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| --- | --- | --- | --- |
| **Pin Type** | **Arduino Mega Pin** | **External Connection** | **Purpose** |
| **Serial** | 0 | USB Serial RX | Receive USB Comms via PC |
| 1 | USB Serial TX | Transmit USB Comms via PC |
| **PWM** | 2 | Xbee Shield RX | Receives data through antenna |
| 3 | Xbee Shield TX | Transmits data through antenna |
| 4 |  |  |
| 5 |  |  |
| 6 |  |  |
| 7 |  |  |
| 8 |  |  |
| 9 | L298N Wheels | Left Wheel IN1 PWM |
| 10 | L298N Wheels | Left Wheel IN2 PWM |
| 11 | L298N Wheels | Right Wheel IN3 PWM |
| 12 | L298N Wheels | Right Wheel IN4 PWM |
| 13 |  |  |
| **UART** | 14 | Mega Serial3 TX | Transmits data to Xbee Shield |
| 15 | Mega Serial3 RX | Receives data from Xbee Shield |
| 16 |  |  |
| 17 |  |  |
| **Interrupts** | 18 | Left Wheel Encoder | Left encoder interrupt 1 |
| 19 | Left Wheel Encoder | Left encoder interrupt 2 |
| 20 | Right Wheel Encoder | Right encoder interrupt 1 |
| 21 | Right Wheel Encoder | Right encoder interrupt 2 |
| **Digital** | 22 | A4988 1 | Turret Step |
| 23 | QTRX 13-LED Dig. Input | LED Reading |
| 24 | A4988 1 | Turret DIR |
| 25 | QTRX 13-LED Dig. Input | LED Reading |
| 26 | A4988 2 | Z-Axis STEP |
| 27 | QTRX 13-LED Dig. Input | LED Reading |
| 28 | A4988 2 | Z-Axis DIR |
| 29 | QTRX 13-LED Dig. Input | LED Reading |
| 30 | A4988 3 | Arm STEP |
| 31 | QTRX 13-LED Dig. Input | LED Reading |
| 32 | A4988 3 | Arm DIR |
| 33 | QTRX 13-LED Dig. Input | LED Reading |
| 34 | A4988 4 | Wrist STEP |
| 35 | QTRX 13-LED Dig. Input | LED Reading |
| 36 | A4988 4 | Wrist DIR |
| 37 | QTRX 13-LED Dig. Input | LED Reading |
| 38 | Magnet ON | ON |
| 39 | QTRX 13-LED Dig. Input | LED Reading |
| 40 | Magnet OFF | OFF |
| 41 | QTRX 13-LED Dig. Input | Line following array LED reading |
| 42 | Color Sensor S0 | Power Adjustment |
| 43 | QTRX 13-LED Dig. Input | Line following array LED reading |
| 44 | Color Sensor S1 | Power Adjustment |
| 45 | QTRX 13-LED Dig. Input | Line following array LED reading |
| 46 | Color Sensor S2 | Diode Setter |
| 47 | QTRX 13-LED Dig. Input | Line following array LED reading |
| 48 | Color Sensor S3 | Diode Setter |
| 49 | QTRX Digital Output | Controls array LED lights |
| 50 | Color Sensor Input | Reads color data |
| 51 |  |  |
| 52 |  |  |
| 53 |  |  |
| A0 | Rear Distance Sensor |  |
| A1 | Front Distance Sensor |  |
| A2 | Hall Effect Sensor |  |
| A3 |  |  |
| A4 |  |  |
| A5 |  |  |
| A6 |  |  |
| A7 | QTR8 CTRL |  |
| **PWM** | A8 | QTR8 Array 1 |  |
| A9 | QTR8 Array 3 |  |
| **Digital** | A10 | QTR8 Array 5 |  |
| A11 | QTR8 Array 7 |  |
| A12 | QTR8 Array 9 |  |
| A13 | QTR8 Array 11 |  |
| A14 | QTR8 Array 13 |  |
| A15 | QTR8 Array 15 |  |
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| **Analog** |  |  |  |
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// PWM Pins - If wheel drives backwards, swap pin definitions

const int leftMotorPin1 = 8;

const int leftMotorPin2 = 9;

const int rightMotorPin1 = 10;

const int rightMotorPin2 = 11;

// Interrupt Pins - If velocity is recorded backwards, swap pin definitions

const int rightEncoderPin1 = 19;

const int rightEncoderPin2 = 18;

const int leftEncoderPin1 = 20;

const int leftEncoderPin2 = 21;