

User Manual

for

SuprAmpA



The **SuprAmpA** is a general-purpose operational power amplifier which can be used for a variety of applications. However, it has been optimized for use as a motor driver, with pin connections to match products made by Physik Instrumente.

The **SuprAmpA** accepts an industry-standard +/- 10 Volt input to drive precision-size motors bi-directionally. A **Burr-Brown OPA541** power op-amp provides the amplification function. As shipped, the gain is set at unity, but may be easily modified in the field by changing the values of the gain-setting resistors.

A DB-25 connector (**J1**) provides connection for input signals, power supply and operational signals returned from the motor connector. A DB-15 connector (**J2**) provides direct connection to motor functions and passes through those that require service in other assemblies. The *passed through signal functions* are noted for a Physik Instrumente standard connector. The limit switches are passed through as well as actively used to interrupt potentially dangerous drive conditions.

J1-Connections

1	J2-15 (B+)	14	J2-14 (A+)
2	J2-8 (B-)	15	J2-7 (A-)
3	J2-13 (RefSw)	16	J2-12 (Limit switch) Note 1
4	J2-5 (Limit switch) Note 1	17	Input (-)
5	Input (+)	18	J2-4 (+5 V encoder supply)
6	Negative p/s (-15V)	19	Negative p/s (-15V)
7	Negative p/s (-15V)	20	Ground (p/s return)
8	Ground (p/s return)	21	Ground (p/s return)
9	Positive p/s (+15V)	22	Positive p/s (+15V)
10	Positive p/s (+15V)	23	nc
11	nc	24	nc
12	nc	25	nc
13	J2-1 (Brake)		

Note 1: Pass through and on-board function.

J2-Connections

1	J1-13	9	Motor - (ground)
2	Motor +	10	Ground
3	nc	11	nc
4	J1-18 (+5)	12	J1-16 (negative limit switch)
5	J1-4 (Positive limit switch)	13	J1-3 (Ref sw)
6	Ground	14	J1-14 (A+)
7	J1-15 (A-)	15	J1-1 (B+)
8	J1-2 (B-)		

Operation of the SuprAmpA requires only the connection of power, control signals, motor and limit switches.

In normal operation, the input signal is buffered by the power op-amp at unity gain. A +/- 10 Volt signal input will yield +/- 10 Volts drive to the load.

Optional limit switch protection

When the limit switch inputs are not at ground, operation is unaffected. When the positive limit switch signal is grounded, the inputs to the op-amp are shorted only if the polarity of the input signal is positive. Likewise, when the negative limit switch signal is grounded, the inputs to the op-amp are shorted only if the polarity of the input signal is negative. This allows the controller to provide a reverse polarity to move the stage away from the inhibiting switch, but does not otherwise affect operation.

Please note that the op-amp short is isolated from the input pins by 10K ohms.

Because of the active limit switch circuitry, the op-amp supply voltage is limited to 18 Volts. If operation at higher voltages is desired, the limit switch circuitry must be removed or supplied separately. When the limit switch circuitry is removed or protected, the power supply input for the amplifier may be increased to +/- 35 Volts.