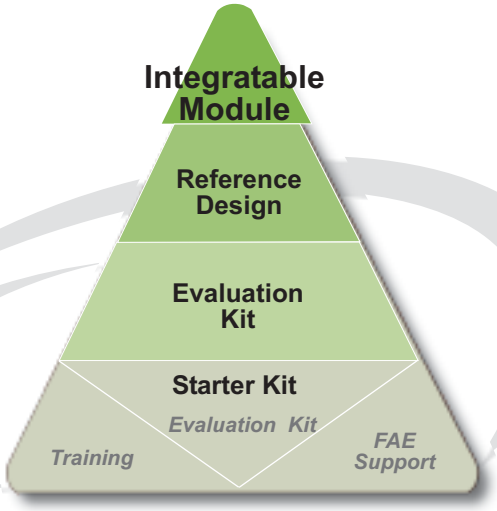
# PulsON® P210 Integratable Module

BY TIME DOMAIN®

Integrate | Deploy

**Fostering Ultra-Wideband (UWB) Innovation and Integration**




The PulsON 210 family of products supports customers beginning with UWB familiarization, through every step to final UWB-based product deployment. We have encapsulated Time Domain's industry leading technology and experience in user-friendly packages, demystifying UWB and accelerating our partners to success.

- Starter Kit → Discover and Experiment
- Evaluation Kit → Evaluate and Innovate
- Reference Design → Implement and Prototype
- **Integratable Module → Integrate and Deploy**

No other company provides such a comprehensive suite of UWB development tools, nor supports you so thoroughly with its industry leading team of engineers.

## Product Description

When you're ready to deploy UWB products, you need a reliable, proven, plug-in UWB module: you need Time Domain's PulsON 210 Integratable Module (P210 IM). The P210 IM is an UWB physical layer component that enables multiple applications, including communications, ranging, bi-static radar, and monostatic radar. Two circuit boards, the P210 RF Module and the P210 UWB Module, comprise the P210 IM.

*Time Domain PulsON 210™ IM are 2 circuits boards, the P210 RF Module and the P210 UWB Module.*

RF Module: The RF Module produces a short duration, UWB pulse sent to the antenna. When connected to a P200 Broadspec Antenna, the intentional emissions from the P210 IM comply with the FCC Part 15 mask for indoor UWB devices.

UWB Module: The UWB Module hosts the P200 chipset and peripherals, including two precision timing chips, one high-speed sampler chip, the baseband signal processor, the radio kernel software processor, and a Field Programmable Gate Array (FPGA) to support the external interface. The P210 IM is addressed with asynchronous parallel Static Random Access Memory (SRAM-type) signaling, which facilitates integration with a wide range of microprocessors and microcontrollers.

## Support for PulsON 210 Integratable Module

The PulsON 210 Reference Design is a case study in the integration of the P210 IM, as well as the perfect platform for product prototyping. At a higher level, we offer comprehensive UWB and product training and also Field Application Engineer (FAE) support from senior UWB engineers. You can purchase this type of support as-needed, or bundled with an Evaluation Kit (EVK) in Time Domain's UWB Starter Kit. More importantly, our industry leading engineers can team with you during every phase of UWB evaluation, product prototyping and deployment through custom engineering support contracts. Please contact your international distributor or Time Domain directly at 256.428.6481 or via email at customer.support@timedomain.com for further details.

## Software Applications

### UWB Radio Sample Application (URSA)

This sample application of a simple radio analysis tool shows users how to interface with the UWB Kernel to develop embedded applications. URSA includes source code and implementation notes, and enables the user to evaluate radio parameters such as data rate, variable gain, and acquisition threshold and to capture and display a sample waveform.

### Fused Ranging & Communications Sample Application

The fused communications and ranging sample application provides source code and application notes demonstrating how to create a fused (communications and ranging) UWB packet for simultaneous real-time data transmission and ranging between two radios.

### Bi-Static Radar Application

The Bi-static Radar (BSR) application demonstrates how to use 2 P210s in a bi-static radar configuration. BSR consists of an embedded component running on the radio, which is provided as a binary module, and a PC-based GUI sample application, which is provided in source form. The BSR Programming Guide describes in detail the Transmission Control Protocol/Internet Protocol (TCP/IP) socket interface to the embedded component. Customers may use the BSR GUI sample to investigate UWB radar technology, or they may employ it as a guide for developing custom bi-static radar applications.

## Documentation

### PulsON 210™ Programming Guide

This guide thoroughly describes Time Domain's UWB Kernel for users familiar with the VxWorks development environment. Users can host embedded applications on the available StrongARM microprocessor. Users wishing to use a different Real Time Operating System (RTOS) will find all the necessary information in the P210 Integratable Module Data Sheet.

### PulsON 210™ Integratable Module Data Sheet

The P210 IM is the heart of the reference design. This document thoroughly describes the interface to the IM and includes signal descriptions, connector pin-outs and usage, interface register settings and timer diagrams. This document allows customers to use the Application Module provided in the Reference Design with or without Time Domain's developed software layer.

### PulsON 210™ Application Module

The integration of the P210 IM in a product requires the use or re-implementation of the Application Module included with the Reference Design (RD). To support this re-implementation, the module has additional documentation, including Bills of Materials (BOMs) and schematics, with gerber files available on request.

### PulsON 210™ Getting Started Guide

The PulsON 210™ Getting Started Guide takes the user from initial radio set-up through first power-up and radio connection to the computer interface.

## Specifications

- PRF (Pulse Repetition Frequency): 9.6 MHz
- Center Frequency (radiated): appr. 4.7 GHz
- Bandwidth (10 dB radiated): 3.2 GHz
- EIRP: -12.8 dBm
- Power Consumption: 6.5 Watts
- Dimensions: 16.5cm x 10.2cm x 5.1cm (housing w/o antenna)

| Raw Data Rate | Free Space Typical Range of Operation | Residential / Office Average Range Of Operation |
|---|---|---|
| 9.6 Mbps | 12-17meters | 6.4 meters |
| 2.4 Mbps | 25-35 meters | 10 meters |
| 600 kbps | 50-70 meters | 16 meters |
| 150 kbps | 100-140 meters | 25 meters |

Data based on standard FCC 15.517 power.

## Suggested Markets for PulsON Technology

**COMMUNICATIONS**
- Secure Data Links & Networks
- Unmanned Vehicle Command & Control Systems
- Wireless Intercoms
- Wireless Telemetry

**RADAR**
- Intrusion Detection
- Remote Breathing Detection
- Target Detection, Classification & Tracking
- Obstacle Avoidance
- Proximity Fuzing

**TRACKING**
- 1st Responder/Soldier Tracking
- Precision Surveying & Measurement
- Real-Time Location Systems for Delivery Personnel & Assets
- P-Commerce
- L-based Content

*- Just imagine what Pulson Technology can do for you -*

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