1

Troubleshooting

THE ONBOARD MICRO-COMPUTER, ARDUINO UNO

MORE INFO: HTTP://ARDUINO.CC

MICRO-COMPUTER ROBLEMS

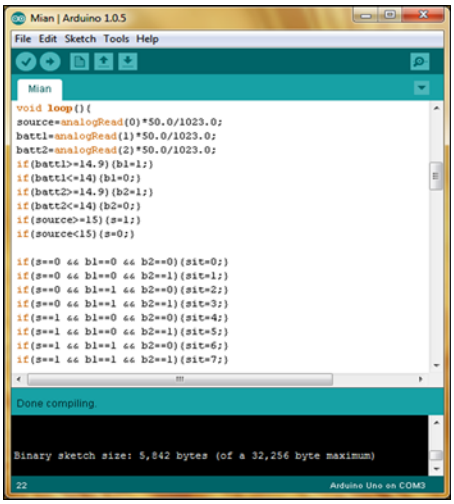
The SkiHiTek – UAV blimp is an aerial vehicle without a human pilot aboard. Its flight is controlled either autonomously by onboard computers or by the remote control of a pilot on the ground or in another vehicle.

The blimp power system uses an Arduino UNO, an open-source physical platform, as an onboard computer.

Arduino UNO

Arduino UNO automatically performs input and output of power voltage of the solar cells and the battery cells; triggers solid state relays to turn on and of the batteries and to prevent them from under or over charging, as well as to increase operating voltage under low-light conditions.

The Arduino platform is constructed on a simple microcontroller board programmed using the Arduino programming language (based on Wiring) and the Arduino development environment (based on Processing).



The Arduino writing code

Common Arduino problems

Here we provide instructions on how to troubleshoot the most common Arduino problems.

For more information on Arduino troubleshooting, please refer to the troubleshooting section of the Arduino guide at the http://arduino.cc website.

The Javelang.stackoverflow Error

You get this error, because Arduino environment get confused by some unusual text strings, when it processes a sketch.

Step 1

Look for unusual sequences containing "double-quotes", 'single-quotes', \backslashes, commas, sequence '\"', etc.

Step 2

Replace them with "".

```
java.lang.StackOverflowError
at java.util.Vector.addElement(Unknown Source)
at java.util.Stack.push(Unknown Source)
at com.oroinc.text.regex.Perl5Matcher._pushState(Perl5Matcher.java)
```

or:

```
        at com.oroinc.text.regex.Perl5Matcher._match(Perl5Matcher.java)
        at com.oroinc.text.regex.Perl5Matcher._match(Perl5Matcher.java)
        at com.oroinc.text.regex.Perl5Matcher._match(Perl5Matcher.java)
        at com.oroinc.text.regex.Perl5Matcher._match(Perl5Matcher.java)
        at com.oroinc.text.regex.Perl5Matcher._match(Perl5Matcher.java)
        at com.oroinc.text.regex.Perl5Matcher._match(Perl5Matcher.java)
        at com.oroinc.text.regex.Perl5Matcher._match(Perl5Matcher.java)
```

The Jave.lang.StackOverflowError notice

The sketch does not start when powering the board with an external power supply

Your sketch does not start, when you power the board with an external power supply, because the:

1. RX pin is unconnected.
2. Garbage data goes to the bootloader on the board.
3. Bootloader will never time out to start the sketch.

To start your sketch:

Step 1

Tie the RX pin to ground with a 10K resistor.

Step 2

Connect the RX pin directly to the TX pin.

The Arduino software freezes when uploading a program

Freezing can be caused by a conflict with the Logitech process 'LVPrcSrv.exe'.

Step 1

Open the Task Manager.

Step 2

Check if the Logitech process 'LVPrcSrv.exe' program is running.

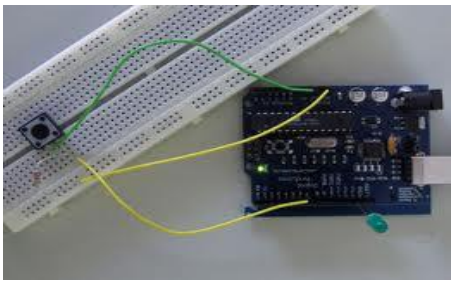
Step 3

If the program is running, cancel it before attempting the upload.

The board does not turn on (the green power Light Emitting Diode (LED) button does not light up)

Make sure that the jumper (little plastic piece near the USB plug) is on the correct pins:

- If you are powering the board with an external power supply (plugged into the power plug), make sure that the jumper is on the two pins closest to the power plug.
- If you are powering the board through the USB, make sure that the jumper is on the two pins closest to the USB plug.



The Arduino light emitting diode (LED) button

The Arduino Diecimila board takes 6-8 seconds to start the sketch

As some of the Arduino Diecimila boards were burned with the Arduino NG bootloader, the boards takes a longer delay to reset. The NG bootloader does not have an automatic reset, so you have to do it manually.

Step 1

Press the reset button manually on the board.

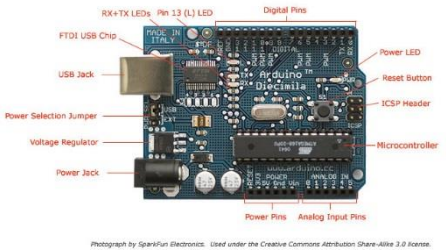
Step 2

Wait for the LED on the pin 13 blink three times after you reset the board.

Locate the NG bootloader.

Step 2

Upload your sketch.



Arduino board Diecimila components

TIP

You can burn the correct bootloader onto the Arduino Diecimila. Burning the bootloader takes around 15 seconds.

To burn the bootloader:

Step 1

Have an AVR-ISP (in-system programmer), USBtinyISP or build a ParallelProgrammer.

Step 2

Connect the programmer to the ICSP pins with the 2 by 3 pin header.

Step 3

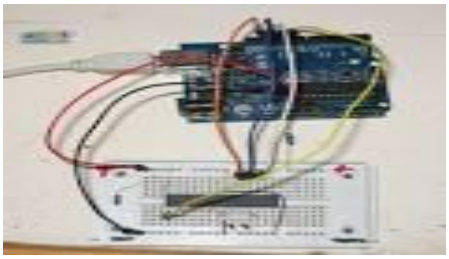
Plug the ICSP to power the board by an external power supply or the USB port.

Step 4

Select the right item in the **Tools | Board** menu.

Step 5

Launch the command from the Tools > Burn Bootloader menu of the Arduino environment.



Burning new bootloader using Arduino UNO

NOTE

On Windows, the COM port assigned to the board may be too high.

The cygwin error

6 [main] ? (3512) C:\Dev\arduino-0006\tools\avr\bin\avr-gcc.exe: *** fatal error - C:\Dev\arduino-0006\tools\avr\bin\avr-gcc.exe: *** system shared memory version mismatch detected - 0x75BE0084/0x75BE009C.

The Arduino cygwin error

Step 1

Stop running the cygwin application.

If the cygwin application is not running:

Step 2

Delete the cygwin1.dll from the Arduino directory

Step 3

Replace the cygwin1.dll from the Arduino directory with the cygwin1.dll from your existing cygwin install (probably in c:\cygwin\bin).

The Arduino the Tools menu takes a long time to open

If the Arduino software appears to freeze when opening the Tools menu, it is possible that a COM port created by one of the devices on your computer slows down this process.

Step 1

In the Device Manager, the Tools menu, get a list of all the COM ports on your computer,

Step 2

Disable the devices that provide COM ports (e.g. Bluetooth devices).

The board does not show in the Tools | Serial Port menu

Step 1

Make sure that the board is plugged in.

Step 2

Check that you're not running any programs that scan all serial ports, like PDA sync applications, Bluetooth-USB drivers (e.g. BlueSoleil), virtual daemon tools, etc.

Step 3

Change the FTDI chip's COM port assignment to a lower one.

If you cannot find the COM port responsible for the program:

Step 3

Delete the virtual port in Control Panel (on XP),

Step 4

Move to the FTDI's assignment down to COM2.

Step 5

Set Arduino to use the new port.

The gnu.io.PortInUseException error

The gnu.io.PortInUseException error means that the port is in use by another application.

Step 1

Make sure that other programs that access serial or USB ports, like PDA sync application, bluetooth device managers, certain firewalls, etc, are not running.

Step 2

Close any patches that use the serial port or close the application entirely.

Step 3

Upload the code again.

The sketch does not start when powering up or resetting the Arduino board

During the first few seconds, the bootloader read the commands on a new sketch to upload to the board. After few seconds of uploading, the bootloader times out and starts the sketch. If you continuously send data to the bootloader with a pause for uploading, the bootloader never times out and starts your sketch.

To time out and start your sketch on the bootloader:

Step 1

Enable the chip that sends the data from within your setup() function to stop serial data from arriving for the first few seconds,

Step 2

Power up the board again.

TIP

You can also burn your sketch onto the board with an external programmer to replace the bootloader.

The sketch appears to be uploaded but does not function

You may have selected the wrong item from the Tools in Microcontroller menu and the chip lost its sketch. To find the sketch back:

Step 1

Find the name of microcontroller written on the largest chip on the board.

Step 2

Make sure the selected microcontroller corresponds to the one on your board (either ATmega8 or ATmega168).

Step 3

Check for a noisy power supply.

TIP

Alternatively, the sketch may be too big for the board.

When uploading your sketch, Arduino calculates the chip's compatibility for the ATmega8.

The calculation is based on a 1 Kb bootloader. Your bootloader may take up 2 Kb of the 8 Kb of program space (flash) on the ATmega8 instead of the 1 Kb used by the current bootloader. If the chip is bigger than that, only part of the sketch will be uploaded and will cause the board to reset and pause multiple times.

To upload the whole sketch, you can either:

- If you have an access to an AVR-ISP or parallel port programmer, burn the latest version of the bootloader to your board with the Tools | Burn Bootloader menu item. Or
- Specify in the Arduino environment the amount of space available for sketches by editing the uploaded maximum size variable in your preferences file. Or
- Change 7168 to 6144 for the environment to warn you when your sketch is too big.

To reduce the size of the sketch

The ATmega168 chip on the Arduino board has only 16 Kb for the program code with 2 Kb used by the bootloader. If you need to reduce the size of the sketch to upload to the board:

Step 1

Rewrite your code with integer math to save about 2 Kb by using floating point.

Step 2

Delete any #include statements at the top of your sketch for libraries that you do not use.

No PWM when calling on pins other than pins 3, 5, 6, 9, 10, or 11

The microcontroller on the Arduino board (the ATmega168) only supports PWM/ analogWrite() on 3, 5, 6, 9, 10, and 11 pins. If you want to get a PWM on any other pins:

Step 1

Call analogWrite() on a pin you would like.

Step 2

Give 5 volts for the high values

NOTE

Arduino code samples are released into the public domain on the http://arduino.cc website.

greater than 128 and 0 volts for low values less than 128.

Errors about undeclared functions or undeclared types

As the Arduino environment automatically generates prototypes for your functions, you can order prototypes in your sketch.

The ordering process, however, sometimes leads to obscure error messages.

- If you declare a custom type in your code and create a function that accepts or returns a value of that prototype, you'll get an error when trying to compile the sketch. That happens because the automatically-generated prototype for that function appears above the type definition.
- If you declare a function with a two-word return type (e.g. "unsigned int") the environment does not consider it a function and does not create a prototype for it.

Step 1

Provide your own definition of the function, or place the definition above any calls to the function.

Errors about an invalid device signature when trying to upload the sketch

Arduino uses a slightly modified version of avrdude to upload sketches to the Arduino board.

The standard version queries for the board's device signature, which the bootloader does not recognize, result in an invalid device signature error.

If you get an error about an invalid device signature, make sure that either you:

- Have selected the right board from the Tools > Board menu, or
- Are using the right version of avrdude that comes with Arduino source code.

Where to get help:

If you have difficulties or want to learn more about Arduino UNO and its components, please refer to the following website:

THE ARDUINO UNO WEBSITE

Arduino.cc