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MULTITECH®
CREATE • CONNECT • COMMUNICATE

# MultiTech Conduit® 300

## IoT Programmable Gateway



LoRa Alliance®

**MultiTech Conduit® 300 Series** programmable gateway features 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. Moreover, mPower Edge Intelligence incorporates a host of security features including signed firmware validation, enhanced firewall and VPN settings, secure authentication and more.

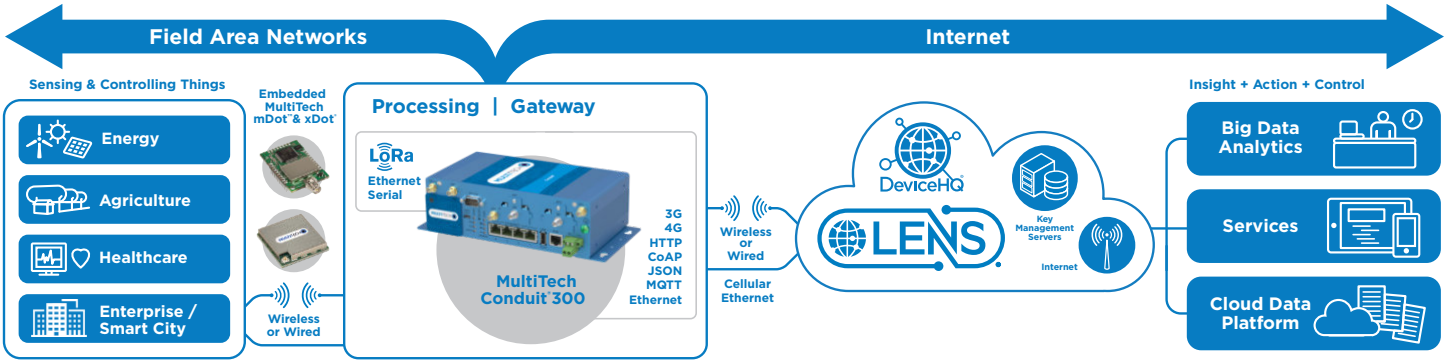
The Conduit 300 gateway features the flexibility to be used as a programmable gateway with Ethernet or cellular data backhaul and can also include LoRaWAN mCards capable of supporting thousands of MultiTech mDot and xDot long range RF modules connected to remote sensors and appliances. The additional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

### BENEFITS

- High security hardware
- Protect thousands of end devices with 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

- High-performance, secure processor supports industrial-grade IoT applications
- 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 geolocation
- Ethernet backhaul with optional 4G-LTE cellular and Wi-Fi options
- POE and DC power options available

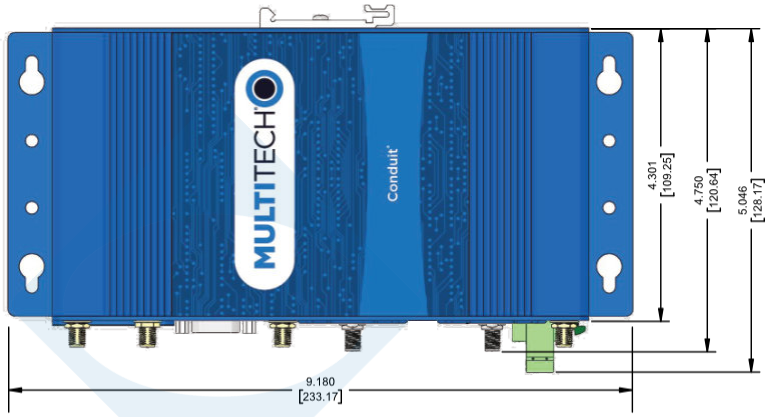



www.multitech.com/conduit300

Alcom electronics
Singel 3 | B-2550 Kontich | Belgium | Tel. +32 (0)3 458 30 33 | info@alcom.be | www.alcom.be
Rivium 1e straat 52 | 2909 LE Capelle aan den Ijssel | The Netherlands | Tel. +31 (0)10 288 25 00 | info@alcom.nl | www.alcom.nl

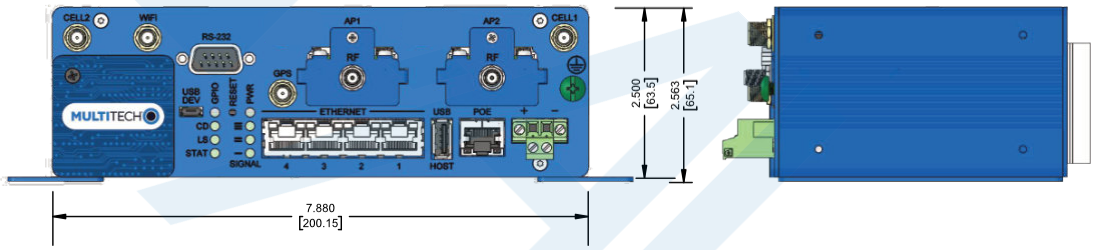
## HARDWARE DESCRIPTION

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<br>Volatile Memory: 2GB DDR3 RAM<br>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<br>(location, time stamping) | GNSS for LoRa Packet Time Stamping<br>Concurrent GNSS connections: 3<br>GNSS Systems Supported: (default: concurrent GPS/QZSS/SBAS and GLONASS | | |
| Wi-Fi/Bluetooth | Wi-Fi/BT Models only<br>Wi-Fi: 802.11abng (2.4 & 5 GHz)<br>Bluetooth: Classic 4.2 and BLE | | |
| LEDs | Pre-defined LEDs to communicate system status: Power, Signal Strength (3), Carrier Detect, Link Status, Status, and GPIO<br>Number of LEDs varies by model. Maximum eight | | |
| Power over Ethernet (POE)<br>Input Power | 37 – 57 VDC<br>POE Standard: IEEE 802.3at | | |
| DC power | 12 – 32 VDC<br>Average Power Draw 15.3 Watts.<br>See Hardware Guide for current draw at specified voltages.<br>Provided by power adapter, DC power cable or POE Injector | | |
| 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<br>Europe: EN 301 893 V2.1.1 (WiFi)<br>North America: United States: FCC Part 22, 24, 27. Canada: ISED-003 | | |
| Regulatory Approvals<br>(Approvals Pending)<br>Contact MultiTech for details | Anatel (Brazil), IFETEL (Mexico), SRRC/CCC/NAL (China), KC (South Korea), NCC (Taiwan, China),<br>JATE/TELEC (Japan), FAC (Russia), NBTC (Thailand), IMDA (Singapore), ICASA (South Africa) | | |
| Quality | MIL-STD-810G: High Temp, Low Temp, Random Vibration.<br>SAE J1455: Transit Drop & Handling Drop, Random Vibration, Swept-Sine Vibration.<br>IEC68-2-1: Cold Temp.<br>IEC68-2-2: Dry Heat | | |
| Safety | IEC/UL/cUL 60950-1, IEC/UL/cUL 62368-1 | | |
| EMC Compliance | Australia: CISPR 32<br>EU: EN 55023 Class B, EN 301 489-3 V2.1.1,<br>EN 301 489-1 V2.2.0, EN 301-489-52 V1.1.0<br>US: FCC Part 15 Class B<br>Canada: ICES-003 Class B | | |
| Warranty | 2-Years - www.multitech.com/legal/warranty | | |

Product specifications are subject to change without notice.

* 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

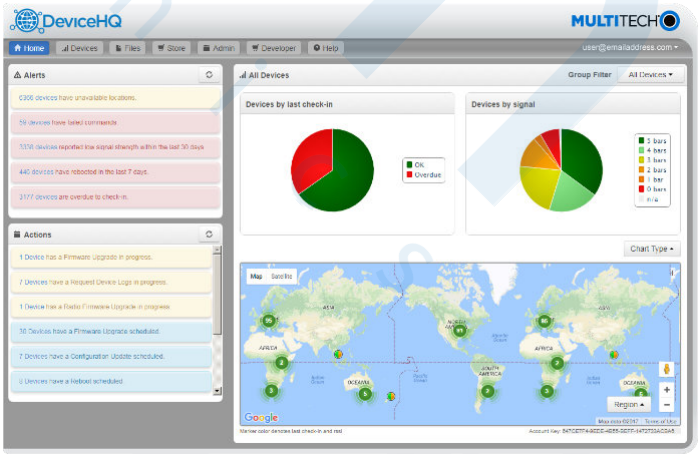
LENS is a hybrid LoRaWAN® network management platform that enables deployment and management of LoRaWAN networks at scale. Designed for private and enterprise networks, LENS provides a site-by-site user account and centralized management for LoRa® end devices, as well as configuration and control of 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.

LENS®


DeviceHQ®

## 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.



## SOFTWARE SPECIFICATIONS

| Feature | Description |
|---|---|
| Operating System | • mPower Edge Intelligence<br>• Linux version 4.19.X (Standard Long Term Support. Access to hundreds of resolved CVE)<br>• Based on Yocto/Thud (version 2.6) |
| Software Packages | • Native language support: Python, C, C++, Javascript, Node.js, Node-RED<br>• LoRa Network Server<br>• LoRa Packet Forwarder |
| Security | • VPN: Up to 5 concurrent tunnels<br>• Mac Filtering: Accept, reject, drop or log packets based on MAC address<br>• Firewall Rules: SPI Firewall with configurable DNAT, NAT-T, SNAT<br>• Secure Boot, Secure file system |
| Secure Access | • Password Strength Controls: Secure passwords required for all user types<br>• User Interface Inactivity Timeout: Automatically log out a user if connection remains dormant for an identified period of time<br>• Administrative Controls: Tools to help restore the configuration of the device |
| Secure Connectivity | • OpenVPN: Server and Client. Version 2.4.7 (built on OpenSSL 1.1.1b)<br>• GRE Tunnels: Allows use of public network to convey data on behalf of two remote private networks<br>• 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<br>• 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<br>• 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<br>• 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<br>• Device can be configured to use Modbus protocol to communicate with serial devices |
| Remote Management | • Signed firmware authentication / integrity check<br>• Simple Network Management Protocol (SNMP) support<br>• DeviceHQ<br>• Customizable web user interface |

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

## LORAWAN SPECIFICATIONS

| Feature | Description | | | | | |
|---|---|---|---|---|---|---|
| | Frequency Band | Channel Plan | Power Output* | RX Range | TX Range | Sensitivity |
| LoRa Modules Semtech | 868 MHz | EU868 | 27 dBm | 863 – 870 MHz | 863 – 870 MHz | |
| | | IN865 | | 865 – 867 MHz | | |
| | | RU864 | | 864 – 870 MHz | | |
| | 915 MHz | US915 | 27 dBm | 902 - 915 MHz | 923 - 928 MHz | |
| | | AU915 | 30 dBm | 915 – 928 MHz | | |
| | | AS923 | | 915 – 928 MHz | 902 – 928 MHz | |
| | | KR920 | | 920 – 923 MHz | | |
| | (*) Maximum output power before antenna / 1x8 channel or 2x8 channels / Half-Duplex | | | | | |

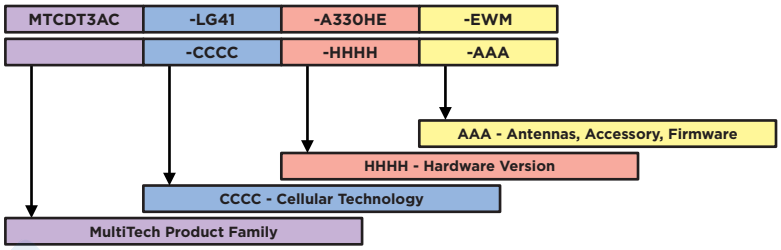
## CELLULAR WAN SPECIFICATIONS

| Models | MTCDT3AC-L4G1 |
|---|---|
| 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)<br>**4G TDD:** B38(2600), B39(1900), B40(2300), B41(2500)<br>**3G:** B1(2100), B2(1900), B4(AWS1700), B5(850), B6(800), B8(900), B19(850)<br>**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<br>**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<br>Europe: GCF, European Network Operators<br>North America**: United States: PTCRB, AT&T, Verizon |
| Mobile Network Operator (Approvals Pending) Contact MultiTech for details | United States: T-Mobile, US Cellular<br>Canada: Rogers, Telus, Bell |
| EMC Compliance | Australia CISP32<br>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<br>North America: United States: FCC Part 15 Class B. Canada: ICES-003 Class B |
| Radio Compliance | Australia: RCM. 4268:2012 + A1:2013<br>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<br>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 | Included Item(s) 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 |
| **Category 4 LTE Models + 8-channel LoRa Accessory Card** | | | | | | | | |
| MTCDT3AC-L4G1-A31UHE-EWM | Cellular, MTAC-LORA-H-915 mCard (8 channels), GNSS and Wi-Fi/BT | Japan / Australia / North America | • | • | • | • | • | 5 |
| MTCDT3AC-L4G1-A31EHE-EEM | Cellular, MTAC-LORA-H-868 mCard (8 channels), GNSS and Wi-Fi/BT | Europe | • | • | • | • | • | 6 |

## 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)

| Accessory & Kit Number | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| LoRa Antenna(s) | | | | | (1) | (1) |
| Cellular Antenna(s) | | | (2) | (2) | (2) | (2) |
| Wi-Fi/BT Antenna | (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 |

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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