

GETAC UX10

FULLY RUGGED HIGH-PERFORMANCE 10-INCH TABLET OFFERS MULTI-MODE USAGE VIA DETACHABLE KEYBOARD DOCK

by Conrad H. Blickenstorfer; photography by Carol Cotton

Getac introduced the rugged 10-inch UX10 tablet in 2019 to meet the challenges faced by emergency service and public safety personnel, but suitable for other demanding applications in utilities, field services, manufacturing and more. Implemented as a “detachable laptop,” the UX10 can be used either as a tablet or with an optional keyboard dock. The UX10 further shines with an all quad-core 8th generation Intel Core processor lineup of powerful CPUs.

Getac’s strong answer to Panasonic

The UX10 is Getac’s answer to the Panasonic Toughbook 20, just as Getac’s larger K120 competes with Panasonic’s Toughbook 33. All are hybrids consisting of a tablet and an optional detachable keyboard that adds functionality and connectivity. Getac bills the UX10 as a “rugged tablet with enhanced versatility.”

With the UX10, Getac not only has a direct competitor to the Toughbook 20 but also another true hybrid, which represent a growing market segment. The UX10 also adds a strong 10-inch tablet to Getac’s lineup, a good move considering the ongoing popularity of the 10-inch form factor and the 10-inch tablet entries by pretty much all of the competition.

Like all hybrids the UX10 is a compromise, but it ably addresses the needs of those who want both. It is a full-function tablet, and with the keyboard dock it is full-function laptop.

What do you get with the Getac UX10?

The Getac UX10 is a very rugged tablet computer that provides flexibility and substantial computing power in a remarkably compact package. With its 10.8 x 7.5 inch footprint, the UX10 is small enough to fit almost anywhere. It’s also less than an inch thick and weighs just 2.7 pounds. And unlike earlier rugged tablets in this class that often sacrificed performance in order to get acceptable battery life, the UX10 lets you have your cake and eat it, too — Intel 8th generation Core processor and related technology provide excellent performance and very good battery life.



The 10-inch display of the UX10 is the size of the original iPad — not too big and not too small. Used as a notebook with the optional keyboard, the screen is fairly small, with standard notebook displays usually measuring between 13 and 16 inches, though Apple is very successful with its smaller MacBooks. The table below shows where the UX10 fits into Getac’s growing roster of rugged tablets.

The UX10 comes with up to 16GB of fast DDR4 RAM and up to 1 terabyte of AES encrypted solid state storage. The IPS display has 1920 x 1200 pixel resolution, making for a sharp 224 pixels per inch. Its 1000 nits luminance is higher than the Panasonic Toughbook 20’s 800 nits. There’s, of course, 10-point capacitive multi-touch, a hard tip stylus, and an optional active digitizer.

Due to weight and space issues, battery size is always a tricky thing with tablets. Getac didn’t resort to the gimmick of designing the UX10 with two tiny batteries just to be able to claim a low starting weight with only one battery installed. Instead, the tablet comes with a strong 46.6 watt-hour battery, and there is an optional 99.8 watt-hour extended life battery. An optional bridge battery allows hot-swapping.

Despite its low weight, the Getac UX10 feels tough and substantial. It’s an elegant, purposeful design where form follows function. The tablet shape looks like it was designed to accommodate screw-on corner bumpers, and maybe those are available. Our unit came with the sturdy optional carry handle.

Getac knows that sealing and protection of ports is important in rugged computers and gave the UX10 elaborate sealed snap-click protective doors. It is a good, reliable solution.

Our unit came with the optional fingerprint scanner. Instead of the fingerprint reader, customers may opt for a magnetic stripe reader or a serial port and an RJ45 LAN jack. Our unit also came with an optional 1D/2D barcode reader. Instead of that, customers can select from seven other options: COM port or MicroSD slot or USB 3.0 Type-A port or USB 3.1 Type-C port or LAN port (RJ-45) or VGA port or HF RFID reader.

The backside of the UX10 offers additional customization potential. Available are an HF RFID reader or a Smart Card reader or a bridge battery, or a bridge battery/Smart Card reader combo.

Its three expansion areas make the Getac UX10 customizable to suit a very large number of possible applications. But since each of the three expansion areas can only accommodate ONE of the many available options, customers still might have to make some hard choices.

Model	T800	UX10	F110	K120	A140
					
Display size	8.1-inch	10.1-inch	11.6-inch	12.5-inch	14.0-inch
Resolution	1280 x 800	1920 x 1200	1920 x 1080	1920 x 1200	1366x768 or 1920x1080
Pixels/inch	186 ppi	224 ppi	190 ppi	176 ppi	112 or 157 ppi
Luminance	600 nits	1000 nits	800 nits	1200 nits	1000 or 800 nits
Size (inches)	8.9 x 5.9 x 0.9	10.9 x 7.7 x 0.92	12.4 x 8.15 x 0.96	13.0 x 9.4 x 0.94	14.5 x 9.8 x 1.3
Volume (cu-in)	47.3	77.2	96.4	114.9	184.7
Weight (lbs.)	1.94	2.68	3.1	3.96	5.1
CPUs	Atom	8th gen Core	8th gen Core	8th gen Core	6th gen Core
CPU Code	Cherry Trail	Whiskey Lake	Kaby Lake Refresh	Kaby Lake Refresh	Skylake
Max RAM	8GB	16GB	32GB	32GB	32GB
Max storage	128GB eMMC	1TB SSD	1TB SSD	1TB SSD	512GB SSD
Operating temp	-6° to 122° F	-20° to 145° F	-6° to 140° F	-20° to 145° F	-6° to 140° F
IP rating	IP65	IP65	IP65	IP65	IP65



Exemplary design

Many tablets are just slim boxes with a circuit board inside. Others are complex and highly integrated systems where each part is exactly right and in exactly the right place. The Getac UX10 is one of the latter. There's a strong magnesium frame for strength. And there's a tough plastic enclosure consisting of numerous parts, with everything designed to fill a purpose.

The detail in this tablet is amazing. It is a great demonstration of how form can follow function and still be practical and attractive. The UX10 convinces inside and out, with complete attention paid not only to the outside but also to the attention that hardly anyone ever sees. Even on the back of the machine, Getac didn't just phone it in. It is tough plastic, but with a very scratch-proof powdery finish that looks just like powder-coated magnesium.

Other impressive details that caught our eyes:

- A small board to plug in all the antenna wires going from wireless modules (WiFi, Bluetooth, GPS, mobile broadband) to the internal antennae along the device perimeter for best reception and signal strength, or to the external antennae pass-throughs.
- The sturdy, ergonomic carry handle that's secured with four thick bolts into solid magnesium.
- Radio frequency shielding consisting of precision-cut metal plates that are screwed on. Thermal conductive material is used to guide heat away from components, optimizing performance and lifespan.
- The battery isn't glued inside the housing as is so often the case in consumer tablets. It's a slender 3/8-inch affair that can be inserted and removed in seconds, and shows charge level via five LEDs.
- The integrated scanner isn't just loosely placed or glued in front of a pre-cut scanner window. In the UX10, the scanner assembly is a precision-designed and manufactured module that can be added or removed without taking the machine apart.
- The protective port covers are easy to operate, are properly labeled, and are screwed on so they can easily be replaced should they ever get damaged.



Powerful Intel 8th generation Core processor technology

A good part of the Getac UX10's appeal comes from getting so much computing power in such a compact package. That's made possible by a selection of Intel's 8th generation of Core processors, the first ever to offer quad-core configurations in mobile CPUs. Four cores can do more than two cores, and this allowed Intel to lower the base clock speeds of these chips, cutting down power consumption and heat generation. Other ongoing refinements allowed raising maximum "turbo" clock speeds. The combined result is higher peak performance with an overall power draw that's no more (and sometimes less) than it was with less powerful dual-core processors.

Getac offers the choice of four mobile chips for the UX10. They are the Core i5-8265U and i5-8365U, and the Core i7-8565U and i7-8665U. The table below shows the important specs of the four available processors.

Getac UX10: Processor options

PROCESSOR OPTIONS	Core i7	Core i7	Core i5	Core i5
Model	8665U	8565U	8365U	8265U
Gen	8th	8th	8th	8th
Cores/Threads	4/8	4/8	4/8	4/8
Base Clock Speed	1.90 GHz	1.80 GHz	1.80 GHz	1.60 GHz
Turbo Speed	4.80 GHz	4.60 GHz	4.10 GHz	3.90 GHz
Intel Smart Cache	8MB	8MB	6MB	6MB
Thermal Design Power (TDP)	15 watts	15 watts	15 watts	15 watts
Graphics base speed	300 MHz	300 MHz	300 MHz	300 MHz
Graphics max speed	1.15 GHz	1.15 GHz	1.10 GHz	1.10 GHz
Intel vPro	Yes	No	Yes	No
Intel TSX-NI	Yes	No	Yes	No
Intel SIPP	Yes	Unknown	Yes	No
Intel Trusted Execution	Yes	No	Yes	No

The Core i7 chips have higher clock speeds and more Smart Cache than the Core i5 models, but other than that, there isn't a large difference. All are quad-core designs with eight threads and 15 watts thermal design power, and all use Intel UHD Graphics 620 with very similar clock speeds. What may make a difference in some applications are four Intel technologies (vPro, TSX-NI, SIPP, and Trusted Execution) that are included in the i7-8665U and i5-8365U, but not in the i7-8565U and i5-8265U. The extra security and manageability capabilities of vPro, especially, are required in many enterprise deployments. TSX-NI (Transactional Synchronization Extensions New Instructions) helps make parallel operations more efficient, SIPP (Stable Image Platform Program) allows deployment of standardized image PC platforms for at least 15 months, and Trusted Execution technology adds extra security such as measured launch and protected execution, and may also be an enterprise requirement.

An important decision systems designers must make is whether to use passive cooling or an active system fan. In the past, Getac used advanced passive cooling systems even in powerful standard voltage systems. The rationale was the elimination of fan noise and potential mechanical failure. Well, the UX10 platform does have that small fan. But unlike some fans that are annoyingly loud and on almost all the time,

this one is quiet and doesn't come on often, but it IS a fan. The reason for its presence likely is that an active fan offers better protection against overheating and, more importantly, makes it possible for the CPU to operate without significant performance drops even at the upper end of its operating temperature range.

Excellent power conservation

Battery technology has come a long way, but progress has been slower than overall progress in electronics and miniaturization. Does that mean today's slender batteries have less capacity? Often they do. Rugged devices of the past routinely had standard batteries with 90 or 100 watt-hour capacities. Today it's often just half of that, and the UX10 is no exception. Is the 46.6 watt-hour capacity of its standard battery enough?

Getac doesn't list battery life in the UX10's specs. Panasonic lists 8.5 hours for the Toughbook 20 with its 29.6 watt-hour battery. The UX10 has both a bigger battery and more powerful processors. We used PassMark's BatteryMon to measure power draw.

With the Windows 10 slider moved all the way to "Best battery life" and screen brightness cranked all the way down, we saw a minimum of just 2.4 watts. That's the lowest value we've ever seen in an Intel Core processor-powered device. With the backlight set to 50% it was 3.3 watts, and with the backlight at 100% 4.2 watts. Dividing the available 46.6 watt-hours of a fully charged battery by the lowest observed battery draw of 2.4 watts would indicate a theoretical battery life of a very impressive 19.4 hours.

Putting the Windows 10 slider to "Best performance" and toggling the backlight to 0%, power draw was 2.9 watts, not much higher than in battery conservation mode. With the backlight set to the 50% level, it was 3.7 watts, still good for 12.6 hours. But with the backlight at 100%, power draw more than doubled to 7.5 watts, reducing battery life to 6.2 hours.

The UX10 draws a more power in "best perform-

Getac UX10 Power Draws (at idle)			
Backlight level	Darkest	Recommended	Brightest
Max Battery	2.4 watts (19.4 hrs)	3.3 watts (14.1 hrs)	4.2 watts (11.1 hrs)
Max Performance	2.9 watts (16.1 hrs)	3.7 watts (12.6 hrs)	7.5 watts (6.2 hrs)

ance" mode because 100% backlight in that mode is much brighter than in best battery mode. Which means battery life depends on the settings.

Getting as much as almost 20 hours of battery life is tremendous. And if that's not enough, the optional 99.8 watt-hour extended battery should push possible maximum battery life past the 40 hour mark.

Note that the power draw we measured was with the tablet idling along. In real life, PCs go into standby mode after a period of idling, using even less power, but when called to do actual work, they use much more. Which mean that real life battery life will vary.

Communications

Fast, reliable communication is mandatory in today's mobile computers, and the Getac UX10 is well equipped. For wired network connectivity there is gigabit Ethernet and a serial port, which still comes in handy for use with legacy peripherals. WiFi is covered by an Intel Wireless-AC 9260 module that provides 802.11ac WiFi. 802.11ac, also called "5G WiFi," is up to three times faster than 802.11n. The module also incorporates Bluetooth version 5.0, which quadruples the range of earlier Bluetooth 4.2.

The UX10 can be ordered with an optional 4G LTE module (our tester had a Sierra Wireless 4G card). A dedicated GPS module is also optionally available.



Dual cameras

Like almost all tablets these days, the Getac UX10 has front and rear cameras. The front camera offers FHD (1920 x 1080 pixel) resolution and is for webcam use. Customers can opt for a Windows Hello face authentication camera instead. For security, the front camera can be covered up with a manually operated slider — a low-tech solution that works.

The documentation camera in the rear has an 8-megapixel imager and a largest image setting of 3,264 x 2,448 pixel resolution, exactly 8-megapixel.

Getac complements the dreadful Windows Camera app which its own and much better camera app. Image settings offer resolutions from 160 x 120 all the way up to full 8mp for the documentation camera, with the same menu being used for the webcam. Both cameras can be used for stills as well as for video.

In the settings menu you can toggle shutter sound, location, status display, GPS/time stamp, and even barcode beep on or off. There's a 5-picture burst setting. Limited manual control (white balance, exposure compensation, contrast, hue, timer, flash and scene modes) are all available via large touch buttons.

After a bit of experimentation, the rear camera is

capable of taking sharp pictures that are good enough for job documentation. Most users will likely still opt to use their smartphone or a dedicated camera, but if none is available, the integrated camera will do.

Video, likewise, is acceptable. The camera generally doesn't fall behind and the maximum 1920 x 1080 recording format is useful. Today's smartphones, of course, have completely spoiled consumers with their superb cameras and sophisticated imaging apps.

Tough and durable

The Getac UX10 is fully rugged and designed to perform "flawlessly under extreme working environments where weather conditions and physical abuse are unavoidable." The tablet can operate between -20° and 145° Fahrenheit (-29° to 63°C) (though, per manual, the recommended temperature range is between 32 and 131F). Sealing is at the IP65 standard, and the machine fills MIL-STD-810G (and presumably the new MIL-STD-810H) testing requirements for humidity, altitude, shock, drop, vibration and others, and there is optional compliance with MIL-STD-461G (electromagnetic interference). To go into a bit more detail on the individual ruggedness testing categories:

The UX10's IP65 rating indicates total protection against dust, and protection against low pressure water jets from all directions.

The tablet's very wide -20 to 145F operating temperature range was measured in accordance with MIL-STD-810G, 501.5 Procedure II and 502.5 Procedure II. The computer also passed non-condensing humidity testing up to 95% per MIL-STD-810G, 507.5 Procedure II, 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.

The device is RoHS-compliant. RoHS stands for Restriction of Hazardous Substances and regulates the use of certain hazardous substances in electronic equipment. The RoHS standard is fully implemented in Europe, with lesser restrictions applying in the US.

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

With respect to the ever important drop spec, the UX10 passed the MIL-STD-810G Method 516.6 test that requires 26 drops from a drop height of six feet. That is very impressive.

Getac offers optional ANSI/UL 121201, CSA C22.2 NO. 213 certification as well as a special version of the UX10, the UX10-Ex, that is ATEX and IECEx certified for use in explosive atmospheres. There are multiple configuration options to fit desired usage scenarios in potentially explosive environments typically found in the oil and gas, petrochemical, aviation and related industries. Finally, Getac's rugged mobile computer decontamination document recommends a number of commonly available disinfectants for the UX10. Those have all been tested for 10,000 swipe-downs at a pressure of 14.22 psi.

LumiBond 2 display

Computer displays have come a long way since the early days of the PC, with many of today's displays being pretty much perfect. Indoors, that is. Outdoors, the sun can overwhelm the brightest display, and there are reflections that can make a screen difficult to see and use. That makes outdoor viewability very important in rugged tablets such as the Getac UX10.

Rugged computer manufacturers have long been in a race for the best possible outdoor-viewable display technology. The difference boils down to backlight brightness, various optical coatings, and how the various layers are bonded (the fewer reflective surfaces, the better). Getac named its "QuadraClear" display technology after four core features (a bright backlight, anti-reflective coatings, linear polarizer, and circular polarizer) and calls their layer bonding process "LumiBond."

Backlight depends on the intensity of light emitted, and that is called luminance. Luminance is measured in "candela per square meter." Since that is a bit cumbersome, the industry uses the term "nits" (short for "units"). A laptop display is in the 200-250 nits range, premium tablets claim 400-600 nits, and some heavy-duty rugged gear can get as high as 1500 nits, but that generally requires a massive battery.

The Getac UX10 display is very bright, up to 1000 nits, and its various optical treatments cut down incoming ambient light. That's important because the ratio between the backlight and the reflected incoming light determines the effective contrast ratio, which determines real world outdoor readability of a display.

We compared the UX10 screen outdoors with an iPad Air 2 whose 425 nits display is, of course, no match for the much brighter UX10 screen. The iPad, like al-



most all smartphone and tablet displays today, is super-glossy and its lack of reflection control can turn it into a virtual mirror outdoors. The Getac UX10's semi-matte display shows no reflections and remains perfectly readable. This is one of the major differences between a vertical/industrial market device carefully designed for outdoor and sunlight use, and a consumer market tablet designed primarily for use indoors. There is, however, no magic. Semi-matte display technology works by diffusing light, and that can show as milkiness on the display.

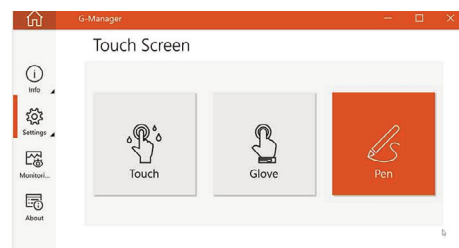
As is, the UX10 display is excellent. Both glossy and semi-matte screens have their pros and cons, but outdoors and in the sun, semi-matte's ability to diffuse the sharp reflections of glossy screens can be an advantage. This is about as good as it currently gets.

Glove touch and handling rain

One of the limiting issues with capacitive touch is that it in its generic form, it only works with fingers or, to a lesser extent, with capacitive styli. Capacitive touch doesn't like rain and it won't accept gloves. But wetness and gloves is what one encounters out there where tablets such as the Getac UX10 are often used.

Getac was one of the first to address these issues,

and solutions have been part of the LumiBond technology for several years. Via the G-Manager users can select "Touch," "Glove," or "Pen" modes.



"Touch" is default and it also works with "direct exposure to rain." "Glove" allows the UX10 to be operated with gloves by increasing the sensitivity of the touch controller. "Pen" mode is for use with the dual-mode input option that adds an active pen. Touch continues to work in pen mode, but the system will not recognize touch when it sense the pen in use, and vice versa. Pen mode is also for use with narrow-tip capacitive pens, where the smaller contact area of the stylus takes priority over the large contact of finger touch.



Getac UX10

Type: Fully rugged tablet

Processors:

Intel Core i7-8665U (1.9GHz base/4.8 GHz max turbo)
Intel Core i7-8565U (1.8GHz base/4.6 GHz max turbo)
Intel Core i5-8365U (1.6GHz base/4.1 GHz max turbo)
Intel Core i5-8265U (1.6GHz base/3.9 GHz max turbo)

OS: Windows 10 Professional (64-bit)

Memory:

8GB DDR4 expandable to 16GB

Graphics: Intel UHD Graphics 620

Display: 10.1-inch/1920 x 1200 pixel, 224 ppi, TFT LCD, LumiBond 2.0 sunlight readable LED display, 1,000 nits

Digitizer: 10-point capacitive multi-touch, hard tip stylus; optional digitizer

Keyboard/keys: Onscreen full-size 82-key backlit detachable mechanical keyboard

Storage: AES Solid State 256GB / 512GB / 1TB

Expansion slots: Optional 1 x micro SD card slot

Housing: ABD + PC polymer over magnesium frame

Operating temperature: -20° to 145°F (-29° to 63°C)

Ingress protection: IP65 (IEC 60529)

Humidity: 95% RH, non-condensing

Drop: MIL-STD-810G Method 516.6 -- transit drop: 26 drops from 6 feet

Vibration: "Vibration & drop resistant"

Disinfectants: See Getac rugged mobile computer decontamination

Intrinsic safety: Getac offers the UX10-Ex for use in explosive atmospheres (ATEX / IECEx Zone 2/22, I13GExicopolisICT4Gc, I13DExicopolisIIBT130°Cdc)

Size: 10.8 x 7.5 x 0.88 inches (275 x 191 x 22 mm)

Weight: 2.68 pounds (1.22 kg)

Power: 11.1V 4,200 mAh 46.6 whr Li-Ion batteries; optional 10.8V 9,240 mAh 99.8 whr Li-Ion battery, optional bridge battery

Cameras: Front-facing: FHD webcam OR optional Windows Hello face-authentication camera; rear-facing: 8MP AF camera

Security: Intel vPro (per CPU options), TPM 2.0, cable lock slot, NIST BIOS compliant; optional Absolute DDS software, optional Smart Card reader, fingerprint reader, or LF/HF RFID reader

Communication: Intel Dual Band Wireless-AC 9260 802.11ac, Bluetooth 5.0; optional dedicated GNSS, optional 4G LTE with integrated GPS

Interface: 1 x headphone out / mic-in combo, power, 1 x USB 3.1 Type-A, 1 x HDMI, 1 x docking; optional RF antenna pass-through for GPS, WLAN & WWAN; via expansion slot: optional serial port + RJ45 LAN

Price: Inquire

Contact:

Getac

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Getac UX10: Summary



With the UX10, Getac has a powerful direct competitor to Panasonic's Toughbook 20. For now, the UX10 beats the Toughbook on the processor front and in other areas. And with the UX10, Getac also presents a very strong offering in the important 10-inch rugged tablet market. That was needed, and further expands Getac's lineup of rugged computers for most conceivable applications in harsh, demanding environments.

The UX10 hits the sweet spot for a large number of potential applications. It has a display larger than those of even the biggest smartphones, but still small enough to go anywhere. With its selection of 8th generation Intel Core processors, the UX10 is powerful enough for any application, yet it

also runs a long time on a single charge.

A modular design with three expansion areas allows easy customization for almost any type of deployment. A bright, vibrant display makes the UX10 easily suitable for outdoor work. A broad catalog of accessories enhances productivity and allows for easy use in vehicles, in the field, or in the office. Impressive ruggedness means the UX10 can go where no consumer tablet can.

The Getac UX10 is a prime example of the difference between fragile consumer tech and ruggedized technology that can be trusted on the job, no matter how hard the job is, or where it takes place.

-- Conrad H. Blickenstorfer, April 2020