

WINEGARD Pilot-IQ

Model VMS-500

OPERATION MANUAL



SilverLeaf Electronics, Inc.
2498 Ferry St SW Albany, OR 97322
888-741-0259
www.silverleafelectronics.com



Introduction

Pilot-IQ is a versatile vehicle monitoring system designed for quick installation and easy operation across a wide range of heavy vehicles. This manual provides step-by-step instructions for connecting, configuring, and using your Pilot-IQ, along with troubleshooting tips and details on available settings and accessories.

Quick Start

Locate your Diagnostic Plug

The diagnostic plug is typically located below the dash to the left of the steering column. It may be protected by a dust cap. Identify your connector type:

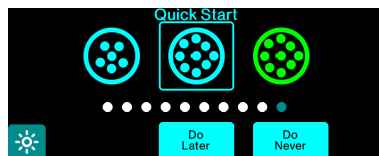
- **Grey 6-pin:** Found on mid-1990s to early-2000s vehicles (SAE J1587/J1708).
- **Black 9-pin:** Found on late-2000s vehicles (SAE J1939).
- **Green 9-pin:** Found on vehicles from 2017 to current (SAE J1939 500K).



Note: The Pilot-IQ includes standard cables compatible with both 9-pin and 6-pin connectors. Pilot-IQ is not compatible with OBDII connections used in light vehicles such as Sprinter Vans, Class C RVs, etc.

Connect and Query Your Chassis

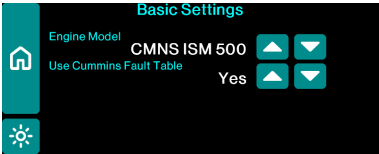
1. **Plug in the device:** ensure the Pilot-IQ cable is pushed deeply into the chassis connector to ensure it is fully mated.
2. **Start the engine:** The device will automatically power on and display the **Quick Start** screen.
3. **Tap the connector icon** that matches the diagnostic connector installed in the vehicle.
4. **Automatic Data Collection:** Progress is indicated by a line of dots changing color.
 - **Manual Intervention:** If no progress is seen, touch the icon on the screen that matches your vehicle's connector type.
 - **Troubleshooting:** If the connection still fails, try the other connector icons as your vehicle may have been built during a standards transition.
5. **Save Results:** Once the scan is complete, tap **"Accept"** to save the scan results and configure the Pilot-IQ.



Complete Basic Configuration

Follow the on-screen prompts to finalize your settings:

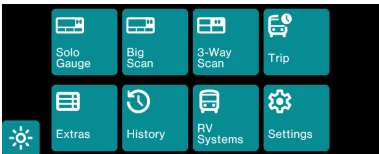
- **Engine Model:** Select your specific model for accurate performance calculations. If you are unsure, make your best guess. This can be changed later in Vehicle Settings.
- **Fault Tables:** Select **Yes** for “Use Cummins Fault Table” if applicable to receive more detailed diagnostic information.
- **Internal Clock:** Set the current time and date. This is critical for accurate trip recording and diagnostic logging.



Basic Operation

Common Icons

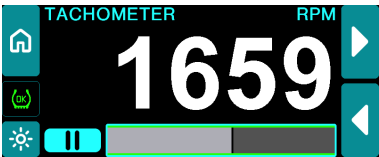
- **Home:** Navigates away from the current mode to the main menu.
- **Day/Night:** Toggles between day and night color and backlight settings. You can customize these palettes in the User Settings menu.



Solo Gauge Mode

This mode displays gauges one at a time using a large digital readout and corresponding bar graph.

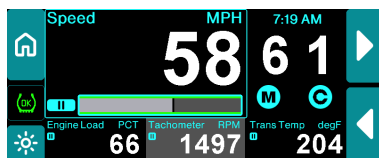
- **Scan Mode:** Automatically advances through your selected gauges every few seconds. Play/Pause button will switch between Scan and Watch modes.
- **Watch Mode:** Remains on a single gauge until you manually use the arrow buttons to switch.
- **Customization:** You can choose which gauges appear and set the rotation interval in the **Scan Settings** menu.
- **Visual Alerts:** The gauge color will change when values reach pre-set yellow or red thresholds.



Big Scan and Three-Way Scan Modes

For drivers who need more data at a glance, the Pilot-IQ offers **Big Scan** and **Three-Way Scan**.

- **Multi-Display:** These modes provide multiple active gauges on one screen.
- **Interactive Selection:** To change a specific gauge, simply touch its area on the screen to highlight and select a different data point using the on-screen arrows.
- **Status Bar:** The upper right of the screen can be configured to show transmission status (gear, mode, cruise & Economy Mode (Circled M Filled in indicates ACTIVE)) or trip data like distance and MPG. These preferences are managed in **User Settings**.



Cruise and Retarder Monitor

In any scan mode, the main gauge will automatically switch to show the Cruise Set Speed when adjusted, or the Retarder Level when active (For vehicles that have transmission retarders installed). This can be disabled in **User Settings** if your chassis does not support these features. Circled C (Cruise Status) indicates that Cruise Power is active and ready to set.

Special Gauges

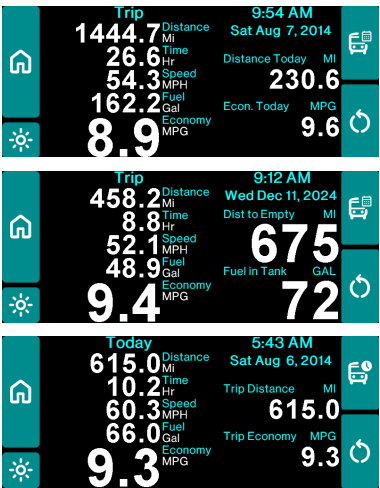
- **Rolling vs Recent MPG:** Rolling MPG reflects fuel economy over the last fraction of a mile, while Recent MPG covers several miles.
- **Miles-to-Empty:** Calculates range based on current fuel level and trip odometer history. (For vehicles that have fuel level reporting capability)
- **Torque, Horsepower:** These are calculated from engine specifications for performance reference.

Trip Modes

The Pilot-IQ tracks two independent trip odometers using data drawn directly from the engine.

- **Main Trip Odometer:** Designed to reset manually at the start of each new journey.
- **Daily Trip Odometer:** Resets automatically every 24hrs or can be cleared manually.
- **Display Options:** You can adjust your preferred display in **User Settings**.
- **Trip History:** Tapping the **Reset** icon saves the current data to the Trip History log for later review.

Note: Not all chassis provide fuel data for distance-to-empty calculations.



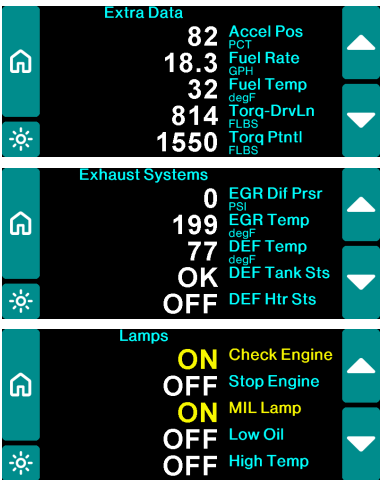
Daily Data/Main Trip

Toggle between main and daily trip odometers.

Extras

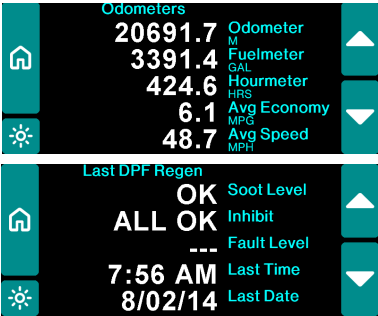
Use the Extras menu to access specialized data screens. These lists can be customized in the Extras Settings menu

- **Extra Data Mode:** Displays additional gauges useful for troubleshooting. Scroll through the list using arrow icons; customize the list in Extras Settings.
- **Exhaust Status:** Shows EGR, DPf, and DEF system data if applicable; customize in Exhaust Settings.
- **Lamps:** Displays dash lamp status for troubleshooting; customize in Lamps Settings.



- **Odometers:** Shows engine internal odometers; customize in Odometer Settings.
- **Vehicle Info:** Displays non-operating engine and vehicle information.
- **Last Regen:** For DPF-equipped vehicles, displays soot level and last regeneration time.

Note: There can be substantial variation in available data depending on your vehicle's year, model, and specific configuration. If a gauge shows no data, your chassis may not support that specific broadcast parameter.

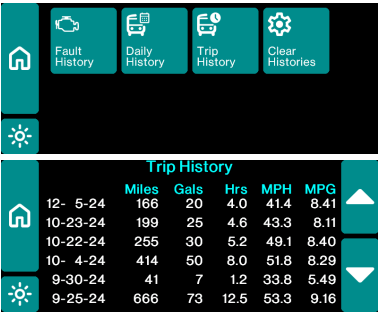


History Modes

The Pilot-IQ serves as a comprehensive digital logbook for your vehicle, storing detailed records of your travels and engine health.

Trip Histories

- **Trip Histories:** Every time a trip odometer is reset, the data is archived.
- **Storage Capacity:** The device stores over 1,000 entries for both Main and Daily trips.
- **Data Captured:** Records include ending date, total distance, fuel used, engine run time, average speed, and fuel economy.
- **Navigation:** Use the on-screen arrows to scroll through your history logs.



Diagnostic History

When the vehicle broadcasts a fault code—typically signaled by a “Check Engine” lamp—the Pilot-IQ captures the event in the Diagnostic Log.

- **Detailed Analysis:** Tap the triple-dot icon next to any code to view critical engine snapshots from the moment the fault occurred.
- **Snapshot Data:** Includes engine temperature, RPM (tachometer), and engine load at the time of the fault.
- **Code Descriptions:** Fault definitions are pulled from Cummins or SAE standard tables.

Diagnostic Log

		Miles	Fault	
10-23	9:06	3399	103 - 2	...
10-23	9:05	3399	157 - 1	...
10-22	9:04	3200	157 - 1	...
10-04	9:02	2945	157 - 1	...
9-25	8:59	2490	157 - 1	...
9-05	8:56	1824	157 - 1	...

10-23-24

9:05 AM

3398.8mi

TEMP 189°F

TACH 2040

LOAD 99%

157 - 1

Injector Metering Rail 1 Pressure - Data valid but below normal operational range - Most Severe Level

Clearing Histories

While unlikely to fill the history memory, you can clear each memory block if desired.

Restore Settings to Factory Defaults

Quick Start

If changing vehicles run the “quick Start” process again after selecting “Settings”, then “Vehicle Settings”. Use the Down arrow to scroll to “Wipe Settings” and tap it. Use “Wipe Settings” in Vehicle Settings first, then tap “Restart” and the Pilot-IQ will reboot.

Quick Start

Scan Settings

Extra Settings

User Settings

Vehicle Settings

Comm Check

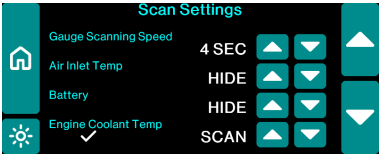
Set Clock

Note: Engines, Transmissions and other vehicle components are not all alike and your vehicle may not support all gauges and features that the Pilot-IQ is capable of displaying.

Scan Settings

You can fully customize the gauge rotation speed and which specific gauges appear in your rotation. For every gauge, choose one of three states

- **Scan:** The gauge is included in the automatic rotation.
- **Watch:** The gauge is manually selectable.
- **Hide:** The gauge is removed from the list.



Auto-Set duplicates Quick Start without engine start or connector changes. Reset to Defaults restores factory settings.

Extras Settings

These menus allow the customization of the Extras - gauges, lamps, exhaust and odometers. The menus operate just like the Scan Settings, but with only Hide and Watch options. Each also has the option of completely hiding the mode - so, for example, the Exhaust mode can be removed for a pre-DEF vehicle.

User Settings

The User Settings menu provides a lengthy list of customizations to let you fine-tune your Pilot-IQ.

- **Units:** Toggle between Metric and Standard units for all gauges.
- **Display Gear Status:** Choose what appears in the top-right corner during Scan modes—typically the Gear Selected vs. Gear Attained, or Trip Data
- **Scan Screen Trip Data:** If Display Gear Status is set to display trip data, this setting determines whether the Daily odometer or the Main odometer is displayed.
- **Enable Cruise Monitor:** This feature causes the main scan gauge to switch to showing Cruise Set Speed whenever it detects the driver is adjusting the cruise control.
- **Enable Retarder Monitor:** This feature causes the main scan gauge to switch to showing Retarder Level whenever it detects the retarder is active (If vehicle is equipped with transmission retarder).
- **Brightness and Color:** Select from several color palettes and four brightness levels for both Day and Night modes.

Vehicle Settings

Use this menu to refine installation and parameter selections if the Quick Start scan did not capture all vehicle features.

- **Engine Model:** Select your engine for accurate torque and horsepower calculations. Choose the closest equivalent if your exact model is not listed.
- **J1708 Engine/Transmission:** Adjust these for older vehicles with mismatched databus types to resolve data loss between components.
- **500k J1939:** Toggle this setting when using the Green 9-pin connector.
- **Use Cummins Fault Table:** Provides more detailed fault descriptions than standard SAE tables. Use with care on non-Cummins engines.
- **Clear Odometer/History:** Resets trip and daily odometers to match the vehicle's main odometer.
- **Allow J1939 Transmits:** Set to NO if the device triggers dashboard faults. This restricts the unit to "listen-only" mode.
- **Use Internal Odometer:** Allows you to manually set an internal odometer value if the engine's reading is lost or zeroed.
- **Vehicle-in-Motion Threshold:** Sets the speed at which menus lock out for safety.
- **Rolling/Recent MPG Factor:** Adjusts gauge responsiveness to throttle changes; lower numbers result in faster reactions.
- **Base MPG:** The default value used for miles-to-empty calculations before sufficient trip data is collected.
- **Speed/MPG Correction:** Enter multipliers to correct errors caused by non-standard tire sizes or faulty fuel sensors.
- **Backup/Restore Settings:** Save or load your configuration. Note that this does not include trip odometers.
- **Wipe Settings:** Resets the unit to factory defaults, clearing trip odometers but preserving history logs.
- **Firmware/App Status:** System data used primarily for technical support.

Wiring and Installation

Engine Connector Types

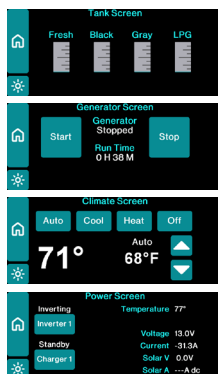
- **6-Pin Connector (Gray):** Used primarily from the mid-1990s to the early 2000s for vehicles supporting the SAE J1587/J1708 protocol.
- **9-Pin Connector (Black):** Adopted in the late 2000s to support the SAE J1939 protocol.
- **9-Pin Connector (Green):** The current standard from approximately 2017 to today, supporting the SAE J1939 500K protocol.
- **ALDL Connector:** A twelve-pin, two-row connector found on some 1990s vehicles, often those with Detroit Diesel engines and Allison transmissions. A custom harness for the ALDL is available to purchase. Contact Winegard technical support for information to order this harness if it's needed for installation.

Important: Do not confuse the ALDL with an OBDII connector. OBDII is not compatible with the Pilot-IQ. A custom harness is required for ALDL installations.

RVC House Systems (If coach is equipped)

If your coach is equipped with RVC monitoring equipment (common in motorcoach brands such as Newmar, American Coach, Country Coach, & Foretravel), the Pilot-IQ can display basic house-side data.

- **Required Hardware:** An accessory harness must be purchased to interface with the RVC system.
- **Monitoring Capabilities:**
 - **Tank Screen:** Displays levels for Fresh, Black, Gray, and LPG tanks.
 - **Generator Screen:** Shows status (Running/Stopped), run time, and provides Start/Stop controls.
 - **Climate Screen:** Monitors interior temperature and manages Heat/Cool settings.
 - **Power Screen:** Tracks battery voltage, current, inverter status, and solar charging data



Tire Pressure Monitoring

Pilot-IQ supports Pressure Pro and TST tire monitoring systems that use J1939 tire pressure monitoring. Contact SilverLeaf Support for more information.

Power

The Pilot-IQ does not have a physical power switch; it typically powers on and off based on the engine ECM or accessory power.

Ignition-Switched Power: If your vehicle provides constant power to the diagnostic plug (preventing the unit from shutting off), follow these steps:

- **Locate the Ignition Wire:** Find the extra wire (**Violet**) tied back on the Pilot-IQ harness and splice it into an ignition-switched 12VDC source in the dash.
- **Access the Circuit Board:** Carefully press on the connectors with your fingers to snap the screen out of its plastic casing.
- **Apply the Jumper:** Locate the two-pin jumper shunt between the two internal connectors. Slide it off the single pin, and re-install it across both pins to activate ignition-switched functionality.



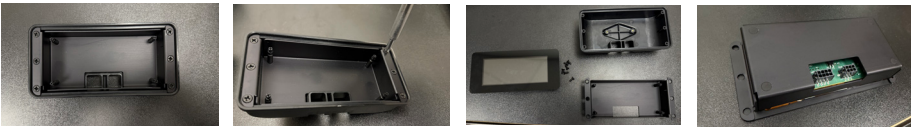
Mounting Options

The Pilot-IQ is housed in a durable plastic case designed for flexible installation. Choose the method that best fits your vehicle's dashboard layout:

- **RAM-Mount Integration:** The back of the device features a molded-in mount base compatible with the RAM-B-238U diamond base. This allows for external mounting using various arms, suction cups, or bolt-down bases without the need to cut into your dash panels.



- **Panel Flush Mounting:** Inside the plastic casing is a metal bracket that can be unscrewed and used as a template. Trace the bracket to cut a hole in your dash panel slightly larger than the bracket for a seamless, integrated look.



- **Custom Replacement Bezels:** If you are replacing an older SilverLeaf VMS unit, custom bezels are available to ensure the Pilot-IQ fits perfectly into existing factory cutouts.

Accessories and Support

Company	
Winegard/SilverLeaf Electronics	
Phone	Website
888-741-0259	www.silverleafelectronics.com

Appendix: Troubleshooting Tips

- Always Ensure connectors are fully mated and the correct icon is selected for your connector type.
- If data is not displayed, try alternate icons as standard may have changed during vehicle productions.
- Consult Scan, Extras, and User Settings menus to customize data display and resolve missing data issues.
- Contact SilverLeaf Support with your firmware version and app status flags for assistance.