Roman Parise’s Guide to the MAVLink Protocol

Introduction

The MAVLink protocol is a way to define communication between the ground station and some UAV.

Download

Windows:

git clone --recursive https://github.com/mavlink/mavlink.git <- Clones mavlink repo and all submodules

pip install –U future <- Download the future module for Python. Make sure to add Python34/Scripts directory to your PATH variable in Windows. Must also install Tkinter on other OSs

Can run fine in the pdb debugger (python –m pdb mavgenerate.py), but cannot run traditionally.

Run, continue. The GUI boots up.

By command line: python –m pymavlink.tools.mavgen (XML file name) –o (Python file output name)

The command above will generate a Python file with all of the objects required for the MAVLink protocol. It contains the MAVLink object, which facilitates any MAVLink communicate in the application. For instance, the decode function in the MAVLink object takes a buffer as an argument, more abstractly an array, and returns a message object of sorts. (MAVLink objects can all be autogenerated.)

// All of this assumes python. C++ not tested yet.

Dialect – your own flavor of MAVLink

Dialects have different kinds of messages. In our case, that would be TelemetryPacket, AckPacket, etc.

Mavgen will autogenerate all of the code required to understand the messages

You can pass functions to your MAVLink object. For instance, set\_send\_callback is used to set what function is called when you say that you want to “send” a message. You can also send your message through your MAVLink object.

A message corresponds to an object that inherits the MAVLink\_message class. The different fields in your message outlined in your XML file each corresponds to an argument you can pass to the constructor whenever you instantiate such a message.

(Message log?) (Pixhawk dialect?)

MAVLink Messages

If just one message, all you need is <message></message>

But if you have more than one, you need to encapsulate it in <messages><message></message></messages>.

Name of the xml file defines a dialect.

MAVLink Packets

MAVLink Official Website: http://qgroundcontrol.org/mavlink/start

MAVLink 2.0 Documentation: https://docs.google.com/document/d/1XtbD0ORNkhZ8eKrsbSIZNLyg9sFRXMXbsR2mp37KbIg/edit#

Packet Structure:

uint8\_t magic;                    // 0xFD

uint8\_t length;                   // length of payload

uint8\_t incompat\_flags

uint8\_t compat\_flags

uint8\_t sequence

uint8\_t sysid

uint8\_t compid

uint8\_t dialect

uint16\_t msgid

TIMESTAMP