



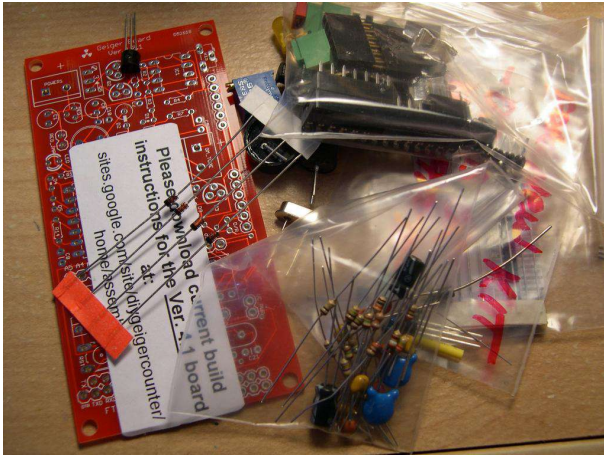
Geiger Copter Underground

First release instruction :

This kit deals about payload only.

What do you need :

Arduino geiger board + geiger tube with atmega325P microcontroller :



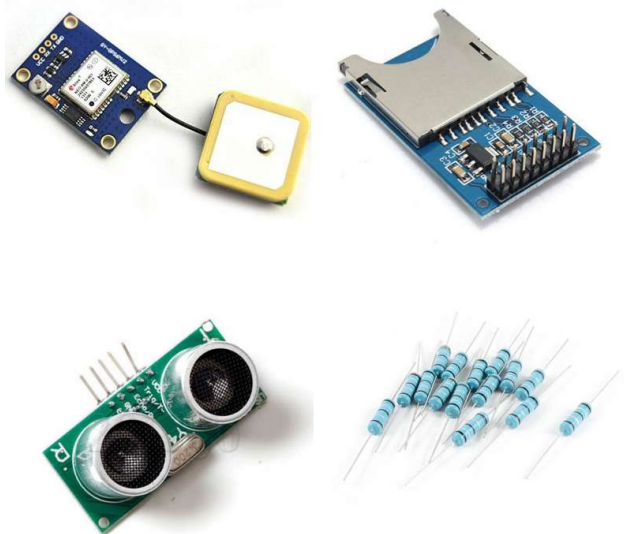
FPV Receiver + transmitter with video and audio link :



Mini arduino board with atmega325P 16M microcontroller.

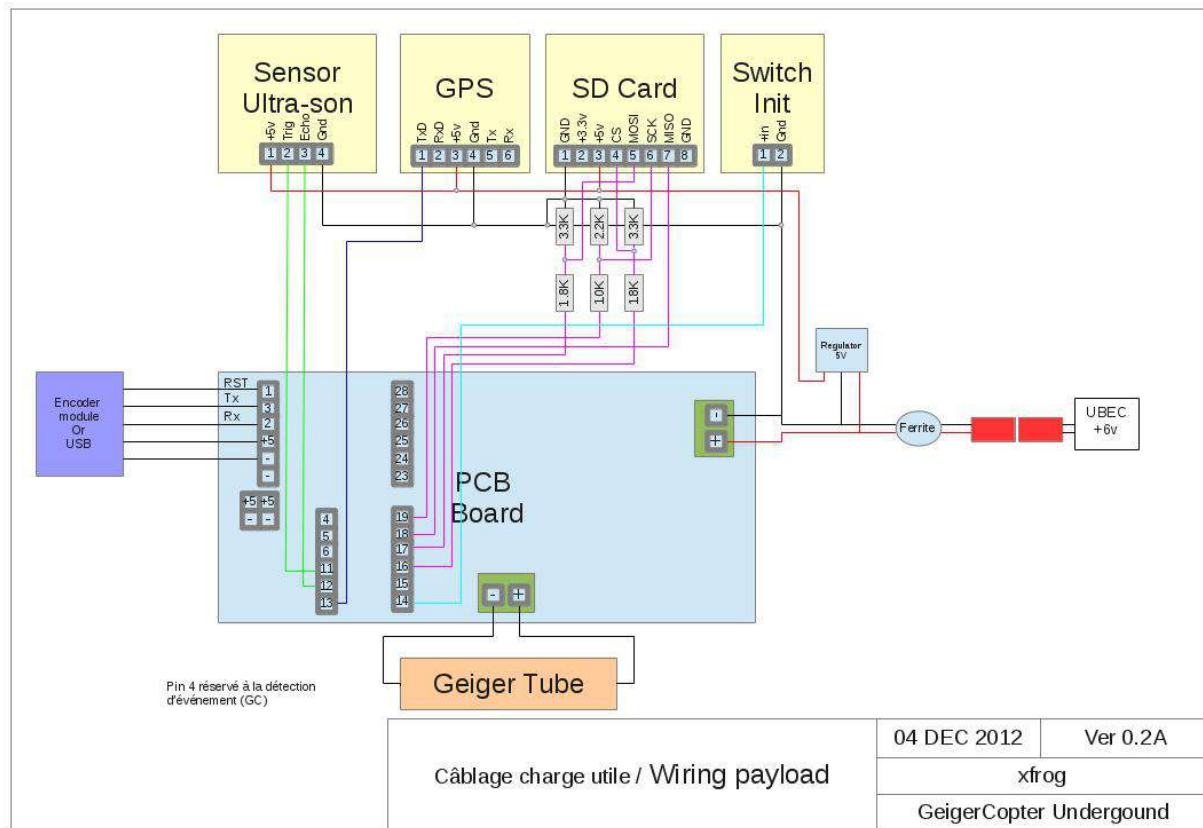


GPS + SD CARD + Ultra-sonic sensor + Resistors + Capacitors.



Datas measurement payload unit :

Geiger board payload with GPS, Ultra-sonic sensor and serial link :

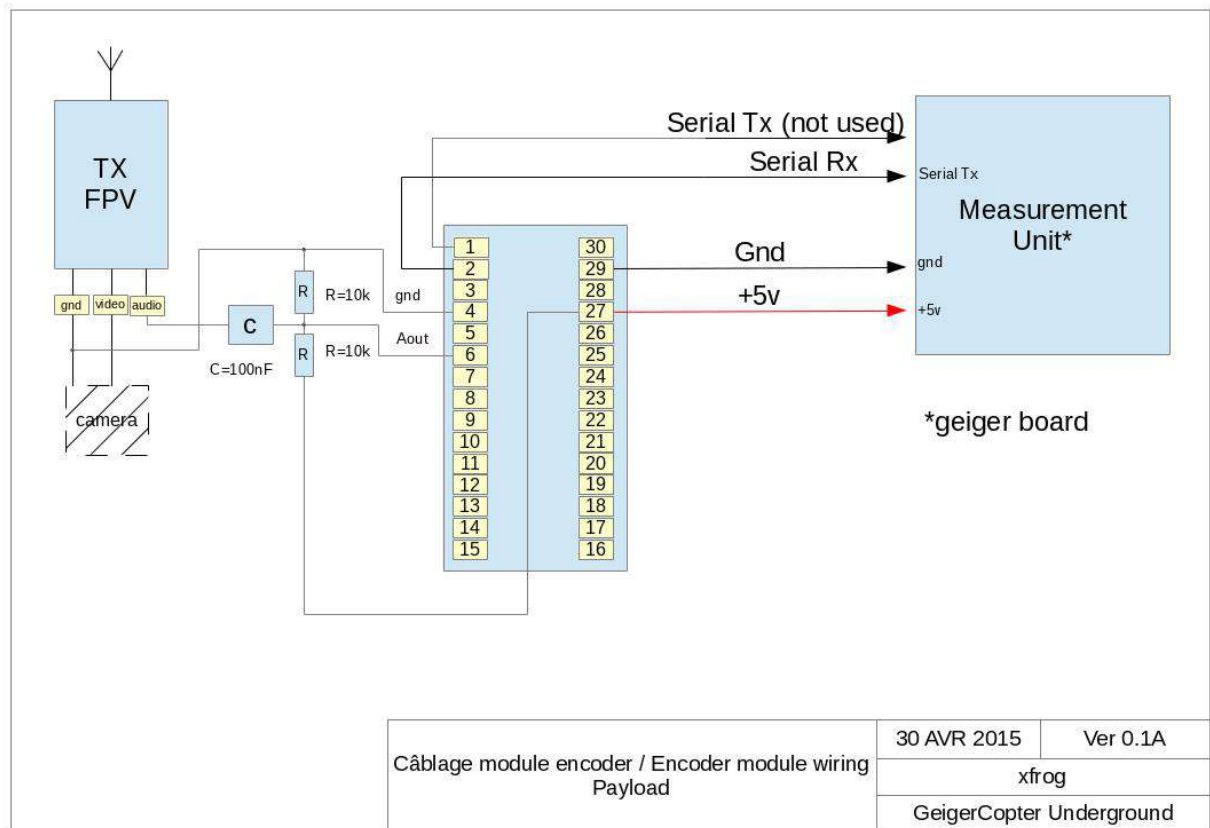


Firmware :

sketch_payload_MUNIT_V2_1.hex



Encoder module :

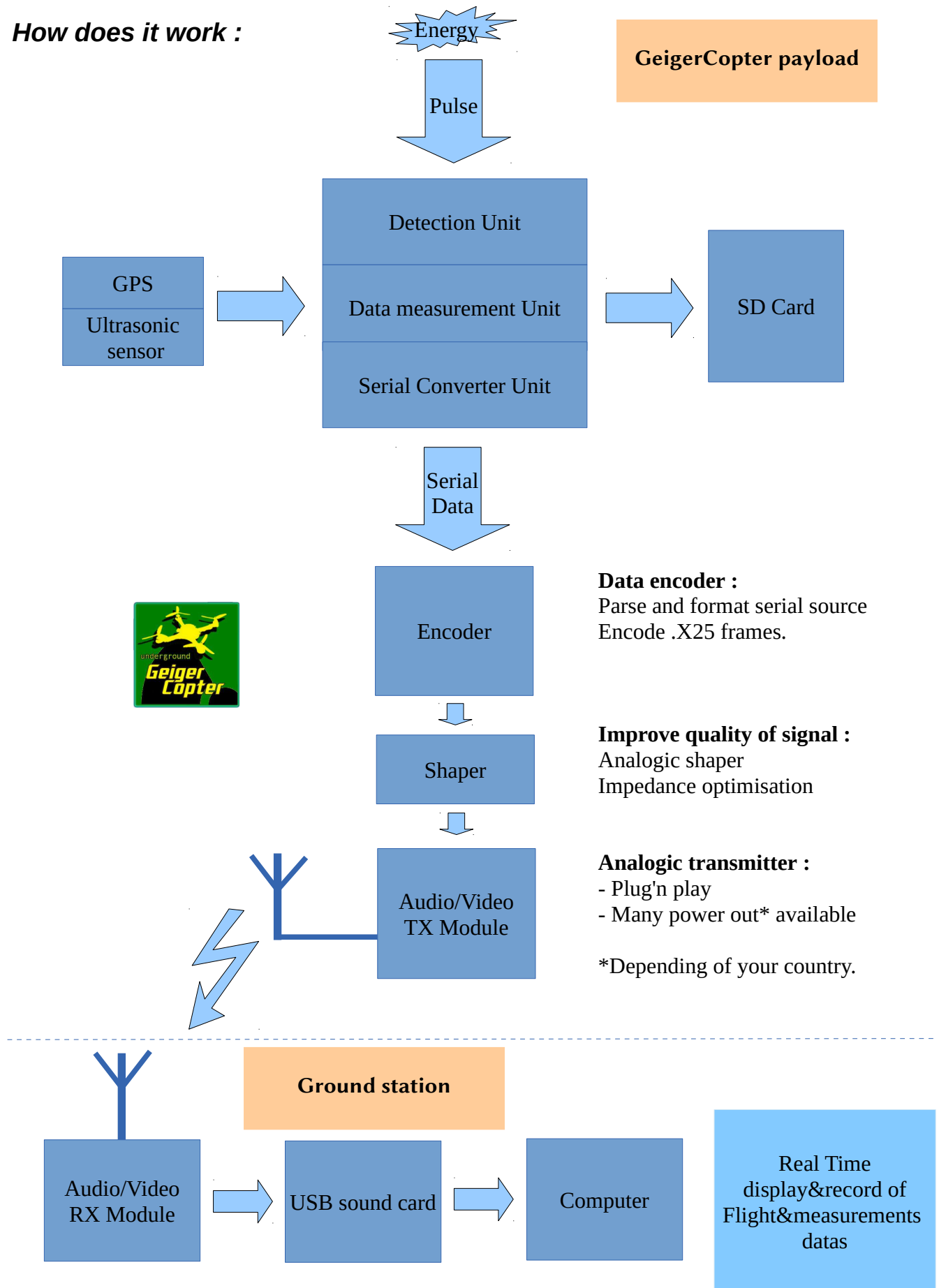


Firmware :

sketch_payload_encoder_0V4.hex



How does it work :



Ground station :

Hardware :

Usb soundcard



Computer with OS Linux



Software :

- Linux OS (any).
- Soundmodem
- Alsamixer
- Python 2.7 and Python 3.x

Soundmodem Installation :

```
sudo apt-get install ax25-tools  
sudo apt-get install soundmodem
```

Soundmodem and alsamixer configuration :

```
sudo soundmodemconfig
```

Select :

IO

Mode : alsa (never f\$@% Pulseaudio)

ALSA Audio driver : plughw 2,0

No half duplex

Capture Channel : Mono

Channel Access :

Txdelay : 150

Slot Time : 100

P-Persistence : 40

No Full duplex

TxTail : 10

Modulator : afsk

Bits/s : 1200

Frequency : 1200

Frequency : 2200

Differential Encoding
selected.

demodulator : afsk

Bits/s : 1200

Frequency : 1200

Frequency : 2200

Differential Encoding
selected.

Packet IO

Mode : KISS

File /dev/soundmodem0

Unlike File selected

Soundmodem running :

```
sudo soundmodem
```

Check input rec level with :

```
sudo alsamixer
```

Select :

F6 (choose your usb sound car)

F4 (capture menu)

Use Pad right and left to chose REC input capture menu and Up and low for level input.

GroundStation_GeigerCopterU.py running :

```
sudo python GroundStation_GeigerCopterU.py
```

Software will be release later !



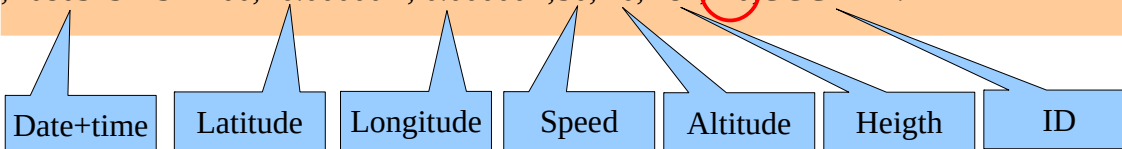
TEST AND RESULT :

First test : Manually deployed and carried by foot.

Max Distance between ground station and Geigercopter payload is around 30 to 50 m :

```
fm GGCPT-11 to APRS-0 via WIDE2-1 UI pid=F0
,T08051517513900,L0.00000N,l0.00000E,S0,A0,H54,M0,GGCPTx1.
fm GGCPT-11 to APRS-0 via WIDE2-1 UI pid=F0
,T08051517514000,L0.00000N,l0.00000E,S0,A0,H53,M0,GGCPTx1.
fm GGCPT-11 to APRS-0 via WIDE2-1 UI pid=F0
,T08051517514100,L0.00000N,l0.00000E,S0,A0,H03,M1,GGCPTx1.
fm GGCPT-11 to APRS-0 via WIDE2-1 UI pid=F0
,T08051517514300,L0.00000N,l0.00000E,S0,A0,H52,M0,GGCPTx1.
fm GGCPT-11 to APRS-0 via WIDE2-1 UI pid=F0
,T08051517514400,L0.00000N,l0.00000E,S0,A0,H82,M0,GGCPTx1.
```

Measurement



Datas mapping :



Xfrog - GCU@2015 – Datalove