MAGIC BREED PLUS

User Manual 2025

Revision date: 10/4/2025
This manual is updated to suit the new receiver in 2025.
Receiver firmware revision 1.00

Designed/manufactured by Electronic & Electrical Solutions Pty Ltd
3/9 Rawlins Circuit
Kunda Park
QLD 4556
Australia

Phone: +61 07 5453 4355
email: admin@eesolutions.net.au

www.magicbreed.com.au
www.eesolutions.net.au

1. Contents

2. Introduction

Congratulations on your purchase of the Magic Breed Plus foaling alarm system. Magic Breed has been the leading name in foaling alarms for over 40 years and with the release of the Magic Breed Plus now incorporates many electronic advancements made during that time.

To ensure that you have the best possible experience with your Magic Breed Plus system, please ensure that you read through this manual and understand the operation before use.

This symbol is used to note instructions that must be followed to prevent damage to the Magic Breed Plus system.

The latest version of the Magic Breed Plus Receiver (model year 2025) operates identically to the previous version, but significant improvements to the user interface have been made. These are detailed in this updated manual.

Previous manual versions can be downloaded from our website www.magicbreedplus.com.au

3. Legal Information

3.1. Liability Statement

Magic Breed Plus is intended to aid in the foaling process but there are limitations to the technology which means that it cannot be 100% accurate.

While we have every expectation that the Magic Breed Plus will work well and be very helpful in the majority of situations, Electronic & Electrical Solutions Pty Ltd can unfortunately take no responsibility or liability of a negative outcome due to the failure of the Magic Breed Plus system to detect the foaling event. The only way to achieve 100% reliability is to have an awake, alert person physically watching the mare at all times.

3.2. Regulatory Compliance

The Magic Breed Plus system has been designed and tested to comply with Australian regulations regarding Electromagnetic Compatibility and radio transmissions. Both the transmitter and receiver comply with the following Australian/New Zealand standards:

AS/NZS 4268:2017
AS/NZS CISPR32:2015

The RCM mark found on the Magic Breed Plus components is a confirmation that the equipment meets Australian regulatory requirements. Always look for this mark when purchasing new electronic equipment:

By complying with AS/NZS 4268, the Magic Breed Plus system is classified as a “Low Interference Potential Device”, or LIPD. An LIPD device can be operated by any person without requiring a radiocommunications licence, which is important for equipment like the Magic Breed Plus which is intended for operation by unlicensed people.

If you require more information regarding EMC and radiocommunications legislation please consult the Australian Communications and Media Authority (ACMA) at www.acma.gov.au or New Zealand Radio Spectrum Management (RSM) at www.rsm.govt.nz

4. Principle of Operation

Typically, in the late term of pregnancy, a mare will avoid lying flat on its side until entering labour. The Magic Breed Plus system uses this well documented behaviour.

A transmitter containing a special sensor called an accelerometer is attached to the mare's halter. The accelerometer allows the transmitter to determine the direction of gravity and therefore it can detect when the mare has laid on its side.

When the transmitter detects that the mare is in the foaling position a timer is activated and after a short delay the transmitter will alert the receiver, which will sound an alarm.

Note however that some mares are very active and will even temporarily lay in the foaling position prior to foaling. This results in false alarms, so it's important to be able to easily and temporarily silence any foaling alarms. The Magic Breed Plus makes this easy.

5. Getting Started

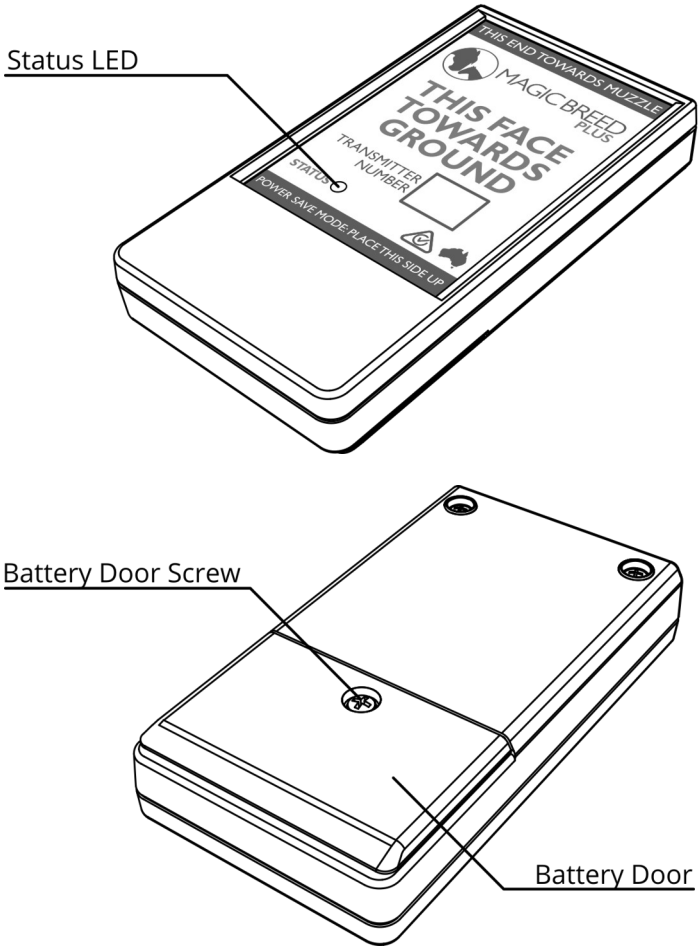
The Magic Breed Plus system is comprised of two main components: the receiver (base station) and transmitter. The transmitter is attached to the mare and sends wireless signals to the base station for reporting when it has detected that the mare is foaling.

5.1. Receiver

The receiver is a dark grey unit which has a power supply and antenna connected at the rear, plus an auxiliary output. Up to 8 transmitters can be used with a single receiver, which allows up to 8 mares to be monitored at one time.

5.2. Transmitter

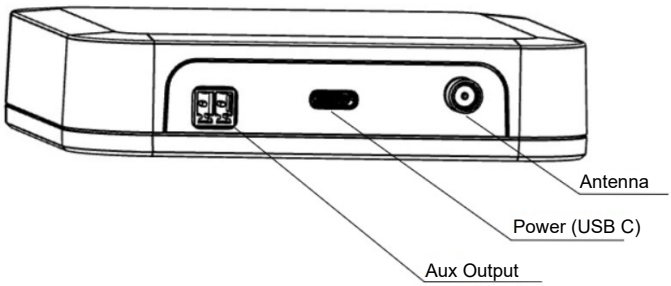
The Magic Breed Plus transmitter is battery powered and contains an accelerometer which enables it to sense the orientation of the mare's head. Detecting when the mare is laying on its side with its head on the ground is how the transmitter determines if the mare is in a foaling position.



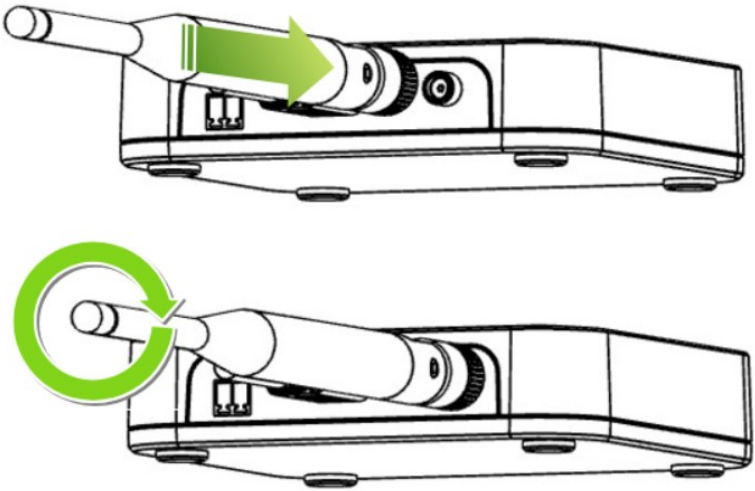
6. Setting Up

6.1. Receiver Connections

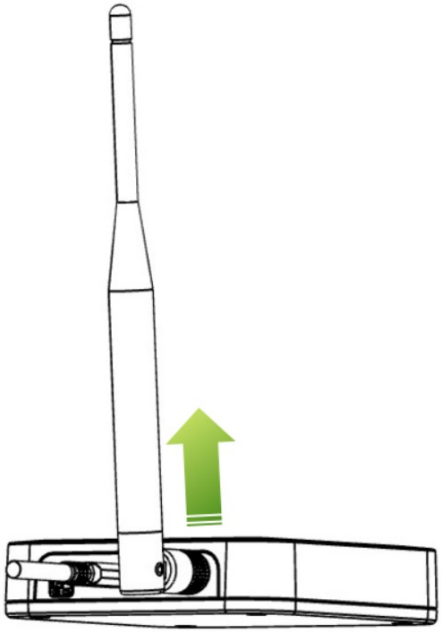
The receiver is powered by USB, either using the supplied USB plug pack or an alternative USB power source.



The receiver also needs to have the supplied antenna connected to the screw in connector on the rear.



The antenna screw connection should only be tightened to finger tight (do not use a tool to tighten it further).



The antenna and power connections can be damaged if treated roughly or dropped. Please take care with them and place the receiver in a safe location.

The antenna supplied may differ slightly from the one shown in the diagrams but operation will be the same.

Do not use any antenna other than that which was supplied with your unit or otherwise recommended by Electronic & Electrical Solutions.

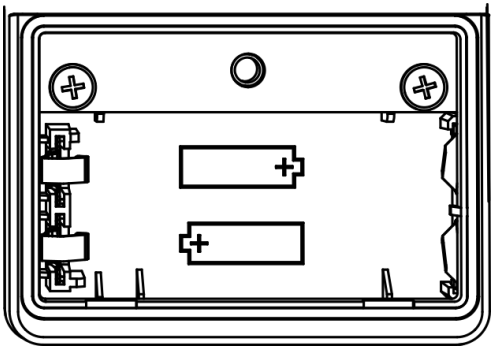
6.2. Transmitter Batteries

Transmitters are powered by a pair or AAA 1.5V alkaline batteries. Depending on the mare's level of activity the batteries in a transmitter can easily last an entire season.

Only use quality batteries from Energizer, Eveready, Duracell or Panasonic. Low quality batteries can leak and cause damage to the battery contacts.

To insert or remove the batteries, the transmitter battery door must be opened by first removing the battery door screw using a PH1 philips head screwdriver. When closing the door don't forget to reinstall the screw (including the sealing ring).

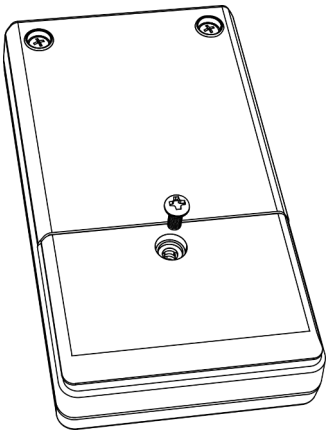
Note that the batteries must be installed in the correct orientation, as noted in the bottom of the battery holders:



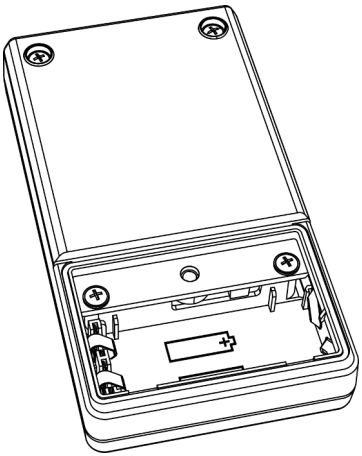
Do not overtighten the battery door screw as this may cause damage.

Under typical usage and depending on the movements the mare makes when not foaling, a single pair of AAA batteries can last an entire season.

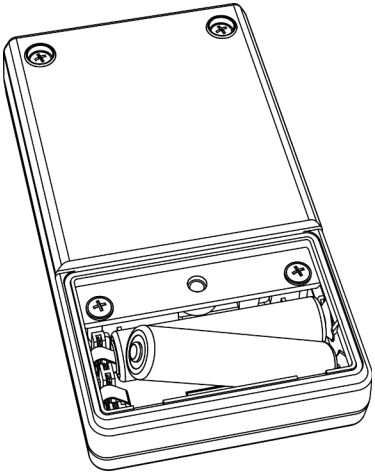
1. Remove battery door screw



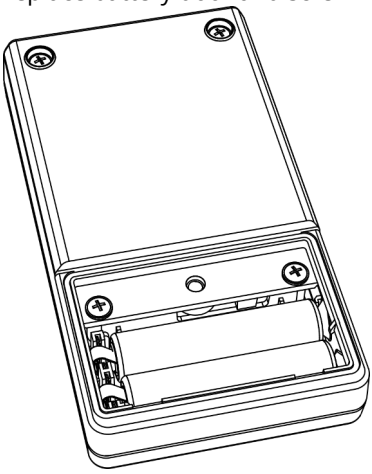
2. Remove battery door



3. Insert batteries

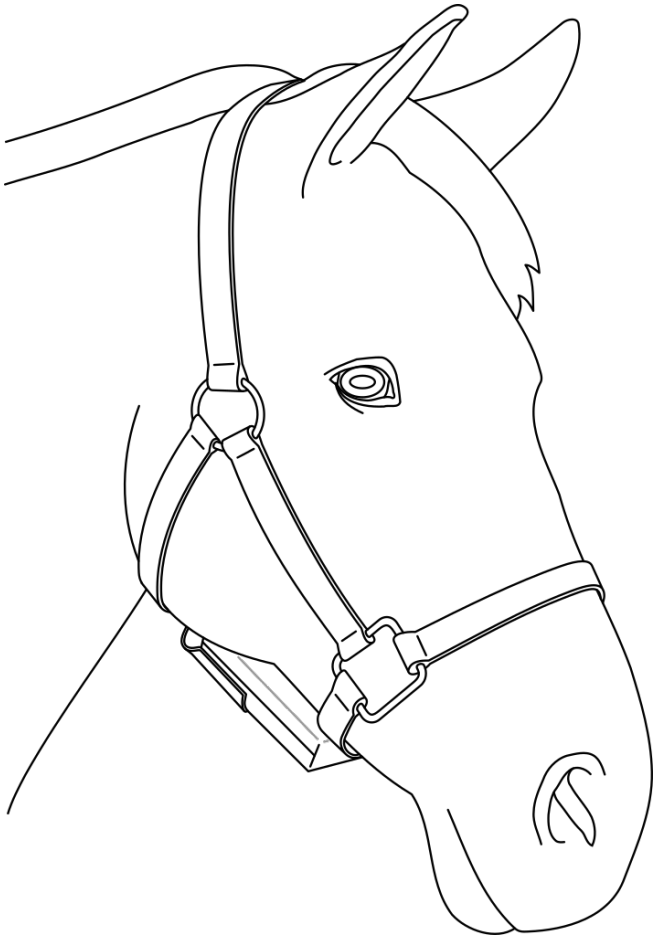


4. Once batteries are installed replace battery door and screw

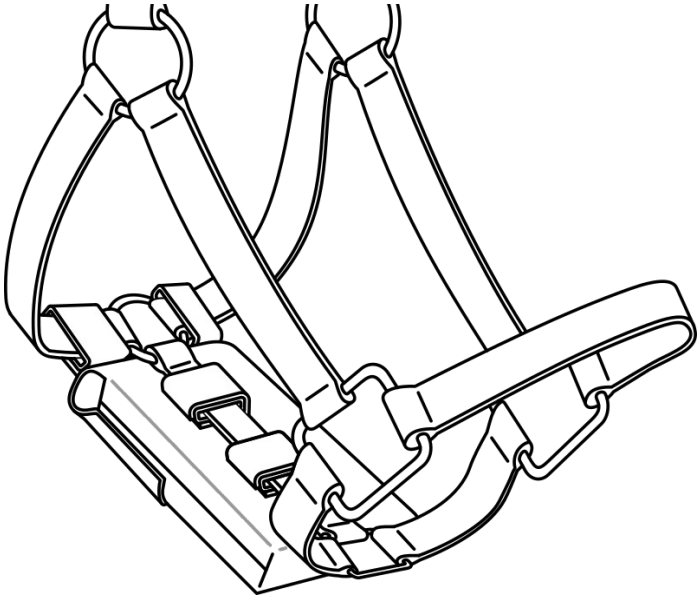


7. Fitting to the Mare

The transmitter is secured in place under the mare's chin using a halter fitted with a transmitter pouch.



The pouch is fitted to the halter using the four Velcro straps:

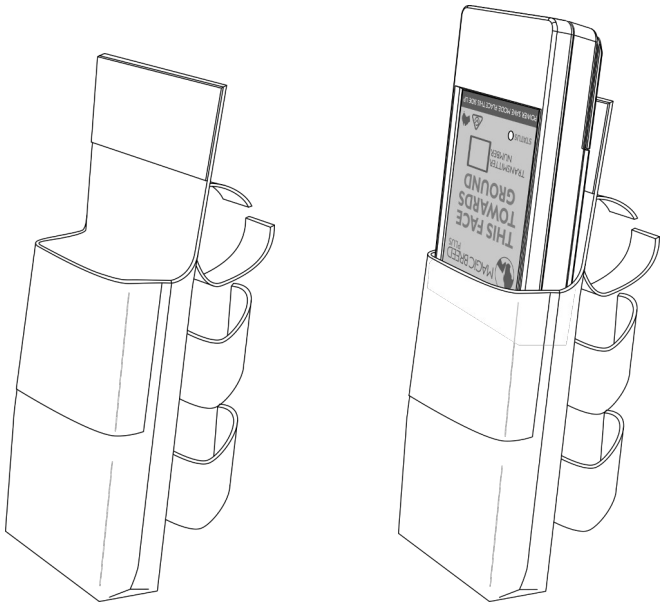


If concerned about the Velcro fasteners coming loose an optional alternative would be to use cable ties to fasten the pouch to the halter.

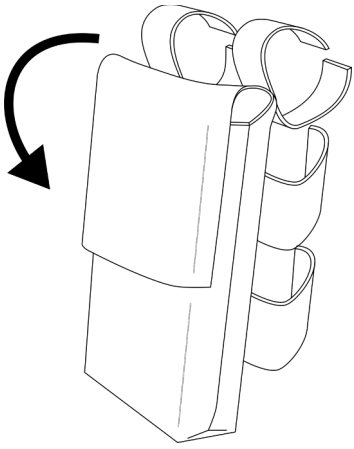
Pouches are manufactured from high quality Weathermax® canvas and should last many foaling seasons but if required replacements are available for purchase. The pouch is designed to work with both the original Magic Breed and the new Magic Breed Plus transmitters.

Once the pouch has been fitted to the halter, the transmitter can then be fitted.

Insert the transmitter into the pouch in the orientation indicated in the following diagram:



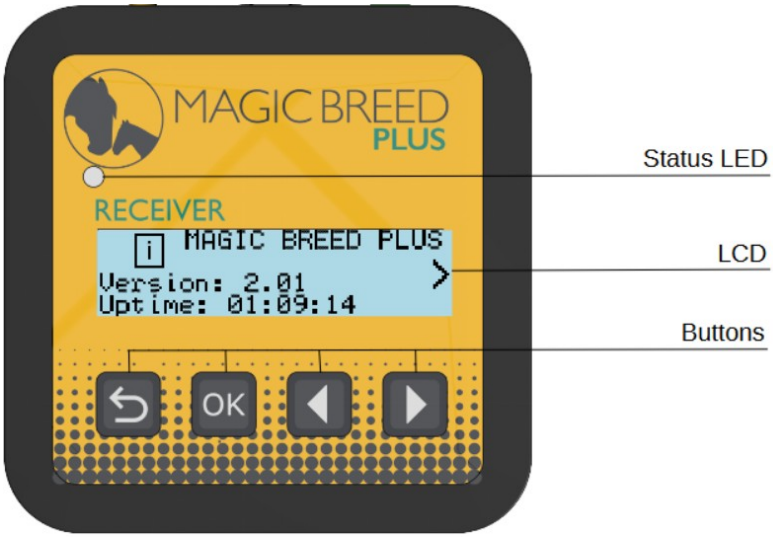
Note that the transmitter must be inserted into the pouch in the correct orientation or it WILL NOT WORK. Refer to the instructions on the transmitter front label for guidance in the field.



Then pull the flap over and down, sealing the Velcro so that the transmitter is held tightly. It's important that the transmitter is not able to move around inside the pouch.

8. User Interface

The Magic Breed Plus receiver features an LCD screen and four buttons to aid in configuration and user information.



Operation is simple:

Navigate between the various menu and status screens.

Make a selection from the menu.

Exit from a menu selection.

9. Transmitter Pairing

Before a transmitter can be used it first must be paired with the receiver. Each transmitter has a unique code that it uses to identify itself and the pairing process is used to communicate to the receiver this code without the user having to enter it.

NOTE: The Magic Breed Plus Receiver has a limit of 8 transmitters that can be paired for monitoring.

9.1. Setting Up Your System For First Use

When your receiver is first turned on it may not have any transmitters paired. The status LED will be green and the following message is displayed:

This is the home screen and will change once transmitters have been paired to the receiver.

In the following example transmitter 1 will be paired but the same procedure is applied pairing all the other transmitters.

9.2. Adding A Transmitter

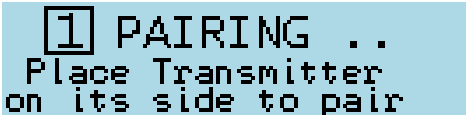
Preparation:

1. Transmitters on hand.
2. Transmitters each fitted with 2 AAA batteries.

Procedure (transmitter 1 example):

- From the main screen press the ▶ button once.

- A square with a number “1” should be visible with “Pair new Transmitter?”
- Press OK button
- The screen will show the number of the transmitter being added in a square and text “Pairing...” with instructions “Place transmitter on its side to pair”



- Place the transmitter that you wish to pair as transmitter 1 on it side, and look for the transmitter LED to start flashing.
- The receiver should beep three times to indicate that pairing was successful.
- The receiver will alarm for “FOALING”. Place the transmitter on its back to clear the alarm (after a short delay). Pairing is complete.
- It is recommended for the transmitter to be marked accordingly, to reflect the device number on the receiver.

The home screen will now display the transmitters which have been paired with the receiver. Please make use of the table at the back of this manual to note which transmitter was assigned to which mare.

Note that the pairing must take place while the transmitter and receiver are in close range of each other, within 10 metres is ideal.

10. Operation

10.1. Transmitter Communication

While a transmitter has batteries inserted it sends periodic messages to the receiver every 10 minutes. These “status” messages inform the receiver that the transmitter is operational and provide information such as signal strength and battery power level.

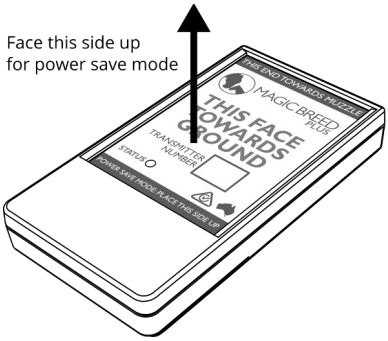
10.2. Transmitter Status

The transmitter status LED provides visual feedback to the user:

LED Behaviour	Description
Off	Transmitter is powered off or idle.
Flashing once per second	The transmitter is in an alarm condition.
Flashing twice per second	There is an error with the transmitter and it is unable to function correctly. Please contact Magic Breed for repair/replacement.
Remains on	The batteries have become too drained to operate correctly. The LED will remain on until the batteries are dead (at which point the LED will turn off as there is no power left).

10.3. Transmitter Power Saving Mode

During the foaling season the transmitter may not need to be used for periods from a few days up to a couple of weeks. Instead of removing the batteries for these time periods, it’s possible to put the transmitter into power saving mode by placing the transmitter on a *flat and level surface*, the label facing up.



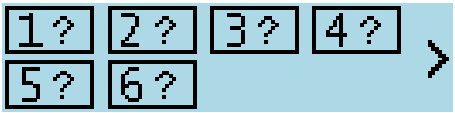
In power save mode the transmitter will still communicate status updates but at a 2 hour interval. The receiver will display the status of the transmitter as "POWER SAVE".

To exit power save mode, place the transmitter on its side and wait for the red status LED to start flashing. This provides visual confirmation that the transmitter has returned to normal operating mode. Note that depending on your "Alarm delay" setting for the specific transmitter this movement may trigger a foaling alarm for that transmitter.

10.4. Receiver Power ON

After power on, the receiver can make no assumptions about the status of the paired transmitters until it receives a status message from each one. To give the user a visual confirmation, after power on the screen will report the number of paired transmitters and their status. If no communication have been received from the transmitters since power on, an "?" will indicate a "WAITING" status

until the first communication is received from from the transmitter this may take up to ten minutes.



After power was lost the receiver will not retain the transmitter specific “Silence Period” setting, but all the other settings will remain as previously configured.

Receiver LED status table:

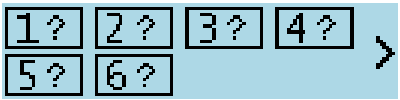
LED Status	Description
Green	Power is on. No alarms present for any of the transmitters
Red Flashing	Transmitter alarm received, (Foaling, Offline, Low battery)
Blue	The receiver is in programmable mode.
Pink/Red	Please contact the supplier for further assistance.

10.5. Receiver: Transmitter Status Display

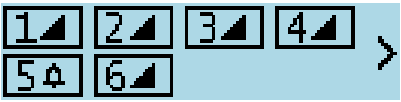
When no transmitters have been paired with the receiver the home screen will simply display “No Paired Transmitters”

When transmitters are paired with the receiver the “Home” screen serves as an overview screen of the transmitters paired and display the most important stat of each transmitter.

Below is a “Home” screen with six paired transmitters, just after power was lost and no transmitter data received yet.



Below is a “Home” screen with six paired transmitters. Transmitter five is in an alarmed state. By default a transmitter will display the signal strength.



Alternatively more information for each transmitter can be viewed by pressing the button from the “Home” screen, navigating through all the paired devices.

Below are two example “Device Screen” images. The transmitter number is visible in the box. In the top left corner the unique transmitter identification number is displayed.

Next to the transmitter number is the current status of the transmitter. This could be “Offline”, “Online”, “Low battery” or “Silenced”

10.6 Receiver: Transmitter Alarm Display

Foaling Alarm

The transmitter will detect when the mare enters a foaling position (laid on its side, head flat against the ground), and begin transmitting this information to the receiver. After the alarm delay (default 10 seconds), the buzzer in the receiver will begin to sound. The receiver display will indicate which transmitter number has caused the alarm:

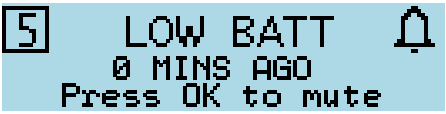
If more than one transmitter is detecting an alarm, once the current alarm have been acknowledged (the OK button pressed to mute) the next transmitter alarm will appear. The “Home” screen will display all the transmitters currently in alarm with the icon.

Offline Transmitter Alarm

If the receiver does not receive a status report from a paired transmitter for more than 20 minutes then an offline transmitter alarm will sound. This alarm differs from the foaling alarm in that when muted, the alarm will remain quiet until the receiver has heard from the transmitter in question again.

Low Battery Alarm

The transmitter is able to measure its battery level and sends this information to the receiver. If the battery level is being measured as critically low and the transmitter goes offline then a “Low Battery” alarm will be triggered:



Multiple Concurrent Alarms

If multiple alarms are occurring at the same time then they are displayed based on priority: foaling alarms are displayed first, followed by empty battery alarms and offline transmitter alarms.

The status of individual transmitters can always be viewed by using the buttons to navigate through the transmitter information screens.

10.6. Transmitter Information

For each paired transmitter a screen is available showing its current status. Using the buttons will cycle through these. The content of the screen is shown as follows:

Pressing the OK button will allow settings for the displayed transmitter to be displayed and adjusted (see section Transmitter settings for further information).

The icons on the right hand side of the screen indicate:

	Alarm status		Mute status
	Battery full		Full signal strength
	Battery half-full		Moderate signal strength
	Battery low		Weak signal strength

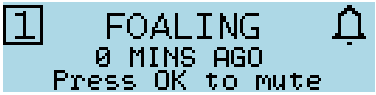
If the battery level reaches “battery low” then the transmitter batteries should be changed as soon as possible to ensure reliable operation. The battery status will blink as a warning when the battery start to run low.

If a weak signal is shown the system will still operate correctly but there is a chance of “offline transmitter” alarms occurring. The signal strength status will blink if the signal strength is very low.

The mute status will only be visible if the Transmitter “Silenced” mode setting was selected or if an alarm was muted.

The alarm status will only be visible if a transmitter is in an alarmed state.

If there have been any alarms since power was last reset the “Foaling Alarm” screen will show the last alarm and how long ago the alarm started.



11. Settings

11.1. Transmitter specific settings

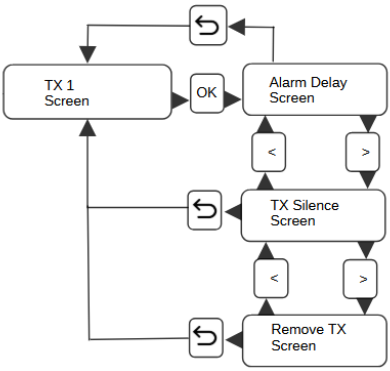
The settings for each transmitter can be adjusted individually, which allows for setting precisely to suit the personalities of different mares being monitored.

Once a transmitter has been added there are transmitter specific menu options available from the transmitter device screen.

- Press OK from the device screen to access the transmitter specific settings.
- Then the ◀ ▶ buttons to jump between these transmitter specific settings.

- In order to exit from the transmitter specific settings press the ⮌ button.

The following diagram is a reference for the "Transmitter Settings" menu and how to navigate:



Alarm Delay

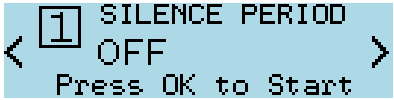
The alarm delay specifies how long the mare must have its head in a horizontal position until the alarm is triggered. Alarm delay can be used for minimizing false foaling alarms. The default setting is set to 10 seconds.

Change settings:
Press the OK button.
◀ ▶ to navigate options.
Press OK to select or ⮌ to cancel.

The available delay options are 5, 10, 15 and 20 secs.

Silence Period

Silence Period is a setting available for instances where you wish to ignore a specific transmitter for an extended time period.



This setting is “OFF” by default.

The setting can be changed by pressing OK on the silence period screen and will take effect immediately, a twelve hour clock count down starts.

Note: If the Magic Breed Plus Receiver loses power the silence period will be reset to OFF.

Remove Transmitter

This screen allows you to remove a transmitter.

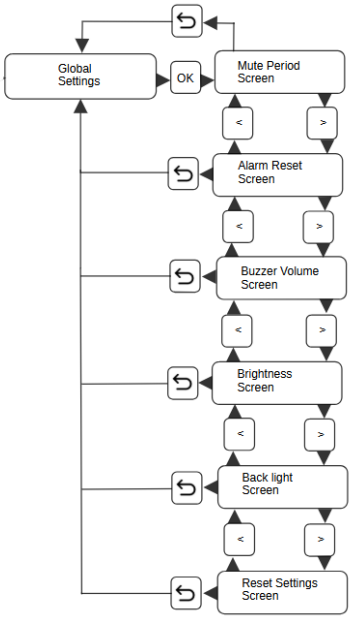
Press OK button. The remove transmitter verification screen should pop-up, in a flashing box.

If you would like to remove the transmitter press the OK button.

If you would NOT like to remove the transmitter press the ⮌ button.

11.2. Global Settings

These settings are for user preference and comfort. The below diagram is a reference for the “Global Settings” menu and how to navigate it:



To access these settings from the home screen, press the ▶ button passing all the transmitter devices until you find the “SETTINGS” screen.

Press the OK button to access the available settings and navigate with the ◀ ▶ buttons to the different available settings.

To exit the “Settings” menu press the ↩ button at any time.

Mute Period

The mute period specifies the duration the receiver will ignore an alarm. This mute period setting apply to all the transmitters. The

mute period for a specific transmitter starts when an alarm for the specific transmitter was muted.

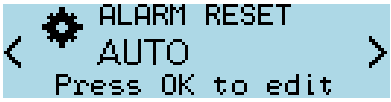
Change settings:
Press the OK button.
◀ ▶ to navigate options.
Press OK to select or ↩ to cancel.

The default mute period setting is set to 5 minutes.

The mute period can be a value from 5 minutes to 60 minutes in increments of 5 minutes.

Alarm Reset

The alarm reset mode determines the behaviour once the alarm condition stops (i.e. the mare returns to an upright position).



Change settings:
Press the OK button.
◀ ▶ to navigate options.
Press OK to select or ↩ to cancel.

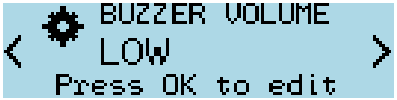
The default setting is “AUTO”.

When the “Alarm Reset” is “AUTO” an alarm will cancel (and the buzzer will silence) once the mare has returned to an upright position for 5 seconds.

When the “Alarm Reset” is set to “MANUAL”, once an alarm has been triggered the alarm will not reset until specifically muted by the user by pressing the OK button. This mode is similar to the original Magic Breed system and allows for more certainty if the monitoring person cannot continuously be in earshot of the receiver.

Buzzer Volume

This will be the volume that all alarms will sound at. When swapping between the two available settings a volume sample will be sounded.

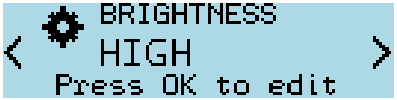


Change settings:
Press the OK button.
to navigate options.
Press OK to select or to cancel.

The volume of the buzzer by default is set to be “HIGH”.

Brightness

The brightness of the LCD screen can be set to personal preference.



Change settings:
Press the OK button.
to navigate options.
Press OK to select or to cancel.

The default brightness setting is set to be “HIGH”.

The brightness of the screen will change, navigating through the available brightness settings.

Backlight

The display is backlit so that it can be read in the dark.

Change settings:
Press the OK button.
to navigate options.
Press OK to select or to cancel.

The default setting is “AUTO”.

When the backlight setting is set to be “AUTO” the backlight turns off after 7 minutes of inactivity so that it is not disruptive. Any time a button is pressed or an alarm occurs the backlight will automatically turn on again.

If the always on options is selected the back light will always remain on.

Reset Settings

The “Reset Settings” menu option provides the option to set all the global and transmitter specific settings back to their default state.

To set all the settings to default from the Reset Settings screen press the OK button.

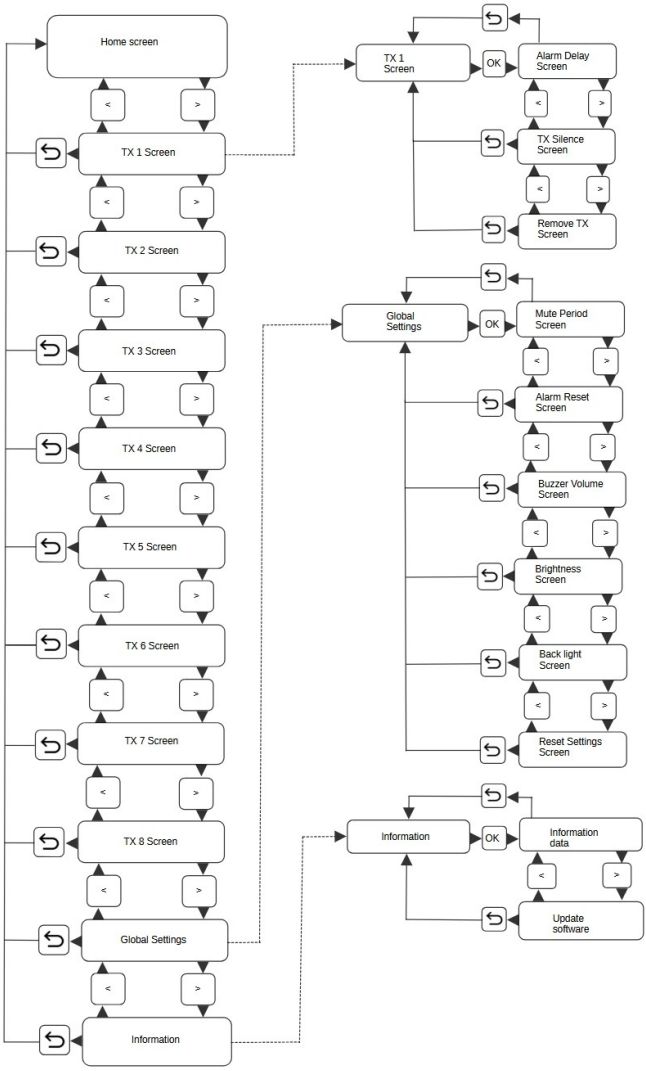
The confirmation screen will verify if you really want to set all the settings to default.

To restore all the settings to default press the OK button.

To keep the current settings press the button.

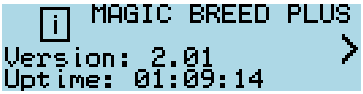
11.3. Menu Overview

The following diagram is a reference for the menu system and how to navigate it:



12. About Device

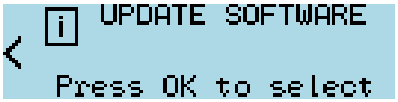
The receiver has an “About Device” menu option that can be used to view the version of the Magic Breed Receiver and the time period the receiver have been on.



There is also an option to update the firmware for the receiver. This could be done by connecting a USB cable from a computer to the receiver power port.

Before the Receiver can be updated the user would need the latest “Magic Breed Plus Updater”

Navigate to the “Update Software” screen:

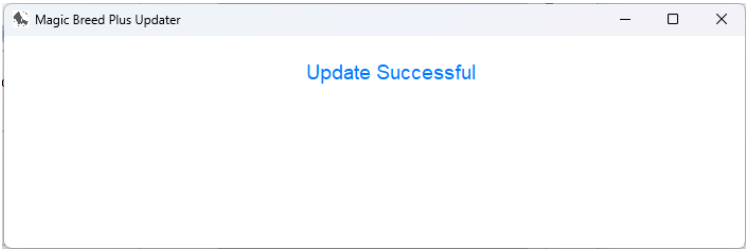


Press the OK button

The receiver status LED should change to a blue colour.

Double click on the latest “Magic Breed Plus Updater” and wait for the Window on the computer to show “Update Successful”

The update should then be completed.



Please note that once an update is completed all the transmitters would need to be paired with the receiver again. All the settings will also be set to default.

13. Range and Testing

The range of RF devices such as the Magic Breed Plus system is highly dependent on many factors but most specifically on the path between the transmitter and receiver. Magic Breed Plus uses the latest modulation technology at 917MHz, which provides a significant increase in performance over the 27MHz FM system used by the original Magic Breed design.

If there is a clear line of sight between the transmitter and receiver than a range of over 1km can be easily achieved. Unfortunately, clear line of sight is somewhat uncommon. Trees, fences and buildings can have a minimal to moderate impact on the range. Hills can have a significant impact. Regardless, even with significant blocking objects a range of 500m should still be easily achievable.

To perform testing, first check the pairing by placing a transmitter on its side near the receiver. The alarm should sound and then silence once the transmitter is placed back in a flat orientation.

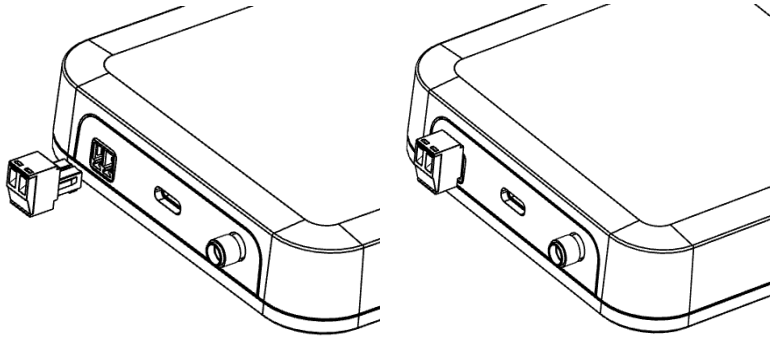
Take the transmitter to the foaling location and place it on its side on the ground. For the most accurate testing place your foot between the transmitter and the direction of the receiver (this simulates the blocking characteristic of the mare's body). Again, the receiver should sound the alarm (it might be necessary to have a helper relay this information).

14. Additional Hardware Options

14.1. Auxiliary Alarm Output

The Magic Breed Plus receiver has an auxiliary alarm output. This can be used by those who require a louder siren or would like to connect to an alarm dialer.

The auxiliary alarm output is a normally open volt-free relay contact rated to 1A at up to 30V AC/DC. The relay contacts will close when the receiver is indicating an alarm condition.



14.2. 12V Operation

To operate the Magic Breed Plus receiver from 12VDC requires a 12V to 5V USB-C converter. We recommend the use of the Jaycar part number MP3684:

https://www.jaycar.com.au/p/MP3684

If this is no longer available please contact us for an alternative recommendation.

15. Troubleshooting

Problem	Solution
Receiver will not turn on or power is intermittent	Ensure that the USB-C connector is inserted properly and power supply cable is not damaged.
The receiver alarms with the message *Hardware Fault*	Transmitter self-test has detected an internal error. Please contact Magic Breed for assistance.
The receiver alarms with the message *Offline Alarm*	An Offline Alarm occurs if the receiver has not heard from the transmitter for an extended period (1 hour). Usually this would only occur if the batteries have gone flat but can also be caused by mechanical problems. Please contact Magic Breed for assistance.
The alarm is too loud/too quiet	The 2025 receiver model features the ability to select between two volume levels. If you are hard of hearing it's possible to use the auxiliary alarm output with an external siren. We recommend locating the receiver as close as possible to the person monitoring the mare.

16. After Use

New Magic Breed Plus systems should be stored in a clean, dry environment between seasons or when not in use for an extended period.

IMPORTANT: make sure the batteries are removed from all transmitter units prior to storage. This will prevent the batteries being depleted and also prevent possible damage due to the chance of leaking batteries.

The Magic Breed Plus design features significant improvements over the old Magic Breed design and as such, regular servicing is unnecessary. For peace of mind however, many customers may still wish to send their Magic Breed system in for a factory check from time to time.

17. Specifications

Operating frequency:	917MHz
Signal modulation:	Chirp spread-spectrum
Transmitter	
Size:	110 x 58 x 22.5mm
Weight (excluding batteries):	58g
Power:	2x AAA 1.5V Alkaline batteries
IP rating:	IP54
EIRP output power:	50mW
Receiver	
Size:	110 x 110 x 22mm
Weight:	133g
Power:	5VDC 500mA max, USB-C

18. Warranty

18.1. Standard Warranty Terms and Conditions: Manufacturer's Warranty

Australian Consumer Law guarantees that regardless of the manufacturer warranty, products are warranted for a period relative to the product's value and intended use. The following manufacturer's warranty does not modify or exclude the manufacturer's obligations under the Australian Competition and Consumer Act and other Australian laws.

1. Electronic & Electrical Solutions Pty Ltd warrants that, during the warranty period this product will be free from faulty parts, manufacture or workmanship when used within normal operating conditions.

2. The warranty period for Magic Breed Plus components is 24 months from the date of purchase.

3. The warranty does not apply where damage is caused by other factors, including:

   (a) abuse, mishandling, accident or failure to follow operating instructions.
   (b) exposure to liquid or infiltration of foreign particles exceeding the IP rating of the unit.
   (c) servicing or modification of the equipment other than by Electronic & Electrical Solutions.
   (d) use of the equipment with other accessories, attachments, parts or devices that do not conform to the specifications laid out in this manual.
   (e) damage during shipment.

4. Any repair work carried out will receive a further 12 month warranty. A fresh warranty does not apply to any parts not repaired.

18.2. Warranty Claim Procedure

1. You must inform Electronic & Electrical Solutions as soon as the failure becomes apparent.

2. Once authorised, return the unit (at the customer's cost) to Electronic & Electrical Solutions to be assessed and repaired. Ensure that all contact information and a written fault description are included.

3. The unit will be assessed and, as appropriate, either repaired or replaced. It is then returned to the customer at the cost of Electronic & Electrical Solutions.

19. Transmitter Reference

For ease of reference, write down your transmitter numbers and corresponding mares in this table:

Transmitter No.	Mare