

# FUJITSU, years of experience

## Wireless modules & Beacons



shaping tomorrow with you

## Fujitsu Components Wireless Modules & Beacons

Fujitsu Components wireless modules are designed to offer an easy solution to make applications wireless. The product line contains a wide range of *Bluetooth*® modules. The family of Classic *Bluetooth*® modules includes iOS compatible products in addition there is a complete family of *Bluetooth*® Smart modules.

The Fujitsu Components *Bluetooth*® Smart beacon can broadcast information to mobile devices. The possibilities are extensive.

Fujitsu Components also offers complete WLAN modules making connections with a WLAN network possible for applications without an onboard operating system.

### More information:

Website: [emea.fujitsu.com/wireless-modules](http://emea.fujitsu.com/wireless-modules)

E-mail: [info@fceu.fujitsu.com](mailto:info@fceu.fujitsu.com)

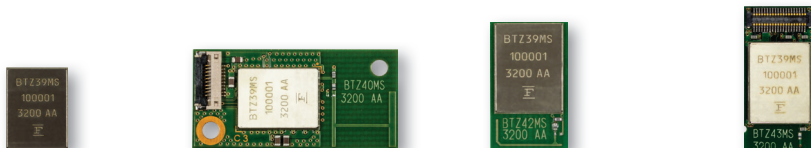


## Classic *Bluetooth*®

The Fujitsu Components *Bluetooth*® modules contain the complete upper layer protocol stack (L2CAP, RFCOMM, SDP) and the GAP and SPP profile. Communication and control can be easily established by using as many as 200 simple text base commands and events covered by the firmware. The crystal and 8Mbit Flash memory are integrated into the module, but offer nevertheless a small and compact design. The Fujitsu Components *Bluetooth*® modules are available in four versions, offering antenna options, a 40-pin PCB connectors and a 10-pin FPC/ FCC connector.

In response to the rapid development of iOS devices and software applications, Fujitsu Components developed *Bluetooth*® modules that are compatible with iOS products, such as the iPhone®, iPod® and iPad®. The modules with and without antenna make the Fujitsu *Bluetooth*® iOS modules easy to integrate.

\* To purchase these *Bluetooth*® iOS modules it is required to join the MFi license program provided by Apple®. The CP-chip (Authentication Coprocessor chip) is required for iOS communication and needs to be purchased from Apple®.



Partnumber	MBH7BTZ39(A)	MBH7BTZ40	MBH7BTZ42(A)	MBH7BTZ43
Used IC	CSR BC4-Ext.	CSR BC4-Ext.	CSR BC4-Ext.	CSR BC4-Ext.
Type	Version 2.1+EDR, SPP embedded Class 2 (A: iAP and iAP2)	Version 2.1+EDR, SPP embedded Class 2	Version 2.1+EDR, SPP embedded Class 2 (A: iAP and iAP2)	Version 2.1+EDR, SPP embedded Class 2
Size	12.4x9.4x1.5mm	31x15x2.5mm	17.6x10.6x1.9mm	22.5x10.6x2.3mm
Operating Temperature	-40 to +85 °C (A: -25 to +85 °C)	-25 to 85 °C	-40 to +85 °C (A: -25 to +85 °C)	-40 to 85 °C
Attachement	SMD	Connector	SMD	Connector
Antenna	No	Yes	Yes	Yes
Host I/F	UART	UART	UART	UART
Qualification/ Certification	QDID, Radio Act Japan	QDID, FCC/IC/CE/Radio Act Japan	QDID, FCC/IC/CE/Radio Act Japan	QDID, FCC/IC/CE/Radio Act Japan

## Bluetooth® Smart

Fujitsu offers a wide range of wireless modules which conform to the *Bluetooth®* Core Specification Version 4.1. This *Bluetooth®* technology contains a low energy feature enabling a substantial reduction of power consumption. The modules are available with 256kB Flash memory and up to 32kB RAM for profile and application development or with the embedded Fujitsu Component Data profile for SPP (serial port profile) like interface which can be controlled by text based commands.

Fujitsu *Bluetooth®* Smart modules provide robust wireless communication with any *Bluetooth®* Smart (ready) device. The modules have a compact size and are among the smallest on the market.



Partnumber	MBH7BLZ01-1090xx	MBH7BLZ02-1090xx	MBH7BLZ01A-1090xx	MBH7BLZ02A-1090xx	MBH7BLZ07-1090xx
Used IC	Nordic Semiconductor nRF51822 rev.3 16kB RAM, 256kB Flash	Nordic Semiconductor nRF51822 rev.3 16kB RAM, 256kB Flash	Nordic Semiconductor nRF51822 rev.3 32kB RAM, 256kB Flash	Nordic Semiconductor nRF51822 rev.3 32kB RAM, 256kB Flash	Nordic Semiconductor nRF51822 rev.3 16kB RAM, 256kB Flash
Type	Ver.4.1 (single mode) SoftDevice embedded upon request	Ver.4.1 (single mode) SoftDevice embedded upon request	Ver.4.1 (single mode) SoftDevice embedded upon request	Ver.4.1 (single mode) SoftDevice embedded upon request	Ver.4.1 (single mode) SoftDevice embedded upon request
Size	10.5x9.2x1.6mm	15.7x9.8x2.0mm	10.5x9.2x1.6mm	15.7x9.8x2.0mm	11.5x7.9x1.7mm
Operating Temperature	-40 to +85 °C	-40 to +85 °C	-25 to +85 °C	-25 to +85 °C	-40 to +85 °C
Attachement	SMD	SMD	SMD	SMD	SMD
Antenna	No	Yes	No	Yes	Yes
Host I/F	UART,SPI, I2C, GPIO	UART,SPI, I2C, GPIO	UART,SPI, I2C, GPIO	UART,SPI, I2C, GPIO	UART,SPI, I2C, GPIO
Number of GPIO's	31	31	31	31	22
Qualification/ Certification	QDID, Radio Act Japan	QDID, FCC/IC/CE/Radio Act Japan	QDID, Radio Act Japan	QDID, FCC/IC/CE/Radio Act Japan	QDID, FCC/IC/CE/Radio Act Japan

■ 1090xx, xx part number indicates which Softdevice version is preinstalled

## Bluetooth® Smart Fujitsu Embedded profile

Partnumber	MBH7BLZ01	MBH7BLZ02	MBH7BLZ01A	MBH7BLZ02A	MBH7BLZ07
Used IC	Nordic Semiconductor nRF51822 rev.3	Nordic Semiconductor nRF51822 rev.3	Nordic Semiconductor nRF51822 rev.3	Nordic Semiconductor nRF51822 rev.3	Nordic Semiconductor nRF51822 rev.3
Type	Ver.4.1 (single mode) Fujitsu unique data transmission profile embedded Peripheral type	Ver.4.1 (single mode) Fujitsu unique data transmission profile embedded Peripheral type	Ver.4.1 (single mode) Fujitsu unique data transmission profile embedded Central/Peripheral type	Ver.4.1 (single mode) Fujitsu unique data transmission profile embedded Central/Peripheral type	Ver.4.1 (single mode) Fujitsu unique data transmission profile embedded Peripheral type
Size	10.5x9.2x1.6mm	15.7x9.8x2.0mm	10.5x9.2x1.6mm	15.7x9.8x2.0mm	11.5x7.9x1.7mm
Operating Temperature	-40 to +85 °C	-40 to +85 °C	-25 to +85 °C	-25 to +85 °C	-40 to +85 °C
Attachement	SMD	SMD	SMD	SMD	SMD
Antenna	No	Yes	No	Yes	Yes
Host I/F	UART	UART	UART	UART	UART
Qualification/ Certification	QDID, Radio Act Japan	QDID, FCC/IC/CE/Radio Act Japan	QDID, Radio Act Japan	QDID, FCC/IC/CE/Radio Act Japan	QDID, FCC/IC/CE/Radio Act Japan

## Beacon

Fujitsu Components *Bluetooth*® Smart beacons, let the app do the talking...

Fujitsu Components *Bluetooth*® Smart beacons are based upon Fujitsu Components experience in the field of Wireless Modules. The Beacons are *Bluetooth*® powered location devices capable of providing location based information to mobile devices. Beacons are low energy transmitters that broadcast specific data which triggers an action on the installed application of a mobile device.

Beacons enable pro-active communication with the audience and are used in a wide field of applications such as in-shop promotion, museum, festivals, exhibitions and many more....

Partnumber	FWM8BLZ02-XXXXX
Type	Ver.4.1 (single mode)
Size	40x31x12mm Casing
Operating Temperature	-30 to +60 °C
Humidity	+20 to +80%RH (No condensation)
Battery	CR2450
Qualification/Certification	FCC/IC/CE/Radio Act Japan, QDID



### How does it work?

A beacon transmits a package of data without having the need to be connected (different than classic Bluetooth). This data package can contain information like the identification of a group the beacons relates to with additional the sub group, individual ID and transmitting power but also for example an URL.

A standard application example is the use of beacons in a shop environment. Either transmitting a data package like the iBeacon standard (UUID, Major, Minor, Tx power) or using the Google Eddystone™ standards of transmitting an ID or URL. Also a customized data transmitter can be requested.

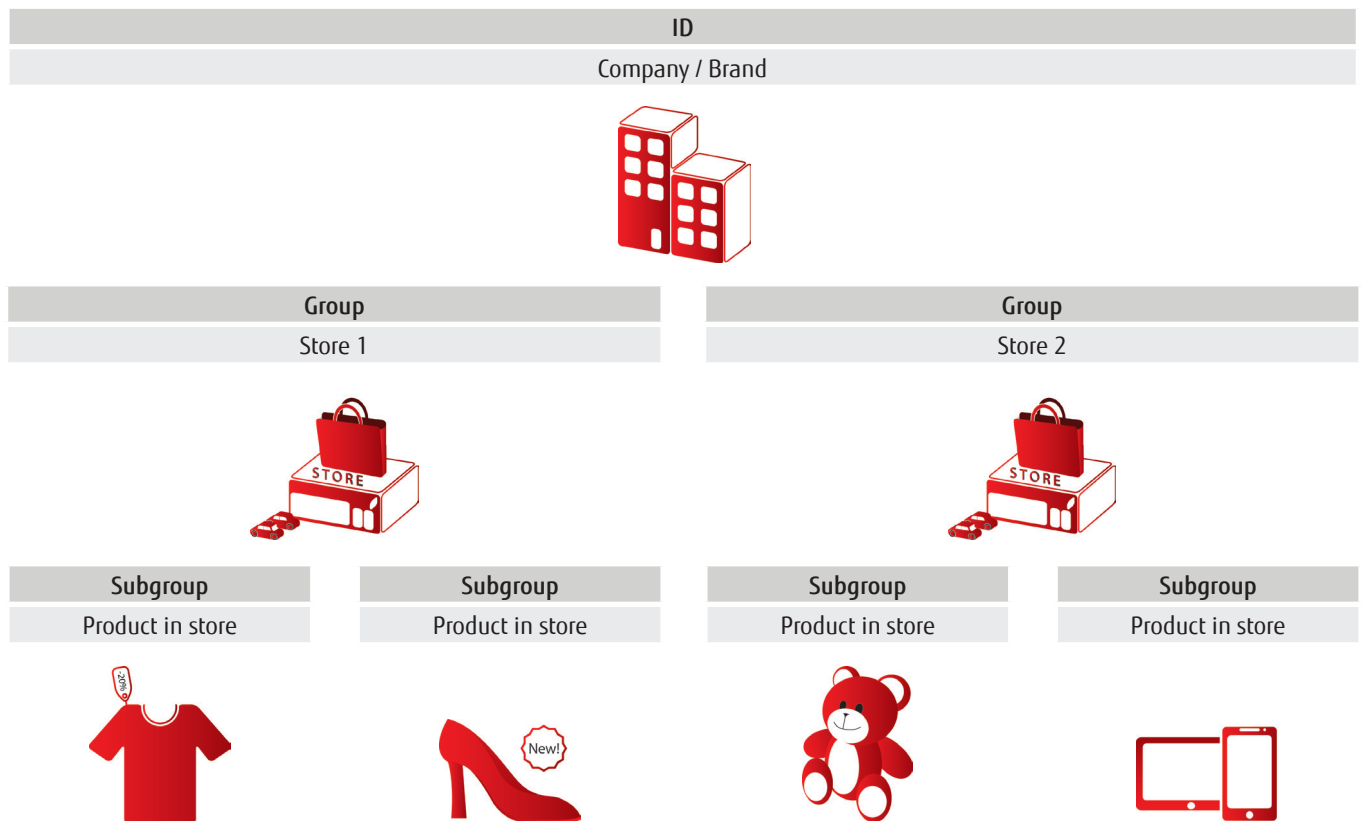
By using the standards the beacon transmits a data package at a certain interval (example: every 100ms). This package is received by a mobile device and can trigger an installed app or open a webbrowser or visit a weblink. The data package contains information which can be converted/translated in a specific action from the installed app. This could display a discount coupon, sale items, new items etc.

Below an example for using the beacons:

- A big sportswear company with their own shops and outlet stores would integrate a network of beacons.
  - All these beacons would have the same group ID in their data package. This allows any smartphone app of this company to know you are near or in one of their shops.
  - In the data package there is a part used to identify a smaller subgroup of beacons within the larger group. For example: Per each shop the beacons would have this same ID. This allows the App to know exactly which store you are in.
  - A part of the data package is to identify the individual beacon and can contain other info useful for his task.

Keeping with the used example, a beacon at a specific area in the store would have its own unique ID. This allows the App to know exactly where you are in the shop and can identify it with a specific message.

Below an example on how the beacons would function in a store:



### Applications

- Information guide  
Show the information on a specific painting in a museum gallery.
- Customer information  
Give information on sale items, or even where that T-shirt is located in store. You can even adjust the proximity so the customer sees the information at a specific location.
- Movement monitoring  
Avoid people getting lost in a Hospital, or show where to find the right train platform.
- Transportation  
Give real time flight information. Or what bus to take to get to your destination.
- Many more...

### Functions of the Fujitsu beacon

- Selectable operation modes  
Broadcasting / Peripheral mode
- Recovery function  
Reset the beacon if necessary
- LED status indicator  
View the beacon status on the device itself
- Extend battery life  
Adjust interval settings to get more battery life out of your beacon.
- Sample application software available  
Free of charge sample software available on request (for Android and iOS).

### iBeacons contract procedure

For using Fujitsu Beacons as iBeacons® the following steps are required:

- Agreement with Apple® to use iBeacon specifications and trademarks.
- iBeacon® program is necessary. \*  
\* Customers who already participate in the MFi program, require only to make an agreement on iBeacon®
- Specification (Advertising data format) will be disclosed according to the iBeacon® program agreement. \*  
\* It is possible to set the arbitrary advertising data to our module (use is possible with iBeacon®). Customer needs to make an agreement with Apple® to know the contents of the data set.

### MFi licensing information:

<https://mfi.apple.com/MFiweb/enrollnew.action>

### New MFi enrollment:

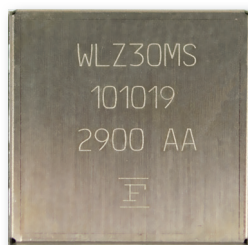
<https://myaccess.apple.com/epdm/register/app/mfi>

## WLAN

The Fujitsu Components complete WLAN modules are perfect for connecting devices over wireless LAN without using an operating system. The unique command interface provides easy connection by using simple commands. The module can function in station mode and access point mode.

The Fujitsu Components complete WLAN modules have built in flash memory, an LDO and reference clock all in one small easy to integrate module.

Partnumber	MBH7WLZ30
Type	IEEE 802.11b/g/n
Size	20x20x2.5mm
Operating Temperature	-25 to +85 °C
Attachement	SMD
Antenna	No
Host I/F	UART
Qualification/ Certification	Radio Act Japan (an- tenna specified)

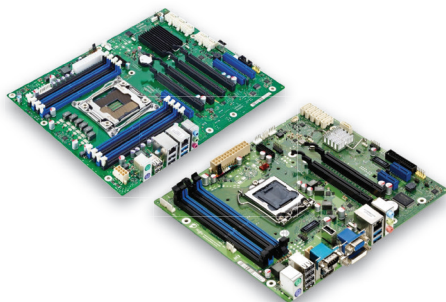


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*Classic Desktop, Extended Lifecycle and Industry*

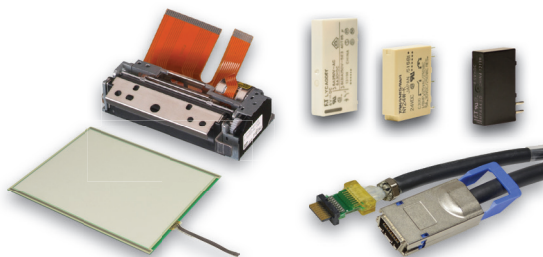


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### ■ Others

*Relays, Touch Panels, Connectors, PDU's, Thermal Printers, Wireless Modules, KVM switches*



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It is mandatory for every product implementing Bluetooth® technology to be listed on the Bluetooth® SIG Product Listing.

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