Notes:
12V – 2A barrel power supply comes with camera with pigtail...
Max enclosure size is 15cm x 8 cm. Will be 3D printed
Will be built by hand with hot air gun. 0804 or 0603 passives
Do we want the headers to be available?
Do we want to remove/set the jumpers?
Keep LED from ESP board. Put in position to be visible outside enclosure (light pipe?)
Does a bootloader need to be loaded on to the ESP before placing on board?

Todo:
Check "3.45V" net on USB-to-Serial converter on ESP page.
Create Global labels, remove The header/model from other pages.
add power connector details and LM2575, use switch for power selection
Add test points
Generate BOM
Check footprints (Export/Import symbol libraries from originals)

Ethernet

ESP

I2C_SDA
I2C_SCL

SPI_MOSI
SPI_MISO
SPI_SCK

RTC

POWER AND FILTERING

VBUS

D1
MBR540

R1 100K
R3 100K

C1 10uF

U1
IN
EN
GND
OUT
P4
AP2112-3.3

VHI

3.3V

C2 10uF
C3 10uF
C4 1uF
C5 10uF
C6 10uF

GND

RESET

3.3V

R7A 10K

RESET

SW2
KMR2

C7 1uF

GND

USB TO SERIAL CONVERTER

IC1
CP2102N-24
USB/UART BRIDGE

3.45V

C8 0.1uF
C9 1uF

VBUS

C10 0.1uF

GND

5 VIO
6 VDD
7 REGIN

GND

16 CP2014VREG

#RST 9
#SUSPEND 15
SUSPEND 17
GPIO0/TXLED 14
GPIO1/RXLED 13
GPIO2 12
GPIO3 11
RI 1
DCD 24
DTR 23
DSR 22
TXD 21
RXD 20
RTS 19
CTS 18

DTR
RXD0
TXD0
RTS

VIO: 1.8~VDD
Op. Temp: -40~-85°C
CP2102N-24

USB TYPE C

X2
USB C
D+1
D-1

VBUS
D+
D-
CC1
CC2
SBU1
SBU2
GND

USB Type C

VBUS
D+
D-
CC1
CC2

R10A 47K
R11A 47K

VBUS_DET

R12A 47K

R8 5.1K
R9 5.1K

VBUS

8 VBUS
3 D+
4 D-

GND GND GND GND

ESP32 PICO MODULE

3.3V

3.3V 3

RESET 8 EN

A2_I34 9 I34/A1_6
A13_I35 10 I35/A1_7
A4_I36 4 I36/A1_0
I37 5 I37/A1_1
6 I38/A1_2
A3_I39 7 I39/A1_3

R2A 47K

3.3V

SW1
KMR2

GND

RXD0 30 RXD0
TXD0 31 TXD0

GND

IO0/A2_1 23 GPIO0
IO2/A2_2 22 NEOI2C_PWR
IO4/A2_0 24 A5_IO4
IO5 29 SCK
IO7 27 RX/IO7
IO8 28 TX/IO8

IO12/A2_5 19 IO12_A11
IO13/A2_4 20 IO13_A12
IO14/A2_6 18 IO14_A6
IO15/A2_3 21 IO15_A8
IO19 33 MOSI
IO20 26 SCL
IO21 35 MISO
IO22 34 SDA

IO25/DAC1/A2_8 15 A1_DAC1
IO26/DAC2/A2_9 16 A0_DAC2
IO27/A2_7 17 IO27_A10
IO32/A1_4/X32P 12 IO32_A7
IO33/A1_5/X32N 13 IO33_A9

GND

NEOPIXEL

3.3V

WS2812B
VDD
DI GND DO

GND

AUTORESET

RTS

R4A 10K

Q1A
DUAL NPN
G D S

GPIO0

DTR

R5A 10K

Q2A
DUAL NPN
G S D

RESET

LED

GND

D2 RED

R6 5.1K

IO13_A12

HEADERS

HEADER-1X12

VBAT 1
VBUS 2
EN 3
IO13_A12 4
IO12_A11 5
IO27_A10 6
IO33_A9 7
IO15_A8 8
IO32_A7 9
IO14_A6 10
I2C_SCL SCL 11
I2C_SDA SDA 12

JP1

HEADER-1X16ROUND

3.3V
RESET 16
GND 15
14
A0_DAC2 13
A1_DAC1 12
A2_I34 11
A3_I39 10
A4_I36 9
A5_IO4 8
SCK 7
MOSI 6
MISO 5
RX/IO7 4
TX/IO8 3
I37 2
1

SPI_SCK
SPI_MOSI
SPI_MISO

JP2

3.3V 3.3V 3.3V 3.3V
GND   GND   GND
10K R18 10K R19 10K R20 10K R21
SJ1   SJ2   SJ3
AGND

AVDD AVDD AVDD
R23 49.9 R25 49.9 R27 10
X3
TX+ 1 TX+
TX- 3 TCT
     2 TX-
C25 10nF
3.3V
AGND
GREENLED 9 LED1_A
         10 LED1_K
3.3V
YELLOWLED 12 LED2_A
         11 LED2_K
RX+ C23 6.8nF 7 RX+
RX- C26   6 RCT
              8 RX-
R24 49.9 R26 49.9
C24 10nF
AGND
4 GND1
5 GND2
GND
RB1-125BAG1A

RESET
U$5
3.3V
R15 10K

37 RSTN
38 RSVD@2
39 RSVD@3
40 RSVD@4
41 RSVD@5
42 RSVD@6
43 PMODE2
44 PMODE1
45 PMODE0
46 NC@3
47 NC@4
48 AGND@7

IRQ 36 INTN
MOSI 35 MOSI
MISO_W5500 34 MISO
SCK 33 SCK
CS   32 SCSN
     31 XO
R14 1M
     30 XI/CLKIN
GND 29 GND
     28 VDD
Y1 25MHz
     27 ACTLED
R16 470
     26 DUPLED
R17 470
     25 LINKLED

WIZNET
W5500 Ethernet
Controller
W5500

TXN TX-
TXP TX+
     AGND
AGND@1
AVDD@1
RXN RX-
RXP RX+
DNC
AVDD@2
AGND@2
EXRES1
AVDD@3
NC@1

AVDD
C18 0.1uF C19 0.1uF C20 0.1uF C21 0.1uF C22 10uF
AGND

R22 12.4K
AGND

24 SPDLED
23 RSVD(GND)
22 1V20
21 AVDD@6
20 TOCAP
19 AGND@6
18 VBG
17 AVDD@5
16 AGND@5
15 AVDD@4
14 AGND@4
13 NC@2

GND AGND AGND AGND

3.3V
C13 10uF C15 0.1uF
YELLOWLED GREENLED
GND GND

C16 0.1uF C17 10uF
AGND AGND

Keep close to P20
AVDD

Internal pullup on CS

3.3V
FB1 ferrite FB2 ferrite
GND AGND

IC2
CS 1 OE VCC 5 3.3V
MISO_W5500 2 A
3 GND Y 4 MISO
GND
74AHC1G125
TRI-STATE BUFFER
ON MISO (TO SHARE
SPI W/OTHER DEVICES)

JP3
13 12 11 10 9 8 7 6 5 4 3 2 1
3.3V
GND
1 RESET
2 3V
3 AREF
4 GND
5 GPIOA0
6 GPIOA1
7 GPIOA2
8 GPIOA3
9 GPIOA4
10 GPIOA5
11 GPIOSCK
12 GPIOMOSI
13 GPIOMISO
14 GPIORX
15 GPIOTX
16 NC
SCK
MOSI
MISO

JP4
VBAT 28 1
EN   27 2
USB 26 3
GPIO13 25 4
GPIO12 24 5
GPIO11 23 6
GPIO10 22 7
GPIO9 21 8
GPIO6 20 9
GPIO5 19
GPIOSCL 18
GPIOSDA 17

SJ4 2 1

3.3V
R28 10K
CS
IRQ
RESET
JP5
1
2
3

Check out out JP5 is used

Check out how INT1 and SDCS1 jumpers are used.

IC3 — PCF8523

Pin	Name		Name	Pin
1	XI		VDD	8
2	XO		INT1/CLK	7
3	VBAT		SCL	6
4	VSS		SDA	5

Y2 — 32khz

B1 — CR1220 / cr1220

INT1

C27 10uF — GND

R29 1K — 3.3V

C28 10uF — GND

GND

SD_CS — SDCS1 (1)

JP6 (1)

SJ5 (1, 2)

R30 100K — 3.3V
R31 10K — 3.3V
R32 10K

I2C_SCL
I2C_SDA

SCL
SDA

JP8
27 26 25 24 23 22 21 20 19 18 17

VBAT EN USB GPIO13 GPIO12 GPIO11 GPIO10 GPIO9 GPIO6 GPIO5 GPIOSCL GPIOSDA

JP7
16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

RESET 3V AREF GND GPIOA0 GPIOA1 GPIOA2 GPIOA3 GPIOA4 GPIOA5 GPIOSCK GPIOMOSI GPIOMISO GPIORX GPIOTX NC

SCK MOSI MISO RX

GND
3.3V

X4 — microsd — SD & MMC

Name	Pin		Pin	Name
CD1		CARD_DETECT		
CD2		CARD_DETECT1		
MISO	7	DATA_OUT		
MOSI	3	DATA_IN		
SCK	5	SCLK		
SD_CS	2	CS		
	8	DAT1		
	1	DAT2		
3.3V	4	SD_VDD		
	6	GND@3		
MT2		GND@1		
MT1		GND@2		

GND