safecows

IN-0130/IN-0103

PRODUCT SPECIFICATIONS

Version <*2.1*>

<*2022-09-25*>

VERSION HISTORY

[The table below will show how the development and distribution of the Product Design Specification was managed and monitored until it was approved. It will include the version number, the person who created that version, the date of creation, the name of the person who approved it, the approval date, and a brief explanation for any changes made to that version.]

Version #	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	Ming wei	2 021-07 -02	Weiq i	2 021-07 -02	Initial Design Definition draft
2.0	Ming wei	2 022-09 -21	Weiqi	2 022-09 -21	
2.1	Ming wei	2 022-09 -25	Rain	2 022-09 -25	

UP Template Version: 12/31/07

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1 OVERVIEW

Safecows Bovine Rumen Capsule is a cylindrical, high-performance, long-term biometric collection device made of safe and environmentally friendly materials, including components such as circuit boards, chips, sensors, and batteries. The device is designed for the health management of ruminant animals and uses the method of staying in the reticulum to collect physiological data. This enables breeders to instantly access the real-time physiological data of each animal and generate abnormal alerts based on data comparison, allowing for timely monitoring of the health status of livestock and preventing economic losses by managing animals with diseases or in estrus. The device uses Lora technology for communication, with ultra-low power consumption and a working life of up to three to five years.

Production Functions:

- Heating monitoring
- Real-time estrus monitoring,
- real-time pregnancy monitoring,
- calving status monitoring,
- health status monitoring,
- and abnormal status alerting.

Typical Application:

- Large-scale and intensive monitoring and management of ranches,
- livestock financing and insurance services,
- branding of beef and dairy enterprises,
- feed companies with formula optimization,
- veterinary services for disease prevention and control,
- specialized veterinary drugs,
- seed companies for breeding, scientific research institutions for research,
- and government agencies for market regulation and supervision.

Rumen capsule model lists:

Serial	Model	Description	Remarks
1	In-0130	130.5*32mm service life of 5 years	
2	In-0103	103.5*28.5mm service life of 3 years	

2 PRODUCT FEATURES

- Real-time collection and recording of accurate and reliable data inside the cow's stomach,
- fully traceable and comparable,
- with traceability of water intake and calving status, sustainable measurement of body temperature unaffected by external environmental factors,

- scientifically designed shape for easy insertion into the rumen without causing rejection,
- and special outer shell material to ensure that it is not corroded or ruptured in the rumen,
- with resistance to ultraviolet rays and impact.

3 PRODUCT APPEARANCE

4 TECHNICAL SPECIFICATION PARAMETERS

Item	Parameters
Wireless	LoRa/LoRaWAN
Frequency Band	CN470, US915, AU915, AS923, EU868
Output Power	Type （SF9）：16dBm@470MHz；17dBm@868MHz; 15dBm@915MHz；15dBm@923MHz
Range	500m maximum
Temperature Accuracy	±0.1℃
Monitoring Temperature	23~45℃
3 Axis Sensor	Rumen Activity
Uplink Period	15min/30min configurable
Current	22uA standby, 65uA/h Average
Power Consumption	Less than 3.3mW

Battery Capacity	4800mAh for In-0130; 2400mAh for In-0103
Battery Life	5years (In-0130), 3years (In-0103)
IP level	IP68
Operating Temperature	-40~65℃
Storage Temperature	-40~22℃
Size	JS-0130: 130.5*32mm/ JS-0103: 103.5*28.5mm
Weight	120~200 g
Standards	Rohs, FCC, CE,

5 OPERATINGINSTRUCTIONS

5.1 STORAGE REQUIREMENTS

Store in an environment with temperature of -40°C~24°C

Do not open the sealed bottle cap before Installation.

5.2 BEFORE INJECTING

1) LORA gateway (prepare the corresponding quantity according to the range and layout).
2) SIM card/cable (numbers equal to gateways).
3) Rumen capsules (prepared according to the planned quantity and do online testing in the company in advance).

4) Capsulegun(nolessthantwo).
5) Twoveterinarians
6) Communicatewithranchtodeterminethenumberofcattleinadvance,itis best to place the confirmed cattle in a shed, which is convenient for later management

5.3 INJECT THE RUMEN CAPSULE

1) Device and tools preplacement: capsules, gateways, screwdrivers, feeding guns, alcohol, disinfection equipment, disposable gloves, protective clothing, capsule delivery registration form, pens (as appropriate).
2) 2 veterinarians and 1-2 recorders
3) Set up the gateway according to the planned layout.
4) Sterilize the balling gun after every injection to avoid the cross infection.
5) Log in to the ranch administrator account with your mobile phone, and scan the QR code of the bio-capsule through the APP to add and save the identification number corresponding to the ear number of the cow, so as to realize the one-to-one correspondence between cows and capsules.
6) Take photos of bio-capsules with the numbers of cattle of cattle ear for later verification.
7) Confirm that the number of bio-capsules to be injection is the same as the number of cattle check the number of capsules on the health management platform and whether they are normal, and confirm that the injection is completed.

6 PACKAGE

Model	Style	Quantity	Size	Box Size	Quantity/Box	Remarks
In-0130	Device in a sealed bottle	1	140*40	36.9*33*18.9cm	30pcs/box	
In-0103	Device in a sealed bottle	1	120*40	36.5*32.2*27cm	60pcs/box	

7 CONTACTUS

FCC Warning:
Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part15 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.

Note: 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. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.