

Operating Instructions



F01033y

Discharging System BASIX

Series ES47 Power Supplies for AC Operation

BA-en-2075-1807



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Dear Customer,

The ES47 high voltage power supplies are power supply units for the series R47 AC discharging bars, the R36 ion blower nozzles and the ion blower heads R55.

The discharging bars and the ES47 power supply are used mainly in cases where disruptive static charges on fast-moving material webs impair production processes and need to be eliminated.

The ES47 power supply features the following characteristics:

- 4 high voltage outputs
- stable 5 kV AC output voltage
- small dimensions
- easy installation
- stable design in IP54

Please read the operating instructions carefully before starting the instrument. This will help you prevent personal injuries and damage to property.

Please give us a call if you have any suggestions, proposals or ideas for improvements. We greatly appreciate the feedback from the users of our appliances.

1. Outline of appliance Power Supply ES47

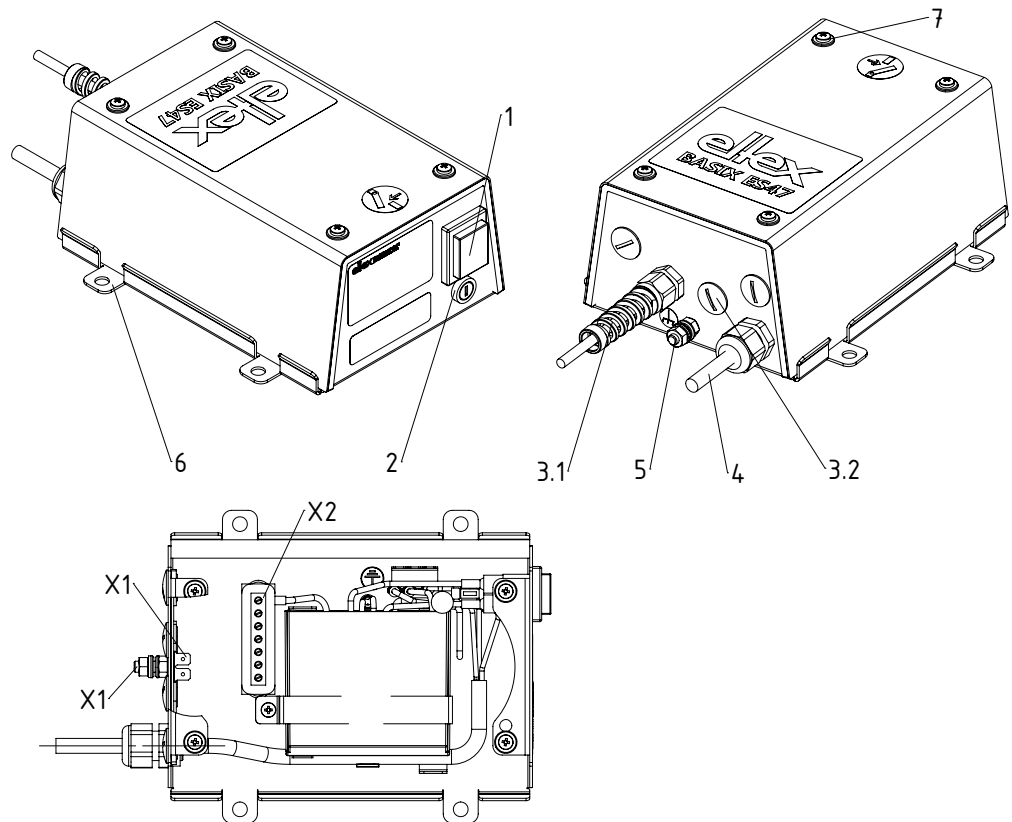


Fig. 1:
*ES47 high voltage
 power supply for
 AC operation*

- 1 ON/OFF switch (ON = lit)
- 2 Fuse (type: see type plate)
- 3 High voltage connections (4 pcs.)
 - 3.1 Shown with high voltage plug connected
 - 3.2 Shown as delivered
- 4 Supply voltage conductor
- 5 Ground connection
- 6 Mounting lug
- 7 Mounting bolts housing cover
- X1 Ground connection / protective ground
- X2 High voltage base plate

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2. Safety

The ES47 Power Supplies have been designed, built and tested using state-of-the-art engineering, and have left the factory in a technically and operationally safe condition. If used improperly, the units may nevertheless be hazardous to personnel and may cause injury or damage. Read the operating instructions carefully and observe the safety instructions.

Always observe the rules and regulations applying in your country with reference to opening and repairing electrical appliances.

The manufacturers will not assume any liability and warranty if the units are used improperly or used outside the intended purpose.

2.1 Proper use

The ES47 Power Supplies may be operated only in connection with the Eltex R47 discharging bars, the R36 ion blower nozzles and the R55 ion blower heads for AC operation.

Modifications or changes made to the power supplies are not permitted.

Use only original Eltex spare parts and equipment.

2.2 Identification of risks and hazards

Possible risks and hazards resulting from the use of the power supplies are referred to in these operating instructions by the following symbols:



Warning!

This symbol appearing in the operating instructions refers to operations which, if carried out improperly, may result in serious personal injuries.



Caution!

This symbol appearing in the operating instructions refers to operations which, if carried out improperly, may result in damage to property.

2.3 Work and operational safety



Warning!

Carefully observe the following notes!

- Before starting the unit make sure that the appliance is permanently grounded via the ground connection (5, Fig. 1). The ground cable should have a minimum cross section of 1.5 mm².
- Check the power supplies and the discharging bars at regular intervals for any damage to the electrical wiring and the high voltage cables. Any damaged components must be repaired professionally or replaced before continuing to operate the units.

- Before carrying out repairs, cleaning or maintenance work involving the power supplies and the discharging bars, switch off the power supply and disconnect the mains power supply.
- Any repair, maintenance or cleaning work must be carried out by qualified personnel.
- If the housing cover is removed, contact protection is no longer effective. Always disconnect the power before opening the power supply units.
- The protection class IP 54 only applies if the housing cover is closed and the cable connections are shrouded.
- Connect/disconnect the discharging bars only if the power supply unit is switched off and the electrical supply is disconnected.
- Please note the maximum total lengths of the bars and the high voltage cables in chapter 3.5.
- Make sure that the bars are clean at all times.
- Wearers of cardiac pacemakers
See separate operating instructions for the bar to be connected.
- The operation of the bars can generate ozone. The ozone concentration levels developing near the bars depend on many different factors such as site of installation, bar current and voltage, air circulation, etc., and can therefore not be specified in general terms. If the maximum allowable concentration of ozone must be observed at the site of installation of the bar, the concentration must be measured on site. The AGW value (maximum admissible concentration) serves to assess the ozone concentration at the workplace. The user must make sure that the appropriate national AGW value is at no times exceeded, e.g. in Germany the ozone concentration occurring during the operation of the system must not exceed the recommended value based on international limits of 0.06 ml/m³ (0.12 mg/m³).

2.4 Technical advance

The manufacturer reserves the right to make changes to the technical specifications without prior notice in order to adapt the units to state-of-the-art engineering. Eltex will provide the latest information on any changes or modifications in the operating instructions on request.

3. Installation and assembly

3.1 Assembling the power supply

The power supply is designed for wall mounting. Attach using the brackets provided (installation dimensions, see Fig. 2). The operating elements of the power supply and the terminals must be freely accessible at all times.

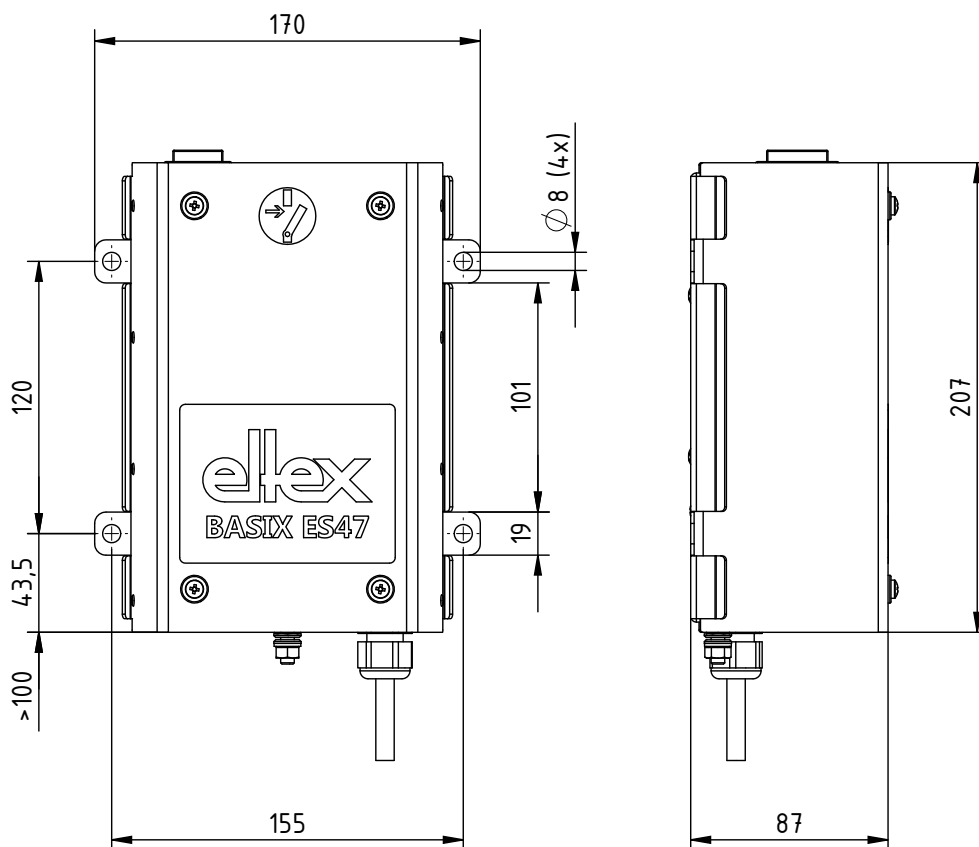


Fig. 2:
Installation dimensions, ES47
Power Supply

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3.2 Ground connection

A permanent ground connection must be made via the ground connection (5, Fig. 1). The ground cable should have a minimum cross section of 1.5 mm^2 .

3.3 Selecting the discharging bars

Eltex R47 discharging bars, R36 ion blower nozzles and R55 ion blower head for AC operation can be connected to the ES47 power supplies.

3.4 Connecting the high voltage cable



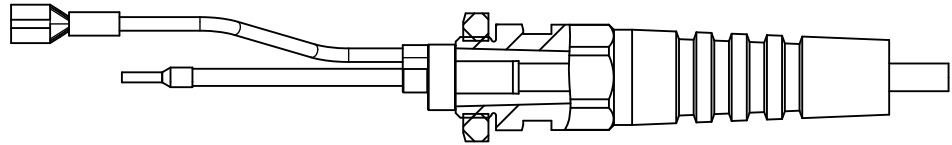
Warning!

Electric shock hazard!

Connect or disconnect the high voltage cables only with the power supply switched off!

Connect the discharging bars to the power supply using the prefabricated high voltage cable.

*Fig. 3:
High voltage cable
without flexible
tube*



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Method:

- Remove the cover of the power supply (see Fig. 1).
- Remove the nut from the connection at the high voltage cable.
- Insert the connection into the provided opening of the housing.
- Clamp the core of the high voltage cable to the high voltage socket X2.
- Fix the connection inside the unit with the locknut.
- Plug the flat connector of the cable shielding onto ground connection X1.



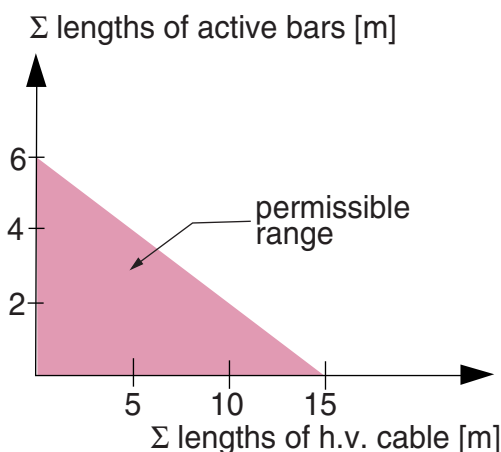
Warning!

Terminals at the housing that are not used must be closed with blanking plugs.

3.5 Maximum active bar length and length of the high voltage cable

Both the lengths of the high voltage cable and of the active bars are limited. The shielded high voltage cables cause a capacitive load on the transformer inside the power supply. The maximum loading capacity is a result of the function of the total active bar length and the total length of all high voltage cables. Fig. 4 demonstrates this principle for R47 bars.

Fig. 4:
Loading capacity
of the Power
Supply as factor of
bar length and
length of high
voltage cable.



Example: The maximum permissible total cable length with a 3 meter active bar length is 7 meters.

3.6 Connecting the supply voltage

Connect the supply voltage via the power supply lead (4, Fig. 1) using an earthing pin plug (depending on country).

To ensure that no voltage is supplied to the bars when the material web is at rest, enabling the supply voltage to the power supply via machine contact is recommended. If the material web is at rest, or if the machine is not in operation, no high voltage is supplied to the bars in this case.

For external security of the power supply the following circuit breaker is recommended:

Tripping Characteristic 2A / K according to DIN EN 60947-2.

4. Operation

4.1 Startup

Before starting up the power supply the user must make sure that the power supply and the bars have been installed and assembled correctly. The supply voltage can then be switched on.

Use the toggle switch (1, Fig. 1) to switch on the power supply. In the ON position the switch lights up green. High voltage is now supplied to the discharging bars.

The output voltage is now a constant 5 kV AC.

If the fuse is defective, the switch will not light up.

5. Maintenance



Warning!

Electric shock hazard!

Switch the power supply off and disconnect the supply voltage before carrying out any maintenance or repair work. The machine in which the discharging bars are installed must not be in operation. Maintenance work must be carried out by trained or qualified personnel.

Power supply

The power supply must be checked regularly to ensure its proper functioning. The connections of the high voltage cables must be free of dirt and other foreign matter. The intervals for the check depend on the application and must hence be defined by the user according to the operating conditions. The power supply itself does not require any maintenance. Check for correct ground connection!

Discharging bars

To ensure the proper function of the discharging bars, clean the bars at least once a week using compressed air and a brush with soft plastic bristles. Refer to the operating instructions for the bar used.

Dirt deposits settling on the bars (e.g. grease) must be cleaned off using a suitable solvent (benzine). Do not soak the bars and the high voltage cable in solvent!



Caution!

Risk of deflagration!

Allow the solvent to evaporate completely before restarting the unit. Do not damage the emission tips of the bars.

6. Trouble-shooting



Warning!

Electric shock hazard!

Switch the power supply off and disconnect the supply voltage before carrying out any maintenance or repair work. Maintenance work must be carried out by trained or qualified personnel.

Fault	Cause	Measure
No high voltage	<ul style="list-style-type: none">Lamp in mains power switch lit: transformer defective.Lamp in mains power switch fails to light: supply voltage not enabled or not connected.Defective fuse.	<p>Inform Eltex Service.</p> <p>Check supply voltage and connections. Check connected cables, cable connections and bars.</p> <p>Replace fuse.</p>

7. Warranty

The units are warranted for a period of 12 months provided that the operating conditions have been maintained, that the units have not been tampered with and that the units show no mechanical damage.

The warranty applies only if the operating and assembly instructions specified by Eltex have been observed. The warranty period begins on the date of delivery.

In the event of defects occurring during the warranty period, the units or defective components will be repaired at Eltex. Defective components will be replaced and installed free of charge.

If repairs are required at the customer's premises, the costs for sending a technician (travel, travel time, expenses) will be charged to the customer.

8. Technical specifications ES47

Supply voltage	230 V AC 50/60 Hz; 115 V AC 60 Hz
Power input	max. 25 VA
Output voltage	5 kV AC
Loading capacity	depending on length of bar and length of high voltage cable (see 3.5)
Output current	max. 2.4 mA at 5 kV
Operating ambient temperature	0... +50 °C (+32... +122 °F)
Storage temperature	-20... +80 °C (-4... +176 °F)
Ambient humidity	max. 80% r.h., non-dewing
Mains power cable	approx. 2.0 meters with earthing-pin plug, national version
Fuse (primary circuit)	see name plate
Ground connection	ground connecton on housing
High voltage connection	4 pieces
Housing	sheet metal steel with wall bracket
Protection class	IP 54
Dimensions	207 x 170 x 87 mm (H x W x D) (see Fig. 5)
Weight	approx. 3.6 kg
UL Approval	File No. E227156

as shown on
appliance
marking:



9. Dimensions

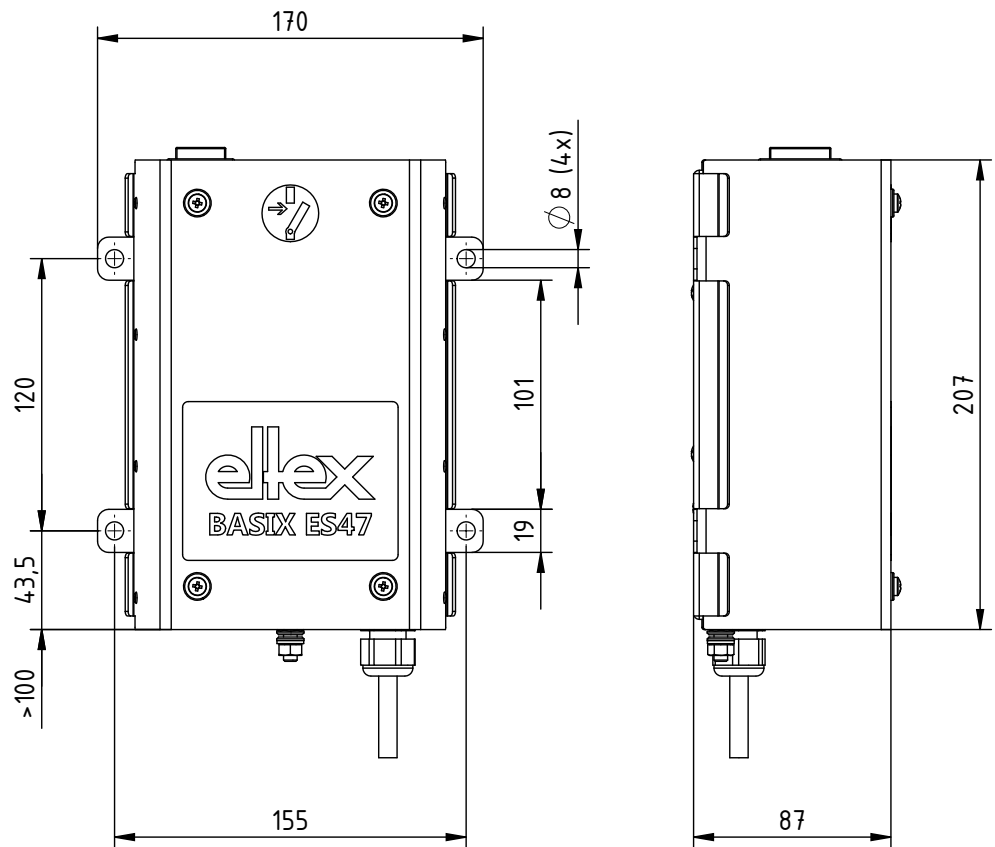


Fig. 5:
Dimensions, ES47
Power Supply

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10. Spare parts and accessories

Article	Article No.
High voltage cable without flexible tube from power supply ES47 to blower nozzle R36 resp. blower head R55 (specify cable length)	KE/Xy
Plug "X"	
Kit for cutting high voltage cable to size without flexible tube for bar R47	113259
Hexagonal crimper, 5.41 mm	102952
Blanking plug, M16 x 1.5	113399
Nut, M16 x 1.5	104974
Mains cable gland	MCH02176
Fuse F1 (115 V) 0.315 A T (IEC 60127-2/3)	ELM00722
Fuse F1 (230 V) 0.63 A T (IEC 60127-2/3)	105659
Accessory	113402
Kit of fixing screws and cover	115795
Operating instructions (specify language)	BA-xx-2075

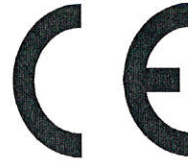
Please specify the article number when ordering.

EU-Declaration of Conformity

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declares in its sole responsibility that the product

Power Supply Type ES47 (according to Eltex reference code)

complies with the following directives and standards.

Relevant EU-Directive:

2014/35/EU

Low Voltage Directive

Harmonized standard applied:

EN 60204-1:2006 + A1:2009

Safety of machinery – Electrical equipment of machines –
General requirements

Relevant EU-Directive:

2014/30/EU

EMC Directive

Harmonized standards applied:

EN 61000-6-2:2005

Electromagnetic compatibility (EMC) – Generic standards –
Immunity for industrial environments

EN 61000-3-2:2014

Electromagnetic compatibility (EMC) – Limits – Limits for harmonic
current emissions (equipment input current ≤ 16 A per phase)

EN 61000-3-3:2013

Electromagnetic compatibility (EMC) – Limits – Limitation of
voltage changes, voltage fluctuations and flicker in public low-
voltage supply systems, for equipment with rated current ≤ 16 A
per phase and not subject to conditional connection

EN 55011:2016 + A1:2017

Industrial, scientific and medical equipment –
Radio-frequency disturbance characteristics – Limits and methods
of measurement

Relevant EU-Directive:

2011/65/EU

RoHS Directive

in the version effective at the time of delivery.

Eltex-Elektrostatik Gesellschaft mbH keep the following documents for inspection:

- proper operating instructions
- plans
- other technical documentations

Weil am Rhein, 10.07.2018
Place/Date


Lukas Hahne, Managing Director

Eltex offices and agencies

The addresses of all
Eltex agencies can be
found on our website at
www.eltex.com



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