MCP1K4 Series

XP Power

1.4kW BENCH MOUNT

AC-HVDC POWER SUPPLIES

The MCP1K4 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
- Single 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

MCP1K4 Series

Models & Ratings

Model Number	Polarity	Output Voltage	Output Current	Input Voltage	Frequency
MCP1K4-125	Floating	0 to 125V	0 to 10A	230VAC ±10%	47 to 63Hz
MCP1K4-200	Floating	0 to 200V	0 to 5A	230VAC ±10%	47 to 63Hz
MCP1K4-350	Floating	0 to 350V	0 to 3A	230VAC ±10%	47 to 63Hz
MCP1K4-650	Floating	0 to 650V	0 to 2A	230VAC ±10%	47 to 63Hz
MCP1K4-1250	Floating	0 to 1.25kV	0 to 1A	230VAC ±10%	47 to 63Hz
MCP1K4-2000	Floating	0 to 2kV	0 to 600mA	230VAC ±10%	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 x 10-5 + 100mVpp
- Higher stability: Stability, over 8 hours under constant conditions $<\pm 1 \times 10^{-5}$
  Temperature coefficient $<\pm 1 \times 10^{-5}$/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 ±500VDC. Devices with a rated voltage between 650VDC and 2000VDC are isolated for ±2000VDC. 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 ≥650VDC 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	<±1 x 10^{-3} of rated value with potentiometer on front panel <±1 x 10^{-5} of rated value with fine potentiometer 1 x 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 <±0.2% of rated value Current <±0.2% of rated value for current ranging between >5mA to <200A Current <±0.5% of rated value for current ranges <5mA or >200A Additional digital display error <±2 digits				
Residual Ripple	Up to 350W rated power: <5 x 10^{-5}pp + 50mVpp, for 700W and higher: <2 x 10^{-4}pp + 200mVpp (measuring bandwidth 30Hz to 10MHz) up to 350W <1.5 x 10^{-5} + 20mV of rated value RMS for 700W and higher <6 x 10^{-5} + 70mV of rated value RMS				
Control Deviation	±10% mains voltage variation: <±1 x 10^{-5} of the rated value Open circuit / full load: 2 x 10^{-4} of the rated value Over 8 hours: <±1 x 10^{-4} of the rated value Temperature deviations <±1.5 x 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 SET VALUES 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	

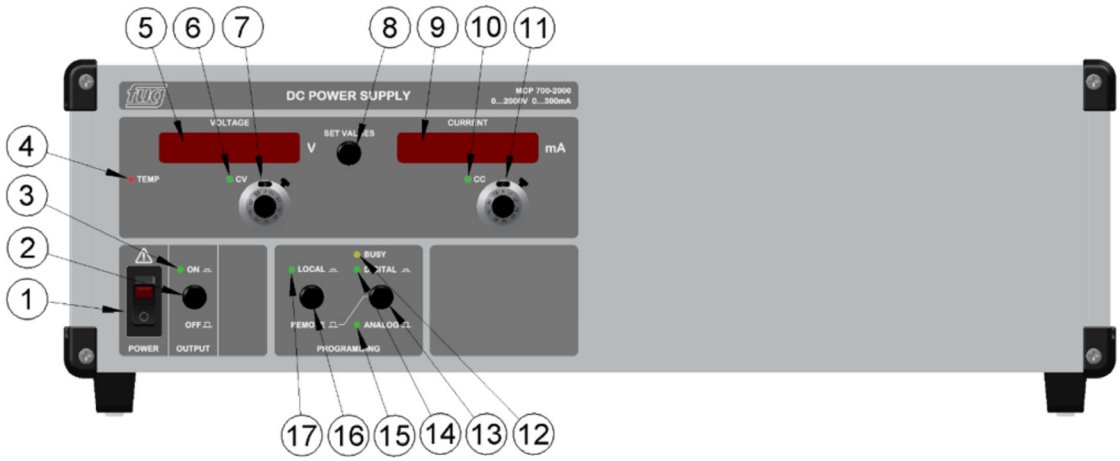
Safety Approvals

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

MCP1K4 Series

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 single 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	AC input with mains fuses Up to 700W: IEC connector (as shown) with integrated fuse, at 1400W, C20 mains cable in accordance with IEC60320-C20, equipped with automatic circuit breaker.	5	For power supplies with 650VDC or higher output voltage: Positive HV output (designated for screened output cable with grounded screen. To let the current flow back via the screen, the other (negative) output must be shorted to ground) For power supplies up to 350VDC output voltage: HV-output with safety laboratory socket
2	(Optional) 15-pin Sub-D connector for Analog programming/ interface	6	For power supplies with 650VDC or higher output voltage: Negative HV output (designated for screened output cable with grounded screen. To let the current flow back via the screen, the other (positive) output must be shorted to ground) For power supplies up to 350VDC output voltage: HV-output with safety laboratory socket
3	(Optional) Slot for digital interface (e.g.: IEEE-488, RS232, USB, LAN, ...)	7	Earth bolt (is permanently connected to the protective conductor (PE): This connection must be connected to the ground of the load!
4	Air outlet (depending on device type)	8/9	Polarity indication: BLUE: NEGATIVE, RED: POSITIVE

Mechanical Details

Model Number	Mounting	Width		Height		Depth	Weight
MCP1K4-125	Bench mount(1)	19”	443mm	3U	133mm	450mm	14kg
MCP1K4-200	Bench mount(1)	19”	443mm	3U	133mm	450mm	14kg
MCP1K4-350	Bench mount(1)	19”	443mm	3U	133mm	450mm	14kg
MCP1K4-650	Bench mount(1)	19”	443mm	3U	133mm	450mm	14kg
MCP1K4-1250	Bench mount(1)	19”	443mm	3U	133mm	450mm	14kg
MCP1K4-2000	Bench mount(1)	19”	443mm	3U	133mm	450mm	14kg

Notes:

1. Rack mount option

Cables

Mains input cable
Single phase mains: with CEE-7/7

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