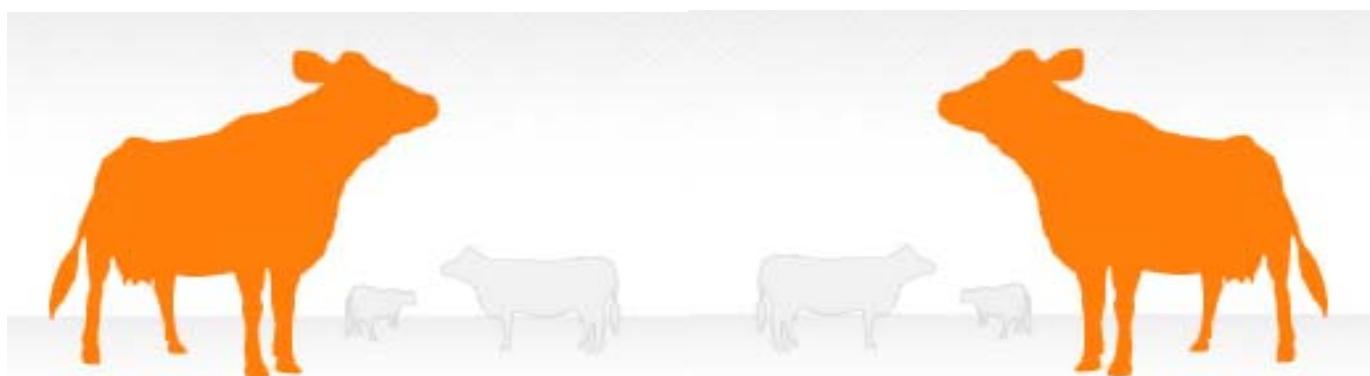




User Guide

Kahne Receiver

KR2003



www.kahneanimalhealth.com

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Foreword

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Kahne reserves the right to revise this document or withdraw it at any time without prior notice. The availability of particular products may vary by region.

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Statements of Compliance

1. The Kahne KR2003 Receiver complies with FCC CE 
Tested to 47 Code of Federal Regulations (United States of America) FCC
2. The Kahne Receiver complies with Part 15 – Radio Frequency Devices:

Clause 15.101

Clause 15.103

Clause 15.107

Clause 15.109

Clause 15.111

NOTE:

Changes or modifications not expressly approved by the party responsible for compliance will void the user's authority to operate the equipment.

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/nuisance interference. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful/nuisance interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful/nuisance 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.

Caution to Operators

Operation is subject to the following influencing conditions:

- (1) Ensure that you operate this receiver and the peripheral wireless boluses in a considerate manner; mitigate unforeseen potential to cause nuisance/harmful signal interference to similar wireless systems.
- (2) Consider that other devices and environmental factors may cause interference to the signal received; including but not only interference by buildings, yard and enclosure materials, and electricity transmission lines.

None of these factors have been an influence on the performance of these products to date. This caution is precautionary only and serves to encourage due consideration prior to setting this telemetry network to work in an environment and/or landscape not suited to RF transmissions.

Warranty

Thank you for purchasing this Kahne product. To get maximum use of the features of your new product we recommend that you follow a few simple steps:

- Read the guidelines for safe and efficient use.
- Read all the terms and conditions of your Kahne Warranty.
- Save your original receipt. You will need it for warranty repair claims. Should your Kahne product need warranty service, you should return it to the dealer from whom it was purchased or contact Kahne.

Our Warranty

Kahne warrants this product to be free from defects in material and workmanship at the time of its original purchase by a consumer, and for a subsequent period as stated in the following table:

Product	Warranty Period
Kahne Receiver	One year from the date of purchase

This warranty is expressly limited to the original owner who purchases the equipment directly from Kahne or from an authorized Kahne dealer.

What we will do

If, during the warranty period, this product fails to operate under normal use and service, due to improper materials or workmanship, Kahne subsidiaries, authorized distributors or authorized service partners will, at their option, either repair or replace the product in accordance with the terms and conditions stipulated herein.

Conditions

1. The warranty is valid only if the original receipt issued to the original purchaser by the dealer, specifying the date of purchase, is presented with the product to be repaired or replaced. Kahne reserves the right to refuse warranty service if this information has been removed or changed after the original purchase of the product from the dealer.
2. If Kahne repairs or replaces the product, the repaired or replaced product shall be warranted for the remaining time of the original warranty period or for ninety (90) days from the date of repair, whichever is longer. Repair or replacement may be via functionally equivalent reconditioned units. Replaced faulty parts or components will become the property of Kahne.
3. This warranty does not cover any failure of the product due to normal wear and tear, damage, misuse, including but not limited to use in any other than the normal and customary manner, in accordance with Kahne's user guide for use, faulty installation, calibration and maintenance of the product, accident, modification or adjustment, events beyond human control, improper ventilation and damage resulting from liquid or corrosion.
4. This warranty does not cover product failures due to repairs, modifications or improper service performed by a non-Kahne authorized service workshop or opening of the product by non-Kahne authorized persons.
5. The warranty does not cover product failures which have been caused by use of non-Kahne original accessories.
6. This warranty becomes void if a non-Kahne approved AC/DC adaptor or battery is used.
7. Tampering with any part of the product will void the warranty.
8. Kahne makes no other express warranties, whether written or oral, other than contained within this printed limited warranty. To the fullest extent allowable by law all warranties implied by law, including without limitation the implied warranties of merchantability and fitness for a particular purpose, are expressly excluded, and in no event shall Kahne be liable for incidental or consequential damages of any nature whatsoever, however they arise, from the purchase or use of the product, and including but not limited to lost profits or business loss.
9. Some countries restrict or do not allow the exclusion or limitation of incidental or consequential damage, or limitation of the duration of implied warranties, so the preceding limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights, which may vary from country to country.

For Your Safety

Read these simple guidelines. Ignoring these guidelines may be hazardous.

- **USE SENSIBLY**

Use only as per this user guide.

- **USE KAHNE APPROVED SERVICE**

Only approved service personnel must work on this product.

- **ACCESSORIES**

Use only approved accessories. Do not connect incompatible products.

- **CONNECTING TO OTHER DEVICES**

When connecting to any other device, read the appropriate user guide for detailed safety instructions. Do not connect incompatible products.

- **HEALTH AND SAFETY IN THE WORKPLACE**

Kahne does not guarantee user safety. In hazardous environments, an appropriate Health and Safety plan should be in place.

Receiver Components

Components supplied with the KR2003:

KR2002003 receiver box

Yagi antenna

Receiver assembly

1 GB SD memory card

12 VDC power adaptor

Software

User guide

Please check that all these components have been supplied and contact your dealer or Kahne on email at: contact@kahneanimalhealth.com if any of the components are missing.

Components NOT supplied with the KR2003

SD memory card reader

USB to RS232 connector

RS232 connector

Description

The KR2003 receiver is designed to operate standalone and log data transmissions from Kahne KB1000 series boluses and log them to a SD data card. The logged data can be easily exported into a spreadsheet or Kahne database for data analysis. The receiver has a high gain Yagi antenna to pick up transmissions from boluses inside animals up to a distance of about 200m.

The SD card should be read using a SD card reader which is available at your local computer or camera shop.

Assembly

The Kahne Receiver requires some basic assembly by the user.



Place the box section with the electronics enclosure attached to it as illustrated below



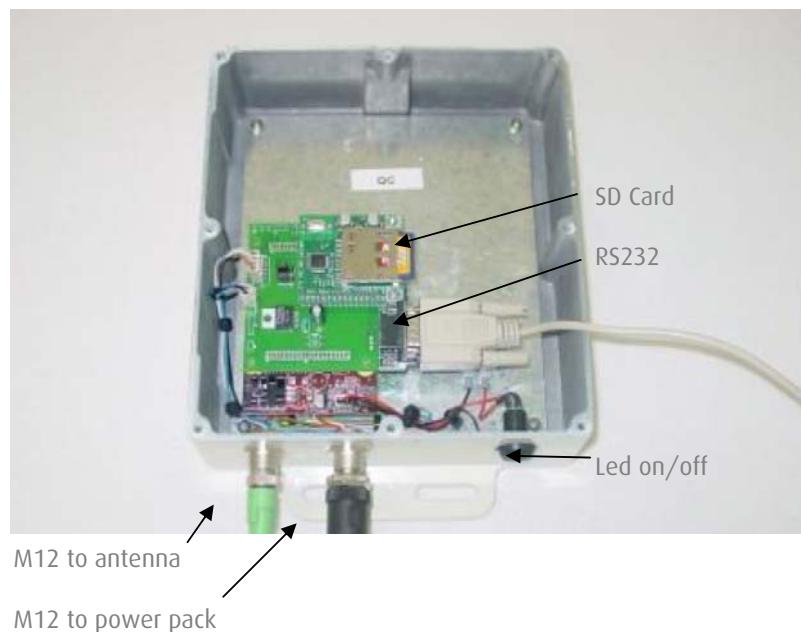
Tighten the bolts so that the components hold the 'L' shape illustrated below



Connect 5 pole M12 connector – 3 poles signal; 2 poles power



Remove the face plate of the KR2003; undo the screws and keep them in a safe place. Install the 1GB SD Card. Note: removing and replacing the SD card should be performed with the receiver unpowered.



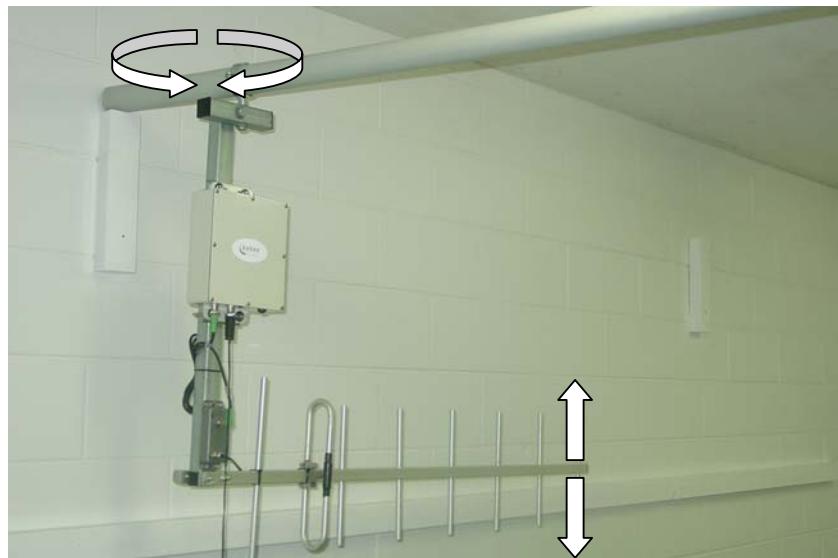
KR2003 Mounting Options

Mounting on a Pole



Mounting to a Roofing Structure

Adjustment capabilities for overhead mounting



Knuckle assembly



Antenna Orientation

The Yagi antenna is a directional antenna with an acceptance angle of about 40 degrees. It should be mounted with vertical polarization to maximise response and aimed with direct line of sight at the animals containing the boluses. Follow these positioning tips to maximize antenna reception:

1. Use vertical polarization (Yagi arms vertical)
2. Select a position with direct line of sight from antenna to the animals.
3. Aim the antenna so that the target animals will generally be within a 40 degrees cone of the antenna at a distance of less than 200m.
4. Position the antenna so that transmitted signals do not have to pass through buildings, trees, fences or other farm structures. Metal structures may reflect radio signals.

Operation

- Install the SD card by removing the lid and clicking it into the card slot (see diagram).
- Assemble and mount the KR2003.
- Align the antenna carefully.
- Apply 12 VDC power (the LED should come on).

The receiver will begin logging data from boluses within range.

To retrieve the data card:

- Turn the receiver off
- Open lid and click out the SD card
- Always replace the card with the receiver off.
- Replace lid and power on.

Reading the SD data card

- Install the SD card reader onto your computer following the manufacturers instructions
- Insert SD card into reader
- Open card and transfer the daily files on data logged.

Care and Maintenance

Your Kahne product is of superior design and quality and should be treated with care.

When using your Kahne product:

- Keep it and all its parts and accessories out of the reach of small children.
- This KR2003 is designed for indoor or sheltered applications.
- Open and close the receiver enclosure with extreme care; careless handling of the device may cause damage.
- Do not drop, knock or shake as this could lead to internal damage.
- Do not use harsh chemicals, cleaning solvents or strong detergents for cleaning. Wipe with a soft cloth slightly dampened with a mild soap-and-water solution.

Specifications

Kahne Receiver – KR2003	
Power	12 VDC power pack
Receiver Frequency	433.9 MHz
External indicator type	LED
Connectors	2 x M12 IP65 rated
Enclosure rating	Equivalent to NEMA 3SX and IP62
Enclosure size	253mm (l) x 180mm (d) x 62mm (w)
Enclosure casing	Die cast aluminium
Weight	1.5 kg
Approvals	FCC, CE, 
Micro processor	BL1820 JackRabbit Single Computer
Memory	1GB SD card
Card logger	uALFAT SD card logger
Environmental operating conditions	-20°C to 70°C

Antenna	
Number of Elements	8
Frequency Range (MHz)	400-500
Bandwidth (fo)	10%
Gain (dBd)	9.5
Half Power Beamwidth E Plane (deg)	40
Half Power beamwidth H Plane (deg)	50
Front to Back Ratio (dB)	18
Return Loss (dB & VSWR)	<-14 dB 1.5:1
Input Impedance (ohms)	50
Max element length (m)	0.38
Boom Length (m)	1.35
Boom Diameter (mm)	25 sq mm
Effective Area (m ²)	0.08
Weight (kg)	1.25