

Data sheet

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HPV High Power High Voltage Power Supplies

60kV - 200 kV 6kW - 60kW

High voltage power supplies of the HIPOVO series are characterized by high control speed and high accuracy. The rectified mains voltage is converted to a medium frequency AC voltage (50 kHz) which then is transformed, rectified and filtered, so that the required DC voltage is available at the output. By varying the frequency of medium-frequency voltage, the transmitted power is varied and thus the output voltage is kept constant at the set value (principle of the series resonant converter).

The units operate with high efficiency of about 85% and are short circuit and open circuit proof.

The power connections for the power part and for the control electronics are carried out separately, so that the power part can be switched off from external, while the readings are continuously displayed and the control electronics will continue to operate. With flashovers and overload the device switches off. This occurs with one of the following conditions: Either the output current rises to more than 120% of the rated value while the voltage at the same time shows a falling slope, or - second condition - the output current crosses the limit of 105% of the rated value for a period of at least 2s. The short circuit current is inherently limited to small values (2 - 3 times of nominal) so that the power supplies operate very reliable even under complicated conditions.

Due to the principle of resonance conversion a small ripple and good electromagnetic compatibility (EMC) is achieved. To reduce the ripple in the low load range, optionally a pulse width modulator can be used instead of the series resonant converter.

In default the units will be controlled via the integrated analogue programming. A manual control panel is available as an option. The operating state is indicated by LEDs.

For safe shut down of the high voltage an interlock circuit with locking is available. On request we equip your unit with optional or non-standard equipment or we design the unit completely according to your specifications.

Units with different from the series voltage and power are available on request.

All Units are equipped as standard with:

- Key switch for mains On / Off
- HV On / Off - buttons with LED signalization
- Potential free analogue interface
- Interlock connection with locking for fast switching off by door contacts
- LED signalization for „Mains on“, „Arc“, „Overload“, „Lock“, optional „Remote control“
- Output resistor to limit arcing current to 50 times of the nominal value.
- Limitation of short circuit current



Sample HPV 153 - 150

Type	Power max.	Voltage max.	Current max.	Dimensions W x D x H [mm]
HPV 602- 060	6 kW	60 kV	100 mA	1000 x 1200 x 1600
HPV 103- 060	10 kW	60 kV	167 mA	1000 x 1200 x 1600
HPV 153- 060	15 kW	60 kV	250 mA	1000 x 1200 x 1600
HPV 303- 060	30 kW	60 kV	500 mA	1200 x 1400 x 1600
HPV 453- 060	45 kW	60 kV	750 mA	1200 x 1400 x 1600
HPV 603- 060	60 kW	60 kV	1000 mA	1200 x 1400 x 1600
HPV 602- 080	6 kW	80 kV	75 mA	1000 x 1200 x 1600
HPV 103- 080	10 kW	80 kV	125 mA	1000 x 1200 x 1600
HPV 153- 080	15 kW	80 kV	188 mA	1000 x 1200 x 1600
HPV 303- 080	30 kW	80 kV	375 mA	1200 x 1400 x 1600
HPV 453- 080	45 kW	80 kV	563 mA	1200 x 1400 x 1600
HPV 603- 080	60 kW	80 kV	750 mA	1200 x 1400 x 1600
HPV 602- 100	6 kW	100 kV	60 mA	1000 x 1200 x 1600
HPV 103- 100	10 kW	100 kV	100 mA	1000 x 1200 x 1600
HPV 153- 100	15 kW	100 kV	150 mA	1000 x 1200 x 1600
HPV 303- 100	30 kW	100 kV	300 mA	1200 x 1500 x 1800
HPV 453- 100	45 kW	100 kV	450 mA	1200 x 1500 x 1800
HPV 603- 100	60 kW	100 kV	600 mA	1200 x 1500 x 1800
HPV 602- 120	6 kW	125 kV	48 mA	1000 x 1200 x 1600
HPV 103- 120	10 kW	125 kV	80 mA	1000 x 1200 x 1600
HPV 153- 120	15 kW	125 kV	120 mA	1000 x 1200 x 1600
HPV 303- 120	30 kW	125 kV	240 mA	1200 x 1500 x 1800
HPV 453- 120	45 kW	125 kV	360 mA	1200 x 1500 x 1800
HPV 603- 120	60 kW	125 kV	480 mA	1200 x 1500 x 1800
HPV 602- 150	6 kW	150 kV	40 mA	1000 x 1200 x 1600
HPV 103- 150	10 kW	150 kV	67 mA	1000 x 1200 x 1600
HPV 153- 150	15 kW	150 kV	100 mA	1000 x 1200 x 1600
HPV 303- 150	30 kW	150 kV	200 mA	1200 x 1500 x 1800
HPV 453- 150	45 kW	150 kV	300 mA	1200 x 1500 x 1800
HPV 603- 150	60 kW	150 kV	400 mA	1300 x 1600 x 1800
HPV 602- 175	6 kW	175 kV	34 mA	1200 x 1400 x 1800
HPV 103- 175	10 kW	175 kV	57 mA	1200 x 1400 x 1800
HPV 153- 175	15 kW	175 kV	86 mA	1200 x 1400 x 1800
HPV 303- 175	30 kW	175 kV	171 mA	1300 x 1700 x 1900
HPV 453- 175	45 kW	175 kV	257 mA	1300 x 1700 x 1900
HPV 603- 175	60 kW	175 kV	343 mA	1400 x 1600 x 1900
HPV 602- 200	6 kW	200 kV	30 mA	1400 x 1600 x 1900
HPV 103- 200	10 kW	200 kV	50 mA	1400 x 1600 x 1900
HPV 153- 200	15 kW	200 kV	75 mA	1400 x 1600 x 1900
HPV 303- 200	30 kW	200 kV	150 mA	1500 x 1700 x 2000
HPV 453- 200	45 kW	200 kV	225 mA	1500 x 1700 x 2000
HPV 603- 200	60 kW	200 kV	300 mA	1500 x 1700 x 2000

Type	Voltage max.	Current max.
Wehnelt 015	1500 V	10 mA
Wehnelt 025	2500 V	10 mA
Wehnelt 030	3000 V	10 mA
Filament 006	20 V	10 A
Filament 010	10 V	20 A
Filament 020	10 V	40 A

The dimensions in the table are stated considering the installation of one Wehnelt and one Filament supply including the necessary insulation transformer.

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Possible optional equipment (selection):

- Floating wehnelt supply
- Floating filament supply
- Floating surge voltage for indirect heating
- Emission current regulation (by wehnelt or by filament)
- Additional filter capacitor for low residual ripple
- Pulse width modulation for low residual ripple with small loads
- Delayed arcing trip after a defined number of arcs
- Constant current regulation instead of overcurrent trip
- Control panel for manual control (Ten turn potentiometer for voltage adjustment, two analogue meters for indication of voltage and current)
- Control panel as before, but with 3½ digit digital displays for voltage and current
- Digital interface (USB, RS232, IEEE488, Ethernet or others possible)
- PLC-control with Profibus
- Air conditioner (refrigeration)
- Oil collection container
- Special design for capacitor charging



Sample HP V 602 - 060
(Customized compact design)

Technical Data:

Mains (power part):	400 V \pm 10 % / 47-63 Hz (3x L / PE)
Mains (electronics):	230 V \pm 10 % / 47-63 Hz (L / N / PE)

High Voltage:

Voltage adjustable from zero to nominal value

Polarity:

positive or negative, please state with the order.

Ramping up:

0 - U_{max.}: 2s (Other values on request)

Residual ripple:

< 0,3%

Regulation accuracy and stability:

< 0,3%

Environmental conditions:

max. temperature:

40°C

Relative humidity:

max. 80% (not condensing)

free of corrosive, explosive dusts and gases

Cooling:

Water cooling

Possible Applications:

- High power electron beam guns (Electron Beam Welding, Coating, Linking etc.)
- Ion sources, Accelerators
- High power electron tubes (Triodes, Tetrodes, Klystrons, X-ray tubes etc.)
- Electro Filters
- Charging of capacitors

Scope of delivery:

Power supply

5 m HV-output cable pluggable - load side end open

Harting- connectors for mains input and communication

Documentation