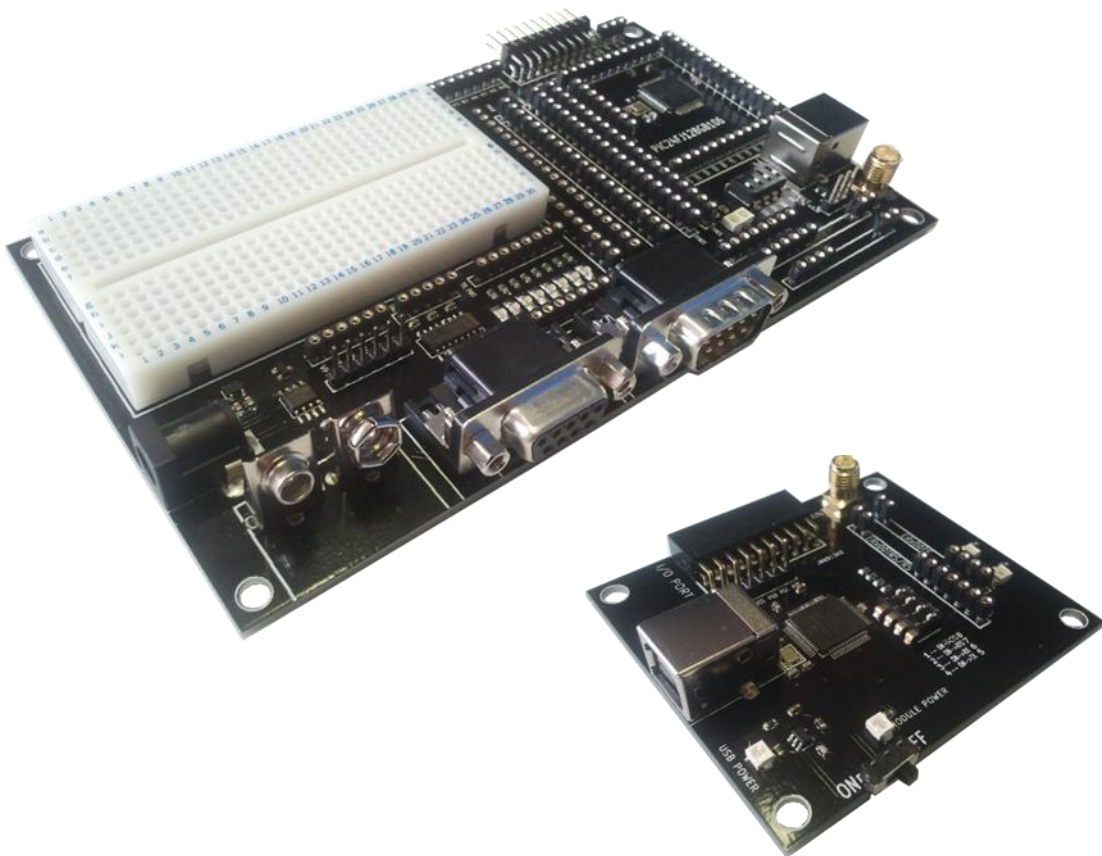




Connect2

easyRadio Advanced



Datasheet

Table of Contents

What is easyRadio Advanced Connect2?	3
easyRadio Advanced Connect2-DEV Features	3
easyRadio Advanced Connect2-USB Features	3
eRA Connect2 PCB Layouts	4
PCB Layout Description.....	6
Schematics.....	8
Basic Setup of eRA Connect2 Boards	11
Checklist	11
Limitations.....	11
Electrical Characteristics	11
Datasheet Revisions	12
Copyright	12
Disclaimer.....	12
Contact Information	12

What is easyRadio Advanced Connect2?

easyRadio Advanced Connect2 is a complete development platform for all easyRadio transmitters and transceiver modules. On-board PIC microcontrollers provide USB connection to host PCs and can also be utilised for software development. Numerous sockets and connectors allow other processors and devices to be hosted on the board and a prototyping breadboard is fitted for hardware development.

Two boards are available:

easyRadio Advanced Connect2-DEV
easyRadio Advanced Connect2-USB

easyRadio Advanced Connect2-DEV Features

- Turned pin sockets for all easyRadio modules.
- Generic DIL sockets supporting all microcontrollers (PIC, Atmel etc.) up to 40 pins.
- On-board PIC24FJ128GB106 microcontroller pre-programmed to support USB communications.
- A 370 tie point breadboard for adding external components.
- An ICSP connector to program all supported PIC-microcontrollers.
- Male/Female DB9 connectors to provide both host and slave RS232 connection via a MAX232 IC.
- USB connectivity.
- Eight bi-colour LEDs for display or debugging.
- Power options:
 - PP3 9V battery
 - External 9V DC Supply
 - USB cable
- Plug to interconnect with eRA Connect2-USB.

easyRadio Advanced Connect2-USB Features

- Turned pin sockets for all easyRadio modules.
- On-board PIC24FJ128GB106 microcontroller pre-programmed to support USB communications.
- An ICSP connector to program the on-board PIC24FJ128GB106.
- Socket to interconnect with easyRadio Advanced Connect2-DEV board.

eRA Connect2 PCB Layouts

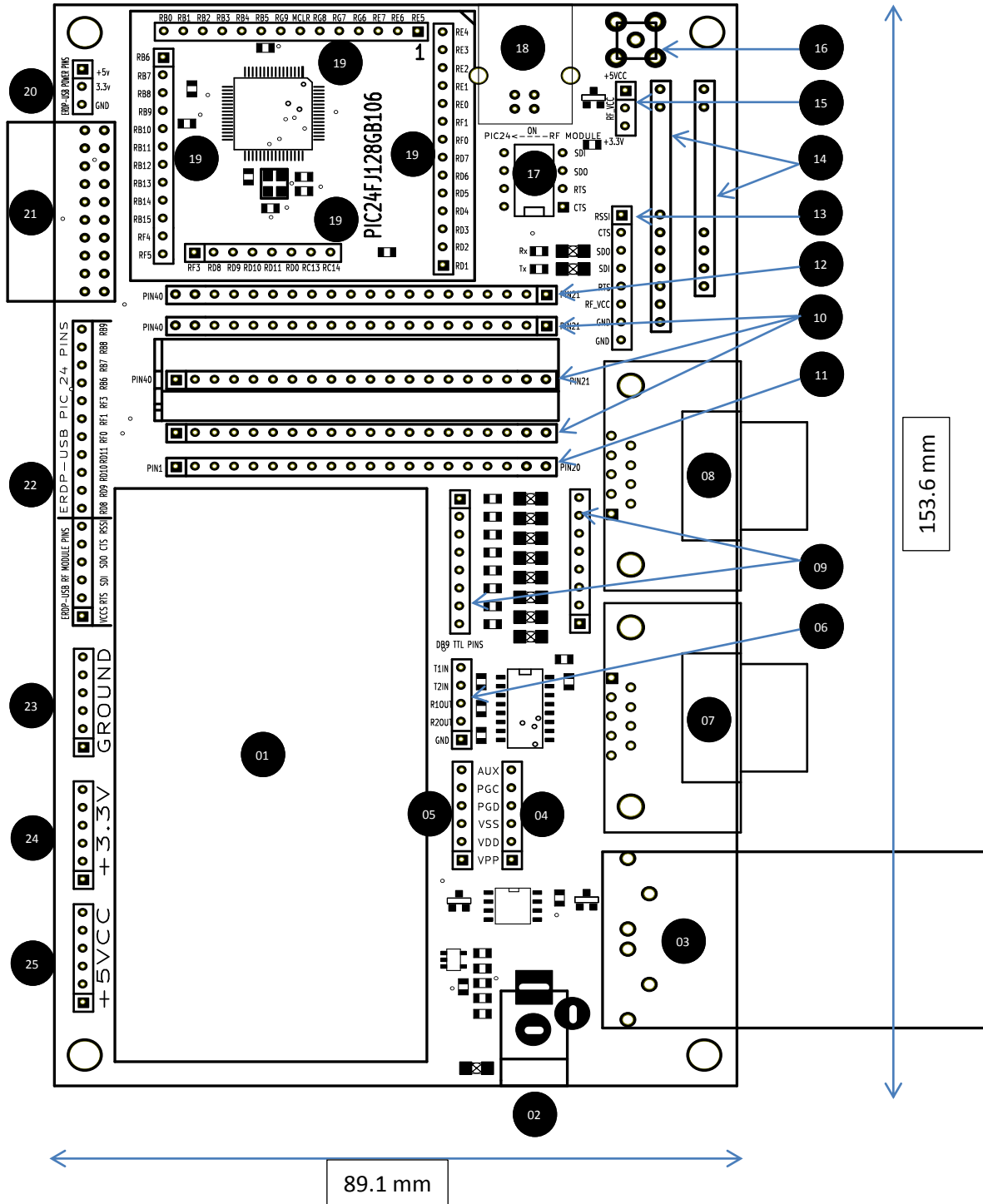


Figure | eRA Connect2 DEV Board

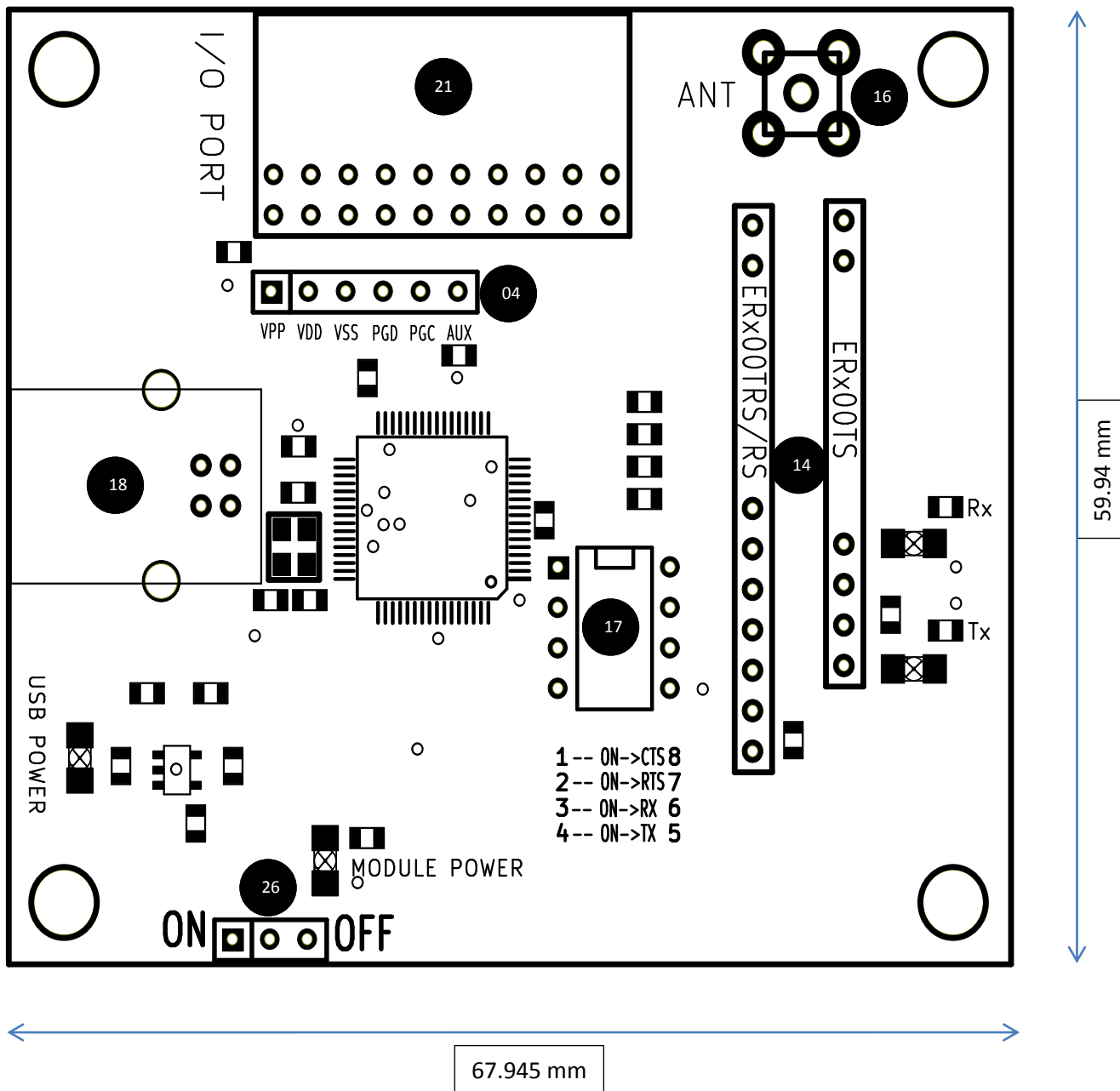
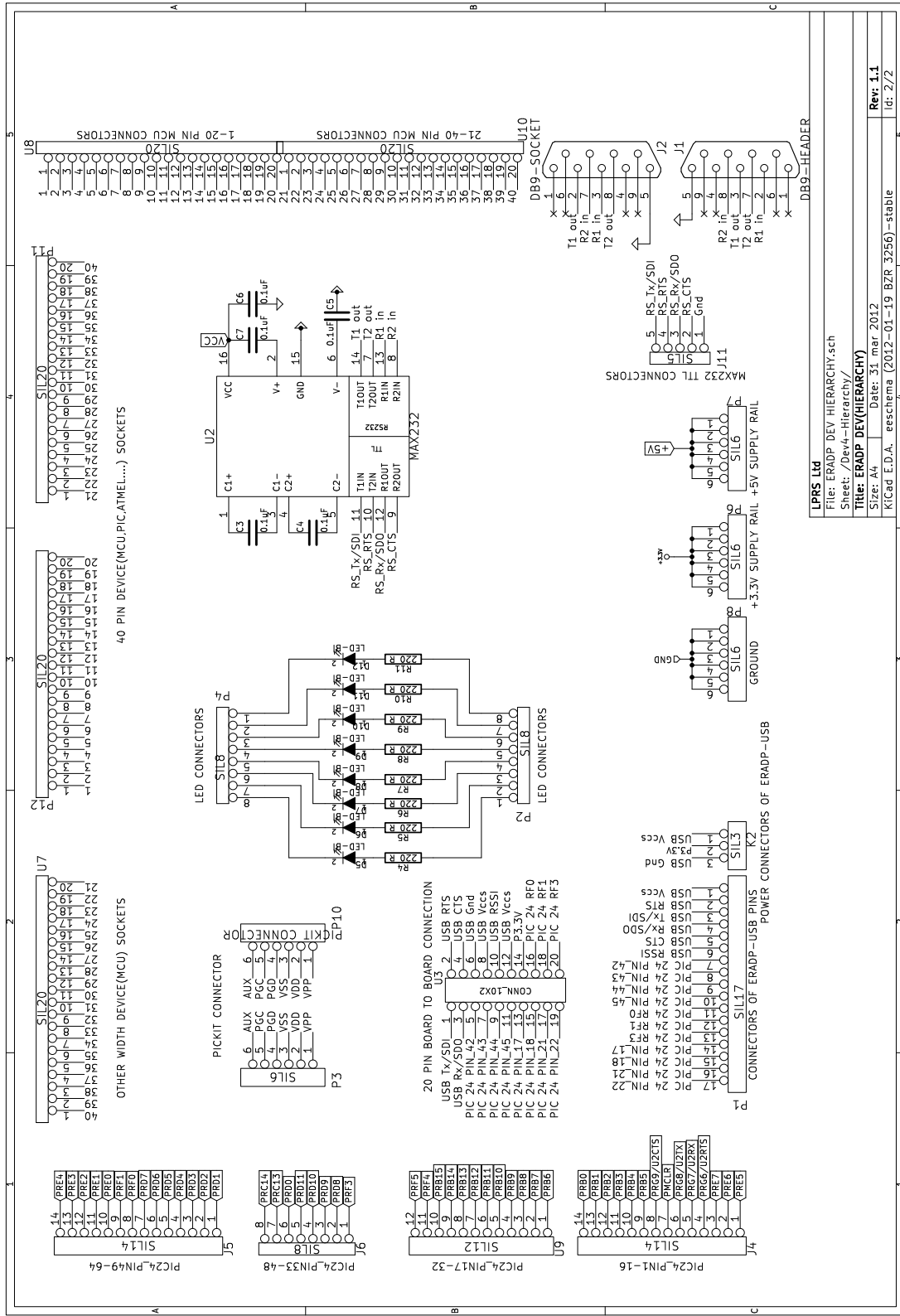


Figure 2 erA Connect2-USB Board

PCB Layout Description

1	Breadboard: For prototyping and adding components.
2	DC Adapter Power Socket: 9-12V DC. Centre pin +ve 2.1mm
3	PP3 9V Battery Connection
4	ICSP Connector: Six pin ICSP header for PICkit or other Microchip compatible programmer.
5	PICkit Sockets: Six pin sockets that can be connected to the host processor.
6	MAX232 TTL Sockets: TTL level I/O connections to the RS232 IC
7	DB9 Socket: Female DB9 can be used to perform RS232 operations using the MAX232. The board has to be powered to use DB9 socket. The pins are connected to the MAX232 and the TTL outputs are provided by the socket connected to it.
8	DB9 Header: Male DB9 can be used to perform RS232 operations using the MAX232. The board has to be powered to use DB9 header. The pins are connected to the MAX232 and the TTL outputs are provided by socket connected to it.
9	Bi-Colour (Green/Red) LEDs: Connected to Bi- colour LEDs. These sockets can be pulled high or low from either side, as they are bi-directional. The colour of the LED depends on the polarity.
10	Sockets For All MCU, Devices up to 40 Pins: These sockets are used to place any SIL or DIL devices up to 40 pins. As different pin devices have different widths and sizes, three rows of sockets of 20 pins each are provided to fit all sizes of devices. For example, a PIC with 40 pin MCU can be placed on sockets 1 and 3 rd row, and a PIC with 18 pins can be placed on sockets of row 1 and 2 nd . Rows 2 nd and 3 rd are interconnected and positioning of the devices is drawn on the board for reference.
11	Sockets for MCU Pins 1-20: Connections for the 1 st row of sockets of item 10. Pins 1-20 of a device can be connected from these sockets. The first and last pins are numbered on the board for reference.
12	Sockets For MCU Pins 21-40: Connections for the 2 nd and 3 rd row of sockets of item 10. Pins 21-40 of a device can be connected from these sockets. The first and last pins are numbered on the board for reference.
13	Sockets for Connecting easyRadio Modules: These sockets are the connections to the RF modules. Each pin of the sockets is also named by the side of it. Connectors are used to connect these sockets to MAX232 TTL sockets or MCU sockets. An extra ground pin is provided with these sockets.
14	Sockets for all RF Modules: Sockets for all easyRadio modules. A 9 pin socket for all easyRadio transceivers and receivers (ERA X00TRS/RS) and a 6 pin socket for all easyRadio Transmitters (ERAX00TS).
15	Jumper: A two pin jumper is placed to select either 5V or 3.3V supply for the RF modules. These pins are labelled on the board.

16	SMA Antenna Connector: A surface male antenna can be fitted with the provided 400 MHz or 900 MHz antennas.
17	DIP Switch: Connects RF modules I/O with PIC24FJ128GB106. Each switch corresponds to a particular pin on RF module and PIC24FJ128GB106.
18	USB-B Connector: USB-B connectors are provided on easyRadio Advanced Connect2 USB and DEV board for communications. They are connected to PIC24FJ128GB106 data lines (D+ and D-). These are also another source of power to the board of 5V.
19	Sockets for most IO pins of PIC24FJ128GB106: All PIC24FJ128GB106 I/O pins can be used from these sockets. Each of these sockets correspond to the PIC pin locations. Reserved pins (Oscillator and USB data line) are not provided on these sockets, as they are internally connected and cannot be used for any other purpose.
20	Power Sockets of eRA Connect2-USB: These are the power and ground connections from USB board when plugged in.
21	eRA Connect2-USB to eRA Connect2-DEV Connectors: These are the 20 pins i.e. 10x2 right angle header on DEV board and socket on USB board which forms an interconnection between the two boards. Users can plug both the boards and use all USB board connection on DEV board with the provided sockets.
22	Sockets for all eRA Connect2 USB Board: These are the sockets on the eRA Connect2 DEV board, which can be accessed when eRA Connect2 USB board is connected using 20 pin right angle connector. These sockets provide the means to link both boards together.
23	0V Connection: A six pin ground rail.
24	Sockets for +3.3V Rail:
25	Sockets for +5V Rail: Can be used for any application. <u>These pins can be used only when powered by DC power supply or 9V PP3 battery. USB voltage is not connected to these pins as they might cause an undue load to the USB port.</u>
26	On/Off Switch: Switches power to the RF modules on the eRA Connect2-USB board. An LED indicator indicates module power.



Basic Setup of eRA Connect2 Boards

Install the latest version of easyRadio Companion software (available from LPRS website <http://www.lprs.co.uk/easyradio.html>) onto the PC.

Connect one of the boards to the PC using USB connector or RS232 (eRA Connect2 -DEV).

If prompted install the provided USB drivers (USB mode only).

Place an eRA module into the specified sockets on the board (Position 14).

Switch all the DIP switches to the ON position.

Open easyRadio Companion software.

Select appropriate Com ports and device in the software.

Checklist

- Check that the USB device is properly connected to the PC.
- Check that the USB drivers are properly installed. (On Windows check 'Device Manager' settings)
- Check the RS232 settings within 'easyRadio Companion'.
- Check that the DIP switches are turned ON, and that the modules are connected correctly.

Limitations

The +5V rail cannot be accessed when powered only by USB to prevent damage to PC peripherals.

The Male/Female DB9 (RS232) connectors cannot be used simultaneously.

Electrical Characteristics

Specification	Min	Typ	Max
Supply Voltage	5V	9V	12V
Temperature	-40°C	20°C	+85°C

Datasheet Revisions

Revision	Date	Changes	Notes
1.0	4 th May 2012		Preliminary

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Any liability from defect or malfunction is limited to the replacement of product ONLY, and does not include labour or other incurred corrective expenses.

Using or continuing to use these devices hereby binds the user to these terms.

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