

TRAPoS

PROGRAMMABLE 8-CHANNEL POWER SUPPLY FOR FET-BASED LNAs

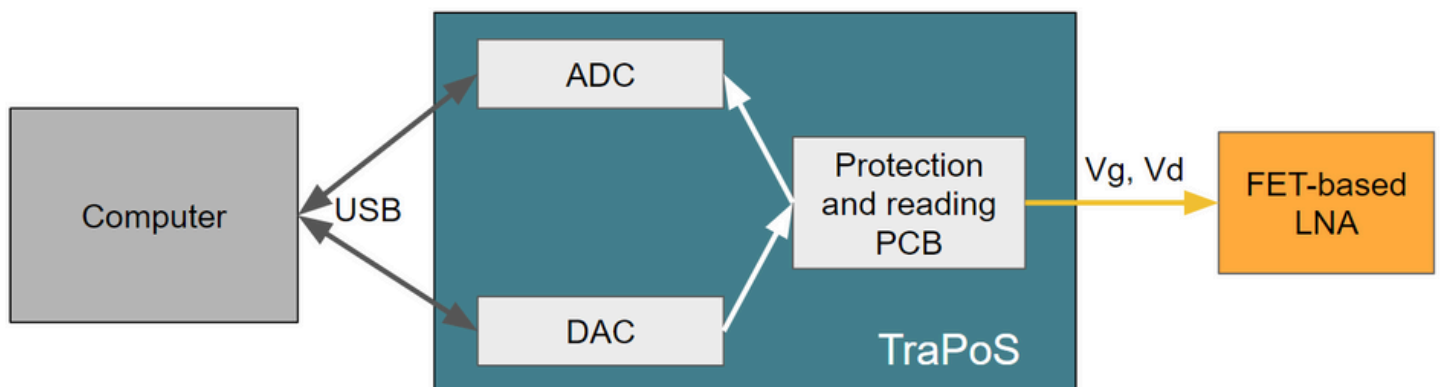
TRANSISTOR POWER SUPPLY

OVERVIEW

TraPoS (Transistor Power Supply) is a programmable 8-channel power supply for FET-based low noise amplifiers, which controls the drain voltage of a transistor, while maintaining a target drain current flowing through it, letting the transistor stay at its ideal operating voltage and current condition. This is accomplished by controlling the transistor's gate voltage while measuring its drain current, and compensating the voltage drop at the drain.

This device's components allow a sufficient amount of output drain current for most, if not all, of the currently available Low Noise Amplifiers.

PRODUCT DIAGRAM



SPECIFICATIONS

Output voltage channels	16 (two used per FET)
Output current	± 40 mA each channel ± 180 mA total load current
Maximum operation conditions	3 V @ 20 mA
Channel settling time	20 s ¹
Update rate	20 times per second
Output noise	32 μ Vrms typ.
Output voltage accuracy	3.7 \pm mV
Voltage reading accuracy	500 μ V
Current reading error	0.015%
Output transients: Drain Channel	Device turn off: 55 mVpp, 10 μ S Device turn on: 400 mVpp, 10 μ S
Output transients: Gate Channel	Device turn off: -200 mV, 1 min with no load

The device requires a 5 V, 355 mA power supply, and 275 mA current from the USB connection. A warm up time of 15 minutes is recommended.

¹. A LNF LNC65_115WB amplifier was used, biased at 1 V with 11 mA.

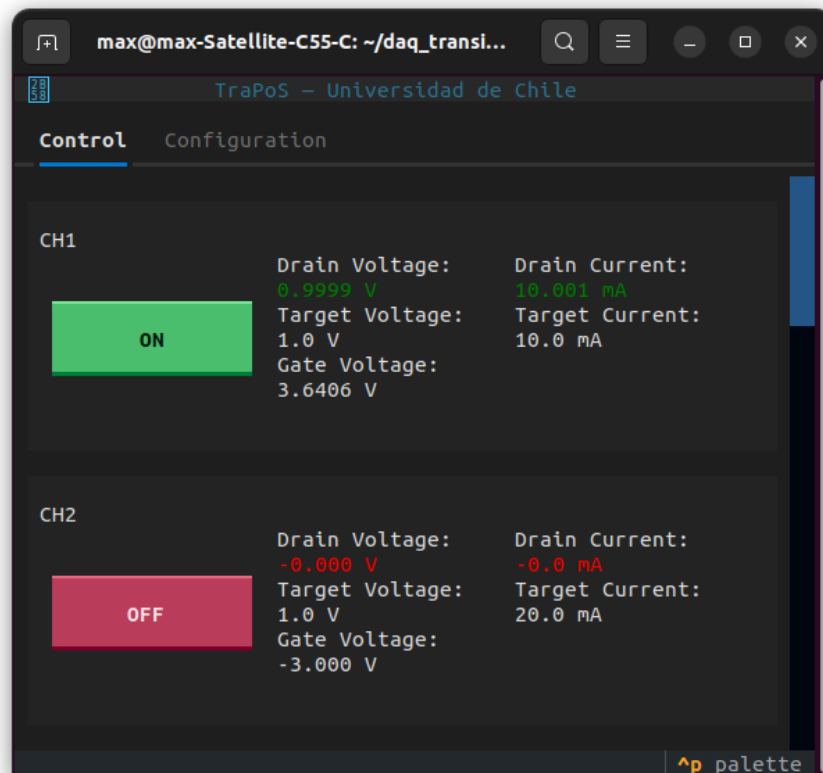
USER INTERFACE

TraPoS' user interface consists of two tabs: a Control Tab and a Configuration Tab.

- Control Tab

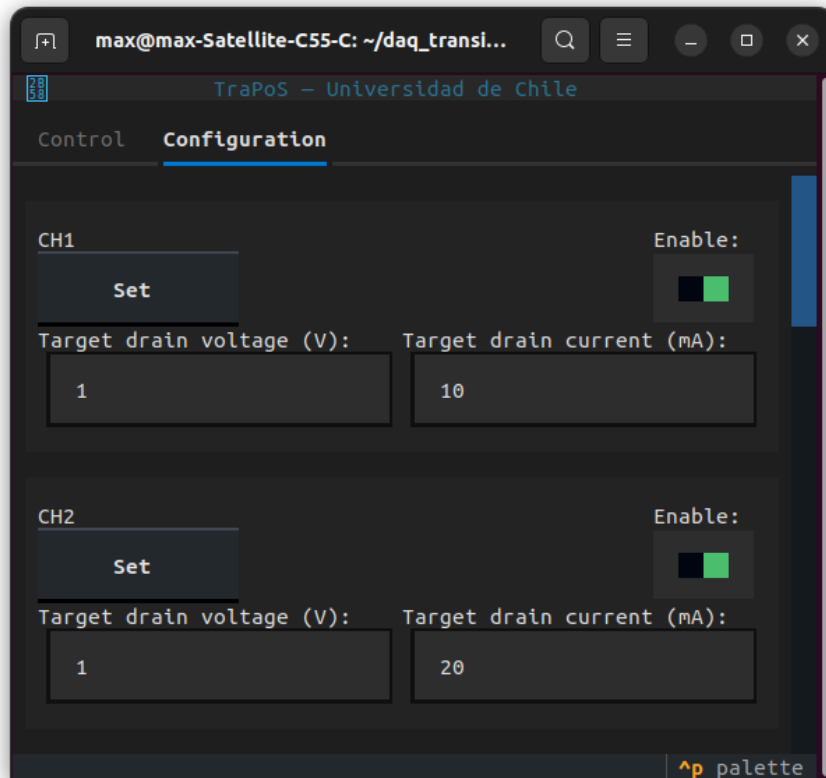
Shows a box for each enabled transistor that is going to be biased. This box contains the transistor's actual drain voltage and current, and the actual gate voltage. It also shows the target drain voltage and current, along with an ON/OFF indicator button.

In order to bias a transistor, you have to click the ON/OFF indicator button inside the box. When the transistor is correctly biased and at its target values, the drain voltage and current values will appear in green color.

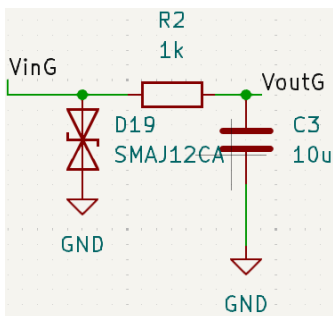


- Configuration Tab

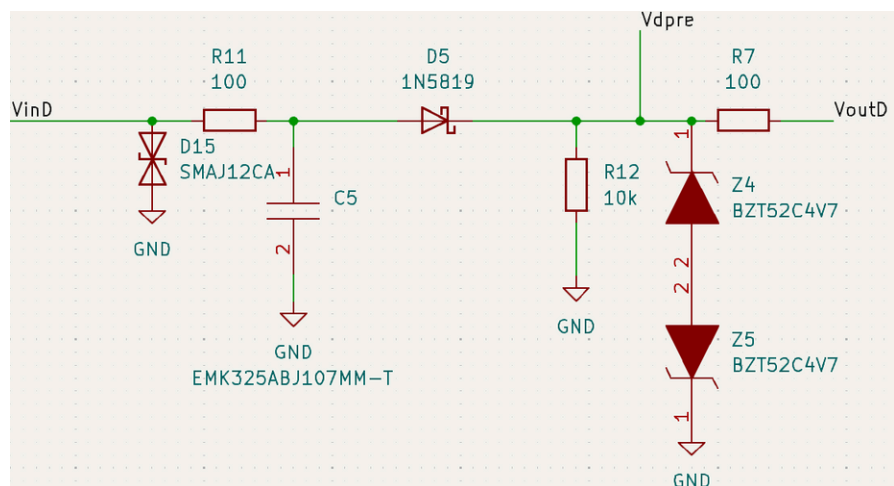
Shows a box for each of the eight available channels. Each box lets the user set a new target drain voltage and current. The "Set" button sets the actual entered voltage and current as the target. In every box, there is an enable switch at its top right corner, which allows the channel to be controlled in the Control Tab.



PROTECTION CIRCUIT



Gate Circuit



Drain Circuit