BOM:

C1 = 100n (50V 0805)
C2 = 100n (50V 0805)
C3 = 10µ (50V RM2.5/5mm)
C4 = 100n (50V 0805)
C5 = 10µ (16V 0805 MLCC)
C6 = 100n (50V 0805)
C7 = 100n (50V 0805)
C8 = 1µ (0805 16V -do not mount)
C9 = 10µ (50V RM2.5/5mm)
C10 = 100n (50V 0805)
C11 = 100n (50V 0805)
C12 = 10µ (16V 0805 MLCC)

CN1 = DCIN (DC Jack 5.5/2.1mm)
CN2 = ICSP (5pin Microchip ICSP)
CN3 = DCOUT (DC Jack 5.5/2.1mm)
CN4 = OLED_I2C (4 pin header RM2.54)
CN5 = I2C (4 pin header RM2.54)
CN6 = UART (4 pin header RM2.54)
CN7 = SPI/5110 LCD (9 pin header RM2.54)
CN8 = RB1 (3 pin header RM2.54)
CN9 = UART (4 pin header RM2.54)

D1 = 1N4007
D2 = 1N4007

DZ1 = 9V1 (9.1V Zener Diode THT)

IC1 = L78L33 (TO92 3.3V Vreg)
IC2 = PIC24F16KA101
IC3 = INA219B SOT23-8

LCD1 = 128x64 i2C SSD1306 OLED
LCD2 = Nokia5110 PCD8544 LCD (SPI)

SPK1 = Piezo buzzer (2.4kHz 12mm RM6.5mm)

P1 = 10k-50k LIN (ALPS RK09L114001T)

Q1 = AP4435GJ (PMOS -30V 21mOhm)

R1 = 100k (0805)
R2 = 470R (0805 1% 0.125W)
R3 = 10k (0805 1% 0.125W)
R4 = 0.1R 1W 0.1% (1206 0.25W 0.5%)
R5 = 1R 0.5% (1206 0.25W 0.5%)
R6 = 1R 0.5% (1206 0.25W 0.5%)
R7 = 1R 0.5% (1206 0.25W 0.5%)
R8 = 1R 0.5% (1206 0.25W 0.5%)
R9 = 1R 0.5% (1206 0.25W 0.5%)
R10 = 1R 0.5% (1206 0.25W 0.5%)
R11 = 1R 0.5% (1206 0.25W 0.5%)
R12 = 1R 0.5% (1206 0.25W 0.5%)
R13 = 1R 0.5% (1206 0.25W 0.5%)
R14 = 1R 0.5% (1206 0.25W 0.5%)
R15 = 0R(10R) (0805 1% 0.125W)
R16 = 0R(10R) (0805 1% 0.125W)
R17 = 2k2 (0805 1% 0.125W)
R18 = 2k2 (0805 1% 0.125W)
R19 = 47R (1206 0.25W)
R20 = 10k (0805 1% 0.125W)

UART (9600 baud 8b 1Sb NP) commands
NORMAL MODE:

lcd data output format, copy of the LCD display
raw data output format, raw numbers separated by semicolons
stop stops updating the data via UART
start start/resume the data update in 1 second intervals
rstcnt resets the measurement counter to 0
getcnt returns the actual masurement counter value
calrst resets the INA219 calibration constant to theoretic calculated stock value (8192)
recal INA219 secodary recalibration mode used to increase the precision.
Requires a separate at least 4.5 digit mA/A meter as a reference.
getcal return the actual INA219 calibration constant value
y yep! I confirm
n no, thanks.

RECAL MODE:
xxxx.xx waits for the reference current value (xxxx.xx[mA] format)
exit cancel the calibration and return to NORMAL mode

Project Name:

POWER MONITOR

PIC24F16KA101 + INA219
mini dev board

Date: **05-07.2014**

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