

LC-301 PSD

Amplifier for 1 and 2 dimensional PSDs

The LC-301 PSD has been designed for application with both 1D and 2D PSDs. The design allows for straightforward and flexible use with different PSD designs. A DC voltage in the range 15 – 24 V is all that is required for operation . A light source (LED or laser diode) can be synchronised to the amplifier using the integrated clock signal generator . A three-stage variable-gain amplifier allows the optimum gain for the application to be selected. The PSD output signals are precisely added and subtracted and the following DC regeneration eliminates the effect of background light and creates highly linear DC signals. These are then converted into true position information by the accurate analogue divider. The output signal intensity may be varied by the user by +/- 25% to allow the working range to be optimised. A short circuit proof power stage allows long cables to be used. An analogue sum signal, which equals the total detector signal and is proportional to the incident power, is also provided.

The high degree of flexibility allows the board to be easily adapted according to the requirements of the customer. If both PSD and amplifier are ordered together we can optimise the electronics for the application.

Technical data:

Transimpedance amplifier (3 stages)	10^{-3} , 10^{-4} , 10^{-5} , A/V
Position signal	+/-10 V, variable by +/-25%
Sum signal	0 – 10 V
Linearity	+/- 0.5%
Frequency	10 kHz
Voltage supply	15 V – 24 V DC, 200mA, reverse polarity protected
SUB D 9-pin connector	output Pos X, Pos Y, sum, trigger frequency
Dimensions	160 mm x 100mm with 4 mounting holes

Board connections:

Voltage supply:	solder pads (2) + 15 to + 24 V DC
Current consumption:	200 mA
Laser/LED synchronisation:	solder pads (3) 0 V +5 V Trigger freq. 10 kHz
PSD connections:	solder pads (6) 0 V 12 V X1 X2 Y1 Y2 Connection examples for various PSD types are given below.
Jumper 1:	Example settings are given below
Jumper 2 und 3:	The sum signal may be +ve or –ve depending on the type of PSD used. The jumpers must be set correctly to ensure correct operation of the analogue divider. Example settings are given below
9-pin subD connector:	
Pin 1 – 5 = 0 V	
Pin 6 = sum signal	ideally ca. 5 V
Pin 7 = trigger signal	TTL square wave, 10 kHz
Pin 8 = position X	+/- 10 V
Pin 9 = pos Y	+/- 10 V

Resistor and Jumper settings for use with Sitek PSDs and FLEXPPOINT® lasers
(laser on= 0V)

One-dimensional PSD :

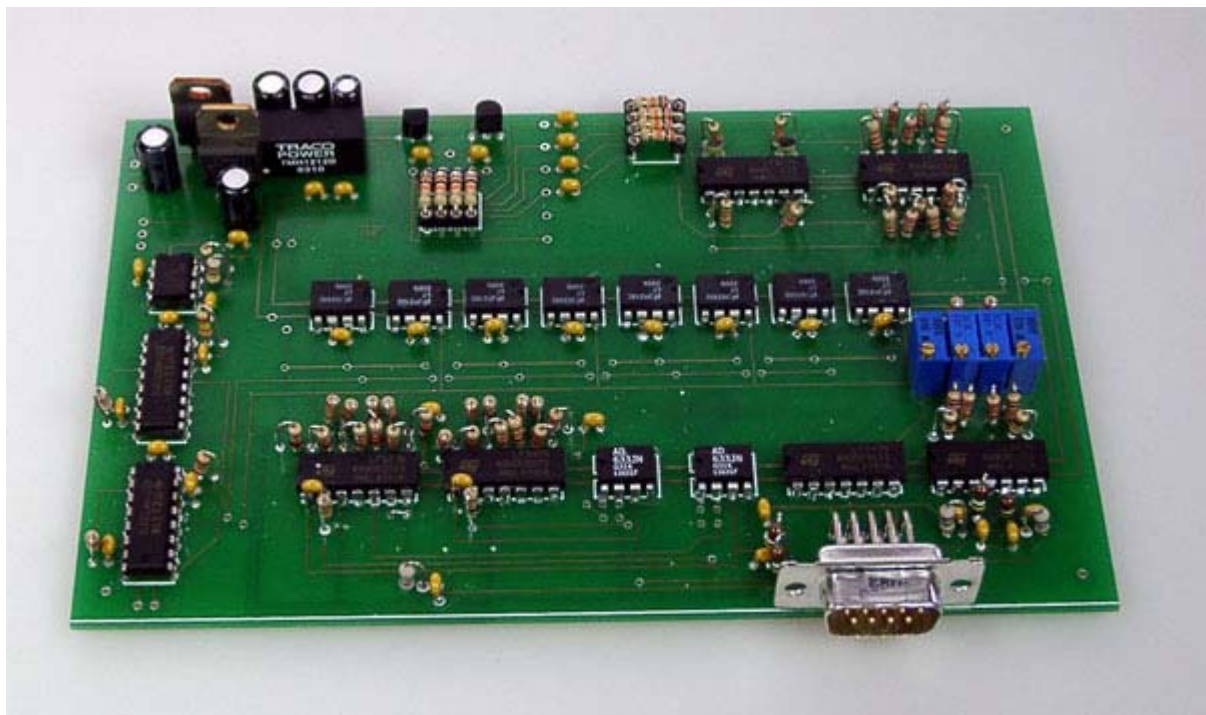
Jumper J1	0 V at RX and RY
Jumper J2	parallel
Jumper J3	crossed
R1 to R4	51 kΩ
4 x R at V1	30 kΩ (for 1 mW laser)
PSD connection	Bias to + 12 V

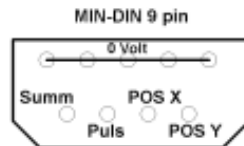
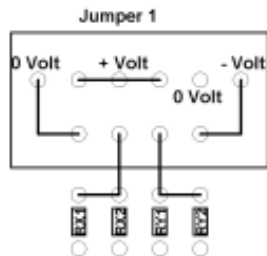
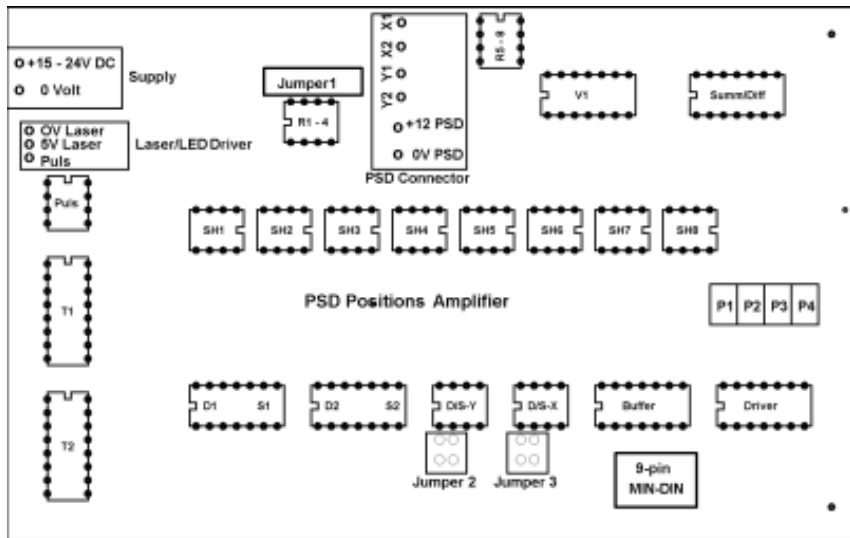
Two-dimensional PSD:

Jumper J1	+ V at RX, -V at RY
Jumper J2	parallel
Jumper J3	parallel
R1 to R4	20 kΩ
4 x R at V1	30 kΩ (for 1 mW laser)

Notes:

1. For lower laser powers (e.g. diffuse reflection) the resistors at V1 must be changed accordingly (higher resistance for lower power)
2. Recommended R values for PSD from manufacturers other than Sitek are available on request
3. No guarantee is offered regarding the performance of individual components in specific applications.





Settings for Sitek PSD

One Dimensional
+0V to RXRY

Two Dimensional
+Volt to RX
-Volt to RY

- P1 Amplification X
- P2 Offset X
- P3 Offset Y
- P4 Amplification Y

