1. Atmega1284P processor featuring 4 Kbyte EEPRPOM, 16 Kbyte SRAM, 128Kbyte Flash Memory; 2 hardware UARTS; 32 IO lines; and 40 pin DIP package, easily replaceable when you blow it up. Preprogrammed with a bootloader. Fully supported: boards.txt, pins_arduino.c, avrdude.conf, and Sd2PinMap.h files for use with the fat16lib's SdFat library. Use them as is, or cut & paste the relevant sections into your files. Directions provided for setting them all up.

2. Female headers that accept standard shields. All shield pins are accessed normally: Vin, +5, +3.3V (50mA max), Reset, Gnd, D0-D13, A0-A3, A4-A5 (** see #24 below), and 2 additional analog pins, A6-A7 (** see #25 below). D10-11-12-13 are the SPI pins. D10 is free to be used as the Shield's SPI ChipSelect/SlaveSelect line. Activity "L" LED connected to D13 via series 1K resister (about a 3mA load when High).

3. Jumper to select RTC Square Wave output, can go to D6 (INT2) or D31 (PD7). SqWave is not connected to anything when no jumper is installed.

4. DS1307 Real time clock with 13.768KHz crystal oscillator, connected to dedicated I2C pins SCL/SDA, and with **10K pullup resistors**, for access to Year, Month, Day of Month, Day of Week, Hours (24 hour format, or 0-12 with AM/PM indication), Minutes, Seconds. Square wave can be off; or the open drain output with 10K pullup resister can be software selected to output 1Hz, 4kHz, 8kHz, 32kHz. **CR2032 3V Lithium battery** is installed in a **Tyco battery holder** on the back of the board.

5. 5.5/2.1mm Barrel jack for wallwart. Will include 7.5V, 1000mA switching regulator for an additional $5, or use your existing 7.5VDC to 12VDC wallwart. Input DC goes thru a reverse polarity protection diode to become Vin to the 5V regulator and to the header shield.

6. 5V, 800mA linear regulator, mounted on expanded thermal pads (connected top & bottom).

7. 3 holes to connect to external Vin, Gnd, +5V. Option: remove the regulator and install,or connect to, a leaded part with heatsink (MC33269T-5.0, TO-220 package) if planning to supply power from up to a 20VDC source, or your favorite switching regular to supply 5VDC. (shown pictured with 0.025", 0.1" pitch pins for testing)

8. 3 pins with Jumper to select 5V from regulator or 5V from USB to supply the rest of the board. If no jumper is installed, 5V must come in from the Analog header (#2). 5V Power Indicator LED "PWR" located near the "L" LED.

9. FTDI FT232RL USB chip to connect Rx0/Tx0 to USB connector. Rx0/Tx0 are also D0/D1 and connect to the shield. 4 holes adjacent are for 0.025"/0.1" pitch pins, intended to be used to "bitbang" a bootloader in using the adjacent FT232RL chip. (Pins shown pictured for testing only, jumper cable to ICSP header needed). Rx and Tx activity LEDs located adjacent to the chip.

10. USB-B Mini connector, connects Rx0/Tx0 to PC via FT232RL chip. USB's Vbus (5v) goes thru a 500mA polyfuse.

11. Reset Jumper, 3 pins to connect, or not, DTR from FT232RL chip to Reset capacitor.

12. Reset switch.

13. ICSP header pins for connecting AVR ICSP type bootloader, such as from MDFLY.com.

14. Holes for connecting 315/434MHZ type Rx or Tx module (one or the other), plus an antenna wire. Up to user to confirm that signals agree with their part. If not, an adapter cable will be needed to match the pins (Vcc, Gnd, Antenna, and D9) to an offboard module. Intended to be used with VirtualWire.

15. 3.3V, 400mA regulator with thermal pad area (top & bottom), supplies the SD Socket only.

16. 74AC125 3.3V driver chip to convert ATMega SPI pins to 3.3V. D30 (PD4) is dedicated to the SD socket chip select.

17. MAX232 driver chip for Rx1/Tx1.

18. RS232 Jumpers to connect MAX232 IO to Rx1/Tx1, or not. Rx1/Tx1 are also D2/D3 and Int0/Int1 and connect to the shield.

19. FCI push-push SD card socket (micro-SD with appropriate adapter). Works great with Fat16lib's SdFat library. D30 must be set as ChipSelect.

20. 16 MHz crystal oscillator and 22pF caps.

21. RS232 header. Connect to DB9 Pins 2, 3, and 5 (Gnd) for RS232 operation. Requires jumpers (see #18) to be installed.

22. JTAG header.

23. 8-pin IO header, connects to PC0-7. Accessed as D22-D29. PC0 and PC1 are also SCL & SDA.

24. SDA/SCL Jumpers to select function connected to shield header pins A4/A5. One side connects A4/D18 and A5/D19, the other side connects SDA and SCL. Nothing connected if no jumpers are installed.

25. Extended Analog header for shield. Extended 2 pins for A6/D20 and A7/D21.