

Linear regulated power supplies unipolar Series NLN from 6,5 V to 500 V / 35 W to 1400 W



Design examples

NLN 1400 - 20
20V / 60A

Features:

- Voltage and current setting with 10-turn potentiometers with precision scale; the adjusting knob can be locked
- Output voltage and output current are fast programmable
- No output capacitor
- All units are short circuit proof and allow unlimited operation with full current in short circuit condition
- Voltage and current regulation with automatic and sharp transition; control mode indicated by LEDs
- 4½ digit DVM for voltage and current (for table-top models)
- Sense terminals for the compensation of voltage drop on the load lines, for units up to 350V nominal voltage. The rated voltage always refers to the output terminals
- Suitable also for inductive and capacitive loads
- Standard starting current limitation from 700W nominal power onwards

Function:

The mains voltage is transformed to the appropriate level and rectified. The rectified voltage charges a bank of capacitors of the intermediate circuit to a constant voltage, which it is given via a set of power transistors to the output. The series transistor defines the final stability of the output voltage and the regulation speed. Optionally a set of power transistors parallel to the output can act as a current sink to provide active pull down ability. The design of linear regulated power supplies is optimized for fast programming speed.

Design:

- For 35W nominal power - ½19" table-top case,
- other models - 19" table-top case (19" rack adaptors available)
- Cooling: Convection or built-in fan with air outlet on the rear

Output:

- Output isolation:
The output is floating. Operating voltage with respect to earth: max. ±500V. Each of the output terminals may be connected to earth.
- 4mm safety connectors up to 20A on the rear panel. For higher currents clamps installed on the rear.

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
- Power loss:
At nominal load approx. 25%, during short circuit at nominal current approx 125% of the nominal power.

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 from page 54.)

- Setting range:
from approx. 0,1% to 100%
- Setting resolution:
 $\pm 1 \times 10^{-4}$
- Residual ripple (0 - 10MHz):
 $< 5 \times 10^{-4} \text{pp} + 10 \text{mVpp}$
- Recovery time:
<50µs for load changes from 10% to 100% or from 100% to 10%
- Setting time at nominal load:
<1ms for full range
- Deviation:
For ±10% mains voltage variation:
 $< \pm 2 \times 10^{-5}$
For no load / full load:
 $< 2 \times 10^{-4}$
Over 8 hours under constant conditions:
 $< \pm 2 \times 10^{-4}$
Within the temperature range:
 $< \pm 2 \times 10^{-4} / \text{K}$

Possible Options:

- Analog programming (The positive output has to be earthed; see also page 44)
- Analog programming, floating (see page 44)
- DVM with higher resolution
- Computer interfaces - IEEE 488, RS 232, RS 422, Profibus DP, USB, LAN (more on request) (see page 46)
- Active pull-down control. Parallel to the output is a set of power transistors operating as a current sink. (see page 48)
- Higher programming speed

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

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Design example

NLN 700 - 250

250V / 2,8A

Customised design
(Non standard voltage/ current
prepared for 19" build-in)

Type	Voltage	Current	Width	Height	Depth	Weight
NLN 35 - 6,5	0 - 6,5 V	0 - 5 A	½19" / 222 mm	3 U / 133 mm	350 mm	5 kg
NLN 140 - 6,5	0 - 6,5 V	0 - 10 A	19" / 443 mm	3 U / 133 mm	350 mm	10 kg
NLN 350 - 6,5	0 - 6,5 V	0 - 30 A	19" / 443 mm	4 U / 177 mm	450 mm	19 kg
NLN 700 - 6,5	0 - 6,5 V	0 - 60 A	19" / 443 mm	4 U / 177 mm	550 mm	38 kg
NLN 1400 - 6,5	0 - 6,5 V	0 - 120 A	19" / 443 mm	7 U / 310 mm	550 mm	50 kg
NLN 35 - 12,5	0 - 12,5 V	0 - 2,5 A	½19" / 222 mm	3 U / 133 mm	350 mm	5 kg
NLN 140 - 12,5	0 - 12,5 V	0 - 8 A	19" / 443 mm	3 U / 133 mm	350 mm	10 kg
NLN 350 - 12,5	0 - 12,5 V	0 - 20 A	19" / 443 mm	4 U / 177 mm	450 mm	19 kg
NLN 700 - 12,5	0 - 12,5 V	0 - 50 A	19" / 443 mm	4 U / 177 mm	550 mm	38 kg
NLN 1400 - 12,5	0 - 12,5 V	0 - 80 A	19" / 443 mm	7 U / 310 mm	550 mm	50 kg
NLN 35 - 20	0 - 20 V	0 - 1,5 A	½19" / 222 mm	3 U / 133 mm	350 mm	5 kg
NLN 140 - 20	0 - 20 V	0 - 6 A	19" / 443 mm	3 U / 133 mm	350 mm	10 kg
NLN 350 - 20	0 - 20 V	0 - 15 A	19" / 443 mm	4 U / 177 mm	450 mm	19 kg
NLN 700 - 20	0 - 20 V	0 - 30 A	19" / 443 mm	4 U / 177 mm	550 mm	35 kg
NLN 1400 - 20	0 - 20 V	0 - 60 A	19" / 443 mm	7 U / 310 mm	550 mm	50 kg
NLN 35 - 35	0 - 35 V	0 - 1 A	½19" / 222 mm	3 U / 133 mm	350 mm	5 kg
NLN 140 - 35	0 - 35 V	0 - 4 A	19" / 443 mm	3 U / 133 mm	350 mm	10 kg
NLN 350 - 35	0 - 35 V	0 - 10 A	19" / 443 mm	4 U / 177 mm	450 mm	19 kg
NLN 700 - 35	0 - 35 V	0 - 20 A	19" / 443 mm	4 U / 177 mm	550 mm	35 kg
NLN 1400 - 35	0 - 35 V	0 - 40 A	19" / 443 mm	7 U / 310 mm	550 mm	50 kg
NLN 35 - 65	0 - 65 V	0 - 500 mA	½19" / 222 mm	3 U / 133 mm	350 mm	5 kg
NLN 140 - 65	0 - 65 V	0 - 2 A	19" / 443 mm	3 U / 133 mm	350 mm	10 kg
NLN 350 - 65	0 - 65 V	0 - 5 A	19" / 443 mm	4 U / 177 mm	450 mm	19 kg
NLN 700 - 65	0 - 65 V	0 - 10 A	19" / 443 mm	4 U / 177 mm	550 mm	35 kg
NLN 1400 - 65	0 - 65 V	0 - 20 A	19" / 443 mm	7 U / 310 mm	550 mm	50 kg

On request we deliver power supplies of this type also with higher power.

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Design example
Customer specific
special versions

NLN 22500M - 15
15V / 1500A for 0,5s

Special design:
Intermediate storage of energy
Adjustable internal resistance

NLN 3000M - 10
10V / 300A
In rel. Duty cycle 10%



Type	Voltage	Current	Width	Height	Depth	Weight
NLN 35 - 125	0 - 125 V	0 - 250 mA	½19" / 222 mm	3 U / 133 mm	350 mm	5 kg
NLN 140 - 125	0 - 125 V	0 - 1 A	19" / 443 mm	3 U / 133 mm	350 mm	10 kg
NLN 350 - 125	0 - 125 V	0 - 2,5 A	19" / 443 mm	4 U / 177 mm	450 mm	19 kg
NLN 700 - 125	0 - 125 V	0 - 5 A	19" / 443 mm	4 U / 177 mm	550 mm	30 kg
NLN 1400 - 125	0 - 125 V	0 - 10 A	19" / 443 mm	7 U / 310 mm	550 mm	50 kg
NLN 35 - 200	0 - 200 V	0 - 150 mA	½19" / 222 mm	3 U / 133 mm	350 mm	5 kg
NLN 140 - 200	0 - 200 V	0 - 600 mA	19" / 443 mm	3 U / 133 mm	350 mm	10 kg
NLN 350 - 200	0 - 200 V	0 - 1,5 A	19" / 443 mm	4 U / 177 mm	450 mm	19 kg
NLN 700 - 200	0 - 200 V	0 - 3 A	19" / 443 mm	4 U / 177 mm	550 mm	30 kg
NLN 1400 - 200	0 - 200 V	0 - 6 A	19" / 443 mm	7 U / 310 mm	550 mm	50 kg
NLN 35 - 350	0 - 350 V	0 - 100 mA	½19" / 222 mm	3 U / 133 mm	350 mm	5 kg
NLN 140 - 350	0 - 350 V	0 - 400 mA	19" / 443 mm	3 U / 133 mm	350 mm	10 kg
NLN 350 - 350	0 - 350 V	0 - 1 A	19" / 443 mm	4 U / 177 mm	450 mm	19 kg
NLN 700 - 350	0 - 350 V	0 - 2 A	19" / 443 mm	4 U / 177 mm	550 mm	25 kg
NLN 1400 - 350	0 - 350 V	0 - 4 A	19" / 443 mm	7 U / 310 mm	550 mm	50 kg
NLN 35 - 500	0 - 500 V	0 - 60 mA	½19" / 222 mm	3 U / 133 mm	350 mm	5 kg
NLN 140 - 500	0 - 500 V	0 - 250 mA	19" / 443 mm	3 U / 133 mm	350 mm	10 kg
NLN 350 - 500	0 - 500 V	0 - 600 mA	19" / 443 mm	4 U / 177 mm	450 mm	19 kg
NLN 700 - 500	0 - 500 V	0 - 1,2 A	19" / 443 mm	4 U / 177 mm	550 mm	25 kg
NLN 1400 - 500	0 - 500 V	0 - 2,5 A	19" / 443 mm	7 U / 310 mm	550 mm	50 kg

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