

Time Domain's P400 RCM combines UWB wireless communications and ranging in a 3" x 4" custom silicon form factor.

BENEFITS

- Cost effective
- Portable or permanent
- Easy to use and integrate
- Ranging and/or positioning
- Integratable with supplemental technologies (e.g., GPS, Inertial)
- High precision in high multi-path environments
- Fused wireless communication
- Operable in all weather and lighting conditions
- Low power consumption

APPLICATIONS

- Personnel safety and situational awareness around large vehicles
- Dynamic truthing test systems
- Automated person and vehicle convoy following
- Indoor robot navigation and mapping
- Auto-survey of distributed sensors and localization systems

ULTRA WIDEBAND RANGING AND COMMUNICATIONS MODULE

Time Domain's PulsON 400 (P400) Ultra Wideband (UWB) Ranging and Communications Module (RCM) is the first miniature UWB module that packs low cost, low power, and advanced real-time ranging and communication capabilities into a 3 inch x 4 inch footprint. The module's innovative design overcomes the limitations of GPS technologies, which cannot operate effectively inside or around buildings or heavy foliage, and video cameras, which can be easily blocked and are affected by weather and darkness.

PARTNER READY FOR OEMS AND INTEGRATORS

Time Domain is now shipping the P400 RCM to integrators like you. We are excited about helping you create new UWB-enabled products and applications. Contact us today and let's get started!



Dismounted soldiers wearing UWB mobile nodes shown being followed by an autonomous vehicle outfitted with UWB coordinate nodes.

HIGH-SPEED TRACKING IN ENVIRONMENTS WHERE GPS DOESN'T WORK

To operate safely in relation to other vehicles and people, autonomous vehicles must be located precisely and continuously over long ranges. While GPS works in open, uncluttered environments, Time Domain's P400 RCM provides precise and relative ranging accuracy of unmanned ground systems, people, and other vehicles in highly challenging, densely populated and forested areas. The P400 RCM's UWB signal can penetrate most obstructions, allowing it to work well in indoor environments.

Time Domain's next generation UWB technology combines fast, pulsed radio frequency (RF) time-of-flight ranging and covert communication in a single chipset. The P400 RCM makes it easy for system integrators to conduct accurate high-speed tracking of vehicles and personnel in applications where GPS does not work.

TIME-OF-FLIGHT (TOF) PRECISION RANGE MEASUREMENT

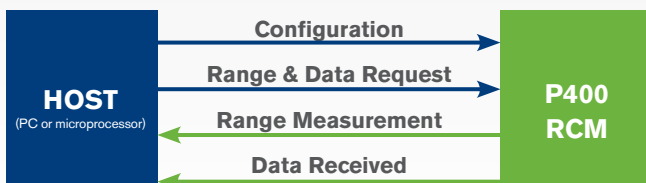
A P400 RCM sends a range request to another P400 RCM, which acknowledges the request with a range response. The initiating P400 RCM uses this range response to precisely measure the time-of-flight (TOF) of RF pulses between it and the responding P400 RCM, and uses this information to calculate an extremely accurate range measurement. Unlike ultrasonic or laser-based ranging techniques, UWB pulses can travel through walls and dense foliage. Also, unlike conventional narrow-band RF, these pulses do not suffer from errant multi-path reflections—the most direct path through the environment is measured.

TARGETED RANGING WITH COMMUNICATIONS

Each P400 RCM is configured with a unique UWB node ID in non-volatile memory. The RCM will automatically respond to any range requests it receives from other RCMs. If desired, the RCM can operate as a respond-only device without a host connection. The RCM reports all data overheard in range requests, range responses, or data-only packets to its host (a PC or microprocessor).

INTERFACING AND CONFIGURATION OPTIONS

The user interacts with the P400 RCM through Ethernet, Serial, or USB interfaces. During configuration the user can select node ID, pulse integration (which determines distance and range update rate), antenna port (A or B), and 7 code channels. These values can be stored in non-volatile memory until reconfiguration by the user.



The P400 RCM provides a simple, easy to use interface, which enables users to develop their own localization and communication network.

SPECIFICATIONS

DIMENSIONS

76mm x 102mm x 20mm

SENSING:

Pulsed-RF Ultra Wideband (UWB)

Time-of-Flight measurement

OPERATIONAL RANGE

0.1m to 354m

RANGE RESOLUTION

7cm

MAX DISTANCE @ RANGING INTERVAL

88m @ 6ms

125m @ 13ms

177m @ 26ms

250m @ 51ms

354m @ 103ms

INTERFACING OPTIONS

Ethernet/UDP, Serial, USB Client

POWER REQUIREMENTS

5.8V to 30VDC at 5W

CHANNELIZATION

7 user-selectable pseudo-random pulse interval channels

ANTENNA

BroadSpec™ Toroidal Dipole
Standard SMA coaxial connector

TEMPERATURE & HUMIDITY

Operating -10°C to +65°C

Storage -40°C to +85°C

Up to 95%, non-condensing humidity

SPECTRUM

FCC 15B (-14.5 dBm)

Adjustable

Bandwidth UWB 3.1GHz to 5.3GHz

Center frequency 4.3 GHz

PART NUMBERS

100RC01 P400 RCM

100AN01 BROADSPEC ANTENNA FOR P400 RCM

400RC01 P400 RCM DEVELOPMENT KIT (4 NODES)

EXPORT

The P400 RCM was classified as ECCN 5A001.b.4 by the U.S. Department of Commerce. An export license may be required for some countries.

FOR MORE INFORMATION

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