300mA 5V Buck Regulator

U7 MAX15062BATA+T
VIN, EN/UVLO, MODE, VCC, LX, FB/Vout, RESET, GND
PSU_EN
L1 47uH LX
C3 4.7uF 100V
R9 1M
PSU_VCC
C11 1uF
+48V
PSU_RST JMP RST
JP1

ESP32 3.3V Regulator

U2 AMS1117-3.3
VI, VO, GND
+5V
C12 4.7uF
C13 4.7uF
JMP_3V3 JP2
C4 4.7uF
C6 47uF
+3V3
GND

JP1 & JP2 should be shorted after programming ESP32.

RESET — Open-Drain Reset Output. Pull up RESET to an external power supply with an external resistor. RESET goes low when the output voltage drops below 92% of the set nominal regulated voltage. RESET goes high impedance 2ms after the output voltage rises above 95% of its regulation value. See the *Electrical Characteristics* table for threshold values.

Power Input

J4 Power
1 PSU_EN
2 +48V
3 GND

Programming UART
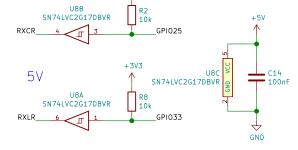
J2 PROG_UART
6 RTS
5 RST
4 DTR GPIO0
3 RXD
2 TXD
1
+3V3
GND
On break-away part

Only use 3.3V supply on J2!
Solder JP2 after programming
to power ESP32 from on-board
regulators.

Level Shifters

U4B SN74LVC2G17DBVR
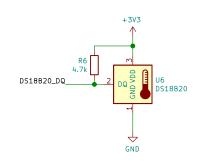TXL 3 — 4 GPIO26

3.3V
U4A SN74LVC2G17DBVR
TXC 1 — 6 GPIO27
U4C SN74LVC2G17DBVR GND VCC
C2 100nF
+3V3
GND

U8B SN74LVC2G17DBVR
RXCR 4 — 3 GPIO25
R2 10k
+3V3

5V
U8A SN74LVC2G17DBVR
RXLR 6 — 1 GPIO33
R8 10k
U8C SN74LVC2G17DBVR GND VCC
C14 100nF
+5V
+3V3
GND

Yes, input thresholds not guaranteed suitable across temperature range.

LCD & Controller UARTs

J3 Conn_01x04
1 TXC
2 TXL
3 RXC
4 RXL
R7 330R RXCR
R4 330R RXLR

ESP32

U5 ESP32-PICO-D4
RST 9 EN
SENSOR_VP, SENSOR_CAPP, SENSOR_CAPN, SENSOR_VN
VDDA, VDD3P3, VDD3P3_RTC, VDD3P3_CPU
LNA_IN — ESP_ANT
IO0 GPIO0
U0TXD/IO1 TXD
IO2
U0RXD/IO3 RXD
IO4 DS18B20_DQ
IO5
SD2/IO9
SD3/IO10
IO12 SDA
IO13
IO14 SCL
IO15
IO16
IO17
SD0
SD1
CLK
CMD
IO18
IO19
IO21
IO22
IO23
IO25 GPIO25
IO26 GPIO26
IO27 GPIO27
IO32
IO33 GPIO33
IO34
IO35
VDD_SDIO
GND
R1 10k
C1 4.7uF
+3V3
GND

Controlled impedance antenna trace.

J1 ANT

ESP32 Decoupling
C5 100nF
C7 100nF
C8 100nF
+3V3
GND

On-board Temperature Sensor

U1 TMP100
R3 10k R5 10k
SDA, SCL, ADD0, ADD1, V+
C10 100nF
+3V3
GND
I2C Address: 0x48
Previous T sensor: 0x49

External Temperature Sensor

U6 DS18B20
R6 4.7k
DS18B20_DQ DQ VDD GND
+3V3
GND

BOM Only Extras

U3 CP2102 Ai-Thinker-CP2102
USB-Serial Adapter

AE1 2.4GHz Antenna
WiFi Antenna

Detail on UART programming: https://github.com/espressif/esptool/wiki/ESP32-Boot-Mode-Selection#automatic-bootloader