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Haltech HT-159976

Haltech WB1 Single Channel CAN O2 Wideband Controller Kit

Model: HT-159976

1. Introduction

This manual provides comprehensive instructions for the installation, operation, and maintenance of the Haltech WB1 Single Channel CAN O2 Wideband Controller Kit. The WB1 controller is designed to accurately measure and report exhaust gas oxygen content (Air/Fuel Ratio) to a compatible Engine Control Unit (ECU) or data logger via a CAN (Controller Area Network) interface. This kit includes a Bosch LSU 4.9 sensor, ensuring precise and reliable AFR data for optimal engine tuning and monitoring.

2. Package Contents

Verify that all items listed below are present in your kit:

- Haltech WB1 CAN Wideband Controller (single channel)
- Bosch 4.9 LSU Sensor
- CAN Cable (4 feet / 1200mm)
- Power Supply Cable
- Weld-on Bung

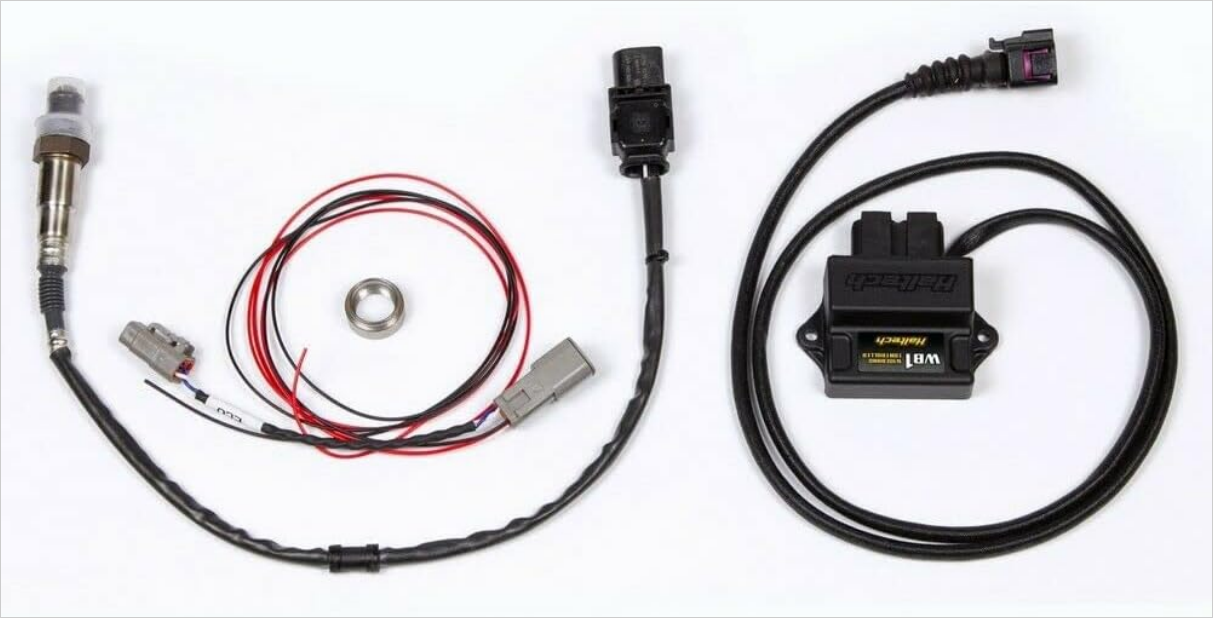

Figure 1: All components included in the Haltech WB1 Single Channel CAN O2 Wideband Controller Kit. This includes the Bosch LSU 4.9 O2 sensor with its wiring harness, a small metal weld-on bung, additional wiring, and the black Haltech WB1 controller unit connected to a long black CAN cable and a power supply cable.

3. Setup and Installation

3.1. O2 Sensor Installation

1. **Location Selection:** Choose a suitable location in the exhaust system, typically after the turbocharger (if applicable) and before the catalytic converter. The sensor should be positioned at least 18 inches (45 cm) from the exhaust port to avoid excessive heat, which can damage the sensor.
2. **Bung Welding:** Use the provided weld-on bung. Ensure the bung is welded securely to the exhaust pipe, creating a gas-tight seal. The sensor should be installed at an angle (at least 10 degrees from horizontal) to prevent condensation from collecting in the sensor element.
3. **Sensor Installation:** Carefully thread the Bosch LSU 4.9 sensor into the welded bung. Tighten it firmly, but do not overtighten.

3.2. Controller Mounting

Mount the Haltech WB1 controller in a secure location away from direct heat, moisture, and excessive vibration. Ensure adequate airflow around the unit for cooling. The controller is not waterproof and should be installed inside the vehicle cabin or a sealed enclosure.

3.3. Wiring Connections

- **Sensor Connection:** Connect the Bosch LSU 4.9 sensor harness to the designated port on the WB1 controller. Ensure the connection is fully seated and locked.
- **Power Supply:** Connect the provided power supply cable to the WB1 controller. The red wire should be connected to a switched 12V power source (e.g., ignition switched power), and the black wire to a reliable chassis ground. Ensure proper fusing for the 12V supply.
- **CAN Connection:** Connect the CAN cable from the WB1 controller to your Haltech ECU or other compatible CAN device. Refer to your ECU's wiring diagram for specific CAN input connections. Ensure the CAN bus is properly terminated if the WB1 is at an end of the bus.

4. Operating Instructions

Once installed and wired correctly, the Haltech WB1 controller will automatically begin to heat the O2 sensor upon receiving power. The controller will then transmit real-time Air/Fuel Ratio (AFR) data via the CAN bus to your connected ECU or data logger. No user configuration is typically required on the WB1 unit itself, as it is pre-calibrated for the Bosch LSU 4.9 sensor.

- **Warm-up Period:** Allow a brief warm-up period (typically 30-60 seconds) after power-up for the sensor to reach its operating temperature and provide accurate readings.
- **Data Monitoring:** Monitor AFR data through your Haltech ECU's software (e.g., ESP software) or your connected data logging device.
- **Normal Operation:** The WB1 continuously measures and outputs AFR. Fluctuations in AFR are normal during engine operation, especially under varying load and throttle conditions.

5. Maintenance

- **Sensor Lifespan:** The Bosch LSU 4.9 O2 sensor is a consumable item. Its lifespan can vary significantly depending on fuel type, engine condition, and operating environment. Typical lifespan ranges from 30,000 to 60,000 miles (50,000 to 100,000 km) for street use, but can be much shorter in high-performance or race applications. Replace the sensor if readings become erratic, slow to respond, or consistently inaccurate.
- **Connection Checks:** Periodically inspect all wiring connections for corrosion, fraying, or looseness. Ensure the sensor is securely threaded into the bung.
- **Controller Inspection:** Ensure the WB1 controller remains free from debris, moisture, and excessive heat.

6. Troubleshooting

Symptom	Possible Cause	Solution
No AFR reading / Sensor not heating	No power to WB1 controller; faulty wiring; faulty sensor.	Check power and ground connections. Verify 12V supply. Inspect wiring for damage. Test with a known good sensor if available.
Erratic or inconsistent AFR readings	Exhaust leak near sensor; sensor contamination; aging sensor; electrical interference.	Check for exhaust leaks. Inspect sensor tip for deposits. Replace sensor if old. Ensure power/CAN wiring is away from ignition components.
Incorrect AFR values (offset)	Incorrect CAN configuration in ECU; sensor calibration issue (rare for LSU 4.9).	Verify CAN settings in your ECU software match Haltech's recommendations for the WB1.
CAN communication error	Faulty CAN cable; incorrect CAN bus termination; incompatible CAN settings.	Check CAN cable for damage. Ensure CAN bus termination is correct (typically 120 Ohm resistors at each end of the bus). Verify CAN baud rate and ID settings.

If troubleshooting steps do not resolve the issue, contact Haltech technical support for further assistance.

7. Specifications

Feature	Detail
Model Number	HT-159976
Sensor Type	Bosch LSU 4.9 Wideband O2 Sensor
Channels	Single Channel
Output Interface	CAN (Controller Area Network)
Compatible Devices	Haltech ECUs, other CAN-enabled ECUs/data loggers
Operating System (for software interface)	Windows, macOS, Linux (for ECU software)
Item Weight	1.14 pounds (approx. 0.52 kg)
Product Dimensions (Controller)	6.5 x 5.4 x 2.8 inches (approx. 16.5 x 13.7 x 7.1 cm)
UPC	741031915849

8. Warranty and Support

Haltech products are manufactured to high standards and come with a manufacturer's warranty against defects in materials and workmanship. The specific warranty period and terms may vary. Please refer to the official Haltech website or your purchase documentation for detailed warranty information.
For technical support, troubleshooting assistance beyond this manual, or warranty claims, please contact Haltech directly through their official website or authorized distributors. When contacting support, have your product model number (HT-159976) and purchase details readily available.

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Related Documents - HT-159976

	Haltech WB1/WB2 Wideband Controllers: Quick Start Guide A comprehensive quick start guide for Haltech WB1 and WB2 Wideband Controllers, covering product overview, installation, wiring, and software setup for various Haltech ECUs.
	Haltech NEXUS R3 Quick Start Guide: Installation, Wiring, and Specifications Comprehensive quick start guide for the Haltech NEXUS R3 Vehicle Control Unit (VCU). Covers overview, specifications, software installation, wiring diagrams, connections, and warranty information.
	Haltech Nexus Rebel LS ECU Quick Start Guide: Installation & Setup Comprehensive quick start guide for the Haltech Nexus Rebel LS Engine Control Unit (ECU). Covers installation, wiring, software setup, specifications, and troubleshooting for GM LS engines.
	Haltech Platinum Pro Plug-in Nissan Skyline R32/R33 Quick Start Guide A quick start guide for installing the Haltech Platinum Pro Plug-in ECU for Nissan Skyline R32 and R33 models. Covers installation, ECU Manager software, warranty, and wiring.

Preview	[Haltech Rebel LS Terminated Harness for Nexus Rebel LS ECU: Quick Start Guide HT-186500] This document provides a quick start guide for the Haltech Rebel LS terminated wiring harness (HT-186500), designed for seamless integration with Nexus Rebel LS ECUs and GM LS engines. It covers harness features, installation warnings, pinout diagrams, connection details for various sensors and components, and warranty information.
	[Haltech Platinum Sport 1000/2000 Quick Start Guide] A quick start guide for installing and configuring the Haltech Platinum Sport 1000 and 2000 Engine Management Systems (ECUs), covering wiring, sensor setup, software installation, and basic operation.