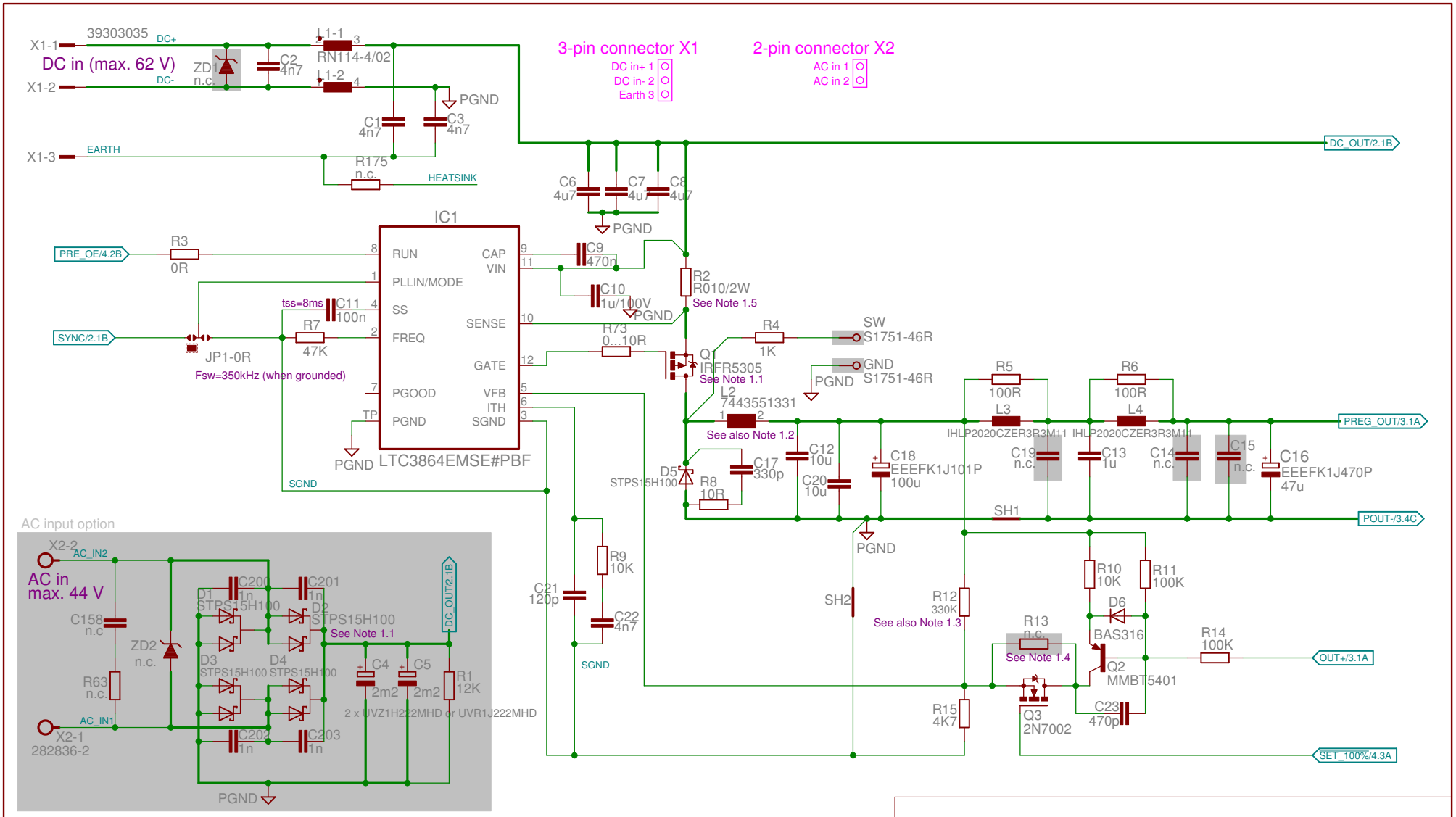

Note 1.1: Possible alternative AUIRFR5305, SUD19P06-60, SPD30P06P or other with similar or lower input capacitance
Note 1.2: WE 7447709330, WE 7443551331, Coilcraft MSS1210-333, Coilcraft XAL1510-333, Vishay IHLP4040DZER470M11, etc.
Note 1.3: Use 240K for 30 VAC main transformer
Note 1.4: Install 0R only if 100% Duty cycle feature for Low Ripple mode is not needed
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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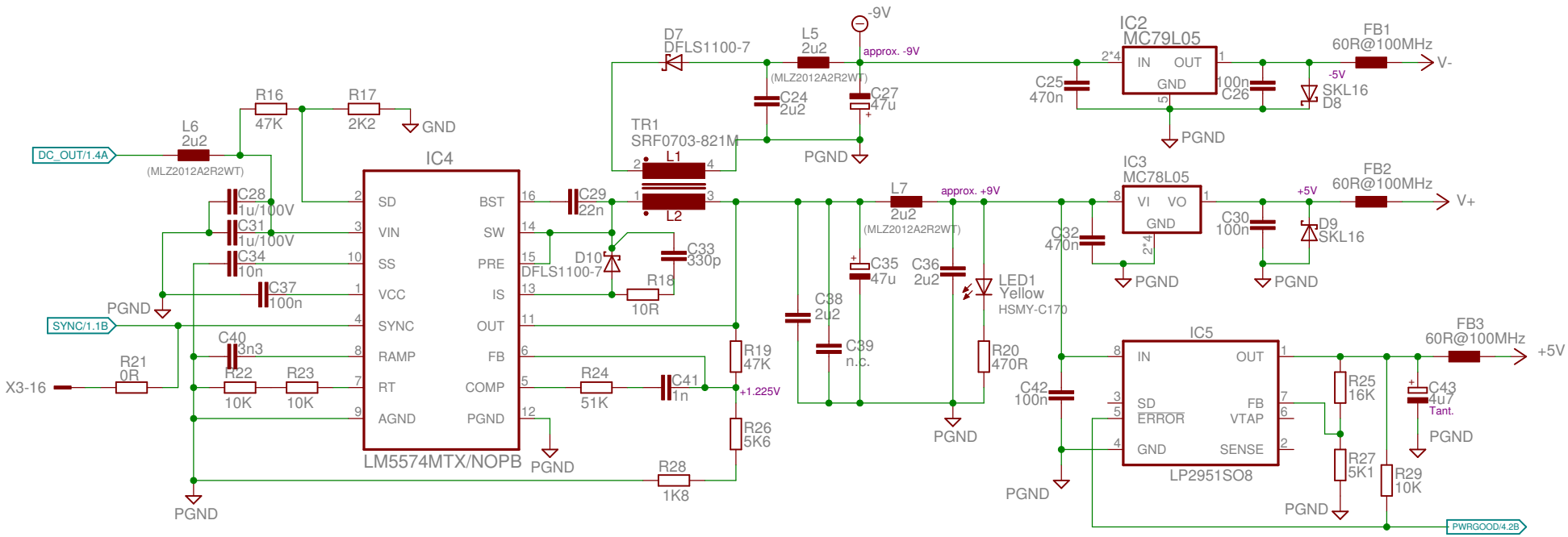

Bias power supply with SMPS pre-regulator

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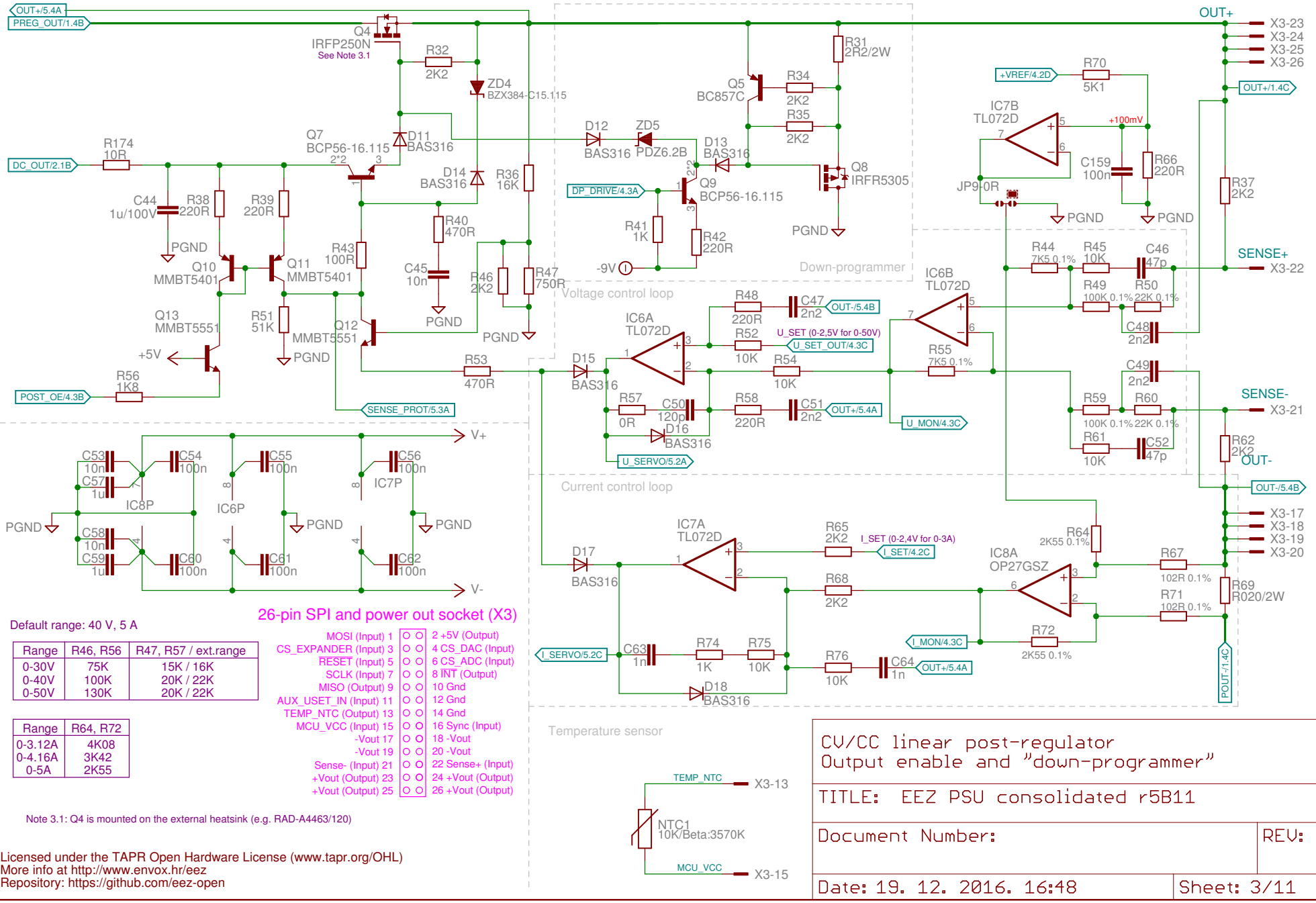

Default range: 40 V, 5 A

Range	R46, R56	R47, R57 / ext.range
0-30V	75K	15K / 16K
0-40V	100K	20K / 22K
0-50V	130K	20K / 22K

Range	R64, R72
0-3.12A	4K08
0-4.16A	3K42
0-5A	2K55

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)

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

CV/CC linear post-regulator
Output enable and "down-programmer"

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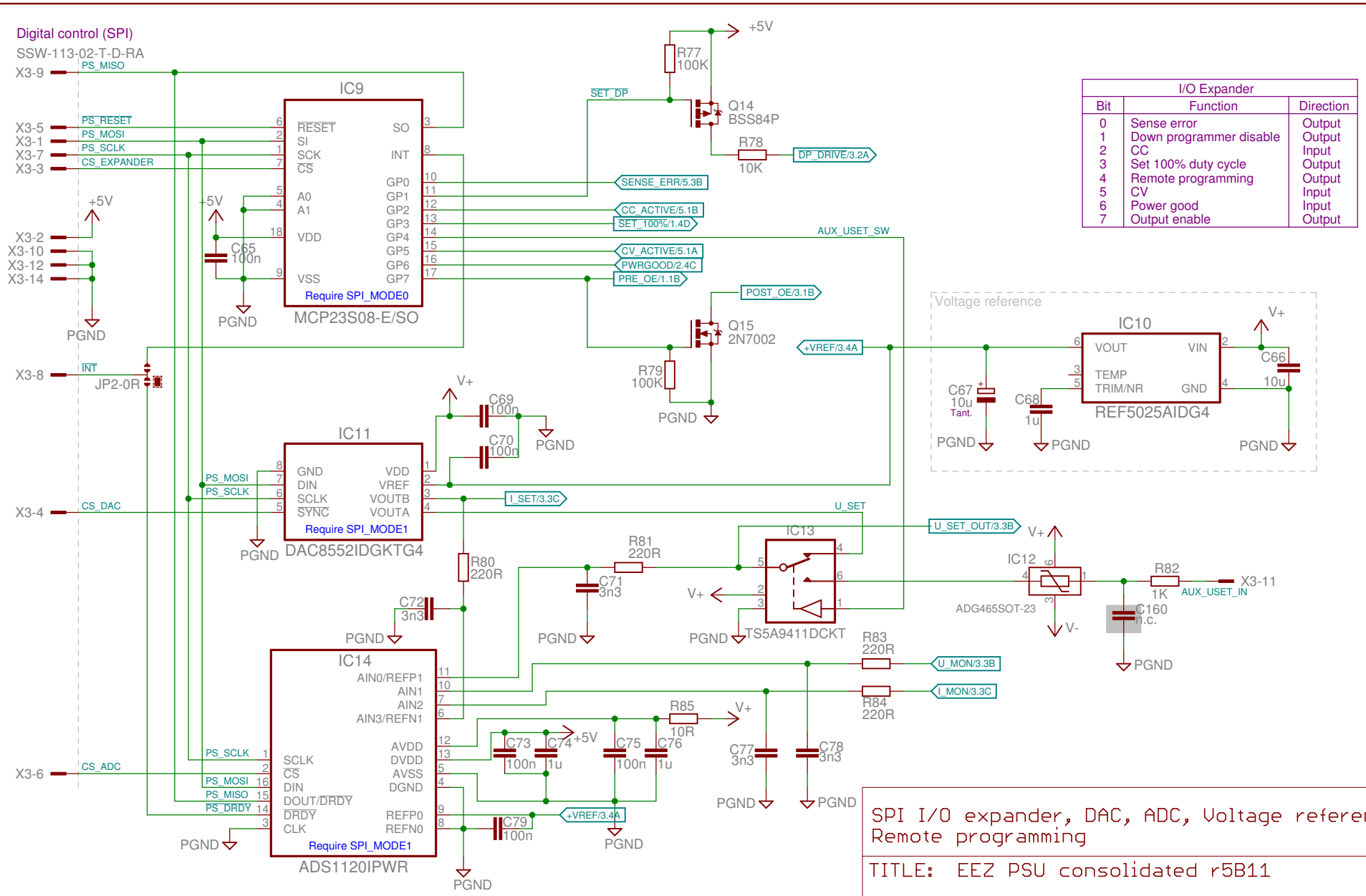
Digital control (SPI)
SSW-113-02-T-D-RA
X3-9
PS_MISO
IC9
X3-5
PS_RESET
X3-1
PS_MOSI
X3-7
PS_SCLK
X3-3
CS_EXPANDER
RESET
SI
SCK
CS
SO
INT
GP0
GP1
GP2
GP3
GP4
GP5
GP6
GP7
A0
A1
VDD
VSS
Require SPI_MODE0
MCP23S08-E/SO
+5V
C65
100n
PGND
X3-2
X3-10
X3-12
X3-14
X3-8
INT
JP2-0R
R77
100K
SET_DP
Q14
BSS84P
R78
10K
DP_DRIVE/3.2A
SENSE_ERR/5.3B
CC_ACTIVE/5.1B
SET_100%/1.4D
AUX_USET_SW
CV_ACTIVE/5.1A
PWRGOOD/2.4C
PRE_OE/1.1B
POST_OE/3.1B
Q15
2N7002
R79
100K
+VREF/3.4A
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
Voltage reference
IC10
VOUT
VIN
TEMP
TRIM/NR
GND
REF5025AIDG4
V+
C66
10u
C67
10u
Tant.
C68
1u
IC11
GND
DIN
SCLK
SYNC
VDD
VREF
VOUTB
VOUTA
Require SPI_MODE1
DAC8552IDGKTG4
C69
100n
C70
100n
I_SET/3.3C
U_SET
U_SET_OUT/3.3B
R80
220R
R81
220R
C71
3n3
C72
3n3
IC13
TS5A9411DCKT
IC12
ADG465SOT-23
R82
1K
AUX_USET_IN
X3-11
C160
n.c.
V-
R83
220R
R84
220R
U_MON/3.3B
I_MON/3.3C
IC14
AIN0/REFP1
AIN1
AIN2
AIN3/REFN1
AVDD
DVDD
AVSS
DGND
REFP0
REFN0
SCLK
CS
DIN
DOUT/DRDY
DRDY
CLK
Require SPI_MODE1
ADS1120IPWR
X3-6
CS_ADC
PS_DRDY
R85
10R
C73
100n
C74
1u
C75
100n
C76
1u
C77
3n3
C78
3n3
C79
100n
SPI I/O expander, DAC, ADC, Voltage reference
Remote programming
TITLE: EEZ PSU consolidated r5B11
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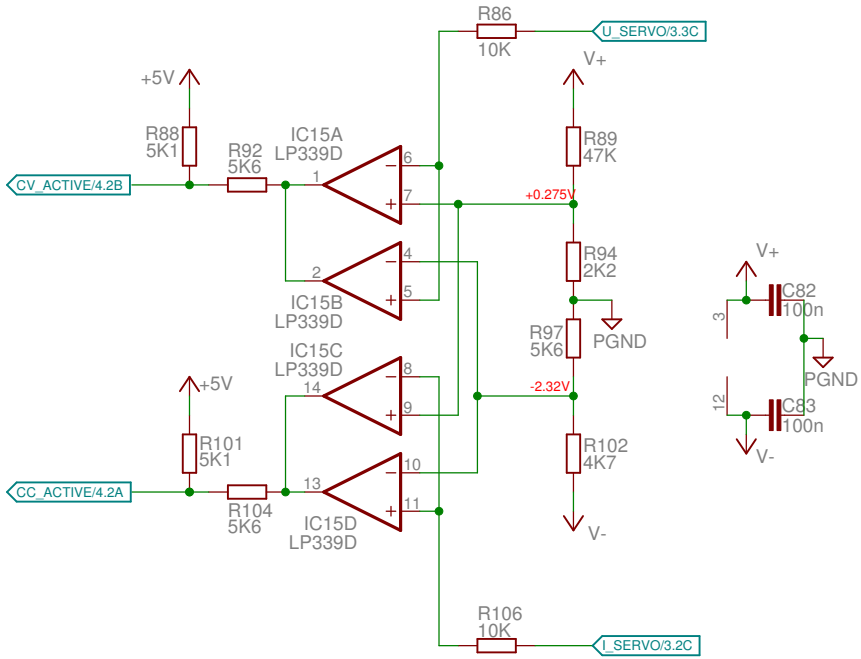
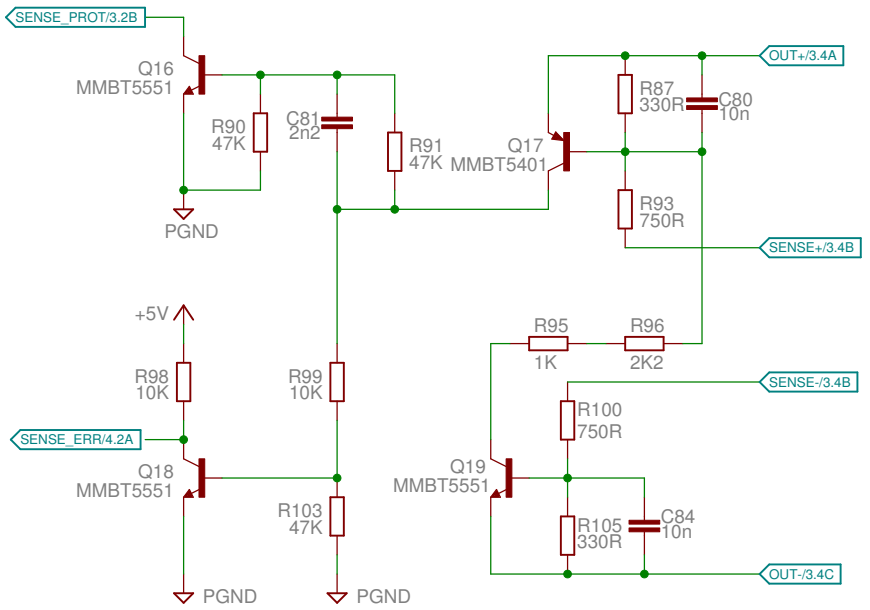
More info at http://www.envox.hr/eez
Repository: https://github.com/eez-open

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



Remote sense reverse polarity detection



CC/CV indicators, Sense error detection	
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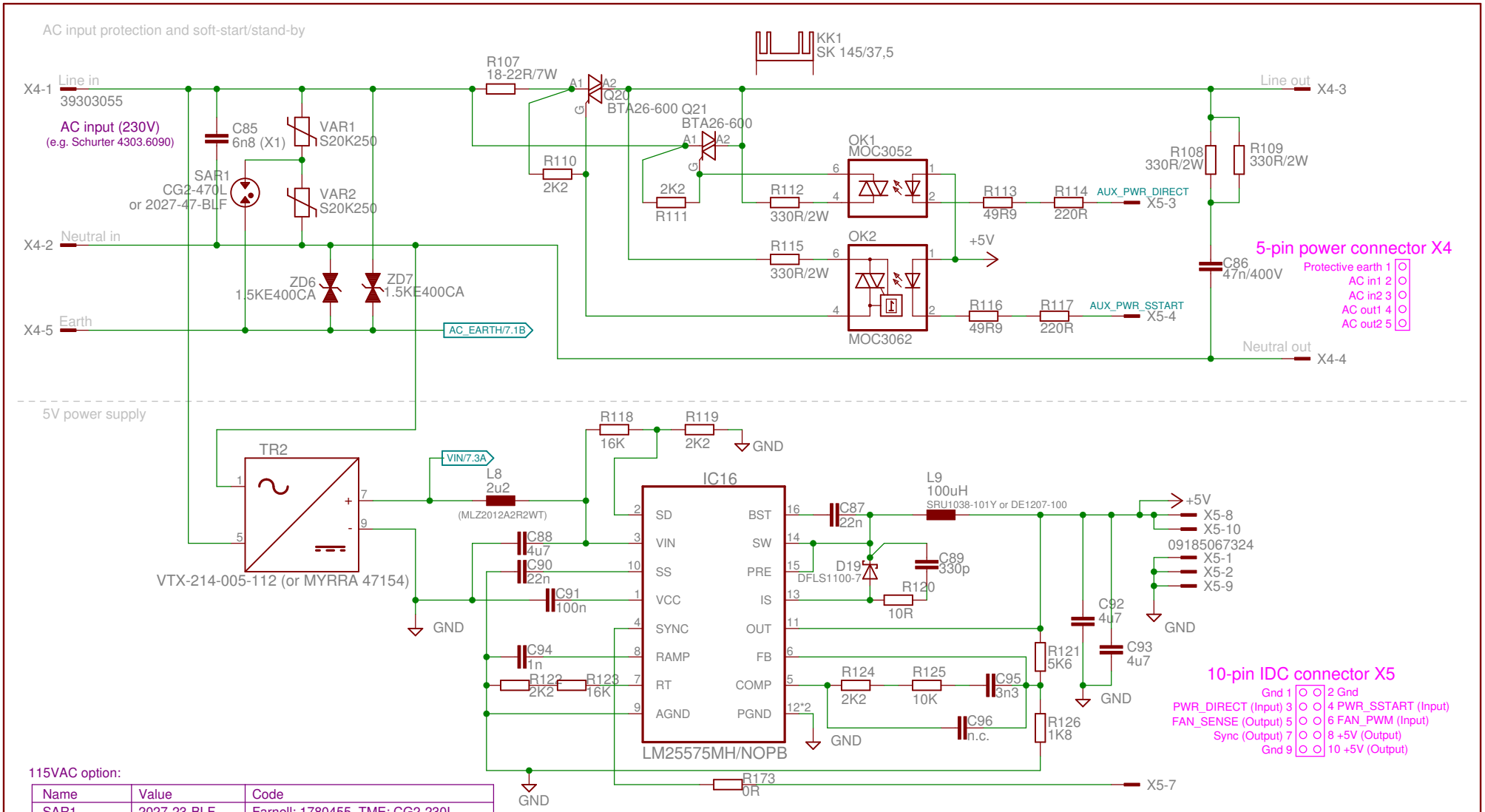

115VAC option:

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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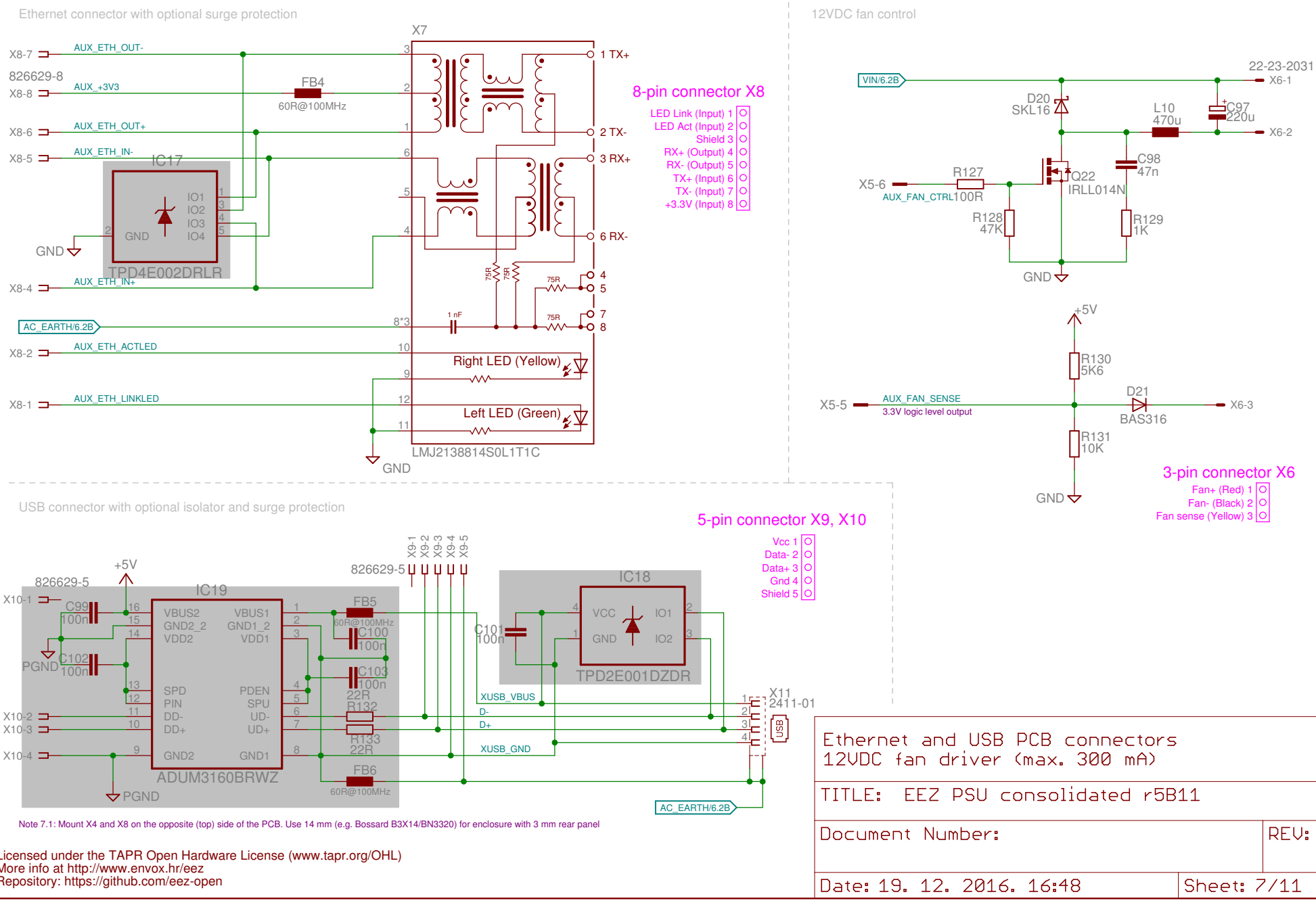
Ethernet connector with optional surge protection
X7
X8-7
AUX_ETH_OUT-
826629-8
X8-8
AUX_+3V3
FB4
60R@100MHz
X8-6
AUX_ETH_OUT+
X8-5
AUX_ETH_IN-
IC17
IO1
IO2
IO3
IO4
GND
TPD4E002DRLR
GND
X8-4
AUX_ETH_IN+
AC_EARTH/6.2B
8*3
1 nF
X8-2
AUX_ETH_ACTLED
X8-1
AUX_ETH_LINKLED
1 TX+
2 TX-
3 RX+
6 RX-
75R
Right LED (Yellow)
Left LED (Green)
LMJ2138814S0L1T1C
GND
8-pin connector X8
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
12VDC fan control
VIN/6.2B
22-23-2031
X6-1
D20
SKL16
L10
470u
C97
220u
X6-2
X5-6
AUX_FAN_CTRL
R127
100R
Q22
IRLL014N
C98
47n
R128
47K
R129
1K
GND
+5V
R130
5K6
X5-5
AUX_FAN_SENSE
3.3V logic level output
D21
BAS316
X6-3
R131
10K
GND
3-pin connector X6
Fan+ (Red) 1
Fan- (Black) 2
Fan sense (Yellow) 3
USB connector with optional isolator and surge protection
826629-5
+5V
IC19
X10-1
C99
100n
VBUS2
VBUS1
GND2_2
GND1_2
VDD2
VDD1
PGND
C102
100n
SPD
PDEN
PIN
SPU
X10-2
DD-
UD-
X10-3
DD+
UD+
X10-4
GND2
GND1
ADUM3160BRWZ
PGND
FB5
60R@100MHz
C100
100n
C103
100n
22R
R132
R133
22R
FB6
60R@100MHz
826629-5
X9-1
X9-2
X9-3
X9-4
X9-5
IC18
VCC
IO1
GND
IO2
C101
100n
TPD2E001DZDR
XUSB_VBUS
D-
D+
XUSB_GND
X11
2411-01
USB
AC_EARTH/6.2B
5-pin connector X9, X10
Vcc 1
Data- 2
Data+ 3
Gnd 4
Shield 5
Note 7.1: Mount X4 and X8 on the opposite (top) side of the PCB. Use 14 mm (e.g. Bossard B3X14/BN3320) for enclosure with 3 mm rear panel
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More info at http://www.envox.hr/eez
Repository: https://github.com/eez-open
Ethernet and USB PCB connectors
12VDC fan driver (max. 300 mA)
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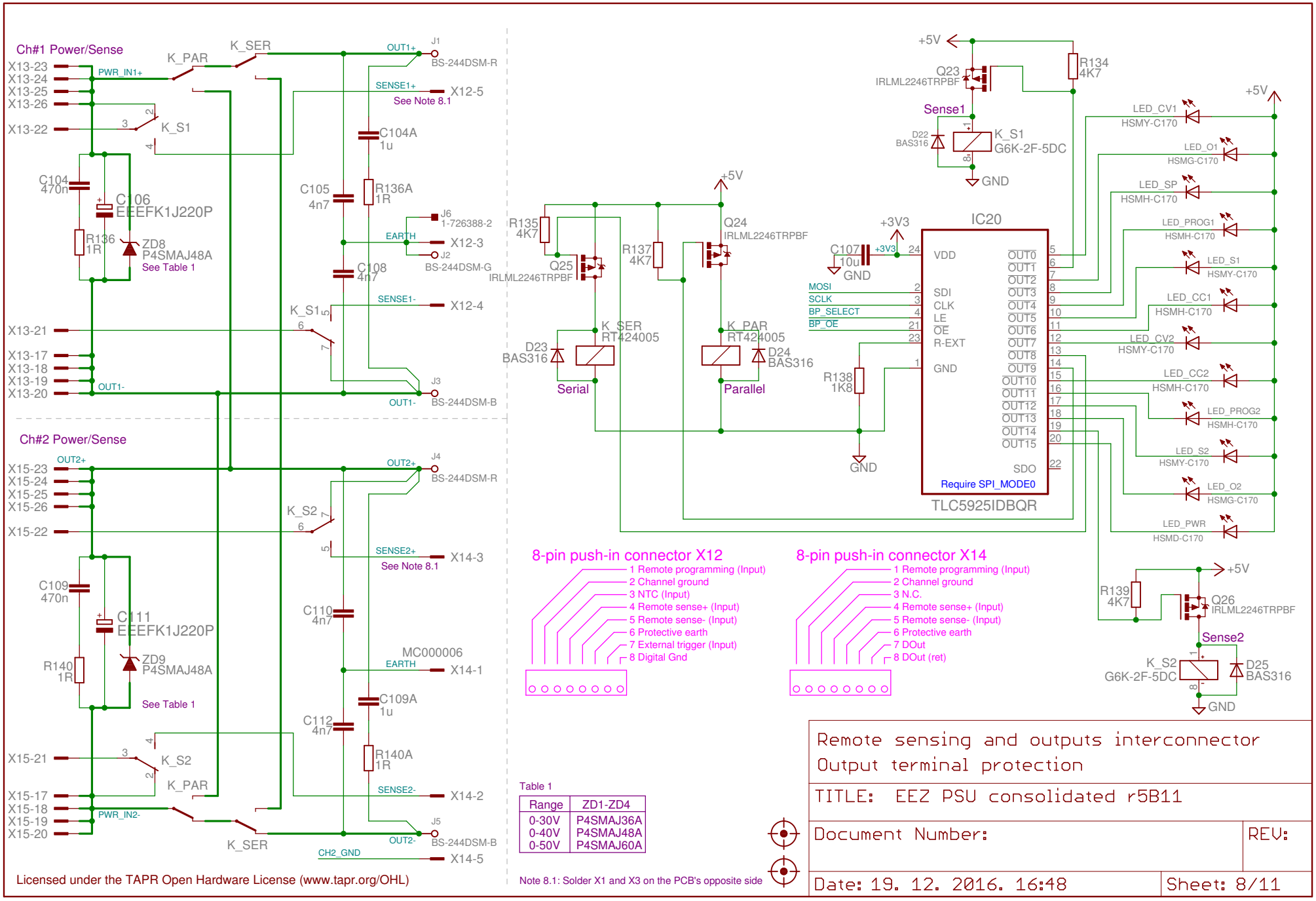
Ch#1 Power/Sense
X13-23
X13-24
X13-25
X13-26
X13-22
PWR_IN1+
K_PAR
K_SER
K_S1
C104
470n
C106
EEEFK1J220P
R136
1R
ZD8
P4SMAJ48A
See Table 1
X13-21
X13-17
X13-18
X13-19
X13-20
OUT1-
C105
4n7
R136A
1R
C108
4n7
C104A
1u
OUT1+
J1
BS-244DSM-R
SENSE1+
See Note 8.1
X12-5
EARTH
J6
1-726388-2
X12-3
J2
BS-244DSM-G
SENSE1-
X12-4
J3
OUT1-
BS-244DSM-B
Ch#2 Power/Sense
X15-23
X15-24
X15-25
X15-26
X15-22
OUT2+
C109
470n
C111
EEEFK1J220P
R140
1R
ZD9
P4SMAJ48A
See Table 1
X15-21
X15-17
X15-18
X15-19
X15-20
PWR_IN2-
K_S2
K_PAR
K_SER
C110
4n7
C109A
1u
C112
4n7
R140A
1R
MC000006
EARTH
X14-1
SENSE2+
See Note 8.1
X14-3
SENSE2-
X14-2
J4
J5
OUT2-
BS-244DSM-B
CH2_GND
X14-5
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+5V
R135
4K7
Q25
IRLML2246TRPBF
R137
4K7
Q24
IRLML2246TRPBF
K_SER
RT424005
D23
BAS316
Serial
K_PAR
RT424005
D24
BAS316
Parallel
GND
Q23
IRLML2246TRPBF
R134
4K7
Sense1
D22
BAS316
K_S1
G6K-2F-5DC
GND
+3V3
C107
10u
GND
IC20
VDD
SDI
CLK
LE
OE
R-EXT
GND
MOSI
SCLK
BP_SELECT
BP_OE
SDO
OUT0
OUT1
OUT2
OUT3
OUT4
OUT5
OUT6
OUT7
OUT8
OUT9
OUT10
OUT11
OUT12
OUT13
OUT14
OUT15
Require SPI_MODE0
TLC5925IDBQR
R138
1K8
GND
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
8-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
7 DOut
8 DOut (ret)
R139
4K7
Q26
IRLML2246TRPBF
Sense2
K_S2
G6K-2F-5DC
D25
BAS316
GND
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
Remote sensing and outputs interconnector
Output terminal protection
TITLE: EEZ PSU consolidated r5B11
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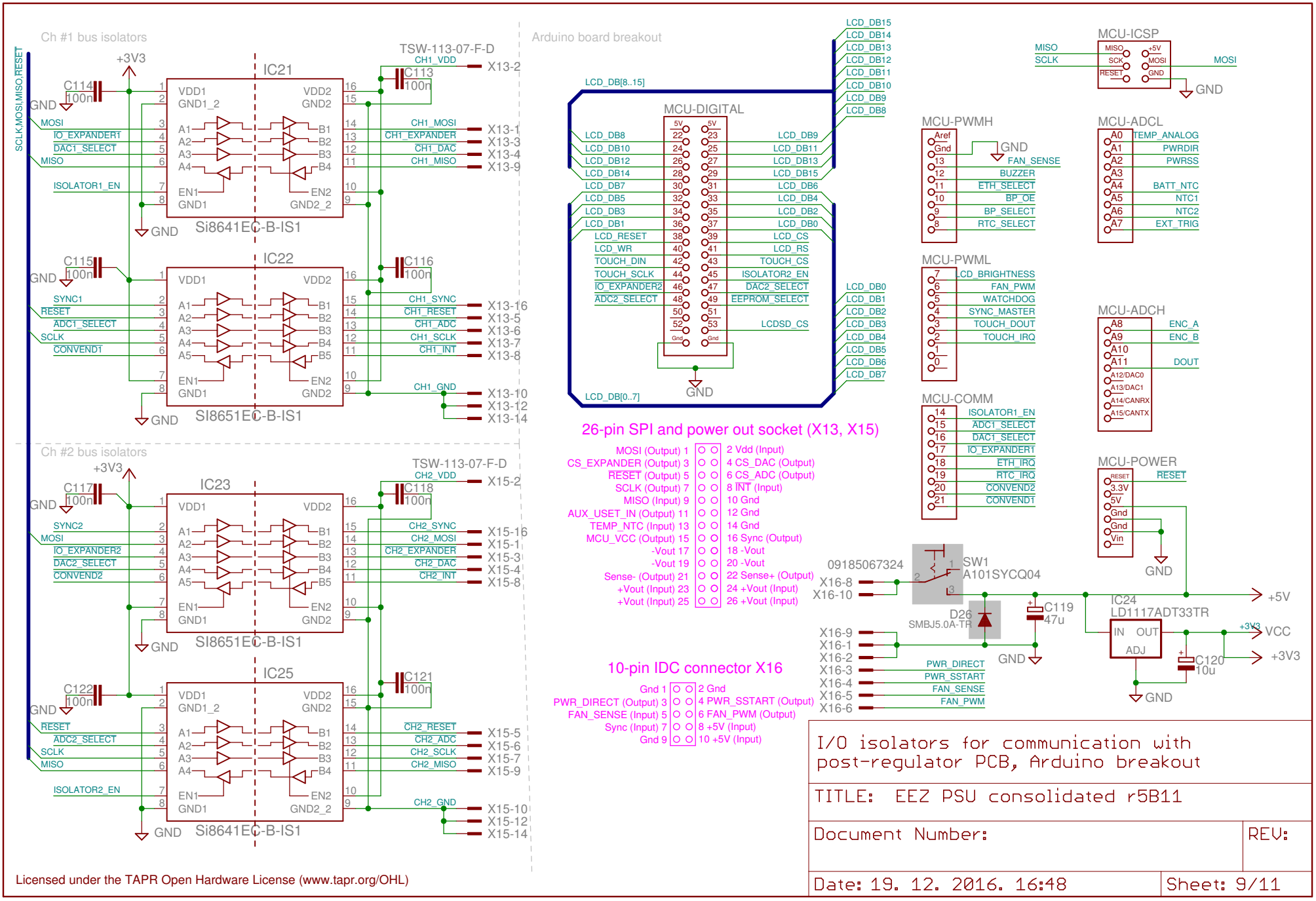

I/O isolators for communication with post-regulator PCB, Arduino breakout

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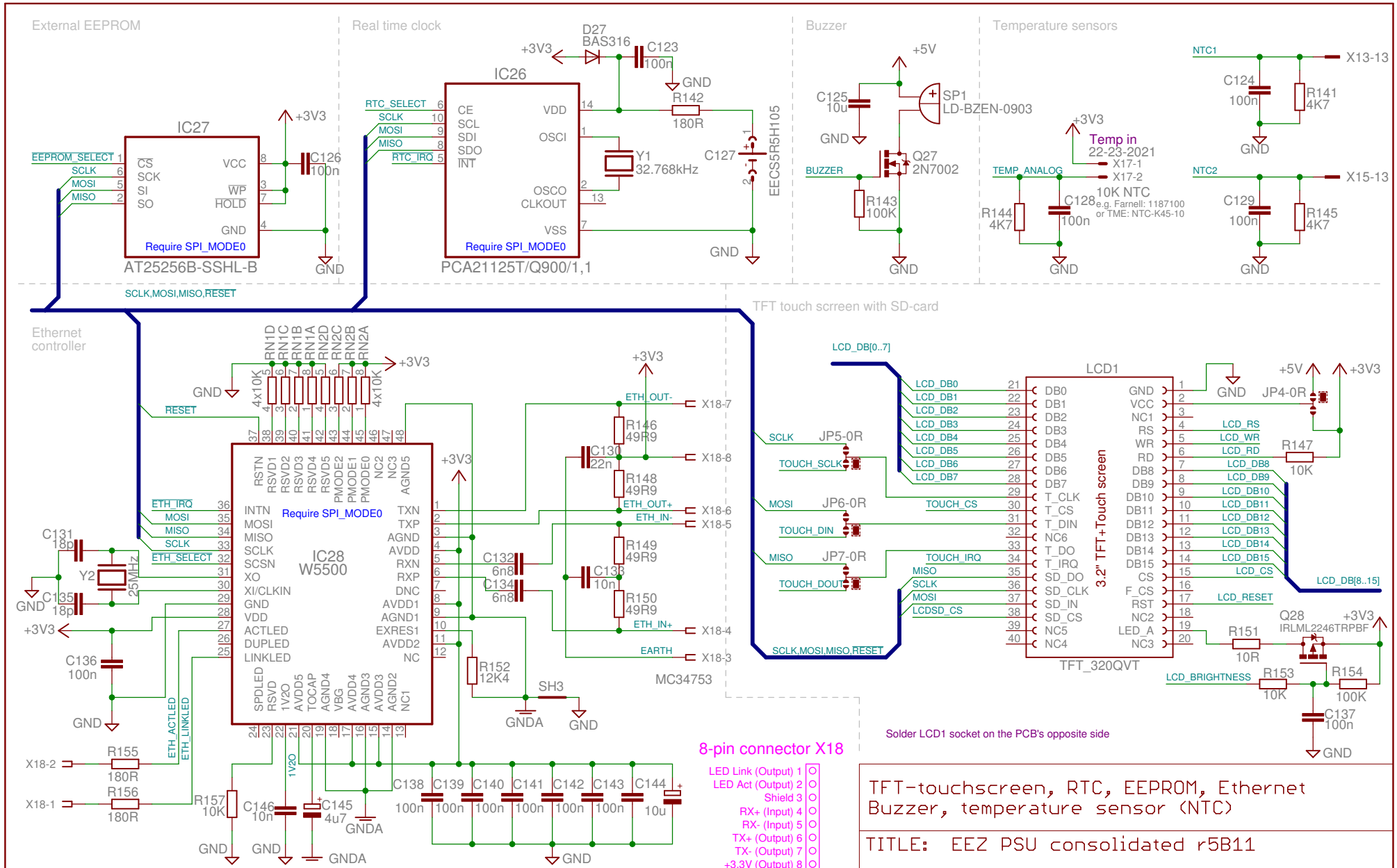

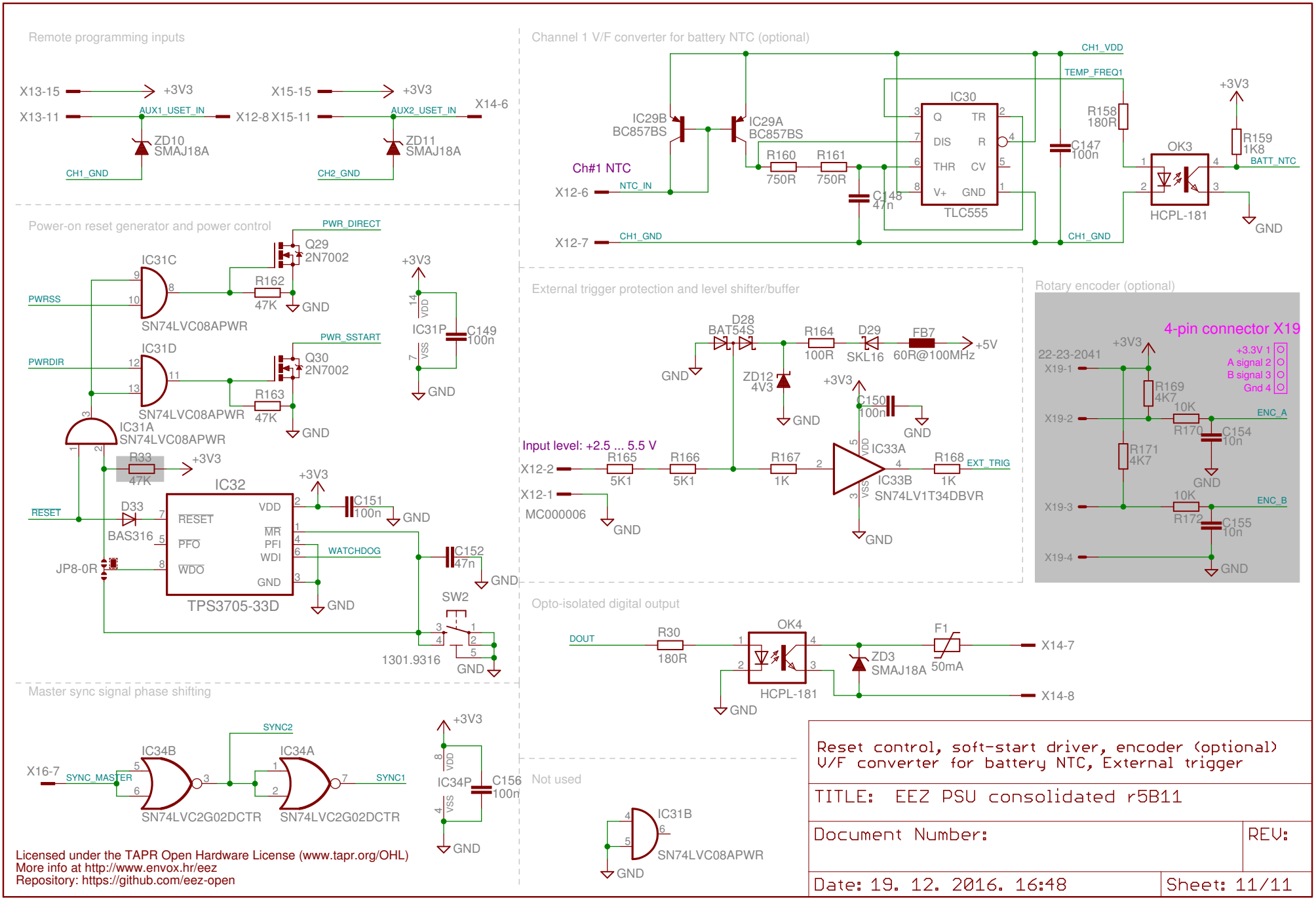
Remote programming inputs
X13-15
+3V3
X13-11
AUX1_USET_IN
ZD10
SMAJ18A
CH1_GND
X15-15
+3V3
X12-8 X15-11
AUX2_USET_IN
X14-6
ZD11
SMAJ18A
CH2_GND
Channel 1 V/F converter for battery NTC (optional)
CH1_VDD
TEMP_FREQ1
IC30
IC29B
BC857BS
IC29A
BC857BS
Ch#1 NTC
X12-6
NTC_IN
R160
750R
R161
750R
C148
47n
TLC555
R158
180R
C147
100n
OK3
HCPL-181
+3V3
R159
1K8
BATT_NTC
GND
X12-7
CH1_GND
CH1_GND
Power-on reset generator and power control
PWR_DIRECT
Q29
2N7002
IC31C
SN74LVC08APWR
PWRSS
R162
47K
GND
+3V3
IC31P
C149
100n
PWR_SSTART
Q30
2N7002
IC31D
PWRDIR
SN74LVC08APWR
R163
47K
GND
IC31A
SN74LVC08APWR
R33
47K
+3V3
IC32
RESET
D33
BAS316
JP8-0R
TPS3705-33D
C151
100n
GND
WATCHDOG
C152
47n
GND
SW2
1301.9316
GND
External trigger protection and level shifter/buffer
D28
BAT54S
R164
100R
D29
SKL16
FB7
60R@100MHz
+5V
GND
ZD12
4V3
GND
+3V3
C150
100n
GND
Input level: +2.5 ... 5.5 V
X12-2
R165
5K1
R166
5K1
R167
1K
IC33A
IC33B
SN74LV1T34DBVR
R168
1K
EXT_TRIG
X12-1
MC000006
GND
GND
Rotary encoder (optional)
4-pin connector X19
22-23-2041
+3V3
+3.3V 1
A signal 2
B signal 3
Gnd 4
X19-1
R169
4K7
10K
ENC_A
X19-2
R170
C154
10n
R171
4K7
GND
10K
ENC_B
X19-3
R172
C155
10n
X19-4
GND
Opto-isolated digital output
DOUT
R30
180R
OK4
HCPL-181
F1
50mA
X14-7
ZD3
SMAJ18A
X14-8
GND
Master sync signal phase shifting
SYNC2
IC34B
IC34A
X16-7
SYNC_MASTER
SN74LVC2G02DCTR
SN74LVC2G02DCTR
SYNC1
+3V3
IC34P
C156
100n
GND
Not used
IC31B
SN74LVC08APWR
GND
Reset control, soft-start driver, encoder (optional)
V/F converter for battery NTC, External trigger
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Repository: https://github.com/eez-open