

Serial Port Plug - F2M01SXA

Datasheet

Features

- Provides transparent RS-232 serial cable replacement.
- No need for external drivers.
- Power is supplied via the D-SUB or mini-USB connector.
- Supports the following Bluetooth® profiles: SPP, DUN, GAP, HCI.
- Interoperability with PDA, laptops etc.
- Range up to 300 m (line of sight).
- Configurable serial settings.
- Easy to use Configuration software available.
- Small size 36x17x60 (WxHxL) mm.
- High supply voltage range 5-30V DC.
- Simple pairing with onboard button.
- Led indications for power, data and status monitoring.
- Additional RS-232 lines for enhanced signaling.



F2M01SXA

Applications

The F2M01SXA Serial Port Plug can be connected to applications that currently use cables for serial communication. The F2M01SXA is also ideal if you are looking for a reliable and robust wireless link between any RS-232 enabled devices. The Ad-Hoc connectivity will connect 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

General Description

The F2M01SXA offers an intuitive serial cable replacement by using a wireless link, based on Bluetooth® technology.

With its small size, long range, high voltage range and reliable data transmission, the F2M01SXA is the obvious choice for the most demanding wireless applications.

No external drivers are needed, and pairing to another Bluetooth® device is as easy as pressing a button. Two LEDs are used to monitor the current status of the device and if any data transmission are present. The device uses a fault detection system indication if an invalid RS232 device is attached to the F2M01SXA. A user-friendly Windows application is available for configuration to suit Your requirements.

The F2M01SXA can be used together with other Bluetooth® units supporting the Bluetooth® Serial Port Profile (SPP), Dial Up Networking (DUN) and HCI, e.g. Laptops, PDA and mobile phones.



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1 Hardware specification

Physical size: 37x17x60 (WxHxL) mm
Voltage range: 5-30V DC (regulated)
Current consumption (max): 300mA
Temperature range: -40°C to +85°C
Baud rate: Configurable up to 230400 baud/s

1.1 Power supply

The F2M01SXA is using external power supply and need to be powered either via pin 9 on the D-sub or the mini-USB connector. The device can be used in the voltage range of 5-30VDC (regulated, min 300mA).

1.2 Power consumption

Measured with 5V power supply at 20°C and a range of 5m. (Blue LED off**)

Role	Mode	Distance*	Sniff mode	Average (mA)	Peak (mA)
Connecting	No connection			48mA	86mA
Endpoint	No connection			10mA	63mA
Connecting	Connected, no data transfer	Short	Off	12mA	58mA
Endpoint	Connected, no data transfer	Short	Off	27mA	95mA
Connecting	115.2kbps full duplex	Short	Off	42mA	138mA
Endpoint	115.2kbps full duplex	Short	Off	46mA	160mA
Connecting	115.2kbps master to slave	Short	Off	38mA	167mA
Endpoint	115.2kbps master to slave	Short	Off	39mA	215mA
Connecting	115.2kbps slave to master	Short	Off	37mA	131mA
Endpoint	115.2kbps slave to master	Short	Off	42mA	164mA
Connecting	Connected, no data transfer	Long	Off	19mA	207mA
Endpoint	Connected, no data transfer	Long	Off	18mA	207mA
Connecting	115.2kbps full duplex	Long	Off	50mA	209mA
Endpoint	115.2kbps full duplex	Long	Off	52mA	215mA
Connecting	Connected, no data transfer	Short	125 ms	10mA	189mA
Endpoint	Connected, no data transfer	Short	125 ms	10mA	150mA
Connecting	115.2kbps full duplex	Short	125 ms	11mA	153mA
Endpoint	115.2kbps full duplex	Short	125 ms	12mA	142mA

*Short distance: ~5m, Long distance: ~100m

**Blue LED consumes additionally ~5mA depending on the data throughput.

1.3 Radio performance

Radio Characteristics				
	Min	Typ	Max	Unit
Operating Frequency	2402	-	2480	MHz
Transmit Power	-8	-	16	dBm
Sensitivity at 0.1% BER	-90			dBm

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2 Device overview



Number	Description
1	Green LED
2	Blue LED
3	Button
4	D-sub (DB9)
5	Mini-USB
6	Screw
7	Label

2.1 Green LED

The green LED has different functionality depending on the current state of the device. It is possible to configure the LED indication to either be Off, On or Blinking (default).

LED configuration	Indication during state				
	Power up	Idle	Connected	HCM ¹	Auto connect
Off	LED on for 3 sec.	Off	Off	Off	Off
On	On	On	On	On	On
Blinking (default)	On	On	1*	2*	3*

*Indication	Each square-box indicate a time slot of 100ms																												
1	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
3	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

2.1.1 Fault detection system

The F2M01SXA has a fault detection system that monitors the RS-232 signals at power up. The green LED will flash one time (independent of the LED configuration) if no valid RS-232 transceiver is connected during power up (No indication if a valid signal is present).

¹ HCM – Host Controlled Mode (During configuration of the device)

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2.2 Blue LED

The blue LED indicates if there are data transmitted from and to the Plug via the connected D-sub. The indication is on as default but is possible to disable during configuration.

2.3 Button

The button has two functions depending on the current state of the device.

1. Auto connect if the button is pressed for more than 15 seconds
2. Disconnect

2.3.1 Auto connect

The Auto connect feature can be activated by pressing the button down for more than 15 seconds. The F2M01SXA will now start to search and connect to the first available remote devices supporting SPP (Serial Port Profile) in reachable distance. It can't be easier to connect two F2M01SXA to each other; simply push down the button on ONE of the device and they will try to pair. The F2M01SXA will change state to "connected" if Auto connect was successful.

2.3.2 Disconnect

It is possible to disconnect an active Bluetooth connection (State: connected) by simply pressing the button.

2.4 D-sub

The 9 pin D-sub is RS-232 compatible and support baud rates up to 230400bps. The F2M01SXA has signaling as a DCE (Data Communication Equipment) and is intended to be connected to a DTE (Data Terminal Equipment) e.g. a Computer.

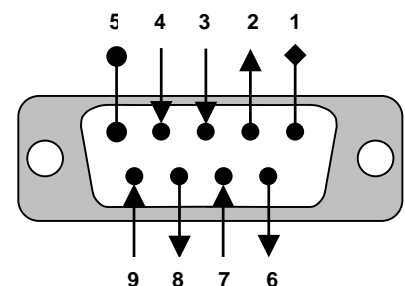
The F2M01SXA has hardware flow control (CTS/RTS signals) activated by default and is recommended to be used to get reliable data transmissions. It is though possible to deactivate Hardware flow control by configuration.

The two extra RS-232 signals; DTR and DSR can be configured in three different modes.

1. Emulate serial handshaking lines
2. Bluetooth control – The DTR signal is used to disconnect an active Bluetooth connection and the DSR signal will indicate when you have an established Bluetooth connection.
3. Don't care. The state of the signals is not used.

2.4.1 Pinout

Pin	signal	Direction
1	DCD	Not connected
2	TxD	Output
3	RxD	Input
4	DTR	Input
5	GND	Ground
6	DSR	Output
7	CTS	Input
8	RTS	Output
9	Vcc Power	Input 5-30V



Serial Port Plug connector (female)

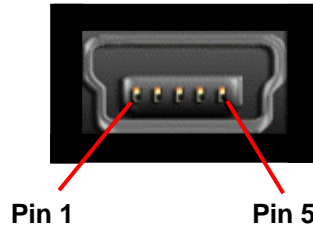
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2.5 Mini-USB

The mini-B USB connector can be used for powering the F2M01SXA Serial Port Plug. It can also be used for high throughput data transmission when running HCI-firmware² on the device.

Mini USB		
Pin	Name	Description
1	Vcc	5 – 30V DC
2	D-	Data -
3	D+	Data +
4	ID	Not connected
5	GND	Signal Ground



2.6 Screw

The two UNC 4-40 screws can be used to affix the F2M01SXA to the host device.

2.7 Label

The bottom label is a quality mark of the product and is attached on the F2M01SXA after final testing of the device.



2.8 Default configuration

The F2M01SXA is configured with below settings at delivery:

Feature	Description
Role	Endpoint (slave) accepting all units to connect
Security	None
Baud rate	38400bit/s
Parity	None
Stop bits	1
Flow control	On
Green LED indication	Blinking
Blue LED indication	On
DTR and DSR signaling	Off

² HCI-firmware can be activated by configuration of the device

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3 Certifications

The F2M01SXA is certified according to CE and FCC regulations and is fully Bluetooth® qualified as an end product

3.1 Bluetooth®

F2M01SXA is fully Bluetooth® 2.0+EDR qualified and listed as an end product.

QDID: B012540

3.2 CE

F2M01SXA complies with the requirements of R&TTE Directive 1999/5/CE, the European Community Directive 73/23/EEC and 93/68/EEC.

- EN 300 328 (2006-10)
- EN 301 489-1 (2005-09), EN 301 489-17 (2008-08)
- EN 62311 (2008)
- EN 60950 (2006)

3.3 FCC

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. To maintain compliance with FCC RF exposure compliance requirements, please follow operation instruction as documented in this manual.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC ID: R47F2M01SX

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4 RoHS Statement

The F2M01SXA Serial Port Plug meets the requirements of Directive 2002/95/EC of the European Parliament and of the Council on the Restriction of Hazardous Substance (RoHS). The device is assembled solely using RoHS compliant components.

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5 Ordering information

The F2M01SXA Serial Port Plug is available for ordering.

Part nr:	Description
F2M01SXA-S01-C	Serial Port Plug, CD with documentation and software, USB-A to Mini-USB cable delivered in a carton (available in January 2009)
F2M01SXA-S01-B	Serial Port Plug, Bulk delivery

Default settings at delivery for F2M01SXA-S01

Feature	Description
Role	Endpoint (slave) accepting all units to connect
Security	None
Baud rate	38400bit/s
Parity	None
Stop bits	1
Flow control	On
Green LED indication	Blinking
Blue LED indication	On
DTR and DSR signaling	Off

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Contact information

For support questions please contact your local dealer

For more information visit our website: www.free2move.net

For other purposes use: info@free2move.net

Local dealer/distributor

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