

Active High-Impedance Injector for Head Amplifier of V2002 Spinstand

- Bandwidth from DC to 3 GHz
- High-impedance output
- Heater-driver connector
- Current-probe connection



Guzik active high-impedance injector is designed for the measurements of frequency response and the calibration of the low-impedance current-sensitive head amplifiers. The injector also provides the ability to evaluate the performance of the head-amplifier heater driver. A current probe can be connected to the injector, in order to measure write current of the head amplifier.

The injector converts the single-ended signal from a network analyzer or a signal generator to a differential signal and attenuates the level of the signal, so it can be connected to the input of a head amplifier. Due to the high output impedance (**1280 Ohm**), the injector acts as a current source.

The injector has the bandwidth from **DC to 3 GHz** and provides a differential output signal with the high symmetry of frequency response and group delay. The bandwidth starts from DC to measure the frequency response of the read-back amplifiers for perpendicular recording. The injector also has a bypass biasing circuitry to work with the majority of the commercial amplifiers.

The external devices, such as an oscilloscope or the load simulating the heating element of a head, can be connected to the three-pin heater-driver connector (scope points) on the active injector. This connector provides the positive output $F+$, the negative output $F-$, and the ground output GND .



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Head Amplifier Active Injector Specifications:

Frequency Response

- **Bandwidth:** DC to 3 GHz
- **Flatness:** ±0.2 dB, 100 kHz to 2 GHz, ±1 dB, DC to 3 GHz (50 Ohm load)
- **Amplitude Difference Between Positive and Negative Outputs:** less than 0.5 dB

Group Delay

- **Flatness:** better than 100 psec to 3 GHz
- **Difference Between Positive and Negative Outputs:** less than 25 psec

Output Impedance

- **Nominal:** 1280 Ohm differential

Attenuation

- **Single Ended Input to Differential Output:** 38 dB typical with 50 Ohm termination (see **Figure 1** for more details)
- **Power Supply**
 - ±5 V, 120 mA from the power filter of RWA Analog Box

Items available: CCW Cartridge with Active Injector Board (Guzik P/N S80-703408), CW Cartridge with Active Injector Board (Guzik P/N S80-703409), and Power Filter Cable (Guzik P/N 30-461017). Separate Injector Boards CCW (Guzik P/N 23-327930) and CW (Guzik P/N 23-327920) can be ordered as spare parts.

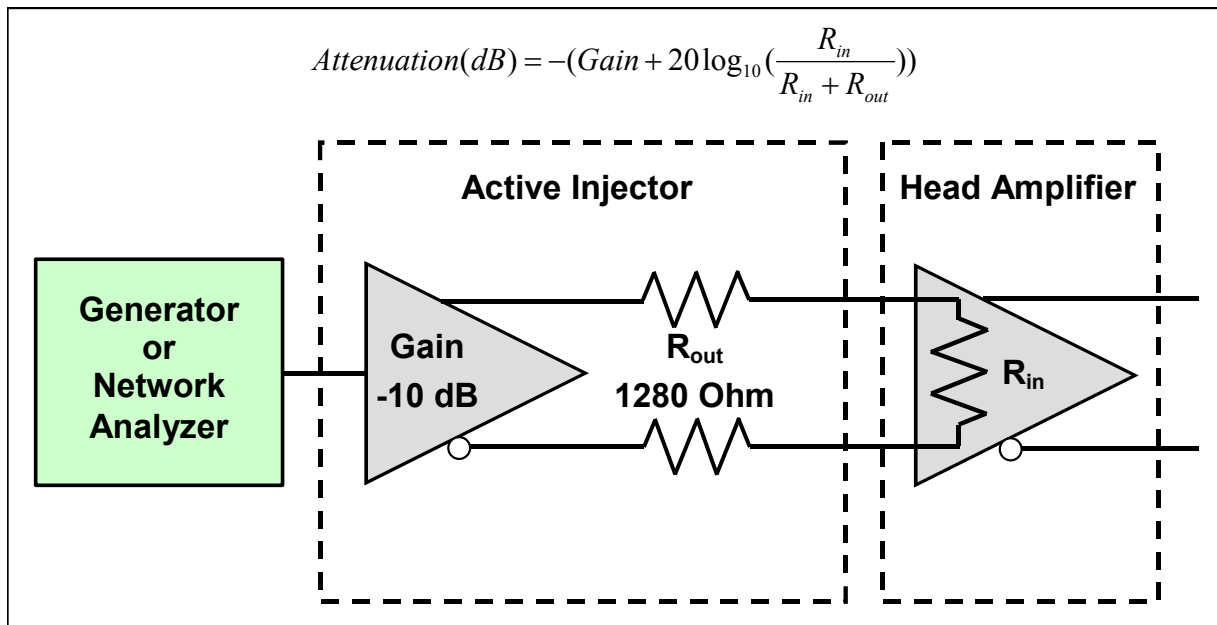


Figure 1: Active Injector Attenuation



Frequency Response and Group Delay

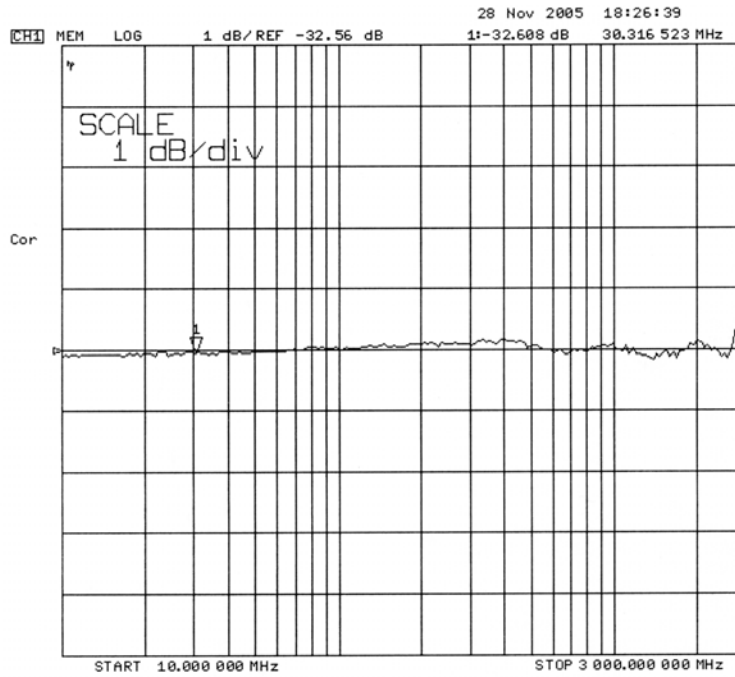


Figure 2: Frequency Response of Head Amplifier Active Injector

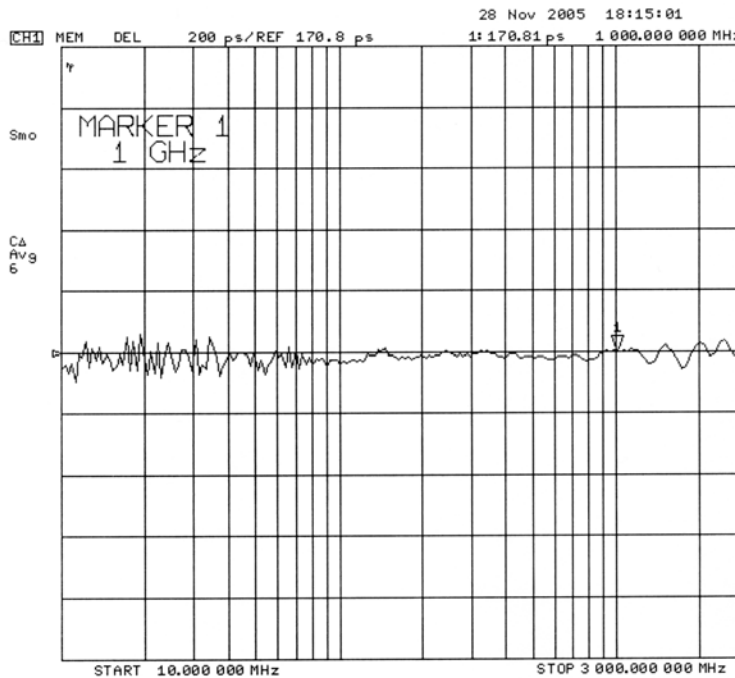


Figure 3: Group Delay of Head Amplifier Active Injector



Connecting Current Probe

To measure the write current of a magnetic head, a probe can be connected directly to the active high-impedance injector. Connecting the current probe is simple: remove the zero-Ohm resistor and solder the wire loop of the current probe to *Via 1* and *Via 2* reserved for the loop connection (see Figure 4). The recommended probe is *Tektronix CT-6*.

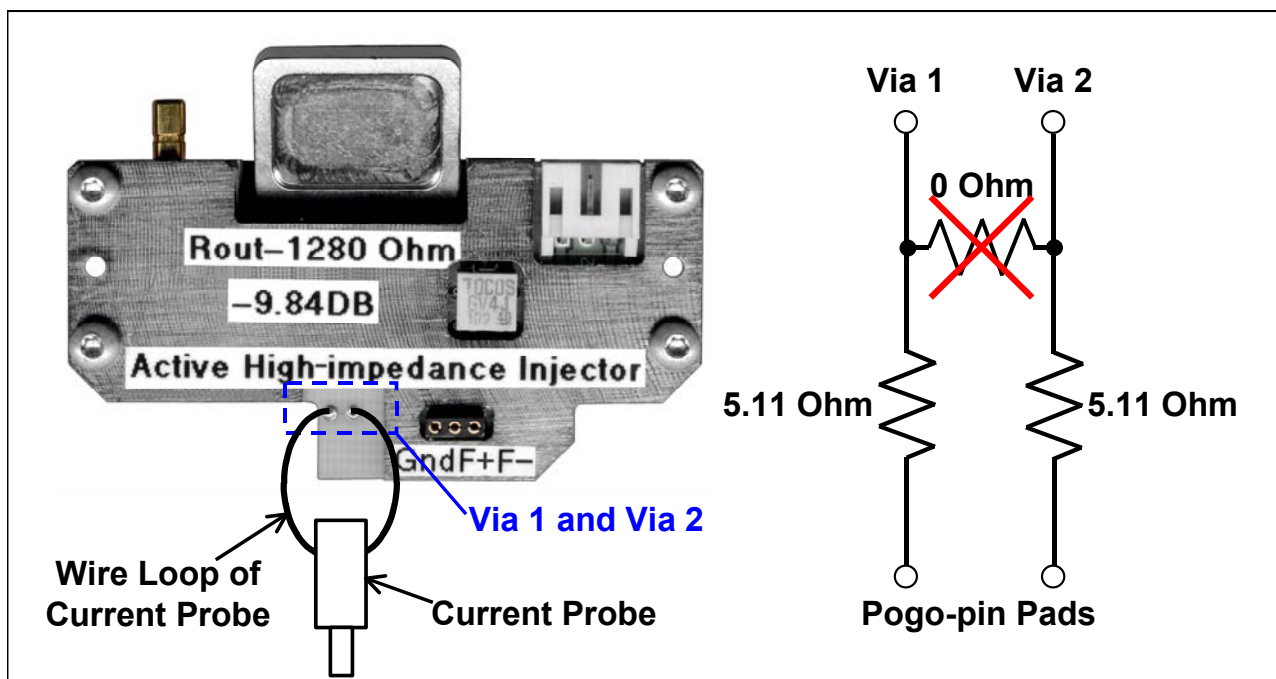


Figure 4: Current-probe connection diagram