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iDwaRF-HubBoard

Adapter Board for the iDwaRF-168 Radio Module.

The iDwaRF-HubBoard is a small adapter to connect the iDwaRF-168 programmable radio module to a PC.

iDwaRF-HubBoard

Features

- connector for an iDwaRF-168 module
- USB to UART converter (Silabs CP2102)
- 3.3V voltage regulator for iDwaRF module
- USB bus powered
- status LED
- push button
- AVR ISP header (6 pins)

Scope of Delivery

The iDwaRF-HubBoard comes as complete SMD assembled board – the ISP header can be assembled easily.

Onboard Components

The picture on the right shows the onboard components.

Voltage Regulator

A low drop out voltage regulator (LDO) is used to generate constant 3.3V from the battery voltage to supply the iDwaRF module and all onboard components.

Push Button

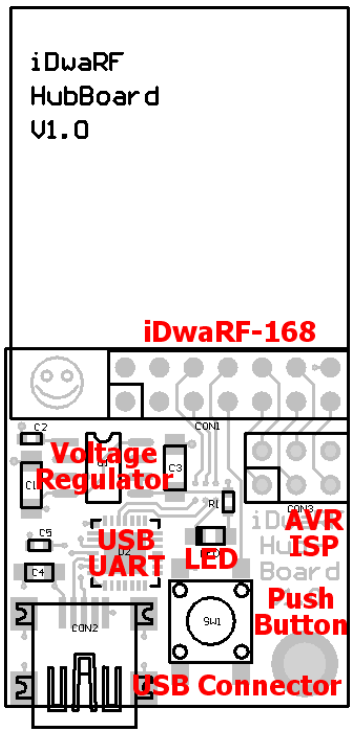
A standard normally-open push button is connected from PORT5 to GND. By enabling the AVR's internal pull up resistor, a low is asserted to PORT5 when the button is pressed.

LED

A small SMT light emitting diode (LED) can be used as a simple status indicator. Is is connected to PORT7 low active, i.e. when the port pin is low, the LED goes on.

iDwaRF-168 Module

The iDwaRF-168 module can be plugged into a 14 pin double row pin header, which is preassembled as SMT component. It turned out, that this pin header is a little bit sensitive to bending the iDwaRF module after is is plugged into it. By bending the module too much, single contact headers of the connector can break away from the PCB, hence no longer providing good contact. It is usually no problem to resolder them with a small soldering tip, but it is recommended to take care not to stress the connecter too much.



Onboard Components

Board Schematic

For complete reference of the the iDwaRF-NodeBoard PCB, the board schematic is available for download at www.chip45.com/iDwaRF-NodeBoard.

USB Driver

For USB connection to a host PC a littleUSB module (www.chip45.com/littleUSB) is used. It provides a CP2102 USB-UART bridge by Silicon Laboratories. A virtual COM port driver is available for download at www.chip45.com/iDwaRF-HubAdapter_Downloads. The driver is available not only for Windows, but also for MacOSX and Linux (newer Kernals already have a CP210x kernel module included).

chip45.com - Dr. Erik Lins
Development and Distribution
of Hardware and Software

35440 Linden/Germany
Email: info@chip45.com
http://www.chip45.com

iDwaRF-Net Firmware

The wireless N:1 network protocol software iDwaRF-Net has been ported to the new NodeBoard, i.e. the examples coming along with the software make use of all onboard components (especially the terminal example). The latest version of the iDwaRF-Net firmware is available at www.chip45.com/iDwaRF-Net.

Development Tools

The iDwaRF-Net firmware has been developed with the free WinAVR GCC C/C++ toolchain (http://winavr.sourceforge.net). Currently the firmware is distributed as C-library for WinAVR and connot be used with another compiler suite.

Further Informations

Data sheets of the onboard components as well as the boards schematics can be downloaded at www.chip45.com/iDwaRF. The official Atmel AVR homepage is www.atmel.com/avr. A valuable source of information on AVR microcontroller ist www.avrfreaks.net.