

PRECISE, GRANULAR POSITIONING AND PROCESSING – ON ONE CLEVER INTEGRATED UWB & BLUETOOTH LE MODULE



The time has come for Ultra-Wide Band (UWB) to grow beyond the consumer and automotive segments into mainstream IoT devices. Our innovative integration of the best wireless silicon from NXP and Nordic Semiconductor has produced the unique and flexible **Sera NX040** range.

The series features tightly integrated hardware and RF designs, all optimized for low power operation and reducing the need for external clocks, filters and components. Already using **Bluetooth LE** for basic beaconing or RSSI-based ranging? Now, easily advance to the next level with **NFC** and **UWB** for more granular locationing and positioning. This granularity yields much higher accuracy compared to RSSI-only proximity applications in industrial environments.

The Sera NX040 series provides added value hardware and software capabilities to accelerate your development of UWB/BLE applications:

- Rapid firmware app development in Python with on-module scripting engine, OR work directly with nRF Connect SDK
- Ranging toolkit: visualization and sample applications available
- Built on Zephyr RTOS for extensibility
- Tag-to-tag and tag-as-anchor applications for fast evaluation
- Mobile app for easy configuration and view of real-time tag status
- AT Command set for hosted designs, with host-side libraries

- **Best of breed silicon** – NXP’s SR040 chipset for UWB and the nRF52833 silicon from Nordic Semiconductor for Bluetooth LE
- **Antenna Calibration** – done per module at factory
- **Fully Integrated Design** – Integrated chipsets, MCU, additional flash, clocks, filters and peripherals for lowest cost of implementation
- **Hosted & Hostless** – Firmware development options to cater for all levels of experience and development resources
- **Low Power** – Operates on a **coin cell** battery for UWB Tag operations
- **Multi-Wireless** – granularity available to your application’s needs
- **Fira™ Compliant** – Certified by the Fira Consortium for compliance at the PHY and MAC layer (pending).
- **Ease of Use** – low cost, easy to use DVKs, supporting desktop and mobile applications for configuration and visualization
- **Sample applications** for two-way ranging, BLE advertising and beaconing, distance alert use cases and much more!



FEATURES AT A GLANCE



EASY BUTTON TO DEVELOP UWB SOLUTIONS

Get started quickly evaluating ranging and positioning use cases with DVK boards, powerful software tools and sample scripts.



MULTI WIRELESS INTEGRATION AND COMPONENT EASE

All-in-one package for UWB Tag applications. Just add a battery and enable ranging, Bluetooth LE and NFC connectivity to your products.



ADDED VALUE SOFTWARE APPROACH - SCRIPTING

Rapidly design applications with python scripts running right on the module or use serial driver libraries for hosted radio integration.



LOW POWER OPERATION FOR BATTERY POWERED TAGS

Intelligent power schemes, deep sleep mode, and low power consumption leads to long-performing IoT solutions, even on a battery.



GLOBAL APPROVALS: MAKE YOURSELF AT HOME

Carries FCC, ISED, CE, UKCA, and MIC approvals, plus Bluetooth SIG and FiRa Consortium Certified (Pending)



PERSONAL SUPPORT FROM DESIGN TO MANUFACTURE

Our industry-renowned support is passionate about helping you speed your design to market.



APPLICATION AREAS



Smart Cities



Indoor Positioning / RTLS



Asset Tracking



Factory Automation

PART # 453-00175
PCB MODULE WITH
INTEGRATED ANTENNA



- DIMS: 20.3 x 22.3 x 2.15 mm
- PCB Trace Antennas x 2

Simplest Integration

PART # 453-00174
PCB MODULE WITH
EXTERNAL ANTENNA CONNECTORS



- DIMS: 15 x 16.3 x 2.15mm
- MHF4L Connectors x 2

Smallest Form Factor

Shared Specifications

| Category | Feature | Specification | |
|----------------------------|------------------------------|--|--------------------------------|
| Hardware | SoC (UWB) | NXP – Trimension™ SR040 | |
| | SoC (MCU / Bluetooth LE) | Nordic Semiconductor – nRF52833-CJAA | |
| | MCU | Cortex M4, 64 MHz with FPU, 512 kB Flash, 128 kB RAM | |
| Wireless | Bluetooth | Bluetooth LE v5.4 – 2.4 GHz | |
| | UWB | Ultra-Wide Band (IEEE 802.15.4/4z HRP UWB PHY) - Channel 5 (6.4896GHz) & 9 (7.9872 GHz) | |
| | NFC | Supported via External Antenna | |
| | Tx Power (BLE) | Up to +8 dBm (maximum), Configurable down to -40dBm | |
| | Tx Power (UWB) | Up to +10 dBm (maximum) | |
| | RX Sensitivity (BLE) | -96 dBm (typical @ BLE 1 Mbps) -103 dBm (typical @ BLE 125 kbps) | |
| | RX Sensitivity (UWB) | -92 dBm (typical @ 1% PER, 6.8Mbps, 62.4MHz PRF) | |
| | Power Consumption (BLE/Host) | TBC mA Peak RX current | TBC µA Standby (RAM retention) |
| | | TBC mA Peak TX current | TBC µA Deep Sleep |
| | Power Consumption (UWB) | TBC mA Peak RX UWB current | TBC mA Active UWB current |
| TBC mA Peak TX UWB current | | | |
| Antenna | Options | Internal - PCB trace antennas (UWB & BLE) External - MHF4L Connector x 2 | |
| Interfaces | Host | UART, USB | |
| | GPIO | 8 Dedicated GPIO | |
| | Other | ADC, PWM, SPI, I2C | |
| Additional Hardware | Built In | SPI Flash – 8Mbit Crystal - 32.768kHz | |
| | Programming | Programming Interfaces | SWD / JTAG |
| | FW Upgrade | UART (FW and Python application scripts) DAPLink via SWD / JTAG (FW) OTA via BLE (FW and Python application scripts) | |
| Supply Voltage | | 1.8 to 3.6 V | |
| Physical | Dimensions | MHF4L Variant: 15 x 16.3 x 2.15 mm Integrated Ant: 20.3 x 22.3 x 2.15 mm | |
| Environmental | Temp Range | -40 to +85 °C | |
| Regulatory | Certifications | FCC, EU, UKCA, ISED | |
| | | Pending: RCM, MIC, KCC | |
| | | Bluetooth SIG, FiRa Consortium | |

For full specifications on Sera NX040 modules, please see the appropriate datasheet

ORDERING INFORMATION

| Part | Description |
|--------------|--|
| 453-00174R | Sera NX040 – UWB / Bluetooth LE Module, MHF4L Connectors, Tape and Reel |
| 453-00174C | Sera NX040 - UWB / Bluetooth LE Module, MHF4L Connectors, Cut Tape |
| 453-00175R | Sera NX040 - UWB / Bluetooth LE Module, Integrated Antennas, Tape and Reel |
| 453-00175C | Sera NX040 - UWB / Bluetooth LE Module, Integrated Antennas, Cut Tape |
| 453-00174-K1 | Sera NX040 - UWB / Bluetooth LE Development Kit, MHF4L Connectors |
| 453-00175-K1 | Sera NX040 - UWB / Bluetooth LE Development Kit, Integrated Antenna |

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