

GB



®

Operating instructions

Discharging power pack Multistat Ex SDN

Ident number: 01.7960.000 (230 V), 01.7961.000 (115 V)



Ex Line

Keep for future use!



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1 Operator instructions

Before installation and commissioning read these operating instruction in full. Always observe the safety instructions. These operating instruction is a part of the product; make sure you retain them for later use or subsequent owners.

The power pack is installed outside the EX-hazardous zone.

The discharging power pack is maintenance free and operationally safe when used as intended.

The term “high voltage” is abbreviated HV in these operating instructions (e.g. HV terminal).

The illustrations in this document are a simplified representation of the product. They render only the technical facts and provide support for the text. Departures from the actual product may be noticeable. However, these deviations neither reduce the proper function nor mitigate the specifications of the product.

1.1 Symbols used in operating instructions

 **WARNING**

Always observe this safety instruction to avoid critical or fatal injuries.

NOTICE

Always observe this safety instruction to avoid damage to property.

NOTE:

Important notes and additional information.



Never dispose of with household garbage.

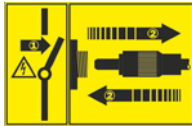


General hazard!

1.2 Symbols on the discharging power pack



WARNING!
High voltage



ATTENTION!
Only plug in/unplug the ionizing unit at the HV terminal when the discharging power pack is switched off.

2 Safety

Only the persons authorized by the operator may carry out tasks on the discharging power pack.

The installer must be a trained and qualified electrician and be acquainted with the construction rules and country-specific installation regulations for areas with potentially explosive atmospheres. He must read the operating instructions in full. The operator must read the operating instructions in full.

When working on the discharging power pack, switch off the voltage supply and secure against inadvertent switching on.



Hazards caused by manipulated or faulty discharging power pack

Unauthorized modifications, moisture or damage to the discharging power pack may result in electric shocks or fire hazards due to sparking.

- For reasons of safety, never open or modify the discharging power pack.
- In the event of visible damage or suspected electrical defects, take the discharging power pack out of operation immediately and secure against inadvertent reuse.
- Protect the discharging power pack from moisture.
- Never carry out any unauthorized repairs to the discharging power pack.
- Always switch off the discharging power pack after use.
- Do not keep any inflammable materials in the vicinity of the discharging power pack or its components.



Damage to device and risk of fire

Short circuits can occur as a result of soiling in the high-voltage (HV) connection point. This can lead to faults with the discharging power pack and cause a fire.

- The high-voltage connections and plugs must be clean, dry and free of grease.
- Use blind plugs to protect the unused HV connection points against environmental influences. Ensure that the blind plugs are clean, dry and free of grease.

2.1 Intended use

⚠ WARNING**Risk of explosion!**

The discharging power pack may generate sparks which ignite gases, dust or similar substances.

- Never install or use the discharging power pack in areas with potentially explosive atmospheres.
-

NOTE:

An operating authorization (ATEX) exists for the discharging power pack. Only the HAUG Ex ionizing units listed in the operating authorization must be connected. If other units are connected, the operating authorization will become null and void.

The discharging power pack is intended exclusively for the supply of alternating high voltage to HAUG ionizing units with X-2000 connector for use in potentially explosive atmospheres. In combination with an ionizing unit for use in potentially explosive atmospheres, electrostatic charges are neutralized in a production process.

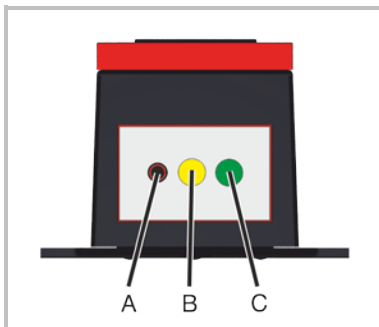
Always observe the installation and operating conditions indicated in these operating instructions.

Warranty only covers products, accessories or spare parts of HAUG GmbH & Co. KG.

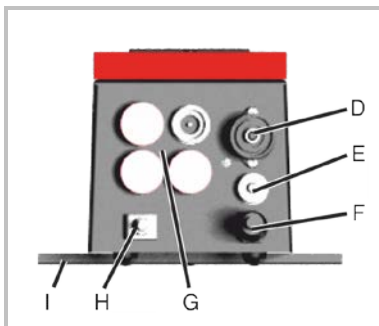
3 Product overview

Multistat Ex SDN

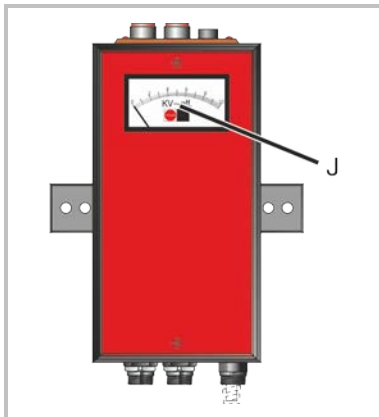
- A fuse holder with fuse
(Replacing fuse, refer page 20)
- B Reset button with fault lamp
- C Power switch (is lit green if the power pack is switched on)



- D K1 signal socket (for monitoring functions)
- E K6 signal socket (external resetting, HV monitoring)
- F Mains power input
- G 4 HV connection points
- H Earth connection point (terminal)
- I Retainer plate



- J HV display



4 Install

WARNING

Risk of explosion!

The discharging power pack may generate sparks which ignite gases, dust or similar substances.

- Never install or use the discharging power pack in areas with potentially explosive atmospheres.
 - Always observe the erection stipulations and country-specific installation regulations for potentially explosive atmospheres.
-

WARNING

Electric shock hazard!

An electric shock hazard results from a faulty connection of the discharging power pack to the power supply.

- The discharge power pack may only be installed by a trained and qualified electrician.
-

NOTICE

Damage to equipment!

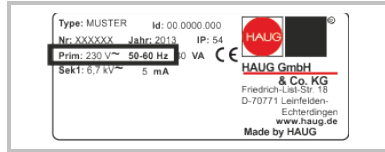
Continuous overloading of the discharging power pack may result in failures.

- Never exceed the permissible connected length.
 - Never install the discharging power pack on a surface generating or radiating heat.
 - Never install at a location subject to direct solar irradiation.
-

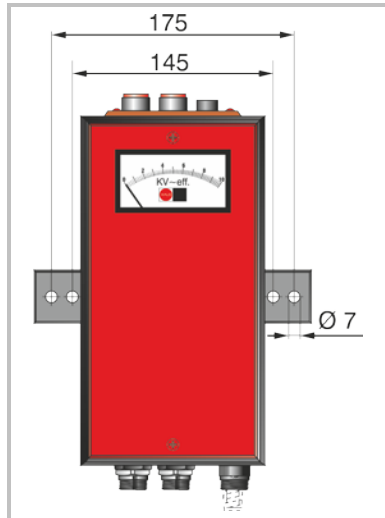
NOTE:

An operating authorization (ATEX) exists for the discharging power pack. Only the HAUG Ex ionizing units listed in the operating authorization must be connected. If other units are connected, the operating authorization will become null and void.

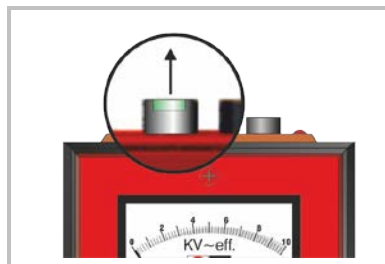
1. Check the model plate of the discharging power pack against the ordering data. In the event of damage to the discharging power pack, contact HAUG GmbH & Co. KG.
2. Before connecting, make sure that the correct supply voltage is available for the discharging power pack.
 - The model plate attached to the housing indicates the voltage.
 - If the supply voltage is incorrect, the discharging power pack may be damaged.



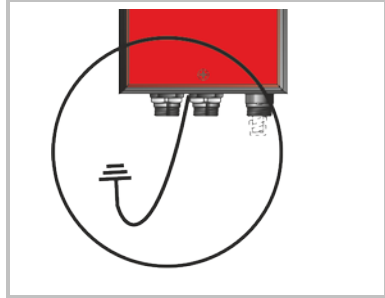
3. Place the discharging power pack at the desired location and attach with the enclosed retaining plate, if appropriate.
 - The operation of the discharging power pack is not affected by the position in which it is installed.
 - We recommend installing the discharging power pack with the HV terminals pointing downwards (to protect them from moisture, oil and dirt).



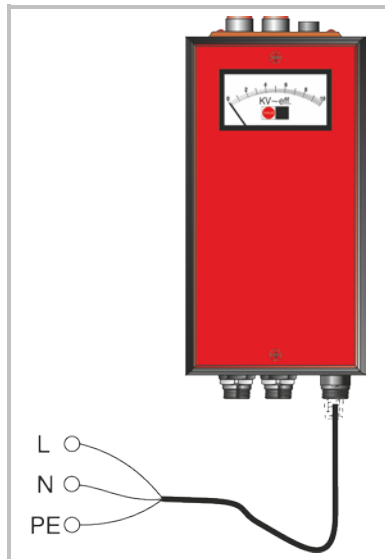
4. Ensure that the discharging power pack is switched off.



5. The ground socket of the discharging power pack must be connected to ground potential in line with applicable standards.
- Grounding cables of at least 1,5 mm² must be used.



6. Connect the discharging power pack to the supply voltage. Always connect the protective earth conductor (green-yellow) with a functioning protective earth of the mains.
- Connecting the PE conductor via parts of a machine body is insufficient.
 - L = brown conductor
 - N = blue conductor
 - PE = green/yellow conductor



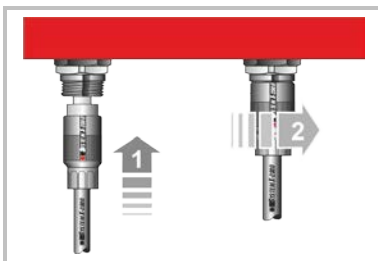
NOTICE Contact and separation spark-overs!

When the ionizing unit is plugged in or unplugged while the discharging power pack is switched on, spark-overs will occur at the HV connection. This may result in defects in the discharging power pack.

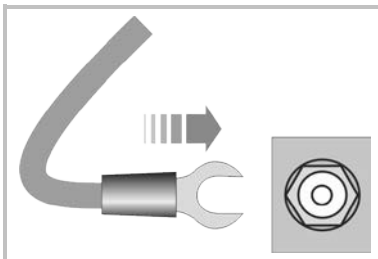
- Switch off discharging power pack before plugging in/unplugging ionizing unit.

7. Connect the ionizing unit to the HV terminal of the discharging power pack.

- Insert the ionizing unit's HV plug in the HV terminal of the discharging power pack and press the HV cable until it reaches the stop.
- Screw the screw cap onto the HV terminal and tighten by hand.



8. It is essential that the grounding strap of the HV plug is connected to the grounding terminal of the power pack.

**NOTE:**

Compliance with maximum connection length specifications is required.

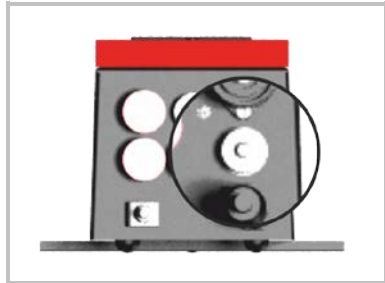
Use blind plugs to protect the unused HV connection points against environmental influences. Ensure that the blind plugs are clean, dry and free of grease.

NOTICE Damage to equipment!

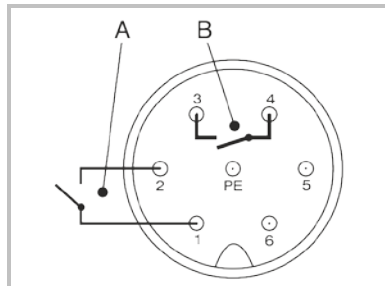
Destructive electrical charges on the contacts of the K6 signalling socket during the connection of the K6 signalling line may result in defects in the discharging power pack.

- To protect the electronic system of the unit, self-discharge shall be ensured by means of contact with grounded machine parts.

9. If necessary, connect the signal line K6 to the K6 signal socket.
- Reset the power pack externally.
 - These HV connections must be monitored.
 - Relay contact load:
max. 24 V~ / 35 V=,
max. 50 mA

**Configuration of the K6 signal socket:**

- A External reset (floating normally open contact)
B Relay contact HV failure

**Switching condition table for pin 3 and 4**

	Operating conditions		Contacts 3 and 4 closed
	Mains voltage is available	HV is available	
Normal mode	Mains voltage is available	HV is available	no
Internal fault	Mains voltage is available	HV failure	yes
External fault	Power failure	Not defined	no

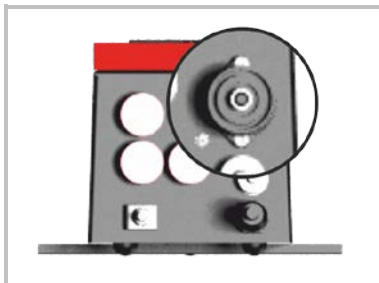
NOTICE Damage to equipment!

Destructive electrical charges on the contacts of the K6 signalling socket during the connection of the K6 signalling line may result in defects in the discharging power pack.

- To protect the electronic system of the unit, self-discharge shall be ensured by means of contact with grounded machine parts.

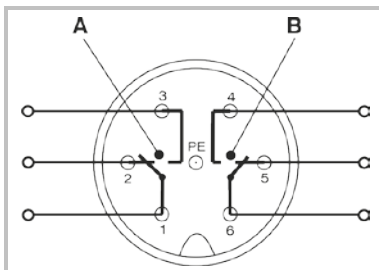
10. If necessary, connect the signal line K1 to the K1 signal socket.

- Monitoring the function of the power pack.
- Relay contact load:
max. 24 V~ / 35 V=,
max. 50 mA



Configuration of the K1 signal socket:

- A Relay contact for power failure
B Relay contact for operational failure



Switching condition table for the K1 signal socket

	Operating conditions		Contacts closed	
	Mains voltage is available	HV is available	1 and 3	5 and 6
Normal mode	Mains voltage is available	HV is available	1 and 3	5 and 6
internal fault	Mains voltage is available	HV failure	1 and 3	4 and 6
external fault	Power failure	not defined	1 and 2	5 and 6

More information in chapter "Using the K1 signal socket for the operation" on page 17.

11. The discharging power pack is ready for operation.

5 Operate

Preconditions:

The discharging power pack and the ionizing unit are connected and installed as specified in the operator instructions.

NOTE:

After a fault has occurred, the error lamp starts blinking. The power pack switches off the HV.

The following occurrences may have triggered the fault:

- *The high-voltage on the HS output has dropped below ~ 4.2 kV.*
- *A flashover in the ionisation system may have been the cause.*
- *A short circuit in the ionisation system may have been the cause.*

Resetting the power pack is effected by triggering a reset. If a fault persists, follow the instructions in the Chapter "Troubleshooting". Refer page 19.

5.1 Normal operation

Operating the power pack without monitoring it. K1 and K6 signal sockets are not connected.

1. Use the power switch to turn on the power pack.
 - To verify this, the green power switch is illuminated.
 - The HV output voltage is indicated on the HV display of the power pack.
 - The power pack is running.

NOTE:

The flashing of the error indicator lamp indicates a defect. The discharging power pack can be reset by pressing the reset pushbutton. If the defect persists, refer to the following chapter "Troubleshooting". Refer page 19.

5.2 Using the K6 signal socket for the operation

Connecting the signal line K6 (accessory) to the K6 signals socket is mandatory.

1. Use the power switch to turn on the power pack.
 - To verify this, the green power switch is illuminated.
 - The HV output voltage is indicated on the HV display of the power pack.
 - The power pack is running.
2. If an error occurs, pins 3 and 4 have continuity at the K6 signal socket and the HV is switched off.
 - The error lamp is blinking.
3. The HV can be switch on again by proceeding with a reset.
 - To execute the external reset, close the potential-free normally open contact (> 0.5 s) briefly.
 - For a manual reset, simply press the reset button.

NOTE:

An error indication over the K6 signalling socket will indicate a fault. The discharging power pack can be reset by triggering the external reset. If the defect persists, refer to the following chapter "Troubleshooting". Refer page 19.

5.3 Using the K1 signal socket for the operation

Connecting the signal line K1 (accessory) to the K1 signals socket is mandatory.

1. Use the power switch to turn on the power pack.
 - To verify this, the green power switch is illuminated.
 - The HV output voltage is indicated on the HV display of the power pack.
 - The power pack is running.
2. If a fault occurs, the HV is switched off.
 - The error lamp is blinking.
 - The signal line K1 can be used to evaluate an error message. Refer page 18 "Application example of a K1 signal socket".
3. The HV can be switch on again by proceeding with a reset.
 - To execute the external reset, close the potential-free normally open contact (> 0.5 s) briefly. Only possible if a potential-free normally open contact is connected via the K6 signal socket.
 - For a manual reset, simply press the reset button.

NOTE:

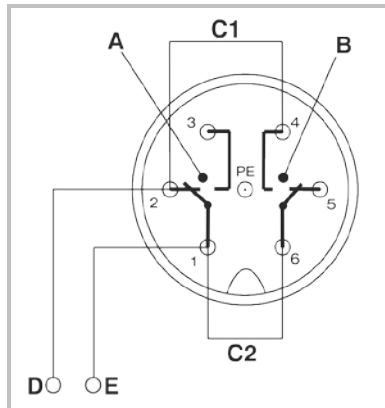
A error message via the K1 signal socket indicates a fault. Resetting the power pack is effected by triggering a reset. If a fault persists, follow the instructions in the Chapter "Troubleshooting". Refer page 19.

5.4 Application example of a K1 signal socket

Example 1:

- A Relay contact for mains failure
- B Relay contact for HV failure

- C1 Bridge 1
- C2 Bridge 2
- D Output
- E Input

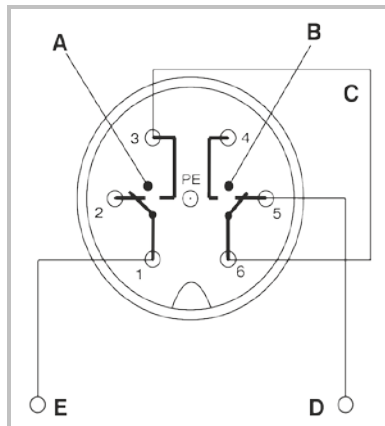


High-voltage	Continuity (D and E)
Normal operation	no
Malfunction	yes

Example 2:

- A Relay contact for mains failure
- B Relay contact for HV failure

- C Bridge
- D Output
- E Input



High-voltage	Continuity (D and E)
Normal operation	yes
Malfunction	no

6 Troubleshooting

WARNING

Electric shock hazard!

The discharging power pack is operated electrically and generates a high electric voltage. In the event of any faults, there is a risk of an electric shock.

- Faults may only be eliminated by a trained and qualified electrician.

NOTE:

If the error cannot be removed in this way, return the discharging power pack and ionizing unit for checking to HAUG GmbH & Co. KG (the address is provided on the back of the envelope).

Fault	Cause	Troubleshooting
Ionization not available	Power failure	Inspect the power fuse
	HV not available	Check the fuse of the discharging power pack.
		Inspect the connections on the discharging power pack.
		Use the Combicheck to verify the HV output of the discharging power pack. (Accessories/spare parts, refer page 23)
Error lamp blinks or error message	The discharging power pack is damaged	Shut down the discharging power pack immediately and secure it to prevent unintentional restart.
	Ionizing unit is dirty	Clean ionizing unit
	Short circuit	Proceed with the work steps according to the flow diagram shown below. Refer page 21.
	Flashover	Proceed with reset

6.1 Replacing fuse

NOTICE

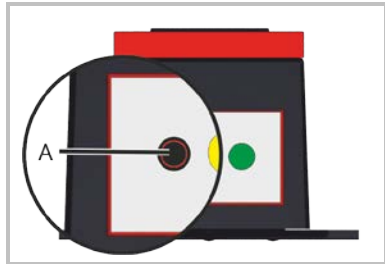
Damage to equipment!

An incorrect fuse in the discharging power pack may cause a defect. This may result in a cable fire.

- Only use fuses of the specified type.
- Never use repaired fuses.
- Never bridge the fuse.

The unit type and the rated voltage are indicated on the nameplate.

1. Disconnect discharging power pack from supply.
2. Determine and remove the cause for the blown fuse.
3. Detach the fuse holder (A) using a screwdriver and lift out.
4. Replace fuse and reattach fuse holder.

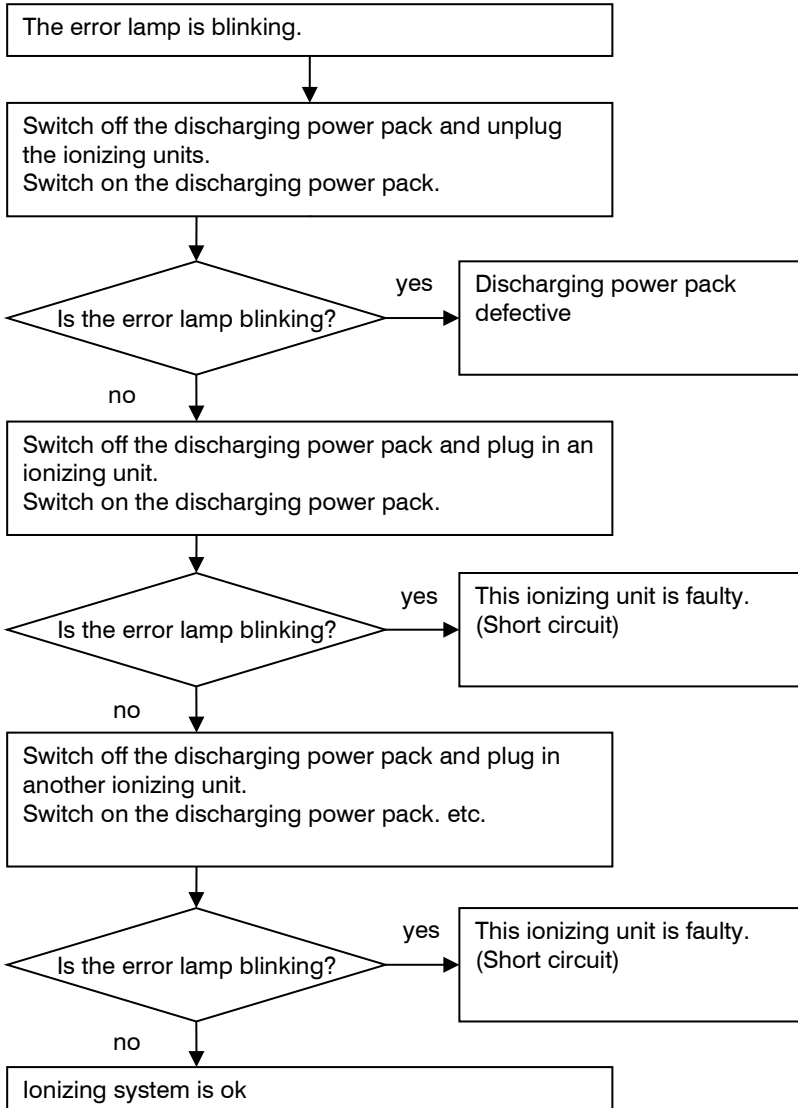


Use the following fuse only:

- 115 V = 0,50 A slow, 5 x 20 mm
- 230 V = 0,25 A slow, 5 x 20 mm

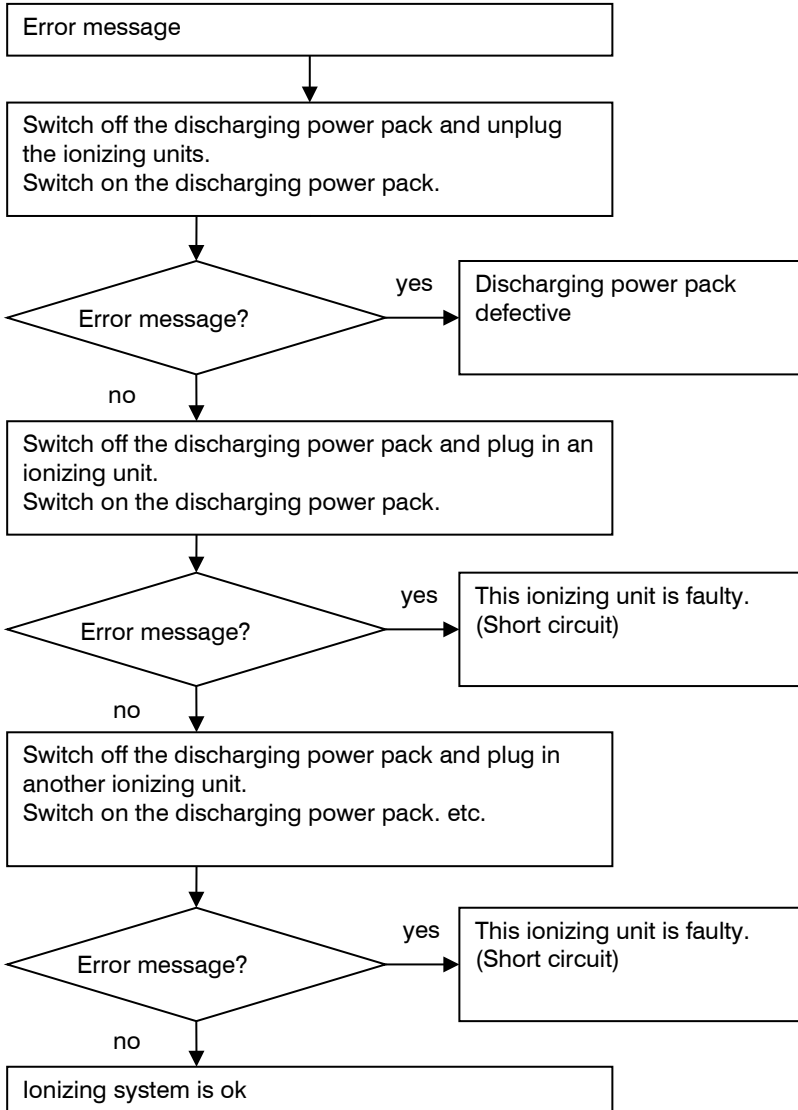
6.2 Flow diagram 1

Proceed with troubleshooting of all components exclusively outside of the Ex zone.






6.3 Flow diagram 2

Proceed with troubleshooting of all components exclusively outside of the Ex zone.







7 Accessories/spare parts

Accessories and spare parts can be sourced from your authorized sales partner or directly from HAUG GmbH & Co. KG (the address is provided on the back of the envelope).

Article	Illustrations	Order number
Circular plug (K1)		X – 0616
Right-angle plug (K1)		X – 5718
5 m shielded signalling line K1 with assembled plug		06.8941.000
10 m shielded signalling line K1 with assembled plug		06.8941.001
20 m shielded signalling line K1 with assembled plug		06.8941.002

7 Accessories/spare parts

Article	Illustrations	Order number
Control plug (K6)		X – 7807
5 m shielded signalling line K6 with assembled plug		06.8976.000
10 m shielded signalling line K6 with assembled plug		06.8976.001
20 m shielded signalling line K6 with assembled plug		06.8976.002
Combicheck		12.7231.000
Blind plug for HV terminals		X – 3521

8 Technical data

8.1 Characteristics and specification

Reference temperature 23 °C

HV terminals	4
High-voltage	6,7 ± 1 kV~
Short-circuit current	$I_k < 5 \text{ mA}$
Maximum connected length	18 m (ionizing bar + HV cable)
Reset pulse	> 0,5 s
Cannot be used in pulsed mode	
Relay contact rating K1/K6 signalling socket	max. 24 V~/35 V=; max. 50 mA
Switching threshold for HV	< 4,2 kV
Switching threshold for mains failure	< 50 V

8.2 Supply voltage

Unit type	Nominal value	Frequency range	Power input
01.7960.000	230 V~ ± 10 %	50 – 60 Hz	$P_{\text{max}} = 80 \text{ VA}$
01.7961.000	115 V~ ± 10 %	50 – 60 Hz	$P_{\text{max}} = 80 \text{ VA}$

8.3 Ambient conditions

Never use in potentially explosive atmospheres.	
Use indoors only.	
Temperature:	
Rated range of use	+5 to 45°C
Limit range for storage and transport	-15 to 60°C
Relative humidity (RH):	
Rated range of use	20% to 65% RH
Limit range for storage and transport	0 % to 85 % RH
Compressed air:	
Rated range of use	810 hPa to 1074 hPa
Vibrations:	
Limit range for storage and transport	max. 1.5 g (10 to 55 Hz), 1 h
Impact	max. 15 g in each direction
Recommended position for operation:	HV connections pointing downwards

8.4 Housing

Protection type	IP 54
Protection class	I
Mains supply	approx. 2,6 m fixed on unit
Dimensions:	
Height	245 mm
Width	130 mm
Depth	130 mm
Weight:	
	5 kg

9 Taking out of operation

WARNING

Electric shock hazard!

The discharging power pack is operated electrically and generates a high electric voltage. Improper decommissioning may result in electric shock.

- Decommissioning may only be carried out by a trained and qualified electrician.
-

1. Disconnect discharging power pack from supply.
2. Disconnect the mains line from the voltage supply.
3. Disconnect the ionizing unit from the HV terminal.
4. Disconnect the signalling line from the discharging power pack.
5. Remove the discharging power pack from the production process.

9.1 Storing

Always store our products in a dry and cool place.

9.2 Disposing



Never dispose of electrical appliances together with household garbage.

Always collect separately and dispose of in an environmentally responsible way. Always observe national and regional waste disposal regulations for the disposal of electrical appliances.

If proper disposal of our products is not possible, returning the units to us may be an option. We dispose of our products in an environmentally responsible way. The address is provided on the back of the envelope.



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EU-Konformitätserklärung

EU-Declaration of Conformity
UE Déclaration de conformité

Die Firma, The company, La société

HAUG GmbH und Co. KG
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erklärt in alleiniger Verantwortung, dass das elektrische Betriebsmittel
declares hereby in sole responsibility, that the electrical product
déclare de sa seule responsabilité, que le produit électrique

Multistat Ex SDN

in Verbindung mit den Serien der Ionisationsgeräte
with the series of the ionizing devices
avec les séries des appareils d'ionisation

EI Ex T, EI Ex T TPE, EI Ex NT, EI Ex NT TPE,
EI Ex II, EI Ex NH, EI PHS Ex, REF Ex,
RI Ex O, RI Ex O TPE, RI Ex M, RI Ex M TPE, RI Ex V, RI Ex V TPE,
LS Ex, KL Ex, KM Ex, AK Ex, LM Ex, SC Ex

mit den folgenden Richtlinien übereinstimmend:
is in conformity with the following directives:
est conforme aux directives suivants:

Niederspannungsrichtlinie Low voltage directive Directive sur les basses tensions	2014/35/EU	EN 61010-1:2010
EMV Richtlinie Electromagnetic compatibility Compatibilité électromagnétique	2014/30/EU	EN 61000-6-2:2005 EN 61000-6-4:2007+A1:2011
ATEX Richtlinie im Ex-Bereich Norm ATEX explosive atmospheres Normes ATEX atmosphères explosives	2014/34/EU	

Leinfelden-Echterdingen, 2.1.2019

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Personlich haftender Geschäftsführer: HAUG 03 mit H
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