MultiConnect® mDot™
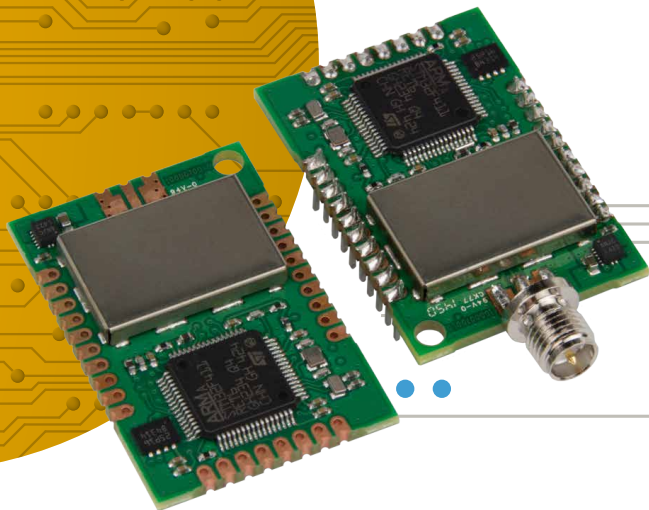
Long Range 868/915 MHz LoRa™ Module

The MultiConnect® mDot™ is a secure, CE/FCC certified, ARM® mbed™ programmable, low-power RF module, that provides long-range, low bit rate M2M data connectivity to sensors, industrial equipment and remote appliances.

The MultiConnect mDot is LoRaWAN™ 1.0 compliant, providing bi-directional data communication up to 10 miles / 16 km line-of-sight and 1-3 miles / 2 km into buildings, using sub-GHz ISM bands in North America and Europe.

As the first ARM mbed Platform listed on mbed.org that is industry certified and deployment ready, applications can be written and compiled quickly online using developer friendly libraries, downloaded and hosted within the mDot. Decision making and control is distributed to the edge, enabling data to be more actionable without the heavy lift required to optimize RF performance, implement complex M2M middleware and security protocols needed to deploy a low touch install.
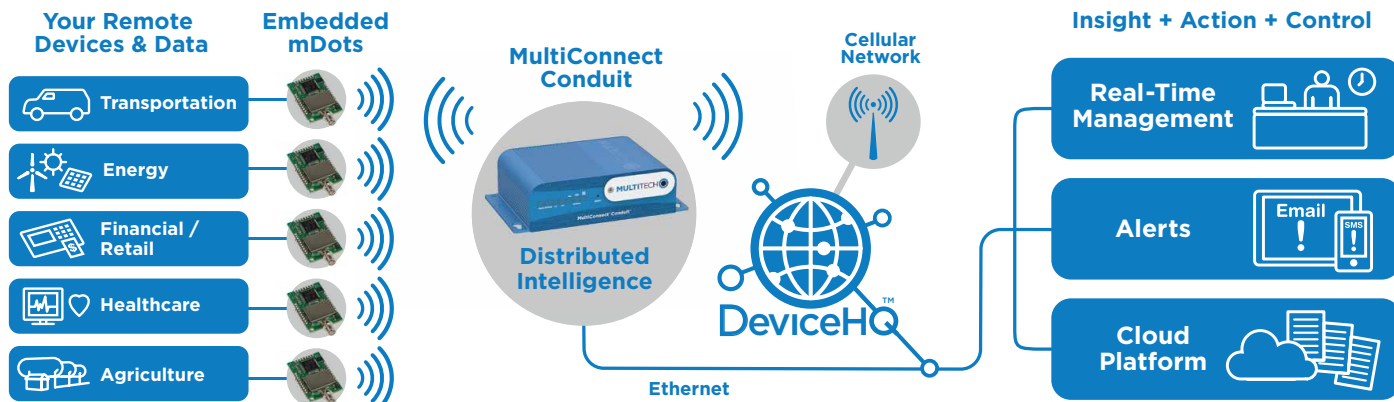
mDots bring intelligence, reduced complexity and a lower overall bill of material cost to the very edge of the network while supporting a variety of electronic interfaces to connect just about any "Thing" for years on battery power.

BENEFITS

- Up to 10 miles / 16 km range
- Deep in-building penetration – 1 to 3 miles
- Developer friendly to integrate and quickly deploy assets
- Runs for years on batteries

FEATURES

- FCC/CE end-certified for use in North America & Europe
- 2-way duplex communication, ideal for emergency and mission critical applications
- Multiple I/O interfaces for most any "Thing"
- Data rates 293bps-20Kbps+ LoRa™ up to 300Kbps FSK

Your Remote Devices & Data — Transportation, Energy, Financial / Retail, Healthcare, Agriculture

Embedded mDots

MultiConnect Conduit — Distributed Intelligence

Cellular Network

DeviceHQ™

Ethernet

Insight + Action + Control — Real-Time Management, Alerts (Email, SMS), Cloud Platform

SPECIFICATIONS

Model	MTDOT-868	MTDOT-915
Region	Europe	North America
Communication	LoRaWAN 1.0 compatible ARM mbed libraries or AT commands for radio control 868MHz and 900MHz	
Interfaces (pin functions are multiplexed)	Up to 16 Digital I/O, Up to 11 Analog Inputs, SPI, I2C, UART (RX, TX, RTS, CTS), USB (OTG Full speed)	
Physical Dimensions	1.0″ x 1.47″ (25.5 X 37.3 mm)	
Radio Frequency		
Modulation	FSK, GFSK, MSK, GMSK, OOK, LoRa Digital Spread Spectrum	
Frequency	860-1020 MHz	
Performance*		
CPU	STM32F411RET	
Max Clock	100 MHz (configurable to power use)	
Flash Memory	512 KB (400 KB customer usable)	
RAM	128 KB	
Power		
Max Transmitter Power Output (TPO)	14dBm	15dBm
Max Receive Sensitivity	-137 dBm	-130 dBm
Link Budget*	151 dB Point-to-Multipoint, 147 dB Point-to-Point	145 dB Point-to-Multipoint, 147 dB Point-to-Point

* Calculation assumes two 0 dBi antennas. North America: Greaterlink budget possible with higher gain antennas. Europe: This is the maximum link budget. Note: Point-to-Multipoint utilizing MultiTech gateway with MT-LORA accessory card.

Max Effective Isotropic Radiated Power (EiRP)	10 dBm	36 dBm
Environmental		
Operating Temperature	-30° C to +70° C (-22° F to 157° F)	
Storage Temperature	-40° to +85° C (-40° to 185° F)	
Relative Humidity	20 to 90% noncondensing	
Certifications		
EMC Compliance	US: FCC Part 15 Class B. EU: EN 55022 Class B, EN 55024. Canada: ICES-003	
Radio Compliance	FCC 15.247, IC RSS-210, EU EN 300 220	
Safety Compliance	UL/cUL 60950-1 2nd Ed., cUL 60950-1 2nd Ed., IEC 60950-1 2nd Ed.	
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	

* Actual performance speeds may be affected by a variety of attributes such as distance from gateway, data loads, packet sizes, etc.