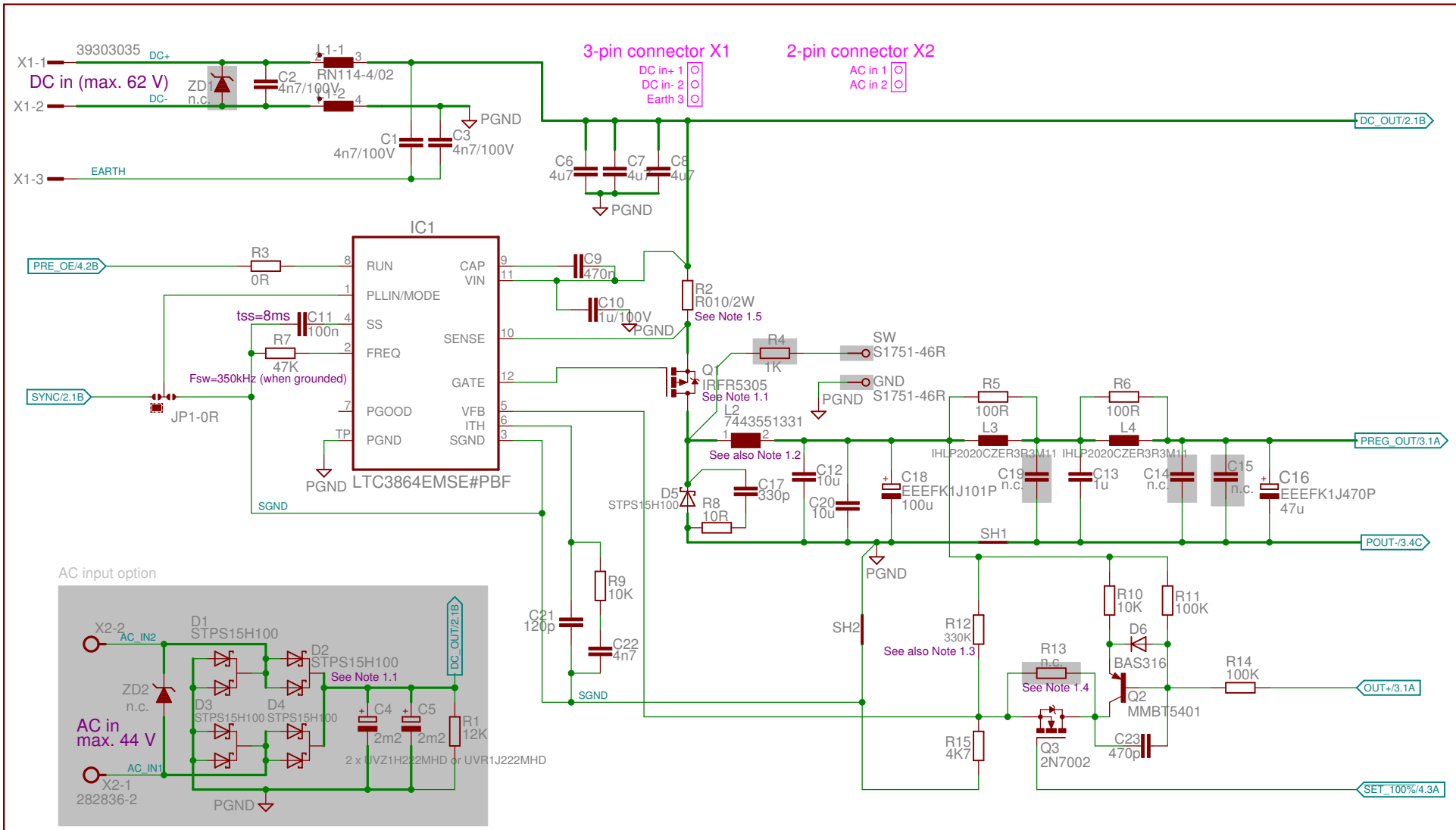

Note 1.1: Possible alternative AUIRFR5305, SUD19P06-60, SPD30P06P or other with similar or lower input capacitance
Note 1.2: WE 7447709330, WE 7443551331, Coilcraft MSS1210-333, Coilcraft XAL1510-333, Vishay IHLP4040DZER470M11, etc.
Note 1.3: Use 240K for 30 VAC main transformer
Note 1.4: Install 0R 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

SMPS power pre-regulator with 100% duty cycle

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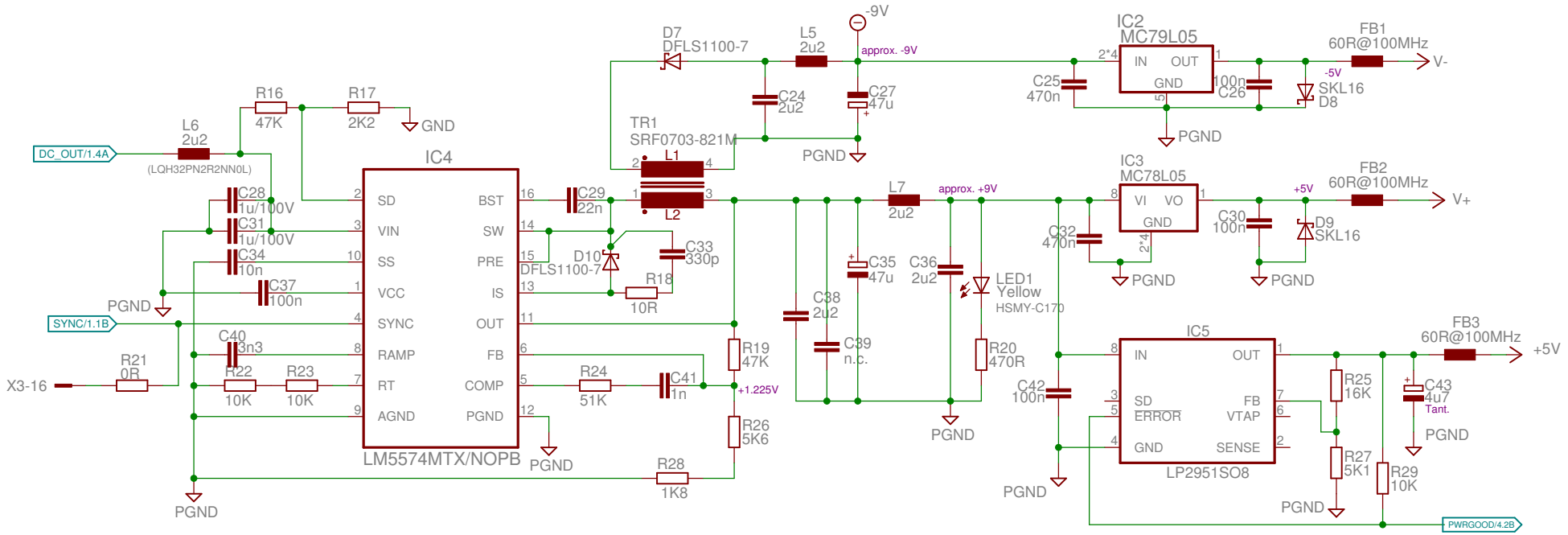

Bias power supply with SMPS pre-regulator

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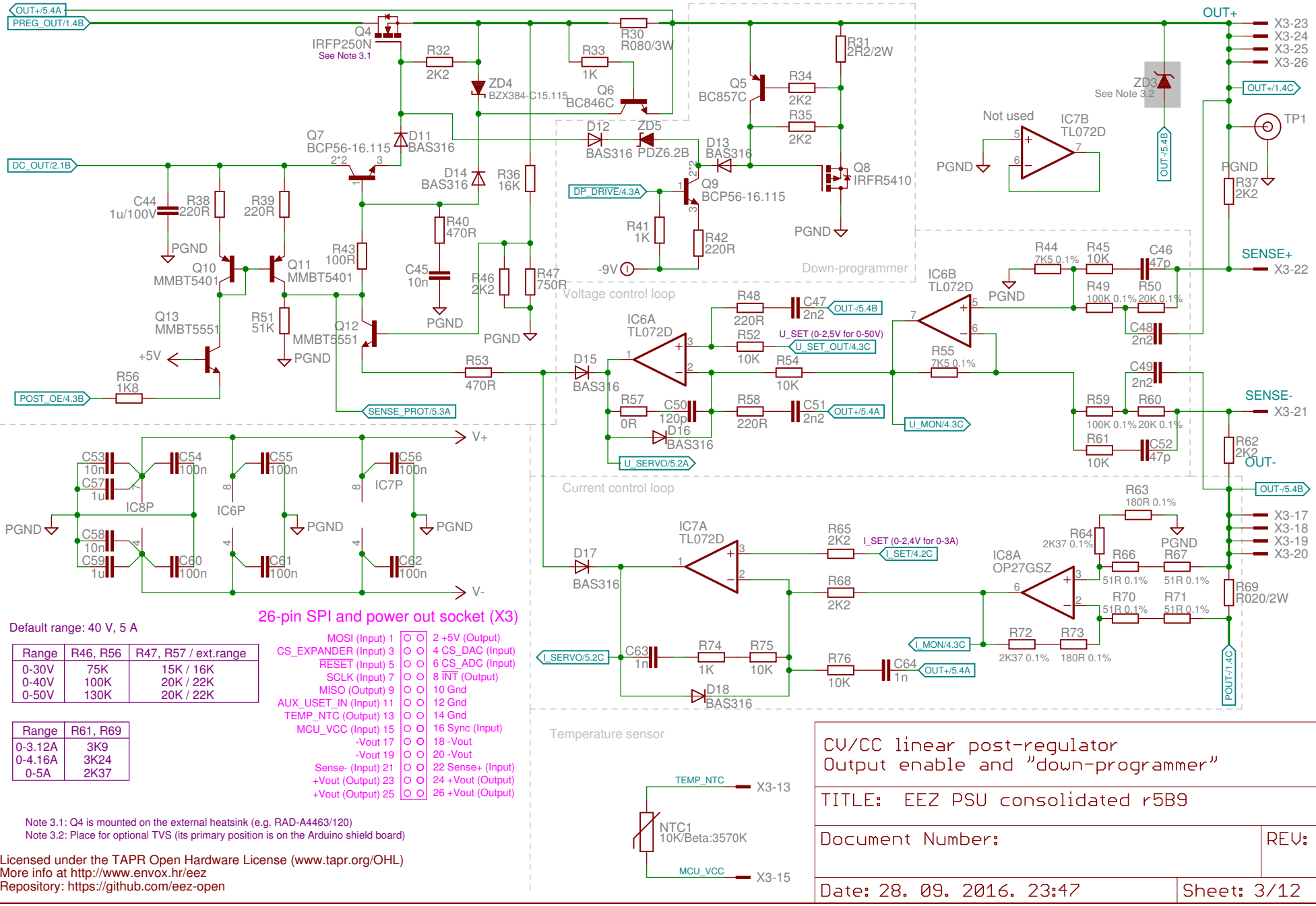
OUT+/5.4A
PREG_OUT/1.4B
Q4
IRFP250N
See Note 3.1
R32
2K2
ZD4
BZX384-C15.115
R33
1K
R30
R080/3W
Q6
BC846C
Q5
BC857C
R34
2K2
R35
2K2
R31
2R2/2W
Q8
IRFR5410
D12
BAS316
ZD5
PDZ6.2B
D13
BAS316
Q9
BCP56-16.115
DP_DRIVE/4.3A
R41
1K
R42
220R
-9V
PGND
Down-programmer
Q7
BCP56-16.115
2*2
D11
BAS316
D14
BAS316
R36
16K
R40
470R
C45
10n
R46
2K2
R47
750R
DC_OUT/2.1B
C44
1u/100V
R38
220R
R39
220R
R43
100R
Q10
MMBT5401
Q11
MMBT5401
Q13
MMBT5551
Q12
MMBT5551
R51
51K
+5V
R56
1K8
POST_OE/4.3B
R53
470R
SENSE_PROT/5.3A
Voltage control loop
IC6A
TL072D
R48
220R
C47
2n2
OUT-/5.4B
R52
10K
U_SET (0-2,5V for 0-50V)
U_SET_OUT/4.3C
R54
10K
D15
BAS316
R57
0R
C50
120p
D16
BAS316
R58
220R
C51
2n2
OUT+/5.4A
U_SERVO/5.2A
IC6B
TL072D
R55
7K5 0.1%
U_MON/4.3C
R44
7K5 0.1%
R45
10K
C46
47p
R49
100K 0.1%
R50
20K 0.1%
C48
2n2
C49
2n2
R59
100K 0.1%
R60
20K 0.1%
R61
10K
C52
47p
Not used
IC7B
TL072D
PGND
OUT-/5.4B
ZD3
See Note 3.2
OUT+
X3-23
X3-24
X3-25
X3-26
OUT+/1.4C
TP1
PGND
R37
2K2
SENSE+
X3-22
SENSE-
X3-21
R62
2K2
OUT-
OUT-/5.4B
X3-17
X3-18
X3-19
X3-20
R69
R020/2W
POUT-/1.4C
V+
V-
C53
10n
C57
1u
C54
100n
IC8P
C55
100n
IC6P
C56
100n
IC7P
C58
10n
C59
1u
C60
100n
C61
100n
C62
100n
PGND
Current control loop
IC7A
TL072D
D17
BAS316
R65
2K2
I_SET (0-2,4V for 0-3A)
I_SET/4.2C
R68
2K2
I_SERVO/5.2C
C63
1n
R74
1K
R75
10K
D18
BAS316
R76
10K
C64
1n
OUT+/5.4A
I_MON/4.3C
IC8A
OP27GSZ
R63
180R 0.1%
R64
2K37 0.1%
R66
51R 0.1%
R67
51R 0.1%
R70
51R 0.1%
R71
51R 0.1%
R72
2K37 0.1%
R73
180R 0.1%
26-pin SPI and power out socket (X3)
MOSI (Input) 1
2 +5V (Output)
CS_EXPANDER (Input) 3
4 CS_DAC (Input)
RESET (Input) 5
6 CS_ADC (Input)
SCLK (Input) 7
8 INT (Output)
MISO (Output) 9
10 Gnd
AUX_USET_IN (Input) 11
12 Gnd
TEMP_NTC (Output) 13
14 Gnd
MCU_VCC (Input) 15
16 Sync (Input)
-Vout 17
18 -Vout
-Vout 19
20 -Vout
Sense- (Input) 21
22 Sense+ (Input)
+Vout (Output) 23
24 +Vout (Output)
+Vout (Output) 25
26 +Vout (Output)
Default range: 40 V, 5 A
Range | R46, R56 | R47, R57 / ext.range
0-30V | 75K | 15K / 16K
0-40V | 100K | 20K / 22K
0-50V | 130K | 20K / 22K
Range | R61, R69
0-3.12A | 3K9
0-4.16A | 3K24
0-5A | 2K37
Temperature sensor
TEMP_NTC
X3-13
NTC1
10K/Beta:3570K
MCU_VCC
X3-15
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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More info at http://www.envox.hr/eez
Repository: https://github.com/eez-open
CV/CC linear post-regulator
Output enable and "down-programmer"
TITLE: EEZ PSU consolidated r5B9
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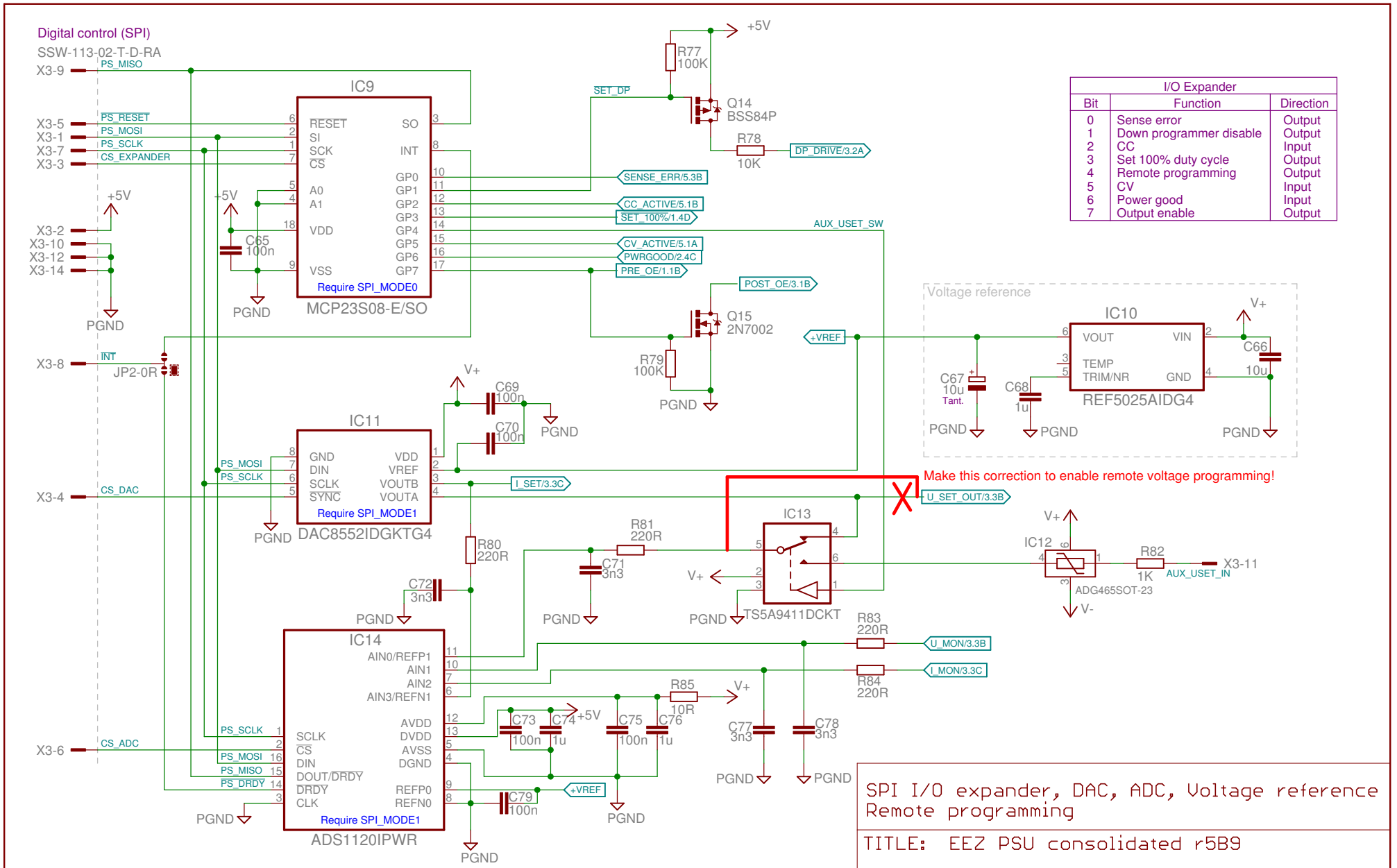

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More info at http://www.envox.hr/eez
Repository: https://github.com/eez-open

SPI I/O expander, DAC, ADC, Voltage reference
Remote programming

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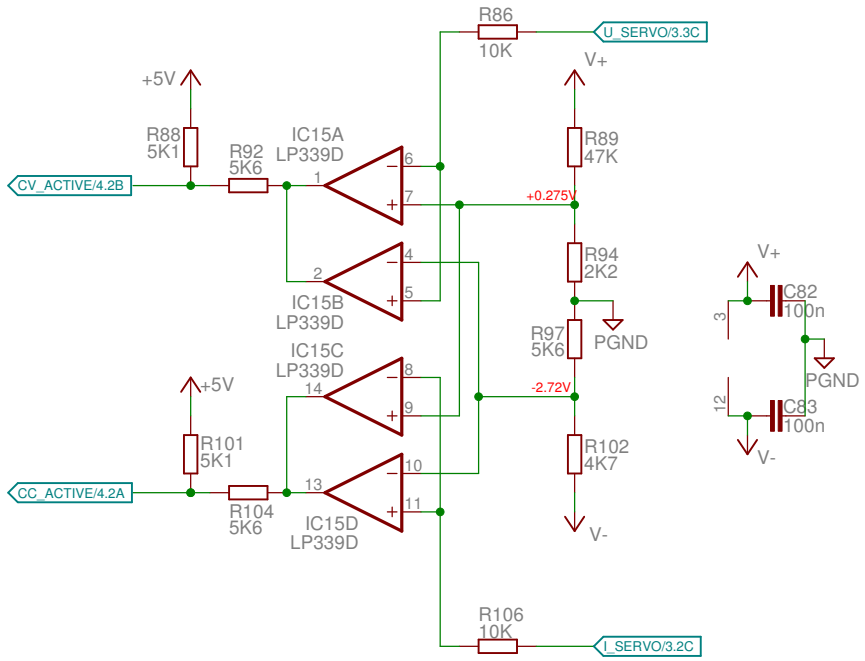
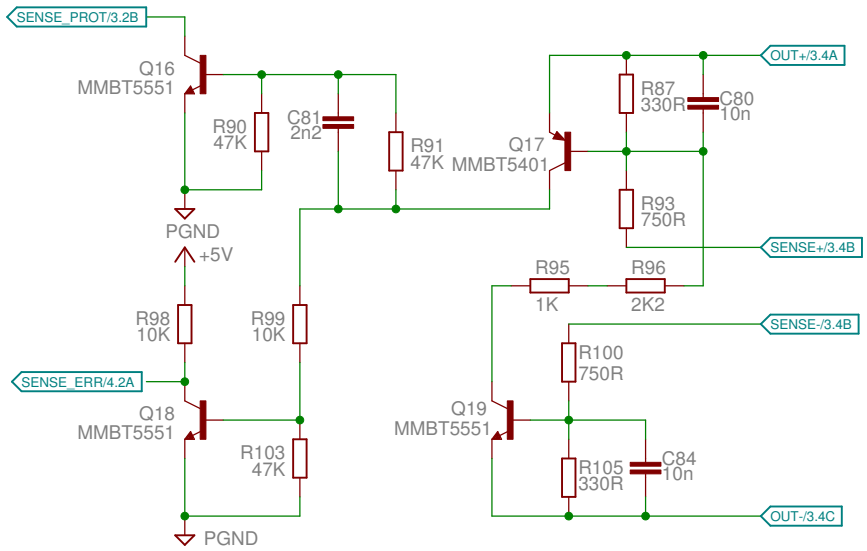
Constant Voltage (CV) and Constant Current (CC) mode indicator



Remote sense reverse polarity detection



CC/CV indicators, Sense error detection	
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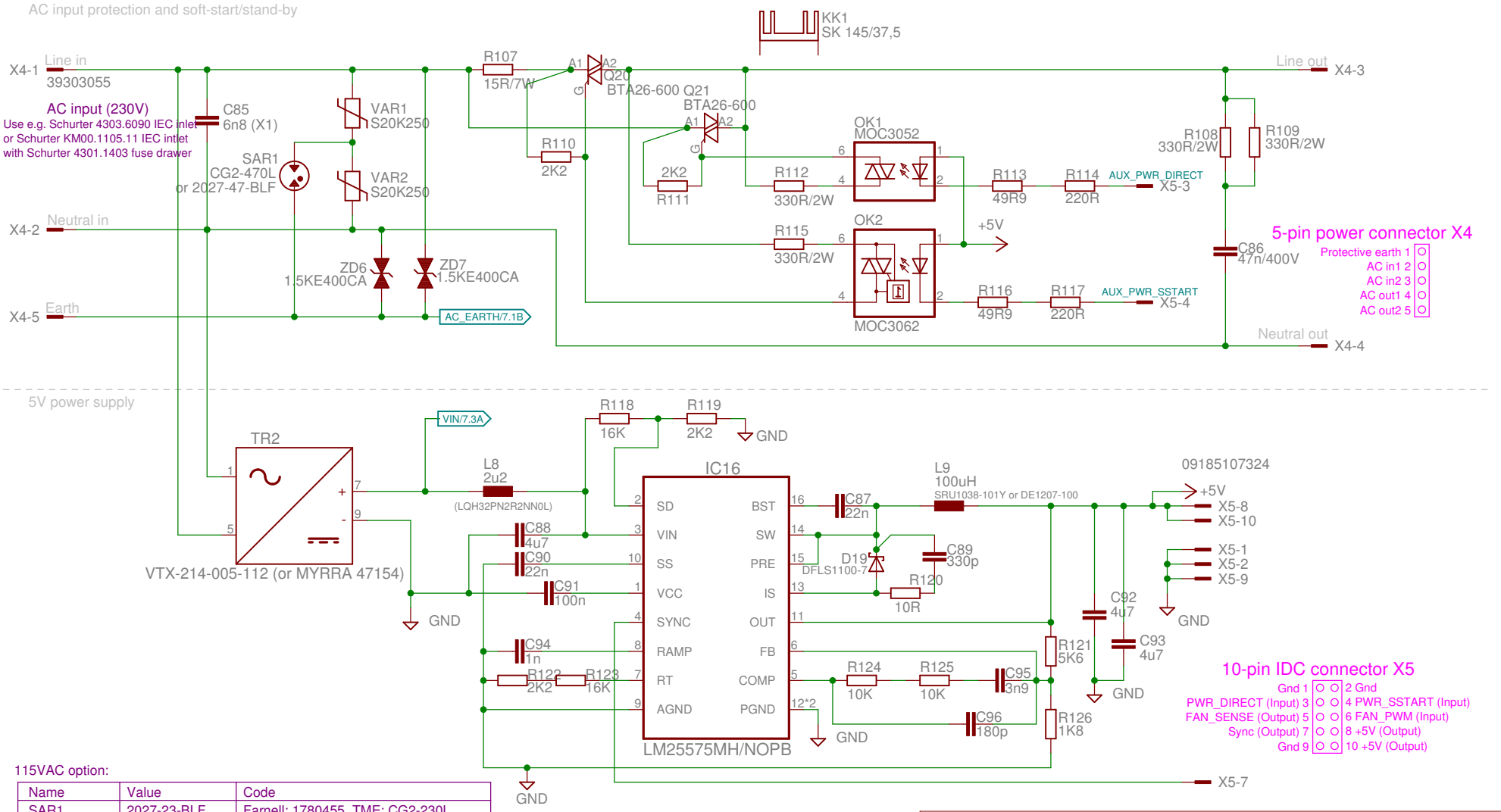

115VAC option:

Name	Value	Code
SAR1	2027-23-BLF	Farnell: 1780455, TME: CG2-230L
TR2	VPP24-210	Digikey: 237-1085-ND Mouser: 553-VPP24-210 Newark: 93F8764
	or AC/DC module Myrra 47202	Farnell: 2469211
VAR1, VAR2	S20K140	Farnell: 1004387, TME: SIOV-S20K140
ZD1, ZD2	1.5KE200CA	Farnell: 1837117, TME: 1.5KE200CA

AC input protection, in-rush current limiter
+5V/1A power supply

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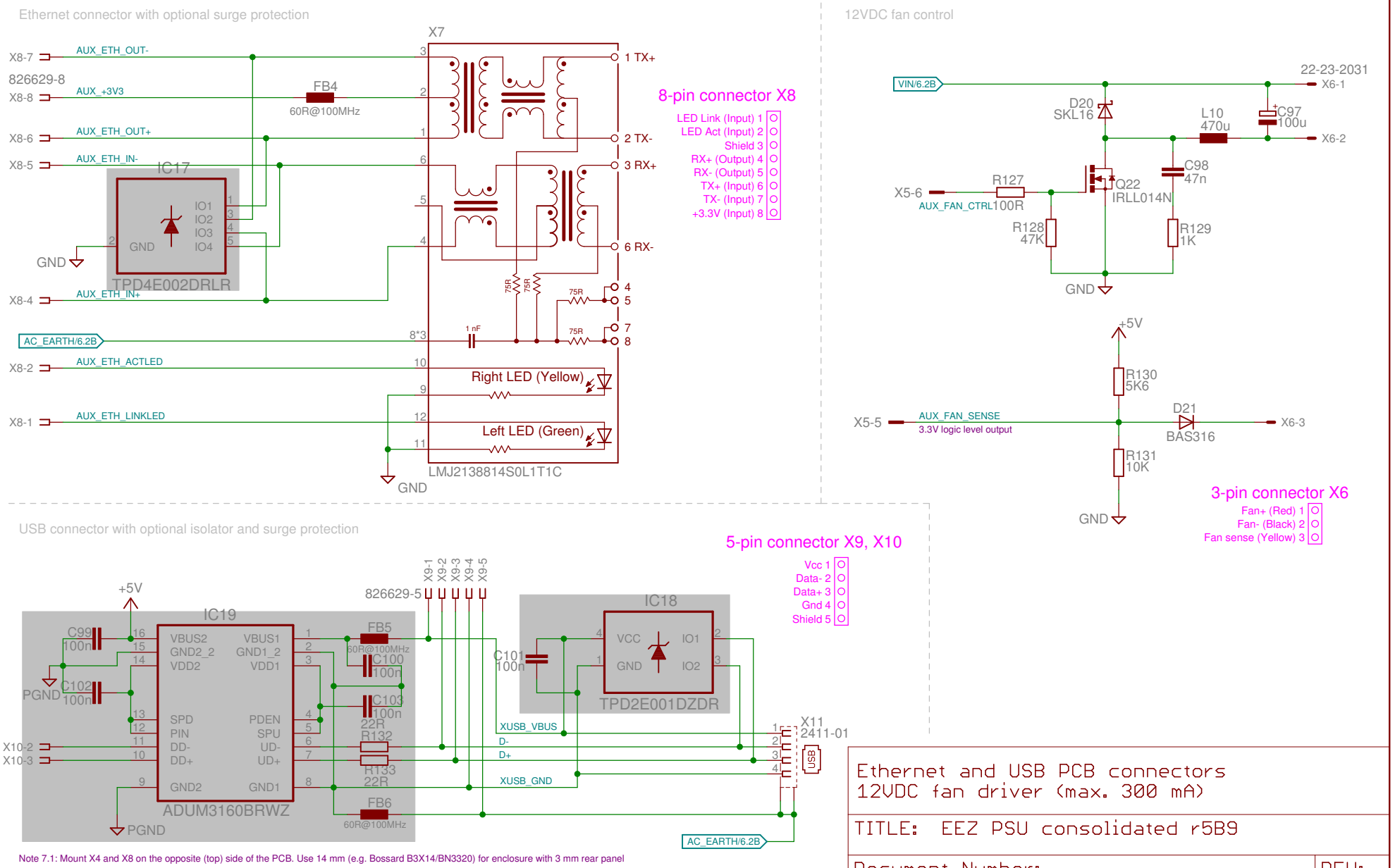

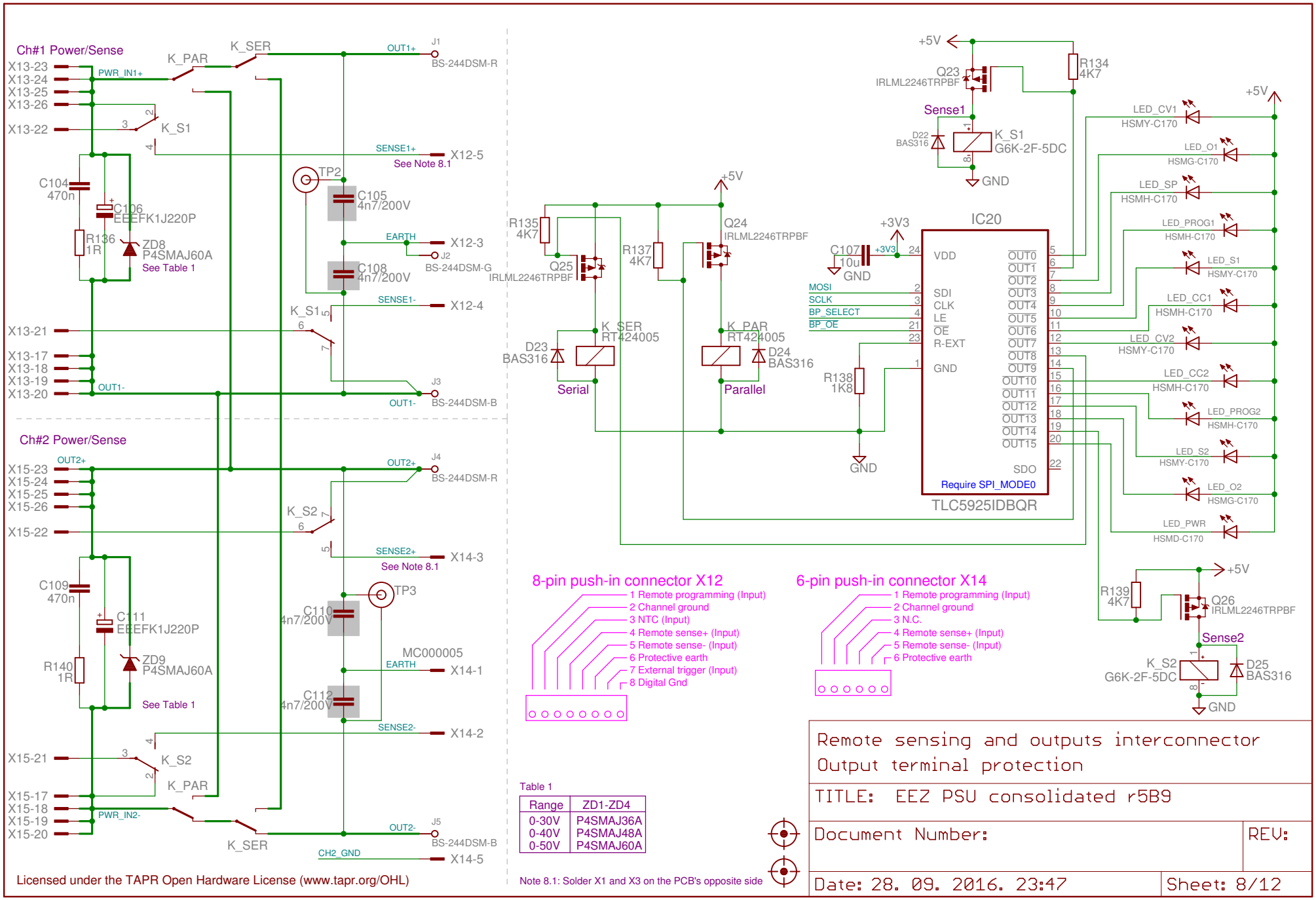
Ch#1 Power/Sense
X13-23
X13-24
X13-25
X13-26
X13-22
PWR_IN1+
K_PAR
K_SER
OUT1+
J1
BS-244DSM-R
K_S1
SENSE1+
See Note 8.1
X12-5
TP2
C104
470n
C106
EEEFK1J220P
C105
4n7/200V
EARTH
X12-3
J2
BS-244DSM-G
R136
1R
ZD8
P4SMAJ60A
See Table 1
C108
4n7/200V
SENSE1-
X12-4
K_S1
X13-21
X13-17
X13-18
X13-19
X13-20
OUT1-
J3
OUT1-
BS-244DSM-B
Ch#2 Power/Sense
OUT2+
X15-23
X15-24
X15-25
X15-26
X15-22
J4
OUT2+
BS-244DSM-R
K_S2
SENSE2+
See Note 8.1
X14-3
C109
470n
C111
EEEFK1J220P
TP3
C110
4n7/200V
MC000005
EARTH
X14-1
R140
1R
ZD9
P4SMAJ60A
See Table 1
C112
4n7/200V
SENSE2-
X14-2
X15-21
K_S2
K_PAR
X15-17
X15-18
X15-19
X15-20
PWR_IN2-
K_SER
OUT2-
J5
BS-244DSM-B
CH2_GND
X14-5
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+5V
R135
4K7
Q25
IRLML2246TRPBF
R137
4K7
Q24
IRLML2246TRPBF
K_SER
RT424005
K_PAR
RT424005
D23
BAS316
D24
BAS316
Serial
Parallel
GND
+5V
Q23
IRLML2246TRPBF
R134
4K7
Sense1
D22
BAS316
K_S1
G6K-2F-5DC
GND
+3V3
C107
10u
GND
IC20
MOSI
SCLK
BP_SELECT
BP_OE
R138
1K8
VDD
SDI
CLK
LE
OE
R-EXT
GND
SDO
OUT0
OUT1
OUT2
OUT3
OUT4
OUT5
OUT6
OUT7
OUT8
OUT9
OUT10
OUT11
OUT12
OUT13
OUT14
OUT15
Require SPI_MODE0
TLC5925IDBQR
+5V
LED_CV1
HSMY-C170
LED_O1
HSMG-C170
LED_SP
HSMH-C170
LED_PROG1
HSMH-C170
LED_S1
HSMY-C170
LED_CC1
HSMH-C170
LED_CV2
HSMY-C170
LED_CC2
HSMH-C170
LED_PROG2
HSMH-C170
LED_S2
HSMY-C170
LED_O2
HSMG-C170
LED_PWR
HSMD-C170
8-pin push-in connector X12
1 Remote programming (Input)
2 Channel ground
3 NTC (Input)
4 Remote sense+ (Input)
5 Remote sense- (Input)
6 Protective earth
7 External trigger (Input)
8 Digital Gnd
6-pin push-in connector X14
1 Remote programming (Input)
2 Channel ground
3 N.C.
4 Remote sense+ (Input)
5 Remote sense- (Input)
6 Protective earth
Table 1
Range
ZD1-ZD4
0-30V
P4SMAJ36A
0-40V
P4SMAJ48A
0-50V
P4SMAJ60A
Note 8.1: Solder X1 and X3 on the PCB's opposite side
+5V
R139
4K7
Q26
IRLML2246TRPBF
Sense2
K_S2
G6K-2F-5DC
D25
BAS316
GND
Remote sensing and outputs interconnector
Output terminal protection
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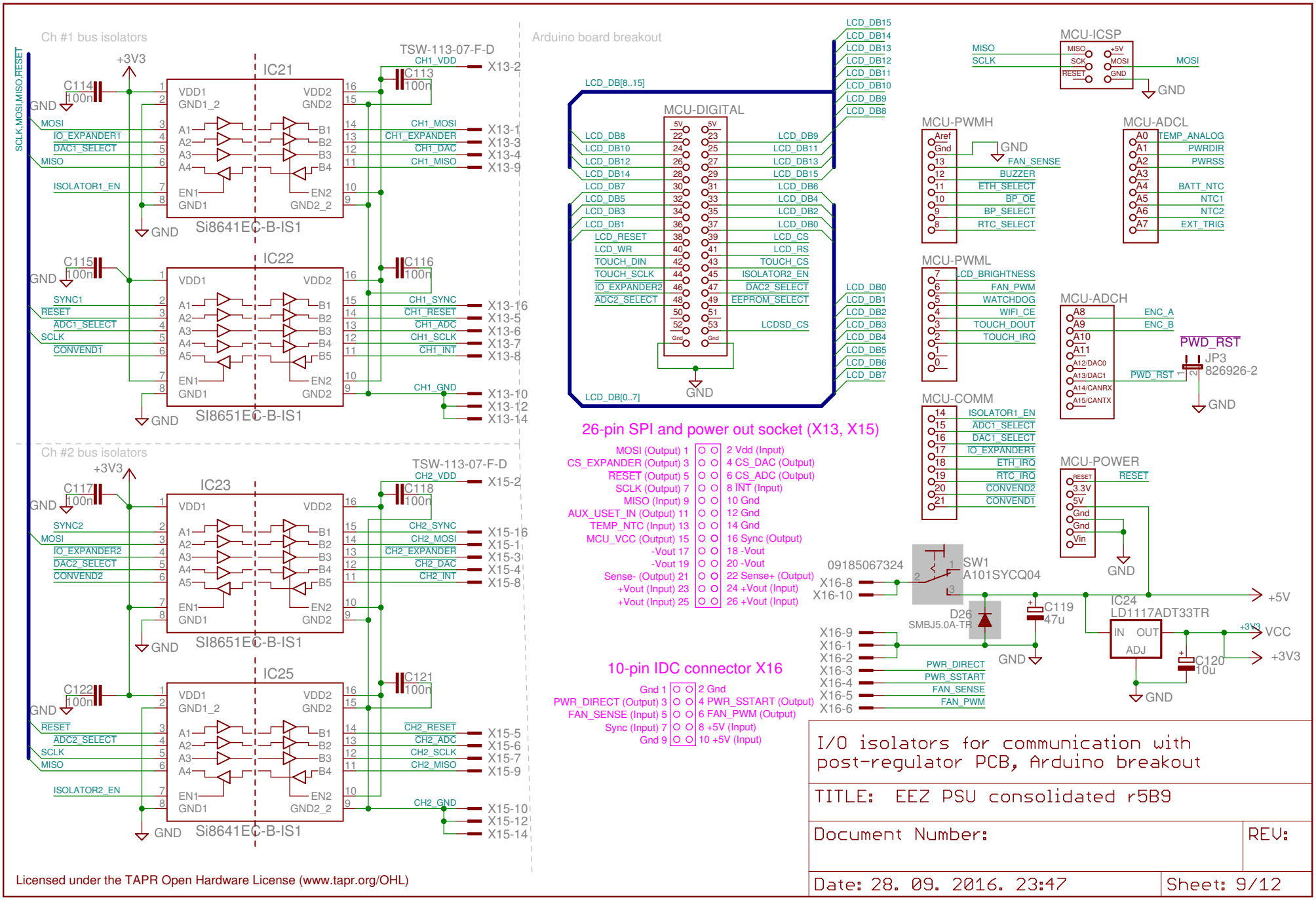

I/O isolators for communication with post-regulator PCB, Arduino breakout

TITLE: EEZ PSU consolidated r5B9

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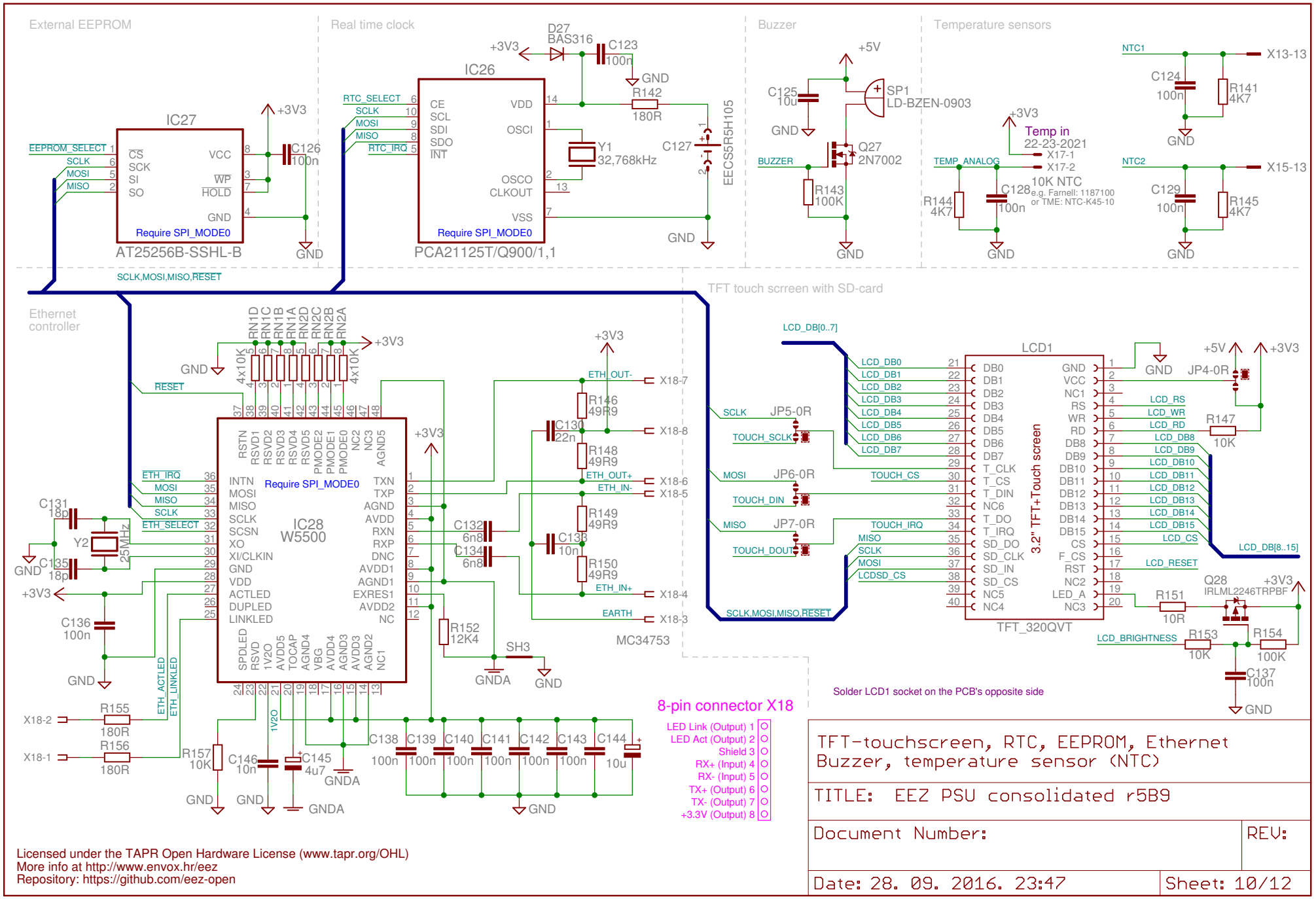
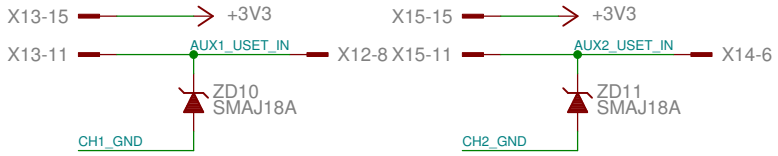
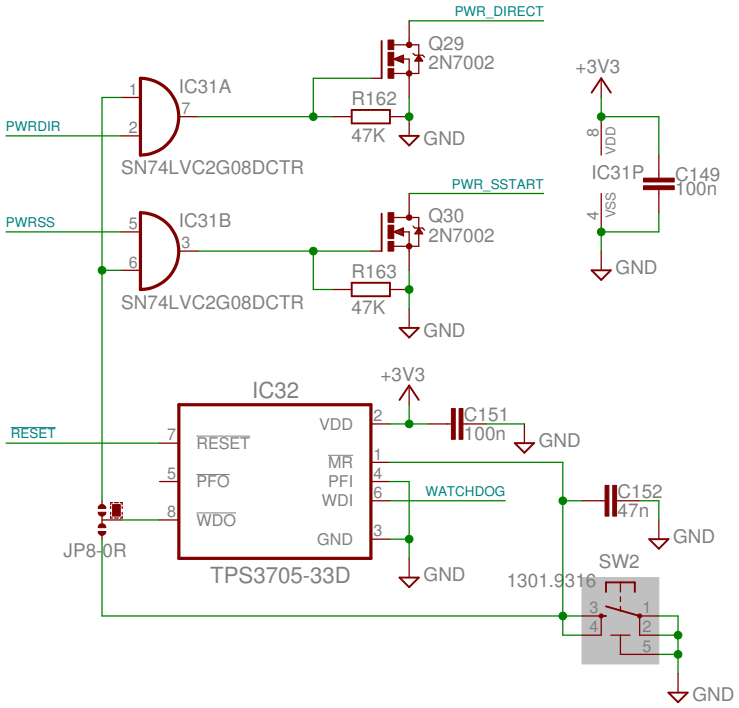


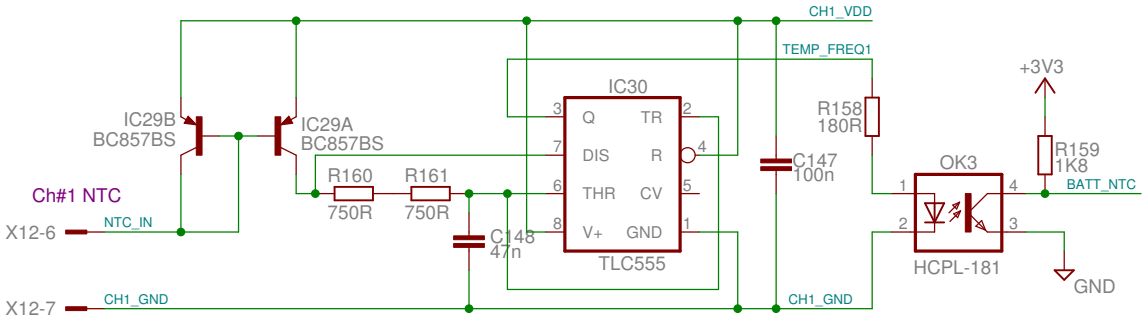
Remote programming inputs



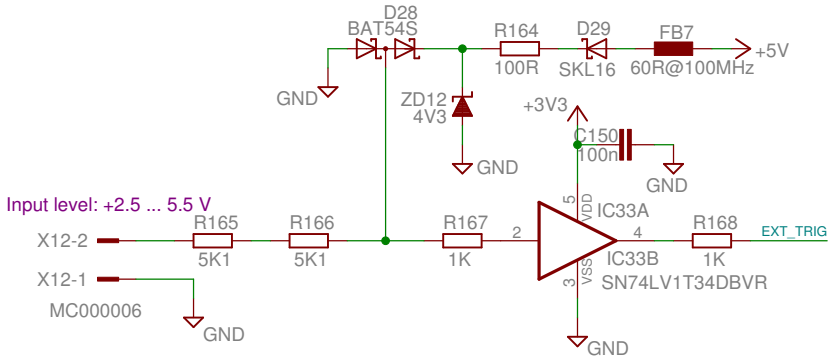
Power-on reset generator and power control



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



External trigger protection and level shifter/buffer



Reset control, soft-start driver, V/F converter for battery NTC, External trigger	
TITLE: EEZ PSU consolidated r5B9	
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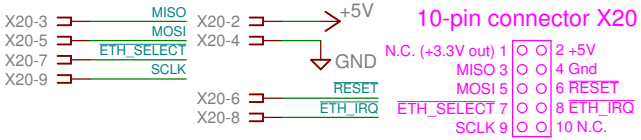
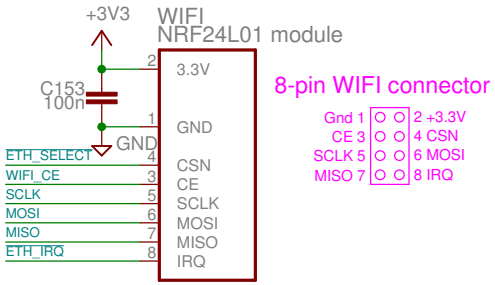
Optional Ethernet module connector

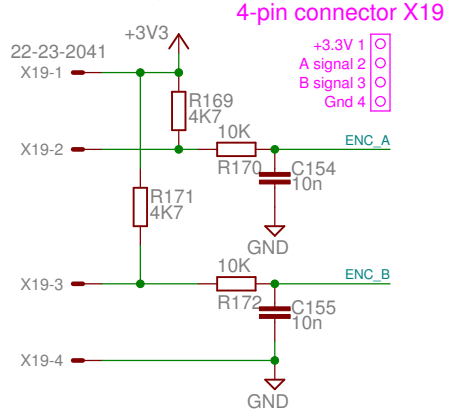


Optional Wifi module connector

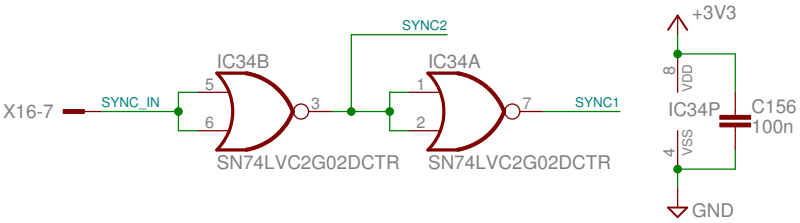


Solder WIFI on the PCB's opposite side

Rotary encoder (optional)



Master sync signal phase shifting



Optional ethernet, Wifi and encoder
Power boards SMPS sync

TITLE: EEZ PSU consolidated r5B9

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