8 channels Leading Edge discriminator.

Model **NCB221.**

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.

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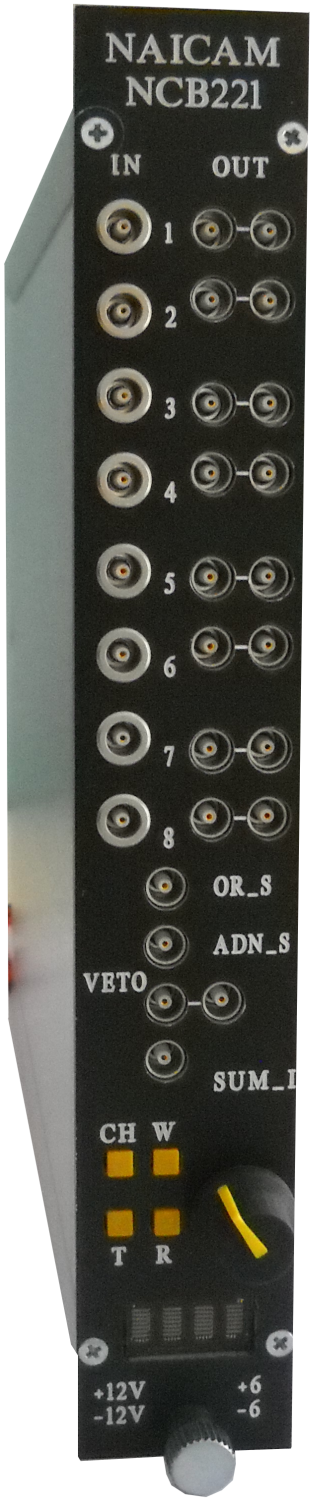
NAICAM
NCB221
IN
OUT
1
2
3
4
5
6
7
8
OR_S
ADN_S
VETO
CH W
T R
+12V
-12V
+6
-6

1. GENERAL DESCRIPTION.

1.1 DESCRIPTION.

The one wide NIM module **NCB221** is an 8 Channel Leading Edge discriminator. The module accepts 8 negative inputs and has 2x8 NIM outputs on front panel LEMO 00 connectors.

The pulse output width is adjustable in a range from 25 ns to 400 ns. The discriminator thresholds are individually settable in a range from -1 mV to -255 mV (1 mV step), via an 8-bit DAC and displayed by 4 digit led display. The minimum detectable signal is - 1 mV (see note 1). On the front panel there are SUM_OR , SUM_AND and SUM_I (input currents) of all 8 channels. During VETO signal all channels are disabled.

1.2 FUNCTIONAL BLOCK DIAGRAM

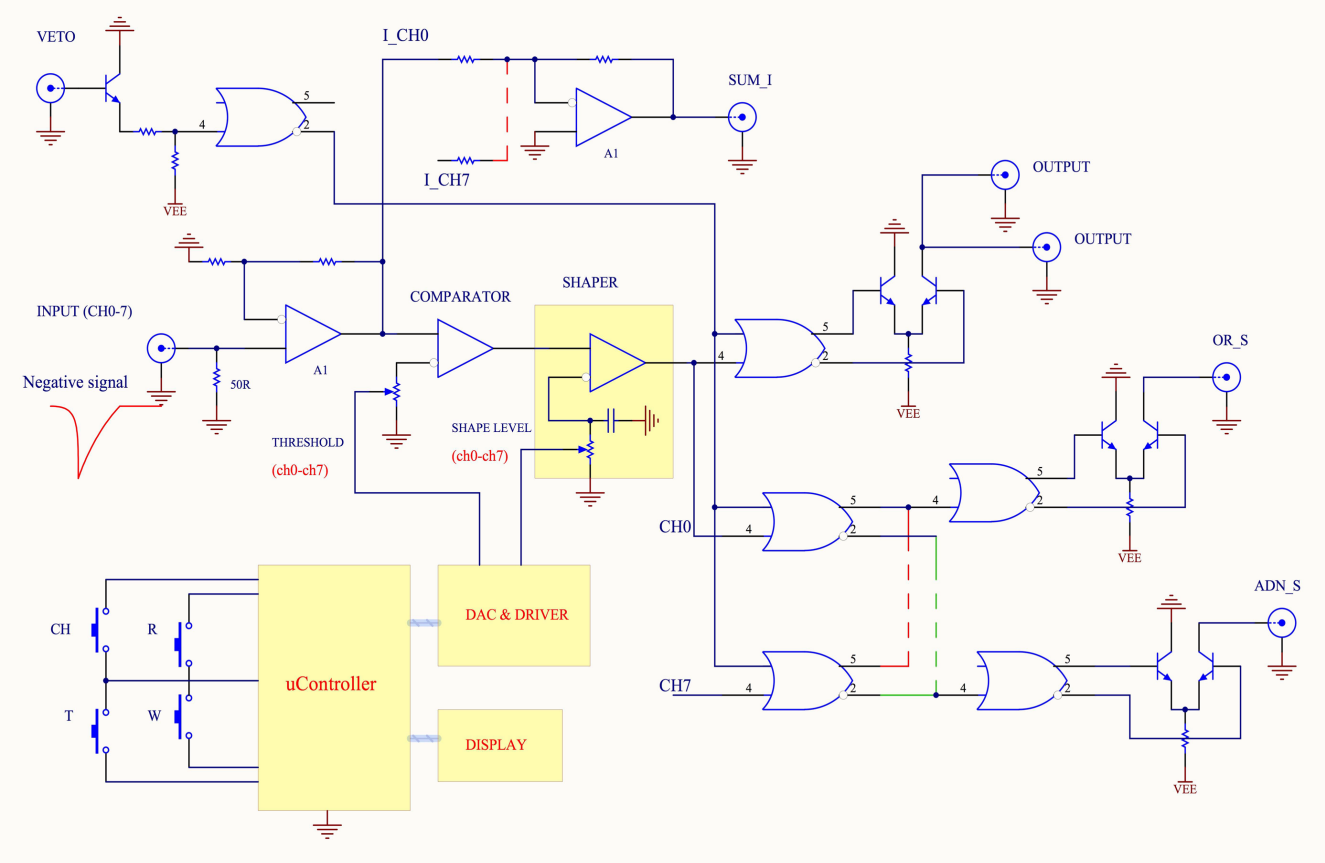

Figure1. Block diagram of NCB221 module.

1.3 PERFORMANCE.

INPUT	50 Ohm impedance, negative polarity, DC coupled.
Rise time	< 3 ns
Threshold range	-1 mV to -255 mV (1 mV step) (Optional version up to 1 Volt range).
Output Width	25 ns to 400 ns
Maximum dynamic input range:	5 V (with 50 Ohms termination).
Input/output delay Input - OR output Input - AND output	11 ns 12 ns 12 ns
Pulse Resolution	7 ns.
Channels OUTPUT:	Double NIM logic signal
VETO	Veto outputs of all channels, 1 kOhm input
I Sum out	Analogue output of the SUM input signals, output resistor 100 Ohm.
Sum OR	Output function OR all 8 channels, NIM standard.
Sum AND	Output function AND all 8 channels, NIM standard.

Note1: For low thresholds (less then 3 mV) very important avoid DC input offset from detector by using decoupling capacitance.

2. TECHNICAL SPECIFICATIONS.

The module has manual setting parameters. The 4 keys and alphabetic display help set all parameters of the module NCB221. The all parameters are stored in internal memory. When power on microcontroller wrote all stored parameters in two DAC to set up threshold and width output signals.

2.1 OPERATING INSTRUCTIONS

Set Up module parameters.

The module has 4 keys, 4 digits LED display and rotate switch to set all settable parameters of module.

CH - select channel.
T - set threshold
W - set width output pulse
R - revers key

The last working value thresholds and output pulse widths always are saved in memory of module. These parameters will be installed after power on.
On the LED display the text **Run** is appeared.

Select channel by **CH** key and press **T (or W)** key to install a threshold (a output pulse width) of selected channel.

Press **T** key to increase or **R** key to decrease threshold by step one.

Press **W** key to change output pulse width and **R** key to decrease it.

The first value is actual installed threshold or pulse width. Escape without change press **CH** and **R**. The rotated switch has used to increase or decrease settable value more then step 1 of selected channel. Select channel by **CH,** select T or W key. After moving the rotated switch press **T, R** or **W, R** key to increase/ decrease value by step 1. After key press **R** or **CH** the rotated switch is disabled to avoid missing setup.

2.2 INPUT/OUTPUT CONNECTIONS AND SIGNAL CHARACTERISTIC

The input impedance of the Model 221 is 50 **Ω** and provides a suitable termination for 50 **Ω** coaxial cable. Output connector can be terminated with a impedance of 50 **Ω** .

IMPUTS.

INPUT — input impedance is 50 **Ω**, DC-coupled; front-panel LEMO 00

Input amplitude range from 0 to ±5 V signal, 0 to ±5 V DC offset; absolute maximum range of input signal is ±12 V.

VETO — input impedance is 1k**Ω**, NIM standard signal. DC-coupled; two front-panel LEMO 00. Several modules NCB221 can connect in daisy chain. Last module must have 50 **Ω** termination.

OUTPUTS.

OUTPUT Front-panel LEMO 00 connector (NIM Standard signal - 50 ohm termination). Output width 25 ns to 400 ns.

OR_S Logic OR all 8 channels. Front-panel LEMO 00 connector (NIM Standard signal - 50 ohm termination).

ADN_I Logic AND_ all 8 channels. Front-panel LEMO 00 connector (NIM Standard signal - 50 ohm termination).

SUM_I Output resistance 100-**Ω** , Analogue output 0 to ±5 V without termination load. Front-panel LEMO 00 connector.

2.3 INTERNAL HARDWARE SETTINGS

No any internal setting present on the board.

2.4 POWER REQUIREMENTS

The module has NIM standard power supply.

Power Voltage (V)	Current (mA)
+ 6	280
- 6	1430
+12	21
- 12	20

2.5 DIMENSION AND WEIGHT

Standard single-width NIM module.

Weight:

0,91 kg.

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