

GETAC P470

AN ELEGANT AND POWERFUL RUGGEDIZED BUSINESS-CLASS NOTEBOOK

By Conrad H. Blickenstorfer, September 2008

The GETAC P470 is a Core 2 Duo-based ruggedized business-class notebook with a 14.1" wide screen. Available with a dedicated graphics processor, it is fast enough to be used for all computing tasks and durable enough to survive use outside of the office. Weighing just 6.4 pounds, the magnesium alloy-bodied P470 can be ordered with a sunlight-viewable display and also with a touch screen. It is exceptionally flexible thanks to a media bay that can accommodate an optical drive, a second hard disk, an additional battery, or even a customized I/O port. This is a laptop computer to be considered when a standard commercial notebook won't do.

The Getac P470

Semi-rugged machines like the GETAC P470 are significantly tougher and stronger than standard notebooks or even "business-rugged" notebooks. They are designed and built to handle a reasonable degree of abuse, and in return they require less of a compromise in terms of size, weight and cost.

With a footprint of 13.25 by 10.25 (without including the handle in the measurement), a thickness of just under two inches, and a weight of 6.4 pounds, the P470 is in the same range as the semi-rugged competition from Panasonics and GD-Itronix. As far as weight goes, around seven pounds is standard in this class. You know you're carrying a computer, but it's really no heavier than today's commercial full-size wide-screen notebooks.

Screen size, type and resolution are differentiators between notebooks in this class. Not only are there different screen sizes (13.3, 14.1, 15.4 inches), but also different aspect ratios (the traditional 4:3 and the "wide" 16:10), different resolutions, and different screen treatments (matte, gloss, anti-reflective). With the P470, GETAC switched to the newer wide format with a display that measures 14.1 inches diagonally and offers WXGA (1280 x 800 pixel) resolution. Our machine also came with the optional touch screen and sunlight-viewable display treatment. Of the competition, the Panasonic CF-52 can be ordered with an extremely high-res 1920 x 1200 display; everyone else in this class uses either 1024 x 768 or 1200 x 800.

Performance

As far as performance goes, mobile computers almost always represent a compromise between

power and battery life. Faster processors need more power, which means a larger battery, which means more weight. If prolonged use away from a power outlet is not anticipated, a manufacturer may aim for good performance without increasing weight with a massive battery. GETAC chose the latter approach by equipping the P470 with a powerful Core 2 Duo processor running at 2GHz but staying with a fairly compact battery.

We benchmarked the GETAC P470's performance with Passmark Software's PerformanceTest 6.1 that runs about 30 tests covering CPU, 2D graphics, 3D graphics, memory, and disk and then computes scores for each category and an overall PassMark score. For comparison we added the results of GETAC's own fully rugged B300 notebook as well as those of the DRS ARMOR C12. DRS chose a very frugal processor that consumes a fraction of the power of the P470's speedy Core 2 Duo chip, and thus provides long battery life. The benchmark results show how it all fits together and you can see, the P470 provides serious performance, as it should with a potent processor drawing 35 watts of Thermal Design Power. Keep in mind that disk and graphics benchmarks can vary widely in machines with the same processor, depending on the type of graphics and storage subsystems installed.

Battery life

Now how about battery life? The P470's standard battery is a very compact 11.1 Volt/4,800mAh (53.3 watt-hour) Li-Ion pack. That's roughly the same size as GD-Itronix offers, and Dell with its ruggedized Latitude notebooks. Panasonic decided to incur the weight penalty and go with larger batteries. With their B300 notebook, GETAC, too, went that route, achieving a stunning battery life of up to 12 hours with a somewhat more frugal processor and advanced power management. The goals for the P470 were different. Our machine did not come with the handy "G-Panel" that allowed us to monitor and set a variety of functions and examine power draw in detail. There is an ECO mode for maximum battery life, but there's only so much you can squeeze out of a 53 watt-hour battery that must drive a speedy processor and a large LCD display. GETAC does offer an optional larger battery. As is, the P470 is good for about 2-1/2 hours between charges, or four with the extended battery. However, battery life, like mileage, varies, and with the ECO mode engaged you can squeeze considerably more life out of a charge.



Display technology

Sunlight-readability is a major selling point in the rugged notebook sector as most rugged and semi-rugged notebooks will likely see outdoor duty. Standard transmissive LCD displays, however, wash out in daylight. As a result, GETAC offers a sunlight-viewable display option that was installed in our test machine. Though GETAC does not specifically mention optical coating, a degree of coating must be there as the image remains visible in direct sunlight. That, however, is only part of the story. While the P470 does not have the superbright 1,200 nit backlight used on the company's B300 and as of summer 2008 also on the V100, it does have a "sunlight readable quick button" that sets the backlight to maximum at the touch of a hardware button. Pushing the button doesn't boost the backlight beyond the maximum of the standard brightness range as it does on the B300, but it's very convenient to just push a button outside instead of having to mess with screen brightness settings.



The two pictures above show the P470 (right) and a standard Gateway notebook in bright daylight in partial shade with the sun on the right side. The standard display remains quite readable, a testimony to how far run-of-the-mill computer displays have come, but mirror-like reflections on the glossy screen make it all but unusable. The GETAC P470,



PERFORMANCE	GETAC B300	GETAC P470	DRS ARMOR C12
Processor	1.6GHz L7500	2.0GHz T7200	1.2GHz Core Solo U1400
Thermal Design Power	17 watts	35 watts	10 watts
CPU Mark	893.9	1085.2	329.4
2D Graphics Mark	158.5	295.2	174.7
Memory Mark	400.0	497.2	251.4
Disk Mark	343.3	277.8	247.9
3D Graphics Mark	138.3	154.8	87.0
Overall PassMark	420.8	498.0	218.7

on the other hand, not only provides a strong, bright picture, but also one that is completely free of mirror reflections. A comparison in direct, bright sunlight with the computer displays facing the sun shows again that a standard notebook display is no match for the P470 in brightness and freedom from distracting reflections.

Design and construction

The P470 has an elegant magnesium-alloy body and chassis. In the picture below you can see the two memory card slots, the WiFi and expansion slots, and the processor and fan itself. The standard 53.3 watt-hour (11.1 Volts, 4,800mAh) battery is fairly small but GETAC offers a larger capacity battery that provides around four hours of battery life between charges. There's also a special media bay battery pack that can extend battery life if there is no need for the optical drive that usually occupies the bay. The shock-mounted disk drive sits in its own plastic sub-frame with a metal top. The caddy is externally accessible upon removing a couple of screws and operating a latch.



The P470 is a well-connected machine. The pictures below right show the left and the right side both with the protective plastic port covers open.

On the left side are the Media Bay and the shock-mounted hard disk caddy. The Media Bay can contain a DVD combo drive, a DVD dual layer writer, the optional second battery, an optional second hard drive, or a customized I/O port. The left side also contains two USB 2.0 ports.



On the right side are the power jack, microphone and headphone jacks, wireless on/off, an RJ11 modem jack, a RJ45 gigabit LAN connector, a third USB 2.0 port, the multi-card reader, a mini-FireWire jack, and PC Card Type II and ExpressCard slots. The hard plastic protective doors are screwed onto the body of the computer for easy replacement.

Most of the backside is taken up by the battery that slides in and is securely held in place by two levers. To the left and right of the battery are a 9-pin serial ports and a 25-pin video port, both with protective covers. On the right side is a Kensington lock slot that can provide extra physical security.

The front does not have any connectors or ports as most of the front is taken up the large and very useful magnesium handle that is screwed onto the system side of the computer. There are indicator lights built into the right side of the handle base. They show the status of power, battery, hard disk, optical drive, num lock, caps lock, power savings mode, WiFi, Bluetooth and wide area wireless.



The P470's 88-key keyboard is full-scale. It has black keys with large and very legible white labels. Blue letters and symbols indicate function key combos. The keyboard is sealed. There is no keyboard illumination. Below the keyboard is a touchpad and two mouse buttons. Between the mouse buttons is a fingerprint reader for extra security.

Wireless

As is, the GETAC P470 comes with a Bluetooth Version 2.0 with EDR (Enhanced Data Rate) class 2 module and Intel 3945ABG 802.11a/b/g WiFi. An integrated GPS receiver with internal antenna is optionally available. For Wide Area Network communication, there are CDMA/EVDO/1xRTT (Sprint, Verizon, etc) and HSDPA/UMTS/EDGE/ GSM (AT&T, T-Mobile, etc) options.

Security

The GETAC P470 offers several levels of hardware and software security to prevent unauthorized access as well as theft. The Protector Suite QL from UPEK Software Products handles Fingerprint scanning and manages enrollment records that combine the Windows user name, password, fingerprint and an automatically generated security key. You can do a swipe to bring up the security control center from where you can fine-tune security.

The GETAC P470 also uses Trusted Platform Module (TPM) 1.2 hardware to create and manage computer-generated digital certificates for secure email, signed macros, encrypted files or folders, and secure network connections. TPM is handled by the Infineon Security Platform Settings Tool.

Touch screen

Our P470 had the optional resistive touch screen that can be operated either with a stylus or a finger. A Touchkit control panel handles adjustment and optimization for accurate touch performance and ease of use. The panel is quite elaborate, offering either nine or 25 point calibration accuracy, variable double click time and area, beeps, auto right click, cursor stabilization, and five different mouse modes. There is also Edge Compensation and you can map the touch screen to only part of the display. This is ideal for custom software applications.

Ruggedness

The GETAC P470's magnesium-alloy housing is capable of absorbing a degree of rough handling and demanding environmental conditions thanks to shock protection of the hard disk and shock-mounting of other sensitive components. The machine can survive drops from 2-1/2 feet and has an operating temperature range of 32 to 113 degrees Fahrenheit. Humidity, thermal shock, vibration, shock, and altitude were tested according to MIL-STD-810F and IEC 68-2-xx methods. The machine also fulfills ESD compliance with IEC 10000-4-2, Level 4. The P470 does not have an IP rating but is considered "water and dust resistant." With a spill-proof keyboard and protective covers for all ports, we're sure the P470 can survive coffee or soda spills.

Summary

The GETAC P470 is a compact, solid notebook computer that combines commercial notebook performance and features with an extra degree of protection and ruggedness. It is an elegant, well-executed design that's pleasing to the eye and better



able to withstand an occasional bump and spill than standard notebooks. The ergonomically designed machine weighs between six and seven pounds.

Unlike some vertical market machines, the GETAC P470 does not compromise performance. Its 2.0GHz Intel Core 2 Duo T7200 processor provides excellent speed and responsiveness. You also get plenty of onboard ports and connectivity as well as a fast 160GB SATA disk and a flexible media bay. There is plenty of onboard security, including a fingerprint scanner, and an integrated 1.3 megapixel camera allows video conferencing.

For wireless communications there's an Intel PRO/Wireless 3945ABG module, and optional Bluetooth, GPS, and a variety of 3G networks: EV-DO, GSM/GPRS/EDGE, UMTS, WCDMA, HSDPA.

The P470 comes with a bright 14.1-inch display that uses the 1280 x 800 pixel format with a 16:10 aspect ratio. It's a transmissive LCD with special coating that provides a degree of outdoor viewability and virtually no distracting reflections. A special hardware button turns the backlight to full power.

Overall, the GETAC P470 is an intelligently designed semi-rugged machine that works like a commercial notebook but is more immune to spills and drops. Pricing starts at US\$2,200; a fully equipped machine with sunlight readable touch-screen, a broadband wireless module, and a few other desirable options is in the US\$3,500 range.

- Conrad H. Blickenstorfer, EIC RuggedPCReview

GETAC P470 Specs

Type: Business-rugged Notebook PC
Housing: Magnesium alloy case, sealed ports
Processor: 2.0GHz Intel Core 2 Duo T7200 with 4GB L2 cache and 35 watt TDP
OS: Windows XP Pro SP3 (Standard with Vista Business)
Memory: 512MB DDR2 PC2, expandable to 4,096MB
Slots: 1 PC Card Type II; Express Card 34/54mm; 4-in-1 card reader (MMC, SD, MS, MS-PRO)
Display: 14.1-inch/1280 x 800 pixel transmissive TFT with sunlight-readable display and touch screen
Digitizer/Pens: Touch screen (optional)
Keyboard: Integrated, full-scale, spill-proof
Storage: Shock-mounted SATA hard disks 80GB to 250GB
Size: 13.25 x 10.25 x 1.9 inches
Ruggedness: 32 to 113 F; 2.5-foot drop/shock; MIL-STD-810F 507.4 (humidity), 500.4 (altitude), 516.5 (shock), 514.5 (vibration); ESD
Weight: 6.6 lbs., with battery, as tested
Power: Li-Ion (11.1V, 4,800mAh; 53.3 watt-hours), optional 9-cell media bay battery
Communication: Intel PRO/Wireless 3945ABG; optional Bluetooth 2.0 + EDR, EV-DO, GSM/GPRS/EDGE, UMTS, WCDMA, HSDPA, Circomm GPS
Interface: 3 USB 2.0, RJ11, gigabit RJ45, Serial, dock, mini 1394a, audio in/out, video, 1.3mp camera, fingerprint scanner
Price: Starting at US\$2,200; fully equipped US\$3,500-4,000.
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