

# Home Page of Rat and Mouse Sleep Deprivation Apparatus

Sleep deprivation apparatus for rats and mice

Product Introduction: I. Instrument Description Sleep is a necessary behavior for restoring mental and physical strength. Sleep disorders can affect brain function and lead to diseases, causing the human body to shift from a healthy state to a sub-healthy or even diseased state. To study sleep disorders and develop anti-fatigue drugs or health supplements, preliminary animal model experiments are required.

As...

Product Model: XR-XS108

Category ☒ Rat and Mouse Sleep



Sleep is a necessary behavior for restoring mental and physical strength. Sleep disorders can affect brain function and lead to diseases, causing the human body to shift from a healthy state to a sub-healthy or even diseased state. To study sleep disorders and develop anti-fatigue drugs or health supplements, preliminary animal model experiments are required. Therefore, sleep deprivation equipment is an indispensable instrument.

There are basically three types of sleep deprivation devices currently available: the rotating cylinder with a partition board mode, the rotating cage mode, and the horizontal platform mode.

In the (1) rotating cylinder mode, sleep deprivation was imposed on the experimental mice. Theoretically, when the rotation speed was low, the mice had a longer period of rest, resulting in intermittent sleep deprivation. However, when the speed was high, the range of sleep deprivation methods available was reduced.

The rotating cage mode deprives the experimental animals of sleep by having an electric motor drive the cage to rotate continuously, with the animals passively running along. Due to the angle defect between the food basket and the rotating cage, sometimes the animals' heads get stuck between the food trough and the cage, leading to death.

Most of the horizontal platform sleep deprivation methods are modified from animal running wheel devices and are mainly used for depriving rapid eye movement (REM) sleep. In long-term deprivation experiments, animals are prone to infection and death. Additionally, there is significant interference among experimental animals in platform-based sleep deprivation experiments, and the equipment is bulky and noisy.

The XR-XS108 sleep deprivation apparatus is designed based on imported similar products and has undergone numerous upgrades and improvements on the basis of the previous XR-XS107 cage model. For instance, the horizontal deprivation method was abandoned and replaced with a circular and feedback deprivation method, which reduces the physical injury rate of animals and further enhances the experimental effect effectively.

## **II. Experimental Mode**

The XR-XS108 sleep deprivation apparatus controls the deprivation rod by monitoring the activity level of the animal in a feedback manner. It can start the deprivation rod after the animal enters a specific sleep stage to perform sleep deprivation or fragmentation. It has three working modes: feedback regulation (software control mode), programmed regulation (external control mode), and independent touch screen regulation (standard mode). It is suitable for the creation of animal models of sleep deprivation or sleep fragmentation and features precise regulation and low physical exertion.

1. Standard mode: No need to connect to a computer, operated by a 5-inch touch screen.
2. External control mode: Integrate sleep behavior with third-party systems (including sleep analysis software from imported competitors / EEG/EMG electroencephalogram and electromyogram systems) to achieve diversified and effective deprivation.
3. Software control mode (optional): Equipped with SuperSleep software and a camera, it can effectively customize deprivation strategies and intensities based on the real-time activity levels of the animals.

## **III. Technical Indicators**

It adopts a 5-inch LCD capacitive touch screen for operation, and the interface language supports switching between Chinese and English.

2. Rotation direction: Forward, reverse, and forward-reverse. The interference bar rotates 360 degrees without dead angles to prevent animals from getting injured.

3. Deprivation intensity: mild, balanced, strong, three levels adjustable;
4. Speed range: 5 - 20 RPM;
5. Cylinder diameter: 30 cm, height: 35 cm;
6. Operating mode: Random rotation, continuous rotation, and intermittent periodic rotation. Among them, random rotation can reduce the adaptation of sleep-deprived animals to the environment;
7. Experiment duration: 0 - 9999 minutes;
8. Equipped with food and water supply devices for long-term experiments;

9. The SuperSleep sleep deprivation software can be optionally equipped to monitor the activity of individual or multiple animals in the cage in real time, formulate reasonable deprivation strategies, and increase the success rate of experiments.

10. The system comes with an instrument administrator mode, which enables more settings for instrument parameters, such as raising the upper limit of rotation speed to a maximum of 70 RPM, customizing deprivation intensity, and setting the upper and lower limits of random rotation duration, etc.

**IV. Feature Comparison**

System Characteristics	Standard Type (XR-XS108)	Feedback type (XR-XS108-I)
The rotational speed, direction and deprivation intensity control are adjustable.	✓	✓
Suitable for short-term, long-term and chronic studies	✓	✓
Food and drinking water facilities	✓	✓
Administrator Mode (Parameter Upper and Lower Limit Settings)	✓	✓
Compatible with third-party based deprivation strategy (time-based deprivation)	✓	✓
Polysomnogram (EEG) and video capture (recording) function	✗	✓
electromyography (EMG) software	✗	✓



动物行为实验仪器领跑者  
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## 大小鼠睡眠剥夺仪

(XR-XS108 型)

—— 反馈式睡眠剥夺技术

### 特性对比

系统特性	标准型 (XR-XS108)	反馈型 (XR-XS108-I)
转速、转向、剥夺强度控制可调	✓	✓
适合短期、长期和慢性研究	✓	✓
饮食和饮水装置	✓	✓
管理员模式 (参数上下限设置)	✓	✓
以日历形式 (北京时间) 进行剥夺程序设置	✗	✓
兼容第三方生物脑电、肌电软件	✓	✓
基于规则的剥夺策略 (分时段剥夺)	✗	✓
视频采集 (录像) 功能	✗	✓
导出剥夺行为日志表	✗	✓

For more information on animal behavior experiment testing methods and index evaluations, please scan the code to follow our [official account](#):



For detailed product functions and technical parameters, please scan the code to add WeChat - [Wu Wenyuan 18121054991](#) for online consultation and demonstration.



Shanghai Xinruan is a high-tech enterprise integrating R&D, production and sales. It is a professional **provider** of **video analysis solutions** for **animal behavior**. Our company focuses on the research of products related to **animal neuroscience** and behavior and is committed to offering integrated laboratory solutions to universities, research institutions and other fields. Our business covers over a hundred laboratories across the country. All our main products are independently developed, with 100% core technology. Meanwhile, the company has several senior service engineers with over 10 years of experience in the animal behavior instrument industry, who can provide comprehensive pre-sale and after-sale services for our products. The instruments and equipment developed by our company are essential and irreplaceable for scientific research.

**Animal behavior analysis software:**

**1 VisuTrack software**

- 2. SuperMaze Software
- 3. FishTrack Zebrafish Analysis Software

**Animal behavior instruments:**

Self-administration, conditioned fear, Skinner, prepulse inhibition (PPI), treadmill, various classic mazes, etc.

- 2. Animal Scratching Analyzer, Animal Tremor Behavior Analyzer, Animal Predatory Behavior Analyzer
- 3. Active gait analysis of **animals**, **passive gait analysis** of **animals**, **free** gait analysis of animals (under internal testing)
- 4. Sleep deprivation apparatus, body temperature maintenance apparatus, intelligent hot plate apparatus, rotarod fatigue apparatus, tail light irradiation pain measurement apparatus, etc. **Neuroelectrophysiology:**  
Optogenetics, wireless  
optogenetics
- 2. Fiber optic recording system (single-channel, multi-channel)
- 3. Electrophysiological signal acquisition system (EEG, EMG, etc.)

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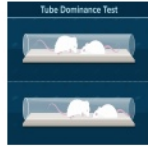
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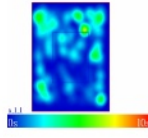
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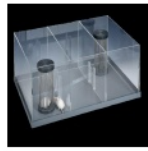
VisuTrack动物行为分析软件



OptoTrack动物视动反应分析系统



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## Product Categories

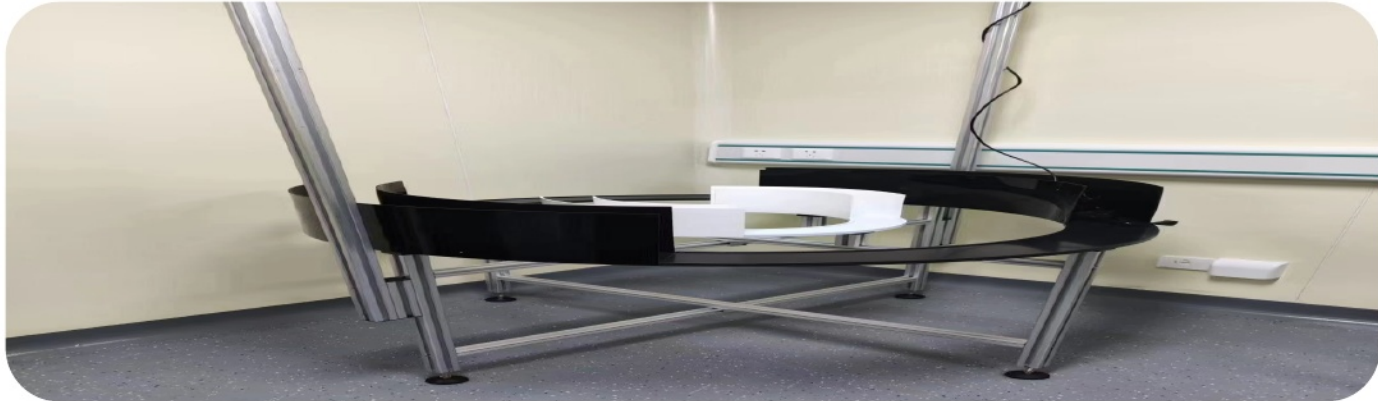
- Animal behavior analysis software category
- Learning and Memory Related
- Emotional and behavioral category
- Motor function behavior
- Pain? Inflammation and Behavioral Disorders
- Neuropsychiatric and behavioral disorders
- Social Behavior Category
- Visual Behavior Category
- Operant Behavior of Classical Conditioning Type
- Animal-specific behavior category (customized requirements)

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**Animal Behavior Series Products**

Animal behavior analysis software category

Learning and memory category

Emotional and behavioral category

Motor function behavior

Pain, Inflammation, and Behavioral Disorders

Neuropsychiatric and behavioral disorders

Social behavior category

Visual behavior category

Class of operant behavior based on conditioned reflexes

Animal-specific behavior category (customized requirements)

### **Knowledge Academy**

When conducting learning and cognitive experiments, under what circumstances should the Morris water maze be chosen?

Animal Behavior Studies for Beginners (24) | Principles and Applications of the Small Animal Rotarod Fatigue Instrument and Testing Methods of the Mouse Tail Light Irradiation Pain Meter

Animal Behavior Science Beginner's Guide (22) | Principles and Training Schemes of Treadmill Experiments  
Animal Behavior Science Beginner's Guide (21) | Principles and Training Schemes of 5CSRTT Experiments  
Testing Methods of the Hot Plate Test

Animal Behavior: A Beginner's Guide (20) | Social Defeat Paradigm

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### **Contact Information**

Free call: 400-833-6811

Fax: 021-64137318

Mobile phone: 18917988366

15316324848

Reception Address: 8th Floor, Building B17, No. 109, Yuamei Road, Minhang District, Shanghai

