NCB238 - TIME-TO-AMPLITUDE CONVERTER

The module NCB238 Time-to-amplitude converter (TAC) measures the time interval between start-stop pulses and generates an analog output pulse proportional to the measured time. The module has two switches: first determines the range and second multiplier factor. Total time measurement ranges can be from 10 ns to 2 ms. Valid Startand Valid Conversion outputs are provided for each accepted start and stop inputs. The duration of the Start output indicates the interval from the accepted start until the end of reset.

PERFORMANCE

Time resolution FWHM	≤0,01% of full scale plus 5 ps for all ranges
Temperature instability	≤±0,01%/°C of full scale, in range 0 to 50°C
Differential nonlinearity	Typically, <1% from 10 ns or 2% of full scale
Integral nonlinearity	≤±0,1% from 10 ns or 2% of full scale
Multiplier range	Fixed 1,0 µs for x1 and x10 Multipliers, fixed 5 µs for x100 Multiplier, and fixed 50 µs for x1K, and x10K Multipliers.
Star-to-stop conversion time	Minimum ≤5 ns
Input count rate	>30 MHz

FRONT PANEL CONTROLS

Range control (ns)	Three-position rotary switch selects full scale time interval of 50, 100, or 200 ns between accepted START and STOP input signals
Multiplier	Control is five-position rotary switch extends time range by a multiplying factor of 1, 10, 100, 1K, or 10K
Delay	Control (µs) 10-turn screwdriver-adjustable potentiometer varies the delay of the TAC output from 0,5 µs to 10,5 µs, relative to an accepted Stop input signal
Gate mode	Control is two-position locking toggle switch selects coincidence or anticoincidence mode of operation for the Start circuit

INPUT/OUTPUT

Input	All three inputs are DC-coupled, jumpers selectable to accept positive in range 2-10 V or negative NIM standard signals. Input impedance is 50 Ω in the NIM input and >1 kΩ in the positive signal. **START** Front-panel BNC connector initiates time conversion when Start input signal is arrived. Factory-set in the negative input position. **STOP** Front-panel BNC connector terminates time conversion. Factoryset in the negative input position. **GATE** front-panel BNC connector provides an external means of gating the Start circuitry in either Coincidence or Anticoincidence with the Start input signal.
Outputs	**TAC OUTPUT** Front-panel BNC connector provides unipolar pulse. Amplitude 0 V to +10 V proportional to START/STOP input time difference. **VAL_CONC**. Rear panel BNC connector, output signal NIM standard. Valid START signal. **VAL_ST** Rear panel BNC connector, output signal NIM standard. Valid conversion signal.

POWER SUPPLY REQUIREMENTS

The module has NIM standard power supply.

P. Voltage (V)	Current/ch (mA)
+24	20
-24	37
+12	71
-12	102
+6	180
-6	443

DIMENSIONS

dimensions	3,43x22,13 cm per DOE/ER-0457T
weight	0,9 kg