Bluetooth™ Serial Port Plug - F2M01C1
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Features

- Provides transparent RS-232 serial cable replacement

- No need for external drivers

- External power can be supplied via D-SUB connector or via DC connector

- Implements the Bluetooth Serial Port Profile and Generic Access Profile

- Interoperability with PDA, laptops etc.

- Nominal 100m range

- Configurable for use of different baud rates and serial settings

- Easy to use windows interface available

- Small form factor 48x34x19

Applications

The F2M01 plug can be applied to applications that currently use cables for serial communication. The Ad Hoc connectivity will give you the serial link as soon as the communicating devices are within range of each other.

Examples of possible applications are:

- Embedded systems
- Stand alone sensors
- Computer peripherals
- Domestic and industrial appliances

Free2move offers OEM usage and customization of the Serial Port Plug.

General Description

The F2M01C1 offers a replacement of the serial cable by a wireless link based on the Bluetooth wireless technology.

The F2M01C1 Serial Port Plug is a Class 1 Bluetooth device with a very dense packing. The unit gives a nominal range of approximately 100m. No external drivers are needed. A user-friendly Windows application is included that can be used to configure the plug to suit your requirements.

The F2M01 can be used together with other Bluetooth units that support the Serial Port Profile e.g. Laptops and mobile phones.

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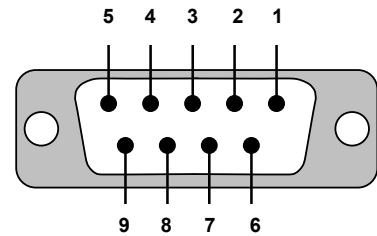
1   Specifications

Physical size: 47x33x19 mm

Temperature range: 0°C to 70°C

Baud rate: Configurable up to 115200 baud/s

1.1   Pinout

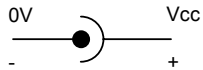| Pin	RS-232 signal	Direction
1	CD	Not connected
2	TxD	Output
3	RxD	Input
4	DSR	Not connected
5	GND	
6	DTR	Not connected
7	CTS	Input
8	RTS	Output
9	Vcc Power	Input 4-5V

Serial Port Plug connector (female)

1.2   Power supply

The serial port plug needs to be powered by an external voltage of 4.0 - 5.0V.

Power can be supplied either via the DC-connector or via the DSUB-connector, pin 9.

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1.3 Current consumption

Measured with 5V power supply

Peak consumption: 190mA

Endpoint unit (Bluetooth slave):

Mode	Average (mA)
No connection (default settings)	8.2
No connection (inquiry scan disabled)	7.6
Connected (Short range), no data transfer	44
Connected (Short range), no data transfer Sniff mode 200 ms interval	11
Connected (Short range), no data transfer Park mode 200 ms interval	7.9
Connected, (Short range) 115.2 kbit/s master to slave	45
Connected, (Short range) 115.2 kbit/s slave to master	58
Connected, (Long range) 115.2 kbit/s master to slave	50
Connected, (Short range) 115.2 kbit/s master to slave Sniff mode 125 ms interval	29
Connected, (Short range) 115.2 kbit/s slave to master Sniff mode 125 ms interval	29

Connecting unit (Bluetooth master):

Mode	Average (mA)
No connection (default settings)	83
Connected (Short range), no data transfer	13
Connected (Short range), no data transfer Sniff mode 200 ms interval	9.3
Connected (Short range), no data transfer Park mode 200 ms interval	9.5
Connected, (Short range) 115.2 kbit/s full duplex	48
Connected, (Long range) 115.2 kbit/s full duplex	65
Connected, (Short range) 115.2 kbit/s master to slave	39
Connected, (Short range) 115.2 kbit/s slave to master	36
Connected, (Short range) 115.2 kbit/s slave to master Sniff mode 125 ms interval	21

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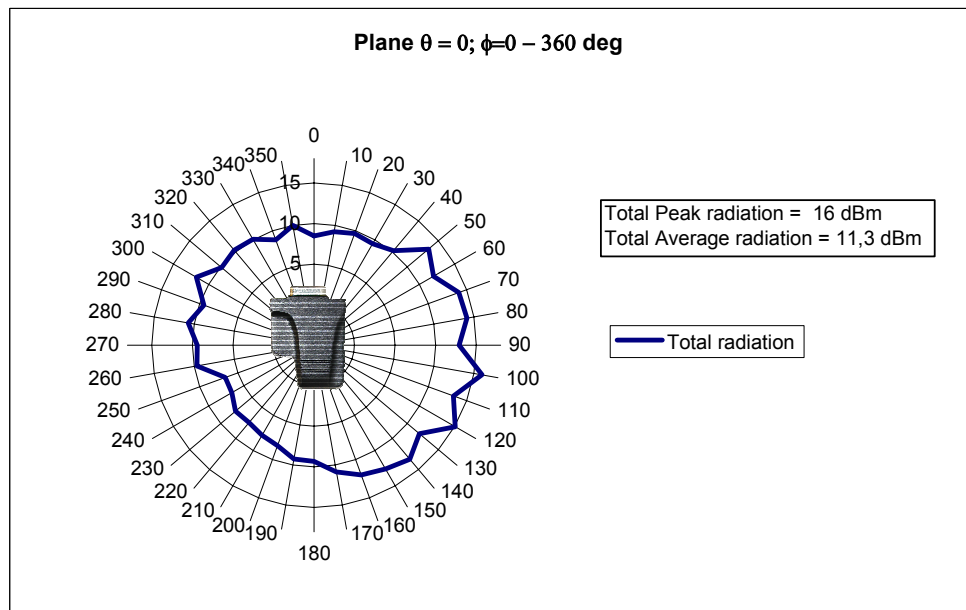
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1.4   Radio performance

Radio characteristics (normal conditions)	Min	Typ	Max	Unit
Transmit power	-	11	16	dBm
Sensitivity at 0.1% BER	-	-85	-90	dBm

The radiation efficiency has been measured in two planes. Common for both planes is that the D-SUB connector is pointing against the measurement point for φ = 0 degrees.
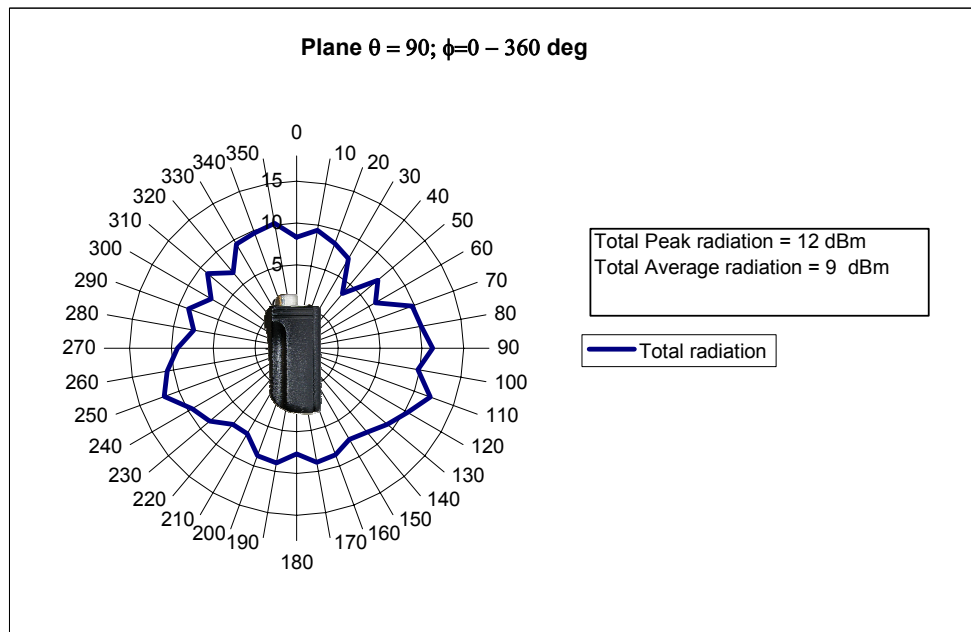
Plane 1 (θ = 0 degrees)

Measurement point

Plane θ = 0; φ=0 – 360 deg

Total Peak radiation = 16 dBm
Total Average radiation = 11,3 dBm

Total radiation

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Plane 2 (θ = 90 degrees)

Measurement point

Plane θ = 90; φ=0 − 360 deg

Total Peak radiation = 12 dBm
Total Average radiation = 9 dBm

──── Total radiation

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2 Configuration options

A complimentary Free2move software package accompanies your serial port plug and can be installed on systems running Windows 98, ME, 2000 and XP. This Windows™ based software is used for configuration of the serial interfaces, connection rules and for the security of your device.
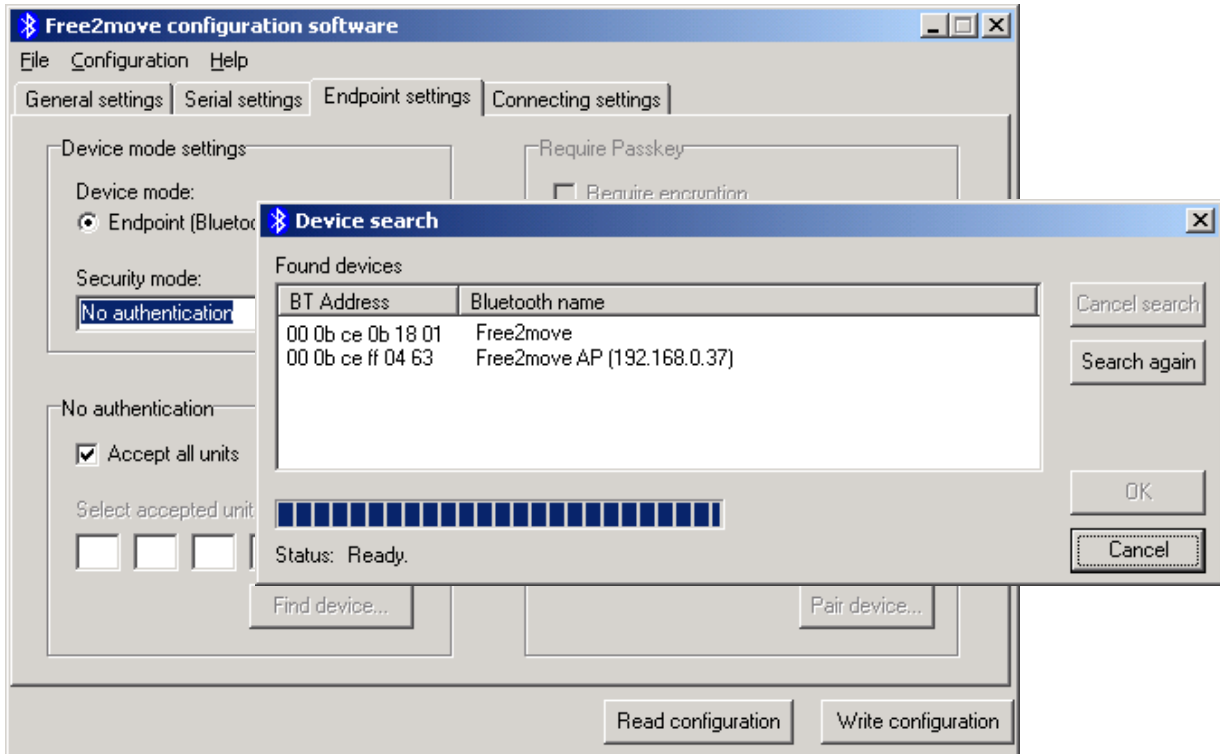
With the plug connected to the serial port of a PC and the configuration software running; the plug can be configured to work in different situations and also to meet varying requirements for security.

The serial interface of the plug can be configured to work with almost every piece of equipment that uses a serial port. See the table below for the configuration options.

Setting	Configuration alternatives
Baud rate	2400 –115200 (baud/s)
Stop bits	1 or 2
Data bits	8
Parity	None, Odd or Even
Flow control	Hardware (i.e. CTS/RTS) or None

When streaming data continuously or sending large blocks of data it is recommended to use hardware flow control.

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2.1 Connection rules and security

The F2M01 Serial Port Plug can be configured to accept connections (endpoint mode) or to connect other Bluetooth units (connecting mode). There are also extensive configuration options for power save modes.

When configured in endpoint mode (Bluetooth slave) the plug can be detected and connected by other Bluetooth equipped units. Three different levels of security make it possible to configure the plug to fit your demands for secure communication.

- No authentication

- Require passkey

- Require paired device

In Connecting mode (Bluetooth master) the F2M01 will initiate connections with another unit; the plug will continue to try establishing a connection until successful. Two security options are available in connecting mode

- Connect without passkey

- Connect to paired device

Paired Bluetooth devices have a complete pairing procedure with authentication. As a result they both know that the remote Bluetooth unit is a trusted device. To simplify the pairing procedure the configuration software includes a *Pair device wizard*. When using the passkey or the paired device options, encryption can be used to ensure secure communication.
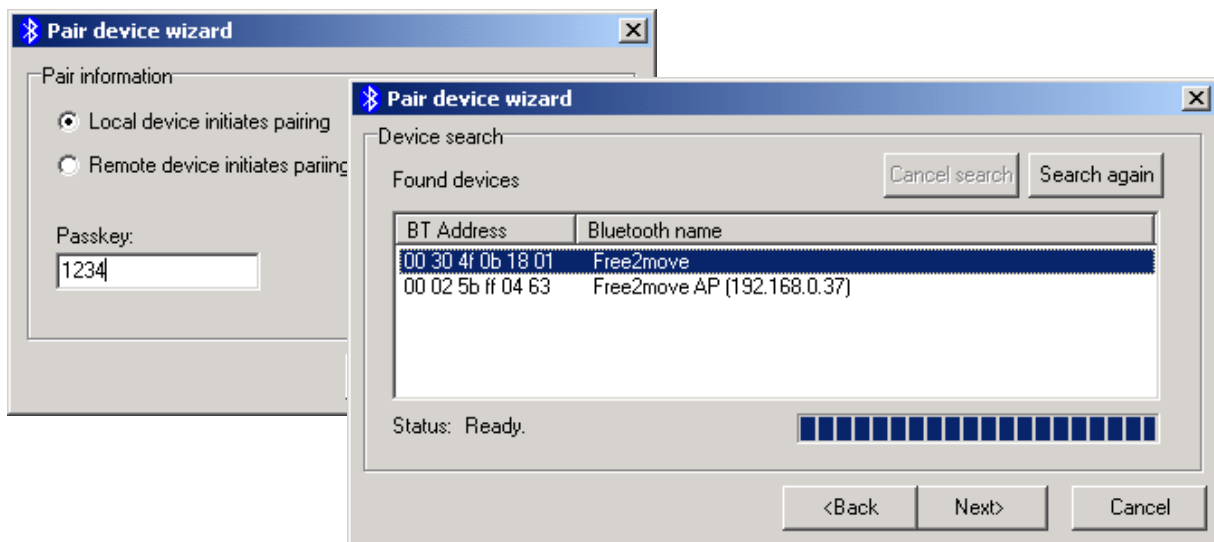
To make it easier to choose which device to connect to or accept connections from, the configuration software includes a device search feature where the plug searches for devices in the neighbourhood. The devices that are found are presented by name and Bluetooth address. If the plug should connect or accept a device that is not present when the configuration is complete, the user can manually enter the Bluetooth address of the remote device.

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2.2 Serial protocol

It is also possible to configure the F2M01 from a non-Windows environment using a serial protocol. More information about this is available in the Wireless UART firmware datasheet, which is available on request.

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3 Ordering information

The F2M01C1 is available for delivery.

Part nr:	Description
F2M01C1-000	Standard version: With the default settings, Endpoint plug that allows all units to connect (slave). Baud rate: 38400 baud/s Data bits: 8 Parity: None Stop bits: 1 Flow control: On

The Serial Port Plug is also available in OEM versions and can be customized to fit your needs.

Please use our website: www.free2move.se for more information about local distributors and dealers.

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Contact information

For support questions please contact your local dealer
For more information see our website: www.free2move.se/
For other purposes use: info@free2move.se

Local dealer/distributor