15385 Carrie Drive
Grass Valley, CA 95949
Office: (530) 477-8400
Tech. Support: (530) 477-8402
FAX: (530) 477-8403
Sales: (800) 874-8663
Email: tech@norcommcorp.com
Web:www.norcommcorp.com

MODEL NC109 NOTCH FILTER
INSTRUCTION MANUAL

INTRODUCTION

The Model NC109 is a high stability field tunable audio Notch Filter designed to attenuate the level of a single tone frequency and pass all other in-band frequencies. These filters may be cascaded for further attenuation of a single frequency or more than one. The NC109 is generally used when it is desired to remove from the audio output circuitry of a radio the tone frequency used to control a decoder in a tone plus voice system. There are three versions: The NC109-A, tunable from 800 to 3000 Hertz, the NC109-B, tunable from 280 to 1500 Hertz and the NC109-C, tunable from 67 to 250 Hertz.

SPECIFICATIONS

	NC109-A	NC109-B	NC109-C
SIGNAL FORMAT:	Single tone	Same	Same
FREQUENCY RANGE:	800 to 3000 Hertz	280 to 1500 Hertz	67 to 250 Hertz
NULL FREQUENCY STABILITY:	±0.2% OVER TEMPERATURE RANGE	Same	Same
INPUT SIGNAL LEVEL:	No greater than 1VRMS	Same	Same
INPUT IMPEDANCE:	1 Meg ohm unbalanced	Same	Same
INSERTION LOSS:	0dB over passed frequency range	Same	Same
BANDWIDTHS:			
@ 3dB notch:	B.W. = ±3.0% nominal	Same	Same
@ 20dB notch:	B.W. = ±0.3% nominal	Same	Same
@ 40dB notch:	B.W. = ±0.1% nominal	Same	Same
FILTER DISTORTION:	< 1% @ 1VRMS	Same	Same
OUTPUT LEVEL:	Dependent on impedance selected	Same	Same
OUTPUT IMPEDANCE:	Selectable 1K or 56K ohms	Same	Same
OPERATING TEMPERATURE:	-20°C to +80°C	Same	Same
OPERATING VOLTAGE:	5.5 to 24VDC	Same	Same
OPERATING CURRENT:	<10mA	Same	Same
SIZE:	1.12"W x 0.92"L x 0.185"H	Same	Same
MOUNTING:	Double sided adhesive tape	Same	Same
INTERFACING:	12" Flying color coded leads	Same	Same

--SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE--

WARRANTY POLICY

NorComm products are unconditionally guaranteed for two (2) years on materials and labor from date of purchase. All Warranty repairs must be performed at NorComm's Customer Service Department in Grass Valley, CA. Units under warranty can be returned for repair or replacement without prior authorization, however, a letter explaining the defect should be enclosed with the unit. Out of warranty units returned constitute Purchaser's authorization for NorComm to repair or replace equipment and to invoice Purchaser for any and all reasonable costs of repair labor, parts and freight.

NorComm shall not be obligated to repair or replace equipment rendered defective, in whole or in part, by causes external to the equipment, such as, but not limited to, catastrophe, power failure, or transients, environmental extremes, improper use, and maintenance or interfacing applications. NorComm further assumes no liability for any incidental or consequential damages which may result from the applications of its products by the Purchaser or any other party.

INTERFACING

The Model NC109 is supplied with a piece of double sided adhesive tape to eliminate the need for mounting hardware. Remove the protective covering from one side of the tape and apply to bottom side of P.C. Board. Now remove protective cover from remaining side of tape and adhere unit to desired location making sure that mounting surface is clean and dry to insure positive mounting. For maximum operational reliability the decoder should be located away from intensive R.F. or magnetic fields and all leads should be kept to minimum lengths.

NOTE: **DO NOT** connect notch filter in series with speaker output leads or exceed 1VRMS input to filter as the output signal level will flatten resulting in filter distortion and reduction of unwanted signal attenuation. Recommended installation would be to interface notch filter in series with low level, high impedance circuitry of pre-amp audio stage not exceeding 1VRMS.

FREQUENCY ADJUSTMENT

[1] RED (+) . . . . . Connect to 5.5 to 24VDC.

[2] BLACK (-) . . . . . Connect to system ground.

[3] Apply tone frequency to [GREEN] input lead. (Note: Audio input not to exceed 1VRMS.)

[4] Listen for tone in system speaker or observe with scope or A.C. voltmeter connected to the [YELLOW] lead.

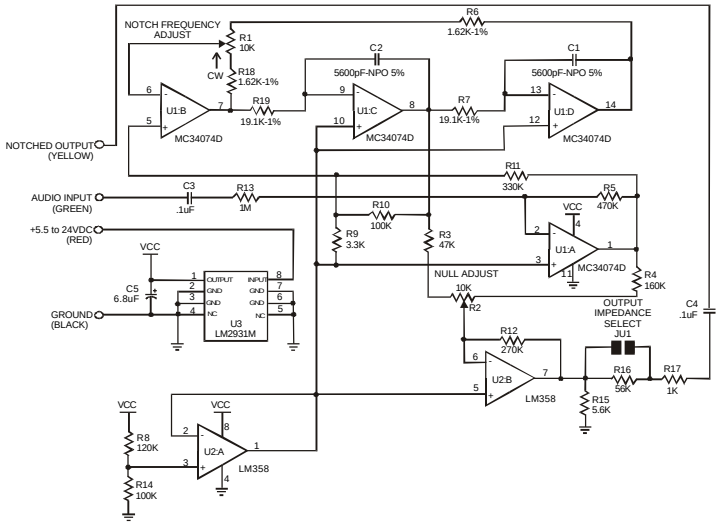
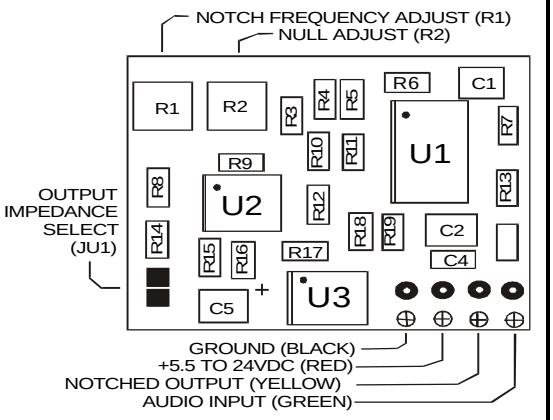
[5] Adjust "Notch Frequency" potentiometer (R1) for minimum tone level. Then adjust "Null" potentiometer (R2) for minimum tone level. Repeat adjustments for maximum tone attenuation.

NOTES: 1) For balanced audio system applications, use matching transformers on input and output.

2) Several NC109 notch filters may be cascaded if more than one frequency is to be suppressed or to further attenuate a single frequency.

3) If a limiter or compressor stage is used in the audio circuitry, install the NC109 notch filter following the output of this circuitry to avoid negating the performance of the filter.

SCHEMATIC



COMPONENT LOCATOR