

RFX 328p dev/deployment board -- Assembly instructions (short version, v1.1, Nov 2, 2013)

- 1) Mount & solder 28pin DIP socket, orienting socket notch with silkscreen markings
- 2) Mount & solder 3v3 voltage regulator. Trim excess leads on underside of board with cutting pliers or similar.
- 3) Mount, solder & trim resistors:
 - a. R1 (10K, 1% – Br, Bl, Bl, Re, Br)
 - b. R2 (1K, 1% - Br, Bl, Bl, Br, Br)
- 4) Mount, solder & trim inductor L1 (10mH, Br, Bl, Bl, Go)
- 5) Mount, solder & trim 16MHz crystal
- 6) Mount, solder & trim 2 x crystal capacitors beside crystal (22pF, marked “22”)
- 7) Mount solder & trim 3 x bypass capacitors (marked “104”, 1 between shield headers, 2 beside L1)
- 8) Mount, solder & trim LED, observe polarity (long lead is +, short lead is –ve)
- 9) Mount, solder & trim electrolytic filter capacitor C5, observe polarity (10uF, long lead is +, short lead is –ve)
- 10) Mount & solder headers:
 - a. 2 x nRF24L01+ headers (female 8pin, 2x4)
 - b. ICSP header (male 6 pin, 2x3)
 - c. Vcc/3v3 header (male 2 pin jumper header, in front of ICSP header)
- 11) (Optional) Mount & solder shield connection headers (female 8pin x3, 6pin x1). Either mount so that :
 - a. Shield headers are mounted on top of board, like traditional Arduino shield headers. Use rows of holes nearest edge of board to use standard shield header alignment and form factor. Or,
 - b. Shield headers are mounted on underside of board, pointing down, so that headers can be used to conveniently plug dev board onto prototyping board or breadboard with standard 01” pitch spacing. Use secondary “inside” rows of holes from edge.
 - c. Also possible to have two sets of headers installed, one traditional, one 0.1” spacing aligned, if required (extra set of headers not included in kit).
- 12) Plug in 328p chip, observing notch alignment with respect to DIP socket and silkscreen on board.
- 13) Program as Uno using ISP programmer (USBasp, etc.) from Arduino IDE. **Make sure the jumper for pins Vcc/3v3 header is removed if a nRF24L01+ module is plugged in, or, even better, make sure the nRF24L01+ modules is removed before connecting programmer to ICSP header.** The danger here is that the programmer (e.g., USBasp) could supply 5V to Vcc rail, which is fine for 328p chip, but could damage nRF24L01+ modules if they were connected.
- 14) After programming, disconnect programmer from ICSP headers, replace Vcc/3v3 jumper, and plug in nRF24L01+ module (if nRF24L01+ module is used for this project.)
- 15) Power board by supplying 5V-16V DC to Vin pin on shield header (or equivalently, pin marked Vin on voltage regulator, or pin 2 on ICSP header). It is also possible to supply board power with already regulated 3v3 DC directly to pin marked Vcc on voltage regulator (in which case the regulator is not actually used.)
- 16) If a nRf24L01+ module is not being used, then the Vcc rail can optionally be supplied with 3v3-5V regulated DC, or a 5V regulator rather than a 3v3 regulator can be substituted if required (in which case supply Vin with at least 6V DC, to allow for regulator drop out voltage.)

Parts list (kit with passive components):

1 RFX 328/nRF24La01+/Proto Brd PCB

1 Voltage Regulator, LD11173v3

1 crystal (16MHz)

2 caps, 22pF caps (ceramic, for crystal)

3 caps, 0.1 uF (ceramic, bypass)

1 cap, 10uF (electrolytic, filter)

1 LED

2 resistors:

R1 10K (Reset Pullup)

R2 1K (LED)

1 inductor:

L1 10uH (AVcc filter)

1 28-pin DIL socket (for Atmega328p)

nRF24L01+ connectors sockets:

2 female headers (2×4)

ICSP programming connector:

1 male header (2×3)

nRF24L01+ power supply jumper:

1 male header (1×2)

1 jumper

shield headers:

3 female headers (1×8)

1 female header (1×6)