

INSTALLATION GUIDE

Active Tag Solution



This installation guide provides instructions for technical installers on how to install a Tru-Test Active Tag Solution.



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Overview

What is the Tru-Test Active Tag Solution?

An Active Collar or Active Ear Tag is a sophisticated monitoring device that analyses an animal's gestures and behaviours. The system analyses the data and interprets the overall health and oestrus status of each animal. Actionable alerts are then presented in a user-friendly app. The system optimises the efficiency of farm's breeding and health care programs.

The active tags talk to a central gateway which gathers data automatically and sends it to the cloud where it can be analysed with tools within a Datamars Livestock account.

How does it help the farm employees?

The Tru-Test Active Tag Solution provides actionable alerts in a user-friendly app that can lead to an improvement in reproduction and animal health outcomes, reduced treatment costs, improved milk production and more efficient use of labour.

For example, tail paint/chalk is a good tool for heat detection, however, requires attentive, trained, and experienced staff to interpret whether an animal is on heat. The Tru-Test Active Tag Solution will automatically alert staff to review an animal for a heat event leading to better heat detection rates, which in turn will improve breeding and pregnancy rates.

Safety warnings

The installation of the Tru-Test Active Tag Solution must be performed with rigorous adherence to national and local electrical and 'Working at Heights' codes. Animal welfare standards for your region should be followed in all instances when handling and containing animals. Manufacturer instructions should be followed closely when attaching active collars or active ear tags to animals. Failure to do so may result in personal injury, death or injury to livestock.

Before the installation

The following information will help you understand how to review a site before the installation and will help you complete the pre-install checklist.

Gateway installation requirements

Base considerations

A gateway should be installed in a location where it:

- Cannot be damaged by moving parts such as a rotary platform, moving gates, or pivot irrigators.
- Cannot be accessed or damaged by animals. If needed cables can be installed in conduit to protect them.
- Is at least 5 m (16') from objects which can cause electrical interference such as RFID readers, drafting (sorting) gates, antennas, and aerials.
- Has access to a power outlet within 10 m (11 yards) of the gateway install location. Extension cables should not be used. If needed, an electrician should install a new power outlet prior to installation day.
- Has access to a suitable internet connection, see section further on for how to determine this.

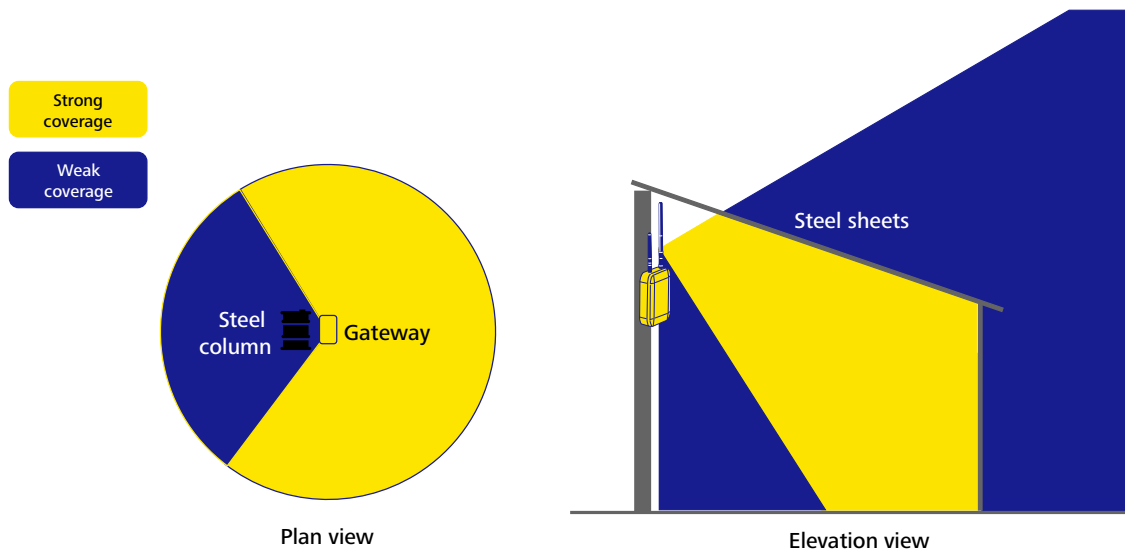
Choosing the best location for transmitting data

Once locations have been identified that match the base criteria, then a location that provides best line-of-sight to animals needs to be identified:

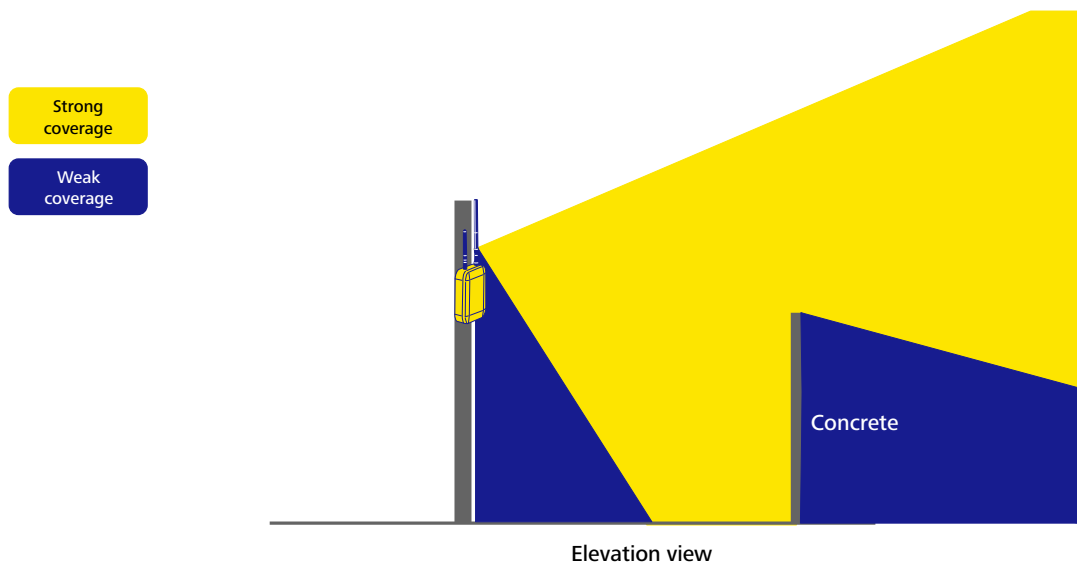
- Each gateway has a 500 m (540 yards) line-of-sight to livestock with active devices installed. Obstructions will either reduce or completely block this range depending on the materials involved.
- Consider where animals are housed and the flow of animals around the property at different times of the year – what routes are they taking to the parlor, housing, or paddocks each day.
- The gateway needs to be positioned in a location where it can see (line-of-sight) animals for as long as possible before the data will need to be used by the staff, such as in a raceway leading up to the holding pen before the milking parlor. For a 1000 head system, the optimal time is 10 minutes between when the gateway sees the active devices and when the farmer needs to start using the data. This gives time for the data to be synced and processed by the algorithms.
- Often the best position for a gateway is high above the ground. A minimum of 3 m (9') is recommended to achieve optimal coverage and limit interference from low objects and machinery. A gateway may be installed on a roof if it is braced adequately.
- Since walls block line-of-sight, it is generally recommended to install a gateway on a pole or building roof rather than a wall to achieve the widest angle of coverage for transmitting data.
- Consider the location of obstructions such as buildings, trees, and metal cladding which may block data transmission from animals. See *Diagrams showing considerations for gateway placement* on page 9 to see how different obstructions can affect gateway performance. Avoid installing the gateway in locations where these obstructions are in line of animal flows and critical areas for data syncing.
- Obstructions may be overcome, if necessary, by the installation of more gateways at different locations. See *Number of gateways* on page 11.
- If obstructions are unlikely to be overcome, inform the customer of dead-zones and limitations before proceeding with the install.
- Once the best location has been selected, inspect the shed for a wooden or steel beam which can be used for mounting.

Diagrams showing considerations for gateway placement

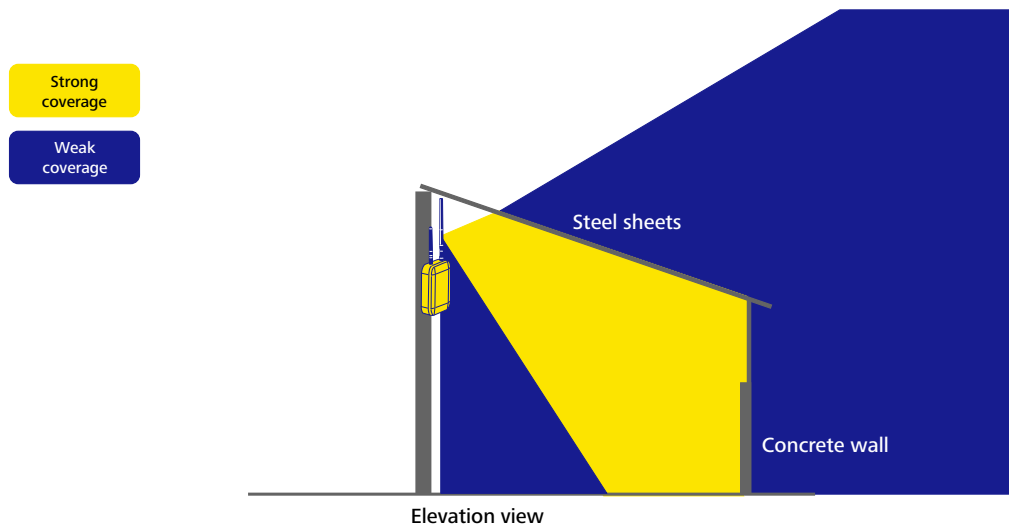
Expected gateway performance through metal



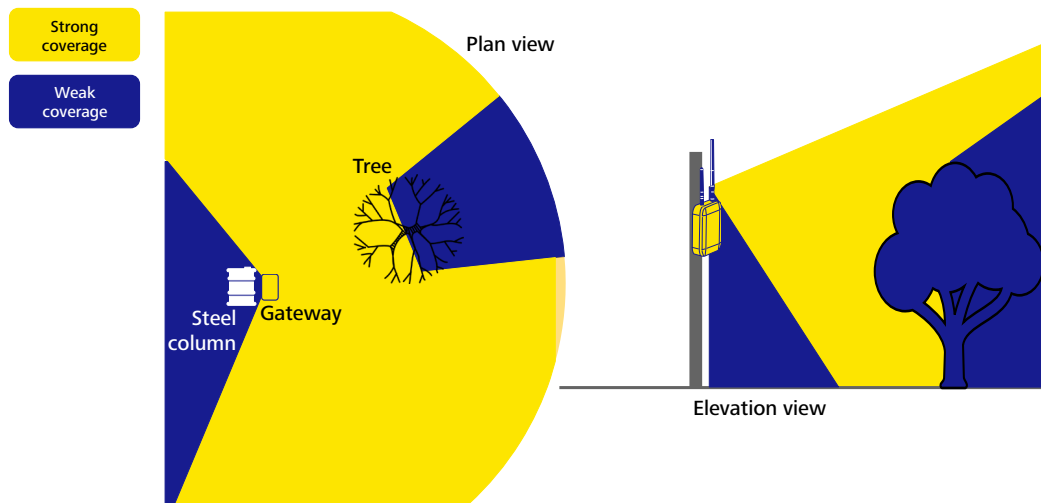
Expected gateway performance through concrete



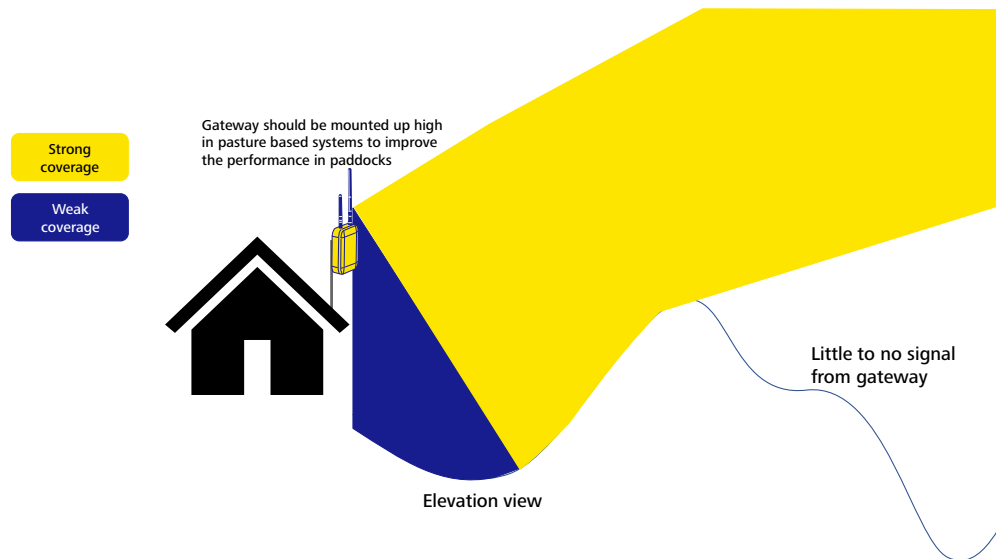
Expected gateway performance through concrete and metal



Expected gateway performance through trees and vegetation



Expected gateway performance across terrain

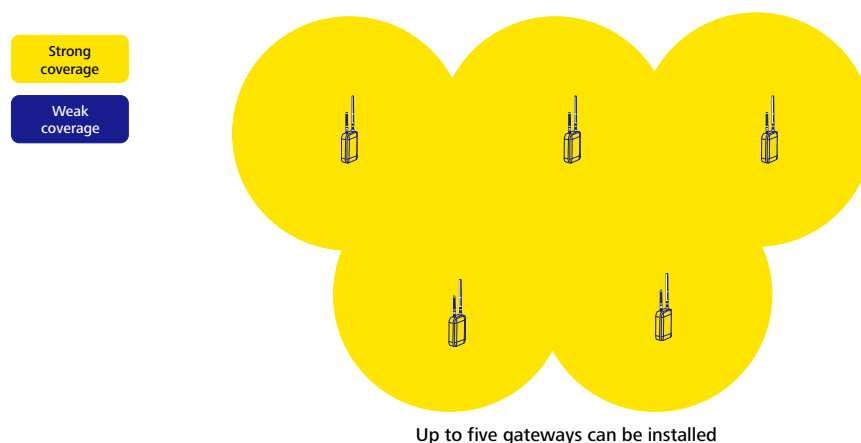


Number of gateways required



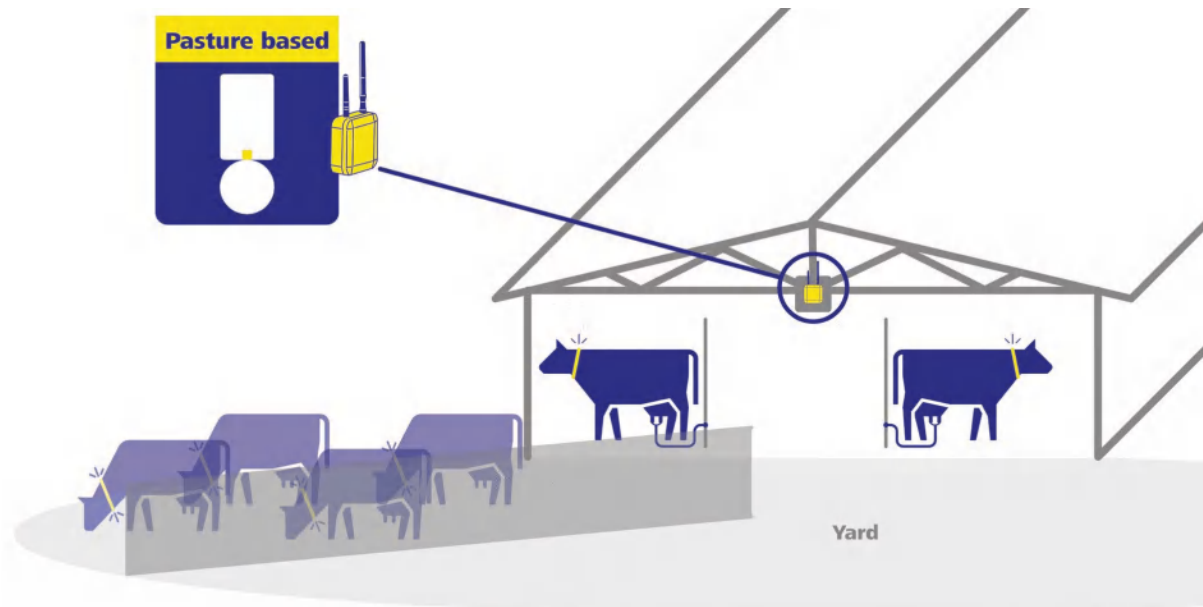
Before installing multiple gateways, contact the Datamars support team for assistance. See *How do I contact support* on page 59.

- By default, one gateway can synch data for 1008 active devices. However, this number can be extended to up to 5000 active devices per gateway. Contact the Datamars support team for assistance. See *How do I contact support* on page 59.
- One gateway has a range of 500 m (540 yards) line-of-sight; to increase coverage over a larger area or increase the amount of time animals are in range of a gateway, multiple gateways can be installed.
- Gateways should be installed ~500 m (540 yards) apart.
- Up to 5 gateways can be installed on a single farm.
- If multiple gateways are required (either because more than 5000 active devices being used or because better coverage is required) all gateways must be added to the same farm in the Datamars Livestock software (see *Step 1: Adding a gateway to a farm* on page 20). Each gateway can have the same internet connection type (Ethernet, LTE or Wi-Fi) or a different internet connection type.



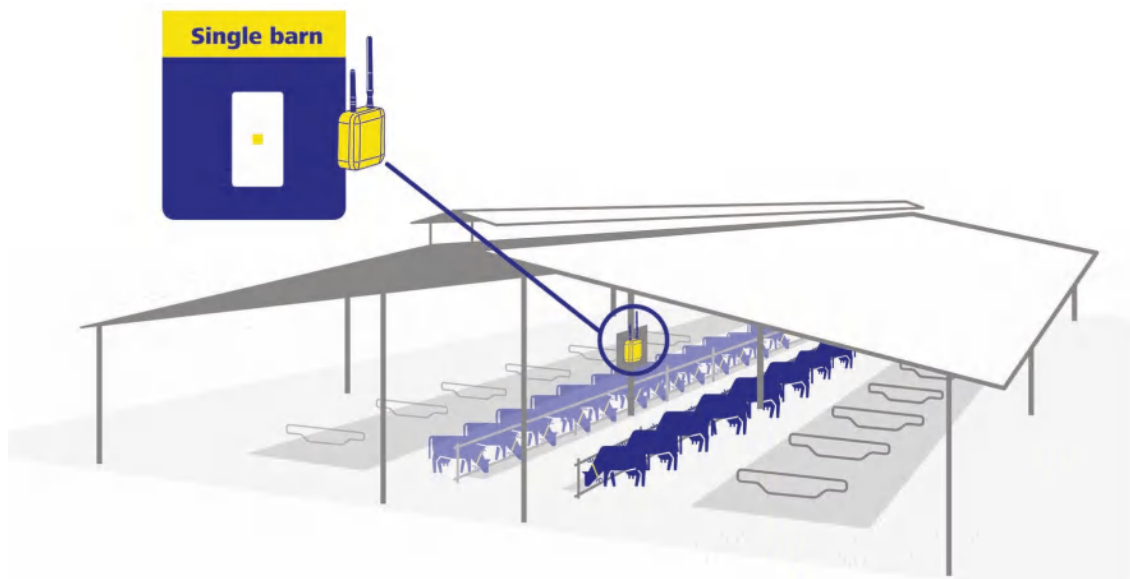
Examples of gateway installations

Gateway installation in a pasture-based situation

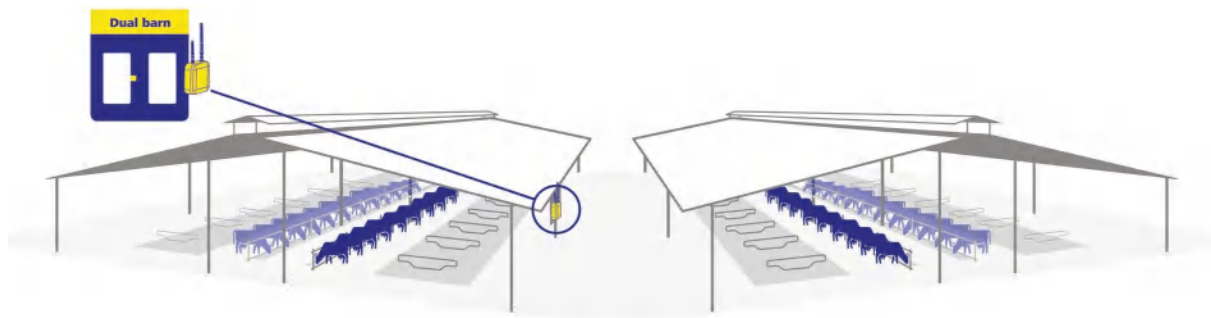


- Installing the gateway in a yard provides good coverage as animals approach. However, it may be difficult to access power and wired internet.
- Installing the gateway in a dairy shed makes it easier to access power and an ethernet internet connection. The gateway can be mounted on the roof apex for good line-of-sight.

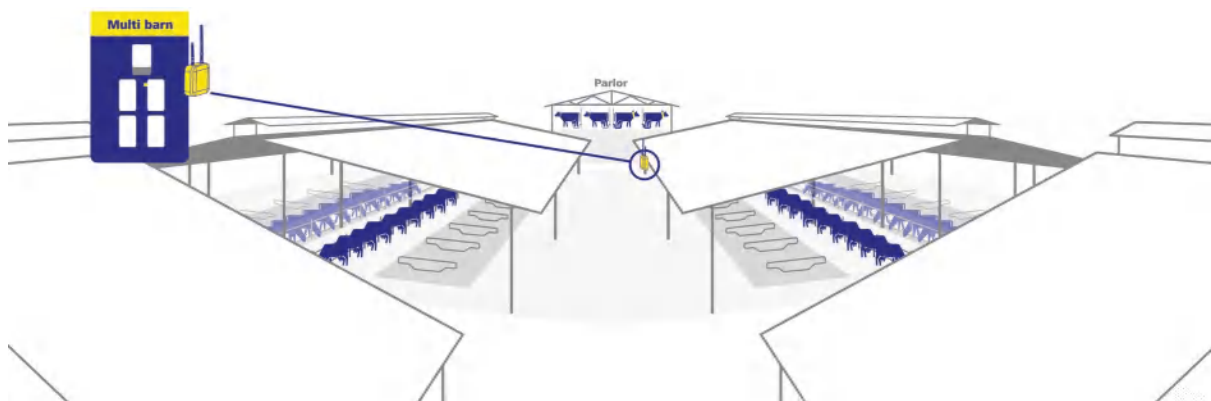
Gateway installation in a single barn situation



Gateway installation in a dual barn situation



Gateway installation in a multiple barn situation



Identifying a suitable internet connection

- The recommended internet connection is via ethernet cable as this is the most reliable, however if this is not available then an LTE connection via a cellular network is recommended, followed by Wi-Fi as the last resort due to risk of interference. If using an LTE connection, ensure a gateway is ordered which supports this.
- The most important factor in the system working correctly is the stability and speed of the internet connection. An unstable, intermittent or slow internet connection will significantly reduce the effectiveness of the system and may cause missed AI opportunities or may result in health issues going unnoticed.
- The minimum supported upload and download speeds are at least **6 Mbps**.

Gateway connection via ethernet

- The ethernet cable between the gateway and the router should be less than 90 m (100 yards). A longer cable may be used, but any cable longer than 75 m (82 yards) is likely to require the installation of an ethernet repeater or ethernet hub part-way along the cable. This will require its own dedicated power outlet.
- Ensure that there are enough ethernet ports available on the router for all gateways to plug into, otherwise a switch will be required to extend the number of ports available.
- To test that the internet connection is fast enough, perform a speed test (see steps below) using a computer plugged in to the router via an ethernet cable (such as one in the shed, or supply a laptop).

Gateway connection via LTE

- To determine the best LTE provider, search coverage maps for local providers, which should be available online. Verify this on farm using information supplied by the farmer about quality provided by different networks, as well as farm walks with mobile devices using those networks.
- To test that the internet connection is fast enough, perform a speed test (see steps below) using a mobile device, or laptop with a LTE dongle and SIM card, connected to the network that will be used during the install. It is important to test this at the location that the gateway will be installed to ensure the signal at that location is strong enough.
- The farmer must supply a SIM card and organise a data plan of >1 Gb with the LTE provider prior to the installation.

Gateway connection via Wi-Fi

- Only 2.4 GHz Wi-Fi networks are supported.
- To test that the internet connection is fast enough, perform a speed test (see steps below) using a mobile device or laptop connected to the Wi-Fi network that will be used during the install. It is important to test this at the location that the gateway will be installed to ensure the signal at that location is strong enough.
- If the signal is not strong enough at the installation location, a Wi-Fi booster can be installed to improve the signal strength.

Performing an internet speed test

- Browse to <https://www.google.com/search?q=speed+test> and click **Run Speed Test**.
- Ensure that both the minimum download and upload speeds are at least **6 Mbps**, if slower than this there may be delays transmitting or viewing data, which will make the system unreliable.

Verifying internet strength at locations where staff will access data

- Not only is it important that there is a strong internet connection at the location the gateway will be installed, but there also needs to be a strong internet connection at the location where staff will be working with animals. Staff must be able to receive alerts, view animals in heat, update animal information or events via their mobile devices.
- Identify locations on the property where staff will need to access this data such as around head bails, lockups, milking parlors, or near drafting (sorting) gates then perform an internet speed test using a mobile device connected to either the LTE or Wi-Fi network that staff will be using.
- It is the responsibility of the farm owner to ensure that there is suitable internet access at these locations, however without this, the system is unreliable. The farmer should be informed as early as possible so that they can investigate solutions.

Installing the active devices

Resources required for installation

- At least 2-4 people are recommended for installation of active ear tags, and 2-3 people for active collars. Staff can work in teams. See *Step 1: Preparing for the installation* on page 44 for details.
- It is highly recommended that active collars are fully assembled prior to installation. The assembly process is very time-consuming and will require an additional person on-site.
- If many animals are being held in lockup at once, it is crucial that the process is as fast as possible to reduce the time they are locked up for.

Existing collars

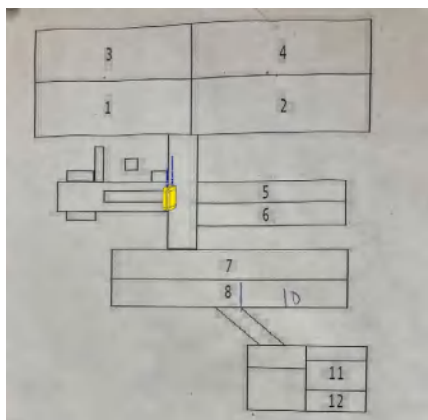
- If non-Tru-Test active collars are already in use on the farm, the collar straps *may* be re-usable with Tru-Test active tags replacing the existing active tags. Note that non-Tru-Test active tags are not compatible with the Tru-Test Active Tag Solution. It is only the *collar straps* which may be re-usable, if they are the right size. To check that existing collars are compatible with Tru-Test active tags, measure the width of the existing collars. The width must be between 30-40 mm (1-1½") and no thicker than 3.5-4 mm (3/8"). Collars up to 5 mm (¼") may be suitable if they are flexible enough, however a Tru-Test active tag should be threaded onto an existing collar in order to test it.
- Existing collars will need to be removed from the animals and Tru-Test active tags threaded on to these prior to the installation process.
- If an existing collar is incompatible, any visual IDs or other devices will need to be transferred onto a new Tru-Test active collar. Each animal should only be fitted with one active collar.

Animal identification

- Where a farm uses both EID and VIDs to identify all animals being monitored using active devices it is recommended that EIDs are used as the primary identification method.
- EIDs will be scanned at the time of installation using a Tru-Test XRS2i/XRS2 or SRS2i/SRS2 EID stick reader and entered into the mobile app alongside the animal's VID.
- The Datamars Livestock app supports EIDs in Decimal 1, Decimal 2 and Hex format only.
- If two animals have the same VID, the EID becomes a secondary identifier to assist in finding an animal which has generated an alert (e.g. an animal which is on heat). Ideally, one of the animals would have its duplicate VID replaced.

Completing the pre-install checklist

Complete the pre-install checklist in the appendix of this guide, see page 61. Include a diagram of the gateway installation site(s) and/or a Google Maps image of the farm. See the example below:



Once the pre-install checklist has been completed, this should be reviewed with the customer.

Both the sales staff member and the customer should sign that they have agreed with all points listed. Email the signed pre-install checklist to the installer AND to **smartfarming.service@datamars.com**

Parts list and tools required

Included parts

All orders should be shipped directly to the installer to allow for pre-installation day checks and steps.

- Datamars Edge gateway either supporting Ethernet and Wi-Fi, or optionally also supporting LTE
- Power supply
- Cable to connect gateway to power supply (grey)
- Cable to connect power supply to power outlet (black)
- Ethernet IP67 protection gland
- Pole mount kit:
 - Plastic mounting plate
 - 2 large metal ratcheting band clamps
 - 2 x pan head M4 6mm screws for mounting the gateway to the plastic mounting plate
- Either:
 - Active collars consisting of active tags, collars, and weights (pre-assembled in some markets) OR
 - Active ear tags and male buttons
- 2 x magnets to wake up active collars and active ear tags
- Z2 No-Tear-Tagger™ (optional – if using active ear tags. Check if farmer already has this before ordering)
- Tag removal tool (optional)
- Spare VID tags & pen (optional – for re-tagging any animals with duplicate VIDs)
- Tru-Test XRS2i/XRS2 or SRS2i/SRS2 EID stick reader (optional – if using EIDs to assign. Check if farmer already has this before ordering)





Recommended consumables to supply

- Galvanised round pole to mount gateway on (optional)
- Fixings and support brackets for attaching steel tube to ground/roof/building (optional)
- 4 x M4 screws for attaching gateway to wall (optional – if wall mounting)
- 4 x M3 screws for attaching power supply to wall
- Localised plug for gateway
- Cable ties and cable clips for cable management
- Cable glands for routing power cable through holes
- Conduit (optional – to protect cables where needed)
- Regional nano SIM card if required for LTE (optional – if using LTE)
- Enough Cat5 or Cat6 cable to reach router with standard RJ45 connectors - reel, or pre-set lengths. (Optional – if using ethernet)
- Short length of ethernet cable to plug laptop into gateway for configuration (optional – if using Wi-Fi or LTE)
- UPS (optional – only for extreme power fluctuations in shed)

Recommended tools

- Screwdriver set
- Socket and/or spanner set
- High-torque drill
- 10 cm (4") magnetised driver bit (optional – if attaching gateway directly without the plastic mounting plate, head should match M4 screws being used)
- Cobalt steel drill bits – assorted sizes
- Hammer
- Tools for fixing steel tube to ground/roof/building
- Angle grinder, cut off discs, grinding wheels
- Spirit level
- Scissor lift or ladders, and safety equipment for working at heights
- Wire cutters and strippers
- Crimps for connecting RJ45 to Cat5 or Cat6 cable (optional – if not using pre-set lengths)
- Multimeter for testing gateway power supply
- Laptop with an ethernet port (optional – if using LTE or Wi-Fi)
- LTE dongle (optional – if using LTE or Wi-Fi)
- Smartphone with the Datamars Livestock app installed, and that has internet access

On site requirements

- Power outlet within 10 m (33') of gateway installation location, if one is not available ensure this is installed by a registered electrician prior to installation day
- Internet access via one of:
 - Router with an available RJ45 ethernet port
 - 2.4 GHz Wi-Fi network with strong signal
 - Cellular reception with a provider that has strong signal at the installation location
- Ethernet repeater or ethernet hub installed between the gateway installation and the router [only required if using ethernet cable longer than 75 m (82 yards)].

Installation day

Assembling what you need for installation day

Prior to installing the Tru-Test Active Tag Solution, make sure that you have a copy of the completed pre-install checklist (see page 61). This will ensure that the installation goes smoothly and reduces the chance of problems further down the track.

You should have received all components as per the purchase order. Go through and double check that the order is correct, and that all parts have arrived. Check that you have enough consumables to do the job, and that all tools are in working order.

Read the information in the section *Is an electrician required?* on page 20 to see whether a power point needs to be installed prior to installation day or whether a qualified electrician is required on-site.

Software setup

The first job of the installer will be to help the farmer create an account in the Datamars Livestock software. They should make a note of the login credentials they use. We suggest noting the farmer's login details on the *Quickstart Guide* which can be left behind with the farmer after the installation process is complete.

Step 1: Registering the user and creating a farm

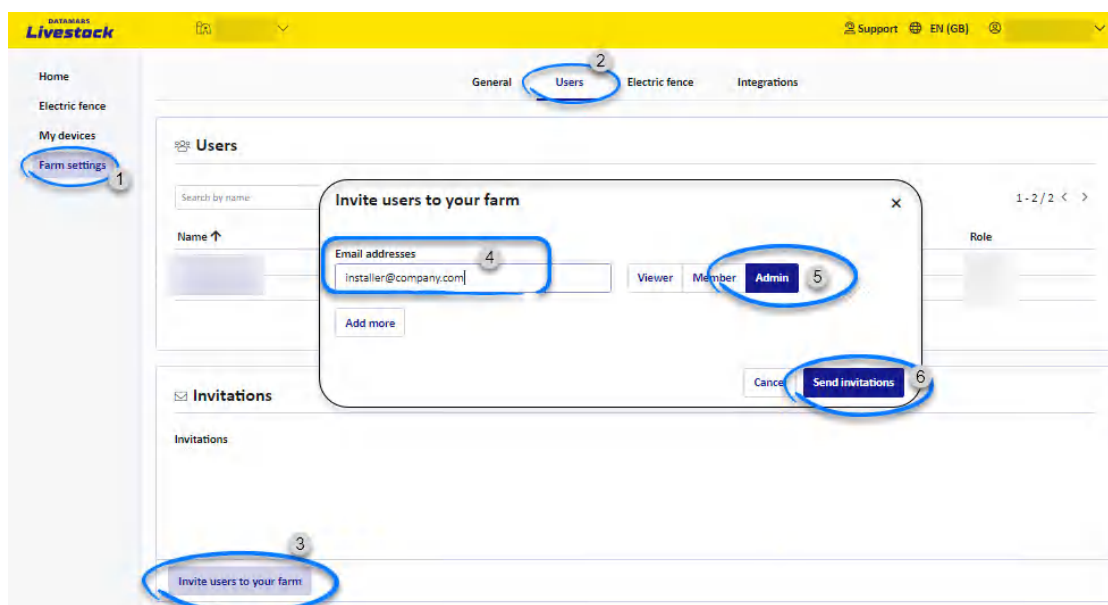
Get the farmer to open the Datamars Livestock web application on their computer

<https://monitoring.livestock.datamars.com>. They should step through the registration process to create an account. They will need to create a farm which the gateway will be linked to during the install.

Step 2: Inviting the installer to the farm

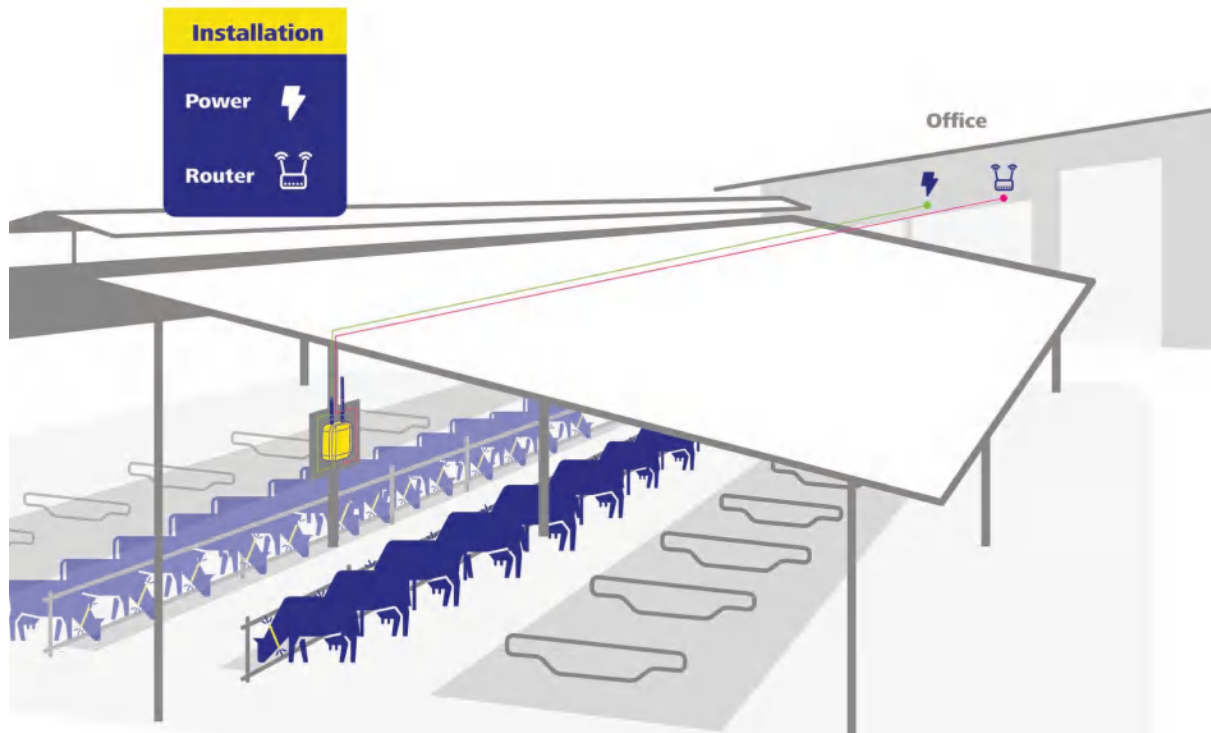
Once the user and farm have been created, you (the installer) need to be invited to the farm. Go into **Farm Settings > Users**, then scroll down and choose to invite a user to the farm.

Enter the email address of the installer (i.e. your email address), choose **Admin** as the permission, and send the invitation. An email will be sent to the email address input and the link will need to be clicked to accept the invitation to the farm.



Installing the gateway

Example of a final installation



Is an electrician required?

In some countries, a qualified electrician may be required to install the gateway power connection. If the ideal cable length is known for the route that the cable will take to the outlet, and the cable is not required to go through conduit and/or a wall, then it is recommended that the cable be cut to a length slightly longer than that which is needed, and the plug fitted prior to install day. If, however, the cable needs to be run through conduit and/or a wall, an electrician will need to be on-site on install day to install the plug. It is OK to leave the cable at the full 10 m (11 yards) length and coil it onsite if the final cable length is unknown.

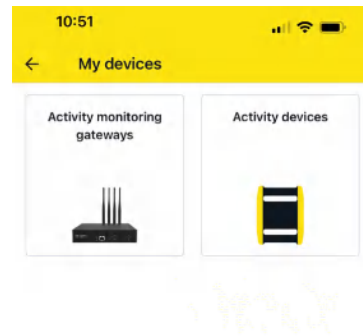
Step 1: Adding a gateway to the farm

To add the gateway to the farm in the Datamars Livestock software:

- 1 Take the gateway out of the packaging and locate the MAC address on the label on the back:



- 2 Launch the Datamars Livestock mobile app or web app, select the farm, go into **My Devices**, click **Add device**. Choose **Activity monitoring gateway**.



- 3 Type in the MAC address as the device ID (without colons and in lower case letters) and optionally, give it a name. In the example above, the MAC address would be entered **9c65f93cdeb2**.



If multiple gateways are being used, all gateways must be added to the **same farm** in the Datamars Livestock software.

Step 2: Installing a mounting pole (optional)

Install a mounting pole for the gateway, if it was determined during the pre-install visit that this is required.

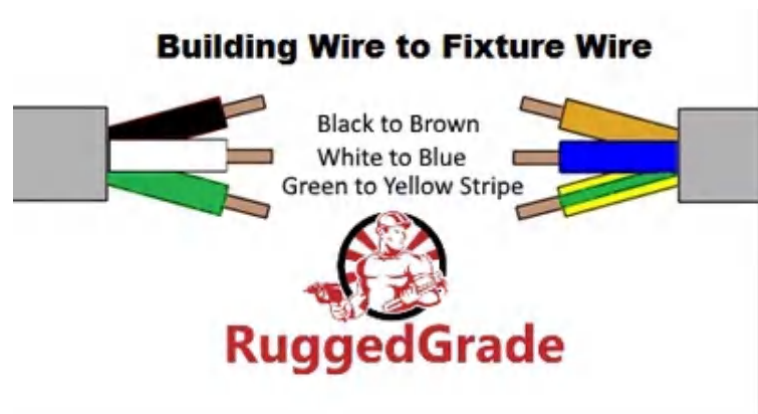
The steel pole should be installed at least 3 meters (9') above the ground in a location where livestock cannot access and interfere with it. If necessary, it should be braced to ensure it is stable in harsh weather conditions.

Step 3: Wiring a regional plug to the power supply

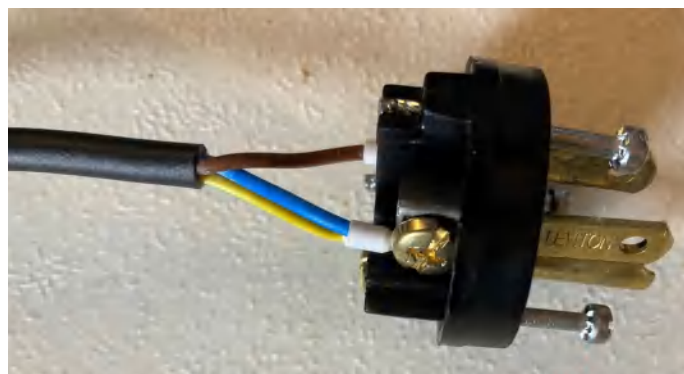
- 1 On the power supply, locate the black power cable. Ensure that you have enough length to reach the power outlet from the install location. It is a good idea to leave some excess cable in case the gateway location needs to be tweaked later to provide better coverage.
- 2 Trim this cable down to a suitable length, run the cable through any conduit or walls, then wire a regional power plug onto the end of this cable.



In some countries, an electrician may be required to wire a regional power plug.



Example of how to wire a power plug for use in North America



Example of a power plug wired for use in North America

- 3 Coil up any extra length in the cable and cable tie it in a secure location. It is important that cables are held securely and are not loose to blow around in wind or hanging down to get caught on anything. Good cable management is an important step in having a tidy installation job that does a credit to representing both the brand and the installer.
- 4 Ensure that all cables are well protected from animals and other damage such as by exposed metal cladding by installing in out-of-reach locations, using conduit, or cable glands. An electrician can provide best-practice advice for this.

Step 4: Powering on the gateway



The gateway can store up to 10 days of data, so the only impact of any power fluctuations may be a delay in data getting into the cloud. If power fluctuations are a problem on a specific site, a UPS should be installed to help with this.

- 1 Take the grey cable and connect this to both the power supply and gateway.



Power supply



Gateway

- 2 Plug the power supply into the nearby power outlet and switch on. The power LED on the gateway should be green.



- 3 Ensure that the power outlet is installed in such a way that it cannot come out by accident, and ideally be located where it is unlikely to be unplugged. It is a good idea to label the plug and including a DO NOT UNPLUG! warning on it.



Having someone unplug the gateway is a common cause of the system going down, so reasonable steps should be taken to prevent this.

Step 5: Connecting the gateway to the internet

There are three methods to connect the gateway to the internet. Use the method for the site determined in the pre-install evaluation checklist.

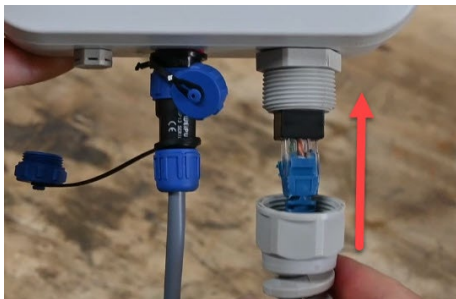
Connecting the gateway via ethernet cable

To connect the gateway via ethernet:

- 1 Take either an ethernet patch cable of a suitable length or create one of a custom length using Cat5/Cat6 cable and crimping RJ45 connectors at each end. It is a good idea to leave some excess cable in case the gateway location needs to be tweaked later to provide better coverage. The ethernet cable between the gateway and the router should be less than 90 m (100 yards), less in environments that have a large amount of electrical noise which can interfere. A longer cable may be used, but any cable longer than 75 m (82 yards) will likely require the installation of an ethernet repeater or ethernet hub part-way along the cable. This will require its own dedicated power outlet.
- 2 On the gateway end, squeeze the RJ45 connector through the narrow end of the ethernet protection gland provided.



- 3 Plug the ethernet cable into the ethernet port on the gateway, then slide the ethernet protection gland up, and screw it over the threaded insert.



- 4 Run the cable in a tidy manner to the router and plug the other end in. If no ports are available on the router, a switch will need to be installed to extend the number of ports available.
- 5 Use cable ties to keep the ethernet cable securely mounted close to any poles or tubes, and cable clips against any walls. In some countries the ethernet cable may need to be installed in a conduit.

The gateway should automatically connect to the internet.

Connecting the gateway via LTE (cellular network)

To check the internet connection:

- 1 Using a laptop with an LTE dongle, insert the Nano SIM card into the dongle and if necessary, activate the SIM card using the steps provided by the network provider.



- 2 Check that the laptop has internet by browsing a site using your browser, while connected to the internet using this SIM card to confirm it is working correctly.

To connect the gateway via the cellular network:

- 1 On the back of the gateway, use a long screwdriver or drill with a long bit to remove the 4 x M3 8 mm (1/4") screws.
- 2 Make sure that the cable between the gateway lid and the **LTE connector** on the PCA remains connected.



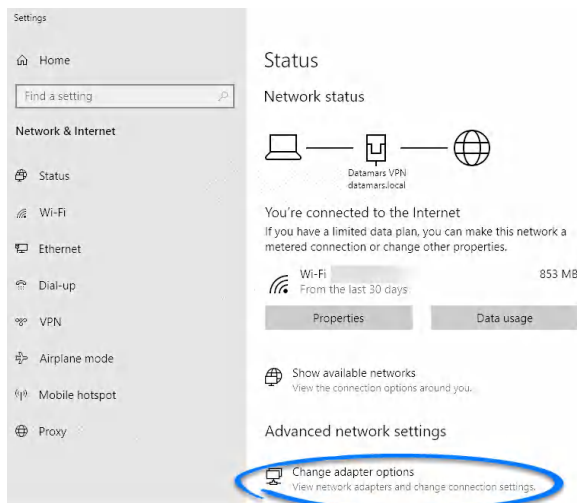
- 3 Insert the Nano SIM card into slot provided:



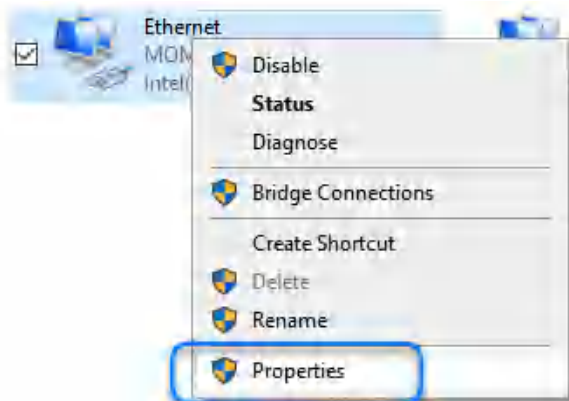
- 4 Close the gateway back up using the screws.
- 5 Connect the gateway to a Windows laptop using an ethernet cable.
- 6 On the laptop, click on the Wi-Fi icon in the bottom right and click **Network & Internet settings**.



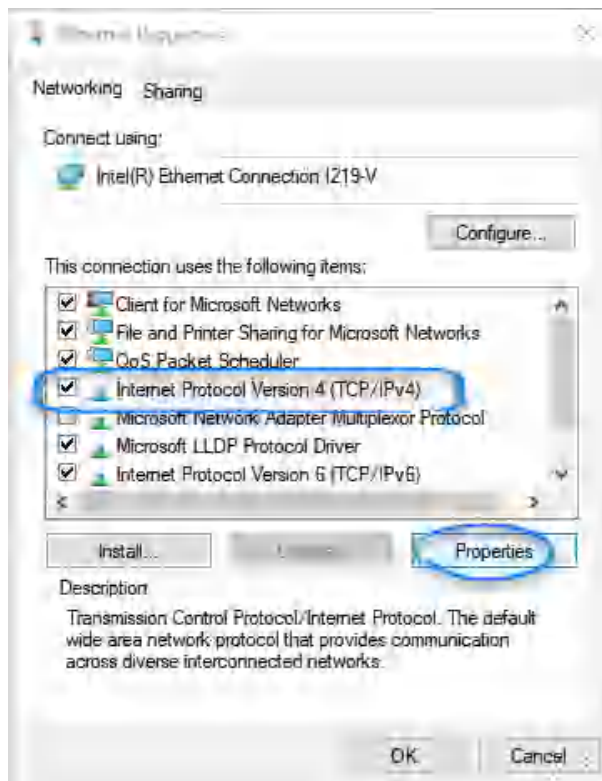
- 7 Click **Change adapter options**.



- 8 Right click on **Ethernet**, and click **Properties**

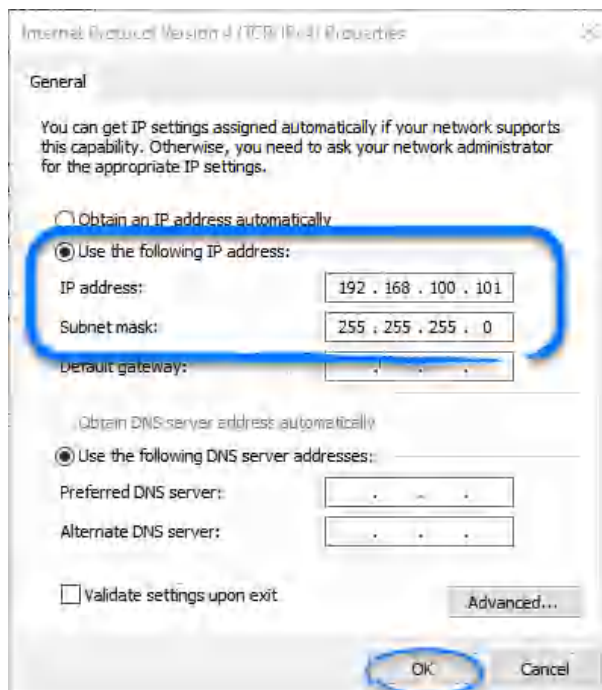


- 9 Click **Internet Protocol Version 4 (TCP/IPv4)** and open **Properties**



- 10 Click **Use the following IP address** and enter the **IP address** and **Subnet mask** details:

- IP address = **192.168.100.101**
 - Subnet mask = **255.255.255.0**
- All other boxes should be blank.



- 11 In an internet browser address bar open the gateway configuration by entering the URL **192.168.100.100**



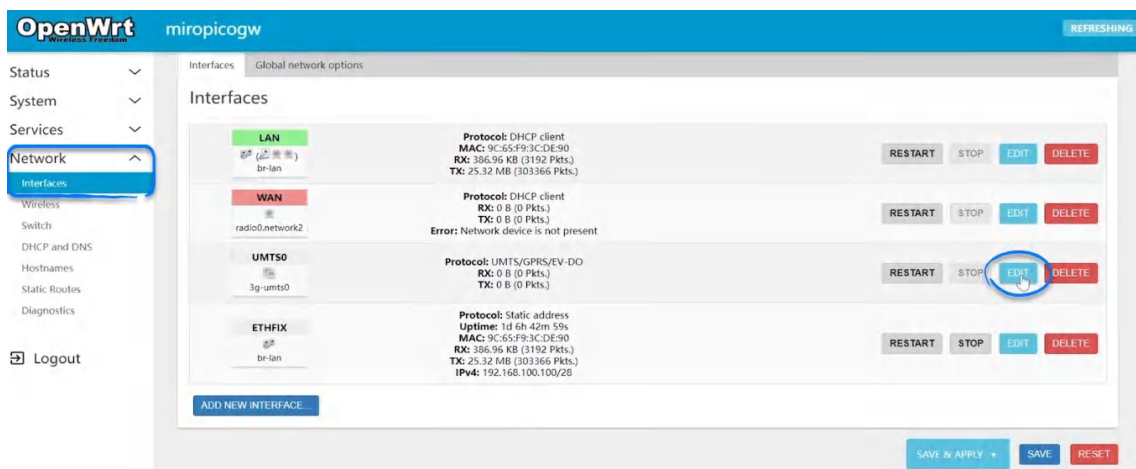
- 12 Log in with these credentials:

- Username = **root**
- Password = **miro** then the **last 6 digits of the MAC address** printed on the back of the gateway (without spaces and excluding colons)

A screenshot of the OpenWrt login page. The title is 'Authorization Required'. Below it, a message says 'Please enter your username and password.' There are two input fields: 'Username' with the text 'root' and 'Password' with masked characters '*****'. At the bottom right, there are two buttons: 'LOGIN' (blue) and 'RESET' (orange). A mouse cursor is pointing at the 'LOGIN' button.

- 13 On the left-hand side menu expand **Network** and click **Interfaces**.

- 14 Next to **UMTS0** click **Edit**.



- 15 In the **APN** box, enter the provider's **APN** and click **Save**. The provider's APN information should be on the completed pre-install checklist. If not, Google the provider's APN.

General Settings Advanced Settings Firewall Settings

Status **Device:** 3g-umts0
RX: 0 B (0 Pkts.)
TX: 0 B (0 Pkts.)

Protocol UMTS/GPRS/EV-DO

Bring up on boot ☒

Modem device /dev/ttyUSB2

Service Type UMTS/GPRS

APN internet

PIN

PAP/CHAP username

PAP/CHAP password

Dial number *99#

DISMISS **SAVE**

- 16 You should see the pending changes listed. Click **Save & Apply**.

OpenWrt miropicogw REFRESHING UNSAVED CHANGES: 1

Status System Services Network

Interfaces

Wireless Switch DHCP and DNS Hostnames Static Routes Diagnostics Logout

Interfaces Global network options

LAN Protocol: DHCP client
MAC: 9C:65:F9:3C:DE:90
RX: 408.15 KB (3348 Pkts.)
TX: 25.42 MB (303597 Pkts.)

WAN Protocol: DHCP client
RX: 0 B (0 Pkts.)
TX: 0 B (0 Pkts.)
Error: Network device is not present

UMTS0 Protocol: UMTS/GPRS/EV-DO
Interface has 1 pending changes

ETHFIX Protocol: Static address
Uptime: 1d 6h 43m 20s
MAC: 9C:65:F9:3C:DE:90
RX: 408.15 KB (3348 Pkts.)
TX: 25.42 MB (303597 Pkts.)
IPv4: 192.168.100.100/28

ADD NEW INTERFACE...

RESTART STOP EDIT DELETE

SAVE & APPLY SAVE RESET

- 17 Go back into the **Ethernet properties** and change the **Internet Protocol Version 4 (TCP/IPv4)** for the laptop back to **Obtain an IP address automatically**.

Internet Protocol Version 4 (TCP/IPv4) Properties

General Alternate Configuration

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

☒ Obtain an IP address automatically

☐ Use the following IP address:

IP address: Subnet mask: Default gateway:

☐ Obtain DNS server address automatically

☒ Use the following DNS server addresses:

Preferred DNS server: Alternate DNS server:

☐ Validate settings upon exit

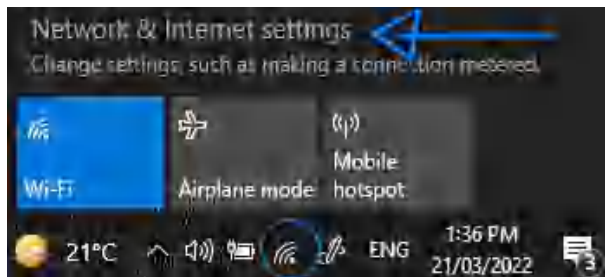
Advanced...

OK Cancel

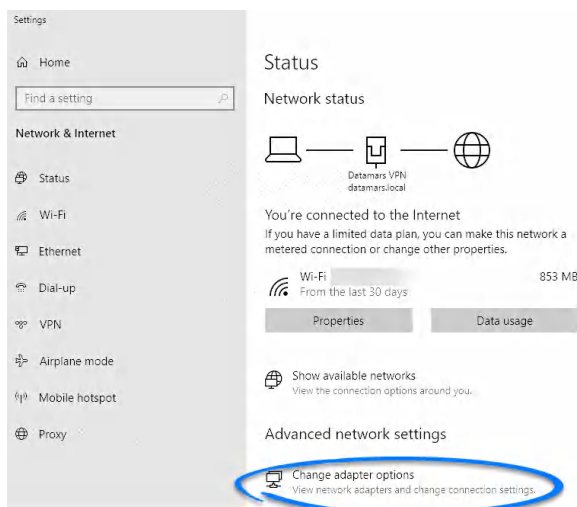
The gateway should connect to the internet.

Connecting the gateway via Wi-Fi network

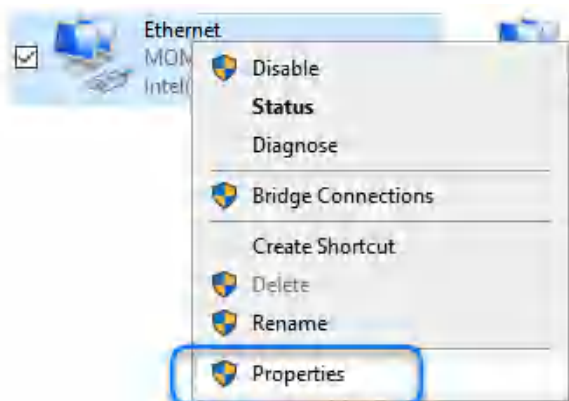
- 1 Connect the gateway to a Windows laptop using an ethernet cable.
- 2 On the laptop, click on the Wi-Fi icon in the bottom right and click **Network & Internet settings**.



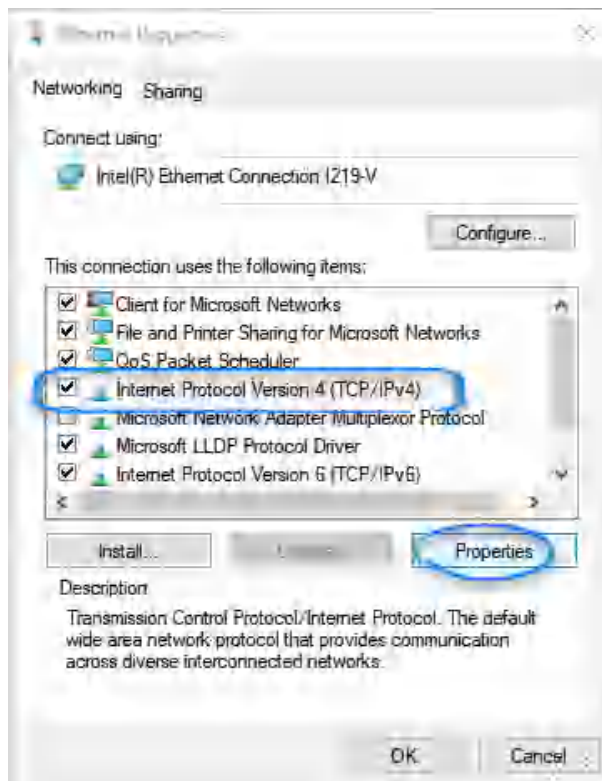
- 3 Click **Change adapter options**.



- 4 Right click on **Ethernet**, and choose **Properties**

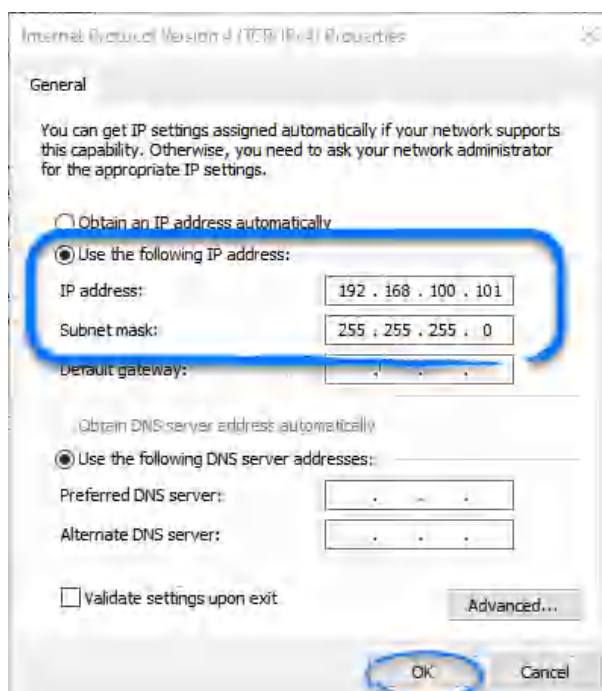


- 5 Click **Internet Protocol Version 4 (TCP/IPv4)** and click **Properties**



- 6 Click **Use the following IP address** and enter the **IP address** and **Subnet mask** details:

- IP address = **192.168.100.101**
 - Subnet mask = **255.255.255.0**
- All other boxes should be blank.



- 7 In an internet browser address bar, open the gateway configuration by entering the URL **192.168.100.100**.



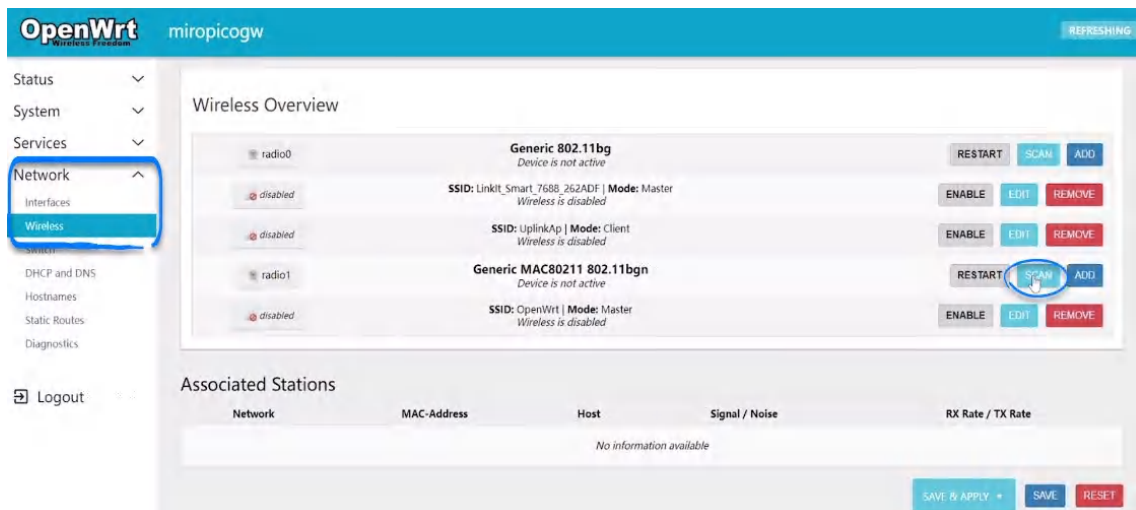
- 8 Login with these credentials:

- Username = **root**
- Password = **miro** then the **last 6 digits of the MAC address** printed on the back of the gateway (without spaces and excluding colons)

A screenshot of a web page titled 'Authorization Required'. It asks the user to enter their username and password. The username field is filled with 'root' and the password field is filled with '*****'. There are 'LOGIN' and 'RESET' buttons at the bottom right. A hand cursor is pointing at the 'LOGIN' button.

- 9 On the left-hand side menu expand **Network** and select **Wireless**.

- 10 Next to **Generic MAC80211 802.11bgn** click **Scan**.



- 11 A list of nearby Wi-Fi networks will appear. Choose the appropriate Wi-Fi network and click **Join Network**.



- 12 Check the box to **Replace wireless configuration** and enter the WPA passphrase (Wi-Fi password). Click **Submit**, then **Save**.

Joining Network: "Stonybrook Acres Wireless"

Replace wireless configuration ☒ Check this option to delete the existing networks from this radio.

Name of the new network: DemoWireless
The allowed characters are: A-Z, a-z, 0-9 and _

WPA passphrase: *****
Specify the secret encryption key here.

Lock to BSSID ☐
Instead of joining any network with a matching SSID, only connect to the BSSID 30:FD:65:DA:EC:48

Create / Assign firewall-zone: wan
Choose the firewall zone you want to assign to this interface. Select unspecified to remove the interface from the associated zone or fill out the custom field to define a new zone and attach the interface to it.

CANCEL SUBMIT

- 13 You should see the Wi-Fi network in the list, with pending changes listed underneath it, click this link and choose **Save & Apply**.

OpenWrt miropicogw REFRESHING UNSAVED CHANGES: 13

Wireless Overview

radio0 Generic 802.11bg Device is not active RESTART SCAN ADD
disabled SSID: LinkIt_Smart_7688_262ADF | Mode: Master Wireless is disabled ENABLE EDIT REMOVE

radio1 Generic MAC80211 802.11bgn Device is not active RESTART SCAN ADD
disabled SSID: Stonybrook Acres Wireless | Mode: Client Interface has & pending changes DISABLE EDIT REMOVE

Associated Stations

Network	MAC-Address	Host	Signal / Noise	RX Rate / TX Rate
No information available				

SAVE & APPLY SAVE RESET

- 14 Go back into the **Ethernet properties** and change the **IPv4 settings** for the laptop back to **Obtain an IP address automatically**.

Internet Protocol Version 4 (TCP/IPv4) Properties

General Alternate Configuration

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

☒ Obtain an IP address automatically

☐ Use the following IP address:

IP address: Subnet mask: Default gateway:

☐ Obtain DNS server address automatically

☒ Use the following DNS server addresses:

Preferred DNS server: Alternate DNS server:

☐ Validate settings upon exit. Advanced...

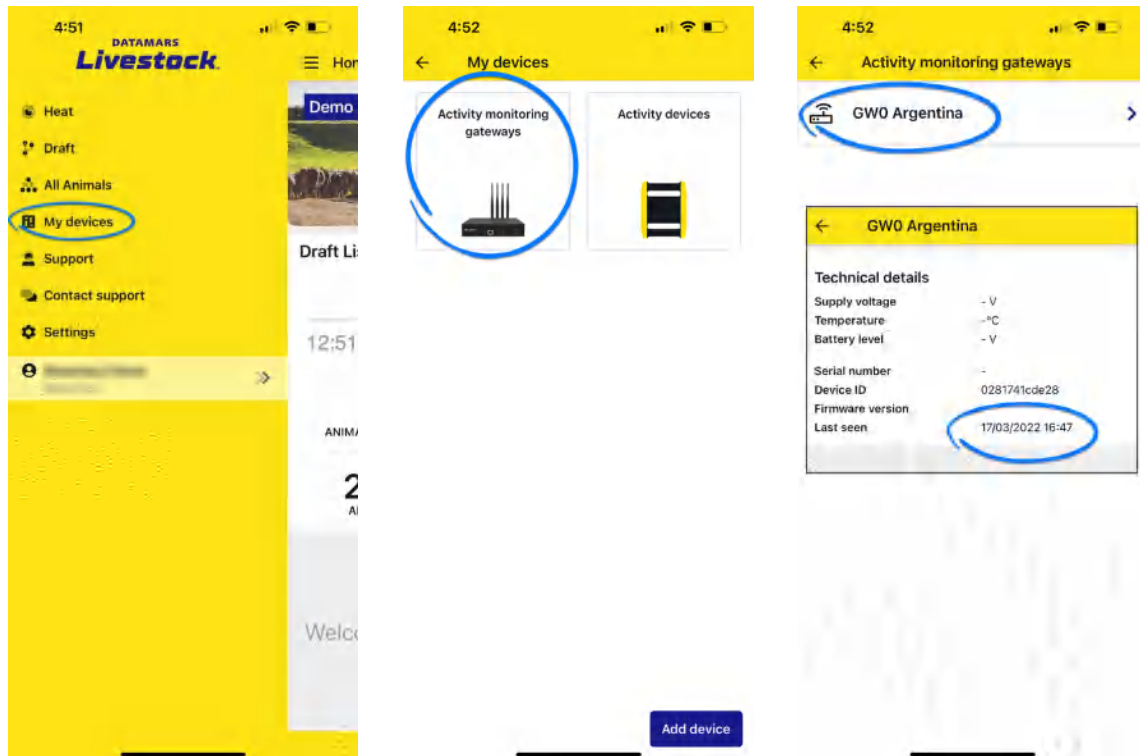
OK Cancel

The gateway should connect to the internet.

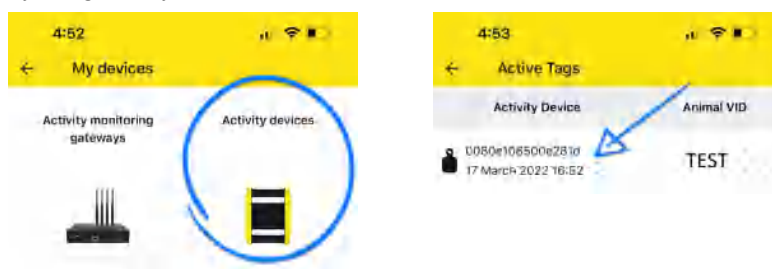
Step 6: Testing that the gateway is transmitting data

It's now a good idea to test that both the gateway and internet connection are working correctly.

- 1 Launch the Datamars Livestock mobile or web app and go to **My Devices, Activity monitoring gateways**. Click on the gateway and confirm the gateway has a value in the **Last Seen** column, and that this is recently.



- 2 Take an active collar or active ear tag, wake up the device using the magnet, and use the mobile app to assign this device to a fake animal with a VID of 'TEST'. Within 10 minutes to 1 hour the tag should be seen by the gateway.



If no data is showing within an hour, then the gateway is not connected to the internet. You will need to troubleshoot to find out why there is an internet connection issue.

To troubleshoot an internet connection issue:

- 1 Connect a laptop using the same ethernet cable/Wi-Fi details/SIM card with dongle and check if the internet is working.
- 2 Try re-entering the Wi-Fi details in case they were entered incorrectly.
- 3 Try connecting the gateway to the internet using a different method.

Step 7: Mounting the gateway

There are two ways to mount the gateway, either directly to a wall or flat surface, or onto a steel pole.

To mount the gateway directly to the wall or flat surface:

- 1 Open the hinged panels on the left and right sides of the front face of the gateway. This gives access to the screw mounting holes.



- 2 Screw this to the building using screws from your consumables
- 3 Close the front panels again.

To mount the gateway to a steel pole:

- 1 Attach the plastic mounting plate to the back of the gateway using the screws provided.
- 2 Thread the large metal band clamps through the slots on the mounting plate, ensuring you go over top of the mounting plate and not behind it. It is a good idea to trim off some of the length to make these easier to work with.

- 3 Secure the bands around the pole, ensuring that the gateway antennae are facing towards the sky.
- 4 Thread the metal ends through the ratcheting mechanism, pull taught, then open and close the lever to tighten the gateway against the pole.
- 5 When complete, push the lever down to lock it in position and trim any remaining excess length.

If needed, the large steel hose clamps can be used to attach the gateway directly to a support by wrapping them around the outside of the gateway.

To mount the power supply:

Attach the power supply using 4 x M3screws through the outer holes in the plastic flanges.

Step 8: Confirming the gateway read range

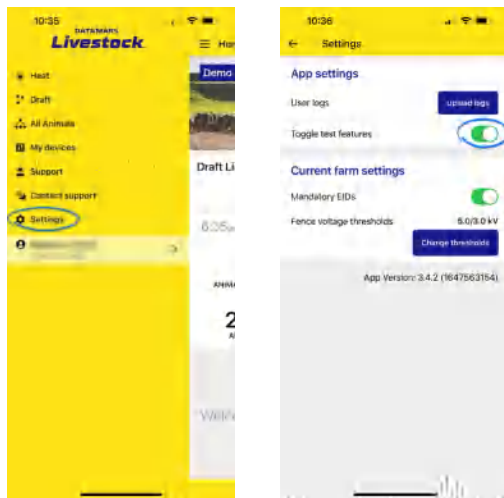
Once the system is transmitting data the gateway read range can be tested and checked to ensure it covers all high priority areas.



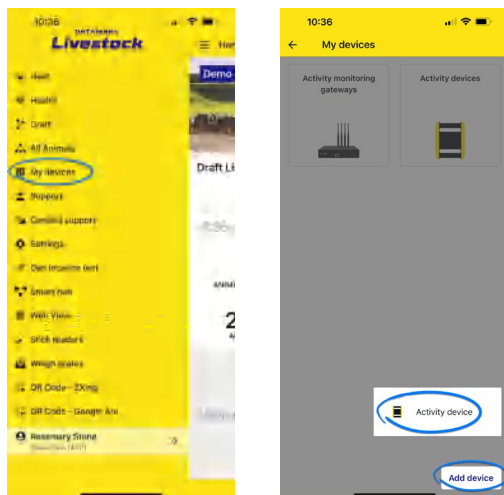
This test can only be performed using the mobile app rather than the web app.

To test the gateway read range:

- 1 Launch the Datamars Livestock mobile app.
- 2 In the main menu, tap **Settings**.
- 3 Toggle the switch **Toggle test features** to ON.

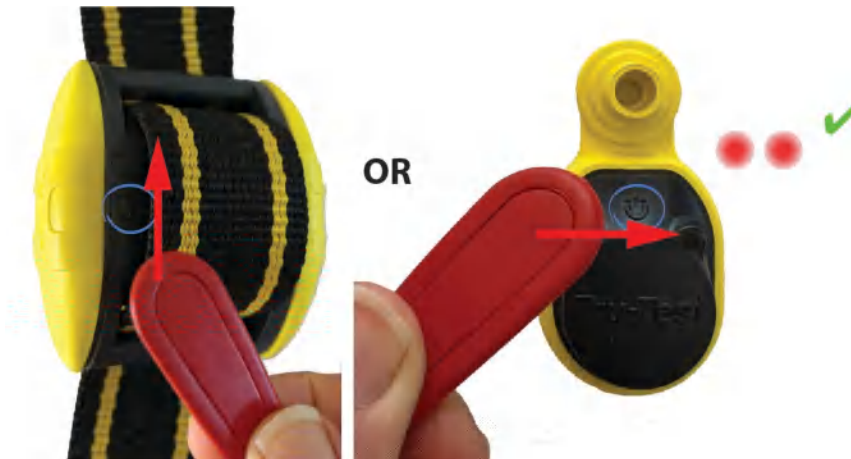


- 4 In the Main Menu, go to **My Devices, Add Device, Activity Device**.

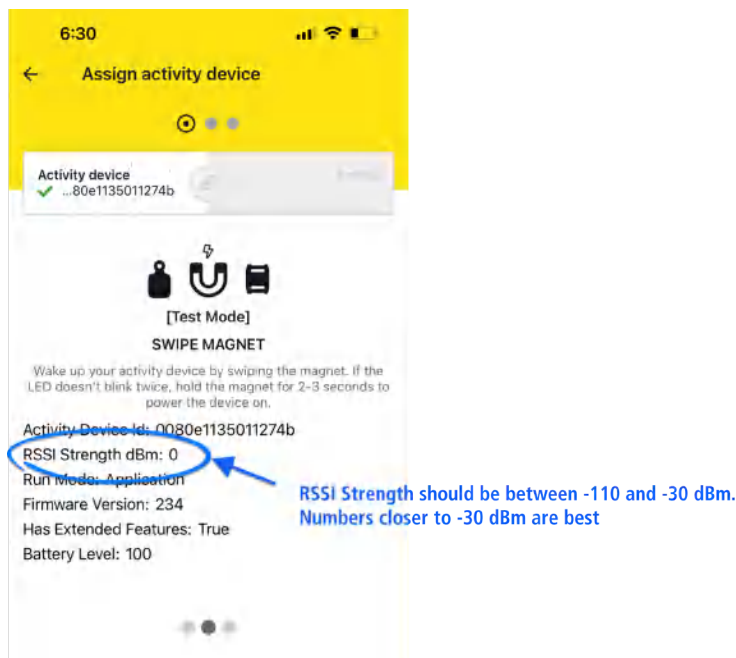


- 5 With the test features toggle enabled, you will see a different screen to the normal pairing process.

- 6 Take one of the active devices for the farm to temporarily use for testing, swipe the magnet over the magnet icon for 2-3 seconds until the light flashes twice to wake it up.



- 7 For a few seconds after an active device is seen, information will pop-up about that device, including RSSI signal strength.



- 8 Take the active device and test different spots where you anticipate animals should be seen by the gateway, with particular attention on key areas that need to be in range. Now that the device is already woken up you can slowly swipe the magnet over the magnet icon on the active device to re-trigger it to send information to the phone, the light will flash twice when the magnet leaves the active device (don't hold the magnet on waiting for a light as this will put the device back to sleep instead). Ensure in these areas that the RSSI signal strength is **between at least -110 and -30 dBm**, with numbers closer to -30 being better. Note that you may get interference near things such as variable speed motors, pumps, drafting (sorting) gates, etc. so it is not recommended you test within 5 m (5½ yards) of these. If there are key areas on the farm that have an unsuitable RSSI signal strength which could impact the syncing of data and functioning of the system, it is worth considering moving the gateway to ensure these areas are in range.
- 9 Once you have assessed that the signal strength is suitable, toggle the test features setting to OFF in the **Settings** menu to re-enable the ability to pair an active device with an animal.

Information you should know before installing active devices

The active tag solution works with active devices - active collars or active ear tags. Each active device is assigned to a particular animal in the Datamars Livestock software, then attached to an animal. There is some important information you should know before you begin this process.

Batteries in active devices

Each active collar or active ear tag contains a small battery. Batteries in active collars last up to 7 years and batteries in active ear tags last up to 3 years. Batteries cannot be replaced, and a new active device will need to be assigned and attached to an animal when the battery has expired.

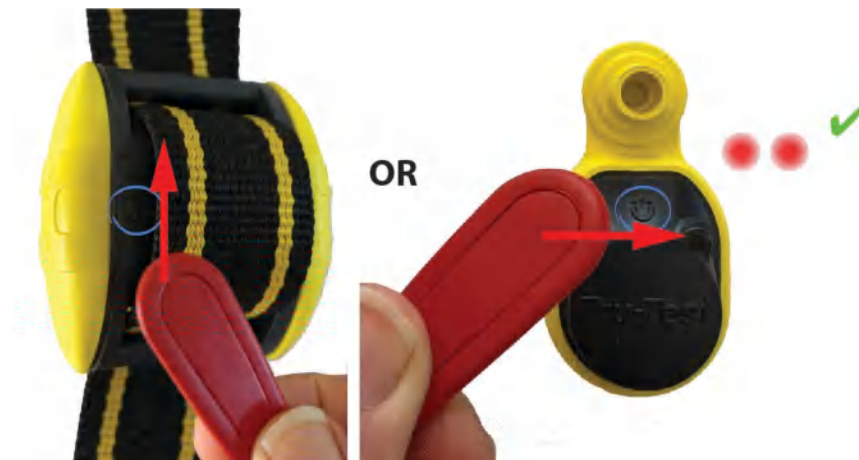
Active devices are shipped in a shelf mode (or sleep state) which has their *Bluetooth™* functionality disabled. This is a requirement for some transport such as air freight and helps preserve battery life. Active devices can be woken up or put to sleep again using the magnet supplied

Waking up an active device – quick reference

Active devices will be woken up or activated during the assigning and attaching process. For full instructions on assigning and attaching an active device, skip to the next section of the installation guide or see the *Quickstart Guide*. You should only wake up active collars and ear tags when they are going to be used. If an active device is accidentally woken up, it should be put back to sleep.

To wake up an active device:

Swipe the magnet over the magnet icon on the active ear tag or active collar for 2-3 seconds until the LED emits a **double flash** indicating it has woken up. **Remove** the magnet.



Do not **hold** the magnet over the magnet icon - this will put the active device to sleep.

Putting an active device to sleep – quick reference

Active devices should be put to sleep if they are not being used in order to conserve their battery life.

Hold the magnet over the magnet icon for more than 8 seconds until the LED emits a **single flash**.



The active device will remain asleep until it is woken up with the magnet again.

Assembling active collars

In some markets, active collars come pre-assembled with the weight and active tag, in others these will need to be assembled prior to installation day.

To assemble an active collar:

- 1 Take the collar with the buckle facing downwards and slide the belt keeper onto this.



- 2 Thread the weight onto the collar and slide down until it is 30 cm (1') away from the buckle.



- 3 Thread the end of the collar back through the metal loop. Make sure that the collar is not twisted.



- 4 Slide the loop towards the weight to secure it in place.



- 5 With the arrow on the active tag facing UP and facing upwards, thread the end of the collar through the bottom slot of the active tag, then through the top slot.



- 6 Slide the tag to roughly 30 cm (1') from the weight, an equal distance from the buckle. The active collar is now assembled and ready to fit onto an animal.



What to do about duplicate IDs

A farmer may encounter duplicate IDs where two animals have the same VID. Learn why it is important to rectify duplicate IDs and discuss this with the farmer.

Duplicate tags scenario

A farmer's herd has a duplicate ID for animal number 10. The system shows that animal number 10 is on heat. The farmer manually drafts (sorts) animal number 10 or types animal number 10 into their drafting (sorting) system. There are several undesirable outcomes which may result because of the duplicate ID:

- Only the first animal number 10 is drafted (sorted) and the animal which is on heat is missed OR
- Both animals are drafted (sorted) and both animal number 10s are artificially inseminated. The second animal 10 is not in heat and the straw is wasted
- The farmer searches for animal number 10 in the software and enters data against the wrong animal.

It is therefore strongly recommended that as part of the assigning process, any duplicate visual IDs are removed, and those animals are given a new tag with a different visual number. The software will inform you if an animal already exists with a duplicate VID.

If this is not feasible, then a prefix or suffix can be added to both animals in the software to help tell them apart, for example 123-Friesian, 123-red-tag.

If a tag is entered into the mobile app incorrectly, make a note of the error and the correct tag number. This will need to be fixed by an administrator in the Datamars Livestock web app.

To fix an entry in the Datamars Livestock web app, open the entry for the animal, choose the **three dots** in the top right corner. click **Manage identifier tags** and **Edit** next to the tag to fix.

Installing the active devices

With the gateway up and running, it is time to attach the active collars or ear tags to the animals and get these set up in the system. It takes 3 days of data collection on an animal before the system is trained and can accurately start to predict heat events, so it is important to get the active collars and active ear tags installed on the animals as soon as possible.

The pre-install checklist will outline who is responsible for fitting these on the existing herd, however it is crucial that the farmer understands this process well themselves as they will need to do this ongoing for any new animals on the property, as well as knowing how to remove devices from animals leaving the property. Show the farmer the *Quickstart Guide* which has a summary of the process outlined below. They can also refer to the online help system, accessible via the Datamars Livestock web and mobile apps.

Step 1: Preparing for the installation



Planning the installation is crucial. If many animals are being held in lockup at once, it is vital that the process is as fast as possible to reduce the time they are locked up for.

Personnel required

- At least 2-4 people are recommended for installation of active ear tags, and 2-3 people for active collars. One for loading the active ear tag into the tagger (active ear tags only), one for waking the device up with the magnet (can be done by one of the other roles if required), one for installing the active device on the animal, and the final person for assigning the animal using the mobile app and potentially also the EID reader.
- If multiple animals can be done in parallel, this process can be sped up significantly by having multiple teams working at once. Teams should be working at least 40 m (43 yards) apart to reduce the chance of picking up tag reads from the other team.

Equipment required

- All of the active collars or active ear tags you require, and the magnet supplied with them.
- Mobile phone with Datamars Livestock app installed. The person using the phone needs to be logged in to an account with admin permissions.
- Active collars - it is highly recommended that active collars are assembled prior to installation. The assembly process is very time-consuming and will require an additional person on-site.
- Tru-Test XRS2i/XRS2 or SRS2i/SRS2 EID reader (if using).

Site requirements

At the installation site, when assigning active devices to an animal, the mobile phone, active devices and stick reader (if using) must be within 5 m (5½ yards) of each other. If multiple teams are working simultaneously, they must be at least 40 m (43 yards) apart.



As each animal will either need to be tagged or have a collar buckled around its neck, we recommend that animals are contained in a suitable head bail, lockup, treatment stall, rotary stall or yard race, where it is safe to handle the animal.



Internet coverage is required at the site of the installation in order to use the Datamars Livestock mobile app.

Step 2: Assigning the active device to an animal

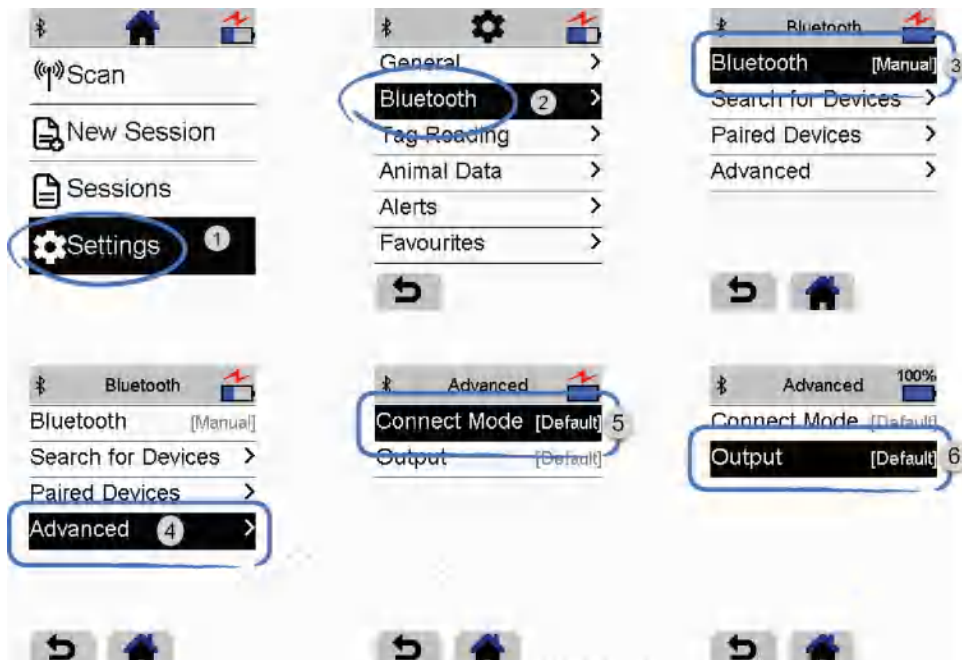
The assigning process makes the link between data generated by the active device and the animal to which it is mounted. This allows the farmer to analyse the data in Datamars Livestock Monitoring, identify animals and take appropriate action.

It is important that it is possible to uniquely identify animals so that when an animal comes on heat, or has a health issue, that particular animal can be identified and drafted (sorted). Many farms use visual IDs for this, but often accidental duplicate IDs in herds make things challenging. See *What to do about duplicate IDs* on page 43 on the ways of rectifying a duplicate ID.

Assigning active devices to EIDs

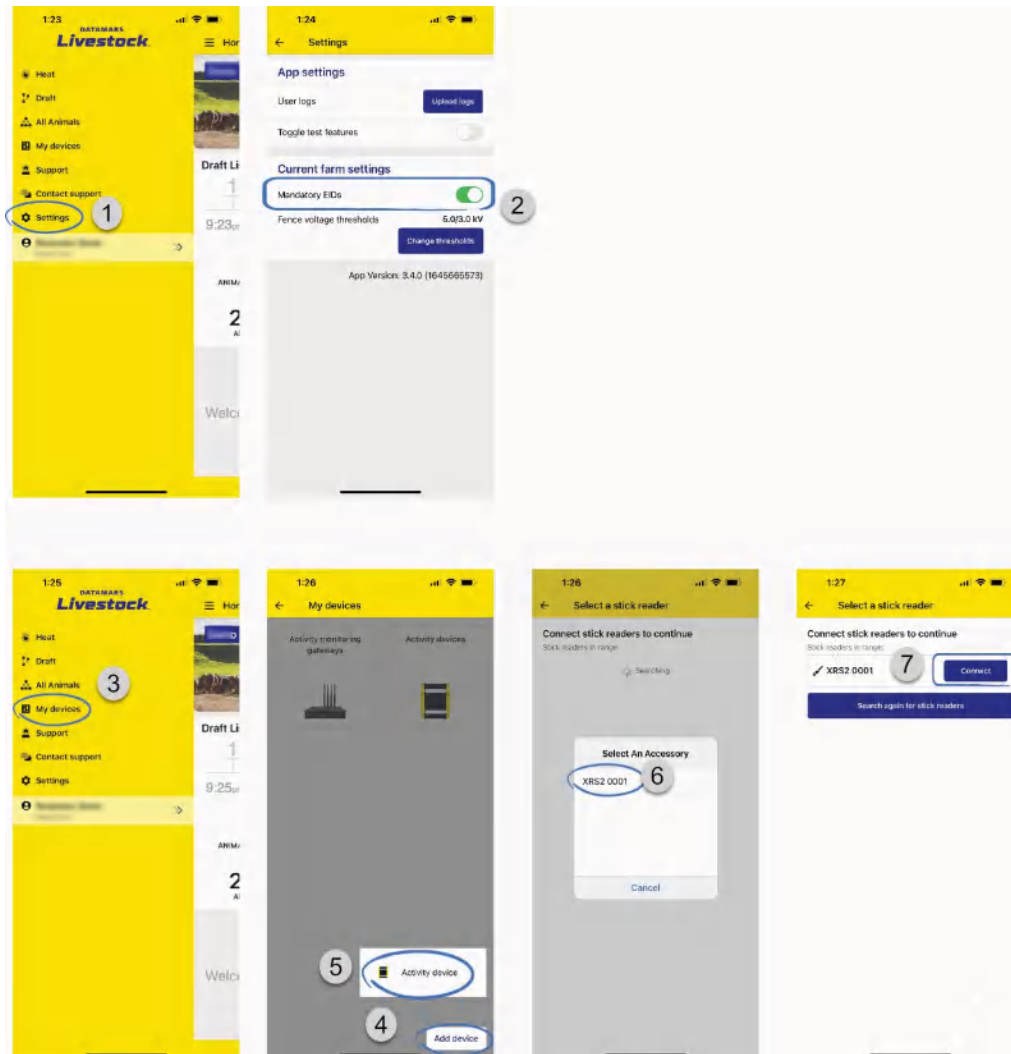
To set up the stick reader:

- 1 Turn on the stick reader.
- 2 Go to **Settings, Bluetooth** and set to **Manual**.
- 3 Go to **Settings, Bluetooth, Advanced** and set **Connect Mode** and **Output** to **Default**:



To set up the Datamars Livestock mobile app:

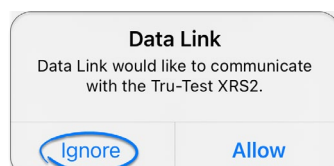
- 1 Launch the Datamars Livestock mobile app and in the main menu, tap **Settings**. In the Current farm settings, set the **Mandatory EIDs** slider to **ON**.
- 2 Launch the pairing process by tapping on **My Devices, Add Device, Activity Device**. The app will scan for nearby stick readers. Tap on the stick reader, then **Connect**.



If the stick reader is not found, ensure that it is not connected to another phone or weigh scale (The *Bluetooth* light on the stick reader should be off).



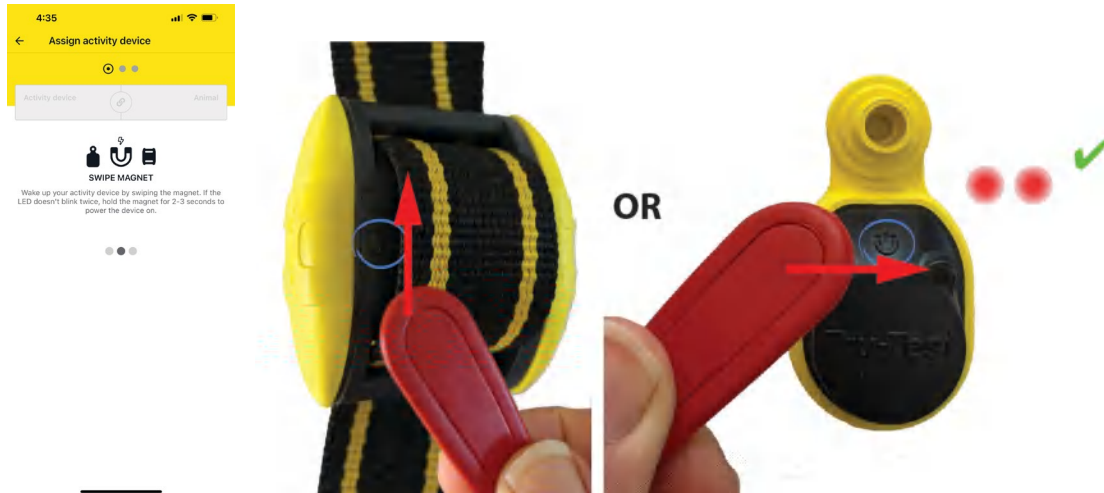
If a popup about Data Link is displayed, tap **Ignore**:



The active tag solution uses the Datamars Livestock app, not the Data Link app.

To assign an active device with an EID:

- 1 Make sure that the mobile phone, the active devices and the stick reader are all within 5 m (5½ yards) of each other.
- 2 **Swipe** the magnet over the magnet icon on the active ear tag or active collar for 2-3 seconds until the LED emits a **double flash** indicating it has woken up. **Remove** the magnet.

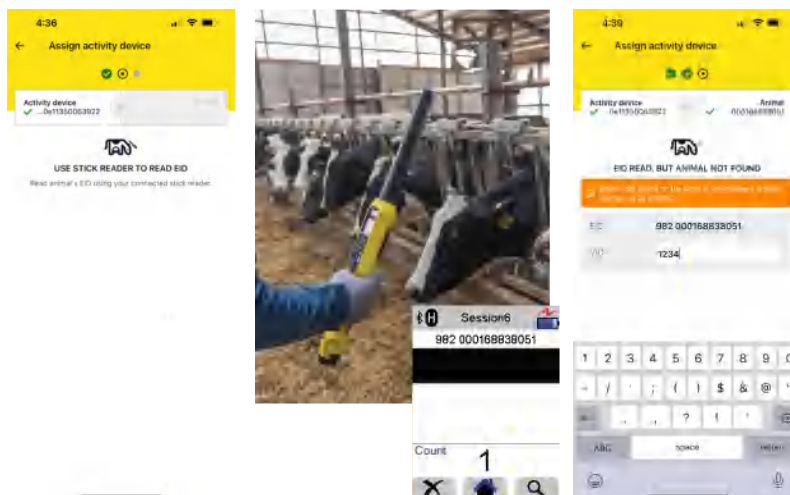


The device will automatically be picked up by the phone app.



If the tag is not picked up the first time, swipe the magnet slowly over the tag to re-trigger it to pair. Do not **hold** the magnet over the magnet icon - this will put the active device to sleep.

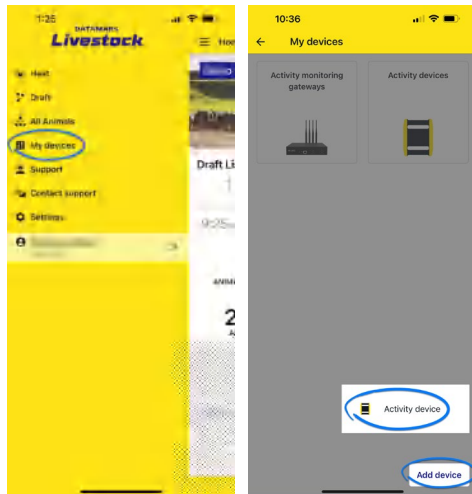
- 3 Scan the animal's EID with the stick reader. Enter a VID (optional).



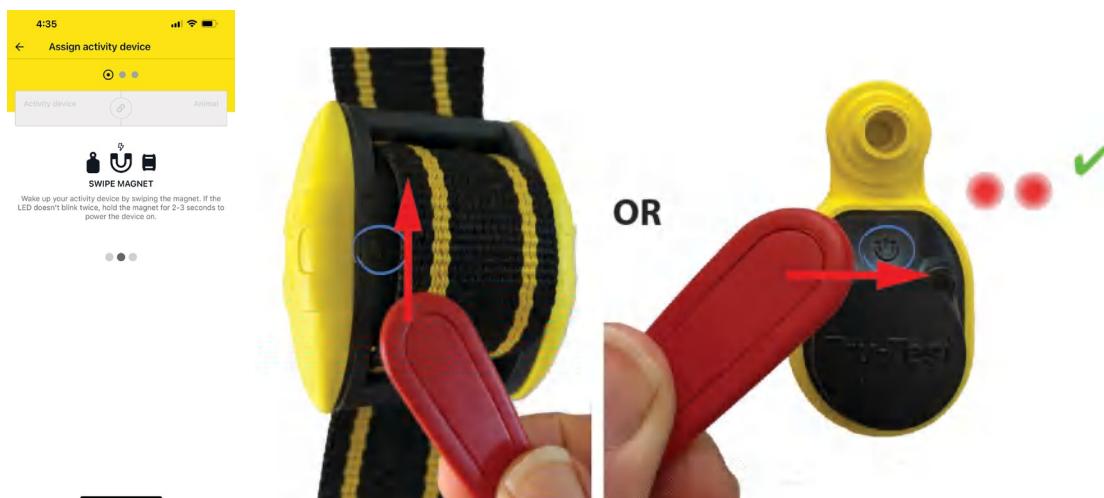
- 4 Tap **Save animal and assign it with activity device**.
- 5 Attach the active device to the correct animal (see *Step 3: Attaching the active device to an animal* on page 50).
- 6 Tap **Pair another one** to assign another active device with an animal. When you have finished, tap **Done**.
- 7 Turn off the stick reader to break the connection with your phone.

Assigning active devices to VIDs

- 1 Launch the Datamars Livestock mobile app.
- 2 Launch the pairing process by tapping on **My Devices, Add Device, Activity Device**.



- 3 **Swipe** the magnet over the magnet icon on the active ear tag or active collar for 2-3 seconds until the LED emits a **double flash** indicating it has woken up. **Remove** the magnet.



The device will automatically be picked up by the phone app.



If the tag is not picked up the first time, swipe the magnet slowly over the tag to re-trigger it to pair. Do not **hold** the magnet over the magnet icon - this will put the active device to sleep.

- 4 Enter the animal's VID.



- 5 Tap **Save animal and assign it with activity device**.
- 6 Attach the active device to the correct animal (see *Step 3: Attaching the active device* to an animal on page 50).
- 7 Tap **Pair another one** to assign another active device with an animal. When you have finished, tap **Done**.

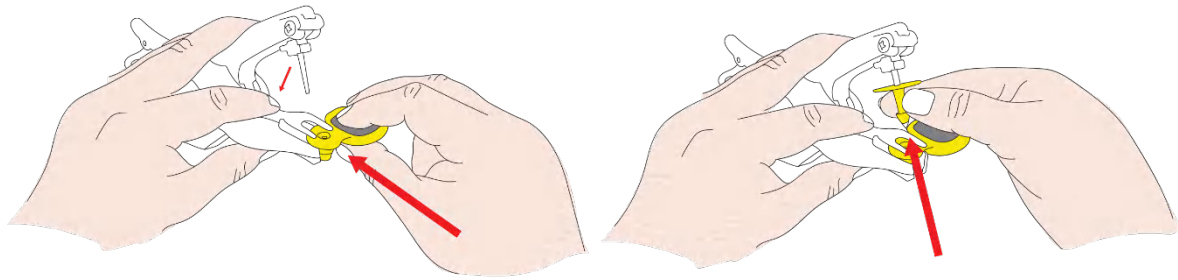
Step 3: Attaching the active device to an animal

Now that the active device has been woken up, and assigned to the intended animal, it can be physically attached to the animal.

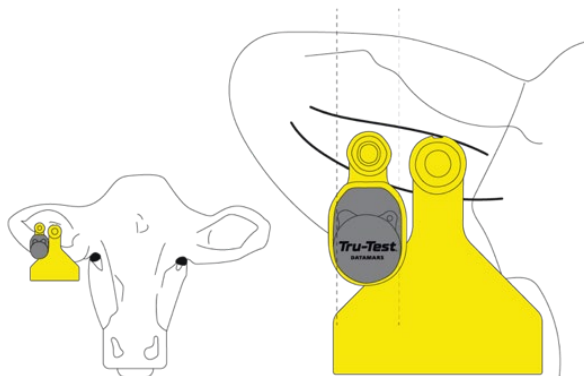
Attaching an active ear tag

Tru-Test active ear tags are designed to be attached using the Z Tags No-tear Tagger.

- 1 Insert the active ear tag into the tagger, with the female part of the tag under the tagger clip, and the male part of the tag on the pin. Immerse or thoroughly spray both sections in an animal-safe disinfectant.



- 2 Squeeze the handles together firmly to attach the active ear tag to the animal, in either ear between the two large veins ensuring that the tag is facing forward (male pin at the back of the ear). The centre of the ear, on either side of the centreline is the ideal location and it should fit with one other existing tag.



Where necessary, it is recommended that the active ear tag is installed further towards the outside of the ear, rather than being too far inside as movement and functioning of the active ear tag can be restricted if it gets caught inside the ear.



We always recommend creating a new hole rather than using an existing hole as this can significantly impact tag retention.

- 3 Remove the tagger by pulling straight down from the animal's ear in a smooth motion (no need to open the handles). The tag arm flicks out releasing the active ear tag, preventing ripped ears.
- 4 With the active ear tag installed, the process is complete for that animal and can be repeated with the next.

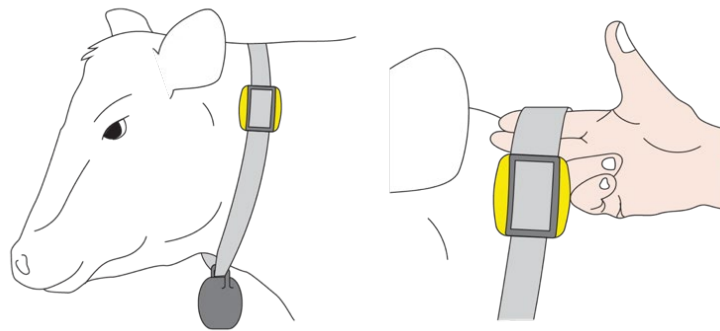
Attaching an active collar

To fit an active collar:

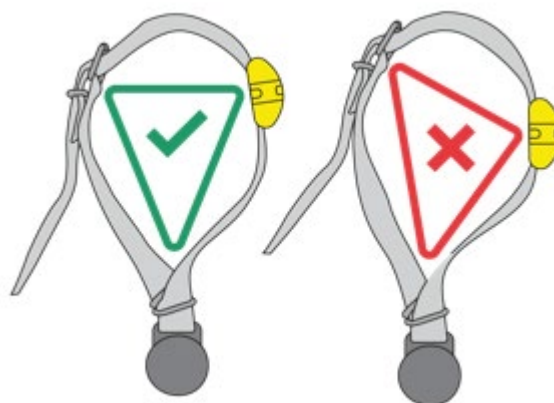


The Tru-Test active collar has a series of pre-made holes like in a belt buckle.

- 1 Standing on the right side of the animal, loop the active collar around the animal's neck as far forward as it will go, so that it is on the narrowest part of the neck directly behind her head. If installed further down the neck, when the animal puts her head down to eat, the collar will slide forward up her neck and become too loose.
- 2 Fasten the buckle so that it has two-fingers of slack on the active collar at the top of the neck. Depending on the size of the animal, there may not be a suitable buckle hole to allow the optimal tightness, in that case it is better to opt for a slightly looser fit, rather than having it too tight. It is imperative however that the active collar is not fitted too loosely, as a loose fit may increase the risk of snagging on obstructions, becoming a choking hazard.



- 3 Slide the active tag up or down on the collar to sit in the correct position in the top 1/3 of the animal's neck where it has good contact, just behind the left ear. Correct positioning of the active tag is critical for performance. Those placed too high or too low on the animal will result in inaccurate data.
- 4 Ensure that the weight is centred at the bottom of the animal's neck and both the buckle and active tag are an equal distance from the weight.



- 5 With the active collar fitted, the process is complete for that animal and can be repeated with the next.

Removing an active device from an animal

When an animal is leaving the property, its active collar or active ear tag can be removed and re-used on another animal or put back to sleep and stored for later use.

Removing active ear tags

- 1 Hold the ear of the animal and the active ear tag firmly in one hand. Using the Z Tags Tag Removal tool in the other hand, slip the blade of the tool behind the animal's ear, but in front of the male button.



- 2 Pull the tool firmly and quickly to cut through the shaft of the male button and remove the active ear tag from the animal. Make sure to clean the Tag Removal tool with a suitable animal-safe disinfectant between uses.



When installing an active ear tag on a new animal, a new male button will need to be supplied. These can be purchased from all leading farm supply stores.

- 3 To install an active ear tag on another animal straight away, **swipe** the magnet over the magnet icon on the for 2-3 seconds until the LED emits a **double flash**. **Remove** the magnet. The re-pairing is triggered when the magnet is removed from the active ear tag. Go through the standard assigning process using the mobile app. See page 45.

Removing active collars

- 1 Standing on the right side of the animal, un-buckle and remove the active collar from the animal.
- 2 To install the active collar on another animal straight away, **swipe** the magnet over the magnet icon on the for 2-3 seconds until the LED emits a **double flash**. **Remove** the magnet. The re-pairing is triggered when the magnet is removed from the active collar. Go through the standard assigning process using the mobile app. See page 45.

Unassigning and storing active devices

If an active device is removed from an animal and is not being used on another animal straight away, it can be unassigned from the animal in the software, then put back to sleep.

To unassign an active device from an animal:

- 1 Open the Datamars Livestock web app (this functionality is not available in the mobile app), open the animal which the active device is assigned to, click the three dots in the top right corner and select **Manage active devices**. Click on the **Unlink** icon to remove the activity device.

The screenshot shows the Datamars Livestock web app interface. The top navigation bar is yellow with the logo and links for Support, EN (GB), and a user profile icon. The left sidebar contains navigation links: Home, Animals in heat, Health issues, Drafting, Herd management, and My devices. The main content area is titled 'Animals' and features a search bar, filters (Current, Sold, Died), and a table of animals. The table has columns for VID, LID, Group, Reproductive status, Last heat, Last AI, In heat, and Health issue. The animal with VID 1301 is selected, and a modal window titled 'VID 1301 - Activity devices' is open. This modal shows a list of activity devices, including a 'Collar tag' with ID [3013]. A red 'X' icon with the number 5 is visible next to the collar tag, indicating the 'Remove activity device' action. A dropdown menu is open for the selected animal, showing options like 'Add animal note', 'Mark as sold', 'Mark as died', 'Change date of birth', 'Change gender', 'Manage identifier tags', 'Manage activity devices', and 'Change group'. The 'Manage activity devices' option is highlighted with a blue circle and the number 4.

VID	LID	Group	Reproductive status	Last heat	Last AI	In heat	Health issue
1234		Mob 1					
1301		Mob 1	Not pregnant	5 months ago	a month ago		
1414		R1					
1473		R1					

- 2 Once the device is unassigned in the software, put it to sleep by **holding** a magnet over the magnet icon for more than 8 seconds. It will emit a **single flash** on the LED when going to sleep and will remain asleep until it is woken up with the magnet again when installing it on the next animal.

Software training

Once the system is up and running it is important to show the farmer and other farm staff a basic overview of how to access their data using the Datamars Livestock mobile app and web app. You should show the farmer the *Quickstart Guide* and use this to train them so that they have something to refer to when you have left. Show them how to access the Online Help System, via the apps.

Differences between the Datamars Livestock mobile and web apps

Explain that there are differences between the functionality in the web app and mobile apps. There are several administrative tasks which can only be done using the web app. These are tasks which are typically performed by a farm owner or manager. Assigning active devices must be done in the mobile app.

Permissions

When the farmer invites users to the farm, they need to assign permissions, depending on their role.

Task	Admins	Members	Viewers
Inviting users (in web app)	<input checked="" type="checkbox"/>		
Adding a stick reader to the mobile app	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Assigning active devices	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Viewing animals in heat	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Marking animals as inseminated and other events	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Drafting animals	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Undrafting an animal	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Changing animals to a different group	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Checking devices are connected	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Configuration and setup (in web app)	<input checked="" type="checkbox"/>		
Notifications (in web app)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Using the Datamars Livestock web app

Accessing the Datamars Livestock web app

Get the farmer to browse to <https://monitoring.livestock.datamars.com> and bookmark it. The farmer should log in with the credentials used during the software setup phase of the installation (see *Software setup* on page 19).

Training users on the Datamars Livestock web app

This list contains tasks that can *only* be done in the web app, the rest of the training should be done in the mobile app. Make sure you cover off:

Topic	Be sure to cover off:	Checklist
Drafting (Sorting)	Configuring draft (sort) times.	
	Adding an animal to a draft (sort) list.	
Groups	Creating a new group.	
	Editing or deleting a group.	
	Changing the default group which new animals are added to.	
	Adding multiple animals to a group.	
Managing users	Sending users an invitation to join the farm.	
	Editing and deleting users.	
Notifications	Everyone using the Datamars Livestock can set their own permissions in the web app by logging in with their own credentials.	

Using the Datamars Livestock mobile app

Installing the Datamars Livestock mobile app

Browse to either the Apple Store if using an iPhone, or Google Play store if using an Android device. Search for the Datamars Livestock mobile app and install it.



Logging in

The farmer should log in with the credentials used during the software setup phase of the installation (see *Software setup* on page 19).

Other staff members should accept the invitation they received from the farmer.

Training users on the mobile app

Make sure you cover off:

Topic	Be sure to cover off:	Checklist
Viewing animals in heat	How to view details for an individual animal	
Drafting (Sorting) animals	Why the draft list (sort list) may differ from the heat list.	
	How to manually draft (sort) animals or how to copy the draft list (sort list) to an auto-drafter (if they have one).	
	How to un-draft (un-sort) an animal.	
Marking animals as inseminated or other events	The types of event which can be added - heat, insemination, synchronisation, pregnancy check, calving, reproductive status, health issue, or general	
Checking that devices are connected	Checking when gateway(s) and active devices have last been seen.	
Groups	How to add an animal to a group.	
	How to view all animals in a particular group.	

Frequently asked questions

After training, the farmer may have some questions about the system. Here are some frequently asked questions. All of this information is available for the farmer in the Datamars Livestock help centre.

How do I access the help centre?

The Datamars Livestock Help Centre provides searchable articles and videos to help you when you need it. The Help Centre provides instant support for our apps, software and products. Access the help centre via the web or mobile phone app or go to support.livestock.datamars.com. A QR code is also printed on the farmer's Quickstart Guide.



What is the range between the gateway and the collar?

Up to 500 m (540 yards) where there is direct line of sight. Note that things such as trees and buildings blocking this line of sight may also interfere with the read range in that direction.

How long does the monitor on the active collar or active ear tag hold data?

Up to 10 days with the oldest data then being lost.

How can I check that a gateway is on and working?

In the mobile app, go to **My Devices**, then **Activity monitoring gateways**. Tap on the gateway and view the **Last seen** time.

How can I check that an active collar or active ear tag is sending data?

Perform this check when you know that animals have been within range of the gateway recently.

In the mobile app, go to **My devices**, **Activity devices** then **Active Tags**. View the list of active tags recently seen. To view a specific animal, from the Home page, tap on **Animals**. Search for an animal ID. If an active device has not been seen in the last hour, draft out the animal and re-assign the active device to the animal. See the help system (accessible from the web or mobile phone apps).

My gateway seems offline or there is no data showing?

The most common cause of the gateway being offline, or the data not showing is that the gateway has been unplugged or turned off at the wall outlet. Double check that the gateway is plugged in properly, and that it is switched ON – the power LED on the gateway should be illuminated.

If the gateway is ON then it is likely an issue with the internet connection. Verify that the internet connection is working using the same connection method but a different device. Try restarting the modem.

If the internet connection is OK, try restarting the gateway. Unplug it and leave it for a full 10 minutes. The green LED on the gateway may illuminate for a period of time, even when it is unplugged but this should be ignored. Plug the gateway back in. If there is still a problem contact the support team (see below).

How can I collect data from active devices when animals are out grazing and not within gateway range?

Data can only be harvested by the gateway if the active device is within range. This is the same for any heat and health detection system. Once the animal gets within range, usually at milking times, the data will be harvested.

Does this mean that I could get late alerts?

No, not necessarily because the alerts are sent out after the onset of oestrus and after the algorithm has validated the data.

Can I collect data more frequently?

Not currently, nodes are currently being developed that will be available to add to the solution to collect data at remote points, so data can stream from other locations on the property.

What is the web page address?

<https://monitoring.livestock.datamars.com>

How do I modify the draft (sort) times?

This can only be done in the Datamars Livestock web app by someone with admin permissions. Draft (sort) times cannot be modified in the mobile app. From the **Home** page, click on **Farm Settings, Drafting, Edit drafting configuration** or **Delete drafting configuration**. For more information, see the help system (accessible from either of the apps).

How can I draft (sort) animals using my automated drafting (sorting) gate?

In the mobile app, open the draft list. Click on the **Export** icon  (top right-hand corner of the screen). This will copy the list to the clipboard. You can then paste it into your auto-drafter software app or email it. For more information, see the help system (accessible from either of the apps).

In the web app, open the draft list and click on the **Export** button at the top of the table. This will download a spreadsheet of the table. Open this in Excel or another spreadsheet software, copy the list of VIDs, and paste these into your auto-drafter software.

How do I change the draft (sort) list?

Only someone with Admin permissions can change the draft list (sort list).

To undraft (unsort) an animal in the mobile app, select the individual animal in the draft list (sort list), scroll down and tap **Undraft** (unsort). You cannot add an animal to the draft list (sort list) in the mobile app, this must be done in the web app.

In the web app, select **Drafting**, then select the draft time (sort time) you want to modify. **Add an animal** or **Undraft** (unsort) an animal.

How do I import data into Datamars Livestock from another system?

We are currently still working on implementing the integrations functionality. As soon as this is available, we will be able to connect common dairy herd management solutions so heat and health data, and animal events will be able to automatically sync between the two systems.

What does *heat intensity* mean?

Heat intensity is a measure of how differently the animal is behaving compared to her resting baseline of activity. Some animals naturally have stronger heats that are obvious from a behavioural perspective, and others can have more quiet and less intense heats. Individual animals can also have fluctuations in the intensity of their heats. Often in a seasonal mating system all heats, even less intense ones will be inseminated, whereas in year-round mating systems sometimes a farmer may wait until a stronger heat to inseminate that animal.

What happens if the data says that one of my animals is in heat, but an alternative method such as tail paint does not?

No common methods of heat detection are 100% accurate all of the time. Some animals have silent heats where the change is so subtle it is often sometimes not picked up by behavioural cues or heat detection methods such as tail paint. For these types of heats an activity monitoring solution can pick up heats where other

methods may not. There is also the chance though that some other event has caused an animal to have a change in behaviour that is being picked up as a heat, when in fact the animal is not in heat. In seasonal mating systems we recommend an animal gets inseminated if there is a discrepancy in heat detection methods. In year-round systems things such as the heat-strength can be used to determine how strong the heat is, in these instances it can be ok to wait until the next (hopefully stronger) heat to inseminate. Overall, it really comes down to individual farm, and how important it is to get the animal in heat as quickly as possible.

How can I make the most out of my active tag monitoring solution?

Ensure that animals are always assigned to the correct group in Datamars Livestock, to match the physical group of animals on the farm e.g. Herd 1, Herd 2, Sick Mob. This is important because the active tag solution will assess an individual animal's behaviour against the behaviour of all animals in a group. If the same unusual animal behaviour is recorded for all animals in the group, the behaviour will be attributed to an external event e.g. a loud noise, the presence of something unusual in the paddock or a weather event. Using groups provides the active tag solution with a richer set of data for accurate animal monitoring.

How do I change notifications?

By default, all mobile phone users will receive notifications about the active tag solution (e.g. when an animal is on heat, if a gateway goes offline etc). Notifications can be switched off in the mobile's own settings.

Further notifications settings are available in the Datamars Livestock web app. These settings are not available in the mobile app. To configure which notifications you receive and the notification method (email or push notifications through the Datamars Livestock app on your mobile), in the web app, click on your name in the top right-hand corner and choose **Notification Settings**. Changes only apply to the person who is logged in.

How do I put active devices to sleep when I'm storing them?

If you have removed an active device from an animal, you should put it to sleep if you're not using it on another animal straight away. This will conserve the battery in the active device.

To put an active device to sleep, **hold** the magnet over the magnet icon for 8 seconds. The LED on the active device will flash once to indicate that it is asleep. The active device will remain asleep until a magnet is used to wake it up when it is installed on a new animal.

What do I do if I get a warning about a duplicate ID?

During the assigning process, you will be warned if there is a duplicate ID. Remove the duplicate VID and apply a new VID tag number to the animal. If this is not feasible, then a prefix or suffix can be added to both animals in the software to help tell the animals apart, for example 123-Friesian, 123-red-tag.

If a tag is entered into the mobile app incorrectly, make a note of the error and the correct tag number. You can edit an animal record using the web app. To do this, search for the animal record, click on the **three dots** in the top right corner, **Manage identifier tags**, then the **Edit** icon next to the tag which requires editing.

How do I contact support?

There are several ways to contact our support team:

- Using the Datamars Livestock mobile app, tap **Contact Support** in the navigation menu, where you can message our support team.
- Using the Datamars Livestock web application, click on **Support** in the top menu and then use the chat bubble in the bottom-right corner of the screen.
- Email the product support team sf-support@datamars.com

Phone:

AU: 1800 248 774

NZ: 0800 243 282

NAM: 1 888 431 0957

UK: +44 204 571 7717

IR: +353 21 242 8844

Completing the post-install checklist

Once the installation and basic software training have been completed, it's time to do one final handover to the farmer. It is crucial that the farmer understands how the system works so now is the time to run them through the install and make sure they are across all the details of this. Even if the farmer has been attentive during the install, covering it a second time in a concise format will help consolidate this knowledge. With the farmer alongside, complete the post-install checklist on page 66. Show, demonstrate and discuss the contents of the checklist with the farmer. Both the installer and the farmer should sign that they have agreed that all points have been covered. Email the signed post-install checklist to the sales member AND to smartfarming.service@datamars.com

Post install check-in

Checking the installation the next day

The day following the installation, a member from the support team should log in and check that data is transmitting, there aren't any issues with tags/collars/internet connection. They should call the customer and ask their experience, and if they have any questions/issues.

Checking the installation on day 3

There should then be a day 3 check post-install where a support team member checks their data is there, gets in contact with the customer to confirm that they can start using the data and to see if they have any questions.

Pre-install checklist

Primary customer contact details

Name

Phone number

Role

Farm details

Farm/business name

Number of cows

Milking cows/heifers that require monitoring

Address

Animal identifiers used

☐

VID

☐

EID

Type of farm

☐

Indoor

☐

Outdoor

☐

Seasonal

☐

Year-round

Drafting or sorting system

Herd management system

Number of sites

Number of parlors/areas where there are barns

Farm details (continued)

Google Maps image



System installation

Gateways

Number of gateways

Gateway installation location(s)

Describe location(s)

Power supply

Existing power outlet located within 10 m (32') of gateway?

If no, a new outlet will need to be installed by an electrician

☐ Yes☐ No

Does the power cable need to be run through a wall or conduit?

If yes, an electrician should be on-site on install day to run the cable and wire the plug

☐ Yes☐ No

Internet connectivity

Internet connection

☐ Ethernet☐ LTE (cellular)☐ Wi-Fi

Speed test results

Test using chosen connection method at gateway installation location

 Mbps download Mbps upload

If using an ethernet connection

Estimated ethernet cable length

Ethernet repeater or hub required

if ethernet cable >75 m (82 yards)

☐ Yes☐ No

Enough ports available on router

☐ Yes☐ No - switch to be provided

If using an LTE connection

LTE provider to use

LTE APN number

info available online or contact provider

SIM card and data plan with >1GB data

to be supplied by farmer

☐ Yes☐ No

If using a Wi-Fi connection

Wi-Fi network name

Wi-Fi network password

Internet speed where farm staff will access data

Test using default mobile device access methods (LTE or Wi-Fi) at location staff will access heat and/or health data

 Mbps download Mbps upload

Installing the active tag solution

Device type

☐ Active ear tags ☐ Active collars

Do animals have pre-existing collars which can be re-used with Tru-Test active tags added?

If using active collars

☐ Yes ☐ No

How many to be installed?

Who will install these?

When will they be installed?

Animal identifier to be used for assigning

☐ VID ☐ EID

Additional information

Please include the following items with this document:

Site map

Draw a rough aerial map of the site setup including (using Google Maps or hand drawn)

- Any barns/parlors/buildings
- Roads and raceways
- Primary flow of cows
- Areas of strong or weak internet connectivity
- Items that may generate electrical interference e.g. RFID readers, drafting or sorting gates, antennas, and aerials
- Obstructions that may block data transfer such as metal-clad buildings, trees, etc
- Power outlets
- Router
- Location of gateway to be installed

Site photos

Attach photos to give the installer an idea of what to inspect prior to arrival at the site, including:

- General site photos including barns/parlors/milking sheds
- Gateway installation location

Further comments

Signatories

Once the pre-install checklist has been completed, this should be reviewed with the customer. Both the sales staff member and the customer should sign that they have agreed with all points listed.

Customer signature

Date

Sales signature

Date

**Email the signed pre-install checklist to the installer
AND to smartfarming.service@datamars.com**

Post-install checklist

Gateways

Show the gateway install and explain the function of the gateway

Show where the gateway is plugged in, and explain how it is important that this is not switched off or unplugged, show the power LED on the gateway as a method to identify if the gateway is on or off

Discuss the method the gateway uses to connect to the internet, and explain what will happen to the system if the internet goes down

Active collars and active ear tags

Show remaining inventory of active collars, active ear tags and magnets. Remind how to wake them up, install them, remove them, put them back to sleep, and how to order new ones

Discuss how it takes 3 days to build a baseline of data for each animal before the alerts start to come through and data can be used

Mobile and web apps

Remind farmer that they need to send out invitations to anyone who is using the Datamars Livestock app.

Remind farmer that they have the mobile app installed on their phone where they can view animals in heat and those to draft at each drafting time.

Remind farmer that they have the web app, with the address bookmarked on their computer where they can see the same things.

Getting help and support

Explain who should be contacted for help on using the system, or any issues with the install; provide a handout with contact details

Set expectations that someone from the support team will be in contact with them tomorrow and again in 3 days' time once the data baselines have been set to see how they are getting on with the system and check if they have any questions

Show the farmer the QuickStart Guide

Show the farmer how to access the Datamars Livestock help system and AgTrac contact centre, via the QR code and apps.

Ask if there are any questions you can help with now

Completed gateway installation

Insert photo here



Signatories

Customer signature

Sales signature

Date

Date

Email the signed post-install checklist to the sales member
AND to smartfarming.service@datamars.com

COMPLIANCE

Active Tag Solution



FCC notice

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. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC warning

Note: Users are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This equipment should be installed and operated with a minimum distance of 20 cm (8") between an active device and your body.

Responsible party in the USA

This product is supplied by:

Datamars Inc 528 Grant Road
Mineral Wells
Texas 76067
UNITED STATES
Toll free: 800 874 8494

ISED Canada notice

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- (1) this device may not cause interference
- (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;
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

ISED Canada warning

Installation within Canada: To maintain compliance with ISED Canada RF exposure compliance requirements, please follow the operation instructions as documented in this guide. This equipment should be installed and operated with a minimum distance of 20 cm (8") between an active device and your body.

Cet équipement est conforme aux limites d'exposition au rayonnement du CI établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé à une distance minimale de 20 cm entre le radiateur et votre corps.

UK declaration of conformity



Hereby, Datamars declares that the radio equipment types Collartag-1 and Eartag-1, are in compliance with the relevant statutory requirements. The full text of the declaration of conformity is available at the following internet address
<http://livestock.tru-test.com/en/compliance>

UK Importer:
Datamars UK,
Pheasant Mill,
Dunsdale Rd,
Selkirk TD7 5DZ,
United Kingdom

Brasil - Agência Nacional de Telecomunicações (ANATEL)

Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados. Para maiores informações, consulte o site da ANATEL www.anatel.gov.br



Collartag-1

Eartag-1

República Argentina - Registration of Telecommunication Activities and Materials (RAMATEL)



RAMATEL
C-28438

Collartag-1



RAMATEL
C-28439

Eartag-1

EU declaration of conformity



Hereby, Datamars declares that the radio equipment types Collartag-1 and Eartag-1 are in compliance with Directive 2014/53/EU. The declaration of conformity may be consulted at: <http://livestock.tru-test.com/en/compliance>

EU Importer:
Datamars Slovakia s.r.o.
Dolné Hony 6, 949 01
Nitra, Slovak Republic

The Collartag-1 emits a maximum of 10 mW e.i.r.p. in the frequency band 2.40 to 2.48 GHz.

The Eartag-1 emits a maximum of 10 mW e.i.r.p. in the frequency band 2.40 to 2.48 GHz.