

HOW-TO: Flashing and debugging the Piksi firmware using Black Magic Probe and gdb

You can do in-application debugging of Piksi's on-board microcontroller firmware if you have a compatible JTAG device. We highly recommend the [Black Magic Probe](http://www.blackosphere.co.nz/main/blackmagic) (<http://www.blackosphere.co.nz/main/blackmagic>).

If anything in this guide is incorrect or unclear, please email our [mailing list](https://groups.google.com/forum/#!forum/swiftnav-discuss) (<https://groups.google.com/forum/#!forum/swiftnav-discuss>).

Enter the Piksi firmware directory.

```
$ cd ~/piksi_firmware
```

Connect Piksi via USB, connect your JTAG device via USB, and connect your JTAG device via a 10 pin ribbon cable to Piksi.

There is a `.gdbinit` file in the `piksi_firmware` root directory that issues commands for connecting to the device and loading the firmware when `gdb` starts. You may need to edit this file to point to the correct virtual serial port for the Black Magic Probe. Edit this line:

```
target extended-remote /dev/ttyACM0
```

Substituting the correct USB serial device for `/dev/ttyACM0`, for example on OS X the correct device might be `/dev/cu.usbmodem-??????`

Run `gdb`, providing the path to the firmware to be loaded.

```
$ arm-none-eabi-gdb src/piksi_firmware.elf
```

NOTE: On some Linux installations you may get a permissions error:

```
/dev/ttyACM0: Permission denied
```

This can be fixed by adding your user to the `dialout` group as follows (you may need to log out and back in for this to take effect):

```
$ sudo adduser <username> dialout
```

Usage of `gdb` is beyond the scope of this guide but there are many excellent resources and tutorials online. Below are a couple of basic commands to get started:

To flash the firmware to the microcontroller (this is also done automatically on startup):

```
> load
```

To run the firmware:

```
> run
```

To break execution, press Ctrl+C

To resume:

```
> continue
```

To exit gdb, press Ctrl+D

Retrieved from "http://docs.swiftnav.com/w/index.php?title=HOW-TO:_Flashing_and_debugging_the_Piksi_firmware_using_Black_Magic_Probe_and_gdb&oldid=20059"

This page was last edited on 19 July 2014, at 01:40.