Panasonic
INDUSTRY

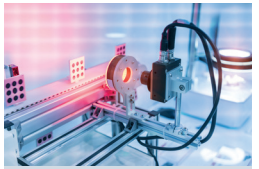
Your Committed Enabler

# Wireless Connectivity

## Product Leaflet

| | Bluetooth® Low Energy | Bluetooth® LE & IEEE® 802.15.4 | | | |
|---|---|---|---|---|---|
| |  |  |  |  NEW |  COMING SOON |
| **SERIES** | **PAN1740A** | **PAN1780 / PAN1770** | **PAN1781** | **PAN1782** | **PAN1783** |
| **STATUS** | Mass Production | Mass Production | Mass Production | Mass Production | In Development |
| **PART NUMBER** | ENW89852A1KF | ENW89854A1KF (PAN1780)<br>ENW89854A3KF (PAN1780AT)<br>ENW89854C1KF (PAN1770)<br>ENW89854C2KF (PAN1770 APP) | ENW89857A1KF | ENW89858A1KF | ENW89860A1KF (PAN1780)<br>ENW89860C1KF (PAN1783) |
| **RF CATEGORY** | **Bluetooth® 5.0** | **Bluetooth® 5.1, IEEE® 802.15.4 & NFC-A** | **Bluetooth® 5.1, IEEE® 802.15.4** | **Bluetooth® 5.1, IEEE® 802.15.4 & NFC-A** | |
| **SOFTWARE & DRIVERS** | SDK by Dialog | nRF Connect SDK | nRF Connect SDK | nRF Connect SDK | nRF Connect SDK |
| **INTEGRATED CIRCUIT** | DA14585 | nRF52840 | nRF52820 | nRF52833 | nRF5340 |
| **SIZE [MM]** | 9.0 x 9.5 x 1.8 | 15.6 x 8.7 x 2.0 | 15.6 x 8.7 x 2.0 | 15.6 x 8.7 x 2.0 | 15.6 8.7 x 2.0 |
| **RX SENSITIVITY [DBM]** | -93 @ 1MB/s | -95 @ 1Mb/s<br>-103 @ 125kb/s | -95 @ 1Mb/s<br>-103 @ 125kb/s | -96 @ 1Mb/s<br>-103 @ 125kb/s | -97 @ 1Mb/s<br>-103 @ 125kb/s |
| **TX POWER (MAX.) [DBM]** | +0 | +8 (Chip Antenna) | +8 | +8 | +3 (Chip Antenna) |
| **POWER SUPPLY [V]** | 2.2 to 3.3 | 1.7 to 5.5 | 1.7 to 5.5 | 1.7 to 5.5 | 1.7 to 5.5 |
| **CURRENT CONSUMPTION** | Tx: 4.9mA, 3V @ 0dBm<br>Rx: 4.9mA , 3V | Tx: 4.8mA, 3.3V @ 0dBm<br>Rx: 4.8mA, 3.3V | Tx: 4.9mA @ 0dBm<br>Rx: 4.7mA | Tx: 4.9mA @ 0dBm<br>Rx: 4.7mA | Tx: 3.4mA @ 0dBm<br>Rx: 2.7mA |
| **SLEEP MODE CURRENT** | Sleep Mode (Full RAM Retention):4µA<br>Deep Sleep Mode: 520nA | Wake-on-RTC: 1.5µA<br>Off Mode: 0.4µA | Wake-on-RTC: 1.2µA<br>Off Mode: 0.3µA | Wake-on-RTC: 1.5µA<br>Off Mode: 0.6µA | Wake-on-RTC: 1.5µA<br>Off Mode: 0.9µA |
| **INTERFACES** | GPIO, UART, SPI+, I2C, ADC, 3-axis QD | GPIO, UART, QSPI, I2C, I2S, ADC, PDM, PWM, NFC-A, USB2.0 | GPIO, UART, SPI, I2C, USB2.0, QDEC | GPIO, UART, QSPI, I2C, I2S, ADC, PDM, PWM, COMP, USB2.0 | GPIO, UART, QSPI, I2C, I2S, ADC, PDM, NFC-A, USB2.0 |
| **MICROCONTROLLERS AND MEMORY** | ARM® Cortex®-M0<br>96kB SRAM, 64kB OTP | ARM® Cortex®-M4F<br>256kB RAM, 1MB Flash | ARM® Cortex®-M4<br>32kB RAM, 256kB Flash | ARM® Cortex®-M4<br>128kB RAM, 512kB Flash | Dual ARM® Cortex®-M33<br>512kB RAM, 1MB Flash<br>63kB RAM, 256kB Flash |
| **OPERATING TEMP. [°C]** | -40 to +85 | -40 to +85 | -40 to +85 | -40 to +85 | -40 to +85 |
| **EVALUATION KIT** | ENW89852AXKF (Dongle)<br>ENW89852AWKF (Dongle Kit) | ENW89854AUKF (PAN1780 EVB)<br>ENW89854AVKF PAN1780AT EVB)<br>ENW89854CXKF (PAN1770 EVB)<br>ENW89854CZKF (PAN1770AT EVB) | ENW89857AXKF (Board) | ENW89858AXKF (Board) | TBD |

## Applications



Industrial IoT



Smart Home/Building



Beacons



Medical Devices

Status of engineering sample (ES) are expected as of the time of leaflet production.

The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth® SIG, Inc. and any use of such marks by Panasonic is under license. Other trademarks and trade names are those of their respective owners.

**Panasonic Industry Europe GmbH**
**wireless.connectivity@eu.panasonic.com**
**https://industry.panasonic.eu**

rev.202212

Panasonic
INDUSTRY

Your Committed Enabler

# Wireless Connectivity

## Product Leaflet

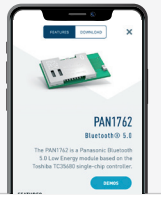
| | Bluetooth® Dual Mode | Wi-Fi® & Bluetooth® LE | | | Wi-Fi® |
|---|---|---|---|---|---|
| |  |  |  | COMING SOON  |  |
| **SERIES** | **PAN13x6C/2** | **PAN9026** | **PAN9028** | **PAN9019(A)** | **PAN9520** |
| **STATUS** | Mass Production | Mass Production | Mass Production | In Development | Mass Production |
| **PART NUMBER** | ENW89823A5KF (Chip Antenna)<br>ENW89823C4KF (bottom Pad) | ENWF9202A1EF (EU)<br>ENWF9201A1EF (US)<br>ENWF9203A1EF (CA)<br>ENWF9208A1EF (Multi-region) | ENWF9408A1EF (with PMIC)<br>ENWF9408A2EF (without PMIC) | ENWF9501C1KF (PAN9019)<br>ENWF9511F1KF (PAN9019A) | ENW49D01A1KF<br>(4 MB Flash / 2 MB RAM)<br>ENW49D02A1KF<br>(1 MB Flash / No RAM) |
| **RF CATEGORY** | **Bluetooth® 5.1 Dual Mode (BR, EDR, Bluetooth® LE)** | **Wi-Fi® Radio 2.4 GHz & 5.0 GHz 802.11 a/b/g/n & Bluetooth® 5.0 (BR, EDR, LE)** | **Wi-Fi® Radio 2.4 GHz & 5.0 GHz 802.11 a/b/g/n/ac & Bluetooth® 5.2 (BR, EDR, LE)** | **Wi-Fi® Radio 2.4 GHz & 5.0 GHz 802.11 a/b/g/n/ac/ax & Bluetooth® 5.2 (BR, EDR, LE) only PAN9019A: & 802.15.4** | **Wi-Fi® Embedded 802.11 b/g/n** |
| **SOFTWARE & DRIVERS** | HCI<br>Bluetooth Stack for MSP432 or STM32<br>Bluetooth Service Pack with Init Script | Linux & i.MX RT Support | Linux & i.MX RT Support | Linux & i.MX RT Support | ESP-IDF by Espressif<br>Arduino IDE |
| **INTEGRATED CIRCUIT** | CC2564C | 88W8977 | 88W8987 | IW611 (PAN9019)<br>IW612 (PAN9019A)" | ESP32-S2 |
| **SIZE [MM]** | 9.0 x 9.5 x 1.8 (with Antenna)<br>9.0 x 6.5 x 1.8 (no Antenna) | 17.5 x 10.0 x 2.6 | 24.0 x 12.0 x 2.8 | 15.3 x 12 x 2.5 | 24.0 x 13.0 x 3.1 |
| **RX SENSITIVITY [DBM]** | -90 | -98 @ 1M-DSSS | -98 @ 1M-DSSS | -98 dBm @ 1M 802.11b | -97 @ IEEE 802.11b |
| **TX POWER (MAX.)[DBM]** | +10 (Chip Antenna)<br>+11.5 (no Antenna) | +17 @ IEEE 802.11b | +16 @ IEEE 802.11b | | +19.8 @ IEEE 802.11b |
| **POWER SUPPLY [V]** | 1.7 to 4.8 | 1.8 to 3.3 | 3.3 with PMIC<br>1.1, 1.8, 2.2, 3.3 without PMIC | 1.8V and 3.3V | 3.0 to 3.6 |
| **CURRENT CONSUMPTION** | Tx: 40mA, 3.3V @ 8dBm<br>Rx: 20mA, 3.3V | Tx: 400mA @ 11Mb/s<br>Rx: 70mA @ 11Mb/s | Tx: 320mA @ 11Mb/s<br>Rx: 60mA @ 11Mb/s | | Tx: 190mA, 3.3V @ 19.5 dBm<br>Rx: 63mA, 3.3V @ 1 Mb/s |
| **SLEEP MODE CURRENT** | Deep Sleep Mode: 105 µA | Power Down Mode: 150µA | Power Down Mode: 150µA | | Deep sleep mode <100 µA |
| **INTERFACES** | GPIO, UART, PCM | SDIO 3.0, HS UART, PCM | GPIO, SDIO 3.0, HS UART, PCM | SDIO, HS UART | GPIO, UART, SPI, I2C, I2S, RMT, PWM, USB, LCD, ADC & DAC |
| **MICROCONTROLLERS AND MEMORY** | | | 88PG823<br>Power Management IC (PMIC) | | Xtensa® 32-bit LX7<br>320 kB SRAM, 128 kB ROM internal memory<br>Integrated QSPI Flash and PSRAM (size depending on version) |
| **OPERATING TEMP. [°C]** | -40 to +85 | -30 to +85 | -30 to +85 | | -40 to +85 |
| **EVALUATION KIT** | ENW89819AYKF<br>(EMK without Antenna) | ENWF9201AWEF (mSDIO Dongle)<br>ENWF9201AYEF (SDIO Dongle Kit)<br>ENWF9201AXEF (i.MX Kit) | ENWF9408AVEF (mSD Adapter)<br>ENWF9408AZEF (i.MX Kit) | TBD | ENW49D01AZKF<br>(Board with 4 MB Flash, 2 MB RAM) |

**Panasonic Wireless Connectivity** solutions encompass a wide range of technologies, with a focus on helping design engineers increase their product's speed-to-market.

The product portfolio covers all of today's latest communication protocols with ready-to-use modules for Bluetooth® Low Energy and Classic. Panasonic offers Bluetooth® Low Energy in combination with all important short range RF technologies: Wi-Fi® (2.4GHz & 5GHz), IEEE® 802.15.4 and NFC-A.

Engineered with design simplicity in mind, Panasonic's Wireless Solutions allow design engineers to quickly extend wireless communication into their feature set.


Connected
by Panasonic Industry




NOW AVAILABLE!
Download on the App Store
Google play


**Design and specification are subject to change without notice.**

> Ask Panasonic for technical specification before purchase and/or use.

> If there is any doubt regarding the safety of this product, kindly inform Panasonic immediately for technical consultation.

> Qualification of all products: CE, FCC, IC, Bluetooth® QDID if applicable.

> Different software/profile options available.


**Panasonic Industry Europe GmbH**
**wireless.connectivity@eu.panasonic.com**
**https://industry.panasonic.eu**


rev. 202212