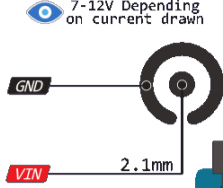


7-12V Depending on current drawn



VIN

The input voltage to the board when it is running from external power. Not USB bus power.

R3 Only

IOREF

RESET

3V3

5V

GND

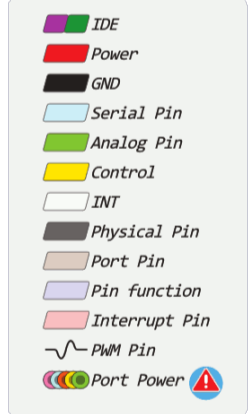
VIN

Cut do disable autoreset

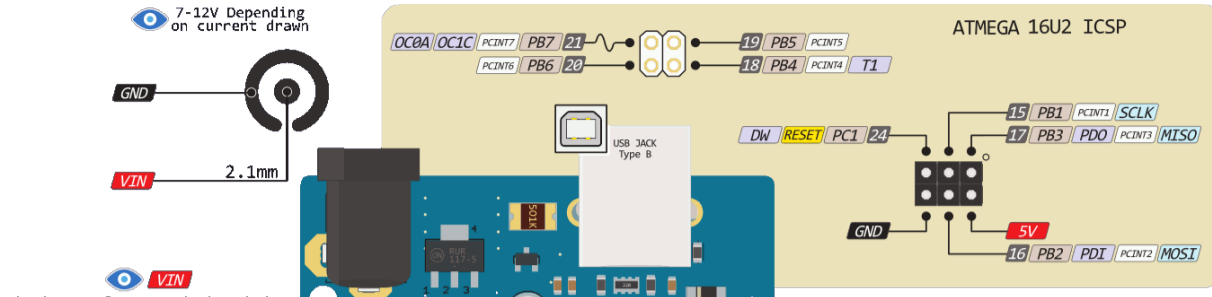
| | | | | | |
|-------------------------|----|------|--------|-----|----|
| X Step | 54 | A0 | ADC0 | PF0 | 97 |
| X Dir | 55 | A1 | ADC1 | PF1 | 96 |
| Y Enable | 56 | A2 | ADC2 | PF2 | 95 |
| Tool probe | 57 | A3 | ADC3 | PF3 | 94 |
| UI_MATRIX_KEYPAD_PIN_C1 | 58 | A4 | ADC4 | TCK | 93 |
| Y Step | 59 | A5 | ADC5 | TMS | 92 |
| Y Dir | 60 | A6 | ADC6 | TDO | 91 |
| Z Enable | 62 | A8 | ADC8 | PK0 | 89 |
| UI_MATRIX_KEYPAD_PIN_R4 | 63 | A9 | ADC9 | PK1 | 88 |
| UI_MATRIX_KEYPAD_PIN_C2 | 64 | A10 | ADC10 | PK2 | 87 |
| UI_MATRIX_KEYPAD_PIN_R1 | 65 | A11 | ADC11 | PK3 | 86 |
| UI_MATRIX_KEYPAD_PIN_C4 | 66 | A12 | ADC12 | PK4 | 85 |
| | 67 | A13 | ADC13 | PK5 | 84 |
| | 68 | A14 | ADC14 | PK6 | 83 |
| | 69 | A15 | ADC15 | PK7 | 82 |
| X Enable | 38 | T0 | PD7 | 60 | |
| UI_MATRIX_KEYPAD_PIN_R3 | 40 | RD | PG1 | 62 | |
| UI_MATRIX_KEYPAD_PIN_R2 | 42 | PL7 | 42 | | |
| UI_MATRIX_KEYPAD_PIN_C3 | 44 | OC5C | PL5 | 40 | |
| Z Step | 46 | OC5A | PL3 | 38 | |
| Z Dir | 48 | ICP5 | PL1 | 36 | |
| | 50 | MISO | PCINT3 | PB3 | 22 |
| | 52 | SCK | PCINT1 | PB1 | 20 |

| | | | | | |
|----|------|---------|------|----|----------------------------|
| 43 | PD0 | INT0 | SCL | 21 | |
| 44 | PD1 | INT1 | SDA | 20 | R3 Only |
| 93 | AREF | | | | |
| | GND | | | | |
| 26 | PB7 | PCINT7 | OC1C | 13 | OC0A |
| 25 | PB6 | PCINT6 | OC1B | 12 | |
| 24 | PB5 | PCINT5 | OC1A | 11 | |
| 23 | PB4 | PCINT4 | OC2A | 10 | COOLANT_FLOOD |
| 13 | PH6 | OC2B | | 9 | COOLANT_MIST |
| 17 | PH5 | OC4C | | 8 | |
| 16 | PH4 | OC4B | | 7 | |
| 15 | PH3 | OC4A | | 6 | SPINDLE_PWM |
| 5 | PE3 | AIN1 | OC3A | 5 | SPINDLE_DIRECTION |
| 4 | PG5 | OC0B | | 4 | SPINDLE_ENABLE |
| 7 | PE5 | INT5 | OC3C | 3 | UI_ENCODER_B_PIN2 |
| 6 | PE4 | INT4 | OC3B | 2 | UI_ENCODER_B_PIN1 |
| 3 | PE1 | TXD0 | | 1 | |
| 2 | PE0 | PCINT0 | RXD0 | 0 | |
| 64 | PJ1 | PCINT10 | TXD3 | 14 | X Limit Min (no Max limit) |
| 63 | PJ0 | PCINT9 | RXD3 | 15 | Y Limit Min (no Max limit) |
| 16 | PH1 | TXD2 | | 16 | LCD_PIN_RS |
| 18 | PH0 | RXD2 | | 17 | LCD_PIN_EN |
| 18 | PD3 | INT3 | TXD1 | 18 | |
| 19 | PD2 | INT2 | RXD1 | 19 | Z Limit Max (no Min limit) |
| 44 | PD1 | INT1 | SDA | 20 | |
| 43 | PD0 | INT0 | SCL | 21 | |
| 54 | PC1 | A9 | | 36 | |
| 56 | PC3 | A11 | | 34 | |
| 53 | PC5 | A13 | | 32 | Cycle Start |
| 60 | PC7 | A15 | | 30 | |
| 72 | PA6 | AD6 | | 28 | |
| 71 | PA4 | AD4 | | 26 | |
| 70 | PA2 | AD2 | | 24 | |
| 73 | PA0 | AD0 | | 22 | |

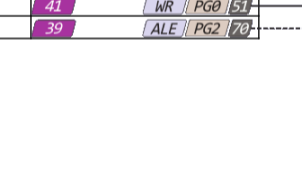
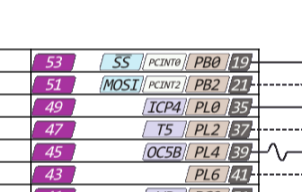
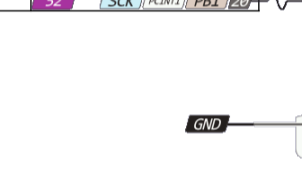
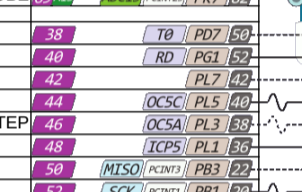
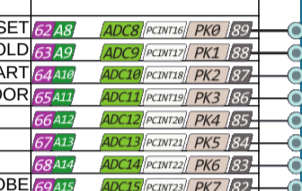
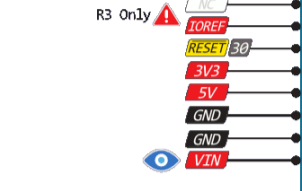
| | | | | | | | | | | |
|---------------------|----|-------|--------|-----|----|----|-----|-----|----|---------------------|
| SD_CHIPSELECT | 53 | SS | PCINT0 | PB0 | 19 | 77 | PA1 | AD1 | 23 | LCD_PIN_D4 |
| SD_CARDDTECT | 51 | MOSTI | PCINT2 | PB2 | 21 | 75 | PA3 | AD3 | 25 | LCD_PIN_D5 |
| Reset/Abort | 47 | T5 | PL2 | 37 | | 76 | PA5 | AD5 | 27 | LCD_PIN_D6 |
| Feed Hold | 45 | OC5B | PL4 | 39 | | 74 | PA7 | AD7 | 29 | LCD_PIN_D7 |
| Safety Door | 43 | PL6 | 41 | | | 59 | PC6 | A14 | 31 | UI_ENCODER_A_PIN2 |
| UI_ENCODER_A_PINBT2 | 41 | WR | PG0 | 51 | | 57 | PC4 | A12 | 33 | UI_ENCODER_A_PIN1 |
| | 39 | ALE | PG2 | 70 | | 55 | PC2 | A10 | 35 | UI_ENCODER_A_PINBT1 |
| | | | | | | 53 | PC0 | A8 | 37 | BEEPER |



- Rotary Encoder + buttons
- Matrix keyboard (5x5)
- LCD connection
- Axis spindle and endstops
- Spindle
- SD card SPI connection



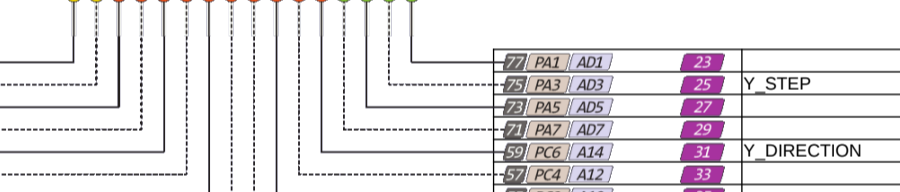
The input voltage to the board when it is running from external power. Not USB bus power.



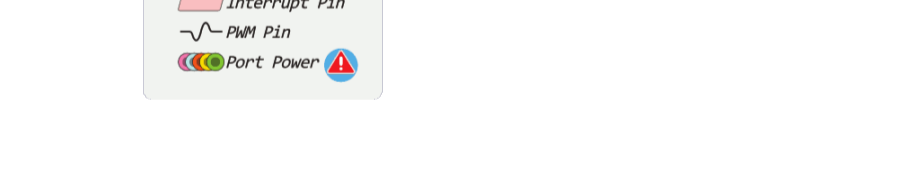
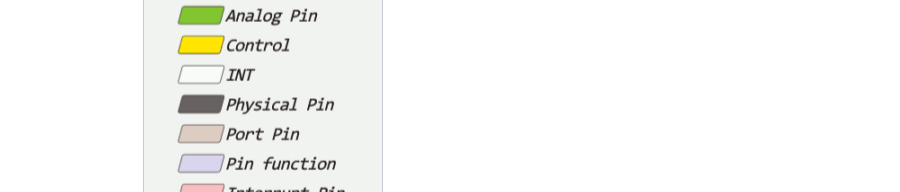
| | | | | | | | | |
|----|------|--------|------|----|------|--------|-----|-------------------|
| 43 | PD0 | INT0 | SCL | 21 | OC0A | PCINT7 | PB7 | 21 |
| 44 | PD1 | INT1 | SDA | 20 | OC0B | PCINT6 | PB6 | 20 |
| 93 | AREF | | | | | | | |
| | GND | | | | | | | |
| 26 | PB7 | PCINT7 | OC1C | 13 | OC0A | | | STEPPERS_DISABLE |
| 25 | PB6 | PCINT6 | OC1B | 12 | | | | Z_LIMIT |
| 24 | PB5 | PCINT5 | OC1A | 11 | | | | Y_LIMIT |
| 23 | PB4 | PCINT4 | OC2A | 10 | | | | X_LIMIT |
| 13 | PH6 | OC2B | | 9 | | | | COOLANT_MIST |
| 17 | PH5 | OC4C | | 8 | | | | COOLANT_FLOOD |
| 16 | PH4 | OC4B | | 7 | | | | SPINDLE_PWM |
| 15 | PH3 | OC4A | | 6 | | | | SPINDLE_ENABLE |
| 5 | PE3 | AIN1 | OC3A | 5 | | | | SPINDLE_DIRECTION |
| 7 | PE5 | INT5 | OC3C | 3 | | | | |
| 6 | PE4 | INT4 | OC3B | 2 | | | | |
| 3 | PE1 | TXD0 | | 1 | | | | |
| 2 | PE0 | PCINT0 | RXD0 | 0 | | | | |

| | | | | | | | | |
|----|-----|---------|------|----|--|--|--|--|
| 64 | PJ1 | PCINT10 | TXD3 | 14 | | | | |
| 63 | PJ0 | PCINT9 | RXD3 | 15 | | | | |
| 16 | PH1 | TXD2 | | 16 | | | | |
| 12 | PH0 | RXD2 | | 17 | | | | |
| 18 | PD3 | INT3 | TXD1 | 18 | | | | |
| 19 | PD2 | INT2 | RXD1 | 19 | | | | |
| 20 | PD1 | INT1 | SDA | 20 | | | | |
| 21 | PD0 | INT0 | SCL | 21 | | | | |

| | | | | | | | | |
|----|------|--------|-----|----|-----|-----|--|-------------|
| 38 | T0 | PD7 | 50 | 36 | PC1 | A9 | | |
| 40 | RD | PG1 | 52 | 34 | PC3 | A11 | | |
| 42 | PL7 | 42 | | 32 | PC5 | A13 | | Z_DIRECTION |
| 44 | OC5C | PL5 | 40 | 30 | PC7 | A15 | | X_DIRECTION |
| 46 | OC5A | PL3 | 38 | 28 | PA6 | AD6 | | |
| 48 | ICP5 | PL1 | 36 | 26 | PA4 | AD4 | | Z_STEP |
| 50 | MISO | PCINT3 | PB3 | 22 | PA2 | AD2 | | X_STEP |
| 52 | SCK | PCINT1 | PB1 | 20 | PA0 | AD0 | | |



| | | | | | | | | |
|----|-------|--------|-----|----|----|-----|-----|----|
| 53 | SS | PCINT0 | PB0 | 19 | 77 | PA1 | AD1 | 23 |
| 51 | MOSTI | PCINT2 | PB2 | 21 | 75 | PA3 | AD3 | 25 |
| 49 | TCP4 | PL0 | 35 | 27 | 73 | PA5 | AD5 | 27 |
| 47 | T5 | PL2 | 37 | 29 | 71 | PA7 | AD7 | 29 |
| 45 | OC5B | PL4 | 39 | 31 | 69 | PC6 | A14 | 31 |
| 43 | PL6 | 41 | | 33 | 67 | PC4 | A12 | 33 |
| 41 | WR | PG0 | 51 | 35 | 65 | PC2 | A10 | 35 |
| 39 | ALE | PG2 | 53 | 37 | 63 | PC0 | A8 | 37 |



- IDE
- Power
- GND
- Serial Pin
- Analog Pin
- Control
- INT
- Physical Pin
- Port Pin
- Pin function
- Interrupt Pin
- ~ PWM Pin
- ⚡ Port Power