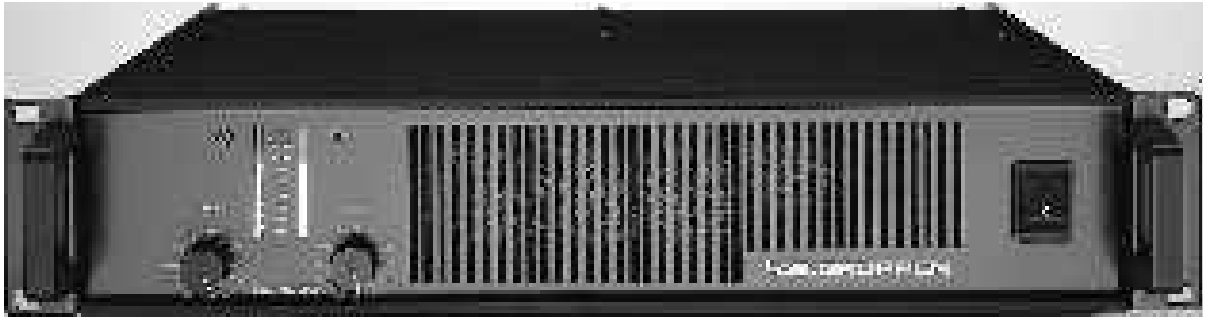


# LAB. GRUPPEN



## POWER AMPLIFIER

## LAB 1000

### FEATURES

- ◆ 2 x 350 W into 8  
2 x 550 W into 4  
2 x 675 W into 2  
at clip level with both  
channels driven
- ◆ Compact design, 2 U high  
(88 mm)
- ◆ Low weight
- ◆ Electronically balanced  
inputs
- ◆ LED indicators show output  
voltage and headroom
- ◆ Independent protection  
circuitry
- ◆ Manages long-term short-  
circuit operations
- ◆ VHF protection
- ◆ DC protection
- ◆ Output cooled by Intercooler®
- ◆ Two proportional speed fans
- ◆ Clip limiter

**LAB. GRUPPEN's LAB 1000 is a high power amplifier, designed for 19" rack mounting.**

The 2 U (units) high welded chassis is made of 2 mm thick steel plate. The power transformer is of a two-coil low-loss type, mounted just behind the front panel, which gives the LAB 1000 a stable and balanced design. Both the power supply and the two output channels are cooled by two proportional speed fans, where the air flows from front to back.

Twenty 250 watt bipolar power transistors constitute the output stages, which are totally complimentary. The power transistors are cooled by a solid copper cooler, called Intercooler(r), originally designed for our SS 1300 power amplifier. LAB. GRUPPEN's specially designed thermal feedback circuit protects against thermal breakdown.

The output stage is designed totally discreet, to get the best optimisation for linearity and bandwidth. The driver stage consists of an "enhanced cascode circuit", which is differential symmetrical in class A, to achieve low distortion at high frequencies. The circuit was originally developed by LAB. GRUPPEN in 1980, and experience has proven that this design gives the power amplifier high reliability.

The LAB 1000 is completely short-circuit protected - even in reactive loads. The LAB 1000 is equipped with LAB. GRUPPEN's specially designed short circuit protection, which

permits very high peak-currents, but still holds the transistors within the so-called "Safe Operation Area". This makes it possible to run loudspeakers with impedance variations, which are considerably lower than the lowest permitted impedance of the power amplifier.

Four more protection circuits, which are separate for each channel, protect the LAB 1000 and the loudspeakers:

**Two DC protections;** one DC current limitation protection, supplemented with fuses on each DC voltage power supply rail; and one DC voltage protection of Crowbar type, which works by short-circuiting the output to protect the load.

**Thermal protection;** prevents the LAB 1000 from being overheated. The temperature indicators on the front panel are switched on, as a warning, before the protection occurs.

**VHF protection** (Very High Frequency); protects the loudspeakers against strong non-musical signals above the audible area.

**Clip limiter;** prevents severely clipped waveforms from reaching the loudspeakers, but maintains full peak power.

All electronics are mounted on two modules, one for channel A and one for channel B. The modules are easily accessible for replacement or repair, etc.

# SPECIFICATION

# LAB 1000

MAX OUTPUT POWER <sup>1)</sup>	FTC 20 Hz-20 kHz at 0.1% THD	EIA 1 kHz at Clip (1% THD)	IHF Peak Power 20 ms burst	Calculated <sup>2)</sup> Peak Power
8 stereo	350 W	380 W	450 W	500 W
4 stereo	550 W	600 W	750 W	900 W
2 stereo <sup>3)</sup>	600 W	700 W	900 W	1300 W
8 bridged	1200 W	1300 W	1500 W	1800 W
4 bridged <sup>3)</sup>	1300 W	1400 W	1800 W	2600 W

## SPEAKER PROTECTION

Each channel is fuse protected on the positive and negative power supply rails. Electronic short-circuit protection with a progressive characteristic. The output power is progressively reduced at impedances below 1.7 ohms. The power amplifier can be run into short-circuits for a long time without damage, and is open circuit and mismatch proof.

## DISTORTION

THD 20 Hz-20 kHz and 1 W-600 W	4 ohms	0.08 %
THD at 1kHz and 600W	4 ohms	0.03 %
DIM 30 at 300 W	4 ohms	0.02 %
CCIF (13 and 14 kHz) at 200 W	4 ohms	0.02 %
SMPTE (60 Hz and 7 kHz) at 300 W	4 ohms	0.05 %

## POWER BANDWIDTH

Slew rate 10 Hz-50 kHz

40 V/μs

## OUTPUT IMPEDANCE

1 kHz 0.07 ohm

## HUM AND NOISE below max power

< -105 dBA

## CHANNEL SEPARATION

1 kHz 90 dB  
10 kHz 75 dB

## PHASE AND DELAY

Deviation from perfect delay 150 Hz-20 kHz ± 2°  
Total delay input to output at 4 ohms 4.1 μs

## INPUTS

Sensitivity, switchable for full output into 4 ohms 0.775 or 1.7 Vrms  
Gain, switchable 36 dB or 29 dB  
Impedance 20 kohms, balanced  
Common mode rejection at 1 kHz 50 dB

## FRONT PANEL

Gain controls (2) Channel A - B  
Output display (2) red + (10) green LED's Fast peak - slow release  
Temp indicator (2) yellow LED's 80° C at heatzink  
VHF indicator (2) yellow LED's > 20 kHz at full power  
On indicator (2) green LED's DC rail voltage for channel A and B

## REAR PANEL

Input connectors (2) XLR type 3 pin female (pin 2+), and (2) 1/4" jack  
Output connectors (2) Neutric 4-pole speakon connectors (pin 1+ output)  
Switches:  
Gain 36 dB or 29 dB  
Link Tandem mono, channel A and B  
Polarity B Reverse polarity of channel B  
Clip limiter A and B On - Off

## POWER

Operation voltage 120 V - 260 V AC  
Full output power 230 V AC  
Peak inrush current 83A

## OVERALL DIMENSIONS

mm (inch) 483 (19") W  
x 88 (3.5") H  
x 355 (14") D

## WEIGHT

18 kg (40 lbs)

## APPROVALS

CE Emission EN 55 103-1, E3  
Immunity EN 55 103-2, E3, with S/N below 1%  
at normal operation level <sup>4)</sup>  
THX version: Safety EN 60 065, class I  
LAB 1000t

1) Specifications measured with 230 V regulated AC

2) Calculated by using peak voltage and nominal speaker impedance

3) Though the LAB 1000 can drive a 2 ohms load, we recommend you to keep the load impedance on 4 ohms or above in professional applications, which demand large amounts of continuous power.

4) Normal operation level 1/8 of full power or -9dB below clip point.

LAB. GRUPPEN reserve the right to alter functions or specifications without prior notice.

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