

GETAC V200

HIGH-PERFORMANCE, FANLESS, FULLY RUGGED CONVERTIBLE NOTEBOOK WITH SUPERBRIGHT 12-1-INCH WIDE-FORMAT DISPLAY AND 5-YEAR WARRANTY

By Conrad H. Blickenstorfer

If you need a rugged, versatile notebook computer that's still compact enough to carry around in the field, the Getac V200 should be on your short list. The primary differentiator between this Getac machine and a standard notebook is that its pivoting display hinge allows the unit to be used either as a notebook or as a tablet. Added to the Getac lineup late 2010, the V200 builds on a very mature, field-tested platform that includes an exceptionally bright 1200 nits display available with either resistive multi-touch (i.e. it can be used even with gloves on) or a dual mode combination of touch and electromagnetic digitizer.

The convertible notebook concept

The picture series below shows how the Getac V200 convertible notebook works. The display has a special hinge that lets you rotate it and then fold it down, with the LCD facing up. This way you have the best of both worlds—a regular notebook when you need it, and a tablet computer for situations where that form factor works better.



Where does the V200 fit in?

The Getac V200 is a tough and rugged notebook computer that provides flexibility and a lot of computing power in a compact package. Its footprint of 12.4 x 8.7 inches is barely larger than that of a sheet of paper. Despite its ruggedness, the V200 is under two inches thick and weighs less than seven pounds. That's a couple of pounds less than most "full size" rugged notebooks. Since mobile computers spend a lot of time on the road and away from electrical outlets, the V200 has a powerful 90 watt-hour battery. Manufacturers often configure such notebooks with low-power processors to stretch battery life, but Getac gave the V200 a muscular 2GHz Intel Core i7-640LM CPU.

On the display side, the V200 has a nicely-sized wide format 12.1-inch LCD with an exceptionally bright 1,200 nits LED backlight. That's compared to about 200 nits in a standard consumer notebook. Our review unit came with Microsoft Windows 7 Professional and the dual mode touchscreen.

A closer look

The Getac V200 is a handsome machine. Its case is made of magnesium alloy with hardened plastics along the edges and small rubber bumpers in the corners for extra impact protection. The plastic parts are black, the magnesium alloy finished in a



military-style dark gray. Form follows function here. Screws and structural elements are left visible. It all comes together in a design that exudes toughness and purpose but also looks good enough to win design awards. Getac also paid attention to detail, ergonomics, ease of use, and common sense.

An example is the V200's cover latch. Most rugged notebooks have a mechanism that makes sure they don't open inadvertently, but with convertibles it's complicated because you need to be able to secure the display face up or down. Getac used a clever tension-loaded latch that reliably keeps the LCD lid in place. The latch works the same way whether the screen is facing up or down. Securing the latch is a manual operation because sometimes you may not want the lid to be secured, like when you need to open and close it frequently or when you wear gloves that would make it difficult to operate a small latch or release.



Getac also did a nice job protecting the V200's ports and connectors. Many rugged devices use one door to cover multiple ports. That makes no sense as you often need just one, so why expose the rest? The V200 has separate rubber/plastic covers for most ports. Each is clearly marked. Should one break or rip off, it is easily replaced.

Another well-designed detail is the rotating display hinge. The hinge needs to be tough and sturdy, and it is. And Getac found a way to make the hinge stiff enough to eliminate flex. A drawback is

that you can only turn the hinge counter-clockwise.

We also liked the stylus that comes with the touch screen version of the V200. It telescopes, can be tethered to the computer, and it neatly fits into its own garage below the LCD.

Touch typists and even those who hunt-and-peck will be thankful for the V200's 100%-scale keyboard. We also like the large white letters on black, the excellent tactile feedback, and the clear markings that provide all the necessary information without looking cluttered. We also liked the keyboard backlight. An optional backlit waterproof mechanical membrane or rubber keyboard is available as well.

1,200 nits "QuadraClear" display

Most rugged notebooks will be used outdoors and in bright, direct sunlight. Standard LCD displays, however, wash out in daylight, and that's why sunlight-readability has become a major selling point in the rugged notebook sector. Our technology editor, Geoff Walker, explains:

"There are really only two practical methods of making a notebook screen readable outdoors: (a) crank up the brightness to the point where the light emitted by the screen is sufficiently greater than the ambient light reflected by the screen, or (b) treat the surface of the screen so it reflects much less light, which again allows the emitted light to exceed the reflected light."

All major rugged notebook makers have introduced their own sunlight-viewable technologies. Getac calls theirs QuadraClear for the four elements that comprise the technology: a very bright backlight, anti-reflective coatings, linear polarizer, and circular polarizer. All else being equal, display backlight power determines the effective contrast ratio that translates into good outdoor readability.

Getac's solution for the V200 employs both QuadraClear and increased screen brightness for superb sunlight viewability. The super-bright 1,200 nits LED-based display backlight helps the V200 display remain remarkably readable outdoors, and even in bright sunlight.

The picture below compares the V200 with a standard Gateway notebook. The two machines sit side by side outdoors on an overcast, but bright California spring day. Even though the V200 isn't

even set to its highest brightness, its powerful backlight is instantly noticeable. The biggest difference is in the reflections off the screen. The Getac has none whereas the Gateway's "gloss" display becomes mirrorlike. The second picture shows the same scenario, but with the V200's backlight set to full 1,200 nits brightness.



The V200 has a near perfect horizontal viewing angle but the vertical viewing angle is much narrower, and varying the vertical angle results in color shifts that can be distracting.

Performance

Whenever designing a notebook computer, the challenge is to find the right balance between performance, size, weight, battery life and heat generation. We were amazed to see that the V200 uses a considerably quicker processor than the V100. Its i7-620LM chip has a base clock speed of 2.0GHz, 67% higher than that of the V100's i7-640UM. The V200's CPU also has a higher maximum Turbo frequency of 2.8GHz, it can use faster memory, and its graphics subsystem runs faster (266 vs 166MHz). Amazingly, despite the more powerful chip, the V200 still doesn't need a fan!

PERFORMANCE	Getac V200	Getac V100
Intel Processor	Core i7-620LM	Core i7-640UM
Clock speed	2.0/2.8GHz	1.2/2.27GHz
TDP	25 watts	18 watts
CPU Mark	962.5	768.6
2D Graphics Mark	269.2	208.9
Memory Mark	646.0	493.3
Disk Mark	1,431.2	543.4
3D Graphics Mark	265.1	250.1
Overall PassMark	731.9	462.2

Speed and long battery life

How does the V200's fast processor and bright screen affect battery life? We used Passmark's BatteryMon to test battery draw under different conditions. In economy mode (ECO mode, Windows Power Saver mode, screen turned down as much as possible, and radios off) idle battery draw was around ten watts. That's an excellent result for such a powerful machine and translates into theoretical battery life of almost nine hours.

Setting the backlight to maximum increases draw to about 24 watts (3.6 hours), showing the tradeoff between strong backlight and battery life, and how important it is to keep an eye on backlight settings when using the computer outdoors.

With full brightness, all systems on, and running 1080p video, the V200 needs 30 watts, which translates into just under three hours of battery life.

Real world mileage will vary.

Communications

For wired network connectivity the V200 has gigabit Ethernet. For wireless, there is Class II Bluetooth with EDR (Enhanced Data Rate) Version 2.1 and the Centrino Advanced-N 6200 chipset that provides 802.11a/b/g/n WiFi. A GPS module is optional.

The V200 can be ordered with a Gobi 2000 module for wireless technology and carrier independence, eliminating the need to physically switch out various single-module, carrier-specific modems to select a different carrier. With Gobi, V200 users in the US can access AT&T, Sprint and Verizon Wireless networks with one wireless device, and select or change to the best carrier for any geographic area.

Ruggedness

Getac classifies the V200 as "fully rugged" and states it is "performing flawlessly under extreme working environments where weather conditions and physical abuse are unavoidable." Let's take a look at individual ruggedness testing categories:

The V200's IP65 rating means total protection against dust and protection against low pressure water jets from all directions.

The V200 can operate in temperatures of -4 to +140 degrees Fahrenheit. The computer also passed non-condensing humidity testing up to 95%, and can operate in altitudes up to 15,000 feet (and obviously in aircraft with pressurized cabins) per MIL-STD-810G, 500.5 Procedure II.

Shock, vibration, drop and ESD resistance are all tested according to MIL-STD-810G and other relevant regulatory procedures.

Getac's MIL-STD-810G compliance testing table indicates a drop from three feet, but also states the unit passed "Transit Drop Total 78 continuous drops, 516.6 Procedure IV from 48 to 72 in height." Getac also offers optional UL 1604 certification that allows safe, spark-free use of the V200 in potentially explosive environments.

Security

Security is addressed via a combination of hardware and software measures, including a finger print reader (optional), a Smart Card reader, TPM 1.2, a cable lock slot, Intel security technologies available through the new i7 chip, as well as BIOS, password and software utility settings.

Utilities

In the field, quick and easy access to often-used functions and applications is imperative. For that, Getac included a variety of useful utilities.

G-Manager provides a system overview, battery stats, ECO mode info and settings, light sensor configuration, ignition configuration for using vehicle power, status monitoring, and GPS info.

Button Manager lets you assign functions to the V200's five hardware buttons.

The full-screen **Getac Utility** lets you turn wireless on and off, adjust brightness and sound, access major apps, and launch Windows control panels.

Getac Camera is a simple app that lets users control and configure the V200's integrated rotating camera. You can also get GPS information, view stored images, etc.

Multi-touch with gloves on

Getac offers optional multi-touch that works with gloves on. It uses a modified resistive touch technology that subdivides the display into a matrix with 154 zones, and the system can recognize input from two of those zones at a time. That makes the Getac system dual-touch without losing the inherent advantages of resistive touch.

Summary

The Getac V200 is a compact rugged mobile computer with a very bright 12.1-inch wide-format display. It can either be used as a standard laptop or, by rotating the display, as a tablet PC.

Equipped with a fast Intel Core i7 CPU, the V200 provides excellent performance while still offering very good battery life. Its 320GB serial ATA hard disk is fast and quiet. The V200 has gigabit Ethernet, USB and eSATA ports, wireless PAN and WAN radio, SD Card reader, and an integrated camera.

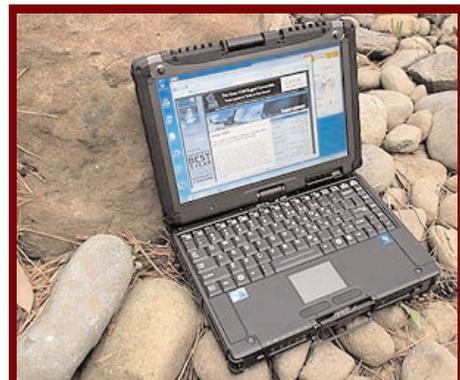
Like all Getac units, the V200 uses advanced thermal design to keep heat buildup at an absolute minimum. Heat pipes and the sturdy magnesium alloy case keep the computer cool and alleviate the need for a noisy and potentially troublesome fan.

Optional Gobi 2000 offers technology and carrier independent wide area wireless communication, and adds an integrated GPS receiver.

"QuadraClear" sunlight-readable technology and a 1,200 nits LED backlight combine for excellent outdoor viewability, though we'd like a better vertical viewing angle. Depending on the type of deployment, there are several touch and digitizer options (pressure, multi-touch, pressure and digitizer).

In everyday use, the V200 excels thanks to an optimal balance between performance, long battery life, good ergonomics, silent operation, a very good display and a high quality feel.

- Conrad H Blickenstorfer, EIC RuggedPCReview



GETAC V200 Specs

Type: Rugged convertible notebook PC
Housing: Magnesium alloy case, sealed ports
Processor: 2.0GHz Intel Core i7-620LM with 4MB L3 cache
OS: Windows 7 Professional
Memory: 2GB DDR3 800/1066Mhz, expandable to 8GB
Slots: 1 PC Card Type II, 1 Express Card 34/54mm, 1 SD Card, 1 SIM; opt. Smart Card (uses Express Card slot)
Display: 12.1-inch/1024 x 768 pixel, 1200 nits sunlight-readable display with touch screen), 1.7 nits night vision option available
Digitizer/Pens: Pressure sensitive touch screen; optional: multi-touch touch screen, dual mode touchscreen (pressure sensitive touchscreen and digitizer)
Keyboard: Integrated, 88-key full-scale waterproof mechanical, optional backlit rubber keyboard
Storage: Shock-mounted SATA 320GB HDD; optional 80 or 160GB SSD; optional -4F low-temp, optional SSD
Size: 12.4 x 8.7 x 1.9 inches
Ruggedness: 0° to 140°F (low temp -4F opt.); IP65 sealing; drop/shock and other criteria in accordance with MIL-STD-810G testing; ESD/EMC; optional UL1604 certification
Weight: 6.8 lbs. as tested, with battery
Power: Li-Ion (11.1V, 7,800mAh); 86.6 watt-hours
Communication: Intel Centrino Advanced-N 6200; Bluetooth 2.1 + EDR, Gobi 2000, GPS
Interface: USB 2.0, USB 2.0/eSATA, RJ11, RJ45, RS232, dock, audio in/out, video (VGA), 2mp cam, fingerprint scanner
Price: Starting at high US\$3,000s
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