# HYN10K5 Series

XP Power

## 10.5kW FULL RACK

AC-HVDC POWER SUPPLIES

The HYN10K5 uses a phase controlled thyristor rectifier circuit to transform the mains supply to high voltage, a series LC filter is used to smooth the resulting rectified voltage.

All racks are equipped with fork-lift-compatible plinths and removable lifting-eyes. The side covers are detachable, the rear door is lockable. Cooling is carried out via convection or built-in fans, with the air being exhausted (depending upon type) either via the rear or the top.

### Dimensions

See mechanical details table

### Features

- Extremely robust
- High efficiency
- Short circuit proof and unlimited operation with full current in short circuit condition
- Voltage and current regulation with automatic and fast transition; control mode indicated by LEDs
- Voltage and current setting with 10-turn potentiometers with precision scale; the adjusting knob can be locked
- Limitation of inrush current on switching on
- Suitable also for inductive and capacitive loads
- Interlock loop to monitor the external load and internal loop as a standard
- Elapsed hour meter as a standard

### Benefits

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

### Applications

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

# HYN10K5 Series

## Models & Ratings

| Model Number | Polarity | Output Voltage | Output Current | Input Voltage | Frequency |
|---|---|---|---|---|---|
| HYN10K5-20000P | Positive | 0 to +20kV | 0 to 500mA | 400VAC ±10% 3 phase | 47 to 63Hz |
| HYN10K5-20000N | Negative | 0 to -20kV | 0 to 500mA | 400VAC ±10% 3 phase | 47 to 63Hz |
| HYN10K5-20000R | Reversible | 0 to 20kV | 0 to 500mA | 400VAC ±10% 3 phase | 47 to 63Hz |

## Options

- Analog programming (one of the outputs on “0V” - potential)
- Analog programming, floating
- Computer interfaces - IEEE 488, RS 232, RS 422, Profibus DP, USB, LAN (more on request)
- Polarity reversal switch. Please specify the output polarity, when ordering without polarity reversal switch.
- Internal resistance setting and regulation
- Power regulation with display
- Heavy duty castors for rack unit

More options and special solutions on request. Some options may involve changes to the description of the unit especially concerning the mechanical design.

## Input

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|---|---|---|---|---|---|
| Input Voltage | See models and ratings table | | | | |
| 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 | | | | |
| Output Isolation | ±2kV against earth.<br>Exception: Not valid with the option analog programming | | | | |
| HV Output Connection | Mating HV connector supplied on all models | | | | |
| Voltage Setting Range | Using the VOLTAGE potentiometer, approx. 1% to 100% of the rated value | | | | |
| Current Setting Range | Using the CURRENT potentiometer, approx. 1% to 100% of the rated value | | | | |
| Setting Time at Nominal Load | <100ms to 2s, depending on type, for changes in the output voltage from 10% to 90% or 90 to 10%, respectively | | | | |
| Setting Resolution | $\pm 1 \times 10^{-4}$ of rated value with potentiometer on front panel | | | | |
| Discharge Time Constant | With output free of load. The discharge time can be between 5s and 60s, depending on type | | | | |
| Residual Ripple | $<1 \times 10^{-2}$ of rated value +100mVpp (measuring bandwidth 0Hz - 10MHz) | | | | |
| Recovery Time | <100ms to 500ms, depending on type, for load variations of ±10% | | | | |
| Control Deviation | ±10% mains voltage variation: $<\pm 1 \times 10^{-4}$ of the rated value<br>0 to 100% load change: $<\pm 1 \times 10^{-3}$ of the rated value<br>Over 8 hours: $<\pm 3 \times 10^{-4}$ of the rated value<br>Temperature deviations $<\pm 3 \times 10^{-4}$/K of the rated value | | | | |
| Short Circuit Protection | The power supply is short circuit proof. The maximum current can be drawn at any output voltage, even in the event of a short circuit. | | | | |
| Interlock Loop | Monitors the external load and internal loop as standard | | | | |
| Elapsed Hour Meter | As standard | | | | |

## Environmental

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|---|---|---|---|---|---|
| Temperature Operation | 0 | | +40 | ˚C | |
| Storage Temperature | -20 | | +50 | ˚C | |
| Temperature Coefficient | | ±0.1 | | ˚C | |
| Humidity Operating | 0 | | +80 | % | Up to +31°C, decreasing linearly down to 50% relative humidity at +40°C |
| Storage Humidity | | | +80 | % | No precipitation |
| Cooling | Heat generated in the power supply unit is dissipated by convection or, in the case of high-power units, by forced ventilation | | | | |
| Operating Altitude | | | 2000 | m | Above sea level |

## Signals & Controls

| | Function |
|---|---|
| Front panel | Voltage and current encoders, power switch, OUTPUT ON/OFF switch |
| Operating Modes | The output's polarity is isolated (see models & ratings table).<br>The power supplies can be operated in the LOCAL, ANALOG (optional) and DIGITAL (optional) operating modes. |
| LEDs | Control mode indication |

## 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 | |

## Mechanical Details

| Model Number | Mounting | Width | | Height | | Depth | Weight |
|---|---|---|---|---|---|---|---|
| HYN10K5-20000P | Full rack | 19” | 600mm | 29U | 1500mm | 600mm | 340kg |
| HYN10K5-20000N | Full rack | 19” | 600mm | 29U | 1500mm | 600mm | 340kg |
| HYN10K5-20000R | Full rack | 19” | 600mm | 29U | 1500mm | 600mm | 340kg |

### Connections

**Mating Connectors**
Mating high voltage connectors are included.