MULTITECH®
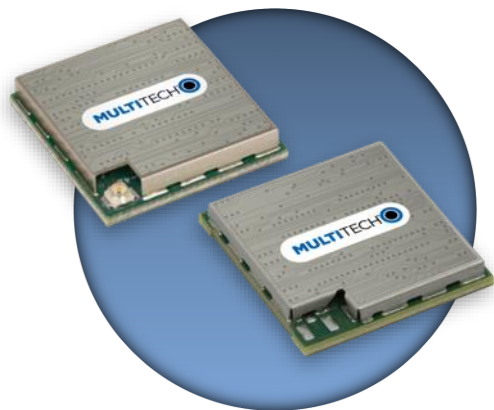
Simplifying the Connected Product,
Connected Service Journey

MultiTech
xDot® Essential
& Advanced

March 2024

MultiTech xDot®
Product Brief - Essential & Advanced Models

Overview
- Low-power, **LoRaWAN 1.0.4 Certified module using Semtech SX1262**. (US915, AS923, AU915, EU868,IN865, KR920, RU864)
- Designed for long-range, low-bandwidth communication in IoT devices.
- Two main SKUs are the **Essential and Advanced** and two regional SKUs are USA and Global.

Applications
- Suitable for diverse range of IoT applications like smart cities, agriculture, environmental monitoring, and industrial automation.

Key Features
- **Utilizes the latest LoRaWAN technology** with a range of over 22 miles/35 km line-of-sight and excellent penetration through buildings.

Energy Efficiency
- **Ultra-low power consumption** extends sensor and device battery life up to 10 years.
- One of the lowest sleep currents in the market @ 1uA.

Integration and Security
- Easily integrates into existing systems through serial **UART AT Commands** or custom applications using **MultiTech ARM® Mbed OS libraries**.
- AES-128 standard via symmetric cryptography and secret keys to safeguard against cyberattacks.
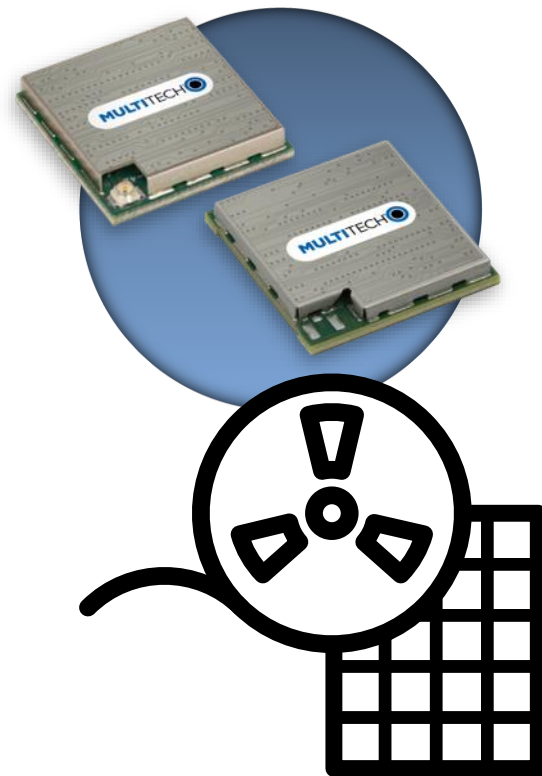
Flexibility and Reliability
- Both Essential and Advanced models share identical pin-out.
- The Advanced model offers additional features such as Digital I/Os, 8Mbit flash FOTA memory, trace and UFL antennas, and it supports custom applications.
- A global solution for a variety of enterprises in IoT network deployment based on MultiTech's proven quality and reliability.

Quick Tip:
product order prefix
MTXDOT

LoRaWAN
CERTIFIED℠

Soft Launch Announcement

- **February 13, 2024:**
  Take orders for trays and Tape & Reel
  (North America & Worldwide – no China)
- Standard lead time
  - Trays: 4-6 Weeks
  - Tape and Reel: 12-14 Weeks

LoRaWAN® Modules (Comparison Table)

Description	MultiTech xDot® Essential	MultiTech xDot® Advanced	MultiTech xDot® Current Version
Processor	Arm Cortex M4	Arm Cortex M4	Arm Cortex M3
OS	Arm Mbed OS	Arm Mbed OS	Arm Mbed OS
Application	AT commands	AT commands, Mbed Libraries, GitHub	AT commands, Mbed Libraries, GitHub
System	160KB SRAM	160KB SRAM	32KB SRAM
Memory	384KB Flash	384KB Flash	256KB
FOTA Memory	External or host flash memory required	8Mbit Flash	External or host flash memory required
Input / output	Wake, reset	19 Digital I/O 2 UART, I2C, SPI, Wake, Reset	19 Digital 1/0, 10 analogue inputs, 12C, SPI, Wake, Reset, 2 DAC outputs
Class	A, B, C	A, B, C	A, B, C
Spreading Factors	7-12 (SX1262) future proof to accommodate SF 5,6	7-12 (SX1262) future proof to accommodate SF 5,6	7-12 (SX1272)
Channels Plan Supported	AS923 1/2/3/4, AU915, EU868, IN865, RU864, US915	AS923 1/2/3/4, AU915 , EU868, IN865, RU864, US915	AS923 1/2/3/4, AU915, EU868, IN865, US915
Number of Main SKU	2 - US & WW	2 - US & WW	7

MultiTech xDot ®
Long Range LoRaWAN® Certified Module

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

Benefits

LoRa Alliance Certified

Longest battery Life

- xDot Essential and Advanced use half the idle current compared to the existing xDot – doubling battery life.

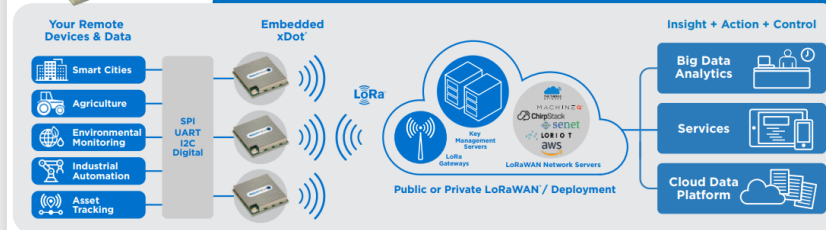- Idle current is **1uA**, the lowest in the market.

Increased Range

- Up to **4 times the range** of the existing xDot.

- Increased network capacity and significantly lower energy consumption.

Minimum SKUS

- **Single configurable global SKU**, separate SKU for US & China.

- Supports high volume automated manufacturing.

MT_MultiTech_xDot_Datasheet_86002274.pdf

LoRaWAN® Modules (Competitive Analysis)

Description	MultiTech xDot™ Essential	MultiTech xDot™ Advanced	Microchip RN2483	RAK Wireless RAK3172	Laird RM126x	muRata LBAA0QB1SJ
Speed to Market	Fast	Fast	Medium	Fast	Fast	Fast
Risk	Low	Low	Medium	Medium	Medium	Low
Ease of Integration	Easy	Easy	Easy	Easy	Medium	Medium
Integrated Processor	Arm® Cortex-M4	Arm® Cortex-M4	Arm® Cortex-M4	Arm® Cortex-M4	Arm® Cortex-M33 Silicon Labs EFR32	Semtech (SX1262) + STM (STM32L) Arm® Cortex®-M3
LoRaWAN	LoRaWAN 1.0.4 Activation OTAA/ABP Class A, B, C	LoRaWAN 1.0.4 Activation OTAA/ABP Class A, B, C	LoRaWAN 1.0.2 specification compliant OTAA/ABP Class A, C	LoRaWAN 1.0.3 specification compliant OTAA/ABP Class A, C	LoRaWAN 1.0.4 Activation OTAA/ABP Class A, B, C	LoRaWAN 1.0.3 Activation OTAA/ABP Class A, B, C
Channels	US915, AS923-1/2/3/4, AU915, EU868, IN865, KR920, RU864	US915, AS923-1/2/3/4, AU915, EU868, IN865, KR920, RU864	863.000 MHz to 870.000 MHz; 433.050 MHz to 434.790 MHz	EU433, CN470, IN865, EU868, AU915, US915, KR920, RU864, AS923-1/2/3/4	IN865, EU868, AU915, US915, AS923-1/2/3/4	IN865, EU868, AU915, US915, AS923-1/2/3/4
Flash	384 KB	384 KB	256KB	256 KB	512 KB	128KB
RAM	160KB	160KB	40KB	64KB	32KB	16KB
Input Power	2.4 to 3.57V	2.4 to 3.57V	2.1V to 3.6V	2.0 V ~ 3.6 V	2.0 V ~ 3.6 V	2.2V to 3.6V
Size	23.6 X 23.6 x 3.51 mm	23.6 X 23.6 x 3.51 mm	17.8 x 26.7 x 3 mm	15 x 15 x 2.6 mm	14 x 13 x 2.6 mm	10.0 mm x 8.0 mm x 1.6 mm
Integration	AT Command	AT Command or Custom using MultiTech Mbed OS Libraries	AT Command or Custom firmware using MPLAB® X IDE	AT Command or Custom firmware using Arduino via RUI3 API	Hosted: AT Command set Hostless: C development using Silicon Labs Simplicity Studio	AT Command
FOTA	Passthrough Mode Using AT Commands (Requires External Flash)	8Mb Flash	Needs external flash	Needs external flash	Needs external flash	Needs external flash
Digital and Analog Interfaces	UART, Wake, Reset, Status PINs	19 Digital I/O 2 UART, I2C, SPI, Wake, Reset	UART, Digital, Analog	ADC, 2 UART, I2C, SP	16 GPIOs: SWD (3 pins), EUART (4pins), Boot pin (1 pin), GPIO, I2C, UART, SPI, Analog– 12-bit channel , Freq, PWM (8 pins)	UART / I2C / SPI / ADC / USB
FCC/CE/RCM Approvals	Yes	Yes	Some	Yes	RM1262: FCC, ISED, AS/NZS RM1261: EU, UKCA, NCC(Taiwan), MIC(Japan), IN(India)	Yes
Sleep Power Consumption	1uA	1uA	2uA	1.69uA	2.1uA	1.3uA
Link	Link	Link	Link	Link	Link	Link
Price	$	$$	$$$	$	$$$$	$$$

New xDot

Two new LoRaWAN module options

- xDot Essential (B15)
- xDot Advanced (B10)

Both options offer:

- US and Canada – (NA1)
- Global – (WW1)
- Tape and Reel of 250 units
- Development Kits

Part Number	Description	MSRP
MTXDOT-NA1-B15-TR-250	xDot Essential with Trace Antenna and US/Canada Tape and Reel Packaging. (250 quantity)	$8.50 / unit
MTXDOT-WW1-B15-TR-250	xDot Essential with Trace Antenna and Global Tape and Reel Packaging. (250 quantity)	$8.50 / unit
MTXDOT-NA1-B10-TR-250	xDot Advanced with UFL and Trace Antenna and Tape and Reel Packaging. (250 quantity)	$9.50 / unit
MTXDOT-WW1-B10-TR-250	xDot Advanced with UFL and Trace Antenna and Tape and Reel Packaging. (250 quantity)	$9.50 / unit
MTMDK-XDOT-NA1-B14	xDot Essential Developer Kit (3 Pk)	$199.00
MTMDK-XDOT-WW1-B14	xDot Essential Developer Kit (3 Pk)	$199.00
MTMDK-XDOT-NA1-B10	xDot Advanced Developer Kit (3 Pk)	$199.00
MTMDK-XDOT-WW1-B10	xDot Advanced Developer Kit (3 Pk)	$199.00

Getting Started:
MultiTech xDot Developer Kit

The MultiTech xDot Developer Kit (MTMDK-XDOT) has a compact USB dongle designed to streamline application development.

Develop IoT Applications Quickly & Easily

- MultiTech xDot®: Arm® Mbed™ compatible for quick app development.
- Decentralized decision-making at the edge without complex setup.
- Preloaded with AT command firmware for easy use as a LoRa modem.

Operating Modes

- Comprehensive AT command instruction set
- Developer friendly Arm Mbed libraries provides customization capability for specific applications

Developer support and resources are available at **www.multitech.net**

Included in the kit:

- Development board featuring the xDot module
- Integrated LoRa antenna

References

- Website: https://multitech.com/all-products/lorawan-devices/lorawan-modules/multitech-xdot-essential-and-advanced-lorawan-certified-modules/
  - Datasheet
  - Developer Guide
  - Quick start guide for the development kit
  - Developer Resources
  - Certifications

Roadmap 2024-2025

xDot® China Channel Plan (470-510) RP001 standard

- Samples July 2024.

xDot® Mini based on the Essential version.

- Early sample Q4, 2024.
- Target size: (15mmX15mm)
- Price ~ $9 MSRP.
- Targeting US, WW version.

Summary

➤ LoRa Alliance Certified

➤ The new xDot greatly improves

- Battery Life
- RF performance
- Automation and scalability

➤ Minimal amount of SKU's. Reduced from 7 to 2

➤ Competitive pricing based on feature set.

➤ Roadmap to include China support and new mini version.

MULTITECH®

Simplifying the Connected Product, Connected Service Journey

Thank You

for additional information please contact:

Munis Shawaf
Sr. Product Manager
mshawaf@multitech.com