The actuator output is given as a digital (low power) signal.
This is so the acutator can optionally use a separate power supply than the sensor board and be decoupled from it since it may have significantly different power requirements. We plan to use a transistor on a separate circuit board to power the actuator separately, with the transistor base triggered by the ACT_OUT signal.

Actuator Digital Output – DO NOT CONNECT TO POWER DIRECTLY

Conn_01x02_Socket
J_ACT_OUT1

Programming Port. On CP2104 Friend, pinout is:
RTS | RX | TX | V+ (5V/3V3) | CTS | GND

RTS and CTS remain unused.

J_PROG1
Conn_01x04_Socket

U2
ESP32-WROOM-E

ESP32-WROOM

U3
MAX3483AEASA+

Soil Sensor RS485 Port

Conn_01x04_Socket
JST_XH_SOIL5V1

C7_MAXDECOUP1
0.1uF

Q1
2N7002K

SENSOR_EN

JST_XH_AIR1
Conn_01x03_Socket

Air Temp Sense Port

Boot & Reset Buttons

EN RC Delay Circuit.
10K R comes from the reset button pullup.
(Top right of schematic)

R1
10K

C5
1uF

C6
0.1uF

SW_DIP_x01

To program the board, the boot and reset buttons must be pressed manually. There is a better way to do this, however it requires using RTS and DTR pins on the USB programmer and significant added complexity.

3V3 Power LDO – HT7833

U1
HT7833

Place caps close to LDO and ESP32 power rails

C1
1uF

C2
2.2uF

C3
0.1uF

C4
22uF

Conn_01x02_Socket
J_PWRIN1

Capacitance values are taken from datasheets of the HT7833 and ESP32.

CottonCandy Node Connections

JST_XH_CC1
Conn_01x05_Socket

We assume that actuation input will be provided as a pulse, akin to the WKP signal, on a different port which we name "ACT_IN". The actual downstream data is expected on the "RX_CC" port.

Spare GPIO Bank

J1
Conn_02x10_Odd_Even

Spare GPIOs are paired with GND for simplified connection to external devices. This is presented as a 2x10 standard 0.100" female(?) connector on the board.

Optional Power LED

D1
LED

R2
1.91K

JP1
Jumper_LED_EN

H1 MountingHole
H2 MountingHole
H3 MountingHole
H4 MountingHole

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Title: ESP32 WROOM 32 – CottonCandy Sensor and Actuator Platform

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