HiLetgo 3-01-1056

HiLetgo USBTiny USBtinyISP AVR ISP Programmer Instruction Manual

Model: 3-01-1056

1. Introduction

The HiLetgo USBTiny USBtinyISP is a compact and efficient In-System Programmer (ISP) designed for AVR microcontrollers. It facilitates burning bootloaders and programming AVR chips, making it an essential tool for Arduino development, especially for boards like Arduino UNO and MEGA. This manual provides comprehensive guidance on its features, setup, operation, and troubleshooting.

2. Product Features

- Power supply options: external power supply and USB power.
- ISP interface: 6-pin and 10-pin connectors.
- Compact design for easy integration into various projects.

3. Package Contents

- 1 x USBTiny ISP Programmer
- 1 x 10 Pin Programming Cable

Image: Contents of the HiLetgo USBTiny ISP Programmer package.

4. Setup

Before connecting the USBTiny ISP Programmer to your computer or target device, ensure all necessary drivers and software are installed.

1. Connect the USBTiny ISP Programmer to your computer's USB port.
2. Connect the appropriate ISP cable (6-pin or 10-pin) from the programmer to your target AVR microcontroller or Arduino board.
3. If using an external power supply for the target chip, ensure the yellow jumper cap near ISP10 on the programmer is removed to prevent power conflicts.

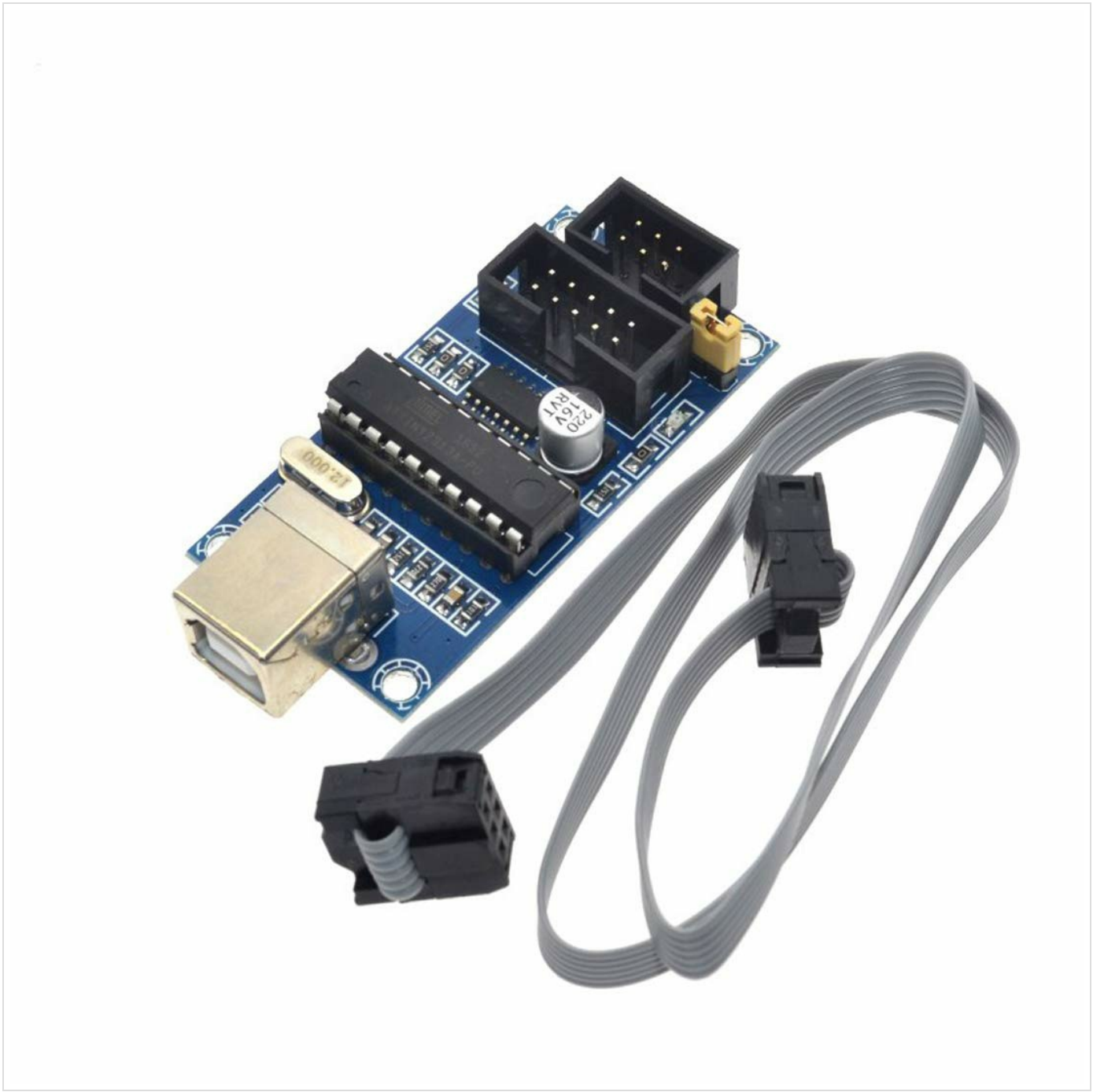

Image: HiLetgo USBTiny ISP Programmer connected to a USB port.

5. Operating Instructions

The USBTiny ISP Programmer is primarily used with the Arduino IDE and AVR programming tools like AVRdude.

5.1. Burning Bootloaders

To burn a bootloader onto an AVR microcontroller using the Arduino IDE:

1. Open the Arduino IDE.
2. Go to **Tools** > **Board** and select your target Arduino board (e.g., Arduino Uno, Arduino Mega).
3. Go to **Tools** > **Programmer** and select **USBTinyISP**.
4. Go to **Tools** > **Burn Bootloader**. The IDE will attempt to burn the bootloader to your connected chip.

5.2. Programming AVR Chips

For direct programming of AVR chips without a bootloader, you can use the**Upload Using Programmer** option in the Arduino IDE (**Sketch** > **Upload Using Programmer**) or command-line tools like AVRdude.

6. Driver Installation

Proper driver installation is crucial for the USBTiny ISP Programmer to function correctly.

6.1. Initial Driver Setup

- Install the USBtinyISP driver, typically available from Adafruit or similar sources.
- Install WinAVR, which includes AVRdude.
- Install the Arduino IDE.
- Install necessary board cores like ATtinyCore and MiniCore within the Arduino IDE's Boards Manager.
- (Optional) Install AVRdudess for a graphical interface to AVRdude.

6.2. Resolving Driver Incompatibility (for newer AVRdude versions)

If you encounter incompatibility issues with newer versions of AVRdude and the USBTiny's driver, you may need to replace the driver using Zadig:

1. Uninstall the existing USBTiny driver via Windows Device Manager.
2. Download and open Zadig.
3. Connect your USBTinyISP to your computer. Zadig should detect it.
4. Select **WinUSB** as the target driver.
5. Click **Install Driver**.

7. Power Supply Options

The USBTiny ISP Programmer offers flexible power options:

- **USB Power:** The programmer can draw power directly from the USB port of your computer. This is suitable for powering small target microcontrollers.
- **External Power Supply:** For target circuits requiring more power or a different voltage, an external power supply can be used. When using an external power supply for the target chip, ensure the yellow jumper cap near the ISP10 connector on the programmer is removed. This prevents potential damage from conflicting power sources.

8. Pinout and Interface

The programmer features both 6-pin and 10-pin ISP interfaces for compatibility with various AVR target boards.

8.1. ISP Pinout (Common for 6-pin and 10-pin)

Pin	Function
VCC	Power Supply Voltage
GND	Ground
MISO	Master In Slave Out

Pin	Function
MOSI	Master Out Slave In
SCK	Serial Clock
RST	Reset

The 10-pin connector typically includes additional GND pins and sometimes an extra VCC or NC (No Connect) pin. Refer to your target board's documentation for specific 10-pin connections.

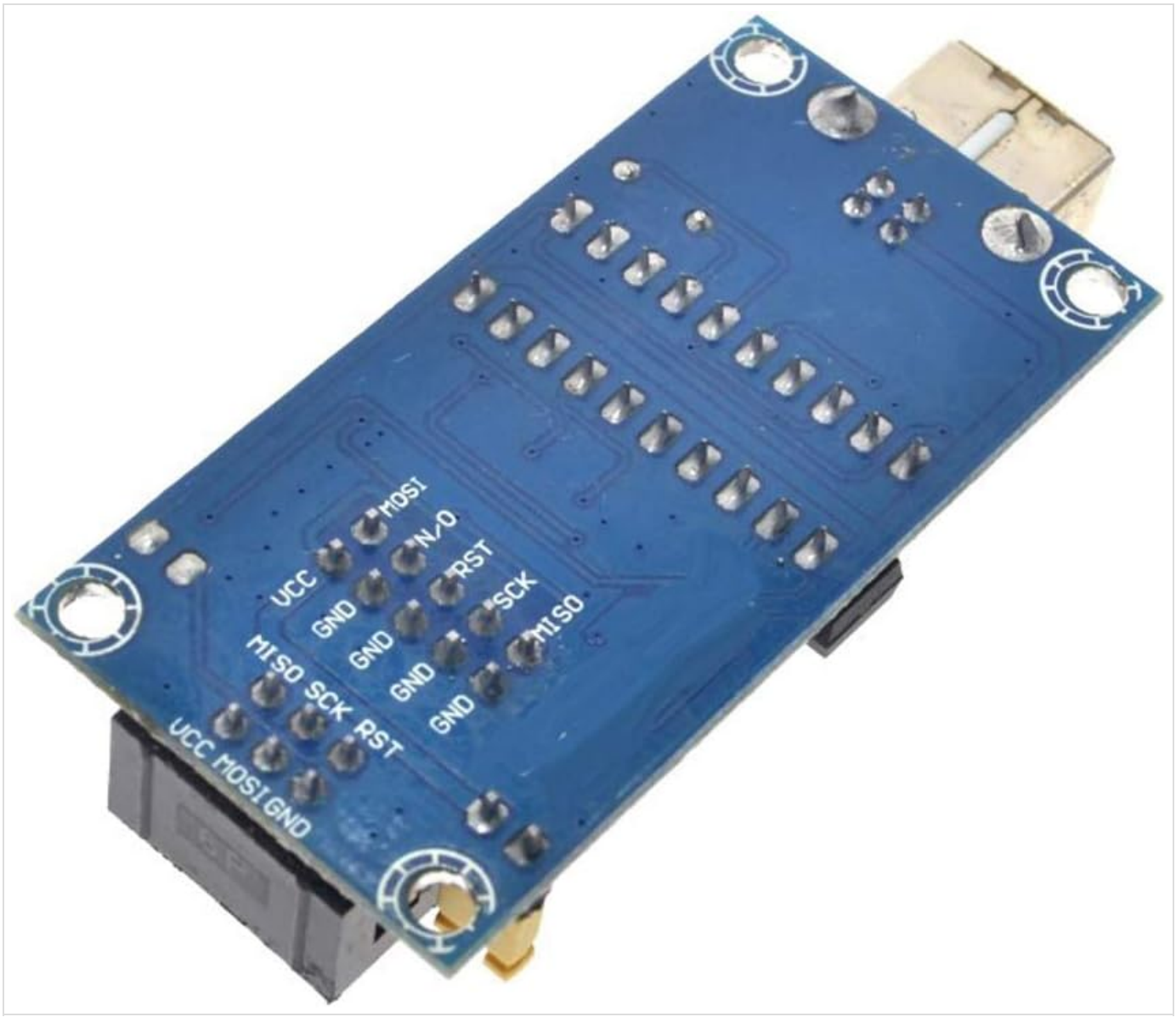

Image: Bottom view of the programmer showing ISP pin labels.

9. Troubleshooting

9.1. Programmer Not Detected by Computer

- Ensure the USBTiny ISP Programmer is securely connected to a functional USB port.
- Verify driver installation. If issues persist, try reinstalling the driver using Zadig as described in the "Driver Installation" section.
- Test with a different USB cable or port.

9.2. "Device Signature" or "Protocol" Errors

- This often indicates a communication problem between the programmer and the target chip.
- Check all connections between the programmer and the target board (ISP cable, power).
- Ensure the target chip is correctly powered. If using external power, confirm the jumper cap on the programmer is removed.
- Verify that the correct board and programmer are selected in the Arduino IDE.
- Ensure the target chip is compatible with the selected bootloader/firmware.

9.3. "Verify" Errors After Burning Bootloader

- Some users report "Verify" errors after burning a bootloader, but the chip still functions correctly. If the chip operates as expected, this error might be ignorable. However, always re-check connections and settings if functionality is not confirmed.

10. Specifications

- **Brand:** HiLetgo
- **Model Number:** 3-01-1056
- **Hardware Interface:** USB
- **Product Dimensions:** 2.43"L x 1.13"W x 1.13"H
- **Item Weight:** 0.02 kg
- **Compatible Devices:** Arduino UNO, Arduino MEGA
- **Operating System Compatibility:** Windows, macOS, Linux
- **ISP Interface:** 6-pin, 10-pin
- **Power Supply:** USB power, External power supply

11. Warranty and Support

For technical support or if you encounter any issues with your HiLetgo USBTiny ISP Programmer, please contact HiLetgo customer support. Refer to the product packaging or the official HiLetgo website for contact information.

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question