

ProBee - instructions for using hive scale with temperature and acoustic sensor

The Hive Scale is a device consisting of two skids and a plastic box with a merger that is connected to the transmitter. The installation consists of placing the skids under the hive so that the spacers, visible at the edges of the skids, are seated at the bottom. Then you need to connect the merger box to the transmitter. All components incl. the connectors are waterproof, but not designed for permanent sinking in water. So it is not recommended to place them directly on the ground, where there is a risk of rain puddle, but at least on some raised underlayment. The transmitter box contains 3 small solar panels and must be placed to direct sunlight for the maximum of daytime. The suitable position is diagonally about 60 degrees to the horizontal layer. If this condition is not met, there may be equipment failures on cloudy days of the winter months (November - February).

An acoustic and temperature sensor (square module at the end of the flat cable) is also connected to the transmitter. It is intended to be inserted into the hive between the combs. To measure the temperature of the bee cluster, its best position is at the top of the brood nest. The flat cable from the sensor is designed for direct squeezing between supers. ATTENTION!!! In no case, the connected round cable should be squeezed - it must be outside the hive. If it is squeezed between supers, it will get damaged.

The transmitter is delivered in switched on mode and its battery capacity enables working for about 1 week without charging. When the voltage drops below the minimum level (which ProBee reports to the user in time via the Info Channel - see Help in Downloads), the transmitter will switch off automatically, but the solar panels are still able to recover the battery. If this happens, the transmitter switches on again automatically. Only if the transmitter is placed away from sunlight for longer time, it must be switched off manually, so that it is not stored with a discharged battery. This can be done by unscrewing the transparent cover and switching the switch No. 1 in the middle of the board (towards the No. 1).

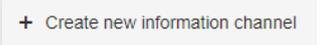
The central unit is a device that collects data from all assigned transmitters on the apiary at regular intervals (usually every 10 minutes) and sends it to the ProBee web server. There the data are analyzed and the results are displayed to the user in their records of hive representations (items Temperature, Weight, Condition - their display - see Help again). The central unit must be located within a few tens of meters from the transmitters and connected to the solar panel with its extension cable - its position must comply with the same rules as for the transmitters (see above). The central unit has its own switch to turn it on. There are also small control buttons that we do not recommend manipulating - they are used for setting some parameters by a qualified user and improper settings can cause stop of the service.

After manual installation of the transmitters and switching on the central unit, it is recommended to monitor on its display whether the central unit has a sufficient GSM signal (value up to 100dbm) and whether its connection with all transmitters has been successful. If so, the installation is complete and after a few minutes the first data in the ProBee online beekeeper's diary appears.

In order for the user to see the outputs of the above-mentioned devices, these devices must be assigned to the corresponding hives and apiaries. This is done by selecting Sensors (in the

Tools/Sensors menu) by clicking on the pencil icon  in the first column and selecting from the list of hives in the second column. The scale with the temperature/acoustic sensor is assigned to the hive and apiary, the central unit to the apiary.

After the assignment, it is necessary to wait for the device to send at least two values (within a few minutes of the assignment) and then the last measured value is displayed in the list of hives (in the Hives menu after a apiary selection) in the temperature/weight/condition columns. After clicking the button with a value, graphic progress can be displayed (after receiving two measurements from the assignment at the earliest). In the list of sensors above, a history table is available after clicking on the icon .

ProBee can announce critical sensor values using so-called Info channels. The channel must first be created in the Tools/Info Channels section by clicking on , filling in any name, email address or phone number and ticking where the messages should be sent (whether to the registered email, phone or both). Then you need to match the corresponding channel with relevant sensor in the Alert Channel column. You can do that in Sensors section (in the

Tools/Sensors menu) by clicking on the pencil icon  in the first column. Multiple sensors can be set to the same channel, or vice versa. In addition to sending an alarm when some critical values occur (e.g. weight change of more than 10kg, GPS tracker movement), ProBee will take an immediate snapshot from all apiary cameras.