**Sensors and Custom PCB/Micro-Processor**

All prices without tax and custom….

rain:  
[https://de.aliexpress.com/item/1-pcs-of-spare-part-for-weather-station-for-rain-meter-to-measure-the-rain-volume/32793367115.html](https://deref-gmx.net/mail/client/4HdaFD3MiT8/dereferrer/?redirectUrl=https%3A%2F%2Fde.aliexpress.com%2Fitem%2F1-pcs-of-spare-part-for-weather-station-for-rain-meter-to-measure-the-rain-volume%2F32793367115.html)  
  
15$~  
  
  
wind:  
[https://de.aliexpress.com/item/Free-shipping-1-PCS-of-Spare-part-for-weather-station-to-test-the-wind-speed/1000001830841.html](https://deref-gmx.net/mail/client/ninD8uYUc2k/dereferrer/?redirectUrl=https%3A%2F%2Fde.aliexpress.com%2Fitem%2FFree-shipping-1-PCS-of-Spare-part-for-weather-station-to-test-the-wind-speed%2F1000001830841.html)  
  
20$~  
  
(need wind direction still, I can only find expensive thing i.e. 50$)  
  
  
temperature/humidity:  
[https://www.sensirion.com/en/environmental-sensors/temperature-sensors/](https://deref-gmx.net/mail/client/hebt81T6Ebo/dereferrer/?redirectUrl=https%3A%2F%2Fwww.sensirion.com%2Fen%2Fenvironmental-sensors%2Ftemperature-sensors%2F)  
  
2eur~  
  
  
Temperature at ground or snow:  
1eur, TO220 transistor-like  
  
  
Solar panel, 10W  
[https://de.aliexpress.com/item/ALLMEJORES-Solar-Panel-18-V-10-Watt-0-55A-Monokristalline-Polykristalline-Mini-PET-pv-modul-geb/32876278786.html](https://deref-gmx.net/mail/client/L-YyGPkRVvI/dereferrer/?redirectUrl=https%3A%2F%2Fde.aliexpress.com%2Fitem%2FALLMEJORES-Solar-Panel-18-V-10-Watt-0-55A-Monokristalline-Polykristalline-Mini-PET-pv-modul-geb%2F32876278786.html)  
or  
[https://de.aliexpress.com/item/18V-556mA-10Watt-10W-Solar-Panel-Standard-PET-polycrystalline-Silicon-charge-for-12V-Battery-Charge-Module/32875835142.html](https://deref-gmx.net/mail/client/fcRuvAYPUV4/dereferrer/?redirectUrl=https%3A%2F%2Fde.aliexpress.com%2Fitem%2F18V-556mA-10Watt-10W-Solar-Panel-Standard-PET-polycrystalline-Silicon-charge-for-12V-Battery-Charge-Module%2F32875835142.html)  
  
  
GPS:  
GSM/GPRS:  
100-200bytes every log-line every 5 minutes - think SMS or GPRS  
  
  
Full PCB should be sized some 70x100mm; it will have a voltage regulator   
suitable for charging NiCd or NiMH batteries from a solar panel; a MCU,   
16bit 32MHz (should be more than good); connections to sensors; extra   
I/O pins just in case; Real Time Clock with sync to network time; GSM or   
GPS module; an EEprom or SD card slot.  
Say, 25-30 eur including GSM/GPRS and GPS, and SD (for logging).  
  
  
Reading all sensors: every 15sec, and stored in memory; 0.5 sec @50mA @3.3V  
Transmission to the cloud: every 5min, I assume 30sec air-time with 1A   
consumption @3.3V  
Stand-by current: 10uA  
10uA/hour + 1A for 6min/hour + 50mA for 2sec/min => 2min/hour ... this   
should make an average 10uA+100mA+2mA~ per hour i.e. 202mAh, which means   
roughly 2.5Ah per day that we want to support without recharging.  
A 15-20Ah battery (some 20x20x5cm I have at home) should last 4 days then.  
  
Mmmm, rethinking about the above, I am quite sure than 1A @3.3V will   
draw much less than 1A @12V, so the battery should actually last more!  
  
  
  
  
So we need some 7Ah battery, 20 eur  
[https://www.reichelt.at/blei-vlies-akku-12-v-7-ah-vds-yu-np7-12l-p157003.html?PROVID=2788&wt\_gata=10129435314\_291960734108&PROVID=2788&gclid=CjwKCAjw54fdBRBbEiwAW28S9hfNmGezDi41NTVuPIaRFRqEKH030r--RU6RObre908YiSo30XNZ0RoCrTEQAvD\_BwE&&r=1](https://deref-gmx.net/mail/client/850S4sUNIIQ/dereferrer/?redirectUrl=https%3A%2F%2Fwww.reichelt.at%2Fblei-vlies-akku-12-v-7-ah-vds-yu-np7-12l-p157003.html%3FPROVID%3D2788%26wt_gata%3D10129435314_291960734108%26PROVID%3D2788%26gclid%3DCjwKCAjw54fdBRBbEiwAW28S9hfNmGezDi41NTVuPIaRFRqEKH030r--RU6RObre908YiSo30XNZ0RoCrTEQAvD_BwE%26%26r%3D1)  
  
housing: 150x150x70  
<https://de.aliexpress.com/item/Wholesale-ABS-Plastic-IP65-Waterproof-Junction-Box-DIY-Outdoor-Electrical-Connection-box-Cable-Branch-box/32894929484.html?spm=a2g0x.search0104.3.57.78055ac4cxRRBT&ws_ab_test=searchweb0_0,searchweb201602_4_10065_10068_10547_10059_10884_10548_10887_10696_100031_10084_10083_10103_10618_10304_10307_10820_10821_10302,searchweb201603_60,ppcSwitch_5&algo_expid=1edc14b1-181d-4454-a91a-7e2d3d8bd186-8&algo_pvid=1edc14b1-181d-4454-a91a-7e2d3d8bd186&transAbTest=ae803_2&priceBeautifyAB=0>

~ $ 5,- bis $10,- with Cable Glands

12V to 5V converter

<https://de.aliexpress.com/item/Wholesale-ABS-Plastic-IP65-Waterproof-Junction-Box-DIY-Outdoor-Electrical-Connection-box-Cable-Branch-box/32894929484.html?spm=a2g0x.search0104.3.57.78055ac4cxRRBT&ws_ab_test=searchweb0_0,searchweb201602_4_10065_10068_10547_10059_10884_10548_10887_10696_100031_10084_10083_10103_10618_10304_10307_10820_10821_10302,searchweb201603_60,ppcSwitch_5&algo_expid=1edc14b1-181d-4454-a91a-7e2d3d8bd186-8&algo_pvid=1edc14b1-181d-4454-a91a-7e2d3d8bd186&transAbTest=ae803_2&priceBeautifyAB=0>

~ < €1,-