

PRODUCT INFORMATION: DWM1001

Overview

- UWB and *Bluetooth®* module based on Decawave's DW1000 IC and Nordic Semiconductor nRF52832 SoC
- On board motion sensor and integrated antennas
- Embedded firmware enabling:
 - Accurate UWB-based Real-Time Location Systems (RTLS)
 - Data encrypted network connectivity (available: Q1 2018)

Benefits

- Build scalable Two-Way-Ranging (TWR) RTLS systems with up to thousands of tags
- Accelerates product designs for faster time-to-market & reduced development costs
- Same module for anchor, tag & gateway designs
- No RF design required
- Embedded DRTLS firmware (DWM1001 TWR RTLS) reduces software development effort
 - Firmware API to customise embedded user application
 - SPI, UART and Bluetooth® APIs to access DWM1001 from an external device
- On-board Bluetooth[®] for connectivity to phones/tablets
- · Low-power hardware and software architecture for longer battery life
- Certification: Q1 2018

Example Applications

- Industrial (asset-tracking, factory automation)
- Healthcare (locate assets, patients & staff)
- Retail (security, navigation, customer analytics)
- Consumer (connected home, sports analytics)

Complementary Products

- DWM1001-Dev: Development board for evaluating and programming the module
- MDEK1001: Development and evaluation kit with 12 units, Android tablet application, Web Client



DWM1001-Based System Architecture



DWM1001 Module



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API (from network)

1

Application Space

TWR RTLS || Bluetooth

Technical Data

Hardware Features



- \geq Decawave DW1000 UWB transceiver
 - IEEE802.15.4-2011 compliant
- \geq UWB PCB antenna (6.5 GHz centre frequency)
- 6.8 Mbps frame data encoding
- ~60 m UWB line-of-sight range \triangleright
- Nordic Semiconductor nRF52832 SoC
 - ARM Cortex M4F, 512K Flash •
- \geq Bluetooth[®] chip antenna
- 3-axis accelerometer: STM LIS2DH12TR \triangleright
- \triangleright Low power - Sleep mode: <5µA
- \geq Supply voltage: 2.8 V to 3.6 V
- \triangleright 19.125 mm x 26.125 mm x 2.6 mm
- 34 x 1 mm pitch side castellations \geq
- \geq Serial Wire Debug (SWD)
- **External Interfaces:**
 - SPI slave, I2C, UART
 - **I2S Audio**
 - NFC Ready
 - **GPIOs**
 - **Bluetooth Wakeup**







IMU

Application Layer

Software Features

API (from hardware I/F)

1

User Application Space



- DRTLS firmware:
 - Complete RTLS & network stack configurable into anchor, tag or bridge modes
 - User options for partial or full re-flash
 - Location Engine on tag •
 - Over-the-air firmware updates
- > Application code:
 - Two-Way-Ranging (TWR) RTLS
 - Application memory area for custom code
- Configuration via Bluetooth® or UART commands
- MAC layer: \triangleright
 - Resource allocation, frame & slot timing
- Wireless mesh network (available: Q1 2018):
 - Network mgmt. & dynamic data routing •
 - Discovery, joining, leaving, self-healing
- \geq Security (available: Q1 2018):
 - AES encryption & decryption
- API access to firmware:
 - Nordic nRF52832 peripherals (GPIOs, I2C)
 - **DRTLS** Configuration



Get Started:

- Learn more at: www.decawave.com/products
- Download the RTLS SW at www.decawave.com/support/software

Join the community:

- http://www.decawave.com/decaforum/

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