

# Vertical Power VP-200 Pricing Analysis

## *Introduction*

This document describes how to estimate the true cost of the Vertical Power VP-200 system. First, you add up the cost for things you don't have to buy as well as labor savings (both professional and personal). Then you subtract that from the system cost and the difference is the estimated true cost of the VP-200. Depending on the complexity of your electronics and the value of your time, you may be surprised at how affordable the system is.

First, let's set the record straight by saying the VP-200 costs more than switches and circuit breakers. It was never designed to compete directly with those items and for good reason. Because the VP-200 adds intelligence to aircraft power switching, you get a lot more than just a direct replacement. You get lots of features for less effort and complexity. Read on.

## *Why Go Solid-State?*

Using an EFIS instead of steam gauges? Using a GPS moving map instead of VORs? Using a graphical engine monitor instead of mechanical gauges? Using an electronic ignition instead of mags? If you answer yes to any of these questions, then you recognize the value of modern solid-state electronics to make flying safer and more enjoyable. Now it's time to look at solid-state electrical controls for the exact same reasons.

## *The Vertical Power Advantage*

In addition to price there are other considerations for any product. Here are some things to think about for the VP-200:

### **Handles routine tasks.**

The VP-200 handles routine tasks for you so you can focus on flying the airplane and keeping your head outside the cockpit. It can turn on your boost pump and landing lights at takeoff or landing, turn on your alternator and avionics automatically after engine start, inflate and deflate the canopy/door seal, and set your trim and flaps while on the ground, to name just a few.

### **Advanced features.**

Without complex wiring or additional modules, you can incorporate advanced features into your aircraft like reduced trim sensitivity at speed, auto trim compensation when lowering flaps, intermediate flap settings, wig-wagging the landing lights, automatic switching to the backup alternator, configurable load-shedding, disabled landing gear on the ground, and alerts when the landing & taxi lights fail.

### **Rapid emergency detection and response.**

You are notified of engine and electrical faults with voice and visual alarms. And when you need to respond to an emergency, you can see an emergency checklist and activate a pre-configured set of actions with two simple button presses.

### **Safety features.**

The VP-200 also includes important safety features like runaway trim protection and reminders when the mag switch is set in the wrong position. A graphical electrical system display shows you the status of the electrical system in clear, concise graphics and is updated in real time. When a failure occurs, you know exactly what's happening.

### **Makes changes easier.**

Thinking about adding a backup alternator or installing a new electrical device in the future? Need to change a circuit breaker value? Want to change what is on your emergency bus? With little or no wiring you can make these changes using the on-screen setup menus.

### **Clean, simple panel.**

For those who value a clean, clutter-free instrument panel, the VP-200 goes a long way towards helping you achieve this goal. Many switches, annunciators, and lights are built into the VP-200.

### **Reduces parts count and complexity.**

You don't have to buy fuse blocks, diodes, circuit breakers, most switches, over-voltage & under-voltage modules, trim modules, voltage converters, relay decks, indicators, annunciator lights, mechanical engine gauges, key switches, flap controllers, dimmers, or landing gear disable systems. No more complex wiring diagrams. Fewer connections and mechanical components means fewer opportunities for failure.

### **Reduces build time.**

Not having to plan, draw wiring diagrams, and actually wire all the components in the previous paragraph saves a lot of time. Wiring is simplified because you run power wires from the VP-200 directly to the electrical devices that need power such as the avionics, flaps, trim motors & switches, and contactors.

### **Convenience features.**

Enjoy the convenience of automatic shut-off of your electrical system if left on after flight - never leave the master switch on again! Plus, convenience features like voice alerts and a remote key fob that you can use to turn on the cabin lights or unlock the canopy.

Begin planning on the next page...

## Estimate Your Savings

This section is where you estimate actual dollar savings. For each line item, estimate the actual dollar amount you won't have to spend.

**Amount you won't  
have to spend**



Switches Estimated Savings: \$ \_\_\_\_\_  
\$15 - \$60 each. The VP-200 Switch Panel includes three user-configurable switches. You will still need a few switches for backup circuits.

Circuit Breakers Estimated Savings: \$ \_\_\_\_\_  
\$20 each. Built into VP-200.

Fuse Blocks Estimated Savings: \$ \_\_\_\_\_  
\$35 each. May need one for backup circuits.

Wire Estimated Savings: \$ \_\_\_\_\_  
\$300 - \$600 per aircraft, assuming tefzel wire. The VP-200 wiring harness includes almost all power and ground wires behind the firewall.

Dimmer Estimated Savings: \$ \_\_\_\_\_  
\$30 - \$60 each. The VP-200 has six dimming circuits that can be used to soft-start the landing lights or dim the cabin lights. Not needed with VP-200, but can still be used if desired.

Crimp tools Estimated Savings: \$ \_\_\_\_\_  
\$30 - \$500 each. You can rent crimp tools from Vertical Power for about \$10 per month.

High-current relays Estimated Savings: \$ \_\_\_\_\_  
\$10 - \$20 each. Traditionally used to switch on a group of avionics (avionics master contactor) or other high-current devices. Not needed with VP-200.

Shunts and/or hall-effect sensors Estimated Savings: \$ \_\_\_\_\_  
\$25 - \$60 each. Traditionally used to measure current drawn on the alternator or battery. Built into VP-200, no need for external measurement. Each circuit can measure current individually.

- Conventional mag switch with start** Estimated Savings: \$ \_\_\_\_\_  
 \$120 each. Key switch is replaced with a 4-digit code to enable the starter. Mag switch is built into the VP-200.
- Diode with heat sink** Estimated Savings: \$ \_\_\_\_\_  
 \$20 each. Used to power endurance bus. Built into VP-200.
- Over-voltage protection module** Estimated Savings: \$ \_\_\_\_\_  
 \$35 each. Included with some voltage regulators and alternators. Built into VP-200.
- Under-voltage alarm** Estimated Savings: \$ \_\_\_\_\_  
 \$75 each. Light blinks when voltage is low. One needed for each buss. VP-200 includes voice alerts as well.
- Wig wag for lights** Estimated Savings: \$ \_\_\_\_\_  
 \$100. Allows you to wig wag (pulse) the lights for added safety. Built into VP-200.
- Hobbs meter and pressure switch** Estimated Savings: \$ \_\_\_\_\_  
 \$52. Tracks engine time. VP-200 tracks engine and flight time.
- Trim Indicators** Estimated Savings: \$ \_\_\_\_\_  
 \$90 each. Shows position of the trim on segmented LED display. One required for each trim axis. Built into VP-200.
- Flap position indicator** Estimated Savings: \$ \_\_\_\_\_  
 \$90. Shows position of flaps on segmented LED display. Built into VP-200.
- Flap Position System (FPS)** Estimated Savings: \$ \_\_\_\_\_  
 \$250. Allows the flaps to stop at intermediate positions. Must install sensors on the flap motor, and then run wires to a controller. Built into VP-200.
- Trim Relays** Estimated Savings: \$ \_\_\_\_\_  
 \$42 per servo. Relays needed to convert trim switch position to correct power output to drive trim motors. Built into VP-200.
- Trim speed control** Estimated Savings: \$ \_\_\_\_\_  
 \$42 per servo. Allows you to adjust trim speed based on whether flaps are either up or down. Built into VP-200.
- Auto trim control** Estimated Savings: \$ \_\_\_\_\_  
 \$270 each. Controls the flap position, and includes automatic trim compensation for various flap positions. 15 wires need to go to this module. Built into VP-200.

**Runaway trim module** Estimated Savings: \$ \_\_\_\_\_  
\$430 each, with harness. Provides runaway trim protection with 2-speed trim motor control. Built into VP-200.

**Trim voltage regulator** Estimated Savings: \$ \_\_\_\_\_  
\$40 each. Trim motors run on 12 volts. If you have a 28v system, you need a separate voltage regulator for each trim motor. VP-200 trim motor circuits are regulated at 12 volts. Built into VP-200.

**Annunciator black box** Estimated Savings: \$ \_\_\_\_\_  
\$600 each. Box used to control annunciator lights on the instrument panel. Takes high or low inputs, provides dimming, and press to test functionality. You can build your own, but takes a lot of time. VP-200 allows you to annunciate most functions on the screen, and flash a master warn light. Not needed with VP-200.

**Annunciator/gear lights** Estimated Savings: \$ \_\_\_\_\_  
\$10 each. Small lights used for annunciation on the instrument panel. Not needed with VP-200.

**Mechanical engine gauges** Estimated Savings: \$ \_\_\_\_\_  
\$40 - \$400 each. All mechanical engine and electrical gauges are replaced with the VP-200 (VP-200 requires engine data come from an external digital engine monitor like EIS, MVP-50, AFS-3400, etc.). Calculate the savings based on the difference between mechanical gauges and a digital engine monitor.

**28v to 14v DC-DC converter** Estimated Savings: \$ \_\_\_\_\_  
\$100 each. Convert 28 volts to 14 volts. VP-200 includes a 3 amp 12 volt regulated output.

**3<sup>rd</sup> screen for engine display** Estimated Savings: \$ \_\_\_\_\_  
\$2,500 - \$11,000 each. Extra screen for dedicated engine gauges is replaced with VP-200 Display Unit.

**Graphical engine monitor** Estimated Savings: \$ \_\_\_\_\_  
\$2,500 - \$5,000. With the VP-200, you can use a lower cost non-graphical engine monitor, such as the Grand Rapids Technologies EIS to provide engine data, which is displayed graphically by the VP-200.

**Other item** \_\_\_\_\_ Estimated Savings: \$ \_\_\_\_\_  
Enter a savings item here not listed elsewhere.

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Enter a savings item here not listed elsewhere.

Your time savings Estimated Savings: \$ \_\_\_\_\_  
\$0 - \$10,000. It's hard to quantify your own time savings, but we roughly estimate 30 to 100 hours of savings in planning and installation. Look at all the electrical devices above that need purchasing, planning, mounting, drilling, crimping, testing, and troubleshooting and decide how much time you'll save by not having to do that.

Panel builder labor reduction Estimated Savings: \$ \_\_\_\_\_  
\$1000 – \$3000. If you're having a shop build your panel, they may reduce their labor to reflect the labor savings. Panel wiring is simplified because dozens of switches, breakers, relays, and other modules are not needed.

Builder assist labor reduction Estimated Savings: \$ \_\_\_\_\_  
\$1000 – \$3000. Overall aircraft wiring is simplified, meaning the builder assist labor is less.

Total Estimated Savings: \$ \_\_\_\_\_

VP-200 system cost: \$ \_\_\_\_\_

True system cost = VP-200 system cost - Total Estimated Savings: \$ \_\_\_\_\_

### ***Follow Up***

Please call us at (505) 715-6172 if you have any questions.