

NCB239 - DUAL SPECTROMETRIC AMPLIFIER

The single-width NIM module NCB239 has two separate spectrometric amplifiers. This design can provide optimum timing for up to two germanium detectors or also be used for timing with other solid-state detectors, or operate as a general-purpose wideband amplifier with selectable bandwidth. Three-position printed wiring board (PWB) jumpers select either Pos or Neg input pulse polarity. The Gain can be selected and is adjustable over the nominal range from 5 to 1500. The Gain is adjustable from 5 to 500 using a front-panel screwdriver potentiometer (FG) and Gain Switch (GAIN). Internal jumper selects a Coarse Gain

of x1 or x5. Front-panel screwdriver adjustment to compensate for the preamplifier decay time constant from 25 μ s to ∞ (B/L). Automatic Base line restorer. Front-panel screwdriver adjustment to compensate output offset in range ± 20 mV. The module provide two independent outputs: unipolar and bipolar signals. Each output available on the front and back side panels. All input and outputs connectors are RADIAL BNC type connector. The connectors can be changed to LEMO 00 type connectors if this option will be specified in order.

PERFORMANCE

Input signal amplitude range	0 to $\pm 1,0$ V AC signal; 0 to ± 200 mV DC offset; maximum input ± 10 V
Output amplitude range	0 to ± 10 V linear without load. Output DC-coupled with DC regulated offset $< \pm 1$ mV
Pulse shape	Semi-Gaussian on all ranges with peaking time equal to $2,2\tau$ of shaping time
RMS noise	(maximum gain, Integration and Differentiation set to 1- μ s) referred to the input RMS < 7 μ V for unipolar shaping, negative polarity; < 5 μ V using 2- μ s shaping time;
Integral nonlinearity	$< \pm 0,5\%$ over ± 10 V into a 1000- Ω load
Temperature sensitivity	DC level $< \pm 10$ μ V/C referred to the output
Controls	each section of the Model NCB239 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
Coarse gain	selectable by 10 positions switch for nominally x10, x15, x20, x30, x45, x60, x80, x120, x160, and x250
Fine gain	Front-panel potentiometer adjustable from 1 to 2
Bipolar crossover walk	< 5 ns at 0,5- μ s shaping time for 50:1 dynamic range, P/L front-panel potentiometer used to adjust pole-zero cancellation for decay time constants from 25 μ s to ∞
Invert/noninvert	jumpers selectable to invert or Non-invert the Output signal relative to the Input signal
Differentiation	Time constant jumper selectable as 0,5 μ s, 1 μ s, 2 μ s, 3 μ s. A third position is available for custom modification. The Model NCB239 is shipped with this jumper in the 1 μ s position
Integration	Time constant jumper selectable as 0,5 μ s, 1 μ s, 2 μ s, 3 μ s.. The Model NCB239 is shipped with this jumper in the 1 μ s position.
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 1000 Ω , protected to ± 12 V.
Unipolar output	Front-panel LEMO connector, output impedance $Z_o = 100 \Omega$, active base line restorer adjustable ± 20 mV.
Bipolar output	Front-panel LEMO connector, output impedance $Z_o = 100 \Omega$, full range scale 0-10V.

NIM CONNECTOR PIN OUT

PIN	FUNCTION	PIN	FUNCTION
1	+3 V	23	Reserved
2	-3 V	24	Reserved
3	Spare bus	25	Reserved
4	Reserved bus	26	Spare
5	Coaxial	27	Spare
6	Coaxial	28	+24 V
7	Coaxial	29	-24 V
8	200 V DC	30	Spare bus
9	Spare	31	Spare
10	+6 V	32	Spare
11	-6 V	33	117 V AC
12	Reserved bus	34	Power return ground
13	Spare	35	Reset (Scaler)
14	Spare	36	Gate
15	Reserved	37	Reset (Auxiliary)
16	+12 V	38	Coaxial
17	-12 V	39	Coaxial
18	Spare bus	40	Coaxial
19	Reserved bus	41	117 V ACc (neutral)
20	Spare	42	High-quality ground
21	Spare	G	Ground guide pin
22	Reserved		

POWER SUPPLY REQUIREMENTS

The module has NIM standard power supply and 202515-3 AMP connector on the backside of module.

P. Voltage (V)	Current/ch (mA)
+12	225
-12	225
+24	Preamplifier supply
-24	Preamplifier supply

DIMENSIONS

dimensions	3,43x22,13 cm per DOE/ER-0457T
weight	0,82 kg

