INSTALLATION GUIDE
Fence Monitoring System

Tru-Test™
DATAMARS

This installation guide provides basic instructions for installing and setting up your fence monitoring system.
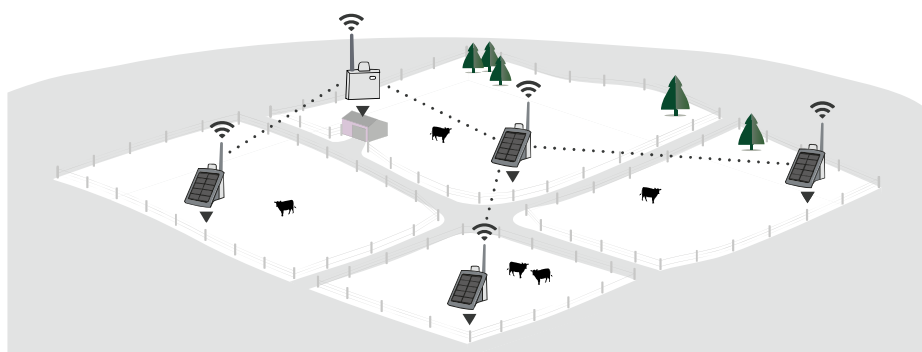
Contents

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 mobile phone app or go to support.livestock.datamars.com

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See
"Getting help"
on page 18

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1 Before you start

Components of a fence monitoring system

A **Fence Monitoring System** is made up of Gateways and Fence Nodes. A starter kit consists of 1 x gateway and 3 x nodes, but up to 50 nodes may be included in a system.

The **Gateway** provides the internet/cloud interface to the on-farm network. Each Fence Monitoring system requires a gateway to collect information from the nodes and pass it to the cloud.

Each **Fence Node** communicates to the gateway through radio frequency. The system works like a mesh, where each node can talk to all other nodes within 500 m (1/3 mile) to relay information back to the gateway.

How does fence monitoring work?

1. Something causes a drop in voltage on the electric fence.
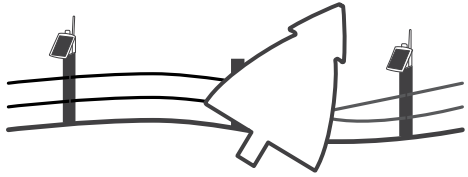
2. The electric fence voltage data is broadcast out from the nearest Fence Node and bounced up to 500 m (1/3 mile) from node to node creating a shared network of data across the farm.
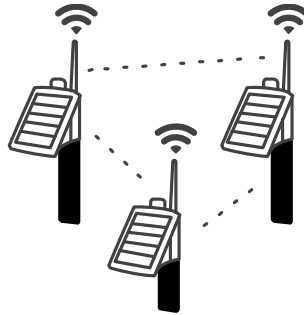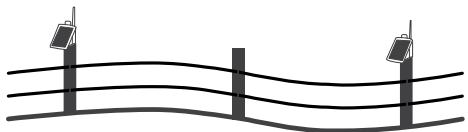
3. Once the data from the nodes reaches the gateway installed at a shed or barn it is sent up into the cloud.
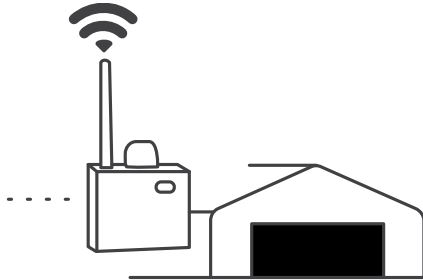
4. When voltage drops, an alert is automatically sent to you. You can see this data on the Datamars Livestock Monitoring web or mobile app.

5. You can fix the electric fence.

Overview of the installation process

To install a fence monitoring system, you will need to perform the following steps in order:

1. Unpack the box and assemble the other items you need.
2. Sign up for an account on the Datamars Livestock Monitoring web app and install the app on your mobile phone.
3. Install the gateway in a location where you have internet access e.g. shed, then set up the gateway using the Datamars Livestock mobile app.
4. While you are still near the gateway, pair all of the nodes using the Datamars Livestock mobile app.
5. Out on the farm, install the fence nodes.

Unpacking the box

Check that you have all of these items. If anything is missing, contact your supplier.

Gateway and power adaptor

Gateway mounting screws
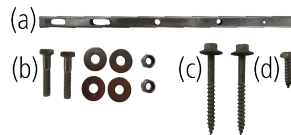
Mag key

(a)
(b) (c) (d)

Fence nodes
(3 supplied in the starter kit, but more may be purchased)

Node mounting kit
(1 kit per node)
(a) 1 x mounting rod
(b) steel y post hardware,
(c) 2 x wood post screws
(d) 1 x mounting rod screw

Other items you will need

Other items you will need for installation which are not supplied:

Mobile phone with the Datamars Livestock app installed

A compass
(or a compass app on your mobile phone)

Binoculars

Impact driver, pozi drive screw bit and 10 mm (3/8″) hex socket

Joint clamps
(2 for each node - one for the earth connection and one for the fence connection)

Insulated underground fence cable (>1.6 mm [1/16″] diameter)
for a lead-out cable and an earth cable (2-3 m [6-9′] per node)

10 mm (3/8″) spanner

Cable ties

20-30 cm (8-11″) earth rods
e.g. a 3 mm (1/8″) thick tent peg (1 for each node)

Wire cutters/strippers

# Datamars Livestock Monitoring web and mobile phone apps

Before you install the fence monitoring system, you need to sign up for an account on the Datamars Livestock Monitoring web app and install the app on your mobile phone.

The Datamars Livestock Monitoring web app and mobile app have slightly different functionality, so we recommend that you sign up for an account on the web app first, then install the mobile app on your phone.

Datamars Livestock Monitoring web app

To sign up for an account on the Datamars Livestock Monitoring web app:

1. Go to monitoring.livestock.datamars.com and click **Sign up here**.
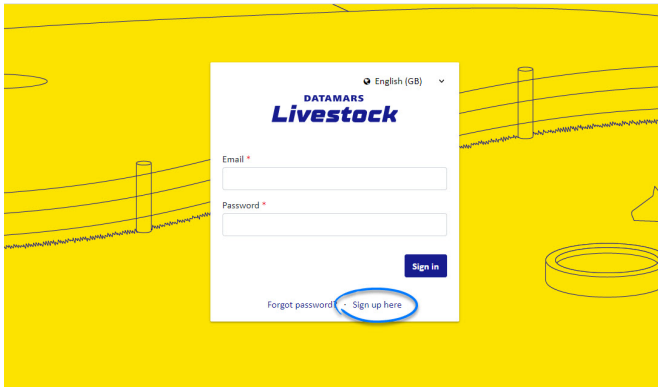
2. Follow the instructions, entering your details, verifying your email address and entering your farm details when prompted.

Datamars Livestock mobile app

The Datamars Livestock mobile app is available to download for free from the Google Play* store (Android* devices) or from the Apple App store* (Apple iOS*).
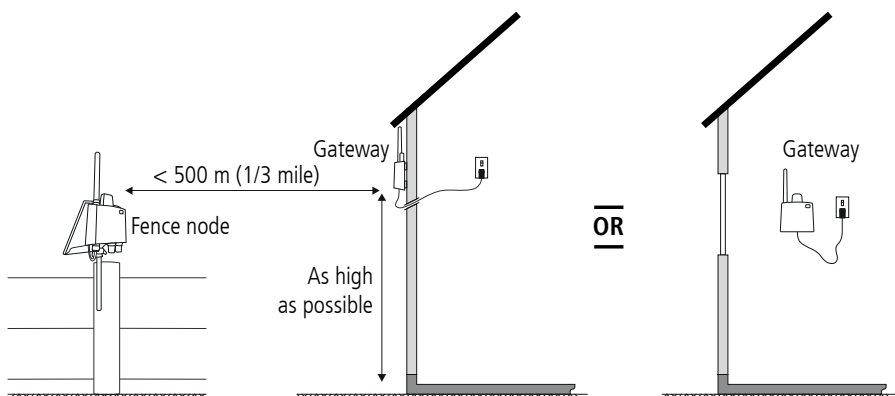
2 Installing the gateway

Choosing a suitable location

The gateway should be mounted:

- where there is internet access, either wireless (Wi-Fi) or wired connection (ethernet).
- as high as practicable, to ensure best performance.
- within 500 m (1/3 mile) of where the nearest node will be mounted. We strongly recommend a clear line of sight between the gateway and the nearest node. Any objects in the way, e.g. walls, steel, foliage (especially when wet), metal or reinforced concrete will affect the performance of your system and you will need to include more nodes and space them closer together.
- on a wooden wall or a stud.
- on the outside of a building, where the connectors are protected from the weather and water ingress, or if this is not possible, then where a window will provide clear line-of-sight with the location of the nearest node.

The PVC cord on the gateway must not be handled when the air temperature drops below freezing.

Mounting and preparing the gateway

To install the gateway you will need:

- Gateway and power adaptor (supplied)
- 2 x gateway mounting screws (supplied)
- Impact driver and pozi drive screw bit
- Ethernet cable (if using a wired internet connection)
- Extension lead (if necessary)
- Waterproof sealing tape (if using a wired internet connection outside)
- A mobile phone with the Datamars Livestock app installed.

To mount and prepare the gateway:

1. Insert the two pan pozi screws supplied into a wall or stud. The screws should be 60 mm (2 5/16") apart to match the mounting holes on the back of the gateway and the screw heads should protrude 5 mm (1/4") from the wall.

2. Hang the gateway upon the two screws, adjusting the screws if necessary to ensure a snug fit.
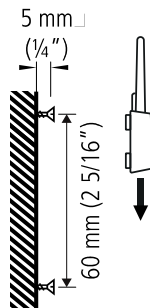
3. Remove the battery tab on the back of the gateway to activate the battery.

4. Connect the gateway to the power supply using the USB lead and power adaptor supplied. You may need to use an extension lead. Turn on the power supply.

5. If you are using a wired internet connection (optional), connect the gateway to your modem using an ethernet cable.

Gateway   Power   Modem
           supply

Remove   Ethernet cable
battery tab   (optional)
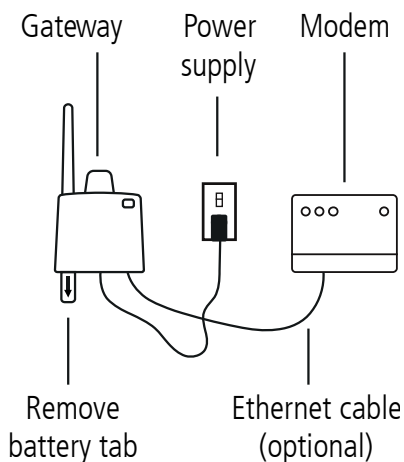
If the gateway is being installed outside with a wired internet connection, wrap the ethernet connector in waterproof sealing tape to protect it from the weather.

Setting up the gateway using the Datamars Livestock app

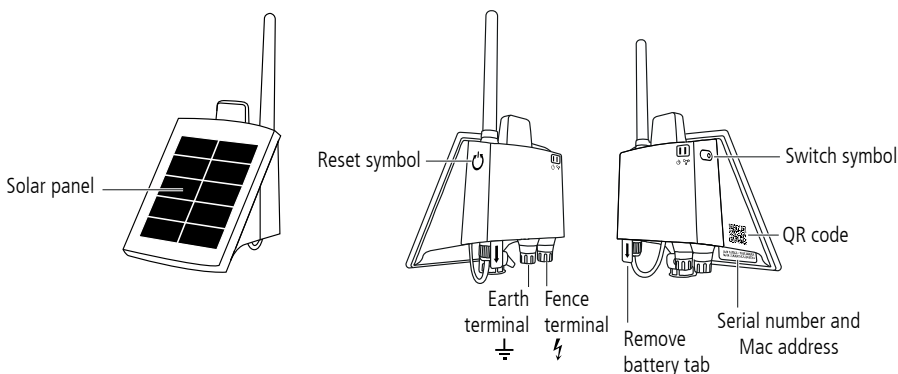To set up the gateway on the mobile app:

1. Launch the Datamars Livestock app on your phone.
2. Tap **Login**. Enter your login details (the same credentials you used when you registered an account on the Datamars Livestock Monitoring web app).
3. The farm name which you registered when you signed up for an account will be on the Home screen:
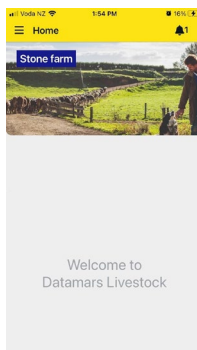
4. On the Datamars Livestock app, tap ![menu icon], **My devices**, then **Add device**.

5. Tap **Farm network gateway**.

6. Tap **Setup**.

7. Follow the steps to install the gateway. When prompted, you will need to enter your Wi-Fi connection details if you are using a wireless connection.

3   Installing the nodes

Parts of the node

Solar panel

Reset symbol

Switch symbol

QR code

Earth terminal ⏚

Fence terminal ⚡

Remove battery tab

Serial number and Mac address

Pairing the nodes using the Datamars Livestock app

You need to pair all the fence nodes in your system using the Datamars Livestock app.

To pair the nodes, you will need:

- All of the fence nodes used in your system.
- A mag key (supplied) to activate the nodes.
- A mobile phone with the Datamars Livestock app installed.

The pairing process must take place next to the gateway, before the nodes are installed on the farm. All nodes should be paired at the same time. Make sure that your mobile phone is connected to the internet.

To pair the nodes on the mobile app:

1. Position yourself beside the gateway with all the fence nodes in your system, the mag key and your mobile phone.
2. Remove the battery tab on the node to activate the battery.
3. Launch the Datamars Livestock app.
4. Tap ☰, **My Devices**, then **Add device**.
5. Tap **Fence monitoring node**.
6. Follow the steps to pair the node. When prompted, scan the QR code. Alternatively, enter the serial number and MAC address. Tap the mag key on the reset symbol when requested.
7. Once pairing is complete, pair the remaining nodes.

Installing the nodes using the Datamars Livestock app and mounting them on the fence

After all of the nodes have been paired, they can be installed on the fence.

Before you begin the installation process, make sure that you have paired all the nodes in your system. The installation process requires each of the nodes to be installed using the Datamars Livestock app, then physically mounted on the fence. Nodes can be mounted on a wood or steel fence post.

⚠️ Turn OFF the electric fence before you install the nodes.

To install the nodes, you will need:

- All of the paired fence nodes you'll be using in your system.
- A mag key to activate the nodes (supplied).
- A mobile phone with the Datamars Livestock app installed.
- A compass or a compass app on your mobile phone.
- A pair of binoculars so that you can establish a clear line-of-sight between the gateway and the nearest node and between each of the nodes.
- An impact driver, pozi drive screw bit and 10 mm (3/8") hex socket
- Wire cutters/strippers
- Node mounting kit (1 per node). Supplied
- Insulated underground fence cable for a lead-out cable and an earth cable (2-3 m [6-9'] per node). Not supplied.
- 10 mm (3/8") spanner
- Joint clamps (2 for each node - one for the earth connection and one for the fence connection). Not supplied.
- 20-30 cm (8-11") earth rods e.g. a 3 mm (1/8") thick tent peg (1 for each node). Not supplied.
- Cable ties. Not supplied.

The installation process is done on the farm, not near the gateway.

To install a node using the mobile app:

1. Launch the Datamars Livestock app.
2. If the nodes have been paired but not installed, a message will appear inviting you to **Install nodes**. Tap to begin.
3. Drive to the location where the first node will be mounted. It must be within 500 m (1/3 mile) of the gateway. Note that this is a line-of-sight measurement and the distance will be reduced if there are any objects in the way, e.g. trees, hills or structures. Use a pair of binoculars to assist you.
4. Follow the steps to set up the node. When prompted, reset the node using the mag key; physically mount the node on the fence using the following instructions; scan the QR code; assign a unique name e.g. back paddock, letterbox, hay shed and set a geo-location.

⚠️ Turn OFF the electric fence before you mount the nodes.

Midday summer sun

Mounting rod

Joint clamp

Cable tie

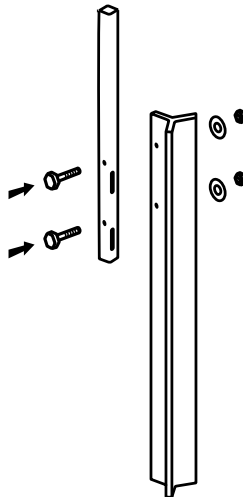Cable tie

20-30 cm (8-11") earth rod
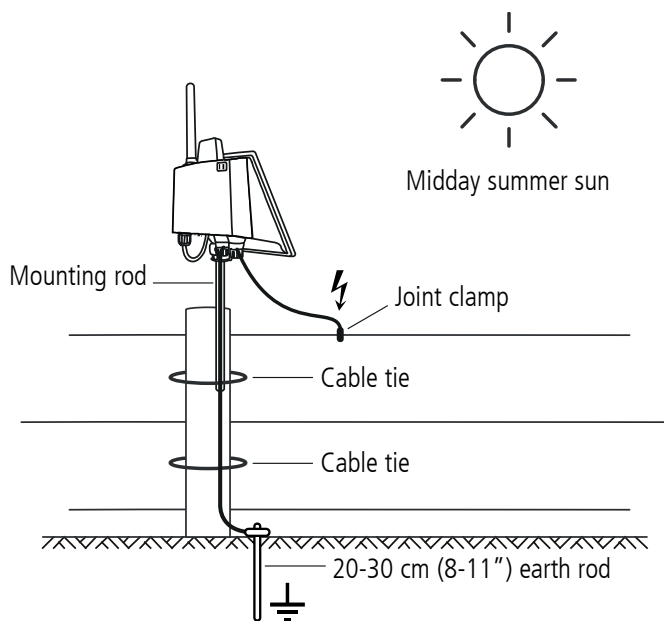
To mount a node on the fence:

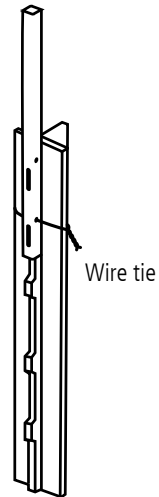See pictures of the node mounting kit on page 5.

1. Attach the mounting rod (a) to a wood or steel post using the hardware provided. The mounting rod should be installed so that the node is as high as possible above the fence post for optimal connectivity.
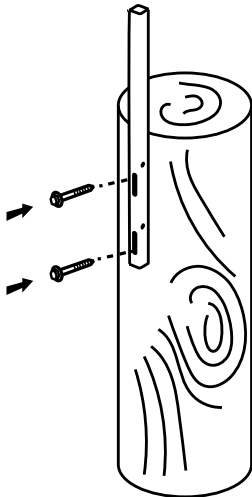

Wood post (b)   Y post (c)   T post

2. Fit the node onto the mounting rod. Ensure that the solar panel faces the midday summer sun. For optimum performance, the solar panel should not be subject to shade at any time of day or any season. Secure the node to the mounting rod by inserting the pan pozi screw supplied into the smallest hole at the top of the mounting rod.

3. Cut ~0.5 m (2') of insulated underground fence cable to connect the fence node to the normally live electric fence wire. Strip 20 mm (3/4") of insulation at both ends. Use a joint clamp to connect one end of the cable to the normally live electric fence wire (+). Connect the other end to the fence terminal on the node (⚡). To do this, undo the fence terminal, insert the cable between the washer and the node, then tighten the fence terminal finger-tight.
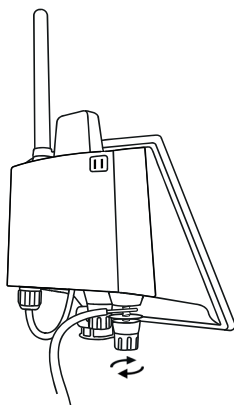
There must be NO wire between the two terminals or arcing will occur.

4. Push a 20-30 cm (8-11") earth rod into the ground immediately beside the fence post. Position the earth rod to avoid interference by animals. The top of the earth rod should protrude just out of the ground.

5. Cut ~1.5 m (5') of insulated underground fence cable to connect the fence node to the earth rod (e.g tent peg). Strip 20 mm (3/4") of insulation at both ends. Use a joint clamp to connect one end of the cable to the earth rod.

   Connect the other end to the earth terminal on the node ($\perp$). To do this, undo the earth terminal, insert the cable between the washer and the node, then tighten the earth terminal finger-tight.

   There must be NO wire between the two terminals or arcing will occur.

6. Use cable ties to secure the earth cable to the fence post.

7. Drive to the location of the next node and begin the installation process for the next and all remaining nodes.

4 Using the Datamars Livestock Monitoring apps

The Datamars Livestock Monitoring apps allow you to monitor your electric fence in real time from your mobile phone or a PC. You can see whether electric fence voltages are OK in all locations where nodes are installed.

Notifications can be enabled in your phone settings so that you receive alerts whenever your fence requires attention.

Alert thresholds and fence node GPS locations can be modified in the PC app, if required.
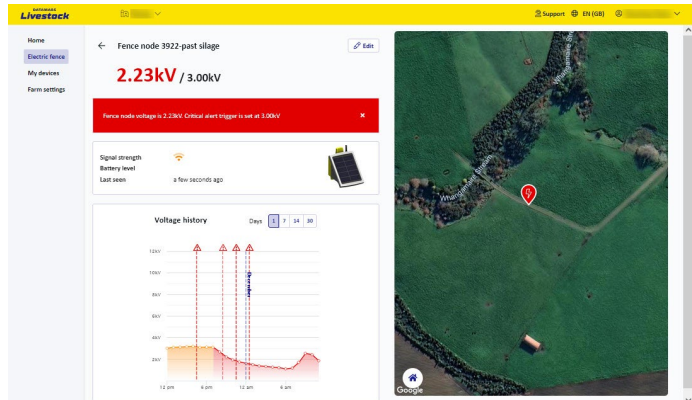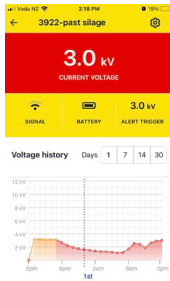
Getting help

Help articles and videos

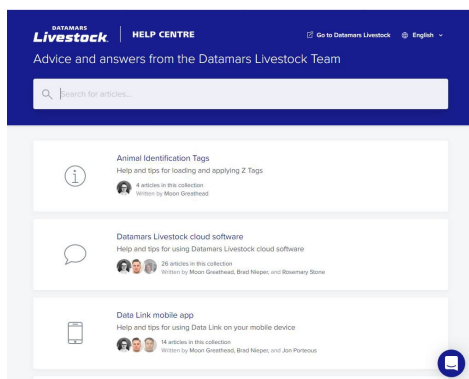The Datamars Livestock Help Centre provides searchable articles and videos to help you when you need it. The help centre provides instant support for our apps, software and products. Access the help centre via the mobile phone app or go to support.livestock.datamars.com

Troubleshooting

For personalised troubleshooting and advice, chat with us directly. In the mobile phone app, tap on ⚙, then 💬. On any of our websites, in the Datamars Livestock Help Centre or in the Datamars Livestock Training Academy, click on 🗨 in the bottom right-hand corner of the screen.

Maintenance and servicing

Solar panel maintenance

Check the solar panel on each node once a month to ensure no bird excreta is caked on and covering the panel (a plastic scraping device should be used to clear any build-up). Clean the solar panel regularly with a soft cloth using glass cleaner or a mild solution of detergent and water. This will ensure that the solar panel functions efficiently.

Do not immerse the node in water.

When transporting a node, protect the solar panel to prevent the glass surface from being damaged.

Servicing

This product contains no user serviceable parts. It must be returned to an authorised service agent for repair.

Europe - Instructions for disposal of product

This symbol on the product or its packaging indicates that this product (and its batteries) must not be disposed of with other waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city recycling office or the dealer from whom you purchased the product.

The gateway and fence node products both contain a 18650 lithium-ion ($LiNiMnCoO_2$) rechargeable battery.

For instructions on how to dismantle this product for recycling, email service.dept@datamars.com

Warranty

This product is warranted against faulty material and workmanship for a period from the date of purchase. If a warranted defect occurs, return this product with proof of purchase to the place of purchase. Details of warranty periods and other terms applying are available at the place of purchase or at **datamars.com**

No responsibility is accepted for any accident or damage caused subsequent to any tampering with or modification to or misuse of this product, including (but not limited to) alterations made by anyone other than Datamars or its agents.

To the maximum extent permitted by law, this warranty is exclusive, personal to you and in lieu of all other warranties, representations or conditions relating to this product (whether express or implied and whenever arising) whether originating by statute, law, trade, custom or otherwise.

The product warranty is only valid in the original country of purchase. Any claims made in another country may incur full repair costs at the owner's expense.

Compliance

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 B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.
- Any changes or modifications not expressly approved by Datamars could void the user's authority to operate the equipment

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 the antenna within this 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 ID information

This product contains Datamars SMT Radio Module ISED Canada ID: 4678A-DMO1

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.

ISED Canada warning

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

UK declaration of conformity

UK CA Hereby, Datamars declares that the radio equipment types GW1 Gateway and FN1F 2 W and 4 W Fence Monitoring Nodes 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

EU declaration of conformity

CE Hereby, Datamars declares that the radio equipment types GW1 Gateway and FN1F 2 W and 4 W Fence Monitoring Nodes are in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: **http://livestock.tru-test.com/en/compliance**

EU Importer:

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

The GW1 gateway radio equipment emits a maximum of 87 mW e.i.r.p. in the frequency band 2.40 to 2.48 GHz. The FN1F 2 W and 4 W Fence Monitoring Nodes emit a maximum of 10 mW e.i.r.p. in the frequency band 2.40 to 2.48 GHz.

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