

Linear regulated power supplies bipolar

Series NLB from $\pm 6,5 \text{ V}$ to $\pm 350 \text{ V}$ / 35 W to 1400 W



Design example

NLB 350 - 20
 $\pm 20 \text{ V} / \pm 15 \text{ A}$

Features:

- 4-quadrant operation is possible for passive loads (and optionally for active loads)
- 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
- Voltage and current setting with 10-turn potentiometers with precision scale; the adjusting knob can be locked
- One of the potentiometers is used for voltage or current regulation, the limiting values can be adjusted in addition
- $4\frac{1}{2}$ 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:

Bipolar linear regulated power supplies consist of two intermediate circuits, one for each polarity. 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 fed, via a set of power transistors, to the output. The output stages of the positive and the negative circuits are switched together in a push-pull manner. The regulation transistors define the final stability of the output voltage and the regulation speed. Bipolar power supplies are able to operate as 4-quadrant power amplifier. (optionally also for active loads).

Design:

- 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. $\pm 500 \text{ V}$.
- Output terminals:
4 mm 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: $230 \text{ V} \pm 10\%$ 47Hz to 63Hz
for 2800W and higher: $400 \text{ V} \pm 10\%$ 47Hz to 63Hz, three-phase
- Ambient temperature:
 0°C to $+40^\circ \text{C}$
- Power loss:
at nominal load approx. 35%, during short circuit at nominal current approx 140% and at no load approx. 15% 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 on page 61.)

- Setting range:
from -100% to +100%
- Setting resolution:
 $\pm 2 \times 10^{-4}$
- Residual ripple:
 $< 5 \times 10^{-4} \text{ pp} + 10 \text{ mVpp}$
- Recovery time:
 $< 50 \mu\text{s}$ for load changes from 10% to 100% or from 100% to 10%
- Setting time at nominal load:
 $< 1 \text{ ms}$ for full range
- Deviation:
for $\pm 10\%$ mains voltage variation:
 $< \pm 2 \times 10^{-5}$
for no load / full load:
 $< 2 \times 10^{-4}$
over 8 h under constant conditions:
 $< \pm 2 \times 10^{-4}$
within the temperature range:
 $< \pm 2 \times 10^{-4} / \text{K}$

Possible Options:

- Analogue programming (see page 52)
- Analogue programming, floating (see page 52)
- Computer interface - IEEE 488, RS 232, RS 422, Profibus DP (more on request) (see page 54)
- Full 4-quadrant operation, even with active loads
- 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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Type	Voltage	Current	Width	Height	Depth	Weight
NLB 35 - 6,5	0 - $\pm 6,5$ V	0 - ± 5 A	19" / 443 mm	4 U / 177 mm	350 mm	9 kg
NLB 140 - 6,5	0 - $\pm 6,5$ V	0 - ± 10 A	19" / 443 mm	4 U / 177 mm	350 mm	12 kg
NLB 350 - 6,5	0 - $\pm 6,5$ V	0 - ± 30 A	19" / 443 mm	4 U / 177 mm	550 mm	22 kg
NLB 700 - 6,5	0 - $\pm 6,5$ V	0 - ± 60 A	19" / 443 mm	8 U / 355 mm	550 mm	35 kg
NLB 1400 - 6,5	0 - $\pm 6,5$ V	0 - ± 120 A	19" / 443 mm	10 U / 443 mm	550 mm	55 kg
NLB 35 - 12,5	0 - $\pm 12,5$ V	0 - $\pm 2,5$ A	19" / 443 mm	4 U / 177 mm	350 mm	9 kg
NLB 140 - 12,5	0 - $\pm 12,5$ V	0 - ± 8 A	19" / 443 mm	4 U / 177 mm	350 mm	12 kg
NLB 350 - 12,5	0 - $\pm 12,5$ V	0 - ± 20 A	19" / 443 mm	4 U / 177 mm	550 mm	22 kg
NLB 700 - 12,5	0 - $\pm 12,5$ V	0 - ± 50 A	19" / 443 mm	7 U / 310 mm	550 mm	35 kg
NLB 1400 - 12,5	0 - $\pm 12,5$ V	0 - ± 80 A	19" / 443 mm	8 U / 355 mm	550 mm	55 kg
NLB 35 - 20	0 - ± 20 V	0 - $\pm 1,5$ A	19" / 443 mm	4 U / 177 mm	350 mm	9 kg
NLB 140 - 20	0 - ± 20 V	0 - ± 6 A	19" / 443 mm	4 U / 177 mm	350 mm	12 kg
NLB 350 - 20	0 - ± 20 V	0 - ± 15 A	19" / 443 mm	4 U / 177 mm	550 mm	22 kg
NLB 700 - 20	0 - ± 20 V	0 - ± 30 A	19" / 443 mm	5 U / 221 mm	550 mm	35 kg
NLB 1400 - 20	0 - ± 20 V	0 - ± 60 A	19" / 443 mm	8 U / 355 mm	550 mm	55 kg
NLB 35 - 35	0 - ± 35 V	0 - ± 1 A	19" / 443 mm	4 U / 177 mm	350 mm	9 kg
NLB 140 - 35	0 - ± 35 V	0 - ± 4 A	19" / 443 mm	4 U / 177 mm	350 mm	12 kg
NLB 350 - 35	0 - ± 35 V	0 - ± 10 A	19" / 443 mm	4 U / 177 mm	550 mm	22 kg
NLB 700 - 35	0 - ± 35 V	0 - ± 20 A	19" / 443 mm	5 U / 221 mm	550 mm	35 kg
NLB 1400 - 35	0 - ± 35 V	0 - ± 40 A	19" / 443 mm	7 U / 310 mm	550 mm	55 kg
NLB 35 - 65	0 - ± 65 V	0 - $\pm 0,5$ A	19" / 443 mm	4 U / 177 mm	350 mm	9 kg
NLB 140 - 65	0 - ± 65 V	0 - ± 2 A	19" / 443 mm	4 U / 177 mm	350 mm	12 kg
NLB 350 - 65	0 - ± 65 V	0 - ± 5 A	19" / 443 mm	4 U / 177 mm	550 mm	22 kg
NLB 700 - 65	0 - ± 65 V	0 - ± 10 A	19" / 443 mm	5 U / 221 mm	550 mm	35 kg
NLB 1400 - 65	0 - ± 65 V	0 - ± 20 A	19" / 443 mm	7 U / 310 mm	550 mm	55 kg

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

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Type	Voltage	Current	Width	Height	Depth	Weight
NLB 35 - 125	0 - ± 125 V	0 - $\pm 0,25$ A	19" / 443 mm	4 U / 177 mm	350 mm	9 kg
NLB 140 - 125	0 - ± 125 V	0 - ± 1 A	19" / 443 mm	4 U / 177 mm	350 mm	12 kg
NLB 350 - 125	0 - ± 125 V	0 - $\pm 2,5$ A	19" / 443 mm	4 U / 177 mm	550 mm	22 kg
NLB 700 - 125	0 - ± 125 V	0 - ± 5 A	19" / 443 mm	5 U / 221 mm	550 mm	35 kg
NLB 1400 - 125	0 - ± 125 V	0 - ± 10 A	19" / 443 mm	7 U / 310 mm	550 mm	55 kg
NLB 35 - 200	0 - ± 200 V	0 - $\pm 0,15$ A	19" / 443 mm	4 U / 177 mm	350 mm	9 kg
NLB 140 - 200	0 - ± 200 V	0 - $\pm 0,6$ A	19" / 443 mm	4 U / 177 mm	350 mm	12 kg
NLB 350 - 200	0 - ± 200 V	0 - $\pm 1,5$ A	19" / 443 mm	4 U / 177 mm	550 mm	22 kg
NLB 700 - 200	0 - ± 200 V	0 - ± 3 A	19" / 443 mm	5 U / 221 mm	550 mm	35 kg
NLB 1400 - 200	0 - ± 200 V	0 - ± 6 A	19" / 443 mm	7 U / 310 mm	550 mm	55 kg
NLB 35 - 350	0 - ± 350 V	0 - $\pm 0,1$ A	19" / 443 mm	4 U / 177 mm	350 mm	9 kg
NLB 140 - 350	0 - ± 350 V	0 - $\pm 0,4$ A	19" / 443 mm	4 U / 177 mm	350 mm	12 kg
NLB 350 - 350	0 - ± 350 V	0 - ± 1 A	19" / 443 mm	4 U / 177 mm	550 mm	22 kg
NLB 700 - 350	0 - ± 350 V	0 - ± 2 A	19" / 443 mm	5 U / 221 mm	550 mm	35 kg
NLB 1400 - 350	0 - ± 350 V	0 - ± 4 A	19" / 443 mm	7 U / 310 mm	550 mm	55 kg

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