PulsON 452

Ranging & Localization Dev Kit

Centimeter-scale distance measurement and positioning for industrial grade applications

The TDSR Ranging & Localization Development Kit is designed to expedite the exploration and implementation of high-precision ranging and localization solutions. Centered around the PulsON 452 (P452) Ultra Wideband (UWB) ranging radios, this comprehensive kit provides all the necessary hardware, software, and support needed to develop and deploy 1D peer-to-peer ranging solutions and 2D/3D navigation/tracking networks.

The P452 ranging radios were designed to meet the requirements of industrial users. The radios excel even in the most challenging environments (indoors, in highly metallic environments, in tunnels, in very cluttered spaces, in low visibility or harsh weather), places where traditional location-based technologies like GPS or LiDAR struggle or sometimes don't work at all.

Measuring ranges with cm-scale accuracy allows you to create very precise tracking and navigation networks. RangeNet, TDSR's ranging/localization software suite, builds upon Two-Way Time-of-Flight (TW-TOF) ranging with a complete ranging network and a location engine to support navigation and tracking applications. Network coordination happens automatically on the P452 without the need for a connected host, which is perfect for autonomous mobile applications.

FEATURES & BENEFITS

- Centimeter-scale precision over hundreds of meters
- High performance in high multipath, RF-noisy industrial environments
- Collected waveform data logged to .csv files (readable by Python, Excel, MATLAB, and others)
- Range error estimation provided
- Ranging network with TDMA and ALOHA scheduler options
- Localization layer (2D/3D)
- Auto-survey of anchor node positions
- Extended Kalman filtering for mobile nodes
- Detailed API with sample C and MATLAB code
- Ideal for mobile ad hoc applications
- OEM device capable of operation at industrial temperatures and in high shock/vibration environments

APPLICATIONS

- Peer-to-peer ranging for collision avoidance
- Indoor / GPS-denied navigation & tracking
- Automated vehicle following & convoying
- Mobile robotics and vehicle autonomy
- Crane positioning
- Drone navigation & landing
- Dynamic test measurement systems
- Advanced research & education

KIT ELEMENTS

- 5 P452 OEM ranging radio modules in protective enclosures
- 5 BroadSpec UWB antennas
- 5 Rechargeable USB batteries with chargers
- RangeNet software suite supporting 1D ranging, TDMA (with CDMA overlay) & ALOHA scheduling
- 5 hours of engineering support (phone/email)