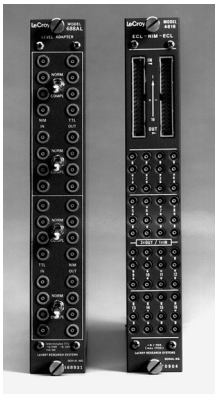


688AL DUAL, 8 INPUT NIM/TTL, TTL/NIM

4616 16 INPUT ECL/NIM/ECL

- •Converts One Standard Logic Level to Another
- •High Speed
- •NIM Packaging
- •High Density
- •Direct Coupled

FOR TRANSLATION OF COMMON LOGIC SIGNALS

Logic level translators are simple units which are very easy to operate and translate/convert logic signals from one standard (i.e., NIM or TTL or ECL) to another one of these standards.

The Model 688AL and the Model 4616 are high performance NIM modules designed for maximum flexibility.

FEATURES

High Speed - Both modules have greater than 100 MHz capability.

Simple Operation - Both modules easily solve a common problem by converting logic signals into other standard levels.

High Density - Each unit has 16 separate translator channels.

Maximum Flexibility - NIM modules can be used in NIM bins or in CAMAC crates with the addition of the Model 4501A NIM-to-CAMAC adapter.

FUNCTIONAL DESCRIPTION

Both LeCroy level translators are NIM modules offering high performance, speed and maximum flexibility. These units operate by simply connecting the input and output level desired and easily solve the common problem of translating between different logic standards.

The Model 688AL Level Adapter provides 8 channels of direct-coupled NIM-to-TTL and 8 channels of TTL-to-NIM conversion in a single-width NIM module. Standard negative TTL notation is used to be compatible with unterminated CAMAC and slow NIM logic levels.

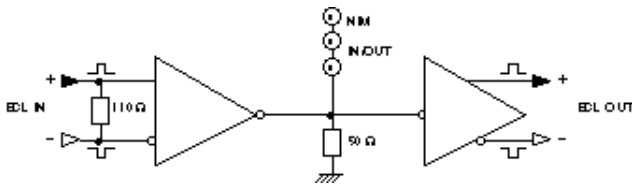
The NIM-to-TTL section accepts either normal or complementary NIM logic levels (logical "0" = 0 to -2 mA; logical "1" = -12 to -32 mA) at each of its eight 50 ohm inputs. The eight outputs switch between 0 V and +2.5 V for a time equal to the input signal duration. The polarity of the outputs is controlled by two front-panel switches common to two groups of four channels and provides either normal or complementary operation. Up to 50 mA at +2.5 V is delivered from each output, making the TTL drive capability compatible with terminated, direct-coupled 50 ohm cable. The low level clamp capability is 100 mA, or approximately 60 standard TTL loads. Direct-coupled, the 688AL is free from any rate effects and has no limitations on duty cycle.

The TTL-to-NIM section accepts standard negative TTL logic levels (logical "1" = 0 to + .8 V; logical "0" = > 2 V) at each of its eight inputs. The minimum input duration for a full output is 10 nsec. The output from each channel is a standard NIM logic level which switches between 0 V and -16 mA (- 800 mV into 50 ohm) during an output. Rise times and fall times are < 3 nsec and the output width is approximately equal to the duration of the input signal. Two front-panel switches common to two groups of four channels provides either normal operation (TTL logical "1" IN gives NIM logical "1" OUT) or complementary operation.

The Model 4616 is simultaneously an ECL-to-NIM and NIM-to-ECL converter, specially designed to fill the gap between ECL circuitry and NIM electronics. The 4616 is designed so that each channel can be used for both applications. When ECL complementary pulses have to be converted, the circuit provides three NIM outputs and an additional ECL output. When a NIM pulse has to be converted, it is sent in one of the NIM outputs (now used as an input) while the other two NIM outputs are unconnected. Thus, the circuit provides a single complementary ECL output. The accompanying diagram shows the basic circuit configuration of one channel.

The 4616 is a 16 channel ECL/NIM/ECL translator which is fully compatible with other ECLine circuits. Three NIM outputs and one ECL output per channel are available and will operate up to 150 MHz. The inputs are direct coupled and are free from rate effects.

Model 4616 Equivalent Circuit Diagram (one channel)



SPECIFICATIONS

Model 688AL

NIM-TO-TTL SECTION

No. of Channels: 8.

INPUT

Impedance: 50 ohm ±5%; reflections < 10% for rise time > 2 nsec.

Quiescent DC Level: 0 V.

Input Signal: Normal (logical "0" = 0 to -2 mA; logical "1" = -12 to -32 mA) or complementary fast NIM logic levels.

Input Protection: ±5 V.

Minimum Input Width: < 10 nsec.

OUTPUT

Signal Levels: Standard negative TTL logic levels: logical "1" <=0.4 V, logical "0" > +2.5 V.

High Level Drive Capability: 50 mA at +2.5 V (compatible with terminated, direct-coupled 50 ohm cable).

Low Level Clamp Capability: 100 mA at 0 ±500 mV (60 standard TTL loads, or 50 ohm to +5 V).

Rise Time and Fall Time: < 10 nsec.

Output Duration: Approximately equal to input duration.

Output Impedance: < 5 ohm.

Duty Cycle Limitations: None.

GENERAL

Delay: Approximately 12 nsec.

Logic Polarity: Two front-panel switches, each common to four channels, provide normal operation (logical "1" IN gives logical "1" OUT) or complementary operation.

TTL-TO-NIM SECTION

No. of Channels: 8.

INPUT

Input Signal: Standard negative TTL logic levels (logical "1" = 0 to +0.8 V, requires -1.6 mA maximum; logical "0" = > 2 V, requires +100 µA maximum).

Minimum Input Duration: < 10 nsec.

Input Protection: ±5 A for 0.5 µsec, clamping at +7 V and -1 V.

OUTPUT

Signal Levels: Logical "0", open circuit; logical "1", -16 mA.

Output Duration: Approximately equal to input duration.

Rise Time and Fall Time: < 3 nsec.

Duty Cycle Limitations: None.

GENERAL

Delay: Approximately 6 nsec.

Logic Polarity: Two front-panel switches, each common to four channels, provide normal operation (logical "1" IN gives logical "1" OUT) or complementary operation.

Packaging: NIM single-width module; Lemo connectors.

Power Requirements: 280 mA at +6 V; 30 mA at +12 V; 300 mA at -6 V.

Model 4616

INPUT

ECL Inputs: 16, one per section, in a 2 x 17 pin connector; accepts complementary ECL levels; typical threshold 200 mV.

NIM Inputs: 16, one per section, Lemo-type connector, to be chosen out of the three Lemo-type connectors in the channel; the other two have to be kept unconnected; input impedance 50 ohm ±5%; reflections < 10% for input rise times > 2 nsec.

OUTPUT

ECL Outputs: 16, one per section, in a 2 x 17 pin connector; ECL complementary levels (-0.8 V and -1.7 V); rise time 2 nsec typical.

NIM Outputs: 48, three bridged outputs per section, Lemo-type connectors; quiescently at 0 mV, < -700 mV into 3 x 50 ohm loads, maximum -1.2 V into 1 x 50 ohm load, during output; rise time 2 nsec typical.

GENERAL

Maximum Frequency: 150 MHz.

Minimum Pulse Width: ECL and NIM inputs/outputs 4 nsec.

Transit Times: ECL input to NIM output < 6 nsec. ECL input to ECL output < 10.5 nsec. NIM input to ECL output < 6.5 nsec.

Power Requirements: -6 V quiescently at 700 mA, with all loads connected and all channels activated 1.7 A maximum.

SELECTION CHART

Model	688AL	4616
Function	TTL to NIM, NIM to TTL	ECL to NIM, NIM to ECL
Number of Inputs/Outputs	8 TTL/8 NIM, 8 NIM/8 TTL	16 NIM or ECL Inputs/up to 36 NIM or 16 ECL Outputs