INSTALLATION GUIDE

Smart Hive Monitor HM-20
B-Ware iPad App PA-2
B-Ware Web App

July 2014

BEEHIVE MONITORING SYSTEM

Reliable, technical and user-friendly solutions are Solutionbee's specialty. Solutionbee's dedicated customer technical support assists distributors and end-users to set-up and maintain their hive monitoring equipment.

Solutionbee Team

SOLUTIONBEE
REMOTE READING SOLUTIONS

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1 INTRODUCTION

Thank you for purchasing a **Solutionbee B-Ware Smart Hive Monitor**. We are certain that this equipment will provide years of precise monitoring of your beehive.

Please read this **Installation Guide** carefully and in sequence so that you can be monitoring your beehive as soon as possible.

This Guide is divided into roughly three sections:

1. Unpacking and Installing your Smart Hive Monitor under your hive
2. Using the iPad App to read your Monitor
3. Registering as a B-Ware user on the Web App

B-Ware is feature-rich and there are many options for customizing your equipment and software. For simplicity and brevity, this Guide will only demonstrate the basic features in order to get started.

Thank you again for trusting Solutionbee with your beehive monitoring needs.

Your Solutionbee Team.

2 INSTALLATION CHECKLIST

Installation Steps	Comments	Manual Reference
1. Download and Install the B-Ware iPad App from iTunes	Open iTunes from your computer and search for the “B-Ware” application. Install it on your iPad.	3.2
2. Unpack the Smart Hive Monitor (SHM)	Open the box, carefully remove the SHM, and remove the plastic coating from the hive monitor top plate.	5.1
3. Place the SHM	Remove the hive. Place the SHM on the base. Turn ON the ON/OFF Switch. Zero the scale.	5.2
4. Place the beehive	Place the beehive centered on top of the SHM. Make sure the ON/OFF switch remains in the ON position.	5.2
5. Open the iPad App	On your iPad open B-Ware App.	6.1
6. Press the SHM Button	Press the SHM Button shortly (<5 seconds) and the Bluetooth module is turned on (the blue LED will begin to blink).	6.3
7. Discover device	Press the Discover button in your B-Ware iPad App. You iPad Bluetooth will be automatically turned ON. Confirm if necessary.	6.3
8. Read data	Select the new discovered monitor in your B-Ware iPad App and press the Read Data button.	6.4
9. Get a Solutionbee account	Register as a new user on the Web App.	7.1
10. Upload data	In your B-Ware iPad App select the Upload Data option.	6.4
11. Open Web App and have fun!	Open link and log in to browse the features and view your data.	8

3 DOWNLOADING THE IPAD APP

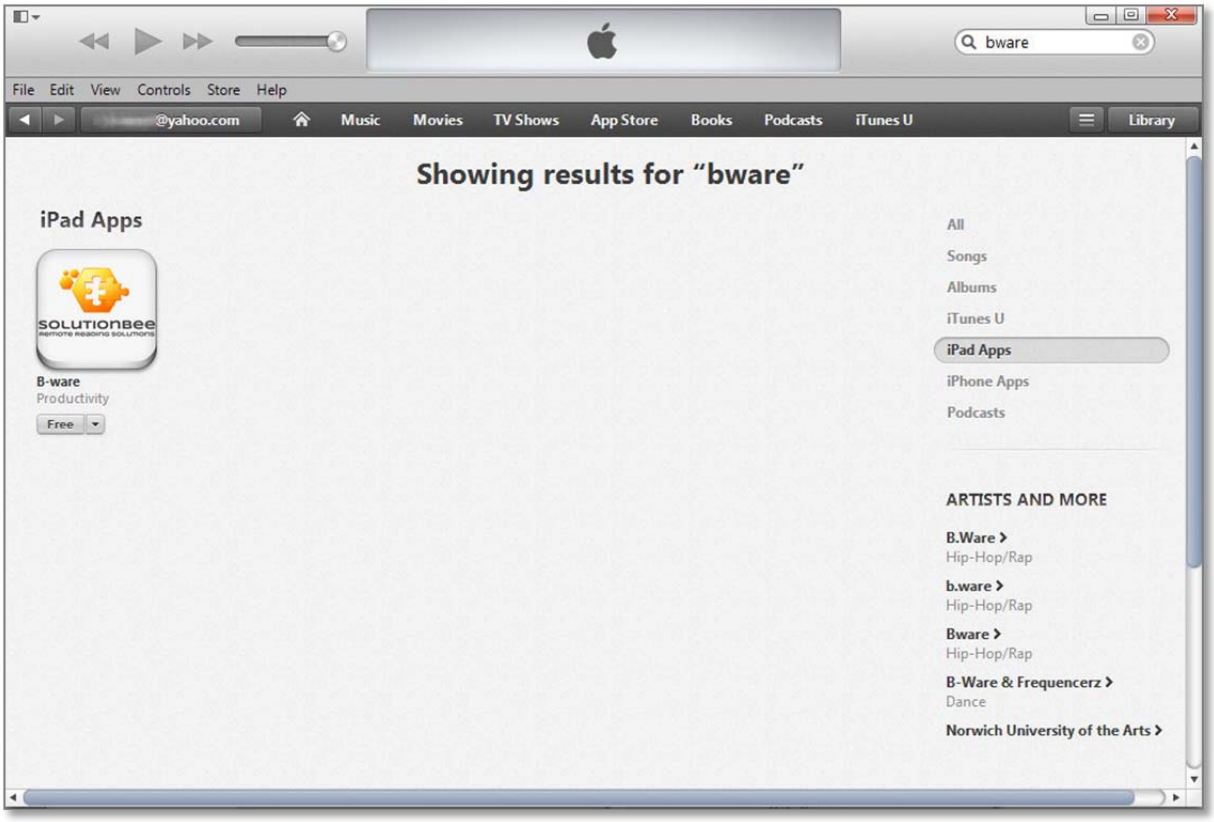
3.1 ABOUT THE IPAD APP

The **B-Ware™ iPad App** is a crucial tool in operating your B-Ware Monitoring System. The app will connect your iPad to your Smart Hive Monitors with reliable Bluetooth communications and give you access to the monitor data.
It can also upload your monitor data to the Internet so that you can use the Web App to view it.

3.2 DOWNLOADING AND INSTALLING THE IPAD APP

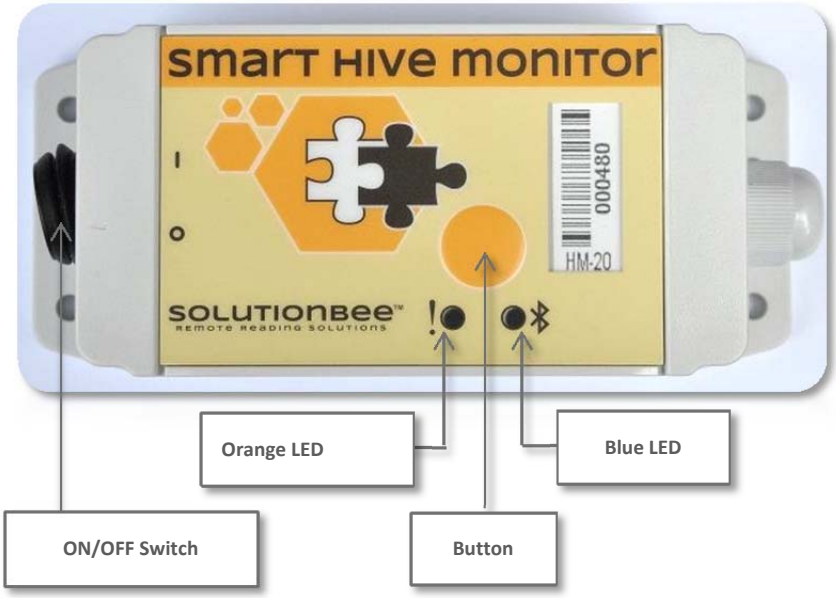
To download and install the B-Ware iPad App follow a few simple steps described below:

1. Open the iTunes application from your computer.
2. Type and search *B-Ware* in iPad Apps.



3. Select *Solutionbee B-Ware* application from the search result.
4. Install it on your iPad.
5. Wait for the application to install.
6. Open the application on your iPad.

4 SMART HIVE MONITOR BUTTONS AND FUNCTIONS EXPLAINED



ON/OFF switch

- *OFF*: power the device off
- *ON*: power the device on

Orange LED

- After the device is powered on, if the operating conditions (battery, temperature) are met, the orange LED will blink fast 5 times.
- If the operating conditions (battery, temperature) are NOT met, the orange LED will blink once every 10 seconds. The device is not recording at this time.
- Button dependent (see Button section)

Blue LED

- *ON*: the Bluetooth modem is being initialized.
- Slow blink (every second): awaiting connections.
- Fast blink (5 times a second): communicating with a Bluetooth device.
- *OFF*: the Bluetooth modem is turned off.

Button

- *Short press (<5 seconds)*: the Bluetooth module is turned on (the blue LED will begin to blink - see Blue LED)
- *Double click*: if the monitor is configured to work with a collector, it will attempt to find and (re)join the collector and transmit its data. The orange LED will blink fast as long as the monitor is attempting to communicate with the collector.
- *Long press (>5 seconds)*: the scale monitor will be tarred to 0. The orange LED will blink 5 times, once a second.

5 UNPACKING AND SETTING UP YOUR SMART HIVE MONITOR

This chapter covers everything from unpacking the system, placing it under your hive, and turning it on. We want your installation to be a success!

5.1 UNPACKING THE SMART HIVE MONITOR

1. Carefully lay the Smart Hive Monitor box flat on the ground. Open the cardboard box from the top.

2. Carefully remove the SHM from the box.

3. Remove plastic coating from the hive monitor top plate.

5.2 Setting up your Smart Hive Monitor

1. Identify the beehive that will be monitored. Temporarily move the beehive aside and place the monitor on a horizontal and firm base such as a pallet, cinderblock or other structure to elevate the monitor from ground level in order to avoid standing water from damaging your monitor.

2. A battery will already be pre-installed in the SHM module. Turn the ON/OFF switch to the ON position.

3. Zeroing the scale: Without the hive on top of the monitor, zero out the scale by pressing the orange button for between 5 and 20 seconds. The yellow warning light will blink for two seconds indicating that zeroing was successful.

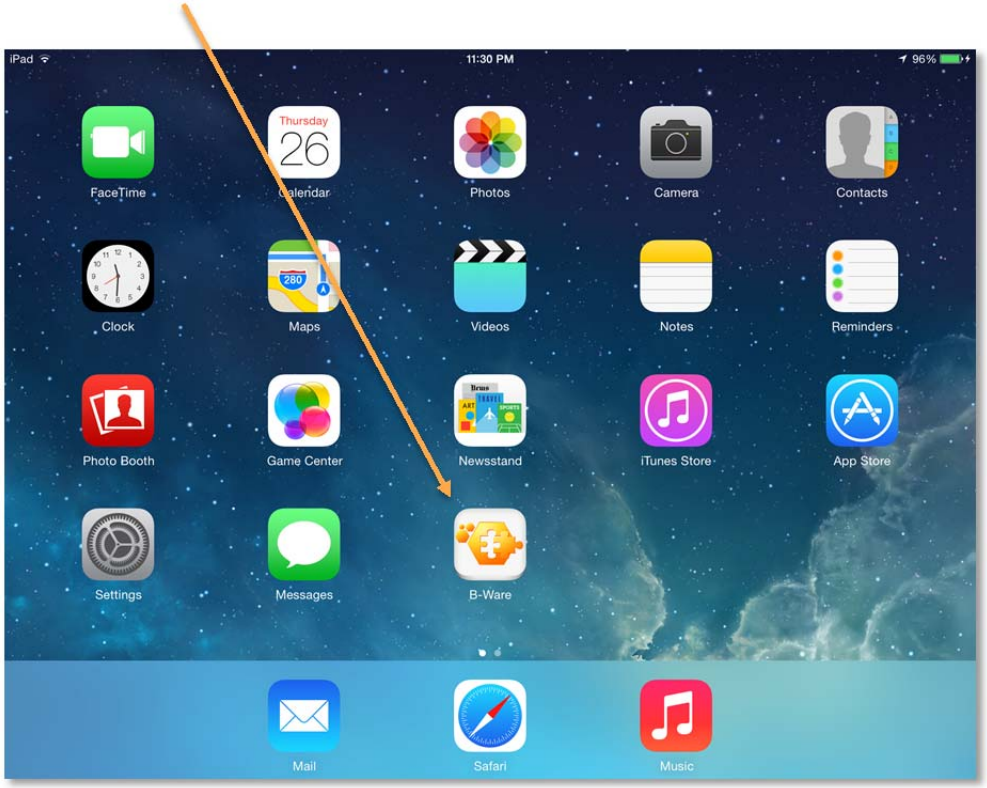
   If the blue light blinks it means the button was not pressed long enough. Try again keeping the button pressed down for at least 5 seconds.

4. Place the beehive centered on top of the SHM. Make sure the ON/OFF switch remains in the ON position.

You have successfully installed and set-up your Smart Hive Monitor!

6 USING THE IPAD APP WITH YOUR SMART HIVE MONITOR

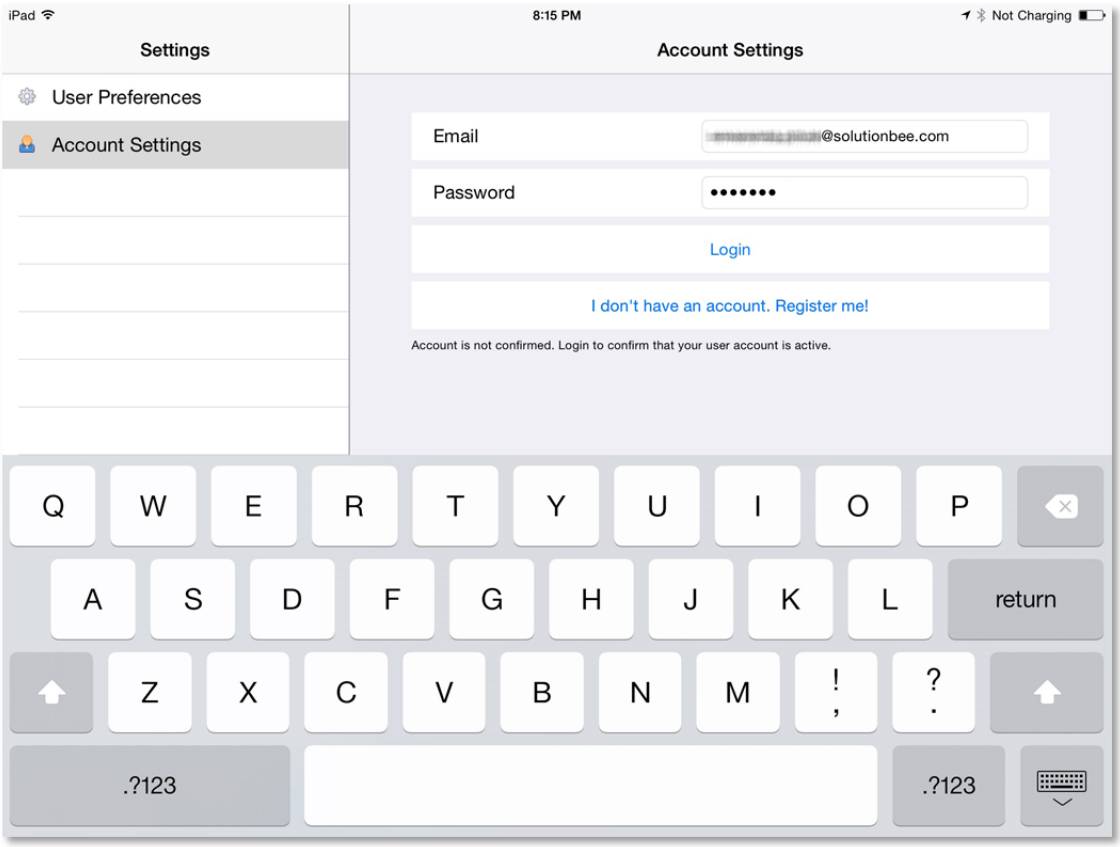
6.1 OPEN THE IPAD APP



6.2 LOG IN (OPTIONAL*)

Open the application. Select *Settings* from the bottom left menu.
Type your email and password and press *Login* if you have an account.

> **This step is necessary only if you want to upload your data to the internet for further analysis with the Web App. For details about setting up an account and using the Web App, please read Chapter 7 and Chapter 8 in this manual.*



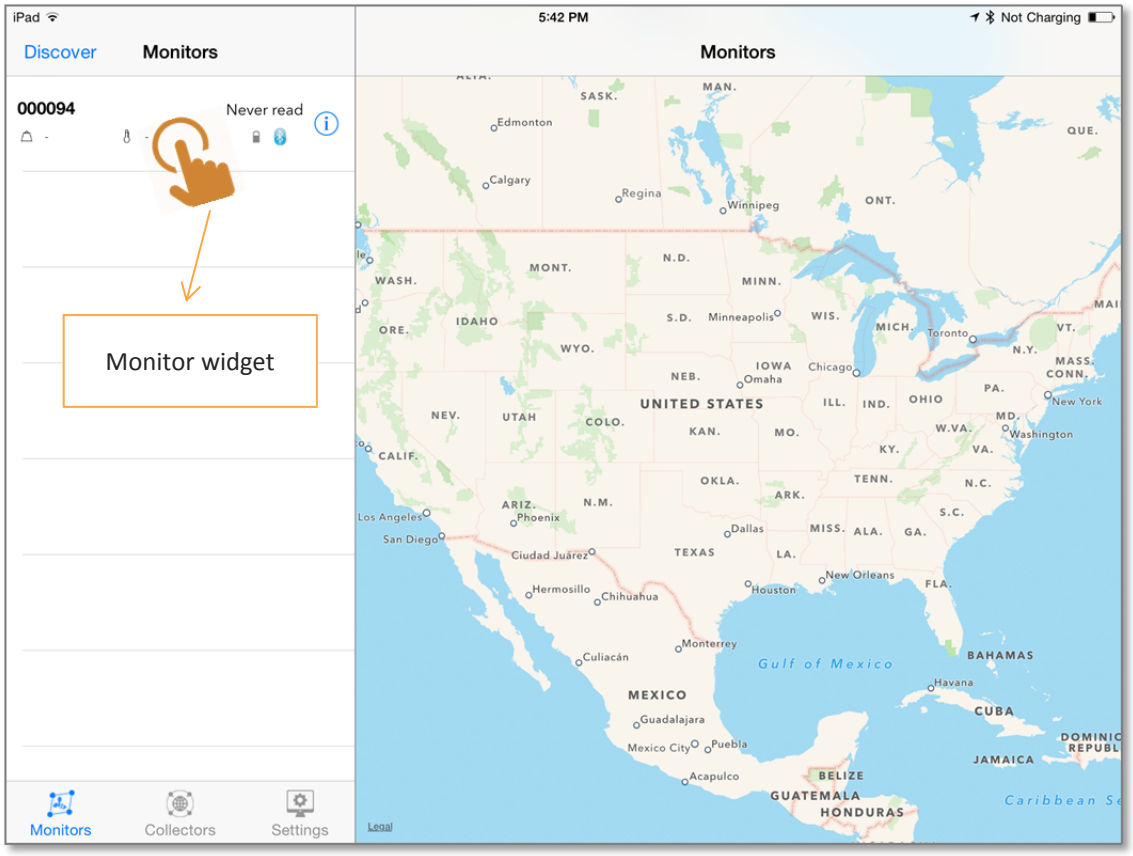
When the applications starts the Bluetooth on your iPad automatically turns on.

6.3 Discover Devices

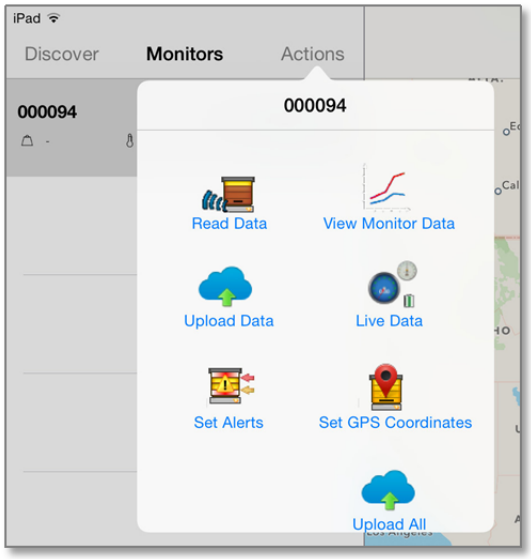
Important!

Press the SHM Button shortly (<5 seconds) <u>before</u> touching the Discover button. The SHM's Bluetooth module is turned on (the blue LED will begin to blink).

After the first start of the application no devices are displayed under the *Monitors* menu. Touch *Discover* button in order to discover and automatically add your SHM to the list.



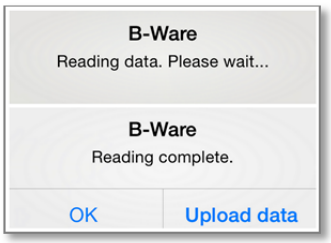
Your monitor is added under *Monitors* list.
You will see your monitor added to the list after the process of discovering and pairing devices is over. By touching the monitor widget the menu associated with your device will appear and the following options will be displayed:



- Read Data
- View Monitor Data
- Upload Data/Upload All
- Live Data
- Set Alerts
- Set GPS Coordinates

6.4 READ DATA

For the first reading choose *Read Data* menu option.

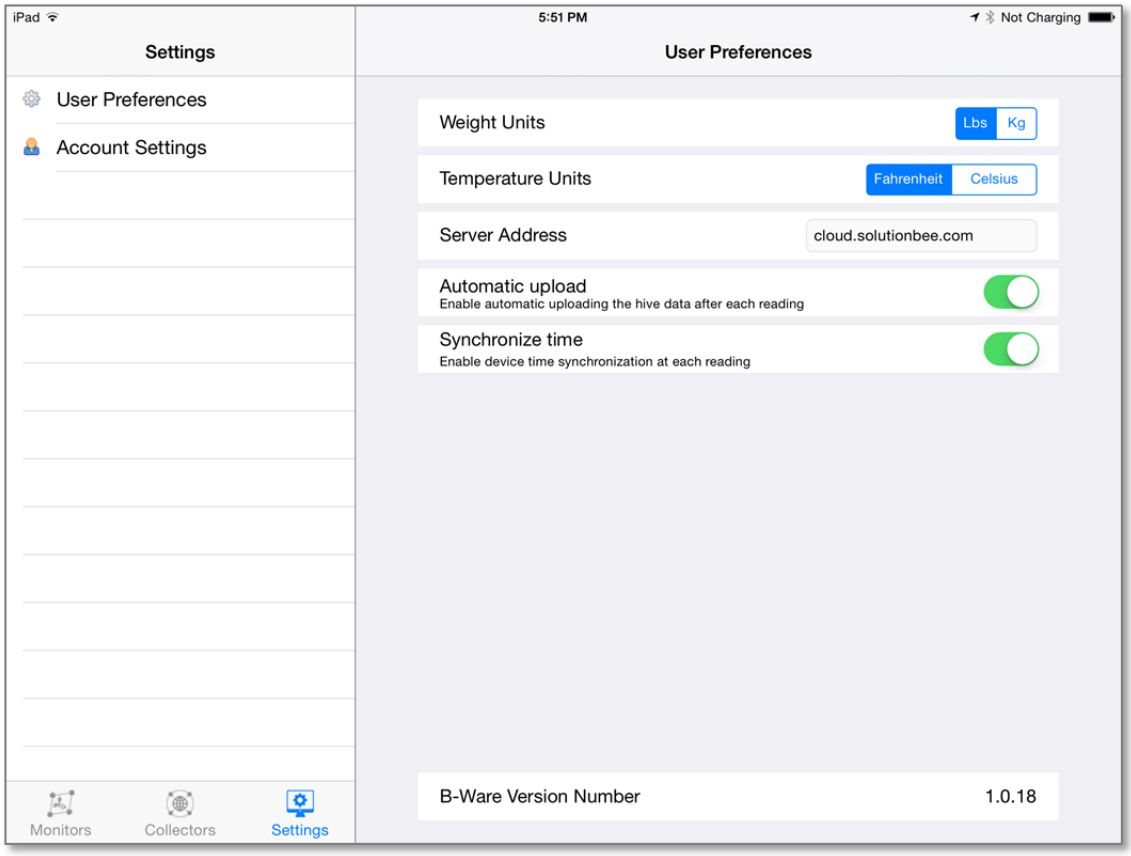


After the reading is over you can choose to:

- Press OK and View Monitor Data: display readings
- Upload Data: to the Internet

  In order to upload data you have to be logged in.

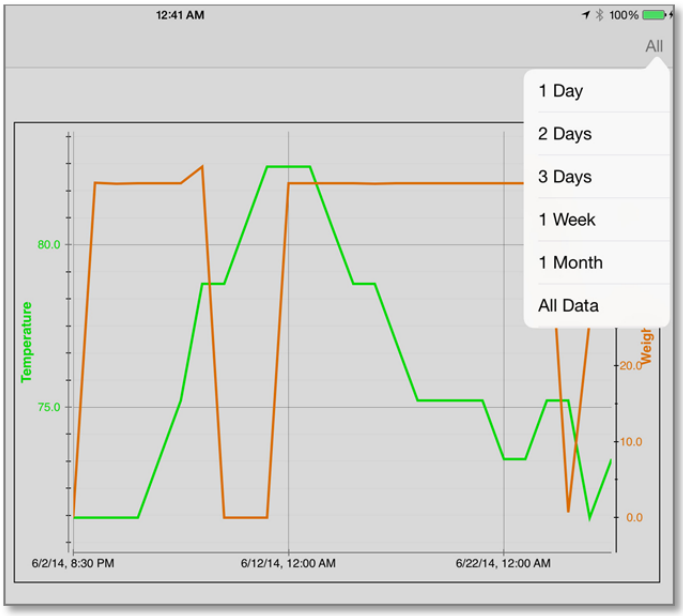
  By selecting the Automatic Upload *option in the* Settings*>User Preferences menu your data will be uploaded automatically after each reading performed.*



6.5 Application Features

After uploading the monitor data to your iPad, the app can upload the same data to the Internet, if it is within cell tower range or do so on a delayed basis once it enters cell tower range. This multifunctional app has the following features:

- **Live Data**: See the real-time weight of your hive and ambient temperature.
- **View Monitor Data**: View your weight and temperature data on interactive graphs after uploading your monitor data.
- **Read Data**: Read weight and temperature data.
- **Upload Data**: Upload your monitor data to the Internet so that it is viewable through your favorite browser.
- **Set GPS Location**: Set the GPS location of your monitored hives.
- **Set Alerts**: Set Alarm upper and lower weight and temperature limits.



6:31 PM

Date/Time	Weight	Temperature
2014-06-27 15:00	70.11	73
2014-06-27 15:15	70.11	73
2014-06-27 15:30	70.13	75
2014-06-27 15:45	70.13	75
2014-06-27 16:00	70.13	75
2014-06-27 16:15	70.13	75
2014-06-27 16:30	70.13	75
2014-06-27 16:45	70.13	75
2014-06-27 17:00	70.11	75
2014-06-27 17:15	70.11	75
2014-06-27 17:30	70.13	75
2014-06-27 17:45	70.11	77
2014-06-27 18:00	70.11	77
2014-06-27 18:15	70.11	75

Example of read data: as a short summary, in a graphical and a tabular format.

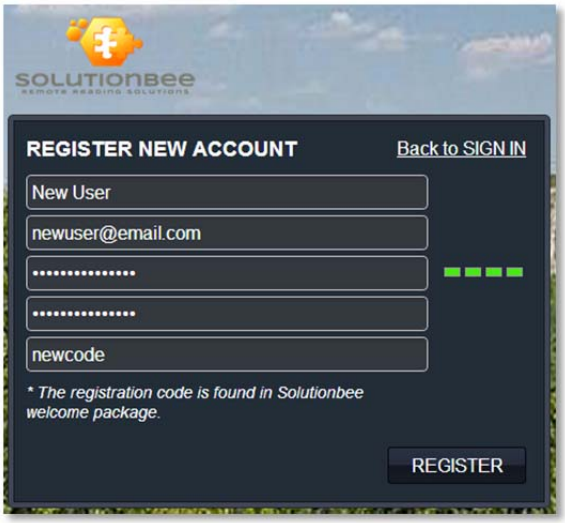
7 REGISTERING AS A B-WARE USER ON THE WEB APP

Learn how to get a new account by registering.

7.1 REGISTERING

7.1.1 Registration steps

To register, open your browser and go to the Solutionbee web page: www.solutionbee.com. Select *Customer Login* from the top menu bar.
The *Sign In* window will appear.



For a new account press *Need to Register?* link. The registration window will appear.

1. Enter your information.

You'll be asked to enter your name, email address, registration code and to choose a password.

User Full Name

A user name is the unique name you use to identify yourself on Solutionbee Web Application and is not seen by other Solutionbee users. Your user name is displayed on the top right corner when you open the web application. You can change this name or update your personal information anytime later.

Email Address

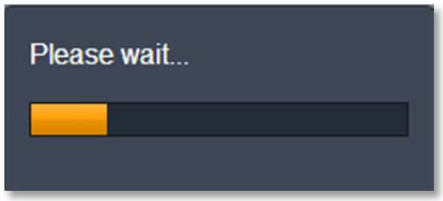
Type your email address and make sure it is a valid one. You will receive a confirmation email and a link at that address to complete the registration process.

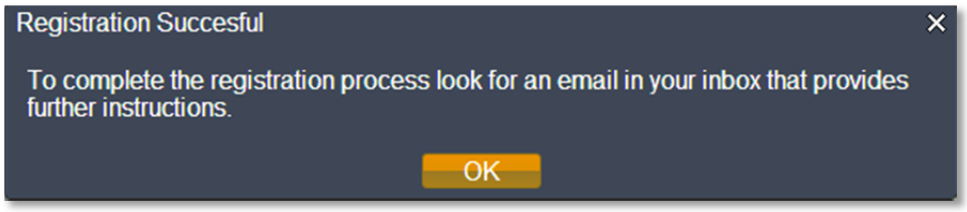
Password

Create a strong and secure password that's difficult for others to guess but still easy for you to remember. Your password must be at least 6 characters. If the password isn't valid or too weak the registration process cannot continue.

Registration Code

Type the registration code provided by Solutionbee. The registration code is found in Solutionbee welcome package.
After completing the required fields click *Register*.





Wait until the registration process is completed. An information window will be displayed.

2. Review your confirmation.

Open your email and you'll find a confirmation message. To complete the registration process click on the link provided.
You're registered! We may need to ask you for a few more pieces of information as you start to buy additional devices and accessories.

7.2 SIGNING IN

7.2.1 How to sign in

After you register with Solutionbee, you can sign in with the email address associated with your account, and your password.

To sign in:

Open www.solutionbee.com and go to *Customer Login*. This will lead you to the *Sign In* page.
Enter your email address, and password.
Check the *Remember me on this computer* option in order to stay signed in and avoid entering the email address and password every time you want to log in to your Solutionbee account.

> *If you're on a public or shared computer, we recommend you clear the* Remember me on this computer *check box.*

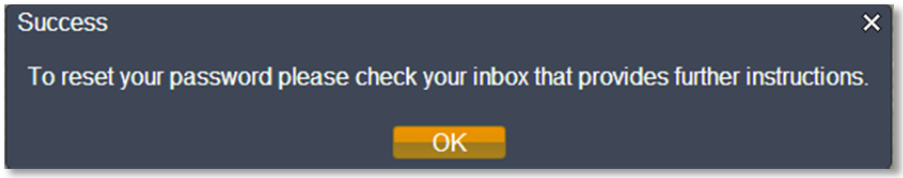
Click the *Login* in button.

7.2.2 Forgot your password?

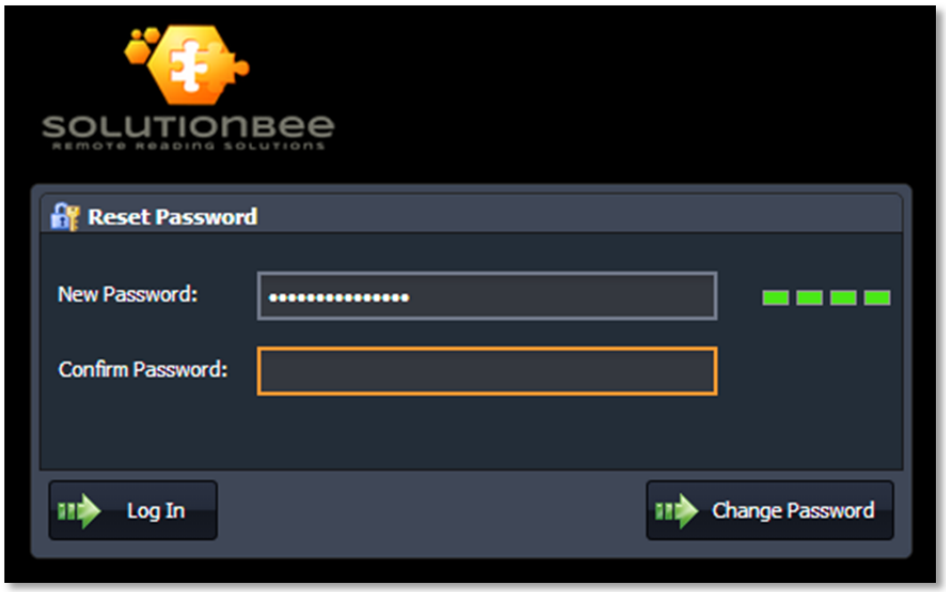
If you forgot your password, we can help you reset it quickly and easily.

Reset your password

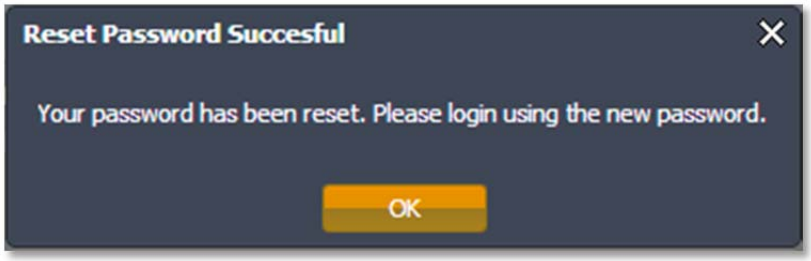
In the *Sign In* window go to the *Forgot your password?* page and enter your email address. Press *Request Password* button.



We'll send you an email (immediately in most cases) with a link you can click to reset your password. Follow the link and in the *Reset Password* window enter and confirm a new password.



Press the *Change Password* button.



The password was changed and now you can login with the new password in the *Sign In* window.

8 USING THE WEB APP WITH YOUR SMART HIVE MONITOR

8.1 ABOUT SOLUTIONBEE WEB APP

The analysis tools available from Solutionbee use a web based user interface to provide a user friendly environment for accessing your data and various system functions.

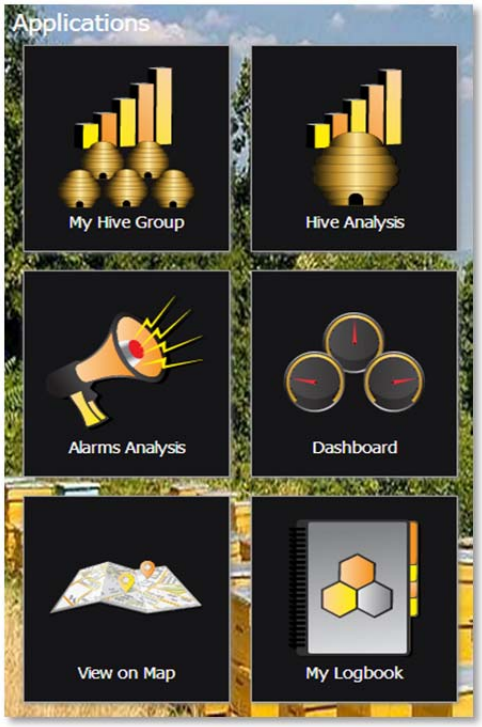
- Cloud-based Information Management - easy “in the cloud” access.
- Daily, monthly, yearly reports based on weight data available for a hive or groups of hives.
- Alarm and error reporting.
- Individual hive localization in Google Maps.
- Dashboard for quick view of hive status and alarms.

8.2 FEATURES

8.2.1 Applications

GPS positioning, weight readings of individual monitors and all the hive data gathered using the **B-Ware™ iPad App** can be uploaded to a web server on the Internet. The **Web App** uses a web based user interface to provide a user friendly environment for accessing your data and various system functions.

Solutionbee web applications are design to ensure the best apiary and hives management.



My Hive Group: provides tabular and graphical reports displaying the weigh variation in your apiary during a selected period of time. You can determine which hives are accumulating high levels of nectar and where the nectar flows are strongest.

Hive Analysis: using this application you can monitor and view data of a particular selected hive in apiary.
Alarms Analysis: indicates the weigh variation and reports errors.
Dashboard: provides a quick view of hive status and alarms.
View on map: displays individual hive localization in Google Maps.
My Logbook: using this feature you can keep track of your beehives by generating a convenient logbook of all your beekeeping activity.

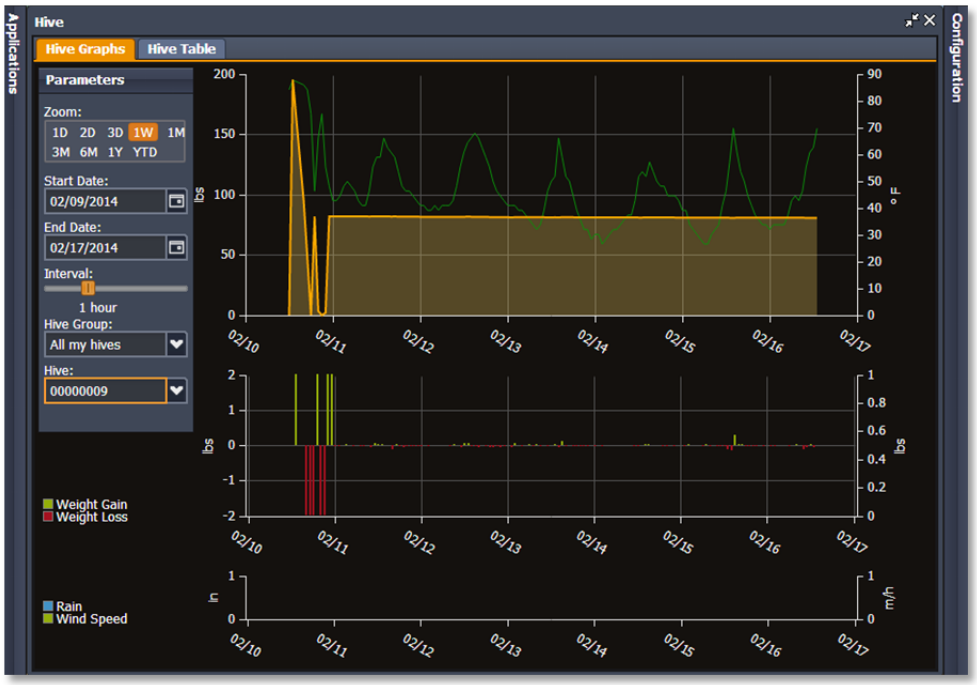
8.2.2 Using the Web App to generate detailed graphs and reports

After uploading the data from your iPad to the internet you can log in to the Web App and use the features as well as generate reports.
For example to generate reports for one hive from your group, follow the steps below:

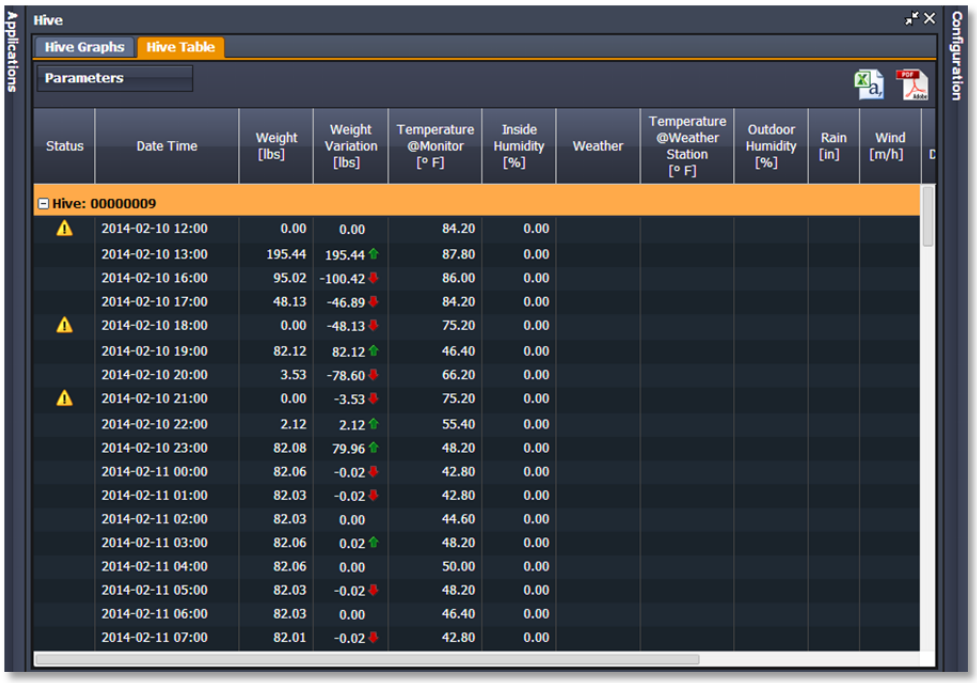
1. Upload the data to the internet (explained in *Chapter 6 - Using the iPad App with your Smart Hive Monitor*)
2. Log In to the Web App
3. Select Hive Analysis
4. In the left upper corner select the parameters:
    a. Zoom level of the graph
    b. The start and the end date for the analysis
    c. Interval: data resolution
    d. Select the hive group
    e. Select the hive from the drop down list
5. The report will be automatically generated
6. Select the format you want: graphical or tabular by switching the tabs *Hive Graphs* or *Hive Table*
7. Export your analysis results information in a *csv, *xlsx or *pdf file for further process of the information, by pressing the icons from the top right corner of the *Hive Analysis* – tabular format.

Examples:

Hive Analysis – graphical format:



Hive Analysis – tabular format:



Status	Date Time	Weight [lbs]	Weight Variation [lbs]	Temperature @Monitor [° F]	Inside Humidity [%]	Weather	Temperature @Weather Station [° F]	Outdoor Humidity [%]	Rain [in]	Wind [m/h]
Hive: 00000009										
⚠	2014-02-10 12:00	0.00	0.00	84.20	0.00					
	2014-02-10 13:00	195.44	195.44 ↑	87.80	0.00					
	2014-02-10 16:00	95.02	-100.42 ↓	86.00	0.00					
	2014-02-10 17:00	48.13	-46.89 ↓	84.20	0.00					
⚠	2014-02-10 18:00	0.00	-48.13 ↓	75.20	0.00					
	2014-02-10 19:00	82.12	82.12 ↑	46.40	0.00					
	2014-02-10 20:00	3.53	-78.60 ↓	66.20	0.00					
⚠	2014-02-10 21:00	0.00	-3.53 ↓	75.20	0.00					
	2014-02-10 22:00	2.12	2.12 ↑	55.40	0.00					
	2014-02-10 23:00	82.08	79.96 ↑	48.20	0.00					
	2014-02-11 00:00	82.06	-0.02 ↓	42.80	0.00					
	2014-02-11 01:00	82.03	-0.02 ↓	42.80	0.00					
	2014-02-11 02:00	82.03	0.00	44.60	0.00					
	2014-02-11 03:00	82.06	0.02 ↑	48.20	0.00					
	2014-02-11 04:00	82.06	0.00	50.00	0.00					
	2014-02-11 05:00	82.03	-0.02 ↓	48.20	0.00					
	2014-02-11 06:00	82.03	0.00	46.40	0.00					
	2014-02-11 07:00	82.01	-0.02 ↓	42.80	0.00					

9 TROUBLESHOOTING AND MAINTENANCE

1. The monitor is not recording.

If the operating conditions (battery, temperature) are NOT met, the orange LED will blink once every 10 seconds. The device is not recording data in this condition.

2. The communication is not working.

Your iPad Bluetooth may not be turned ON. Please verify that Bluetooth is turned on in your iPad's setup option.

3. The data is not uploaded.

Your Wi-Fi or data connection may not be turned ON. Please make sure your iPad is connected to your Wi-Fi or cellular service provider.

4. Low battery alarm.

Change the battery.

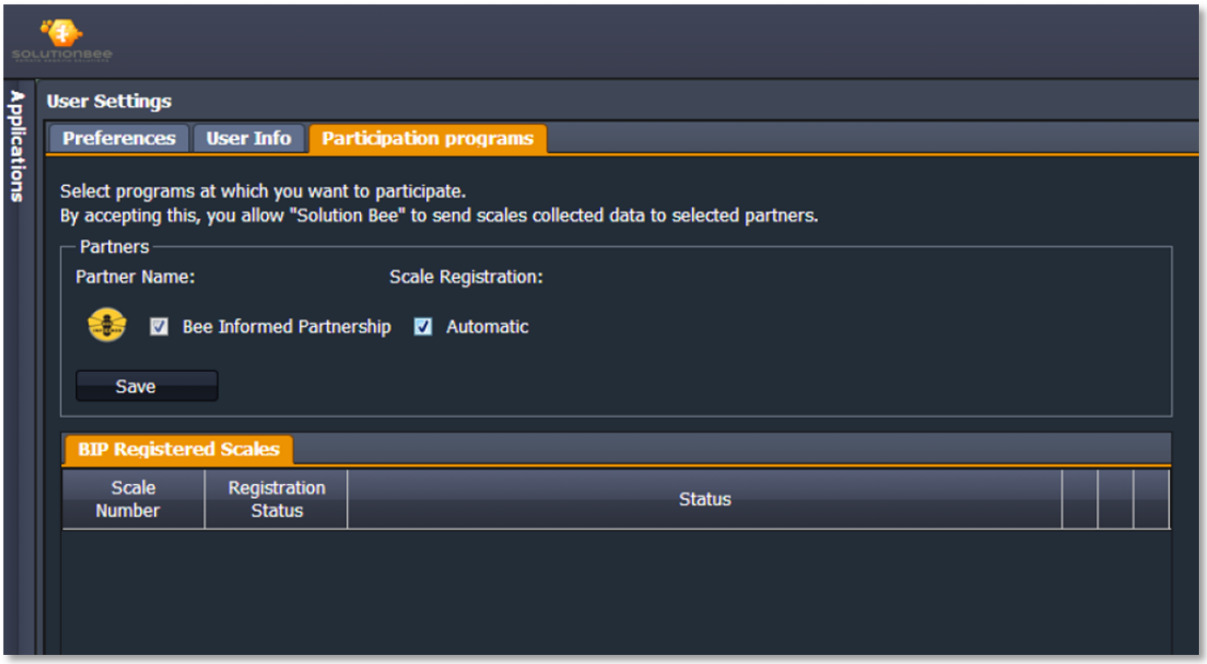
10 APPENDIX A - REGISTER TO BEE INFORMED PARTNERSHIP PROGRAM

Solutionbee strongly supports the efforts and goals of the Bee Informed Partnership.

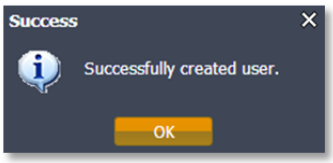
> *"The Bee Informed Partnership is an extension project that endeavors to decrease the number of honey bee colonies that die over the winter. Managed honey bees are important to our agricultural security because many fruits, nuts, vegetables, and other crops require bees to pollinate them to ensure production of quality produce. Unfortunately, the rate of mortality suffered by overwintering colonies over the last 4 years has been unsustainably high, threatening the livelihoods of not only the beekeepers who manage bees, but those who rely on bees for pollination.*
>
> *The project proposes to help beekeepers keep colonies alive by initiating several levels of surveys. These surveys will document which management practices beekeepers use and the degree of loss suffered by those beekeepers. Using methods developed by human epidemiologists, we will compare the effectiveness of different management practices by calculating and comparing the losses suffered by those that did or did not use a particular management practice. In recognition of the fact that the most appropriate management practices for a beekeeper in one region are not necessarily the same for beekeepers in other regions, we will develop web- and app-based tools that will enable beekeepers to interact with the survey data to permit them to compare management practices among groups of beekeepers that share their geography, purpose (e.g., honey production, pollination), and/or management philosophy (e.g., minimal pesticide use). To facilitate this level of engagement, we will develop a honey bee health database that will act as a repository for all honey bee health data collected from this and other bee health surveillance projects.*
>
> *This project is motivated by the conviction that beekeepers, when presented with beekeeper-derived data that objectively show which management practices worked and which did not, will adopt the more successful practices. This, in turn, will reduce colony losses and increase the availability of pollinating units overall."*

Solutionbee supports the affiliation to this program and allows you to transmit your own recorded hives data.
Follow step by step the instructions described below if you allow **Solutionbee** to send hive data to **Bee Informed Partnership Program**:

1. Open Solutionbee Web App and log in.
   Go to *Configuration>User Settings>Participation Programs.*

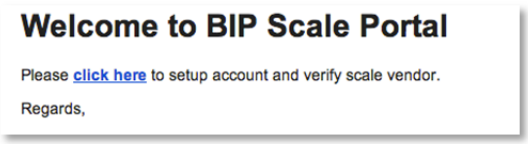


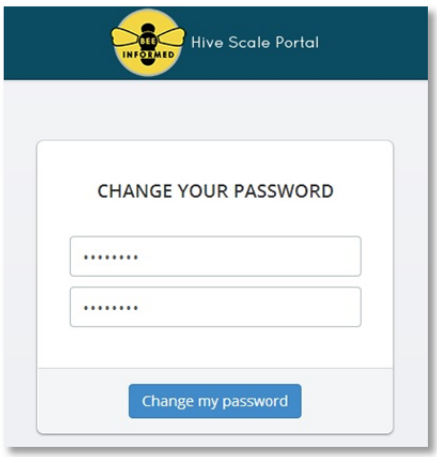
2. Check Bee Informed Partnership and Automatic checkbox and press Save button. A user with your Solutionbee Web App login email will be created automatically on BIP Scale Portal.



In a few minutes you will receive an information email from **BIP Scale Portal** with further instructions.

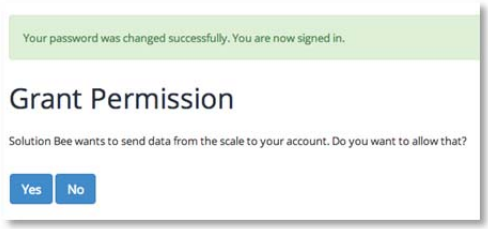
3. Follow the “click here” link.





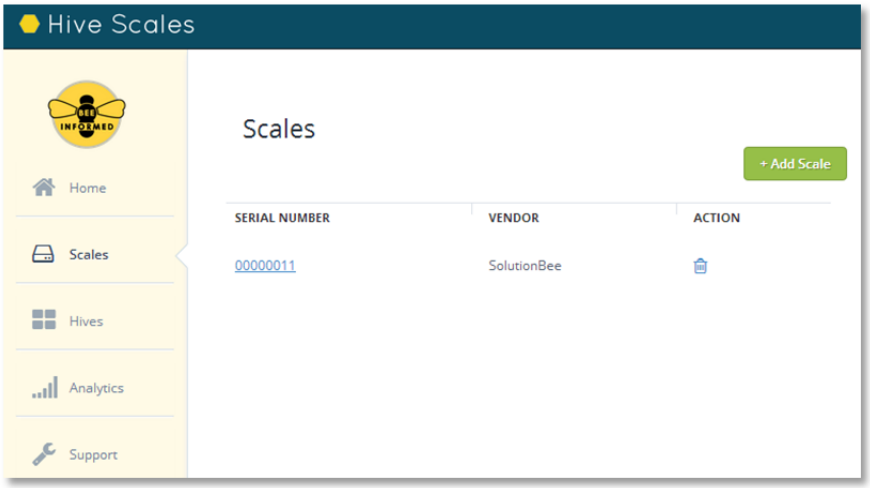
Provide and confirm a new password.
Press the *Change my password* button.
You will be logged in and automatically redirected to the *Grant permission page*.

4. Grant permission.



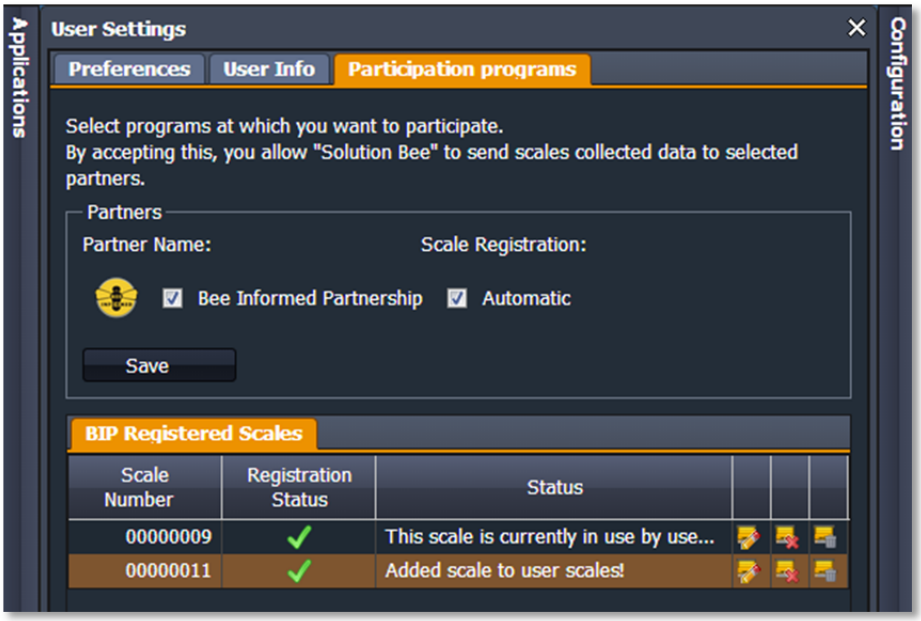
Clicks *Yes* and you will be redirected to the main page with a successfully verified message.

5. Go to the scales menu.
   You will see your scale listed under the *Scales* menu.



A new hive is automatically created and associated with the newly registered scale.

6. Return to Solutionbee Web App and open *Configuration>User Settings>Participation Programs.*



Registration Status will be marked with the green check icon.

11 APPENDIX B - BATTERY REMOVAL/INSERTION PROCEDURE

Follow the step by step instructions described below to insert or remove batteries in/from your Smart Hive Monitor device.

1. Prepare the Smart Hive Monitor for battery removal/insertion. Make sure the power switch is in the OFF – “0” position.

2. Remove the top plate. Identify the two screws (and washers and nuts) that attach the electronic module to the frame bracket.

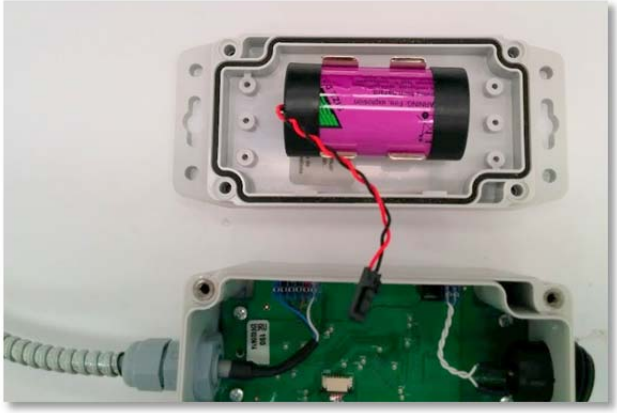
3. Remove the two bracket screws. The electronic module will now be free from the scale frame. Identify the four screws that hold the module together.

4. Remove the four module screws. Carefully open the module.

5. If you are **replacing** a battery, there will already be a battery in the module. In this case, the battery is connected to the printed circuit board with a lock connector. Pinch/press the connector to pull the male connector loose from the female connector on the printed circuit board. This operation may take some wiggling of the connector to remove it.

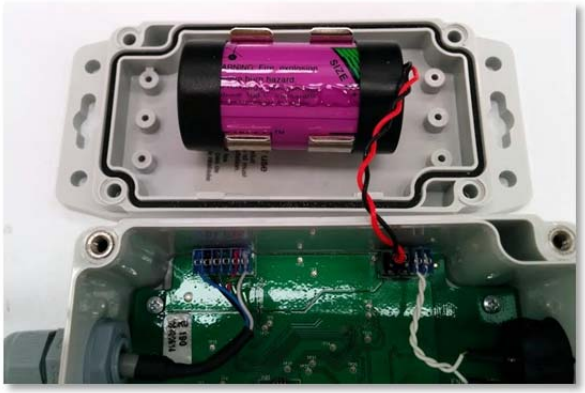
6. If you are simply **inserting** a battery, there won't be a battery in the module.

7. Place a battery between the two clips on the bottom portion. Make sure that the leads exiting the battery are in the 12 o'clock position.



8. Insert the battery lead male connector into to mating female connector on the printed circuit board.

9. Review your work. The assembly should look like in the following picture:



10. Close the module by lifting and then turning the printed circuit board portion of the module on top of the battery portion of the module. This will avoid the insulation O-ring from falling out of its groove.

11. Reinsert the four electronic module screws.

12. Reattach the electronic module to the scale frame bracket.

13. Reattach the top cover. You are done. Turn the power switch to the on – “I” position. Try to communicate with the module with an iPad as per the Installation Guide.

12 APPENDIX C - FCC AND INDUSTRY CANADA COMPLIANCE

12.1 USER INFORMATION (PART 15.105)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- reorient or relocate the receiving antenna
- increase the separation between the equipment and the receiver
- connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- consult the dealer or an experienced radio/TV technician for help

12.2 COMPLIANCE STATEMENT (PART 15.19)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

12.3 COMPLIANCE STATEMENTS (INDUSTRY CANADA)

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada.

Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

12.4 WARNING (PART 15.21)

Changes or modifications not expressly approved by Solutionbee could void the user’s authority to operate the equipment.