



iR1600 Wireless Application Platform

Wiring Harness Installation Instructions

Contents

Introduction	1
Parts Included	3
Connecting harness to hour meter.....	4
Connecting harness to fuel gauge	5
Connecting harness & relay to ignition switch.....	6
Appendix A: In-Vehicle Installation of the eLutions® iR1600® for “Always On” Data Monitoring	8

Introduction

This document describes the installation steps need to wire an iR1600® to an industrial tool or vehicle. These tools and vehicles consist of generators, light towers, earthmovers, forklifts, and similar industrial and construction equipment. The iR1600® will be attached to the tool via a custom wiring harness. Using its digital inputs, digital outputs, and analog inputs, the iR1600® will be able to monitor the hour usage meter, the fuel level, and stop the tool from being started.

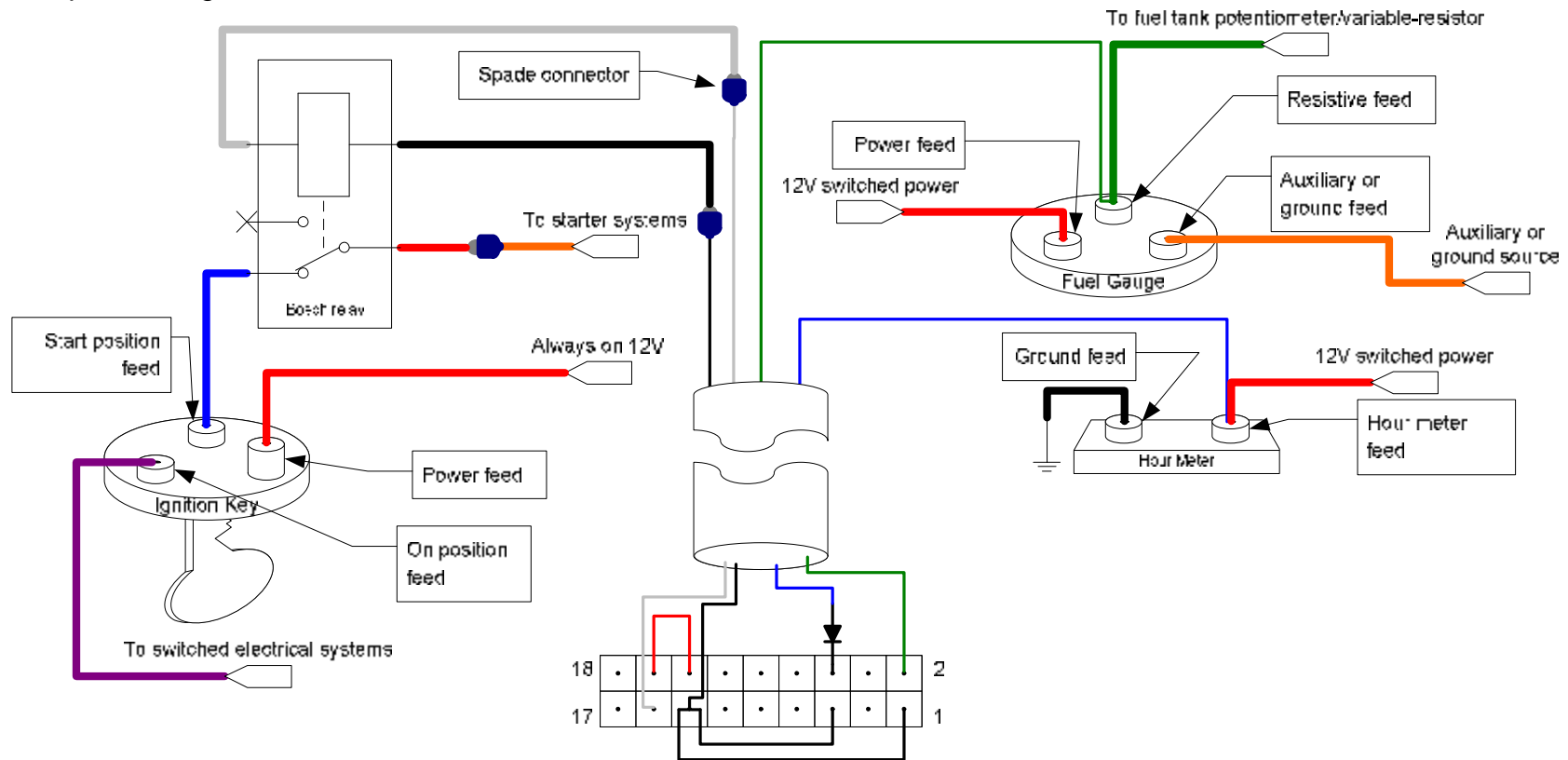
This document relates specifically to installing the wiring harness. The document that details the standard installation procedure can be found at www.elutions.com/wireless/prodSupport.asp.

In a typical installation, the iR1600® will always be on. Detailed instructions about this procedure are in appendix A.



iR1600 Wireless Application Platform

The figure below illustrates the wiring diagram of the final installation. Connection of the individual pieces will be displayed in the proceeding sections.



1300 E. 8th Avenue, Suite 200
Tampa, FL 33605

<http://www.elutions.com>

Wiring Harness
Installation Instructions Rev. 1.10a

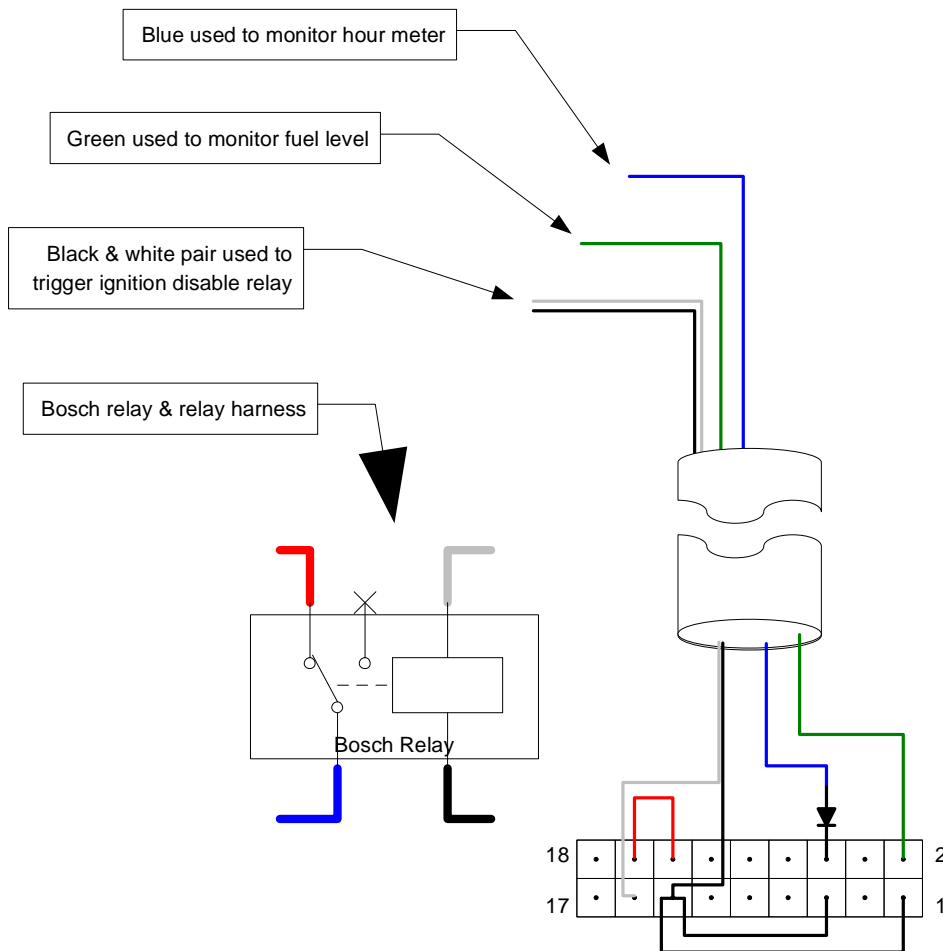


iR1600 Wireless Application Platform

Parts Included

- iR1600® wiring harness (iR1600® I/O extender cable)
- BOSH Relay
- Bosh Relay Harness

The figure below represents the wiring harness, Bosch relay, and relay harness. All wires can be shortened or modified appropriately to fit each tools needs. Note that white cables are represented in this document as a light grey.



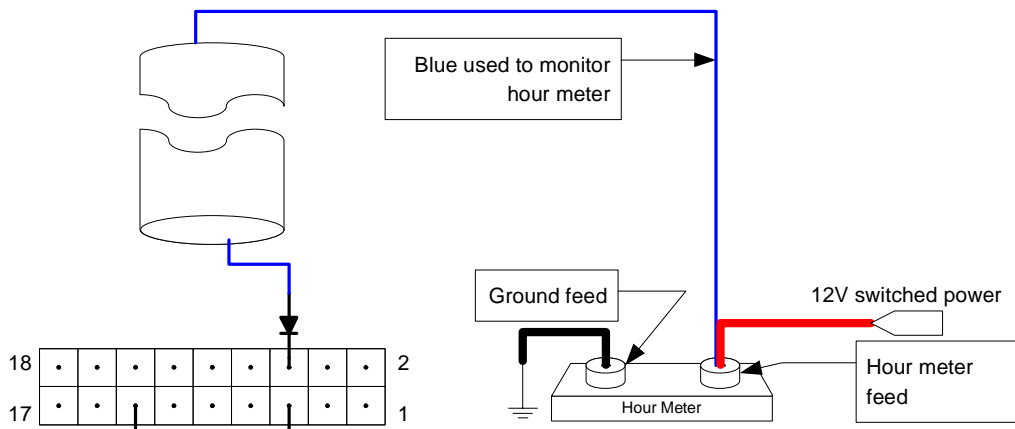


Connecting harness to hour meter

The tool's on-hours can be tracked using one of the iR1600®'s digital inputs. Some tool's hour meters tick when the ignition is on, others only if the engine is running. The figure below illustrates connecting the wiring harness to the hour meter.

The hour meter below is a simplistic representation of an actual hour meter. The hour meter below has a ground reference feed and a 12V switched power feed. The 12V switched power feed is only active when the tool is on. When installing the wiring harness, this 12V switched feed must be identified.

Attach the blue wire from the wiring harness to the 12V switched power feed. The wire from the harness may be attached at any convenient point on the 12V switched feed such as the screw terminal on the meter, using quick-spice, or any other means of taping the wire.



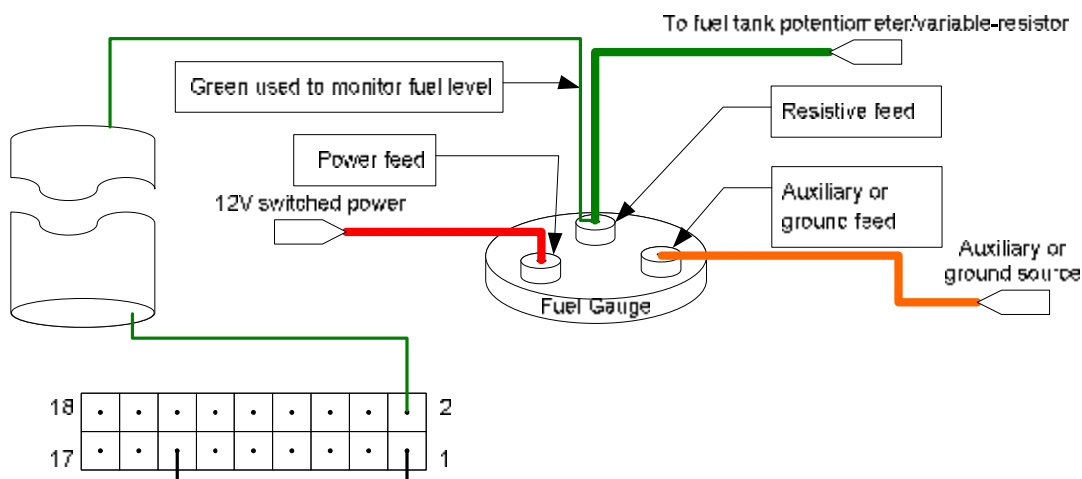


Connecting harness to fuel gauge

The fuel sensor and gauge of a tool can be monitored by the iR1600®'s analog input. The fuel gauge shown in the figure below is a simplistic representation; an actual gauge may have more feed terminals. Most fuel gauges will have two or three terminals, one or two for power and/or ground, and another feed for the sensor in the fuel tank.

The feed from the tank's sensor can be found by tracing the wire from the tank, or by systematically disconnecting feeds from their terminals on the fuel gauge. When disconnecting feed from the gauges, note which disconnections cause a change. Afterwards, determine which of those feeds is connected to tools' power or ground. The feed that is not power or ground is the resistive feed from the tank's sensor. Another way to determine which feed is from the tank's sensor is by using an ohmmeter and measuring all of the feed lines. Before starting, be sure that the tool is switched off. After measuring the feed lines, either fill up or empty the tank and re-measure the feeds. The feed that changed resistance is the feed from the tank's sensor.

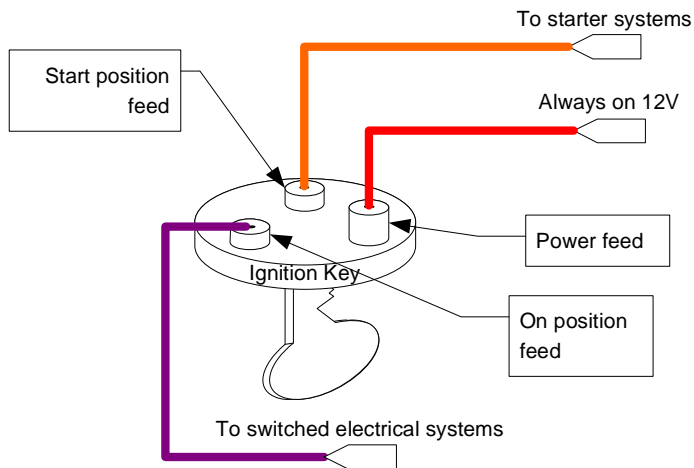
Once the tank's sensor feed is identified, connect the green wire of the wiring harness to the feed wire from the tank's sensor. This can be done in any way that is convenient.





Connecting harness & relay to ignition switch

The iR1600® can be used in conjunction with a relay to disable the tool's ignition system. The figure below represents the ignition switch before modifications. The ignition switch in the figure below is a simplistic representation; an actual ignition switch may have more feeds. The three feeds in the switch below are the constant 12V feed power feed, the on position, and the start position.

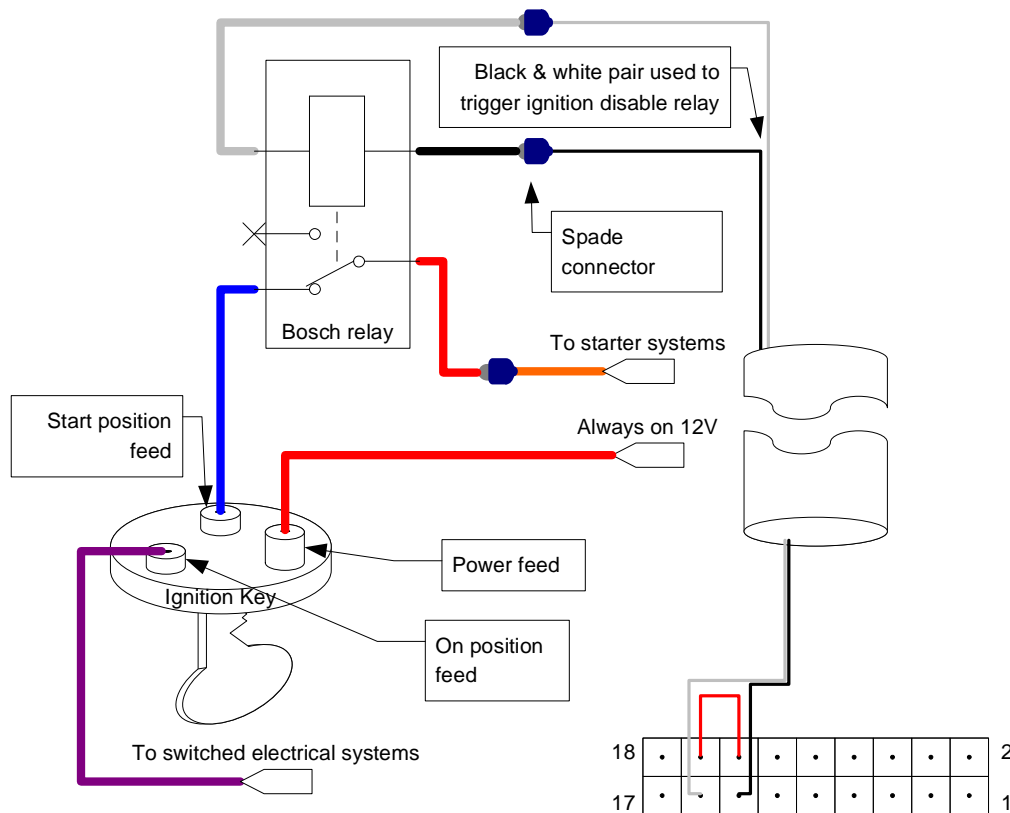




iR1600 Wireless Application Platform

The figure below illustrates the configuration of the wiring harness and the relay. The feed that only supplies power when the key is turned to the start position must be identified. Remove all wires of this feed from the ignition switch's terminal. Replace these wires on the terminal with the blue wire of the relay harness. Then, using a convenient connector, such as a crimp-on spade, connect all of the feed wires that were removed to the red wire of the relay's harness.

The control wires of the relay also need to be connected. Once again, using convenient connectors, connect the white and black feeds of the relay harness to the white and black wires of the iR1600®'s wiring harness.





iR1600 Wireless Application Platform

Appendix A: In-Vehicle Installation of the eLutions® iR1600® for “Always On” Data Monitoring

Installing the eLutions® iR1600 for “Always On” data monitoring allows constant monitoring of the Analog/Digital Inputs/Outputs and GPS coordinates, in GPS enabled devices, of the eLutions® iR1600 even while the vehicle ignition is turned off.



The first step in installing the eLutions® iR1600 for “Always On” data monitoring is to locate the wires leading to the vehicle +12V DC and Ground (Negative) Battery terminals. The next, and final step is to connect the eLutions® iR1600’s power connector to the vehicle power using the diagrams shown in Figure 1 and 2.

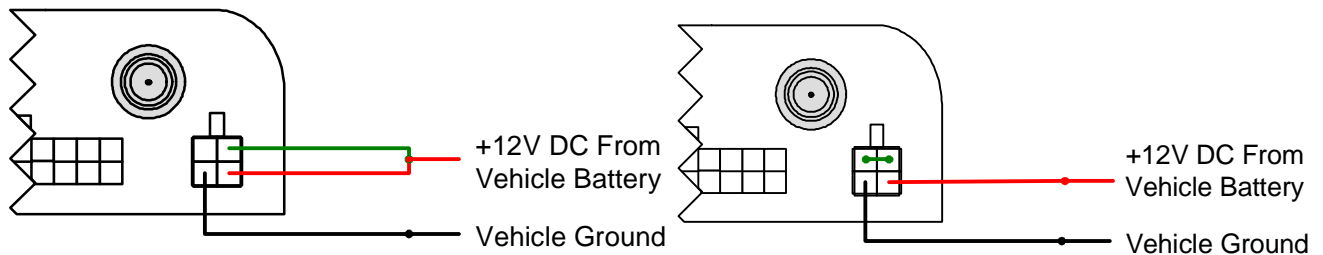


Figure 1

Figure 2

In both of these diagrams, the Red wire represents a connection to +12V DC, the Black wire represents a connection to Ground, and the Green wire represents a connection to the eLutions® iR1600 Ignition Sense Circuitry. Figure 1 illustrates how to connect the iR1600 if using the eLutions® iR1600 vehicle wiring harness or if modifying an existing installation. Figure 2 shows an alternate method of installing the eLutions® iR1600 for “Always On” data monitoring. Once these connections are complete, the eLutions® iR1600 is properly installed for “Always On” data monitoring.