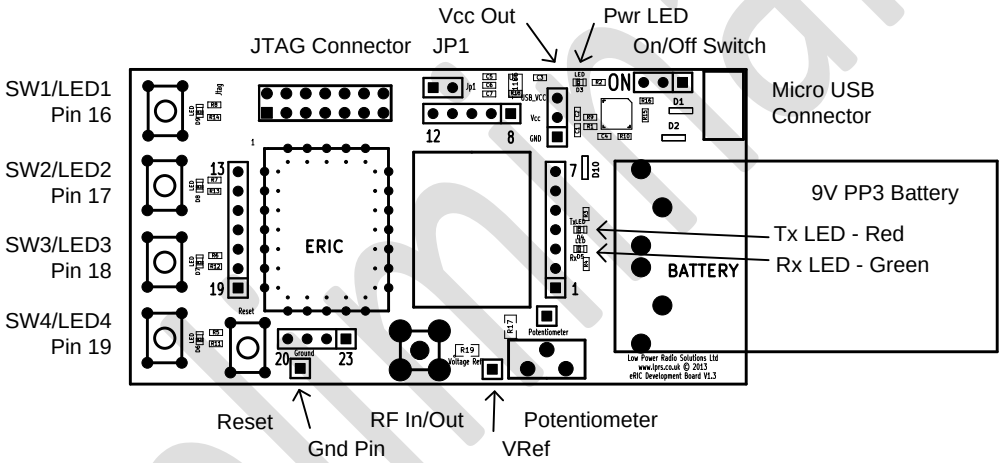
The eRIC Development Kit provides a platform for the test and evaluation of eRIC radio transceivers.

The kit comprises:

- Two eRIC400 (400MHz) or eRIC900 (900MHz) RF Transceiver modules
- Two eRIC Development boards
- Two matching antenna (400/900MHz) with SMA (Male) connectors
- Two 9V Alkaline PP3 Batteries
- Two USB Type A to Micro-B USB connector jump leads for connection to PC
- One 'Wireless Mike' 4GB USB memory stick containing data sheets and software

Using this kit together with the supplied 'easyRadio Companion' software, connection can be made to the eRIC modules allowing the default operating frequency (channels), RF power output, 'Over Air' and Host serial communication rates to be configured and changed. Using the 'eRIC Flash Programmer' simple pre-compiled demo programs can be downloaded and run. In addition, by using the free Texas Instrument (TI) 'Code Composer Studio' (link below) software, user application programs can be compiled, downloaded and run.

Development Board Description



N.B. Board supplied may differ slightly from illustration

Feature	Description
SW1/LED1 to SW4/LED4	Momentary push button switch and LED indicator connected to eRIC I/O pins
JTAG Connector	TI compatible JTAG programming connector
JP1	Bootloader enable jumper. Jumper in place to enable bootloader mode
Vcc Out	5V or 3V3 (20mA max) outputs and Gnd Ref for powering external circuitry
Pwr LED	Indicates that board is powered
On/Off Switch	Board power On/Off
Micro USB Connector	USB Serial Data and 5V USB power
Battery	9V PP3 battery for board power
Tx LED (Red)	Indicates serial USB data activity
Rx LED (Green)	Indicates eRIC receive data activity
Potentiometer	Provides variable voltage output on adjacent pin for testing A-D etc.
VRef	'Top' of potentiometer. Connect to Vcc Out pin 5V/3V3 or other voltage
RF In/Out	50R SMA Female RF connector for antenna or test equipment connection
Gnd Pin	0V Gnd reference for 'scope or other test equipment.
Reset Switch	Momentary push button eRIC reset switch

Preliminary

LPRS

Low Power Radio Solutions Ltd.
Two Rivers Industrial Estate
Station Lane, Witney
Oxon, OX28 4BH
England

Tel: +44 (0)1993 709418
Fax: +44 (0)1993 708575
Web: http://www.lprs.co.uk
Email: info@lprs.co.uk
Technical: technical@lprs.co.uk

Notes

The Development board is provided with both a 'spring pinned socket' and an area/pads for the alternative, permanent SMD mounting of eRIC. All eRIC pins (1–23) are brought out to SIL turned pin sockets allowing easy interconnection to external prototype/development circuitry via jumper wires.

The board can either be powered by the USB PC connection (5V) or for portable/remote/range testing by the supplied 9V PP3 style batteries.

An onboard FT230 device provides a USB to serial connection to a host PC or other device and is used both for sending and receiving serial data to eRIC and for programming the 'flash' memory of the device using the embedded bootloader software.

Status LEDs are used to indicate board power and both transmitted and received serial data activity. Four of the I/O pins are connected to pushbutton switches/LEDs to provide useful user input/outputs for test and during application development.

Set Up the Development Boards

- Inspect board and familiarise yourself with the layout.
- Insert eRIC modules into the spring clips and carefully press down until they 'snap' in place. Note orientation of the eRIC module – Pin 1 is adjacent to the UFL RF connector.
- Check Bootloader jumper (JP1) is NOT in place. (Pins are open)
- Screw the supplied whip antennas into the SMA RF connectors.
- Connect the supplied 9V PP3 Batteries
- Switch the power switch to the 'On' position and check Red power LED lights.

easyRadio Mode

The modules supplied with the eRIC development kit are pre-loaded with a subset of LPRS easyRadio software. This allows connection to 'easyRadio Companion Software' running on a Windows PC which should be installed as detailed below.

- Download the FTDI Virtual Com Port Drivers from http://www.ftdichip.com/Drivers/VCP.htm and install on your PC.
- Download the 'easyRadio Companion Software V3.15' (or later) from: http://www.lprs.co.uk/easy-radio/downloads.html or copy from the supplied 'Wireless Mike' USB stick and double click to install.
- Using the supplied USB jumper cables, connect the Development boards to the PC or PCs.
- After initial connection the PC may report that it is 'Installing Drivers'. Wait until this has completed and then check Windows Device Manager and note the allocation of the (USB) Com port.
- Run the 'easyRadio Companion Software'. Configure the serial port in 'Settings/RS232 Settings" to match those noted.

Then:

- Switch both Dev Boards On.
- Momentarily press and release the Reset button on both Dev Boards.
- Sending any command from 'easyRadio Companion Software' will confirm communication with the module.

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Demo Modes

To allow stand-alone (portable) operation for range testing etc. without the need for a host PC, pre-compiled software hex files can be 'flashed' directly into eRIC using the embedded bootloader program together with the supplied eRIC programming software.

Please see 'eRIC Developers Manual' for further information on how to do this.

Demo1.hex provides the two following modes of operation:

Mode 1 – eRIC-1 as manual Transmitter, eRIC-2 as Receiver

- Switch both Dev Boards On.
- Momentarily press and release the Reset switch on Dev Board-1. Then momentarily press and release SW2 (Manual Transmit).
- Momentarily press and release the Reset switch on Dev Board-2. Then momentarily press and release SW3 (Receive).

Press any switch (1–4) on Dev Board-1, the local LED associated with the switch will light as will the corresponding LED on the remote Dev Board-2 whilst in range.

Mode 2 – eRIC-1 as automatic Transmitter, eRIC-2 as Receiver

- Switch both Dev Boards On.
- Momentarily press and release the Reset switch on Dev Board-1. Then momentarily press and release SW4 (Automatic Transmit). An incrementing binary sequence will be continuously transmitted and is indicated by the local LEDs.
- Momentarily press and release the Reset switch on Dev Board-2. Then momentarily press and release SW3 (Receive).

The remote Dev Board-2 will reflect the transmitted binary data on the LEDs whilst in range.

These Modes will be maintained until the next power down/ up sequence.

Programming eRIC

TI Code Composer Studio (CCStudio) Integrated Development Environment (IDE) is the tool used to write and compile programmes for eRIC. This can be downloaded from:

http://www.ti.com/tool/ccstudio

eRIC Tutorials 1, 2 & 3

http://www.lprs.co.uk/easy-radio/downloads.html

describe the download and install process for this programme.

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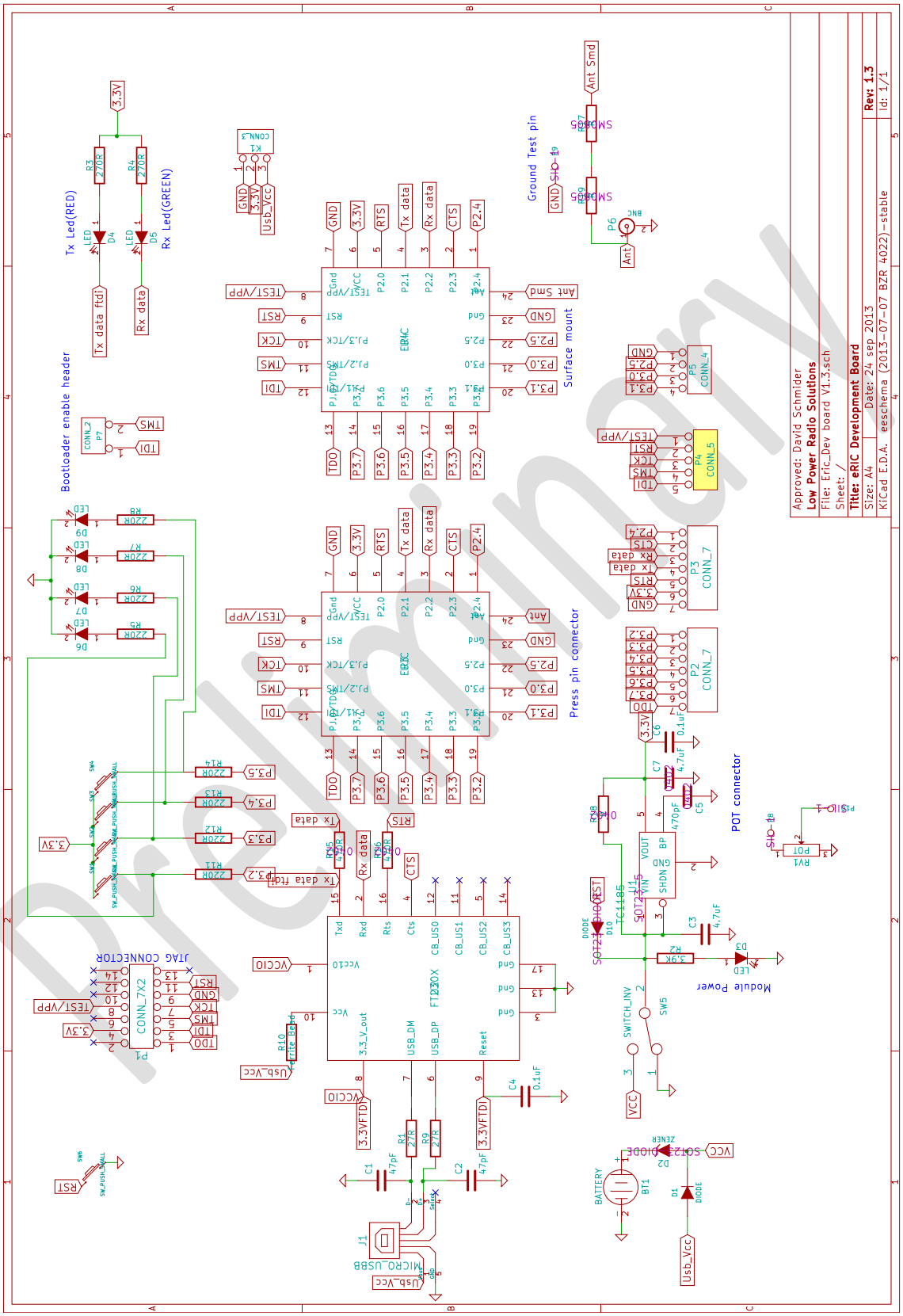
Schematic



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Product Order Codes

Name	Description	Frequency	Order Code
eRIC Dev Kit	eRIC Development Kit including two eRIC400 modules*	433MHz	eRIC4-DK
eRIC Dev Kit	eRIC Development Kit including two eRIC900 modules*	868/915MHz	eRIC9-DK

Document History

Issue	Date	Notes/Comments
Preliminary 0.1	July 2013	Preliminary Draft
Preliminary 0.2	July 2013	Preliminary
Preliminary 0.3x	July 2013	Additions, amendments and minor corrections
Preliminary 0.32	September 2013	easyRadio mode as default firmware
Preliminary 0.33	September 2013	This version. V1.3 hardware/PCB layout change

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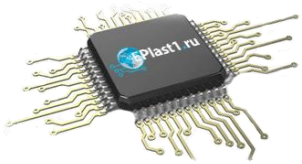
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)
Факс: 8 (812) 320-02-42
Электронная почта: org@eplast1.ru
Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.