BITSTRATA-SYSTEMS-GC848354-Intelligent-Bluetooth-Low-Energy-IoT-Controller

BITSTRATA SYSTEMS GC848354 Intelligent Bluetooth Low-Energy IoT Controller User Manual

Contents

BITSTRATA SYSTEMS GC848354 Intelligent Bluetooth Low-Energy IoT Controller

Specifications:

- **Model:** 0RGHO0
- **Power:** 86(50$18$/Y
- **Compatible with:** ,QWHOOLJHQW%OXHWRRWK/RZ(QHUJ,R7&RQWUROOHU

Product Information

The product is designed to provide efficient performance and compatibility with a range of devices. It is equipped with advanced features to enhance user experience.

Product Usage Instructions

Step 1: Installation

Follow the installation guide provided in the manual to set up the product correctly.

Step 2: Power On

Connect the product to a power source and turn it on using the power button.

Step 3: Configuration

Adjust the settings as per your requirements using the control panel or remote control.

Step 4: Operation

Start using the product for your intended purpose. Refer to the user manual for specific functions and features.

FAQ

- **Q: How do I troubleshoot if the product is not functioning?**
  - **A:** Check the power source, connections, and settings. Refer to the troubleshooting section in the manual

for further assistance.

- **Q: Can I use this product with other devices?**
  - **A:** The product is compatible with a range of devices. Ensure to check compatibility before connecting.

Features

- Integrated Bluetooth Low-Energy Radio with Chip Antenna
- 16-Bit Low-power Host Microcontroller
- 25 GPIO Shared with Special Functions
- 20 Interruptible 1/0
- 17 Timer Capture/Compare 1/0
- Two UARTs
- One High-Speed SPI Interface (10 MHz max)
- One IC
- Five 12-Bit ADC Inputs with Integrated Reference
- Five Comparator Inputs
- Six Channel DMA
- Hardware Multiplier and CRC Generator
- 128-Mbit Non-volatile Flash Storage
- Open-drain Reset Input (optional)
- Operating Voltage: 3.3V @ -40°C to +85°C
- Low Current Operation
- Status LED and Push-button Reset
- Small Form-factor

Introduction

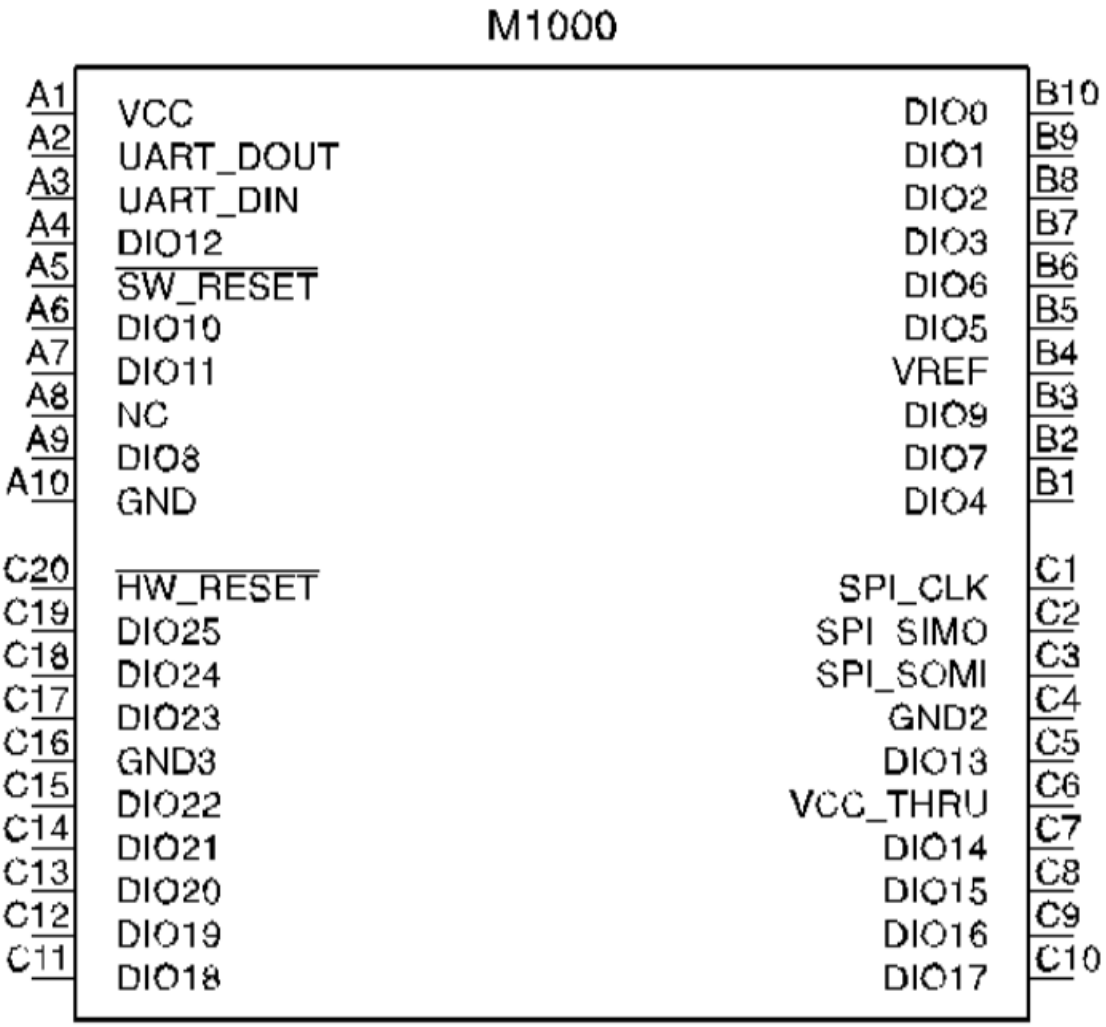
The Bitstrata Systems Inc. model M1000 Intelligent Bluetooth Low-Energy IoT Controller empowers application-specific host circuit boards to connect with Bitstrata’s mobile software and wider cloud ecosystem. It is certified to comply with regulations of various governing agencies.

Identification

- **Model No:** M1000
- **FCC ID:**2BAFL-GC848354
- **ISED no:**30137-GC848354
- **PMN:** M1000
- **HVIN**:830-00021A
- **FVIN:**2.2.7

Bitstrata Svstems Inc.

Symbol



Specifications

Physical

Dimensions (LxWxH):1.3″ x 0.96″ x 0.27″
Weight:6 g

Connections

Type:2 mm pitch-plated holes for thru-hole mating connectors
Organization: Two 1×10 rows for basic operation One 2×10 row for expanded functionality (optional)
Supply Voltage:3.3 V
Digital 1/0 Voltage Domain:3.3 V

Host Microcontroller

Flash:256 kB
RAM:18 kB
Integrated Clock:32.768 kHz to 20 MHz (dynamically configurable)
Non-volatile Storage:

Integrated Radio

Band:2.4 GHz ISM
Receiver Sensitivity (max:-97 dBm

Transmitter Power (max):+5 dBm
Protocol: Bluetooth Low-Energy version 4.2
Max Range (typical): Connected: 30 m (line-of-sight, 2 m height) Connectionless: 100 m (line-of-sight, 2 m height)

Integrated Chip-antenna

Radiation Pattern:•Omni-directional
Gain (typ):0.5 dBi peak / -0.5 dBi average

Pin-out

Pin	Name Type	Description	Available Functions	
A1	VCC 1N	Voltage supply input	<N/A>	supply
A2	UART D0UT	UART transmitter data output	GP10/SP1/UART	1/0
A3	UART D1N	UART receiver data input	GP10/SP1/UART	1/0
A4	D1012	Digital 1/0	GP10	1/0
A5	SW RESET	Reset request input	GP10/TMR	1/0
A6	D1010	Digital 1/0	GP10/TMR	1/0
A7	D1011	Digital 1/0	GP10/TMR	1/0
A8	<NC>	<D0 N0T C0NNECT>	<N/A>	N.C.
A9	D108	Digital 1/0	GP10/TMR	1/0
A10	GND	Ground connection	<N/A>	supply
81	D104	Digital 1/0	GP10/CMP 0UT/UART/SP1/12C/TMR	1/0
82	D107	Digital 1/0	GP10/CMP 0UT/UART/SP1/12C/TMR	1/0
83	D109	Digital 1/0	GP10/CLK 0UT	1/0
84	VREF	ADC voltage reference 1/0	<N/A>	supply
85	D105	Digital 1/0	GP10/CMP/ADC	1/0
86	D106	Digital 1/0	GP10/CMP 0UT/UART/SP1/12C/TMR	1/0

87	D103	Digital 1/0	GP10/CMP/ADC	1/0
88	D102	Digital 1/0	GP10/CMP/ADC	1/0
89	D101	Digital 1/0	GP10/CMP/ADC	1/0
810	D100	Digital 1/0	GP10/CMP/ADC	1/0
C1	SP1 CLK		SP1	0
C2	SP1 S1M0		SP1	0
C3	SP1 S0M1		SP1	1
C4	GND2	Ground connection	<N/A>	supply
C5	D1013	Digital 1/0	GP10/CMP 0UT/UART/SP1/12C/TMR	1/0
C6	VCC THRU	Filtered supply output	<N/A>	supply
C7	D1014	Digital 1/0	GP10/CMP 0UT/UART/SP1/12C/TMR	1/0
C8	D1015	Digital 1/0	GP10/TMR	1/0
C9	D1016	Digital 1/0	GP10/TMR	1/0
C10	D1017	Digital 1/0	GP10/TMR	1/0
C11	D1018	Digital 1/0	GP10/TMR	1/0
C12	D1019	Digital 1/0	GP10/TMR	1/0
C13	D1020	Digital 1/0	GP10/CLK 0UT/CMP 0UT	1/0
C14	D1021	Digital 1/0	GP10/TMR	1/0
C15	D1022	Digital 1/0	GP10/TMR	1/0
C16	GND3	Ground connection	<N/A>	supply
C17	D1023	Digital 1/0	GP10/TMR	1/0
C18	D1024	Digital 1/0	GP10/CLK 0UT	1/0

C19	D1025	Digital 1/0	GP10/TMR	1/0
C20	HW RESET	H/W reset (47 k0hm pull-up)	<N/A>	0.D.

Module Images

Top and Side Views

Bottom View

Mating Connectors

The M1000 provides holes to support thru-hole mating connectors for connection with a host circuit board. See the Footprint section for pin arrangement details. Compatible thru-hole pins must comply with the following specifications:

Cross-section Xx Y)
0.020″ x 0.020″

Label Requirements

Module (M1000)

Due to limited available space and to ensure visibility when attached to a host circuit board, the device's label is located on the RF shield cover. The RF shield frame is permanently affixed to the device (soldered) and the RF shield cover snaps onto the frame with its twelve integrated detents mated to holes in the frame. While this attachment is not permanent, the RF shield is attached in factory, is not intended to be removed by the integrator or end user, and further is very difficult to remove if attempted.

Final End Product

The final end product into which the M1000 device is integrated must be labeled in accordance with instructions in the section of this document named Integrator Responsibilities (OEM/Host Manufacturer). All instructions in that section must be followed to ensure regulatory authorization is considered valid and the FCC and ISED IDs can used on the final product.

Programming Header

The host microcontroller may be programmed by attaching a debugger to the module's J1 connector pads through an adapter board and cable assembly—parts listed below:

Debugger/ Texas Instruments/ ~~ MSP430 Flash Emulation Tool (FET)

Adapter/ Tag-Connect /SPY-BI-TAG (TC2030-MCP to SPY-BI-WIRE)

Cable /Tag-Connect /TC2030-MCP-NL (6-pin No-Legs Cable with RJ12 Plug

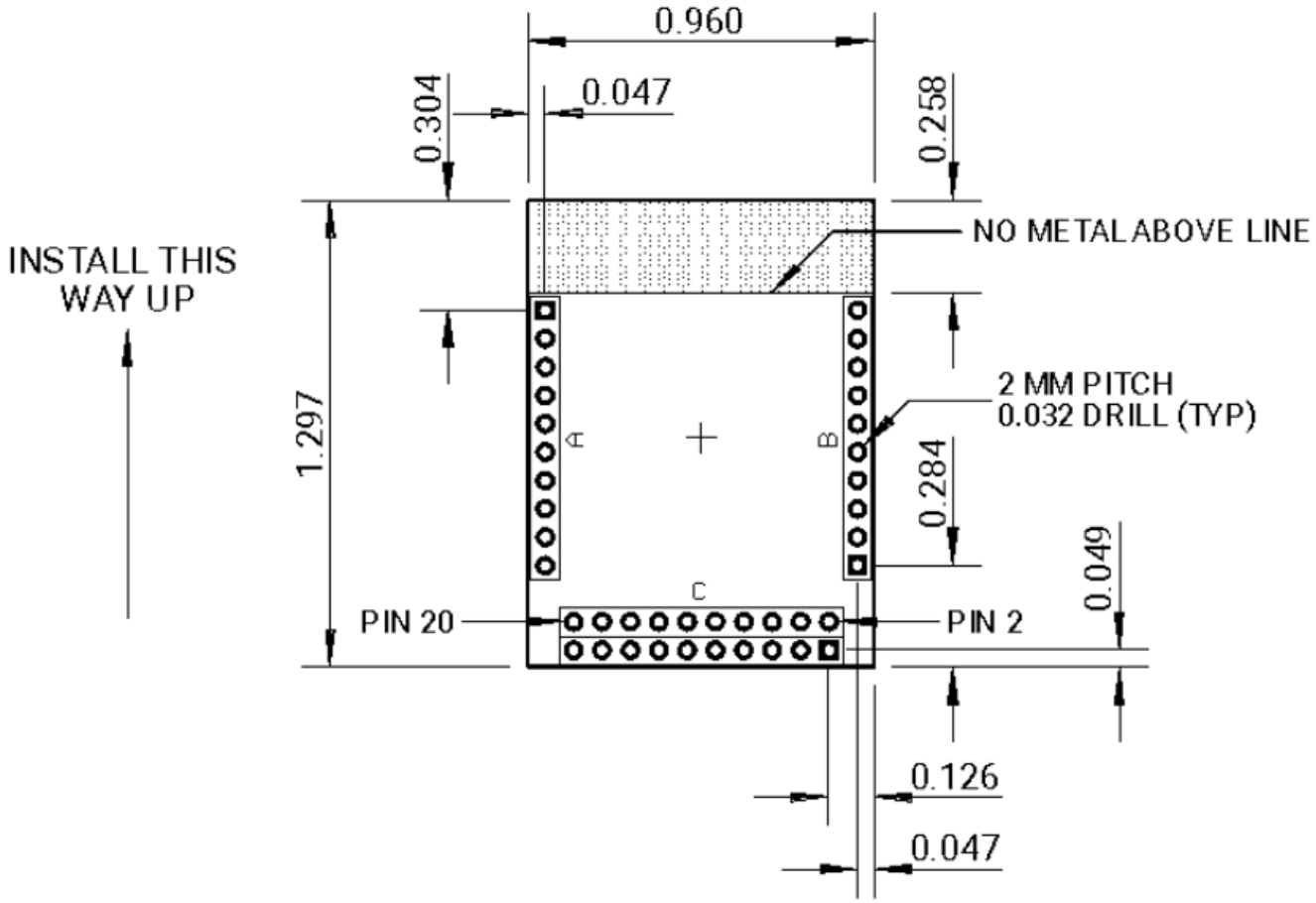
SAR and RF Exposure

The M1000 meets the exemption from the routine Specific Absorption Rate (SAR) and Radio Frequency (RF) exposure evaluation limits in Section 2.5 of the RSS-102 standard, and meets the SAR and/or RF field strength limits of RSS-102 so that no minimum distance limit must beset between device and user for safe operation.

Installation Orientation

The lenticular he spite of of circuit board and shat aline climate in rege of the circuit. board. Best performance is achieved with the module installed in the orientation indicated in the Footprint drawing.

Footprint



Regulatory Statements

Federal Communication Commission (FCC)

Interference Statement

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.

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 or more 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.

CAUTION: Any changes or modifications to this device not explicitly approved by the manufacturer could void your authority to operate this equipment.

Radiation Exposure Statement

The product complies with the FCC portable RF exposure limit set forth for an uncontrolled environment and is safe for intended operation as described in this manual. Further RF exposure reduction can be achieved if the product can be kept as far as possible from the user's body or set the device to lower output power if such a function is available.

Innovation, Science, and Economic Development Canada

Interference Statement

This device contains license-exempt transmitters)/receivers) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Radiation Exposure Statement

The product complies with the Canada portable RF exposure limit set forth for an uncontrolled environment and is safe for intended operation as described in this manual. Further RF exposure reduction can be achieved if the product can be kept as far as possible from the user's body or the device's output power is lowered if such a function is available.

Integrator Responsibilities (OEM/Host Manufacturer)

The final end product must be labeled in a visible area with the following:

Contains FCC ID: 2BAFL-GC848354
Contains ISED no: 30137-GC848354

Label and text information should be in a size of type large enough to be readily legible, and consistent with the dimensions of the equipment and the label. However, the type size for the text is not required to be larger than eight point.

WARNING: This device is intended for integration only under the following two conditions:

(1) The transmitter module may not be co-located with any other transmitter or antenna.
(2) The module shall not be used with any antenna other than the certified integral onboard chip antenna.

As long as the conditions above are met, further transmitter tests will not be required.

WARNING: The integrator should have their device (final end product) which incorporates the M1000 tested by a qualified test house to verify compliance with regulatory limits for unintentional radiators as well as any additional compliance requirements.

WARNING: The integrator must be aware not to provide to the end user, by means of the user's manual for the final end product that integrates this module, information on how to install or remove this RF module. The end user manual shall include all required regulatory information/warnings as show in this manual.

IMPORTANT NOTE: If these conditions cannot be met, then the regulatory authorization is no longer considered valid and the FCC and ISED IDs cannot be used on the final end product. In these circumstances, the integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate regulatory authorization.

- www.bitstrata.com
- **Toll Free**: 888-241-7216

Documents / Resources

	**BITSTRATA SYSTEMS GC848354 Intelligent Bluetooth Low-Energy IoT Controller** [pdf] User Manual GC848354 Intelligent Bluetooth Low-Energy IoT Controller, GC848354, Intelligent Bluetooth Low-Energy IoT Controller, Bluetooth Low-Energy IoT Controller, Low-Energy IoT Controller, Energy IoT Controller, IoT Controller, Controller

References

- User Manual