

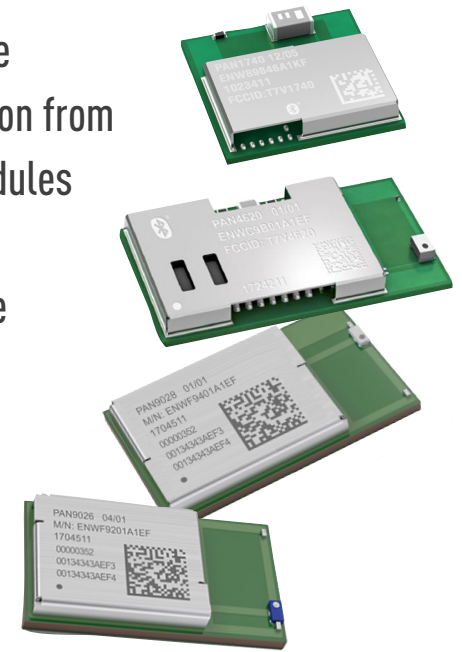
Panasonic

INDUSTRY



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, 802.15.4 protocols and more.



Learn more at: 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 + 802.15.4 :

Bluetooth Low Energy, Thread, Mesh Networking and NFC




	PAN4620 Series	PAN1780 Series	PAN1780AT Series	PAN1770 Series	PAN1781 Series	PAN1782 Series	PAN1783 Series
							 Coming Soon
Part Number	ENW-C9B01A1EF	ENW-89854A1KF	ENW-89854A3KF	ENW-89854C1KF	ENW-89857A1KF	ENW-89858A1KF	ENW-89860A1KF
RF Category	Bluetooth® Low Energy v4.2 + Thread	Bluetooth® Low Energy v5.3 + Thread + NFC	Bluetooth® Low Energy v5.3 + Thread + NFC + AT Commands	Bluetooth® Low Energy v5.3 + Thread + NFC	Bluetooth® Low Energy v5.3 + Thread	Bluetooth® Low Energy v5.3 + Thread + NFC	Bluetooth® Low Energy v5.3 + Thread + NFC
Controller	NXP KW41Z	nRF52840	nRF52840	nrf52840	nRF52820	nrf52833	nrf5340
Size [mm]	15.6 x 8.7 x 1.9	15.6 x 8.7 x 2	15.6 x 8.7 x 2	15.6 mm × 8.7 mm × 2.05 mm	15.6 x 8.7 x 2	15.6 mm × 8.7 mm × 2 mm	15.6 mm × 8.7 mm × 2 mm
Rx Sensitivity [dBm]	BLE: -95 @ 1Mbps 802.15.4: -100 @ 250kbps	-95 @ 1Mbps -103 @ 125kbps	-95 @ 1Mbps -103 @ 125kbps	-95 dBm @ 1 Mbps -103 dBm @ 125 kbps	-95 @ 1Mbps -103 @ 125kbps	-96 dBm @ 1 Mbps -103 dBm @ 125 kbps	-97 dBm @ 1 Mbps -103 dBm @ 125 kbps
Tx Power (max.) [dBm]	+3.5	+8	+8	+8	+8	+8	+3
Power Supply [V]	1.8 to 4.2	1.7 to 5.5	1.7 to 5.5	1.7 V to 5.5 V	1.7 to 5.5	1.7 V to 5.5 V	1.7 V to 5.5 V
Current Consumption	Tx: 7.6mA Rx: 8.5mA Low power mode: <250µA	Tx: 4.8mA Rx: 4.8mA Sleep Mode: <1µA	Tx: 4.8mA Rx: 4.8mA Sleep Mode: <1µA	Tx: 4.8 mA Rx: 4.8mA Sleep Mode: <1µA	Tx: 4.9mA Rx: 4.7mA Sleep Mode: <1µA	Tx: 4.9 mA Rx: 4.7mA Sleep Mode: <1µA	Tx: 3.4 mA Rx: 2.7mA Sleep Mode: <1µA
Interfaces	GPIO, UART,SPI, I2C, ADC, DAC, TSI	GPIO, UART, QSPI,I2C, ADC, PDM,PWM, NFC-A, USB2.0	GPIO, UART, QSPI,I2C, ADC, PDM,PWM, NFC-A, USB2.0	GPIO, UART, QSPI, I2C, ADC, PDM, PWM, NFC-A, USB2.0	GPIO, UART, SPI, I2C, USB2.0, QDEC	GPIO, UART, QSPI, I2C, ADC, PDM, PWM, NFC-A, USB2.0	GPIO, UART, QSPI, I2C, ADC, PDM, PWM, NFC-A
Microcontroller And Memory	ARM® Cortex® M0+ 128kB SRAM, 512kB Flash	ARM® Cortex® -M4F 256kB RAM, 1MB Flash	ARM® Cortex® -M4F 256kB RAM, 1MB Flash	ARM® Cortex®-M4F 256 kB RAM, 1MB Flash	ARM® Cortex®-M4 32kB RAM, 256kB Flash	ARM® Cortex®-M4F 128 kB RAM, 512kB Flash	Dual Core ARM® Cortex®-M33 512kB RAM, 1MB Flash 64kB RAM, 256kB Flash
Type	Autonomous ⁴	Autonomous ⁴	Autonomous ⁴	Autonomous	Autonomous ⁴	Autonomous	Autonomous
Module Pre-certification	FCC, ISED, CE	FCC, ISED, CE	FCC, ISED, CE	FCC, ISED, CE RED	FCC, ISED, CE	FCC, ISED, CE RED, MIC, KCC, RSM	FCC, ISED, CE RED
Operating Temp. [°C]	-40 to +85	-40 to +85	-40 to +85	-40 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

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






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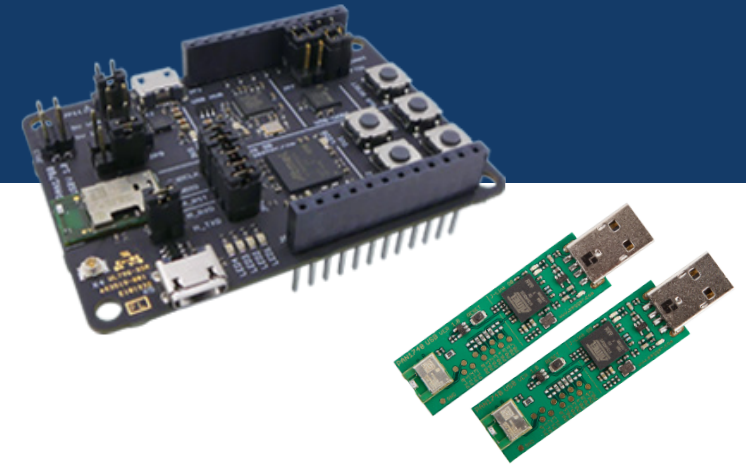
	Bluetooth Low Energy:		Bluetooth Dual Mode:
	Robust Low Data Rate, Low Power Consumption		Bluetooth Classic Plus, Bluetooth Low Energy
	PAN1740 Series	PAN1740A Series	PAN1326C/C2 Series
			
Part Number	ENW-89846A1KF	ENW-89852A1KF	ENW-89823xxKF
RF Category	Bluetooth® Low Energy v4.2	Bluetooth® Low Energy v5.0	Bluetooth® v4.2 Dual Mode (BR, EDR, LE)
Controller	DA14580	DA14585	CC2564C
Size [mm]	9.0 x 9.5 x 1.8	9.0 x 9.5 x 1.8	9.0 x 9.5 x 1.8
Rx Sensitivity [dBm]	-93 dBm	-93 @ 1MB/s	-93 dBm
Tx Power (max.) [dBm]	+0	+0	+10/+8
Power Supply [V]	2.35 to 3.3	2.35 to 3.3	1.8 to 4.8
Current Consumption	Tx: 4.9mA Rx: 4.9mA Sleep Mode: <1µA	Tx: 4.9mA Rx: 4.9mA Sleep Mode: <1µA	Tx, EDR: 40mA Sleep Mode: 135µA
Interfaces	GPIO, UART, SPI, I ² C, 3-axis QD, ADC	GPIO, UART, SPI, I ² C, 3-axis QD, ADC	GPIO, PCM, UART
Microcontroller And Memory	ARM® Cortex®-M0 42kB SRAM, 32kB Flash	ARM® Cortex®-M0 96kB SRAM, 64kB OTP	N/A
Type	Autonomous ⁴	Autonomous ⁴	Autonomous ⁴
Module Pre-certification	FCC, ISSED, CE, ETA, MIC	FCC, ISSED, CE	FCC, ISSED, CE for C2 version only
Operating Temp. [°C]	-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.

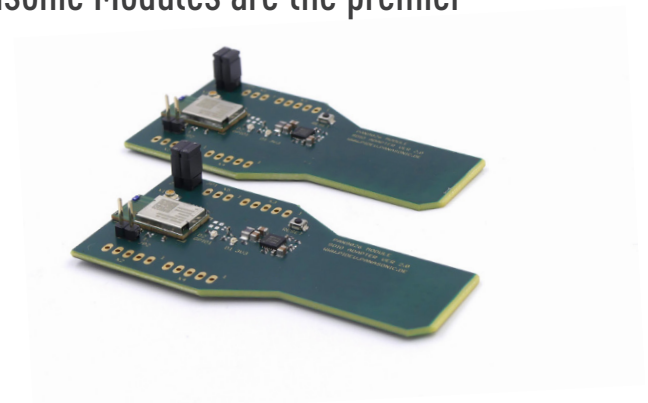
Non-Embedded Wi-Fi + BLE 5.0:			Embedded Wi-Fi:
Wi-Fi Combo BT Dual Band Enabling Simultaneous Multi-Protocol Data Communication			A Complete Solution With An Integrated IoT Stack And API
	PAN9026 Series	PAN9028 Series	PAN9019/PAN9019A Series
			 Coming Soon
Part Number	ENWF9202A1EF (EU) ENWF9201A1EF (US) ENWF9203A1EF (CA) ENWF9208A1EF (Multi-region)	ENWF9408A1EF (With PMIC) ENWF9408A2EF (Without PMIC)	ENW-9501C1KF
RF Category	Wi-Fi® Radio 2.4 GHz & 5.0 GHz 802.11 a/b/g/n And Bluetooth® 5.0 (BR, EDR, LE)	Wi-Fi® Radio 2.4 GHz & 5.0 GHz 802.11 a/b/g/n/ac And Bluetooth® 5.2 (BR, EDR, LE)	Wifi Radio 2.4GHz & 5 GHz 802.11 a/b/g/n/ac/ax + Bluetooth® 5.2 (BR, EDR, LE) + (802.15.4, A version only)
Used ICs	88W8977	88W8987	IW611/IW612
Size [mm]	17.5 x 10.0 x 2.6	24.0 x 12.0 x 2.8	15.3 mm x 12 mm x 2.5 mm
Rx Sensitivity [dBm]	-98 @ 1M-DSSS	-98 @ 1M-DSSS	-98 dBm @ 802.11.b 1Mbps
Tx Power (max.) [dBm]	+17 @ IEEE 802.11b	+16 @ IEEE 802.11b	+18 dBm 802.11b
Power Supply [V]	1.8 to 3.3	3.3 with PMIC 1.1, 1.8, 2.2, 3.3 without PMIC	1.8V to 3.3 V
Interfaces	SDIO 3.0, HS UART, PCM	GPIO, SDIO 3.0, HS UART, PCM	GPIO, SDIO 3.0, HS UART, I2C/PCM, PDN
Microcontroller And Memory	N/A	N/A	N/A
Centre Frequency [MHz]	2,400 And 5,000	2,400 And 5,000	2,400 and 5,000
Module Pre-certification	FCC, ISSED, CE	FCC, ISSED, CE	FCC, ISSED, CE RED
Operating Temp. [°C]	-30 to +85	-30 to +85	-40 to +85
Evaluation Kit	Available		Coming Soon
			Available



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



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