GB

User manual

Ionisation device
Ion Beam DC ultra compact

ID number: 03.0930.000

Please retain for future reference!

DC Line

Inhaltsverzeichnis

1 User information

Read this user manual in full before installation and commissioning. Always heed the safety information.

This user manual is a constituent part of the product, please, therefore, retain it for future use or for a future owner.

The product is an ionisation device with an integrated high-voltage power supply. It will hereinafter be referred to only as an ionisation device.

The ionisation device is safe to use when used as intended.

The illustrations in this document are simplified. They only show the technical circumstances in principal and serve to support the text. Deviations from the product may be apparent. However, any such deviations do not diminish the performance or specifications of the product.

1.1 Warnings

In the user manual

⚠ WARNING

It is imperative that you heed this safety information, otherwise this may lead to serious physical injury or death.

⚠ CAUTION

It is imperative that you heed this safety information, otherwise this may lead to minor physical injury.

INFORMATION

It is imperative that you heed this safety information, otherwise this may lead to material damage.

INFORMATION
Important information and useful additional information.

Never dispose of in household waste.

Do not touch!

Caution, device produces ozone!

Warning, danger from high voltage, electric current!

Risk for people with pacemakers or implanted defibrillators!

Caution, warning of a danger zone!

On the ionisation device

WARNING!
High electrical voltage

WARNING!
Ionisation device is not safe to touch.
Caution: high voltage!
!

2 Safety

Risk of explosion due to sparking!
The ionisation device is under high voltage while in use: it may produce sparks that can ignite gas, dust or similar.
The device may only be used away from areas or ambient conditions at risk of explosion. Only use indoors.

Shock hazard due to ionisation or electrical current!
The ionisation pins are under high voltage when in use. Touching them may lead to the painful release of voltage, a possible but unlikely consequence of which is skin burns. This may cause the person to become startled and lead to secondary accidents.
In the event of errors, damage, device defects or other faults, there is a risk of electrical shock. The ionisation device is operated using electrical current and produces high electric voltage.

Risk to life due to ionisation!
The ionisation device presents a risk to people with pacemakers or implanted defibrillators due to the elimination of electrostatic charge.

Risk of fire due to sparking!
The ionisation pins must not be covered after installation. This would cause ionisation to fail to happen and could produce electrical sparks. This would damage the ionisation device and could cause a fire.

Physical complaints caused by too much ozone at a workstation.
Small amounts of ozone are generated by the corona at the ionisation pins during operation. High concentrations of ozone and long, continuous exposure may cause headaches, eye irritation, circulatory problems and so on.

Risks due to ionisation device being faulty or tampered with
Unauthorised alterations, moisture or damage to the ionisation device may result in electric shock or present a fire hazard due to sparking.

Risk of injury from ionisation pins!
The ionisation pins are sharp and pointy. When cleaning the ionisation device, there is a risk of puncture wounds, lacerations or cuts to the hands from the ionisation pins.

2.1 Use specialist staff

Only **individuals authorised to do so by the operator** may carry out activities on the ionisation device.

The fitter must be a **qualified electrician** and have basic knowledge in the field of mechanical engineering. He or she must have read the user manual in full.

The **operator or maintenance personnel** must have read the user manual in full.

When **qualified personnel** are working on the ionisation device, switch off the power supply and secure it against being accidentally switched back on

2.2 Use as intended

Functional description
The ionisation device is used for installation in manufacturing process. It eliminates electrostatic charges in industrial production.

Areas of application
- in winding and unwinding machines
- in the plastics and packaging industry
- in the printing industry
- on conveyor belts

Always observe the intended use in this user manual, taking the technical requirements and safety information into account.

Disclaimer of liability
The warranty is for original HAUG GmbH & Co. KG devices and accessories. Making any alterations or reproduction or adjustments to the ionisation device is not permitted.

HAUG GmbH & Co. KG accepts no liability for any violations of the safety requirements or improper operation of the ionisation device, or for any damage resulting from such.

3 Device overview t

A Earth connector (clamp)

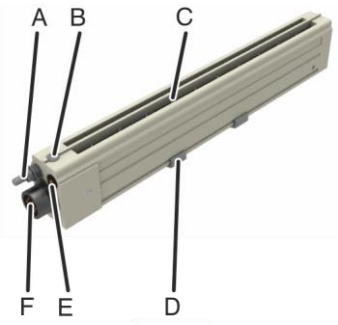
B Green LED (power supply indicator)

C Ionisation pins

D Bar holder (accessory

E Orange LED (maintenance indicator)

F K6 signal connector (power supply, high-voltage monitoring, clock, fault message, reset)



(Device color varies)

3.1 Scope of delivery

Check the scope of delivery for completeness before first use.

- **1 x HAUG Ion Beam DC ultra compact ionisation device**
- **2 x mounts 10.0930.000**
- **Manual**

If anything is missing, get in touch with HAUG GmbH & Co. KG. See back cover for address.aufnehmen.

4 Installation

Requirements

The ionisation device doesn't show any damage and is free from dirt and moisture. The installation takes place in accordance with the safety requirements and the technical specifications. See also: *Chapter 2 – Safety; Chapter 9 – Technical Data*.

1. Check the ionisation device with the order data for compliance. If there is any damage to the ionisation device, please get in touch with HAUG GmbH & Co. KG.
2. Prepare the chosen installation site in the production process for subsequent parameters.

⚠ WARNING

Fire risk!

The ionisation pins must not be covered after installation.

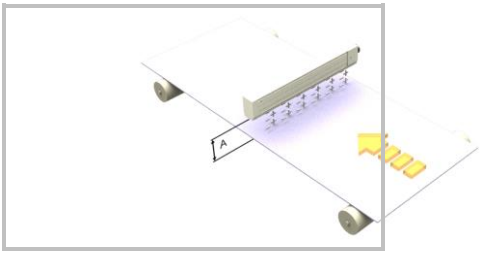
- Never cover the ionisation pins with fastening elements, e.g. bar holders, or machine parts.
- The ionisation pins must not be covered in any way.

Einsatz von 1 Ionisationsgerät

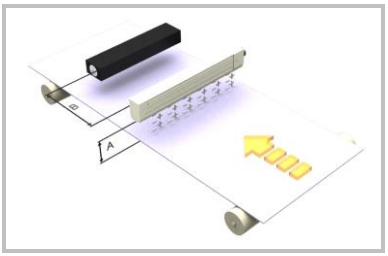
1. The most favourable distance (A) to the material to be ionised from the ionisation device is **approx. 40 mm**.

   A = device to material

   Please note
   Limits of ionization effect:
   min. 20 mm
   max. 100 mm

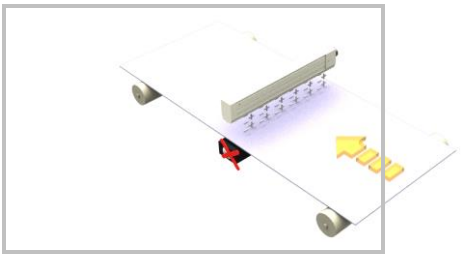


2. The distance to a grounded machine part (B) from the ionisation device **must be greater than** the distance to the material to be ionised (A).



Please note
Ensure the ionisation effect:
Distance > from device to B
Distance < from device to A

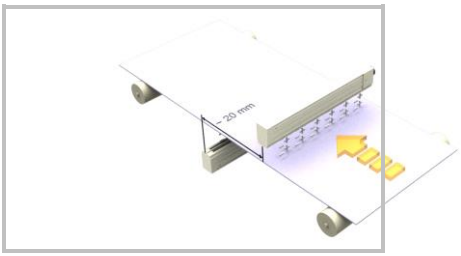
3. No grounded machine parts may be behind the material to be ionised.



Use of 2 ionisation devices, either offset

The ionisation devices **must not be opposite each other**.

4. Install 1x ionisation device and below the material to be ionised.

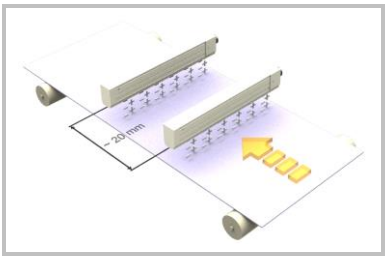


Please note

offset by approx. **20 mm**

The ionisation devices **must be mounted next to each other**.

5. Implement high flow speeds (100 - 200 m/min).



Please note
They must be spaced approx. **20 mm** apart

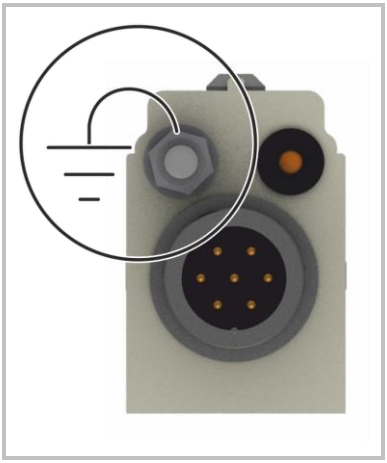
6. Install the ionisation device in the production process using the bar holder.

   Please note
   At least 2 bar holders up to a length of 0.5 m and 1x additional bar holder for each additional 0.5 m or part thereof.

   Length <= 0.5 m: **min. 2 bar holders**
   Additional length + 0.5 m: **+ 1 additional bar holder**

7. Connect the earth connector of the ionisation device to the earth potential in accordance with standards.

   Please note
   Earth cable with at least
   1.5 mm²

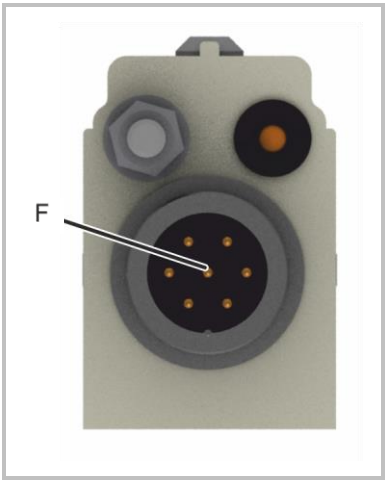


8. Connect the K6 signal cable to the K6 signal connector.

   The following functions can be used.

   - Power supply
   - External clock and reset
   - Fault message for loss of high voltage
   - Monitor signal for high-voltage monitoring

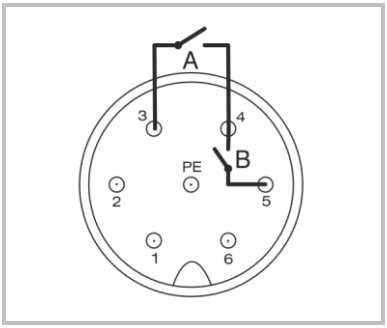
   Please note
   F = shield ground



Configuring the K6 signal connector:

A Potential-free N/O contact for external clock and reset.

B Internal potential-free relay contact (0 ohm) for fault message.



Pin	Function
1	12-24 V_{DC} input
2	Signal ground (GND)
3	Clock and reset signal
4	Signal ground, electrically isolated
5	Fault message contact
6	Monitor output 0-10 V_{DC}
PE	Shield ground

The ionisation device is ready for use.

For more information on operating the ionisation device, see *Chapter 5 – Operation*.

5 Operation

Requirements

The ionisation device has been prepared as per *Chapter 4 – Installation*. The K6 signal cable is connected to the K6 signal connector and the machine control unit.

CAUTION

Risk of electric shock!

The ionisation pins are under high voltage when in use.

- Never circumvent the operator's protective device.
- Never touch the ionisation pins during operation.
- People with pacemakers or implanted defibrillators must stay away from the ionisation device (> 0.5 m from the front).

Physical complaints caused by too much ozone at a workstation

Small amounts of ozone are generated by the corona at the ionisation pins during operation.

- Always ensure sufficient ventilation in order to not exceed ozone concentrations permitted by law.
- It is possible to obtain an expert report on ozone emissions by an ionisation system from HAUG GmbH & Co. KG.

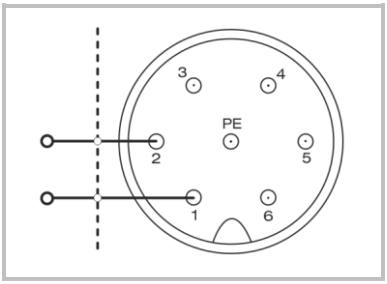
Risks due to ionisation device being faulty or tampered with

Unauthorised alterations, moisture or damage to the ionisation device may result in electric shock or present a fire hazard due to sparking.

- If there is visible damage or suspected electrical defects, take the device out of operation immediately and secure it against being restarted.
- Protect from moisture. Clean the ionisation device thoroughly after it has been wetted with liquid and leave to dry.
- Never twist or bend the ionisation device.
- Never carry out unauthorised repairs on the ionisation device.

INFORMATION:
In the event of a fault (short circuit, sparkover), switch off the power and the green LED will begin to flash. The ionisation device can be restored and restarted by using the reset function.
If the ionisation device is damaged or has any defects, please get in touch with HAUG GmbH & Co. KG.

Pin **1** (12 - 24 V_{DC}) and Pin **2** (GND) **must** be connected to the power supply.

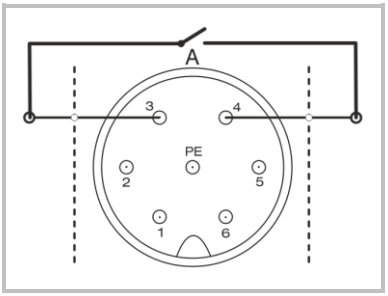


1. Switch on the power supply.
    - LED orange blinkt kurz auf, LED grün leuchtet dauerhaft.

A faint crackling can be heard from the ionisation pins.

The ionisation device is in use.

5.1 Clocking or resetting the device



Pins **3** and **4 must** be connected via a potential-free N/O contact (**A**).

1. Closing the N/O contact switches the ionisation device off (the green LED goes out).
2. Opening the N/O contact switches the ionisation device on (the green LED lights up).

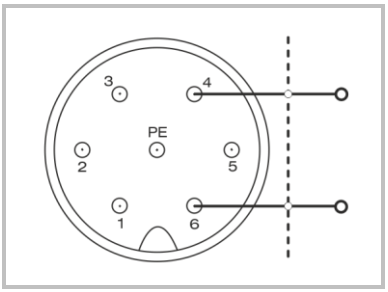
Resetting

Close the N/O contact for at least 1 s and reopen.

Clocking

Close and open the N/O contact in time (max. 1 Hz).

5.2 Monitoring the cleaning signal



The high-voltage monitor voltage is output at Pin **6** and measured against Pin **4**.

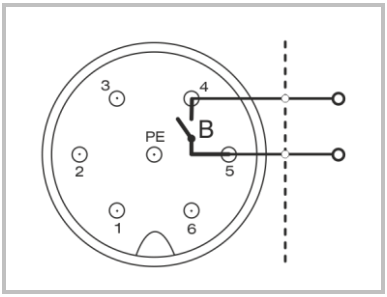
The measured 0 - 10 V_{DC} monitor voltage is analogous to the output high voltage.

Example:
A monitor voltage of 5 V_{DC} corresponds to a high voltage of ±5 kV_{DC}..

INFORMATION:
Wenn *If the monitor voltage equals or exceeds the threshold value for the required cleaning, the ionisation pins must and should be cleaned in order to eliminate the electrostatic charge. The orange LED signals: lit irregulary= maintenance and cleaning work should begin. Flashing regulary = cleaning work **must** be carried out.*

5.3 Monitoring fault messages

The monitor **must** be attached to Pin **5** (fault message contact) and Pin **4** (GND).



Short circuit, sparkover, overload
In the event of a fault, the potential-free relay contact switches through (B = 0 ohm).

- The green LED begins to flash.
- The relay contact is restored by using the reset function, see *Chapter 5.1 – Clocking or resetting the device*.
- The green LED lights up.
- If the green LED doesn't light up, rectify the error, see *Chapter 7 – Troubleshooting*.

6 Regularly maintaining the device

Requirements
The cleaning interval time – **14 days** – has been reached, see *Chapter 6.1 – Cleaning interval*.

The monitored cleaning signal immediately indicates when the cleaning interval has been carried out by means of the **orange LED lighting up** / **flashing**, *see Chapter 5.2 – Monitoring the cleaning signal*.

CAUTION

Risk of electric shock!
The ionisation pins are under high voltage when the ionisation device is switched on. This may be audible by a faint crackling sound.

- The ionisation device must always be disconnected from the mains.
- It must not be possible to accidentally switch it back on again.

CAUTION

Risk of injury!
The ionisation pins are sharp and pointy.

- Wear protective gloves (EN 388 3122) when carrying out maintenance or cleaning working on the ionisation device.

INFORMATION

Damage to the device!
Unsuitable brushes and cleaning agents may damage the ionising device.

- We recommend our cleaning accessory. See page 21.
- Use plastic fibre brush (soft hardness level).
- Use pharmaceutical alcohol.
- Never use a high-pressure cleaner.
- Never use aggressive cleaning agents (e.g. acetone, cellulose thinners, toluene, xylene, etc.)

6.1 Cleaning interval

Impurities reduce the ionisation effect of the ionisation device.
A cleaning will improve it again.

- Regularly clean the ionisation pins on the ionisation device – **every 14 days at least**.
- The higher the degree of contamination of the environment, the more frequent the cleaning interval must be.
- The cleaning duration is dependent on the type and degree of impurity.
- If the monitor voltage reaches or exceeds the threshold value for the required cleaning.

6.2 Dry cleaning

1. Switch off the ionisation device and secure it against accidentally switching back on again.
2. Remove the ionisation device from the socket or from the power supply.
3. Brush off the ionisation pins with a suitable brush.
4. Vacuum the ionisation device or blow it off with clean compressed air (max. 6 bar).
5. Plug the ionisation device back in or reattach it to the power supply.

INFORMATION:
If the result of the dry cleaning process is unsatisfactory, proceed with a wet clean.

6.3 Wet cleaning

1. Switch off the ionisation device and secure it against accidentally switching back on again.
2. Remove the ionisation device from the socket or from the power supply.
3. Moisten a suitable brush with a suitable cleaning agent. Optionally, use the special RS2 cleaning system for the cleaning.
4. Brush off the ionisation pins.
5. Blow off the ionisation device with clean compressed air (max. 6 bar) and leave to dry.
6. Plug the ionisation device back in or reattach it to the power supply.

7 Troubleshooting

⚠ WARNING

Risk of electric shock!

The ionisation device is run using an electric current and generates high electric voltage.

- Troubleshooting may only be carried out by a qualified electrician.

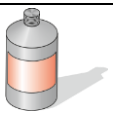
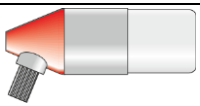
INFORMATION:
If the fault cannot rectified, please send the ionisation device to HAUG GmbH & Co. KG for inspection. (See back cover for address)

Fault	Cause	Troubleshooting measure
No ionisation	Green LED does not light up	Check the power supply.
	Green LED flashes	Carry out a reset.
	Orange LED lights up irregulary	Clean the ionisation device.
	Orange LED flashes regulary	Ionisation device **must** be cleaned.
Sparkover / short circuit	The ionisation device is contaminated with electrically conductive impurities.	Clean the ionisation device.
	The ionisation pins are too close to an electrically conductive material.	Increase the distance to this material.
Damage / defect	The ionisation device has a fault.	Take the ionisation device out of operation and replace it.

Due to strong charging, near the rod, it can lead to a false indication of the maintenance indicator.

8 Accessories / spare parts

The supplier for accessories and spare parts is your authorised sales partner or HAUG GmbH & Co. KG. (See back cover for address.)

Item	Illustration	Order number
Special cleaning agent **SRM1**		10.7220.000
Plastic fibre cleaning brush **RB3**		10.7218.003
Special cleaning system **RS1**		10.7218.001
Disk brush for special cleaning system		X – 6822
Control plug (K6)		X – 7807
5 m shielded K6 signal cable with mounted plug		06.8976.000
10 m shielded K6 signal cable with mounted plug		06.8976.001
20 m shielded K6 signal cable with mounted plug		06.8976.002
Bar holder		10.0930.000

Power Suply		On request

9 Technical data

Key data specifications (reference temperature 23 °C)

Input voltage	12 - 24 V_{DC} ± 10%
Power consumption	P_{max} = 24 W
Input current	max. 2.0 A at 12 V_{DC} max. 1.0 A at 24 V_{DC}
High voltage	±5 kV_{DC}
Max. high voltage short circuit current	I_k = 2.0 mA
Connection alternative	Signal cable K6 Power suply with control plug (K6)
Relay contact load K6 signal connector	max. 24 V_{AC}/35 V_{DC}; max. 50 mA
Maximum frequency	1 Hz

Temperature, humidity, air pressure, vibrations

Nominal operating range	+5 °C - (+45 °C)
Storage and transportation limits	-15 °C - (+60 °C)
Nominal operating range	20% - 65% relative humidity
Storage and transportation limits	0% - 85% relative humidity
Nominal operating range	810 hPa - 1074 hPa
Storage and transportation limits	max. 1.5g (10 - 55 Hz), 1 h
Impact	max. 15g in any direction

Casing dimensions, weight

Type of protection	IP54
Protection class	I
Overvoltage category	I
Contamination level	1
Height	40 mm
Width	26 mm
Length	482 mm to 2002 mm, Grid step 40 mm Special lengths on request
Weight 482 mm	0,57 kg

Pecularity

Ion Balance	predefined
Profile material	GFRP
Emitter material	Tungsten

10 Decommissioning

1. Switch off the ionisation device.
2. Disconnect the signal cable from the power supply.
3. Remove the ionisation device from the production process.

10.1 Storage

Always store our products in a cool, dry place.

10.2 Disposal

Never dispose of electrical devices in the household waste. Always collect them separately and recycle them in an environmentally friendly manner. Always follow national and regional waste disposal regulations when disposing of electrical devices.

If it is not possible to dispose of our products properly, it may be possible to send them to us. We dispose of our products in an environmentally friendly manner. See back cover for address.

Notes:

made by HAUG®

HAUG GmbH & Co. KG

Friedrich-List-Straße 18
D-70771 Leinfelden-Echterdingen
Telefon: +49 711 / 9498-0

www.haug.de

E-Mail: sales@haug.de

HAUG Biel AG

Johann-Renfer-Strasse 60
CH-2500 Biel-Bienn 6
Telefon: +41 32 / 344 96-96

www.haug.swiss
E-Mail: info@haug.swiss

Ion Beam DC ultra compact v02gb.docx

V02 • 07.02.2023 • D - 1046 - GB