Model 3610-L2A

6-channel, 50 MHz Counter

INSTRUCTION MANUAL

March, 1987

TABLE OF CONTENTS

6-channel 50 MHz Counter

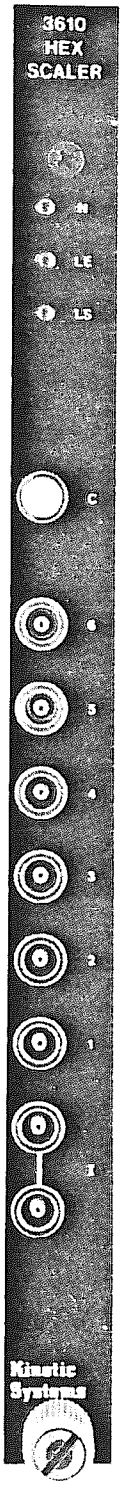
Counts from dc to 50 MHz with TTL or NIM-level signals **3610**

Features

- **Six independent counters**
- **Maximum counts of 16,777,215**
- **LAM status bit set on counter overflow**
- **NIM standard inputs**
- **Input rates from dc to 50 megahertz**

Typical Applications

- **Event counting**
- **Nuclear counting**
- **Frequency measurement**
- **Totalizing**



General Description *(Product specifications and descriptions subject to change without notice.)*

The 3610 is a single-width CAMAC module that contains six independent 24-bit counters. The counters accept either NIM* or TTL input and can count from dc to 50 megahertz. Such type of input is user-selectable for each channel. Each counter has an overflow bit which is set on a carry from either bit 16 or bit 24 and generates a LAM, if enabled. The pattern of overflow bits can be read. The counters can be inhibited as a group by assertion of either Dataway Inhibit or the front-panel inhibit (I) signal. The external inhibit can be selected to be either NIM or TTL. The counters can be individually cleared by Dataway command or as a group by Dataway Clear or manual pushbutton (C). The input is protected for a ±50 volt transient or ±4 volts dc.

When precise timing of sequenced events is required, the Model 3655 Timing module can provide a time base for the 3610 by asserting the Dataway Inhibit line for a programmable interval.

When the count in any counter reaches 2^{24} (or 2^{16} if selected by a jumper), that counter rolls over and continues to count, and a corresponding overflow LAM status bit is set. The six LAM status bits are ORed and, when enabled, produce a LAM request. The pattern of the six LAM status bits can be read to locate the specific counter that overflowed.

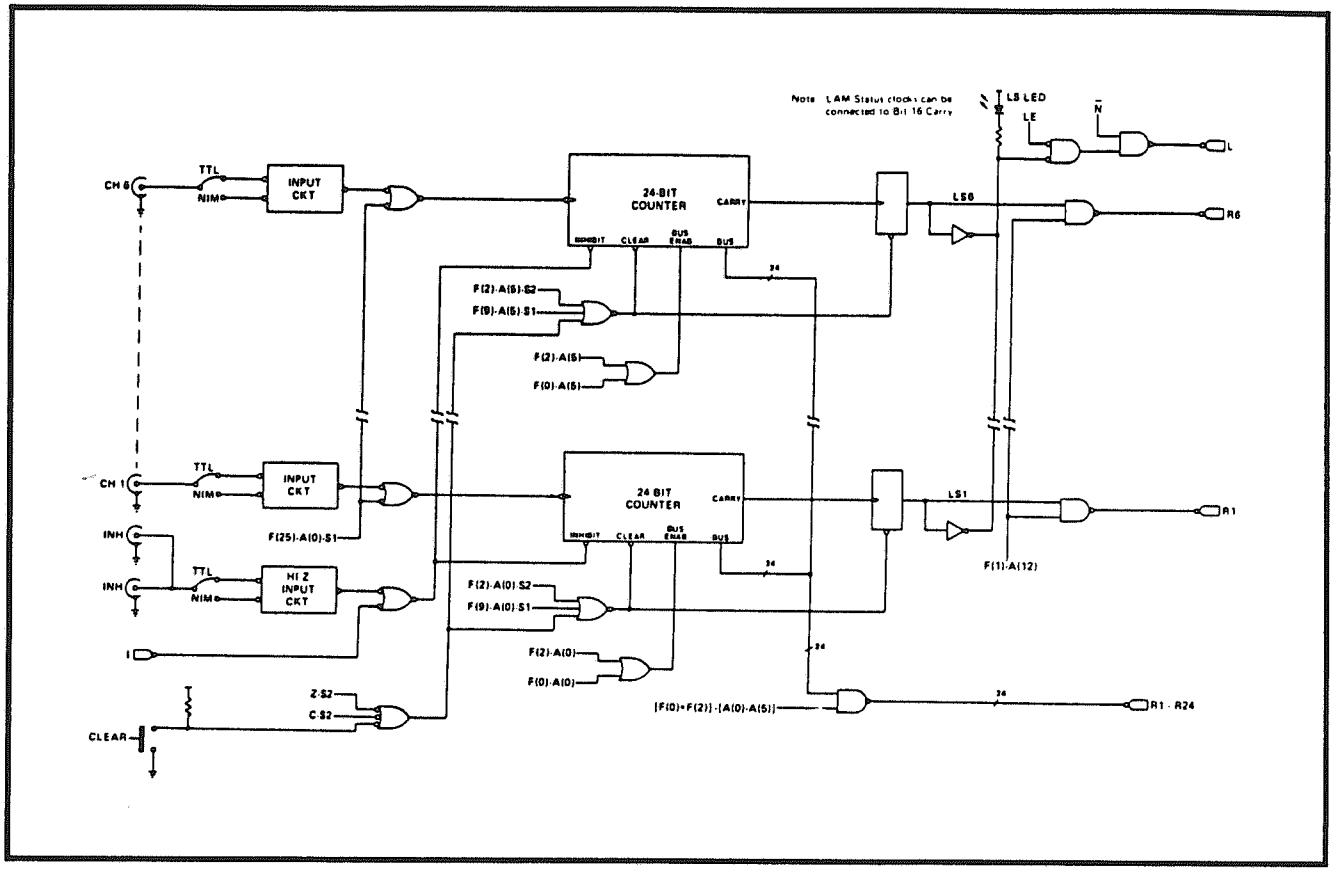
* The nominal NIM signal is: −16 mA into 50 ohms for a logical 1, and 0 mA for a logical 0.

Function Codes

Command		Q	Action
F(0)·A(i)	RD1	1	Reads the Counter i.
F(1)·A(12)	RD2	1	Reads the LAM Status register.
F(2)·A(i)	RC1	1	Reads the Counter i and clears the Counter i and the LAM Status i.
F(8)·A(0)	TLM	LR	Tests whether a LAM request is present.
F(9)·A(i)	CL1	1	Clears the Counter i and the LAM Status i.
F(10)·A(i)	CLM	1	Clears the LAM Status i.
F(24)·A(0)	DIS	1	Disables the LAM request.
F(25)·A(0)	XEQ	1	Increments all counters.
F(26)·A(0)	ENB	1	Enables the LAM request.
C	CC	0	Clears all counters and the LAM Status register.
Z	CZ	0	Clears all counters and the LAM Status register, disables the LAM request.

Notes: i can range from 0 to 5.
Dataway Inhibit (I) prevents counting.
X = 1 for all valid addressed commands.

Simplified Block Diagram



Power Requirements

+6 volts:	1200 mA
–6 volts:	330 mA

Ordering Information

Model 3610-L2A 50 MHz Counter, 6 channels, 24 bits, LEMO connectors

Related Products

Model 5910-Z1A	Mating Connector
Model 5857-Axyz	I/O Cable
Model 5857-Bxyz	I/O Cable
Model 3655-L1A	Timing Pulse Generator, 8 channels, with LEMO connectors

FRONT PANEL DESCRIPTION

N LED — This LED flashes momentarily when the module is addressed.

LE LED — This LED is lit when the LAM request has been enabled by the F(26)·A(0) command.

LS LED — This LED is lit when any of the channels have set the LAM source by overflowing the counters.

CLEAR PUSHBUTTON — Clears all the counters and the LAM status register.

Single Pin LEMO Connectors

0-5 — These six LEMO connectors are the inputs to channels 0 through 5. Channel 0 is accessed through subaddress A(0) for F(0), F(2), F(9) and F(10) function codes. Similiarly, Channel 1 through Channel 5 will have subaddress A(1) through A(5), respectively.

I — Two single-pin LEMO connectors are provided to inhibit the counting when a low-true logical 1 is applied. These two connectors are bridged to provide for "Daisy Chaining" with other 3610 modules. When this input is strapped for NIM signals, the spare Inhibit input on the last 3610 should have a 50 ohm termination. These Inhibit inputs are independent of the Dataway Inhibit.

All of the above inputs can be independently strapped for either TTL or NIM signals.

INPUT SIGNAL DESCRIPTION

TTL — All TTL inputs are low-true and represent one Schottky TTL load.

NIM — All NIM inputs are terminated in 50 ohms except for the Inhibit which is high impedance. A logical 1 occurs when the output that is driving the input, sinks 16 mA, thus forcing the input to -0.8 volts (50 ohms x (-16mA)). A logical 0 is represented by the output that is driving the input, not sinking any current. The input threshold is approximately a -0.4 volts.

MODULE STRAPS

Six straps, one for each channel, are provided for the user to select if the LAM status is set on the overflow of either 16 or 24 bits. These straps are located in the middle of the board with Channel 0 at the bottom of the column and Channel 5 at the top. Each channel is selected independently of the others. With the strap in location A, the LAM status will be set on the overflow of 24 bits, while location B is used for selecting 16 bit overflow.

Seven straps, one for each channel and the Inhibit line, are provided for the selection of whether the input will accept TTL or NIM signals. These straps are located at the front of the module by the front panel. Each channel is individually selected. With the strap in the up position, the input will accept TTL signals. With the strap in the down position, the input will accept NIM signals.

One last strap, labeled INH, is located by chip CA and is used for enabling or disabling the Dataway Inhibit signal. With the strap in the UP position, location A, the Dataway Inhibit signal is enabled. Relocating the strap to position B will disable the Dataway Inhibit. This strap has no affect on the front panel Inhibit input.

Refer to Figure 1 for strap locations.

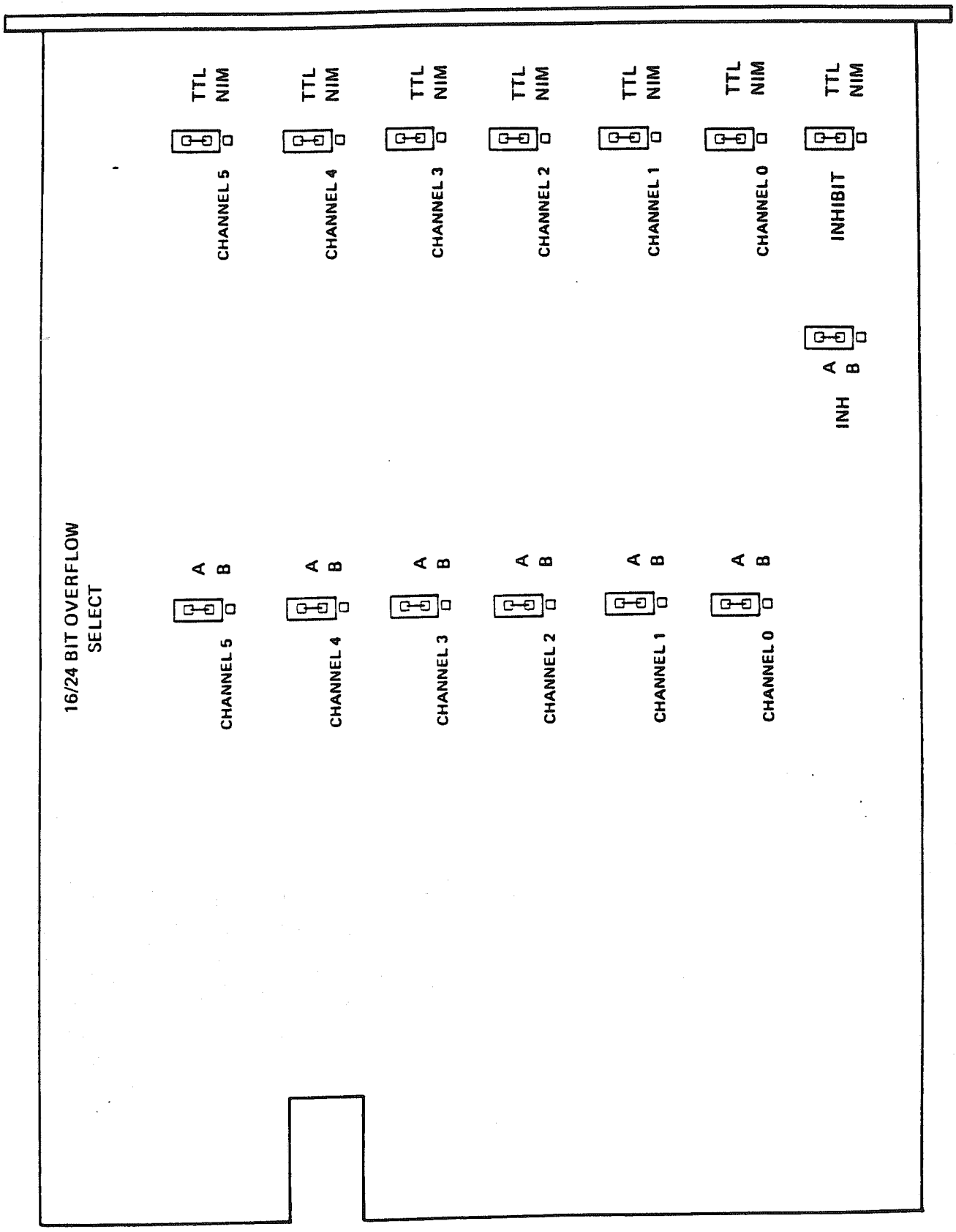


FIGURE 1 - MODULE STRAPS

WARRANTY

KineticSystems Company, LLC warrants its standard hardware products to be free of defects in workmanship and materials for a period of one year from the date of shipment to the original end user. Software products manufactured by KineticSystems are warranted to conform to the Software Product Description (SPD) applicable at the time of purchase for a period of ninety days from the date of shipment to the original end user. Products purchased for resale by KineticSystems carry the original equipment manufacturer's warranty.

KineticSystems will, at its option, either repair or replace products that prove to be defective in materials or workmanship during the warranty period.

Transportation charges for shipping products to KineticSystems shall be prepaid by the purchaser, while charges for returning the repaired warranty product to the purchaser, if located in the United States, shall be paid by KineticSystems. Return shipment will be made by UPS, where available, unless the purchaser requests a premium method of shipment at their expense. The selected carrier shall not be construed to be the agent of KineticSystems, nor will KineticSystems assume any liability in connection with the services provided by the carrier.

The product warranty may vary outside the United States and does not include shipping, customs clearance, or any other charges. Consult your local authorized representative or reseller for more information regarding specific warranty coverage and shipping details.

PRODUCT SPECIFICATIONS AND DESCRIPTIONS IN THIS DOCUMENT SUBJECT TO CHANGE WITHOUT NOTICE.

KINETICSYSTEMS SPECIFICALLY MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER WARRANTY EITHER EXPRESSED OR IMPLIED, EXCEPT AS IS EXPRESSLY SET FORTH HEREIN. PRODUCT FAILURES CREATED BY UNAUTHORIZED MODIFICATIONS, PRODUCT MISUSE, OR IMPROPER INSTALLATION ARE NOT COVERED BY THIS WARRANTY.

THE WARRANTIES PROVIIDED HEREIN ARE THE PURCHASER'S SOLE AND EXCLUSIVE REMEDIES ON ANY CLAIM OF ANY KIND FOR ANY LOSS OR DAMAGE ARISING OUT OF, CONNECTED WITH, OR RESULTING FROM THE USE, PERFORMANCE OR BREACH THEREOF, OR FROM THE DESIGN, MANUFACTURE, SALE, DELIVERY, RESALE, OR REPAIR OR USE OF ANY PRODUCTS COVERED OR FURNISHED BY KINETICSYSTEMS INCLUDING BUT NOT LIMITED TO ANY CLAIM OF NEGLIGENCE OR OTHER TORTIOUS BREACH, SHALL BE THE REPAIR OR REPLACEMENT, FOB FACTORY, AS KINETICSYSTEMS MAY ELECT, OF THE PRODUCT OR PART THEREOF GIVING RISE TO SUCH CLAIM, EXCEPT THAT KINETICSYSTEMS' LIABILITY FOR SUCH REPAIR OR REPLACEMENT SHALL IN NO EVENT EXCEED THE CONTRACT PRICE ALLOCABLE TO THE PRODUCTS OR PART THEROF WHICH GIVES RISE TO THE CLAIM. IN NO EVENT SHALL KINETICSYSTEMS BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING LOSS OF PROFITS.

Products will not be accepted for credit or exchange without the prior written approval of KineticSystems. If it is necessary to return a product for repair, replacement or exchange, a Return Authorization (RA) Number must first be obtained from the Repair Service Center prior to shipping the product to KineticSystems. The following steps should be taken before returning any product:

1. Contact KineticSystems and discuss the problem with a Technical Service Engineer.
2. Obtain a Return Authorization (RA) Number.
3. Initiate a purchase order for the estimated repair charge if the product is out of warranty.
4. Include a description of the problem and your technical contact person with the product.
5. Ship the product prepaid with the RA Number marked on the outside of the package to:

KineticSystems Company, LLC
Repair Service Center
900 North State Street
Lockport, IL 60441

Telephone: (815) 838-0005
Facsimile: (815) 838-4424
Email: tech-serv@kscorp.com