

Injector Supports PSRR Testing For Military And Satellite Buses

[Picotest's](#) J2121A injector supports PSRR (power supply rejection ratio) testing. Complementing its popular J2120A low power line injector, the J2121A is much higher power and supports PSRR, dc biased inductor measurement, dc-dc converter input impedance testing, as well as other EMI tests. The J2121A is especially suited to high-power applications including military and satellite bus voltages up to 400 V/20 A with a bandwidth up to 1 MHz (Fig. 1). According to Picotest there is not another commercially available solution at this power level and typically some sort of voltage summing solution is necessary to perform this often mandatory test.

"The higher power of the J2121A provides support to military and satellite bus applications. It is a unique product in the test marketplace. With its regulated voltage output the line injector allows all types of PSRR and impedance measurements," according to Steve Sandler, Picotest CEO.

While popular "Bode plot" injection transformers are very wideband adapters, they are not useful for measuring ripple rejection (PSRR) of a power supply or even an opamp. This is because the attributes that make the injection transformer perform so well for stability analysis also result in a transformer that is intolerant of dc current. Even very small dc currents (5 mA or less) can greatly reduce the signal capacity or even totally saturate the transformer. For this reason, the Picotest line injector J2120A, and now the J2121A, are essential test adapters for power supply PSRR testing, according to the vendor.

The line injector allows the user-provided dc supply voltage to be modulated by the network analyzer source signal (oscillator). The J2121A line injector output is regulated and provides a fixed voltage drop of 750 mV from the input bus voltage fed into the injector. Connecting the J2121A output and the power supply output to the VNA allows you to measure power supply rejection ratio.

The line injector can also be used to measure the input impedance of a power supply (Fig. 2) or the inductance of an inductor (Fig. 3). The J2121A conveniently includes an isolated current sense monitor output that can be connected to the VNA, replacing the need for current probe.

The price of the J2121A line injector is \$2495 in single quantities and is available now from www.Picotest.com. The J2121A comes with the J2171A power supply and connecting cable and a 1- Ω calibration fixture. For more information please see J2121A product [page](#) and the Picotest PSRR Solutions [page](#).



Fig. 1. In combination with a vector network analyzer, the J2121A line injector enables measurement of PSRR, dc biased inductor measurement, dc-dc converter input impedance testing, as well as other EMI tests. The injector is especially suited to high-power applications such as those associated with military and satellite buses. It can be used with input bus voltages up to 400 V and supply up to 20 A at 1 MHz.

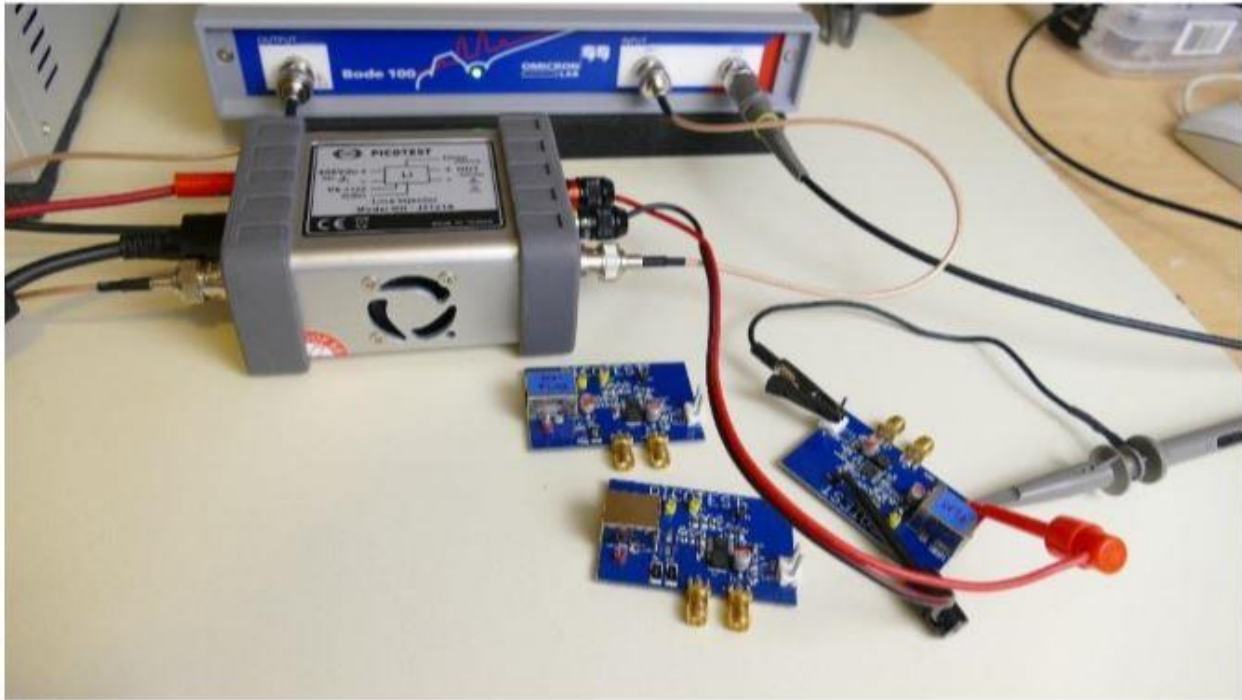


Fig. 2. Dc-dc converter input impedance test setup. The injector output is connected to the dc-dc converter input and a scope probe is connected to channel 2 of the VNA and used to measure the input impedance.

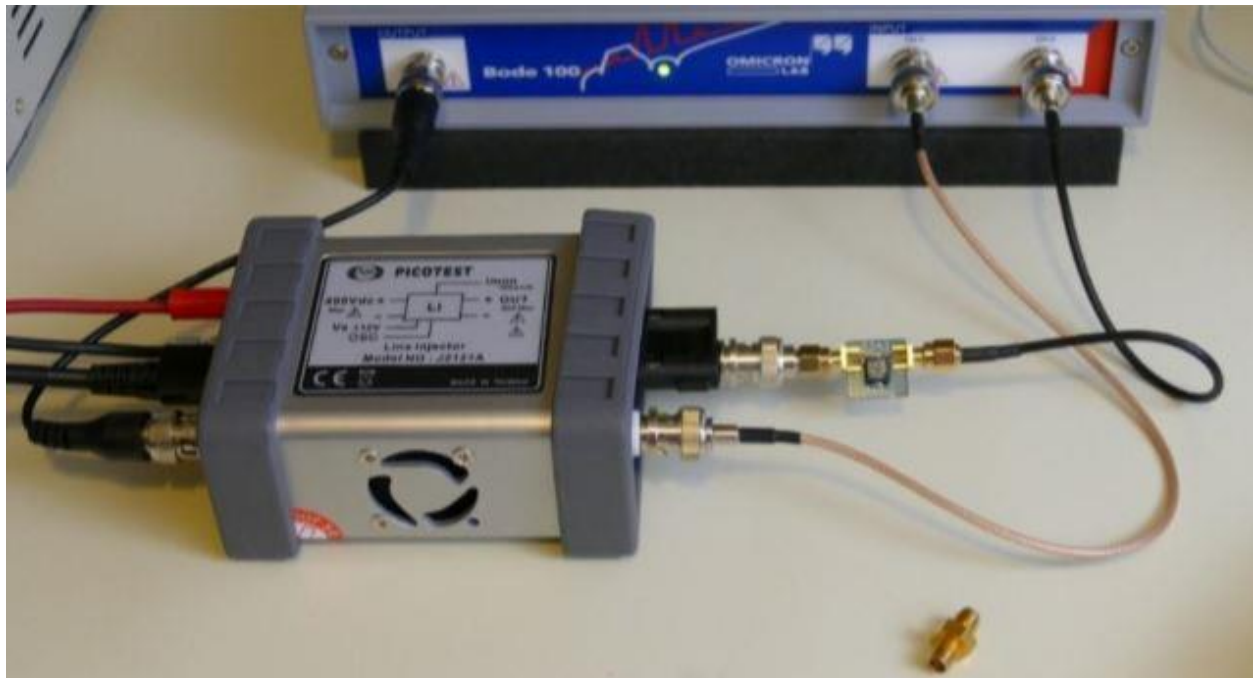


Fig 3. Biased inductor test setup. A 3.3- μ H shunt mounted inductor is connected to the output of the J2121A in order to measure the inductance change with bias. The measurement is set up as an impedance test (voltage/current).