Unified telescope control system

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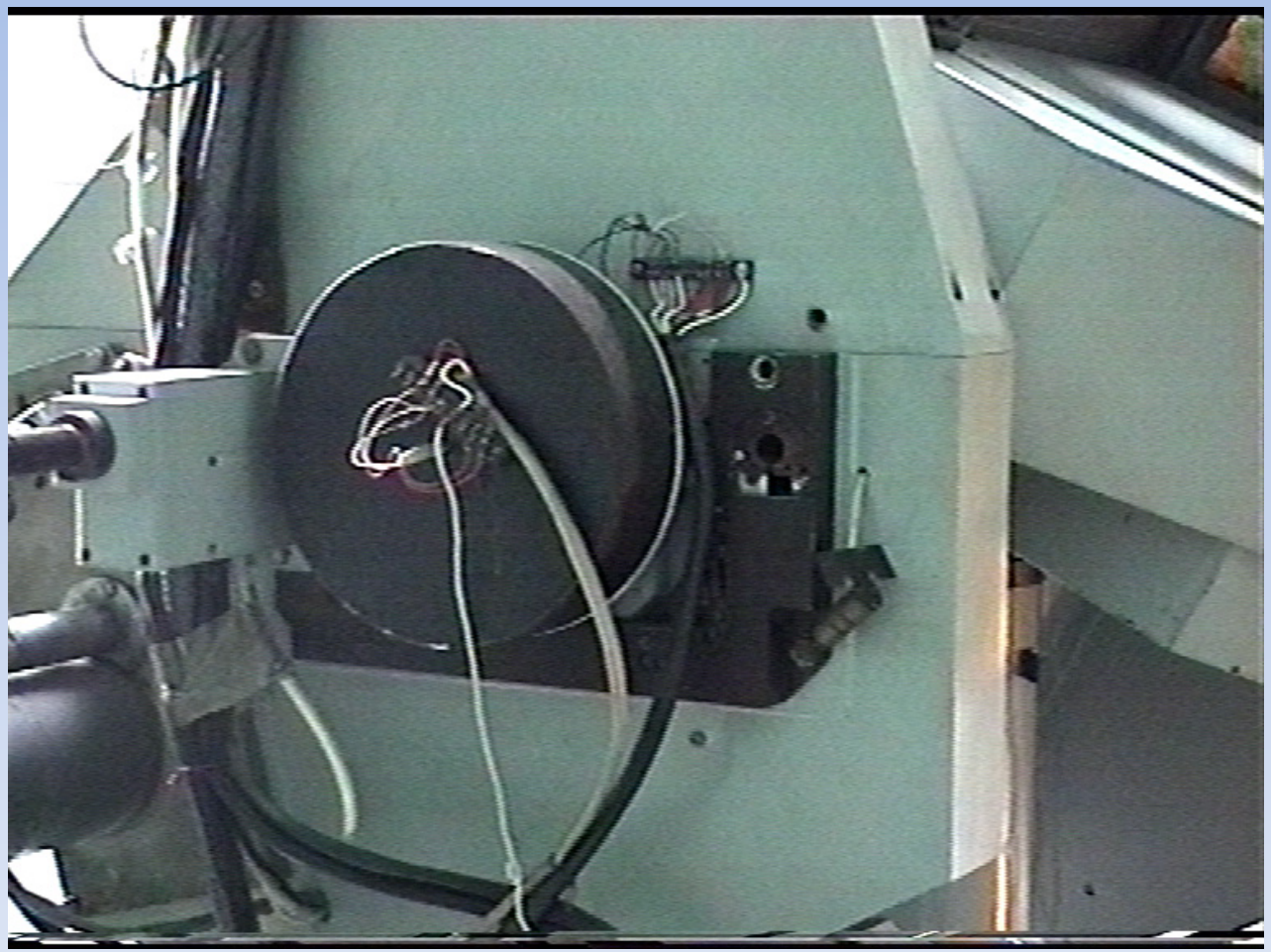
The telescope TPL-1

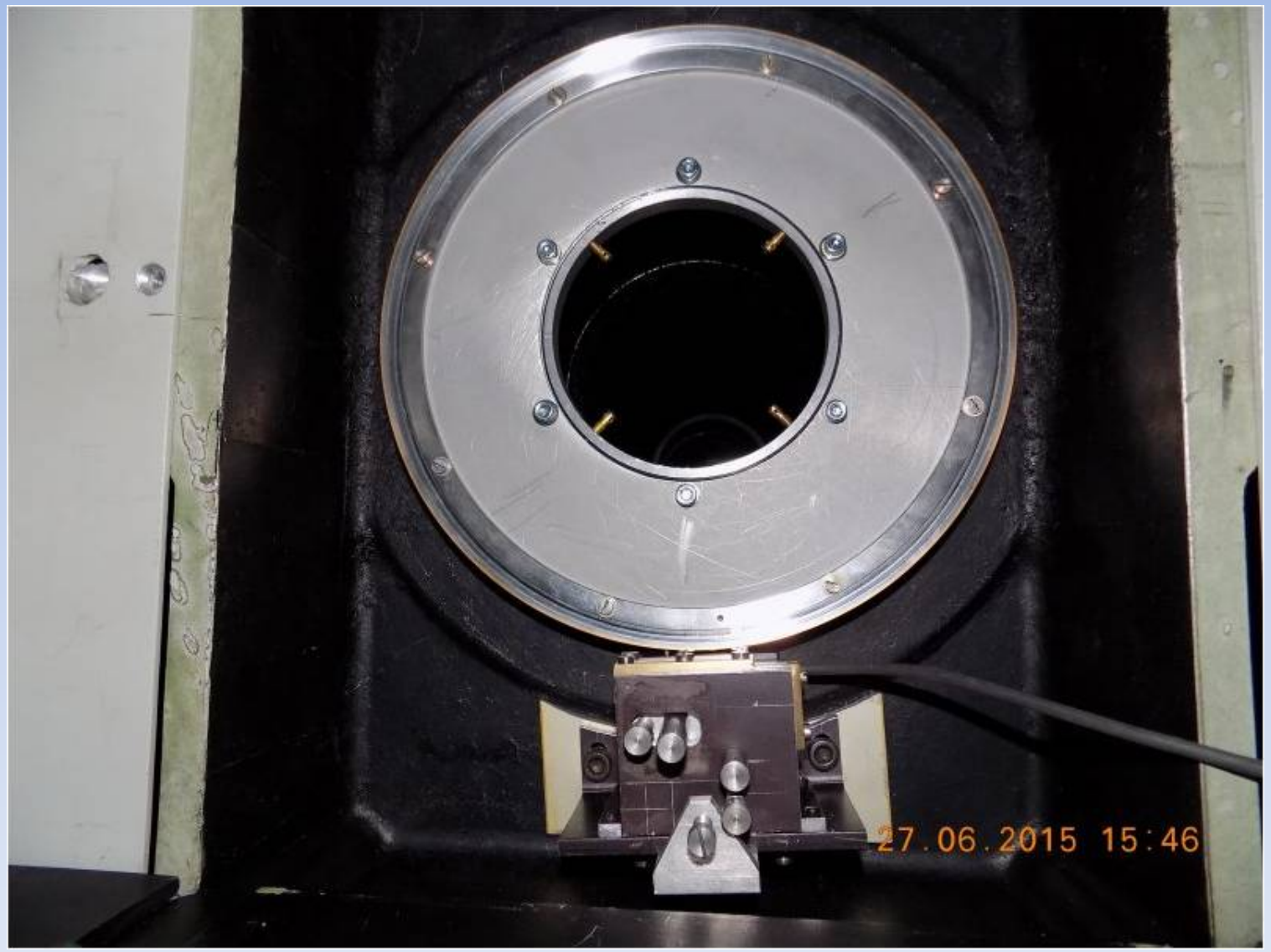
The specific of this telescope

- Must to track the satellite
- Alt azimuth mounting
- This telescope are using the step motors
- This telescope are using the encoders

Elevation encoders in Kiev



Azimuth encoder in Riga HEIDENHAIN manufacture



Azimuth motor

What need the observer from telescope control system

- - maximum convenience
- - minimal operator interaction in the operation of the system
- - reliability
- - as much as possible of the work assign to the system (maximum automation)

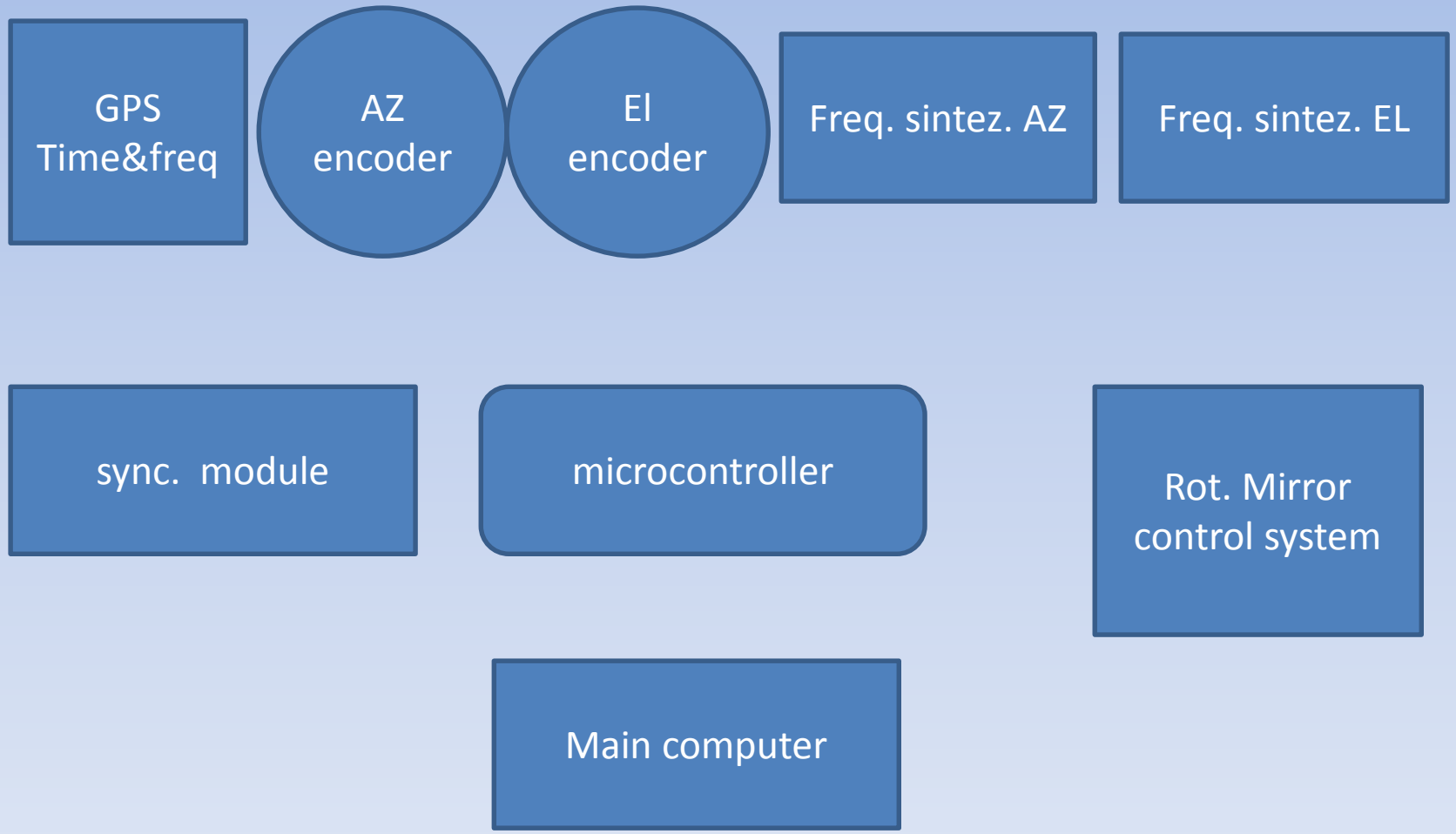
What you need to know telescope control system to track the object

- 1- know where the object is now
- 2- know where "looks" telescope
- 3- know where the object is through a specific length of time (to ask what speed)

What you need to know how the telescope control system to track the object

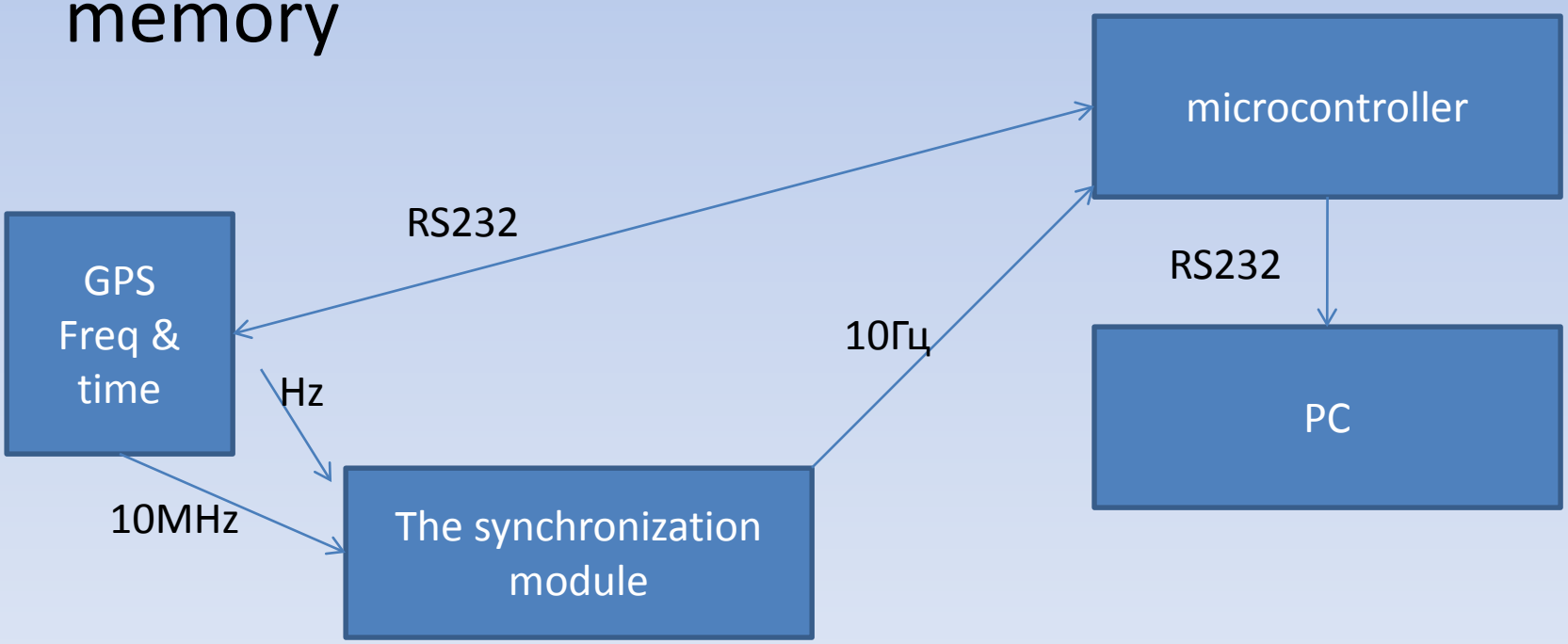
- 4 - control the telescope drives
- 5- interact with the observer

The parts of control system



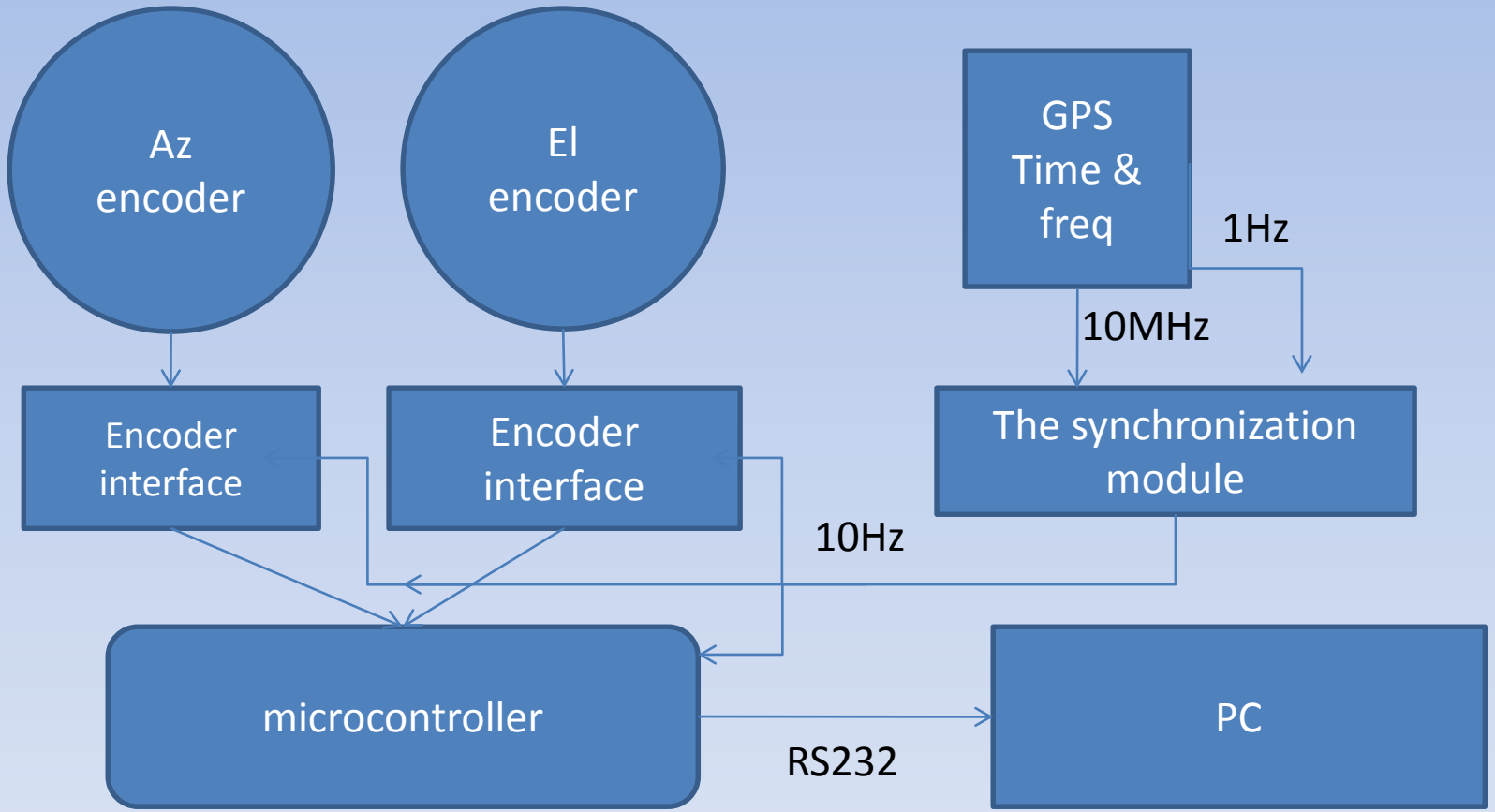
1- know where the object is now

- - It must be the exact time and object ephemeris
- - ephemeris is stored in the computer's memory



- - the exact time of every 100 ms

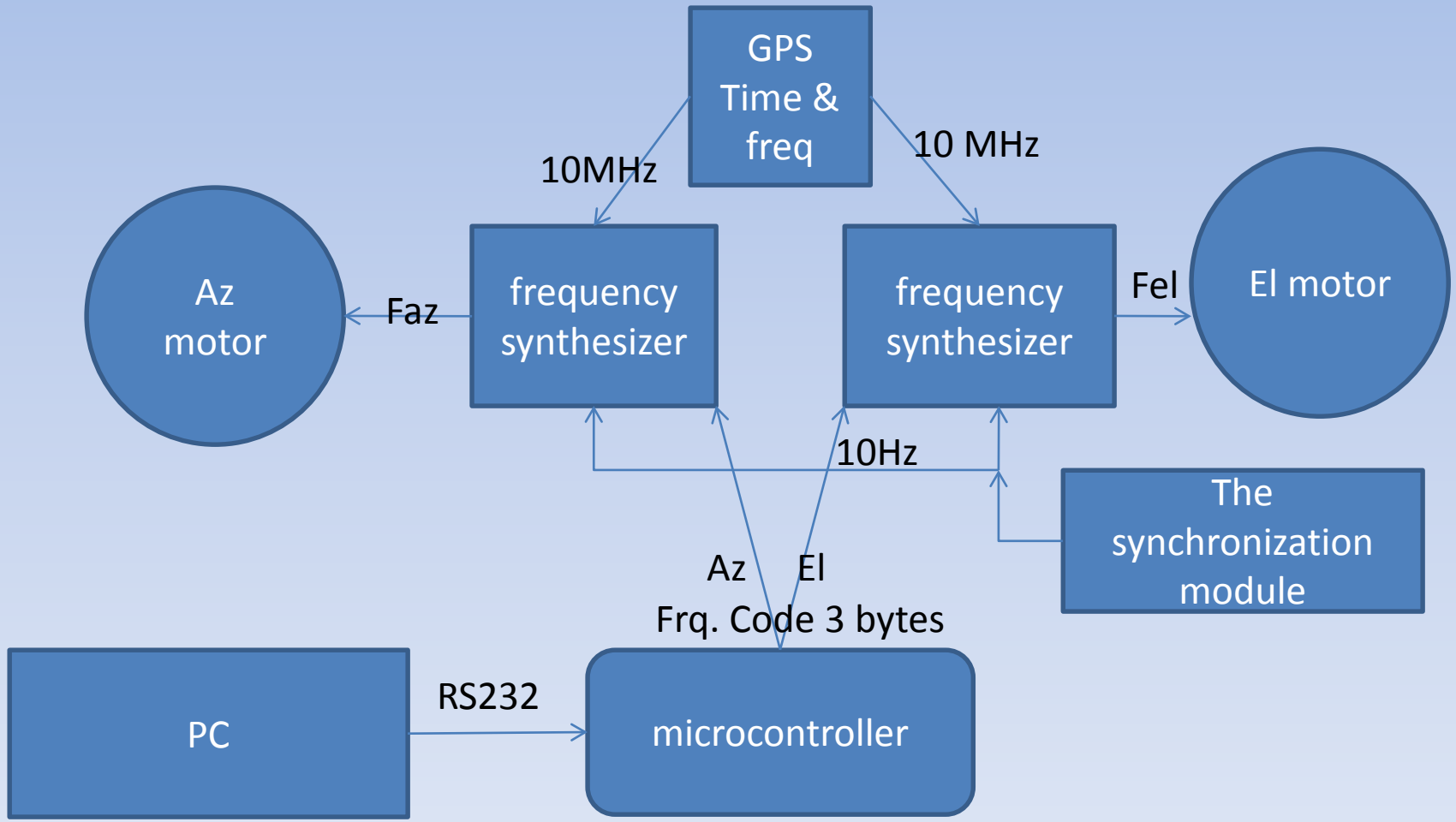
2- know where "looks" telescope



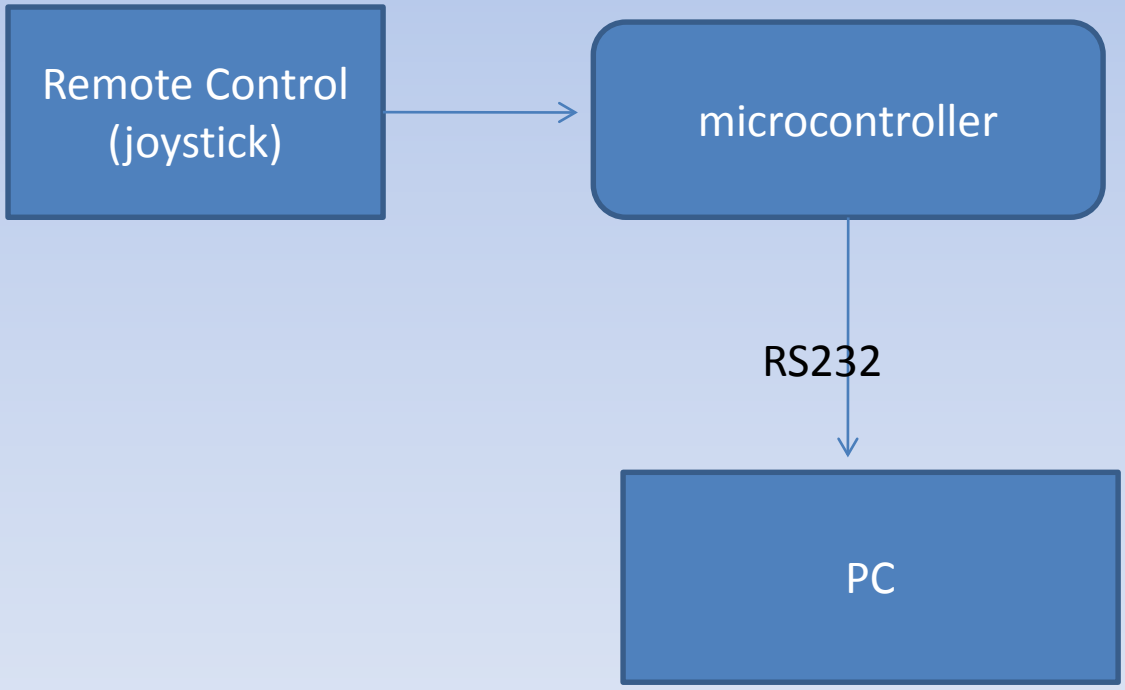
3- know where the object is through a specific time interval

- efemerida memorized Computers,
- Computer interpolates the position of the object the next time (T + 100 ms)

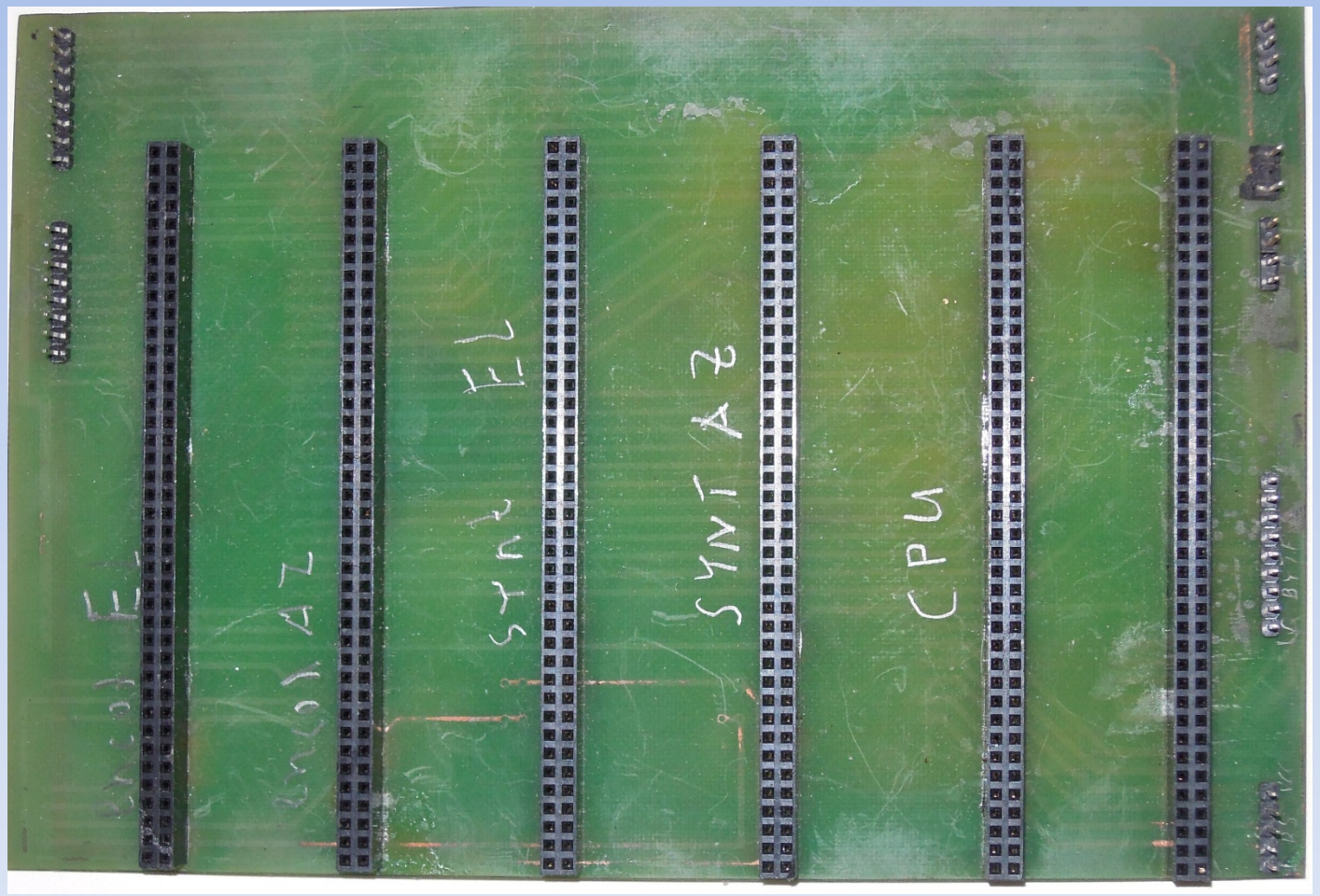
4 - control the telescope drives



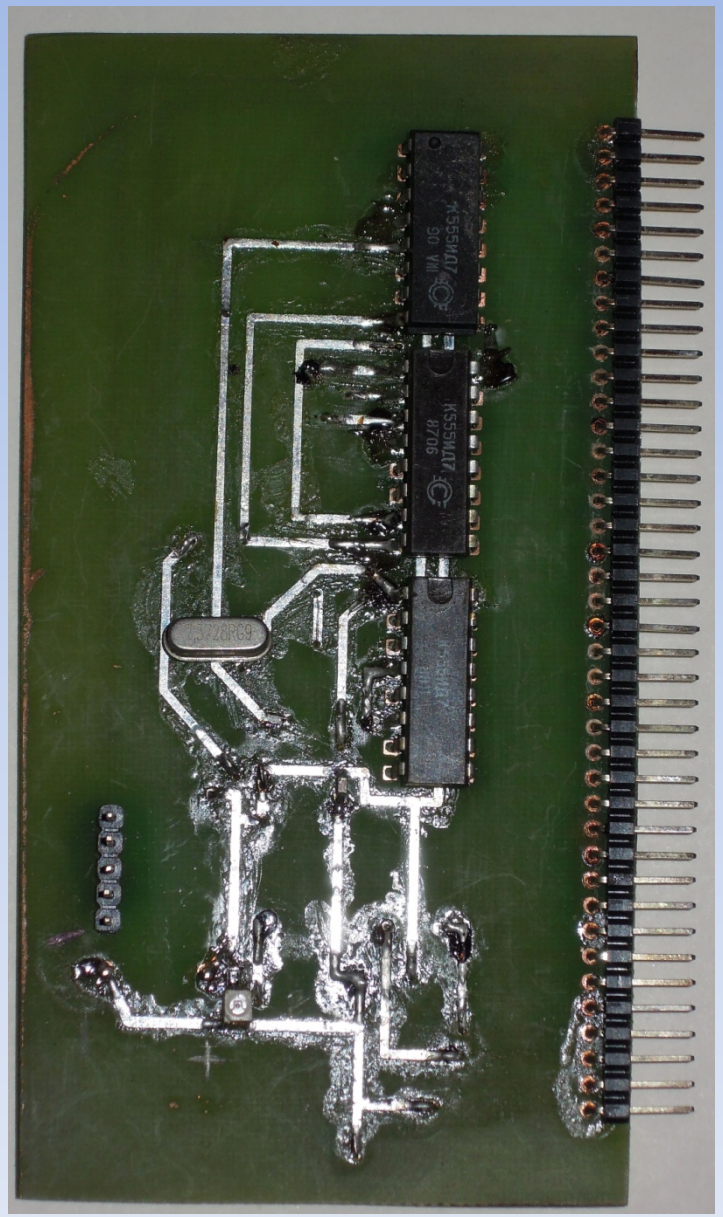
5- to communicate with the observer

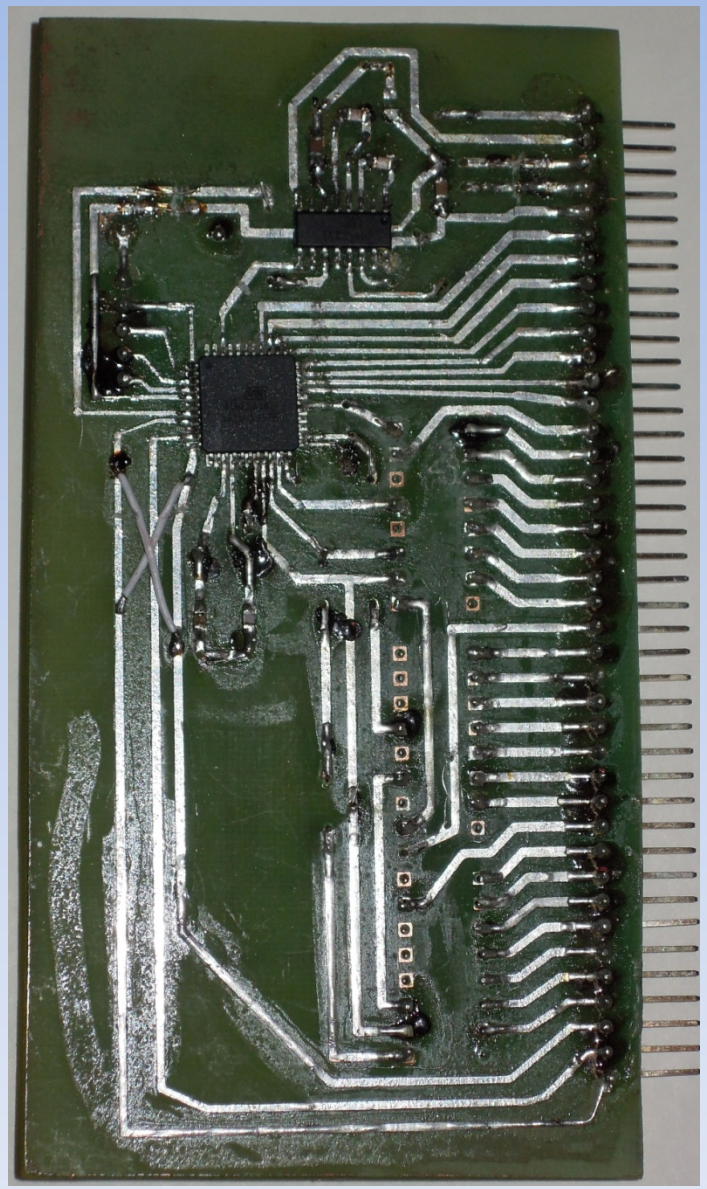


Mother-board

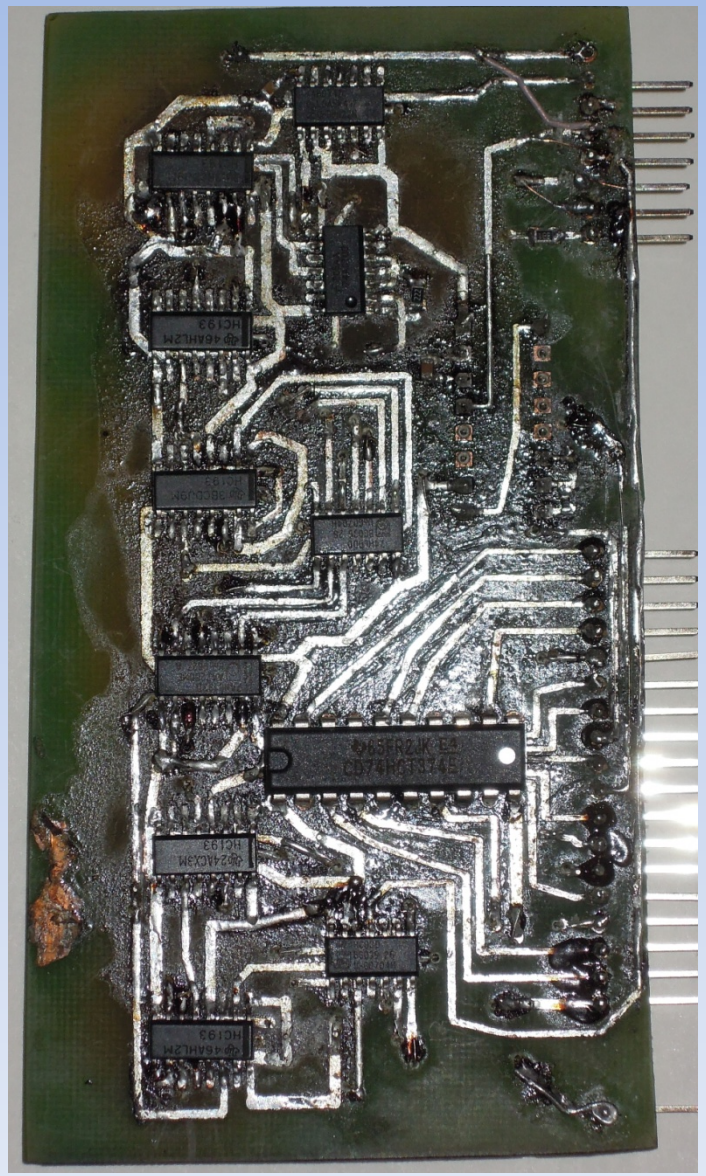


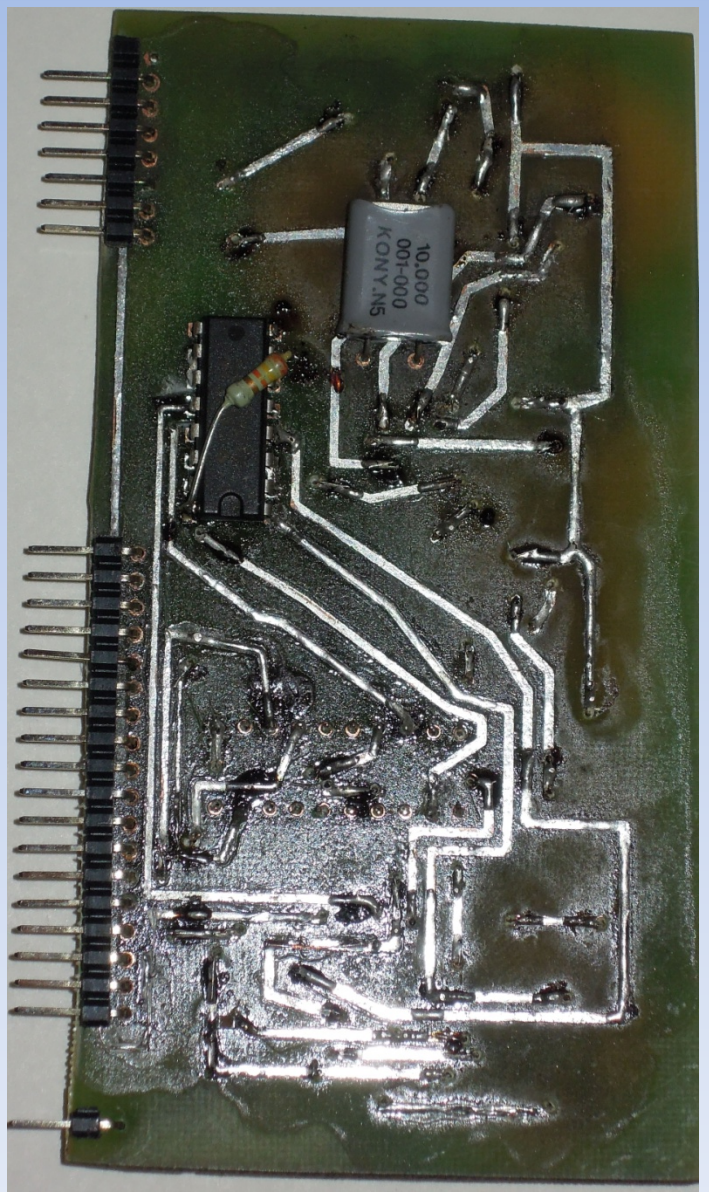
CPU



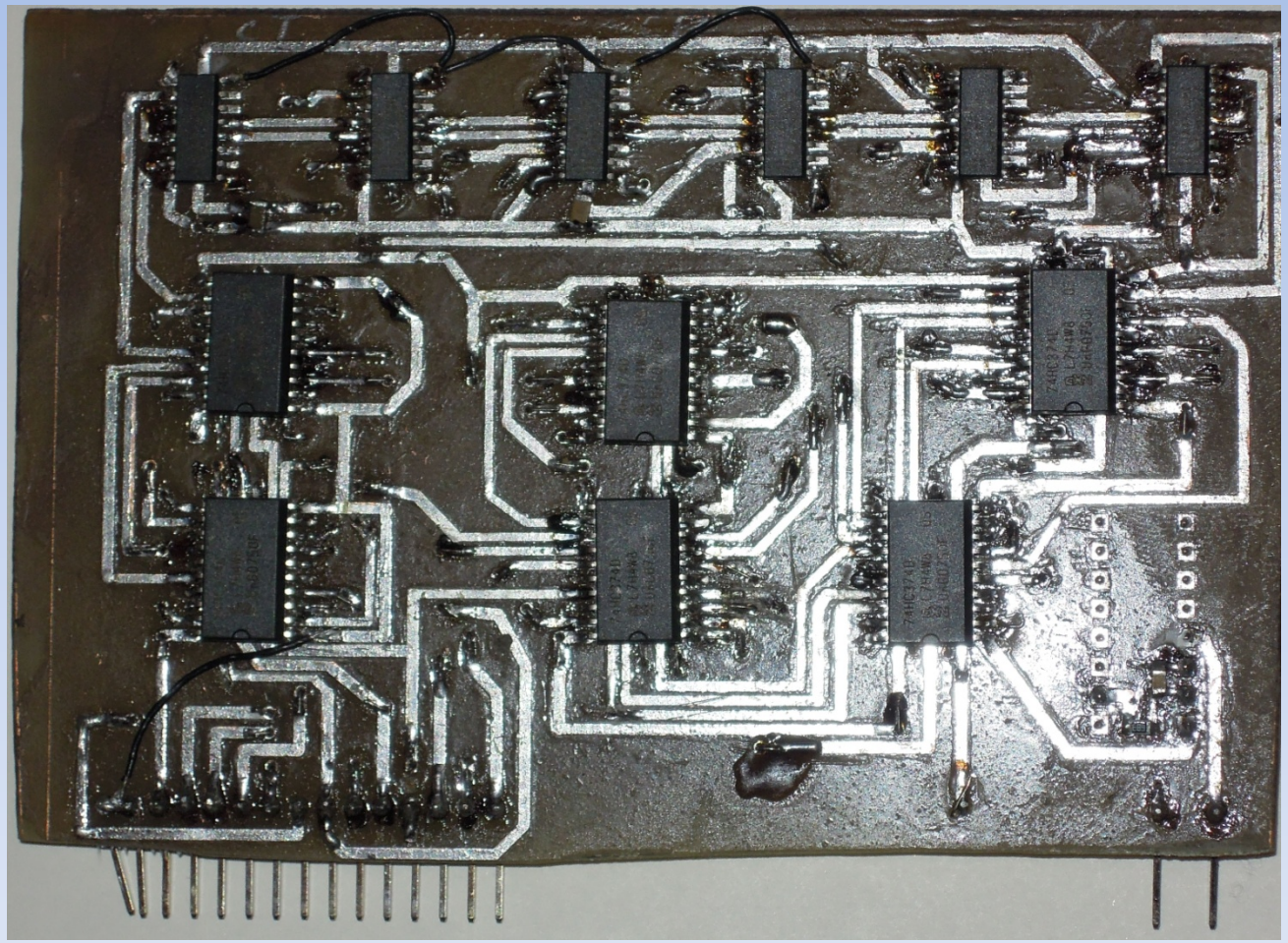


CLK generator





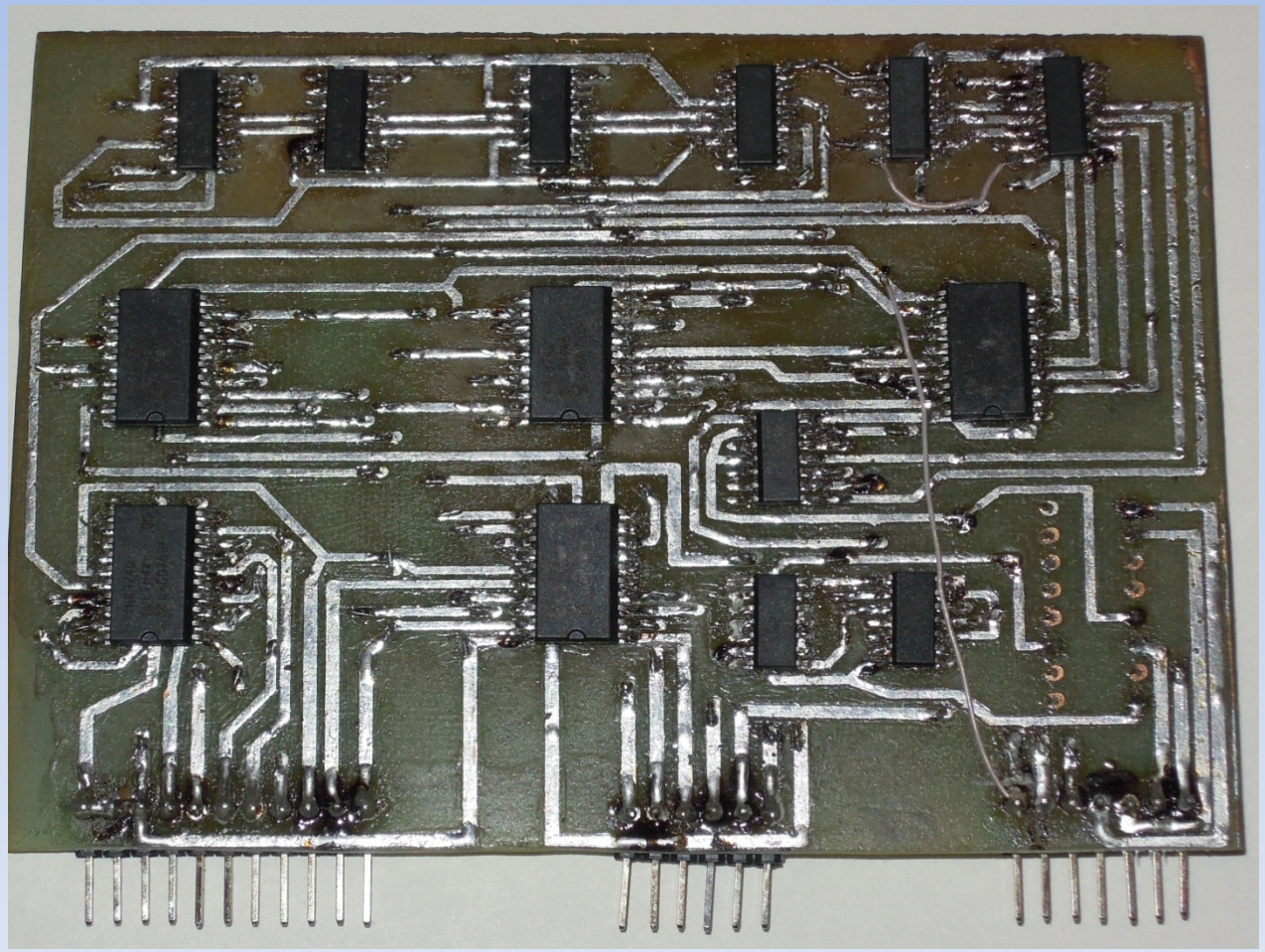
synthesizer



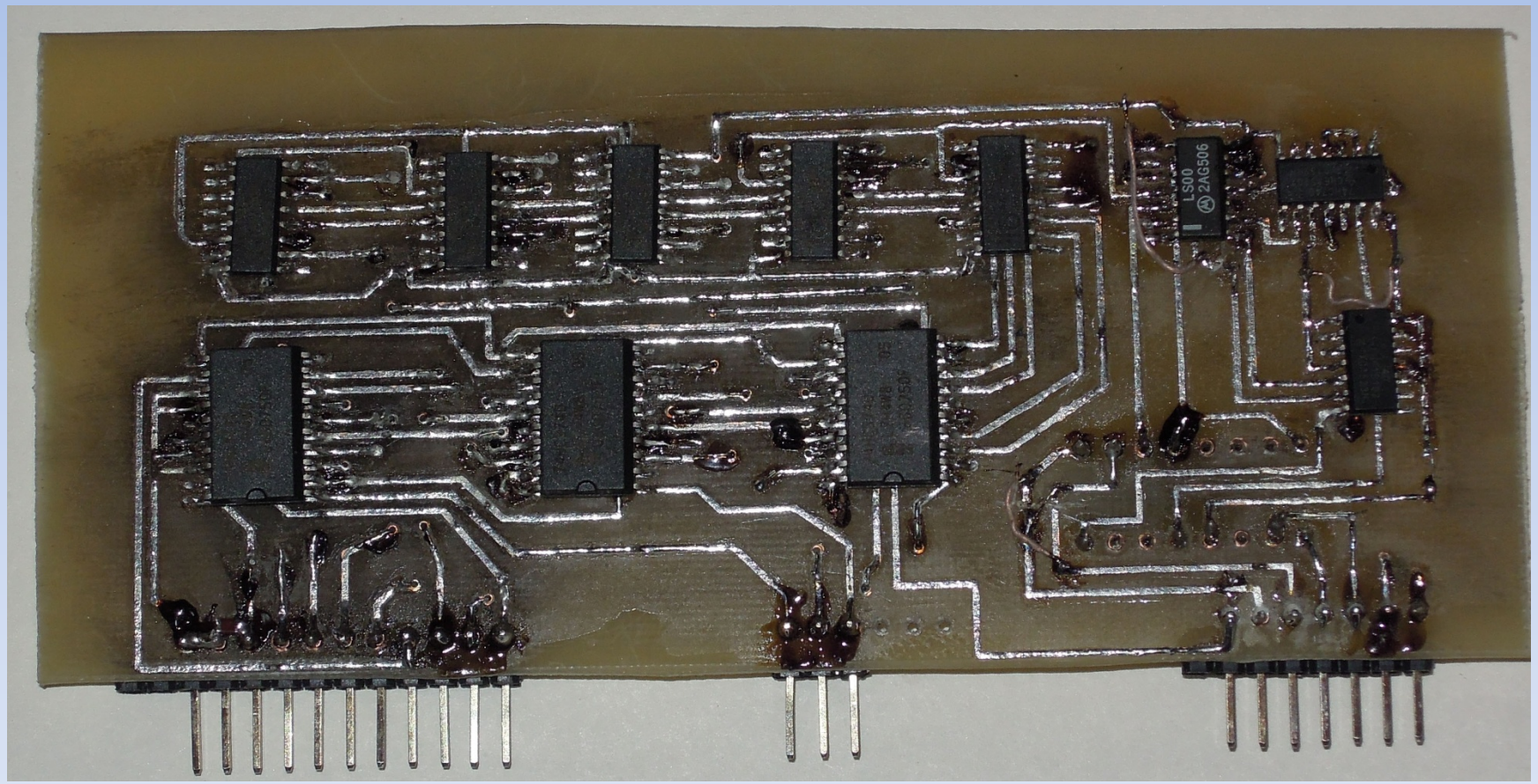
Parameters frequency synthesizer

- Step frequency tuning at the frequency:
- 50Hz – 0,00025Hz
- 5000 Hz – 2,5Hz
- The feature synthesizer - when you change the output frequency is not going break period!
- There are the possibility to work with external frequency (more higher accuracy)

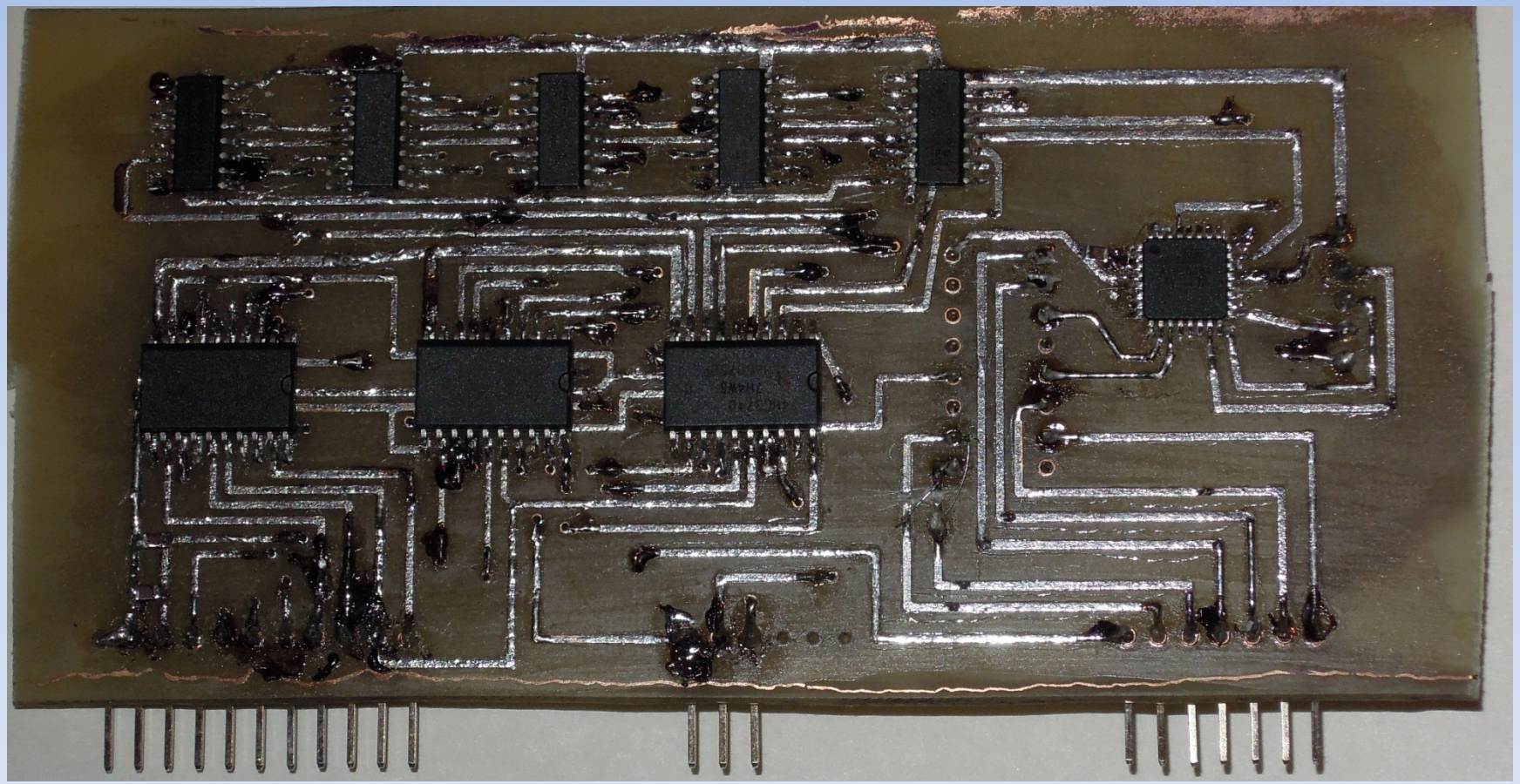
Az encoder adapter



El encoder adapter (ver.4)

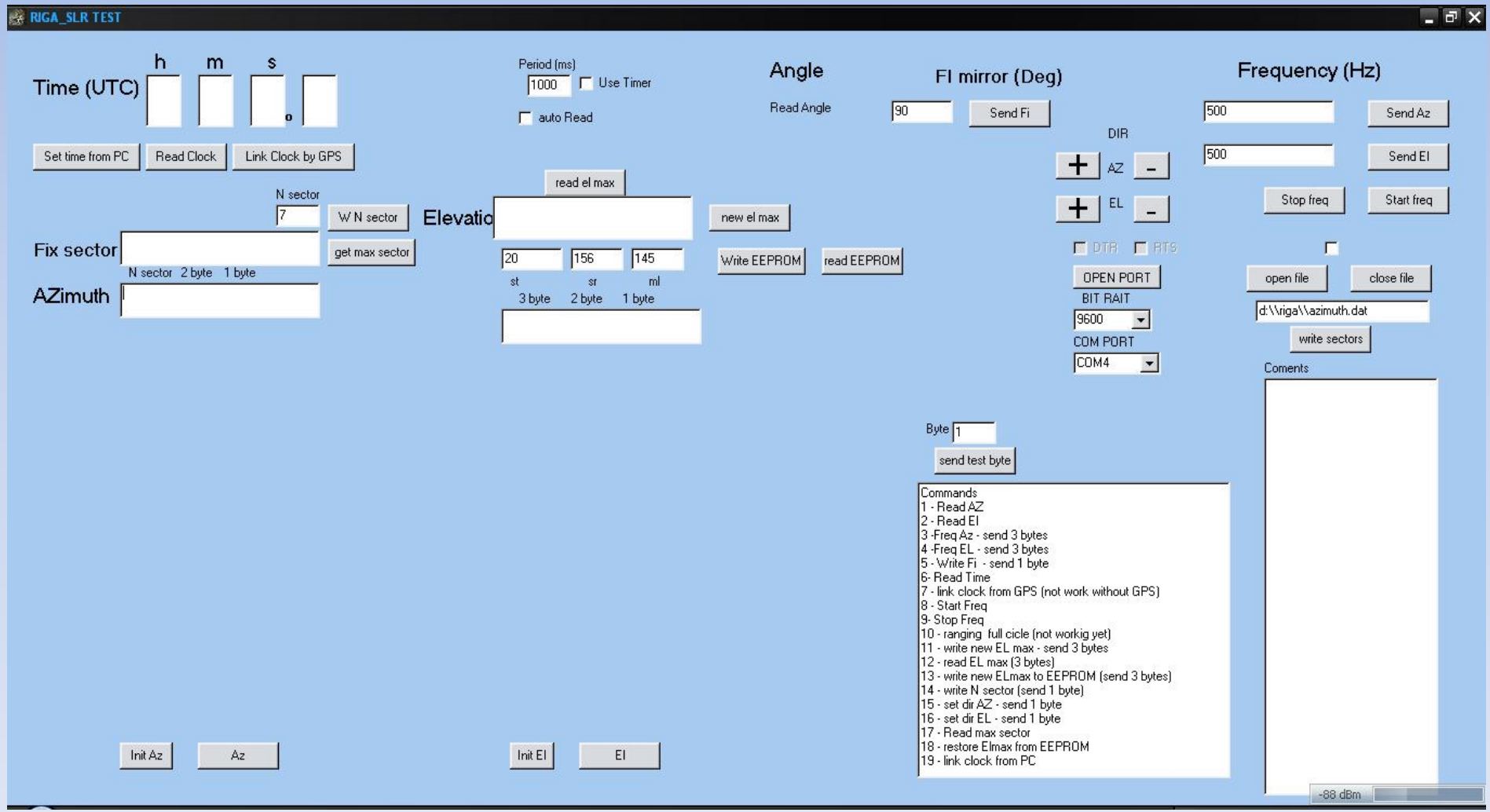


El encoder adapter (ver.5)



All parts

The software for test all parts



conclusion

- This system can be individually modify to unique telescope equipment.
- This system is fool autonomous (time & frequency).
- This system are using standard interface RS232 or USB under different operation system


Thank you for your attention