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Intelligent Positioning Shoulder Light specification

product name :	Beidou Positioning Terminal
product model :	XW129-4G
File Version:	V1.0



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catalogue

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1. Basic Product Information

1.1 Product Overview

This product is an IP65-rated, waterproof high-precision personnel management warning shoulder light that utilizes a low-power MCU combined with 4G Cat1 wireless communication for remote data transmission. It is compatible with the networks of China Mobile, China Unicom, and China Telecom, supports the JT 808 protocol, and offers seamless integration with various system platforms.

To enhance product positioning accuracy, this device features integrated multi-positioning capabilities combining BeiDou, GPS, AGPS, Wi-Fi, Bluetooth, and base station LBS. Outdoor positioning employs dual-frequency full-mode systems—including 18mm×18mm×2mm and 25mm×25mm×2mm dual-ceramic dual-mode dual-frequency systems; dual-mode dual-frequency RTK centimeter-level positioning; domestic single-BeiDou RTK centimeter-level positioning—along with a dedicated amplification/filtration circuit, achieving an accuracy range of approximately 0.1–1 meter.

For indoor positioning, the product meets standard WIFI positioning requirements and is also suitable for applications requiring precise indoor Bluetooth beacon positioning. By deploying a Bluetooth beacon every 4–8 meters indoors and having employee badges upload sets of beacon data (with the four strongest signals) at a maximum frequency of 5 seconds, it delivers high-quality integrated indoor-outdoor positioning performance.

The device features a high-sensitivity gravity sensor that intelligently selects operating modes (e.g., active or sleep mode) based on motion detection to maximize standby time.

The product supports two sets of three red LED warning lights and two sets of three blue LED warning lights, with free switching between warning modes.

The product integrates essential hardware and software components—including Bluetooth, voice recognition, text-to-speech (TTS), a microphone, and three buttons — to facilitate users' project functionality configuration.

The device comes with a built-in 1100 mAh high-performance polymer lithium battery, offering a standby time of at least 3 days (under the condition that the positioning function operates for 8 hours daily with a 5-minute frequency).

The product features waterproof Type-C charging with 5V/1A fast charging capability.

The product features IP65 protection rating and can assist customers in obtaining explosion-proof certification or third-party testing approvals.



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Our company offers customized navigation solutions tailored to client specifications, supporting systems such as BeiDou 3B1I, BeiDou 3B1I/B2I dual-frequency, or Galileo-based navigation modules with specific frequency bands.

1.2 Application Fields

Management and tracking of personnel involved in smart sanitation, smart road administration, smart chemical management, information-based urban management, emergency rescue, elderly care services, smart logistics, outdoor activities, and related fields.

1.3 Functional Features

Warning flash: Red and blue LED warning lights flash to alert.

High-precision positioning: integrated multi-source tracking combining BeiDou, GPS, AGPS, Wi-Fi, Bluetooth, and base station LBS technologies.

Supports domestic single-beidou systems.

Supports GPS and Beidou dual-frequency RTK

Supports Single Beidou RTK

Remote Location Inquiry: Supports actively querying a device's current location remotely;

Motion trajectory query: By default, location data is uploaded every 3 minutes for easy personnel location management (upload intervals can be set remotely)

Fence Alarm: You can customize electronic fences. The official account or platform will immediately notify you when someone enters or exits the fence.

SOS Alarm: When a person encounters an emergency, a one-touch SOS alarm instantly sends a distress signal to the platform.

TTS Reading: Press the button to start TTS voice reading of the latest message sent by the platform.

Check-in Functions: Button check-in, GPS-based check-in, Bluetooth beacon check-in.

Whitelist management feature: Users can communicate with whitelisted numbers; unknown calls cannot be answered.

Waterproof Design: IP65 waterproof rating

1.4 Product Usage Introduction

1.4.1 SIM Card Installation Method

The device uses a standard Nano SIM card. The slot is a side-mounted waterproof slot, with the chip facing the PCBA surface; insert the card flat into the slot.

1.4.2 Description of the LED Indicator Light

LED pigment	function definition	Flash Mode
Red (Power status)	Turn on the button	The light remains on for 3 seconds to indicate startup.

	Turn off by pressing the button	Flash 3 times (with a 1-second interval)
	Charging	Flash (1 flash per second)
	Charging complete	Keep on for 30 seconds, then turn off
	Shut down when battery level is low	Flash 6 times (1 flash per second), then turn off the light and shut down
Blue (GPS Status)	Beidou GPS is turned off	The light goes off
	In Positioning	Flash (1 time per second)
	Positioning successful	Flash (flashes once every 5 seconds)
	RTK Floating Point Solution	Flash (flashes twice in 5 seconds)
	RTK fixed solution	Flash (flashes 3 times in 5 seconds)
Yellow (4G status)	No card registered / Unregistered network / Network search in progress	Flash (1 time per second)
	SIM card network registration successful/connecting to cloud server	Flash (flashes once every 5 seconds)
	Server connection successful	Flash (flashes twice in 5 seconds)

1.4.3 Key Definitions

Note: Actual button functions may vary.

Button Icon	operate	function definition
	Short Press	Read the last voice message (sent within 24 hours)
	Long press	1. When the device is powered on, hold it down for 2 seconds to shut it off; the red LED will flash three times (with a 1-second interval between each flash). 2. When the device is powered off, press and hold the power button for 2 seconds to turn it on; the red LED will remain lit for 3 seconds.
	Short Press	Display the current time and battery level
	Long press	1. In SOS off mode: Hold the button for 2 seconds to activate the SOS alarm and flash the indicator light (three short pulses, three long pulses, then three short pulses). 2. When SOS is activated, hold the button for 2 seconds to turn off the SOS alarm and the flashing indicator light.
	Press twice	End-of-Day Check-in (Optional)
	Short Press	Change the strobe light flashing mode
	Press twice	Work Check-in (Optional)



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1. Turn on

When the battery voltage exceeds 3.2 V, the red light remains on for 3 seconds during normal startup.

After 30 seconds of startup, a voice prompt will play:

a) The device connects to the server and displays a message (Successful connection to cloud server)

b) No SIM card inserted. Message: (Insert a SIM card)

c) No signal or invalid SIM card – Error message: (SIM card registration failed)

d) Connecting to the cloud server

2. Turn off

Press the power button; the red light flashes three times (one flash per second). Then, the device will shut down.

3. Low Battery Level

The battery voltage ranges from high to below 3.3 V. Language prompt (Low battery level – charge promptly)

4. Shut down when battery level is low

When the battery voltage drops below 3.2 V, the red light flashes rapidly six times (each flash lasting 200 ms). After this period, the device shuts down.

5. reset key

Long press the power button for 20 seconds to reset

6. TTS Voice Announcement

Platform's remote text and voice announcement functions

2. Hardware Specifications

Communication Features	4G	LTE-TDD: B34/B38/B39/B40/B41
		LTE-FDD: B1/B3/B5/B8
	APN	Supports APN-based private network communication
	LBS fixed position	Support (requires platform-side support)
locate function	GNSS fixed position	Supports BDS + GPS + Galileo + QZSS positioning (default single-frequency, optional dual-frequency)
	Single BDS Positioning	Support (optional: single-band, dual-band)



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	RTK high accuracy positioning	Supports single BDS dual-frequency and BDS+GPS dual-mode dual-frequency (optional)
	Bluetooth Location Service	Supports indoor Bluetooth positioning (optional)
	WIFI fixed position	Supports indoor WIFI positioning (requires platform support)
	Indoor positioning accuracy	Approximately 300 meters (affected by Wi-Fi router and base station signal strength, as well as floor height)
	Outdoor Outdoor Positioning Accuracy	10cm-10m
	cold boot	< 30s
	Positioning Frequency	1s, 2s, 5s, 10s, 15s, 30s, 60s, 120s, etc.
	PDA	support
	Vibration Sensing	Supports an acceleration sensor to automatically detect a stationary state and put the device into sleep mode
	Flashlight	Supports 2 sets of 3 red LED warning lights and 2 sets of 3 blue LED warning lights, with free switching between warning modes.
	Lampshade	TTS Voice Function: Supports TTS voice playback, allowing the platform to send voice commands directly to the shoulder light.
Electro-acoustic Interaction	MIC	Supports two-way calls (requires a SIM card and platform support)
	LED lamp	Three items, representing power consumption, communication, and satellite positioning respectively
	key	Three buttons: Power button, Function button, and Flash button
	USB Interface	One Type-C port for 5V/1A charging and firmware upgrade/d debugging
	SIM card slot	1 Nano-SIM card slot
	battery capacity	3.8 V 1100 mAh high-performance battery
	Charging Time	Charging time <3.5 hours
	Charging Method	Type-C interface for 5V/1A charging
electrical character	Working Current	Current ≤ 60 mA, Standby ≤ 5 μA
	duration of flight	≥20 hours (with a reporting frequency of 15 seconds continuously)
software function	JT808 Protocol	Supports JT808 protocol for uploading positioning results and status data
	Private Protocol	Supports custom development and integration of private



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physical characteristics		protocols
	Ntrip protocol	Supports the NTRIP protocol and achieves high-precision positioning via CORS differential service.
	outline dimension	79.9mm*39.5mm*16.5mm
	weight	Net weight: 68 g
	material quality	PC+ABS
environmental suitability	Wearing Method	alligator clip
	working temperature	-20°C to 65°C (Battery performance will decrease below 0°C)
	Storage Temperature	-40°C ~ 80°C
	Working Humidity	No condensation at 10%–85% RH
	IP grade	For IP65 and IP66 waterproofing, the SIM card must be coated with adhesive.
attestation	3C Certification	Can work with customers
	Network Authentication	Can work with customers
	Government Authentication	Can work with customers