

Summary

BlueMatik is a serial to Bluetooth data link. It is controlled from a host controller using AT-style serial commands.


The module contains all RF circuitry including integral antenna and level shifting circuitry to ensure the module operates within the 3V to 5V range.

Once implemented, the module can interface to many standard Bluetooth devices, e.g. Laptop computers, PDA's, Mobile phones etc. BlueMatik can connect to one other device at a time.

Applications

- Direct access to PDA's, Laptops, Mobile Phones etc
- Cable replacement
- Enables Bluetooth device control
- Process Control
- Robotics

- FCC / CE / IC compliant. Does not need recertification if integral antenna used.
- Maximum data rate approx 50K full duplex.
- Controlled with AT Command set
- Authentication and encryption.
- Device discovery
- Sniff and hold low power modes.
- Hardware flow control or no flow control.
- Bluetooth error correction layer.
- Class I Bluetooth radio, 100m range.
- 3-5V supply
- Integral antenna
- Minimizes cost by adapting ALPS mobile phone RF Board for serial port use.

Manufactured to ISO9001:2000 

Ordering Information

| Part No | Description |
|---------|--|
| | Bluematik 18pin Dual in Line package |
| | Bluematik RF board and surface mount connector |

Pin Connections

| Pin Name | Description |
|----------|--|
| TxD | Serial data output from <i>BlueMatik</i> . (note 1) |
| RxD | Serial data input to <i>BlueMatik</i> . (note 2) |
| CTS | Clear To Send: Flow control input to <i>BlueMatik</i> input. When low, <i>BlueMatik</i> will output data on the TxD line. (note 2) |
| RTS | Flow control output from <i>BlueMatik</i> . When high, do not send data to <i>BlueMatik</i> . (note 1) |
| HUM | Data type input to <i>BlueMatik</i> – Low to send AT commands, high to send data for transmission. (note 2,3) |
| MUM | Data type output from <i>BlueMatik</i> – Low if AT response message, high if received data. (note 1) |
| Reset | Reset – Low to operate, high for at least 10ms to reset. |
| Gnd | Power ground reference. |
| Vcc | 5V power supply peak requirement 250mA |

1. Dual-in-Line package high output is 5V. RF Board high output is 3.3V
2. Dual-in-Line package high input must not exceed 5V. RF Board high input must not exceed 3.3V
3. No data should be sent to RxD for 50ms before and after changing the state of the HUM pin.

Serial Link

The serial data unless otherwise specified using AT commands is 115.2K baud standard active low format with 8 data bits, no parity bit and 1 stop bit. Hardware flow control is supported. If no flow control is required, RTS must be connected to CTS. For RS232 levels, use a level shifter IC such as a MAX232.

The HUM input is used to differentiate between AT commands sent to the module and data to be transmitted to the remote device. The HUM input should be set low to send an AT command and high to send data. HUM should remain unchanged for at least 50ms before and after any commands or data are sent to *BlueMatik*.

The MUM output is used to differentiate between AT command responses from the module and data received from the remote device. It is completely independent of the HUM input. The MUM output will be set low when an AT command response is being output and high when received data is being output. MUM will remain unchanged for at least 50ms before and after any command responses or data are output from *BlueMatik*.

Radio Link / Antenna

The radio is a 2.4GHz Class I Bluetooth device with an integral antenna. To achieve 100m range, the corresponding Bluetooth device must also be Class I.

LinkMatik is supplied with an integral antenna. This will provide adequate range for most applications. There is also the facility to attach an external

antenna, via the on-board Hirose U.FL series connector (type Murata MM8430). To use this connector, first remove the surface mount component between the connector and the integral antenna.

Please note that the product is certified for use with the antenna supplied. Should an alternative antenna be used then EMC re-certification must be sought.

Additional Supporting Documentation

Refer to the following documentation for detailed technical specifications of the *BlueMatik* module:

- *BlueMatik* AT Command Users' Guide
- *BlueMatik* Source Code For Remote Devices
- *BlueMatik* RF Board AT Command Reference
- *BlueMatik* RF Board Release Notes including timing diagrams
- *BlueMatik* RF Board Specification including electrical specifications

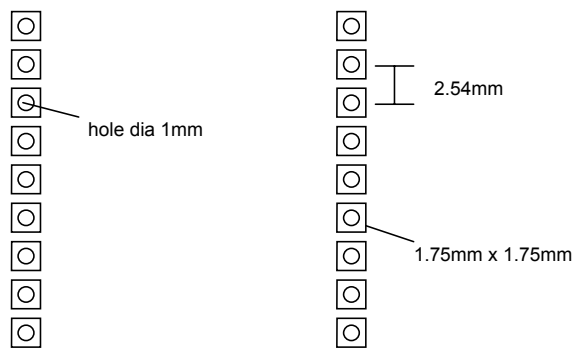
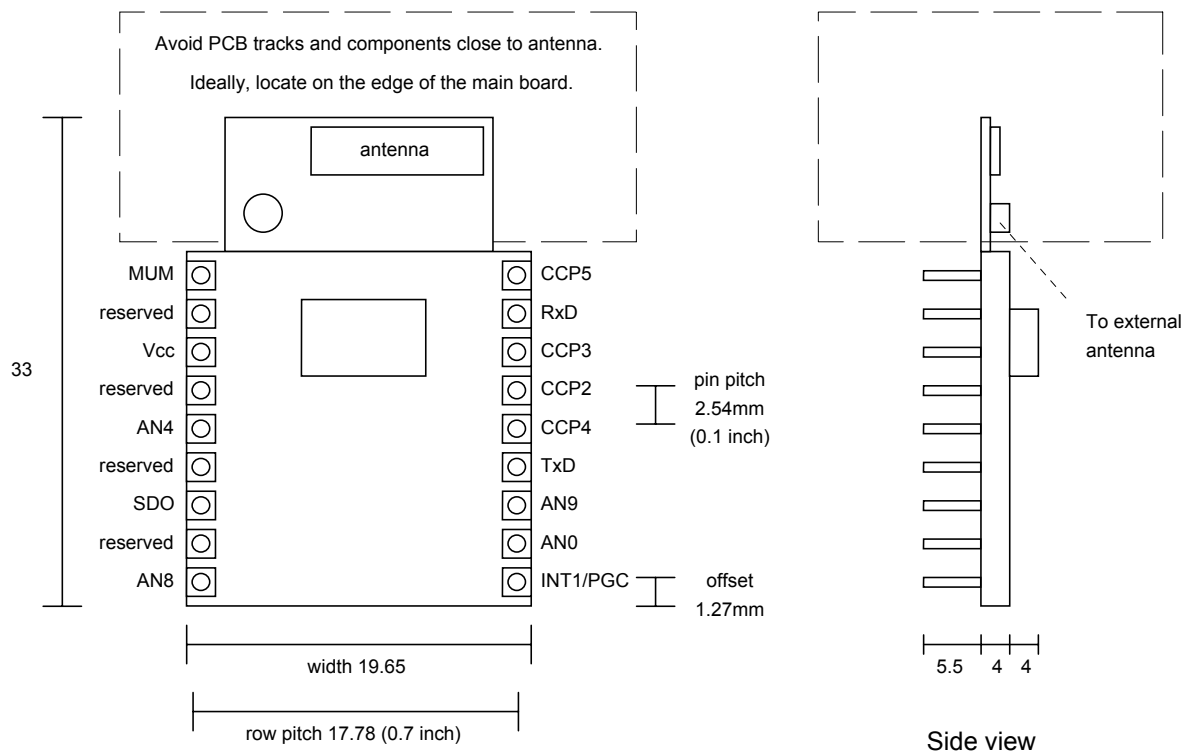
We are grateful to ALPS for permission to reproduce the documentation for the RF Board.

Additional Options

The *BlueMatik* RF board may also be supplied standalone with a surface mount connector rather than the level shifting motherboard. In this case, the logic inputs and outputs are 3.3V.

Subject to minimum order quantities it is possible to supply *BlueMatik* as a Class II model with 10m range.

Mechanical Data



Main board PCB pad layout

Dimensions in mm unless otherwise stated

Technical Specifications

| | |
|---------------------------|----------------------------------|
| Max operating temperature | -20°C to +75 °C |
| Max storage temperature | -30°C to +85 °C |
| Dimensions L × W × H | 33mm × 20mm × 9mm excluding pins |

Electrical

| | |
|---|-------------------------|
| Supply Voltage (regulated) Vcc | 3V to 5.5V (see note 1) |
| Peak power requirement | 250mA |
| Typical current, off mode | <10µA est |
| Typical current, unconnected slave mode | 10mA |
| Typical current, unconnected master mode | 110mA |
| Typical current, connected, not communicating | 30mA |
| Typical current, during transmit | 240mA |
| Typical current, during receive | 70mA |
| Max voltage on I/O pins (D) | -0.5V to Vcc+0.5V |
| Max voltage on I/O pins (RF Board) | -0.5V to 3.8V |

1. BlueMatik will operate down to 3V but Class I performance is only guaranteed if operated above +4.5V.

Radio

| | |
|--|--------------------------|
| Max RF output power | Class I = 100mW = +20dBm |
| RF frequency range | 2402MHz to 2480MHz |
| RF channels | 79 |
| Frequency hopping | 1600 Hz |
| Range | 100m nominal |
| Communication latency, serial to serial via two BlueMatik radios | 30ms to 50ms |

Bluetooth qualification & logos and trademarks

The radio has been pre-qualified and is listed in the Bluetooth Qualified Products as B00524. FlexiPanel Ltd is registered as an Adopter Member with the Bluetooth SIG, Inc. OEMs wishing to re-brand FlexiPanel Ltd Bluetooth products and use the Bluetooth Logos and trademarks must also register as Adopter Members. Membership is free, refer to www.bluetooth.org for details.

FCC, CE and IC modular approval

The radio has 'modular approval' for USA, Canada and certain European countries, provided the existing integral antenna is used. The CE mark on the module indicates that it does not require further R&TTE certification. The exterior of the product should be marked as follows:

| |
|---|
| Contains Transmitter Module FCC ID: CWTUGPZ1 Contains Transmitter Module IC: 1788F-UGPZ1 |
|---|

Distributor Contact Details

LinkMatik is assembled and distributed by agreement by RF Solutions Ltd:



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