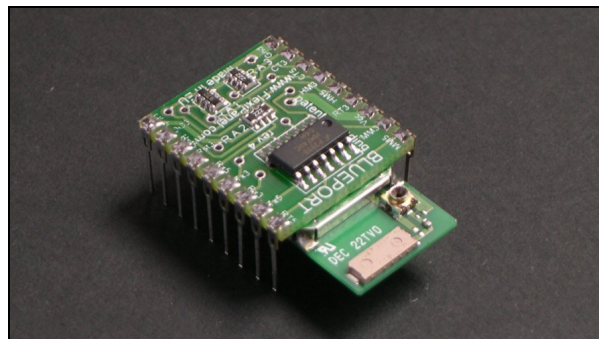


- FCC / CE / IC compliant. Does not need recertification if integral antenna used.
- Maximum data rate approx 50K full duplex.
- Controlled with AT Command set
- Authentication and encryption.
- Device discovery
- Sniff and hold low power modes.
- Hardware flow control or no flow control.
- Bluetooth 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.



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*

Ordering Information

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

Manufactured to ISO9001:2000



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.

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

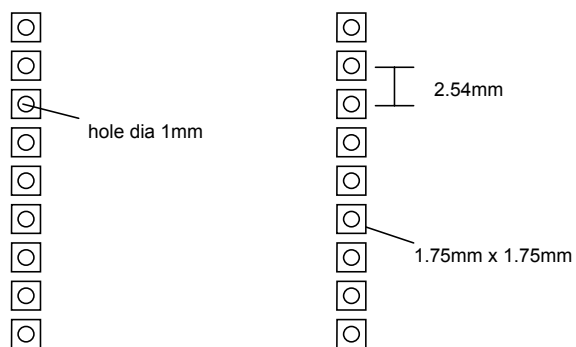
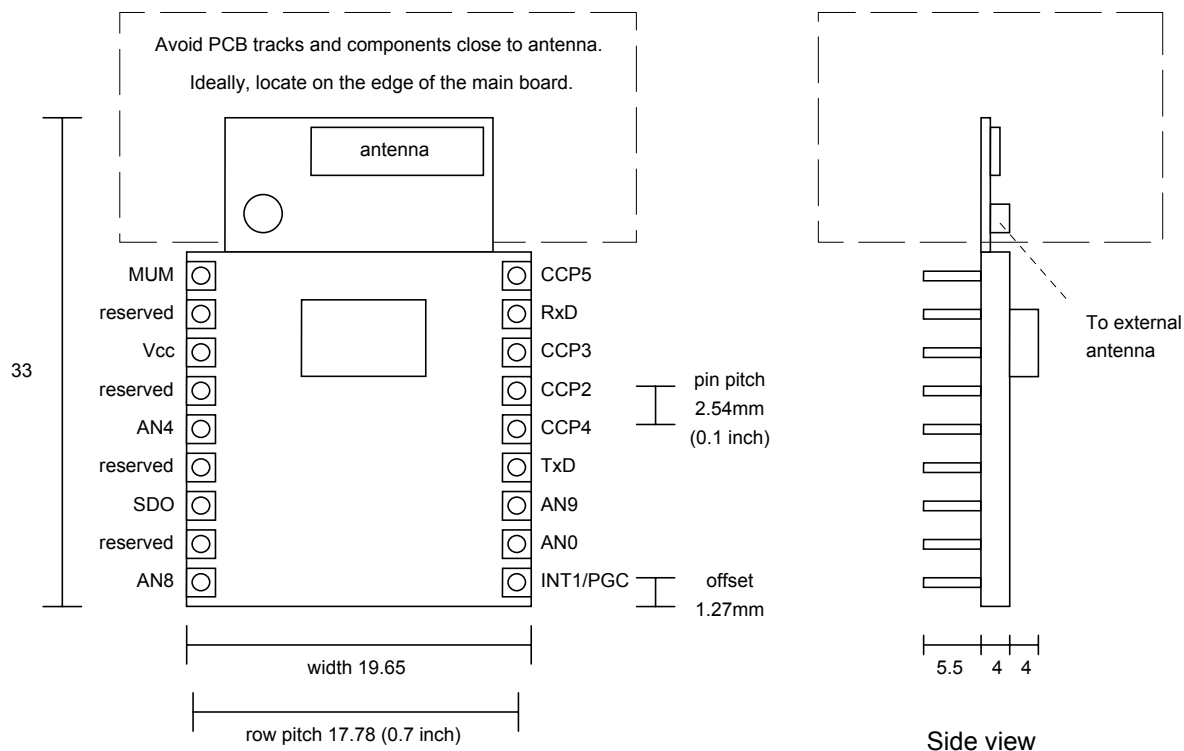
We are grateful to ALPS for permission to reproduce the documentation for the RF Board.

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

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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Manufacturer Contact Details

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