

Flexible Optical B.V.

Adaptive Optics • Optical Microsystems • Wavefront Sensors



High Voltage Bipolar Amplifier

8-ch +/- 300 V

Technical Passport

OKO Technologies,

OKO Technologies is the trade name of Flexible Optical BV

1 Technical data

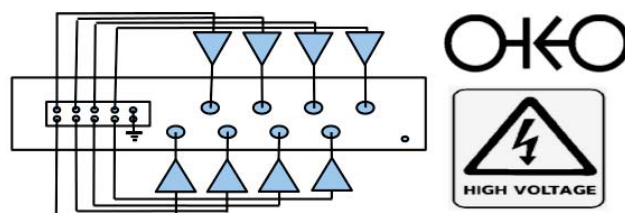
Bipolar DC HV amplifiers have 8 independent channels with a gain of 50, each producing output in the range of -300 to +300 V. These amplifiers are designed to drive piezoelectric tube actuators and tip-tilt stages. Applications include adaptive optics, beam control, and scanning microscopes. The module features compact $40 \times 200 \times 280$ mm size, weight of 1,2 kg, 30 W energy consumption, and works in any country with AC power supply in the range from 85 to 250 V. Full signal response is linear from DC to 9 kHz on a 200 pF load, from DC to 4 kHz on a 4 nF load and from DC to 700 Hz on a 22 nF load. The delay between the input and the output, does not exceed 30μ , with a 200 pF loads. The typical view of amplifier is shown in Fig. 1



Figure 1: Typical view of a 8-ch bipolar high-voltage amplifier.

2 Product label

Each amplifier is supplied with a label, listing the technical data of the particular device. Example label is shown in Fig. 2.



OKO HV Amplifier: custom bipolar 8-ch HV

Date/serial:	28/8/2013 /
Gain:	50
V_out max:	+/- 290 V (no load)
R_out:	10 k
R_input:	100 k
Output short circuit:	< 10 s
F_cutoff:	4 kHz (no load)
Power:	110 to 250 V AC, 50 or 60 Hz
Max load dissipation:	0.4 W per channel

Figure 2: Factory label.

3 Frequency response and noise

The frequency response of a typical amplifier is shown in Fig. 3. The maximum dissipation P per channel should not exceed 0.5W. For a capacitive load the dissipation can be calculated as $P < (C + 1E - 9)U^2f$ where C is the load capacitance in Farada, U is the voltage swing in Volt, (for example $U = 300$ for a +/- 300 V AC output), and f is the output signal frequency in Hz.

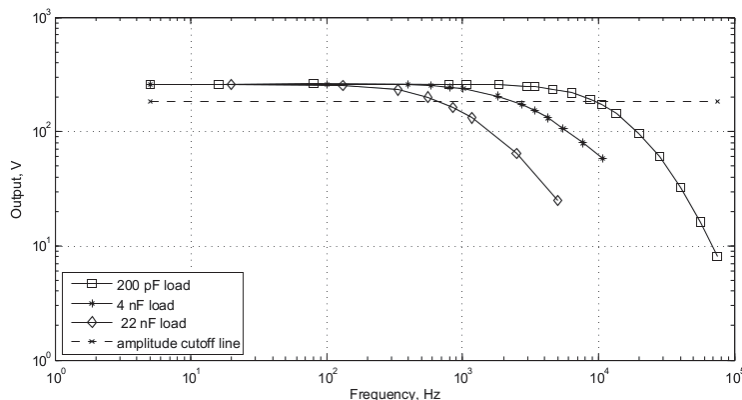


Figure 3: Frequency response on different capacitive loads, measured at +/- 260 V output swing.

Responses to different waveforms are shown in Fig. 4 and 5.



Figure 4: Output response to different waveforms at ~1109 Hz. Yellow - input, green - output.

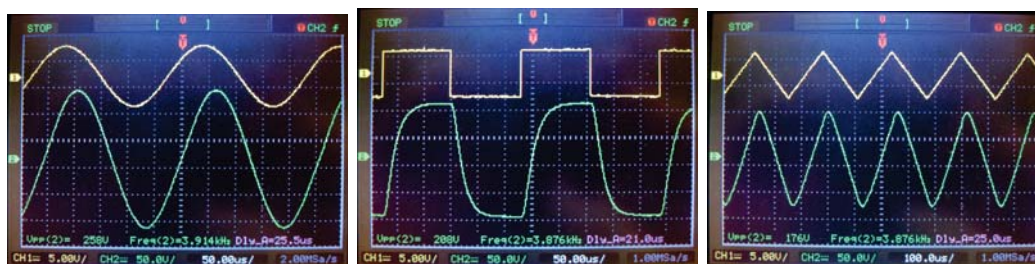


Figure 5: Output response to different waveforms at ~3876 Hz. Yellow - input, green - output.

The noise in the amplifier output does not exceed 50 mV *rms* - see Fig. 6.

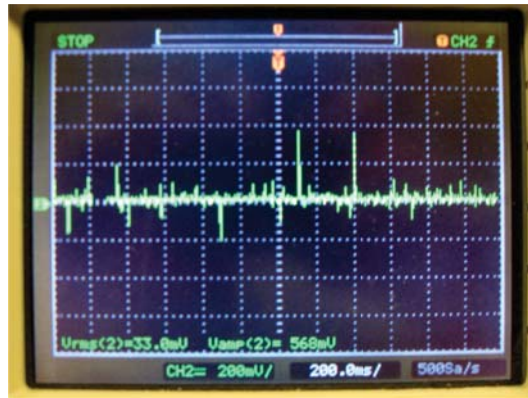


Figure 6: Noise trace in the output.

4 Warranty and Export Disclaimers

4.1 Warranty

The equipment is covered by a one-year factory-defect warranty.

EXCEPT WHEN OTHERWISE STATED IN WRITING FLEXIBLE OPTICAL B.V. (OKO[®] TECHNOLOGIES) AND/OR OTHER PARTIES PROVIDE THE SYSTEM "AS IS" WITHOUT WARRANTY OF ANY MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE EQUIPMENT IS WITH YOU.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL FLEXIBLE OPTICAL B.V. (OKO[®] TECHNOLOGIES) BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE HARDWARE AND SOFTWARE DESCRIBED IN THIS DOCUMENT.

4.2 Export

According to the European export law, to export outside the EU, Flexible Optical B.V. (OKO[®] Technologies) will need to obtain the export license for any product that matches the definition:

"Deformable mirrors having either continuous or multi-element surfaces, and specially designed components therefor, capable of dynamically repositioning portions of the surface of the mirror at rates exceeding 100 Hz."

Export inside the EU is free from this restriction.

5 Contact person

All questions about the technology, quality and applications of the equipment should be addressed to:
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