

5kW BENCH MOUNT

AC-HVDC POWER SUPPLIES

The MCP5K0 series are highly stable switch-mode power supplies with low ripple and a floating output. Due to the high switching frequency the power supply has a low residual ripple in the generated output voltage with high stability, good regulation dynamics, and at the same time only a low amount of stored energy.



Dimensions

See mechanical details table

Features

- Output voltages 0-125VDC to 0-2kVDC floating
- Three phase AC input
- Continuous operation at full rated power
- Multi-function control panel with user friendly interface
- Digital, LAN and USB interface option
- Analog programming/interface option
- Manual voltage and current control with digital display
- Set-point display via a button
- Set-point adjustment possible with disabled output
- Push-button switch for output voltage
- Short circuit & arc protection
- 2 year warranty

Benefits

- Provides maximum device control & flexibility.
- Safe operation ensures maximum protection to the power supply
- High voltage release included for safe operation at high voltage output
- User friendly controls
- Lighter than the leading brand products & easier to maintain
- Low cost of ownership

Applications

- Electrostatics
- High voltage test equipment
- Insulation testing
- Ion sources
- Laboratory power

Models & Ratings

Model Number	Polarity	Output Voltage	Output Current	Input Voltage	Frequency
MCP5K0-125	Floating	0 to 125V	0 to 40A	400VAC ±10% 3 phase	47 to 63Hz
MCP5K0-200	Floating	0 to 200V	0 to 25A	400VAC ±10% 3 phase	47 to 63Hz
MCP5K0-350	Floating	0 to 350V	0 to 14A	400VAC ±10% 3 phase	47 to 63Hz
MCP5K0-650	Floating	0 to 650V	0 to 7A	400VAC ±10% 3 phase	47 to 63Hz
MCP5K0-1250	Floating	0 to 1.25kV	0 to 4A	400VAC ±10% 3 phase	47 to 63Hz
MCP5K0-2000	Floating	0 to 2kV	0 to 2.5A	400VAC ±10% 3 phase	47 to 63Hz

Options

- Coarse/fine-potentiometers (99% / 1%) for more accurate adjustment of voltage and / or current
- Analog programming/interface
- Analog programming/interface, floating
- Computer interfaces -IEEE 488, RS 232, RS 422, RS485, Profi-bus DP, USB, LAN (more on request)
- Signal for output voltage <50VDC
- Lower ripple: $<1 \times 10^{-5} + 100\text{mVpp}$
- Higher stability: Stability, over 8 hours under constant conditions $<\pm 1 \times 10^{-5}$
Temperature coefficient $<\pm 1 \times 10^{-5}/\text{K}$ within the specified temperature range
- Lower stored energy
- 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	See models and ratings table				
Efficiency		90		%	
Overvoltage Category		II			
Protection Class		I			

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	Continuous adjustment from 0 to rated voltage/current by front panel mounted encoders				
Output Polarity	Both output poles are floating. Either the positive or the negative pole can be earthed. In devices with non-isolated Analog programming/interface (option), one pole is permanently earthed.				
Output Isolation	Devices with a rated voltage of up to 350VDC are isolated for ± 500 VDC. Devices with a rated voltage between 650VDC and 2000VDC are isolated for ± 2000 VDC. With these devices, always both connection cables must be connected to the load, as the outputs do not have any potential against ground. If the cable shield is to be used to return the current, the other output must be short-circuited to ground.				
HV Output Connection	For outputs ≥ 650 VDC two mating HV connectors with 3m cable are supplied				
Voltage Control Time	<1ms with load changes from 10% to 100% or 100% to 10%, respectively				
Voltage Setting Range	Using the VOLTAGE potentiometer, approx. 0.1% to 100% of the rated value				
Current Control Time	<10ms with load changes that effect a change of less than 10% in the output voltage				
Current Setting Range	Using the CURRENT potentiometer, approx. 0.1% to 100% of the rated value				
Setting Time at Rated Load	<100ms to 500ms, depending on type, for changes in the output voltage from 10% to 90% or 90 to 10%, respectively				
Set Point Resolution	$< \pm 1 \times 10^{-3}$ of rated value with potentiometer on front panel $< \pm 1 \times 10^{-5}$ of rated value with fine potentiometer 1×10^{-4} of rated value with option interface				
Discharge Time Constant	With output free of load max. 10s Discharge time to <50V max. 60s				
Accuracy	Voltage $< \pm 0.2\%$ of rated value Current $< \pm 0.2\%$ of rated value for current ranging between > 5 mA to < 200 A Current $< \pm 0.5\%$ of rated value for current ranges < 5 mA or > 200 A Additional digital display error $< \pm 2$ digits				
Residual Ripple	Up to 350W rated power: $< 5 \times 10^{-5}$ pp + 50mVpp, for 700W and higher: $< 2 \times 10^{-4}$ pp + 200mVpp (measuring bandwidth 30Hz to 10MHz) up to 350W $< 1.5 \times 10^{-5}$ + 20mV of rated value RMS for 700W and higher $< 6 \times 10^{-5}$ + 70mV of rated value RMS				
Control Deviation	$\pm 10\%$ mains voltage variation: $< \pm 1 \times 10^{-5}$ of the rated value Open circuit / full load: 2×10^{-4} of the rated value Over 8 hours: $< \pm 1 \times 10^{-4}$ of the rated value Temperature deviations $< \pm 1.5 \times 10^{-4}$ /K of the rated value				
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.				

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Temperature Operation	0		+40	°C	
Storage Temperature	-20		+50	°C	
Humidity Operating	0		+80	%	No precipitation and max
Storage Humidity	Max. relative humidity 80% up to +31°C, decreasing linearly down to 50% relative humidity at +40°C				
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
Protection	IP20				

Signals & Controls

	Function
Front 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 SETVALUES push-button.
Operating Modes	The HV output's polarity is floating (see models & ratings table). The power supplies can be operated in the LOCAL, ANALOG (optional) and DIGITAL (optional) operating modes.
Displays	DVM for voltage and current, range ± 20000

EMC: Emissions

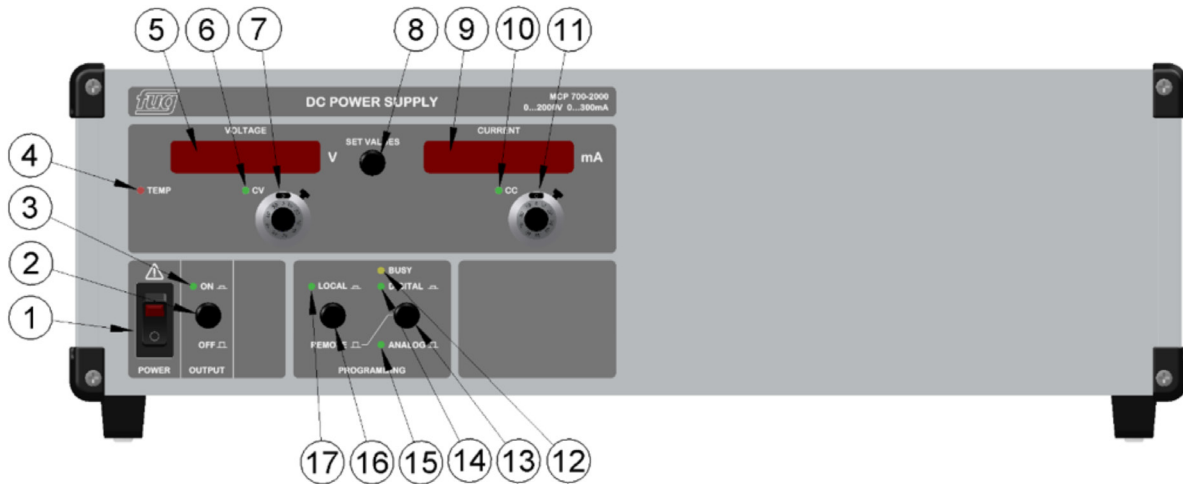
Phenomenon	Standard	Notes & Conditions
Harmonic Currents	EN61000-6-2	
Voltage Flicker	EN61000-6-3	

Safety Approvals

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

Mechanical Details

Front view with controls

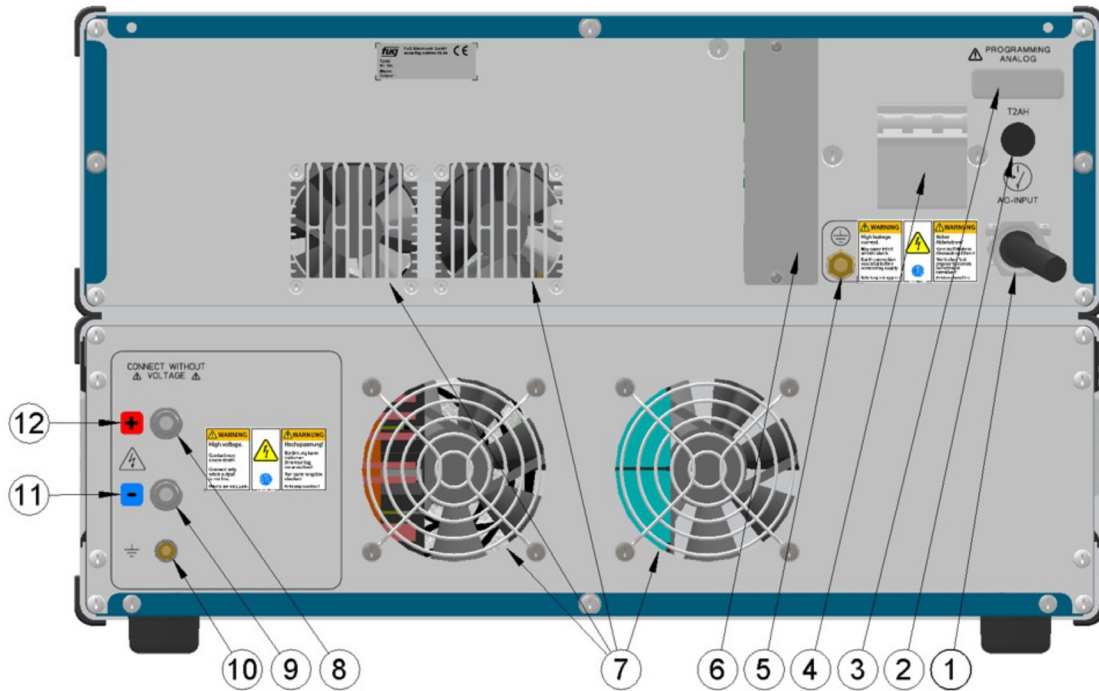


Front panel shown for illustrative purposes only, dimensions and layout differ by power rating - see mechanical details table.

Number	Function	Number	Function
1	AC power switch with indicator light. Disconnects the power supply from the mains, two-pole switching	10	LED for constant current control mode (Constant Current CC)
2	Release of DC output (OUTPUT) No isolation from mains!	11	Ten-turn potentiometer with lockable precision dial for current adjustment
3	LED: DC output ON Green when the controller and the power stage is released (OUTPUT ON)	12	LED BUSY displays data traffic on the digital interface (Optional)
4	LED: Overtemperature: Internal temperature too high, fan failed or contaminated. (Use is type-dependent)	13	Switching the operation mode between REMOTE/ANALOG and REMOTE/DIGITAL (Optional)
5	Voltage display: actual value, flashing: set point	14	LED indicating digital programming active (Optional)
6	LED for constant voltage control mode (Constant Voltage CV)	15	LED indicating Analog programming/ interface active (Optional)
7	Ten-turn potentiometer with lockable precision dial for voltage adjustment	16	Switching the operation mode between LOCAL and REMOTE (Optional)
8	SET VALUES Switch displays between set value and actual value. Displays flash when in set-point mode.	17	LED LOCAL control mode active (Optional)
9	Current display: actual value, flashing: set point		

Mechanical Details

Rear view with three phase AC input



Rear panel shown for illustrative purposes only, dimensions and layout differ by power rating - see mechanical details table.

Number	Function	Number	Function
1	Mains input with fixed installed cable, for 3 phase mains	7	Air outlet (depending on device type)
2	Fuse holder for internal electronics fuse	8	HV output (dedicated for screened HV-cable with grounded screen, which can be used for current return)
3	Earthing bolt (only for power supplies with 3 phase mains input). These power supplies have to be properly connected to earth via this earthing bolt with 10mm ²	9	0VDC load connection, internally connected to the 0V of the electronics. This 0VDC connection is permanently connected to the protective conductor (PE).
4	Automatic circuit breaker, fuse holder	10	Earth bolt (is permanently connected to the protective conductor (PE): This connection must be connected to the ground of the load!
5	Option port for digital interface (e.g., IEEE 488, RS232, USB, LAN)	11	Polarity indication: RED: POSITIVE, BLUE: NEGATIVE RED/BLUE: OPTIONAL POLARITY REVERSAL SWITCH
6	(Option) 15 pin Sub-D connector for analog programming/interface		

Mechanical Details

Model Number	Mounting	Width		Height		Depth	Weight
MCP5K0-20000P	Bench mount ⁽¹⁾	19"	443mm	6U	266mm	650mm	40kg
MCP5K0-20000N	Bench mount ⁽¹⁾	19"	443mm	6U	266mm	650mm	40kg
MCP5K0-20000R	Bench mount ⁽¹⁾	19"	443mm	6U	266mm	650mm	40kg
MCP5K0-35000P	Bench mount ⁽¹⁾	19"	443mm	6U	266mm	650mm	40kg
MCP5K0-35000N	Bench mount ⁽¹⁾	19"	443mm	6U	266mm	650mm	40kg
MCP5K0-35000R	Bench mount ⁽¹⁾	19"	443mm	6U	266mm	650mm	40kg

Notes:

1. Rack mount option

Cables

Mains input cable

3 phase mains: open end

Screened HV output cable

3m long with mating connector fitted one end only. Delivered short circuited for safety reasons.