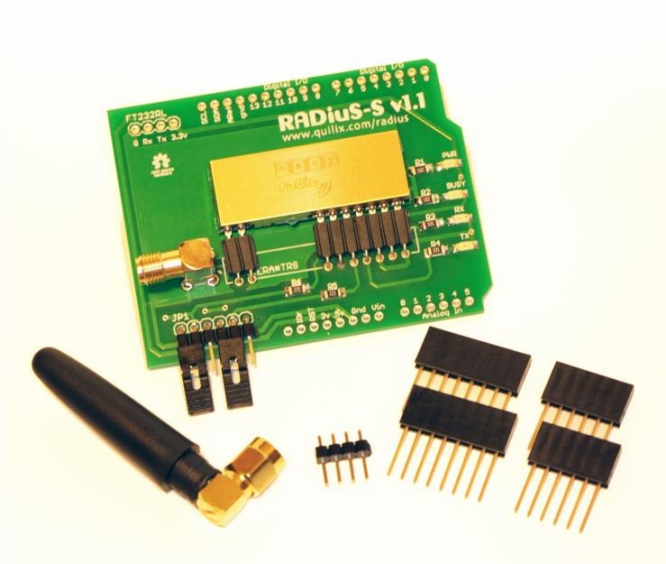
eRA Shield for Arduino



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

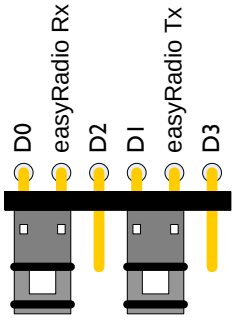
Supply: +5V ± 5%, Temperature 20°C

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

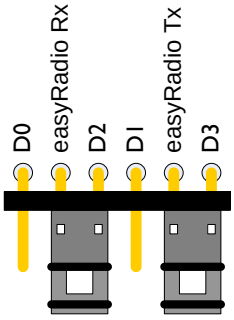
Notes

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™.

Product includes: eRA400TRS or eRA900TRS Transceiver (FCC) & matching antenna (as picture above)

2 x 6-pin Stackable Headers, 2 x 8-pin Stackable Headers and 4-pin to pin Header

Requires an Arduino™ board (not included)

External USB to UART adapter for optional on-board configuration of easyRadio

Acknowledgements

Arduino™ is a trademark of the Arduino team: http://www.arduino.cc/
The shield design is 'Open Hardware' designed and published by Rick Winscot. Details: www.quilix.com/radius

Product Order Codes

Name	Description	Frequency	Order Code
eRA-Arduino-S400	UK/European Transceiver Module	433MHz	eRA-Arduino-S433
eRA-Arduino-S900	Europe/US Transceiver Module (FCC)	868/915MHz	eRA-Arduino-S900
Antenna	UK & Europe	433MHz	ANT-SR433
Antenna	Europe & USA	868/915MHz	ANT-SR900

Document History

Issue	Date	Notes/Comments
V1.0	August 2012	First release
V1.1	January 2013	Minor additions and corrections
V1.2	October 2013	Minor additions and corrections
V1.3	May 2015	This version

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easyRadio modules are a component part of an end system product and should be treated as such. Testing to fitness is the sole responsibility of the manufacturer of the device into which easyRadio products are fitted, and is expected BEFORE deployment into the field.

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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