HCH4K2 Series

AC-HVDC POWER SUPPLIES

4.2kW FULL RACK/ FLOOR MOUNT

The HCH4K2 series of high DC output power supplies principle of operation is that the rectified line voltage drives a square wave generator of fixed frequency, whose AC voltage is transformed, rectified and filtered, producing the output voltage. For regulation, the square wave voltage is pulse width modulated.

Depending on voltage and power the units are configured as single or double 19" racks, or for 35kVDC and above, as an oil filled HV container with the power electronics on the top or in a separate rack.

Dimensions

See mechanical details table

Features

- Output voltages 0-65kVDC to 0-300kVDC
- Voltage and current setting via 10-turn lockable potentiometers with precision scale
- Voltage and current regulation with automatic rapid transition
- Control modes indicated by LEDs
- Inrush current limiting on power up
- Unlimited operation at rated power
- Unlimited operation with rated current in a short-circuit condition
- Efficiency up to 90%
- Short-circuit & arc proof
- Interlock loop monitors the external load & internal loop as standard
- In units up to 20kVDC nominal voltage, the HV-components are air isolated. Units from 35kVDC & above are isolated in oil
- 2 year warranty

Benefits

- Provides maximum control & flexibility.
- Safe operation ensures maximum protection to the power supply
- User friendly controls

Applications

- Electron beam & Ion beam generation
- Electron beam welding
- Electron lithography
- Electron microscopy
- Electron tube manufacturing equipment
- Electron tube testing
- Electrostatic charge generation
- Mass spectrometry
- Semiconductor manufacturing equipment
- Semiconductor testing

HCH4K2 Series

Models & Ratings

Model Number	Polarity	Output Voltage	Output Current	Input Voltage (Power Unit)	Frequency
HCH4K2-65000P	Positive	0 to +65kV	0 to 60mA	400VAC, ±10%, 3 phase	47 to 63Hz
HCH4K2-65000N	Negative	0 to -65kV			
HCH4K2-65000R	Reversible	0 to 65kV			
HCH4K2-100000P	Positive	0 to +100kV	0 to 40mA	400VAC, ±10%, 3 phase	47 to 63Hz
HCH4K2-100000N	Negative	0 to -100kV			
HCH4K2-100000R	Reversible	0 to 100kV			
HCH4K2-150000P	Positive	0 to +150kV	0 to 25mA	400VAC, ±10%, 3 phase	47 to 63Hz
HCH4K2-150000N	Negative	0 to -150kV			
HCH4K2-150000R	Reversible	0 to 150kV			
HCH4K2-200000P	Positive	0 to +200kV	0 to 20mA	400VAC, ±10%, 3 phase	47 to 63Hz
HCH4K2-200000N	Negative	0 to -200kV			
HCH4K2-200000R	Reversible	0 to 200kV			
HCH4K2-300000P	Positive	0 to +300kV	0 to 12mA	400VAC, ±10%, 3 phase	47 to 63Hz
HCH4K2-300000N	Negative	0 to -300kV			
HCH4K2-300000R	Reversible	0 to 300kV			

Options

- Analog programming/interface
- Analog programming/interface, floating
- Computer interfaces -IEEE 488, RS 232, RS 422, RS485, Profi-bus DP, USB, LAN (more on request)
- Lower ripple
- Up to <1 x 10^{-5} + 100mVpp (peak to peak) (Please contact sales for request)
- Higher stability
- Stability, over 8 hours under constant conditions <±1 x 10^{-5}
- Temperature coefficient <±1 x 10^{-5}/K within the specified temperature range
- Shorter setting time
- Heavy duty castors for rack unit
- Supply voltages other than that shown in the models & ratings table may be specified

Please consult XP Power Sales

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage		400VAC ±10% 3 phase 47 to 63Hz			
Inrush current limiting	As standard				
Efficiency		<90		%	

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 Control	Voltage and current setting with 10-turn potentiometers with precision scale; the adjusting knob can be locked				
Output Polarity	See models and ratings table				
Voltage Setting Range	0.1		100	%	Of rated value
Current Setting Range	0.1		100	%	Of rated value
Setting Time at Rated Load	<500ms for changes in the output voltage from 10% to 90% or 90% to 10%				
Set Point Resolution	<±1 x 10^{-4} of rated value				
Discharge Time Constant	With output free of load. The discharge time can be between 1s and 10s, depending on type				
Residual Ripple	<2 x 10^{-3} of rated value +50mVpp (measuring bandwidth 0Hz - 10MHz)				
Accuracy	Voltage:<±0.2% of the nominal value Current: within the range of >5mA up to <200A: ±0.2% of the nominal value Outside the above mentioned range: <±0.5% of the nominal value Additional digital display error <±2 digits				
Voltage control recovery time	<1ms for load changes of ±10% to ±100% or from ±100% to ±10%				
Current control recovery time	<10ms for load changes causing an output change of less than 10% of the rated voltage				
Control Deviation	±10% mains voltage variation: <±1 x 10^{-4} of the rated value 0 to 100% load change: <±5 x 10^{-4} of the rated value Over 8 hours: <±2 x 10-4 of the rated value (under constant conditions) Temperature deviations <±1.5 x 10^{-4}/K				
Short Circuit Protection	The power supply is short circuit and arc proof. The maximum current can be drawn at any output voltage, even in the event of a short circuit.				
Interlock Loop	Safety interlock for cabinet doors provides fast shutdown protection				
LEDs	Control mode indication				

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	0		+40	˚C	
Storage Temperature	-20		+50	˚C	
Humidity Operating	0		+80	%	Up to +31°C, decreasing linearly down to 50% RH at +40°C
Storage Humidity			+80		No precipitation
Cooling	Forced ventilation				
Operation Altitude			2000	m	Above sea level

Signals & Controls

	Function
Control panel	Voltage and current potentiometer, power switch, HV ON/OFF switch, digital display for current and voltage. Display of the output voltage and current set points is possible with the SET VALUES push-button.
Operating Modes	The power supplies can be operated in the LOCAL, ANALOG (optional) and DIGITAL (optional) operating modes.

EMC: Emissions

Phenomenon	Standard	Notes & Conditions
Harmonic Currents	EN61000-6-2	
Voltage Flicker	EN61000-6-3	

Safety Approvals

Safety Agency	Safety Standard	Notes & Conditions
EN	EN61010-1	
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

HCH4K2 Series

Mechanical Details

Model Number	Mounting	Width		Height		Depth	Weight
HCH4K2-65000P[1]	Floor Mount		700mm		800mm	635mm	400kg
HCH4K2-65000N[1]	Floor Mount		700mm		800mm	635mm	400kg
HCH4K2-65000R[1]	Floor Mount		1250mm		800mm	635mm	450kg
HCH4K2-100000P	Full rack	19”	800mm	42U	2200mm	800mm	800kg
HCH4K2-100000N	Full rack	19”	800mm	42U	2200mm	800mm	800kg
HCH4K2-100000R	Full rack	19”	800mm	42U	2200mm	1000mm	800kg
HCH4K2-150000P[1]	Floor Mount		1110mm		1400mm	900mm	1000kg
HCH4K2-150000N[1]	Floor Mount		1110mm		1400mm	900mm	1000kg
HCH4K2-150000R[1]	Floor Mount		1300mm		1400mm	900mm	1100kg
HCH4K2-200000P[1]	Floor Mount		1110mm		1700mm	900mm	1200kg
HCH4K2-200000N[1]	Floor Mount		1110mm		1700mm	900mm	1200kg
HCH4K2-200000R[1]	Floor Mount		1300mm		1700mm	900mm	1300kg
HCH4K2-300000P[1]	Floor Mount		2500mm		1800mm	1250mm	1500kg
HCH4K2-300000N[1]	Floor Mount		2500mm		1800mm	1250mm	1500kg
HCH4K2-300000R[1]	Floor Mount		3000mm		1800mm	1250mm	1600kg

Notes:

1. Dimensions are for the high voltage unit, with control unit on top.

Connections

HV output

For models with outputs up to 10A, high voltage connectors with the appropriate dielectric strength are supplied.
For models with outputs above 10A, connections suitable to the individual application will be provided (please contact sales for details).
For nominal voltages of 65kVDC and above, a 10m HV pluggable output cable is supplied – load side end open.