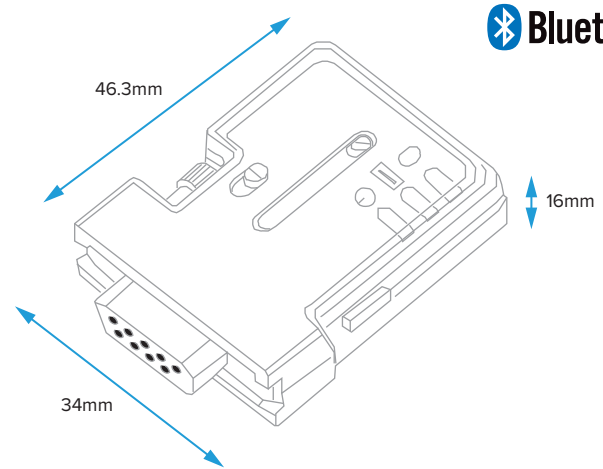


# LM048 Bluetooth® v2.0, v2.1 RS232 Serial Adapter

## Standalone (With Embedded Bluetooth® v2.0 / v2.1 Stack)

Product LM048  
 Part No See Last Page  
 Revised 10/JUL/2019  
 Datasheet Version 2.3



### Features

- World's smallest Bluetooth® Serial Adapter (RS232)
- Bluetooth® v2.0, v2.1 wireless technology
- dBm Outputs TBA (expecting as previous version (18 dBm Tx Output Power and -86 dBm Rx Sensitivity)
- Serial (RS232) interface
- Serial Port Profile (SPP) available
- Programmable Standalone Module (With Embedded Bluetooth® v2.0 / v2.1 Stack)
- Unique patented firmware enabling serial printer functionality
- Up to 100m range (in open space)
- 46.3mm x 34mm x 16mm
- Powered by USB - Mini USB, DB9 or AC adaptor
- DTE / DCE (Master / Slave) mode switch
- DTR / DSR Handshaking and RTS / CTS Flow control lines

- Full Duplex for simultaneous communication between sender and receiver
- Ease of configuration and setup using the LM149 software  
Configurations pre-installed on production
- Fully Certified Solution  
RoHS, REACH and WEEE Compliant Solution
- See our website for this products certifications.



### Typical Industries

- EPOS
- Aviation
- M2M
- Automotive
- LNG

### Overview

The LM048 is the world's smallest Bluetooth® serial adapter (RS232), providing a secure and reliable Bluetooth® v2.0, v2.1 connection.

This wireless connection reaches a range of up to 100m in open space, replacing RS232 cables between a master (DTE) device and slave (DCE) devices such as printers, data loggers and digital signalling devices.

The LM048 patented firmware allows the serial configurations to be used. The firmware controls the RS232 signals, including DTR / DSR handshaking and RTS / CTS flow control lines. The LM048 is powered by USB - Mini USB, DB9 or AC adaptor and all settings and configurations are even retained when the adapter is powered down.

Our LM149 software is used to change the settings and configurations; including the auto connect function, discoverable / non-discoverable function, device name, baud rate, data bits and flow control. The AT Command set is used to change the configurations, plus the developer can also configure and modify the settings of a remote LM048 from a local LM048. Customised configurations and settings can be preloaded to the LM048, simplifying the manufacturing and testing process.

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Product LM048  
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### General Specification

#### Wireless

Bluetooth® Standard	v2.0 and v2.1 wireless technology
Adapter Type	Standalone (Configurable with AT Commands)
Profiles	SPP

#### Hardware

Chipset	CSR
Antenna	IC Antenna Onboard
Flash Memory	8 Mbit
RAM	48 KB
Interfaces	Serial (RS232)
Power Supply	4V to 12V DC
Crystal Oscillator	16 MHz
LED Indicators	Link (BLUE), Data (ORANGE) and Power (RED)

#### RS232 (Serial)

RS232 Interface	D_SUB 9 pin female
Signal	RxD, TxD, DTR, DSR, RTS, CTS and GND
Full Duplex	Yes
Baud Rate	1.2, 2.4, 4.8, 9.6, 19.2, 38.4, 57.6, 115.2, 230.4, 460.8 and 921.6 Kbps

#### RF Characteristics

Tx Output Power	18 dBm (Maximum)
Rx Sensitivity	-86 dBm (Typical)
Antenna Gain	1 dBi to 2 dBi (Maximum)
Current Consumption	90 mA (Typical)
Range (in open space)	Up to 100m
Data Rate	Up to 3Mbps
Frequency	2.4 GHz to 2.485 GHz
Hopping	1,600/sec, 1MHz channel space
Modulation Scheme	GFSK-Mbps, DQPSK-2 Mbps, and 8-DPSK-3Mbps

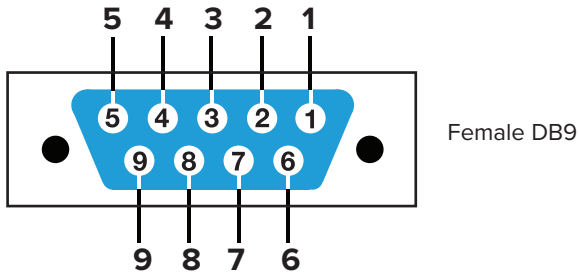
#### Physical Characteristics

Operating Temperature	-10°C to +70°C
Dimensions (L x W x H)	46.3mm x 34mm x 16mm
Weight	20.19g +/- 0.25g tolerance
Certifications	See our website for this products certifications.
Compliance	RoHS, REACH and WEEE

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**Signals**



**Pin out for LM048 Adapter**

Pin	RS232 Signal	DTE to DCE Direction	DCE to DTE Direction	Description
1	CD	Input	Output	Not Connected
2	RxD	Input	Output	Receive Data
3	TxD	Output	Input	Transmit Data
4	DTR	Output	Input	Data Terminal Ready
5	GND	n/a	n/a	Signal Ground
6	DSR	Input	Output	Data Set Ready
7	RTS	Output	Input	Request to Send
8	CTS	Input	Output	Clear to Send
9	Vcc	Input	Input	Power Supply

**Factory Settings**

The factory settings of the COM Port are as follows:

Baud Rate 19200 bps  
 Data Bits 8  
 Parity None  
 Stop Bits 1  
 Flow Control None

Customised settings are available as factory settings upon special request; Bonding, Pre-Pairing, different Baud Rates, Data Bits, Parity and Flow Control Settings.

# LM048 Bluetooth® v2.0, v2.1 RS232 Serial Adapter

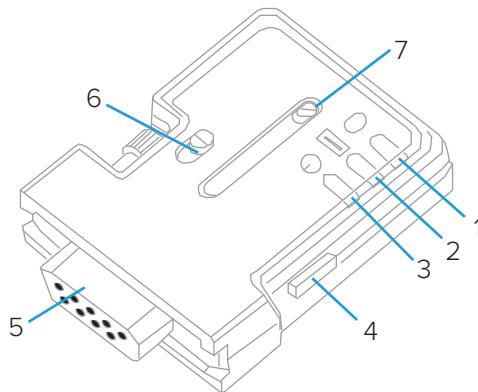
Standalone (With Embedded Bluetooth® v2.0 / v2.1 Stack)

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## Hardware Structure

- 1 Link LED.
- 2 Data LED.
- 3 Power LED.
- 4 Mini USB Connector.
- 5 RS232 Connector.
- 6 Slide Switch.
- 7 Reset Button.



## Switch Functions

### Reset Button

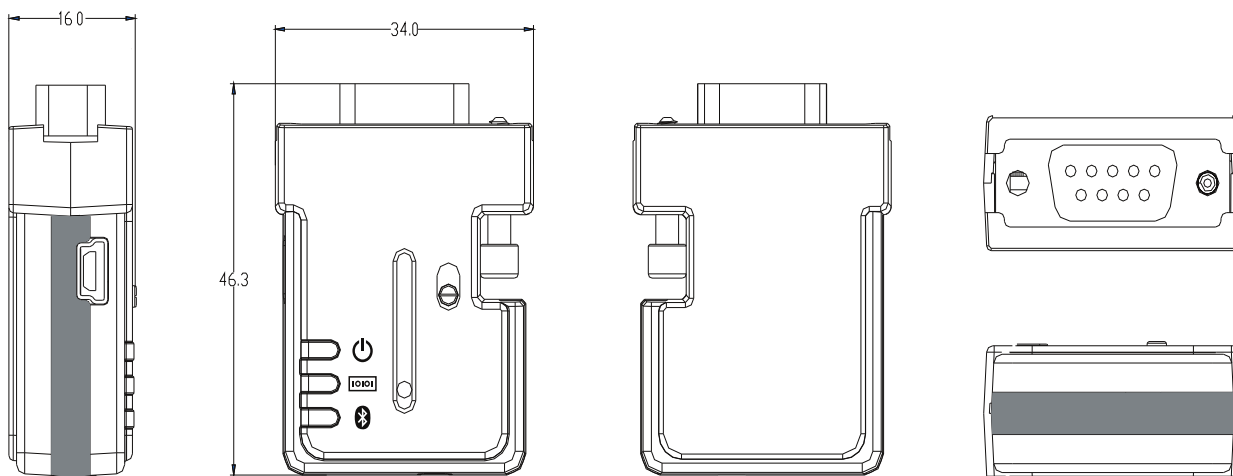
By pressing the Reset Button you can:

- Disconnect a wireless connection (after a short press).
- Restore the factory settings (after over 3 seconds press).

### Slide Switch

The slide switch can swap TxD / RxD, RTS / CTS and DTR / DSR Signals.  
By switching, you can set the adapter as a DTE (towards antenna connector) or a DCE (towards RS232 connector).

## Physical Dimensions



# LM048 Bluetooth® v2.0, v2.1 RS232 Serial Adapter

## Standalone (With Embedded Bluetooth® v2.0 / v2.1 Stack)

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v1.0	13 MAR 2018	Added version notes to datasheet.
v1.1	1 MAY 2018	Existing Part Numbers end of life (due to hardware change).
v2.0	1 MAY 2018	New LM048 version 3 release (with new power amplifier replacing previous).
v2.1	16 MAY 2018	New Part Numbers released for LM048 version 3.
v2.2	10 SEP 2018	Packing Description typo amended (DB9 male to male (not male to female))
v2.3	10 JUL 2019	Packing Page Revised and Extra Options added

### Helpful Notes

- 1** Download the latest software and from [lm-technologies.com/btserial](http://lm-technologies.com/btserial)
- 2** Download any further documentation to assist with your device setup, such as; Manual, Quick Start & Pairing Guides, Troubleshooting, Notes, Certifications, Applications and Datasheet.
- 3** Need support? Visit our [FAQ Support Site](http://lm-technologies.com/support)

# LM048 Bluetooth® v2.0, v2.1 RS232 Serial Adapter

Standalone (With Embedded Bluetooth® v2.0 / v2.1 Stack)

Product LM048  
Part No See Below

## LM048 Packaging Options



**048-3000** **AO - Adapter Only**  
1 x Bluetooth® Serial Adapter



**048-3001** **SWB - Single White Box**  
1 x Bluetooth® Serial Adapter  
1 x DB9 Gender Changer - male to male



**048-3006** **SRP - Single Retail Pack**  
1 x Bluetooth® Serial Adapter  
1 x DB9 Gender Changer - male to male  
1 x USB - mini USB Cable for power supply  
1 x Power Supply Unit with Multi-Plug faces,  
+ UK Plug Connector for USB Cable



**048-3011** **TWB - Twin White Box**  
2 x Bluetooth® Serial Adapters  
2 x DB9 Gender Changers - male to male



**048-3012** **TRP - Twin Retail Pack**  
2 x Bluetooth® Serial Adapters  
2 x DB9 Gender Changers - male to male  
1 x USB mini USB Cable for power supply  
1 x Power Supply Unit with Multi-Plug faces,  
+ UK Plug Connector for USB Cable



**Optional - LM025**  
Slim Line 9 pin to 25 pin Converter

• See our website to download any applicable Product Software, Manuals and Notes - <http://www.lm-technologies.com/downloads>