IP addresses:

* Ground station: 192.168.1.254
* Leader: 192.168.1.1
* First agent: 192.168.1.2

Status message (from agents):

* Port (agents) : 5001
* Each agent and GCS broadcasts on port 5001
* Data:
  + SysID
  + Time
  + Sequential packet number
  + 3D position (global, float)
  + 3D velocity (global, float)
  + 3 axis controls (SI units, float) , 0 for leader
  + Formation Ready? (1 = yes)
  + Lost Packet rate, per client

GCS Should broadcast:

* Port 5001
* Data
  + Client IP addresses and number of clients
  + Gains/parameters
  + Desired relative position vectors
  + Reset command
  + Current local time

Failsafes:

* RC Failsafe detected: RTL, different altitudes (40m + 10 \* agent number)
* MissionPlanner loss (TBD, 30 second), RTL different altitudes
* WiFi Peer Loss (2 seconds), RTL
* WiFi GCS Loss (2 seconds): RTL
* Mode out of designated mode : RTL,

Flight Code:

* Control Process
  + MAVLINk communication
  + Control math execution
  + Monitor mode and RC for formation enable
  + Pushes to logging queue
  + Pushes to transmit queue
  + Pulls from receive queue
* Logging Process
  + Pulls from logging queue
* Receive Process
  + Parses and Pushes to received queue
  + Receives GCS input and peer input (5002 and 5001, respectively)
* transmit Process
  + Pulls from transmit queue
  + Sends peer broadcasts on 5001

Parameters:

* RC Config:
  + Gain and offset factor for airspeed, climb rate, heading rate
* Timeout
* Desired Position Vectors
* Control Gains

Reconnecting: see these <https://discuss.dronekit.io/t/most-effective-way-to-handle-reconnection-between-apm-dronekit/288>

<https://github.com/dronekit/dronekit-python/issues/114>

<http://python.dronekit.io/automodule.html>

<http://www.timesynctool.com/>

**px4 config:**

unique MAVID (Leader = 1).

SERIAL0\_BAUD=1500

Raw sense = default

Ext\_stat = default

RC\_Chan = 20

Raw\_ctrl = default

Position = position = 20

Extra1 = attitude = 20

Extra 2 = default

Extra3 = default

SR0\_ADSB = unknown = default

See <https://github.com/ArduPilot/ardupilot/blob/a45dd30c1d94b216ee89c3fd7ab8f3fc1d9bedea/ArduPlane/GCS_Mavlink.cpp>