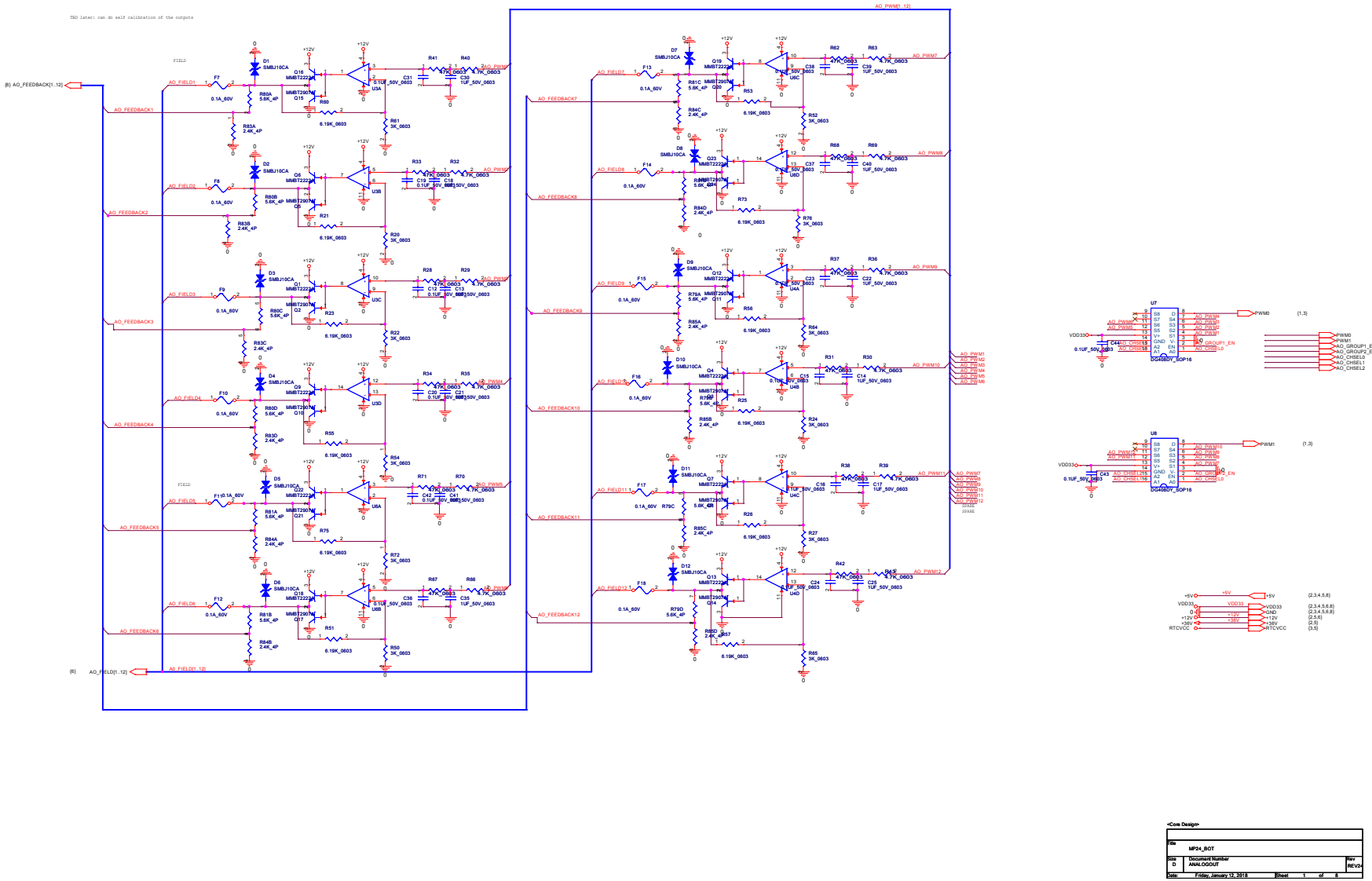
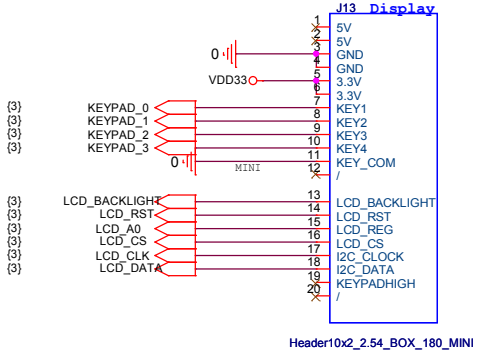
ANALOG OUTPUT

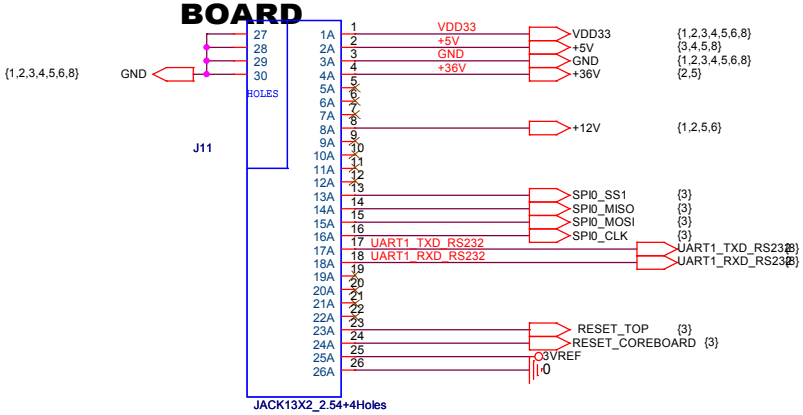


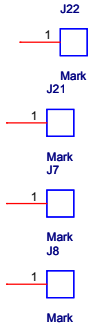
<Core Design>

Title	MP24_BOT	
Size: D	Document Number: ANALOGOUT	Rev: REV2.0
Date: Friday, January 12, 2018	Sheet 1 of 8	

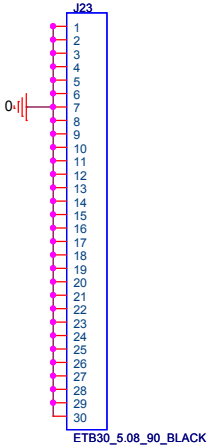


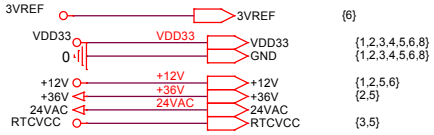
BOARD TO BOARD





Analog GNDs





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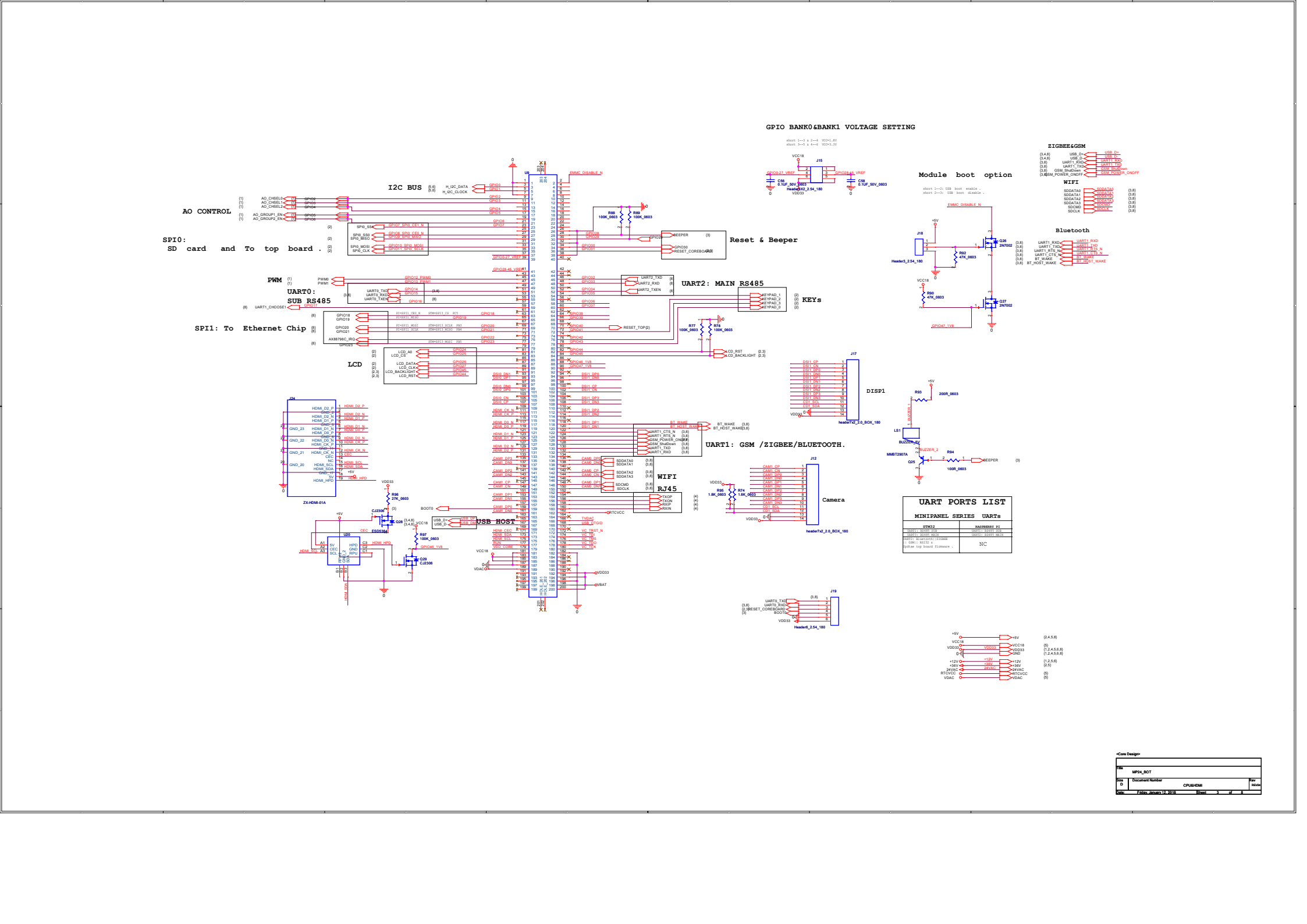
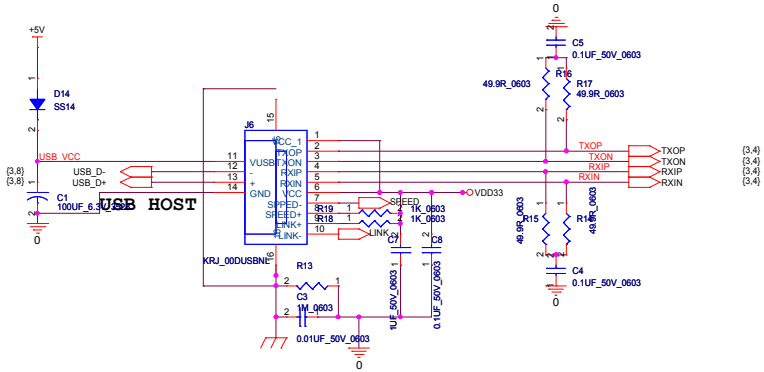
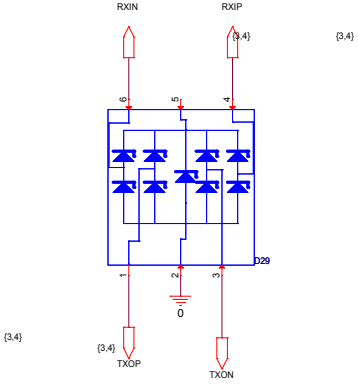
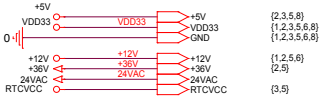
Title: MP24_BOT		
Size: A3	Document Number: CONNECTORS&SD	Rev: REV24
Date: Friday, January 12, 2018	Sheet 2 of 8	


GPIO BANK0&BANK1 VOLTAGE SETTING
I2C BUS
AO CONTROL
SPI0:
SD card and To top board .
PWM
UART0:
SUB RS485
SPI1: To Ethernet Chip
LCD
Reset & Beeper
UART2: MAIN RS485
KEYs
UART1: GSM /ZIGBEE/BLUETOOTH.
WIFI
RJ45
USB HOST
Camera
DISP1
Module boot option
ZIGBEE&GSM
WIFI
Bluetooth
UART PORTS LIST
MINIPANEL SERIES UARTs
STM32
RASPBERRY PI
NC
ZX-HDMI-01A
<Core Design>
Title
MP24_BOT
Size
D
Document Number
CPU&HDMI
Rev
RDV6
Date:
Friday, January 12, 2018
Sheet
3
of
8







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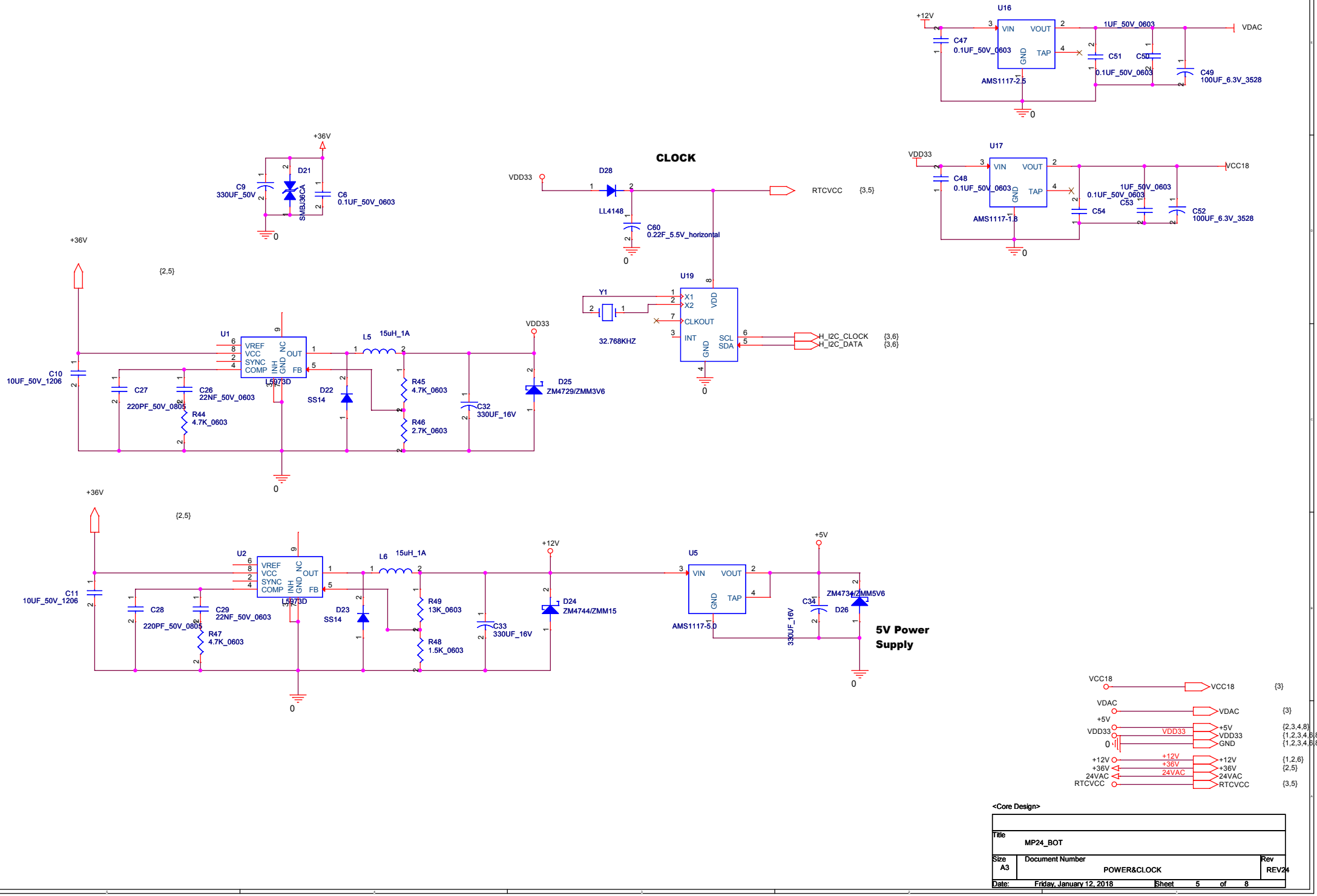
Title	MP24_BOT	
Size C	Document Number ETHERNET&USB	Rev REV24
Date: Friday, January 12, 2018	Sheet 4 of 8	


U16
+12V
VIN
VOUT
GND
TAP
AMS1117-2.5
C47
0.1UF_50V_0603
1UF_50V_0603
C51
0.1UF_50V_0603
C50
C49
100UF_6.3V_3528
VDAC
U17
VDD33
AMS1117-1.8
C48
0.1UF_50V_0603
C54
0.1UF_50V_0603
C53
C52
100UF_6.3V_3528
VCC18
CLOCK
D28
LL4148
C60
0.22F_5.5V_horizontal
RTCVCC {3,5}
U19
Y1
32.768KHZ
X1
X2
CLKOUT
INT
VDD
SCL
SDA
H_I2C_CLOCK {3,6}
H_I2C_DATA {3,6}
+36V
D21
SMBJ36CA
C9
330UF_50V
C6
0.1UF_50V_0603
{2,5}
U1
VREF
VCC
SYNC
COMP
INH
GND
NC
OUT
FB
L5973D
L5
15uH_1A
C10
10UF_50V_1206
C27
220PF_50V_0805
C26
22NF_50V_0603
R44
4.7K_0603
D22
SS14
R45
4.7K_0603
R46
2.7K_0603
C32
330UF_16V
D25
ZM4729/ZMM3V6
U2
L6
C11
10UF_50V_1206
C28
220PF_50V_0805
C29
22NF_50V_0603
R47
4.7K_0603
D23
SS14
R49
13K_0603
R48
1.5K_0603
C33
330UF_16V
D24
ZM4744/ZMM15
U5
AMS1117-5.0
+5V
C34
330UF_16V
D26
ZM4734/ZMM5V6
5V Power Supply
VCC18 {3}
VDAC {3}
+5V {2,3,4,8}
VDD33 {1,2,3,4,5,8}
GND {1,2,3,4,5,8}
+12V {1,2,6}
+36V {2,5}
24VAC
RTCVCC {3,5}
<Core Design>
Title
MP24_BOT
Size
A3
Document Number
POWER&CLOCK
Rev
REV24
Date: Friday, January 12, 2018
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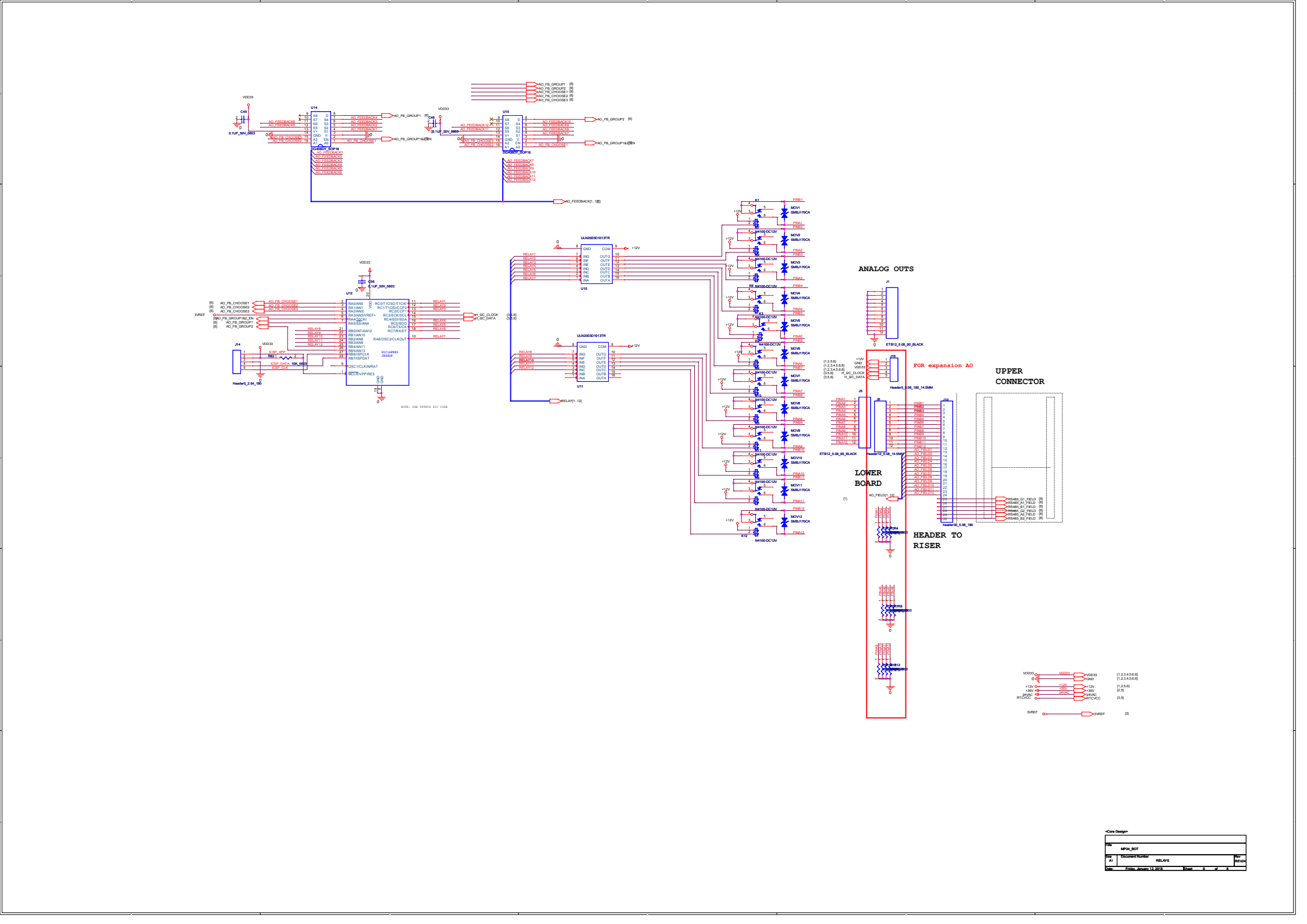
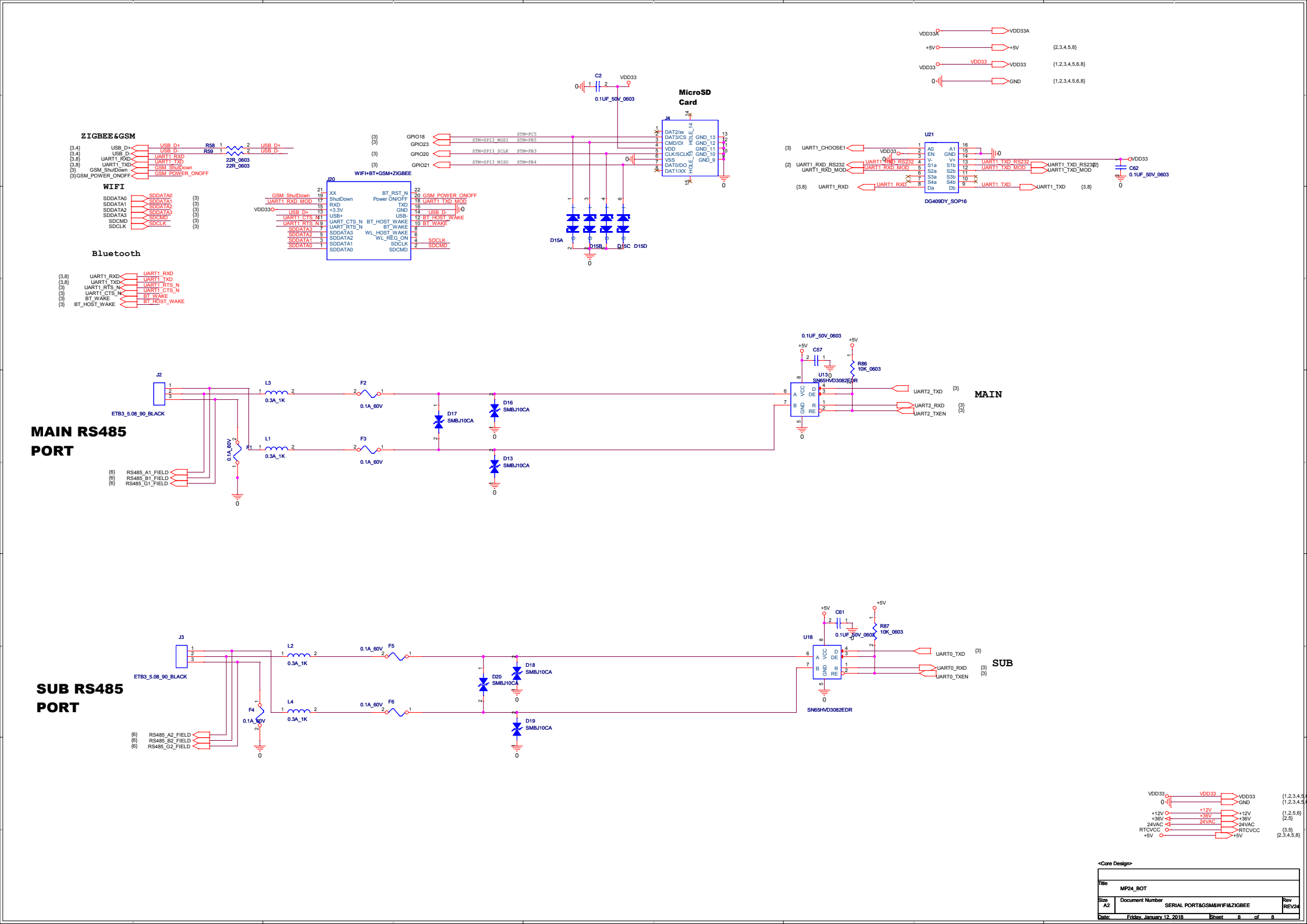

ANALOG OUTS
UPPER CONNECTOR
LOWER BOARD
HEADER TO RISER
FOR expansion AO
U12
U14
U15
U10
U11
K1
K2
K3
K4
K5
K6
K7
K8
K9
K10
K11
K12
J1
J5
J9
J10
J14
J16
ULN2003D1013TR
N4100-DC12V
SMBJ170CA
ETB12_5.08_90_BLACK
Header12_5.08_14.5MM
header30_5.08_180
Header5_5.08_180_14.5MM
Header5_2.54_180
2G4066DY_SOP16
PIC16F882
28SSOP
AO_FEEDBACK[1..12]
AO_FB_GROUP1 (6)
AO_FB_GROUP2 (6)
AO_FB_GROUP1&2_EN
AO_FB_CHOOSE1
AO_FB_CHOOSE2
AO_FB_CHOOSE3
AO_FB_GROUP1
AO_FB_GROUP2
RELAY1
RELAY2
RELAY3
RELAY4
RELAY5
RELAY6
RELAY7
RELAY8
RELAY9
RELAY10
RELAY11
RELAY12
RELAY[1..12]
H_I2C_CLOCK
H_I2C_DATA
AO_FIELD[1..12]
RS485_G1_FIELD
RS485_A1_FIELD
RS485_B1_FIELD
RS485_G2_FIELD
RS485_A2_FIELD
RS485_B2_FIELD
ICSP_VPP
ICSP_DATA
ICSP_CLK
3VREF
VDD33
+12V
+36V
24VAC
RTCVCC
NOTE: USE TSTATE PIC CODE
<Core Design>
File: MP24_BOT
Size: A1
Document Number
RELAYS
Rev: REV.04
Date: Friday, January 12, 2018
Sheet 6 of 8


ZIGBEE&GSM
WIFI
Bluetooth
MicroSD Card
WIFI+BT+GSM+ZIGBEE
DG409DY_SOP16
MAIN RS485 PORT
MAIN
SUB RS485 PORT
SUB
ETB3_5.08_90_BLACK
SN65HVD3082EDR
<Core Design>
Title
MP24_BOT
Size A2
Document Number
SERIAL PORT&GSM&WIFI&ZIGBEE
Rev REV24
Date: Friday, January 12, 2018
Sheet 8 of 8

Mini Panel

Rev0

TBD: clean up the schematic, make the inputs section easier to read

TBD: Add termination resistors for RS485, simialr to mini panel with jumpers

done: Move work to teh Zdrive

TBD: Board 2 connection is complex, move PIC and analog inputs & jumpers to upper board

done: PIC can reset CPU?

TBD: Need brownout protection, 36VDC goes to resister divider to analog input on pic? or digital in on cpu.

TBD: ram is battery backed up? Short power outage should not cause data loss for trend log graphs

TBD: use 3 pin same as mini panel COM ports for RS232

TBD: try for two connectors on RS485, one above the other

Rev1:

TBD: fix the resistor pack footprint

Rev2:

TBD: U12 footprint need to be changed

RevD02:

This is the board Chelsea is working on
TBD: topboard j8 need to change , it affect the j2 mounting.
TBD: c15 super cap need to move position
TBD: d21 d22 move far away j2
TBD: r41 move far away j2
TBD: r19,r41 move far away j2
TBD: y1 change footprint
TBD: J3 change foorprint
TBD: samll side board change the width
TBD: samll side board connector need to change
TBD: swl need to add some sign of ON/OFF signal

Rev05
Done: Move Ethernet connector close to CPU
Done: connect the XADDR1 between the RAM and cpu,
Done: move the RAM to bottom board
Done: delete J2, BIG CPU SOCKET
Done: add inductors to RS232/485 lines
Done: add pullup/pulldown to RS485
Done: Change 12V and 5V power supply zeners to MOVs for negative surge protection
Done: Change RS485 to 3V chip
Done: Change board to board connector

TBD: change I/O config resistors to Rpacks
TBD: cHECK 3V CLOCK CHIP

Rev6 modify by chelsea

Done: add pull-up for I2C_DATA
Done: modify the data-chosen-switches,add xdata3
Done: modify SYS_CLK_SEL1
Done: modify the peripheral circuit of the ASIX
Done: delete the lcd and keypad pin,which are reserved pins, because the GPIO is not enough.
Done: delete DEBUG led,they are no use
Done: change the conmmunication way to SPI
Done: modify RS485
Done: change the power port
Rev7 modify by chelsea

Done: fix I2C_DATA and I2C_CLOCK
Done: add CHSEL_IN1 - CHSEL_IN4

Rev8: skipped this rev
Rev9: skipped this rev
Rev10: not made yet
TBD: set the value of fuse in resistor
Done: make board wider by 109 mm
Done: add two nets AO_PWM8 and AO_PWM10
DONE: change RS485 GND resistor to ptc
TBD: change footprint of Q1
Rev11:
Done: change RS485 to isolate

Rev12:
Done: using 6N137 to replace tlp181
Done: modify UART2_EN from P0.5 to P2.7
Done: add UART1
Done: delete CHSEL_IN - CHSEL_IN4,they are nouse.
Done: modify pressure senor
Done: modify UART2
Done: delete BZA418A in Aanlog outputs? which always burn. or un-populate
Rev13:
done: change XADDR9 for RAM
Rev14:
done: change relays to 2A
DONE: delete DIP switch, use 2pos sip thruhole on AD6?, no component just use tweezers for loading bootloader
DONE: Delete pressure sensor
done: new power switch
done: Change power chip to LM2576 for 5v
done: add silk screen for JTAG , top and bottom
done: add SD card
done: add zigbee moudle
done: add silk screen for OUTPUT & INPUT, TOP and bottom board
Rev15:
done: change footprint of SD CARD, Inverse MOSI and MISO
done: change zigbee moudle footprint
TBD: CHANGE COM PORTS A LITTLE
TBD: USE SAME COMPONENT FOR TOP/BOT BOARD OUTLINE AND HEADER
Done: put 6 aos on each mux

Rev16:
done: modify communicate pin with PIC to software I2C
done: add 2003 for relay driver
done: add divod for USB POWER

Rev17:
done: change LCD & keypad board
done: add gsm_zigbee moudle
done: change to hardware i2c to communiate with asix
Rev18:
done: connect USB+ and USB- with right pin of ASIX CORE
done: change UART PORT
done: change KEYPAD_COM to UART2_TXEN

Rev18:
done: fix RS485_A2_FUSED to RS485_A1_FUSED,RS485_B2_FUSED TO RS485_B1_FUSED
done: change LCD board

Rev20:
done: move ethernet port a little bit
done: add vref of PIC
done: connect VSS of 4051 with GND
Keys move a bit
done: change power supply

Rev21:
done: change interface of zigbee moudle
done: change analog output
done: replace resistor using ln5819 , USB power
done: change sd card to small one
done: swap UART0 and UART2
done: add 12V to top board

Rev23:
DONE: Move RS232 circuit to TOP board .
DONE: Add top board's relay control signal .
Rev24:
TBD: add 8563 for pi PC module .
TBD: change 144pin to 200pin DDR2 socket .
TBD: add some jumpers for PI .
TBD: add AMS2.5 and AMS1.8 FOR PI .
TBD: Move Feedback to the front of fuse .

Rev25:
Done: Add WIFI&Bluettooth MODULE
Done: MicroSD and HDMI swap position.
Done:Add PIN header for expansion AO .

Rev26:

TBD:LM317 change to AMS1117-5.0V .
TBD:Modify 200pin define . fit PI and STM32 coreboard.
TBD: PCB have two pcs R33,and two pcs R35 , check silkscreen one by one .
TBD: PIC882 GPIO PIN define the same as REV23 .
TBD: Add DG409 for RS232 and Zigbee MOD switch .
TBD: SD card change to SPI3 .
TBD: VP3082 change to DIP footprint .

Rev27:
TBD: Delete SPI ASIX Ethernet Chip .
TBD: Modify PWM filter circuit .

Rev28:

TBD: Modify AO Amplifier peripheral
resistor , improve accuracy .
TBD: change VP3082 footprint to SMD .
TBD :add RLST236A054LV on the ethernet connector for ESD .

Rev28.1:

TBD: ADD RESET_TOP NET.
TBD: PIC REF changed to 3.0V.

<Core Design>

Title: MP24_BOT		
Size: A3	Document Number: Revisions	Rev: REV24
Date: Friday, January 12, 2018	Sheet 8 of 9	