



# NMIS-9002 3CH 16BIT COUNTER CARD

The NMIS-9002, in 2x4"s™ format, provides a JEDSTACK™ computer system with access to three channels of 16-bit counters.

## FEATURES

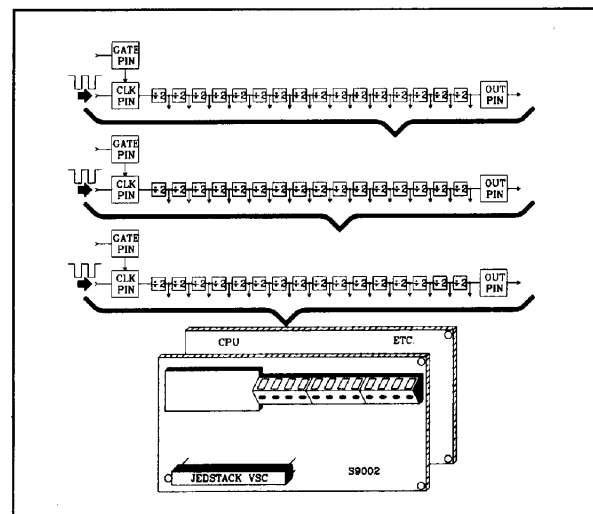
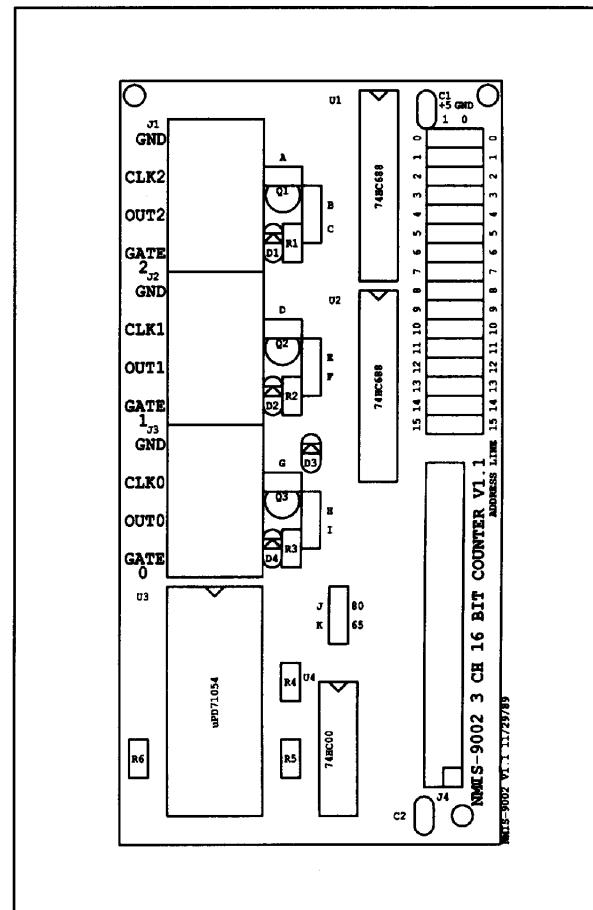
- uPD71054 CMOS counter chip with:
- Three independent 16-bit counters
- Six programmable counter modes
- Binary or BCD counting
- Multiple latch command
- Wide clock rate from DC to 8 MHz
- Low-power standby mode
- CMOS technology

The uPD71054 is a high-performance, programmable counter for system timing control. Three 16-bit counters, each with its own clock input, gate input, and OUT pin, can be clocked from DC to 8 MHz. Under software control, the uPD71054 can generate accurate time delays.

The uPD71054 contains three counters capable of binary, or BCD, operation. There are six programmable count modes. The counters operate independently and each can be set to a different mode.

After initialization, the uPD71054 can count the delay, and generates an interrupt when the task is complete, without further CPU intervention. This eliminates the need for software timing loops and frees the CPU for other tasks.

A Vertical Stacking Connector in the lower right hand corner (top view) provides connections to the processor's address and data bus, control signals, 5V power and ground. Address decoding of the drivers' space in memory is accomplished by two octal comparators and 16 two-position jumpers. Each jumper setting corresponds to the state of a particular address line. The NMIS-9002 occupies 4 address locations. Any 4-byte boundary in the 64K address space of the JEDSTACK™ processor's bus can be selected by correct jumper placement.



## Application

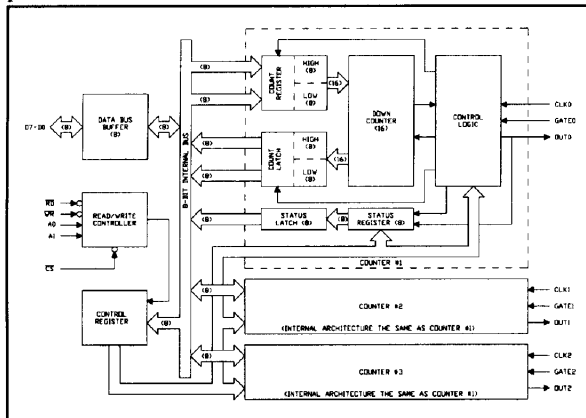
# NMIS-9002 3-CH 16-BIT COUNTER CARD 2x4"s

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## DESCRIPTION

Internally the three counter channels consist of a number of registers. The Command Register is an 8-bit register which is written with the control command determining the operating mode of the counter. The contents of this register cannot be read directly. (The multiple latch command, however, allows you to read the mode and status of each counter.) Binary or BCD operation can be selected, as well as the Count Mode (0-5), the Read/Write Mode, and the counter or counters involved.

Internally the three counters each have three 16-bit registers: the Counter itself, the Count Register, and the Count Latch. The Counter is a 16-bit down counter. The 16-bit Count Register can preset the 16-bit Counter by transferring the desired value to it. The 16-bit Count Latch can capture the Counter, and hold the data for processor access.



Block Diagram

ADDRESS	Read Target	Write Target
XXX0	Counter 0	Counter 0
XXX1	Counter 1	Counter 1
XXX2	Counter 2	Counter 2
XXX3		Command Register

## Register Summary

D7	D6	D5	D4	D3	D2	D1	D0
SC1	SC0	RWM1	RWM0	CM2	CM1	CM0	BCD

## Command Register

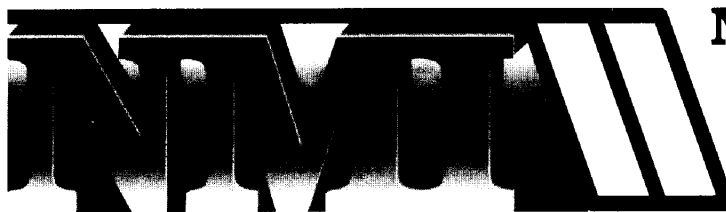
BCD	Binary or BCD		
0	Binary Count (16 Bits)		
1	BCD Count (4 Digits)		
CM2	CM1	CM0	Count Mode
0	0	0	Mode 0
0	0	1	Mode 1
X	1	0	Mode 2
X	0	1	Mode 3
1	0	0	Mode 4
1	0	1	Mode 5
RMW1	RMW0	Read/Write Mode	
0	0	Count Latch Command (2)	
0	1	Lower Byte Only	
1	0	Higher Byte Only	
1	1	Lower Byte, then Higher Byte	
SC1	SC0	Select Counter or Multiple Latch Command	
0	0	Counter #0 (1)	
0	1	Counter #1 (2)	
1	0	Counter #2 (3)	
1	1	Multiple Latch Command (2)	

Command Register Detailed Summary

## WORLD HEADQUARTERS

## WORLDWIDE REPRESENTATIVES

AMERICA (N, C & S)	CENTRAL EUROPE	SOUTHERN EUROPE	SCANDINAVIA	ASIA
<b>NEW MICROS, INC.</b> Sales Department 1601 Chalk Hill Road Dallas, TX 75212, USA Phone: (214) 339-2204 Fax: (214) 339-1585 G3, G2, FMG1 User Bulletin Board: (214) 339-2321 24/12, E, 8, 1	<b>MS</b> Microscan Electronic GmbH 31 Ueberseering P O Box 601705 D 2000 Hamburg 60 WEST GERMANY Phone: 0 40163 20 03-0 Fax: 0 40/63 20 03-49 Telex: 2 13 288	<b>DEMEL</b> G. Demel Handelsges, m.b.H. Hoffmeistergasse 8-10/1/4, A-1120 Vienna, AUSTRIA Phone: (0043) 0222 813 2507-0 Fax: (0043) 0222 85 95 93 Telex: 75311851	<b>FIELD OY</b> <b>ELECTRONIJKKARYHMA</b> P O Box 131 SF 00601 Helsinki, FINLAND Phone: 358 0 757 1011 Fax: 358 079 8853 Telex: 12-2022 FIELD SF	<b>CIBI TRADING INT'L</b> 20 Maimitan Street Teacher's Village, Diliman Quezon City, PHILIPPINES Phone: (632) 922-2988 Fax: (632) 921-8027



**NEW MICROS, INC.**  
 1601 Chalk Hill Road  
 Dallas, Texas 75212  
 Tel: (214)-339-2204