# eRA Shield for Arduino

This 'shield' allows Arduino™ boards to communicate wirelessly using proprietary LPRS 'easyRadio' technology operating in the 433MHz or 868MHz (UK & Europe) & 915MHz (US) Industrial Scientific & Medical (ISM) bands.

The essence of these devices is 'easy'. Host Arduino™ boards can send and receive (half duplex) up to 180 Bytes of data per packet that will be seamlessly delivered and presented to all other hosts within range. There is no need for any complicated 'bit balancing' or elaborate coding schemes. 'Easy': Data In and Data Out !

These devices provide considerably greater range (typically 200m) and less power consumption than similar WiFi or Bluetooth dongles operating in the overcrowded 2.4GHz bands.

Frequency, bandwidth, power output and data rate can (optionally) be configured to allow multiple devices to communicate free from interference from each other and any other RF devices.

| Features | Benefits |
|---|---|
| | |
| LPRS easyRadio RF Transceiver technology | Bi-directional link, no 'RF protocol' software required |
| Transmit, Receive, Busy and Power LEDs | Diagnostics |
| Integral SMA Antenna connector | Allows use of extension cable for optimal antenna position |
| Configurable RF parameters (optional) | Fine tune for optimum performance |
| Up to 180 Bytes per packet | Ideal for 'Sense & Control' applications |
| Built-in Temperature Sensor | Usable by host program |

Addressing and implementation of networking (point to point, peer to peer, mesh) can handled by Arduino™ application software thus providing flexibility and simplicity.

An optional on-board 4 pin header allows connection of an external FT232 USB adapter device to configure the easyRadio module should need be.

## Specifications

Supply: +5V ± 5%, Temperature 20°C

| Parameter | Min | Typical /Default | Max | Units | Notes |
|---|---|---|---|---|---|
| | | | | | |
| Supply Voltage | | 5V | | Volts | Powered by host Arduino™ |
| Supply Current | | 25 | | mA | Receive (Idle state) |
| | | 35 | | mA | Transmit |
| Data Rate | 2.4 | 19.2 | 115.2 | Kbps | Configurable - See Note 1 below |
| Packet Size | 1 | | 180 | Bytes | Auto detect end of packet |
| Frequency (Default) | | 433 | | MHz | UK/Europe - Configurable |
| | | 868 | | MHz | UK/Europe - Configurable |
| | | 915 | | MHz | USA - Configurable |
| Receive Sensitivity | | -107 | -117 | dBm | Configurable |
| RF Output Power | -1 | +9 | +10 | dBm | Configurable |
| Antenna | | 50 | | Ω | Via SMA Connector |
| Range | | 200 | | m | Dependant on conditions/terrain |
| Operating Temperature | -40 | 20 | 85 | °C | |
| **Mechanical** | | | | | |
| Size | | 68 x 52 x 10 | | mm | Excluding connectors & antenna |
| Weight | | 24 | | g | Without antenna |

## Notes

1) Parameters can be configured using 'easyRadio Companion' software available from: www.lprs.co.uk
2) Please read this datasheet in conjunction with the easyRadio Advanced datasheet available from www.lprs.co.uk
3) The device is supplied with either a matching 433MHz or a 868/915 MHz antenna

## JP1 Pin Connections & Configuration
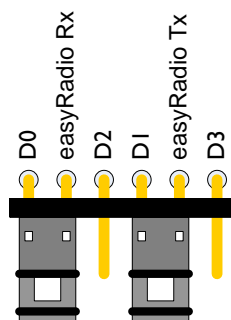
**Hardware Serial:**
Connects easyRadio to Arduino hardware serial port (UART) on D0 and D1
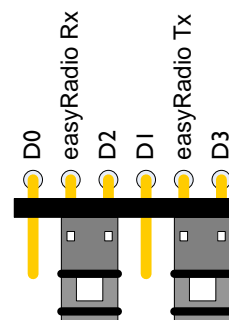
**Software Serial:**
Connects easyRadio to Arduino software serial port on D2 and D3

**Other Serial:** Alternatively remove the shorting jumpers and use male to female jumper wires. Connect the female ends of jumper wires to easyRadio Rx and Tx pins and connect the male end to corresponding / preferred serial-enabled pins on Arduino™.