

BROADBAND LINEAR AMPLIFIER

Model P100



HIGH VOLTAGE

$\pm 50V$

GAIN

10x

HIGH CURRENT

2 A

HIGH

POWER

SMALL SIGNAL

SLEW RATE

BANDWIDTH

BANDWIDTH

30 V/ μ s

DC to ca 100 kHz

DC to >300 kHz

GENERAL DESCRIPTION

The **P100** is a general purpose linear amplifier with high voltage and high output current. Intended applications are piezoelectric positioning, electrostatic transducers and other high voltage instrumentation.

INPUT AMPLITUDE

The **P100** amplifier has a fixed gain of x10 and the input resistance of 1 M Ω . The input amplitude should be within -10...+10 V giving output voltage in the range -100...+100V. Higher input voltage will be limited to -10...+10 V range by the input protection circuit.

Above ca 300% overvoltage at the input a microfuse may be blown. In such a case there will be no signal at the output (see below). For your convenience one spare fuse is provided on the amplifier's printed-circuit board inside the enclosure. It is advisable to contact info@flce.se for guidance.

TROUBLESHOOTING

Problem	Condition	Solution
No output	Power switch is not lit	Check the mains fuse located on the back
No output or very small, distorted signal	Power switch OK	Check the input microfuse located <u>inside</u> the device.
Constant high voltage output	Without any input signal	Amplifier failure. Contact info@flce.se

You should suspect a blown input microfuse if the output is about zero or the amplifier is producing a very low voltage, distorted copy of the input signal (due to the capacitive coupling through the blown fuse).

Spare microfuses are provided inside the instrument. They look like small metal cans and are placed in white holders. The resistance of a good fuse is in the order of 46 ohm. It is imperative to disconnect the power cable and wait at least a minute before opening the case. Inside the amplifier case exist dangerous voltage levels!

If possible, contact info@flce.se for advice.

IMPORTANT NOTES

This device outputs high voltage signals at high frequency. It is, thus, imperative for the safe operation that the user understands the possibilities and limitations of the instrument. Isolated BNC output connector is used to comply with safety requirements.

Due to the high dissipated power the amplifier requires good ventilation. Air intake (at the bottom of the case) and the fan output (on the back) should never be obstructed.

Please remember that the instrument cannot be powered from a DC-AC converter nor from a solid-state AC generator with non-sinusoidal output. A high level of harmonics in the supply line will overheat the toroidal transformer in the power supply module.

Never connect the output to the input of the amplifier! The input fuse will be blown immediately.

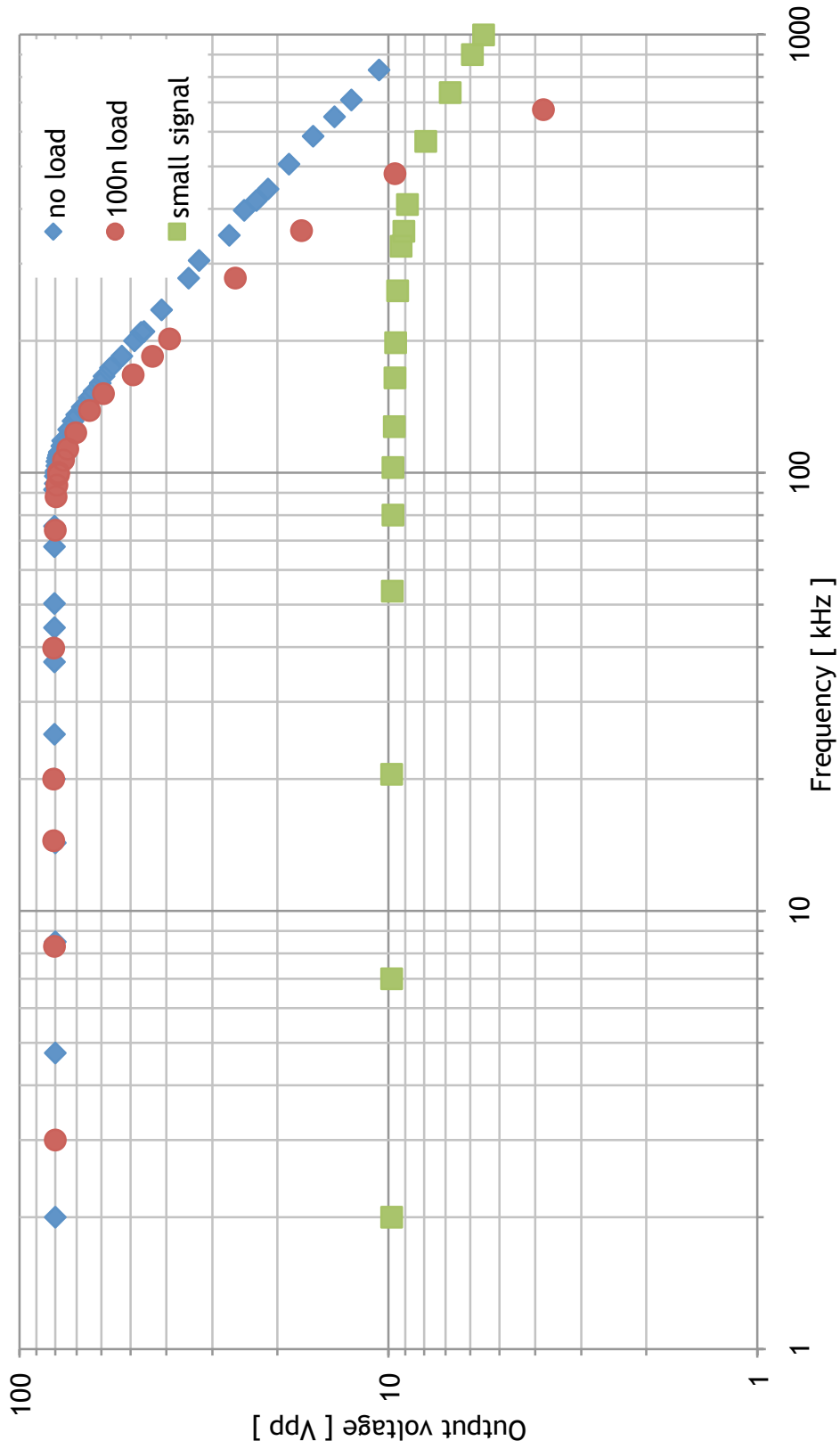
LOAD

P100 is designed for resistive and capacitive load. Do not use with inductive load!

The maximum capacitive load depends on the slew rate of the amplifier. This is normally set at the factory to 30 V/ μ s. When the load is large the effective slew rate becomes governed by the output current limit. This may cause an overshoot to appear. If an overshoot is not acceptable then the slew setting should be reduced accordingly. Such an adjustment may be performed by qualified personnel and the factory should be contacted for advice (preferably by email info@flce.se). Inside the cabinet exist hazardous voltage levels and the amplifier circuit is very sensitive to static discharge.

The maximum power dissipation of the amplifier is 125W and the maximum output current is ca 1A. The output is equipped with a current limiting circuit that withstands accidental short-circuits. Prolonged short-circuiting may result in overheating of the amplifier.

FREQUENCY RESPONSE



SUMMARY OF TECHNICAL DATA

Bandwidth:		DC to about 200 kHz at 100 Vpp
Amplification:		10 times fixed
Load:	type	resistive capacitive
Impedance:	input	1 M Ω <30 pF
	output	1 Ω in the linear mode
Voltage:	input	nominal ± 5 V
		maximum ± 10 V
Current:	output	maximum 2 A
Slew Rate:	output	ca 30 V/ μ s at 50 Ω load
Input protection fuse		15 mA (Littelfuse, part number 272.015) one spare fuse provided inside the instrument, additional fuses available from Littelfuse resellers or from FLC Electronics AB.
Operating Ambient Temperature:		0°C to 30°C
Storage Temperature:		0°C to 60°C
Relative Humidity:		up to 90% (operation) 30% to 50% (storage)
Power Requirements:		100/110 V or 220/230 V, 50/60 Hz
Fuse:		100/110 V: 4 A (slow), 220/230 V: 2 A (slow)
Dimensions (H/W/L):		112 x 255 x 316 (mm)
Weight:		6 kg
Country of Origin:		Sweden

Note: Specifications apply to instruments operating at $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$ ambient temperature after 15 min. warm-up time. Due to ongoing product development, specifications are subject to change without notice.

WARNING It is not allowed to connect the 100...230V AC line power input of the amplifier to DC-AC converters or solid state AC generators with non-sinusoidal output.

Data sheet revision date: 30 November 2016

WARRANTY

FLC Electronics warrants that this product will be free from defects in materials and workmanship for a period of two years from the date of the shipment.

If any such product proves defective during this warranty period, FLC Electronics, at its option, either will repair the defective product without charge for parts and labour, or will provide a replacement for the defective product. In order to obtain service under this warranty, Customer must notify FLC Electronics of the defect before the expiration of the warranty period and make suitable arrangements for the performance of the service. Customer shall be responsible for packing and shipping the defective product to the service center designed by FLC Electronics, with shipping charges prepaid. FLC Electronics shall pay for the return of the product to the Customer if the shipment is to a location within the country in which the FLC Electronics service center is located. Customer shall be responsible for paying all shipping charges, duties, taxes, and any other charges for products returned to any other locations.

This warranty shall not apply to any defect, failure or damage caused by improper use or inadequate maintenance and care. FLC Electronics shall not be obligated to furnish service under this warranty:

- to repair damage resulting from attempts by personnel other than FLC Electronics representatives to install, repair or service the product;
- to repair damage resulting from improper use or connection to incompatible equipment;
- to service a product that has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty of servicing the product.

This warranty is given by the FLC Electronics with respect to this product in lieu of any other warranties, expressed or implied. FLC Electronics and its vendors disclaim any implied warranties of merchantability or fitness for a particular purpose. FLC Electronics' responsibility to repair or replace defective products is sole and exclusive remedy provided to the customer for breach of this warranty. FLC Electronics and its vendors will not be liable for any indirect, special, advance notice of the possibility of such damages.

The instrument may generate hazardous voltage levels! It should be operated by qualified personnel only. The instrument is to be used in normal room temperature and humidity.

The manufacturer cannot be held responsible for damage to any device connected to the instrument. It is recommended that samples or equipment sensitive to voltage spikes are disconnected from the high-voltage outputs when turning the power to the instrument ON or OFF.

I M P O R T A N T



Inside the amplifier case exist dangerous voltage levels.



Do not use the amplifier to drive inductive load!



Any load sensitive to voltage transients should be disconnected from the amplifier during power-up and power-down.



Never connect the output to the input of the amplifier!



The amplifier may be overheated if the output is short-circuited for a long time.



**The instrument cannot be powered from a DC-AC converter
nor
from a solid-state AC generator with non-sinusoidal output.**



It is recommended to monitor the output signal of the amplifier on the oscilloscope.

EC Declaration of Conformity

We


FLC Electronics AB
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declare under sole responsibility that the

Voltage Amplifier P100

meets the intent of Directive 89/336/EEC for Electromagnetic Compatibility (EMC) and Low Voltage Directive 73/23/EEC (LVD). Compliance was demonstrated to the following standards as listed in the official Journal of the European Communities:

EN 50081-1	Generic Emissions
EN 55022	Conducted emission (interference voltage), class B
EN 55022	Radiated emission (electric field), class B
EN 50082-1	Generic Immunity
EN 61000-4-4	Electrical fast transient/burst
EN 61000-4-2	Electrostatic discharge
EN 61000-4-3	Radiated E-fields (radio frequency)
EN 61010-1:2010	Electrical Safety



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