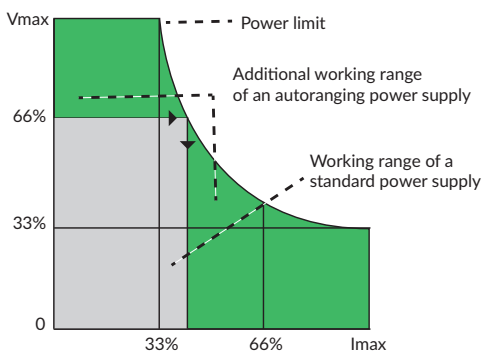


1.5kW BENCH MOUNT

The MCA1K5 series are a switch-mode power supplies with continuous automatic range adjustment. They provide the full output performance over a wide voltage and current range. Due to the automatic power limit, their working range compared to other power supplies is about three times wider.

The high switching frequency achieves a low residual ripple in the generated output voltage with high stability, good control dynamics, and at the same time only a low amount of stored energy.

Autoranging function



AC-HVDC POWER SUPPLIES



Dimensions

See mechanical details table

Features

- Output voltages 0-150VDC to 0-3kVDC
- For models up to 1.5kVDC: floating output
- Autoranging characteristic with fixed power limit
- Single phase AC input
- Continuous operation at full rated power
- Voltage and constant current control with automatic transition
- Control mode display with LED's and power limit LED
- Digital, LAN and USB interface option
- Analog programming/interface option
- Manual voltage and current control with 10 turn potentiometer
- 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

- Aerospace
- Capacitor testing
- Chemical/Biological research
- Inverter/Rectifier testing
- Ion sources
- Nuclear research
- Photomultiplier
- Plasma/Gas discharge
- Sputtering

Models & Ratings

Model Number	Polarity	Output Voltage	Output Current	Input Voltage	Frequency
MCA1K5-150	Floating	0 to 150V	0 to 30A	230VAC \pm 10%	47 to 63Hz
MCA1K5-400	Floating	0 to 400V	0 to 12A	230VAC \pm 10%	47 to 63Hz
MCA1K5-750	Floating	0 to 750V	0 to 6A	230VAC \pm 10%	47 to 63Hz
MCA1K5-1500	Floating	0 to 1.5kV	0 to 3A	230VAC \pm 10%	47 to 63Hz
MCA1K5-3000P	Positive	0 to +3kV	0 to 1.5A	230VAC \pm 10%	47 to 63Hz
MCA1K5-3000N	Negative	0 to -3kV	0 to 1.5A	230VAC \pm 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
- Power adjustment with additional DVM and potentiometer
- Computer interfaces -IEEE 488, RS 232, RS 422, Profibus DP, USB, LAN (more on request)
- Signal for output voltage <50V
- 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		85		%	
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 encoder.				
Output Polarity /Isolation	<p>Depending on the output voltage and output power, the power supply units of the MCA series have either floating or unipolar output with one high-voltage carrying and one grounded pole.</p> <p>Versions:</p> <p>Up to 400VDC nominal voltage: Output floating, either the positive or the negative pole can be earthed. Insulation against earth ± 500VDC</p> <p>At 750VDC nominal voltage: output floating, either the positive or the negative pole can be earthed. Insulation against earth ± 1kVDC</p> <p>At 1.5kVDC nominal voltage and up to 3kW nominal power: output floating, either the positive or the negative pole can be earthed. Insulation against earth ± 2kVDC</p> <p>With 3kVDC nominal voltage (all power classes) and 1.5kVDC with 6kW or 9kW nominal power: One pole carries high voltage, the other is firmly grounded.</p> <p>Power supply units with optional built-in potential-bound analog programming in all voltage and power classes: One pole carries high voltage, the other is firmly grounded.</p>				
Set point resolution		$\pm 1 \times 10^{-3}$		%	Nominal value with potentiometer on front panel
		$\pm 1 \times 10^{-5}$			Nominal value with fine potentiometer
		1×10^{-4}			Nominal value with option interface
Power Range and Power Limitation	<p>Autoranging Factor 1:3:</p> <p>Three-times output voltage at 1/3 of output current or</p> <p>Three-times output current at 1/3 of output voltage</p>				
Voltage Setting Range	Using the VOLTAGE potentiometer, approx. 0.1% to 100% of the rated value				
Current Setting Range	Using the CURRENT potentiometer, approx. 0.1% to 100% of the rated value				
Reproducibility	$\pm 1 \times 10^{-3}$ of rated value with potentiometer on front panel $\pm 1 \times 10^{-4}$ of rated value with option interface				
Regulation Time Constant Voltage Mode	<1ms with load changes from 10% to 100% or 100% to 10% respectively				
Regulation Time Constant Current Mode	<10ms with load changes that effect a change of less than 10% in the output voltage				
Residual Ripple	$< 2 \times 10^{-4} \text{pp} + 200 \text{mVpp}$ (measuring bandwidth 30Hz to 10MHz) $< 6 \times 10^{-5} + 70 \text{mV}$ of rated value RMS				
Setting Time at Full Load	<300ms for changes in the output voltage from 10% to 90% or 90% to 10%, respectively				
Discharge Time Constant	With output free of load max. 10s Discharge time to <50V max. 60s				
Control Deviation	$\pm 10\%$ mains voltage variation: $< \pm 1 \times 10^{-5}$ of the rated value No load: 5×10^{-4} of the rated value Over 8 hours: $< \pm 2 \times 10^{-4}$ of the rated value Temperature deviations $< \pm 1 \times 10^{-4}/\text{K}$ 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	
Temperature Coefficient		±0.1		°C	
Humidity Operating	0		+80	%	Up to +31°C, linearly decreasing down to 50% RH at +40°C, no precipitation and max
Storage Humidity			+80	%	No precipitation and max
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 encoders, power switch, HV ON/OFF switch
Operating Modes	The HV output's polarity is floating or unipolar (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 LEDs for status messages voltage control / current control.

EMC: Emissions

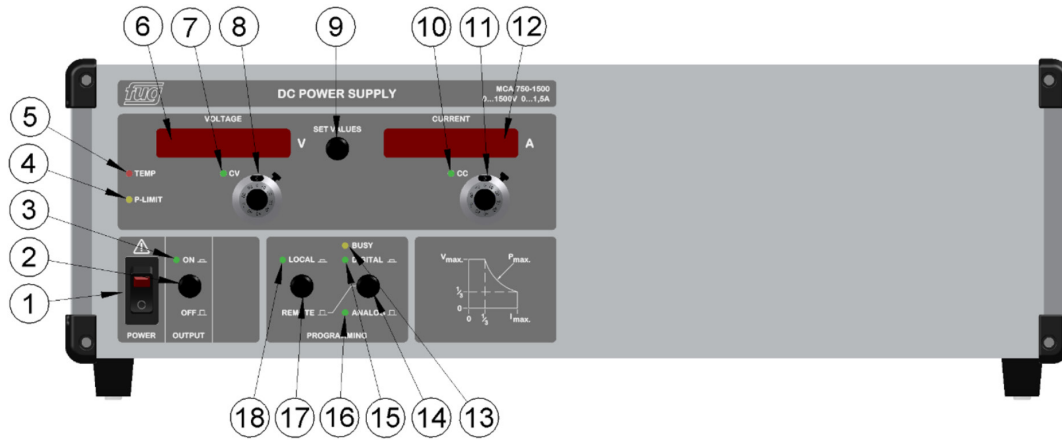
Phenomenon	Standard	Notes & Conditions
Harmonic Currents	EN61000-6-2	
Voltage Flicker	EN61000-6-3	

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

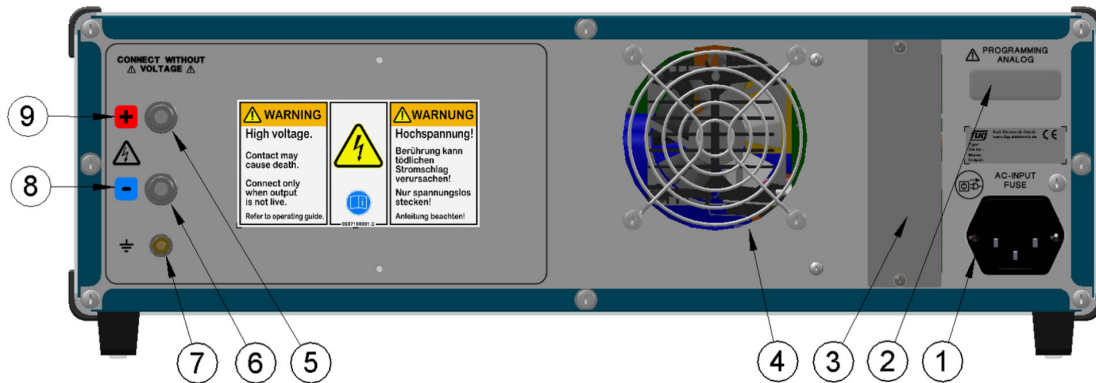


Front panel shown for illustrative purposes only, dimensions and layout differ by power rating - see mechanical details table.

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 control loop is closed and power stage is operating (OUTPUT ON)	12	Current display: flashing: Set point not flashing: Actual value
4	LED: P-LIMIT display for power limit	13	LED BUSY displays data traffic on the digital interface (Optional)
5	LED: TEMP for over-temperature; Internal temperature too high, fan failed or contaminated. (Use depends on type)	14	Switching the operation mode between REMOTE/ANALOG and REMOTE/DIGITAL (Optional)
6	Voltage display: flashing: Set point not flashing: Actual value	15	LED indicating digital programming active (Optional)
7	LED for constant voltage control mode (Constant Voltage CV)	16	LED indicating Analog programming/interface active (Optional)
8	Ten-turn potentiometer with lockable precision dial for voltage adjustment	17	Switching the operation mode set-point between LOCAL and REMOTE (Optional)
9	SET VALUES Switch displays between Set-point mode and Actual output mode, displays flashes when in set-point mode	18	LED LOCAL control mode active(Optional)

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 750W: IEC connector (as shown) with integrated fuse, at 1.5kVDC, C20 mains cable in accordance with IEC60320-C20, equipped with automatic circuit breaker	6	HV Output- (negative) For power supplies with nominal voltage up to 750VDC: laboratory safety socket For power supplies with nominal voltage 1.5kVDC an 3kVDC: SHV (designated for screened output cable with grounded screen.)
2	15-pin Sub-D connector for Analog programming/interface (Optional)	7	Earth bolt (is permanently connected to the protective conductor (PE): This connection must be connected to the ground of the load
3	Slot for digital interface (e.g.: IEEE-488, RS232, USB, LAN, ...) (Optional)	8	Polarity indication: BLUE: NEGATIVE
4	Air outlet (depending on device type)	9	Polarity indication: RED: POSITIVE
5	HV Output+ (positive) For power supplies with nominal voltage up to 750VDC: laboratory safety socket For power supplies with nominal voltage 1.5kVDC and 3kVDC: SHV (designated for screened output cable with grounded screen.)		

Mechanical Details

Model Number	Mounting	Width		Height		Depth	Weight
MCA1K5-150	Bench mount ⁽¹⁾	19"	443mm	4U	177mm	450mm	17kg
MCA1K5-400	Bench mount ⁽¹⁾	19"	443mm	4U	177mm	450mm	17kg
MCA1K5-750	Bench mount ⁽¹⁾	19"	443mm	4U	177mm	450mm	16kg
MCA1K5-1500	Bench mount ⁽¹⁾	19"	443mm	4U	177mm	450mm	17kg
MCA1K5-3000P	Bench mount ⁽¹⁾	19"	443mm	4U	177mm	450mm	17kg
MCA1K5-3000N	Bench mount ⁽¹⁾	19"	443mm	4U	177mm	450mm	17kg

Notes:

- 1. Rack mount option

Cables

Mains input cable

For single phase mains: with CEE-7/7

Mating connectors

Mating connectors for control inputs and outputs (Excluded comm. available cables for digital interfaces)

For power supplies with output voltage 1.5kVDC or more: Set of one or two screened HV output cables, 3m with mating connectors assembled on one end, other end open (For delivery short circuited for safety reasons)