Rev. 01 - 30/09/2003

N638

16 Channel NIM-ECL/ECL-NIM Translator and Fan Out

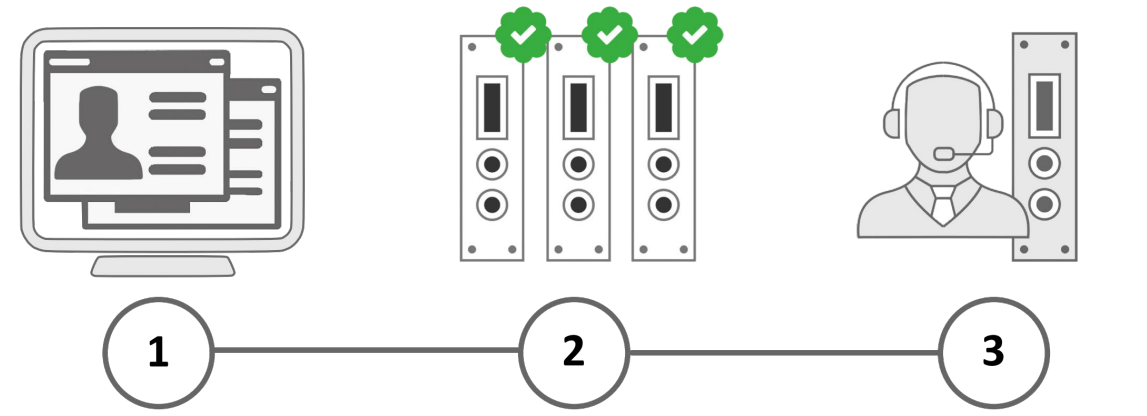
CAEN
Tools for Discovery

User Manual

Register your device

Register your device to your **MyCAEN+** account and get access to our customer services, such as notification for new firmware or software upgrade, tracking service procedures or open a ticket for assistance. **MyCAEN+** accounts have a dedicated support service for their registered products. A set of basic information can be shared with the operator, speeding up the troubleshooting process and improving the efficiency of the support interactions.

MyCAEN+ dashboard is designed to offer you a direct access to all our after sales services. Registration is totally free, to create an account go to https://www.caen.it/become-mycaenplus-user and fill the registration form with your data.



https://www.caen.it/become-mycaenplus-user/

Technical Information Manual

Revision n.1
30 September 2003

MOD. N638
16 CHANNEL
NIM-ECL / ECL-NIM
TRANSLATOR
AND FAN OUT

NPO:
00101/03:N638x.MUTx/01

CAEN will repair or replace any product within the guarantee period if the Guarantor declares that the product is defective due to workmanship or materials and has not been caused by mishandling, negligence on behalf of the User, accident or any abnormal conditions or operations.

CAEN declines all responsibility for damages or injuries caused by an improper use of the Modules due to negligence on behalf of the User. It is strongly recommended to read thoroughly the CAEN User's Manual before any kind of operation.

CE

CAEN reserves the right to change partially or entirely the contents of this Manual at any time and without giving any notice.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1. DESCRIPTION

1.1 FUNCTIONAL DESCRIPTION

The CAEN Model N638 is a 16 CHANNEL TRANSLATOR and FAN OUT (NIM: 2x16, ECL: 2x8) housed in a 1-unit wide NIM mechanics (a functional block diagram is shown in Fig. 1.1).

This model implements the simple conversion of logic signals in a NIM module, which can be close to front-end electronics with consequent better cabling and timing results. It can also be used in applications in which a limited number of control signals must be sent to several modules.

Each of the 16 channels (divided into CH 0÷7 section A and B) accepts a NIM or an ECL signal and provides two NIM (indipendently driven) and one ECL outputs. The NIM and ECL inputs of each channel are ORed prior to fan-out.
The maximum operating frequency is 300 MHz (*).

Moreover the module has two “common” input channels: each COMMON IN channel has two front panel input connectors which accept a NIM signal, which allows the use of the module as a fan-out of 16 NIM and 8 ECL signals; channel COMM A drives output A 0÷7, channel COMM B drives output B 0÷7. These inputs are bridged for daisy-chaining: the last input in the chain must be loaded with 50 Ω.

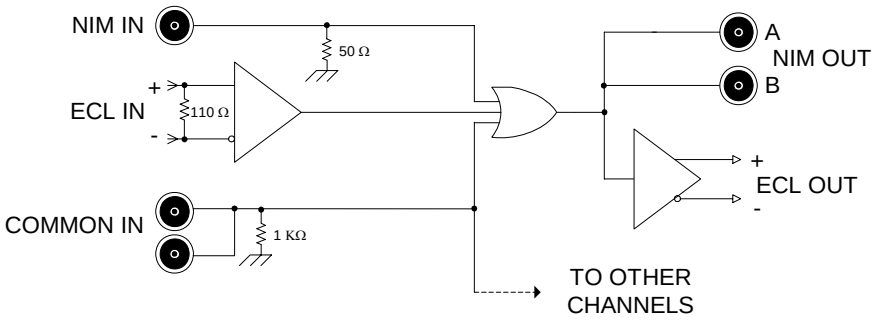


Fig. 1.1: N638 Functional Diagram (one channel)

* When using NIM input signals

2. SPECIFICATIONS

2.1 EXTERNAL COMPONENTS

CONNECTORS

- No. 2, "IN A 0÷7" and “IN B 0÷7”, input connectors, Header 3M 3408-5202 type, 8+8 pins. Connectors for the input differential ECL signals.

- No. 16, "IN A,B 0÷7", input connectors, LEMO 00 type. Connectors for the input NIM signals.

- No. 4, "COMM", input bridged connectors (2 pairs: COMM A, COMM B), LEMO 00 type. Connectors for the COMMON IN NIM signals.

- No. 2, "OUT 0÷7 A” and “OUT 0÷7 B", output connector, Header 3M 3408-5202 type, 8+8 pins. Connector for the differential ECL output signals.

- No. 32, "OUT 0÷7 A,B", output connectors, LEMO 00 type. Connectors for the NIM output signals.

2.2 POWER REQUIREMENTS

The module requires –6 V at 2.3 A.

2.3 CHARACTERISTICS OF THE SIGNALS

INPUTS:

- IN A,B 0÷7 NIM:	NIM logic levels, 50 Ω impedance, 1.65 ns minimum FWHM. Reflections < 3% for input signals featuring: 0.8 ns rise/fall time, 50 ns FWHM, 1 KHz frequency.
- IN A,B 0÷7 ECL:	Std. ECL logic levels, 110 Ω impedance, 1.65 ns minimum FWHM. Reflections < 10% for input signals featuring: 0.8 ns rise/fall time, 50 ns FWHM, 1 KHz frequency..
- COMM:	Std. NIM Level, high impedance, 1.65 ns minimum FWHM. Reflections < 3% for input signals featuring: 0.8 ns rise/fall time, 50 ns FWHM, 1 KHz frequency.

OUTPUTS:

- OUT A,B 0÷7 NIM: Std. NIM levels on 50 Ω impedance, 1.65 ns minimum FWHM.
  rise/fall time: < 0.5 ns.

- OUT A,B 0÷7 ECL: Differential ECL levels on 110 Ω impedance, 1.65 ns min.FWHM.
  rise/fall time: < 0.8 ns.

2.4 PERFORMANCES

Maximum Frequency: NIM inputs: 300 MHz (50% Duty Cycle);
ECL inputs: 250 MHz (50% Duty Cycle);
Common IN: 200 MHz (50% Duty Cycle).

Input to Output Delays:

- ECL IN to NIM OUT: 1.5÷2 ns;
- ECL IN to ECL OUT: 1.5÷2 ns;
- NIM IN to ECL OUT: 2.5÷3 ns;
- NIM IN to NIM OUT: 2.5÷3 ns;
- COMMON IN to NIM OUT: 2.5÷3.5 ns;
- COMMON IN to ECL OUT: 2.5÷3.5 ns.

2.5 FRONT PANEL

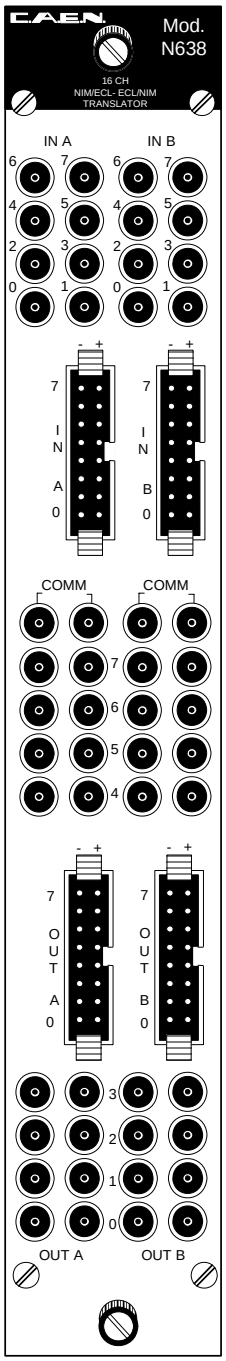


Fig. 2.1: N638 Front Panel

2.6 TECHNICAL SPECIFICATION TABLES

Table 2.1: Technical features

Packaging		1U-wide NIM unit
NIM inputs		NIM logic levels, 50 Ω impedance
ECL inputs		Std. ECL logic levels, 110 Ω impedance
COMM inputs		Std. NIM Level, high impedance
Reflections		< 3%, tested with NIM input signals featuring: 0.8 ns rise/fall time, 50 ns FWHM, 1 KHz frequency
NIM A, B outputs		Std. NIM levels on 50 Ω impedance
ECL outputs		Differential ECL levels on 110 Ω impedance
Output rise/fall time		< 0.5 ns (measured on NIM output)
Min. input FWHM	**NIM/ECL**	1.65 ns
	COMMON	1.65 ns
Max. input frequency	**NIM**	300 MHz (50% Duty Cycle)
	ECL	250 MHz (50% Duty Cycle)
	COMMON	200 MHz (50% Duty Cycle)
I/O delay	**ECL IN to NIM/ECL OUT**	1.5÷2 ns
	NIM IN to NIM/ECL OUT	2.5÷3 ns
	COMM_IN to NIM/ECL OUT	2.5÷3.5 ns

3. OPERATING MODES

3.1 GENERAL INFORMATION

This model implements the simple conversion of logic signals from NIM to NIM/ECL and from ECL to NIM/ECL in a NIM module.

Its operation is extremely simple and immediate: the User should just insert the module into a NIM crate and turn the crate on. The module is ready to operate.

3.2 FRONT PANEL SIGNALS

Each of the 16 channels accepts a NIM or an ECL signal and provides two NIM and one ECL outputs. The NIM and ECL inputs of each channel are ORed prior to fan-out.

Moreover the module has two “common” input channels (COMM A and COMM B): each COMMON IN channel has two front panel input connectors which accept a NIM signal, which allows the use of the module as a fan-out of 16 NIM and 8 ECL signals; channel COMM A drives output A 0÷7, channel COMM B drives output B 0÷7. These inputs are bridged for daisy-chaining: the last input in the chain must be loaded with 50 Ω.

CAEN GmbH
Brunnenweg 9
64331 Weiterstadt
Germany
Tel. +49 (0)212 254 4077
Mobile +49 (0)151 16 548 484
info@caen-de.com
www.caen-de.com

CAEN Technologies, Inc.
1 Edgewater Street - Suite 101
Staten Island, NY 10305
USA
Phone: +1 (718) 981-0401
Fax: +1 (718) 556-9185
info@caentechnologies.com
www.caentechnologies.com

CAEN S.p.A.
Via Vetraia 11
55049 - Viareggio
Italy
Phone +39 0584 388 398
Fax +39 0584 388 959
info@caen.it
www.caen.it

CAENspa INDIA Private Limited
B205, BLDG42, B Wing,
Azad Nagar Sangam CHS,
Mhada Layout, Azad Nagar, Andheri (W)
Mumbai, Mumbai City,
Maharashtra, India, 400053
info@caen-india.in
www.caen-india.in