

Medium voltage power supplies

Series MCP from 125 V to 2000 V / 14 W to 15000 W



Floating output (rear side)

Design example

MCP 15000 - 2000
2000V / 7A

MCP 140 - 1250
1250V / 100mA



Features:

- Compact size and light weight
- Efficiency approx. 90%
- Short-circuit & flashover proof
- Unlimited operation with rated current in a short-circuit condition
- Unlimited operation with rated power
- Voltage and current regulation with automatic sharp transition, control modes indicated by LEDs
- Adjustable overvoltage protection (limitation of set value)
- 4½ digit DVM's for voltage and current for all models
- Voltage and current setting by means of 10-turn potentiometers with precision scale; the adjusting knob can be locked
- Indication of set point values by means of button for switch-over of the displays
- Set point adjustment possible with locked output, release of output voltage by means of an "ON" / "OFF" switch

- Suitable for inductive and capacitive loads
- Suitable for photomultipliers

Function:

In principle, the rectified line voltage drives a square wave generator of fixed frequency, whose AC voltage is transformed, rectified and filtered, producing the output voltage. For regulation, the square wave voltage is pulse width modulated.

A low residual ripple of the output voltage, together with a high stability, high regulation speed and a low stored energy are all achieved by virtue of the high switching frequency.

Design:

- ½19" or 19" table-top case (depending on output voltage and power).
- 19" Rack-adapters for mounting into a 19" rack are available as accessory.

Output:

- Output isolation:
The output is floating. Either the positive or the negative terminal may be connected to earth. Units with nominal voltage up to 350V are isolated for ±500V. Units with nominal voltage from 650V up to 2000V are isolated for ±2000V. (Not valid with the option analog programming. If the floating function should remain, the floating analog programming must be chosen).
- Output terminals:
All output terminals are located at the rear side of the unit. Units up to 350V nominal voltage are equipped with 4mm safety connectors. For nominal voltage of 650V and higher, high voltage connectors with the appropriate dielectric strength are delivered with the power supply.

Technical Data:

- Mains connection:
Up to 1400W nominal power: 230V ±10% 47Hz to 63Hz
For 2800W and higher: 400V ±10% 47Hz to 63Hz, three-phase
- Ambient temperature: 0°C to +40°C

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The following data applies for voltage and current regulation, and refers to the rated value (unless otherwise stated): (For explanations please refer to Definitions and Terms on page 54.)

- Setting range: from approx. 0,1% to 100%
- Setting resolution: $\pm 1 \times 10^{-4}$
- Residual ripple (0-10MHz):
Up to 350W nominal power: $< 5 \times 10^{-5} \text{pp} + 50 \text{mVpp}$
For 700W and higher: $< 2 \times 10^{-4} \text{pp} + 200 \text{mVpp}$
- Recovery time:
Voltage control: $< 1 \text{ms}$ for load changes from 10% to 100% or from 100% to 10%

Current control:
 $< 10 \text{ms}$ for load changes causing an output change of less than 10% of the rated voltage

- Setting time at nominal load: $< 300 \text{ms}$ for changes of the output voltage from 10% to 90% or 90% to 10%
- Discharge time constant for output without load: approx. 2sec. to 10sec., depending on type
- Deviation:
For $\pm 10\%$ mains voltage variation: $< \pm 1 \times 10^{-5}$
For no load / full load: $< 1 \times 10^{-4}$
Over 8 hours under constant conditions: $< \pm 1 \times 10^{-4}$

Within the temperature range:
 $< \pm 1 \times 10^{-4} / \text{K}$

Possible Options:

- Coarse/fine-potentiometers (99% / 1%) for more accurate adjustment of voltage and / or current
- Analog programming (One of the outputs on "0V" - potential; see also page 44)
- Analog programming, floating (see page 44)
- DVM with better resolution

- Computer interfaces - IEEE 488, RS 232, RS 422, Profibus DP, USB, LAN (more on request) (see page 46)
- Lower ripple (see page 48)
- Higher stability (see page 48)
- Lower stored energy (see page 48)
- Power limitation (see page 48)

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

Type	Voltage	Current	Width	Height	Depth	Weight
MCP 35 - 125	● 0 - 125 V	0 - 250 mA	½19" / 222 mm	3 U / 133 mm	350 mm	4 kg
MCP 140 - 125	● 0 - 125 V	0 - 1 A	½19" / 222 mm	3 U / 133 mm	350 mm	5 kg
MCP 350 - 125	● 0 - 125 V	0 - 2,5 A	½19" / 222 mm	3 U / 133 mm	350 mm	6 kg
MCP 700 - 125	● 0 - 125 V	0 - 5 A	19" / 443 mm	3 U / 133 mm	350 mm	9 kg
MCP 1400 - 125	● 0 - 125 V	0 - 10 A	19" / 443 mm	3 U / 133 mm	450 mm	12 kg
MCP 2800 - 125 3)	0 - 125 V	0 - 20 A	19" / 443 mm	3 U / 133 mm	550 mm	23 kg
MCP 5000 - 125 3)	0 - 125 V	0 - 40 A	19" / 443 mm	6 U / 266 mm	650 mm	40 kg
MCP 10000 - 125 3)	0 - 125 V	0 - 80 A	19" / 443 mm	9 U / 399 mm	650 mm	75 kg
MCP 15000 - 125 3)	0 - 125 V	0 - 120 A	19" / 443 mm	12 U / 535 mm	650 mm	110 kg
MCP 35 - 200	● 0 - 200 V	0 - 150 mA	½19" / 222 mm	3 U / 133 mm	350 mm	4 kg
MCP 140 - 200	● 0 - 200 V	0 - 600 mA	½19" / 222 mm	3 U / 133 mm	350 mm	5 kg
MCP 350 - 200	● 0 - 200 V	0 - 1,5 A	½19" / 222 mm	3 U / 133 mm	350 mm	6 kg
MCP 700 - 200	● 0 - 200 V	0 - 3 A	19" / 443 mm	3 U / 133 mm	350 mm	9 kg
MCP 1400 - 200	● 0 - 200 V	0 - 6 A	19" / 443 mm	3 U / 133 mm	450 mm	12 kg
MCP 2800 - 200 3)	0 - 200 V	0 - 12 A	19" / 443 mm	3 U / 133 mm	550 mm	23 kg
MCP 5000 - 200 3)	0 - 200 V	0 - 25 A	19" / 443 mm	6 U / 266 mm	650 mm	40 kg
MCP 10000 - 200 3)	0 - 200 V	0 - 50 A	19" / 443 mm	9 U / 399 mm	650 mm	75 kg
MCP 15000 - 200 3)	0 - 200 V	0 - 75 A	19" / 443 mm	12 U / 535 mm	650 mm	110 kg
MCP 35 - 350	● 0 - 350 V	0 - 100 mA	½19" / 222 mm	3 U / 133 mm	350 mm	4 kg
MCP 140 - 350	● 0 - 350 V	0 - 400 mA	½19" / 222 mm	3 U / 133 mm	350 mm	5 kg
MCP 350 - 350	● 0 - 350 V	0 - 1 A	½19" / 222 mm	3 U / 133 mm	350 mm	6 kg
MCP 700 - 350	● 0 - 350 V	0 - 2 A	19" / 443 mm	3 U / 133 mm	350 mm	9 kg
MCP 1400 - 350	● 0 - 350 V	0 - 4 A	19" / 443 mm	3 U / 133 mm	450 mm	12 kg
MCP 2800 - 350 3)	0 - 350 V	0 - 8 A	19" / 443 mm	3 U / 133 mm	550 mm	23 kg
MCP 5000 - 350 3)	0 - 350 V	0 - 14 A	19" / 443 mm	6 U / 266 mm	650 mm	40 kg
MCP 10000 - 350 3)	0 - 350 V	0 - 28 A	19" / 443 mm	9 U / 399 mm	650 mm	75 kg
MCP 15000 - 350 3)	0 - 350 V	0 - 42 A	19" / 443 mm	12 U / 535 mm	650 mm	110 kg

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Type	Voltage	Current	Width	Height	Depth	Weight
MCP 14 - 650	0 - 650 V	0 - 20 mA	½19" / 222 mm	3 U / 133 mm	350 mm	4 kg
MCP 35 - 650	0 - 650 V	0 - 50 mA	½19" / 222 mm	3 U / 133 mm	350 mm	4 kg
MCP 140 - 650	0 - 650 V	0 - 200 mA	½19" / 222 mm	3 U / 133 mm	350 mm	5 kg
MCP 350 - 650	0 - 650 V	0 - 500 mA	½19" / 222 mm	3 U / 133 mm	350 mm	6 kg
MCP 700 - 650	0 - 650 V	0 - 1 A	19" / 443 mm	3 U / 133 mm	350 mm	9 kg
MCP 1400 - 650	0 - 650 V	0 - 2 A	19" / 443 mm	3 U / 133 mm	450 mm	12 kg
MCP 2800 - 650 3)	0 - 650 V	0 - 4 A	19" / 443 mm	3 U / 133 mm	550 mm	23 kg
MCP 5000 - 650 3)	0 - 650 V	0 - 7 A	19" / 443 mm	6 U / 266 mm	650 mm	40 kg
MCP 10000 - 650 3)	0 - 650 V	0 - 15 A	19" / 443 mm	9 U / 399 mm	650 mm	75 kg
MCP 15000 - 650 3)	0 - 650 V	0 - 22,5 A	19" / 443 mm	12 U / 535 mm	650 mm	110 kg
MCP 14 - 1250	0 - 1250 V	0 - 10 mA	½19" / 222 mm	3 U / 133 mm	350 mm	4 kg
MCP 35 - 1250	0 - 1250 V	0 - 25 mA	½19" / 222 mm	3 U / 133 mm	350 mm	4 kg
MCP 140 - 1250	0 - 1250 V	0 - 100 mA	½19" / 222 mm	3 U / 133 mm	350 mm	5 kg
MCP 350 - 1250	0 - 1250 V	0 - 250 mA	½19" / 222 mm	3 U / 133 mm	350 mm	6 kg
MCP 700 - 1250	0 - 1250 V	0 - 500 mA	19" / 443 mm	3 U / 133 mm	350 mm	9 kg
MCP 1400 - 1250	0 - 1250 V	0 - 1 A	19" / 443 mm	3 U / 133 mm	450 mm	12 kg
MCP 2800 - 1250 3)	0 - 1250 V	0 - 2 A	19" / 443 mm	3 U / 133 mm	550 mm	23 kg
MCP 5000 - 1250 3)	0 - 1250 V	0 - 4 A	19" / 443 mm	6 U / 266 mm	650 mm	40 kg
MCP 10000 - 1250 3)	0 - 1250 V	0 - 8 A	19" / 443 mm	9 U / 399 mm	650 mm	75 kg
MCP 15000 - 1250 3)	0 - 1250 V	0 - 12 A	19" / 443 mm	12 U / 535 mm	650 mm	110 kg
MCP 14 - 2000	0 - 2000 V	0 - 6 mA	½19" / 222 mm	3 U / 133 mm	350 mm	4 kg
MCP 35 - 2000	0 - 2000 V	0 - 15 mA	½19" / 222 mm	3 U / 133 mm	350 mm	4 kg
MCP 140 - 2000	0 - 2000 V	0 - 60 mA	½19" / 222 mm	3 U / 133 mm	350 mm	5 kg
MCP 350 - 2000	0 - 2000 V	0 - 150 mA	½19" / 222 mm	3 U / 133 mm	350 mm	6 kg
MCP 700 - 2000	0 - 2000 V	0 - 300 mA	19" / 443 mm	3 U / 133 mm	350 mm	9 kg
MCP 1400 - 2000	0 - 2000 V	0 - 600 mA	19" / 443 mm	3 U / 133 mm	450 mm	12 kg
MCP 2800 - 2000 3)	0 - 2000 V	0 - 1,2 A	19" / 443 mm	3 U / 133 mm	550 mm	23 kg
MCP 5000 - 2000 3)	0 - 2000 V	0 - 2,5 A	19" / 443 mm	6 U / 266 mm	650 mm	40 kg
MCP 10000 - 2000 3)	0 - 2000 V	0 - 5 A	19" / 443 mm	9 U / 399 mm	650 mm	75 kg
MCP 15000 - 2000 3)	0 - 2000 V	0 - 7 A	19" / 443 mm	12 U / 535 mm	650 mm	110 kg

3) Three phase mains connection

● short term delivery (components on stock)

For 650V and higher units, the mating high voltage connectors are included in the scope of delivery. Mating high voltage cables you'll find beginning with page 51.