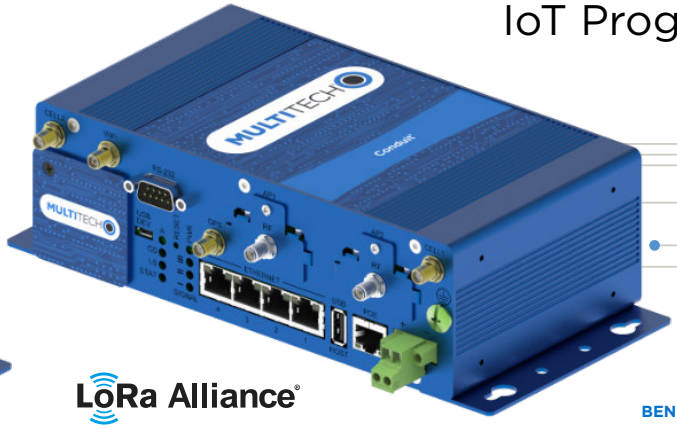
MULTITECH®
CREATE • CONNECT • COMMUNICATE

MultiTech Conduit® 300

IoT Programmable Gateway



LoRa Alliance®

MultiTech Conduit® 300 Series programmable gateway featuring mPower™ Edge Intelligence enables streamlined edge-to-cloud orchestration, management and analytics together with a high performance, secure processor to support Dockers and containers for easy programmability and built-in compatibility with leading IoT software platforms. mPower Edge Intelligence incorporates a host of security features including signed firmware validation, enhanced firewall and VPN settings, secure authentication and more.

The Conduit 300 gateway includes the flexibility to be used as a programmable gateway with Ethernet or cellular data backhaul and can also include next generation LoRaWAN® mCards™ capable of supporting thousands of MultiTech Reveal™ sensors and MultiTech mDot™ and xDot® long range RF modules connected to remote sensors and appliances. The additional wired connectivity options and flexible mounting options allow the gateway to be customized for any IIOT application.

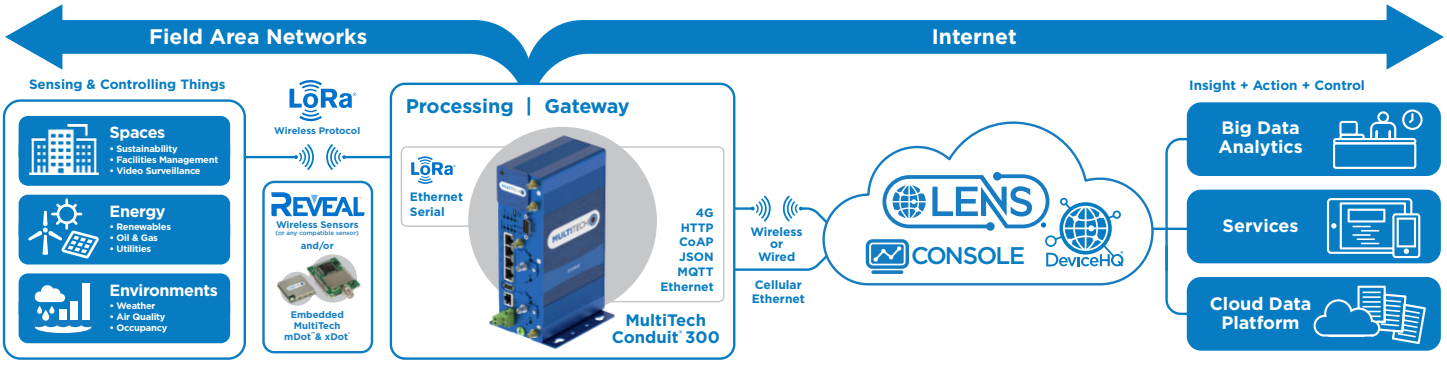
BENEFITS

- Protect thousands of end devices with a highly secure programmable gateway
- Simplified and streamlined edge-to-cloud management and analytics
- Simultaneous communication between gateway and endpoints
- Approved for use with global LoRa channel plans
- Cost effectively determine the location of remote assets
- Easy to deploy, multiple backhaul options available
- Multiple power options support different use cases and applications

FEATURES

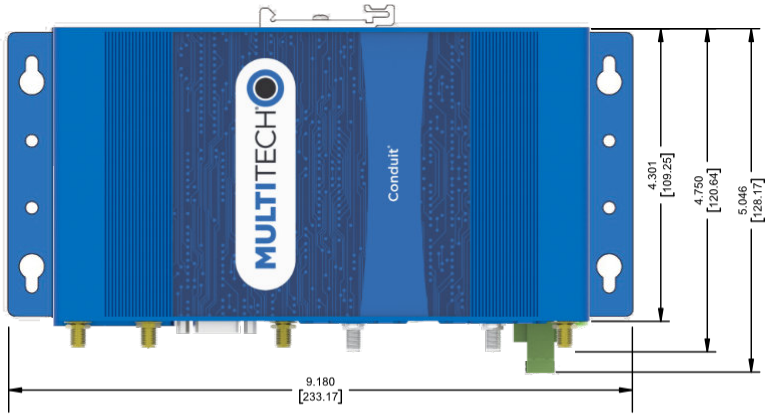
- Secure boot, debug security, trusted execution environment, signed firmware validation, enhanced firewall and VPN settings
- mPower Edge Intelligence provides software development tools and integrated hardware controls
- Optional MultiTech mCard Gateway Accessory Cards support 868 MHz and 915 MHz LoRa frequency bands and other wired interfaces
- GNSS module for LoRaWAN packet time-stamping and network-based location
- Ethernet backhaul with optional 4G-LTE cellular and Wi-Fi options
- POE and DC power options available

www.multitech.com/conduit300



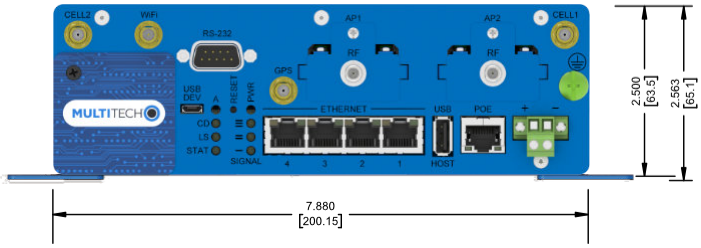
HARDWARE DESCRIPTION

Note: Reference ordering information for features and connectors associated with each individual model number.



Desktop Vertical and Horizontal Configuration Options Shown
(DIN Rail Vertical and Horizontal mounting also available)

Mounting Options:
- 4 wall mount holes
- 5 DIN Rail mounting bracket holes



HARDWARE OVERVIEW

Front Panel Connectors		
Interface	Label	Connector Type
MTAC Card	AP1, AP2	Accessory Card
Serial	RS-232	DTE male connector
SIM Card Holder	SIM	3FF Micro SIM (under nameplate)
Power over Ethernet Power	POE	RF-45 jack for POE
USB HOST	USB	USB 2.0 Type A Female
USB DEVICE	USB DEV	USB 2.0 Micro B Female
Micro SD Memory Card	SD CARD	SD Card Socket (under nameplate)
4-port Ethernet Switch	ETHERNET (1-2-3-4)	RF-45 jack (10/100/1000)
DC Power	+-	2-pin Terminal Block
Grounding Screw	⏚	Green Screw
Antenna Connectors		
Interface	Label	Connector Type
Cellular Antennas (2)	CELL1, CELL2	Female SMA
LoRa Antennas (2)	RF	Female Reverse Polarity SMA
GPS Antenna	GPS	Female SMA
Wi-Fi/BT Antenna	Wi-Fi	Female Reverse Polarity SMA
Back Panel Connectors		
Interface	Label	Connector Type
Mounting Holes (5)	DIN RAIL BRACKET	DIN Rail Mounting Bracket
Debug Interface	SERIAL DEBUG	USB 2.0 Micro B Female
Optional Grounding Screw Location	⏚	Green Screw

HARDWARE SPECIFICATIONS

Feature	Description		
CPU Module	Cortex A9 processor • 1 GHz • 32K L1 Instruction and Data Cache • 256K L2 Cache Volatile Memory: 2GB DDR3 RAM Non-Volatile Memory: 8 GB Flash Memory eMMC		
WAN Backhaul Options	Ethernet	10/100/1000 Base T	All Models
	Cellular	LTE Category 4	-L4G1 models only
	Wi-Fi	802.11abng (2.4 & 5 GHz)	Wi-Fi/BT Models only
GNSS (location, time stamping)	GNSS for LoRa Packet Time Stamping Concurrent GNSS connections: 3 GNSS Systems Supported: (default: concurrent GPS/QZSS/SBAS and GLONASS		
Wi-Fi/Bluetooth	Wi-Fi/BT Models only Wi-Fi: 802.11abng (2.4 & 5 GHz) Bluetooth: Classic 4.2 and BLE		
LEDs	Pre-defined LEDs to communicate system status: Power, Signal Strength (3), Carrier Detect, Link Status, Status, and User Defined (A) Number of LEDs varies by model. Maximum eight		
Power over Ethernet (POE) Input Power	37 – 57 VDC POE Standard: IEEE 802.3at		
DC power	12 – 32 VDC Average Power Draw 15.3 Watts. See Hardware Guide for current draw at specified voltages. Provided by power adapter, DC power cable, POE injector or industrial enterprise router		
Physical Description			
Dimensions (L x W x H)	7.88" x 4.301" x 2.500" (200.15 mm x 109.25 mm x 63.5mm) (See diagram)		
Weight	Approximately 2 lbs (1 kg)		
Chassis Type	Aluminum / Blue Anodized (IP-Rating: Designed for IP30)		
Mounting Options	Desk mount, wall mount, DIN rail mount (See diagram)		
Environmental			
Operating Temperature	-40°C to +70° C*		
Storage Temperature	-40° C to +85° C		
Relative Humidity	20%-90% RH, non-condensing		
Environmental			
Radio Certifications	Australia: AS/NZS 4268:2012 +A1:2013 MPE Standard 2014 Europe: EN 301 893 V2.1.1 (WiFi) North America: United States: FCC Part 22, 24, 27. Canada: ISED-003		
Regulatory Approvals (Approvals Pending) Contact MultiTech for details	Anatel (Brazil), IFETEL (Mexico), SRRC/CCC/NAL (China), KC (South Korea), NCC (Taiwan, China), JATE/TELEC (Japan), FAC (Russia), NBTC (Thailand), IMDA (Singapore), ICASA (South Africa)		
Quality	MIL-STD-810G: High Temp, Low Temp, Random Vibration. SAE J1455: Transit Drop & Handling Drop, Random Vibration, Swept-Sine Vibration. IEC68-2-1: Cold Temp. IEC68-2-2: Dry Heat		
Safety	IEC/UL/cUL 60950-1, IEC/UL/cUL 62368-1		
EMC Compliance	Australia: CISPR 32 EU: EN 55023 Class B, EN 301 489-3 V2.1.1, EN 301 489-1 V2.2.0, EN 301-489-52 V1.1.0 US: FCC Part 15 Class B Canada: ICES-003 Class B		
Warranty	2-Years - www.multitech.com/legal/warranty		

Product specifications are subject to change without notice. Feature availability differs by model number.

* UL Recognized @ 40° C, limited by DC power supply

mPower™ EDGE INTELLIGENCE

Programmable embedded software provides enhanced security and enables task execution at the edge for reduced latency and cost optimization.

mPower™ Edge Intelligence embedded software delivers programmability, network flexibility, enhanced security and manageability for scalable Industrial Internet of Things (IIoT) solutions.

mPower simplifies integration with a variety of popular upstream IoT platforms to streamline edge-to-cloud data management and analytics, while also providing the programmability and processing capability to execute critical tasks at the edge of the network to reduce latency; control network and cloud services costs, and ensure core functionality – even in instances when network connectivity may not be available.

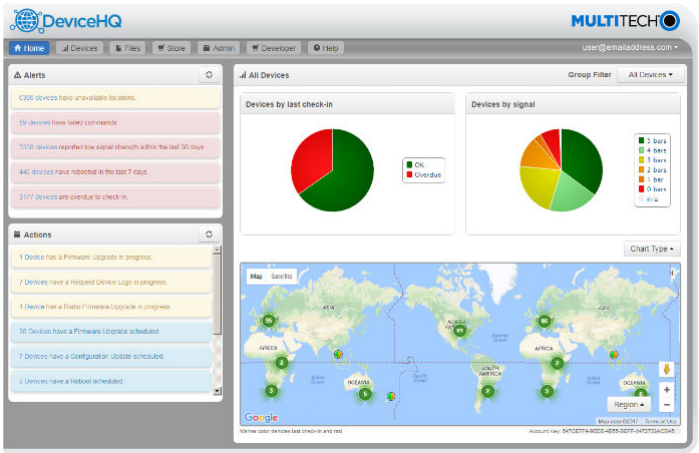
mPower software specifications can be found **here**.

LENS® Embedded Network Server & Key Management Toolset for LoRaWAN® Networks

LENS is a hybrid LoRaWAN® network management platform that enables deployment and management of LoRaWAN networks at scale. Designed for private and enterprise networks, LENS provides a site-by-site user account and centralized management for LoRa® end devices, as well as configuration and control of Conduit® gateways. LENS has the capability to assign unique access rights to individual users, add gateways and LoRa end nodes in bulk, or create separate organizations and network segmentation to support different IoT use cases or applications. For more information on MultiTech LENS, visit: **multitech.com/lens**

Cloud-based Application Store and IoT Device Management

MultiTech DeviceHQ® is cloud-based tool set for managing the latest generation of MultiTech devices. It incorporates all the functionality of MultiTech Device Manager, on which so many M2M and IoT applications already rely for remote monitoring, upgrades and configuration of entire device populations – whether one or 1 million. DeviceHQ takes remote device management and maintenance to a new level, by providing an application marketplace, allowing users to browse applications or build their own then easily deploy them to and customize them for remote devices from anywhere. For more information on MultiTech DeviceHQ, visit: **multitech.com/devicehq**



SOFTWARE SPECIFICATIONS

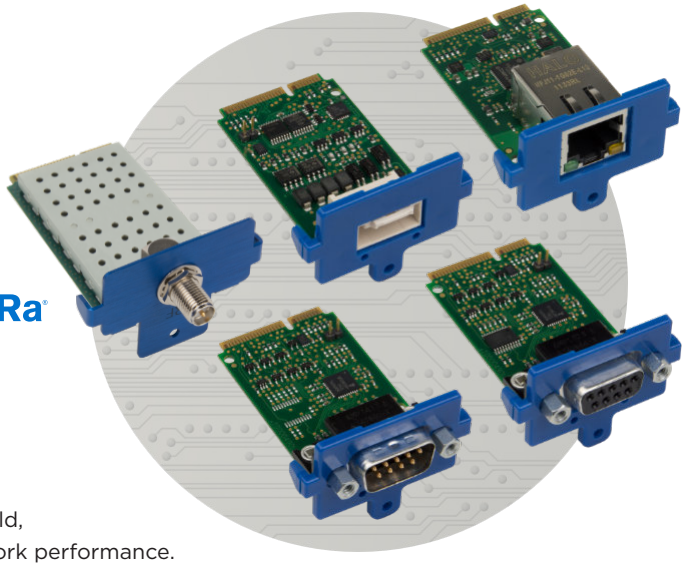
Feature	Description
Operating System	• mPower Edge Intelligence • Custom Linux distribution with access to hundreds of resolved CVE • Based on Yocto
Software Packages	• Native language support: Python, C, C++, Javascript, Node.js, Node-RED • LoRa Network Server • LoRa Packet Forwarder
Security	• VPN: Up to 5 concurrent tunnels • Mac Filtering: Accept, reject, drop or log packets based on MAC address • Firewall Rules: SPI Firewall with configurable DNAT, NAT-T, SNAT • Secure Boot, Secure file system
Secure Access	• Password Strength Controls: Secure passwords required for all user types • User Interface Inactivity Timeout: Automatically log out a user if connection remains dormant for an identified period of time • Administrative Controls: Tools to help restore the configuration of the device
Secure Connectivity	• OpenVPN: Server and Client (built on OpenSSL) • GRE Tunnels: Allows use of public network to convey data on behalf of two remote private networks • Network-to-Network VPN: Site-to-Site VPNs via Internet Protocol Security (IPsec) tunnels
RADIUS Support	• Secure entry to a network of assets for better monitoring and control • RADIUS protocol supports authentication, user session accounting, and authorization of users to the device
Notifications	• Time-stamped notifications sent to individuals or groups via E-mail message, SMS message, and/or SNMP trap • Sent messages and message status can be managed by Mail Log, Mail Queue, or Notifications Sent
Debugging	• Cellular AT Commands: Communicate directly with device cellular radio using AT command • Automatic Reboot Timer: Configure device to automatically reboot
Serial Port Protocols	• The serial terminal connection can be configured using TCP, UDP, or SSL/TLS server protocol • Device can be configured to use Modbus protocol to communicate with serial devices
Remote Management	• Signed firmware authentication / integrity check • Simple Network Management Protocol (SNMP) support • DeviceHQ • Customizable web user interface

Additional information available:
http://www.multitech.net/developer/downloads/
https://www.multitech.com/technology/software-innovation

mCARD GATEWAY ACCESSORY CARDS

Conduit 300 series gateways can be upgraded to include up to two mCard gateway accessory cards. mCards provide the flexibility needed to manage a wide range of different wired and wireless interfaces and associated communication protocols required to connect sensors, appliances, and assets to the gateway. mCard options include:

- LoRaWAN Long Range, Low Power Wireless Access Network
- General Purpose Input/Output (GPIO)
- Multi-functional serial (DTE and DCE variants)
- Ethernet (10/100/1000 Mbps)



LoRaWAN GATEWAY ACCESSORY CARDS

Next Generation LoRaWAN gateway accessory cards allow customers to process higher amounts of LoRa traffic, from more devices in the field, while improving end-device battery performance and optimizing network performance. Customers can obtain the latitude and longitude of devices using network-based location services.

- Eight spreading factors (SF5 to SF12)
- Fine timestamp capability for network-based location services using Time Difference of Arrival (TDoA)
- LoRaWAN Class A, B, C

LoRaWAN Gateway Accessory Cards can be ordered separately and are also available in select Conduit 300 models.

LoRa Module	Frequency Band	Channel Plan	Maximum EIRP*	Default Frequency Band
MTAC-003E00	868 MHz	EU868	14 dBm - 27 dBm**	863 – 870 MHz
		IN865	30 dBm	865 – 867 MHz
		RU864	16dBm	864 – 870 MHz
MTAC-003U00	915 MHz	US915	27 dBm	902 - 928 MHz
		AU915	30 dBm	915 – 928 MHz
		AS923	27 dBm	915 – 928 MHz
		AS923-1	16 dBm	915 - 925 MHz
		AS923-2	16 dBm	915 - 925 MHz
		AS923-3	16 dBm	915 - 918 MHz
		AS923-4	16 dBm	917 - 920 MHz
		KR920	14 dBm	920 – 923 MHz

* Maximum output power before antenna / 1x8 channel or 2x8 channels / Half-Duplex
** Maximum EIRP is 14 dBm for most of the band, except 27 dBm at 869.4 – 869.65

CELLULAR WAN SPECIFICATIONS

Conduit 300 models with cellular backhaul include a global 4G-LTE Category 4 module

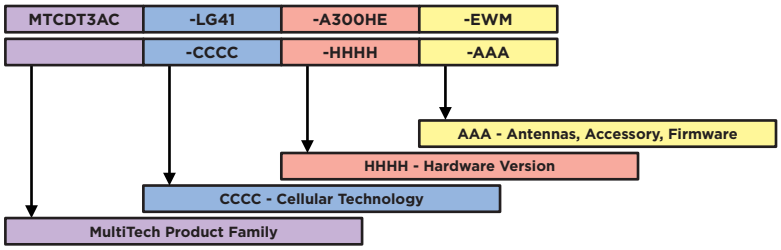
- Worldwide LTE support with 3G-HSPA+ and 2G-GPRS fallback (where available)
- One model supports deployments in multiple countries/regions
- Approved on a growing number of mobile network operators

Feature	MTCDT3AC-L4G1 Models
Cellular Radio	MTQ-L4G1-B02
Cellular Performance	4G-LTE Category 4
Cellular Fallback	3G - HSPA +, 2G - GPRS
Frequency Band (MHz)	**4G FDD:** B1(2100), B2(1900), B3(1800), B4(AWS1700), B5(850), B7(2600), B8(900), B12/B13(700), B18(850), B19(850), B20(800), B25(1900), B26(850), B28(700) **4G TDD:** B38(2600), B39(1900), B40(2300), B41(2500) **3G:** B1(2100), B2(1900), B4(AWS1700), B5(850), B6(800), B8(900), B19(850) **2G:** B2(1900), B3(1800), B5(850), B8(900)
Packet Data (LTE)	**4G-FDD:** Up to 150 Mbps peak downlink. Up to 50 Mbps peak uplink **4G-TDD:** Up to 130 Mbps peak downlink. Up to 30 Mbps peak uplink
SIM Card	(1) 3FF Micro SIM
Mobile Network Operator (MNO) Approvals	Australia: RCM, Optus, Telstra, Vodafone Europe: GCF, European Network Operators North America**: United States: PTCRB, AT&T, Verizon
Additional Mobile Network Operator Certifications Available (Contact MultiTech for Details)	United States: T-Mobile, US Cellular Canada: Rogers, Telus, Bell
EMC Compliance	Australia CISP32 Europe: EN 55032 Class B, EN 301 489-3 V2.1.1, EN 301 489-1 V2.2.0, EN 301-489-52 V1.1.0 North America: United States: FCC Part 15 Class B. Canada: ICES-003 Class B
Radio Compliance	Australia: RCM. 4268:2012 + A1:2013 Europe: CE/RED. EN 300 220-2 V3.1.1, EN 300 328 V2.1.1, EN 301 908-1 V11.1.1, EN 62311 North America: FCC Part 15 Subpart B, 22H, 24E, 27, 90

Product specifications are subject to change without notice.

** MTQ-L4G1-B02 is PTCRB, AT&T, and Verizon approved

MODEL NUMBER SCHEMA



MultiTech Conduit® 300 IoT Programmable Gateway Ordering Information

Model Category & Model Number	Description	Region	Ethernet	Cellular	LoRA	GNSS	Wi-Fi/ BT	Accessory Kit
Ethernet Only Models								
MTCDT3AC-EN-A300HE-EWM	GNSS and Wi-Fi/Bluetooth	Japan / Australia / Europe / North America	•			•	•	1
MTCDT3AC-EN-A300GE-EWM	GNSS	Japan / Australia / Europe / North America	•			•		2
Category 4 LTE Models								
MTCDT3AC-L4G1-A300HE-EWM	Cellular, GNSS and Wi-Fi/Bluetooth	Japan / Australia / Europe / North America	•	•		•	•	3
MTCDT3AC-L4G1-A300GE-EWM	Cellular, GNSS	Japan / Australia / Europe / North America	•	•		•		4
Ethernet Only Models + 8-channel LoRa Accessory Card								
MTCDT3AC-EN-A33UHE-EWM	MTAC-003U00 mCard (8 channels),GNSS and Wi-Fi/Bluetooth	Japan / Australia / North America	•		•	•	•	5
MTCDT3AC-EN-A33EHE-EEM	MTAC-003E00 mCard (8 channels),GNSS and Wi-Fi/Bluetooth	Europe	•		•	•	•	6
MTCDT3AC-EN-A33UGE-EWM	MTAC-003U00 mCard (8 channels), and GNSS	Japan / Australia / North America	•		•	•		7
MTCDT3AC-EN-A33EGE-EEM	MTAC-003E00 mCard (8 channels), and GNSS	Europe	•		•	•		8
Category 4 LTE Models + 8-channel LoRa Accessory Card								
MTCDT3AC-L4G1-A33UHE-EWM	Cellular, MTAC-003U00 mCard (8 channels), GNSS and Wi-Fi/BT	Japan / Australia / North America	•	•	•	•	•	9
MTCDT3AC-L4G1-A33EHE-EEM	Cellular, MTAC-003E00 mCard (8 channels), GNSS and Wi-Fi/BT	Europe	•	•	•	•	•	10
MTCDT3AC-L4G1-A33UGE-EWM	Cellular, MTAC-003U00 mCard (8 channels), and GNSS	Japan / Australia / North America	•	•	•	•		11
MTCDT3AC-L4G1-A33EGE-EEM	Cellular, MTAC-003E00 mCard (8 channels), and GNSS	Europe	•	•	•	•		12

Accessory Kit Specifics

Accessory kits differ by model number. All accessory kits include: Power supply, Ethernet cable, USB cable, mounting brackets and screws, DIN rail mounting bracket and screws, terminal block connector (power), and grounding screw

Accessory & Kit Number	1	2	3	4	5	6	7	8	9	10	11	12
LoRa Antenna(s)					(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Cellular Antenna(s)			(2)	(2)					(2)	(2)	(2)	(2)
Wi-Fi/BT Antenna	(1)		(1)		(1)	(1)			(1)	(1)		
GNSS Antenna	ANGPS-1MM Available Separately											
Power Blades	(4) AU/NZ, EU, GB, US	(4) AU/NZ, EU, GB, US	(4) AU/NZ, EU, GB, US	(4) AU/NZ, EU, GB, US	(4) AU/NZ, EU, GB, US	(2) EU, GB	(4) AU/NZ, EU, GB, US	(2) EU, GB	(4) AU/NZ, EU, GB, US	(2) EU, GB	(4) AU/NZ, EU, GB, US	(2) EU, GB

Visit www.multitech.com for detailed product model numbers

Produced in the U.S. of U.S. and non-U.S. components. Features and specifications are subject to change without notice.

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Services & Warranty

MultiTech's comprehensive Support Services programs offer a full array of options to suit your specific needs. These services are aimed at protecting your investment, extending the life of your solution or product, and reducing total cost of ownership. Our seasoned technical experts, with an average tenure of more than 10 years, can walk you through smooth installations, troubleshoot issues and help you with configurations.

Technical Support Services

At MultiTech, we're committed to providing you personalized attention and quality service while providing you a quick response to your product support needs. We have several options of support for you to choose from.

For additional information on Support Services as well as other service offerings, please contact your MultiTech representative or visit www.multitech.com/support.go

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