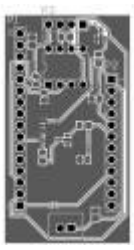
Lora Node (Prototype) for Soil Moisture Profile Probe

This device can connect to a soil moisture profile probe for measuring soil permittivity and temperature at three different depths. The data gets transmitted to an IoT-Stack for saving the data permanently and displaying it nicely in graphs. The data from a test we run on our terrace can be found here: Grafana Dashboard

The device is powered by solar and an internal battery. It can also monitor the battery. The battery levels get also logged on the dashboard. This prototype also includes a custom-made circuit board.







Soil Moisture Lora Node (Prototype v2)

The second prototype is more sophisticated and implements things that work in a more compact and also cleaner way. It is still based on the RFM95 HopeRF Module on 868 Mhz. It's using a 18650 LiPo battery and also includes a Solar Charger, so a Solar Cell can be hooked up. Furthermore, a coulomb counter observers the power usage so it can be precisely determined if and how much current is used or if the battery is recharged.

Currently, we are running our final tests on these prototypes and will deploy some of these in the field for testing. One prototype, with a solar cell, is already running on our lab's terrace.

The casing right now is not perfect and much bigger than it would be needed.

Soil Moisture Lora Node in Action

We installed one of the prototypes v2 with a bigger solar cell on a field near Goch. It´s right next to the river Niers. Because it rained the last days before installation, the field was partly flooded.

Because this particular field is used for cows in the summer, the wire needed to be buried underground. In the future the sensor node should be moved higher.