

Autoranging power supplies

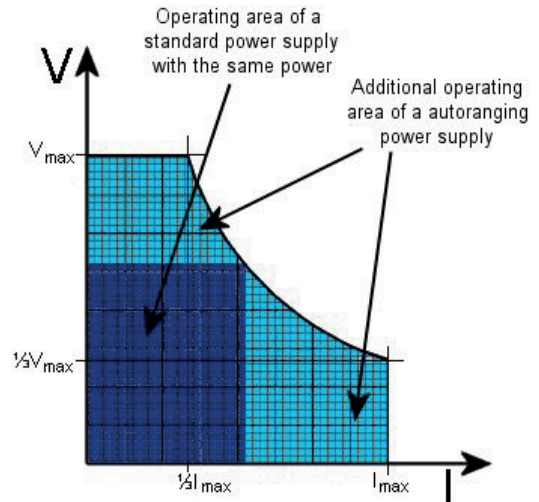
Series NCA / MCA from 55 V to 3000 V / 750 W to 9000 W



Design Example

MCA 9000 - 1500

1500V / 18A, max. 9000W



Features:

- Auto ranging characteristic with constant power limitation
- 5 power classes and 6 Voltage classes: 55V to 3000V
- Up to 1500V with floating output
- Compact size (19" case) , Light-weight and High efficiency
- Short-circuit & flashover proof
- Unlimited operation with nominal power (even in short-circuit conditions)
- Voltage and current regulation with automatic, sharp transition and additional power limitation
- Control mode indicated by LED
- 4½ digit DVM for voltage and current for all power classes
- Voltage and current setting with 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 also for capacitive loads
- Sense connections to compensate voltage drop at the load cables for NCA
- Active down control for NCA

Function:

The NCA/MCA series is an autoranging power supply design in which the power supplies operate over the full range of their output voltage & current - up to the units maximum rated output power. This results in an operating range which is up to 3-times wider than that of a more conventional power supply. When fitted with the optional computer interface, the MCA/NCA series become versatile programmable power supplies. In principle, the rectified line voltage drives a square wave generator, whose AC voltage is transformed, rectified and filtered, producing the output voltage. For regulation, the square wave voltage is pulse width modulated.

Design:

19" table-top case (19" rack adapters available)

Output:

- Output isolation: Up to 1500V nominal voltage and 3000W power, the output is floating. Either the positive or the negative pole may be connected to earth. (Not valid with the option analog programming. If the floating function should remain, the floating analog programming must be chosen).

Maximum isolation voltage: Up to 400V nominal voltage: $\pm 500V$.

At 750V nominal voltage: $\pm 1000V$.

At 1500V nominal voltage: $\pm 2000V$.

At 3000V nominal voltage and for 1500V in the power classes 6000W and 9000W one pole is earthed, the polarity must be indicated when ordering.

• Output terminals:

Units up to 750V nominal voltage have 4mm safety connectors. For units with output current >10A have output clamps. For units with nominal voltage greater than 1500V and rated current up to 10A SHV connectors are provided, suitable HV-cable connectors are included.

Technical Data:

• Mains connection:

Up to 1500W nominal power: 230V $\pm 10\%$ 47Hz to 63Hz;

For nominal power 3000W and higher: 400V $\pm 10\%$ 47Hz to 63Hz; three-phase

• Ambient temperature:

0°C to +40°C

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): $< 2 \times 10^{-4} \text{pp} + 200 \text{mVpp}$
- 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. 10sec for MCA NCA have active down regulation.
- Deviation: For $\pm 10\%$ mains voltage variation: $\pm 1 \times 10^{-5}$ For no load / full load: $< 5 \times 10^{-4}$ Over 8 hours under constant conditions: $< \pm 2 \times 10^{-4}$ Within the temperature range: $< \pm 1 \times 10^{-4}/K$

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Type	Voltage	Current	Width	Height	Depth	Weight
NCA 750 - 55	750 W 0 - 55 V	0 - 40 A	19" / 443 mm	3 U / 133 mm	350 mm	12 kg
NCA 1500 - 55	1500 W 0 - 55 V	0 - 80 A	19" / 443 mm	3 U / 133 mm	550 mm	20 kg
NCA 3000 - 55 3)	3000 W 0 - 55 V	0 - 160 A	19" / 443 mm	3 U / 133 mm	650 mm	25 kg
MCA 750 - 150 ●	750 W 0 - 150 V	0 - 15 A	19" / 443 mm	3 U / 133 mm	350 mm	10 kg
MCA 1500 - 150	1500 W 0 - 150 V	0 - 30 A	19" / 443 mm	4 U / 177 mm	450 mm	17 kg
MCA 3000 - 150 3)	3000 W 0 - 150 V	0 - 60 A	19" / 443 mm	4 U / 177 mm	650 mm	37 kg
MCA 6000 - 150 3)	6000 W 0 - 150 V	0 - 120 A	19" / 443 mm	8 U / 355 mm	650 mm	61 kg
MCA 9000 - 150 3)	9000 W 0 - 150 V	0 - 180 A	19" / 443 mm	12 U / 535 mm	650 mm	90 kg
MCA 750 - 400 ●	750 W 0 - 400 V	0 - 6 A	19" / 443 mm	3 U / 133 mm	350 mm	10 kg
MCA 1500 - 400	1500 W 0 - 400 V	0 - 12 A	19" / 443 mm	4 U / 177 mm	450 mm	17 kg
MCA 3000 - 400 3)	3000 W 0 - 400 V	0 - 24 A	19" / 443 mm	4 U / 177 mm	650 mm	35 kg
MCA 6000 - 400 3)	6000 W 0 - 400 V	0 - 48 A	19" / 443 mm	8 U / 355 mm	650 mm	61 kg
MCA 9000 - 400 3)	9000 W 0 - 400 V	0 - 72 A	19" / 443 mm	12 U / 535 mm	650 mm	90 kg
MCA 750 - 750 ●	750 W 0 - 750 V	0 - 3 A	19" / 443 mm	3 U / 133 mm	350 mm	10 kg
MCA 1500 - 750	1500 W 0 - 750 V	0 - 6 A	19" / 443 mm	4 U / 177 mm	450 mm	16 kg
MCA 3000 - 750 3)	3000 W 0 - 750 V	0 - 12 A	19" / 443 mm	4 U / 177 mm	650 mm	33 kg
MCA 6000 - 750 3)	6000 W 0 - 750 V	0 - 24 A	19" / 443 mm	8 U / 355 mm	650 mm	61 kg
MCA 9000 - 750 3)	9000 W 0 - 750 V	0 - 36 A	19" / 443 mm	12 U / 535 mm	650 mm	90 kg
MCA 750 - 1500 ●	750 W 0 - 1500 V	0 - 1,5 A	19" / 443 mm	3 U / 133 mm	350 mm	10 kg
MCA 1500 - 1500	1500 W 0 - 1500 V	0 - 3 A	19" / 443 mm	4 U / 177 mm	450 mm	17 kg
MCA 3000 - 1500 3)	3000 W 0 - 1500 V	0 - 6 A	19" / 443 mm	4 U / 177 mm	650 mm	32 kg
MCA 6000 - 1500 3)	6000 W* 0 - 1500 V	0 - 12 A	19" / 443 mm	8 U / 355 mm	650 mm	61 kg
MCA 9000 - 1500 3)	9000 W* 0 - 1500 V	0 - 18 A	19" / 443 mm	12 U / 535 mm	650 mm	90 kg
MCA 750 - 3000 ●	750 W* 0 - 3000 V	0 - 750 mA	19" / 443 mm	3 U / 133 mm	350 mm	10 kg
MCA 1500 - 3000	1500 W* 0 - 3000 V	0 - 1,5 A	19" / 443 mm	4 U / 177 mm	450 mm	17 kg
MCA 3000 - 3000 3)	3000 W* 0 - 3000 V	0 - 3 A	19" / 443 mm	4 U / 177 mm	650 mm	32 kg
MCA 6000 - 3000 3)	6000 W* 0 - 3000 V	0 - 6 A	19" / 443 mm	8 U / 355 mm	650 mm	61 kg
MCA 9000 - 3000 3)	9000 W* 0 - 3000 V	0 - 9 A	19" / 443 mm	12 U / 535 mm	650 mm	90 kg

3) Three phase mains connection

● short term delivery (components on stock)

*Fields marked with * power supply types do not have a floating output.

For orders of power supplies with 3000V nominal voltage please state the required output polarity.

For 1500V and higher, the mating high voltage connectors are included in the scope of delivery. Mating high voltage cables you'll find beginning with page 51.

Possible Options:

- Analog programming (One of the outputs on "0V" - potential; see also page 44)
- Analog programming, floating (see page 44)
- Computer interfaces - IEEE 488, RS 232, RS 422, Profibus DP, USB, LAN (more on request) (see page 46)

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