

Professional rodents and insects repeller "GRAD A-1000 PRO +"



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The User Manual includes key features, operating instructions (intended use, maintenance, repair, storage and transportation) of professional rodents and insects repeller "GRAD A-1000 PRO +" (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.

1 DEVICE DESCRIPTION AND OPERATION

1.1 Device application

1.1.1. It is a portable device designed to deter small and large rodents (moles, rats, mice), bats, insects (mosquitoes, fleas, spiders, mites, moths).

Operating principle is based on intolerance of rodents and insects to sound, ultrasonic and light emission generated by the device according to a specially developed algorithm. Sound and ultrasonic waves affect the nervous system of animals and insects, causing them pain and discomfort. Rats and mice lose their ability to take food, water and try to leave the premises.

For the first time, the additional expelling effect is implemented with the use of bright flashes according to a specially developed algorithm that improves the device efficiency.

Note that the device has no harmful effect on people and pets.

Power supply is from an external source.

1.1.2 Distinctive features of the device:

- According to research results, improved algorithm of emission generation allowed to significantly increase the area of protection, while maintaining the maximum permissible safe level of emission for people
- Hybrid expelling system (sound, ultrasound waves, bright flashes) significantly raises the protection efficiency due to synergistic effect
- Unique, non-repeating pattern of the ultrasonic sound allowed to exclude rodents habituation to emission and to improve the device efficiency
- Availability of emission power control
- Availability of 4 functional modes
- Availability of clock/timer

1.1.3 Device operating instructions:

- Surrounding air temperature, °C from – 40 to + 50
- Relative air humidity at 25°C, % up to 98
- Atmospheric pressure from 66,6 kPa up to 106,6 kPa (from 500 mmHg up to 800 mmHg)

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	109 x 65 x 25
1.2.3 Weight, kg.....	0,12
1.2.4 Device shipping weight, including external power source, kg	0,47
1.2.5 DC supply voltage for operation from the external source, V.....	from 12 up to 20
1.2.7 Maximum current consumption by the device, mA.....	120
1.2.8 Emission operating frequency, kHz	from 4 up to 72
1.2.9 Emission pattern	circular
1.2.10 Sound pressure level at 1 m distance from the device, dB, not more	110
(maximum safe level of emission for human according to SanPin 2.2.4/2.1.8.582- 96)	
1.2.11 Maximum protection area covered by emission, m2.....	1000
1.2.12 Functional modes	4
- mode 1 - most effective expelling mode for rodents (sound and ultrasonic waves);	
- mode 2 - ultrasonic (silent) expelling mode for rodents and bats;	
- mode 3 - expelling mode for mosquitos;	
- mode 4 - expelling mode for insects (fleas, spiders, mites, moths).	

Note: mode 3 - ineffective for expelling of mosquitos outdoors, the device should be placed in the window opening. In this way, the number of mosquitos that flew into a room will be significantly reduced.

Note: When the device operates in modes 3 and 4 (*expelling of insects*), bright flashes are absent as it is known that insects are attracted by light.

- 1.2.13 Number of emission power control levels4
 Level 1 – 25%;
 Level 2 – 50%;
 Level 3 – 75%;
 Level 4 – 100%
- 1.2.14 Possibility of additional emission in the light range Yes
- 1.2.15 Possibility to turn off the light emission Yes
- 1.2.16 Protection from rodents habituation Yes
- 1.2.17 Availability of clock/timer Yes

1.3 Device components

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

Table 1

№	Description	Quantity
1	Professional rodents and insects repeller "GRAD A-1000 PRO +" INTK.433523.005 TU	1
2	External power source	1
3	Packing box	1
4	User manual INTK.433523.005 RE	1

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



Figure 2 – Components assembly

The housing is constructed of high impact ABS plastic (item 1),
 In housing are installed:
 - Ultrasound transducer (item 2)

- Power button (item 3)
- Jack for external power source (item 4)
- LED indicator of mode selection (item 5)
- Mode selection button (item 6)
- LED indicator of sound level (item 7)
- Selection button of sound emission (item 8)
- LEDs (item 9)
- Clock and timer button (item 10)
- Digital clock display (item 11)

1.4 Structure and functioning

1.4.1 Operating principle is based on intolerance of rodents and insects to sound and ultrasonic waves generated by the device. Constant change of emission parameters and unique sound pattern eliminates habituation of rodents and ensures even greater protection area with safe for people and pets power level of emission. Efficiency of the device has been further enhanced by high brightness flashes generated by the microprocessor according to special algorithm of 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 12-20V. Polarity of power jack is shown in Figure 3.



Figure 3 – Polarity of jack for external power source.

2. INTENDED USE.

2.1 Operating restrictions

2.1.1 Operating device cannot be placed closer than 2.5 m distance from a person.


2.2 Device usage.


2.2.1 Before switching on the device you must plug an external power source into the jack (item 4, Figure 2), and then connect the source itself to the single-phase AC voltage network of 220 V. Just press a power button (item 3, Figure 2) in order to switch on the device.

After switching on the device, select one of 4 expelling modes by repeatedly pressing the “Mode” button item 5 (Figure 2). Then select the necessary emission power level by repeatedly pressing “Power” button (item 7, Figure 2).

Now the device is ready to operate.


2.2.2 To set the current date you should:




- press and hold button  until the first digit on display starts to flash;


- repeatedly press the button  to select the number corresponding to the current day of the week (*Mon - 1, Tue-2, Wed-3, Th-4, 5-Fri, Sat-6, Su-7*);





- after you have selected the day, hold the button  until the figure stops to flash, it means that the data is stored in the memory, day of the week is set.

2.2.3 To set the current time, use three buttons  -“Time”  -“Hour”,  -“Minutes”:



- press and hold button  until all digits on display start to flash. It means that device is now in the clock setting mode;


- in order to set up the current time press buttons  - Hours and  - Minutes. Press and hold the button  in order to set up minutes while the figures on the display in the minutes range will be changed automatically.




- After the set up press and hold the button  until the figure stops to flash, it means that current time is set.


2.2.4 To set the timer, use three buttons:  - "Timer",  - "On time",  - "Off time". The fact that the button -  "Timer" is pressed (timer is On) is demonstrated by flashing dot in the low right corner of the indicator, repeated pressing of the button disables the timer – a dot of light disappears.

2.2.5 The on-time set up of the timer for the selected day of the week should be performed in the following sequence:


- to set up the day of the week – press and hold the button  until the first digit on display starts to flash. Then select the number of the corresponding to the desired day of the week by tapping the button ;

- to switch to on-time mode for the selected day of the week – press and hold the button  until all figures of the clock start to flash alternately showing the timer on-time day and the current time;

- by pressing  and  set the timer on-time on the selected day of the week. Press and hold the button  in order to set up minutes while the figures on the display in the minutes range will be changed automatically.

- to save the settings of the on-time for the selected day of the week - press and hold the button  until the display switches to the current time mode;


- set up the timer on-time for other days of the week in similar way.


2.2.6 Setting up of the timer off-time is made in the same way as described in p.2.2.5 only use the button  - "Off time".

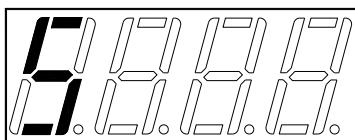
NOTE. If you wish to further disable the timer ton some days of the week, it is necessary to establish the same time for switching on and off.

Example of setting the current time, on and off time of the device.

1. Set the current day of the week and time, for example - Friday, 12:30:

- press and hold button  until the first digit on display starts to flash;



- repeatedly press the button  to select the number 5 corresponding to the current day of the week - Friday;




- after you have selected the day, hold the button  until the figure stops to flash and display returns to

clock mode, it means that the data is stored in the memory, day of the week is set.

- press and hold button  until all digits on display start to flash. It means that device is now in clock mode;

- set up the time - "12 hours", by repeatedly pressing the button  and "30 Minutes" by pressing the button , numbers continue to flash while setting up;


- press and hold the button  until the numbers do not stop flashing and the current set time displayed with dividing point flashing between the hours and minutes digits within 1 second interval.




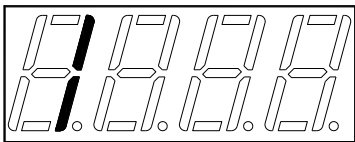
- current time is set.


2. Set on and off time of the device on weekdays, for example - to turn on the device on Monday at 20:08 and turn off at 7:10 am on.

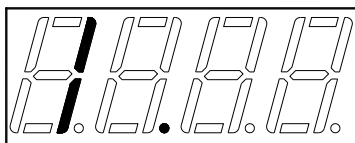
a) The device on-time set up on Monday at 20:08

- press and hold button  until the first digit on display starts to flash;



- repeatedly press the button  to select the number 1 corresponding to Monday, the number keeps flashing at that time;

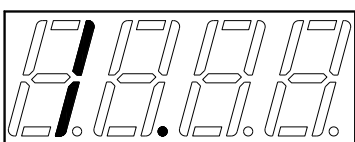


- in order to set up the device On-time on Monday, press and hold the button  until the following images will be alternately shown on the display within 1-second interval:



and

- to set up the device on-time - "20 hours" - repeatedly press the button  and "08 Minutes" – press the button , numbers continue to flash while setting up. Following images will be alternately shown on the display within 1-second interval





and

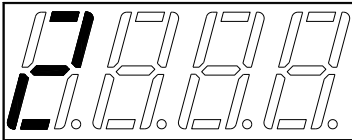
- press and hold the button  until the display switches to the clock mode – on-time is set.


Note: To set the device on-time on other days of the week, repeat the same procedure for each of the days.

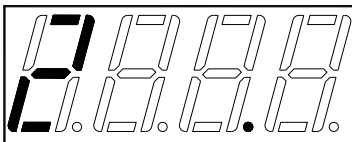
b) The device off-time set up on Tuesday at 20:08, 07:10

- press and hold button  until the first digit on display starts to flash;

- repeatedly press the button  to select the number 2, corresponding to Tuesday, the number keeps flashing at that time;





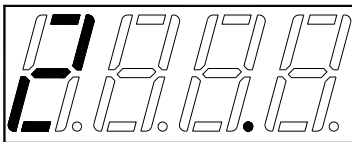
- in order to set up the device off-time on Tuesday, press and hold the button  until the following images will be alternately shown on the display within 1-second interval:



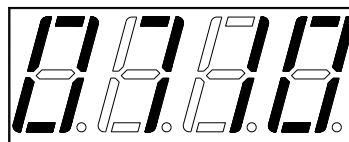
and



- to set up the device off-time - "07 hours" - repeatedly press the button  and "10 Minutes" - press the button , numbers continue to flash while setting up. Following images will be alternately shown on the display within 1-second interval:



and



- press and hold the button  until the display switches to the clock mode – off-time is set.

Note: To set the device off-time on other days of the week, repeat the same procedure for each of the days.

2.2.2 For resulting expelling effect, it is important to choose the right place for the device. Please consider the following factors:

- ultrasonic waves reflect from solid materials and are absorbed by soft materials;
- ultrasonic waves do not pass through walls or partitions;
- maximum effective device functioning is obtained by placing it at a distance of 60-70 cm from the ground (floor).

2.2.3 The result of device usage in closed space - the complete disappearance of pests is observed after 14 of continuous operating.

2.2.4 You can disable the LEDs in expelling mode of the device by to pressing and holding for more than 2 seconds the button "Mode".

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

2.2.5 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

3.1 Maintenance requires only cleaning the surface of the device.

3.2 Current repair. Troubleshooting

Typical problems and possible solutions are specified in Table 2.

Table 2

Problem	Possible reasons	Possible solution
When you turn on the device there is no sound from the transducer, LEDs do not lit.	External power source is not connected	Connect the external power source
	Device is defective	Take the device to service center

4 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

5 ACCEPTANCE CERTIFICATE

Professional rodents and insects repeller "GRAD A-1000 PRO +" INTK.433523.005 TU

Serial number _____

Manufacture date _____

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

Quality Department stamp _____

6 MANUFACTURER WARRANTY

6.1 The manufacturer guarantees that the device is manufactured in accordance to INTK.433523.005 TU, provided the operation, storage and transportation conditions are observed. Conditions are specified in the operational documentation.

6.2 Effective device duration period — not less than 5 years

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

6.4 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.

6.5 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

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



improving its consumer properties.

Manufacturer reserves the right to amend or change the characteristics of the device,

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 and insects repeller "GRAD A-1000 PRO +" INTK.433523.005 TU**

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)