

45kW FLOOR MOUNT

The HPV45K0 series of high DC output power supplies are characterized by their high control speed and high accuracy. The rectified mains voltage is converted to a medium frequency AC voltage (50kHz) which then is transformed, rectified, and filtered, so that the required DC voltage is available at the output. By varying the frequency of the medium frequency AC voltage, the transmitted power is varied and thus the output voltage is kept constant at the set value (following the principle of the series resonant converter).

The units operate with high efficiency of about 85% and are short circuit and open circuit proof. The supply connections for the power unit and for the control electronics are completely separate, so that the power section can be isolated from the external supply, while the readings continue to be displayed, and the control electronics remains operational.

When arcing or overload occurs, 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 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 to 3 x nominal) so that the power supplies operate reliably even under complex conditions.

Due to the principle of resonance conversion, good electromagnetic compatibility (EMC) is achieved as well as low ripple. To reduce the ripple in the low load range, an optional pulse width modulator can be specified, instead of the series resonant converter.

As standard, the units are controlled via the integrated analog 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 optional 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 non-standard voltage and power are available on request.

Features

- Output voltages 0-60kVDC to 0-200kVDC
- Potential free analog interface
- Key switch for mains supply On/Off
- HV On/Off - buttons with LED indication
- Safety interlock for cabinet doors provides fast shutdown protection
- LED indication for 'Mains on', 'Arc', 'Overload', 'Lock', optional 'Remote control'
- Output resistor to limit arcing current to 50 x nominal value
- Current limiting short circuit protection

AC-HVDC POWER SUPPLIES



Dimensions

See mechanical details table

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
- Capacitor charging

Models & Ratings

Model Number	Polarity	Output Voltage	Output Current	Input Voltage (Power Unit)	Frequency
HPV45K0-60000P	Positive	0 to +60kV	0 to 750mA	400VAC ±10% 3 phase	47 to 63Hz
HPV45K0-60000N	Negative	0 to -60kV			47 to 63Hz
HPV45K0-80000P	Positive	0 to +80kV	0 to 563mA	400VAC ±10% 3 phase	47 to 63Hz
HPV45K0-80000N	Negative	0 to -80kV			47 to 63Hz
HPV45K0-100000P	Positive	0 to +100kV	0 to 450mA	400VAC ±10% 3 phase	47 to 63Hz
HPV45K0-100000N	Negative	0 to -100kV			47 to 63Hz
HPV45K0-125000P	Positive	0 to +125kV	0 to 360mA	400VAC ±10% 3 phase	47 to 63Hz
HPV45K0-125000N	Negative	0 to -125kV			47 to 63Hz
HPV45K0-150000P	Positive	0 to +150kV	0 to 300mA	400VAC ±10% 3 phase	47 to 63Hz
HPV45K0-150000N	Negative	0 to -150kV			47 to 63Hz
HPV45K0-175000P	Positive	0 to +175kV	0 to 257mA	400VAC ±10% 3 phase	47 to 63Hz
HPV45K0-175000N	Negative	0 to -175kV			47 to 63Hz
HPV45K0-200000P	Positive	0 to +200kV	0 to 225mA	400VAC ±10% 3 phase	47 to 63Hz
HPV45K0-200000N	Negative	0 to -200kV			47 to 63Hz

Options

- 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 (10 turn potentiometer for voltage adjustment, two analog 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, further options possible on request)
- PLC-control with Profibus
- Air conditioner (refrigeration)
- Oil collection container
- Special design for capacitor charging

Type		Voltage (max.)	Current (max.)
Wehnelt	15	1.5kV	10mA
Wehnelt	25	2.5kV	10mA
Wehnelt	30	3.0kV	10mA
Filament	6	20V	10A
Filament	10	10V	20A
Filament	20	10V	40A

Please consult XP Power Sales

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage Power Unit		400		VAC	±10% 3 phase, 47 to 63Hz
Input Voltage Control Electronics		230		VAC	±10%, 47 to 63Hz
Efficiency		85		%	

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage Range	See models and ratings table				
Output Current Range	See models and ratings table				
Output Polarity	See models and ratings table				
Voltage Adjustment	0 to nominal value				
Ramping up	0 - Vmax. 2s, other values on request				
Residual Ripple		<0.3		%	
Regulation Accuracy & Stability		<0.3		%	

Signals & Controls

	Function
Control Panel	Supply On/Off keyswitch HV On/Off switch with LED indication 'Mains on', 'Arc', 'Overload', 'Lock' LED indication

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	0		+40	°C	
Operating Humidity	0		+40	°C	Non-condensing
Operating Atmosphere	Free of corrosive, explosive, dust and gases				
Cooling	Water cooling				
Protection	Current limiting short circuit protection. Safety interlock for cabinet doors provides fast shutdown protection				

Mechanical Details

Model Number	Mounting	Width	Height	Depth
HPV45K0-60000P	Floor mount	1200mm	1600mm	1400mm
HPV45K0-60000N	Floor mount	1200mm	1600mm	1400mm
HPV45K0-80000P	Floor mount	1200mm	1600mm	1400mm
HPV45K0-80000N	Floor mount	1200mm	1600mm	1400mm
HPV45K0-100000P	Floor mount	1200mm	1800mm	1500mm
HPV45K0-100000N	Floor mount	1200mm	1800mm	1500mm
HPV45K0-125000P	Floor mount	1200mm	1800mm	1500mm
HPV45K0-125000N	Floor mount	1200mm	1800mm	1500mm
HPV45K0-150000P	Floor mount	1200mm	1800mm	1500mm
HPV45K0-150000N	Floor mount	1200mm	1800mm	1500mm
HPV45K0-175000P	Floor mount	1300mm	1900mm	1700mm
HPV45K0-175000N	Floor mount	1300mm	1900mm	1700mm
HPV45K0-200000P	Floor mount	1500mm	2000mm	1700mm
HPV45K0-200000N	Floor mount	1500mm	2000mm	1700mm

Notes:

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

Cables

Single phase mains input for control unit
Harting connectors supplied

Three phase mains input for power unit
Harting connectors supplied

Communications
Harting connectors supplied

HV output
5m HV pluggable output cable supplied – load side end open