Operating instructions
EN 70 / EN 70 LC / EN 70 RLC

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Static Line

V03

Types:	EN 70	100 / 115 / 200 / 230 V
	EN 70 LC	100 / 115 / 200 / 230 V
	EN 70 RLC	100 / 115 / 200 / 230 V

Keep in a safe place for future reference!

Contents

1 Notes on operating instructions

In these operating instructions, the power pack EN 70 / EN 70 SL / EN 70 RLC is also referred to as "unit".

1.1 Pictorial markings used

In these operating instructions

Caution!
Important instructions!

Danger!
High voltage!
Danger of fatal accidents!
Do not open unit!

Only plug in/unplug coaxial connector when the unit is switched off!

In the operating instructions and on the unit

Danger!
High voltage!
Danger of fatal accidents!
Do not open unit!

Only plug in/unplug coaxial connector when the unit is switched off!

2 Safety

The unit is operationally safe, provided that it is operated in accordance with its intended use.
In case of misuse, dangers may result:
- For life and limb of the operator,
- For the unit and other assets.

Also note Chapter 4.1 (Important installation notes).

Special safety instructions apply to operators with heart pacemakers; please apply to HAUG for details!

2.1 Intended use

The unit is intended exclusively for the high-voltage supply of HAUG ionizing units.
It generates an alternating high tension of approx. 7 – 8 kV.
It is intended, in connection with an ionizing unit, for the removal of electrostatic charges from, for example, glass, paper, plastics etc.

Do not install or use the unit in areas subject to explosion hazards.

For reasons of safety, unauthorized conversions and modifications of the unit are not permitted.
The installation and operating conditions indicated in these Operating Instructions must be adhered to.

2.2 Danger sources

Defective high-voltage terminals and cables may lead to danger of electric shocks. Shut down the unit immediately in case of visible damage and suspected electrical defects.

Danger!
High voltage!
Danger of fatal accidents!
Do not open unit!

Only plug in/unplug coaxial connector when the unit is switched off!

2.3 Installer qualifications

The charging electrode may be installed and put into operation by trained electricians only. The above mentioned persons must have read the operating instructions and must follow the instructions, notes and safety advice.

2.4 Operator qualifications

The unit may be maintained and put into operation by trained electricians only or by authorized persons informed about the potential dangers. The above mentioned persons must have read the operating instructions and must follow the instructions, notes and safety advice.

3 Design, operating elements

Figure 1

1. Fuse (for replacement refer to Section 7.1)
2. Signalling lamp
   (only applies to EN 70 LC / EN 70 RLC)
3. ON/OFF switch: switch lights up green
   when the unit is switched on.

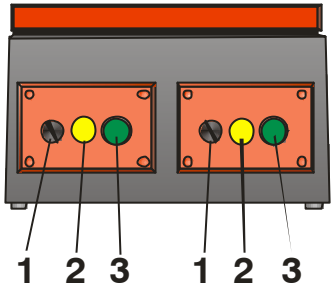


Figure 1

Figure 2

4. 4 High-voltage terminals
5. Signalling terminal (only applies to EN 70 RLC)
6. Ground connection
7. Mains cable

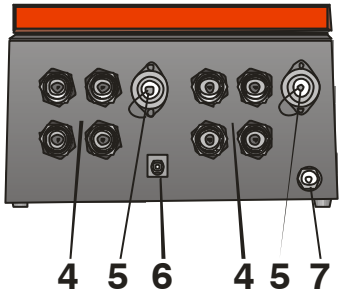


Figure 2

4 Installation

The charging electrode may be installed and put into operation by trained electricians only. The above mentioned persons must have read the operating instructions and must follow the instructions, notes and safety advice.

4.1 Important installation instructions

The operation of the unit is not affected by its position.
However, we recommend installing the unit so that the high-voltage terminal points downwards (to protect it from humidity, oil and dirt).

Do not place the unit on a surface generating or radiating heat. Avoid installation positions exposed to direct sunlight.

Only plug in/unplug coaxial connector when the unit is switched off!

4.2 Setting up, connecting

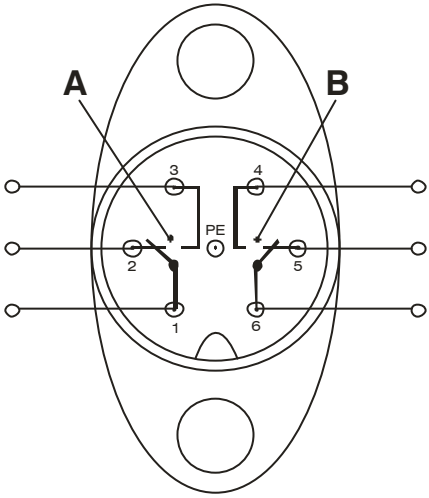
1. Before connecting always check that the unit is suitable for the local mains voltage (the voltage is indicated on the name plate). The unit will be destroyed if used with wrong mains voltage.
2. Attach unit at the desired location using the enclosed retaining plates.
3. Ensure that the power pack is switched off (ON/OFF switch).
4. Connect ionizers to high-voltage terminals.
5. Connect the PE conductor (green-yellow) with the protective earth of the mains. Connecting the PE conductor via parts of a machine body is insufficient.
6. Connect signalling lead K1.
7. Connect the unit to the mains.
8. Put unit into operation.

Please note in general:

Only plug in/unplug coaxial connector when the unit is switched off!

4.3 Signal terminal for EN 70 RLC

Figure 3
Connection of monitoring
- Connect the plug connector for the external signalling unit in accordance with the following assignment plan.
  A Relay contacts power failure
  B Relay contacts operational failure
- Plug in connector for external signalling unit.
- The power pack indicates mains and operational failures.



Contact load max. 24 VAC / 35 VDC, max. 50 mA

Figure 3

Output states:

	Operating conditions		**Contacts closed**	
Normal operation	Mains voltage present	High voltage present	1 and 3	5 and 6
Internal fault	Mains voltage present	High voltage failure	1 and 3	4 and 6
External fault	Mains failure	Not defined	1 and 2	5 and 6

Contact load: max. 24 VAC / 35 VDC, max. 50 mA

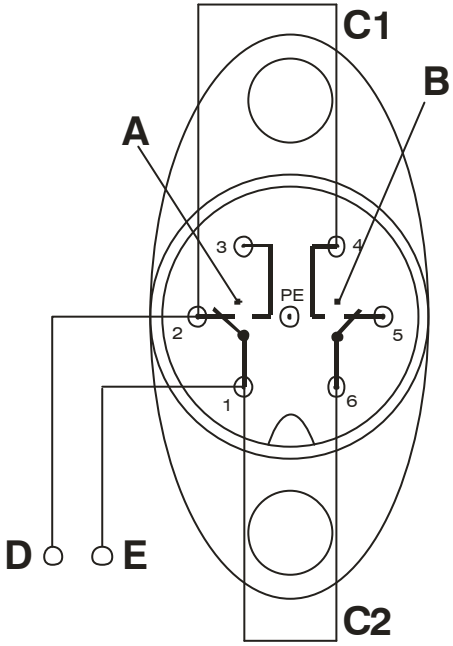
Application examples:

There is only one signalling output indicating a signal in case of any internal or external fault.

Optional connection: E. g. to PLC

Figure 4

A: Relay contact for mains failure
B: Relay contact for high voltage failure
C1: Bridge 1
C2: Bridge 2
D: Output
E: Input



Contact load max. 24 VAC / 35 VDC, max. 50 mA

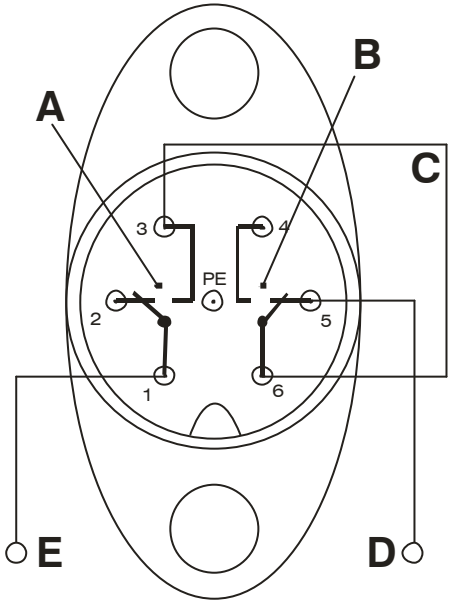
Figure 4

Output states:

High voltage	Continuity
Normal operation	no
Malfunction	yes

Figure 5

A: Relay contact for mains failure
B: Relay contact for high voltage failure
C: Bridge
D: Output
E: Input



Contact load max. 24 VAC / 35 VDC, max. 50 mA

Figure 5

Output states:

High voltage	Continuity
Normal operation	yes
Malfunction	no

5 Application

Preconditions:
The power pack and the ionizing unit must be correctly connected.

The unit may be put into operation by trained electricians only or by persons instructed in the potential dangers. The above mentioned persons must have read the operating instructions and must follow the instructions, notes and safety advice.

5.1 Putting into operation

1. Switch on the unit using the ON/OFF switch (see Fig. 1).

2. In case of defects, the signalling lamp will flash (only applies to EN 70 LC / EN 70 RLC) (refer to " Remedy of defects ").

6 Remedy of defects

Any remedy of defects must be carried out by trained electricians only. The above mentioned persons must have read the operating instructions and must follow the instructions, notes and safety advice.

In case of defects regarding the power pack and the ionizing unit, please check for correct installation and fusing first (for replacement, refer to Chapter 7.1). If this does not solve the problem, please return the power pack together with the ionizing unit for examination.

Danger!
High voltage!
Danger of fatal accidents!
Do not open unit!

Only plug in/unplug coaxial connector when the unit is switched off!

7 Maintenance and repairs

Danger!
High voltage!
Danger of fatal accidents!
Do not open unit!

This unit does not include any parts which can be maintained or repaired by the operator. HAUG only is authorized to repair or calibrate the unit.

Should the unit prove defective or if a defect is suspected, switch off unit immediately and secure against subsequent reuse.

7.1 Changing the fuse

1. Switch off unit.
2. Determine and remove the cause of the blown fuse.
3. Detach the fuse holder using a screwdriver and lift out.
4. Replace fuse and reattach fuse holder.

Use the following fuses only:

Unit type	Supply voltage	Fuse
EN 70 / EN 70 LC / EN 70 RLC	100 / 115 V	0,50 A slow; 5x20 mm
EN 70 / EN 70 LC / EN 70 RLC	200 / 230 V	0,25 A slow; 5x20 mm

The unit type and the rated voltage are indicated on the nameplate.
Only use fuses of the type indicated.

7.2 Accessories EN 70 RLC

Circular plug			X – 0616
Right-angle plug			X – 5718
Signalling line K1 (incl. plug, assembled)	5 m	shielded	06.8941.000
Signalling line K1 (incl. plug, assembled)	10 m	shielded	06.8941.001
Signalling line K1 (incl. plug, assembled)	20 m	shielded	06.8941.002

8 Technical data

8.1 Characteristics and specification

(Reference temperature 23 °C).

High-voltage terminals	2 x 4 HAUG high-voltage terminals	
High voltage	U = approx. 7 - 8 kV	
Short-circuit current	EN 70	Ik < 5 mA
	EN 70 LC	Ik < 5 mA
	EN 70 RLC	Ik < 5 mA
Connected load	EN 70	2 x max. 18 m
	EN 70 LC	2 x max. 18 m
	EN 70 RLC	2 x max. 18 m
Signalling terminal (only applies to EN 70 RLC)	Contact load max. 24 VAC / 35 VDC, max. 50 mA	

Cannot be used in pulsed mode

8.2 Supply voltage

Type	Nominal value	Operating range	Frequency range	Power input
EN 70 / EN 70 LC / EN 70 RLC	100 / 115 / 200 / 230 VAC	±10 %	50 - 60 Hz	Pmax = 160 VA

Always connect the PE conductor (green/yellow conductor) to the protective earth of the mains!

8.3 Ambient conditions

Ambient temperature:	
Rated application range	+5 °C to +45 °C
Extreme range for storage and transport	-15 °C to +60 °C
Humidity:	
Rated application range	20 % to 65 % RH
Extreme range for storage and transport	0 % to 85 % RH
Air pressure:	
Rated application range	800 mbar to 1060 mbar
Vibrations:	
Extreme range for storage and transport	max. 1,5 g (10 to 55 Hz), 1 h shock: max. 15 g in each direction
Recommended service position	vertical, supply cable downwards

8.4 Housing

Degree of protection	IP 54
Protection class	I
Connection to supply voltage	approx. 2,6 m fixed on unit
Dimensions:	
Height	approx 230 mm
Width	approx 245 mm
Depth	approx 130 mm
Weight	approx 8,5 kg

made by

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