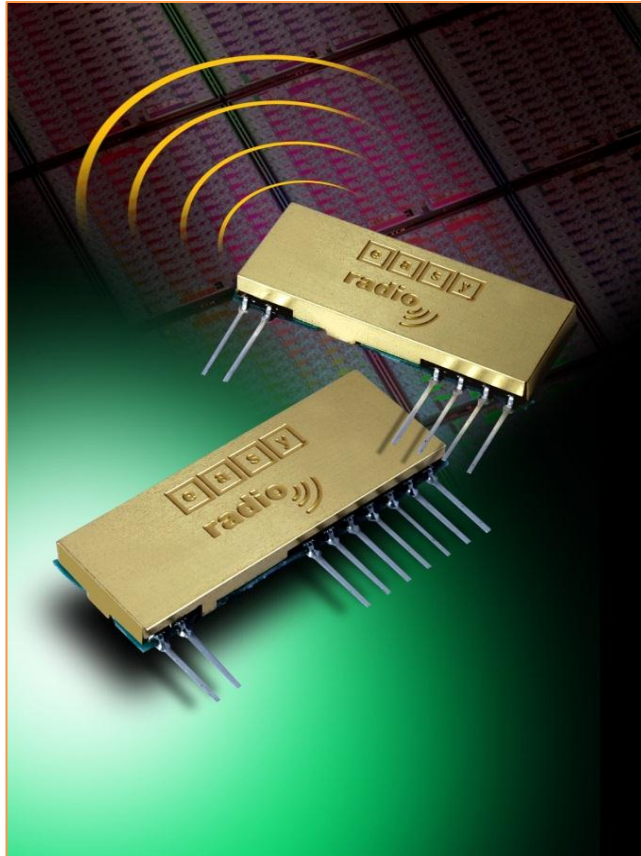


easyRadio Advanced RF Modules



“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

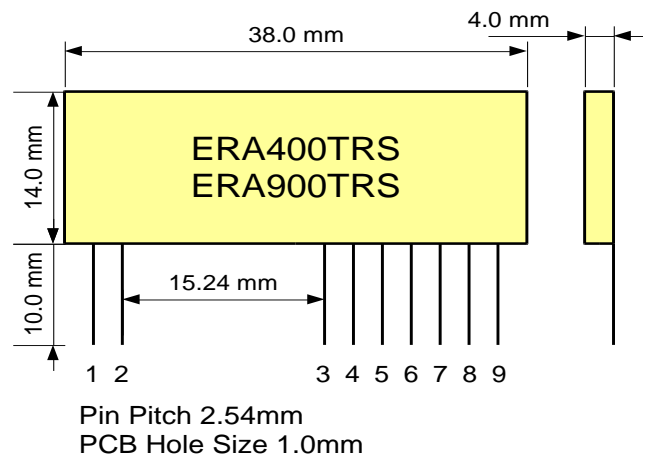
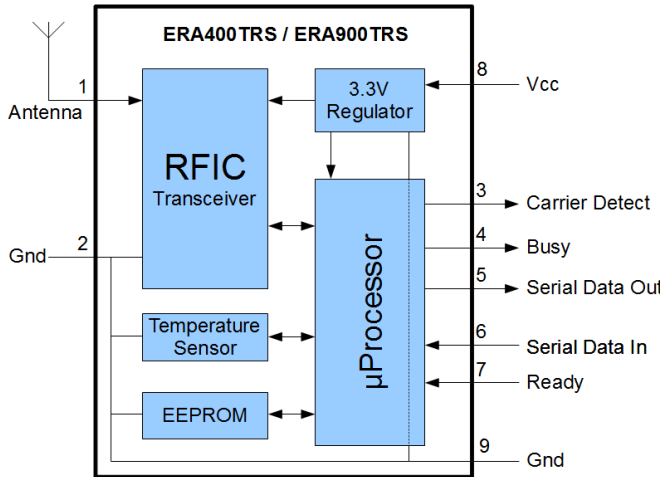
- Replaces analogue RSSI pin

Temperature Sensor:

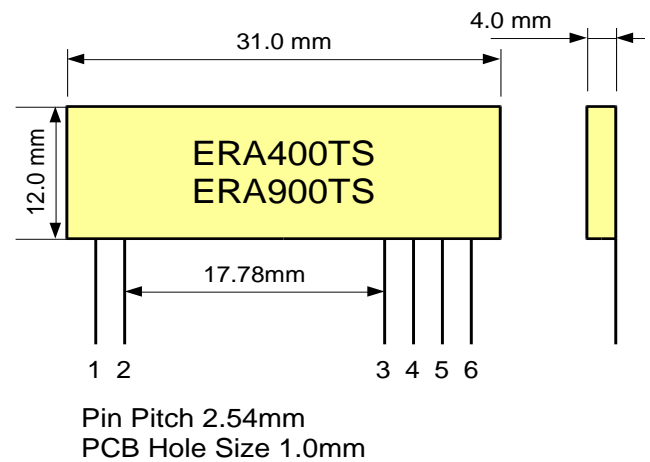
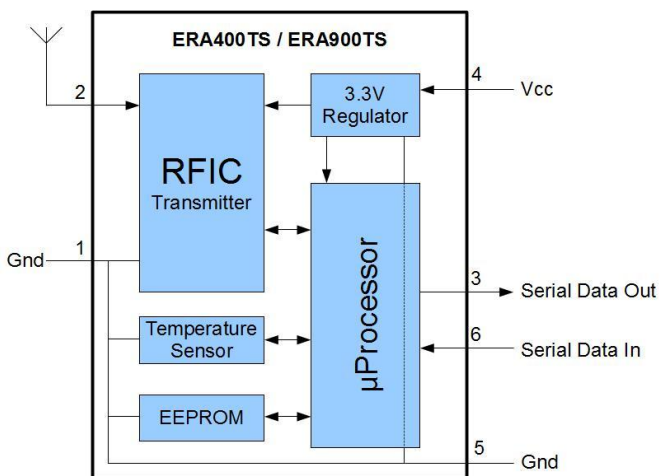
- Automatic frequency adjustment (Important on narrow channel spacing)
- Temperature of module can be read via a command

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

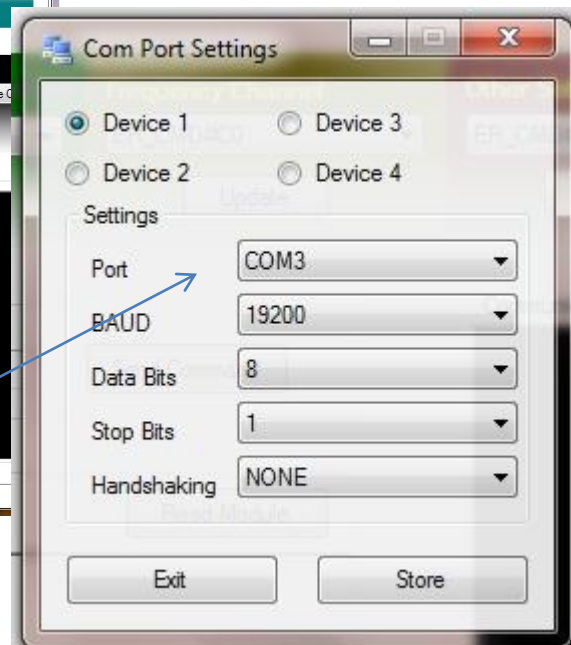
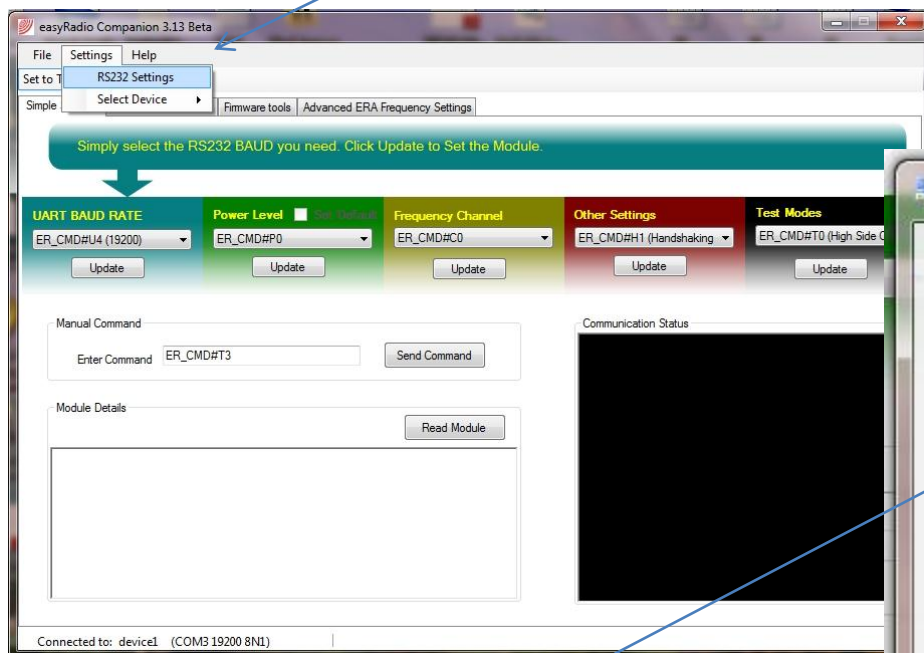
.net framework will be required to run easyRadio software in Microsoft Windows OS

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.

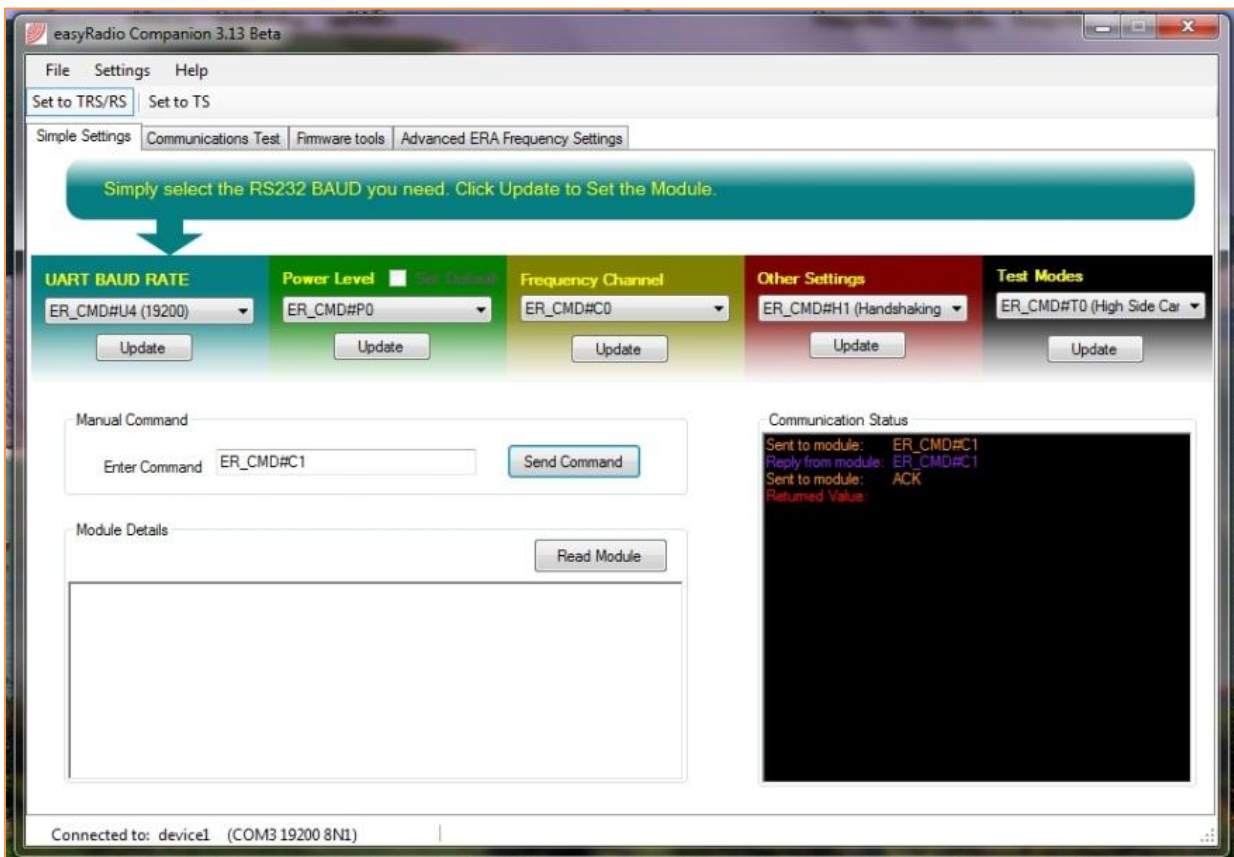
All commands that alter settings are sent to the module in a specific sequence. .i.e. **ER_CMD#CI**

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

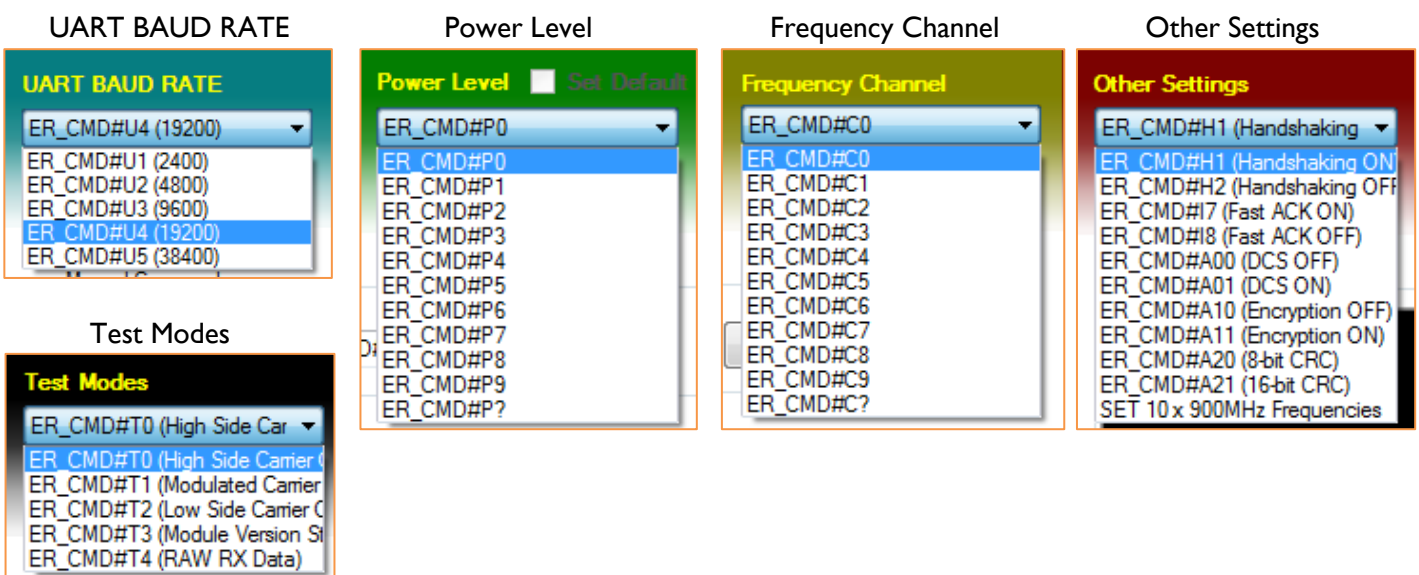
easyRadio Tools: Using easyRadio Companion 3.xx

Using Tabs

Simple Settings Tab



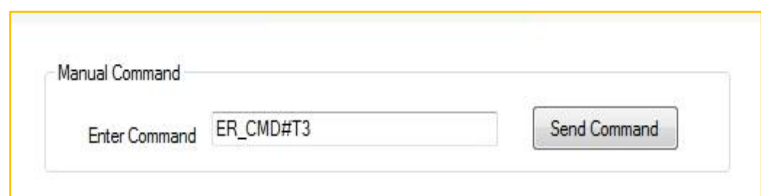
Simple Settings Tab



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

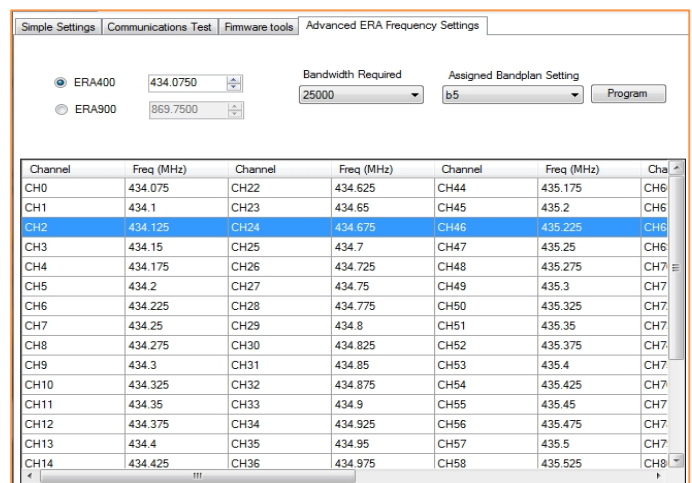
Firmware tools Tab – To update to latest firmware.

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>



Advanced ERA Frequency Settings Tab

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