Vela IF820 series

Bluetooth Dual Mode Modules

UPGRADE YOUR LEGACY BLUETOOTH PRODUCTS: CLASSIC & LE READY

Ensure your estate of Classic Bluetooth devices don't get left behind in a growing environment of Bluetooth LE-only wireless options. Our **Vela IF820 series** being dual mode allows a single module to cover legacy Classic Bluetooth and migration to Bluetooth LE with a single part. This innovative series is based on **Infineon Technologies AIROC™ CYW20820** silicon. This range of flexible modules, adapters and DVKs marries all the benefits of the CYW20820 hardware, software, and tools offerings with our added value application software, services, certification, and support capabilities. The Vela IF820 series provides OEMs with multiple software development options suited to their resources and skillsets, with close attention to providing forward-looking replacement products for some of Laird Connectivity's legacy Bluetooth product portfolio.

The Vela IF820 includes multiple small form factor PCB modules to suit any host board footprint and targets both hosted and hostless applications. They're accompanied by low cost, easy to use development kits and the addition of a certified, packaged USB Adapter to add Classic Bluetooth and Bluetooth LE connectivity to a variety of additional products in your Bluetooth portfolio. Together, Infineon and Laird Connectivity drive down your total cost of ownership, design complexity and risk, while ensuring you the fastest time to market for your next dual mode Bluetooth IoT design.

- Bluetooth BR / EDR & Bluetooth LE v5.x
- Wide range of MCU peripherals: UART, I2C, SPI, ADC, GPIO, PWM, Counter, Timer, Watchdog QSD, Programmable Key Scan
- Bluetooth Low Energy
  - Support - Peripheral/Central roles
  - Support for 1 Mbps and 2 Mbps PHY
- Classic Bluetooth profiles
  - EZ-Serial (SPP only)
  - HCI UART or Modus Toolbox
    - any supported by respective Bluetooth SW stack
- Based on **Infineon AIROC™ CYW20820** chipset
- **Industrial Temp Rating** (-40° to +85 °C)
- **Hostless & Hosted operation** – Flexibility for your architecture
- **Powerful Core**
  - Cortex-M4, 96MHz
  - 256kB on chip Flash
  - 176kB on-chip RAM
  - 1MB on chip ROM
- **Fully featured development kits -** Everything needed to start Bluetooth & Bluetooth LE development

1 Choose Your Hardware

VELA IF820 – CHIP ANTENNA
- Up to +10 dBm EIRP Output Power
- 9.3 x 12.5 x 2.15 mm
- Integrated Chip Antenna

VELA IF820 – USB ADAPTER
- Up to +10 dBm EIRP Output Power
- Integrated antenna
- Add to any PC, laptop or embedded device with a virtual COM port

VELA IF820 – MHF4 CONNECTOR
- Up to +10 dBm EIRP Output Power
- 7.5 x 7.5 x 2.15 mm
- MHF4 Connector for external antenna
- Pre certified range of antennas

2 Three Firmware Options

EZ-Serial Firmware - UART based CLI for use with an external host MCU for AT command-like operation. Fully featured and extensible to suit any developer's needs, with open-source Python host samples to test common use cases
- Classic Bluetooth SPP
- Bluetooth LE capabilities, including custom GATT services/characteristics
- Supports CYSPP for a virtual cable replacement capability in Bluetooth LE

C Code – Modus Toolbox Full software development with Infineon Modus Toolbox™
- Native C code development
- Full set of libraries, tools and code examples
- Full functionality of Infineon chipset HW / SW

HCI UART – Standard Host Controller Interface (HCI) over UART
- MPU or MCU based products
- Broad 3rd party Bluetooth Stack Support

3 Laird Connectivity - Value-Added Support & Services

- Technical and application support for ALL available firmware options
- EZ-Serial is fully extensible, with sample code available for many prior BT900, BTM4xx, TRBLU23 use cases
- Multiple range of internal antennas, pre certified for all certification regions for Vela IF820 – external antenna (MHF4) module.
- Full Service options available – Antenna, Engineering & Certification Services to support your project

Interested in Vela IF820 series?
Contact us at **https://www.lairdconnect.com/vela-IF820-series**

Vela IF820 Series
Product Brief

Features at a Glance

Software Flexibility
Choose from a simple extensible EZ-Serial, HCI UART option or full software access for C code with Modus ToolBox™

Industrial Operating Range
Designed and characterized to the industrial temperature range of -40 ºC to +85 ºC for every component utilized.

Global Approvals – Make Yourself at Home
Carries modular FCC, ISED, EU, UKCA, MIC, KCC, RCM and BT SIG approvals.

Low Power Operation for Battery Powered IoT
Intelligent power schemes, deep sleep mode, and low power consumption leads to long-performing IoT solutions even on a battery

Personal Support From Design to Manufacture
Our industry-renowned support is passionate about helping you speed your design to market.

Application Areas

- Home Automation
- Asset Tracking devices
- Secure Medical Peripherals
- Industrial IoT Sensors

Specifications

Category	Feature	Specification	
Hardware	SoC	Infineon Technologies – AIROC™ CYW20820	
	Memory	256 kB Flash, 176 kB RAM, 1MB ROM	
Wireless	Bluetooth	Classic Bluetooth BR / EDR, Bluetooth LE v5.x	
	Frequency	2.4 GHz Radio	
	Tx Power	EIRP up to +10dBm	
	RX Sensitivity	-90dBm (0.1% BER) BDR GFSK -92.0dBm (0.1% BER) EDR 2M -86dBm (0.1% BER) EDR 3M	-93.5dBm (30.8% PER) BLE 1Mbps -90Bm (30.8% PER) BLE 2Mbps
	Power Consumption	Continuous RX (BR) 6.28mA Continuous RX (EDR) 6.87mA Continuous RX (Bluetooth® LE) 6.31mA HID-OFF (Deep sleep) 1.75uA	Continuous TX (BR) 13.95mA Continuous TX (EDR) 20.1mA Continuous TX (Bluetooth® LE) 14.85mA
Antenna	Options	Integrated Chip antenna MHF4 Connector - external antenna	
Host Interface	UART	UART Interface	
	GPIO	Up to 22 GPIO	
	Other	▪ I2C, I2S, peripheral UART, and PCM interfaces ▪ Two Quad-SPI interfaces ▪ Auxiliary ADC with up to 28 analog channels ▪ Programmable key scan 20 x 8 matrix ▪ On-chip 32 kHz low power oscillator (LPO) with optional external 32 kHz crystal oscillator support	▪ Three-axis quadrature signal decoder ▪ General-purpose timers and pulse width modulation (PWM) ▪ Real-time clock (RTC) and watchdog timer (WDT)
Software	Options	EZ-Serial, HCI UART, or C code via Modus ToolBox	
FW Upgrade		FW upgrade out of the box via HCI UART, OTA via Bluetooth LE	
Supply Voltage		2.6 to 3.3 V (modules), 5V (USB Adapter variant)	
Physical	Dimensions	**Chip Antenna**: 9.3 x 12.5 x 2.15 mm **MHF4 Connector:** 7.5 x 7.5 x 2.15 mm **USB Adapter:** 18.39 x 50.74 x 11mm	
Environmental	Temp Range	-40 to +85 °C	
Regulatory	Certifications	FCC, CE, UKCA, ISED, RCM, MIC, KCC, Bluetooth SIG	
Miscellaneous	Warranty	One Year	
	Lead Free	RoHS & REACH	
	MSL	4 (Modules), N/A (USB Adapter)	

For full specifications on Vela IF820 modules, please see the appropriate datasheet.

Ordering Information

Part	Description
453-00171R	Vela IF820 - Dual Mode Bluetooth Module, Integrated Antenna (Infineon CYW20820) - Tape / Reel
453-00171C	Vela IF820 - Dual Mode Bluetooth Module, Integrated Antenna (Infineon CYW20820) – Cut / Tape
453-00172R	Vela IF820 - Dual Mode Bluetooth Module, MHF4 Connector (Infineon CYW20820) - Tape / Reel
453-00172C	Vela IF820 - Dual Mode Bluetooth Module, MHF4 Connector (Infineon CYW20820) – Cut / Tape
453-00171-K1	Vela IF820 - Development Kit with integrated chip antenna
453-00172-K1	Vela IF820 - Development Kit with MHF4 Connector
450-00185	Vela IF820 - Dual Mode Bluetooth USB Adapter with integrated antenna (Infineon CYW20820)