

research on GPS module

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1 What to consider before choosing GPS module

List of needed requirements	
Type of requirement	specific of the requirement for the project
size	for the wrist band is has to be about 20 mm x 20 mm, for the boat there is no specification
update rate	1-10 Hz
power requirements	3.3/5V - we make a voltage regulator
number of channels	?
time to first start	?
antenna	best if included
accuracy	the more precise the better, budget is a problem, at least 3 m horizontal accuracy for the prototype
microcontroller compatible with	Arduino

2 Considered options and their specifications

1. Spark Fun RTK-SMA

The SparkFun RTK-SMA GPS module is very precise, up to 0.01m in horizontal accuracy. However, the price is 250 \$ which is out of the semester project budget. The module is advanced and can do RTK. However, it is not needed for the prototype of the project. link to the datasheet: https://cdn.sparkfun.com/assets/f/8/d/6/d/ZED-F9P-02B_DataSheet_UBX-21023276.pdf?_gl=1*150sgcj*_ga*MTAxMTI1MDcga_T369JS7J9N*MTY5Njg3NjMOMi40LjEuMTY5Njg3NjU1OS42MC4wLjA

2. NEO - 6

3. BN-220

The needed requirements are fulfilled despite the price. Which for 1000 kroner budget is too high if the shipping price is added. link to datasheet: <https://files.banggood.com/2016/11/BN-220%20GPS+Antenna%20datasheet.pdf>

3 Comparison

requirement	Spark Fun RTK-SMA	NEO - 6	BN-220
size	X		X
update rate	X		X
power	X		X
desired number of channels			72
time to first start (cold/warm)	-148dBm/- 157dBm		26s/25s
antenna			
accuracy of min 3 m	X	X	X
compatible with Arduino	X	X	X
budget	not in the budget		about 150 kroner but expensive shipping