

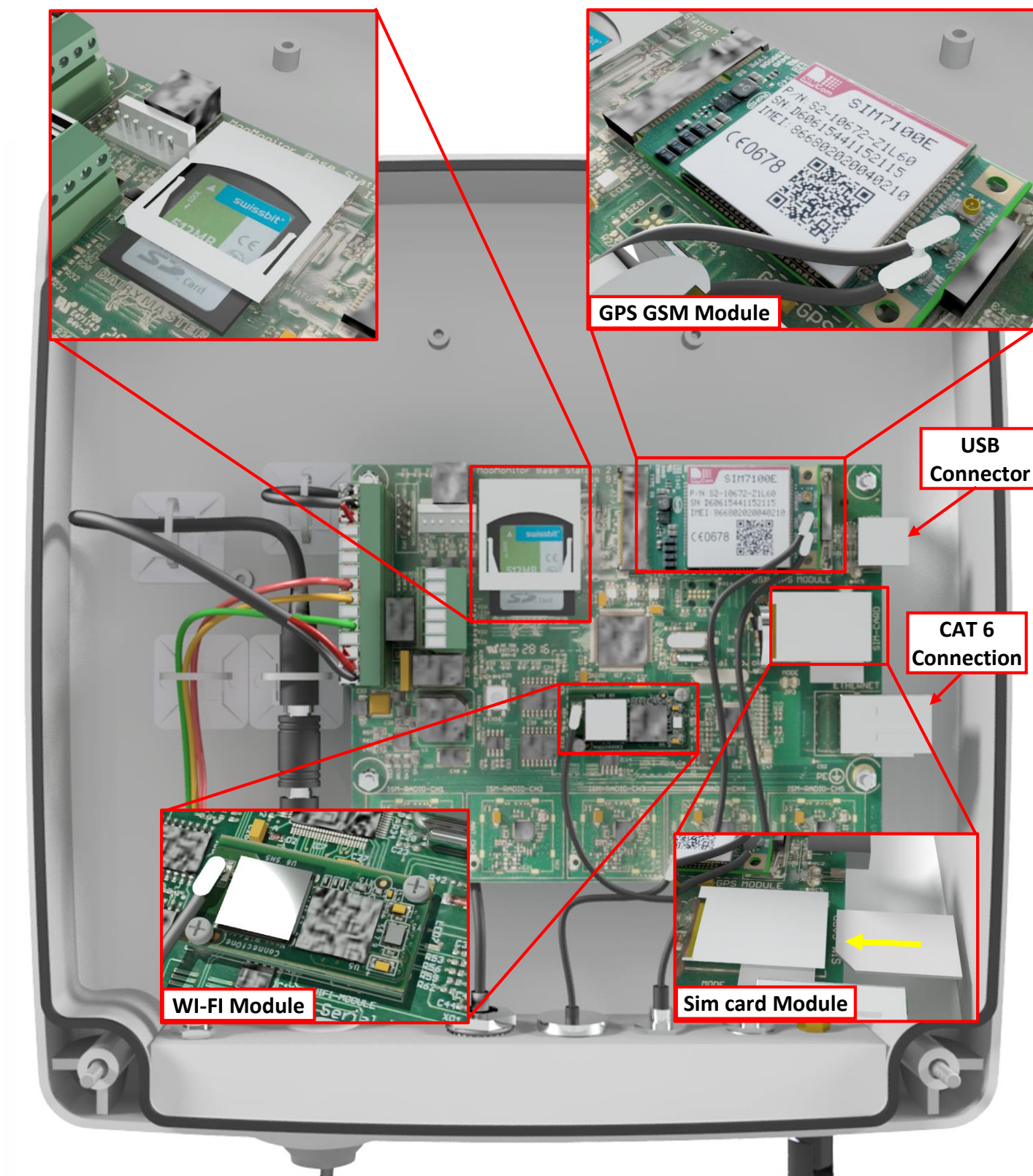


Figure 36 – Base Station PCB Components

5.2.2 CAT 6 Connection to Basestation

Each Basestation is also fitted with a CAT 6 connection. In areas where WI-FI is subject to disruption due to signal interference or other contributing factor the installer may wish to install a CAT 6 cable connection onto the PCB board of the base station.

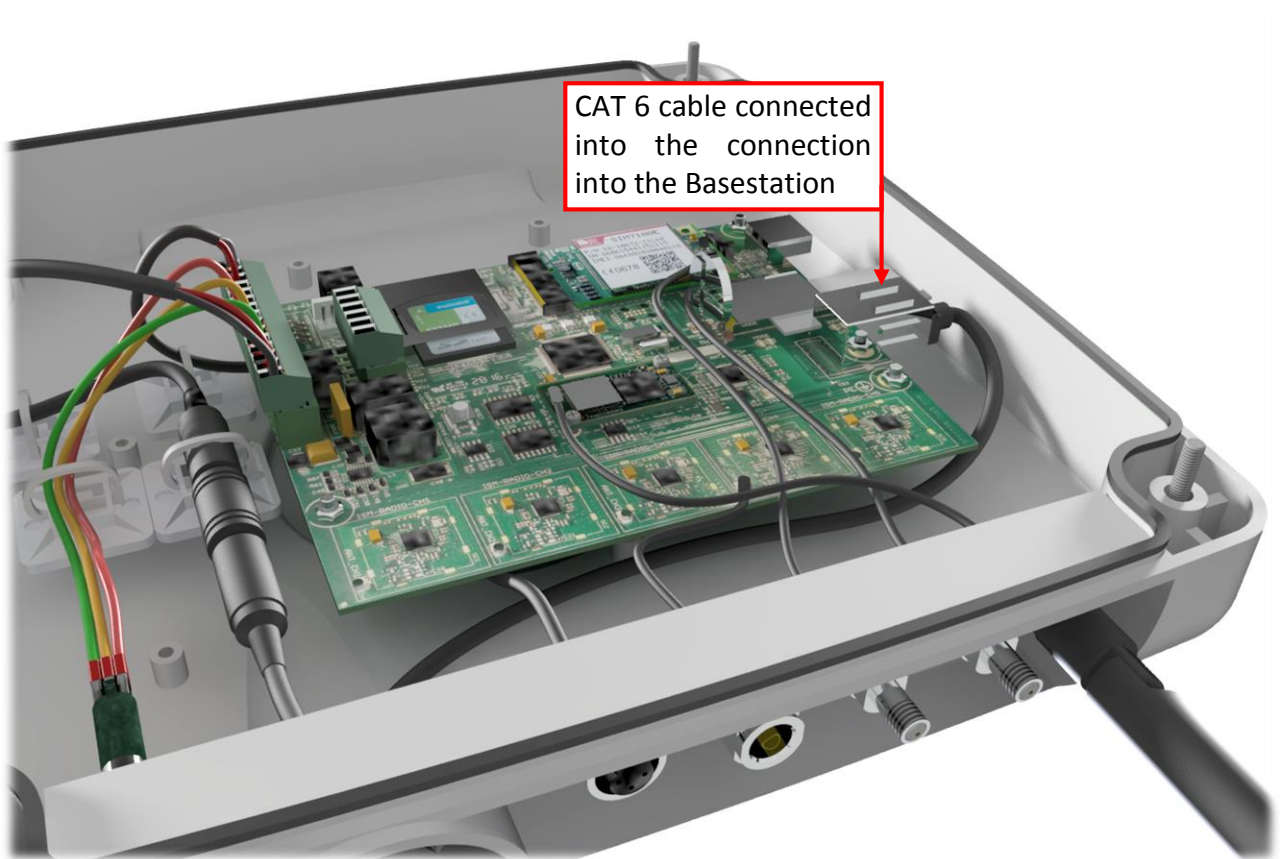


Figure 37 - CAT 6 cable connected into the Basestation

Notes:

Dairymaster can provide a CAT 6 cable if require. This will need to be ordered separately through the following part codes:

Description	Part Code
CAT6 LEAD (5M)	10401735
CAT6 LEAD (20M)	10401743
CAT6 LEAD (40M)	10401750

5.2.3 Basestation ISM Antenna Radio Frequencies

Each Base Station has a 5-way radio by default to allow for a wider spectrum to be accommodated on site in the event of interference from an outside radio source and selection of each of the radio channels is region dependant.

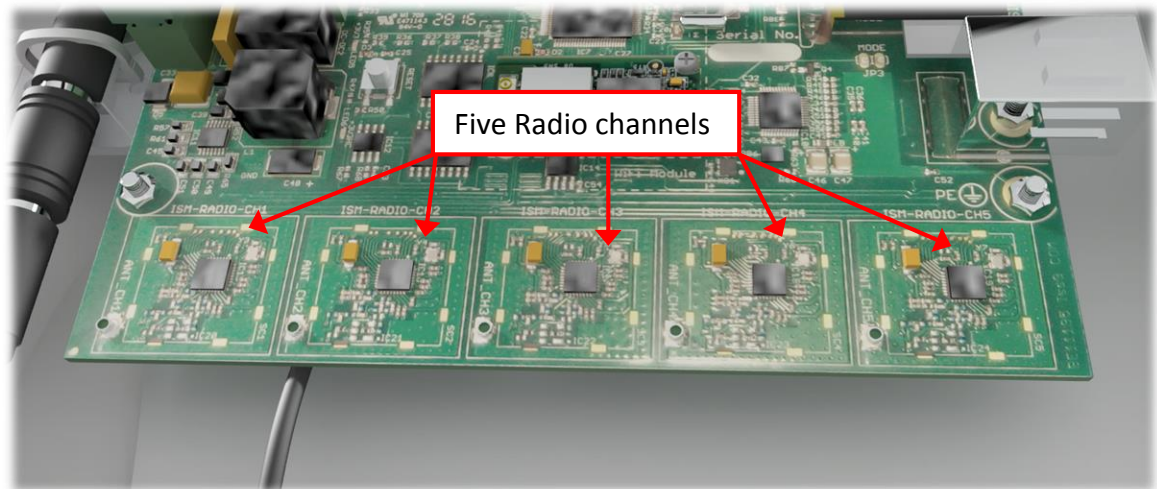


Figure 38 - Five Channel Radio is located on the Base Station PCB

Important Notes

There are five radio channels on the MooMonitor + PCB. These channels are specific to the region of installation and are currently as follows:

ISM Radio Channel 3 = European Installation (countries within the EU & UK).

ISM Radio Channel 4 = American Installation (Installations within the USA).

ISM Radio Channel 5 = Australia & New Zealand.

Currently Radio channels 1 & 2 are currently not in use and should not be connected to the ISM antenna unless specifically instructed to do so by Dairymaster.

5.2.4 Connecting the 12V DC Power Supply

The Base Station is provided with a 12V DC adapter which serves as the power supply to the unit. This makes the unit exceptionally easy for the installer to fit.

The client's electrical contractor must provide an electrical connection as discussed in section 5.1

Route the electrical cable from the 12v DC adapter into the base station using the large electrical gland at the base of the unit.

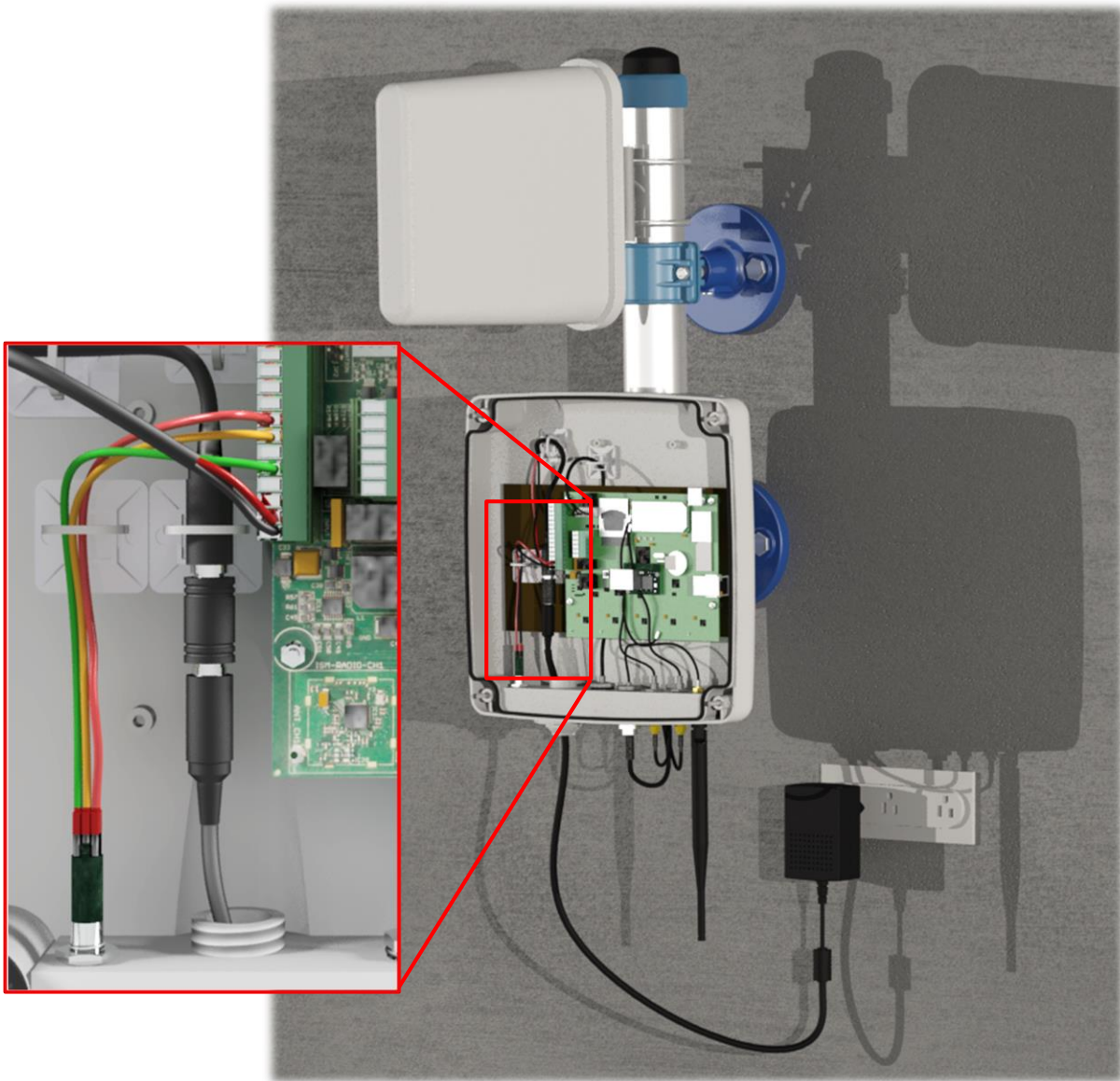


Figure 39 - View of the Electrical connection to the Base Station using the 12V DC Adapter

5.2.5 Installing a Voltage Regulator to the Base Station (USA installations only)

In situations where an unstable power supply is present to the basestation a voltage regulator may be required.

The client's electrical contractor must provide an electrical connection as discussed in section 5.1

The voltage regulator is provided with a standard electrical socket and a 12V DC adapter to connect the voltage regulator to the base station.

The installer would connect the basestation to the mains supply and plug the base station directly into the voltage regulator. See Figure 40 &

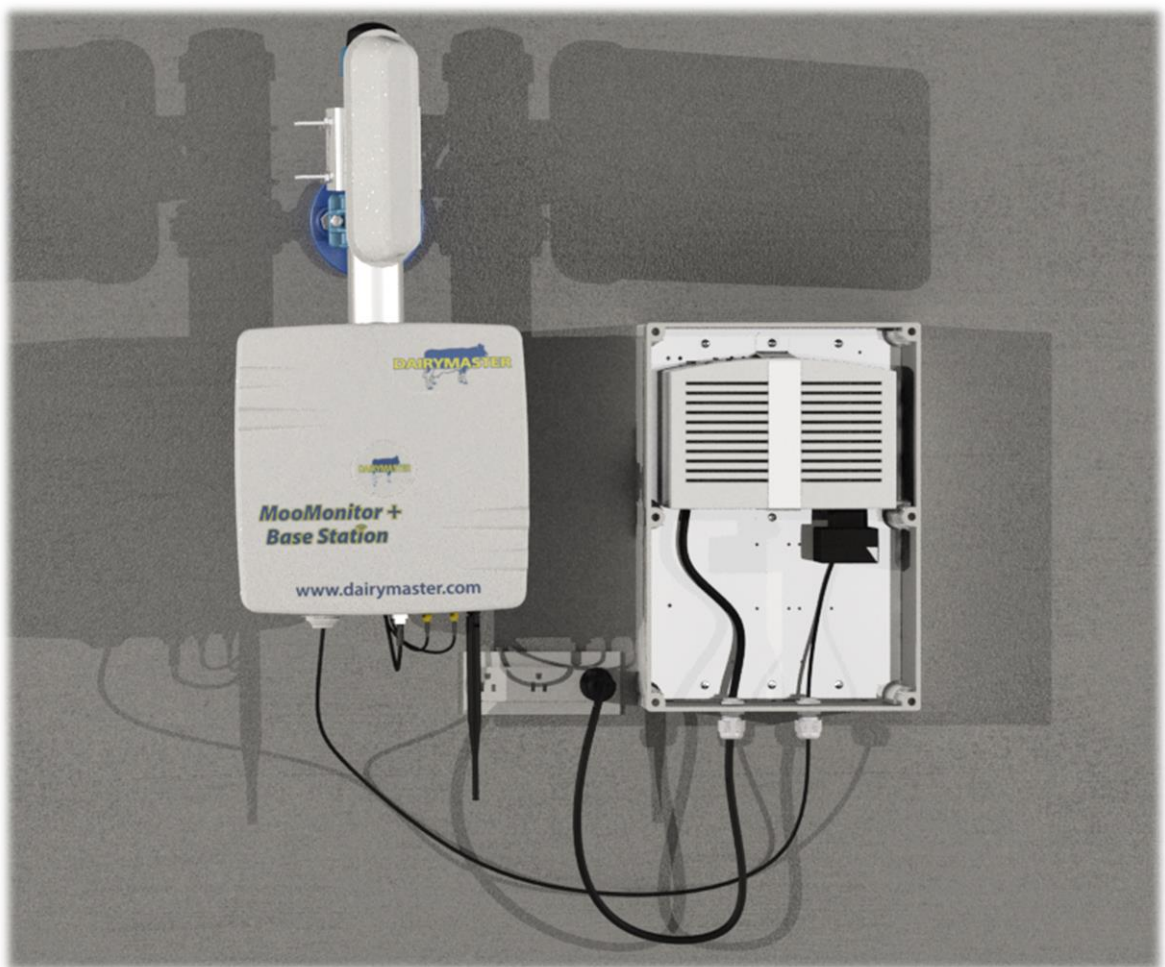


Figure 40 – Typical view of Voltage Regulator installed with the Base Station

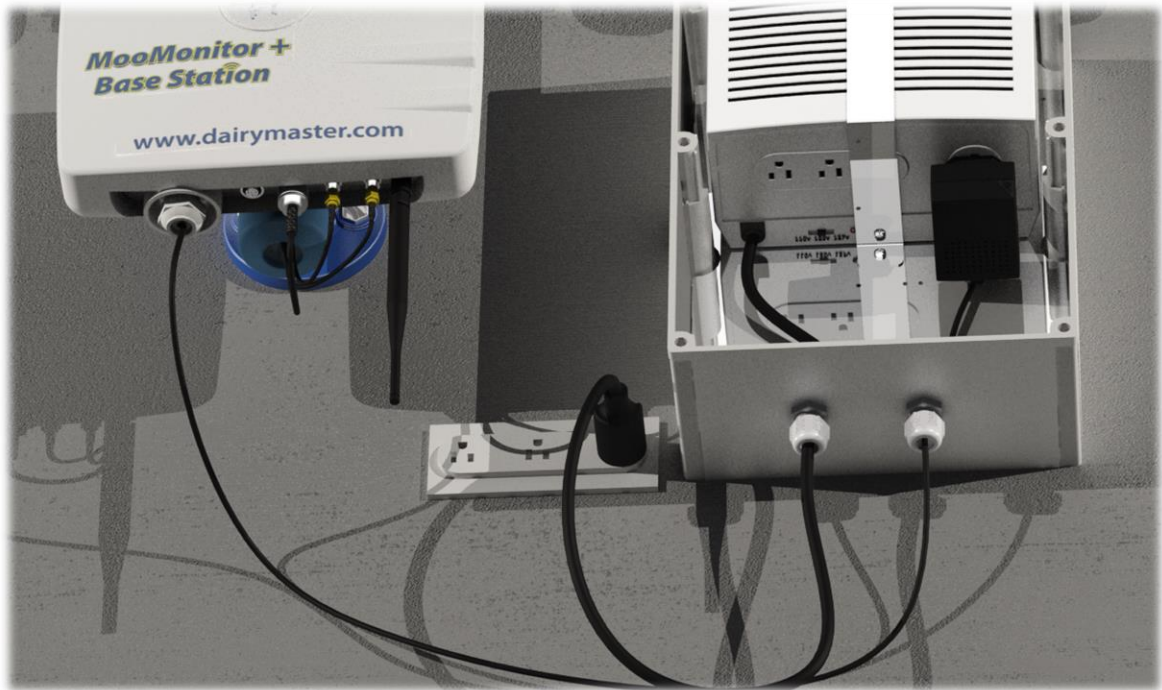


Figure 41 – Typical view of Voltage Regulator installed with the Base Station

5.2.6 Basestation LED Power up

When the base station is powered up the LED located next to the base station connections will light up. Depending on the connection type (Wifi, GSM or Ethernet), the LED will have a different light sequence.

Connection Type	LED Sequence
Ethernet (LAN cable)	Stays on constant
Wifi	Flashes every 1 second
GSM (Mobile)	Flashes every 5 seconds



Figure 42 - LED located next to the connections on the base station

6 Controls

The MooMonitor+ can be controlled and interfaced with in five ways.

1. Wi-Fi connection.
2. SMS commands
3. Dairymasters cloud based services.
4. MooMonitor+ Smartphone App
5. Through a USB to UART connection directly onto the base station PCB.

6.1 Installation Procedure

6.1.1 Configuring the base station using a USB to UART connection

Each base station can be configured using a physical connection onto the Base Station PCB using the UART connection through USB. The installer will need a UART to USB connection which will be provided by Dairymaster on request.

The UART cable is connected to the PCB as shown below.



Figure 43 – UART connection on the BaseStation

Important Notes

For the moment configuration of the MooMonitor+ Basestation will be carried out by the Dairymaster Global support team, and will be done remotely.

Installers should ensure that team viewer is installed on the local machine to facilitate this.

Installers should contact Dairymaster at software@dairymaster.ie to arrange this.

6.1.2 Configuring the base station using a UART connection

Once the connection to the board has been made the user will need to adjust the com port settings on the pc to ensure that the PC and the MooMonitor base station will communicate.

The com port settings can be accessed through My Computer\Control Panel\Device Manager. Choose the appropriate USB comport and enter the following settings.

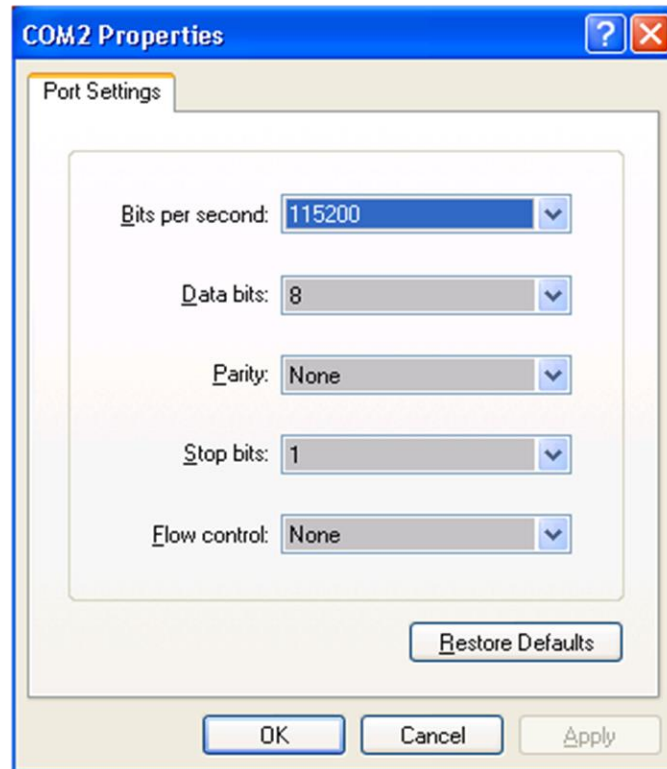


Figure 44 – Com Port settings

Once a connection has been established the user must use **Hyper Terminal** to communicate with the base station. **Hyper terminal** is available online from a number of sources.

6.1.2.1 Step 1: Accessing the base station using UART

When accessing the base station, it will display information about the base stations current configuration and software version.



Figure 45 – Step 1 UART Configuration

As per the Wi-Fi configuration options a value of 1 turns a feature on and a value of 0 turns a feature off.

As can be seen above the base station states the following information on boot up.

1. The Software version running on the device.
2. The device Address.
3. The Device ID
4. The Time
5. The number of records stored on the device.
6. Cloud connectivity active via mobile
7. Logging levels: The device is default is 1. The higher the level of logging the more information that is logged.
8. Logging General: this logs general information about the device and is used by Dairymaster for debugging or troubleshooting any issues a base station may be having.
9. Log Wi-Fi: Device Logs are sent over the Wi-Fi
10. Log Mobile: Device Logs are sent over the GSM.
11. Radio Transmitters which are Active:

6.1.2.2 Step 2. Configuring the Farm ID and the base station ID

Once the base station has gone through its initial start-up process the device will be ready for configuration. The installer will need to type in the installation password into the install wizard and press enter to proceed.

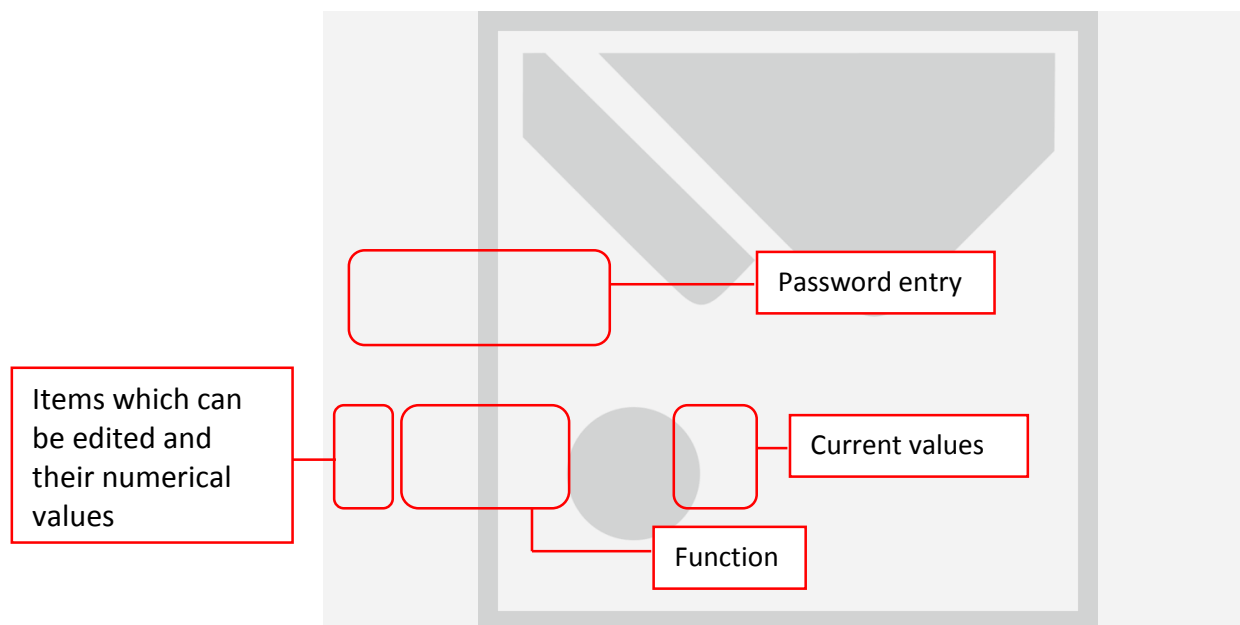
The password allows access to configure the device. The password is 1968.

To begin configuration, the installer will need to type 'Install' and hit Enter on the keyboard.



**Figure 46 – Password entry screen on using hyper terminal
The password is 1968.**

For the installer to edit any given command, they will need to use the edit function. This is done simply by pressing the numerical value on the key board as displayed in window under the edit line.



**Figure 47 – Configuring the base station identification using the
UART connection**

The installer will be prompted to enter a new value at this point. Press Enter on the keyboard after a number is entered and check the new value has populated into the FarmID or BasestationID value fields.

This procedure should be followed when entering any value to the system.

Notes:

1. The Farm ID is provided by Dairymaster. It is essential that the correct farm ID is inputted.
2. Each MooMonitor is programmed to communicate with a specific farm ID only.
3. A MooMonitor with a different farm ID will not communicate with a base station that does not have a corresponding farm ID.
4. The base station ID is used when multiple base stations exist on the one farm. All base stations will have matching farm IDs but will need to have different Base ID (Base station IDs)
Each MooMonitor will have a preferred base station to communicate with, however if it cannot connect with its preferred base station, say station 1. The monitor will connect to the next available station, say station 2 for example if 2 stations exist on a farm or station 3, or 4 and so on.

To proceed with the next step press the greater-than (>) symbol on the keyboard to move back a step press the less-than (<) symbol.

6.1.2.3 Step 3: Configuring the Wi-Fi using UART

This is the same procedure is as before: Pressing the numerical value on the key board corresponding to the numbers displayed in window under the edit line.

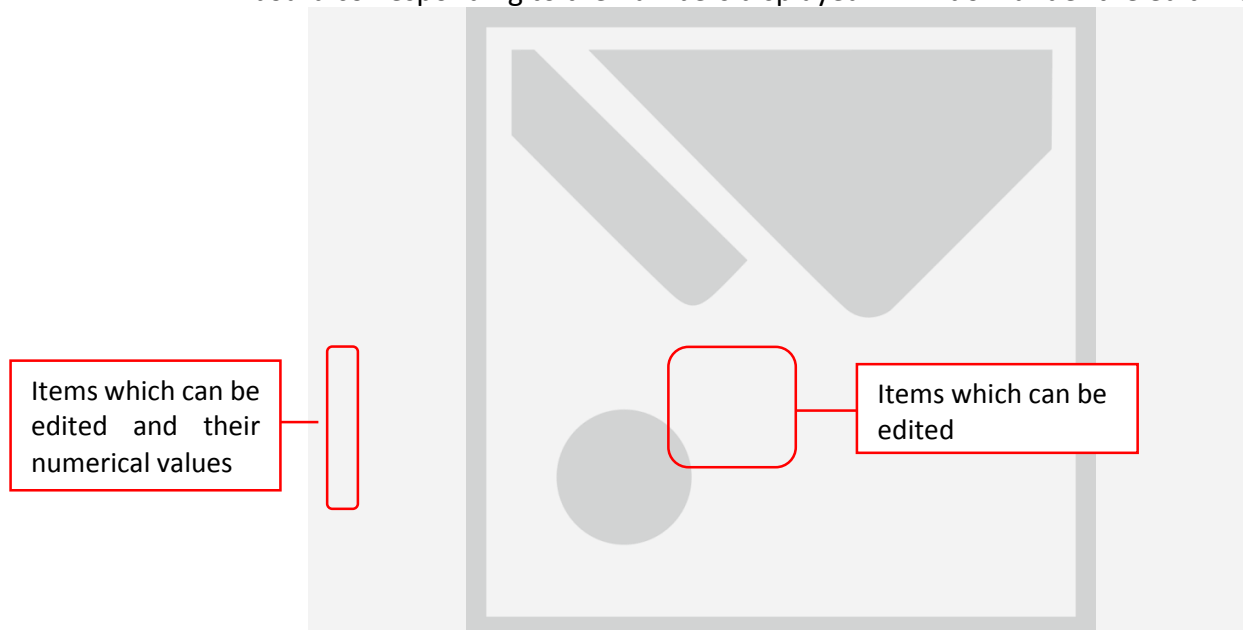


Figure 48 - Configuring the Wi-Fi settings using UART

Table 1 - Configurable Wi-Fi settings via UART

Edit option	Description	Range
1	Wi-Fi enabled	0 = OFF, to 1 = ON
2	SSID	Sample SSID (Site dependant)
3	SSID password	Sample password (Site dependant)
4	Security type	0 = No Security 1 = WEP 64 2 = WEP 128 3 = WPA – PSK with TKIP encryption 4= WPA2 – PSK with TKIP or AES encryption 5= WPA - TKIP or AES encryption Enterprise with EAP – TLS or PEAP-MSCHAPv2 (If CA parameter is empty returns ERROR 222) 6 = WPA2 – AES Enterprise with EAP – TLS or PEAP-MSCHAPv2 (If CA parameter is empty returns ERROR 222) 7 = EAP-MD5 and static WEP 64 8 = EAP-MD5 and static WEP 128 105 = WPA-TKIP Enterprise with EAP-TLS or PEAP- MSCHAPv2. RADIUS Certification Verification will be skipped. 106 = WPA2-AES Enterprise with EAP-TLS or PEAP-MSCHAPv2. RADIUS Certification Verification will be skipped.
5	Active FTP	0 = Active FTP Disabled 1 = Active FTP Enabled
6	Time Server Trys	Number of attempts to connect to Time server before a reset is performed

7	Scan Access Point	This will scan and return any available Wifi Network Access points within range
8	Test connection (Shows the connection status)	Not Connected, or Connected

Once a successful connection has been made the interface will display the strength of the wireless connection and the ping test results for the connection.

It is advisable to ensure the strongest possible Wi-Fi signal and the lowest possible ping time. A slow ping or poor signal can lead to loss of data.

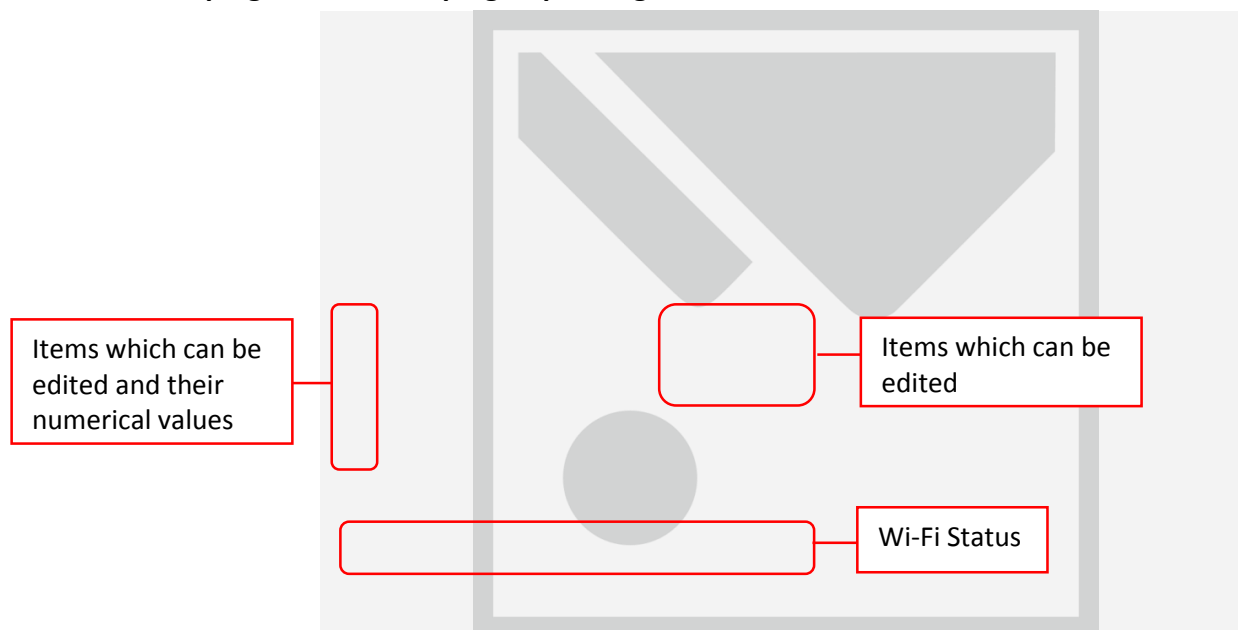


Figure 49 – Wi-Fi connection established signal strength and ping available for review via UART

To proceed with the next step, press the greater-than (>) symbol on the keyboard to move back a step press the less-than (<) symbol.

6.1.2.4 Step4: Configuring the GSM connection using UART

The base station can communicate to the cloud using a GSM connection.

Important Note

1. The installer must ensure that an adequate 3G or 4G connection is available on the farm and that the base station antenna is connected with a strong mobile connection in the event that this is the base stations only connection to the cloud based services.
2. The installer/dealer should inform the customer that data charges may apply depending on the telecoms provider and a suitable data plan will be required.

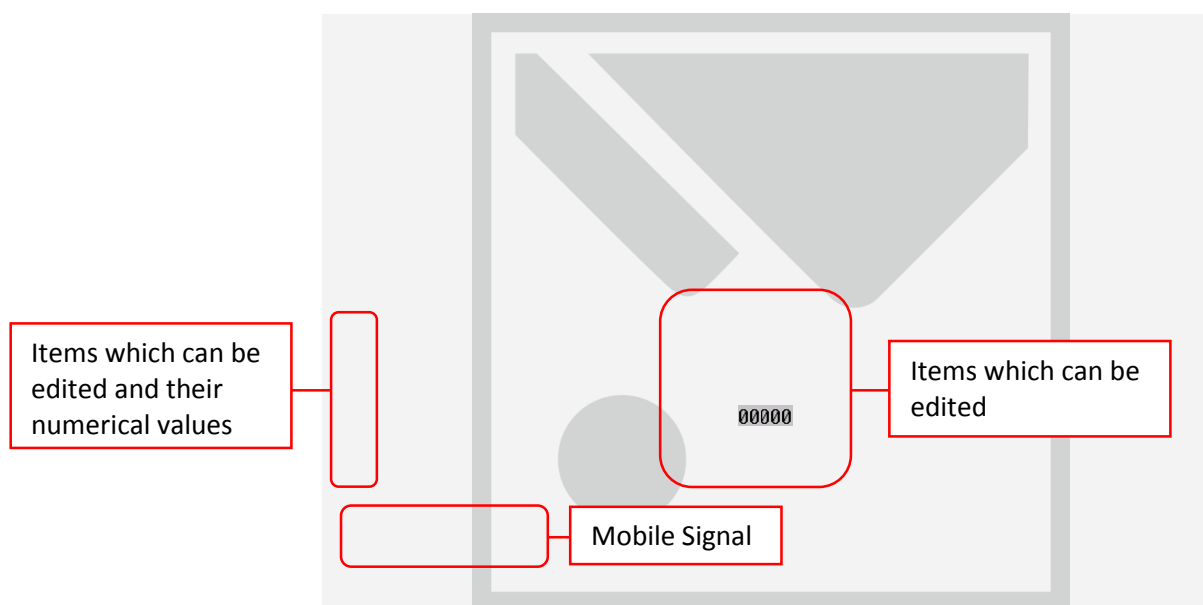


Figure 50 – configuration of the GSM connection

Table 2 - Configurable GSM settings via UART

Edit option	Description	Range
1	Mobile enabled	0 = OFF, to 1 = ON
2	APN	Sample live.vodafone.ie (provider dependant)
3	APN Username	Sample username (provider dependant)
4	APN Password	Sample password (provider dependant)
5	Service Centre	Sample +35387600000 (provider dependant)
6	Service Mobile	Dealer or Service agent number
7	Mobile 1	Customer Number 1
8	Mobile 2	Customer Number 2

To proceed with the next step press the greater-than (>) symbol on the keyboard to move back a step press the less-than (<) symbol.

6.1.2.5 Step 5: configuring the Cloud connection using UART

The cloud connection can be configured to use the mobile network or an available Wi-Fi connection.

The base station will default to a Wi-Fi connection in the event of the mobile connection being disabled.

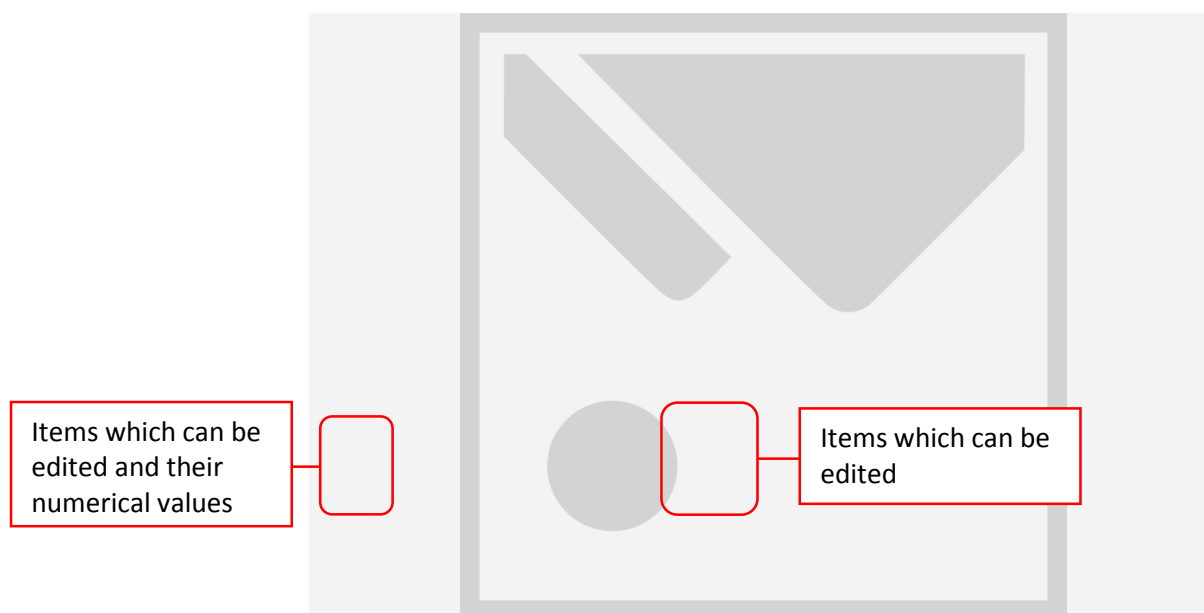


Figure 51 –Configuring the Cloud connections using UART

Table 3 – Cloud connection setting via UART

Edit option	Description	Range
1	Cloud connection via mobile	0 = OFF, to 1 = ON
2	Cloud polling interval	Interval at which the MooMonitor checks on cloud services for updates. Factory Default is 20 seconds.

To proceed with the next step press the greater-than (>) symbol on the keyboard to move back a step press the less-than (<) symbol.

6.1.2.6 Step 6. Configuring the base station radio link using UART

Each base station has a 5 radios by default to allow a wider spectrum to be accommodated on site in the event of interference from an outside radio source. The ability to change radio channels and thereby radio frequencies will allow the installer to ensure that any unwanted interference from signals at a similar frequency will be avoided.

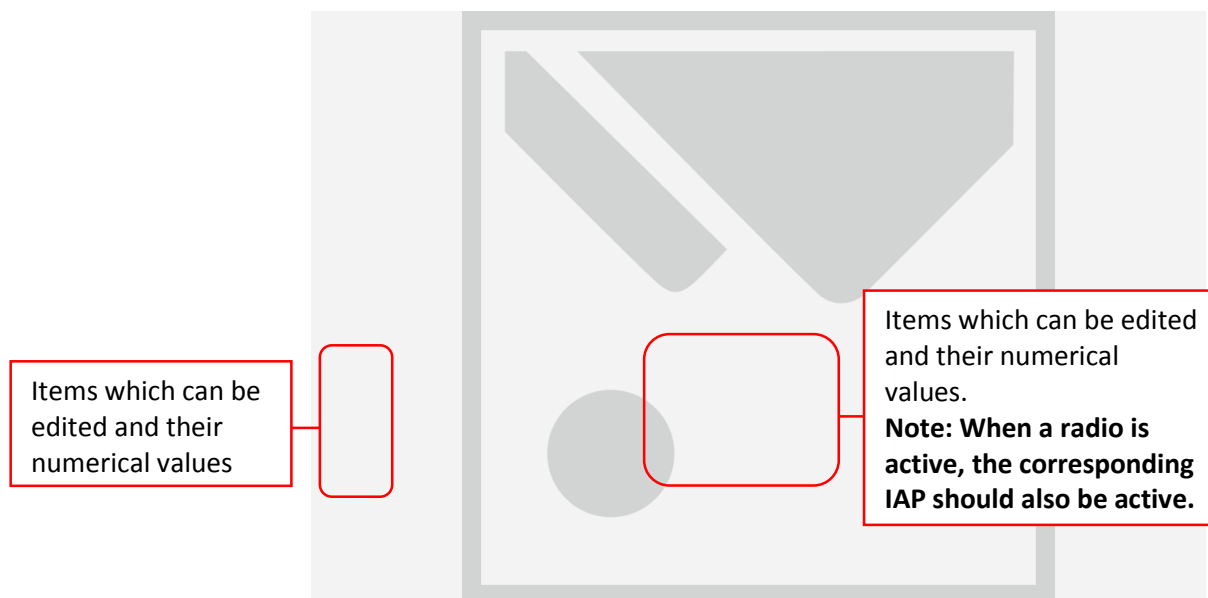


Figure 52 – Configuration of the radio channels using UART

Table 4 – List of frequencies available through

Radio Transmitter	Frequency
Radio 1	868.0 MHz(EUROPE ONLY)
Radio 2	868.2772 MHz(EUROPE ONLY)
Radio 3	869.3 MHz(EUROPE ONLY)
Radio 4	914 MHz (USA ONLY)
Radio 5	915 MHz(USA ONLY)

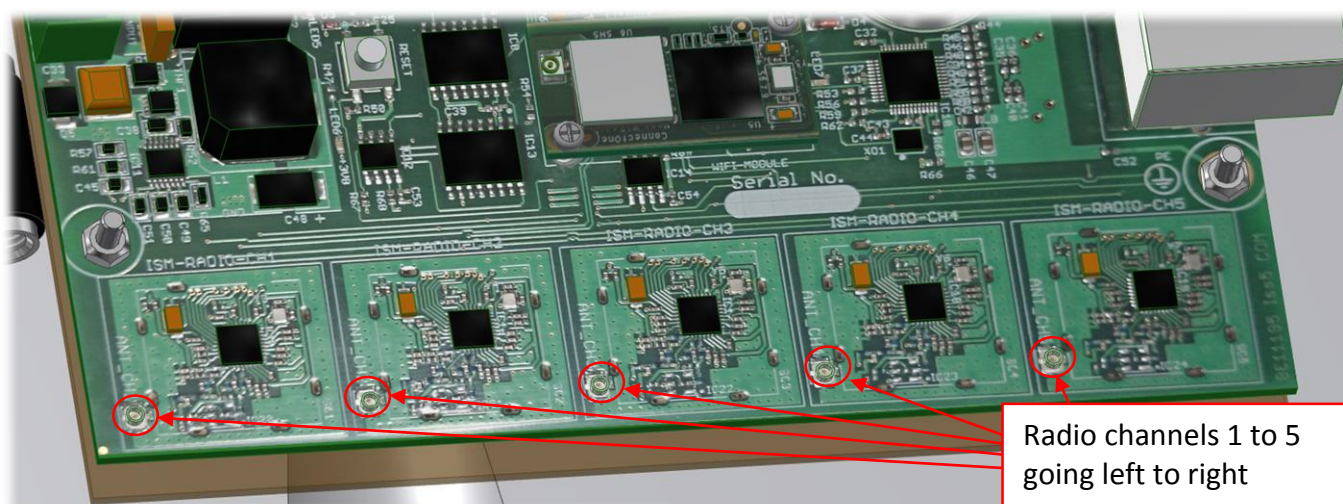


Figure 53 – View of the PCB installed in the base station
The five radios are shown above.

The same procedure can be followed when configuring the radios as in the previous steps.

If the installer needs to activate another radio say Radio channel 1. They will need to edit radio channel 1, by pressing 1 and following the screen prompts typing Y for each of the prompts.



Figure 54 – Configuring the radio station using the UART connection



Figure 55 - Configuring the radio station using the UART connection

Once the new radio channel is active the installer will need to de-activate the old radio channel. This is done by following the same procedures as outlined above.

If the installer needs to de-activate another radio say Radio channel 3, they will need to edit radio channel 3 by pressing 3 and following the screen prompts typing N for each of the prompts.



Figure 56 - Configuring the radio station using the UART connection

To proceed with the next step, press the greater-than (>) symbol on the keyboard to move back a step press the less-than (<) symbol.

6.1.2.7 Step 7: Configuring device logging using UART.

Each base station can be configured to create log files for its activity. Logging should not be altered unless stated by a Dairymaster technical customer support agent.

Logging level: this is defaulted to 1. The higher the level of logging the more information that is logged.

Logging General: Logs general information about the device and is used by Dairymaster for debugging or troubleshooting any issues a base station may be having.

Log Wi-Fi: device logs are sent over the Wi-Fi

Log Mobile: Device logs are sent over the GSM.

Numerical value	Logging	Range
1	Log Level	0 Logging OFF, 1 Logging ON.
2	Log General	0 Logging OFF, 1 Logging ON.
3	Log WI-FI	0 Logging OFF, 1 Logging ON.
4	Log Mobile	0 Logging OFF, 1 Logging ON.

The installer may configure device logging using the same procedures as in the previous steps.

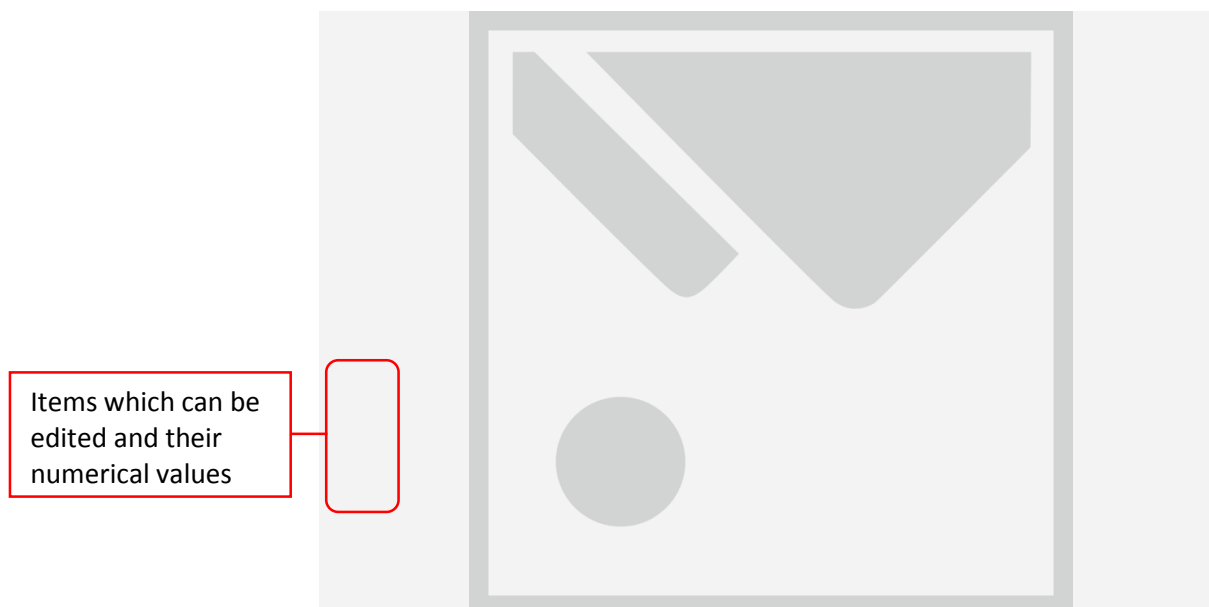


Figure 57 – Configuring event logging using UART

To proceed with the next step press the greater-than (>) symbol on the keyboard to move back a step press the less-than (<) symbol.

Once the event logging has been configured the device should be ready for normal operation.



Figure 58 – Final screen on the UART configuration tool

The installer will see a note appear stating the device is exiting install mode.

To proceed and complete the device configuration press the greater-than (>) symbol on the keyboard to move back a step press the less-than (<) symbol.

The device will then begin populating the screen with device information and the configuration is complete.

6.2 MooMonitor+ Android App (Version 2.0)

6.2.1 App Overview

The MooMonitor+ Android App allows the User to interface with the MooMonitor+ system, giving them the ability to send and receive information from the devices and get a real time view of the data collected for their animals.

The app will allow the user to carry out a range of functions from their Smartphone such as the following:

- Receive alerts for Cows that are Active/Suspect/Health Alert
- View individual Cow Data
- View Individual Cow Activity/Rumination/Feeding/Resting Graphs
- Add events for the Cow such as Add Heat, Add Insemination, Add Calving Date, etc.
- Set up cows for Scheduled and Permanent Drafting

The MooMonitor+ App can be downloaded from the Google Play Store.

When the App has downloaded it will appear on the Smartphone home screen (Figure 59).

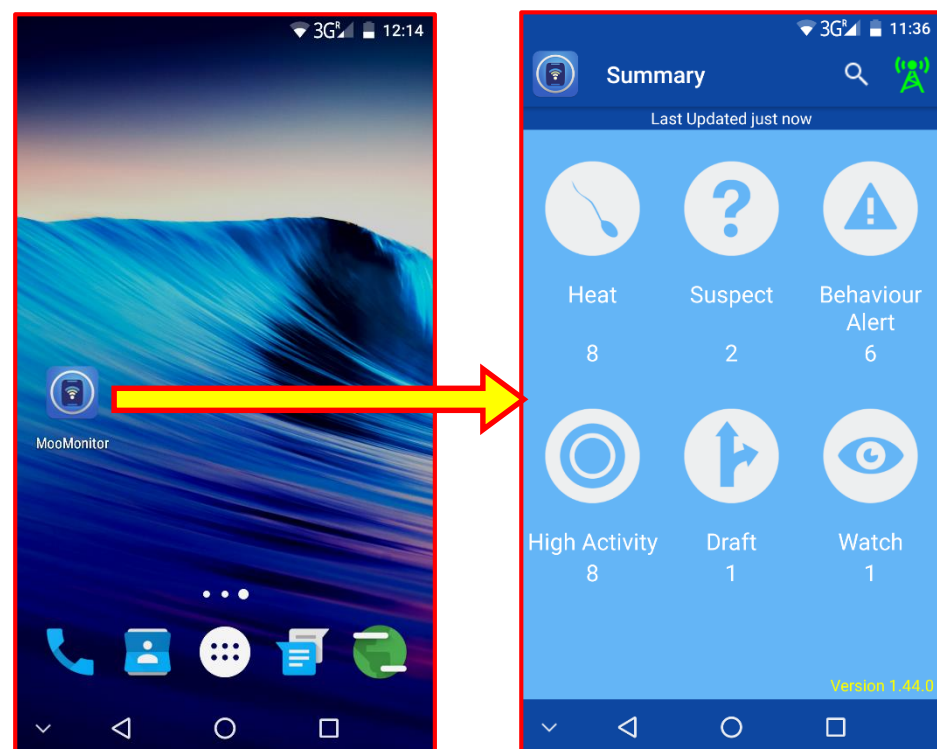


Figure 59 – MooMonitor + App Icon and typical home screen

6.2.2 Launching the App

When launched for the first time the MooMonitor+ App will automatically redirect you to the settings menu within the app.

Within the settings menu the app will require the user to enter the credentials required to log into the system see Figure 60.

These credentials will be provided to the user by Dairymaster and consist of the user name and password allocated to the specific user's farm. Input your Username and Password into the fields shown in Figure 60. The Username and Password will be common amongst any device the user logs into.

Note

At this point you can also decide whether you wish to receive Push Notifications. This option allows the App to send you a notification when an alert is triggered.

Once the credentials have been entered and the Click Save to store the information.

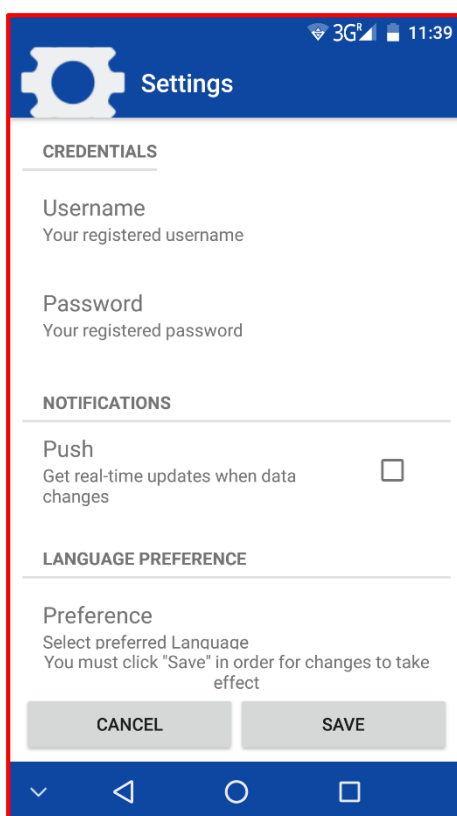


Figure 60 - Settings Menu on the Android App

6.2.3 MooMonitor+ Android App User interface

Upon opening the app the Summary Screen will appear.

This will give a summary of the 6 different alert lists within the selected farm.

The number of cows in each group will be visible below each alert icon.

The Basestation connectivity is also visible at the top right of the screen

- Green: Connected
- Red: Disconnected

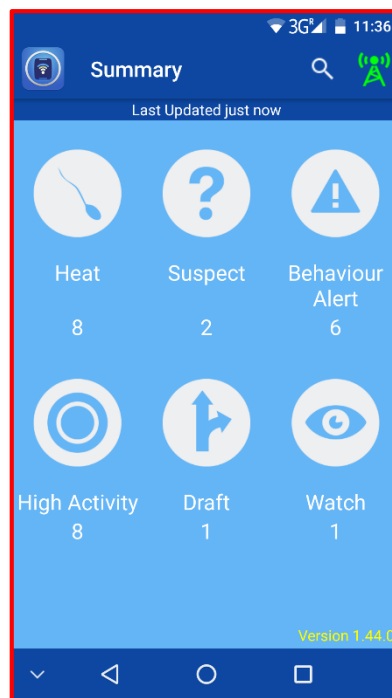
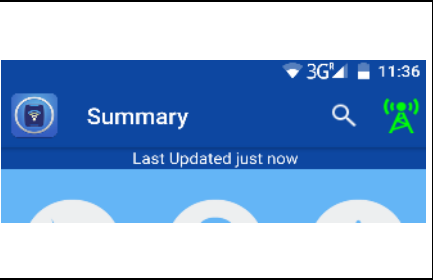


Figure 61 - Android App Summary Screen

Heat Symbol	
Displays all cows with increased activity on the farm including pregnant Cows, Cows in Heat, Cows due to calve and cows that have had an AI or a confirmed heat within the last 4 days.	Heat 8
Suspect Symbol	
This is a list of the cows that are suspected to be in Heat. Their activity levels have increased but they have not yet overcome the Activity threshold. Farmers can identify these cows for further monitoring.	Suspect 2
Behaviour Alert Symbol	
The third symbol shows the cows that are displaying abnormal behaviour such as a decrease in rumination, feed intake, activity, increased resting etc.	Behaviour Alert 6
High Activity Symbol	
This Icon will show the cows that are showing high levels of activity and therefore are identified as in heat. These cows will show factors such as high activity levels, decreased rumination, etc.	High Activity 8
Draft Symbol	
Full list of cows in the herd. The number shown underneath signifies the cows to be permanently drafted. Cows can be set up to draft by choosing 0, 1 or 2 in this table.	Draft 1
Watch Symbol	
This is the list of animals that have been marked for further monitoring or treatment.	Watch 1

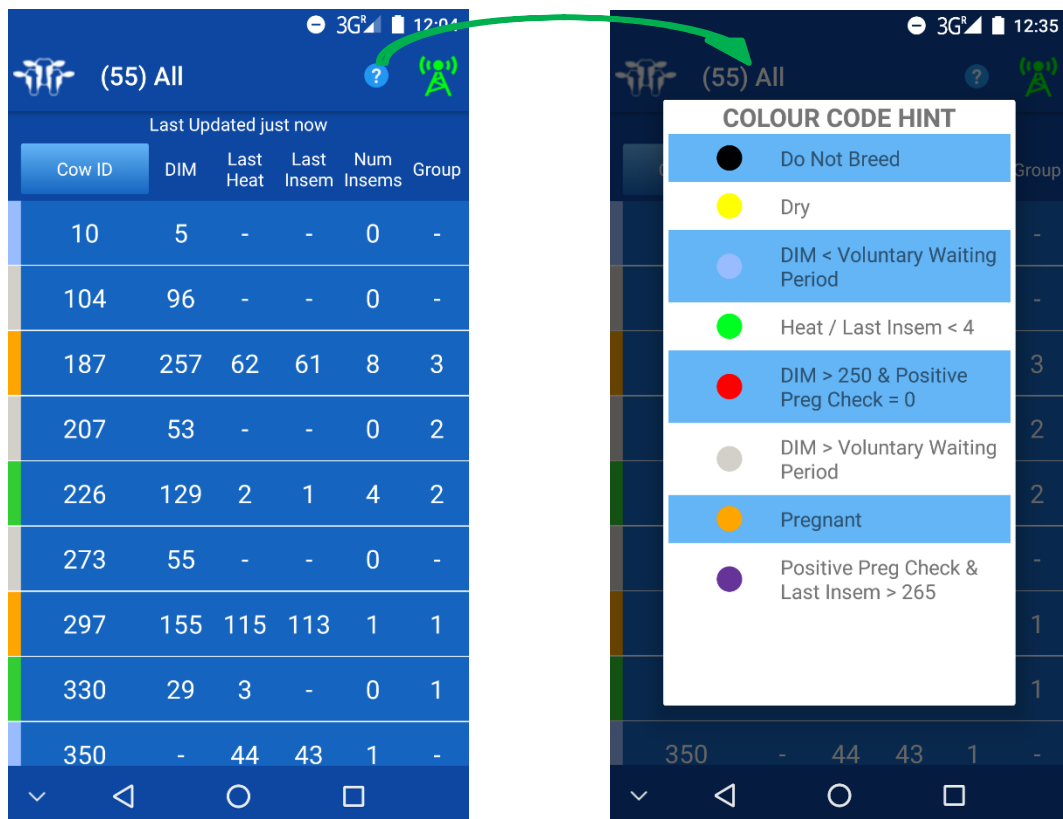
Summary Screen	
This will show when the information was last updated or currently being updated i.e. when the App last downloaded information from the cloud. The current status of the base station is also shown in this ribbon. The user may search any known Cow ID by selecting the search icon, entering the Cow ID and pressing on search.	

6.2.3.1 Animal Tables

Selecting any of the 6 alert icons will open up a tabulated list of the cows for that alert. The table contains the information for each individual cow such as **Cow ID**, Days in Milk (**DIM**), **Last Heat**, Last insemination (**Last Insem**), Number of Inseminations (**Num Insems**) and the Group Number (**Group**). The drafting table generates a different table which is outlined in **section 6.2.3.2**.

The colour codes at the left indicate the suitability of each cow for breeding. This is assigned to each cow based on the information input into the system for each cow. The colour code hint is accessed by selecting the help icon at the top right of the screen which gives an explanation of each colour code (see below).

The information in the table can be sorted by each individual column by selecting the column header at the top of the screen.



Cow ID	DIM	Last Heat	Last Insem	Num Insems	Group
10	5	-	-	0	-
104	96	-	-	0	-
187	257	62	61	8	3
207	53	-	-	0	2
226	129	2	1	4	2
273	55	-	-	0	-
297	155	115	113	1	1
330	29	3	-	0	1
350	-	44	43	1	-

Colour Code	Description
Black	Do Not Breed
Yellow	Dry
Light Blue	DIM < Voluntary Waiting Period
Green	Heat / Last Insem < 4
Red	DIM > 250 & Positive Preg Check = 0
Grey	DIM > Voluntary Waiting Period
Orange	Pregnant
Purple	Positive Preg Check & Last Insem > 265

Figure 62 - Tabulated list of Cows along with the Colour Code hint

6.2.3.2 Draft Table

The Draft table generates a list of all cows in the herd. The user can toggle between the Permanent drafting list and the scheduled drafting list by selecting the Scheduled or Permanent icon on the top ribbon.

The table contain information including Cow ID, Tag ID, draft pin, Group number and if the cow is being weighed.



The screenshot shows a mobile application interface for a 'Draft Table'. At the top, there's a status bar with '3G' and '11:55'. Below it, a blue header bar contains a left arrow icon, the text 'Permanent List', and two circular icons: one with a clock (highlighted by a red arrow) and one with a question mark. The main area is a table with five columns: 'Cow ID', 'TagID', 'Pin', 'Group', and 'Weigh'. The table lists ten cows with their respective IDs, tag numbers, draft pins, group numbers, and weighing status. At the bottom, there's a navigation bar with four icons: a downward arrow, a left arrow, a circle, and a square.

Cow ID	TagID	Pin	Group	Weigh
10	0	0	0	-
104	0	0	0	-
187	32164	0	3	-
207	32108	0	2	-
226	30028	0	2	-
273	...8947	0	0	-
297	31954	0	1	-
330	0	0	1	-
350	7591	0	0	-

Figure 63 - Draft Table

6.2.4 Android App Options Menu

On the Summary screen by sliding the screen from left to right, the Options Menu will be displayed see Figure 64.

This menu gives a list of eight different options see Table 5.

Table 5 – Summary Screen Options

Option	Meaning
Farm Name	Allows the user to access other farms if applicable.
Summary	Displays the Home Screen
Heat	Displays the Cows in Heat
Suspect	Displays the Suspect Cow List
Behaviour Alert	Displays the Behaviour Alert List
High Activity	Displays the High Activity List
Draft	Displays all cows in the herd
Watch	Displays the cows on the Watch list
All	Shows a list of all cows on the farm
Assign MM+	Allows the user to assign a MooMonitor+ to a cow.

Extras	
Option	Meaning
Settings	Opens the Settings Menu
Scheduled Draft	Displays cows on the Scheduled Draft list
Batch Selection	Allows the user to select any batch of animals and add an event for them animals
Herd Data	Display scatter graphs of individual cows and performance against the herd average.

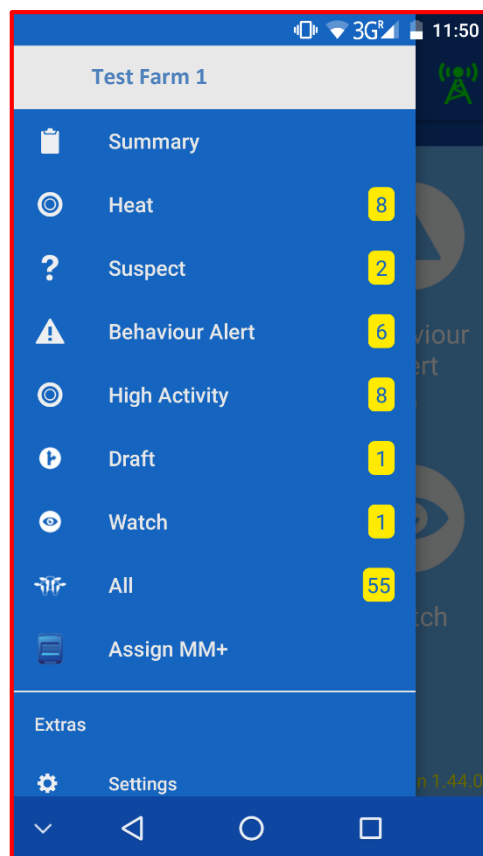


Figure 64 - Android App Options Menu

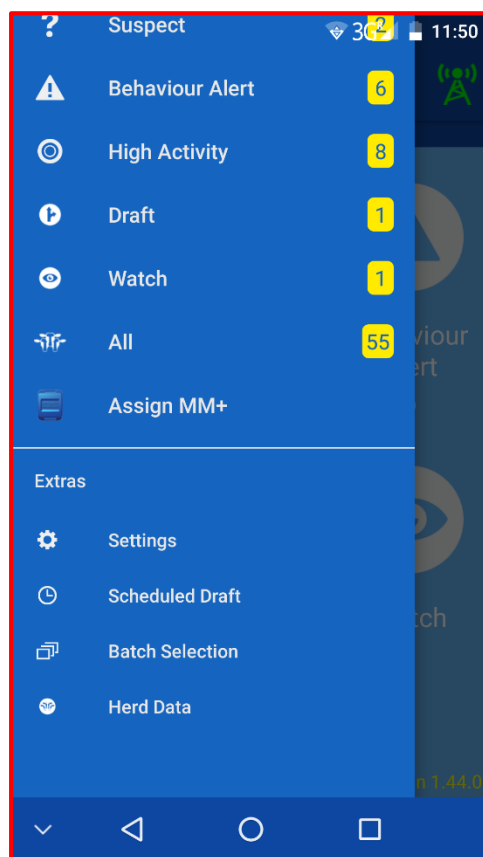


Figure 65 – Android App Options Menu (scrolled)

6.2.5 Working with Multiple Farms

If the user has access to multiple farms, then they can switch farms by clicking on the Farm Name in the options menu.

This will present them with a list of farms which they have access to see Figure 66.

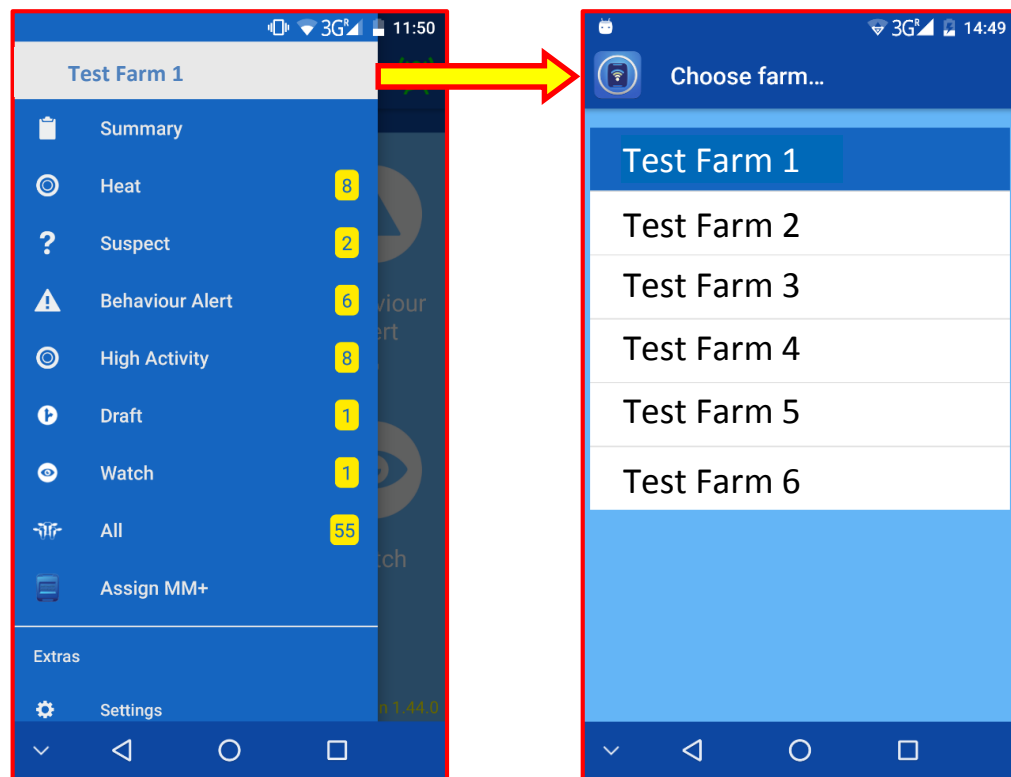


Figure 66 - Android App Options Menu Farm Selection choosing Farm Menu

Important Note

An important note for multi farm use is that each user should have a separate login or each device should have a separate login.

Otherwise if two people are using the same login simultaneously on different devices and one user switched farms then this could lead to undefined behaviour for the second user.

6.2.6 Assigning a MooMonitor+

The user can assign a MooMonitor+ to a cow by selecting the **Assign MM** option in the options menu.

Enter the Cow ID and the MooMonitor+ ID.

- The Cow Id will be the number either freeze branded onto the animal or the number of the RF ID on the animal's ear tag (this is farm dependant).
- The MooMonitor+ ID is the number located on the rear of MooMonitor+ unit.



Figure 67 – Location of the MooMonitor + ID on the rear of tag

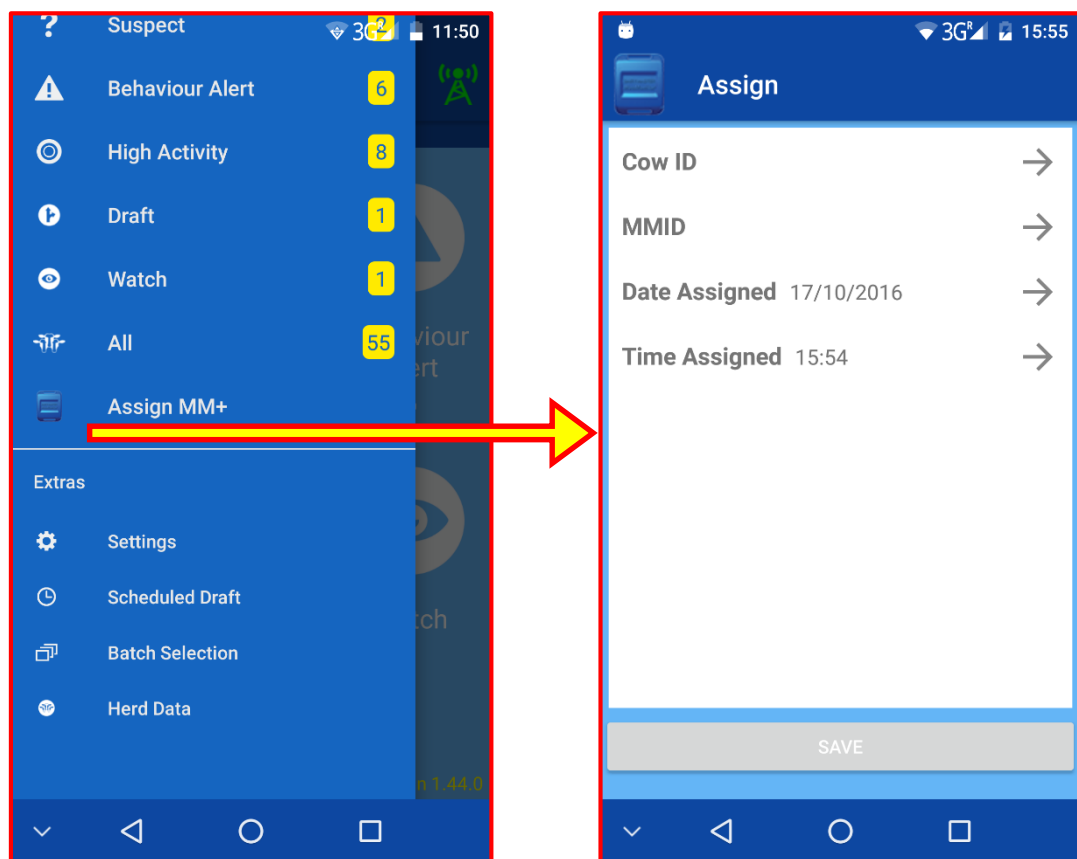


Figure 68 - Assign MooMonitor

6.2.7 Viewing Cow data

A cow's individual data can be viewed by searching for the cow ID in the **search bar**, by clicking into any of the six groups on the home screen and selecting any individual cow or by selecting the **All Cows** list in the **Options menu**.

When the user clicks into an Individual Cow the screen will display the animal's information i.e. **Cow ID, Last Heat, MooMonitor ID, Max. Activity, No of Heats, No. of Inseminations, Lactation no.** (see below).

By tapping on the cow summary at the top of the screen, the list of previous events for that cow will appear instead. The user can toggle between both these information screens.

By scrolling down it will also display the graphs associated with that cow (see below).

The **Daily & hourly Activity and Rumination Graph**, the **Rumination graph**, resting graph, feeding graph and **Daily Activity Intensity graph** will all be displayed.

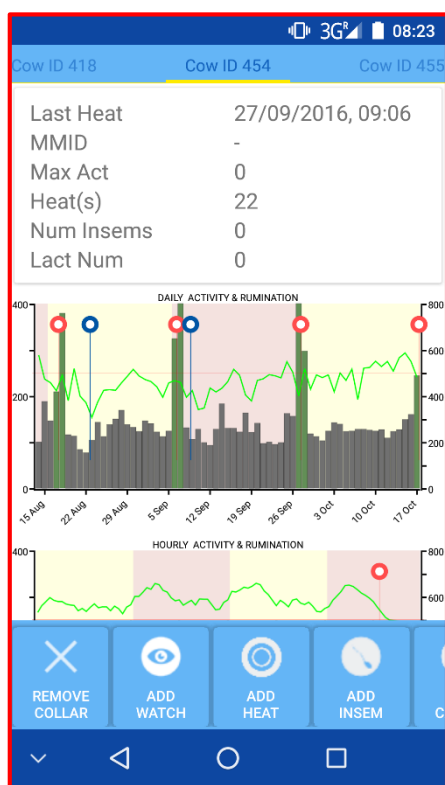


Figure 69 - Individual Cow Summary

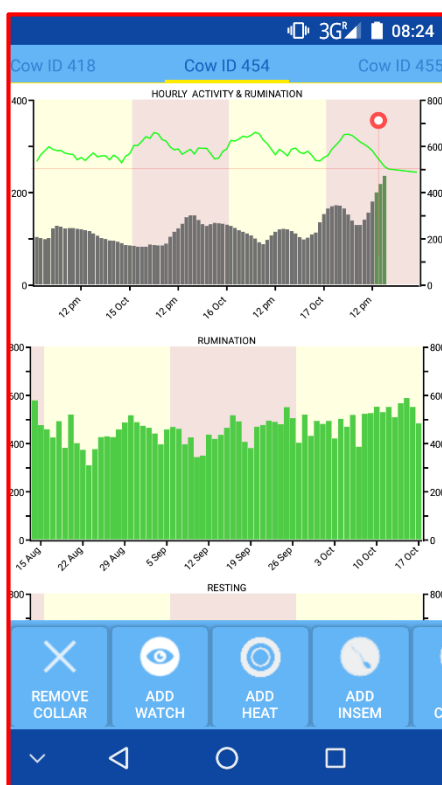


Figure 70 - Individual Cow Summary Graphs

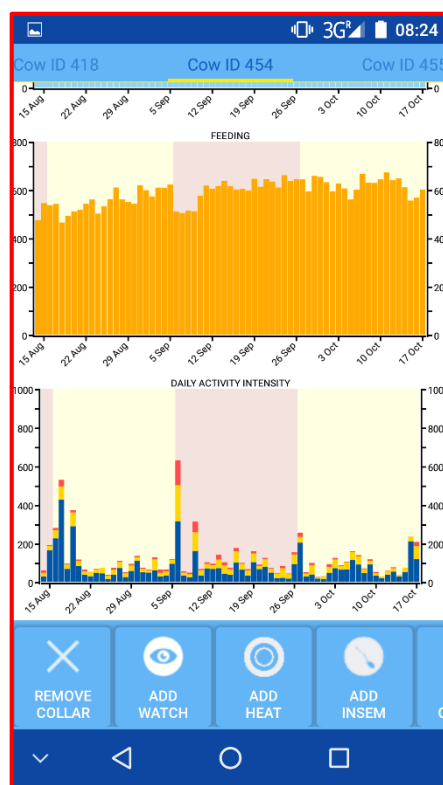


Figure 71 – Daily Activity graph

To view another animal in the table simply swipe the screen left or right to show the information for the next or previous cow on the list.

The Activity and Rumination Graphs display the Heat Alerts and Behaviour Alerts for that specific animal.

The Red Bullseye denotes a heat
The Blue Bullseye denotes a Behaviour Alert.

The user can select any of these bullseye's to view a summary of the information fo rthat event.

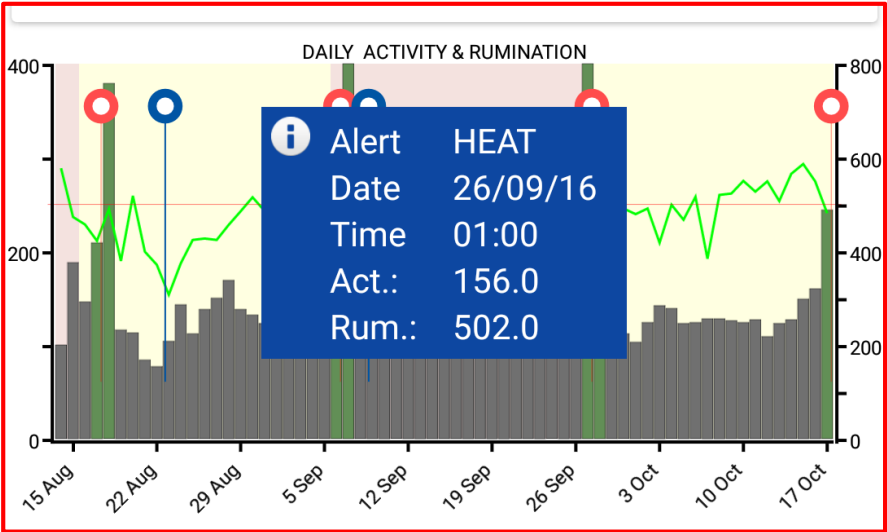


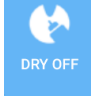
Figure 72 - Daily Activity & Rumination Graph

6.2.8 Adding Events

Users may add a number of events within the app which will assist the farmer to organise the data generated by the MooMonitor+ system.

An event can be added by selecting the type of event at the bottom of the screen. There are also other options such as Remove Collar from the cow, add the cow to the Watch list, remove the cow from the watch list and remove that cow from the system. By scrolling left to right more event options can be chosen.

There are a total of 12 different events that can be undertaken using the Android App:

Remove Collar		Add Calved		Add DNB	
Add Watch		Add Draft		Preg Check	
Add Heat		Add BCS		Behaviour Alert	
Add Insemination		Dry Off		Remove Animal	

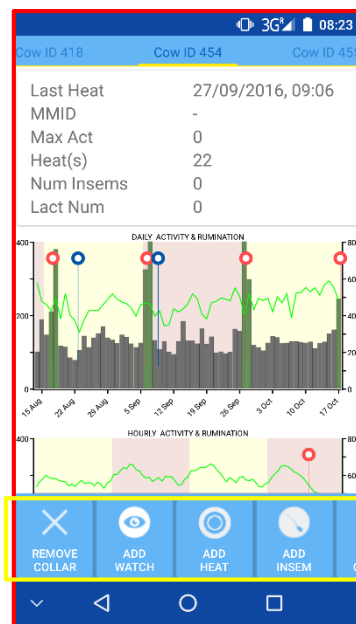


Figure 73 – Add Event Options

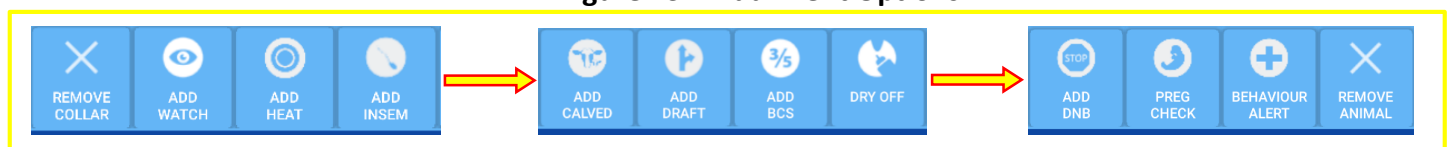


Figure 74 - Scroll left and right to view the full list of the options for each cow.

6.2.8.1 Add Heat Event

The user may at any time add an animal heat by pressing the **Add Heat** icon at the bottom of the screen.

When an animal has a heat added they will be automatically added to the heats list.

1. The user will be prompted to Ignore or Confirm the heat alert.
2. The cow ID and the date of the heat event along with the time will automatically be entered.
3. The time and date may be manually changed by the user if required.
4. Any comments the farmer may have can also be added.
5. Once the details have been entered the user will need to click the save icon to store the information.

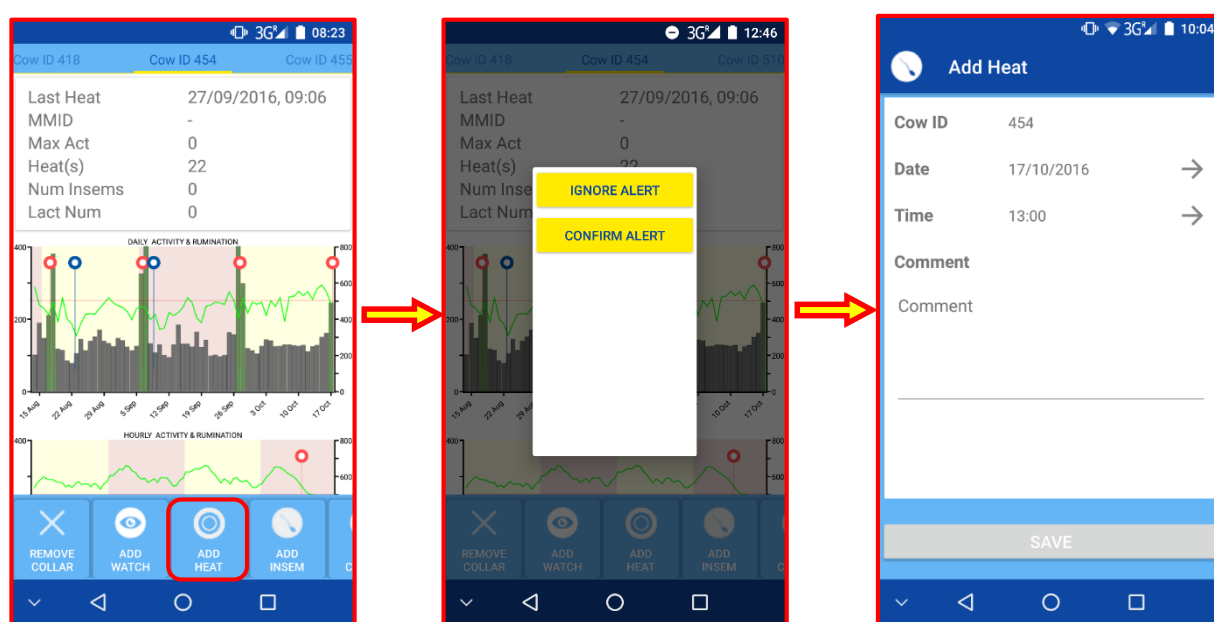


Figure 75 – Adding a Heat Event

6.2.8.2 Add Insemination event

The user may at any time add an animal insemination event by selecting the **Add Insem** icon at the bottom of the screen.

1. The cow ID and the date of the insemination event along with the time will automatically be entered.
2. The time and date maybe manually altered by the user if required.
3. The user will need to add in the sireing animal ID to the app in the sire dropdown menu. This list is generated by pressing the menu button on the top right of the screen, entering the Sire ID, adding it to the list and pressing save at the bottom of the screen. These sire ID's will then appear on the drop down menu in the Add Insemination screen.
4. Any comments the farmer may have can also be added.
5. Once the details have been entered the user will need to click the save icon to store the information.

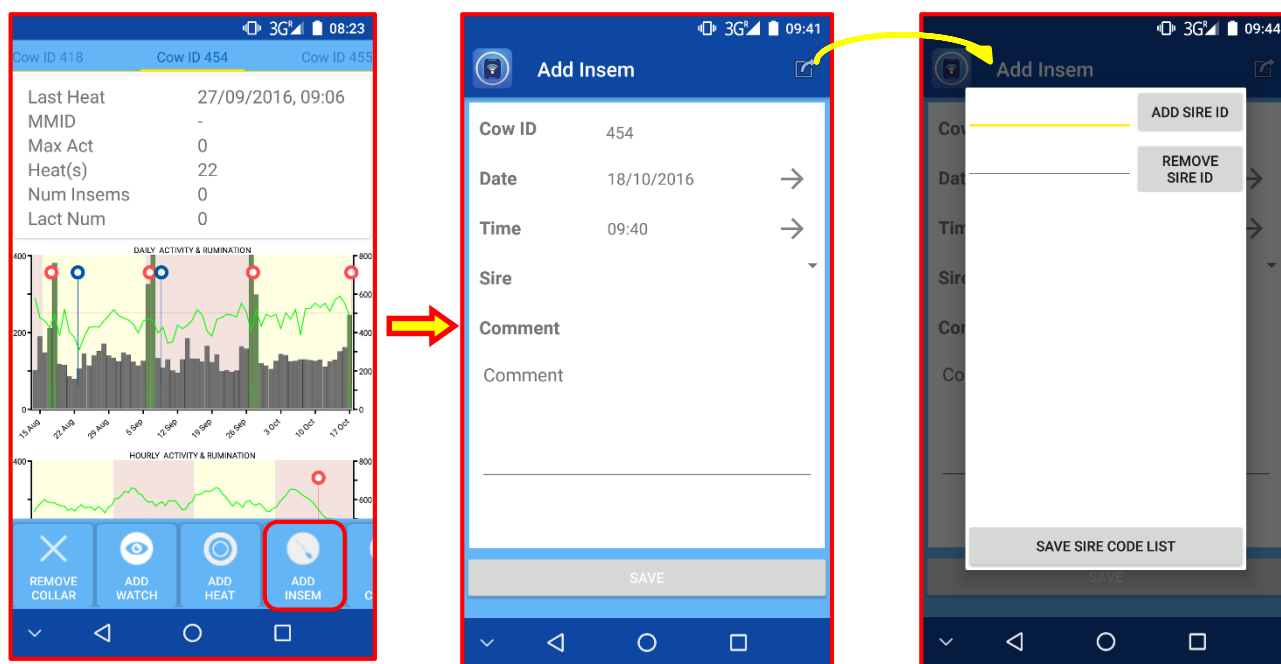


Figure 76 - Add insemination event

6.2.8.3 Adding a calving event

When a cow has calved the information of the event can be entered by selecting the **Calved** icon at the bottom of the screen.

Information such as the CowID, the Date of the calving event, the difficulty of the calving and no of calves, along with any comments the farmer may wish to add.

1. The cow ID and the date of the calving event along with the time will automatically be entered.
2. The time and date maybe manually altered by the user if required.
3. The difficulty of the calving and number of calves may also be entered.
4. Any comments the farmer may have can also be added.
5. Once the details have been entered the user will need to click the save icon to store the information.

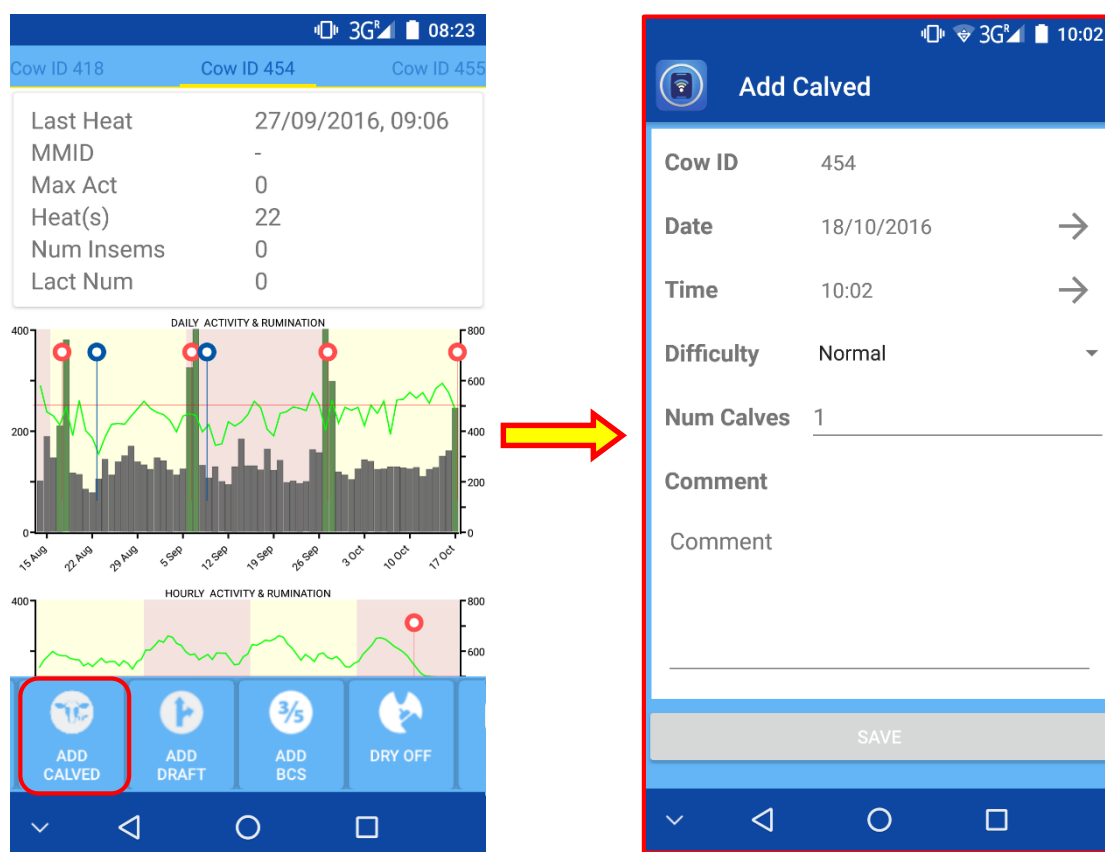


Figure 77 – Add Calving Event

6.2.8.4 Add Drafting Event

It is now possible to add a drafting event for each animal. There is a range of drafting options available to the user when drafting a cow.

Select the **Add Draft** symbol at the bottom of the cow summary screen. A list of drafting options will appear on the screen. The cow can be set up for a **Scheduled Draft** or **Permanent Draft** from this menu.

There also options to add that cow to the Watch list, draft the cow to Pin 1 permanently, Draft the cow to Pin 2 permanently and setting the draft to 0.

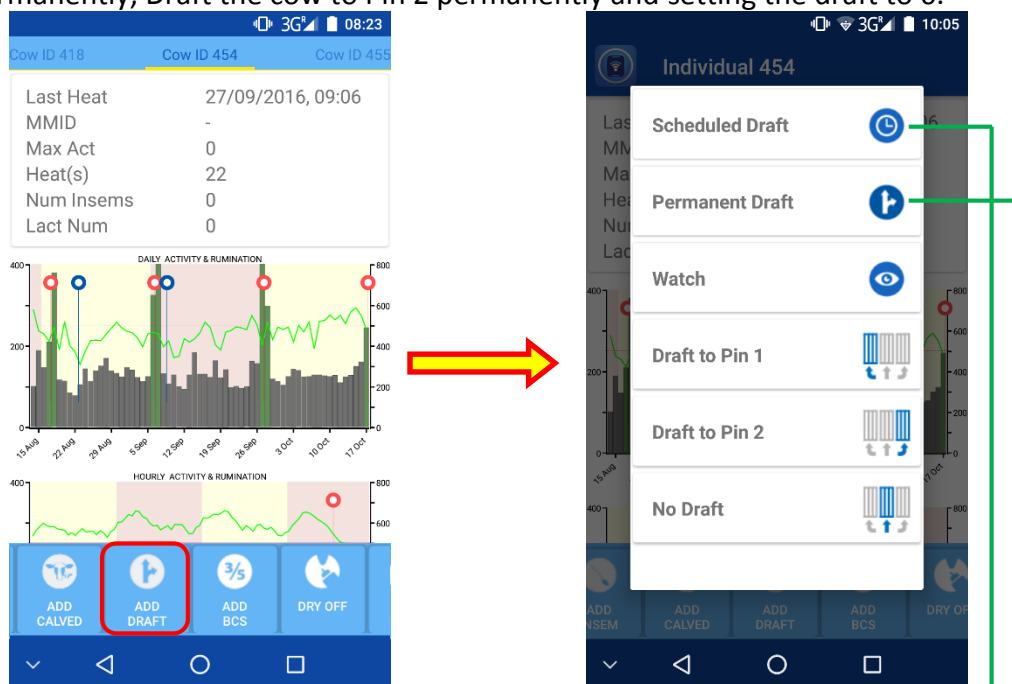


Figure 78 - Add Drafting Event

Figure 79 - Add Scheduled Draft

Figure 80 - Add Permanent Draft

6.2.8.5 Add Body Condition Score

The Body Condition Score of the animal can be added by selecting **Add BCS** at the bottom of the cow information screen.

The Cow ID, Date & time will be populated automatically. The date and time can be changed manually if required. The BCS for the cow is selected from the dropdown menu. Any comments the user may have can be entered also.

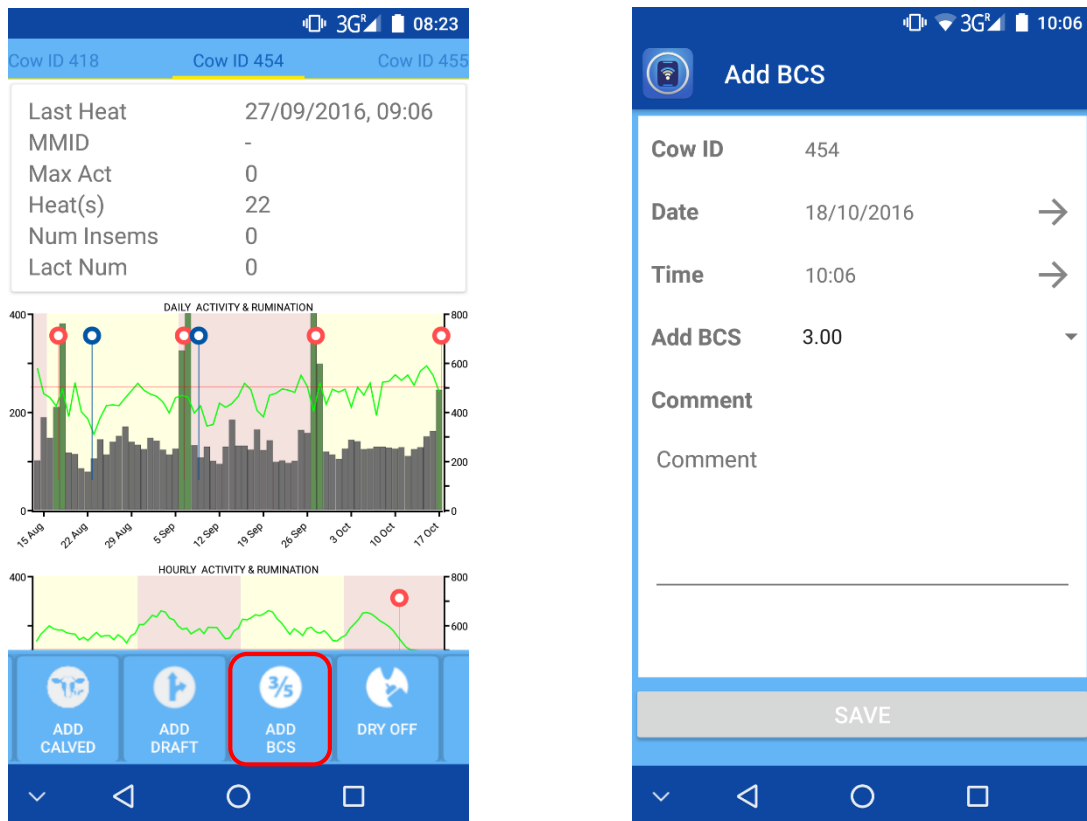


Figure 81 - Add Body Condition Score

6.2.8.6 Add Dry Off Event

The user may add a Dry Off event by selecting the **Dry Off** icon at the bottom of the screen.

1. The cow ID and the date of the dry off event will be automatically entered. The user may enter a different date if they require.
2. Any comments the farmer may have can also be added.

Once the details have been entered the user will need to click the save icon to store the information

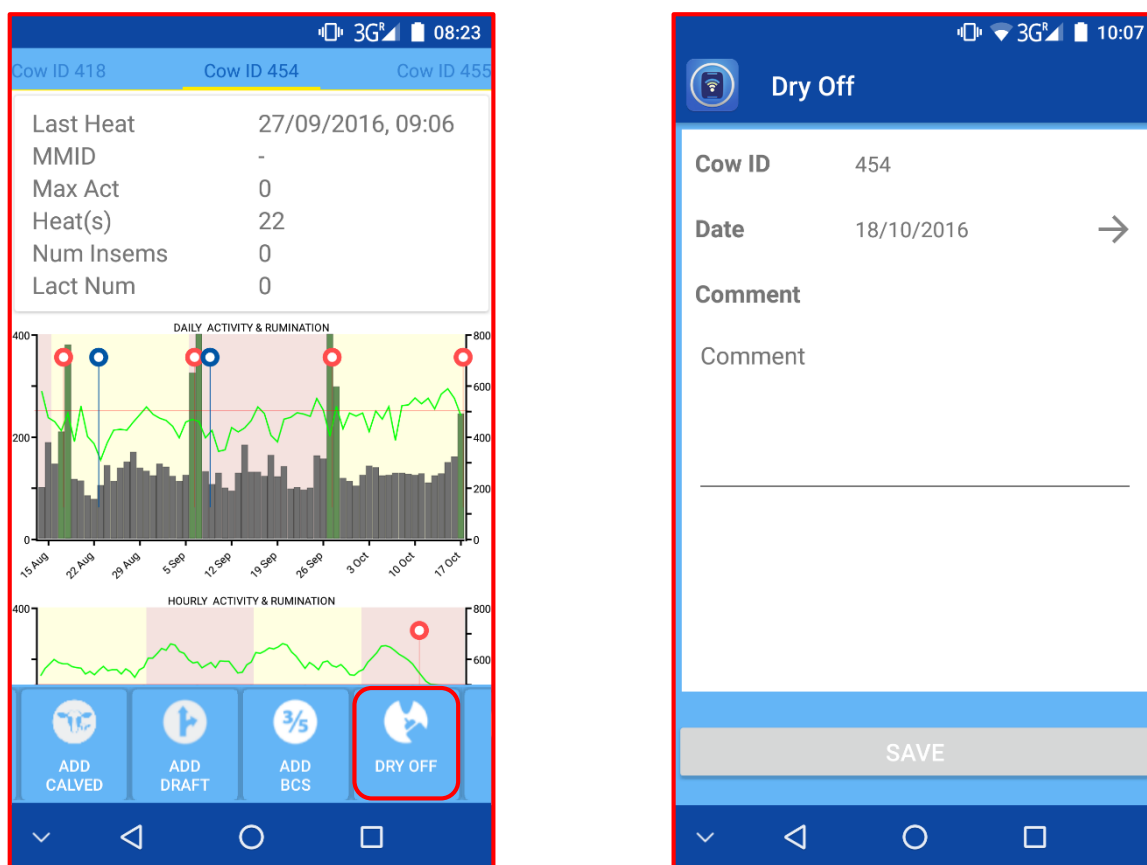


Figure 82 - Add a Dry Off Event.

6.2.8.7 Add Do Not Breed (DNB) Event

In the event that an animal has genetic issues or is of poor health, the user may select the animal for do not breed. At the bottom of the cow overview screen select the DNB icon.

This means the animal can be excluded automatically from inseminations.

1. Enter the Start and Finish dates and times.
2. Any comments the farmer may have can be entered here.
3. Once the details have been entered the user will need to click the save icon to store the information.

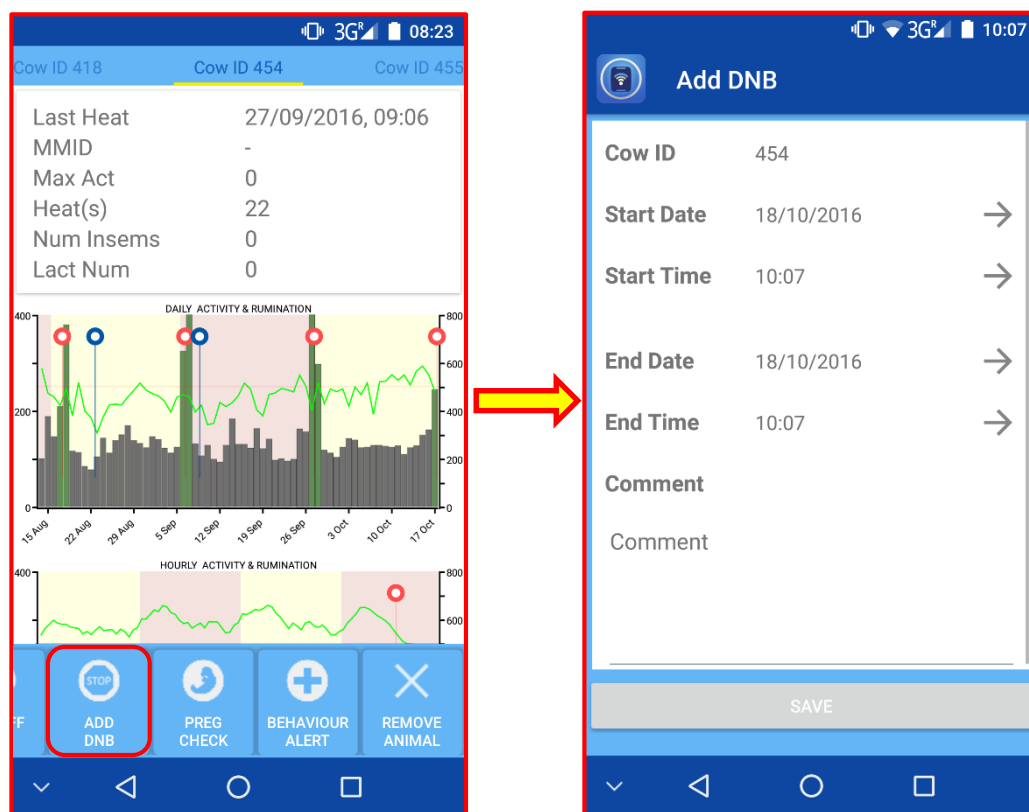


Figure 83 - Add Do Not Breed Event

6.2.8.8 Log a Pregnancy Check

The farmer can keep records of animal pregnancy checks and veterinary scans, which will assist the farmer in building a profile of which animals struggle to get pregnant.

1. The cow ID and the date of the event along with the time will automatically be entered.
2. The result of the pregnancy check (Positive or Negative) will need to be entered.
3. Any comments the farmer may have.

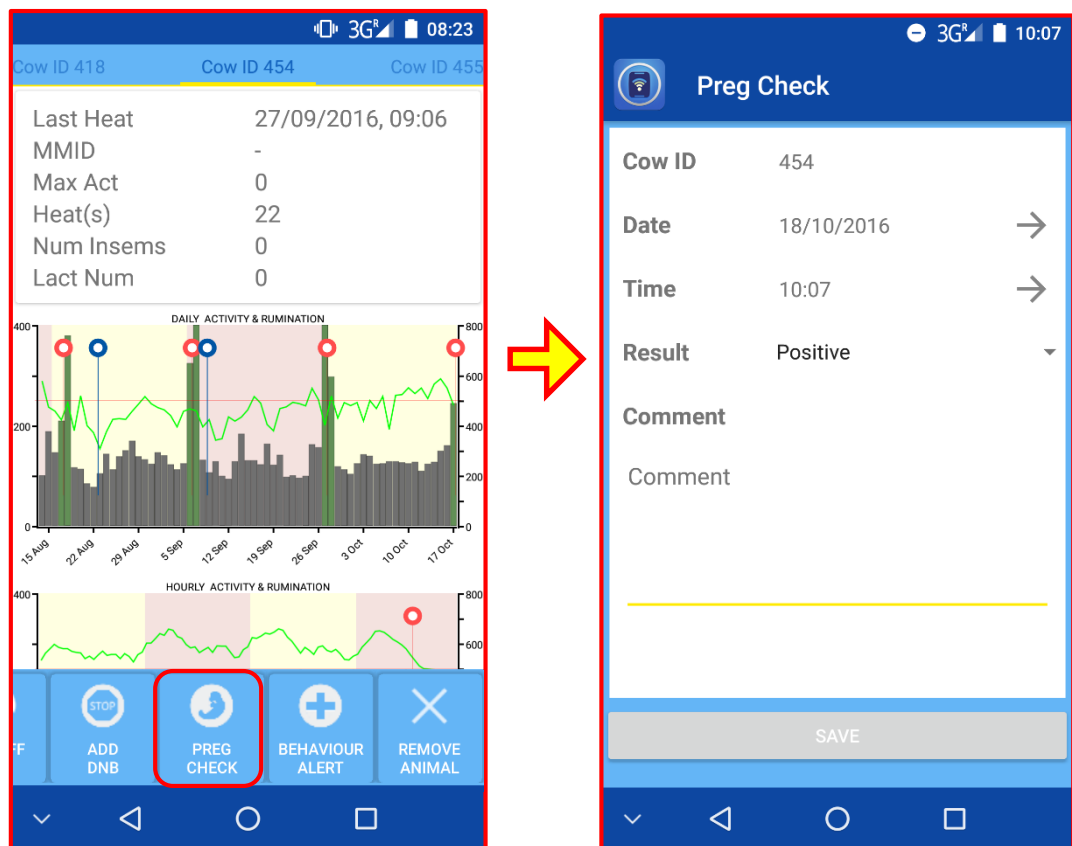


Figure 84 - Add Pregnancy Check Event

6.2.8.9 Adding a Behaviour Alert

A health event may be added for any animal by selecting the **Behaviour Alert** icon at the bottom of the cow overview screen.

This will open up the Add Behaviour Event window on the Screen.

1. The cow ID and the start and end date and time of the behaviour event will automatically be entered.
2. The start and end time and date maybe manually altered by the user if requires.
3. The type of behaviour event must be selected from the illness dropdown list.
4. Any comments the farmer may have can also be added.
5. Once the details have been entered the user will need to click the save icon to store the information.

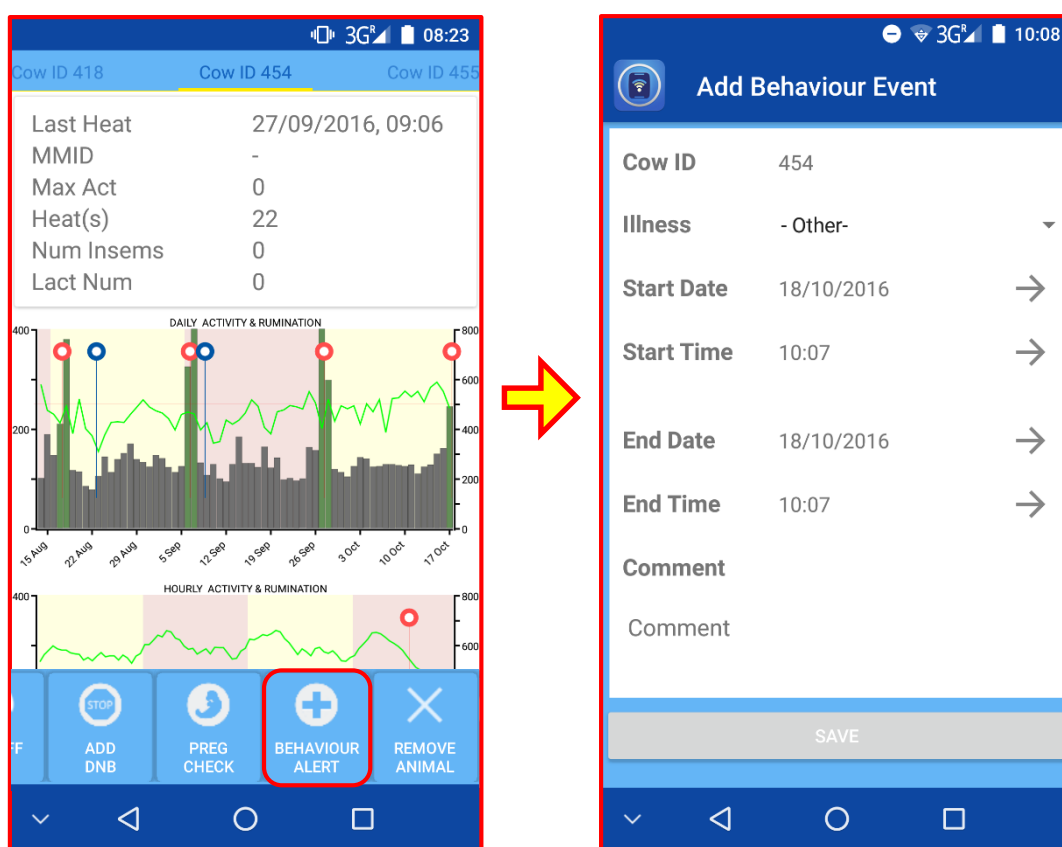


Figure 85 – Adding a health event

6.2.9 Batch Selection

The user may add an event to groups of animals at once by using the **Batch Selection** feature on the Android App. The **Batch Selection** feature is accessed by selecting the options menu at the top left of the home screen. Select **Batch Selection** at the bottom of the settings list.

The **Batch Selection** screen will display a list of the various groups of animals in the herd such as the **Heat, Suspect, High Activity, Behaviour, Drafts & All Cow** lists etc. By selecting into any of these lists, the user can then select a number of cows from the list by ticking the box next to each cow (**Figure 86**).

After selecting the cow ID's, the user can add an event to the selected group of cows by selecting one of the events on the scroll bar at the bottom of the screen

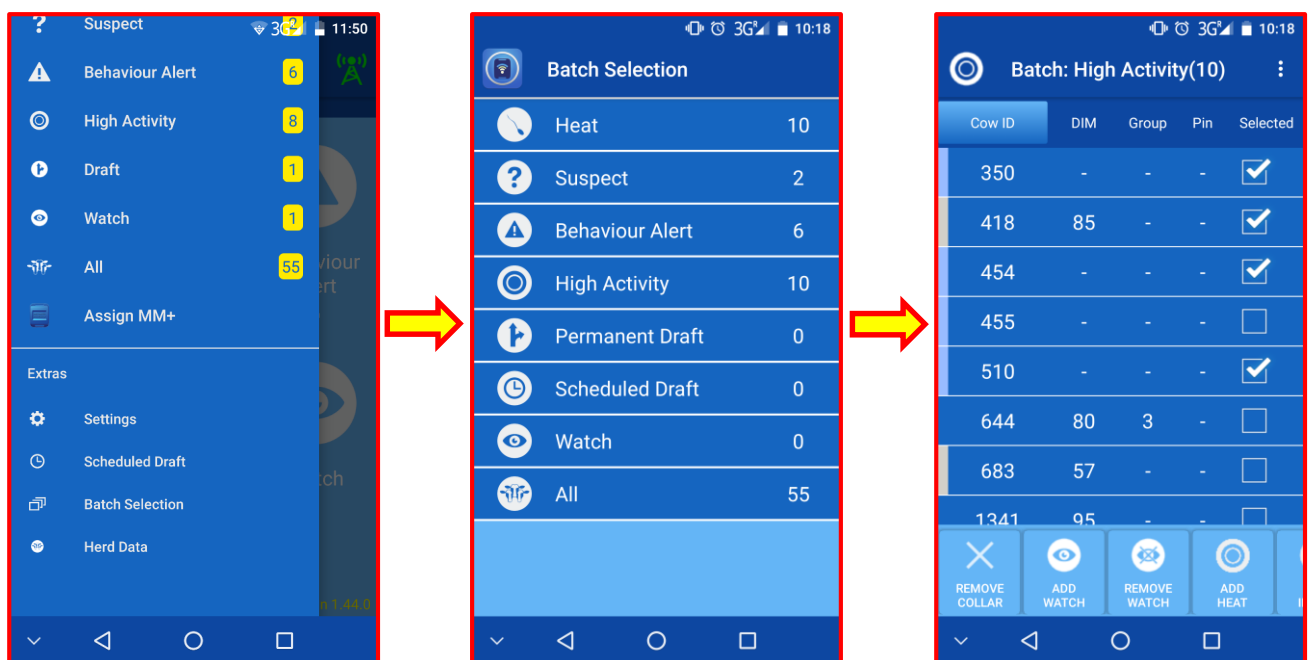


Figure 86 - Entering Batch Selection on the Android App

6.2.10 Viewing Herd Data

The user can view individual herd scatter graphs to determine how each cow is performing against the herd average. The graph compares Resting (y-axis) with Rumination + Feeding (x-axis). Different groups can be selected from the dropdown at the top right of the screen.

Select **Herd Data** from the settings menu. This will proceed to the Herd Analysis screen. The herd graph will be displayed at the bottom of the screen.

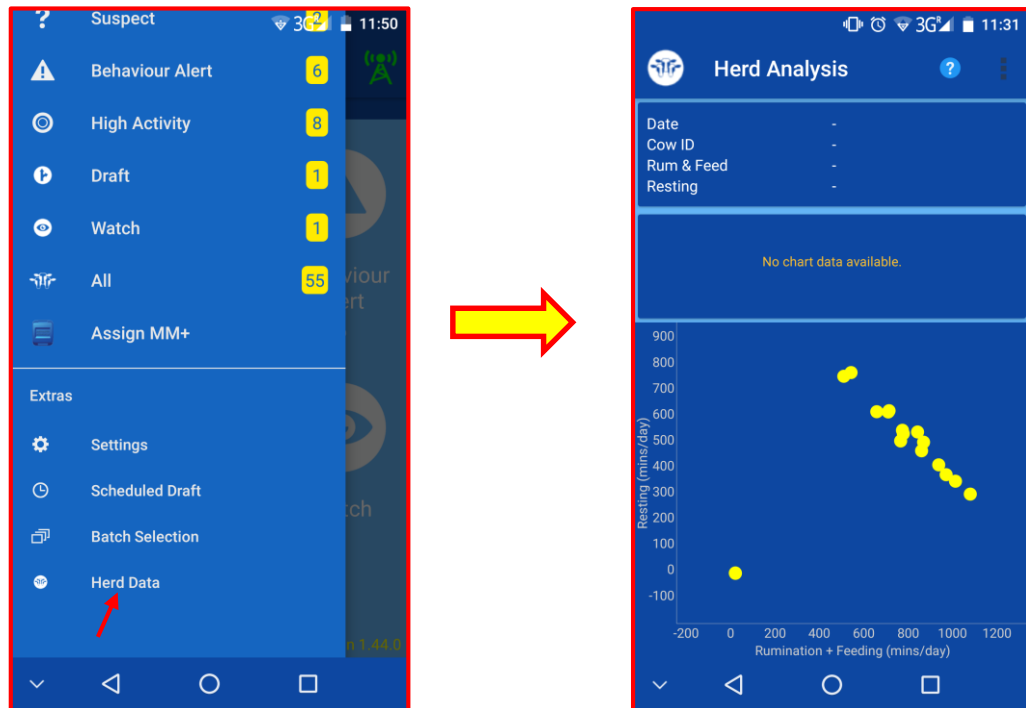


Figure 87 - Herd Analysis option on the Android App

By selecting any of the coloured dots on the graph, the information for that animal will be displayed at the top of the screen.

A chart of the cow's Activity, Resting, Feeding and Rumination performance against the average performance of the herd will also be shown.

Each cow is colour coded according to the colour symbol assigned to them from the data which has been inputted into the system (**See section 6.2.3.1**).

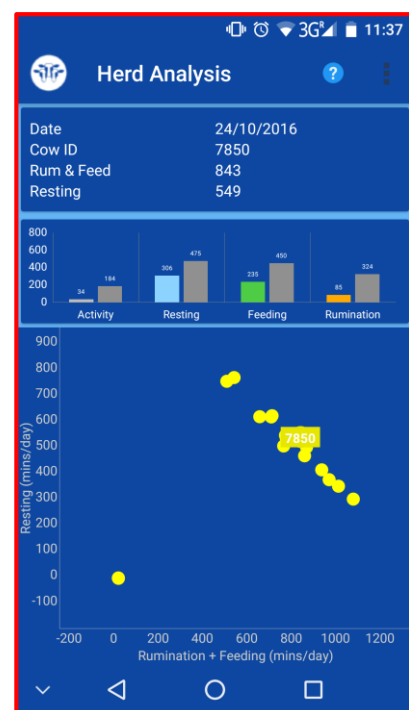


Figure 88 - Chart Data displayed for the individual Animal.

Individual Groups and specific dates can be selected by entering the dropdown menu at the top right of the screen.

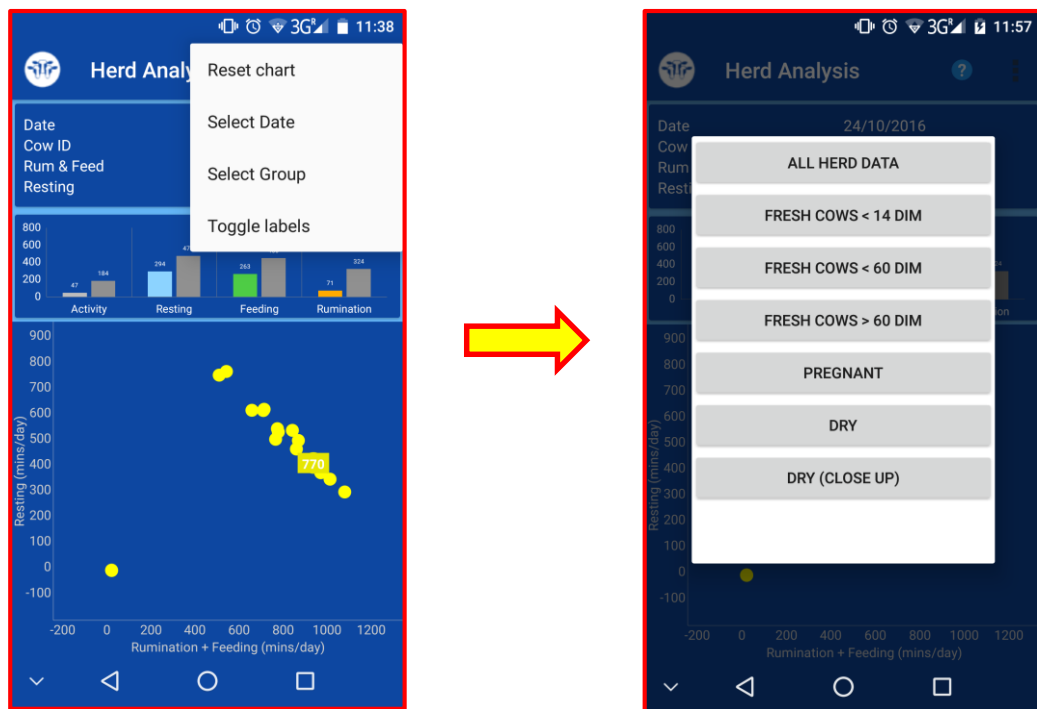


Figure 89 - - Choose from the list of groups for specific graphs to be displayed

6.2.11 View Basestation Status

The User may view the Basestation Status and information about the tags communicating with the system.

To view the Basestation information, select the Basestation icon at the top right of the home screen.

The system will show the number of collars which have communicated with the Basestation in the last 24hrs and the collars which have been out of range for longer than that period.

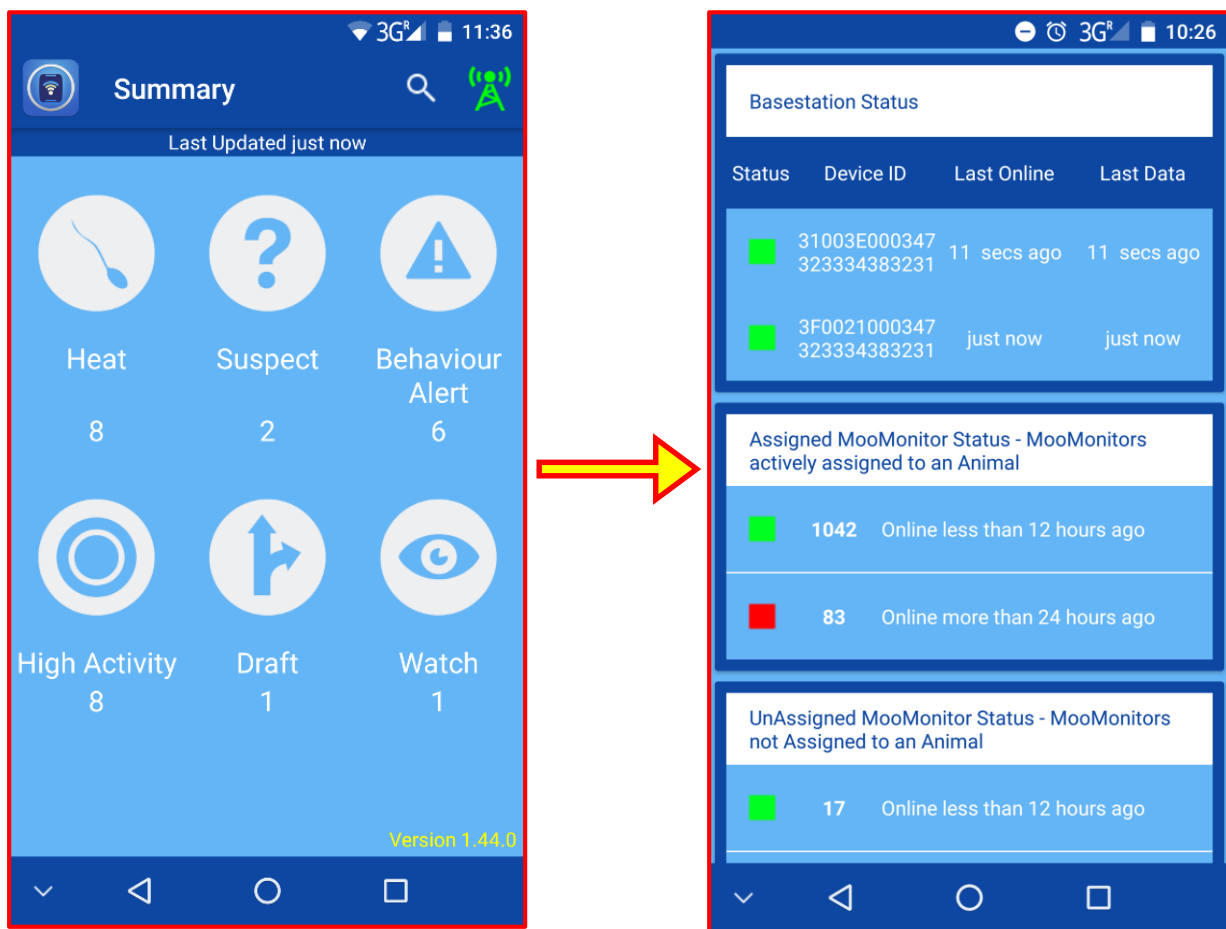


Figure 90 – View Basestation Status