

GETAC B300

UPDATED FULLY RUGGED NOTEBOOK NOW FASTER AND EVEN TOUGHER

By Conrad H. Blickenstorfer, January 2011

The latest version of the compact, fully rugged Getac B300 notebook computer is faster and tougher than ever. How does it compare to its predecessor and competition?

The Getac B300

The Getac B300 is a rugged notebook with a sturdy magnesium alloy case and sealed ports. With a footprint of 11.9 by 10.35 inches, a thickness of about 2.4 inches, and a weight of 8.5 pounds, the Getac B300 is compact enough to go almost anywhere. Its weight is standard in this class. You know you're carrying a computer, but it's barely heavier than today's commercial full-size wide-screen notebooks. For 2011, the B300 has been updated in performance, ruggedness, sealing, storage and several other areas.

Performance

We do not envy product planners and engineers who must decide what level of performance to bestow upon a rugged notebook. While high performance is always good, it means either a larger battery or less battery life, and it means more heat, which may make a fan necessary. Lower performance means longer battery life and less heat, but then the machine may become too slow. The challenge is to find a good balance between performance, size, weight, battery life and heat generation. Getac handled this strategically important decision by moving up the performance ladder, but without going all out and incurring performance related penalties. The step up from the old 1.6GHz Intel Core 2 Duo L7500 to the new 2.0GHz Intel Core i7-620LM is substantial, especially since the new chip can operate at up to 2.8GHz in "turbo mode," an Intel technology that allows the chip to overclock itself if it can safely do so.

We ran Passmark Software's **PerformanceTest 6.1** and also **CrystalMark** to quantify the new B300's performance compared to the original machine. We found that Getac's processor decision worked out

PERFORMANCE	Getac B300X	Getac B300
Intel Processor	Core i7-620LM	Core 2 Duo L7500
Clock speed	2.0/2.8GHz	1.6GHz
TDP	25 watts	17 watts
CPU Mark	926.6	893.9
2D Graphics Mark	258.3	158.5
Memory Mark	629.5	400.0
Disk Mark	575.1	343.3
3D Graphics Mark	272.7	138.3
Overall PassMark	547.4	420.8
ALU	26,187	14,320
FPU	25,170	16,690
MEM	21,810	10,148
HDD	8,668	6,711
GDI	8,560	2,565
D2D	1,819	4,535
OGL	2,208	1,020
Overall CrystalMark	94,422	56,289

well. Compared to the predecessor version, overall performance is up by 30% in one benchmark suite (PassMark) and by 67% in the other (CrystalMark). That is a substantial and very noticeable difference, and places the B300 at or ahead of the level of its closest competition. Also note that if even more speed is desired, the manual suggests optional availability of the Intel Core i7-640LM that runs at 2.13GHz and reaches 2.93GHz in turbo mode.

Battery life

What does all of the enhanced performance mean for the new B300's battery life? The competition has set the bar pretty high in this class, with some models reaching over eight hours of theoretical battery life in our tests. The first generation B300, too, was a power-mizer and reached a theoretical maximum battery life of almost 12 hours.

Running our standard BatteryMon benchmark with the B300 in ECO mode, we recorded a power draw of as little as 9 to 10 watts. In high-performance mode and the display at normal brightness, power draw rose to 17 watts. With the B300's backlight turned on to super-bright, power draw reached 28 watts.



Getac's own G-Manager utility (see above) also includes a Battery status screen and it confirmed the results we had seen on BatteryMon. G-Manager showed a minimum draw that was a bit higher at around 10.5 watts, and maximum draw about the same as we had seen in BatteryMon at 29 watts. Given the B300's powerful 87 watt-hour battery, this would translate into a theoretical maximum battery life of 8 to 10 hours, and around three hours or so in full-power mode with the display set to maximum brightness, which on the B300 is *very* bright.

As always, real world mileage will vary. Minimum draw in a test lab is not an accurate predictor of actual battery life. However, between the very good power management of the mobile Intel Core i5/i7 processors, Windows 7's much improved power management, and the Getac B300's extensive power management settings, if the situation requires it, the B300 can run a good long time on a charge, and twice that via an optional second battery that goes into the media bay en lieu of the optical drive.

QuadraClear display technology

Most rugged notebooks will be used outdoors and sometimes in bright, direct sunlight. Standard transmissive LCD displays, however, wash out in daylight, and that's why over the past few years, sunlight-readability has become a major selling point in the rugged



notebook sector. *RuggedPCReview's* former technology editor, Geoff Walker, explained:

"There are really only two practical methods of making a notebook screen readable outdoors: (a) crank up the brightness (measured in nits, which is display-industry slang for "candela per meter squared," or cd/m²) 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."

As a result, all major rugged notebook makers have introduced their own sunlight-viewable technologies, and Getac calls their version "QuadraClear." The term implies the four elements that comprise the technology: a very bright backlight, anti-reflective coatings, linear polarizer, and circular polarizer. All the major players use those technologies, and the difference boils down to a) backlight brightness, and b) the extent to which the expensive optical coatings are applied and how the various layers are bonded (the fewer reflective surfaces, the better).

It's difficult to objectively quantify the impact of all those optical treatments but the best currently achievable compound reflectivity is about 0.9% for a touch screen, meaning that about 0.9% of incoming ambient light is reflected. All else being equal, display backlight power then determines the all-important effective contrast ratio which then translates into the degree of real world outdoor readability.

And backlight strength is what sets the B300 apart. A standard notebook backlight is in the 170 to 200 nits luminance range (1 nit = 1 candela per square meter) range. Some manufacturers up the brightness in their rugged products, usually into the



300-400 nits range, and the rugged notebook competition offers 500 to 1,100 nits backlights for excellent results. The original Getac B300 had 500 nits, but beat everyone with an optional superbright 1,200 nits backlight. And now Getac again upped the ante with an optional industry-leading 1,400 nits backlight.

The 1,400 nits maximum is much brighter than the maximum of the standard brightness range. To engage it you push a special button above the keyboard, and the screen lights up with an intensity unseen in any regular display. Having that hardware button is also the key to keeping power draw in check: when you need the superbright backlight, switch it on. When you don't need it anymore, turn it off. That's much easier with a button than via menus.

How does it all work in real life? Very well. The B300 screen also has a semi-matte surface and probably a degree of anti-glare treatment, resulting in one of the B300 display's other nice qualities: no reflections. You can adjust the backlight in 16 steps via keyboard brightness buttons, and via 64 steps in the Windows control panel. You can also totally turn off the backlight via a single button. Where the display could stand improvement is in its viewing angles. The horizontal viewing angle is good, with just some milkiness when viewed from the side. The vertical viewing angle, however, is quite narrow, with chromatic aberrations as you change the angle.

Design and construction

The design of the magnesium-alloy housing of the Getac B300 with its matte black and gun-metal gray color scheme is timeless, elegant and tough. It combines pleasing industrial design with a lot of mechanical-looking details that give the computer a purposeful no-nonsense look.



When Getac designed the original B300, engineers faced the challenge of dissipating the heat of a powerful processor. They did it by using three feet of copper piping to remove the heat generated by the primary chips. Amazingly, despite switching to a faster chip with a 50% higher thermal design power in the new B300, Getac managed to stay with a fanless design by expanding copper heat piping by about 50%.



The bottom of the unit consists of a contoured magnesium alloy plate with a continuous O-ring style seal along the entire perimeter. It is held securely in place by 18 Philips screws. The whole assembly has an industrial high-tech look that always differentiates Getac machines.

The hard disk sits in an elaborate caddy consisting of a metal outer housing heavily padded with different types of foam and neoprene.

The battery is a powerful 87 watt-hour unit with a built-in battery gauge that shows charge status via five green lights next to it. You can't see the charge meter when the battery is installed in the unit, but it comes in handy when you carry spare batteries around. The battery is not hot-swappable.

As a full-size rugged notebook, the B300 comes with a full complement of ports, all of which are protected either by rubber plugs or hinged doors.

The B300's 89-key keyboard is full-scale. It has black keys with white labels. Instead of using less legible blue for function key combos, Getac used white for those labels also, but placed them in little white square boxes. The keyboard has a red backlight that can be set to come on automatically. It's pleasant and clearly illuminates the keys in semi and full darkness. Below the keyboard is a small and slightly recessed (so you can feel its boundaries in the dark) touchpad and two mouse buttons. To the right is a fingerprint reader that has its own sliding door.

Wireless and expansion

The Getac B300 has Bluetooth Version 2.1 with EDR class 2 and Centrino Ultimate-N 6300 802.11a/b/g/n WiFi. An integrated GPS receiver is optional. For Wide Area Network communication, there is an optional Gobi 2000 module that supports just about any radio and provider worldwide.

For expansion there is one PC Card Type II slot and one ExpressCard 34/54 slot. You can also opt for two adjacent PC Card Type II slots (or one Type III), or a PC Card slot and a Smart Card reader. There is also an SDHC card reader.

Additional expansion is possible via the B300's Media Bay on the left side of the computer. Our unit came with a Sony Optiarc rewritable drive. Depending on needs, that can be replaced either with an optional second battery or a second hard drive.

Security

Like most modern mobile hardware, the B300 offers various levels of hardware and software security to prevent unauthorized access as well as theft.

Infineon Technologies' Infineon Security Platform Solution is a comprehensive security setup that works in conjunction with the B300's Trusted Platform Module (TPM) 1.2 hardware to create and manage computer-generated digital certificates. Our test system also came with fingerprint registration software that works with the B300's fingerprint scanner. And for physical security don't forget a Kensington locking cable to use with the Kensington slot on the backside of the unit. It is inexpensive insurance against theft.

Getac G-Panel

The B-300 comes with a number of special utilities and helper apps that make using the unit quicker and simpler. Its newly updated Getac G-Manager combines a variety of functions into one tabbed utility that covers summary information, battery, light sensor, economy and systems monitoring.

Touch screen

Our B300 came with the optional resistive touch screen that can be operated either with a plastic stylus or with a finger. The resistive touch panel controller communicates with the processor via USB and is very fast. A special Touchkit control panel provides adjustment and optimization for accurate touch performance and ease of use.

Ruggedness

The Getac B300's rugged design and magnesium-alloy housing with its protective rubber bumpers on all four corners on top, large rubber bumpers at the bottom front and smaller bumpers at the bottom rear protect the unit from casual damage. The B300 has an operating temperature range of -4 to 140 degrees Fahrenheit, making it suitable for use in virtually any operating environment from freezers to desert. In terms of listed ruggedness testing results, Getac's documentation is sparse, simply stating that the unit is MIL-STD 810G compliant, and can be ordered with optional compliance for UL1604 Class 1 Div. 2 (Groups A-D), salt fog exposure, MIL-STD 461F (electromagnetic interference) and MIL-STD 3009 Night Vision. Sealing is now at the higher IP65 level, where the "6" means that the unit is totally protected against dust, and the "5" means protection against water jets from all directions.

Summary

The updated version of the Getac B300 is a fully rugged notebook computer with a well-executed design that's pleasing to the eye and able to withstand even more punishment. Despite its powerful Intel Core i7 processor and greater speed, the B300 still does not need a fan and runs in silence. Thanks to the ECO economy mode settings, the B300 can run up to a full shift on a charge. The 13.3-inch display has an even brighter 1,400 nits backlight that can be turned on and off as needed. The Getac B300 is a superb and cleverly designed rugged machine that remains a primary contender in the rugged market.

- Conrad H Blickenstorfer, EIC RuggedPCReview

GETAC B300 Specs

Type: Rugged Notebook PC
Housing: Magnesium alloy case, sealed ports
Processor: 2.0GHz Intel Corei7-620LM with 4MB L3 cache
OS: Windows 7 Professional
Memory: 2GB DDR3 800/1066Mhz, expandable to 8GB
Slots: 1 PC Card Type II and 1 Express Card 34/54mm; optional Smart Card (uses one PC Card slot). 1 SDHC, SIM
Display: 13.3-inch/1024 x 768 pixel transmissive TFT, 700 nits (optional: 1400 nits sunlight-readable display with touch screen), optional night vision compliance
Digitizer/Pens: Touch screen (optional)
Keyboard: Integrated, full-scale with waterproof membrane, optionally with LED backlight
Storage: Shock-mounted 250GB SATA hard disk or 80/160GB SSD
Size: 11.9 x 10.35 x 2.36 inches
Ruggedness: 32 to 131 F (low temp -4F optional); IP54 sealing; drop/shock and other criteria in accordance with MIL-STD-810F testing; optional: MIL-STD 461E, salt fog compliance
Weight: 8.6 lbs. as tested (with battery and handle)
Power: Li-Ion (11.1V, 7,800mAh; 86.6 watt-hours), optional media bay battery (7,800mAh)
Communication: Intel Centrino Ultimate-N 6300; optional Bluetooth 2.1 + EDR, Gobi, GPS
Interface: 2 USB 2.0, RJ11, gigabit RJ45, 2 Serial, dock, 1394a, audio in/out, video, fingerprint scanner
Price: Starting at high US\$3,000s
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