

PROFICALK PKS 2000 PLUS X

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HTRONIC



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PROFIKALK PKS 2000 PLUS X

This electronic, microprocessor-controlled device largely reduces limescale deposits in water pipes, hot water devices, heating elements, etc. Even old limescale deposits can be broken down and rinsed out over time. There is no need to intervene in the pipe system for installation.

The device incurs few operating costs and is sufficiently dimensioned for water consumption of up to 5 m³/h. It can be individually adapted to the respective pipe system.

TECHNICAL DATA

- Rated voltage: 230V/50Hz
- Capacity: up to 5 m³/h
- Pipe diameter: up to 50 mm
- Nennaufnahme: max. 1.5 Watts
- Frequency range: var. 1...32 kHz
- Modulation: 10 Hz
- Impulse cable: approx. 2 x 1.8 m

- Outputs: 2 x capacitive
6 output frequencies: **1.** 1,000...4,000 Hz
2. 4.000...8.000 Hz
3. 8.000...12.000 Hz
4. 12.000...16.000 Hz
5. 16.000...32.000 Hz
6. Automatic (1,000...32,000 Hz)

With a correctly selected frequency range (from 1 to 5), the efficiency of the device can be up to 30% higher than in automatic operation. Which resonance frequency is the right one for a particular water system depends on various factors: flow speed of the water, water hardness, material and diameter of the water pipes, etc. and can only be determined experimentally.

Warnings and safety information

Please read these operating instructions carefully; they contain a lot of important information for use and operation. The law requires that we give you important information about your safety and point out how to avoid damage to people, the device and other facilities.

The manufacturer is not liable for damage resulting from negligent or intentional disregard of the instructions in this manual! These instructions are part of the device and should therefore be kept carefully. To avoid malfunctions, damage and health problems, please also note the following safety instructions:

- The device may only be repaired by a specialist!
- Dispose of unneeded packaging material or store it in a place inaccessible to children. There is a risk of suffocation!
- This device does not belong in the hands of children! Risk of death!



Danger! The device should only be opened by a qualified electrician! When the device is opened, live parts are freely accessible. Before opening, the mains plug must be unplugged.

A notice! This device left the factory in perfect safety condition. In order to maintain this condition and ensure safe operation, the user must observe the safety instructions and warnings contained in these instructions!

1. INTENDED USE

The intended use of the device is to largely prevent limescale deposits in water pipes and the resulting corrosion damage in water pipes. Any use other than specified is not permitted!

2. OPERATING CONDITIONS

This item has been tested according to the EMVG (EC Directive 89/336/EEC/Electro-magnetic Compatibility) and has been assigned the corresponding CE mark. Any change to the circuit or use of components other than those specified will void this approval!

When handling products that come into contact with electrical voltage, the valid VDE regulations must be observed, in particular VDE 0100, VDE 0701, and VDE 0550/0551.

- The device may only be operated on 230 V/50 Hz alternating voltage.
- If the power cord is damaged, it may only be replaced by a trained electrician.
- When unplugging the power cord, only pull on the plug and never on the cable.
- Never place heavy objects on the power cord or bend it in too tight a radius or around sharp corners.
- It is essential to ensure compliance with the technical data given in these instructions! Exceeding these values can lead to damage to the device or consumer.
- The device must not be brought close to strong high-frequency fields, as the device can enter an undefined operating state!
- The permissible ambient temperature (room temperature) must not fall below or exceed 0 °C and 40 °C during operation.
- The device is intended for use in dry and clean rooms.
- If condensation forms, an acclimatization period of up to 2 hours must be allowed.
- Protect this device from moisture, splash water and heat!
- The device must not be used in conjunction with highly flammable and combustible liquids!
- In commercial facilities, the accident prevention regulations of the Association of Commercial Professional Associations for electrical systems and equipment must be observed.
- In schools, training institutions, hobby and self-help workshops, the operation of assemblies must be monitored responsibly by trained personnel.
- If the device needs to be repaired, only original spare parts may be used! The use of different spare parts can lead to serious property damage and personal injury!
- The device may only be repaired by a trained electrician!

3. GENERAL SAFETY INSTRUCTIONS

- Before opening a device, always pull out the power plug or make sure that the device is without power.
- Components, assemblies or devices may only be put into operation if they have previously been installed in a housing so that they are safe to touch. They must be de-energized during installation.
- Tools may only be used on devices, components or assemblies if it is ensured that the devices are disconnected from the supply voltage and that electrical charges stored in the components in the device have previously been discharged.
- Live cables or lines to which the device, component or assembly is connected must always be inspected for insulation defects or breaks. If a fault is discovered in the supply line, the device must be taken out of operation immediately until the defective line has been replaced.
- If an existing description does not clearly indicate to the non-commercial end user which electrical characteristics apply to a component or assembly, how external wiring is to be carried out, or which external components or additional devices may be connected and which connection values these external components have. If you are allowed to do this, you must always ask a specialist for information.
- Before putting a device into operation, it is generally necessary to check whether this device or assembly is fundamentally suitable for the application for which it is to be used! If in doubt, it is essential to ask specialists, experts or the manufacturers of the components used!

Please note that operating and connection errors are beyond our control. Understandably, we cannot accept any liability for any damage resulting from this.

Important NOTE!

In the event of static discharge, the operating status of the device can change!

4. OPERATING INSTRUCTIONS

This device physically influences the salts dissolved in the water. The water is not chemically affected and the water quality is maintained. Limescale deposits already present in pipes can slowly be dissolved. Particularly in the initial phase of operation, it can happen that lime particles dissolve in pipes and block the flow of aerators and shower heads. Therefore, clean them more often in the beginning.

The device does not require any maintenance!

The greater the flow rate or the degree of hardness of the water, the higher the output frequency should be selected.

Lime chemistry of the water cycle

Calcium is a silvery-white, soft metal that reacts strongly with water. It is the key element in the formation of lime (calcium carbonate CaCO_3). In water the CaCO_3 is in dissolved form, ie as ions Ca^{2+} and CO_3^{2-} available. With the slightest physical changes in the water (e.g. heating, turbulence) the calcium carbonate precipitates. When excreted, the individual CaCO_3 molecules bind layer by layer to the vessel wall according to their polarity (ionic bond or metallic bond). However, if the CaCO_3 molecules can be isolated in the water, amorphous lime complexes are formed, which can no longer form ionic bonds (electrically charged particles) with each other. The lime complexes manifest themselves (in high concentration) in the form of a white, easy-flowing, non-stick, chalk-like "dust sludge".

Release of CaCO_3 molecules

In principle, the CaCO_3 salt ions are very bonding and reactive. But they need a so-called crystallization point to react. There are enough of these in tap water in the form of floating bodies, but they are surrounded by a "water cage" made up of 100 – 200 water molecules. In order to enable a reaction, this cage must now be broken open. Circular amorphous CaCO_3 complexes are then created, which are electrically neutral and can therefore no longer adhere to the pipe walls.

Physical water treatments do not change the original water quality, but only the crystallization behavior of the lime. A limescale suspended substance is created that is washed away with the flowing water and washed out. When a water stain dries up, the treated lime becomes visible as minerals cannot evaporate but rather remain on the surface, e.g. B. in the bathtub. However, this limescale stain can be easily wiped away with a damp cloth. This means that not only do pipes and devices remain intact, but household maintenance also becomes noticeably easier and more convenient.

Water cages can be broken using:

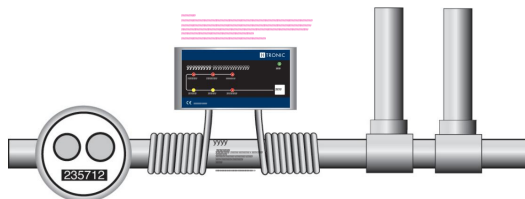
- 1.** a permanent magnet
- 2.** electro-physical method (E-field)
- 3.** electromagnetic method without alternating fields
- 4.** electromagnetic method with alternating fields
- 5.** capacitive pulse technique with variable resonance frequency technology

The first four procedures are currently considered technically outdated and are significantly less effective. That's why capacitive impulse technology was selected for the PKS 2000 plus X.

5. MONTAGE

- The PKS 2000 plus X can be used for any pipe material, i.e. for iron, copper, stainless steel and plastic pipes.
- The PKS 2000 plus X should be attached in the area of the water meter and distribution. (see fig.)
- The device can be mounted horizontally and vertically.
- The impulse cables can be wound left and right, but also underneath the electronics part if there is little space available.
- A water flow direction does not have to be taken into account.
- Both impulse cables are wrapped around the pipe as shown in Fig. p. 8.)
- Thick paint (e.g. wall paint) should be removed from the water pipe in the area of the cable windings. Thin protective coatings do not interfere.

6. MOUNTING OPTIONS



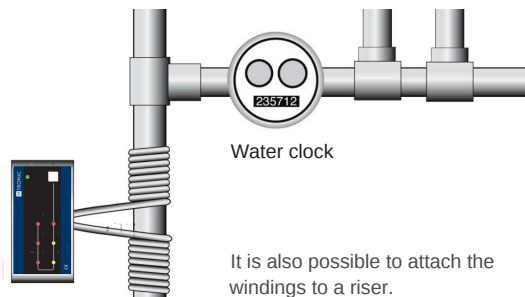
Water clock

The windings are secured at the ends with adhesive tape



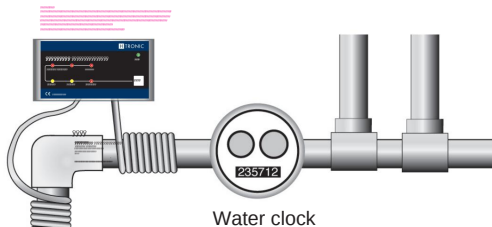
Water clock

The windings can also be attached to the left and right of the water meter or water filter.



Water clock

It is also possible to attach the windings to a riser.



The windings can also be attached to the main pipe and sometimes to a distribution pipe.

Wall mounting

The device must be disconnected from the mains before installation. The mounting location should be chosen so that the device can be mounted on the wall next to the main water connection. Also note that there is a 230 V socket nearby. If a filter is installed, it should be installed in front of the filter.

- Please make sure that there is approx. 2 x 10 cm of space left and right on the water pipe for the coil (winding wire).
- Attach the magnetic field generator above the pipe to the wall, or to the water pipe using long cable ties.
- To attach it to the wall, the cover is removed from the bottom part of the housing using the four screws.

In the lower part of the case there are four holes in the corners at a distance of 14.8 and 5 cm. Use a spirit level to mark the four holes on the wall. After the four mounting holes have been drilled into the wall, a dowel is inserted into the hole and the lower part is screwed to the wall using screws (screws with small screw heads and dowels not included in the scope of delivery). The cover is then screwed back onto the bottom part of the housing. The coils are made according to

Page 8/9 wrapped around the pipe.

7. START-UP

After the device and the coils have been attached and fixed, the device can be put into operation. To do this, plug the power cable into a proper 230 V/50 Hz protective contact socket. The green operating light must now light up. After being connected to the power supply, the device immediately starts working in a previously saved mode. This can be recognized by the fact that the display for the corresponding frequency range flashes permanently.

8. OPERATION

By pressing the **"MODE"** button, the output frequencies can be set manually. Each time you press the button, the frequency range is increased by one step. If the button is not pressed again within the next 10 seconds, the device saves the new setting.

The set frequency is then applied to the coils. In automatic mode, the **"Automatic"** LED lights up and the LEDs responsible for the respective frequency range switch cyclically. The voltage frequency on the coils changes smoothly from the minimum to the maximum value within 0.1 seconds (10 Hz modulation), which is valid for this range.

DISTURBANCE

If it is assumed that safe operation is no longer possible, the device must be decommissioned and secured against unintentional operation.

This applies:

- if the device shows visible damage
- if the device is no longer functional
- if parts of the device are loose or loose
- if the connecting cables show visible damage
- in the event of transport damage

9. GUARANTEE/WARRANTY

The dealer/manufacturer from whom the device was purchased provides a warranty of 2 years from delivery for the material and manufacture of the device. In the event of a defect, the buyer initially only has the right to subsequent performance. The supplementary performance includes either the subsequent improvement or

the delivery of a replacement product. Replaced devices or parts become the property of the dealer/manufacturer. The buyer must immediately report any defects discovered to the dealer. Proof of the warranty claim must be provided by a proper purchase confirmation (purchase receipt, invoice if applicable). We reserve the right to repair, improve, replace or refund the purchase price. costs and risks of transport; Assembly and dismantling effort, as well as all other costs that may be associated with the repair, will not be reimbursed. Liability for consequential damage resulting from faulty operation of the device – regardless of its nature – is fundamentally excluded.

In the following cases, the warranty expires and the device will be returned at your expense:

- When making changes or attempting to repair the device.
- In case of unauthorized modification of the circuit.
- When using other, non-original components.
- In the event of damage due to non-observance of the operating instructions and the connection diagram.
- In the event of damage caused by overloading the device.
- In the event of damage caused by interventions by third parties.
- When connected to an incorrect voltage or current type.
- In the event of incorrect operation or damage caused by negligent handling.
- In the event of defects caused by bridged fuses or the use of incorrect fuses.

10. NOTES ON ENVIRONMENTAL PROTECTION



At the end of its life, this product must not be disposed of with normal household waste, but must be taken to a collection point for the recycling of electrical and electronic equipment. The symbol on the product, the instructions for use or the packaging indicates this. The recyclable materials can be recycled according to their labeling. Please find out about the respective local collection systems for electrical and electronic devices. By reusing, recycling or other forms of recycling old devices, you are making an important contribution to protecting our environment.

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