**MCU Board #2 (Servo Board)**

**Connection Mapping: (C2000 to ESP-32)**

| Motor | C2000 GPIO | ESP-32 GPIO | Motion | Color |
| --- | --- | --- | --- | --- |
| Motor 2 | GPIO33 | GPIO4 | UP | Blue |
| Motor 2 | GPIO34 | GPIO16 | DOWN | Blue |
| Motor 3 | GPIO24 | GPIO17 | UP | Yellow |
| Motor 3 | GPIO31 | GPIO5 | DOWN | Yellow |
| Motor 4 | GPIO12 | GPIO18 | LEFT | Red |
| Motor 4 | GPIO27 | GPIO19 | RIGHT | Red |
| Motor 5 | GPIO32 | GPIO15 | OPEN | Orange |
| Motor 5 | GPIO14 | GPIO2 | CLOSE | Orange |

**Connection Mapping: (C2000 to Cobot Servos)**

| Motor | C2000 GPIO | Motion | Color |
| --- | --- | --- | --- |
| Motor 2 | GPIO0 | PWM Signal | White |
| Motor 3 | GPIO1 | PWM Signal | Yellow |
| Motor 4 | GPIO6 | PWM Signal | Red |
| Motor 5 | GPIO7 | PWM Signal | Orange |

**Code comments:**

// \* \*\*Motor 2 (Base Arm Movement)\*\*

// \* - Moves \*\*UP (Extending, making it taller)\*\* when GPIO33 receives LOW. ESP-GPIO4

// \* - Moves \*\*DOWN (Collapsing onto Arm 1)\*\* when GPIO34 receives LOW. ESP-GPIO16

// \* - Holds position when both are HIGH.

// \*

// \* \*\*Motor 3 (Second Arm Joint)\*\*

// \* - Moves \*\*UP\*\* when GPIO24 receives LOW. ESP-GPIO17

// \* - Moves \*\*DOWN\*\* when GPIO31 receives LOW. ESP-GPIO5

// \* - Holds position when both are HIGH.

// \*

// \* \*\*Motor 4 (Gripper Rotation)\*\*

// \* - Rotates \*\*LEFT (Counterclockwise)\*\* when GPIO12 receives LOW. ESP-GPIO18

// \* - Rotates \*\*RIGHT (Clockwise)\*\* when GPIO27 receives LOW. ESP-GPIO19

// \* - Holds position when both are HIGH.

// \*

// \* \*\*Motor 5 (Gripper Open/Close)\*\*

// \* - Opens \*\*Gripper\*\* when GPIO32 receives LOW. ESP-GPIO15

// \* - Closes \*\*Gripper\*\* when GPIO14 receives LOW. ESP-GPIO2

// \* - Holds position when both are HIGH.

// \*

// \* \*\*GPIO Pins on C2000 MCU:\*\*

// \* - GPIO33 Input from ESP32 to move Motor 2 UP

// \* - GPIO34 Input from ESP32 to move Motor 2 DOWN

// \* - GPIO0 PWM Output to Motor 2

// \* - GPIO24 Input from ESP32 to move Motor 3 UP

// \* - GPIO31 Input from ESP32 to move Motor 3 DOWN

// \* - GPIO1 PWM Output to Motor 3

// \* - GPIO12 Input from ESP32 to rotate Motor 4 LEFT (CCW)

// \* - GPIO27 Input from ESP32 to rotate Motor 4 RIGHT (CW)

// \* - GPIO6 PWM Output to Motor 4 (Gripper Rotation)

// \* - GPIO32 Input from ESP32 to open Motor 5 (Gripper Open)

// \* - GPIO14 Input from ESP32 to close Motor 5 (Gripper Close)

// \* - GPIO7 PWM Output to Motor 5 (Gripper Open/Close)

**MCU Board #1 (BLDC Board)**

**Connection Mapping: (C2000 to ESP-32)**

| Motor | C2000 GPIO | ESP-32 GPIO | Motion |
| --- | --- | --- | --- |
| Motor 1 | GPIO15 | GPIO13 | LEFT |
| Motor 1 | GPIO16 | GPIO12 | RIGHT |

**Connection Mapping: (Button to C2000)**

| Motor | Button | C2000 GPIO | Motion |
| --- | --- | --- | --- |
| Motor 1 | Button 1 | GPIO14 | LEFT |
| Motor 1 | Button 2 | GPIO12 | RIGHT |

**Connection Mapping: (C2000 to Motor Driver Board)**

| C2000 GPIO | Motor Driver |
| --- | --- |
| GPIO4 | UP |
| GPIO16 | DOWN |
| GPIO17 | UP |
| GPIO5 | DOWN |
| GPIO18 | LEFT |
| GPIO19 | RIGHT |
| GPIO15 | OPEN |
| GPIO2 | CLOSE |