

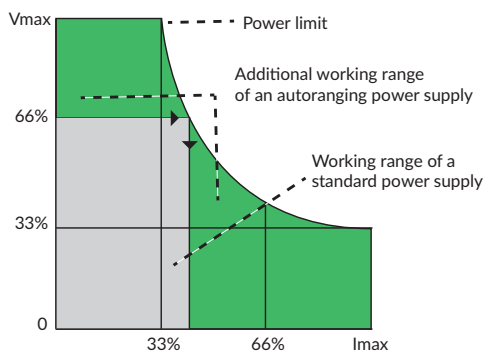
750W BENCH MOUNT

AC-HVDC POWER SUPPLIES

The MCA750 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.

Autorangeing function



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 |
|--------------|----------|----------------|----------------|------------------|------------|
| MCA750-150 | Floating | 0 to 150V | 0 to 15A | 230VAC \pm 10% | 47 to 63Hz |
| MCA750-400 | Floating | 0 to 400V | 0 to 6A | 230VAC \pm 10% | 47 to 63Hz |
| MCA750-750 | Floating | 0 to 750V | 0 to 3A | 230VAC \pm 10% | 47 to 63Hz |
| MCA750-1500 | Floating | 0 to 1.5kV | 0 to 1.5A | 230VAC \pm 10% | 47 to 63Hz |
| MCA750-3000P | Positive | 0 to +3kV | 0 to 750mA | 230VAC \pm 10% | 47 to 63Hz |
| MCA750-3000N | Negative | 0 to -3kV | 0 to 750mA | 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 | | % | |
| Oversvoltage 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 $\pm 500\text{VDC}$</p> <p>At 750VDC nominal voltage: output floating, either the positive or the negative pole can be earthed. Insulation against earth $\pm 1\text{kVDC}$</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 $\pm 2\text{kVDC}$</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

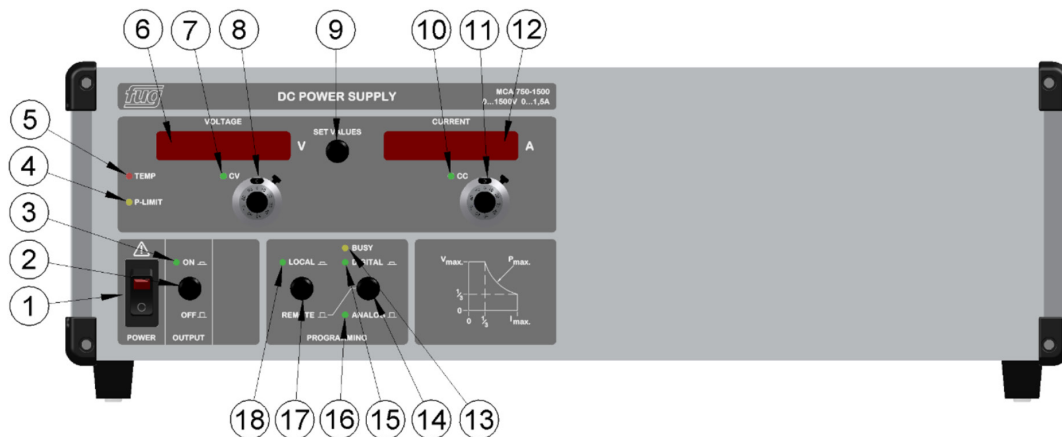
| Phenomenon | Standard | Notes & Conditions |
|-------------------|-------------|--------------------|
| Harmonic Currents | EN61000-6-2 | |
| Voltage Flicker | EN61000-6-3 | |

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

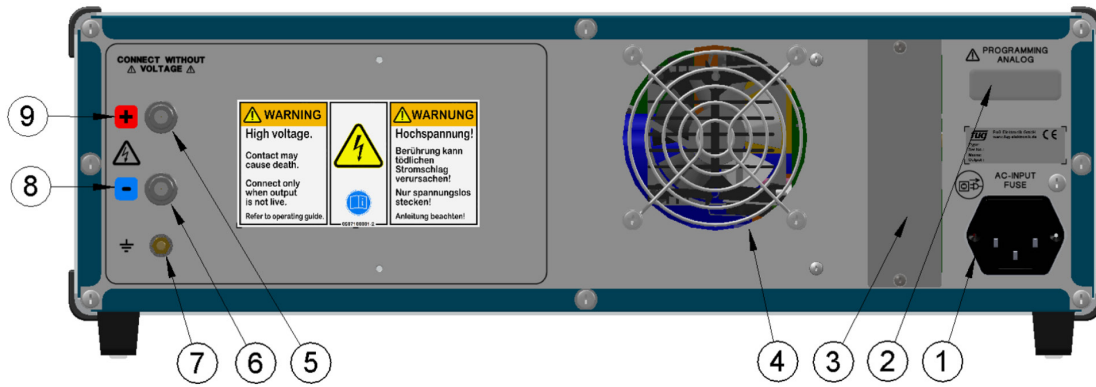


Front panel shown for illustrative purposes only, dimensions and layout differ by power rating - see mechanical details table.

| 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 |
|--------------|----------------------------|-------|-------|--------|-------|-------|--------|
| MCA750-150 | Bench mount ⁽¹⁾ | 19" | 443mm | 3U | 133mm | 350mm | 10kg |
| MCA750-400 | Bench mount ⁽¹⁾ | 19" | 443mm | 3U | 133mm | 350mm | 10kg |
| MCA750-750 | Bench mount ⁽¹⁾ | 19" | 443mm | 3U | 133mm | 350mm | 10kg |
| MCA750-1500 | Bench mount ⁽¹⁾ | 19" | 443mm | 3U | 133mm | 350mm | 10kg |
| MCA750-3000P | Bench mount ⁽¹⁾ | 19" | 443mm | 3U | 133mm | 350mm | 10kg |
| MCA750-3000N | Bench mount ⁽¹⁾ | 19" | 443mm | 3U | 133mm | 350mm | 10kg |

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)