

# Garbage Bins Moers

## Hardware

Part	Links
CubeCell AB-01 Dev-Board	<a href="#">Product Website</a>
VL53L0X Time-of-Flight ranging sensor	<a href="#">Product Website</a>
2000 mAh LiPo-Battery	



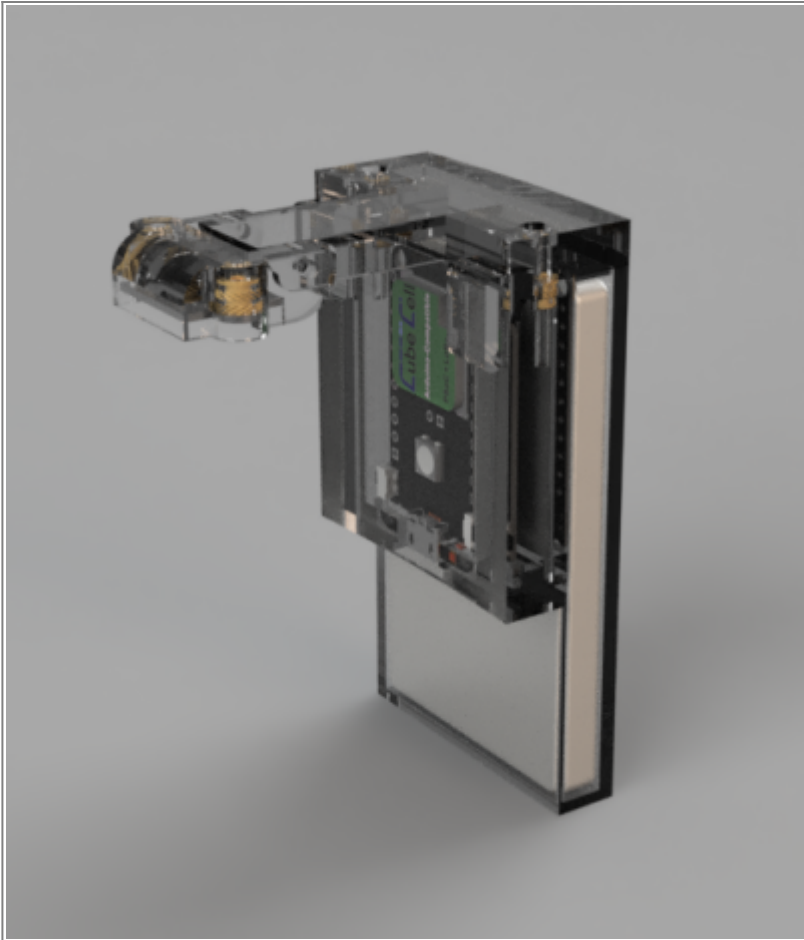
*Fig.: Garbage Bin in the IoT-Lab HSRW*



*Fig.: Sensor Module*



*Fig.: Insides of the Module*



*Fig.: CAD*



*Fig.: Sensor Module installed in the door of the trashcan*



Fig.: Sensor Module installed in the door of the trashcan

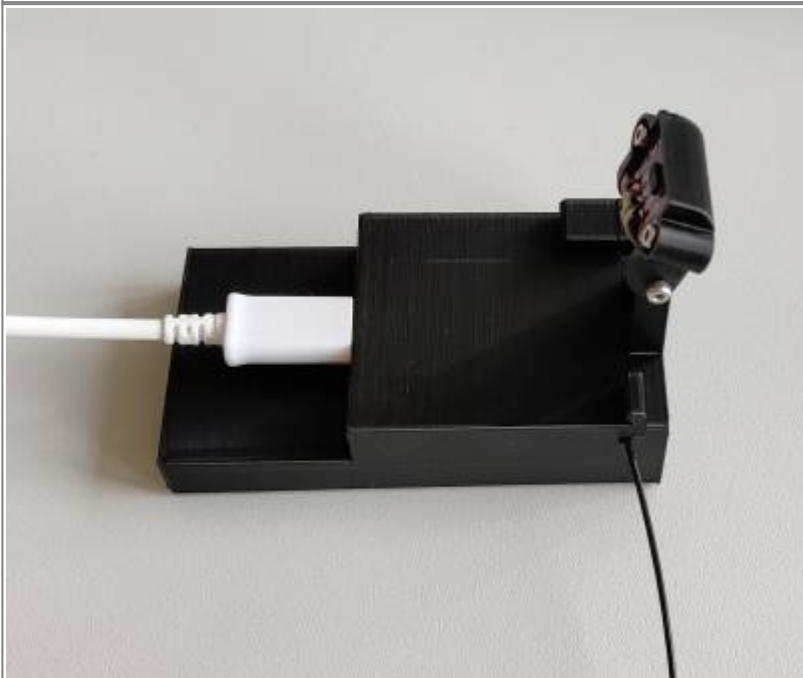


Fig.: Charging/Programing the Module via USB

## Software

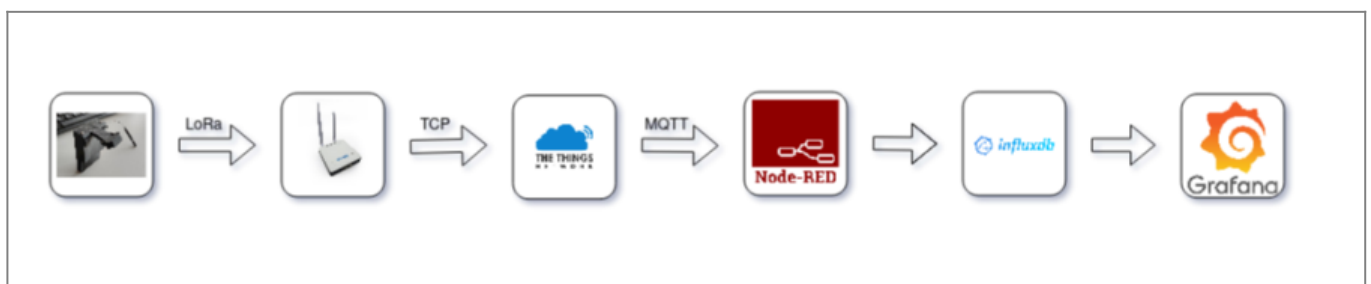


Fig.: Data Flow

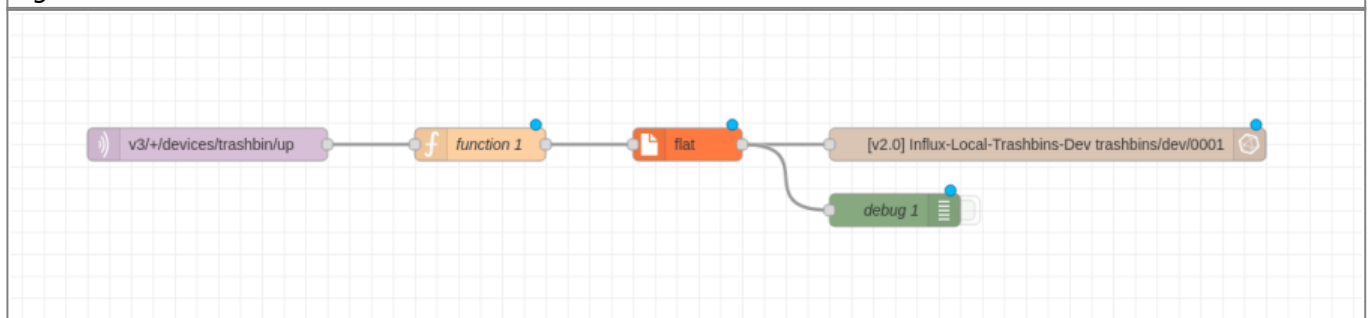


Fig.: Node-Red Flow

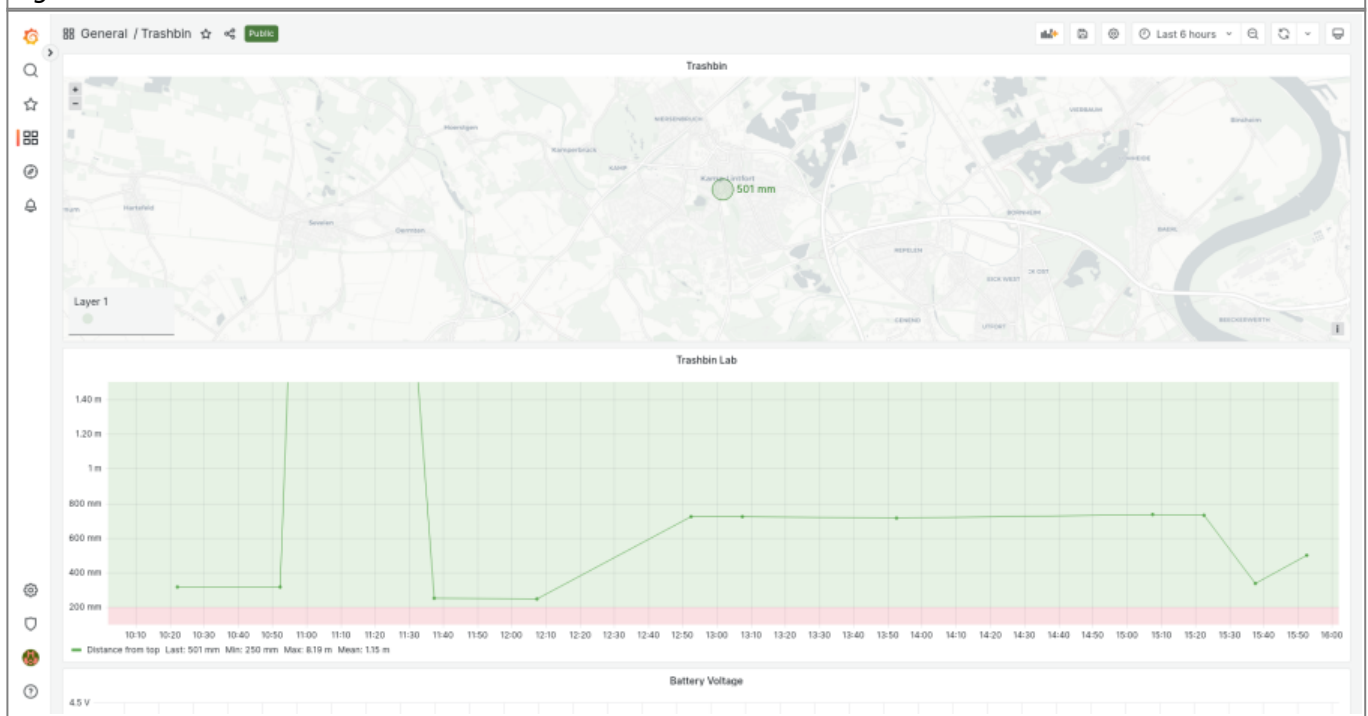


Fig.: Grafana Dashboard

The Grafana dashboard for 'trashbin' (ID: trashbin) shows activity with 251 uplinks and 16 downlinks. The 'Messaging' tab is active, and the 'Downlink' sub-tab is selected. Under 'Schedule downlink', the 'Insert Mode' is set to 'Replace downlink queue'. The 'FPort' is set to 1, and the 'Payload type' is 'Bytes'. The 'Payload' field contains the hex string '00 00 70 35'. A 'Schedule downlink' button is visible at the bottom.

Fig.: Upload interval can be changed via a LoRa Downlink

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