



Operating instructions

SONOREX TECHNIK

Ultrasonic generators



TG ...



TG ... Z

Valid for:

TG 50 /Z to TG 500 /Z

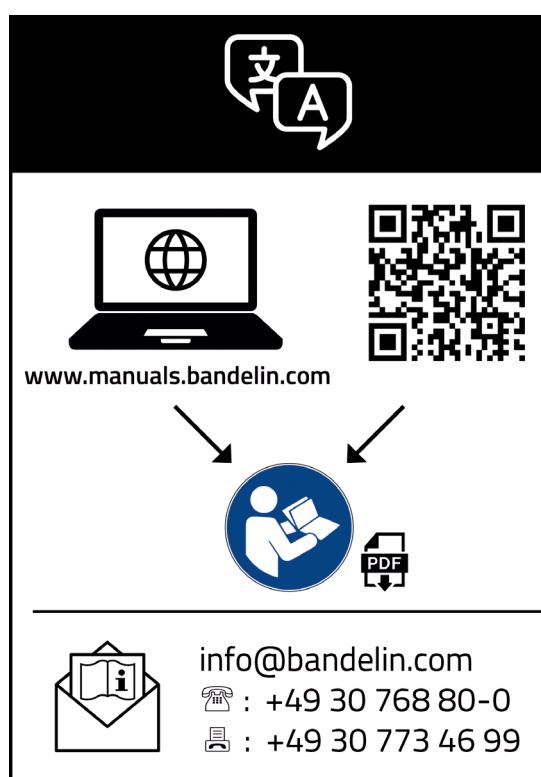


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1 About these operating instructions

These operating instructions contain information that is necessary and useful in order to use the device safely and efficiently.

- Read these operating instructions before using the device.
- Pay particular attention to section **2 Safety**.
- If you pass this device on to someone else, provide these operating instructions with it.
- Should these operating instructions leave any questions unanswered, please contact your specialist dealer or BANDELIN. Notes on service can be found in section **6.4 Repairs**.

In the event that the translation cannot be understood, the German original version of BANDELIN must be followed.

BANDELIN assumes no responsibility or liability for damage caused by improper handling or use.

Illustrations are exemplary and not to scale. Decorations not included with delivery.

2 Safety

2.1 Using the device

SONOREX TECHNIK ultrasonic TG generators generate low-frequency ultrasound, which is intended for the sonication of aqueous liquids via connected oscillation systems (e.g., attached to the customer's own tanks or the like).

The SONOREX TECHNIK ultrasonic generators are operated from the front. Operation is usually carried out on a table.

2.2 Keep out of reach of children

Children may not detect hazards emanating from the device. Therefore, keep the device away from children.

2.3 Risk of electric shock

The device is an electrical device. Failure to follow safety rules can result in a life-threatening electric shock.

- Protect the device from moisture and liquids. Keep the surface and operating elements clean and dry.
Do not place the generator in wet rooms. To protect the generator against moisture (splash water, water vapour, oil, oil mist, etc.), it must be placed at a sufficient distance from the cleaning tank and other machines.
- Do not shower the device or expose it to splash water.
- Do not expose the generator to corrosive influences.
- Disconnect the device from the mains before any cleaning or maintenance.
- Only connect the device to a socket with an earthed protective contact that matches the protective contact of the mains connector.



WARNING

Note for unit with type E+F jack:

Combination with socket type K (especially common in Denmark) is not permitted.

- If you discover a defect in the device, unplug it immediately. Do not connect any defective device to the mains.
- Only have repairs carried out by qualified personnel or by the manufacturer. See chapter **6.4 Repairs**.
- Position the device in such a way that it is possible to disconnect the mains connection at any time without difficulty.

2.4 Interference with wireless communication

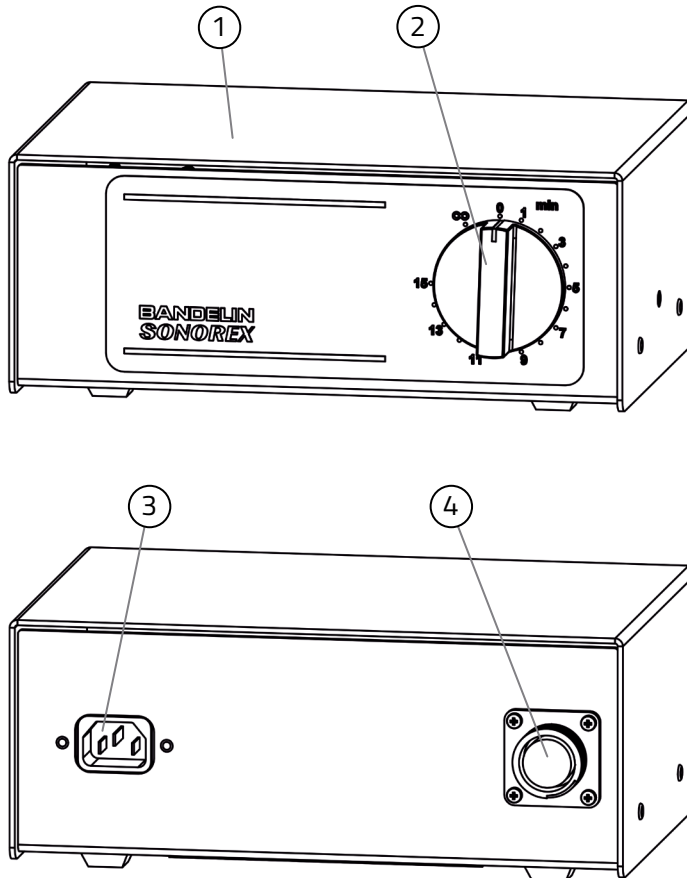
The generator may interfere with other wireless communication devices in close proximity, such as:

- mobile phones;
- wi-Fi devices; and
- Bluetooth devices.

If a wireless device malfunctions, increase its distance from the device.

3 Construction and function

3.1 Construction



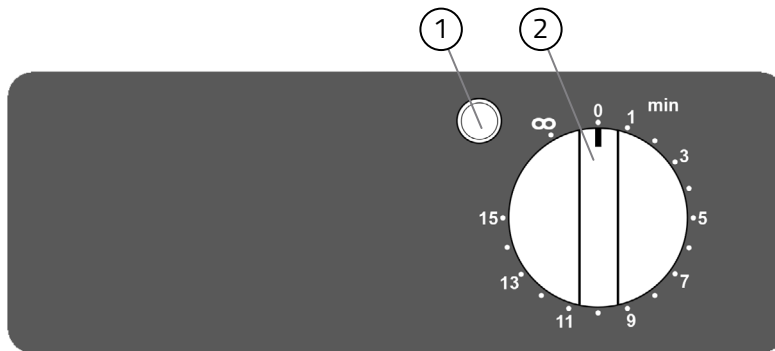
- 1 Housing
- 2 Time switch, model-dependent
- 3 Socket for mains connector
- 4 HF connection

3.2 TG control panel ...

TG HF generators ... have no operating elements (time switches).



3.3 TG control panel ... Z



- 1 Green pilot light
lighting up means: ultrasound is switched on
- 2 Turning knob for adjusting the ultrasound duration

3.4 Function

The ultrasonic generator transforms the absorbed mains energy (mains frequency 50 or 60 Hz) into high-frequency energy with a frequency of 25, 35, 40 or 50 kHz. The high-frequency energy of the ultrasonic generator is converted into ultrasound and thus into mechanical energy by the transducers connected to the ultrasonic generator.

4 Preparing for operation

Carefully unpack the ultrasonic generator and the accessories and check the entire scope of delivery for any transport damage and to ensure it is complete.

If you discover any damage or defects, report this immediately in writing to the shipping carrier and the supplier.

Allow the ultrasonic generator to adapt to the climatic conditions at its operating site for 2 hours before putting it into service.

4.1 Installation site requirements

The installation site of the device must meet the following conditions:

- The installation surface must be horizontal, firm and dry.
- Observe the maximum weight, up to 4 kg, depending on the housing size
- Installation in enclosed structures is not permitted.
- Place the device in a dust-free and dry room. See chapter **8.2 Environmental conditions**.

NOTICE

Component overheating

The generator heats up during operation.

- To avoid overheating, do not install the generator in an enclosed housing.

5 Operation

5.1 Preparation

- Ensure that the connected load is completely covered or filled with liquid before switching on.
- When using tanks or similar, note the prescribed filling level.
- Tanks:
Freshly filled bath liquid, or bath liquid that has remained in the oscillating tank for a long time, must be degassed before use.
 - Remove the basket and other accessories from the oscillating tank.
 - Put the lid on.
 - Start the ultrasound for approx. 30 min for degassing
If using acidic cleaning solutions, this time must be extended.
- Dip the objects to be cleaned into the appropriate cleaning tank using a basket or holder.
- Connect the HF jack of the load to the HF connecting socket and secure with the screw cap of the HF cable.

5.2 Ultrasonic operation

With the TG ... Z generators, the device is operated at the front with the time switch. For TG generators without controls, the ultrasound can only be switched on and off by switching the mains voltage on and off externally. It is not intended that the generator be switched on and off by plugging and unplugging the jack.

5.3 Putting into service

- Check that the time switch is in the "0" position.
- Check the HF cable or connect it to the load.

NOTICE

Damage to the device

Do not operate the generator without a load. Do not operate the generator until the HF cable is connected.

5.4 Switching the sonication on and off

5.4.1 TG generators

Requirements

- Check that the HF cable between the load and the ultrasonic generator is correctly connected.
- The sonication medium of the load must be at the correct filling level.

Procedure

1. Plug the mains cable into the socket for a few seconds (approx. 2 s).
 - » The ultrasound is switched on. The ultrasound noise can be heard.
2. To switch off sonication, unplug the mains cable from the socket
 - » The ultrasound is switched off.

5.4.2 TG ... Z generators

Requirements

- Check that the HF cable between the load and the ultrasonic generator is correctly connected.
- Check that the mains cable is correctly connected.
- The sonication medium of the load must be at the correct filling level.

Procedure

1. Turn the turning knob for the time switch to the desired sonication duration or to the ∞ symbol for continuous operation.
 - » The ultrasound is switched on. The ultrasound noise can be heard.
 - » The green pilot lamp lights up.
 - » If the turning knob is not set to ∞ , it will move slowly in the anti-clockwise direction, indicating the remaining sonication duration. As soon as it is at "0", the ultrasound will switch off.
2. To switch off sonication, turn the turning knob for the time switch to "0".
 - » The green pilot lamp goes out.

**Information**

- You can rotate the turning knob in both directions.
 - You can extend, shorten or switch off sonication at any time.
 - The time switch only works when the mains voltage is applied. Without mains voltage, the locking of the turning knob can barely be felt.
-

5.5 Degassing the sonication fluid

Sonication fluid that has been freshly poured in or that has remained in situ for a long time must be degassed before use. Degassing the sonication liquid increases the effect of the ultrasound.

- To degas, switch on the ultrasound.

**Information**

During degassing, the ultrasonic noise becomes quieter. This means that the ultrasound effect increases.

6 Maintenance

For the device to enjoy an optimal service life, cleaning and care must be carried out regularly.



DANGER

Risk of electric shock

- Disconnect the device from the mains before performing any cleaning/maintenance
- Do not shower the appliance, immerse it in water or expose it to splash water.



WARNING

Health hazard due to contaminated device

- Decontaminate the device if it has come into contact with hazardous substances.

NOTICE

Unsuitable preparations

- No guarantee is provided for damage caused by the use of unsuitable disinfectants or detergents

NOTICE

Generator damage

- The preparation used in the load may also cause damage to the device under certain circumstances.

6.1 Servicing

The device does not require servicing.

6.2 Cleaning and caring for the device

Housing

- Do not use abrasive cleaning agents, only commercially available care products without abrasive additives.
- Wipe the housing down with a damp cloth from the outside only, then allow it to dry or rub it dry.
- Remove the dust from the air slots in the housing about every 6 months, e.g., with compressed air. Before doing this, disconnect the generator from the mains.

Storage/safekeeping

If the ultrasonic generator is not used for a prolonged period, it must be stored in a cool, dry place.

6.3 Error analysis

The ultrasonic generator is robustly constructed and designed for high reliability. Nevertheless, operating failures due to a defective component can never be completely ruled out. If malfunctions occur, please observe the following instructions.



DANGER

Risk of electric shock

- Have repairs carried out by qualified personnel only, or by the manufacturer.
-

The manufacturer assumes no liability for unauthorised interventions on the device.

6.4 Repairs

During the warranty period, contact your specialist dealer or the manufacturer.
Only have repairs carried out by qualified personnel or by the manufacturer.
The manufacturer assumes no liability for unauthorised interventions on the device.



WARNING

Health hazard due to contaminated device

- Decontaminate the device before shipping if it has come into contact with hazardous substances.
-

If the device needs to be repaired, send it to the manufacturer.
Clean and decontaminate the device and the accessories before shipment.
The "Certificate of decontamination" serves the occupational safety and health of our employees in accordance with the German "Infection Protection Act" (Infektionsschutzgesetz) and the Accident Insurance Regulations (UVV) of the employers' liability insurance associations.
Before being returned for inspection/repair, the device and accessories must be cleaned in accordance with the applicable laws and regulations and, if necessary, disinfected with a surface disinfectant that is listed by the VAH (Association of Applied Hygiene).
Please understand that we can only start the work if this certificate is completed in full.
Download the "Certificate of decontamination" form here:

<https://www.bandelin.com/downloads>



Fill out the form and attach it so as to be clearly visible on the outside of the packaging. Acceptance will be refused without a completed form.

Send the unit to the following address:

BANDELIN electronic GmbH & Co. KG
Heinrichstr. 3–4
12207 Berlin
Germany

+49 30 76880-2674
service@bandelin.com

7 Disposal



WARNING

Health hazard due to contaminated device

- Decontaminate the device before disposal if it has come into contact with hazardous substances.
- Also decontaminate accessories before disposal.

Dispose of the device properly as electrical waste if it can no longer be used. Do not dispose of the device in the household waste. Observe local regulations for the disposal of electrical waste.

Dispose of accessories as metal scrap or as plastic waste according to the material used.



8 Information about the device

8.1 Technical specifications

Electrical data, general

Protection class	I
Degree of protection	IP 20

Ultrasonic generator without time switch:

Ultrasonic gener- ator	TG 50	TG 100	TG 200	TG 300	TG 500
Ultrasonic peak power* (max.)	200 W	400 W	800 W	1200 W	2000 W
Ultrasonic nominal power (max.)	50 W	100 W	200 W	300 W	500 W
Ultrasonic frequency	25, 35, 40 or 50 kHz				
External dimensions (L × W × H)	235 × 160 × 100 mm			360 × 310 × 142 mm	
Mains supply	230 V~ (± 10%) 50/60 Hz, 115 V~ (± 10%) 50/60 Hz on request				
Current consump- tion	0.3 A	0.5 A	0.9 A	1.4 A	2.2 A
Cable length	2 m				
Fuse	F 1 A	F 1 A	F 2 A	F 4 A	F 4 A
Weight	1.2 kg	1.3 kg	3.0 kg	3.4 kg	3.7 kg

Ultrasonic generator with integrated time switch:

Ultrasonic gener- ator	TG 50 Z	TG 100 Z	TG 200 Z	TG 300 Z	TG 500 Z
Ultrasonic peak power* (max.)	200 W	400 W	800 W	1200 W	2000 W
Ultrasonic nominal power (max.)	50 W	100 W	200 W	300 W	500 W
Ultrasonic frequency	25, 35, 40 or 50 kHz				
External dimensions (L × W × H)	235 × 160 × 100 mm			360 × 310 × 142 mm	
Mains supply	230 V~ (± 10%) 50/60 Hz, 115 V~ (± 10%) 50/60 Hz on request				
Current consump- tion	0.3 A	0.5 A	0.9 A	1.4 A	2.2 A
Cable length	2 m				
Fuse	F 1 A	F 1 A	F 2 A	F 4 A	F 4 A
Weight	1.3 kg	1.4 kg	3.1 kg	3.5 kg	3.8 kg


Information

The technical specifications of the TG 50 /Z to TG 500 /Z generators may differ depending on the transducer, the number of transducers, and the object being mounted. In these cases, the generators are designated as TG ... "-S" and are shown separately.

8.2 Environmental conditions

Overvoltage category:	II
Degree of contamination:	2
Permissible ambient temperature:	5 ... 45 °C
Permissible relative humidity to 31 °C:	80% (non-condensing)
Permissible relative humidity up to 40 °C:	50% (non-condensing)
Altitude	< 2000 m above sea level
For indoor operation only	

8.3 CE conformity

The device meets the CE marking criteria of the European Union:

- 2014/35/EC – Low Voltage Directive
- 2014/30/EU – EMC Guideline
- 2011/65/EU – RoHS Directive

The declaration of conformity can be requested from the manufacturer, stating the serial number.

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