value="0"/> ft/s/s
<p>Hard deceleration</p> <input type="text" value="0%"/>		

Finally set the RPM Warning Ranges, then click SAVE when finished to return to the Alarms screen, then click “Back to Road Safety” to return to the Customize Road Safety screen.

RPM WARNING RANGES

<p>Over RPMs, idle</p> <input type="text" value="0"/> RPMs	<p>Over RPMs, idle (seconds)</p> <input type="text" value="0"/> seconds	<p>Over RPMs, moving</p> <input type="text" value="0"/> RPMs
<p>Over RPMs, moving (seconds)</p> <input type="text" value="1"/> seconds	<p>Over RPMs delay (seconds)</p> <input type="text" value="1"/> seconds	

v.2.5.0.17 - [enterpriseadmin.zollonline.com] - 2.72 s.

Select “Devices” next.

14. Customize screen- Add Device

This is where you will assign a Road Safety device to a specific vehicle and define some configuration settings specific to that vehicle. Click the  sign to be taken to the Add Device screen.

Items marked with an “*” are required, enter other information as needed.

Customize Road Safety // Add Device

Areas marked with a * are required.

DEVICE

Vehicle Select Item	Device serial number *	
Modem serial number	Communication type Can	Idling MPH rate * 0
RPM connection type High Speed	Idling RPM rate * 0	RPM connected False
Speed calibration 0	Measure speed and distance in miles	RPM calibration 0
Collect second by second <input type="checkbox"/> Speed <input type="checkbox"/> RPM <input type="checkbox"/> Inputs <input type="checkbox"/> Force	Odometer calibration 0	Digital out port * 0

Save

Cancel

Click “SAVE” when finished to return to the Device screen, then click “Back to Road Safety” to return to the Customize Road Safety screen. Configure Inputs next.

15. Customize screen- Add Input

Select Inputs. This is where you will configure the connection points for your Road Safety device

inputs, and assign them to a Group of vehicles (previously defined). Click the  sign to be taken to the Add Input screen. 24 inputs may be configured, you are required to select a group.

Customize Road Safety // Add Input

Areas marked with a * are required.

ADJUST SENSITIVITY

Apply to group *
Select Item

Input line: Ignition Create report

Connected to

Negative

Input line: 1 Create report

Connected to

Negative

Input line: 2 Create report

Connected to

Negative

Click “SAVE” when finished to return to the Input screen, then click “Back to Road Safety” to return to the Customize Road Safety screen. Configure Directional Sensitivity next.

16. Customize screen- Add Directional Sensitivity

Select “Directional Sensitivity”. This is where you will configure turn and velocity change sensitivity.

Home Admin Company: ZOLL EMS & Fire Demo Jeff Miller Logout

Admin

Customize Road Safety // Add Directional Sensitivity

Areas marked with a * are required.

ADJUST SENSITIVITY

Apply to group *
Select Item

Left turn 0

Acceleration 0

Right turn 0

Deceleration 0

Save Cancel

Click “SAVE” when finished to return to the Directional Sensitivity screen, then click “Back to Road Safety” to return to the Customize Road Safety screen. Download a driver for your Driver ID programmer next.

17. Driver Download (Driver ID programmer)

To assign a Driver Id tag for an employee, you will first need to download a 1-Wire device driver for your version of Windows for the device to be recognized by your pc. Select your operating system and click “download”. Follow the download prompts and install.

Home Admin Company: ZOLL EMS & Fire Demo Jeff Miller Logout

Admin

Road Safety Driver Download - ZOLL Online

Download the 1-wire driver to assign the driver Id tag for employees.

FILE NAME	
32 Bit Driver Id Tag Programmer Driver	Download
64 Bit Driver Id Tag Programmer Driver	Download

[Back to Road Safety](#)

Click “Back to Road Safety” to return to the Customize Road Safety screen. Customize alert notifications for a list of recipients next. Click “Alerts”.

18. Alerts

An alert can be set up to notify key personnel via email or text message when certain alert types have occurred.

Items marked with an “*” are required. Select an alert type from the drop down, and then select “recipients”.

Home Admin Company: ZOLL EMS & Fire Demo Jeff Miller Logout

Admin

Customize Road Safety // Add Alert

Areas marked with a * are required.

ALERT

Alert type: Excess Idle

Add Recipients *: Select Item

RECIPIENTS

No recipients have been added for this alert.

Save Cancel

Once a recipient has been selected, click the symbol to continue to configuring the message type.

RECIPIENTS

Jeff Miller

Message type *: Select a message type

Email address or phone number *

Save Cancel

Enter an email address or phone number and click “SAVE” to return to Customize Alerts screen, and then click “Back to Road Safety”.

19. Reports

Once configured, you are now ready to configure your Road Safety Reports. Start from the ZOLL Online home screen, and select “Road Safety” on the lower left side of the screen.

Home Admin Company: ZOLL EMS & Fire Demo Jeff Miller Logout

ZOLL Online

Company: ZOLL EMS & Fire Demo

Products

- @Work**
View the status of your entire fleet with our easy map-based interface.
- 12-Lead**
Receive and manage 12-lead ECGs from just about anywhere.
User Guide | Admin Guide |
- Checklist**
Create and run through your agency's pre-trip vehicle checks.
- easyPCR**
Capture your critical patient information from anywhere.
- Fire Incidents**
Manage your day-to-day fire operations. Add *.zollonline.com to your trusted sites before proceeding.
Need help getting set up?
Admin Guide
- Insight Analytics**
Review operational, financial, billing and clinical data with pie charts, graphs, maps, and more. Make critical decisions, or evaluate your agency's performance using our set of industry-standard workbooks.
- Road Safety**
Improve the safety of your fleet by monitoring driver behavior.

Administration

- Settings**
Adjust product settings and configure your software to fit your organization.

Extracts

- Download an extract**
View the status of your extract, and download the completed file.
- Schedule an extract**
Schedule an extract file to run now, or in the future.

Feedback

Select the  symbol to begin customizing a report.

Company: ZOLL Data Systems Jeff Miller Logout

Settings

Customize Road Safety // Report

Change your company's Road Safety settings to customize your product. Create groups of related fields, then set up custom configurations for your groups.

You have not added any Reports yet. 

20. Report Templates

<u>Report</u>	<u>Type Definition</u>
Backing	Enables you to view duration, distance and time for a vehicle group
Daily Distance	Enables you to view beginning and end odometers and total distances for a vehicle group
Overforce	Enables you to view violations for overforce duration, direction, highest value and identity of the driver
Overspeed	Enables you to view overspeed violations by driver, duration and value
Safety	Enables you to review driver behavior for distance, speed, seat belt violations and so on Seatbelt Enables you to view data for seat belt use based on driver, distance and so on.
Utilization	Enables you to view vehicle utilization results
Driver Log	Enables you to view log in and log out results for each driver and their run duration
Download	Enables you to view the date/time of the most recent data received from vehicles
Run	Enables you to view vehicle or group run information including driver, distance, start and end times

Click  on the left of one of the report templates to begin.



Settings

Customize Road Safety // Add Reports

Areas marked with a * are required.

Change your company's Road Safety settings to customize your product. Create groups of related fields, then set up custom configurations for your groups.

+ Backing - View duration, distance, and times for vehicle group backing events.

+ Daily Distance - See beginning and end odometers, plus total distances, for your selected group.

- Overforce - View violations for overforce duration, highest value, direction and driver.

Date type

Date range / / 

to / / 

format date as YYYY/MM/DD

Report type

- Select a Date Type by clicking in the Date Type entry window. Available options are: Fixed date range, Week to date, Month to date, Year to date, Quarter to date, First quarter, Second quarter, Third quarter, Fourth quarter, and Today.
- Select the date ranges and report type.

*The Date Range and Report Type fields will change based on the Date Type selected.

[Create a report](#)

Click [Create a report](#) when finished and your report will now be on the Customize Road Safety Report page. To view the report, click **“View Report”**.

For more information on reports, see the Road Safety 4000 Administrator and User Guide.

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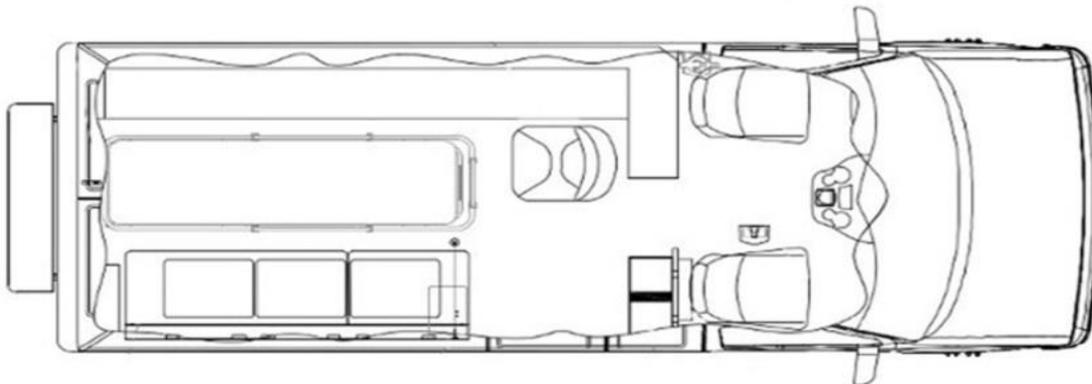
Form 1: Vehicle Inspection Diagram

ROAD SAFETY

ZOLL

Customer: _____ Date: _____

Vehicle: _____ Year: _____ Make: _____ Model: _____



Damage Key

B -Bent	C -Cracked	D -Dent
DR -Dirty	L -Loose	M -Missing
R -Ripped	S -Scratch	ST -Stained

Notes:

This page intentionally left blank.

Form 2: Vehicle Inspection Form

ZOLL Road Safety Vehicle Inspection Form		Vehicle #	Year:
		Make:	Model:
VIN: <input type="text"/>			
ZOLL Inspector:		Customer:	
Pre-Installation Inspection		Post Installation Inspection	
AREA INSPECTED (see Vehicle Diagram)	DAMAGE *Yes / No	*Describe	Yes / No
Exterior Front			
Exterior Drivers Side			
Exterior Rear / Roof			
Exterior Passenger			
Seats / Belts			
Dash / Door Panels			
Headliner			
Flooring			
Vehicle Systems	Normal? Yes /* No	*Comments	Yes / No
Interior OEM Lights			
Horn / OEM Radio			
Emerg. Lts / Siren			
Emerg. Radios / PA			
Vehicle Starts			
Warning Lts Off			
Head Lights			
Turn Signals/Flasher			
Brake /Reverse Lts			
Other			
Notes / Comments			

Form 3: Build Sheet

RS-4000 Build Sheet

VEHICLE YEAR	MAKE	MODEL	CUSTOMER
--------------	------	-------	----------

RS4101 POWER HARNESS CONNECTIONS			
FUNCTION	RS wire color	Vehicle Wire Color	CONNECTION LOCATION
Power1	red		
Power2	red/wht		
Ignition	blue		
Ground	black		Pin 4 at the DLC
Speaker Wires	black		Connected to Audio Speaker (ribbed=neg)
Driver ID Input	blu/yel		White wire on Driver ID Receiver
Driver ID Ground	blu/blk		Brown wire on Driver ID Receiver

RS4103 STANDARD DIGITAL HARNESS						
FUNCTION	Digital Input	RS wire color	Vehicle Wire Color	Polarity		CONNECTION LOCATION
				+	-	
Left Turn	7	wht/brn				
Right Turn	8	wht/yel				
Brakes	9	grn/red				
Spotter Swithces	10	grn/pink				
Reverse	11	grn/blk				
Parking Brake	12	grn/tan				
Neutral	14	grn/vio				

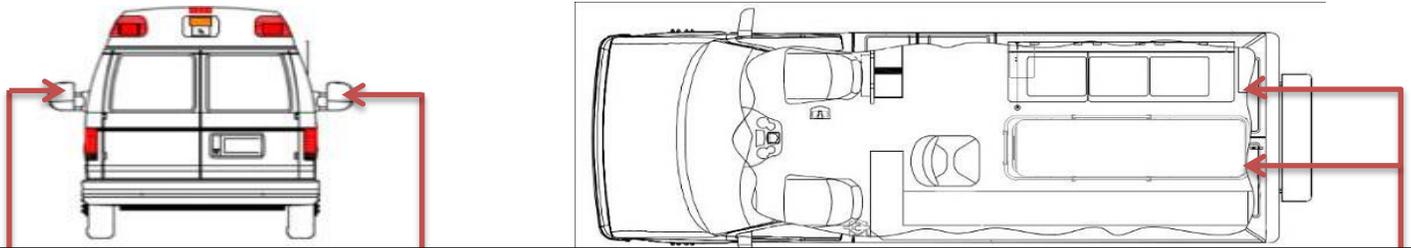
RS4105 EXPANSION HARNESS						
FUNCTION	Digital Input	RS wire color	Vehicle Wire Color	Polarity		CONNECTION LOCATION
				+	-	
Seatbelt +	4a	gry/red				
Seatbelt -	4b	brn/red				
Siren +	5a	gry/yel				
Siren -	5b	brn/yel				
Emerg. Lights	13	grn/gry				

Connect RS4107 OBDII ADAPTER CABLE to OEM DLC connector for Vehicle SPEED and Engine RPM

Orientation Number (1-24) Refer to RS 4000 Installation Guide		Notes:
RS4000 Serial #		
Modem Type		
Modem Serial#		
Wi-Fi SSID		



Appendix A: Printable Component Locations Diagram



RS-4902 - Spotter Switches: When pressed, a tone alerts the driver that it is safe to back up the vehicle.

Typical Mounting Location: One switch mounted on the rear overhead panel with a clear sight line out the rear window, and one switch mounted outside the vehicle near the left or right taillight assembly depending on agency policy.

Note: Place all switches in similar positions on all fleet vehicles to assist the crew.

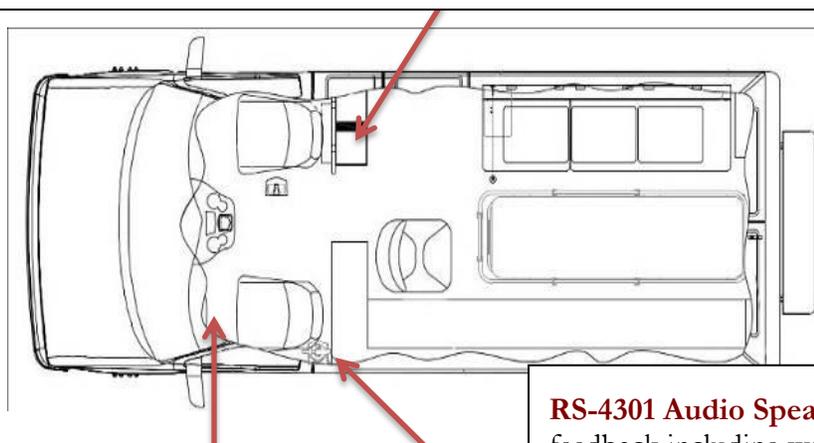
Typical wire harness routing is through the center overhead or outboard exterior light voids.

RS-4000 On-Board Computer: Records and stores vehicle event information. It is the main control unit for inputs, outputs, and communication.

Preferred Mounting Location: Equipment cabinet or bulkhead to help reduce tampering and other damage.

Acceptable Mounting Location: Under passenger seat. This area is more susceptible to damage by tampering and environmental hazards.

- Location should be within 16 feet of the driver's side dashboard. There is an OEM limit of 16 feet for the OBDII/CAN Harness.



RS-3211-1 Driver ID Receptacle: Used to read assigned Driver ID tags that associate a driver to the vehicle for reporting purposes.

Typical Mounting Location- Driver's side dash in close proximity to the ignition switch.

Note: The panel should not be greater than 3/16" thick and have sufficient room behind it to fit without interference.

RS-4301 Audio Speaker: Source of audible feedback including warning and violation tones.

Typical Mounting Location- Driver's side headliner or bulkhead.

Note: Mounting the speaker in other locations further from the driver greatly reduces effectiveness as its volume is limited.

Connects to: On-Board Computer via Power/Audio Harness.

Appendix B: Orientation Index

The RS-4000 On-Board Computer can be mounted in any of 24 unique positions. When configuring the unit in ZOLL Online, refer to the chart below and images following to determine the appropriate **Orientation Index Number** to use for your installation. When mounting the unit, ensure it is level, (perpendicular or vertical) and either parallel or square to the centerline of the vehicle.

Orientation Index	Engraved ZOLL Logo facing	Connectors facing
1	Up	Front
2	Up	Rear
3	Up	Left
4	Up	Right
5	Down	Front
6	Down	Rear
7	Down	Left
8	Down	Right
9	Front	Up
10	Front	Down
11	Front	Left
12	Front	Right
13	Rear	Up
14	Rear	Down
15	Rear	Left
16	Rear	Right
17	Left	Up
18	Left	Down
19	Left	Front
20	Left	Rear
21	Right	Up
22	Right	Down
23	Right	Front
24	Right	Rear

Orientation Index 1-4

The On-Board Computer's mounting tabs are on the bottom, and parallel to the floor, ZOLL logo and screen facing up. The ambulance is shown as a reference to how the RS-4000 would be mounted inside the vehicle.

Orientation 1 (default)

ZOLL logo UP, connectors facing front.



Orientation 2 ZOLL logo UP, connectors facing aft.



Orientation 3 ZOLL logo UP, connectors facing left.



Orientation 4 ZOLL logo UP, connectors facing right.



Orientation Index 5-8

The On-Board Computer's mounting tabs are on top, and parallel to the floor, ZOLL logo and screen facing down (mounted under a shelf).

Orientation 5 ZOLL logo DOWN, connectors facing front.



Orientation 6 ZOLL logo DOWN, connectors facing aft.



Orientation 7 ZOLL logo DOWN, connectors facing left.



Orientation 8 ZOLL logo DOWN, connectors facing right.



Orientation Index 9-12

The On-Board Computer is mounted vertically, perpendicular to the floor, ZOLL logo and screen facing forward (wall mounted).

Orientation 9 ZOLL logo FORWARD, connectors facing up.



Orientation 10 ZOLL logo FORWARD, connectors facing down.



Orientation 11 ZOLL logo FORWARD, connectors facing left.



Orientation 12 ZOLL logo FORWARD, connectors facing right.



Orientation Index 13-16

The On-Board Computer is mounted vertically, perpendicular to the floor, ZOLL logo and screen facing rearward (wall mounted).

Orientation 13 ZOLL logo facing rearward, connectors facing up.



Orientation 14 ZOLL logo facing rearward, connectors facing down.



Orientation 15 ZOLL logo facing rearward, connectors facing left.



Orientation 16 ZOLL logo facing rearward, connectors facing right.



Orientation Index 17-20

The On-Board Computer is mounted vertically, perpendicular to the floor, ZOLL logo and screen facing left (right wall mounted).

Orientation 17 ZOLL logo facing right, connectors facing up.



Orientation 18 ZOLL logo facing right, connectors facing down.



Orientation 19 ZOLL logo facing right, connectors facing forward.



Orientation 20 ZOLL logo facing right, connectors facing rearward.



Orientation Index 21-24

The On-Board Computer is mounted vertically, perpendicular to the floor, ZOLL logo and screen facing right (left wall mounted).

Orientation 21 ZOLL logo facing right, connectors facing up.



Orientation 22 ZOLL logo facing right, connectors facing down.



Orientation 23 ZOLL logo facing right, connectors facing forward.



Orientation 24 ZOLL logo facing right, connectors facing rearward.



Appendix C: Wiring Assignments

RS-4105 Expansion Harness Digital Input #	Vehicle Input	RS			Common Vehicle Location for connection - See Form 3	Notes		
		Harness	Wire	Color				
1	Not Used							
2	Not Used							
3	Not Used							
4	Seatbelt *	Gray/Red			Vehicle seat belt wiring / RS switch			
	Seatbelt *	Brn/Red			Vehicle seat belt wiring / RS switch			
5	Siren 1*	Gray/Yel			Speaker + at Siren Amp			
6	Siren 2*	Brn/Yel			Speaker - at Siren Amp			
7	Left Turn	Wht/Brn			Steering Column			
8	Right Turn	Wht/Yel			Steering Column			
9	Brakes	Grn/Red			Brake Light Switch			
10	Spotter Switch	Grn/Pink			OBC to Rear of Vehicle			
11	Reverse	Grn/Blk			various - Back Up Light circuit			
12	Parking Brake	Grn/Tan			Parking Brake Switch			
13	Emerg. Lights	Grn/Gray			Switched side of Pri/Sec Circuit			
14	Neutral	Grn/Vio			Varies per vehicle			
15	Starter	Grn/Brn*			Ignition Switch			
16	Asset Track	Grn/Yel*			Not Available			
RS-4101 Power Audio Harness Function		RS			Common Vehicle Location			
		Harness	Wire	Color				
Power 1 +12vdc		Red/Wht			Under Steering Column			
Power 2 +12vdc		Red			Under Steering Column			
Ignition +12vdc		Blue			Ign. Sw - 12V Ign On only			
Ground		Black			Ground			
Ground		Black			Ground			
Speaker "+"		Brown			Speaker "+" to RS Audio Speaker			
Speaker "-"		Brown			Speaker "-" to RS Audio Speaker			
Digital Output 1		Yellow			To Device Controller			
Digital Output 2		Orange			To Device Controller			