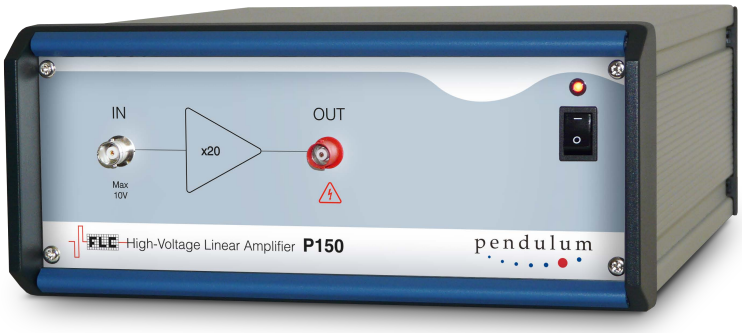
BROADBAND LINEAR AMPLIFIER

Model P150



HIGH VOLTAGE	GAIN	HIGH CURRENT
+150V	20x	1 A

HIGH SLEW RATE	POWER BANDWIDTH	SMALL SIGNAL BANDWIDTH
30 V/µs	DC to ca 60 kHz	DC to >200 kHz

GENERAL DESCRIPTION

The **P150** 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 **P150** amplifier has a fixed gain of x20 and operates on positive voltage polarity only. Its input resistance is 1 MΩ. The input amplitude should be within 0 and +7.5 V giving output voltage in the range 0 to+150V. Higher input voltage will be limited to -1…+12 V by the input protection circuit. This level is still safe for the amplifier but the output will be clipped above the maximum available voltage.

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 service@pendulum-instruments.com 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 inside the device.
Constant high voltage output	Without any input signal	Amplifier failure. Contact service@pendulum.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 service@pendulum-instruments.com 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.

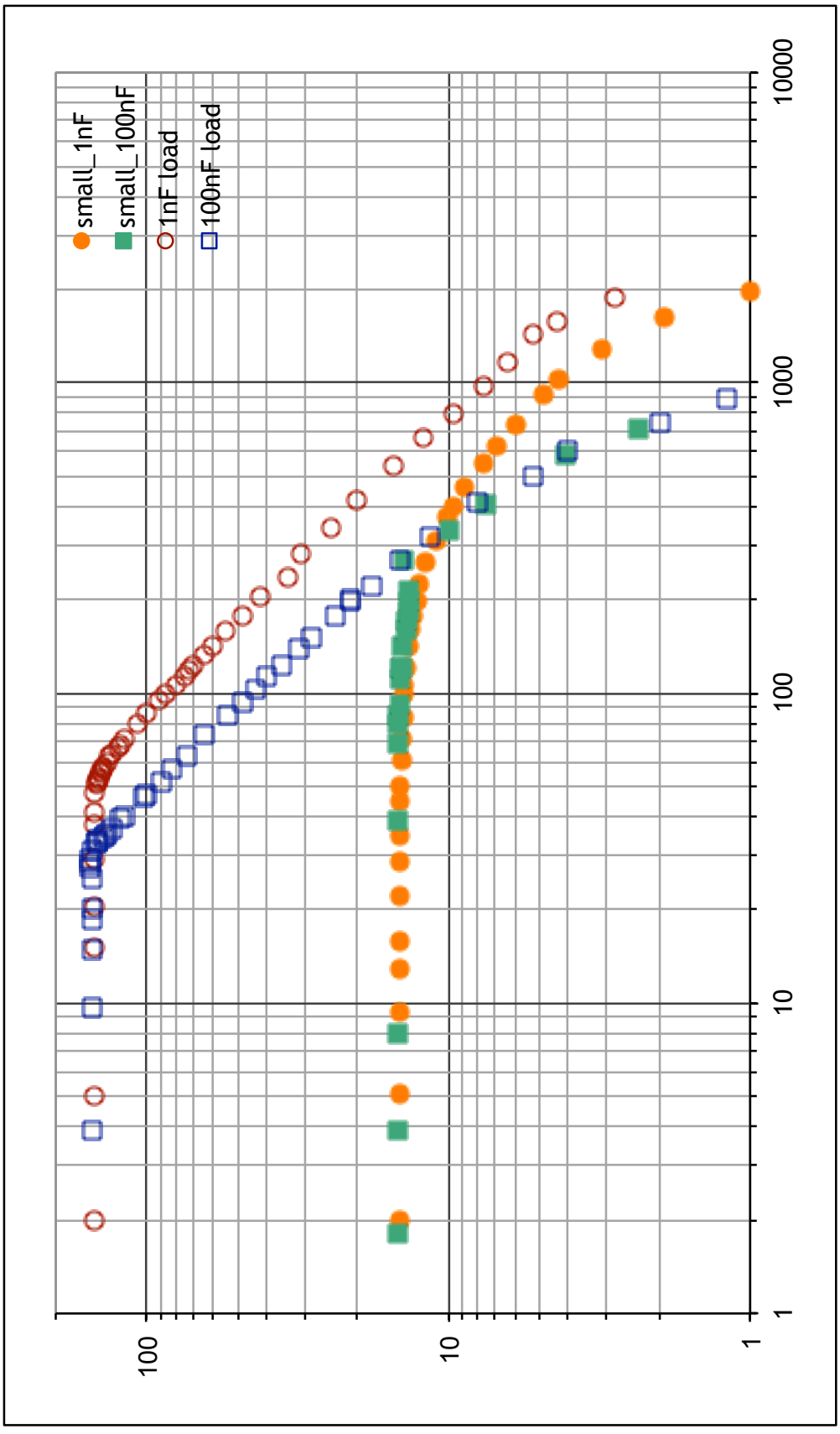
LOAD

P150 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/µs. 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 service@pendulum-instruments.com). 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 ca 60 kHz at 150 Vpp with 1 nF load DC to ca 30 kHz at 150 Vpp with 100 nF load
Small signal bandwidth:		DC to >200 kHz
Amplification:		20 times fixed
Load:	type	resistive || capacitive
Impedance:	input	1 MΩ || <30 pF
	output	1 Ω in the linear mode
Voltage:	input	maximum +10 V
Current:	output	maximum 1 A
Slew Rate:	output	ca 30 V/µs 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 Pendulum Instruments.

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: 3.15 A (slow)
Dimensions (H/W/L):	112 x 255 x 316 (mm)
Weight:	6 kg
Country of Origin:	Poland

Note: Specifications apply to instruments operating at 23°C±5°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 May 2019

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.

WARRANTY

The Warranty Statement is part of the folder *Important Information* that is included with the shipment.

DECLARATION OF CONFORMITY

The complete text with formal statements concerning product identification, manufacturer and standards used for type testing is available on request.

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Specifications subject to change
or improvements without notice.

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