

Wireless Solutions



IoT Connectivity by LM TECHNOLOGIES



GLYN
High-Tech Distribution

GLYN Wireless Solutions

For more than 17 years **GLYN** is actively supporting customers in the selection and development of wireless products.

During this time we have assisted you to enhance your products with wireless M2M communication quickly and smoothly.

The wealth of knowledge we have collected in more than 28,000 hours is invaluable. We gladly share this experience with you by providing our expertise in active design-in support. This is GLYN First-Class PREMIUM Support.

Use our experience in wireless M2M communication and benefit from professional consulting and intensive technical support to enjoy short development times for your products and a faster time-to-market.

Because time is money...

SUPPORT IS RED !

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Bluetooth and WiFi Solutions



LM TECHNOLOGIES is a key enabler for Internet of Things (IoT). They provide cable replacement applications with innovative Bluetooth, Bluetooth Low Energy and WiFi products. LM TECHNOLOGIES design, develop and manufacture their own hardware, firmware and software. With this, they deliver the complete wireless solution to the industry.

These solutions enable easy integration of wireless technology in applications for point of sale, automotive, banking, computing, vending, healthcare, home and building automation and more. Partnering with Qualcomm has enabled LM TECHNOLOGIES to use the Atheros and CSR chipsets for WiFi and Bluetooth. In addition, they also provide modules and adapters supported by Realtek and Cypress chipsets.

LM TECHNOLOGIES was founded in 2004 and has offices in London, China and Hong Kong.



Bluetooth

Bluetooth was designed as a short-range wireless cable replacement for mobile phones. It was quickly adopted as a common solution for industrial applications as well. Bluetooth provides a wide variety of profiles to transfer data between devices.

Bluetooth Low Energy (BLE) was added with version 4.0 of the standard. It is especially designed for low power consumption. This enables new markets such as wearables and health devices.



WiFi

Also known as W-LAN, WiFi is designed as wireless replacement for ethernet local area networks. Based on the IEEE 802.11 standards, it allows easy networking with multiple devices. WiFi supports high speed communication up to 433 Mbps.

WiFi is mainly known for its use in computer networking. Industrial applications also use this technology to connect embedded devices.

Wireless Modules vs. Chipsets

When you need to add wireless connectivity to your application, you have to make a choice:

Using a chipset with lower BOM cost or a reliable and tested module solution?

A chipset may seem favorable at first because of lower component cost. However, you also have to consider the additional components required for this. Shielding, oscillators and matching components will affect your BOM cost. Also, doing a complete custom RF design can be a challenge. It can take a lot of time and cost for development, testing and approval.

This is already included and done in a module solution.

Module solutions speed up development and time to market

Using a pre-certified module instead will significantly reduce your design work. Less time is needed to get your application to the market. All essential components are included in the module. The RF design is already finished and approved. Modules can be easily added to your design, using standard interfaces to connect to your host system. With a module solution, you can be assured that your wireless communication is stable and reliable.

Host Controller Interface or embedded stack software

Embedded applications with operating systems like Linux or Windows® already include networking software. For these, a module with standardized Host Controller Interface (HCI) can easily add wireless connectivity.

Typical microcontroller applications instead do not provide network stacks like this. Here, a wireless module with embedded stack software is the preferred solution. The module handles all the connectivity and networking tasks. It is controlled with simple commands over a serial interface.

Module certifications and approvals enable worldwide use

Wireless modules from LM TECHNOLOGIES are already certified and approved for international standards like CE/RED, FCC and many more. These will help you to deploy your applications on worldwide markets easily. LM TECHNOLOGIES can also provide additional support for your individual certification process.

Programmable Bluetooth Modules

Make your Bluetooth application smarter with programmable modules. They combine Bluetooth radio, stack software and a microcontroller to run your application. External peripherals can be connected using various I/O interfaces.

In addition, “ready-to-use” firmware variants for different IoT applications are also available.

LM930 / LM931 – Bluetooth Low Energy

LM930 / LM931 are designed to provide Bluetooth Low Energy communication for embedded systems.



- ▶ Bluetooth 4.1 Low Energy
- ▶ Programmable with application firmware
- ▶ Various IoT applications available, including: Cloud Sensor, Beacon, Serial Server and more
- ▶ IPEX connector (LM930) or chip antenna (LM931)

LM961 – Bluetooth 4.1 Dual Mode

The LM961 is a very versatile Bluetooth Dual Mode module. It can connect to both Bluetooth “classic” and Low Energy devices. Standard firmware versions are available for SPP, BLE/GAP Central or SPP-to-BLE gateway function.



- ▶ Bluetooth 4.1 Dual Mode with EDR and Low Energy
- ▶ Programmable with application firmware

LM746 – Dual Mode and audio

For Bluetooth audio applications, the LM746 module is the first choice. It is a cost-efficient solution that supports various Bluetooth audio profiles. Sound enhancement features including aptX® improve audio quality. In addition, the module supports Bluetooth “classic” and Low Energy connections.



- ▶ Bluetooth 4.1 Dual Mode with EDR and Low Energy
- ▶ Bluetooth profiles: HSP, HFP, A2DP, AVRCP, PBAP, MAP, SPP
- ▶ Analog and digital (I2S, PCM, SPDIF) stereo audio interface

HCI Bluetooth Modules

LM910 – Dual Mode USB HCI module

LM910 has a wide range of uses thanks to the array of profiles available with the Widcomm Bluetooth stack. The module is also compatible with other OS stacks such as Linux' BlueZ. It supports Dual Mode for Bluetooth and Bluetooth Low Energy communication.

- ▶ Bluetooth 4.0 Dual Mode
- ▶ USB interface to host CPU
- ▶ Driver and software available for Linux, Windows® and MacOS



Development tools

Development kits are available for evaluation and development of Bluetooth modules.

- ▶ LM53X for Bluetooth Low Energy modules LM930, LM931
- ▶ LM55X for Bluetooth Dual Mode modules LM961
- ▶ LM556 for Bluetooth audio modules LM746

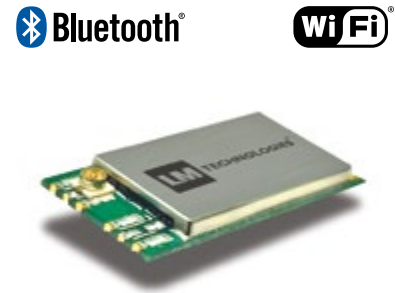


WiFi and WiFi Bluetooth Modules

LM811 – WiFi and Bluetooth

The LM811 combines WiFi and Bluetooth 4.0 Dual Mode in a compact module. A single USB interface is used to connect to the host system, simplifying integration and development. The module is compatible with various operating systems including Linux, Android and Windows®.

- ▶ WiFi 802.11 b/g/n up to 150 Mbps
- ▶ WEP, WPA, WPA2 Personal & Enterprise security
- ▶ Bluetooth 4.0 Dual Mode with EDR and Low Energy
- ▶ Single USB Interface



LM822 / LM823 – WiFi USB module

LM822 / LM823 compact modules for integration support WiFi 802.11 b/g/n with data rates up to 150 Mbps. Based on Realtek 8188EUS chipset, they are designed to provide excellent performance with low power consumption.

- ▶ WiFi 802.11 b/g/n up to 150 Mbps
- ▶ WEP, TKIP, AES, WPA, WPA2 hardware encryption
- ▶ USB interface to host CPU
- ▶ Chip antenna (LM822) or IPEX connector (LM823)



LM832 – SDIO / UART interface

LM832 WiFi and Bluetooth combo module uses a SDIO interface for WiFi and UART for Bluetooth function. It can be used in standalone mode with embedded wireless stack or in Host Controller Interface (HCI) mode with an operating system like Linux.

- ▶ WiFi 802.11 b/g/n up to 150 Mbps
- ▶ Bluetooth 4.1 Dual Mode with EDR and Low Energy
- ▶ WEP, WPA, WPA2, WMM, SSP security
- ▶ SDIO and UART interface
- ▶ HCI mode or standalone mode with embedded wireless stack



Wireless Adapters

How can you easily add Bluetooth or WiFi without design experience?
Just connect a wireless adapter to your application!

Plug & play wireless solution

Wireless adapters from LM TECHNOLOGIES provide a very easy “plug-and-play” solution to add wireless connectivity to existing applications. They use a standard interface like USB or RS232 and are supported by operating systems like Windows®, Linux, Android or MacOS.

USB HCI interface with broad OS support

Adapter with USB interface use HCI (Host Controller Interface) mode. These adapters have drivers and software utilities available for operating systems like Linux, Windows®, MacOS, Android and others.

RS232 adapters as simple cable replacement

RS232 serial adapters do not need special drivers. Instead they are controlled and configured using simple AT commands. The adapters can also be setup to automatically establish a connection to another device, enabling very easy replacement of serial cables.

High speed wireless communication with WiFi

The USB WiFi adapters from LM TECHNOLOGIES support current WiFi standards and high bandwidth. Data rates up to 433 Mbps are possible, enabling your application to transfer large amounts of data quickly.

Worldwide certifications and approvals

LM TECHNOLOGIES has already done a lot of certifications and approvals for worldwide use. This allows you to deploy your application with a wireless adapter to international markets quickly and easily.

Wide software and driver support

Driver software and utilities are available for operating systems like Linux, Windows®, MacOS and Android. So you can easily use the adapters on a variety of different host systems.

Bluetooth Adapters

LM048 – Serial adapter

When a standard serial RS232 connection needs to be replaced with wireless connectivity, serial Bluetooth adapter LM048 is a perfect choice. The adapter has a standard 9-pin DSUB connector which can be configured for DCE or DTE mode. With very compact size, the adapter can be easily plugged to the serial interface of your application. In addition to control with simple AT commands, the adapter can also be configured to start a connection automatically.

- ▶ Most compact serial RS232 adapter: only 46.3×34×16 mm
- ▶ RS232 serial interface configurable as DCE or DTE
- ▶ AT commands for control and configuration



LM506 – Dual Mode compact adapter

The LM506 is a very compact but versatile Bluetooth adapter. Using a USB interface in HCI mode, it can work with operating systems like Linux, Windows and more. The adapter supports both Bluetooth “classic” and Low Energy communication and can connect to a variety of different devices.

- ▶ Ultra-compact: only 19.5×16×8.1 mm
- ▶ Bluetooth 4.0 Dual Mode with EDR and Low Energy



LM1010 – Dual Mode long range

LM1010 combines Bluetooth Dual Mode function with class 1 high output power and external antenna interface for extended range.

- ▶ Class 1 high power and external antenna for long range
- ▶ Bluetooth 4.0 Dual Mode with EDR and Low Energy



WiFi and WiFi Bluetooth Adapters

LM808 – Dual band WiFi

The dual band WiFi adapter LM808 supports WiFi connections at 2.4 and 5 GHz bands with standards IEEE 802.11 a/ac/b/g/n. This allows even faster WiFi communication with highest data rates up to 433 Mbps.

- ▶ Dual band WiFi 2.4 and 5 GHz
- ▶ WiFi 802.11 a/ac/b/g/n
- ▶ Data rates up to 433 Mbps



LM809 - 2x2 MIMO for range and speed

LM809 WiFi adapter uses two internal antennas to provide 2x2 MIMO function for WiFi. This enables higher data rates compared to single antenna solutions. It also improves range up to 100 m for indoor and up to 280 m for outdoor use.

- ▶ 2x2 MIMO with 2 internal antennas
- ▶ Data rates up to 300 Mbps
- ▶ Improved range up to 100 m indoor, up to 280 m outdoor



LM816 – Ultra compact “nano” adapter

With a size only a little more than the USB connector itself, the LM816 is the most compact WiFi adapter available. Based on a Realtek 8188EUS chipset, it supports WiFi IEEE 802.11 b/g/n standards with data rates up to 150 Mbps.

- ▶ Ultra-compact: only 17 × 15 × 8 mm
- ▶ Data rates up to 150 Mbps



LM817 – WiFi and Bluetooth combined

Combining WiFi and Bluetooth function in a single USB adapter, the LM817 is a very versatile device for applications that need both wireless standards. It supports a sophisticated WiFi/Bluetooth coexistence mechanism to enhance performance when exchanging data with independent applications.

- ▶ WiFi with data rates up to 150 Mbps
- ▶ Bluetooth 4.0 Dual Mode with EDR and Low Energy



Product Selector

Wireless modules comparison

Product	WiFi	Bluetooth						Interface						Antenna			Size [mm]	
		Classic + EDR	Low Energy	Bluetooth Class	HCI Interface	SPP Profile	Audio Profiles	GATT Profiles	SDIO	UART	USB	I2C	Digital I/O	Analog I/O	Audio	Chip Antenna		PCB Antenna
LM930		•		1			•	•			•	9	3				•	22 × 10.1
LM931			•	1			•				•	9	3		•			22 × 10.1
LM961		•	•	1		•		•	•	•	•	6	3		•			18.9 × 12.7
LM746		•	•	2		•	•	•				8	2	•	•			23.6 × 9.7
LM910		•	•	1	•					•						•		18 × 9.7
LM811	•	•	•	1	•						•				•	○	○	25 × 12
LM822	•										•				•			25 × 12
LM823	•										•						•	25 × 12
LM832	•	•	•	1	•			•	•							○	○	19 × 12

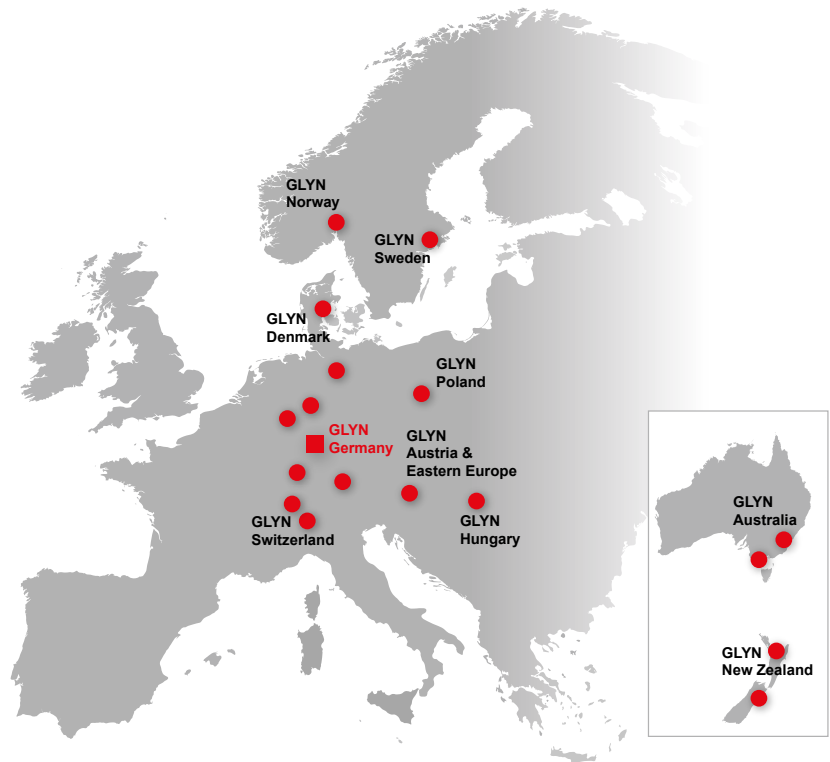
• Supported feature ○ depending on module variant

Wireless adapters comparison

Product	WiFi			Bluetooth				Interface		Antenna		Size [mm]	
	802.11 a/ac	802.11 b/g/n	Data Rate [Mbps]	Classic + EDR	Low Energy	Bluetooth Class	HCI Interface	SPP Profile	RS232	USB	Internal Antenna		RP-SMA Connector
LM048				•		1		•	•		•		46.3 × 34 × 16
LM506				•	•	2	•			•	•		19.5 × 16 × 8.1
LM1010				•	•	1	•			•	•		56 × 28 × 14
LM808	•	•	433							•	•		29.5 × 15 × 8
LM809		•	300							•	2x		29.0 × 16 × 6.8
LM816		•	150							•	•		17 × 15 × 8
LM817		•	150	•	•	1	•			•	•		49.6 × 18 × 7.4

• Supported feature

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