

The diagram illustrates the pin configuration of the ATmega328P microcontroller. The pins are numbered 1 through 28, with additional pins for AREF (29) and AVCC (30). The connections are as follows:

- Left Side (Pins 1-13):**
 - IO0 (Pin 1), IO1 (Pin 2), IO2 (Pin 3), IO3 (Pin 4), IO4 (Pin 5), IO5 (Pin 6), IO6 (Pin 7), IO7 (Pin 8)
 - PD0/RXD/PCINT16 (Pin 9), PD1/TXD/PCINT17 (Pin 10), PD2/INT0/PCINT18 (Pin 11), PD3/INT1/OC2B/PCINT19 (Pin 12), PD4/T0/XCK/PCINT20 (Pin 13), PD5/T1/OC0B/PCINT21 (Pin 14), PD6/AIN0/OC0A/PCINT22 (Pin 15), PD7/AIN1/PCINT23 (Pin 16)
- Right Side (Pins 14-28):**
 - IO8 (Pin 14), IO9 (Pin 15), IO10 (Pin 16), IO11 (Pin 17), IO12 (Pin 18), IO13 (Pin 19), XTAL1 (Pin 20), XTAL2 (Pin 21)
 - PB0/ICP1/CLKO/PCINT0 (Pin 22), PB1/OC1A/PCINT1 (Pin 23), PB2/SS/OC1B/PCINT2 (Pin 24), PB3/MOSI/OC2A/PCINT3 (Pin 25), PB4/MISO/PCINT4 (Pin 26), PB5/SCK/PCINT5 (Pin 27), PB6/TOSC1/XTAL1/PCINT6 (Pin 28), PB7/TOSC2/XTAL2/PCINT7 (Pin 29)
- Bottom (Pins 29-30):**
 - AREF (Pin 29), AVCC (Pin 30)
- Internal Connections:**
 - PC0/ADC0/PCINT8 (Pin 22), PC1/ADC1/PCINT9 (Pin 23), PC2/ADC2/PCINT10 (Pin 24), PC3/ADC3/PCINT11 (Pin 25), PC4/ADC4/SDA/PCINT12 (Pin 26), PC5/ADC5/SCL/PCINT13 (Pin 27), PC6/RESET/PCINT14 (Pin 28)
 - AD0 (Pin 22), AD1 (Pin 23), AD2 (Pin 24), AD3 (Pin 25), AD4 (Pin 26), AD5 (Pin 27)
 - IO14 (Pin 22), IO15 (Pin 23), IO16 (Pin 24), IO17 (Pin 25), SDA (Pin 26), SCL (Pin 27)

LIGAÇÕES BÁSICAS ATMEGA

MEDIÇÃO DE TENSÃO

The diagram illustrates a voltage measurement setup. A voltage source $+VBAT$ is connected in series with resistor $R9$ (82K). This is followed by resistor $R10$ (22k). The output of $R10$ is connected to pin 1 of a potentiometer $RV1$ (10k). The other end of $RV1$ (pin 3) is connected to resistor $R11$ (1k), which is then connected to ground. The wiper of the potentiometer (pin 535, labeled $AD0$) provides the voltage input to the ADC. The ground connection is marked with a minus sign $-$.

MEDIÇÃO DE TEMPERATURA

J10

Pin	Signal
8	IO9
7	IO8
6	IO7
5	IO6
4	IO5
3	IO4
2	IO3
1	

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J11

Pin	Signal
8	+5V
7	+5V
6	+5V
5	+5V
4	GND
3	GND
2	GND
1	GND

TBLOCK-18

The image displays four pinout diagrams for the Arduino Uno R3 headers J1, J2, J3, and J4. Each diagram shows a 5-pin header with its corresponding pin numbers and functions.

- J1 POWER:** A 5-pin header with pins 1 through 5. Pin 1 is labeled RESET, pin 2 is labeled +3.3V, pin 3 is labeled +5V, pin 4 is labeled GND, pin 5 is labeled GND, and pin 6 is labeled +12VCC.
- J2 IOH:** A 5-pin header with pins 1 through 5. Pin 1 is labeled GND, pin 2 is labeled IO9, pin 3 is labeled IO8, pin 4 is labeled IO7, pin 5 is labeled IO6, and pin 6 is labeled IO5.
- J3 IOL:** A 5-pin header with pins 1 through 5. Pin 1 is labeled IO0, pin 2 is labeled IO1, pin 3 is labeled IO3, pin 4 is labeled IO4, pin 5 is labeled IO5, pin 6 is labeled IO6, and pin 7 is labeled IO7.
- J4 I2C:** A 5-pin header with pins 1 and 2. Pin 1 is labeled SDA and pin 2 is labeled SCL.

Diagram showing four connections from the CONN-SIL1 connector to the board:

- BAT_IN** (pin 1) connects to **+VBAT**.
- GND_1** (pin 1) connects to **GND**.
- BAT_OUT** (pin 1) connects to **+Vsdid**.
- GND_2** (pin 1) connects to **GND**.

CON_12V

TBLOCK-M2

2

1

+12VccIN

GND

PROTEÇÃO

The diagram illustrates a protection circuit. It features a +12Vcc supply connected to a 680 ohm resistor (R18) and a transistor (Q1, BC549). The transistor's emitter is grounded, and its base is connected to the resistor. The collector of the transistor is connected to the coil of a relay (RL1, RLY-SPNO). The relay's common terminal is connected to a +12Vcc supply, and its normally open (NO) terminal is connected to a common ground. A 30A fuse (FU1) is connected in series with the +12Vcc supply line. The relay is also connected to a +12Vcc supply and a common ground. The transistor is connected to the +12Vcc supply and the relay. The fuse is connected to the +12Vcc supply and the relay.

REGULAÇÃO DE TENSÃO