

# TUFF+ PANEL PC

12.8" Tablet PC



Motium's fixed mount TUFF+ Panel PC is an evolution of our existing TUFF platform. We've added support for new processors, Full HD screens with capacitive touch, and increased the number of wired expansion interfaces and connector options.

At Motium, customisation is standard, so the TUFF+ Panel PC can be customised to fit your rugged technology requirements.

## Key Features

### Unlimited Configurations

Along with standard card form factors, we offer proprietary expansion board options for unlimited future-proof upgradability.

### Fully Customisable Connectors

Choose from standard QuickConnect Interface connectors, customise your pin-out to consolidate wired interfaces, or change the interface connectors to your own standard.

### Unique High-Definition Touch Display

HD sunlight readable display upgraded to industrial capacitive touch.

### Quad-Core Processing Power

Supporting the latest Intel Elkhart Lake processors, with up to 16GB RAM and an added AI processor.

### Multiple Wireless Options

Including Bluetooth, WiFi, 4G/LTE, 5G, GPS, GNSS, UHF. We also offer custom wireless modules.

### Multiple Operating Systems

Support for Windows 10 and 11, Linux, and Android.



### Customised Solutions

Designing and manufacturing our own technology means we can tailor our products to your specific needs. From white label customisation through to custom hardware and beyond, contact us for a truly bespoke TUFF solution.

### Ongoing Support

We create strong, long-lasting partnerships with our customers. We offer comprehensive and ongoing support and guidance for effective installation and efficient use of all products.

### Contact Us

For product enquiries or further information about the entire TUFF product range, contact us at [sales@motium.com](mailto:sales@motium.com).

## Key Markets



# MOTIUM

**YOUR RUGGED TECHNOLOGY PARTNER**

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# MOTIUM

## SPECIFICATIONS

DISPLAY	
Viewable Area	16:9 aspect ratio. 283.4mm (W) x 159.4mm (H). 12.8-inch (32.5cm) diagonal.
Native Resolution	1920 x 1080; dot pitch: 0.0492mm x 0.1476mm.
Contrast Ratio	1200:1 typical. 900:1 minimum.
Colours	24-bit (16,777,216).
Response Time	Ton: 30ms typ. Toff: 11ms typ.
Brightness	700 nits typical (1 nit = 1 Cd/m <sup>2</sup> ). Supports automatic backlight control via inbuild ambient light sensor. Configurable through Motium Panel PC Utility.
Viewing Angle	Horizontal: 170° typ and 160° minimum. Vertical: 85° typ and 80° minimum.
Touch	10-point projected capacitive on 1.8mm glass, optically bonded with anti-glare surface coating. Optional anti-glare, anti-reflection and anti-fingerprint surface coating available.
PC	
Processor	Intel® Atom™ X E3950 Quad Core 2.00Ghz. Intel® Atom™ x6212RE, Dual-Core (1.2GHz). Intel® Atom™ x6414RE, Quad-Core (1.5GHz). Intel® Atom™ x6425RE, Quad-Core (1.9GHz).
Instruction Set	64-bit.
Memory	16GB DDR3L RAM with x6425RE CPU. 8GB DDR3L RAM with x6414RE, E3950 CPU. 4GB DDR3L RAM with x6212RE CPU.
System Chipset	Intel® Apollo Lake E3900 Series. Intel® Elharkt Lake x6000 Series.
BIOS	AMI Aptio UEFI. Multi Stage Watchdog.
Operating System	Windows 10, Windows 10 IoT Enterprise, Windows 7 Embedded Standard. Linux and Android Available.
MASS STORAGE AND MEDIA	
SSD 1	32GB to 4TB.
SSD 2	32GB to 4TB.
Boot Source	Internal SSD. Internal MicroSD. External USB flash drive. External USB SSD. External optical drive.
VIDEO AND AUDIO	
Video	For Intel® Atom™ x6000: Intel® UHD Graphics for 10th Gen Intel® Processors. For Intel® Atom™ E3800: Intel® HD Graphics 505 Core with 2D and 3D hardware accelerator. Support for high performance hardware MPEG-2 decoding, WMV9 (VC-1), VP8, VP9, H.264 (L5.2), H.265 (HEVC).
Sound	Dual, high-output integrated stereo speakers with software gain control.
WIRELESS CONNECTIVITY	
GPS	92-channel u-blox M9 engine GPS L1 C/A, QZSS L1 C/A/S, GLONASS L10F BeiDou B1I, Galileo E1B/C SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN. External SMA connector with Active Antenna support for enhanced GPS reception.
Bluetooth	Optional Class 5 Bluetooth V5.0 / LE support with suitable Wi-Fi combo card.
Cellular	Optional Cellular modules (3G/4G/LTE/5G) globally certified with Nano SIM and external SMA antennas.
Wireless LAN	Up to two optional IEEE 802.11 AC/a/b/g/n/AC modules with external SMA antennas.
Other	Other Full Length Mini PCIe or M.2 compliant cards can be fitted at time of manufacture. Custom RF modules are able to be fitted at time of manufacture.

INTERFACES	
COM	Three RS-232 ports and one RS-485 port available on QC2.
USB	Two full-function USB 3.0 host ports available on the edge connector. One full-function USB 3.0 or USB 2.0 port available on QC5.
LAN	Up to two 10/100/1000 LAN ports available on QC4 and 5.
I/O	Four independent configurable analogue or digital inputs/outputs available on QC1.
CAN	Up to four CAN FD with J1939 protocol support available. Controllable power output also available.
Composite Video Input	Up to eight HD Composite Video Capture with PAL/NTSC support on QC3.
Function Keys	Power on/off, backlight brightness up/down, volume up/down. Custom Function key. Backlight, Volume and Custom Function keys can be reassigned in software.
PHYSICAL CHARACTERISTICS	
Mounting	75mm VESA mount.
Dimensions	329mm (W) x 227mm (H) x 64mm (D).
Weight	2.68kg. Measured with SSD fitted and no optional internal cards.
Shipping	435mm (W) x 306mm (H) x 90mm (D). 3.54kg.
Environmental	Operating from VIN: -40°C to +70°C. Operating from UPS: -40°C to +70°C. Storage: -40°C to +85°C. UPS Charging*: 0°C to +45°C. (*Only if UPS feature is fitted.)
Humidity	EN 60068-2-30, +25°C to +55°C, >95%RH, 6*24h.
Altitude	IEC 60068 PT2-13. Operating 5000m 4hr. Non-operating 10000m 4hr.
Certification	RCM, FCC, CE. RoHS3.
Vibration	Sinusoidal IEC 60068-2-6 Functioning. Random IEC 60068-2-64 Functioning.
Drop	ANSI/ASAE EP455 JUL91, Agricultural Equipment Automation Committee 5.14.2.2 Bench – 400mm drop. 1.2m drop test onto plywood in packaging.
Shock	IEC 60068-2-27, 30g/6ms.
Sealing	IP67.
POWER	
Power Supply	Input voltage range 9 VDC to 36 VDC with over current, reverse polarity, over and under voltage protection.
Power Consumption	55W Max.
Accessory Control	Accessory input for power on/off control through the power connector.
UPS	Internal 18W/hr LiFePo4 rugged UPS.
Transient Protection	Load dump and other transients specified in ISO-7637 for 12v and 24v vehicles.
SUPPORT	
Warranty	24-month warranty from date of dispatch from Motium. Additional 12, 24 and 36-month warranties are also available. Please also see the Motium Terms and Conditions of Sale document.

## ORDERING OPTIONS

The TUFF+ Panel PC is available in standard models and can also be customised with a variety of options. White label branding options are also available. Minimum order quantities may apply.

QuickConnect (QC) cable assemblies must be ordered separately. Standard and custom options are available.

Contact Motium for order codes. Specifications subject to change without notice.