Groupings:

ENA, IN1, IN2, OUT1 (pos), OUT2 (neg)  
ENB, IN3, IN4, OUT3 (pos), OUT4 (neg)

ENA = EN1  
ENB = EN2  
IN1 =   
IN2 =   
IN3 =   
IN4 =   
OUT1 =   
OUT2 =   
OUT3 =   
OUT4 =

^^For inputs, are INB1 and INB2 paired (how it seems to be in the first image), or should INB1 and INA1 be paired?

|  |  |  |
| --- | --- | --- |
| Component | Component pin | Destination pin |
| Actuator 1 H-bridge | +12v | 12v source |
| gnd | 12v gnd  [Arduino] gnd |
| +5v | N/A |
| ENA | [Arduino] digital 22 |
| IN1 | [Arduino] digital 22 |
| IN2 | N/A |
| ENB | [Arduino] digital 23 |
| IN3 | [Arduino] digital 24 |
| IN4 | [Arduino] digital 25 |
| OUT1 | [Heater 1] positive |
| OUT2 | [Heater 1] negative |
| OUT3 | [Actuator 1] +12v (red) |
| OUT4 | [Actuator 1] gnd (black) |
| Actuator 1 (B) | +12v (red) | [H-bridge 1] OUT3 |
| gnd (black) | [H-bridge 1] OUT4 |
| Feedback positive (yellow) | [Arduino] +5v |
| Feedback negative (orange) | [Arduino] gnd |
| Feedback wiper (purple) | [Arduino] analog A9 |
| Heater 1 (A) | Positive | [H-bridge 1] OUT1 |
| Negative | [H-bridge 1] OUT1 |
| Thermistor 1 | Wire end 1 | 10kΩ -> [Arduino] +5v  [Arduino] analog A8 |
| Wire end 2 | [Arduino] gnd |

|  |  |  |
| --- | --- | --- |
| Component | Component pin | Destination pin |
| Actuator 2 H-bridge | +12v | 12v source |
| gnd | 12v gnd  [Arduino] gnd |
| +5v | N/A |
| ENA | [Arduino] digital 28 |
| IN1 | [Arduino] digital 28 |
| IN2 | N/A |
| ENB | [Arduino] digital 29 |
| IN3 | [Arduino] digital 30 |
| IN4 | [Arduino] digital 31 |
| OUT1 | [Heater 2] positive |
| OUT2 | [Heater 2] negative |
| OUT3 | [Actuator 2] +12v (red) |
| OUT4 | [Actuator 2] gnd (black) |
| Actuator 2 (B) | +12v (red) | [H-bridge 2] OUT3 |
| gnd (black) | [H-bridge 2] OUT4 |
| Feedback positive (yellow) | [Arduino] +5v |
| Feedback negative (orange) | [Arduino] gnd |
| Feedback wiper (purple) | [Arduino] analog A11 |
| Heater 2 (A) | Positive | [H-bridge 2] OUT1 |
| Negative | [H-bridge 2] OUT1 |
| Thermistor 2 | Wire end 1 | 10kΩ -> [Arduino] +5v  [Arduino] analog A10 |
| Wire end 2 | [Arduino] gnd |

|  |  |  |
| --- | --- | --- |
| Component | Component pin | Destination pin |
| Actuator 3 H-bridge | +12v | 12v source |
| gnd | 12v gnd  [Arduino] gnd |
| +5v | N/A |
| ENA | [Arduino] digital 34 |
| IN1 | [Arduino] digital 34 |
| IN2 | N/A |
| ENB | [Arduino] digital 35 |
| IN3 | [Arduino] digital 36 |
| IN4 | [Arduino] digital 37 |
| OUT1 | [Heater 3] positive |
| OUT2 | [Heater 3] negative |
| OUT3 | [Actuator 3] +12v (red) |
| OUT4 | [Actuator 3] gnd (black) |
| Actuator 3 (B) | +12v (red) | [H-bridge 3] OUT3 |
| gnd (black) | [H-bridge 3] OUT4 |
| Feedback positive (yellow) | [Arduino] +5v |
| Feedback negative (orange) | [Arduino] gnd |
| Feedback wiper (purple) | [Arduino] analog A13 |
| Heater 3 (A) | Positive | [H-bridge 3] OUT1 |
| Negative | [H-bridge 3] OUT1 |
| Thermistor 3 | Wire end 1 | 10kΩ -> [Arduino] +5v  [Arduino] analog A12 |
| Wire end 2 | [Arduino] gnd |

|  |  |  |
| --- | --- | --- |
| Component | Component pin | Destination pin |
| Actuator 4 H-bridge | +12v | 12v source |
| gnd | 12v gnd  [Arduino] gnd |
| +5v | N/A |
| ENA | [Arduino] digital 40 |
| IN1 | [Arduino] digital 40 |
| IN2 | N/A |
| ENB | [Arduino] digital 41 |
| IN3 | [Arduino] digital 42 |
| IN4 | [Arduino] digital 43 |
| OUT1 | [Heater 4] positive |
| OUT2 | [Heater 4] negative |
| OUT3 | [Actuator 4] +12v (red) |
| OUT4 | [Actuator 4] gnd (black) |
| Actuator 4 (B) | +12v (red) | [H-bridge 4] OUT3 |
| gnd (black) | [H-bridge 4] OUT4 |
| Feedback positive (yellow) | [Arduino] +5v |
| Feedback negative (orange) | [Arduino] gnd |
| Feedback wiper (purple) | [Arduino] analog A15 |
| Heater 4 (A) | Positive | [H-bridge 3] OUT1 |
| Negative | [H-bridge 3] OUT1 |
| Thermistor 4 | Wire end 1 | 10kΩ -> [Arduino] +5v  [Arduino] analog A14 |
| Wire end 2 | [Arduino] gnd |

|  |  |  |
| --- | --- | --- |
| Component | Component pin | Destination pin |
| GPS | +5v | [Arduino] +5v |
| gnd | [Arduino] gnd |
| Txd | [Arduino] digital 52 |
| Rxd | [Arduino] digital 53 |
| PPS | N/A |
| BME | VIN(+5v) | [Arduino] +5v |
| +3.3v | N/A |
| gnd (black) | [Arduino] gnd |
| SCK | [Arduino] digital 21 |
| SDO | N/A |
| SDI | [Arduino] digital 20 |
| CS | N/A |
| Camera | CVBS | N/A |
| +5v | [Arduino] +5v |
| Tx | [Arduino] analog A6 |
| Rx | 10kΩ -> [Arduino] gnd  10kΩ -> [Arduino] analog A7 |
| gnd | [Arduino] gnd |
| LED1 | positive | 220Ω -> [Arduino] digital 44 |
| negative | [Arduino] gnd |
| LED2 | positive | 220Ω -> [Arduino] digital 45 |
| negative | [Arduino] gnd |
| LED3 | positive | 220Ω -> [Arduino] digital 46 |
| negative | [Arduino] gnd |