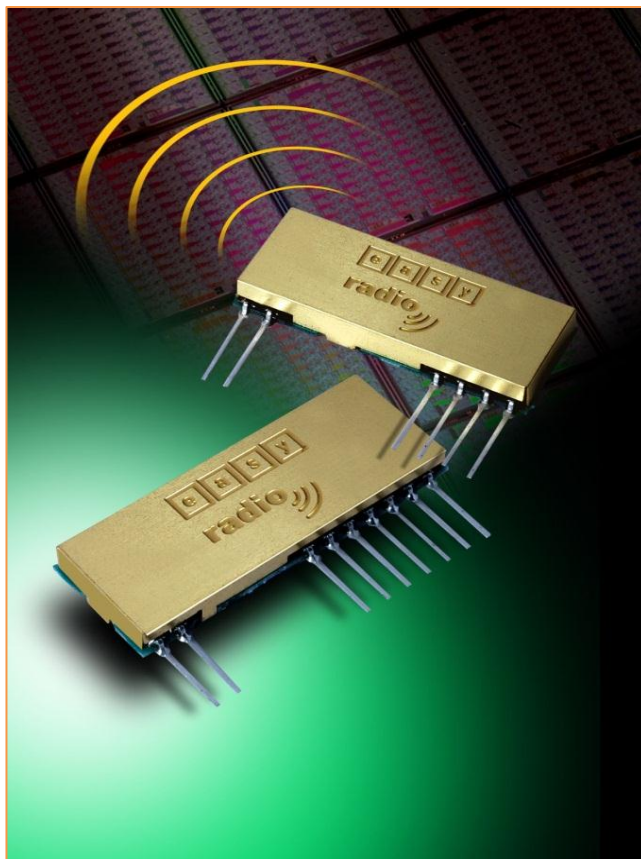


easyRadio Advanced RF Modules



“WIRELESS SOLUTIONS FOR A CONNECTED WORLD”

YOUR QUICK START GUIDE

Introduction

The purpose of this document is to familiarise you with the features and usage of easyRadio modules, particularly with respect to the latest range of modules from LPRS, easyRadio Advanced (eRA)

Key points:

- What is easyRadio Advanced and how it can significantly reduce your design time.
- New Advanced Features
- Physical Connections
- Setting up ER Companion
- Understanding the easyRadio Command Structure.
- easyRadio Tools: Using and Setting Up the easyRadio Companion (Working with the adjustable parameters)

What is easyRadio Advanced and how can it significantly reduce your design time

Our latest release of easyRadio solutions, the “Advanced” range, continues on from the success of the very popular 02 series. Incorporating our unique easyRadio software protocol we extend further on the simplicity of previous versions making it even faster to implement. With the RF communication software in place, all you need to concentrate on is completing the finished product.

Enhanced Features of the easyRadio Advanced Range.

More Channels

- Up to 132 Channels
- Temporary Channel switching. (Saves EEPROM over time)
- Compatible with all ISM 402-470 / 802-940MHz RAW data transceivers. AM/FM (GFSK)
- Full channel separation

Multi-bandwidth

- A World first. Users can select from 12.5KHz to 150KHz channel spacing.

Fully flash upgradeable

- Must use ER Companion Software
- Firmware files downloaded via internet or embedded in latest ER Companion Software

Digital RSSI:

- Live RSSI
- Last Packet RSSI
- RSSI delivered in packet

Carrier Detect

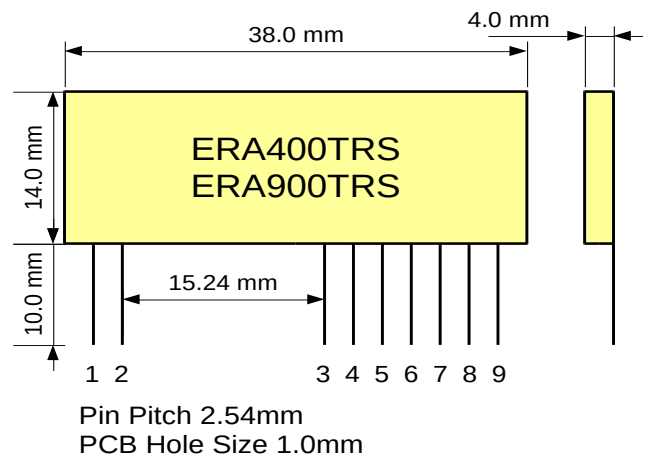
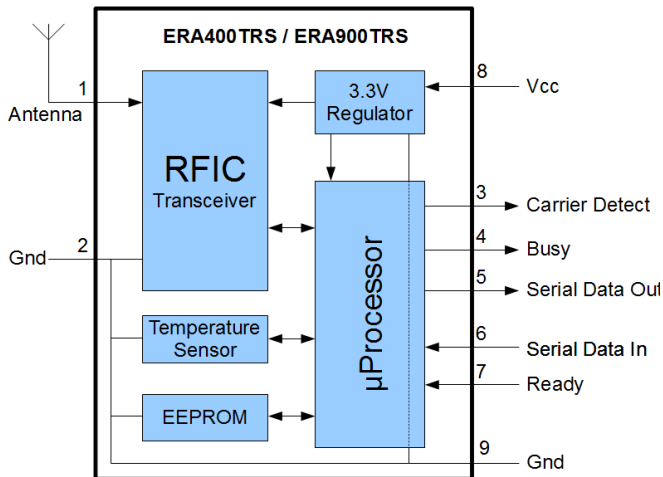
- Replaces analogue RSSI pin

Temperature Sensor:

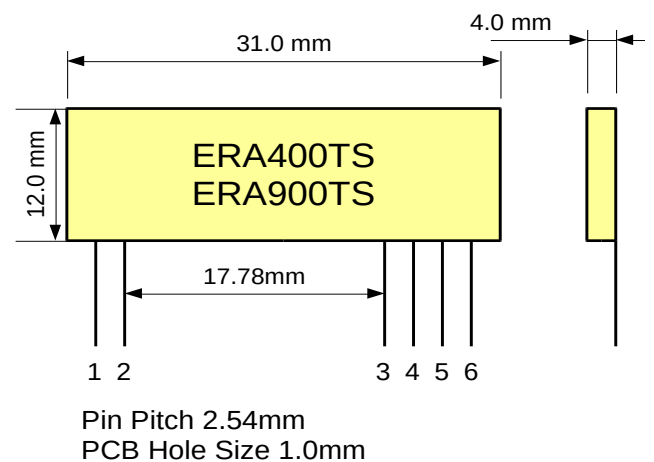
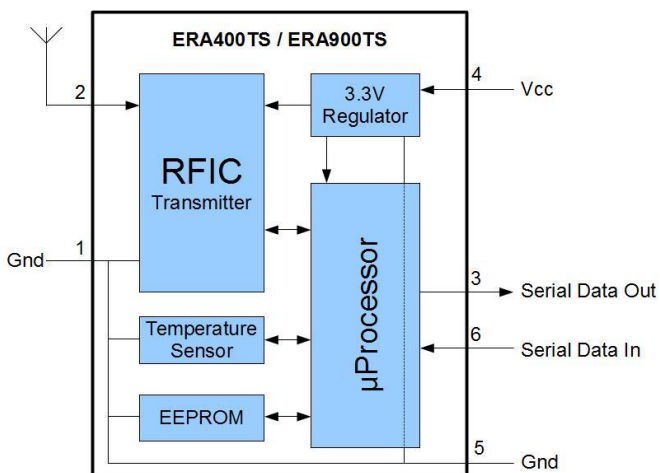
- Automatic frequency adjustment (Important on narrow channel spacing)
- Temperature of module can be read via a command

Physical Connections

ERA400TRS & ERA900TRS



ERA400TS & ERA900TS



Setting up ER Companion:

For USB driver installation you can use.

Various Windows Operating Systems including:-
Windows XP/Vista/7

.net framework will be required to run easyRadio software in Microsoft
Windows OS

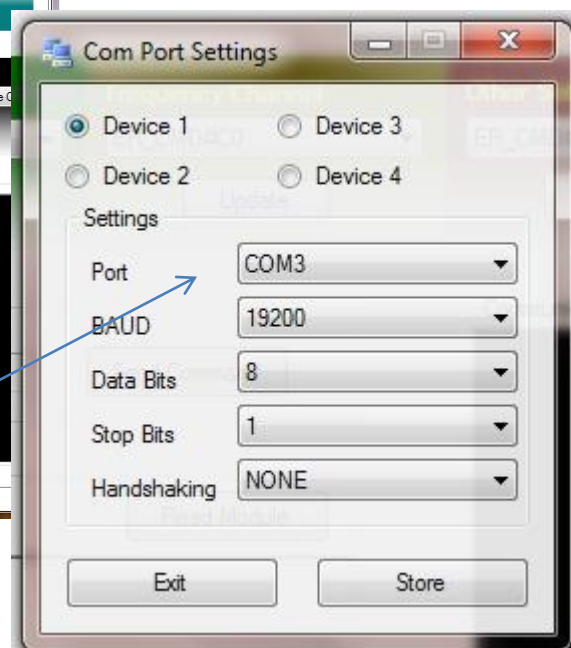
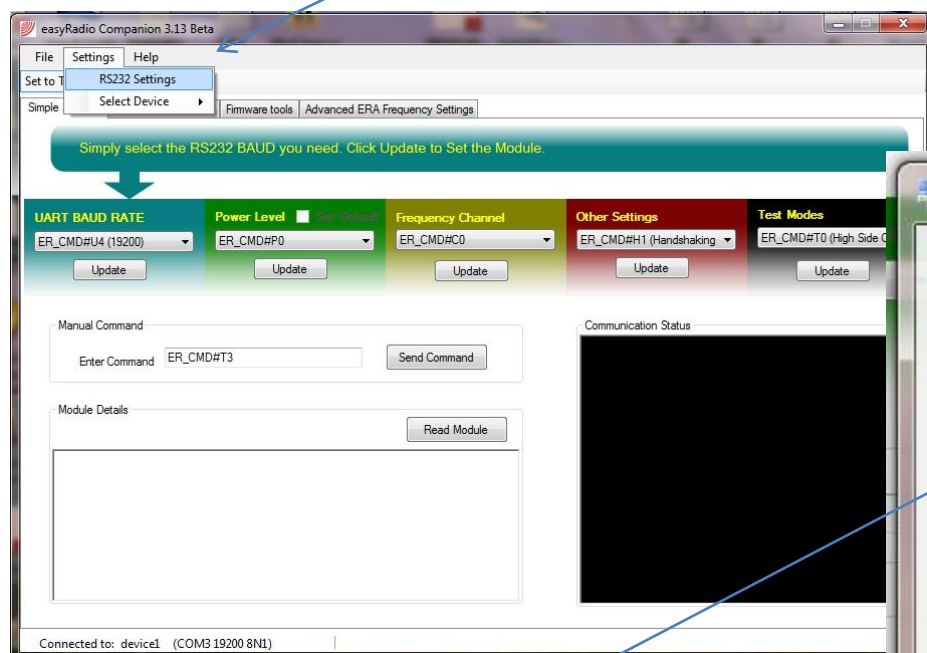
Download ER Companion Setup <http://www.lprs.co.uk/easyradio.html>

Install the software:



Setting the Serial Ports:
Settings>RS232 Settings

CLICK SETTINGS



Select COM Port to be used

Other Modes below (see full operation guide):

RAW Data Mode

FM / AM

Refer to Pendant Data Sheet for:-

easyRadio Pendant modes and UART Mode

Basic Command Structure:

- 1) Host sends command to the module via the UART interface.
- 2) easyRadio modules echo with the same command so the host can verify the instruction is correct.
- 3) Host sends an 'ACK' string in ASCII. (Actual string of 3 bytes – "ACK")

All commands are ASCII.

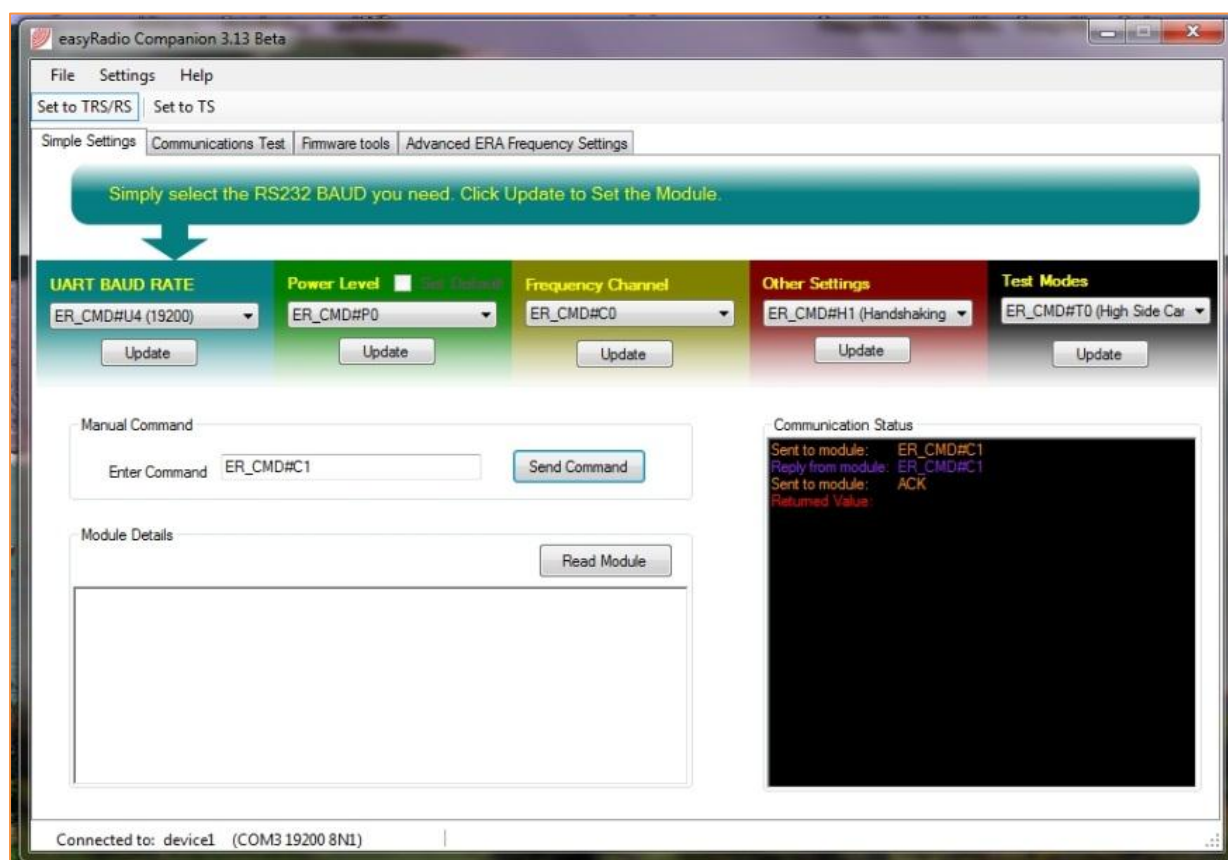
All commands that alter settings are sent to the module in a specific sequence. i.e. **ER_CMD#CI**

ER_CMD# = All commands start with this string
C = Function being set/read
I = Value being set

Refer to the current operation guide for all commands.

Basic Command Functions:

U = Modify/Read UART Setting
 C = Modify/Read Channel Setting
 P = Modify/Read Power Setting



Main easyRadio companion screen showing ER_CMD#CI command

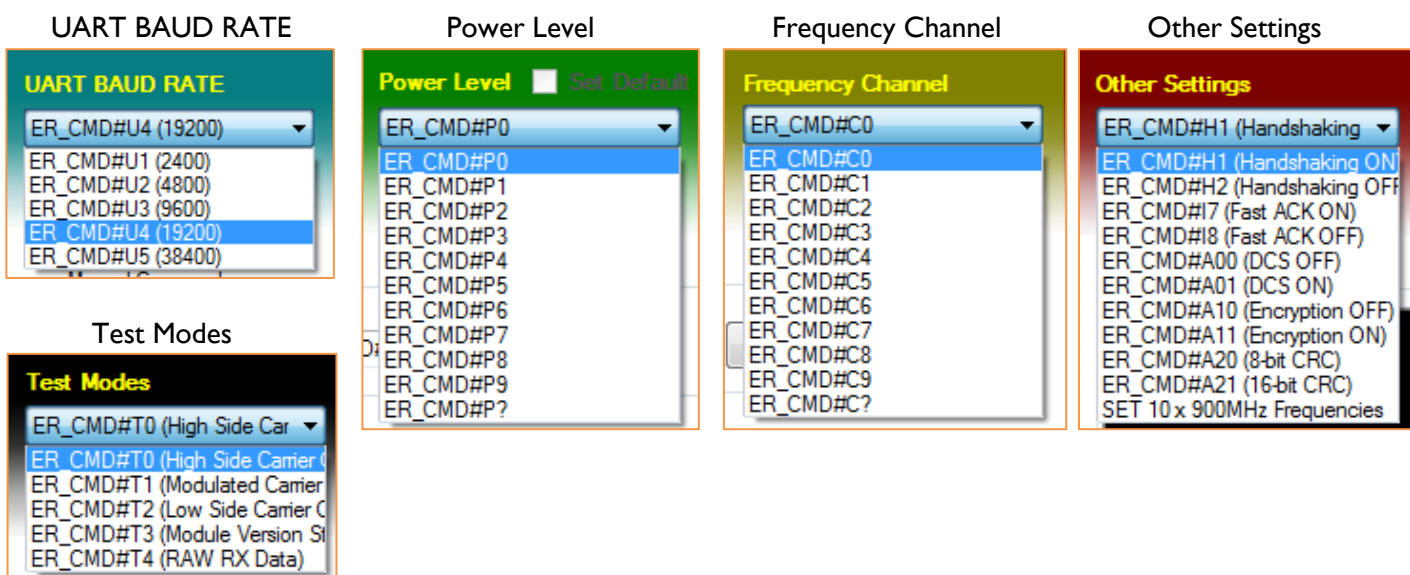
easyRadio Tools: Using easyRadio Companion 3.xx

Using Tabs

Simple Settings Tab



Simple Settings Tab



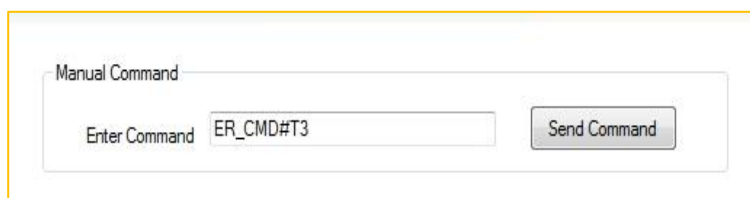
Manual Command Box

Enter commands not in the lists.

Module Details Box

Module firmware

Manufacture date



Manual Command Box

eRA Commands

c = temporarily modify channel setting (does not store in EEPROM, and will reset on POR)

BANDWIDTH (B) AND BANDPLAN (b) SETTINGS

B = MODIFY /READ BANDWIDTH SETTING		b = Modify/Read Band Plan Settings		
			ERA400	ERA900
B0	12.5KHz	b0	433.1MHz	869.7MHz
B1	25KHz	b1	433.1125MHz	902MHz
B2	50KHz	b2	458.5125MHz	863MHz
B3	100KHz	b3	Reserved	Reserved
B4	Reserved	b4	User	User
B5	Reserved	b5	User	User
B6	Back Compatible Mode	b6	User	User

Band Plan (Definition)

Generally we would refer to a band plan as being the start and finish frequencies which are designated for use for example the EU designated frequencies.

As eRA series modules use channel numbers, the band-plan refers to the lowest frequency edge that is adjacent to Channel 0.

For example: Band-plan 0 (default) on ERA400TRS is 433.1MHz.
 Therefore Channel 0 (C0) would have a centre frequency of half the current bandwidth +433.1MHz.
 So in the case of the default bandwidth (B3 = 100KHz):
 F (centre) of C0 = 433100000Hz + 50000Hz = 433150000Hz or 433.15MHz
 $C1 = C0 + 100 \text{ KHz} = 433.25 \text{ MHz}$

On eRA series, there are 7 band-plan settings available (b0-b6).
 b4 to b6 can be set by the user using the Advanced eRA frequency settings Tab

Communications Test Tab - Sending text data

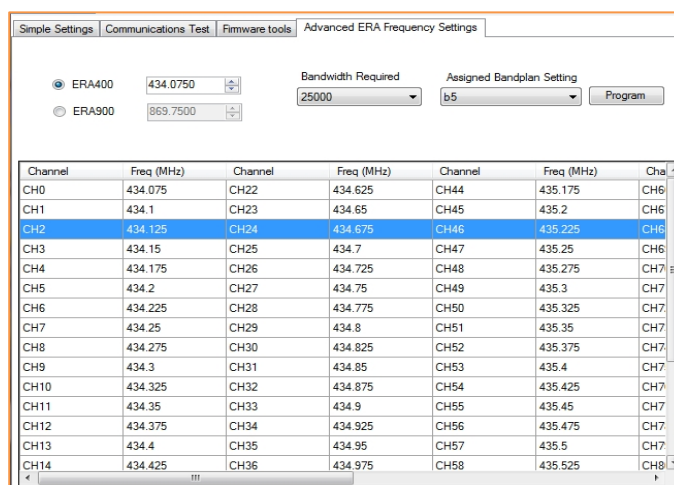
Firmware tools Tab – To update to latest firmware.

Advanced eRA frequency settings Tab

Shows frequency, bandwidth and band plan table.

For full technical details please download the easyRadio Advanced operation guide here:-

<http://www.lprs.co.uk/easyradio.html>



Channel	Freq (MHz)	Channel	Freq (MHz)	Channel	Freq (MHz)	Channel	Freq (MHz)
CH0	434.075	CH22	434.625	CH44	435.175	CH66	435.725
CH1	434.1	CH23	434.65	CH45	435.2	CH67	435.75
CH2	434.125	CH24	434.675	CH46	435.225	CH68	435.775
CH3	434.15	CH25	434.7	CH47	435.25	CH69	435.8
CH4	434.175	CH26	434.725	CH48	435.275	CH70	435.825
CH5	434.2	CH27	434.75	CH49	435.3	CH71	435.85
CH6	434.225	CH28	434.775	CH50	435.325	CH72	435.875
CH7	434.25	CH29	434.8	CH51	435.35	CH73	435.9
CH8	434.275	CH30	434.825	CH52	435.375	CH74	435.925
CH9	434.3	CH31	434.85	CH53	435.4	CH75	435.95
CH10	434.325	CH32	434.875	CH54	435.425	CH76	435.975
CH11	434.35	CH33	434.9	CH55	435.45	CH77	436.0
CH12	434.375	CH34	434.925	CH56	435.475	CH78	436.025
CH13	434.4	CH35	434.95	CH57	435.5	CH79	436.05
CH14	434.425	CH36	434.975	CH58	435.525	CH80	436.075

Advanced ERA Frequency Settings Tab

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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, as is also the 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.

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