

K101<sup>TM</sup>MPG

Patent Pending  
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# 1 Background

## 1.1 Patents

PLX Devices Inc. has patents pending on Kiwi's architecture, algorithms and intellectual properties.

## 1.2 Warnings

**Do not operate this product under direct sunlight or in high temperatures. Damage and malfunction may occur.**

**To prevent fire or shock hazard, do not expose this product to rain or moisture.**

**Do not operate this product while driving. This may interfere with driving operations, resulting in an accident or even death.**

**Do not drive with this product if you have not securely tied the OBD cable away from your vehicle controls such as your gas pedal and/or brake pedal. This may interfere with the operation of your vehicle resulting in injury or death.**

**Do not use this product and its accessories in any way other than specified by PLX Devices Inc. PLX Devices Inc. is not liable for accidents or damage caused by misuse of this product.**

**Do not tamper, disassemble, or modify this product. This may cause an accident, fire, electric shock, or product malfunction.**

## 1.3 Key Features

1. Plug and play to 1996 vehicles and later
2. Engine code check and reset
3. 4 Digit LED Display
4. 2 Button interface
5. Portable

## 1.4 Package Contents

1. Kiwi MPG main unit
2. User Guide
3. Velcro Tape
4. 2 zip ties

# 2 Overview

1. LED mode indicator lights
2. 4 digit LED Display
3. Power switch
4. 6ft OBDII cable and plug
5. 2 Button interface
6. Small form factor (1 x 2.5 x 0.5 inches)



## 2.1 Installation



Connect Kiwi to Vehicle

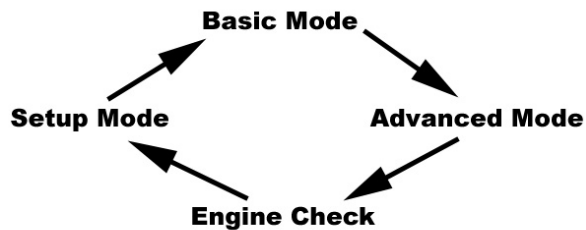
**START YOUR ENGINE BEFORE CONNECTING FOR THE FIRST TIME.** Locate the OBDII connector and simply plug Kiwi MPG in. This connector is often located on the driver's side near or under the steering column. Flip the power switch to the "up" position to turn the unit on.

## 2.2 Navigating

Navigating the Kiwi MPG is performed by pressing the 'Mode' and the 'Set' button.

### The Mode Button:

(Press and hold for 3 Seconds)



By pressing and releasing quickly the mode button toggles you through the following features, depending on what mode you're in:

(Press and Release)

Basic Mode	Advanced Mode	Engine Check Mode	Setup Mode
Instantaneous MPG Trip MPG Trip Dollars	Fuel Used Fuel Remaining Distance Traveled Distance To Empty RPM Vehicle Speed Throttle Position Coolant Temp	Read Code Reset Code	Set Dollars/Gallon Set MPG Cal Set Tank Size Set Units Setup Fuel Type

### The Set Button:

Press and hold the set button for 3 seconds to reset your trip computer. The Kiwi MPG has two independent trip computers, the Basic Mode and the Advanced Mode. They can each be reset independently. The set button is also used, in the setup mode to make changes to your settings.

## 3 Basic Mode

\*When performing a reset in this mode, only Trip MPG and Trip Dollars are reset to zero. Advanced mode values are unaffected.

### 3.1 Instantaneous MPG



Instantaneous MPG is displayed constantly in this mode. (Supported Units: MPG, Km/L, L-100Km).

### 3.2 Trip MPG



Average MPG is accumulated and displayed over multiple trips in this mode. You may reset your trip at any time. (Supported Units: MPG, Km/L, L-100Km).

### 3.3 Trip Dollars



Your total dollars of gas is accumulated over multiple trips. You may reset this to zero at any time. (All worldwide currencies supported).

## 4 Advanced Mode

\*When performing a reset in this mode, only Fuel Used, Fuel Remaining, Distance Traveled, and Distance to Empty are reset to zero. Basic mode values are unaffected.

### 4.1 Fuel Used



Fuel Used is displayed in this mode. This can be reset to zero at any time. (Supported Units: Gallons, Liters).

### 4.2 Fuel Remaining



Fuel Remaining is displayed in this mode. Fuel remaining is calculated based on a pre determined tank size. The defaults tank size is 16 Gallons. The size of your tank can be adjusted from the setup menu. (Supported Units: Gallons, Liters).

### 4.3 Distance Traveled



Distance Traveled is displayed in this mode. This can be reset to zero at any time. (Supported Units: Miles, Kilometers)


### 4.4 Distance to Empty




Distance to empty is displayed in this mode. This is calculated from your fuel remaining and your average MPG. (Supported Units: Miles, Kilometers)

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## 4.5 RPM

	This mode shows your engine's speed or (tachometer revolutions/minute).
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## 4.6 Vehicle Speed

	This mode shows your vehicles' speed. (Supported Units: MPH, kmh)
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## 4.7 Throttle Position


	This mode shows your throttle position or position of your gas pedal. This is great for determining how much "load" is exerted on your engine.
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## 4.8 Coolant Temperature


	This mode shows your engine's coolant temperature. (Supported Units: Fahrenheit, Celsius)
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# 5 Engine Check

## 5.1 Read Code


	Press the 'Set' button in this mode will read off your error codes in a procession. The number of error codes detected will display first followed by a list of the error codes one at a time.
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## 5.2 Reset Code

	Press the 'Set' button in this mode to clear your engine check light.
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# 6 Setup Mode

## 6.1 Set Dollars/Gallon

	This mode allows you to change the price of fuel. Press the set button to enter you into the set mode. When you're in this mode, press the mode button to change the digit position. Press the set button to increment the number. To exit, press the mode button until none of the digits are blinking. If your units (see section 6.4) is set to 0, the price reflects dollars per gallon. If your units (see section 6.4) is set to 1 or 2, the price reflects dollars per liter.
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## 6.2 MPG Calibration



This mode allows you to calibrate the fuel efficiency reading. It is recommended that you leave this at the default value of 1.00. However, if your MPG readings are inaccurate due to the type of vehicle you have, you can manually correct for this by adjusting the MPG Cal. Press the set button to enter you into the set mode. When you're in this mode, press the mode button to change the digit position. Press the set button to increment the number. To exit, press the mode button until none of the digits are blinking.

### Special Considerations and Background Information:

Kiwi MPG derives its fuel efficiency from your vehicle's factory sensors. There are two types of sensor that can be equipped in your vehicle. A manifold absolute pressure sensor (MAP), and/or a mass air flow sensor (MAF). If your vehicle is equipped with a Mass Air Flow sensor, your unit will display "CALF" when entering into this mode. If your vehicle is equipped with a manifold absolute pressure sensor (MAP), your unit will display "CALP" when entering into this mode. In most vehicles equipped with a MAF sensor, calibration is often not necessary and it is recommended that you leave this setting default at 1.00. For vehicles equipped with a MAP sensor, calibration is often necessary to you to achieve the best accuracy.

### Calibration Techniques:


Look up your vehicle's EPA's HWY fuel efficiency rating. If you can't find your original paperwork that came with your vehicle, you can also browse through the government database at [www.fueleconomy.gov](http://www.fueleconomy.gov). Once you've determined your HWY reading. Find a level paved road and drive 50MPH. Keep a steady speed and have a passenger adjust your MPG's instantaneous reading to match your EPA reading by adjusting the MPG Cal parameter. Be sure to drive both direction on the road to counterbalance the slope of the road and any wind conditions to achieve the most accurate results. Keep your foot on the gas as steady as possible to avoid any jerks and pulses to achieve the most accurate reading.

## 6.3 Tank Size




This mode allows you to set the gallon size (or liter size). Press the set button to enter you into the set mode. When you're in this mode, press the mode button to change the digit position. Press the set button to increment the number. To exit, press the mode button until none of the digits are blinking. If your units (see section 6.4) is set to 0, the reading reflects gallons. If your units (see section 6.4) is set to 1 or 2, the reading reflects liters.


## 6.4 Set Units

	<p>This mode allows you to set the unit of measurement.</p> <p>0 - Mode 1 (Gallons, Miles, MPG, Dollars, MPH, Fahrenheit) *default 1 - Mode 2 (Liters, Kilometers, Km/L, Dollars, kmh, Celsius) 2 - Mode 3 (Liters, Kilometers, L-100Km, Dollars, kmh, Celsius)</p>
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## 6.5 Setup Fuel Type

	<p>This mode allows you to set the fuel type.</p> <p>0 - Gasoline (14.7) *default 1 - Diesel (14.6) 2 - E85 (9.86) 3 - Ethanol (9.0) 4 - Methanol (6.4) 5 - CNG (17.2) 6 - LPG (15.5)</p>
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## 7 Standby

	<p>When your vehicle is turned off, the Kiwi MPG automatically saves your trip information and goes into a standby mode leaving one blinking light on. When your vehicle is started up, the Kiwi MPG automatically starts and resumes in the menu where it left off.</p> <p>* In some vehicles, due to ECU incompatibility, the automatic standby detection may not work correctly. If the unit does not automatically go into standby, press and hold BOTH buttons for 3 seconds to save your trip information. If the unit does not resume from standby after the vehicle has started, turn the power switch off and then back on to reconnect.</p>
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## 8 Restore to Factory Defaults

To restore your unit back to factory default settings, press and hold both buttons during power on.

## 9 Technical Specifications

Physical Dimensions	1 x 2.5 x 0.5 inches
Compatible Fuels	Gasoline, Diesel, Ethanol, E85, CNG, Methanol, LPG
Power Consumption	< 1 Watt
OBDII/CAN Protocols	ISO-9141, VPW, PWM, KWP 2000, 11Bit CAN, 29Bit CAN
Compatible Vehicles	1996 and later Vehicles
Operation Temperature	-40 - 105 Deg C
Operating Voltage	10V-18V
Human Interface	2 Button
Enclosure	Automotive Grade Plastic

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**TERMS OF USE** - PLX Devices Inc. does not guarantee product functionality with ALL vehicles. Implementation and integration of the PLX products with any other device(s) must be done at your own risk. Improper installation and usage may lead to engine damage. Mount and install PLX products in a location where it does not obstruct the driver's view and/or ability or safely control the vehicle.

**LIMITED WARRANTY** - PLX Devices Inc. warrants this product to be free from defects for 1 year from the date of purchase. If applicable, Oxygen sensors and other non-serviceable items are excluded from stated warranty. Serviceable goods must be determined by PLX Devices to be defective before any warranty or replacement is issued. PLX Devices' obligation under warranty shall be limited to repairing or replacing, under the discretion of PLX Devices, any part proven defective. This warranty is limited to the repair or replacement of parts in the manufactured good and the necessary labor done to affect its repair or replacement.

**SERVICE UNDER WARRANTY** - In the unlikely event that your PLX Devices hardware should fail during the warranty period, a Return Material Authorization number (RMA) must be first retrieved from PLX Devices Customer Support. Support can be contacted through email: [support@plxdevices.com](mailto:support@plxdevices.com) or by phone: 408-745-7591. All serviceable goods must be packaged securely with proof of purchase, RMA number, with all shipping charges prepaid and shipped to PLX Devices Inc. Goods returned under warranty must be received by PLX Devices Inc. within ten (10) business days after the RMA number has been issued. Goods received after this period is subject to fees for the service of repair or replacement. All repaired or replaced items shall be warranted for the remainder of the original product warranty.

**RETURNS AND RESTOCKING FEE** - A 15% restocking fee will apply to applicable PLX Devices products for refund. All returns are to be packed in original condition including packaging, documentation, manuals, and accessories. Returns that do not include all the accessories and components may be returned to the customer or charged on a per item basis. The customer assumes responsibility for product until receipt at PLX Devices Inc., shipping via an insurable carrier is recommended. Any unauthorized shipping charges will be billed to the customer or shipment will be refused.

**DISCLAIMER** - PLX Devices Inc. shall not be liable for direct, special, incidental, or consequential damages resulting from any legal theory including, but not limited to, lost profits, downtime, goodwill, damage, injury to persons, or replacement of equipment and property due to improper installation, integration and/or misuse of any PLX Devices Inc.'s product(s). This warranty applies to the original purchaser of product and is non-transferable. All implied warranties shall be limited in duration to the said 1 year warranty period.