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CORPORATION

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Email: support@rfdigital.com

TEXAS INSTRUMENTS
MSP430
F5510IRGZ

ALL-IN-ONE • PLUG & PLAY
TEXAS INSTRUMENTS MSP430F5510
Instant Wireless RF Application Module

USER APPLICATION LED
USER APPLICATION CONTROLLER
LEARN LED
Texas Instruments ISP PROGRAMMING CONNECTOR
LEARN BUTTON
USER APPLICATION BUTTON
RESONATOR

BUILT-IN BYPASS CAPS
BUILT-IN POWER CONTROL
0.100" (2.54mm) Pitch Pins
BUILT-IN ANTENNA
RFD21733 CE, ETSI, IC, FCC APPROVED & CERTIFIED WIRELESS RF MODULE

PLUGS DIRECTLY INTO ANY BREADBOARD

See Detail Schematic Below

All 20 External pins connect directly to MSP430F5510

RFD21850 PINTOUT

Pin			Pin		
GPIO 17	ADC 5	1	20		GND
GPIO 16	ADC 4	2	19		+3.3V
GPIO 15	ADC 3	3	18		RST
GPIO 14	ADC 2	4	17	UART TX	GPIO 1
GPIO 13	ADC 1	5	16	UART RX	GPIO 2
GPIO 12	ADC 0	6	15	I2C SCL	GPIO 3
GPIO 11	COUNTER 1	7	14	I2C SDA	GPIO 4
GPIO 10	COUNTER 0	8	13	SPI MOSI	GPIO 5
GPIO 9	PWM 1	9	12	SPI MISO	GPIO 6
GPIO 8	PWM 0	10	11	SPI SCK	GPIO 7

Only 0.9" x 1.25" In Size (23x32mm)
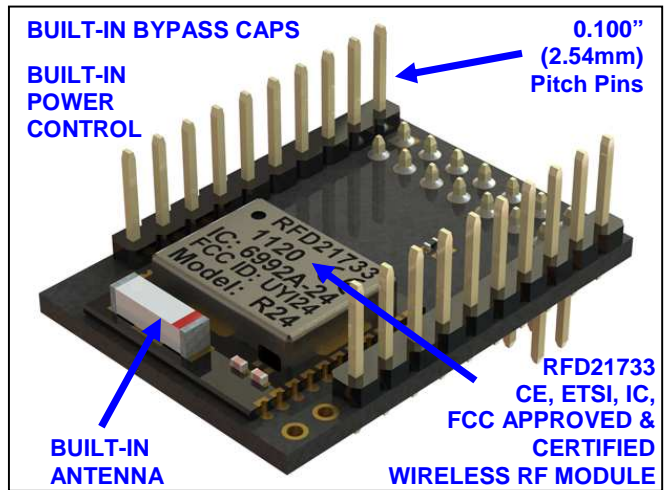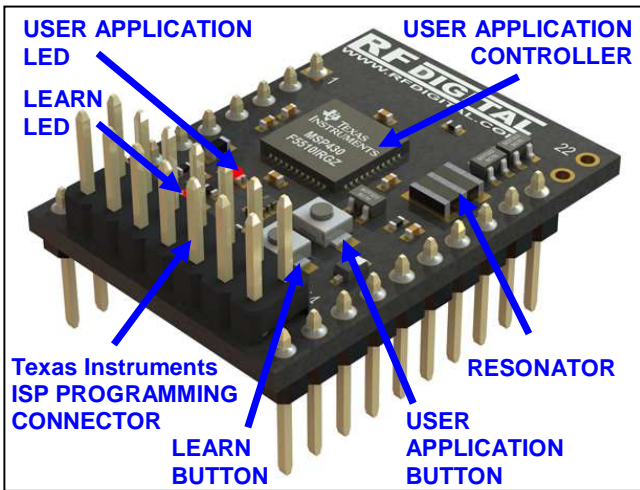
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Instant Solutions
Wireless RF Module
RFD21850

RFD21733 RADIO TRANSCEIVER

CE • ETSI • IC • FCC APPROVED

The RFD21820 has the RFD21733 radio transceiver mounted on the back of it, which allows the controller on the top to have seamless wireless communication. All RFD21733 radio transceiver module control pins are hardwired to the TEXAS INSTRUMENTS MSP430F5510 application controller, so you have full control of the RFD21733. You can power it off completely, consuming zero current and quickly turn it back on to full use mode in only 3mS using a single GPIO on the MSP430F5510. You can read the internal unique 32 bit ESN internal to the RFD21733 using a simple READ ESN command and use it in your code for your application. All 8 modes are switchable and under full programmatic control of theMSP430F5510 application controller. All 8 modes including the built-in ESN and network modes can also be fully used and controlled using the MSP430F5510. You are free to use the Serial UART interface or switch input and output features. Typical range for the RFD21733 is 500 Feet (150 meters).
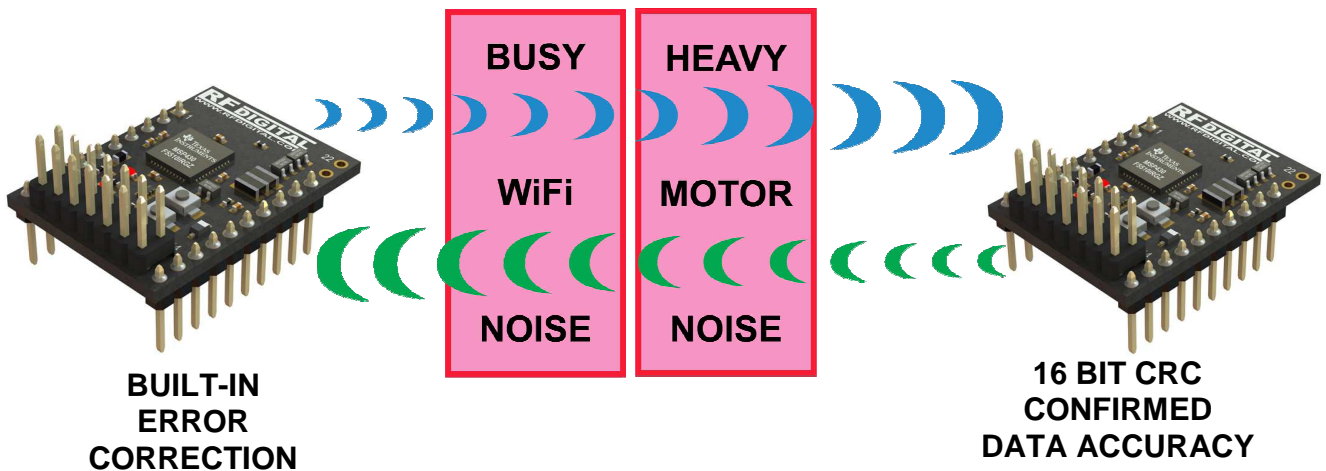
Here is the link to the full datasheet for the RFD21733:
http://www.rfdigital.com/pdf/RFDP8.RF.Modules.Manual.pdf

Complete Compliance Approved & Certified, READY-TO-USE, 2.4 GHz wireless solution with built-in RFDP8 interference-tolerant user application protocol. Includes RFID, 32 Bit ESN, Logic Switch Transmitter / Receiver, 9600-8N1 Serial UART Transceiver and many, easy-to-use addressable network modes. No development required at all, no RF layout, no code writing, all features are built-in. Be up and running with a wireless solution in minutes.

RFDP8 INTERFERENCE IMMUNITY PROTOCOL

USING RFDP8, THE RFD21850, ACCURATELY DELIVERS YOUR MSP430F5510 DATA, OVER A CLEAN & ROBUST WIRELESS RF LINK, PENETRATING THROUGH ALL TYPES OF NOISE

BUSY WiFi NOISE

HEAVY MOTOR NOISE

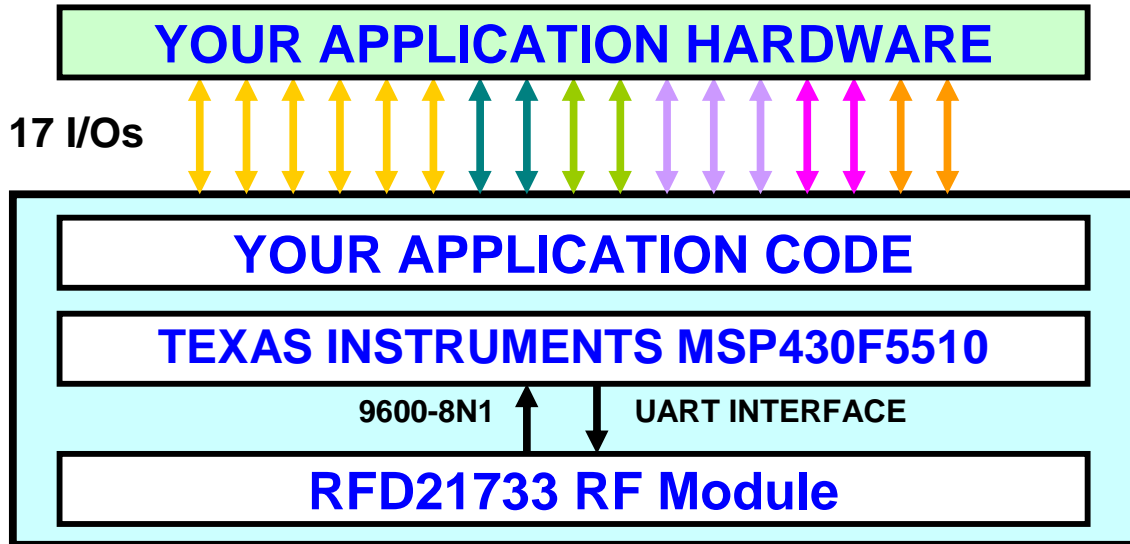BUILT-IN ERROR CORRECTION

16 BIT CRC CONFIRMED DATA ACCURACY
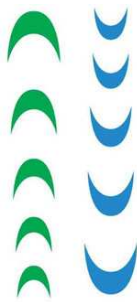
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Texas Instruments
MSP430F5510
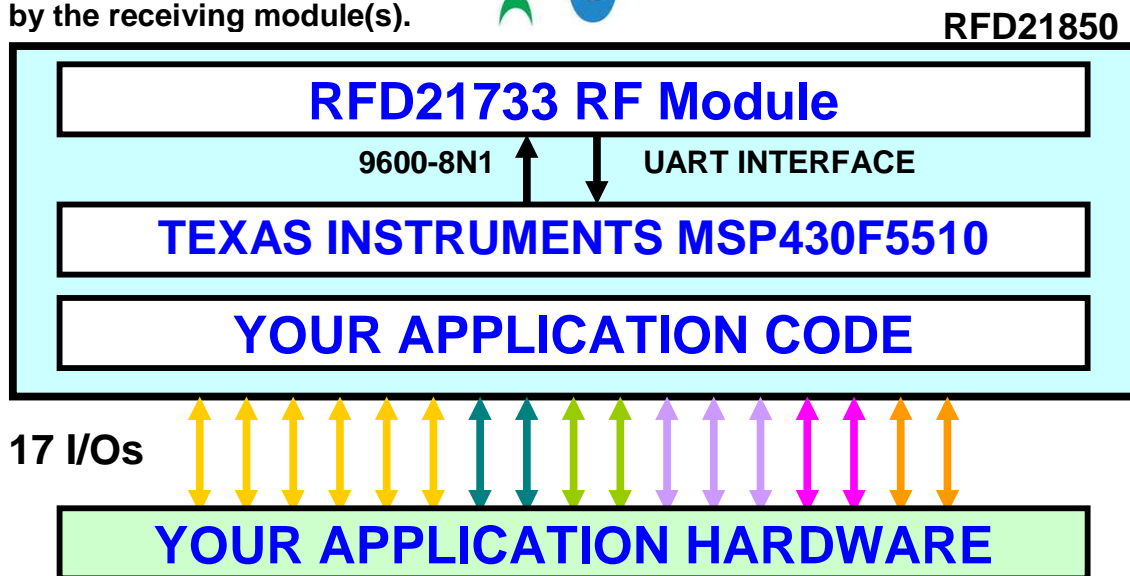Instant Solutions
Wireless RF Module
RFD21850

Your application hardware can have up to 17 connections including GPIO, ADC, UART, SPI, I2C, TIMER/COUNTER, PWM, DEBUG and PROGRAMMING interfaces. Conforms to fit to your application.

YOUR APPLICATION HARDWARE

17 I/Os

YOUR APPLICATION CODE
TEXAS INSTRUMENTS MSP430F5510

9600-8N1 ↑ ↓ UART INTERFACE

RFD21733 RF Module

The RFD21733, with its built-in Patent Pending RFDP8 protocol provides a virtual wireless 9600-8N1 UART serial-interface to you. Any bytes you output from one module is accurately received by the receiving module(s).

RFD21850

2.4 GHz Wireless RF transmissions are sent and received between the built-in RFD21733 mounted on the back of the controller module board are ERROR FREE.

RFD21850

RFD21733 RF Module

9600-8N1 ↑ ↓ UART INTERFACE

TEXAS INSTRUMENTS MSP430F5510
YOUR APPLICATION CODE

17 I/Os

YOUR APPLICATION HARDWARE

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KEYFOB

RFD21783

RF Module

RFD21733

RFID

RFD21791

No hardware to build, no boards to fab, saves time & money!

Simply load your own application code and you're done!

RFD21850
TEXAS INSTRUMENTS MSP430F5510

RFDANT

RFD21743

USB

RFD21807

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RFD21850

Texas Instruments Programmer & Debugger tools

Any TEXAS INSTRUMENTS MSP430F5510 programming tool can be used. The standard 14 pin TEXAS INSTRUMENTS connector is located on top of the RFD21850. You can use all TEXAS INSTRUMENTS programming and debugger tools.

Link to the datasheet for TEXAS INSTRUMENTS MSP430 In-System Gang Programmer:
http://www.ti.com/tool/msp-gang430#technicaldocuments

Link to the TEXAS INSTRUMENTS MSP430 In-System Gang Programmer documentation page:
http://www.ti.com/lit/pdf/slau101

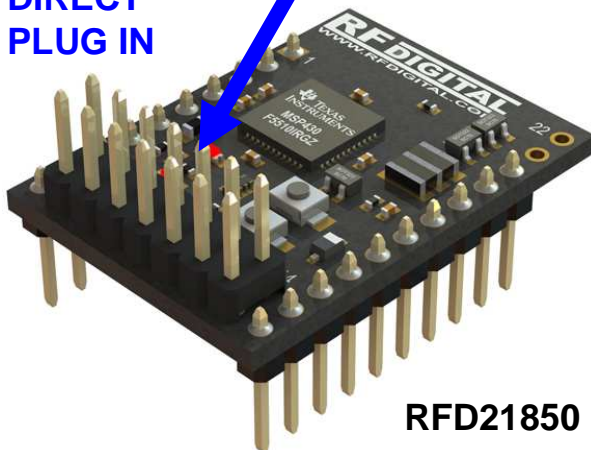## MSP430 GANG Programmer

Image Source:
ti.com

DIRECT PLUG IN

RFD21850

MSP430 JTAG

YOU CAN USE ANY 14 PIN IDC CABLE

DIRECT PLUG IN
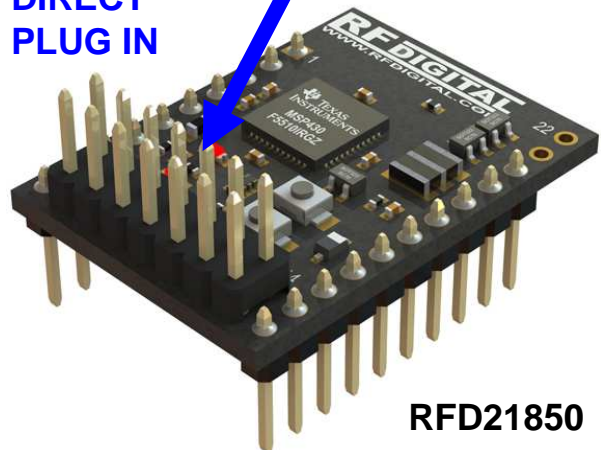
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**Texas Instruments
MSP430F5510
Instant Solutions
Wireless RF Module
RFD21850**

MSP430F5510 CONTROLLER

Displayed below is the front sheet of the TEXAS INSTRUMENTS MSP430F5510 Microcontroller datasheet. For a full datasheet, please go to the link below.

www.ti.com/lit/ds/symlink/msp430f5500.pdf

Image Source:
ti.com

TEXAS INSTRUMENTS

www.ti.com

MSP430F550x, MSP430F5510

SLAS645F – JULY 2009 – REVISED MARCH 2011

MIXED SIGNAL MICROCONTROLLER

FEATURES

- Low Supply-Voltage Range, 1.8 V to 3.6 V
- Ultra-Low Power Consumption
  - Active Mode (AM)
    All System Clocks Active
    - 195 µA/MHz at 8 MHz, 3 V, Flash Program Execution (Typical)
    - 115 µA/MHz at 8 MHz, 3 V, RAM Program Execution (Typical)
  - Standby Mode (LPM3)
    - Real Time Clock With Crystal, Watchdog, and Supply Supervisor Operational, Full RAM Retention, Fast Wake-Up:
      1.9 µA at 2.2 V, 2.1 µA at 3 V (Typical)
    - Low-Power Oscillator (VLO), General-Purpose Counter, Watchdog, and Supply Supervisor Operational, Full RAM Retention, Fast Wake-Up:
      1.4 µA at 3 V (Typical)
  - Off Mode (LPM4)
    Full RAM Retention, Supply Supervisor Operational, Fast Wake-Up:
    1.1 µA at 3 V (Typical)
  - Shutdown Mode (LPM4.5)
    0.18 µA at 3 V (Typical)
- Wake-Up From Standby in Less Than 5 µs
- 16-Bit RISC Architecture, Extended Memory, Up to 25-MHz System Clock
- Flexible Power Management System
  - Fully Integrated LDO With Programmable Regulated Core Supply Voltage
  - Supply Voltage Supervision, Monitoring, and Brownout
- Unified Clock System
  - FLL Control Loop for Frequency Stabilization
  - Low-Power Low-Frequency Internal Clock Source (VLO)
  - Low-Frequency Trimmed Internal Reference Source (REFO)
  - 32-kHz Watch Crystals (XT1)
  - High-Frequency Crystals up to 32 MHz (XT2)

- 16-Bit Timer TA0, Timer_A With Five Capture/Compare Registers
- 16-Bit Timer TA1, Timer_A With Three Capture/Compare Registers
- 16-Bit Timer TA2, Timer_A With Three Capture/Compare Registers
- 16-Bit Timer TB0, Timer_B With Seven Capture/Compare Shadow Registers
- Two Universal Serial Communication Interfaces
  - USCI_A0 and USCI_A1 Each Supporting
    - Enhanced UART Supporting Auto-Baudrate Detection
    - IrDA Encoder and Decoder
    - Synchronous SPI
  - USCI_B0 and USCI_B1 Each Supporting
    - I^2C^{TM}
    - Synchronous SPI
- Full-Speed Universal Serial Bus (USB)
  - Integrated USB-PHY
  - Integrated 3.3-V/1.8-V USB Power System
  - Integrated USB-PLL
  - Eight Input, Eight Output Endpoints
- 10-Bit Analog-to-Digital (A/D) Converter With Window Comparator
- Comparator
- Hardware Multiplier Supporting 32-Bit Operations
- Serial Onboard Programming, No External Programming Voltage Needed
- Three Channel Internal DMA
- Basic Timer With Real Time Clock Feature
- Family Members are Summarized in Table 1
- For Complete Module Descriptions, See the MSP430x5xx/MSP430x6xx Family User's Guide (SLAU208)

Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of the Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

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Wireless RF Module
RFD21850

RFDP8 INTERFERENCE IMMUNITY PROTOCOL

RF Digital's RFDP8 proprietary patent-pending frequency agility protocol operates in the internationally accepted 2.4 GHz band.

The RFDP8's leading-edge advanced algorithm is not burdened by a heavy-weight stack as is BlueTooth, ZigBee, WLAN and other protocols, which are well suited for cross-manufacturer interoperability.

The RFDP8 protocol is highly robust and effective where there is a need to penetrate through a high saturation of RF noise which is common in nearly all environments today. It is especially effective and can easily coexist in heavy WiFi environments, which very few technologies can do successfully without the need of excessive processing power.

The protocol strategically changes channels frequently to deliver its payload to the destination device reliably, yet not too excessively as to demand too much internal processing power which allows it to run with a very low current consumption profile and fast start up times allowing substantial flexibility with implementation.

The RFDP8 protocol reduces the amount of on-air traffic and unnecessary chatter due to its unique and highly efficient design, which does not require bilateral registration and association as do many other technologies today.

The RFDP8 does not require ack-nacks to complete a packet delivery, its unique technique of packet delivery, recovery and correction allows it to work as a one-way link, hence drastically simplifying users' applications which always results in more a robust wireless system.

RFDP8 DELIVERS VERIFIED ACCURATE DATA OR NO DATA

◀ ■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■ ▶

The RFDP8 protocol combined with RF Digital's leading-edge RF Module hardware delivers a highly robust method of delivering user data from point to point, point to multi-point or multi-point to multi-point, transmitter-receiver, transceiver, serial or switch on/off data modes.

The protocol is designed to work seamlessly with RF Digital's hardware modules, the combination results in ultra long range at ultra low currents without concern for compliance approvals since modules such as the RFD21733 come with IC and FCC Approval and Certification for USA and have passed CE - ETSI emission testing for European requirements.

The RFDP8 protocol adds several dB of range gain passively through it's advanced data recovery technique which pulls valid data out of a noisy environment adding effective gain which results in more range, delivering the net result, which is a very robust wireless system.

All of this is built into the overhead of the RFDP8 protocol and RF Digital modules, so it's all done behind the scenes, allowing the user to focus on building their application and simply putting data into the radio device as a wireless pipe and easily receiving it on the other end.

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Wireless RF Module

RFD21850

FEATURES

- WiFi interference tolerant.
- Heavy 2.4 GHz noise and interference tolerant.
- Motor noise and interference tolerant.
- Very low cost.
- No external parts required.
- No RF layout required.
- Easy and ready-to-use, hand-held, eval and application boards available.
- Fully contained, truly finished, ready to use module.
- CE / ETSI / IC & FCC Certified and Approved.
- Typical range: 500 feet (150 meters): RFD21733 MODULE.
- Worldwide 2.4GHz ISM band operation.
- User configurable without need for any programming the radio.
- Zero Current low power mode.
- Only 14mA current consumption at 0dbm TX and 17mA at RX.
- Built-in 16 bit CRC data accuracy verification.
- Only 3mS turn on time.
- Each module has 32 bit unique factory ESN(4 billion combination security).• Flexible network modes, including broadcast and individual addressing.
- Optional version available for use with external antenna (RFD21735).
- Switch on/off, logic, remote-control without the need for an external controller.
- Switch nodes individually addressable without the need for an external controller.
- Wide supply range +1.9V to +3.6V for the radio.
- Built-in, high performance internal miniature antenna (RFD21733).
- Peer to Peer (Ad-Hoc) networks and configurations.
- Point to Multi-Point networks and configurations.
- Multi-Point to Multi-Point networks and configurations.
- Selective addressing of any module by using factory built-in ESN.
- Fast-turn-around, minimal latency (20 millisecond).
- Patent pending RFDP8 interference tolerant protocol.
- Full application protocol runs transparent to the user.
- Easy to use, simple to design in.
- Stores up to 60 ESNs (Electronic Serial Numbers) for network modes.
- Many to one data modes ideal for multi-point data acquisition.
- Unlimited number of module nodes can communicate to each other.
- Standard 0.100 (2.54mm) pitch connector plugs into any breadboard.

TYPICAL APPLICATIONS

• Active RFID	• PC Keyboard Security	• Remote Terminals	• Keyfob Remotes
• Long Range RFID	• Wireless Keyboard	• Wireless RS232 DB9	• Industrial Controls
• Remote Control	• Wireless Mouse	• Wireless RS485	• Vending Machines
• Light Controls	• TV Remote	• Temperature Control	• Pan-Tilt-Zoom Control
• Home Automation	• Home Stereo Remote	• HV/AC	• Camera Flash Control
• Alarm Security	• Asset Tracking	• Meter Reading	• Biometrics
• Keyless Entry	• Wireless PTT	• Data Acquisition	• Seismic Monitoring
• Perimeter Monitoring	• Remote Switches	• Inventory Control	• M2M & many more…

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Wireless RF Module
RFD21850

FCC Compliance Information

The RFD21733 is IC and FCC Modular Approved and Certified, therefore for use of the RFD21733 module in your product does not require further IC or FCC testing. Detail instructions and IC and FCC notices shown later in this data sheet. Any modifications made to the RFD21733 will void the IC and FCC Approval and Certification. The RFD21733 has an integrated on-board chip antenna. You simply include the RFD21733 in your product and follow the IC and FCC notices and information below and place the appropriate label on your product to indicate that it includes an IC and FCC approved module and no further testing would be required for the module.

The RFD21735 is NOT IC or FCC Approved. However it is exactly the same as the RFD21733 except it does not have an internal antenna and is built to allow a user to apply their own antenna of choice. Any type of 2.4 GHz antenna may be used. Once you include the RFD21735 into your product and your chosen antenna is connected, then your whole product is tested by an approved IC or FCC compliance laboratory and you receive your own grant for your whole product which includes the RFD21735. This procedure is somewhat costly and time consuming and therefore the RFD21733 is the primary choice by many engineers. The RFD21735 is typically used if you must have an external antenna, however we always recommend first looking at the RFD21743 which already has an FCC Approval and is in the form of an external antenna.

The RFD21743 is FCC Modular Approved and Certified, therefore for use of the RFD21743 module in your product does not require further FCC testing. Detail instructions and FCC notices shown later in this data sheet. Any modifications made to the RFD21743 will void the FCC Approval and Certification. The RFD21743 has an integrated antenna. You simply include the RFD21743 in your product and follow the FCC notices and information below and place the appropriate label on your product to indicate that it includes an FCC approved module and no further testing would be required for the module.

The RFDANT RFD21743 is a great alternative to needing to get your own FCC approval with the RFD21735 combined with your own antenna. The RFD21743 has an excellent antenna pattern which provides about 4 times more range than a RFD21733 and does not require mounting to your PCB since it has its own antenna enclosure. More details about it below in this data sheet. It should be considered before starting your design with an RFD21735 and your own external antenna, since it accomplishes the same task without the need for further compliance approvals.

CE, ETSI Compliance Information

The RFD21733, RFD21735, RFD21742 and RFD21743 are CE (ETSI) Tested. See declaration of can be found conformity later in this document.

RFDP8 Firmware

RF Digital offers firmware for the RFD21733, RFD21735, RFD21742, RFD21743 which meet many common user requirements. The firmware and a unique identifier are pre-programmed and tested at the factory. The programmed module is therefore immediately ready for use upon delivery.

The RFDP8 firmware use the 3 mode select inputs to select the operating mode. These inputs are sampled when the module powers-on. Some of the operating modes have additional options which are described in the section for that mode.

The RFDP8 firmware cannot be modified by the user. For applications that require alternative functionality, contact RF Digital for information about custom firmware to fit your specific requirements.

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Electrical Characteristics of RFD21733 RF Module on-board

Operating Conditions

Notes	Parameter	Minimum	Typical	Maximum
	VDD Supply voltage	*1.9V*	*3.0V*	*3.6V*
	Supply Rise Time	*1uS*		*50mS*
	Operating Temperature	*-40℃*		*+85℃*
	Input High Voltage	*VDD x 0.7*		*VDD*
	Input Low Voltage	*VSS*		*VDD x 0.3*
	Output High Voltage (@ 0.5mA)	*VDD - 0.7V*		*VDD*
	Output Low Voltage (@ 0.5mA)	*VSS*		*0.3V*
	Internal CPU Controlled Pull-Ups	*11k ohm*	*13k ohm*	*16k ohm*
*RFDP8 M0 Pin **	*Internal CPU Controlled Pull-Downs*	*11k ohm*	*13k ohm*	*16k ohm*
	Power Up Time – Ready to Transmit		*3mS*	
	Power Up Time – Ready to Receive		*3mS*	
	After Reset – Ready to Transmit		*3mS*	
	After Reset – Ready to Receive		*3mS*	

*** Note (RFDP8 M0 Pin) The RFDP8 Modules and RFDANTs have 3 pins used to set the mode the device will go into after reset or power up. These pins are called M2, M1 and M0. M0 pin is the low order pin. At power up or when the module comes out of reset, the module will internally apply a 13k pull down on this pin just for an instant to check if it is high or not. After the mode selection test, which is done just once at start up lasts just microseconds. This is done like this to allow you to have an optional external switch to select between mode 0 and mode 1 without drawing extra current through an external pull down resistor which would statically be there all the time.*

Power Consumption

Conditions: VDD = 3.0V, T_A = +25℃

Logic Transmitter

Parameter	Minimum	Typical	Maximum
Ultra-low power mode - background - Switch Logic Transmitter		*2uA*	

UART or Switch Logic Transmitter / Receiver

Parameter	Minimum	Typical	Maximum
Listening - Receiving		*17mA*	
Transmitting		*14mA*	

Reference MSP430F5510 datasheet for controller specifications:
www.ti.com/lit/ds/symlink/msp430f5500.pdf

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RFD21850

IC Only applies to modules which show "IC: 6992A-24" on the shield (top).

Modules which do not show IC: 6992A-24 on the shield are NOT certified for use in Canada. RFD21733 modules with date codes before "1120" (20th week of 2011) are not Industry Canada approved.

IC NOTICE

Relating to Model Number R24 (RFD Stock Code: RFD21733)

The unit should have a permanently attached label in a conspicuous location with the following statement:

> **Contains IC: 6992A-24**

NOTES:
1. Industry Canada does not specify the size of the label or the lettering thereon. The only requirement is that the text be legible.

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RFD21850

INDUSTRY CANADA INFORMATION

Relating to Model Number R24 (RFD Stock Code: RFD21733)

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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Wireless RF Module
RFD21850

FCC NOTICE

Relating to Model Number R24 (RFD Stock Code: RFD21733)

The unit should have a permanently attached label in a conspicuous location with the following statement:

Contains FCC ID: UYI24

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.

NOTES:
1. The FCC does not specify the size of the label or the lettering thereon. The only requirement is that the text be legible.

2. If the entire label can not be placed on the unit due to space constraint, only FCC ID may be displayed on the unit. In such cases, the compliance statement will have to be included in the "user's manual". NOTE: Device must be smaller than a man's palm.

** If the unit also interfaces with phone line, it requires additional information on the label - refer to part 68 information **

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SAMPLE FCC STATEMENT TO BE INCLUDED IN USER'S MANUAL

Relating to Model Number R24 (RFD Stock Code: RFD21733)

INSTRUCTION TO THE USER (if device DOES NOT contain a digital device)

The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

INSTRUCTION TO THE USER (if device contains a digital device)

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.

In order to maintain compliance with FCC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and TV reception. The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.

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FCC NOTICE

Relating to Model Number RFDANT (RFD Stock Code: RFD21743)

LABELING REQUIREMENT FOR USA
FCC CERTIFICATION

This device has a modular approval from the FCC. You must place the following label outside, on your product in an obvious location.

Permanently attached label in a conspicuous location with the following statement:

> **This device contains FCC ID: UYI-RFDANT RF module that 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.**

NOTES:

1. The FCC does not specify the size of the label or the lettering thereon. The only requirement is that the text be legible.

2. If the entire label can not be placed on the unit due to space constraint (e.g. Pacemaker), only "contains an FCC ID: UYI-RFDANT" may be displayed on the unit. In such cases, the compliance statement will have to be included in the "instruction to the user."

******* It is the users responsibility to determine if their device requires additional approvals *******

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SAMPLE FCC STATEMENT TO BE INCLUDED IN USER'S MANUAL

Relating to Model Number RFDANT (RFD Stock Code: RFD21743)

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RoHS
Declaration Of Conformity

February 28, 2012

RF Digital declares that part numbers

- **RFD21733**
- **RFD21735**
- **RFD21742**
- **RFD21743**
- **RFD21783**
- **RFD21791**
- **RFD21807**
- **RFD21820**
- **RFD21830**
- **RFD21840**
- **RFD21850**

are manufactured with RoHS materials.

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- RFD21850

comply with ETSI EN 300 440-2 power requirements

as called out in the R&TTE V1.2.1 Directive

Technical documents for the above mentioned part numbers are **held at**
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Patents Pending
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Washing

These devices are NOT washable.

Use no-clean flux, leaded or lead-free. If you attempt to wash the modules, water will enter beneath (inside) the RF shield and get trapped, which may cause device failure or damage once powered on. There is no way to make sure all water has been removed before powering the module so do NOT wash the modules.

Potting, Encapsulation and Conformal Coating

Do NOT pot or conformal coat these devices.

If you plan on encapsulating the RFD21733 or RFD21735 in a potting compound or conformal coating, you must assure that the compound in liquid or solid form does not enter under the shield where there are sensitive RF components. Some of the capacitive values are as low as half a picofarad and sensitive to contacting materials such as potting compounds. There are potting compounds and conformal coatings which have very good dielectric constants and are suitable for 2.4 GHz potting applications, however, when you apply any of these, they were accounted for in the circuit design and might reduce performance of the device or all together cause it not to function.

Applying any compound, conformal coating or potting directly to the module voids any and all warranty and support service.

If your application requires 100% sealing of the module, there is a way to do this very successfully without impacting the module performance. Simply place the module on your PCB. Place a plastic cover over the module (like a hat), make the cover large enough to cover the whole module. Apply glue around the bottom perimeter of the cover where it sits on the PCB. This allows the module to function in free airspace while there is a complete seal around it. This information is only for reference and you should do your own testing with your application to find the best suitable fit for your own design.

Important Notice

RF Digital reserves the right to make corrections, modifications, and/or improvements to the product and/or its specifications at any time without notice.

RF Digital assumes no liability for the user's product and/or applications.

RF Digital products are not authorized for use in safety-critical applications, including but not limited to life-support applications.

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Information provided in this document is for reference only. The user must conduct testing and prototyping on their own for their own application. This document only provides an example of a possible use for the parts shown in this design and requires actual testing to confirm its accuracy or validity or proper application. There is NO suggestion that the devices shown in this document should be used for the implied application. There is no guarantee or warranty of suitability for any specific application. The information disclosed in this document is AS-IS. By using any information contained in this document you are assuming all risks and liability associated therewith. RF Digital reserves the right to make corrections, modifications, changes and/or improvements to specifications or details at any time without notice or obligation. RF Digital assumes no liability for the user's product and/or applications. RF Digital products are not authorized for use in safety-critical applications, including but not limited to life-support applications. RF Digital assumes no liability for parts or their application beyond replacement or refunding the original purchase price paid to RF Digital.

Limited Product Warranty

RF Digital warrants that RF Devices manufactured by RF Digital are free from defects in material and workmanship, for Ninety (90) Days from date of delivery. RF Devices covered by this warranty and returned to RF Digital within the Ninety Day Warranty Period will be eligible for replacement, repair, or credit, limited to the amount RF Digital was paid for the RF Device. To obtain a remedy under this Warranty, the following conditions must be met: (1) Customer must notify RF Digital in writing promptly on discovery of the deficiency with reasonable detail within the Warranty Period; (2) Customer must return the RF Devices to RF Digital promptly upon receipt of an RMA from RF Digital, at Customer's risk and expense; and (3) RF Digital confirms the claimed deficiency is present. If all of these conditions are met, RF Digital, at its sole option, will either replace or repair the RF Device or credit Customer's account for the amount the Customer paid to RF Digital for the RF Device.

End of document.