Fast filter amplifier

Model **NCB231.**

WARRANTY

NAICAM S.R.L. warrants this product to be free from defects in material and workmanship for a period of 1 year from date of shipment from headquarter in Italy.

NAICAM SRL warrants the following items for one year from the date of shipment: probes, cables, and documentation of specified equipment.

During the warranty period, we will, at our option, either repair or replace any product that proves to be defective.

To exercise this warranty, write or call your local NAICAM SRL representative, or contact NAICAM SRL headquarters in Italy. You will be given prompt assistance and return instructions. Send the product, transportation prepaid, to the indicated service facility. Repairs will be made and the product returned, transportation prepaid. Repaired or replaced products are warranted for the balance of the original warranty period.

LIMITATION OF WARRANTY

This warranty does not apply to defects resulting from product modification without NAICAM SRL express written consent, or misuse of any product or part.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE. THE REMEDIES PROVIDED HEREIN ARE BUYER'S SOLE AND EXCLUSIVE REMEDIES.

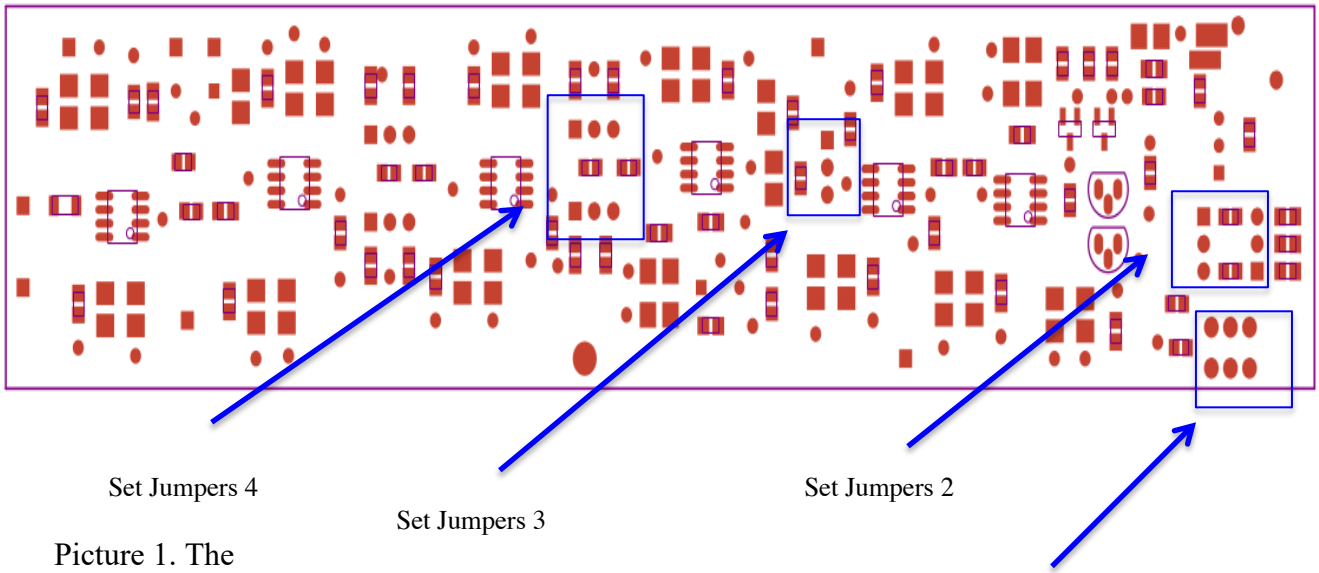
NAICAM srl, NOR ANY OF ITS EMPLOYEES SHALL BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF ITS INSTRUMENTS AND SOFTWARE EVEN IF NAICAM SRL, HAS BEEN ADVISED IN ADVANCE OF THE POSSIBILITY OF SUCH DAMAGES. SUCH EXCLUDED DAM- AGES SHALL INCLUDE, BUT ARE NOT LIMITED TO: COSTS OF REMOVAL AND INSTALLATION, LOSSES SUSTAINED AS THE RESULT OF INJURY TO ANY PERSON, OR DAMAGE TO PROPERTY.


NAICAM
NCB231
IN1
OUT1
B/L
Vo
FG
GAIN
IN2
OUT2
B/L
Vo
FG
GAIN
IN3
OUT3
B/L
Vo
FG
GAIN
IN4
OUT4
B/L
Vo
FG
GAIN
4 ch. Fil.
Amplifier
+12V
-12V

1. GENERAL DESCRIPTION.

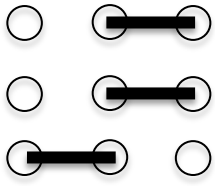
1.1 DESCRIPTION.

The single-width NIM module NCB231 has four separate timing filter amplifiers. This design can provide optimum timing for up to four germanium detectors or also be used for timing with other solid-state detectors, or operate as a general-purpose wideband amplifier with selectable bandwidth.
The Gain can be selected and is adjustable over the nominal range from 10 to 2500. The Gain is adjustable from 10 to 500 using a front-panel screwdriver potentiometer (FG) and Gain Switch (GAIN). Internal jumper selects a Coarse Gain of x1 or x5. The output will drive a 50-Ω load to ±5 V. B/L front-panel potentiometer used to adjust pole-zero cancellation for decay time constants from 25 μs to ∞. There is additional screwdriver potentiometer on the front panel output offset regulator.



Picture 1. The positions of set jumpers on the board.

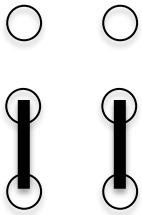
Note 1. Set jumpers 1.



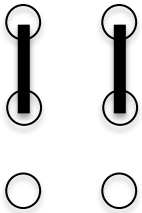
Inverted input signal.

Non-inverted input signal.

Note 2. Set jumpers 2.



Differential time constant selected 200ns.



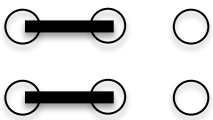
Differential time constant selected OUT.

Note 3. Set jumpers 3.

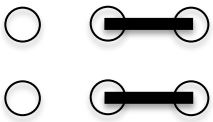
INTERNAL COARSE GAIN selected x1.

INTERNAL COARSE GAIN selected x5.

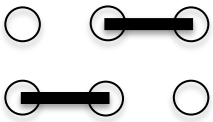
Note 4. Set jumpers 4.



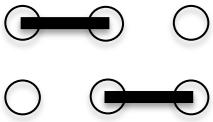
INTEGRATION Time constant jumper selected OUT.



INTEGRATION Time constant jumper selected 50 ns.



INTEGRATION Time constant jumper selected 35 ns.



INTEGRATION Time constant jumper selected 20 ns.

1.2 PERFORMANCE.

INPUT SIGNAL AMPLITUDE RANGE 0 to ±1.0 V AC signal; 0 to ±2 V DC offset; maximum input ±5 V.

OUTPUT AMPLITUDE RANGE 0 to ±5 V linear into a 50-Ω load. Output DC-coupled with DC regulated offset <±1 mV.

RISE TIME <10 ns with Integration and Differentiation time constants set to OUT. (See note 2,4)

RMS NOISE (maximum gain, Integration and Differentiation set to OUT) referred to the input <50 µV;

INTEGRAL NONLINEARITY <±0.5% over ±5 V into a 50-Ω load.

TEMPERATURE SENSITIVITY Dc level <±10 µV/C referred to the output.

CONTROLS each section of the Model NCB231 has separate controls for Coarse Gain, Fine Gain, P/Z, Differentiation, and Integration time constant.

INTERNAL COARSE GAIN jumpers selectable for nominally x1 or x5 (see note 3).

COARSE GAIN selectable by 10 positions switch for nominally x10, x15, x20, x30, x45, x60, x80, x120, x160, and x250.

FINE GAIN Front-panel screwdriver potentiometer adjustable from 1 to 2.

B/L front-panel potentiometer used to adjust pole-zero cancellation for decay time constants from 25 µs to ∞.

INVERT/NONINVERT jumpers selectable to invert or Non-invert the Output signal relative to the Input signal (see note 1).

DIFFERENTIATION Time constant jumper selectable as OUT (equivalent to 0.1 ms) or 200 ns. A third position is available for custom modification. The Model NCB231 is shipped with this jumper in the OUT position (see note 2).

INTEGRATION Time constant jumper selectable as OUT or 50, 35, 20 ns. The Model NCB231 is shipped with this jumper in the OUT position (see note 4).

INPUT Positive or negative polarity selectable with a jumper; amplitude 0 to ±1 V ac signal; 0 to ±2 V dc offset; maximum input ±2 V signal plus offset. Input impedance is 50 Ω, protected to ±6 V.

OUTPUT Front-panel LEMO connector furnishes the shaped and amplified signal Up to ±5 V.

2. TECHNICAL SPECIFICATIONS.

2.1 POWER SUPPLY REQUIREMENTS:

The module has NIM standard power supply.

P. Voltage (V)	Current (mA)
+12	350
-12	350

2.2 Dimensions and weight.

DIMENSIONS NIM-standard single-width
module 3.43 X 22.13 cm per DOE/ER-0457T.

WEIGHT
Net 0,78 kg.

For More information on NAICAM products and applications contact your local NAICAM representative:

Europe: NAICAM s.r.l., Via Aosta 14, Padua, 35142, Italy.
Telephone: +39.049.2050437. Fax: +39.049.2050437
E-mail: info@naicam-tech.com.
Website:www.naicam-tech.com.