NL125/NL126 - Filters

Introduction

The **NL125/NL126** Filter module employs two active sections to control the variable high- and low- pass characteristics along with a mains frequency Notch filter. It is a combination- replacement for both the NL125 and NL126.

The low frequency cut-off point can be set continuously from 0.5Hz to 5kHz with a single turn potentiometer, in four switched ranges. Similarly the high frequency cut-off can be set continuously from 5Hz to 50kHz in four switched ranges. DC and WB (wide band) switch positions by-pass the lower and upper filter sections, respectively.

The unit has two active notch filters which provided for the rejection of line frequency interference; this is selectable on the board, by the user, as either 50Hz (as the original NL125) or 60Hz (as the original NL126), with a 20Hz notch width (-3dB points).

The design is implemented using low noise active linear circuitry and does not suffer any of the aliasing problems that are encountered when cheaper methods are used.

The LF-CUT (High-pass) filter has a rotary switch that selects the 4 frequency settings and a continuous, calibrated control gives adjustment over that range. This gives a wide range with 12dB/octave [40dB/decade] attenuation below the selected frequency value. The 'DC' switch position by-passes the filter sections completely.

The HF-CUT (Low-pass) filter has a rotary switch that selects the 4 frequency settings and a continuous, calibrated control gives adjustment over that range. This gives a wide range with 12dB/octave [40dB/decade] attenuation above the selected frequency value. The 'WB' (wide-band) switch position by-passes the filter sections completely.

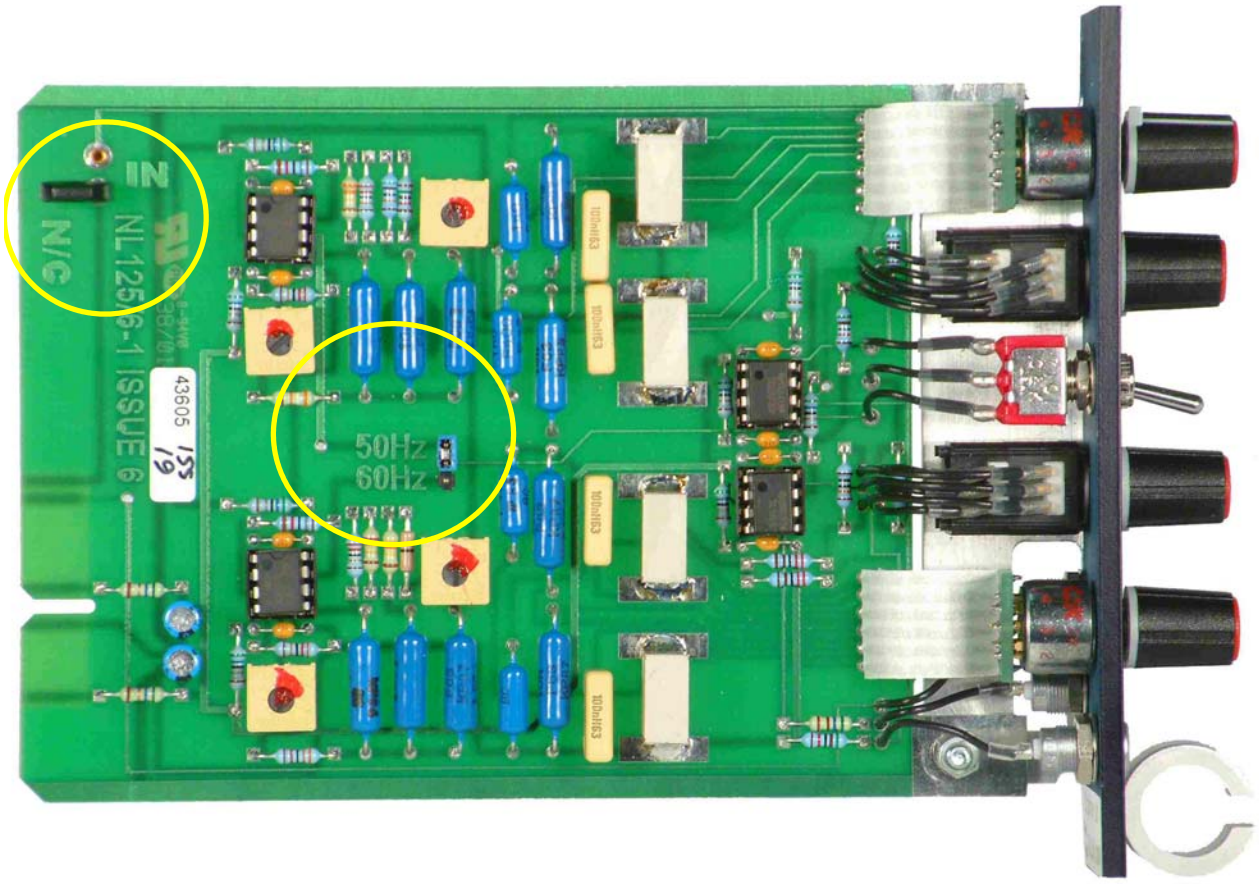
Example

In the photograph, the LF CUT is set with a Range-maximum of “500Hz” and the calibrated control is set to “10” giving a filter cut-off frequency of 100Hz. The NOTCH filter is also “IN” (enabled). The HF CUT is set with a Range-maximum of “5kHz” and the calibrated control is set to approximately “20” giving a filter cut-off frequency of 2kHz.

Specification Summary

Input voltage range	:	±10V
Input impedance	:	56k-ohms
Low frequency cut-off range	:	DC, 0.5Hz->5kHz continuously adjustable
High frequency cut-off range	:	wide band (>50kHz), and 5Hz to 50kHz continuously adjustable
Gain within pass-band	:	+1.0
Attenuation beyond cut-off	:	40dB/decade
Notch attenuation	:	>50dB
Notch width at -3dB points	:	20Hz
Output voltage range	:	±10V
Output impedance	:	600ohms

Rear connections to the motherboard allow Input and Output interconnections between this and adjacent modules without the need of front panel cables.



Rear Connections and jumpers

The rear edge connector in the NL900 rack allows adjacent modules to connected together without the need of external front panel leads.

INPUT - the jumper (upper circle) allows the Output signal from the module to the immediate left to be connected to the input socket (IN), or it may be "parked" for no-connection (N/C) - as shown.

OUTPUT - the Output signal is always passed to the Input of the module to the immediate right.

The unit can be set with to have either a 50Hz (as shown) or 60Hz Notch filter. The jumper (lower circle) is pulled away from the board, aligned with the centre pin and the upper (for 50Hz) or lower (for 60Hz) pin and pushed back onto the two selected pins.

We reserve the right to alter specifications and price without prior notification.

First Issued: 1984 **Last Revision:** March 18, 2005 **Printed:** March 18, 2005
File Reference: N:\Docs\Company\Manuals\NeuroLog \ NL125+NL126.lwp