

# **DESI**<sup>®</sup> VITALTEC-RAIL & BUS

## **Operation Manual**



## Safety Instructions



**When using electrical appliances, basic precautions should always be taken to prevent hazards. For safety and approval reasons (CE), you are not allowed to convert and / or change the product. If you use the product for purposes other than those described in these operating instructions, damage may occur. In addition, improper use can lead to hazards such as short circuit, fire, electric shock, personal injury, etc. Read the operating instructions carefully and keep them. Only pass the product on to third parties together with the operating instructions.**

- Before commissioning the **DESI**<sup>®</sup>*VITALTEC-RAIL&BUS*, these operating instructions must be read carefully to familiarize yourself with the basic functionality and to know the sources of danger. Correct installation of the device before commissioning is crucial for its subsequent function. Should problems arise during use, please contact your **DESI**<sup>®</sup>*Service-Team*.

- The device should be operated at normal ambient temperatures and only under dry indoor conditions. Avoid prolonged exposure to direct sunlight and areas with flammable, highly flammable substances, and solutions. A dry, ventilated room should be chosen for storage.



- Operation in rooms with high humidity, such as shower rooms, bathrooms, is life threatening and is not permitted. Do not touch the device with damp or wet hands; otherwise, there is a risk of a possible electric shock, which could be fatal!



- The device must not be opened during operation! Before opening the device, it must always be switched off by pressing the on / off switch to "position 0" and the power supply must be disconnected. The device must be de-energized when changing location, servicing, cleaning and when not in use.

- Before and during operation, make sure that particles or objects do not block the air inlets and outlets.
- Untrained personnel or personnel who have not read these operating instructions may not install or operate the device.
- Qualified personnel may only carry out maintenance or repairs.
- If safe operation can no longer be guaranteed, take the device out of operation and protect it against further use. Safe operation is no longer guaranteed if the following is present:
  - Visible damage
  - No longer proper function
  - Has been stored for a longer period under unfavourable environmental conditions (a check by a specialist gives you security!).

## Principle of Plasma Disinfection and Air Ionization

### 1) Properties of Plasma Disinfection / Air Ionization and Mode of Action

The principle of action is the plasmatisation or ionization of the air flowing through. The air is ionized under the action of high voltage, which leads to high-energy molecular particles. This excitation and dissociation (breaking down of molecules into simpler molecules, into atoms or ions) creates plasma. The virus or bacterial cell membrane is severely degraded and destroyed under the influence of an electric field. On the other hand, it opens the molecular bonds of gas and generates monatomic molecules, negative oxygen ions ( $O^-$ ),  $OH^-$  ions (hydroxyl), free oxygen atoms, hydrogen peroxide ( $H_2O_2$ ) and other free radicals with strong activation and oxidation ability. The moving molecular particles generate a corona discharge inside the device, which kills bacteria and viruses very strongly. Since viruses are generally more sensitive than bacteria, the percentage is much higher in the case of plasmatic treatment. Ultimately, only a laboratory test can determine the exact value and provide a comparison. At the same time, it can also decompose formaldehyde, benzene, ammonia gas, carbon monoxide, flue gas, TVOC and other high-molecular, toxic, organic substances and convert them into low-molecular, non-toxic, and odourless carbon, water and other inorganic substances.

An effective kill of *Staphylococcus aureus*, *Escherichia coli*, *Bacillus subtilis*, *Candida albicans*, powdery mildew, etc. is given. In addition, the **DESI**<sup>®</sup> *VITALTEC-RAIL&BUS* has a very good disinfection effect on mycoplasma and viruses. The longer the working time of the device, the better the bactericidal, virucide, cleaning and disinfecting effect. In addition, the continuous air circulation avoids that possibly contaminated aerosols remain in the room air and thus contribute to an increased risk of infection.

### 2) Areas of Application

The **DESI**<sup>®</sup> *VITALTEC-RAIL&BUS* is intended for indoor air cleaning and disinfection, mainly for public transport such as underground, suburban and tram trains as well as coaches, cable cars, etc. You can use the device to create the necessary and better atmospheric conditions wherever standing room air cannot be changed by direct ventilation. By generating negative air ions, the indoor climate is significantly improved, and unpleasant odours are greatly reduced.

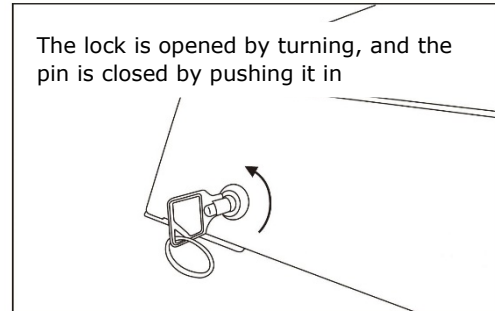
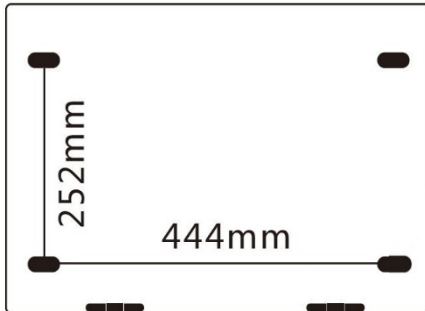
## Installation and Commissioning

Before unpacking the device, please make sure that the outer packaging is not damaged or has not been deformed. Before installation, please check that all parts described in these instructions (see scope of delivery) are present and that they are in proper condition. If this is not the case, please contact your **DESI**<sup>®</sup> *Service-Team*.

Please follow the steps below to ensure proper and safe use.

## Installation and Commissioning

- a) The device is primarily designed for ceiling mounting in trains and buses but can also be mounted on the wall. Since the **DESI**<sup>®</sup> VITALTEC-RAIL&BUS is operated with a protective low voltage of 24 VDC (12 VDC optional), please make sure that you have a connection to the on-board network. Alternatively, the supply can be ensured with a 230 VAC / 24 VDC power supply unit.
- b) Fixing and Opening the Device



- c) Commissioning

Connect the device directly to the vehicle electrical system or use the power supply unit. Switch the on / off switch to position 1 and the operating indicator ② indicates that the device is in operating mode. If the device cannot be switched on, please check the micro fuse ① to see whether it has responded and replace it if necessary.

## Maintenance

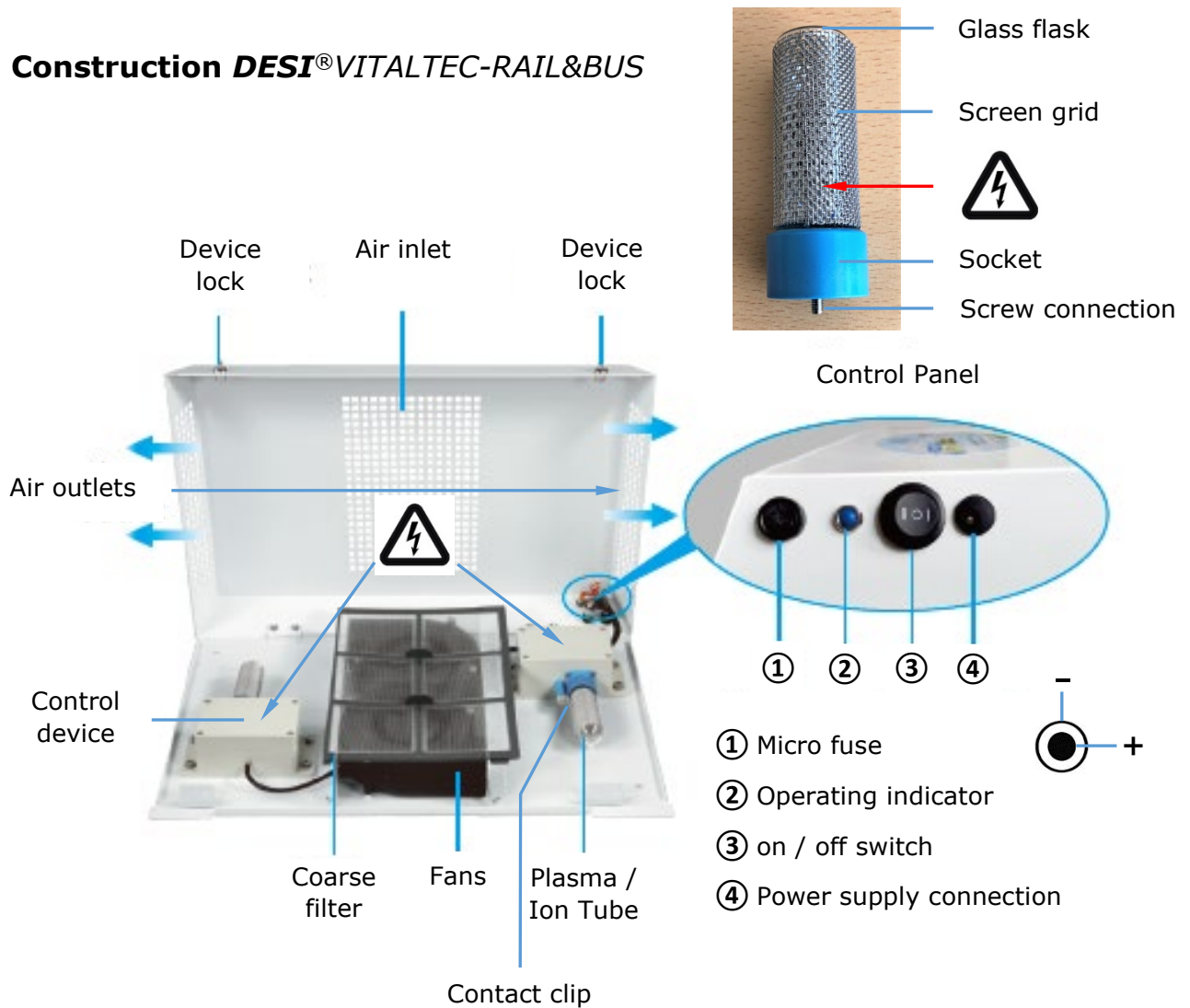
### 1) Cleaning and, if necessary, Replacement of the Ion Tubes



Before opening the device, it must always be switched off by pressing the on / off switch to "position 0" and the power supply must be disconnected. The device must be de-energized when changing location, servicing, cleaning and when not in use.

- a) The air inlets and outlets as well as the interior area with the coarse dust filter must be checked to see whether particles have accumulated that would reduce the performance of the device. Cleaning can be done by blowing it out, vacuum cleaner or a fine brush.
- b) The average lifespan of the ion tubes is approx. 2 years, after which they should be exchanged for new ones. When changing, loosen the screw of the contact clip a little and move it to the side. The tubes are attached to the control unit by means of a screw connection and can be removed by turning counterclockwise. After screwing in the new tube, reattach the contact clip to the screen grid and secure it with the screw.

## Construction **DESI**<sup>®</sup>VITALTEC-RAIL&BUS



## Technical Specifications

Model	<b>DESI</b> <sup>®</sup> VITALTEC-RAIL&BUS
Article No.	14550 (24 V) - 14555 (12 V)
Grid Connection Values	24 VAC / (12 VDC optional)
Power Consumption - Pmax.	23 W
Noise level	≤ 50 dB
Max. Flow rate of Ionized Air	220 m <sup>3</sup> /h
Coverage Area (adjustable)	50 – 100 m <sup>2</sup>
Filter Unit	Coarse filter
Measured Maximum Value of the Ozone Leakage	< 0,003 mg/m <sup>3</sup> (< 3 µg/m <sup>3</sup> )
Number of Plasma / Ion Tubes	2
Operating Temperature Range	-20 – 60 °C
Length of Plasma / Ion Tubes	80 mm
Lifespan of Plasma / Ion Tubes	≤ 2 years
Net / Gross Weight	3,0 / 3,5 kg
Product Dimensions	500 x 340 x 60 mm (LxWxH)
Packing Dimensions	562 x 400 x 135 mm (LxWxH)

## Comments and Service

The representations and pictures shown in these operating instructions are schematic representations and serve as a reference. Due to updates and product upgrades, the illustrations may differ slightly from the actual product.

If you have any questions or would like to purchase **spare parts**, you can contact the **DESI®-Service-Team** by phone or email from Monday to Thursday between 9:00 a.m. and 5:00 p.m. and on Friday from 9:00 a.m. to 3:00 p.m.:

Phone **+49 09762 9397624**

email [info@desi-s.com](mailto:info@desi-s.com)

## Scope of Delivery

- **DESI®VITALTEC-RAIL&BUS** (Base unit)
- Power Supply 24 VDC (12 VDC optional)
- Mounting Material
- 2x Key for Device Lock
- Operation Manual

**DESI®** Herrmann Innovations GmbH  
Bahnhofstraße 32  
D-93483 Pöding  
Deutschland

© 2021

Phone +49 9461 91388 0  
Fax +49 9461 91388 33  
Email [info@desi-s.com](mailto:info@desi-s.com)



**DESI®** is a registered trademark  
of the Herrmann Innovations GmbH

Status 01.10.2021 – Vers. 1.00