

MultiTech Conduit[®] 300

Gateway Developer Kit



MultiTech Conduit[®] 300 is a configurable, manageable, and scalable cellular communications gateway for industrial IoT applications.

Network engineers can remotely configure and optimize their Conduit performance through DeviceHQ[®], the world's first IoT Application Store and Device Management platform.

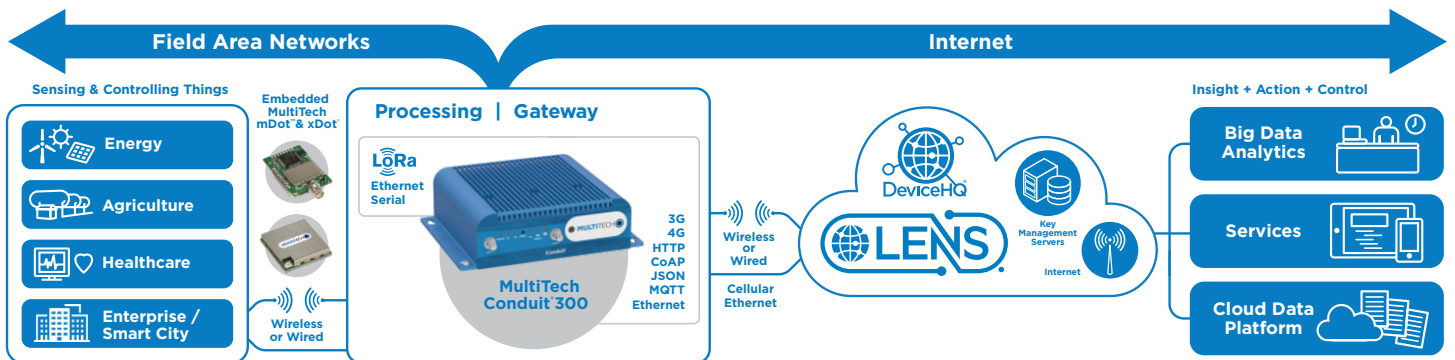
The Conduit 300 is a 16 channel LoRa[®] gateway capable of supporting thousands of MultiTech mDot[™] and xDot[®] long range RF modules connected to remote sensors and appliances. Quick-to-deploy and easy to customize and manage, the Conduit 300 communications gateway realizes your IoT application.

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
- Embedded full-duplex LoRaWAN[®] module supports 868 MHz and 915MHz LoRa frequency bands
- GNSS module for LoRaWAN packet time-stamping and geolocation
- Ethernet backhaul with optional 4G-LTE cellular and Wi-Fi options
- POE and AC power options available



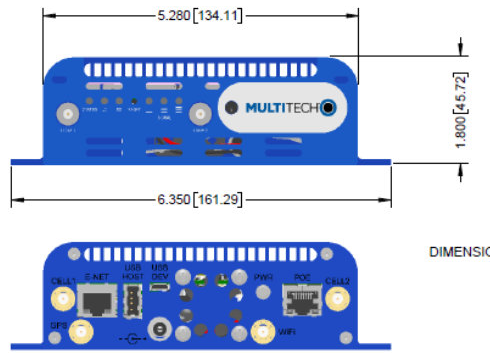
HARDWARE OVERVIEW

Front Panel Connectors:

- LoRa Antennas (2) Female Reverse Polarity SMA
- SIM Card Holder: 3FF Micro SIM
- USB DEBUG: USB 2.0 Type A Female

Back Panel Connectors:

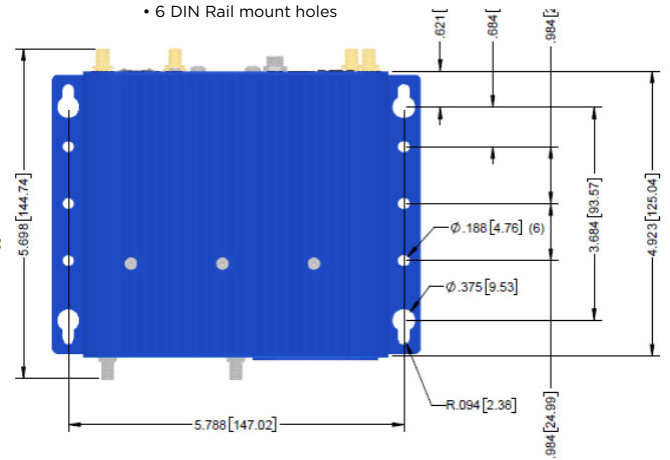
- Wi-Fi/BT: Female Reverse Polarity SMA
- GPS (GNSS): Female SMA
- CELL1 AND CELL2: Female SMA
- Power: TBD mm miniature (screw-on)
- E-NET (LAN): RJ-45 jack (10/100/1000 port)
- POE: RJ-45 jack for POE
- USB HOST: USB 2.0 Type A Female
- USB DEVICE: USB 2.0 Micro B Female



Dimensions in Inches (Millimeters)

Mounting Holes:

- 4 wall mount holes
- 6 DIN Rail mount holes



HARDWARE SPECIFICATIONS

Feature	Description																																											
CPU Module	Texas Instruments AM4372 Sitara Processor Cortex A9 processor • 1 GHz • 32K L1 Instruction and Data Cache • 256K L2 Cache Volatile Memory: 2GB DDR3 RAM Non-Volatile Memory: 4 GB Flash Memory eMMC																																											
LoRa Modules	<table border="1"> <thead> <tr> <th>Frequency Band</th> <th>Channel Plan</th> <th>Power Output (*)</th> <th>RX Range</th> <th>TX Range</th> <th>Sensitivity</th> </tr> </thead> <tbody> <tr> <td rowspan="3">868 MHz</td> <td>EU868</td> <td>27 dBm</td> <td>863 – 873 MHz</td> <td>863 – 873 MHz</td> <td></td> </tr> <tr> <td>IN865</td> <td></td> <td>865 – 867 MHz</td> <td></td> <td></td> </tr> <tr> <td>RU864</td> <td></td> <td>864 – 870 MHz</td> <td></td> <td></td> </tr> <tr> <td rowspan="4">915 MHz</td> <td>US915</td> <td>27 dBm</td> <td>902 – 928 MHz</td> <td>902 – 928 MHz</td> <td></td> </tr> <tr> <td>AU915</td> <td>30 dBm</td> <td>915 – 928 MHz</td> <td></td> <td></td> </tr> <tr> <td>AS923</td> <td></td> <td>915 – 928 MHz</td> <td>902 – 928 MHz</td> <td></td> </tr> <tr> <td>KR920</td> <td></td> <td>920 – 923 MHz</td> <td></td> <td></td> </tr> </tbody> </table> <p>(*) Maximum output power before antenna / 16 channel (1x16 or 2x8 channels) / Half-Duplex</p>	Frequency Band	Channel Plan	Power Output (*)	RX Range	TX Range	Sensitivity	868 MHz	EU868	27 dBm	863 – 873 MHz	863 – 873 MHz		IN865		865 – 867 MHz			RU864		864 – 870 MHz			915 MHz	US915	27 dBm	902 – 928 MHz	902 – 928 MHz		AU915	30 dBm	915 – 928 MHz			AS923		915 – 928 MHz	902 – 928 MHz		KR920		920 – 923 MHz		
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GNSS (location, time stamping)	u-blox (EVA-M8 GNSS Module) GNSS for LoRa Packet Time Stamping Concurrent GNSS connections: 3 GNSS Systems Supported: (default: concurrent GPS/QZSS/SBAS and GLONASS)																																											
Wi-Fi/Bluetooth	Texas Instruments (WL1807 Module) -241 models only Wi-Fi: 802.11abng (2.4 & 5 GHz) Bluetooth: Classic 4.2 and BLE																																											
LEDs	Four pre-defined LEDs to communicate system status: Power, LAN, Cellular, Platform Connect Status																																											
Connectors																																												
Hardware Connectors	<p>Front Panel (behind nameplate):</p> <ul style="list-style-type: none"> SIM: 3FF Micro SIM Holder (Cellular WAN models only) USB DEBUG: USB 2.0 Type A Female Connector <p>Back Panel:</p> <ul style="list-style-type: none"> Power: TBD mm miniature (screw-on) E-NET (LAN): RJ-45 jack (10/100/1000 port) POE: RJ-45 jack for POE USB HOST: USB 2.0 Type A Female Connector (firmware updates) USB DEVICE: USB 2.0 Micro B Female Connector 																																											
Antenna Connectors	<p>Front Panel:</p> <ul style="list-style-type: none"> LORA1 and LORA2: Female Reverse Polarity SMA <p>Back Panel:</p> <ul style="list-style-type: none"> Wi-Fi/BT: Female Reverse Polarity SMA GPS (GNSS): Female SMA CELL1 AND CELL2: Female SMA (cellular WAN models only) 																																											
Power-Over Ethernet (POE)	37 - 57 VDC Provided by PSE injector with power rating of 25W or greater																																											
DC power	12 - 32 VDC Average Power Draw 15.3 Watts. See Hardware Guide for current draw at specified voltages. Provided by power adapter or DC power cable																																											
Physical Description																																												
Dimensions (L x W x H)	4.923" x 6.35" x 1.8" (125.04 mm x 161.29 mm x 45.72 mm) (See diagram)																																											
Weight	Approximately 2 lbs (1 kg)																																											
Chassis Type	Aluminum / Blue Anodized																																											
Mounting Options	Desk mount, wall mount, DIN rail mount (See diagram)																																											
Environmental																																												
Operating Temperature	-40° to +70° C																																											
Storage Temperature	-40° C to +85° C																																											
Relative Humidity	20%-90% RH, non-condensing																																											
Other																																												
IP-Rating	Designed for IP30																																											
Warranty	2-Years - www.multitech.com/legal/warranty																																											

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](#).

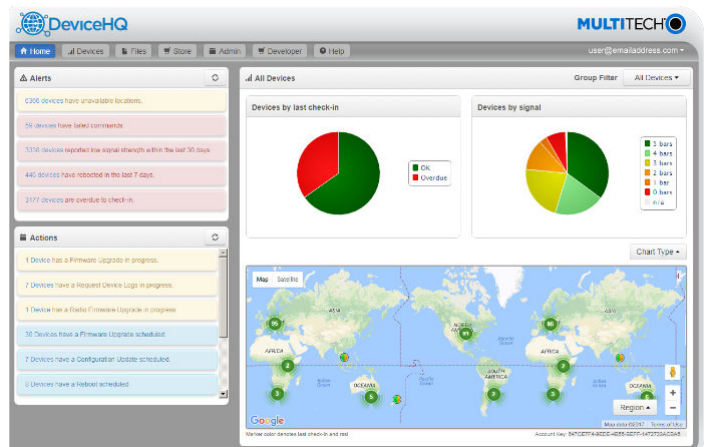
LENS® Embedded by Network Server & Key Management Toolset for LoRaWAN® Networks

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.



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	<ul style="list-style-type: none"> • mPower Edge Intelligence • Linux version 4.9 (Standard Long Term Support. Access to hundreds of resolved CVE) • Based on Yocto/Thud
Software Packages	<ul style="list-style-type: none"> • Language support: Python, C, C++, Javascript, Node.js, Node-RED version 0.15 • LoRa Network Server • LoRa Packet Forwarder
Security	<ul style="list-style-type: none"> • 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 Access	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • OpenVPN: Server and Client. Version 2.4.6 • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Cellular AT Commands: Communicate directly with device cellular radio using AT command • Automatic Reboot Timer: Configure device to automatically reboot • Telnet Radio Access: Direct communication with cellular radio
Serial Port Protocols	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Signed firmware authentication / integrity check • Simple Network Management Protocol (SNMP) support <ul style="list-style-type: none"> • DeviceHQ • Customizable web user interface

Additional information available:

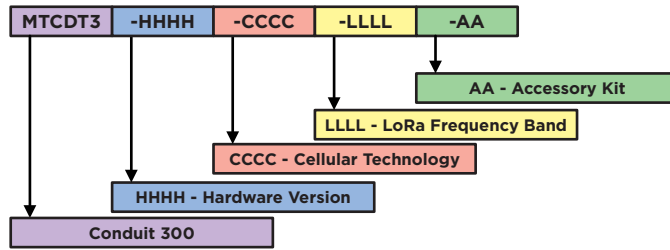
<http://www.multitech.net/developer/downloads/>

<https://www.multitech.com/technology/software-innovation>

CELLULAR WAN SPECIFICATIONS

Models	MTCDT3-LNA7	MTCDT3-LEU7
Mobile Network Operator (MNO)	AT&T Verizon	European Network Operators
Cellular Radio	MTQ-LNA7-B02 Quectel EG95-NA	MTQ-LEU7-B02 Quectel EG95-E
Cellular Performance	4G-LTE Category 4	4G-LTE Category 4
Cellular Fallback	AT&T: 3G - HSPA+ Verizon: No Fallback	3G - HSPA+, 2G - GPRS
Frequency Bands	AT&T:4G: B2 (1900), B4 (AWS1700), B5 (850), B13 (700) 3G: B2 (1900), B5 (850) Verizon:4G: B2 (1900), B4 (AWS1700)	4G: B1 (2100), B3 (1800), B7 (2600), B8 (900), B20 (800), B28A (700) 3G: B1 (2100), B8(900) 2G: 900/1800
Packet Data (LTE FDD)	150 Mbps peak downlink 50 Mbps peak uplink	150 Mbps peak downlink 50 Mbps peak uplink
SIM Card	(1) 3FF Micro SIM	(1) 3FF Micro SIM
Mobile Network Operator Approvals	PTCRB, AT&T, Verizon Pending: T-Mobile, Rogers, Bell Mobility, Telus	GCF Certified Cell Module

MODEL NUMBER SCHEMA



ORDERING INFORMATION

MultiTech Conduit® 300 Gateway Developer Kit with Ethernet, GNSS, and Wi-Fi/BT

Model	Description	Region
MTCDDT3-241-868-POE-EU-GB	Gateway Developer Kit <ul style="list-style-type: none"> • mPower Programmable Gateway • LoRa Specifications: 868 MHz, 16 channel, half-duplex • Includes GNSS and Wi-Fi/Bluetooth • Accessory Kit #1 	Europe
MTCDDT3-241-915-POE-US	Gateway Developer Kit <ul style="list-style-type: none"> • mPower Programmable Gateway • LoRa Specifications: 915 MHz, 16 channel, half-duplex • Includes GNSS and Wi-Fi/Bluetooth • Accessory Kit #1 	US/Canada

Accessory Kit #1 Includes: (1) POE power injector with region-specific cord, (1) Ethernet cable, (1) USB cable, (2) LoRa antennas, and (1) Wi-Fi/BT antenna. GNSS antenna available separately.

MultiTech Conduit® 300 Gateway Developer Kit with Cellular and Ethernet, GNSS, and Wi-Fi/BT

Model	Description	Region
MTCDDT3-241-LNA7-868-POE-EU-GB	Gateway Developer Kit <ul style="list-style-type: none"> • LTE Category 4 mPower Programmable Gateway • MNO Approvals: European Network Operators • LoRa Specifications: 868 MHz, 16 channel, half-duplex • Includes GNSS and Wi-Fi/Bluetooth • Accessory Kit #2 	Europe
MTCDDT3-241-LNA7-915-POE-US	Gateway Developer Kit <ul style="list-style-type: none"> • LTE Category 4 mPower Programmable Gateway • MNO Approvals: AT&T, Verizon • LoRa Specifications: 915 MHz, 16 channel, half-duplex • Includes GNSS and Wi-Fi/Bluetooth • Accessory Kit #2 	US/Canada

Accessory Kit #2 Includes: (1) POE power injector with region-specific cord, (1) Ethernet cable, (1) USB cable, (2) Cellular antennas, (2) LoRa antennas, and (1) Wi-Fi/BT antenna. GNSS antenna available separately.

ACCESSORY KIT OVERVIEW

Description	Accessory Kit #1	Accessory Kit #2
Ethernet cable (1)	•	•
USB cable (1)	•	•
LoRa antenna (2)	•	•
GNSS antenna	ANGPS-1MM Available Separately	
Wi-Fi/BT antenna (1)	•	•
Cellular antenna (2)		•

ORDERING INFORMATION

RECOMMENDED ACCESSORIES

Power

Model	Description	Region
PS-56V-POE-NAM	Single Port 30W Power over Ethernet Transformer with NAM Power Cord (Available in 1-, 5-, or 10-packs)	US/Canada
PS-56V-POE-EU	Single Port 30W Power over Ethernet Transformer with European Power Cord (Available in 1-, 5-, or 10-packs)	Europe
PS-56V-POE-GB	Single Port 30W Power over Ethernet Transformer with GB Power Cord (Available in 1-, 5-, or 10-packs)	Europe
FPC-532-DC	DC Power Cable (w/inline fuse)	Global

Replacement Antennas

Model	Description	Region
ANLTE2-##HRA	LTE Antenna, 7 inch (3.5 dBi) (Available in 2-, 10-, and 50-packs)	Global
AN968-915A-##HRA	868-915 MHz RP-SMA Antenna, (8 inch) (3.0dBi) (Available in 1-, 10-, and 50-packs)	Global
ANGPS-IMM	Antenna Indoor Magnetic for GNSS	Global

Replacement Cables

Model	Description	Region
CARSMA-UFL	Reverse SMA-to-UFL Coax RF Cable, (6 inch)	Global
CA-RJ-45	Ethernet Cable (RJ-45, 6 feet)	Global
CA-USB-A-MICRO-B-3	USB Cable Type A to Type B Micro (3 feet)	Global

DIN Rail Mounting Kits

Model	Description	Region
DIN-FLANGE-10PACK	DIN Rail Mounting Kit, Flange Mount (10 Pack)	Global
DIN-FLANGE-RA-10PACK	DIN Rail Mounting Kit, Flange Mount, Right Angle (10 Pack)	Global

COMPLIMENTARY PRODUCTS

MultiTech mDot™

Model	Description	Region
MTDOT-915-X1-SMA	915 MHz X1 LoRa SMA	NAM
MTDOT-915-X1P-SMA	915 MHz X1 LoRa SMA w/Programming Header	NAM
MTDOT-915-X1-UFL	915 MHz X1 LoRa UFL	NAM
MTDOT-915-M1-UFL	915 MHz SMT LoRa UFL	NAM
MTDOT-915-M1-TRC	915 MHz SMT LoRa RF Pad	NAM

MultiTech xDot®

Model	Description	Region
MTXDOT-NA1-A00-1	915 MHz LoRa Module UFL/TRC (Single Pack)	NAM

Go to www.multitech.com for detailed product model numbers.

CONNECTING THE “THINGS”

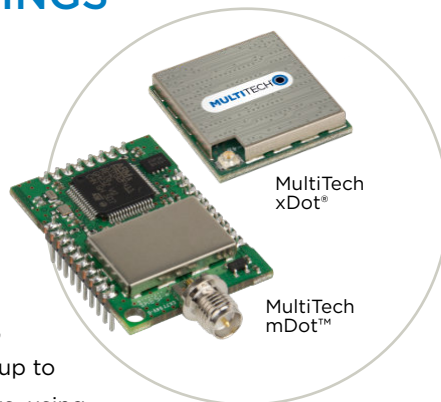
MultiTech mDot™ & xDot®

MultiTech mDot and xDot are secure, regulatory-certified, Arm® Mbed™ programmable, low-power RF modules, providing long-range, low bit rate IoT data connectivity to sensors and actuators.

The mDot and xDot are LoRaWAN compliant, providing bi-directional data communication up to 10 miles line-of-sight and 2-3 miles in buildings, using the global sub-GHz ISM radio bands in North America, Europe, and the APAC regions.

The mDot was the first Arm Mbed platform listed on mbed.org that was deployment ready. The mDot supports applications written and compiled in the mbed online environment using developer friendly libraries. Decision making and control can be done at the edge, reducing the need to optimize RF performance and implement complex IoT middleware.

mDots and xDots bring intelligence, reduced complexity and a lower overall bill of material to the edge of the network while supporting a variety of interfaces to connect just about any battery-powered “thing”.



MultiTech xDot®

MultiTech mDot™

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

World Headquarters

Multi-Tech Systems, Inc.
2205 Woodale Drive
Mounds View, MN 55112 U.S.A.
Tel: 763-785-3500
Toll-Free: 800-328-9717
Email: sales@multitech.com
www.multitech.com

EMEA Headquarters

Multi-Tech Systems (EMEA)
Strata House
264-270 Bath Road
Harlington UB3 5JJ
United Kingdom
Tel: +(44) 118 959 7774
Email: sales@multitech.co.uk
www.multitech.co.uk

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