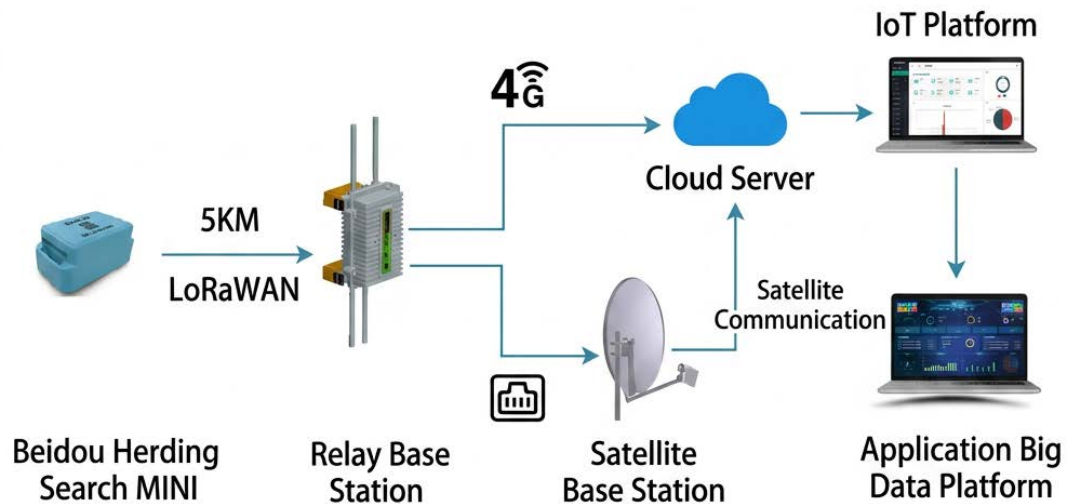


MINI Positioning Collar WE-S502 Product Specification

Product Overview

The WEST Positioning Collar – Beidou Muxun MINI (WE-S502) is specifically designed for livestock positioning in free-range farming scenarios. This collar integrates Beidou/GPS positioning with LoRaWAN communication technology, achieving a maximum communication range of 5KM between the collar and base stations. Once worn around cattle or sheep necks, it automatically collects location data and activity metrics, transmitting information to cloud servers via relay base stations. Featuring dual-mode Beidou/GPS positioning modules, the collar ensures precise livestock tracking with low power consumption. Equipped with a 3-axis accelerometer, it accurately measures daily movement steps, allowing health status and estrus cycle monitoring through step count analysis. The Beidou Muxun collar enables livestock positioning and data upload even in carrier-free environments, representing a revolutionary breakthrough in free-range livestock tracking technology.

Product topology



- The Beidou collar can collect latitude and longitude data through Beidou/GPS dual-mode positioning, and transmit the data to the relay base station through LoRaWAN communication;
- In areas with 4G network coverage, the relay base station can directly forward terminal data to the cloud server via the 4G network;
- In areas without 4G network coverage, the relay base station can forward terminal data to the cloud server via satellite communication with the help of the Beidou satellite base station.

Size of product

product name	Beidou Muxun MINI	product model	WE-S502
product appearance			
			
order number	class	project	Product Parameter
1	essential parameter	communication mode	LoRaWAN (maximum range of 5 km with gateway, stable performance within 3 km)
2		ambient temperature	-30°C—60°C
3		Upload frequency	Upload every 2 hours by default (frequency adjustable, depending on power consumption)
4		cruising power	16 months (battery replaceable)
5		location mode	Beidou/GPS dual-mode positioning
6		positioning accuracy	5m—10m (Positioning accuracy is affected by weather conditions and obstructions)
7		outer shell protection rating	IP67
8		size	86mm*50mm*44mm
9		Weight (excluding straps)	190±3g
10	basic function	Livestock positioning and movement monitoring	
11	usage scenario	Location and Health Monitoring of Free-Raising Cattle, Sheep, and Camels	

Functional characteristics

- Precise positioning: The collar employs dual-mode GPS+Beidou positioning to accurately collect location data of grazing livestock, with data viewable on the platform side.
- Health monitoring: The collar collects activity data of grazing livestock, and the platform can assess the health status, disease occurrence, and mortality of the livestock based on the activity data.
- Superior material: The casing is made of premium engineering plastics (plastic alloys), offering strength, toughness, and environmental friendliness.
- Extended battery life: Equipped with high-capacity, high-density non-rechargeable lithium batteries and ultra-low power consumption design for prolonged operation.
- Compact size and lightweight design: Easy to wear with a weight of approximately 190g, causing no stress response in livestock.
- One-click inventory: By screening the real-time online status of collars, it enables rapid identification of livestock wearing collars, preventing loss or accidents.
- Epidemic surveillance: Through comprehensive analysis of livestock movement patterns, abnormal animals are rapidly identified and alerts are generated via the platform to achieve early epidemic warning and prevent large-scale transmission of diseases.
- Estrus monitoring: By comprehensively analyzing the physical activity of livestock, estrous animals can be rapidly identified and alerts generated through the platform to achieve estrus early warning, thereby preventing missed estrus periods.
- Location monitoring: Implement location management for each livestock unit, equipped with electronic fences, and trigger immediate alarms upon departure to

prevent livestock loss.

- Convenient remote management: User-friendly WEB/App interface for remote farm management, offering simplified and efficient operations

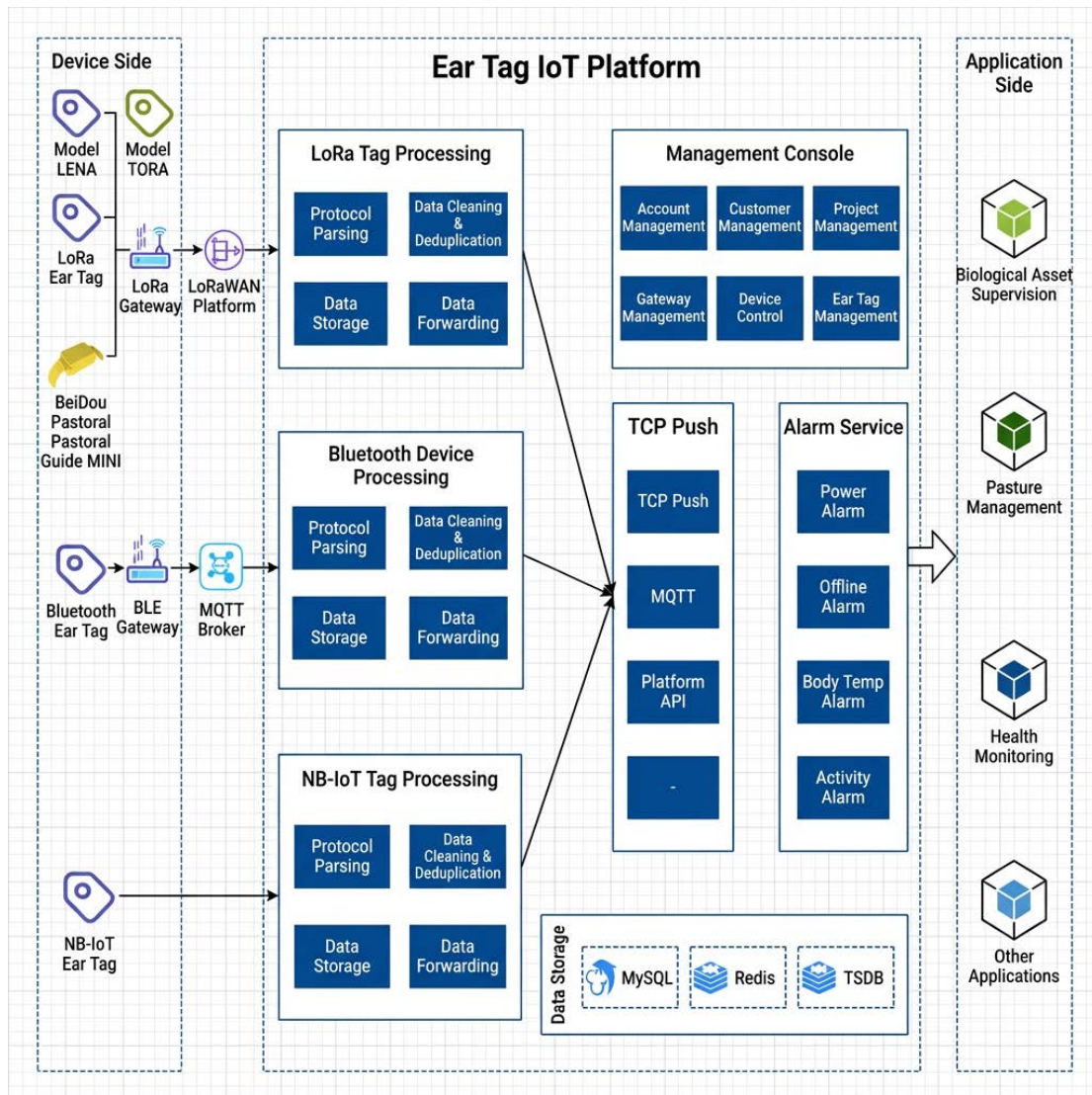
Service Overview and Architecture

The core of the positioning collar (Beidou Muxun MINI) IoT management service is an intelligent centralized network management platform designed for remote centralized management of smart collars. Based on a browser/server (B/S) architecture, users can remotely monitor, configure, and manage devices via web browsers, offering user-friendly operation and significantly reducing equipment management costs.

The core of the positioning collar (Beidou Muxun MINI) IoT management service is an intelligent centralized network management platform, featuring the following architecture:

Hardware components: positioning collar and LoRaWAN gateway.

System software: web-based management systems, mobile applications (APPs), etc.



Data integration

WEST offers three data integration solutions to accommodate diverse client requirements.

Method 1: Subscribe to MQTT

Method 2: WEBHOOK

Method 3: Interface Integration

For detailed docking methods, please refer to the WEST Smart Terminal Docking Document.