

## SERIES 2000 MINI RADIO FREQUENCY MODULE

### FEATURES

- Best In Class Performance Through Patented HDX Technology
- Reduced Power Output For Handheld And Medium Read/Write Range Applications
- Proven In Harsh Industrial Environments
- Best Value
- Easy To Install And Use

### APPLICATIONS

- Access Control
- Vehicle Identification
- Container Tracking
- Asset Management
- Waste Management



### DESCRIPTION

The Texas Instruments low-frequency (LF) reader module provides all the functionality required to communicate with Texas Instruments 134.2 kHz LF transponders which are available in a variety of form factors. The RI-RFM-003B radio frequency power (RFM) module is capable driving a variety of antennas with inductance ranges from 115 $\mu$ H to 117 $\mu$ H including TI standard RI-ANT-P02A stick antenna.

The RI-RFM-007 is designed to be connected to control module RI-CTL-MB2A (RS232 interface) or RI-CTL-MB6A (RS422/485 interface) which provides the interface to a host system, power supply connectors and additional I/O's. The RI-RFM-003B module in combination with a control module is well suited for usage in a broad range of applications including, but not limited to, access control, vehicle identification, container tracking, asset management and waste management applications.

The Series 2000 Mini Radio Frequency Module is the interface between a 134.2 kHz HDX/FSK transponder and the Data Processing Unit.

It sends an energizing signal to the transponder, modulates the RF signal to send data to the transponder, receives the identification signal and processes it for digital decoding. The small size and low supply voltage make the Mini RF Module well suited for portable read/ write units.

# RI-RFM-003B

SCBS849–NOVEMBER 2002



## ABSOLUTE MAXIMUM RATINGS<sup>(1)</sup>

over operating free-air temperature range (unless otherwise noted)

	RI-RFM-003B	UNIT
Operating Temperature	0 to +50	°C
Storage Temperature	–25 to +85	°C

(1) Stresses beyond those listed under *Absolute Maximum Ratings* may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under *Recommended Operating Conditions* is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

## RECOMMENDED OPERATING CONDITIONS

over operating free-air temperature range (unless otherwise noted)

	RI-RFM-003B
Power Supply	Logic Part: 4.75 to 5.25 VDC, regulated; max. 80mA TX Power Stage: 4.50 to 6.00 VDC, regulated; max. 1.2A (depending on the repetition rate and antenna used)

## OPERATING CHARACTERISTICS

over operating free-air temperature range (unless otherwise noted)

PARAMETER	PART NUMBER	UNIT
	RI-RFM-003B	
Relative Humidity	<97% non-condensing, IEC 68-2-30 Test Db, 21 cycles	
RF Transmit Frequency	134.2	kHz
Antenna Specification	Inductivity: 115 to 117μH Q: min. 200	
Antenna Recommended	Ferrite Stick Antenna RI-ANT-P02A or Air Coil Antenna Inductivity: 115 to 117μH; Q: min. 200 Inductivity: 116.5 to 119μH; Q: min. 100	
Antenna Resonance Voltage	max. 240 V peak	
Transponder Types	134.2 kHz HDX / FSK	
Dimensions	(60.2 × 55.1 × 11.5) ± 1.0	mm
Weight	approx. 40	g
Drop Test	1 m on concrete, 3 axes, mounted in moulded aluminum case	
Vibration Test	2 g, 5-500 Hz, displacement 15 mm, 1 oct / min, 3 axes, 3 hrs / axis	
Reference Documentation	11-06-29-030 (SCBU021) Reference Guide S2000 Mini RF Module RI-RFM-003B 11-08-22-003 (SCBS845) Data Sheet S2000 Antennas RI-ANT-P02A	
Approvals	CE; FCC	

**PACKAGING INFORMATION**

Orderable Device	Status <sup>(1)</sup>	Package Type	Package Drawing	Pins	Package Qty	Eco Plan <sup>(2)</sup>	Lead/Ball Finish	MSL Peak Temp <sup>(3)</sup>
RI-RFM-003B-00	ACTIVE			1	10	TBD	Call TI	Call TI

<sup>(1)</sup> The marketing status values are defined as follows:

**ACTIVE:** Product device recommended for new designs.

**LIFEBUY:** TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

**NRND:** Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

**PREVIEW:** Device has been announced but is not in production. Samples may or may not be available.

**OBSOLETE:** TI has discontinued the production of the device.

<sup>(2)</sup> Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

**TBD:** The Pb-Free/Green conversion plan has not been defined.

**Pb-Free (RoHS):** TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

**Pb-Free (RoHS Exempt):** This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

**Green (RoHS & no Sb/Br):** TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

<sup>(3)</sup> MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

**Important Information and Disclaimer:**The information provided on this page represents TI's knowledge and belief as of the date that it is provided. TI bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. TI has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. TI and TI suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

## IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

### Products

Amplifiers	<a href="http://amplifier.ti.com">amplifier.ti.com</a>
Data Converters	<a href="http://dataconverter.ti.com">dataconverter.ti.com</a>
DSP	<a href="http://dsp.ti.com">dsp.ti.com</a>
Interface	<a href="http://interface.ti.com">interface.ti.com</a>
Logic	<a href="http://logic.ti.com">logic.ti.com</a>
Power Mgmt	<a href="http://power.ti.com">power.ti.com</a>
Microcontrollers	<a href="http://microcontroller.ti.com">microcontroller.ti.com</a>
Low Power Wireless	<a href="http://www.ti.com/lpw">www.ti.com/lpw</a>

### Applications

Audio	<a href="http://www.ti.com/audio">www.ti.com/audio</a>
Automotive	<a href="http://www.ti.com/automotive">www.ti.com/automotive</a>
Broadband	<a href="http://www.ti.com/broadband">www.ti.com/broadband</a>
Digital Control	<a href="http://www.ti.com/digitalcontrol">www.ti.com/digitalcontrol</a>
Military	<a href="http://www.ti.com/military">www.ti.com/military</a>
Optical Networking	<a href="http://www.ti.com/opticalnetwork">www.ti.com/opticalnetwork</a>
Security	<a href="http://www.ti.com/security">www.ti.com/security</a>
Telephony	<a href="http://www.ti.com/telephony">www.ti.com/telephony</a>
Video & Imaging	<a href="http://www.ti.com/video">www.ti.com/video</a>
Wireless	<a href="http://www.ti.com/wireless">www.ti.com/wireless</a>

Mailing Address: Texas Instruments  
Post Office Box 655303 Dallas, Texas 75265