



**USER MANUAL
&
INSTALLATION INSTRUCTIONS**

**WIRELESS SENSOR SIRES OF
ERGOLAB**

**Designation of type
ErgoLAB**

User Manual

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1、 Overview

ErgoLAB wireless sensor adopts RF technology. RF is short for Radio Frequency which is RF current, it is short for electromagnetic wave of high frequency and AC change. The frequency is very high, which can be used for sending radio frequency, generally refers to dozens to hundreds frequency band, that is VHF-UHF frequency band. And Higher frequency is called micro wave. Broadly speaking, micro wave on radio-frequency spectrum refers to radio wave of which the frequency is 300MHz-300GHz, specifically refers to 1-30 frequency band. RF has broad and irreplaceable function in the field of wireless communication. Electric

information source(simulation or numeral) is modulated(amplitude or frequency modulated) with high frequency current to form RF signal and sent to the sky by antenna; RF signal is received in long distance and counter-modulated to restore to electric information source, this process is called wireless transmission.

ErgoLAB wireless sensor adopts 2.4GHz RF technology, the volume is small and easy to wear. It takes samples at 16 bits high-resolution and high speed, the sampling frequency reaches up to 4096Hz.Indoor data tracking is broad and prompt and can suppress noise.

2、 Technical Index

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Supplying battery	3.7V,200mA
Service time of battery	4-5h
Charging time	1h
Sampling rate	Max: 4096Hz
Working frequency	2402 MHz
Transmission power	0dbm
Operating environment	Temperature:-40°C~45°C Humidity: <60%
size	36mm*22mm*11mm
weight	20g

3、Indicator Light

Green light: after starting the sensor, green light keeps on, when collecting data, green indicator light will flash at the frequency of one second.

Red light: the sensor will self-test, red light will be put out 1s after it lights, when the capacity of battery is lower than 30%, red light will flash at the frequency of 1 second.

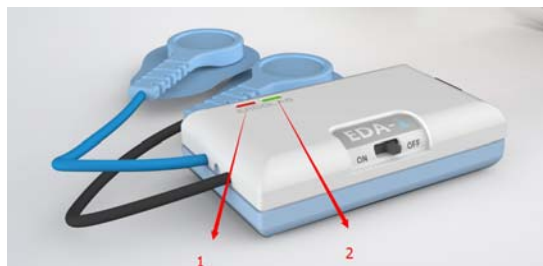


Figure 1

4、 Use Steps

It needs to combine with certain software when obtaining the data with this wireless sensor:

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- 1) Set the switch of wireless sensor to “on”, then green light lights, which indicates the wireless sensor is transmitting data;
- 2) Open ErgoLAB, choose wireless sensor collection module;



Figure 2

- 3) In software, choose “START” to receive the data of wireless sensor.
- 4) In software, choose “STOP” to stop receiving the data of wireless sensor, the data will save automatically.

Referring to the detailed process in the following part 5 and part 6 :

5、 Parameter Setting

We need to set the parameter of sensor before receiving the data of ErgoLAB wireless sensor.

5.1 Channel Selection

Wireless sensor has its own range of radio-frequency, in the software, we need to choose the channel of sensor, then refresh, search this sensor before receiving the data of sensor.

Complete with “channel” of software.

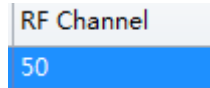


Figure 3

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5.2 State Monitor

After searching this sensor, it presents relevant information of this sensor, sampling frequency of sensor which needs to detect, battery state and steady state of signal;

Sampling frequency of sensor and current battery state:

Sampling Rate	Battery
64	86%

Figure 4

We can continue with experiment or charge wireless sensor according to battery state.

It is suggested that we should consider

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charging when capacity of battery is lower than 30%.

Monitoring steady state of sensor's signal:



Figure 5

If following cases were found:



Figure 6

In such case, data continues to be collected, but the collection of signal may interrupt, so it needs to monitor battery capacity of wireless

sensor and pay attention if connection of sensor is unobstructed.

5.3 Start Recording

When state monitoring is completed, it can normally search wireless sensor, and receive the data that sensor sends, we can click “start” to start collecting and recording data of sensor.



Figure 7

When the color of “start” turns from blue to red, it means it is in the process of recording data.

6、 Data Recording

6.1 Collecting Data

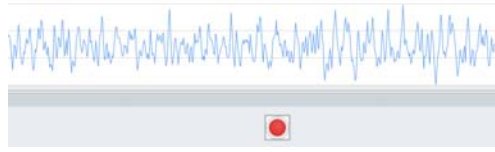


Figure 8

This is the interface of collecting data, up side shows collected data signal, down side shows data is being collected. If collection needs to be stopped, just click the red button:

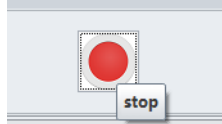


Figure 9

When red button occurs “stop” tip, click it to stop recording data. Data of wireless sensor will not be received. Received data will be automatically saved in the software.

6.2 Presentation Interface

After data record is saved, recorded data of wireless sensor in this period of time can be replayed in software and processed.

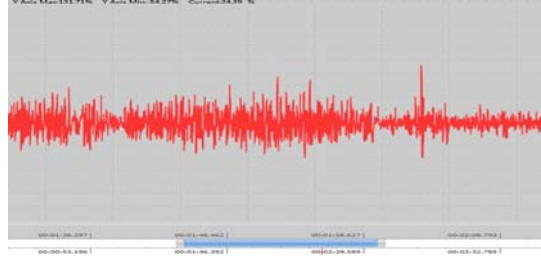


Figure 10

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6.3 Data Analysis

Collected data of wireless sensor can be compiled and analyzed in software.

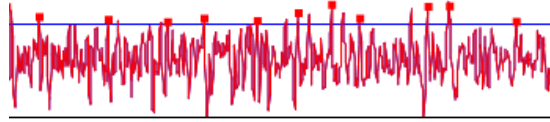


Figure 11

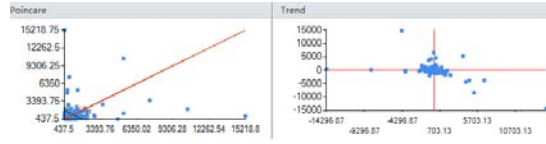


Figure 12

7、 Tips

If red light of sensor flashes frequently, it indicates that the sensor is collecting data; if red indicator lights, it indicates the battery is low and needs to be charged promptly.

INSTALLATION INSTRUCTIONS

ErgoLAB wireless sensor

Overview

ErgoLAB wireless sensor adopts RF technology, freely recording relevant data information. Appearance size of this sensor is only 43mm*26mm, its volume is small and easy to wear.

Technical index

ErgoLAB wireless sensor adopts 2.4GHz RF technology, working on frequency band of 2.4 GHz ISM,

ErgoLAB wireless sensor adopts 3.7V Li battery to supply power, it takes samples at 16 bits high-resolution and high speed, the sampling frequency reaches up to 4096Hz.

Attention

Warranty period of this product is 2 years. If quality problem is proved, Kingfar group will be responsible for maintaining or replacing. If not, Kingfar will not have this obligation.

User should send written-notice to Kingfar in 30 days once finding quality problem. And

attach the detailed description of quality problems.

Attention before installing

Please make sure the sensor can work normally and correctly collect data before installing on test person. When installing on the skin, lines of sensor should be arranged carefully, lead wires can not be crossed each other, or it will affect the test result.

Warning

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.

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

用户手册与安装指导说明书

ErgoLAB 无线传感器系列

传感器型号
ErgoLAB

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1、产品概述

ErgoLAB 无线传感器采用射频技术。射频简称 RF (Radio Frequency) 射频就是射频电流,它是一种高频交流变化电磁波的简称。频率较高,可用于发射无线电频率,一般常指几十到几百兆赫的频段,即 VHF-UHF 频段。而更高的频率,则称为微波。广义地说,在无线电频谱上微波是指频率为 300MHz-300GHz 的无线电波,一般更具体的指 1~30GHz 频段。射频技术在无线通信领域具有广泛的、不可替代的作用。将电信息源(模拟或数字的)用高频电流进行调制(调幅或调频),形成射频信号,经过天线发射到空中;远距离将射频信号接收后进行反调制,还原成电信息源,这一过程称为无线传输。

ErgoLAB 无线传感器使用 2.4GHz 射频技术,体积小,佩戴方便。16bits 高分辨高速采样,采样频率高达 4096Hz。室内数据跟踪广域性

强，同时除噪性和及时性非常好

2、技术指标

供电电池	3.7V,200mA
电池使用时间	4-5h
充电时间	1h
采样率	Max: 4096Hz
工作频率	2402 MHz
发射功率	0dbm
操作环境	温度: -40℃ - 45℃ 湿度: <60%
尺寸	36mm*22mm*11mm
重量	20g

3、指示灯注释

绿色指示灯：传感器开机后，绿色（图 1 中 2 号箭头所指）指示灯常亮，当进行数据采集时，绿色指示灯会按照 1 秒的频率交替亮灭。

红色指示灯：开机后会自检，红色（图 1 中 1 号箭头所指）指示灯亮 1s 后熄灭，当电池的电量低于 30% 时，红色指示灯会按照 1 秒的频率交替亮灭。

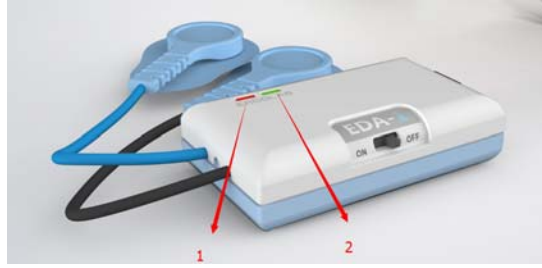


图 1

4、使用步骤

使用该无线传感器，获得数据时，需要与一定的软件结合：

- 1) 无线传感器的开关设置到“ON”状态，此时指示灯绿灯亮，表示无线传感器处于数据传输状态；
- 2) 打开 ErgoLAB 软件，选择无线传感器采集模块；

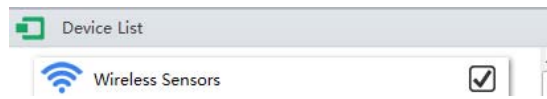


图 2

- 3) 在软件中，选择“START”功能键，开始接受无线传感器的数据。
- 4) 在软件中，选择“STOP”功能键，结束接受无线传感器的数据，数据将自动保存。

具体过程可参见第 5 部分的参数设置与第 6 部分的数据记录

5、参数设置

在软件中接收 ErgoLAB 无线传感器的数据，首先需要对传感器的参数进行设置：

5.1 通道选择

无线传感器存在自己的射频范围，在软件中，接收传感器的数据，需要选择该传感器的通道，刷新，搜索到该传感器。

通过软件中的 channel 功能键完成。

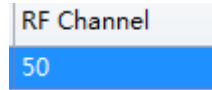


图 3

5.2 状态监测

搜到到该传感器后，呈现出该传感器的相关信息，需要检测传感器的采样频率及电池状态与信号稳定状态：

传感器的采样频率及当前电池状态：

Sampling Rate	Battery
64	86%

图 4

可以根据电池状态，继续实验或对对无线传感器充电。

建议在电池容量低于或等于 30%时，考虑充电。

传感器的信号稳定状态监测:



图 5

如发现下列情况:



图 6

在这种情况下，数据继续采集，但存在信号

采集断续，则要及时监测无线传感器的电池容量，并注意传感器的连接是否通畅。

5.3 开始记录

当状态监测完成，能够正常的搜索到无线传感器，且能够正常的接收传感器传出的数据时，可以点击软件中的 start 功能键，开始采集并记录传感器数据。



图 7

start 功能键由蓝色改变为红色，表示处于数据记录过程。

6、数据记录

6.1 采集数据



图 8

这是数据采集过程的界面，上面表示了采集到的数据信号，下面表示数据处于采集过程。

如需要停止数据采集，只需要点击红色按钮：

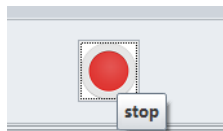


图 9

红色按钮出现 stop 提示，点击则终止数据记录。无线传感器数据将不在被接收。已接收的数据自动保存在软件中。

6.2 呈现界面

数据记录保存后，在软件中可以回放该段时间记录到的无线传感器的数据，并对数据进行数据处理。

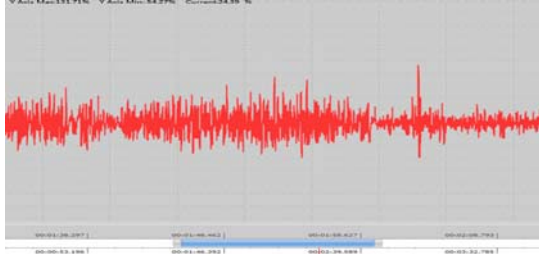


图 10

6.3 数据分析

对已经采集到的无线传感器数据，可以在软件中编辑并进行分析。

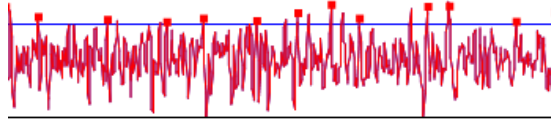


图 11

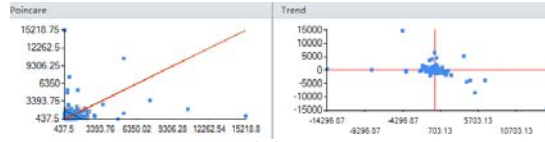


图 12

7、提示信息

如果传感器指示灯红灯按照频率闪亮，传感器在采集数据；如果红色指示灯亮起，说明电池电量低，需要及时充电。

安装指导说明书

ErgoLAB 无线传感器

产品概述

ErgoLAB 无线传感器采用无线射频技术，无约束记录相关数据信息。该传感器外观尺寸仅为 43mm*26mm，体积小，佩戴方便。

技术指标

ErgoLAB 无线传感器使用 2.4GHz 射频技术,工作在 2.4 GHz ISM 2402 MHz

ErgoLAB 无线传感器采用 3.7V 锂电池供电，具有 6bits 高分辨高速采样，采样频率高达 4096Hz。

注意

本产品质量保修期限为 2 年。如果是质量问题，津发公司将负责维修或更换。非产品质量问题引起的问题将不负责保修。

发现质量问题 30 天内需书面通知神州津发。并应对产品质量缺陷有详细描述。

安装前注意事项

在人体安装传感器之前，请确保传感器能正常工作，并能正确的采集数据。安装在人体皮肤上时，应顺应传感器的走线，不能让导线出现互相交叉的状况，否则会影响被试的测试结果。