

Medium voltage power supplies

Series MCP from 125 V to 2000 V / 14 W to 4200 W



Floating output (rear side)

Design example **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, 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 analogue programming. If the floating function should remain, the floating analogue 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

(Continued at next page.)

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



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 61.)

- Setting range: from approx. 0,1% to 100%
- Setting resolution: $\pm 1 \times 10^{-4}$
- Residual ripple 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%
- Discharging 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 h 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
- Analogue programming (One of the outputs on "0V" - potential; see also page 52)

- Analogue programming, floating (see page 52)
- Computer interface - IEEE 488, RS 232, RS 422, Profibus DP (more on request) (see page 54)
- Lower ripple (see page 56)
- Higher stability (see page 56)
- Lower stored energy (see page 56)
- Power limitation (see page 56)

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 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

For 650V and higher the mating high voltage connectors are included in the scope of delivery. Mating high voltage cables you'll find beginning with page 59.