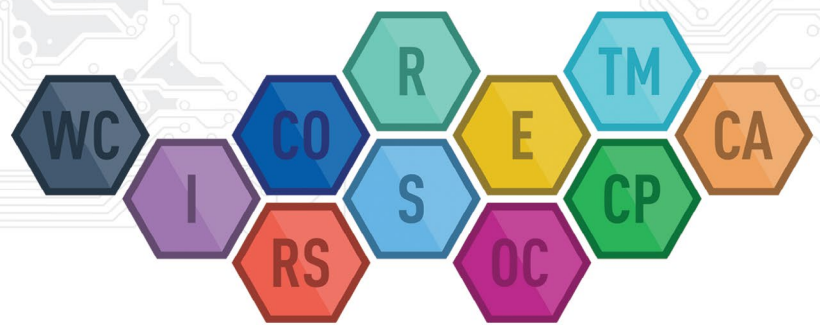
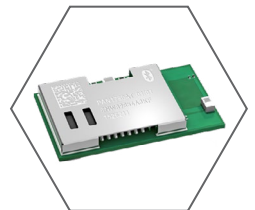




New Product Introduction

PAN1780AT Series *Bluetooth*® 5.0 Low Energy Module With AT Command Set

Panasonic's New Bluetooth 5.0 Low Energy RF Module Based On The Nordic nRF52840 Single-Chip Controller With Integrated BlueRadios nBlue™ Bluetooth AT.s LE Command Set

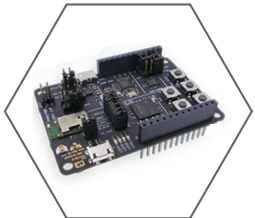


Introducing Panasonic's **NEW PAN1780AT Series RF Module**! The PAN1780-AT Series RF Module is Panasonic's Bluetooth 5 Low Energy (LE) RF Module based on the Nordic nRF52840 single-chip controller with integrated BlueRadios nBlue™ Bluetooth AT.s LE Command Set.

For information on the BlueRadios nBlue Bluetooth AT.s LE Command Set please contact your local Panasonic Sales Representative. Bluetooth 5 features additionally a higher symbol rate of 2 Mbps using the high-speed LE 2M PHY or a significantly longer range using the LE Coded PHY at 125 kb/s. The new channel selection algorithm (CSA#2) improves the performance in high interference environments. Furthermore, the new LE advertising extensions allow for much larger amounts of data to be broadcasted in connectionless scenarios.

An output power of up to 8 dBm and the high sensitivity of the nRF52840 in combination with the LE Coded PHY make the **NEW PAN1780AT Series RF Module** from Panasonic very attractive in applications where a long range is required. In addition, the ultra-low current consumption of the **NEW PAN1780-AT Series** makes it an ideal choice for battery powered devices.

The New Panasonic **PAN1780AT Series** also supports Type 2 Near Field Communication (NFC-A) for use in simplified pairing and payment solutions (external antenna required).



The **NEW PAN1780AT Evaluation Kit** is an all-inclusive and comprehensive Evaluate Kit available to support rapid prototyping with the PAN1780AT Series RF Module.

The **NEW PAN1780AT Evaluation Kit** consists of two dongles. Each dongle has a PAN1780AT Module on board based on the Nordic nRF52840 single-chip controller with integrated BlueRadios nBlue™ Bluetooth AT.s Low Energy Command Set. The AT command Set eases integration of the PAN1780AT Module with most industry Host controllers. The PAN1780AT Module is fully configurable via AT commands which in turn reduces the design cycle of the product. The detailed integration guide also describes how to start up and use the PAN1780AT Module with the integrated BlueRadios nBlue Bluetooth AT.s LE Command Set on the Evaluation Board.

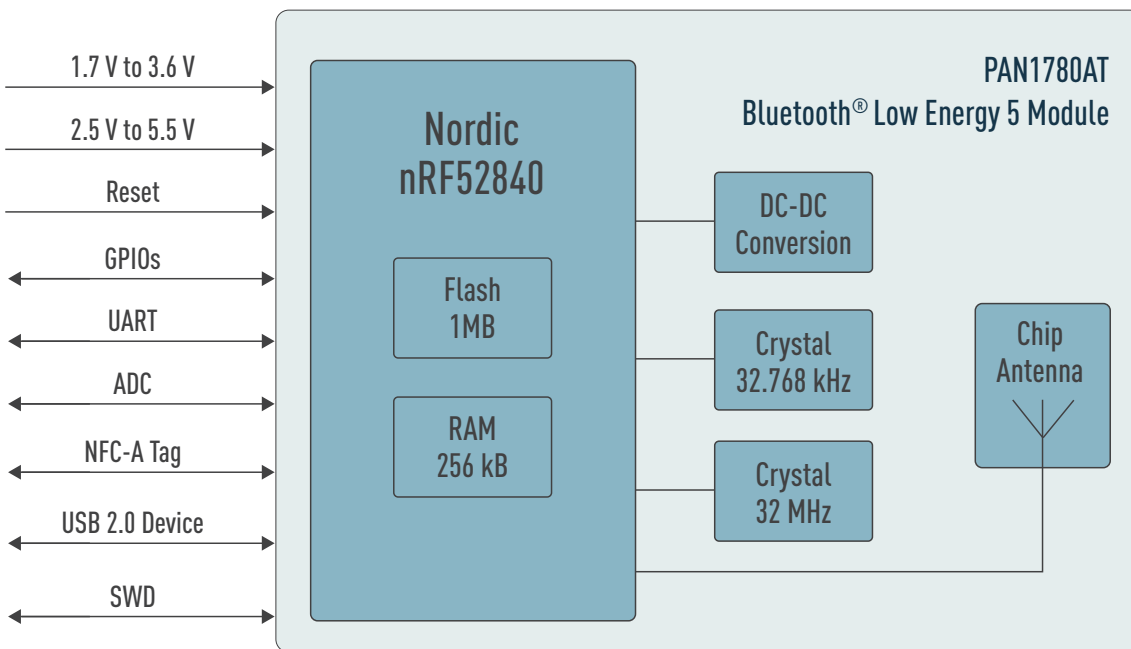
The **New PAN1780AT Evaluation Kit** also supports Type 2 Near Field Communication (NFC-A) for use in out-of-band pairing by way of an external NFC antenna. The break-out headers on Evaluation Kit provide an easy way to connect Sensors, as well as other devices for a rapid prototyping.

General Features and Benefits

- Surface Mount Type Dimensions: 15.6 mm x 8.7 mm x 2 mm
- Same Form Factor As PAN1780
- Nordic nRF52840 Featuring ARM® Cortex®-M4F With 64 MHz
- Bluetooth 5 LE Including LE 2M And LE Coded PHY
- Embedded 1 MB Flash Memory And 256 kB Internal RAM
- Up To 46 General Purpose I/Os (GPIO), Which Are Shared With 1 UART, 8 ADC's, 1 NFC-A, And nRESET Input
- USB 2.0 Full-Speed Device Interface
- Built-In Temperature Sensor
- RoHS AND REACH Compliant



Block Diagram



Bluetooth®

- LE 2 Mbps High Speed PHY, LE Long Range Coded PHY
- LE Advertising Extensions (Advertising On 40 Channels Total)
- Channel Selection Algorithm #2
- LE Secure Connections
- Over-The-Air Update Of Application Software

Technical Characteristics:

- Typical Sensitivity: -95 dBm @ 1 Mb/s And -103 dBm @ 125 kb/s
- Typical Max. Output Power: 8 dBm, Configurable From -20 dBm In 4 dB Steps And -40 dBm In Whisper Mode
- Typical Current Consumption: 4.8 mA In Tx (@ 0 dBm) And 4.8 mA In Rx Mode
- Typical Current Consumption: 0.4 µA In System OFF Mode
- On-Module DC/DC And LDO Regulators With Automated Low Current Modes
- Voltage Range: 1.7 V to 5.5 V
- Temperature Range: -40 °C To 85 °C