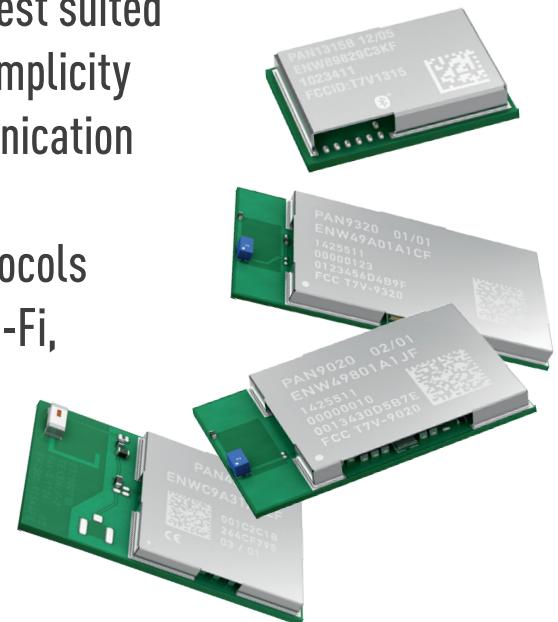


## Wireless Connectivity Solutions

Panasonic Wireless Connectivity Solutions include a wide range of technologies and provide the flexibility to easily choose and implement a wireless protocol that is best suited to an application from a single, world class supplier. Manufactured with design simplicity in mind, Panasonic's RF Modules provide quick implementation of wireless communication without the need to invest in complex wireless hardware and software design.

Panasonic Wireless Connectivity products combine the latest communication protocols with place-and-play modules for Bluetooth® Low Energy, Bluetooth Dual Mode, Wi-Fi, Wi-Fi Combo and more.



1-800-344-2112

[na.industrial.panasonic.com/products/wireless-connectivity/](http://na.industrial.panasonic.com/products/wireless-connectivity/)

# Ready-To-Use Modules with Built-In, Bluetooth Technology



Designed for operation in harsh RF environments, Panasonic's Bluetooth Modules can be designed into all types of electronic devices. Features include, High Data Rates, Long Range, Reduced Power Consumption (under 4mA), Common Hardware and Software Interfaces for Interchangeability.

Bluetooth Low Energy:					Bluetooth Dual Mode:		
Robust Low Data Rate, Button Cell Operation					Bluetooth Classic Plus Bluetooth Low Energy		
PAN1720/1721 Series	PAN1740 Series	PAN1760A Series	PAN1761 Series	PAN1762 Series	PAN1026A	PAN1326B/C	
Part Number	ENW-89820xxKF	ENW-89846A1KF	ENW-89847A3KF	ENW-89848A1KF	ENW-89853A1KF	ENW-89837A5KF	
RF Category	Bluetooth® Low Energy v4.0	Bluetooth® Low Energy v4.1	Bluetooth® Low Energy v4.2	Bluetooth® Low Energy v4.1 + NFC Tag Type 3	Bluetooth® Low Energy v5.0	Bluetooth® v4.2 Dual Mode (BR, LE)	
Supported Profile	SPP	SPP	SPP	SPP	SPP	SPP and GATT	
Controller	CC2560B	DA14580	TC35678	TC35670	TC35680	TC35661-551	
Size [mm]	15.6 x 8.7 x 1.8	9.0 x 9.5 x 1.8	15.6 x 8.7 x 1.9	15.6 x 8.7 x 1.8	15.6 x 8.7 x 1.9	15.6 x 8.7 x 1.8	
Rx Sensitivity [dBm]	-94 dBm	-93 dBm	-93 dBm	-91 dBm	-105 @ 125 kb/s	-89 dBm	
Tx Power (max.) [dBm]	+4 / 0	+0	+0	+0	+8	+4	
Power Supply [V]	2.0 to 3.6	2.35 to 3.3	1.8 to 3.6	1.8 to 3.6	1.9 to 3.6	2.8 to 3.6	
Current Consumption	Tx: 23mA @ -6dBm Rx: 18mA Sleep Mode: <1µA	Tx: 4.9mA Rx: 4.9mA Sleep Mode: <1µA	Tx: 3.3mA Rx: 3.3mA Deep Sleep Mode: 50nA	Tx: 6.0mA Rx: 6.0mA Sleep Mode: <1µA	Tx: 11mA Rx: 5.1mA Deep Sleep Mode: 50nA	ACL, DH1: 46mA Sleep Mode: <2mA	Tx, EDR: 40mA Sleep Mode: 135µA
Interfaces	GPIO, UART, PAN1720: USB; PAN1721: I <sup>2</sup> C	GPIO, UART, SPI, I <sup>2</sup> C, 3-axis QD, ADC	GPIO, UART, SPI, I <sup>2</sup> C, ADC	GPIO, UART, SPI, I <sup>2</sup> C	SPI, I <sup>2</sup> C, UART, PWM, Wake-Up inputs, ADC, GPIO	GPIO, UART	GPIO, PCM, UART
Microcontroller and Memory	8051 µC 8KB RAM, 256KB Flash	ARM® Cortex®-M0 42KB SRAM, 32 KB OTP	ARM® Cortex®-M0 83KB RAM, 256KB Flash	64KB EEPROM, 1.5KB EEPROM NFC memory	ARM® Cortex®-M0 51KB RAM, 128KB Flash	ARM 7TDMI	ARM® Cortex®-M0 1.5KB EEPROM
Type	HCI <sup>3</sup>	Autonomous <sup>4</sup>	Place and Play <sup>2</sup>	—	Autonomous <sup>4</sup>	Autonomous <sup>4</sup>	Autonomous <sup>4</sup>
Footprint-compatible with	PAN172x Series	—	PAN1760A, PAN1762, PAN1026A, PAN1761				All PAN1326 series footprint and pin-compatible
Operating Temp. [°C]	-40 to +85	-40 to +85	-40 to +85	-30 to +85	-40 to +85	-40 to +85	-40 to +85
Evaluation Kit	Available						

Notes: 1. All BlueTooth Special Interest Group LE profiles

2. Place and Play – Integrated microcontroller, API and Bluetooth controller

3. Host Controlled Interface – Microcontroller and Bluetooth stack are required

4. Autonomous – Stand Alone Operation

5. BRSP-Blue Radios Serial Port

# Long Range, High Data Rates, Secure Connections with Panasonic Wi-Fi

Adding Wi-Fi connectivity to a design has never been easier. Panasonic Wi-Fi Modules provide fast implementation of 802.11 bgn and combo Wi-Fi plus Bluetooth Dual Mode in your designs. Panasonic Wi-Fi Modules are cost effective and flexible system-on-chip (SoC) designs, with an optional integrated webserver, certificate based security and simultaneous access point and infrastructure modes. Panasonic Wi-Fi Modules offer the perfect blend of long life, reliability and performance.

Non-Embedded Wi-Fi + BLE 5.0:		Non-Embedded Wi-Fi	Embedded Wi-Fi
Wi-Fi Combo BT Dual Band Enabling Simultaneous Multi-Protocol Data Communication		Cost Engineered, Secure Communication, High Performance	A Complete Solution With An Integrated IoT Stack And API
PAN9026 Series		PAN9010/PAN9020	PAN9420
Part Number	ENW-F9202A1EF (EU) / ENW-F9201A1EF (US) / ENW-F9203A1EF (CA)	ENW-49801A1JF (Antenna) / ENW-49801C1JF (Non-antenna)	ENW-49C02A6KF (EU) / ENW-49C01A6KF (US/CA)
RF Category	Wi-Fi® Radio 2.4 GHz & 5 GHz 802.11 a/b/g/n + Bluetooth® v5.0 (BR, EDR, LE)	Wi-Fi® Radio 802.11 b/g/n	Wi-Fi® Embedded 802.11 b/g/n
Software/ Profile	Linux	Linux / Android Driver	Full Embedded
Used ICs	88W8977	88W8782	88MW300
Size [mm]	17.5 x 10.0 x 2.6	22.75 x 13.5 x 2.42	29.0 x 13.5 x 2.66
Antenna Options	w/ antenna / w / 50 Ohm bottom pad	w/ antenna / w / 50 Ohm bottom pad	w/ antenna / w / 50 Ohm bottom pad
Rx Sensitivity [dBm]	-98 @ 1M-DSSS	-98 @ 1M-DSSS	-97 @ 1M-DSSS
Tx Power (max.) [dBm]	+17 @ 11b	+18 @ 11b	+16 @ 11b
Power Supply	1.8 to 3.3	3.0 to 3.6	3.0 to 3.6
Current Consumption	Tx: 400mA @ 11Mbps Rx: 70mA @ 11Mbps Power Down Mode: 150µA	Tx: 400mA @ 11Mbps Rx: 105mA @ 11Mbps Power Down Mode: 200µA	Tx: 310mA @ 11Mbps Rx: 75mA @ 11Mbps Power Down Mode: <1mA
Centre Frequency [MHz]	2,400 and 5,000	2,400	2,400
Interfaces	SDIO 3.0, HS UART	USB 2.0	2x UART, SPI
Speciality	Coexistence interface for external co-located 2.4GHz radios		
Operating Temp. [°C]	-30 to +85	0 to +70	-40 to +85
Evaluation Kit	Yes		

# Accelerate Prototyping and Testing by Utilizing Panasonic's Evaluation Kits

Whether integrating Bluetooth Dual-Mode, ultra-low power Bluetooth Low Energy, WiFi or Wi-Fi Combo Modules into an application, Panasonic provides easy to use development boards, complete with software and documentation to get up and running FAST. Discover today why Panasonic Modules are the premier choice for reducing design cycles and lowering cost of development.

[na.industrial.panasonic.com/products/wireless-connectivity/evaluation-kits](http://na.industrial.panasonic.com/products/wireless-connectivity/evaluation-kits)



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