TUFF
PC

Rugged Fanless PC

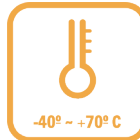**Upgradability** | **Customisable** | **Interoperability** | **IP65** | **Transient Protection** | **-40º ~ +70º C** | **Vibration & Shock**

TUFF PC by Motium is a fanless PC range boasting features including water and dust resistance, a wide operating temperature range, high performance, low power consumption and extensive connectivity.

Motium's TUFF PC is exclusively designed to deliver superior rugged performance in the harshest of environments.

Key Features

Wide-Ranging Expansion Options
Two Mini PCI Express Card slots, including one SIM connector, allow for several expansion options including wireless LAN and cellular modem cards.

Extensive I/O Connector Options
Including four switchable analogue or digital I/O connector options, choose from USB, RS-232, RS-485, CAN, Ethernet, and more.

Designed for Rugged Environments
A wide voltage input range with transient and surge protection to ISO7637. UPS battery backup to ensure power in harsh environments.

Diverse Wireless Connectivity
Including WiFi, 3G/4G/5G, GNSS, Bluetooth, LAN and more. Other Mini PCIe–compliant cards available on request.

Powerful Operation
Efficient fanless operation and optional quad-core processing power available with up to 8GB RAM.

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**.

Key Markets

Mining | **Waste Management** | **Emergency Services** | **Transportation**

Industrial Automation | **Defence** | **Marine** | **Construction**

MOTIUM

YOUR RUGGED TECHONOLOGY PARTNER

p: +61 8 9355 3000
w: **motium.com**

SPECIFICATIONS

PC	
Processor	Intel Atom x7-E3950 Quad-Core 1.6GHz/2.0GHz. Intel Atom x5-E3940 Quad-Core 1.60GHz/1.80GHz. Intel Atom x5-E3930 Dual-Core 1.30GHz/1.80GHz.
Instruction Set	64-bit.
Memory	8GB DDR3L RAM with E3950 CPU. 4GB DDR3L RAM with E3940 CPU. 2GB DDR3L RAM with E3930 CPU.
System Chipset	Intel® Apollo Lake E3900 Series with TPM 2.0 Support.
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 1TB. 16GB eMMC available with E3930 CPU.
External Device	USB Optical Drive: CD-ROM, DVD, Blu-Ray, USB Floppy Drive, USB Flash Drive.
Boot Source	Internal SSD, eMMC if available, Internal microSD. External USB flash drive, LAN.

VIDEO AND AUDIO	
Video	Intel® HD Graphics Gen. 9 3D hardware acceleration: DirectX 12.0, OpenGL 4.3, OpenCL 2.0. Support for high-performance decoding: MPEG-2, H.264 (L5.2), VC-1, WMV9, VP8, JPEG/MJPEG, H.265 (HEVC), VP9, MVC.

WIRELESS CONNECTIVITY	
GNSS	Optional 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 2 Bluetooth V4.0 with BLE available on a Wi-Fi combo card with external SMA antenna support. Optional Class 1 Bluetooth V5.0 with BLE with optional antenna support.
Cellular	Optional 3G/4G/LTE/5G Cellular Data Module with Nano SIM and external dual antenna support for MIMO. Available with SMA or TNC connectors.
Wireless LAN	Optional single or dual IEE 802.11 AC/a/b/g/n Module with external dual antenna support for MIMO. Available with SMA or TNC connectors.
AI	Optional Neural Accelerator with 4Gb LPDDR4 supporting Caffe and TensorFlow frameworks.
Other	Other Mini PCIe compliant cards can be fitted at time of manufacture. Contact Motium to check suitability.

INTERFACES	
COM	Three RS-232 ports available with QC2 cable. Optional RS-485 port available.
USB	Three full-function USB 2.0 ports. One USB 2.0 port available with QC4 cable. Two USB 2.0 ports available on enclosure body.
LAN	One 10/100 LAN port available with QC4 cable. Optional 100/1000 LAN port available.

I/O	Four independent configurable analogue or digital inputs/outputs available with QC1 cable.
CAN	Two CAN Bus2.0b with J1939 protocol support with QC3 cable. Two optional 24v DC internally fused inputs to power CAN sensors (12W shared). Other CAN Bus protocols available.
Composite Video Input	One optional Composite Video Capture with PAL/NTSC support with QC1 cable. One optional 8-way Composite Video Capture with PAL/NTSC support with QC3 cable.
Video Output	Display Port (DP) on USB-C using ALT mode.

PHYSICAL CHARACTERISTICS	
Mounting	Directly to unit with 6x M6 mounting holes.
Dimensions	226.5mm x 239mm x 70.5mm
Weight	Up to 1.8kg.
Shipping	Up to 2.24kg.
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. Nonoperating 10000m 4hr.
Certification	RCM, FCC, CE, RoHS3, Reach. Other certifications available upon request.
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	IP65.

POWER	
Power Supply	Input voltage range 9 VDC to 36 VDC with over current, re-verse polarity, over and under voltage protection.
Power Consumption	55W Max.
Power Management	Custom power management available through system utility, supporting Vin and Acc power controls. BIOS Supported Wake-on: RTC, USB keyboard and LAN.
Accessory Control	Accessory input for power on/off control through the power connector.
UPS	Internal 19.2Wh LiFePo4 rugged Uninterruptible UPS Battery, 14.4Wh usable capacity.
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 Sales document.

ORDERING OPTIONS

The TUFF 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.