

Professional rodents repeller «GRAD Ultra 3D»



User manual
INTK. 433523.009 RE

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This manual acquaints the user with components, rules of operation (intended use, maintenance, repair, storage and transportation) of the Professional rodents and insects repeller «**GRAD Ultra 3D**» device (hereinafter - device).

Before using the device, please, carefully read the supplied User Manual

Following the instructions, restrictions and guidelines contained in User Manual will extend the life of the device and allow you to use it most effectively.

Attention! To provide the fulfilling of the SRaR 2.2.4/2.1.8.582-96 requirements, it is forbidden to place the working device closer than 2.5 m to a person! Consider this when organizing workplaces in rooms, where the device is used.

Attention! Do not put the working device close to man's ears. This may cause headache and temporal hearing loss.

Attention! The working device can adversely affect such domestic rodents as cavies, hamsters and pet rats. Also, keeping other domestic animals (cats, dogs) in the room where the device is used is not recommended, because they are sensitive to ultrasound.

Attention! Keep the device away from children.

1 DEVICE DESCRIPTION AND OPERATION

1.1 Device application

1.1.1 It is a portable device, designed to deter small and large rodents (rats, mice, etc.).

Operating principle is based on intolerance of rodents to ultrasonic and light emission generated by the device according to a specially developed algorithm that excludes habituation. Ultrasonic waves affect the nervous system of animals and insects, causing them pain and discomfort and forcing them to leave their places of habitat. The additional repelling effect, realised by superbright light flashes, highly enhances the device's effectiveness. Rats and mice lose their ability to take food, water and try to leave the premises.

1.1.2 Distinctive features of the device:

- According to research results, patented algorithm of ultrasonic wave generation and the presence of two independent generators and of four ultrasonic emitters allowed to significantly increase the area of protection, while maintaining the maximum permissible safe level of emission for people;
- Hybrid expelling system (ultrasonic and light emissions) significantly raises the protection efficiency due to synergistic effect
- Availability of emission power control
- Availability of 2 functional modes («TURBO», «SILENT»).

1.1.3 Device operating instructions:

- Surrounding air temperature, °Cfrom -10 to +40;
- Relative air humidity at 25°C, %.....up to 98;
- Atmospheric pressure, kPafrom 66, 6 kPa up to 106,6

1.2 Technical specifications

1.2.1 Visual appearance of the device is shown on Figure. 1.



Figure 1. Visual appearance of the device

1.2.2 Dimensions, mm, not more than.....	109 x 65 x 25
1.2.3 Weight, kg, not more than	0,12
1.2.4 Device shipping weight, including external power source, kg, not more than.....	0,40
1.2.5 DC supply voltage for operation from the external source, V	12±0,5
1.2.6 Maximum current consumption by the device, mA, not more than	280
1.2.7 Emission operating frequency, kHz.....	from 24 up to 26
1.2.8 Emission pattern	circular
1.2.9 Sound pressure level at 1 m distance from the device at maximum power level, dB, not less than	120
1.2.10 Maximum protection area covered by emission, m ²	1200

1.3 Device components

1.3.1 Device components and supplied package are shown on Table 1.

Table 1

Nr.	Description	Quantity
1	Professional rodents repeller «GRAD Ultra 3D» TU 6329-005-64062607-2014	1
2	External power supply from single-phase alternating current frequency of 50 Hz and 220V	1
3	Packing box	1
4	User manual INTK. 433523.009 RE	1

1.3.2 Location of repeller’s main parts is shown in Figure 2.



Figure 2 – Components assembly

- 1 - Power button;
- 2 - Jack for external power source;
- 3 - LEDs;
- 4 - LED indicator of «TURBO» mode;
- 5 - LED indicator of power level;
- 6 - LED indicator of «SILENT» mode;
- 7 - «TURBO» - « SILENT» mode selection button;
- 8 - Ultrasonic emission level selection button «POWER»;
- 9 - LED indicator of active «OPTICAL» mode;
- 10 - «OPTICAL» mode LEDs power on button;
- 11 - Device housing;
- 12 - Ultrasonic emitters.

1.4 Structure and functioning

1.4.1 Operating principle is based on intolerance of rodents to ultrasonic waves generated by the device. Constant change of emission parameters and unique specially developed algorithm of their change eliminates habituation of rodents and ensures even greater protection area with safe for people power level of emission. Besides, the efficiency of the device has been further enhanced by high brightness flashes generated by the device according to special algorithm with built-in LEDs.

1.4.2 The device runs under command of microcontroller with embedded software.

1.4.3 The device is powered by an external power source with an output DC voltage 12V. Polarity of power jack is shown in Figure 3.



Figure 3 – Polarity of jack for external power source.

1. INTENDED USE.

2. 2.1 Operating restrictions

2.1.1 Avoid damaging ultrasonic emitters, placed behind the net-screens, with foreign objects. Damaging emitters may cause device malfunction, reduce its effectiveness and make the device inoperative.

2.1.2 Avoid covering working ultrasonic emitters with hand, clothes, etc. This may cause device malfunction.

2.1.3 Do not open or disassemble device.

2.1.4 Avoid to penetrate water, moisture and foreign objects inside the device.

2.2 Device usage.

2.2.1 Switching on and preparing the device for work.

Plug the external power source into the jack (item 2, fig. 2). Switching the device on is done by pressing and holding (more than 2 seconds.) the power button (item 1, fig. 2).

When the device is switched on, you can select the needed level of emission power by repeatedly pressing the

ultrasonic emission level selection button (item 8, fig. 2). The selected emission level will be indicated by the LED glow (item 5, fig. 2):

- Level 1 – 25%;
- Level 2 – 50%;
- Level 3 – 75%;
- Level 4 – 100%.

Select the needed working mode by switching the «MODE» button (item 7, fig. 2) («TURBO» or «SILENT»). The selected mode LED indicator (item 4, fig 2.) or (item 6, Fig.2) will glow. In «TURBO» mode the signal modulation pattern changes and the device efficiency increases, however the device produces quiet rustle sound.

Switching the LEDs on and off («OPTICAL» mode) is done by pressing the corresponding button (item 10, Fig.2). If the «OPTICAL» mode is switched on, the corresponding LED (item 9, Fig.2) will glow.

Now the device is ready to operate.

2.2.2 Switching the device off.

Switching the device off is done by pressing and holding (more than 2 seconds) the power button (item 1, Fig.2). When you switch the device off, it will automatically save the selected working pattern, power level, etc. and load the settings when switched on again. In case of unexpected loss-of-power when the device is operating, it automatically switches on when the power supply is reestablished

2.2.3 Practical recommendations.

For resulting expelling effect, it is important to choose the right place for the device, so, please, consider the following factors:

- Ultrasonic waves reflect from solid materials (concrete, glass, wood, etc.) and are absorbed by soft materials (carpets, sacks with material etc.);
- Maximum effective device functioning is obtained by placing it at a distance of 60-70 cm from the ground (floor);

The device can be used in small spaces at full capacity in this way the efficiency will only increase.

In the case of people presence in the next room to the operating device, you can reduce the power of emission or switch to «SILENT» mode.

3 MAINTENANCE

Maintenance requires only cleaning the surface of the device.

4 TROUBLESHOOTING

Typical problems and possible solutions are specified in Table 2.

Table 2.

Problem	Possible reasons	Possible solution
When the device is turned on there is no sound from the transducer in «TURBO» mode , LEDs do not glow, working pattern is not indicated.	External power source is not connected	Connect the external power source
	Device is defective	Take the device to service center

5 PACKAGING, STORAGE AND TRANSPORTATION

Each device is packed in individual package according to the supply package as indicated in Table 1. Device moving in the package is not allowed.

Packed devices are placed into shipping containers - a corrugated fiberboard box (State Standard 22637). Packaged devices can be transported by vehicle or railway in covered trucks or containers, by air in pressurized compartments.

During transportation packed packages should be protected from precipitation and direct sunrays.

Transportation conditions:

- Surrounding air temperature: from -50 up to 50 °C
- Relative humidity up to 95 % at 25 °C
- Atmospheric pressure from 84 up to 107 kPa (630 - 800 mmHg)
- Shock acceleration peak value is up to 147 m/s² (15 g), with a duration of shock acceleration 10 ... 15 ms

The requirements on warning signs must be strictly obeyed when loading and transportation

6 ACCEPTANCE CERTIFICATE

Professional rodents repeller «**GRAD ULTRA 3D**» TU 6329-005-64062607-2014

Serial number _____

Manufacture date _____

Manufactured and accepted in accordance with the applicable technical documentation and validated.

Quality Department stamp _____

7 MANUFACTURER WARRANTY

7.1 The manufacturer guarantees that the device is manufactured in accordance to TU 6329-005-64062607-2014, provided the operation, storage and transportation conditions are observed. Conditions are specified in the operational documentation.

7.2 Effective device duration period — not less than 5 years

7.3 Manufacturer warranty - 12 months from the date of purchase.

7.4 If the device fails during the warranty period, the supplier (manufacturer or companies providing maintenance services) should replace or repair it at its own expense.

7.5 Customer loses the right to obtain warranty service in the following cases:

- After warranty term expiration;
- Violation of the operation, transportation and storage instructions;
- Mechanical damages causing device failure after the purchase;
- Manufacturer sealing is broken.

7.6 Repair and maintenance of devices with an expired warranty period is covered at the customer's expense.



Manufacturer reserves the right to amend or change the characteristics of the device, improving its consumer properties.

Manufacturer's technical support: www.i4technology.ru

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Questions concerning the exchange after-sales service should be applied to the distributor that completed a sale. Distributor contacts are specified in its warranty card.



Warranty Certificate

Product: Professional rodents repeller "GRAD ULTRA 3D"

Serial number

Manufacture date

Quality Department Stamp _____

Date of purchase _____

Seller's signature and stamp _____

I do not have any claim against quality of the device, its package and technical state _____

(Customer's signature)