BEE-TECH

HARDWARE-MANUAL

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# PROJECT DESCRIPTION

Bee-Tech is an opensource beehive-monitoring system. Designed to be further developed, it offers a basic approach to gather sensor data from one or multiple hives. This data is collected by one mobile unit and sent into the GSM Network, where it is processed.

For data processing and software, see the BeeTech software-manual.

# Ein Bild, das drinnen, aus Holz enthält. Automatisch generierte BeschreibungSYSTEM OVERVIEW

Figure 1: Schematic oft the location

Figure 2: Three Hives, the RE-Unit to the left

## UNIT TYPES

For the monitoring of each hive, one Logging-Unit is needed.   
There are two types of Logging-Units. The Normal ‘Unit’ and the ‘RE-Unit’ [radio-enabled]. Both Unit-types log their sensor-data onto an onboard SD-Card and can be used standalone, if no other communication is required.

## UNIT COMMUNICATION

The RE-Unit logs data onto the SD-Card AND publishes its data via a radio-module to any web-application server or database. In this case, a GSM Module is used to connect to the mobile network, since there is no Wifi on location.   
Alternatively, a Wifi or Lora-Module could be used instead of the GSM Module.

To monitor multiple hives, one RE-Unit can be combined with as many as 256 Units to form a chain. In this chain, the data of all the Units is collected via a serial bus and published by the RE-Unit. The SD-Card acts here as a backup or additional logging system.

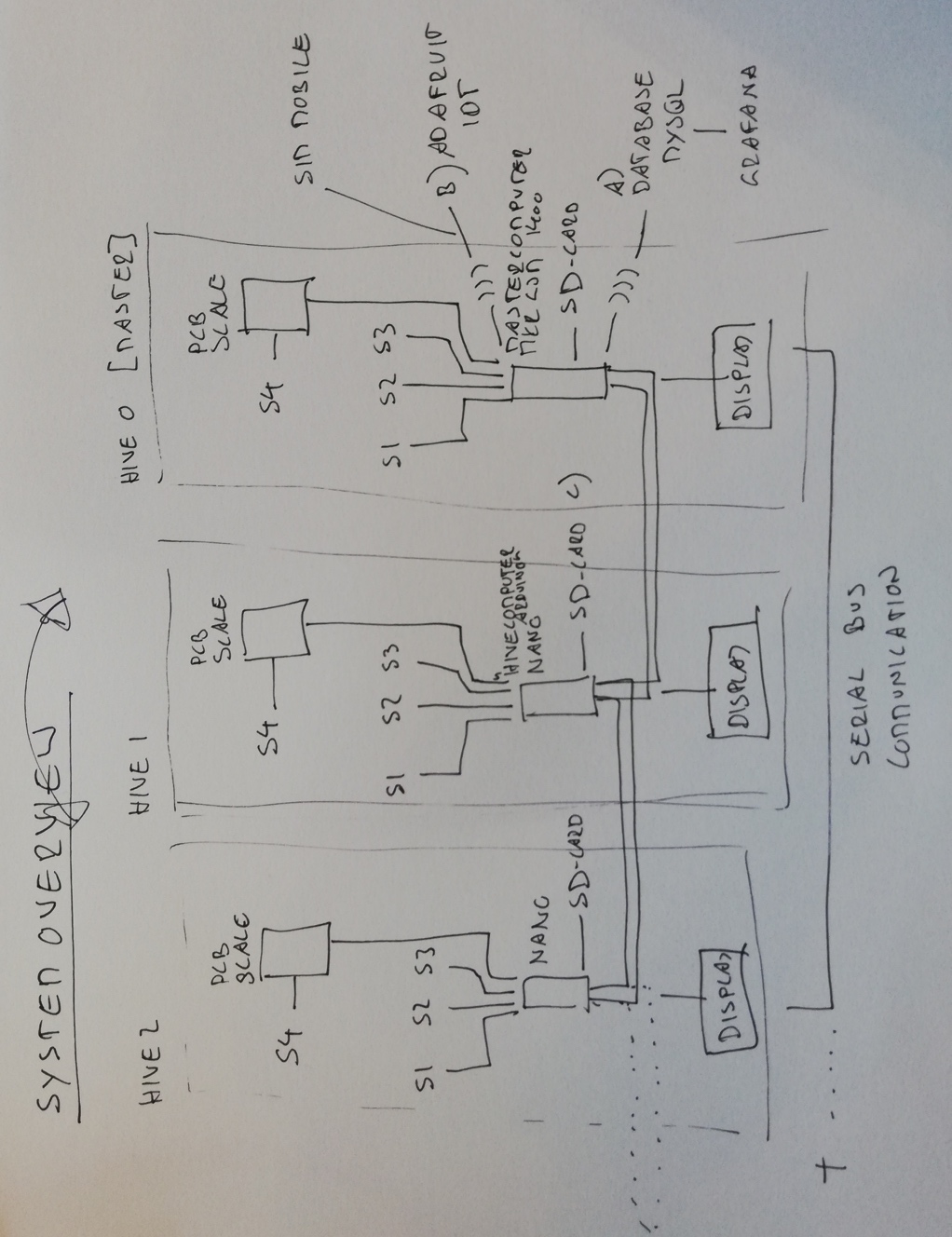
UNIT

Figure 3: Component Overview

Every Unit and RE-Unit collects data via four different sensors: Temperature 1&2, Sound and Weight

## SCEMATICS

# RE-UNIT

Every Unit and RE-Unit collects data via four different sensors: Temperature 1&2, Sound and Weight

## SCEMATICS

# SENSORS

Every Unit and RE-Unit collects data via four different sensors: Temperature 1&2, Sound and Weight.

Additional sensors can be added through a fifth sensor-port, that has no set function yet??

## S1/S2: TEMPERATURE SENSOR 1 AND 2

For functional purpose there are two separate, identical temperature sensors, one Is suggested to use for monitoring the hive-temperature inside, one for outside-temperature.  
The selected sensors are stainless steel and waterproof.

The three cables are:

* VCC (red)
* Data (yellow)
* Ground (black)

Ein Bild, das Kabel enthält.

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## S3: SOUND SENSOR

Lorem ipsum

## S4: WEIGHT SENSOR (SCALE)

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Ein Bild, das drinnen enthält.

Automatisch generierte Beschreibung

Figure 4: RE-UNIT with scale on location, without the hive