

# LAB.GRUPPEN



## POWER AMPLIFIERS

*fp 3400*

### KEY FEATURES:

- ◆ 2 x 1100 watts @ 8  $\Omega$   
2 x 1500 watts @ 4  $\Omega$   
2 x 1700 watts @ 2  $\Omega$   
(Measured just below clip level,  
with both channels driven)
- ◆ Light weight and compact:  
only 10 kg (22 lbs), 2U high
- ◆ **MLS™ Switch:** Lab.gruppen's  
unique power matching for  
different loads

### NEW FEATURES:

- ◆ Replaces the LAB 2002
- ◆ Multiple positions gain  
switch
- ◆ Intercooler® cooling system  
with front-to-rear airflow  
and easily accessible dust  
filters
- ◆ Improved low-end power  
bandwidth
- ◆ Link connector with XLR-type  
connector
- ◆ Extruded front panel for  
increased stability
- ◆ Bridged mono outputs in  
one SpeakOn connector

The FP 3400 is a lightweight and space-saving power amplifier, ideal for use in high quality touring sound systems as well as in demanding permanent installations.

Heat and cooling are fundamental problems in extreme high power amplifiers such as the FP 3400. Already in 1990, Lab.gruppen patented a high efficiency amplifier, in fact an evolution of the Class D amplifier. Lab.gruppen therefore call it Class TD. It obtains the same high efficiency as Class D, but avoids its drawbacks. Class D has a power-amplifier topology using Pulse Width Modulation (PWM) to achieve high efficiency, but it needs a recovery filter between the output stage and the loudspeaker. Lab.gruppen's Class TD amplifiers do not need this filter and this is one reason why the Lab.gruppen Class TD obtains the same sonic quality as a traditional Class AB amplifier.

Besides the traditionally superb Lab.gruppen sonic performance, FP3400 offers a full line of important features:

### Regulated switch mode power supply

Today there are many lightweight, switch-mode amplifiers in the market. However, the unique Lab.gruppen switch-mode power supply technology offers a number of essential advantages that make it superior to other and seemingly similar power supply designs. The most important features are the regulated power supply and the extreme power efficiency. The regulated power supply easily deals with a very high variation in the AC mains voltage: it can drop by up to 20% below its nominal level – e.g. to 180 V instead of 230 V – without any problem. Perhaps even greater benefits result from the extreme efficiency of Lab.gruppen amplifiers: only a fraction of the energy from the AC mains is turned into heat.

A regulated power supply also presents some other sonic advantages, such as better cone control and the same fast response as a conventional power supply.

### Multiple positions Gain switch

To meet the demands for a flexible gain structure in the system, Lab.gruppen offers a multiple position gain switch. The maximum amplifier gain can be set to all industry standards: 20, 23, 26, 29, 32, 35, 38 and 41 dB.

### Sophisticated protection circuitry, combining:

- **DC protection;** protects against infrasonic signals
- **VHF protection;** protects the loudspeakers against strong very high frequency non-musical signals above the audible range.
- **Thermal protection;** prevents the amplifier from being overheated. The protection indicators on the front panel are switched on, as a warning, before the protection process is initiated.
- **AC protection;** shuts down the power supply if the line voltage is outside the operating voltage.
- **Clip limiter;** prevents severely clipped waveforms from reaching the loudspeakers, whilst maintaining full peak power.

# SPECIFICATIONS FP 3400

## MAX OUTPUT POWER <sup>1)</sup>

EIA at 1 kHz and 1% THD

FTC 20-20kHz @0.1%THD

|                  | -5dB   | -4dB   | -2dB                       | 0dB Full                                  | 0dB Full |
|------------------|--------|--------|----------------------------|---|----------|
| MLS switch       | 160 W  | 200 W  | 340 W                      | 520 W                                     | 500 W    |
| 16 Ω per channel | 300 W  | 400 W  | 700 W                      | 1100 W                                    | 1000 W   |
| 8 Ω per channel  | 600 W  | 750 W  | 1300 W                     | 1500, 1900 <sup>3)</sup> W                | 1450 W   |
| 4 Ω per channel  | 1200 W | 1400 W | 1550, 1900 <sup>3)</sup> W | 1700 <sup>3)</sup> , 3000 <sup>3)</sup> W | 1650 W   |
| 2 Ω per channel  | 600 W  | 800 W  | 1400 W                     | 2200 W                                    | 2000 W   |
| 16 Ω bridged     | 1200 W | 1500 W | 2600 W                     | 3000, 3800 <sup>3)</sup> W                | 2900 W   |
| 8 Ω bridged      | 2400 W | 2800 W | 3100, 3800 <sup>3)</sup> W | 3400 <sup>3)</sup> , 6000 <sup>3)</sup> W | 3300 W   |
| 4 Ω bridged      |        |        |                            |   |          |

## Max output voltage

8 ohms load, MLS @ 0 dB

52 Vrms    58 Vrms    75 Vrms    94 Vrms

Peak voltage, no load    79 V    82 V    107 V    132 V

## Distortion etc.

THD 20Hz-20kHz

and 1W to full power

0,08 %

THD @ 1kHz and -1dB

under clip

0,03 %

DIM 30 at -3dB under clip

0,06 %

## Hum and Noise

Channel separation @10kHz

<-110 dB

Output impedance

70 dB

Slew Rate

60 mΩ

20 V/μs

## Inputs

Gain, selectable [dB]

20, 23, 26, 29,

32, 35, 38, 41

Impedance

20 kohm

Common mode rejection

50 dB

## Front Panel

Gain controls

(2) channel A, B

31 positions detent

Clip Indicator

(2) red LEDs

Output headroom indicators

(10) green LED's

Fast peak – slow release

Temp Indicator

(2) yellow LEDs

80°C at heatsink

VHF indicator

(2) yellow LEDs

>12kHz at full power

On Indicator

(2) green LEDs

DC rail voltage for channel A and B

## Rear Panel

Input connectors

(2) Neutrik Combo XLR type, 3 pin & 1/4" jack

Link connector

(2) XLR type, 3 pin male

Output connectors

(2) Neutrik 4-pole Speakon connectors

Switches

Clip limiter A and B

On-Off (switchable)

MLS switch

0, -2, -4, -5dB

Link-switch

Ch.A-B

## Power

Operation voltage

230 V version

115 V version

Minimum start voltage

130 V-265 V AC

65 V – 135 V AC

Full output power at 4ohms

175 V

95 V AC

Peak inrush current (Soft start limited)

180 V-265 V AC

90 V – 130 V AC

5 A

5 A

## Current Draw @ 4ohms&230V

Quiescent power (no load)

1 Arms

2 Arms

1/8 of full power (-9dB)

5 Arms

10 Arms

1/3 of full power (-5dB)

11 Arms

22 Arms

At full power (0 dB) @1 kHz 1% THD

26 Arms

52 Arms

Net Dimensions mm (inch)

483 (19") W x 88 (3,5") H x 347 (13,7") D

Shipping Dimensions mm (inch)

560 (22") W x 180 (7,1") H x 500 (19,7") D

Net Weight

10kg (22lbs)

Shipping Weight

11.6 kg (25.6lbs)

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>

Safety EN 60 065, class I

1) Specifications measured with 230 VAC

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

2) Component tolerance dependent

3) Continuous power, one channel driven or peak power both channels driven  
(Thermal protection may occur at high continuous power)