

Note 1.1: Possible alternative AU1RFR5305, SUD19P06-60, SPD30P06P or other with similar or lower input capacitance  
 Note 1.2: WE 7447709330, WE 7443551331, Coilcraft MSS1210-333, Coilcraft XAL1510-333, Vishay IHL2020CZER3R3M11, etc.  
 Note 1.3: Use 240K for 30 VAC main transformer  
 Note 1.4: Install 0R only if 100% Duty cycle feature is not needed (do not mount Q3 in that case)  
 Note 1.5: Use R020 for 0-3.12 A or R015 for 0-4.16 A range

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 More info at <http://www.envox.hr/eez>  
 Repository: <https://github.com/eez-open>



SMPS power pre-regulator with 100% duty cycle

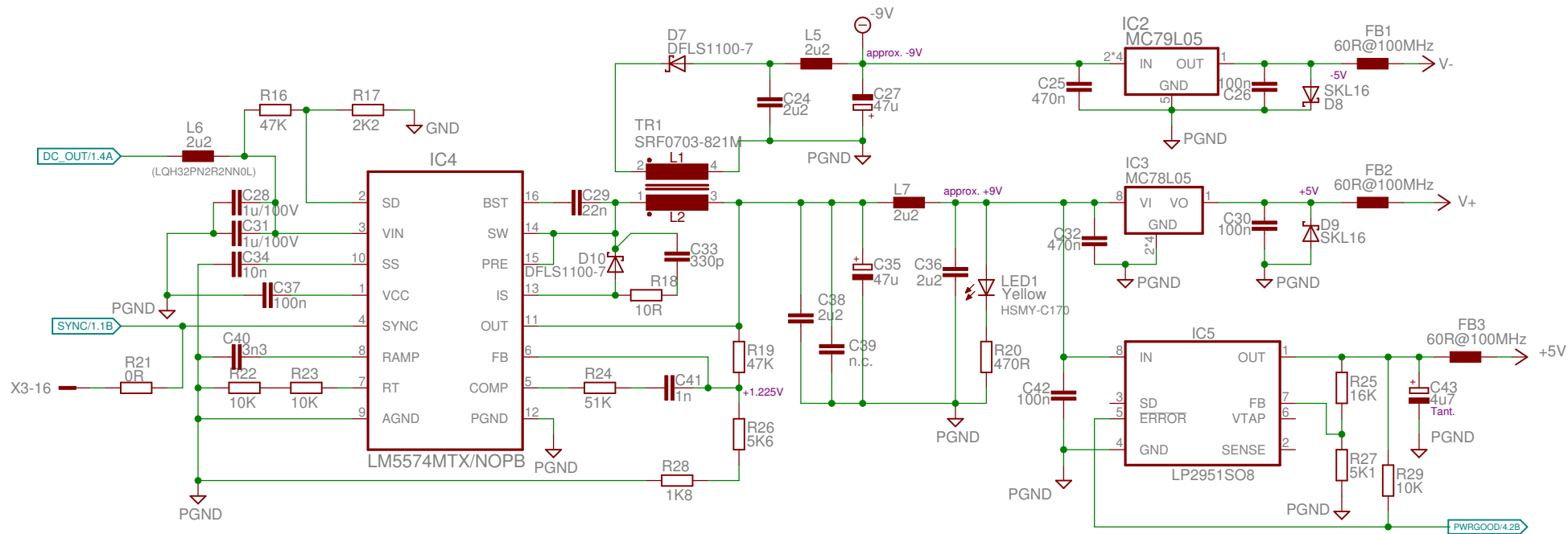
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Bias power supply with SMPS pre-regulator

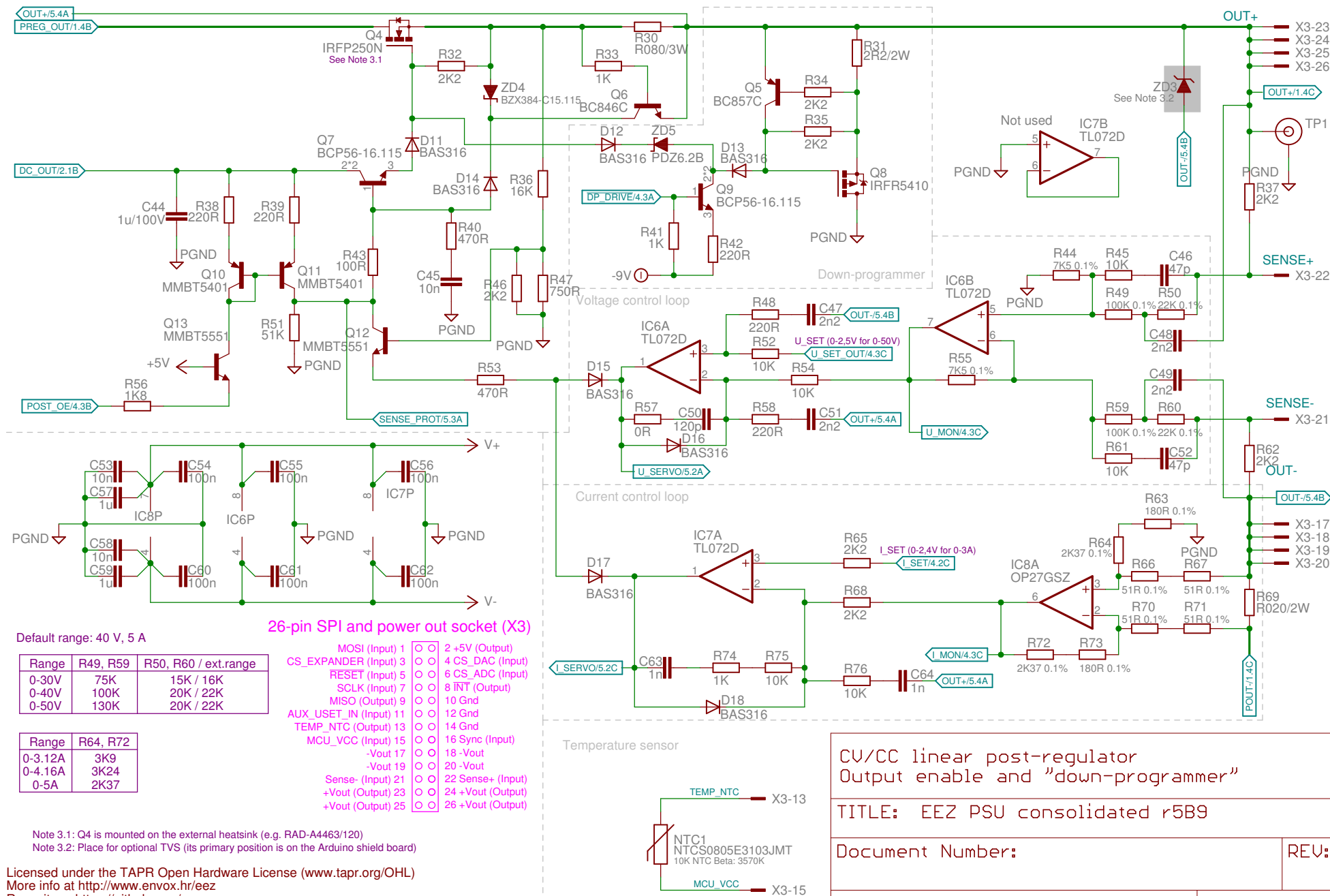
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Note 3.1: Q4 is mounted on the external heatsink (e.g. RAD-A4463/120)

Note 3.2: Place for optional TVS (its primary position is on the Arduino shield board)

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# Digital control (SPI)

SSW-113-02-T-D-RA

X3-9

X3-5

X3-1

X3-7

X3-3

X3-2

X3-10

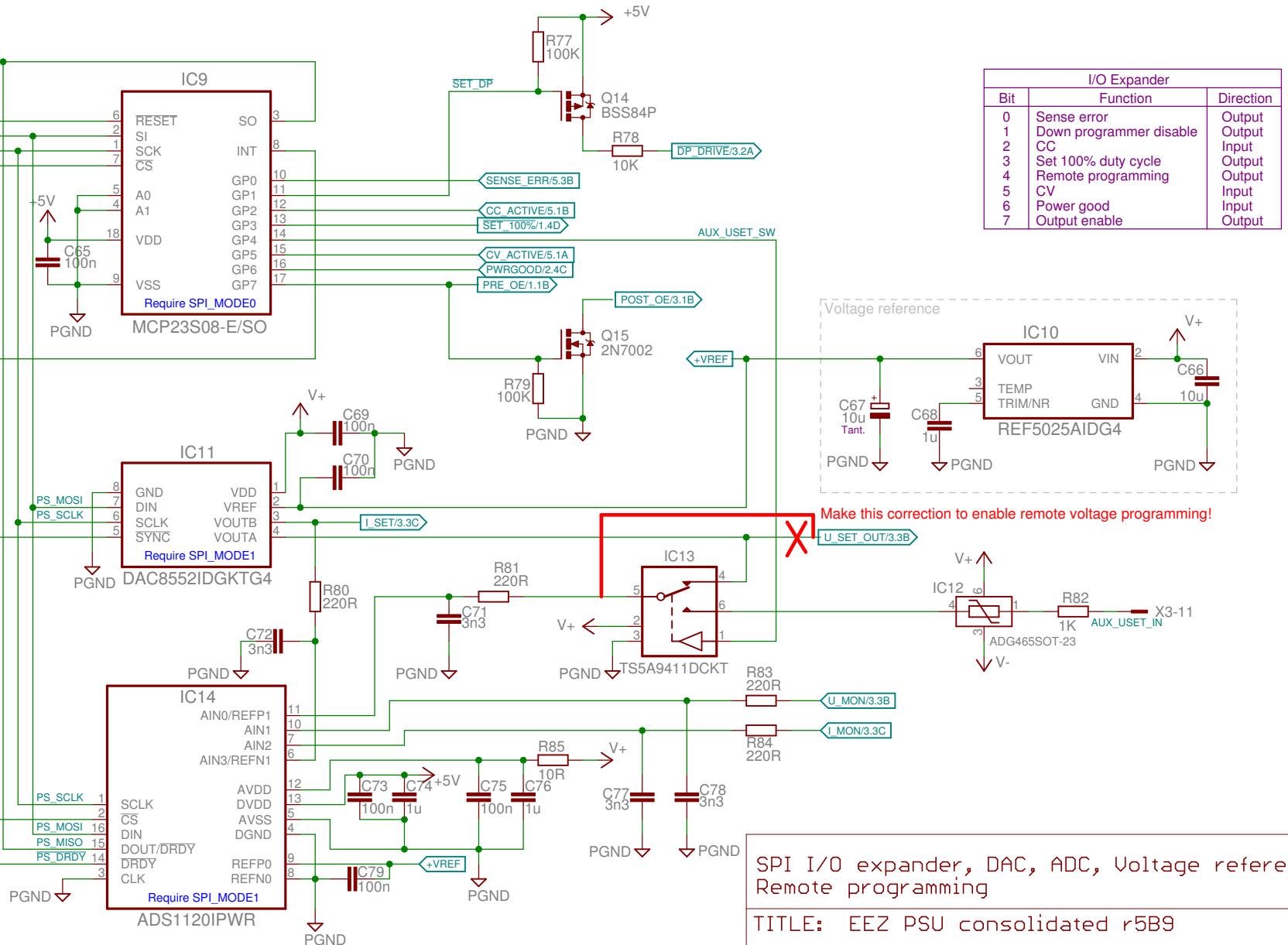
X3-12

X3-14

X3-8

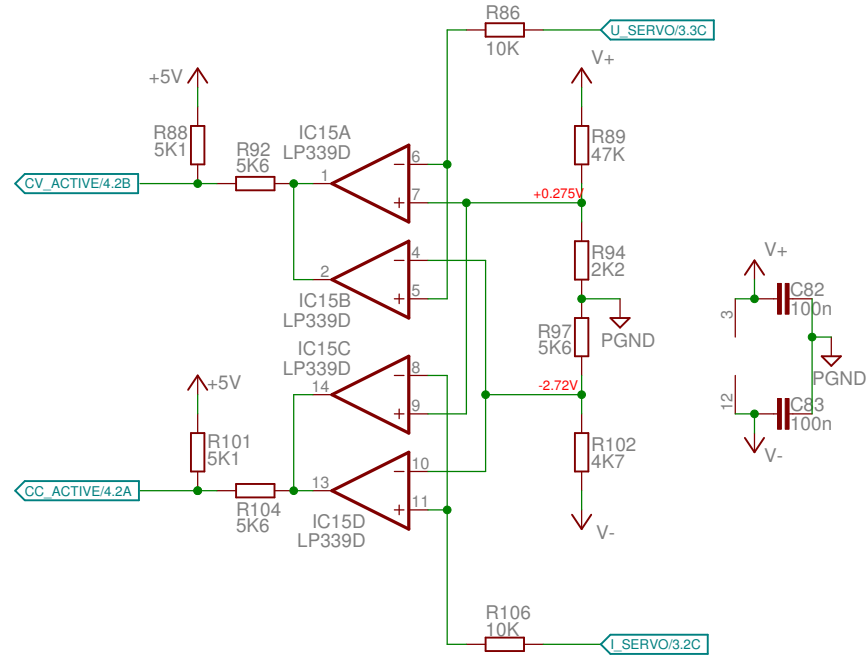
X3-4

X3-6

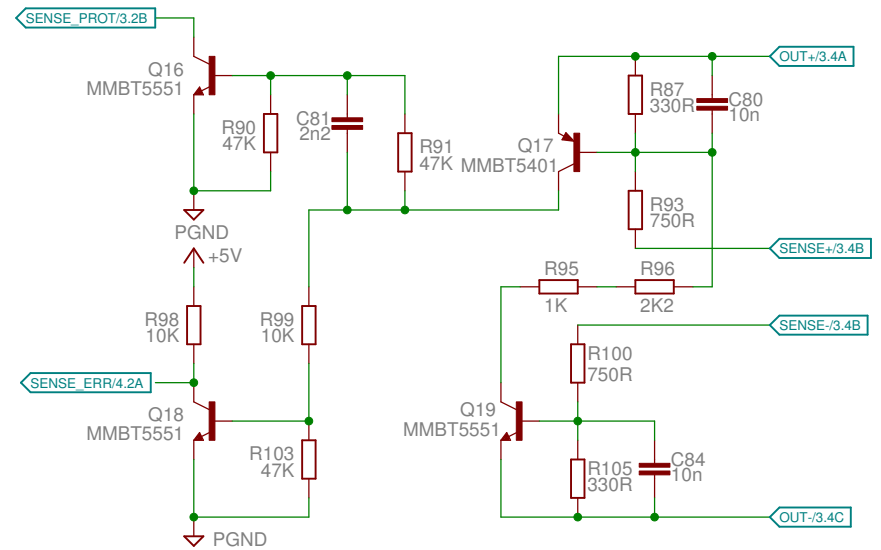


I/O Expander		
Bit	Function	Direction
0	Sense error	Output
1	Down programmer disable	Output
2	CC	Input
3	Set 100% duty cycle	Output
4	Remote programming	Output
5	CV	Input
6	Power good	Input
7	Output enable	Output

# Constant Voltage (CV) and Constant Current (CC) mode indicator



# Remote sense reverse polarity detection



CC/CV indicators, Sense error detection

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[illegible]

LED Link (Input) 1	○
LED Act (Input) 2	○
Shield 3	○
RX+ (Output) 4	○
RX- (Output) 5	○
TX+ (Input) 6	○
TX- (Input) 7	○
+3.3V (Input) 8	○

[illegible]

The schematic diagram illustrates the internal connections between two integrated circuits (ICs) and their external components. The components shown are IC19 (ADUM3160BRWZ) and IC18 (TPD2E001DZDR).

**IC19 (ADUM3160BRWZ) Pin Connections:**

- Power Supply:** VBUS2 (pin 16) is connected to +5V. GND2 (pin 9) is connected to PGND. VDD2 (pin 14) is connected to PGND. VBUS1 (pin 15) is connected to +5V. GND1 (pin 8) is connected to PGND.
- Signal Pins:** SPD (pin 13), PIN (pin 12), DD- (pin 11), and DD+ (pin 10) are connected to PGND. PDEN (pin 4), SPU (pin 5), UD- (pin 6), and UD+ (pin 7) are connected to PGND.
- Internal Connections:** IC19 is connected to IC18 via a series of resistors (R132, R133) and capacitors (C100, C103). The resistors are labeled 22R and 22R. The capacitors are labeled 100n and 100n. The resistors are also labeled 60R@100MHz and 60R@100MHz.

**IC18 (TPD2E001DZDR) Pin Connections:**

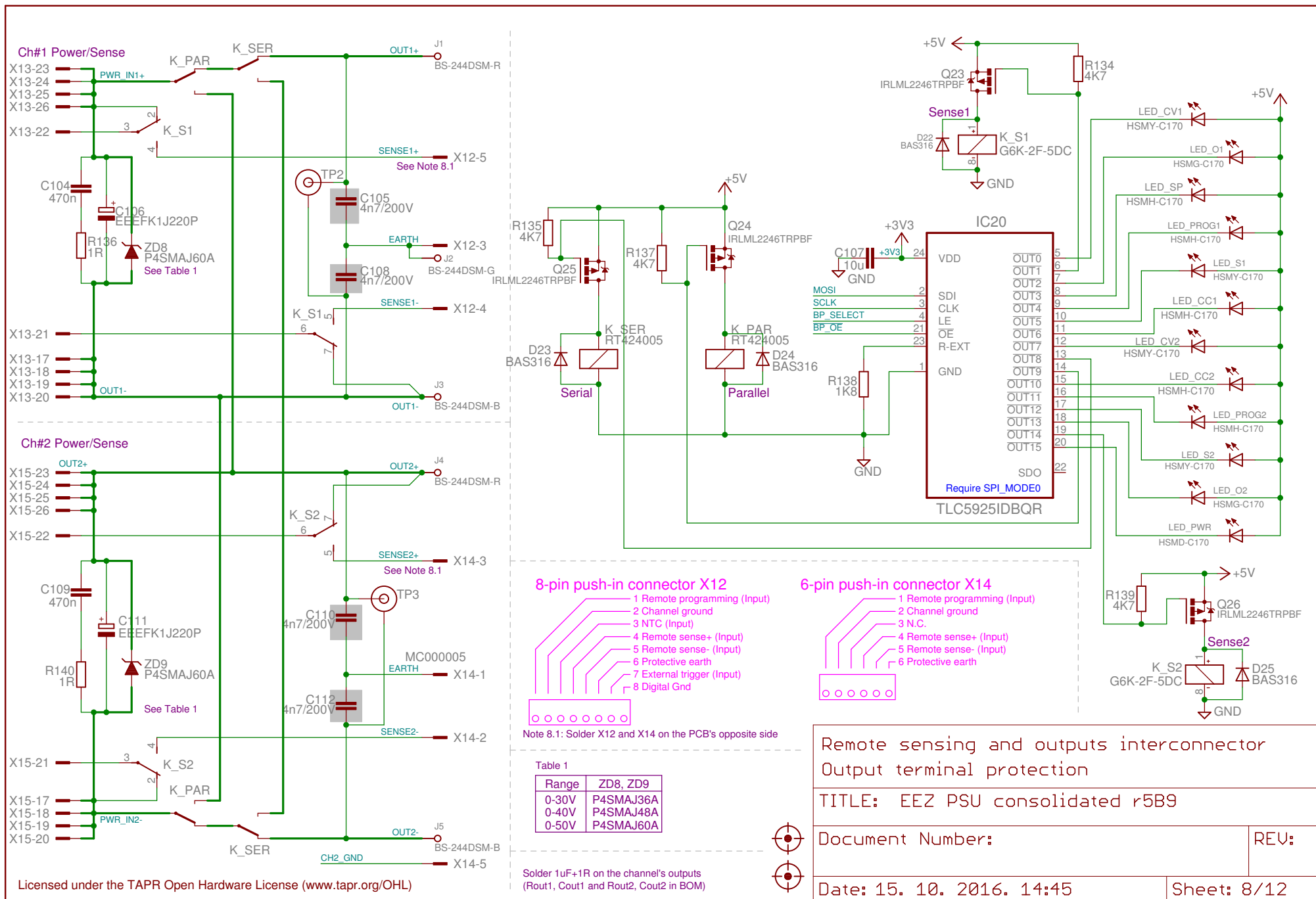
- Power Supply:** VCC (pin 4) is connected to +5V. GND (pin 1) is connected to PGND. IO1 (pin 2) and IO2 (pin 3) are connected to PGND.
- Signal Pins:** X9-1, X9-2, X9-3, X9-4, and X9-5 are connected to PGND.
- Internal Connections:** IC18 is connected to IC19 via a series of resistors (R132, R133) and capacitors (C100, C103). The resistors are labeled 22R and 22R. The capacitors are labeled 100n and 100n. The resistors are also labeled 60R@100MHz and 60R@100MHz.

**External Components:**

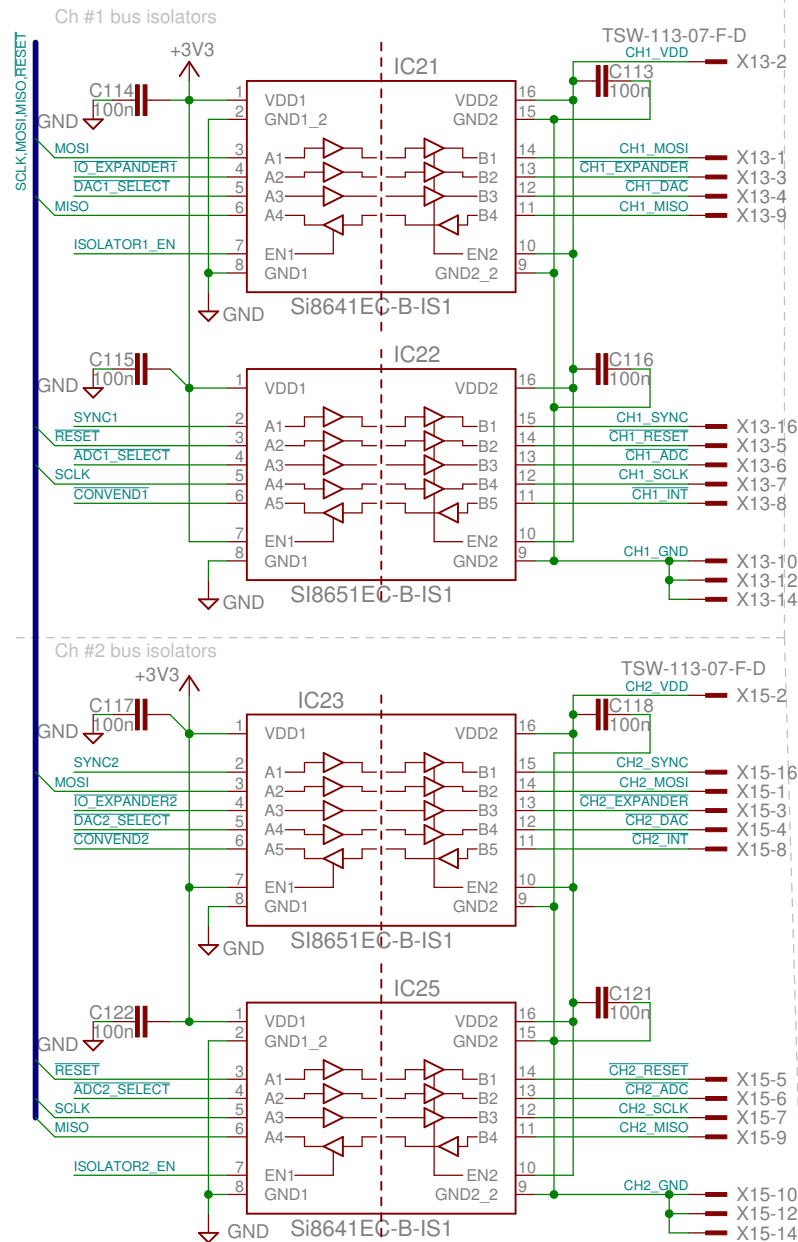
- Capacitors:** C99 (100n), C102 (100n), C100 (100n), and C103 (100n) are connected to PGND.
- Resistors:** R132 (22R) and R133 (22R) are connected to PGND.
- Resistors:** FB5 (60R@100MHz) and FB6 (60R@100MHz) are connected to PGND.
- USB Connector:** X11 (2411-01) is connected to the USB pins (1, 2, 3, 4).
- AC Earth:** AC\_EARTH/6.2B is connected to PGND.

Vcc 1	<input type="radio"/>
Data- 2	<input type="radio"/>
Data+ 3	<input type="radio"/>
Gnd 4	<input type="radio"/>
Shield 5	<input type="radio"/>

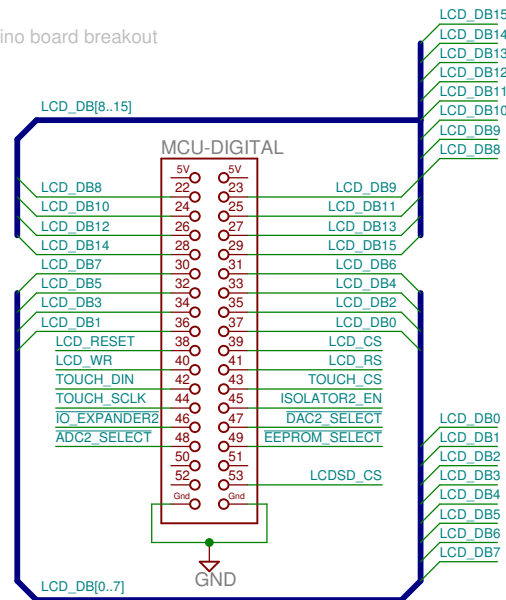
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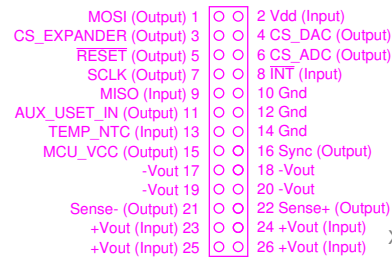




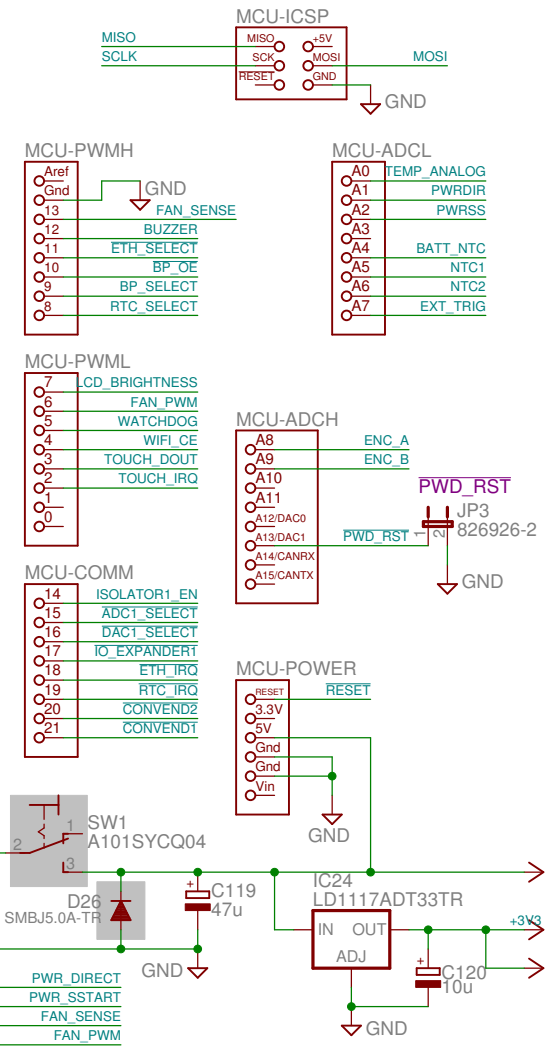
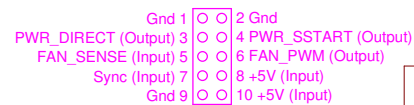
Arduino board breakout



26-pin SPI and power out socket (X13, X15)



10-pin IDC connector X16



I/O isolators for communication with post-regulator PCB, Arduino breakout

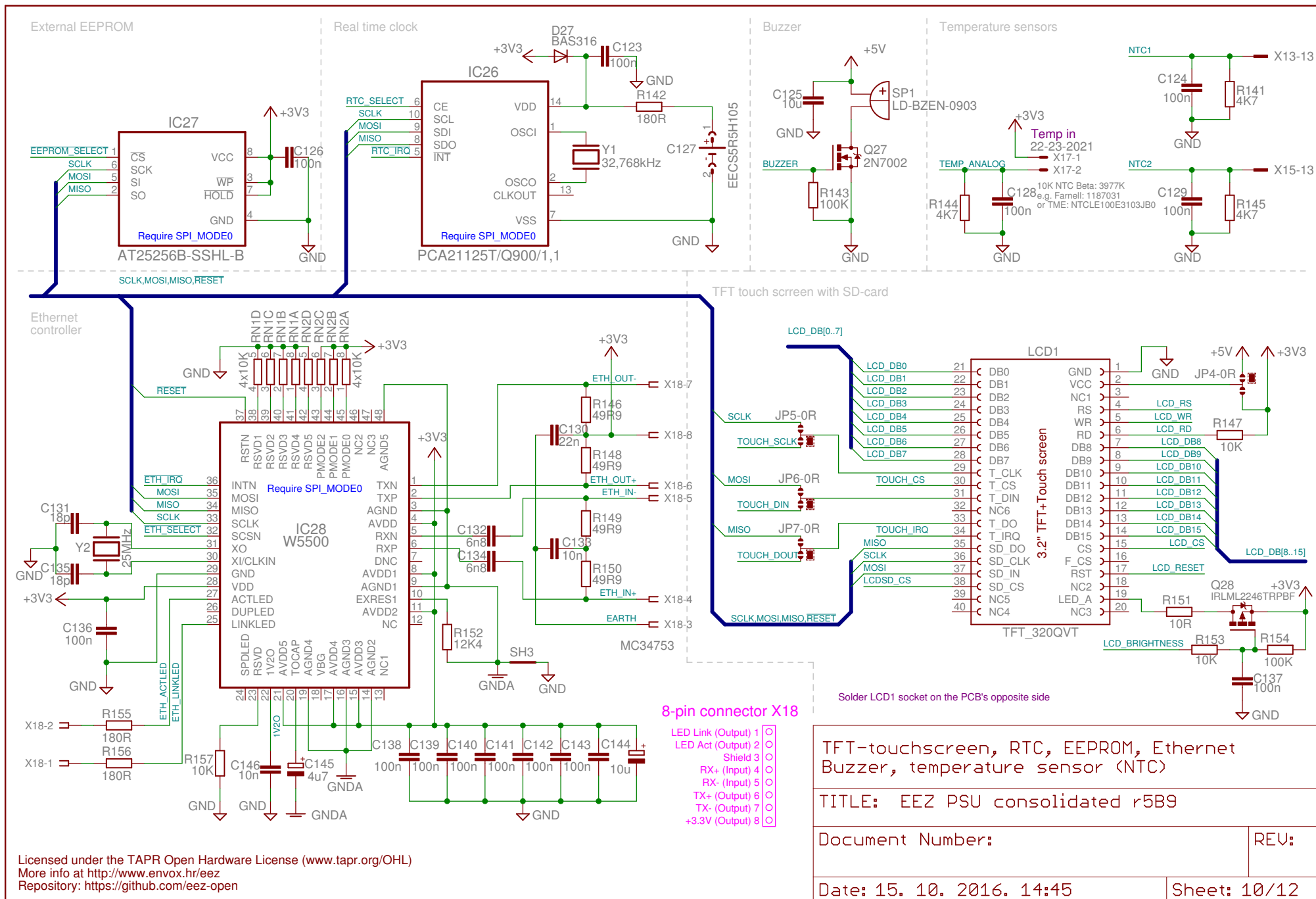
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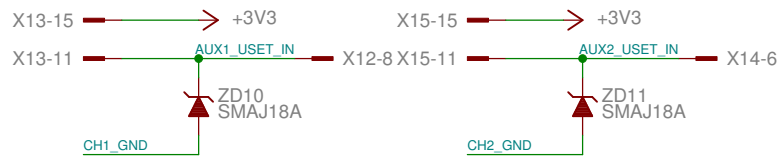
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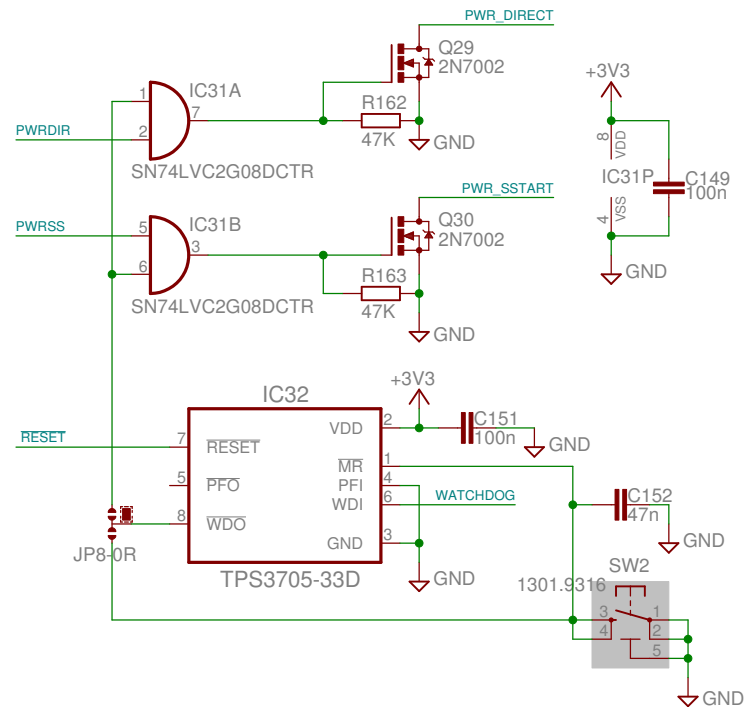
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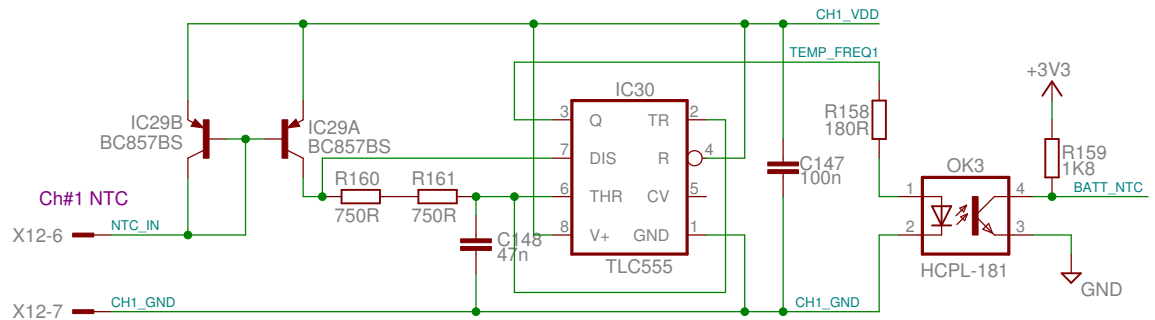
## Remote programming inputs



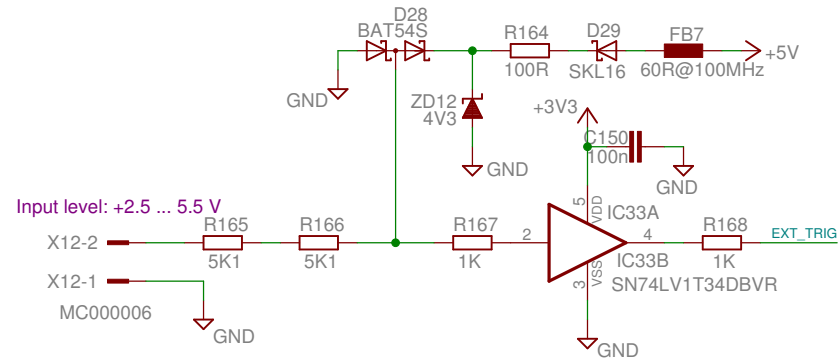
## Power-on reset generator and power control



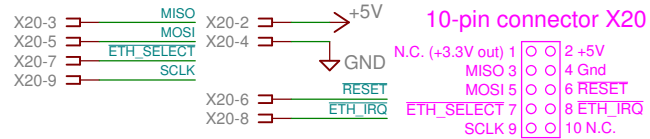
## Channel 1 V/F converter for battery NTC (optional)



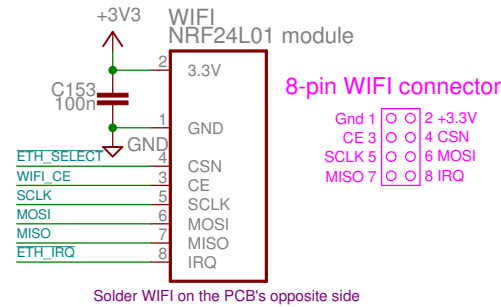
## External trigger protection and level shifter/buffer



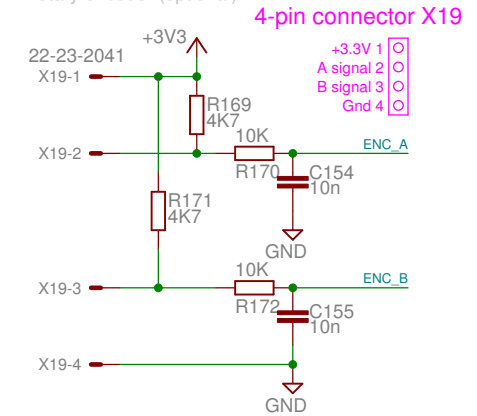
### Optional Ethernet module connector



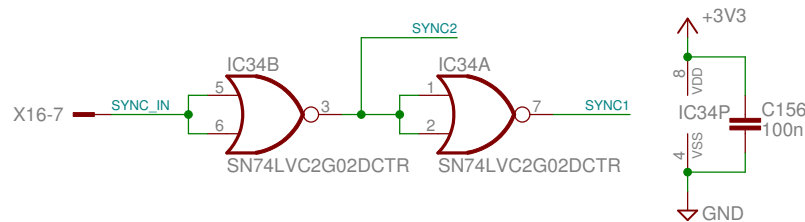
### Optional Wifi module connector



### Rotary encoder (optional)



### Master sync signal phase shifting



Optional ethernet, Wifi and encoder  
Power boards SMPS sync

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