

# Using AVR ISP MKII to upload firmware to Arduino

## What is AVR ISP MKII?

The AVRISP mkII is a USB-based In-System Programmer (ISP) used to program Atmel (now Microchip) AVR microcontrollers. It's designed for developers and hobbyists to upload firmware to AVR-based chips directly on a circuit board without needing to remove the chip.



In this tutorial, we will burn the bootloader to an Arduino UNO (re-upload the firmware to the ATmega328P chip on UNO).

## Supported Microcontrollers

It is compatible with a wide range of AVR microcontrollers, including the popular ATmega and ATtiny series.

1. Arduino Uno
2. Arduino Nano
3. Arduino Leonardo
4. Arduino Mega 2560

However, it is **not** compatible with microcontrollers with ARM-based chips or ESP microcontrollers, such as

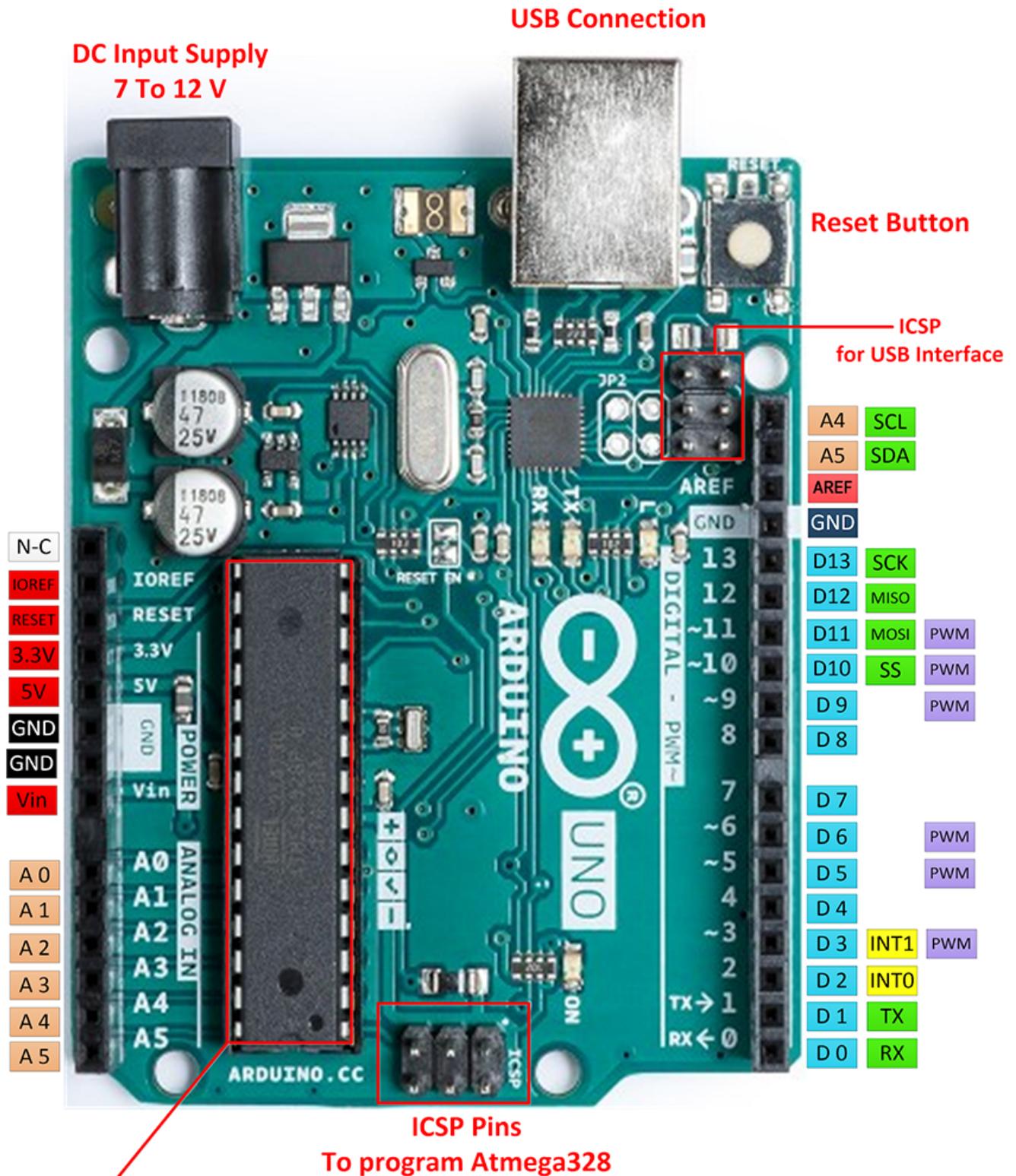
1. Arduino Due
2. Arduino Zero
3. Arduino MKR series
4. Arduino Nano 33 series

## Software Compatibility

Works with Atmel Studio (formerly AVR Studio), Arduino IDE and other tools supporting AVR programming. In this tutorial, we will be using Arduino IDE.

## Connection

- AVR ISP MKII to the computer using USB B cable
- 5V power supply for Arduino UNO (target Arduino), can be via USB port
- AVR ISP MKII 6-pin connector to Arduino ICSP pins (at the bottom usually)



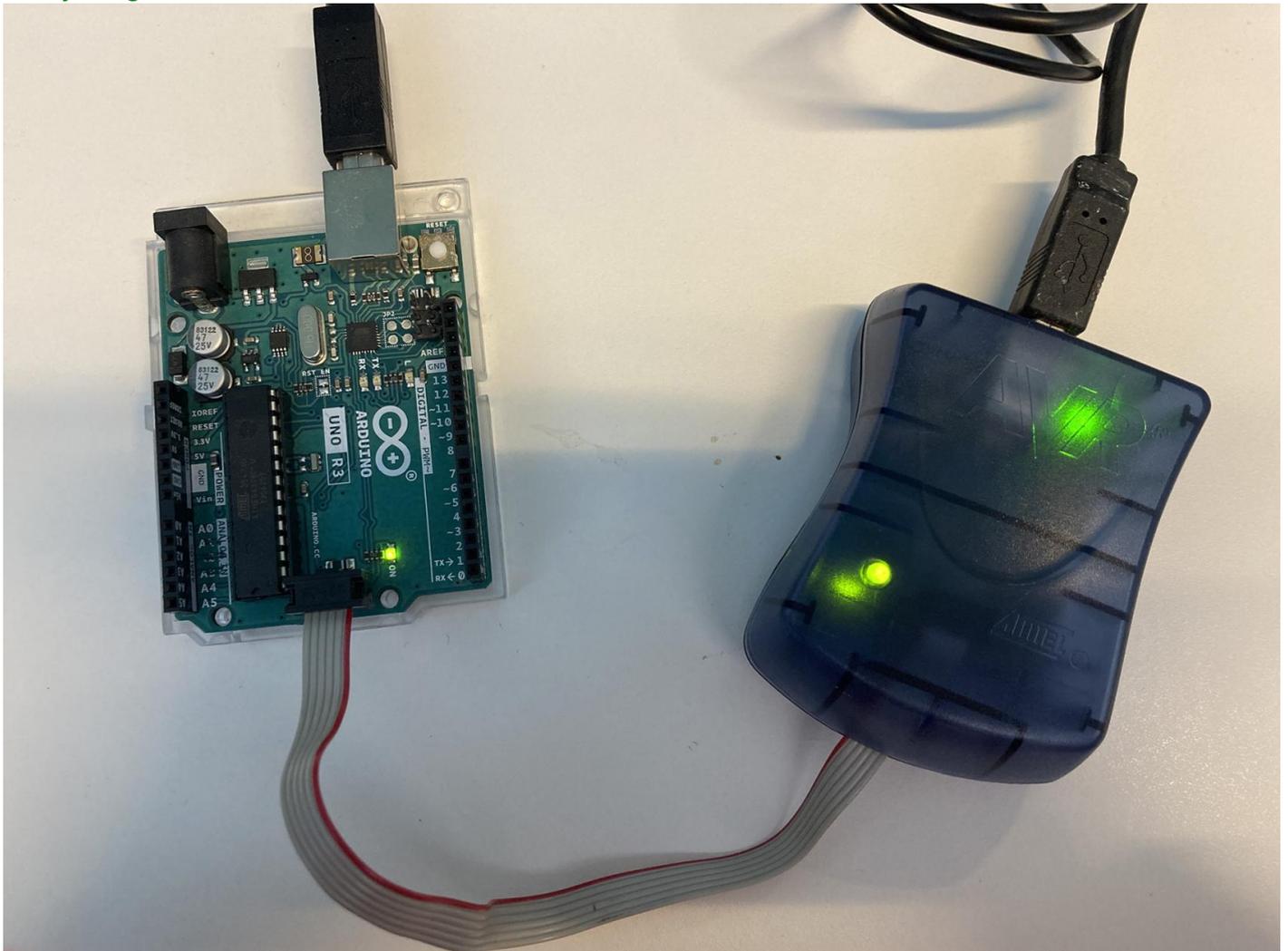
[Sabelectronic.com](http://Sabelectronic.com)

## Status LEDs

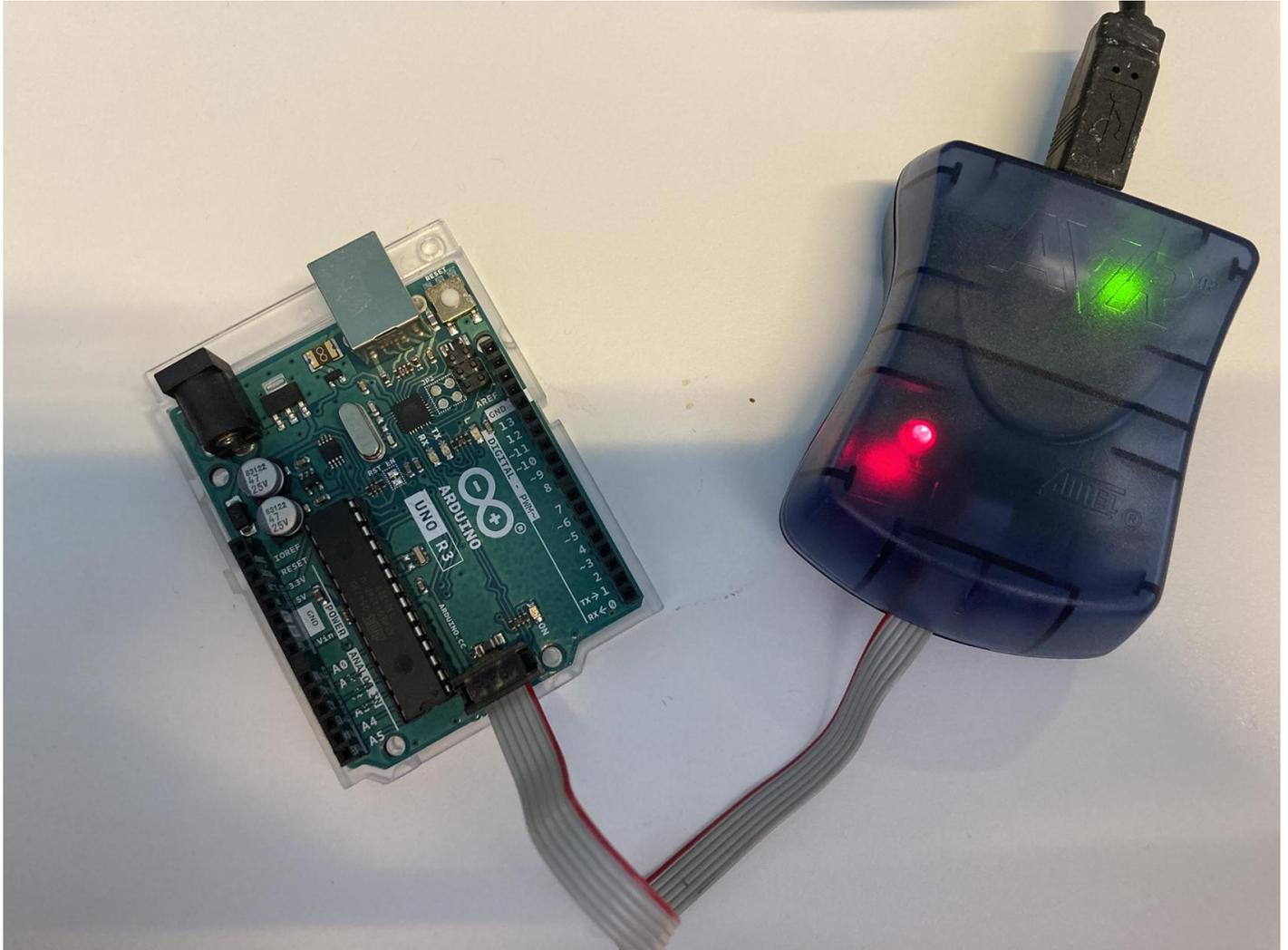
General speaking, **Green** = Everything is OK. **Red** = There is an issue.

Below is some common examples:

Everything works fine:



Missing power supply for target Arduino:

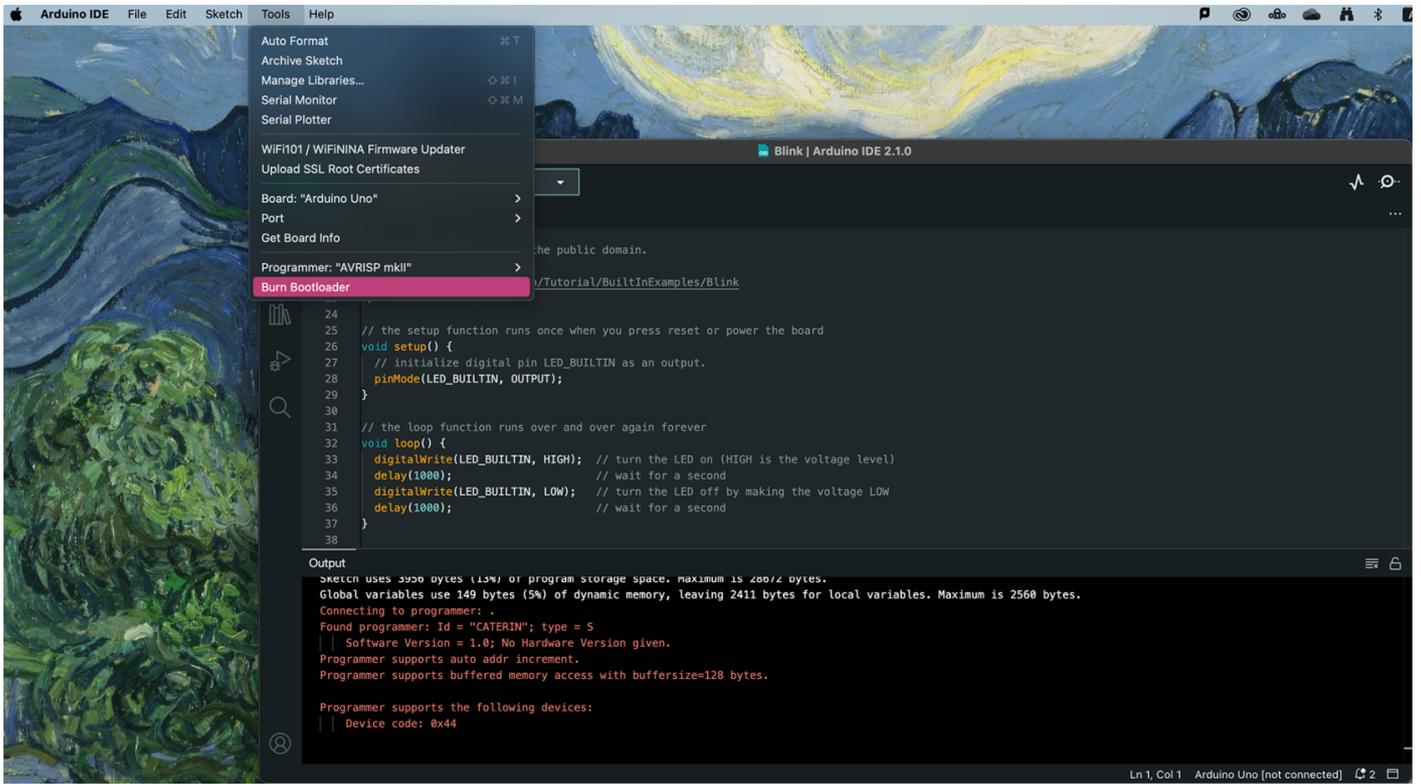


6-pin connection wrong direction:



## Burn bootloader with Arduino IDE

1. `Board`: Choose your target Arduino
2. Leave the `Port` empty
3. Click `Burn Bootloader`
4. Done!



## Revision #2

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