

Bluetooth Line Card

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Bluetooth Low Energy Modules

Modules not actual size.



	Lyra 24 Series	Lyra Series	BL5340 Series	BL5340PA Series	BL654 Series (includes USB adapter)	BL654PA Series	BL653/ BL653μ Series
Chipset	Silicon Labs EFR32BG24 SoC	Silicon Labs EF32BG22 SoC	Nordic nRF5340 SoC	Nordic nRF5340 SoC + Nordic nRF21540 FEM	Nordic nRF52840	Nordic nRF52840 + Skyworks PA SKY66112-11	Nordic nRF52833
Wireless	BT 5.3 LE	BT 5.3 LE	BT 5.x LE + NFC + Thread	BT 5.2 LE + NFC + Thread	BT 5.x LE + NFC + Thread	BT 5.x LE + NFC + Thread	BT 5.x LE + NFC + Thread
Type (Flash/RAM)	SMT or USB module with onboard MCU (ARM Cortex-M33, 1536 KB flash, 256 KB RAM)	SMT with onboard MCU (ARM Cortex-M33, 512 KB flash, 32 KB RAM)	SMT w/ dual Cortex M33 (App processor 1MB/512KB. Network processor 256KB/64KB)	SMT w/ dual Cortex M33 (App processor 1MB/512KB. Network processor 256KB/64KB)	SMT with onboard MCU (ARM Cortex M4F, 1MB/256k)	SMT with onboard MCU (ARM Cortex M4F, 1MB/256k)	SMT with onboard MCU (ARM Cortex M4F, 512KB/128KB)
Size (mm)	7 x 7 x 1.18 (SiP) 12.9 x 15.0 x 2.15 (PCB) 12 x 50.74 x 11 (USB)	6 x 6 x 1.1 (SiP) 12.9 x 15 x 2.2 (PCB)	15 x 10 x 2.2	2.5 x 21 x 10	15 x 10 x 2.2 (module) 18.4 x 50.7 x 11 (USB)	22 x 10 x 2.2	15x10x2.2 (BL653) 6.3x5.6x1.6 (BL653μ/trace pad) 6.3x8.6x1.6 (BL653μ/int. antenna)
Antenna Options	Integrated (PCB and USB), Integrated or external (SiP)	Integrated (PCB), Integrated or external (SiP)	Internal Antenna OR External via trace pin	Internal Antenna OR External (MHF4)	Internal Antenna OR External (MHF4)	Internal Antenna OR External (MHF4)	Internal Antenna OR External (trace pin)
Data/Control	UART, EUART, I2C, SPI, ADC, GPIO, PWN, Counter, Timer, Watchdog, PRS (module)	UART, I2C, SPI, ADC, GPIO, PWM, PDM, Counter, Timer, Watchdog, PRS	USB, UART, QSPI, GPIO, ADC, PWM, PDM, QDEC, FREQ output, I ² S, I ² C, SPI, Comparator, Low Power Comparator	USB, UART, QSPI, GPIO, ADC, PWM, PDM, QDEC, FREQ output, I ² S, I ² C, SPI, Comparator, Low Power Comparator, Power Amplifier	USB, UART, GPIO, ADC, PWM, PDM, FREQ output, I ² S, I ² C, SPI	UART, GPIO, ADC, PWM, PDM, FREQ output, I2S, I2C, SPI, QSPI	UART, GPIO, ADC, PWM, PDM, FREQ output, I2C, I2S, SPI, NFC, USB
Tx Power (dBm)	Up to +10 or +20 (PCB) Up to +10 (SiP) +20 (USB)	Up to +8 dBm (PCB) Up to +6 dBm (SiP)	Up to +3 dBm	Up to +18.5 dBm	Up to +8 dBm	Up to +18 dBm	Up to +8 dBm
Rx Sensitivity (dBm)	Up to -106.5 dBm (PCB) Up to -105.1 (SiP) TBD (USB)	Up to -98.9 dBm (PCB) Up to -98.6 dBm (SiP)	Up to -98 dBm	Up to -108.5dBm	Up to -103 dBm	Up to -107 dBm	Up to -103 dBm (BL653) Up to -103 dBm (BL653μ)
Temp Range	-40°C to +105°C	-40°C to +105°C	-40°C to +105°C	-40°C to +105°C	-40°C to +85°C	-40° to +85° C	-40°C to +105°C
Software/Firmware	AT Command Set or full C Code	AT Command Set, Wireless Xpress, or full C Code	Zephyr RTOS, Nordic nRF Connect	Zephyr RTOS, Nordic nRF Connect	AT Command Set, smartBASIC OR use Nordic SDK, Zephyr	AT Command Set, smartBASIC OR use Nordic SDK, Zephyr	AT Command Set, smartBASIC OR use Nordic SDK, Zephyr
Profiles / Services Supported	AT Commands, or any supported via Silicon Labs SDK	AT Commands, or any supported via Wireless Xpress / Silicon Labs SDK	Any services available via Nordic/Zephyr	Any services available via Nordic/Zephyr	Any available via smartBASIC/Nordic SDK/Zephyr	Any available via smartBASIC/Nordic SDK/Zephyr	Any available via smartBASIC/Nordic SDK/Zephyr
Additional Features	Intelligent power schemes, deep sleep mode, secure boot, ARM TrustZone, HW cryptographic accelerator	Intelligent power schemes, deep sleep mode, secure boot, ARM TrustZone, HW cryptographic accelerator	BLE Mesh, AoA/AoD, LE Audio / Isochronous Channels, LE Coded (Long Range)	BLE Mesh, AoA/AoD, LE Audio / Isochronous Channels, LE Coded (Long Range)	BLE Mesh Packaged USB Adapters	BLE Mesh Ultra Long Range	BLE Mesh Extended Temp Range
Certifications	FCC, IC, CE, UKCA, MIC, KC, RCM, and Bluetooth SIG	FCC, IC, CE, UKCA, MIC, KC, RCM, and Bluetooth SIG	FCC, IC, CE, RCM, MIC, Bluetooth SIG	FCC, IC, RCM, Bluetooth SIG	FCC, IC, CE, MIC, RCM, Bluetooth SIG	FCC, IC, RCM, KCC, Bluetooth SIG	FCC, IC, CE, MIC, RCM, Bluetooth SIG

To learn more, visit lairdconnect.com/bluetooth or contact us at lairdconnect.com/contact

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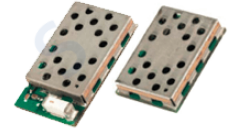


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Bluetooth Dual-Mode Modules

Bluetooth Classic Modules



Modules not actual size.	BT850/BT860 Series	BT851 USB Adapter	BT900 Series (includes USB adapter)	BT730 Series	BT740 Series	BTM4xx
Chipset	Infineon CYW20704 A2	Infineon CYW20704 A2	QCA CSR8811	CSR BC04	CSR BC04	CSR BC04
Wireless Standards	Dual-Mode BT5	Dual-Mode BT5	Dual-Mode BT v4.0	Bluetooth 2.0	Bluetooth 2.1	Bluetooth 2.0 / 2.1 + EDR
Type (Flash/RAM)	SMT with HCI Interface	USB HCI Adapter	SMT with onboard MCU (ARM Cortex M3)	SMT PCB	SMT PCB	SMT PCB
Size (mm)	8.5 x 12.9 x 2.2	50.7 x 18.4 x 11	12.5 x 19 x 2.5 (module) 50.7 x 18.4 x 11 (USB)	28.71 x 15.29 x 3	28.71 x 15.29 x 3	12.5 x 22 x 3.4 (BTM411/431/441/443)
Antenna Options	Internal Antenna OR External via trace pad	Internal Antenna	Internal Antenna OR External via U.FL	Integrated or external via U.FL	Integrated or external via U.FL	Integrated Antenna
Data/Control	USB, HCI (BT850) UART, HCI (BT860)	USB, HCI	UART, GPIO, SPI, I ² C, ADC	UART, GPIO, ADC	UART, GPIO, ADC	UART (host interface) GPIO (user interface)
Tx Power (dBm)	Up to +8 dBm	Up to +8 dBm	Up to +8 dBm	Up to +18 dBm	Up to +18 dBm	Up to +4 dBm
Rx Sensitivity (dBm)	-94 dBm	-94 dBm	-90 dBm typ.	-87 dBm	-87 dBm	Better than -84 dBm
Temp Range	-30°C to +85°C	-30°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C
Software/Firmware	Any external BT software stack via HCI	Any external BT software stack via HCI	Hosted or hostless with <i>smartBASIC</i>	AT Command Set, Multipoint Protocol API	AT Command Set, Multipoint Protocol API	AT Command Set, Multipoint Protocol API
Profiles / Services Supported	Any supported by chosen BT stack	Any supported by chosen BT stack	SPP, HID, any custom BLE Service via <i>smartBASIC</i>	SPP, DUN, FTP Client, HFP, Partial HSP	SPP, HID, HDP	On-module support for SPP, HID, HDP
Additional Features	Support for Searan Dotstack.	Support for Searan Dotstack.	Simultaneous BT and BLE connections. Packaged USB Adapters	Firmware support for multipoint applications (up to 3 bidirectional simultaneous connections). Up to 1km range.	Firmware support for multipoint applications (up to 7 bidirectional simultaneous connections). Up to 1km range.	Bluetooth 2.1 + EDR includes support for secure simple pairing
Certifications	FCC, IC, CE, UKCA, MIC, KCC (BT850 only), MIC (BT850/860), RCM, Bluetooth SIG	FCC, IC, CE, UKCA, MIC, MIC, Bluetooth SIG	FCC, IC, CE, UKCA, MIC, Bluetooth SIG	FCC, IC, CE, UKCA, Bluetooth SIG	FCC, IC, CE, UKCA, Bluetooth SIG	FCC, IC, CE, UKCA, Bluetooth SIG