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VMIVME-1129

128-bit DIGITAL INPUT BOARD WITH BUILT-IN-TEST

INSTRUCTION MANUAL

DOCUMENT NO. 500-001129-000 D

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RECORD OF REVISIONS

REVISION LETTER	DATE	PAGES INVOLVED	CHANGE NUMBER
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D	06/02/94	Cover, pages ii and 3-4	94-0489

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THE FOLLOWING GENERAL SAFETY PRECAUTIONS MUST BE OBSERVED DURING ALL PHASES OF THE OPERATION, SERVICE, AND REPAIR OF THIS PRODUCT. FAILURE TO COMPLY WITH THESE PRECAUTIONS OR WITH SPECIFIC WARNINGS ELSEWHERE IN THIS MANUAL VIOLATES SAFETY STANDARDS OF DESIGN, MANUFACTURE, AND INTENDED USE OF THIS PRODUCT. VME MICROSYSTEMS INTERNATIONAL CORPORATION ASSUMES NO LIABILITY FOR THE CUSTOMER'S FAILURE TO COMPLY WITH THESE REQUIREMENTS.

GROUND THE SYSTEM

To minimize shock hazard, the chassis and system cabinet must be connected to an electrical ground. A three-conductor AC power cable should be used. The power cable must either be plugged into an approved three-contact electrical outlet or used with a three-contact to two-contact adapter with the grounding wire (green) firmly connected to an electrical ground (safety ground) at the power outlet.

DO NOT OPERATE IN AN EXPLOSIVE ATMOSPHERE

Do not operate the system in the presence of flammable gases or fumes. Operation of any electrical system in such an environment constitutes a definite safety hazard.

KEEP AWAY FROM LIVE CIRCUITS

Operating personnel must not remove product covers. Component replacement and internal adjustments must be made by qualified maintenance personnel. Do not replace components with power cable connected. Under certain conditions, dangerous voltages may exist even with the power cable removed. To avoid injuries, always disconnect power and discharge circuits before touching them.

DO NOT SERVICE OR ADJUST ALONE

Do not attempt internal service or adjustment unless another person, capable of rendering first aid and resuscitation, is present.

DO NOT SUBSTITUTE PARTS OR MODIFY SYSTEM

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DANGEROUS PROCEDURE WARNINGS

Warnings, such as the example below, precede only potentially dangerous procedures throughout this manual. Instructions contained in the warnings must be followed.

WARNING

DANGEROUS VOLTAGES, CAPABLE OF CAUSING DEATH, ARE PRESENT IN THIS SYSTEM. USE EXTREME CAUTION WHEN HANDLING, TESTING, AND ADJUSTING.

SAFETY SYMBOLS

GENERAL DEFINITIONS OF SAFETY SYMBOLS USED IN THIS MANUAL

Instruction manual symbol: the product is marked with this symbol when it is necessary for the user to refer to the instruction manual in order to protect against damage to the system.

Indicates dangerous voltage (terminals fed from the interior by voltage exceeding 1000 volts are so marked).

 OR 

Protective conductor terminal. For protection against electrical shock in case of a fault. Used with field wiring terminals to indicate the terminal which must be connected to ground before operating equipment.

Low-noise or noiseless, clean ground (earth) terminal. Used for a signal common, as well as providing protection against electrical shock in case of a fault. Before operating the equipment, terminal marked with this symbol must be connected to ground in the manner described in the installation (operation) manual.

 OR 

Frame or chassis terminal. A connection to the frame (chassis) of the equipment which normally includes all exposed metal structures.

Alternating current (power line).

Direct current (power line).

Alternating or direct current (power line).

WARNING

The WARNING sign denotes a hazard. It calls attention to a procedure, a practice, a condition, or the like, which, if not correctly performed or adhered to, could result in injury or death to personnel.

CAUTION

The CAUTION sign denotes a hazard. It calls attention to an operating procedure, a practice, a condition, or the like, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the system.

NOTE:

The NOTE sign denotes important information. It calls attention to a procedure, a practice, a condition or the like, which is essential to highlight.

VMIVME-1129
128-bit DIGITAL INPUT BOARD
WITH BUILT-IN-TEST

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SECTION 1

INTRODUCTION

1.1 FEATURES

The VMIVME-1129 Digital Input Board is designed to read a voltage from a variety of devices. The signals may originate from electronic switching circuits, standard logic circuits, mechanical switch contacts, relay contacts, Opto 22 type signal conditioning modules, or numerous other sources. The inputs can be configured to receive current sinking or voltage sourcing signals.

The VMIC VMIVME-1129 Digital Input Board has several unique features as specified below:

a. 128 bits of voltage sourcing or current sinking digital inputs
b. 3 msec input noise suppression filter
c. Each group of 8 inputs are jumper selectable to monitor, voltage source, or current sinking signals
d. On-board Built-in-Test logic for fault detection and isolation
e. Front panel with Fail LED
f. User-selectable input voltage thresholds (1.25 to 34 V)
g. VMEbus compatible
h. 8-, 16-, 32-bit data transfers
i. Double Eurocard form factor

1.2 FUNCTIONAL DESCRIPTION

The VMIVME-1129 Board has input circuitry that permits the user to select and configure the basic input functions. The input functions and threshold levels are built into the circuitry. The configuration of the board by the user sets up these functions. This allows the user to set some of the inputs for one function and the rest to another.

The basic function of this board is to sample the external inputs (when the board is accessed by the host) and place this data on the appropriate data lines of the VMEbus. In other words, this board takes a snapshot of the external data and guides it to the host via the VMEbus.

This board supports built-in-testing of its active components. Test registers are mapped into the same addresses as the input registers they are to test. In this way, the host simply writes data to an address then reads the same address, and compares the data *read* with the data sent to determine the health of the board. Testing can be done with the board off-line or on-line. A Control and Status Register (CSR) is used to control the operating state of the board.

1.3 REFERENCE MATERIAL

The reader should refer to "The VMEbus Specification" for a detailed explanation of the VMEbus. "The VMEbus Specification" is available from the following source:

VITA
VFEA International Trade Association
10229 N. Scottsdale Rd.
Scottsdale, AZ 85253
(602) 951-8866

The following Application and Configuration Guides are available from VMIC to assist the user in the selection, specification, and implementation of systems based on VMIC's products.

TITLE	DOCUMENT NO.
Digital Input Board Application Guide	825-000000-000
Change-of-State Application Guide	825-000000-002
Digital I/O (with Built-in-Test) Product Line Description	825-000000-003
Synchro/Resolver (Built-in-Test) Subsystem Configuration Guide	825-000000-004
Analog I/O Products (with Built-in-Test) Configuration Guide	825-000000-005
Connector and I/O Cable Application Guide	825-000000-006

SECTION 2

PHYSICAL DESCRIPTION AND SPECIFICATIONS

REFER TO 800-001129-000 SPECIFICATION

SECTION 3

THEORY OF OPERATION

3.1 OPERATIONAL OVERVIEW

The VMIVME-1129 Digital Input Board is designed to read voltage sourcing or current sinking devices. (For example: contact closure to ground). The input voltage levels and threshold trip levels are set up by the user.

The VMIVME-1129 is a snapshot type board. When the VMEbus address decoded by this board matches its address, the inputs are stored in an associated input register. The data is then steered to the proper data lines on the backplane for the host to use.

The VMIVME-1129 has built-in-test registers. They are used to check the board. The host simply writes data to the register or registers to be checked. Then by reading these registers and comparing the data read to the data written, the user can determine if the board is working. This can be done whenever the user wishes to check the board. The written data will overwrite the external input level. The VMIVME-1129 has input noise filters for the external inputs.

Figure 3.1-1 is a block diagram of the basic functions of the VMIVME-1129 Board stated above. These blocks will be discussed in more detail in the following sections.

3.2 TEST REGISTERS

The test registers are used to check the "health" of the board. The user writes data into these registers. If their outputs are enabled (TEST MODE active), the data in these registers will overwrite the external inputs. This way the active components can be checked without disconnecting the external inputs. The test registers are mapped into the same address as their corresponding input registers. This way the user simply writes to and then reads from the port to be checked. If the data written is different from the data read, there is a problem. Figure 3.2-1 is a block diagram of the Test and Input Data Registers of the VMIVME-1129 Board.

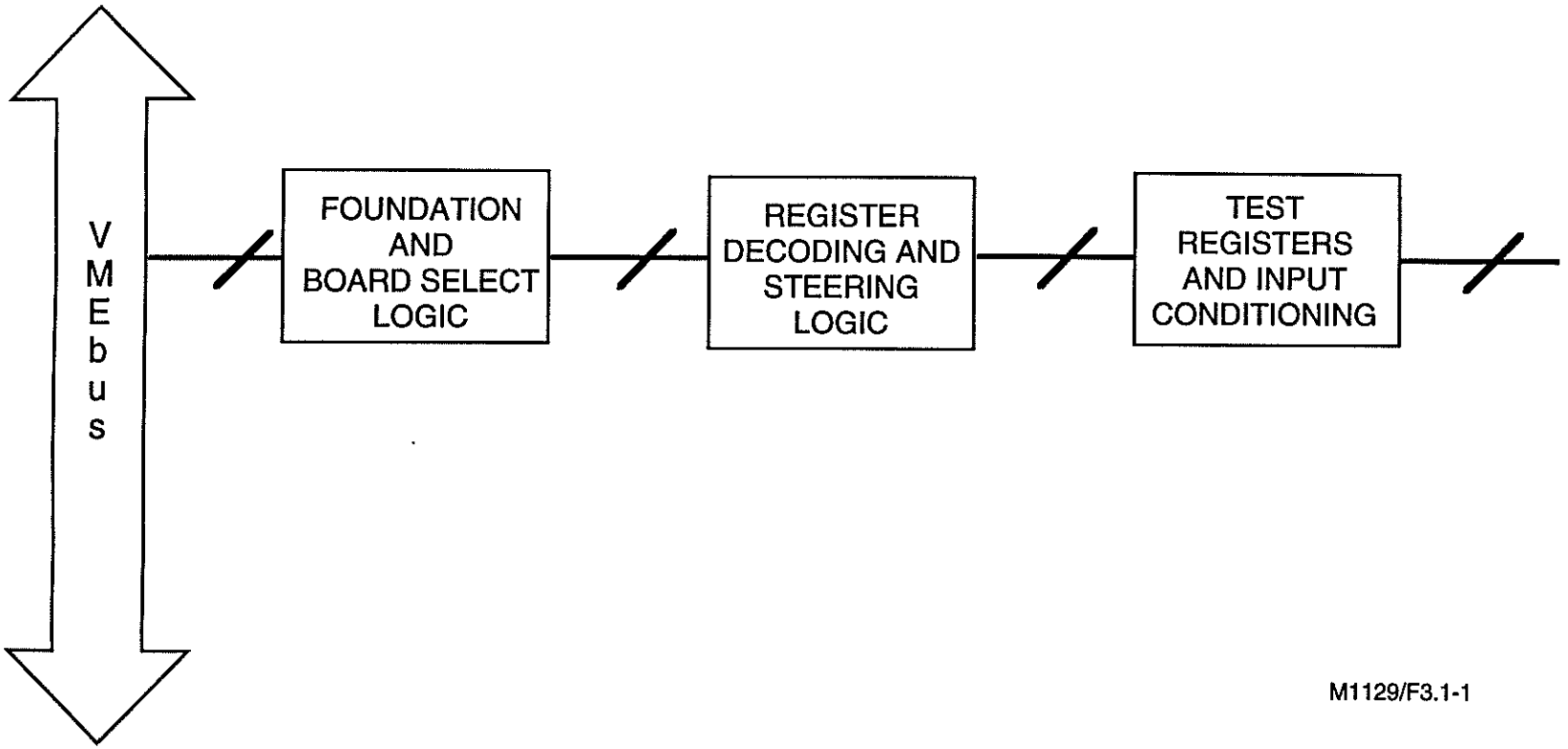

Figure 3.1-1. Block Diagram of the VMIVME-1129

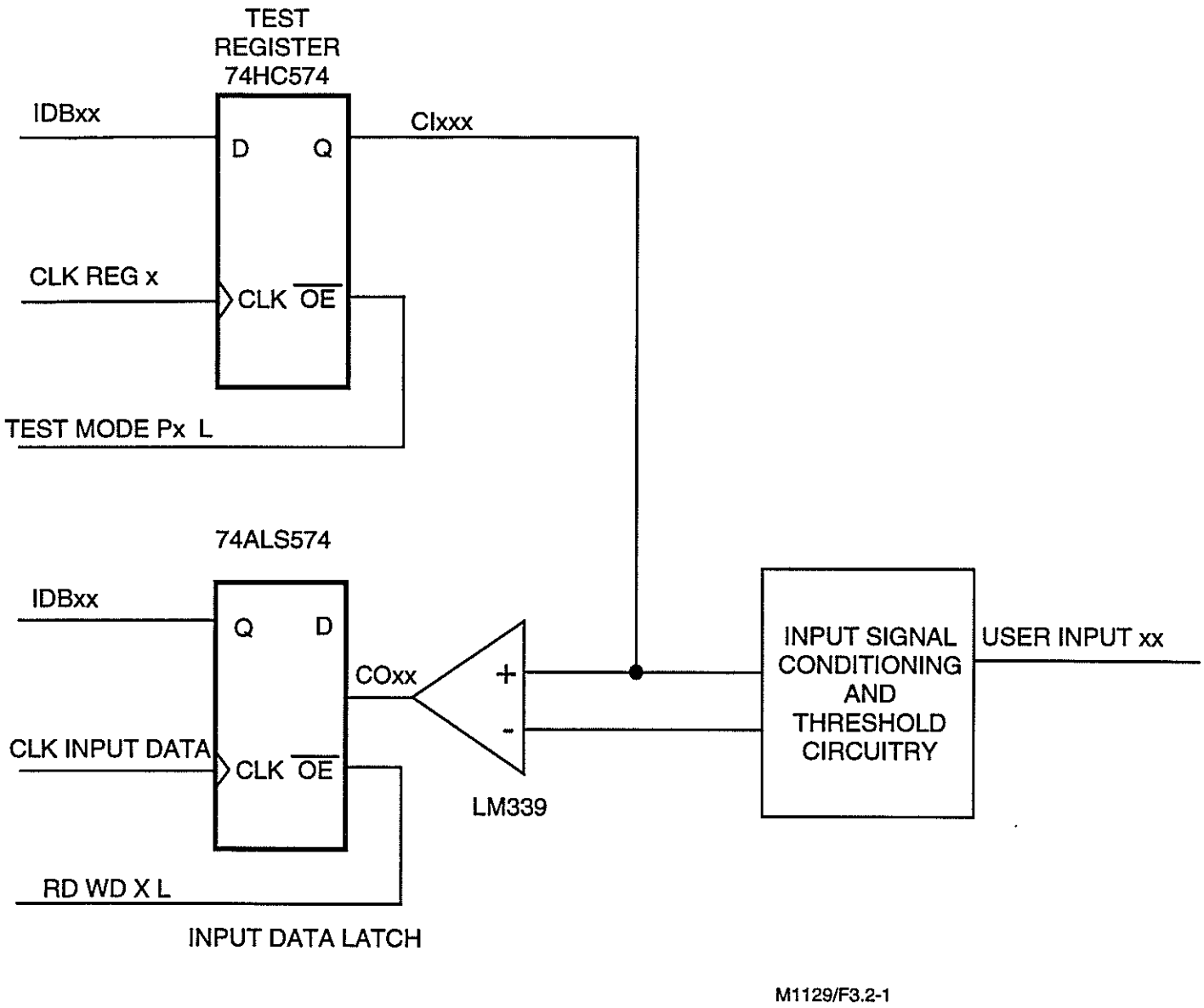

Figure 3.2-1. VMIVME-1129 Test and Input Data Registers

3.3 INPUT CIRCUITRY

Figure 3.3-1 shows the basic topology for each input. The BIT (Built-in-Test) Register is shown with only one of its eight lines (each register controls eight input circuits). The comparator output goes to an Input Data Register (IDR). When the board is selected, these registers are clocked. This is the snapshot effect. The incoming data is then held in these registers while the board guides the data to the appropriate VMEbus data lines. The filter module provides the 3 msec input noise suppression circuitry.

The input circuit of Figure 3.3-1 uses RP4, RP3, and associated header to set the threshold (or trip) level for the comparator. Table 5.2.1-1 is a detailed listing of the thresholds for some common input levels. The threshold equation is also provided. The user can use this to calculate the trip voltage for the specific input voltage range he is using.

3.3.1 Input Types

The VMIVME-1129-000 inputs can be configured in one of two types, either as voltage sourcing or current sinking. In the voltage sourcing input setup, R1's jumper is grounded. The input must be a voltage across R1. RP4 has its jumper going to a voltage the user chooses. The voltage chosen will establish the threshold level for the input voltage. Please refer to Table 5.2.1-1 for the actual value of the trip voltage. In the current sinking configuration, R1's jumper is connected to V_{EXT}. Now R1 acts as a pull up for the user's external circuit. RP4 and its jumper work as before.

The VMIVME-1129-100 option is only for contact sensing using an external voltage of 24 V. This input requires R1's jumper to be connected to V_{EXT}. This makes R1 a wetting resistor for the contacts, and limits the contact current to 1 mA. This requires one end of the contacts to be connected to ground. In this option, RP4 is 100 kΩ. If RP4's jumper is set to V_{EXT} (24 V), the threshold voltage is approximately 7.5 V, or $V_T = \left[\left(\frac{V_R - 1.25}{134\,k}\right) \times 34\,k\right] + 1.25\,V.$

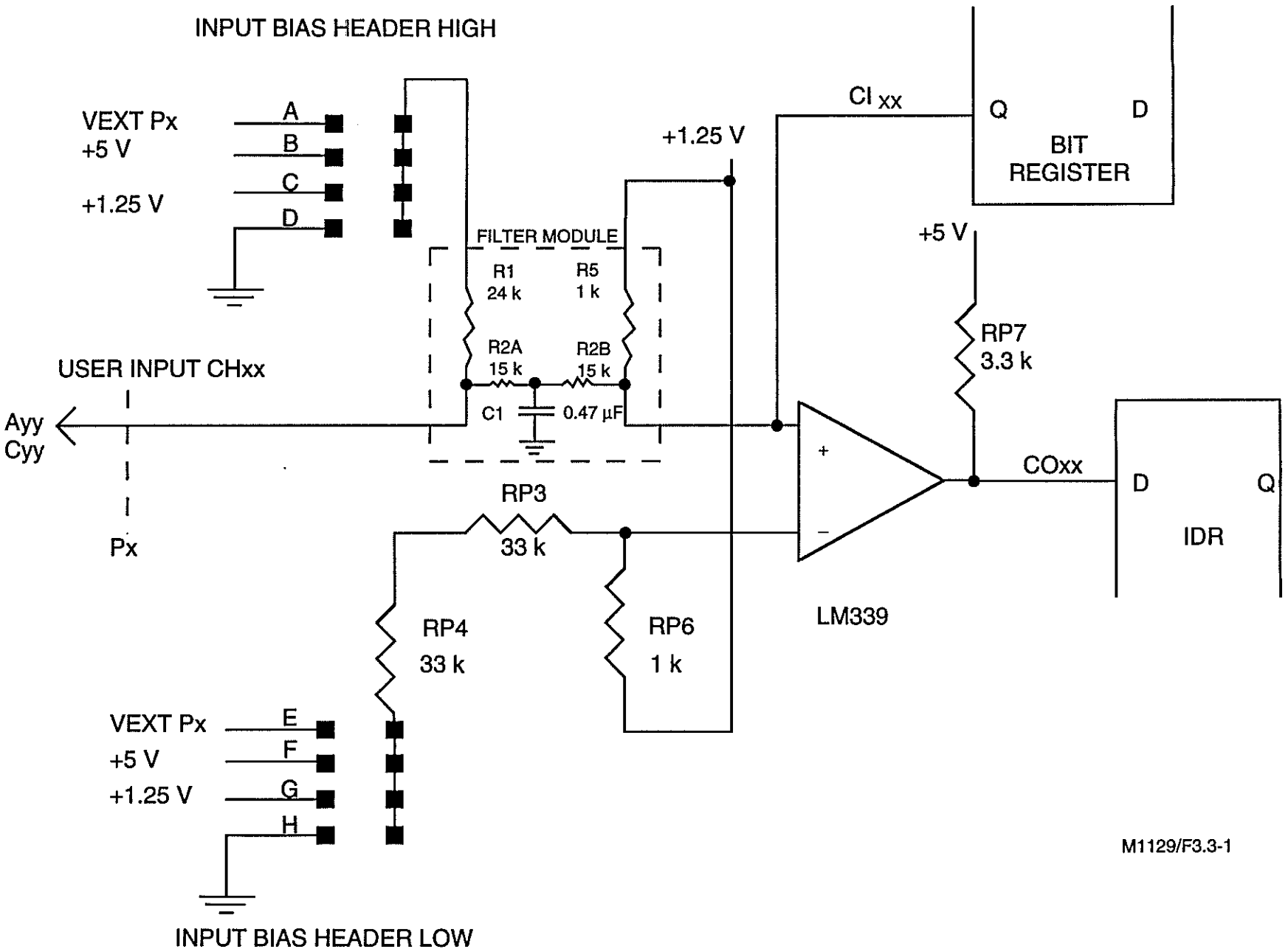

Figure 3.3-1. Basic Input Circuit Topology

SECTION 4
PROGRAMMING

4.1 INTRODUCTION

The VMIVME-1129 is a snapshot board. The user simply performs a read or write operation within the board's address space and the appropriate transfer is performed. The only setup involved with this board deals with the Control and Status Register. Once this register is programmed, the user performs data transfers to or from this board.

The following table (Table 4.1-1) lists the address map for the VMIVME-1129. X's in the address are determined by the address select header E17. This header's function will be discussed in more detail in Section 5 of this manual. This board will respond to nonprivileged, supervisory, or both accesses depending on how the jumpers are positioned.

Table 4.1-1. Address Map

RELATIVE ADDRESS*	MNEMONIC	NAME/FUNCTION
XXX0 0000	IDU	BOARD ID REGISTER UPPER BYTE
XXX0 0001	IDL	BOARD ID REGISTER LOWER BYTE
XXX0 0010	CSRU	CSR UPPER BYTE
XXX0 0011	CSRL	CSR LOWER BYTE
XXX0 0100 through XXX0 1111		NOT USED**
XXX1 0000	DR0U	TEST REGISTER 0 UPPER BYTE
XXX1 0001	DR0L	TEST REGISTER 0 LOWER BYTE
XXX1 0010	DR1U	TEST REGISTER 1 UPPER BYTE
XXX1 0011	DR1L	TEST REGISTER 1 LOWER BYTE
XXX1 0100	DR2U	TEST REGISTER 2 UPPER BYTE
XXX1 0101	DR2L	TEST REGISTER 2 LOWER BYTE
XXX1 0110	DR3U	TEST REGISTER 3 UPPER BYTE
XXX1 0111	DR3L	TEST REGISTER 3 LOWER BYTE
XXX1 1000	DR4U	TEST REGISTER 4 UPPER BYTE
XXX1 1001	DR4L	TEST REGISTER 4 LOWER BYTE
XXX1 1010	DR5U	TEST REGISTER 5 UPPER BYTE
XXX1 1011	DR5L	TEST REGISTER 5 LOWER BYTE
XXX1 1100	DR6U	TEST REGISTER 6 UPPER BYTE
XXX1 1101	DR6L	TEST REGISTER 6 LOWER BYTE
XXX1 1110	DR7U	TEST REGISTER 7 UPPER BYTE
XXX1 1111	DR7L	TEST REGISTER 7 LOWER BYTE

M1129/T4.1-1

* The relative address is defined by A4-A0. All other address lines help to define the base address.
** A read or write access to these addresses will not result in a bus error; however, any data written to these addresses will not be stored. Any data read from these addresses will not be meaningful.

4.2 BD ID REGISTER

The BD ID Register is a read-only register. Its data is fixed at $2900. You can write to this address; however, the data you write will be lost and there will be no effect on the board. If you choose to write to this location, the board will DTACK to prevent any bus errors. The BD ID can be read as a word or as two bytes. The following table (Table 4.2-1) shows the bit values for this register.

Table 4.2-1. BD ID Register Bit Map

XXX0 0000	BOARD ID UPPER BYTE			(Read Only)			
Bit 31	Bit 30	Bit 29	Bit 28	Bit 27	Bit 26	Bit 25	Bit 24
L	L	H	L	H	L	L	H

XXX0 0001	BOARD ID LOWER BYTE			(Read Only)			
Bit 23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16
L	L	L	L	L	L	L	L

M1129/T4.2-1

4.3 CSR BIT DEFINITIONS

The CSR is a 16-bit register that is used to control the board's Fail LED and the test registers' outputs. Table 4.3-1 shows the bits used to perform these functions. Bit 15 controls the LED. Bit 14 controls the test registers for P4 and P3 Row A (Channels 0 through 31 and Channels 64 through 95) while Bit 13 controls the test registers for P4 and P3 Row C (Channels 32 through 64 and Channels 96 through 127). P3 and P4 channel assignments are shown in Tables 5.6-1 and 5.6 2. The Bit map for each channel is shown in Table 4.4-1.

All of these bits are active low.. All of the other bits are not used. When the board is powered up or after a system reset, these signals are activated. Writing a logic high into each bit location will deactivate them. Writing a logic low in these locations will subsequently activate the function. Each of the functions are independent of the others. Thus, the LED can be turned ON and OFF as you wish.

Table 4.3-1. CSR Bit Map

XXX0 0010	CSR UPPER BYTE				(Bits 12 through 08 are Read Only)		
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 09	Bit 08
FAIL_L	TEST_ MODE_ P3/P4 ROW A_L	TEST_ MODE_ P3/P4 ROW C_L	L	L	L	L	L

XXX0 0011	CSR LOWER BYTE				(Read Only)		
Bit 07	Bit 06	Bit 05	Bit 04	Bit 03	Bit 02	Bit 01	Bit 00
L	L	L	L	L	L	L	L

M1129/T4.3-1

4.4 INPUT REGISTERS BIT DEFINITIONS

The following table (Table 4.4-1) lists the input channels and their associated register bit locations. The internal data bit can be used as a guide to locate an input channel when you are doing a longword transfer. When doing word or byte transfers the even address bytes will go to bits 15 through 8 on the VMEbus data bus while the odd address bytes go to bits 7 through 0.

Table 4.4-1. Input Data Registers Bit Map

XXX1 0000	DATA REGISTER 0 UPPER BYTE				(Read /Write)		
Bit 31	Bit 30	Bit 29	Bit 28	Bit 27	Bit 26	Bit 25	Bit 24
CH 127	CH 126	CH 125	CH 124	CH 123	CH 122	CH 121	CH 120

XXX1 0001	DATA REGISTER 0 LOWER BYTE				(Read /Write)		
Bit 23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16
CH 119	CH 118	CH 117	CH 116	CH 115	CH 114	CH 113	CH 112

M1129/T4.4-1/1

Table 4.4-1. Input Data Registers Bit Map (Continued)

XXX1 0010			DATA REGISTER 1 UPPER BYTE		(Read /Write)		
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 09	Bit 08
CH 111	CH 110	CH 109	CH 108	CH 107	CH 106	CH 105	CH 104

XXX1 0011			DATA REGISTER 1 LOWER BYTE		(Read /Write)		
Bit 07	Bit 06	Bit 05	Bit 04	Bit 03	Bit 02	Bit 01	Bit 00
CH 103	CH 102	CH 101	CH 100	CH 099	CH 098	CH 097	CH 096

XXX1 0100			DATA REGISTER 2 UPPER BYTE		(Read /Write)		
Bit 31	Bit 30	Bit 29	Bit 28	Bit 27	Bit 26	Bit 25	Bit 24
CH 095	CH 094	CH 093	CH 092	CH 091	CH 090	CH 089	CH 088

XXX1 0101			DATA REGISTER 2 LOWER BYTE		(Read /Write)		
Bit 23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16
CH 087	CH 086	CH 085	CH 084	CH 083	CH 082	CH 081	CH 080

XXX1 0110			DATA REGISTER 3 UPPER BYTE		(Read /Write)		
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 09	Bit 08
CH 079	CH 078	CH 077	CH 076	CH 075	CH 074	CH 073	CH 072

XXX1 0111			DATA REGISTER 3 LOWER BYTE		(Read /Write)		
Bit 07	Bit 06	Bit 05	Bit 04	Bit 03	Bit 02	Bit 01	Bit 00
CH 071	CH 070	CH 069	CH 068	CH 067	CH 066	CH 065	CH 064

M1129/T4.4-1/2

Table 4.4-1. Input Data Registers Bit Map (Continued)

XXX1 1000		DATA REGISTER 4 UPPER BYTE		(Read /Write)			
Bit 31	Bit 30	Bit 29	Bit 28	Bit 27	Bit 26	Bit 25	Bit 24
CH 063	CH 062	CH 061	CH 060	CH 059	CH 058	CH 057	CH 056

XXX1 1001		DATA REGISTER 4 LOWER BYTE		(Read /Write)			
Bit 23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16
CH 055	CH 054	CH 053	CH 052	CH 051	CH 050	CH 049	CH 048

XXX1 1010		DATA REGISTER 5 UPPER BYTE		(Read /Write)			
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 09	Bit 08
CH 047	CH 046	CH 045	CH 044	CH 043	CH 042	CH 041	CH 040

XXX1 1011		DATA REGISTER 5 LOWER BYTE		(Read /Write)			
Bit 07	Bit 06	Bit 05	Bit 04	Bit 03	Bit 02	Bit 01	Bit 00
CH 039	CH 038	CH 037	CH 036	CH 035	CH 034	CH 033	CH 032

XXX1 1100		DATA REGISTER 6 UPPER BYTE		(Read /Write)			
Bit 31	Bit 30	Bit 29	Bit 28	Bit 27	Bit 26	Bit 25	Bit 24
CH 031	CH 030	CH 029	CH 028	CH 027	CH 026	CH 025	CH 024

XXX1 1101		DATA REGISTER 6 LOWER BYTE		(Read /Write)			
Bit 23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16
CH 023	CH 022	CH 021	CH 020	CH 019	CH 018	CH 017	CH 016

M1129/T4.4-1/3

Table 4.4-1. Input Data Registers Bit Map (Concluded)

XXX1 1110		DATA REGISTER 7 UPPER BYTE (Read /Write)					
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 09	Bit 08
CH 015	CH 014	CH 013	CH 012	CH 011	CH 010	CH 009	CH 008

XXX1 1111		DATA REGISTER 7 LOWER BYTE (Read /Write)					
Bit 07	Bit 06	Bit 05	Bit 04	Bit 03	Bit 02	Bit 01	Bit 00
CH 007	CH 006	CH 005	CH 004	CH 003	CH 002	CH 001	CH 000

M1129/T4.4-1/4

Please note that input channels CH00 through CH63 come from input connector P4 while inputs CH64 through CH127 come via P3.

4.5 BUILT-IN-TEST PROGRAMMING

Built-in-test is activated when either or both test mode bits in the CSR are cleared. When test mode is active, data written to a data register will overwrite the external inputs. Then when the same register is read, the data stored in the test register should be read. If there is a difference, then the board has a problem. When you are through testing the board, the test mode bits **MUST** be set to a "one" in the CSR; otherwise, the board will not be able to monitor the external inputs.

SECTION 5

CONFIGURATION AND INSTALLATION

5.1 UNPACKING PROCEDURES

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*****************
*    CAUTION    *
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SOME OF THE COMPONENTS ASSEMBLED ON VMIC's PRODUCTS MAY BE SENSITIVE TO ELECTROSTATIC DISCHARGE AND DAMAGE MAY OCCUR ON BOARDS THAT ARE SUBJECTED TO A HIGH ENERGY ELECTROSTATIC FIELD. UNUSED BOARDS SHOULD BE STORED IN THE SAME PROTECTIVE BOXES IN WHICH THEY WERE SHIPPED. WHEN THE BOARD IS TO BE LAID ON A BENCH FOR CONFIGURING, ETC., IT IS SUGGESTED THAT CONDUCTIVE MATERIAL BE INSERTED UNDER THE BOARD TO PROVIDE A CONDUCTIVE SHUNT.

Any precautions found in the shipping container upon receipt should be observed. All items should be carefully unpacked and thoroughly inspected for damage that might have occurred during shipment. The board(s) should be checked for broken components, damaged printed circuit board(s), heat damage, and other visible contamination. All claims arising from shipping damage should be filed with the carrier and a complete report sent to VMIC, together with a request for advice concerning the disposition of the damaged item(s).

5.2 BOARD CONFIGURATION

The VMIVME-1129 circuitry permits the user to configure the inputs based on the application. The following sections of the manual are intended to instruct the user in the implementation of these input configurations. The user must first decide which input topology to use: the inputs can receive either current sinking; i.e., open-collector or voltage sourcing signals. Next, the user must select a threshold level; the threshold can be set as shown in Table 5.2.1-1. The input channels are configured in groups of 8 so the channels can be setup on a byte-by-byte basis.

5.2.1 Input Topology

The input topology is configured by placing jumpers in certain positions of a header field. Figure 5.2.1-1 shows the circuit topology for a current sink input. Figure 5.2.1-2 shows a voltage source input. Jumper J1 selects the pull-up voltage applied to input resistor RP1 and J2 selects the reference voltage applied to the threshold resistor RP4. Jumpers J1 and J2 in these figures represent the jumpers used to control a group of 8 input channels. The physical location of these jumpers is shown in Figure 5.2.1-3.

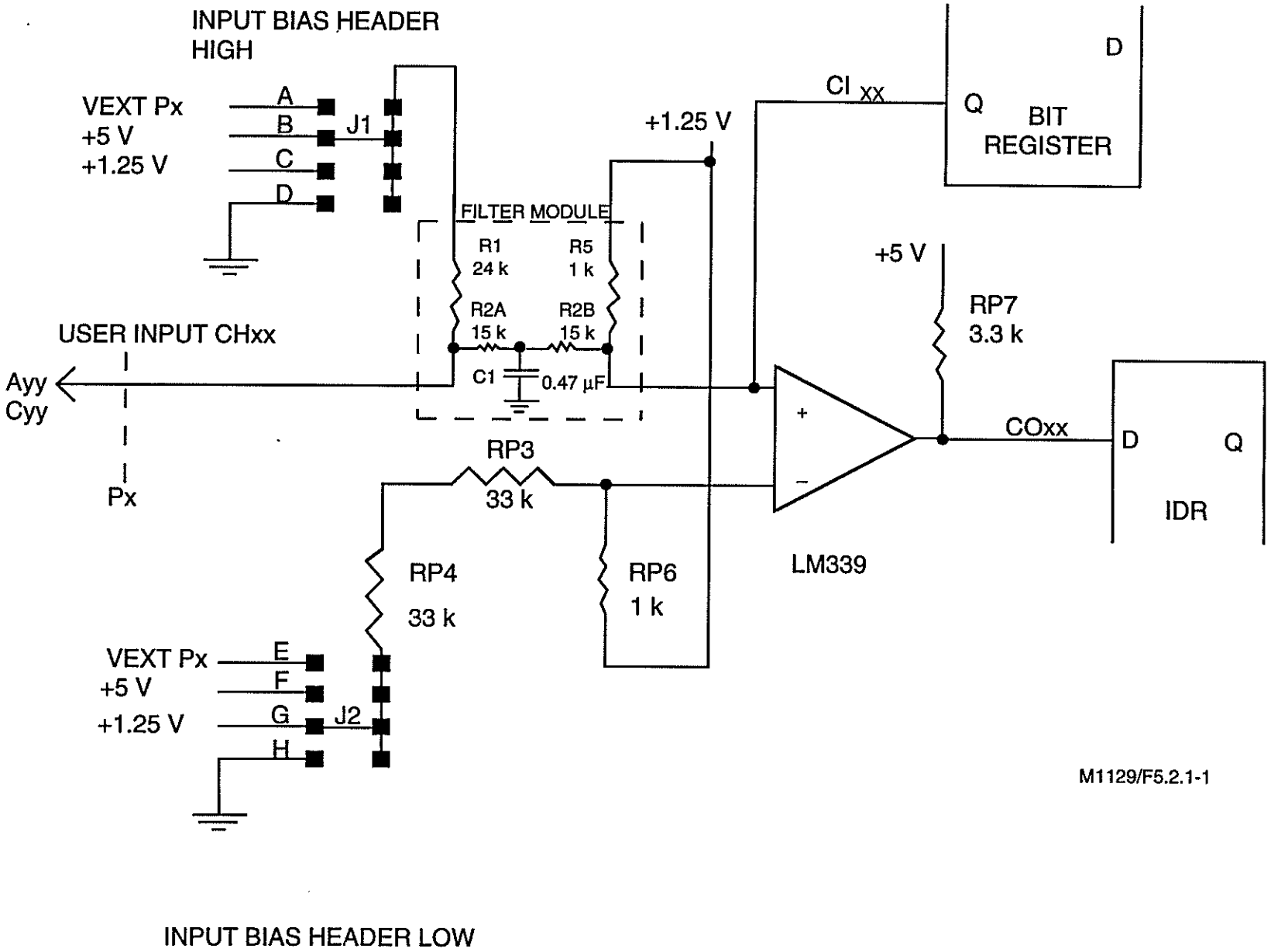


Figure 5.2.1-1. Basic Current Sinking Input

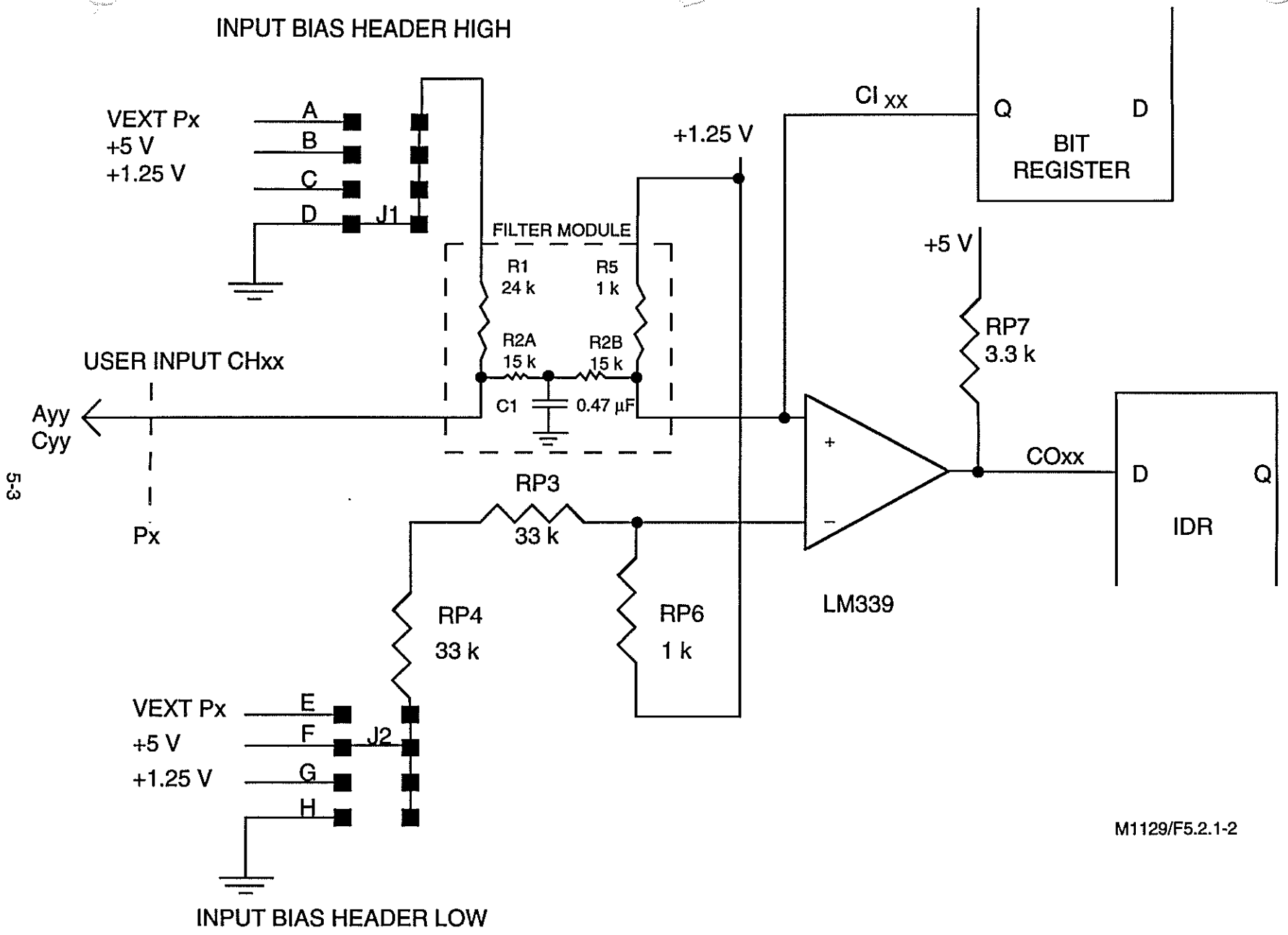


Figure 5.2.1-2. Basic Voltage Sourcing Input

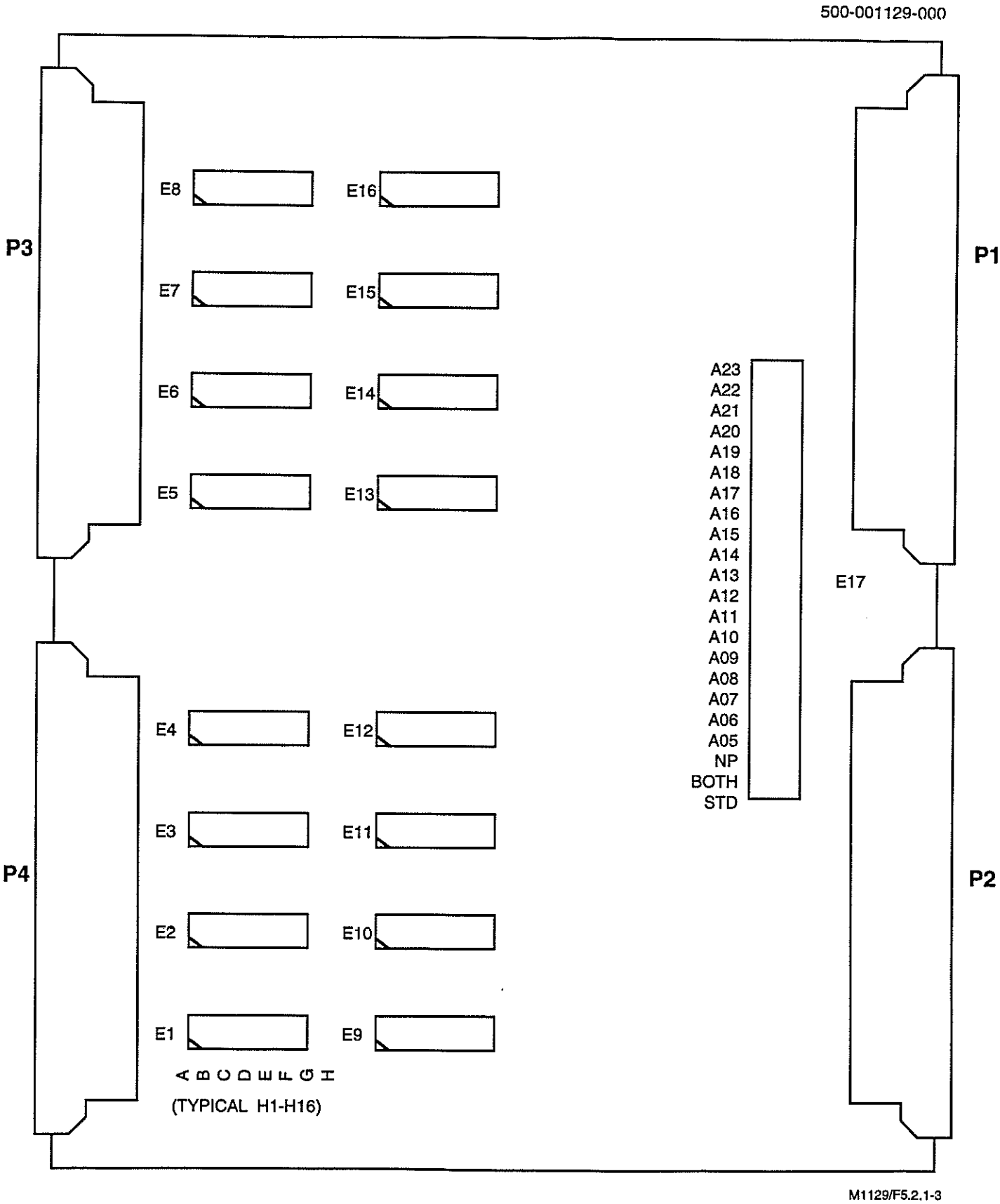


Figure 5.2.1-3. Physical Location of Jumpers

If J1 is in the ground position, the input circuit is voltage sourcing (see Figure 5.2.1-2). In any other position, the input is current sinking (see Figure 5.2.1-1). In the circuit shown in Figure 5.2.1-2, the voltage is 5 V. If the voltage you are using is greater than 5 V, then you should use Vext for J1. Table 5.2.1-2 shows the location of Vext for each group of channels.

Jumper J2 chooses the reference voltage (V_r) for the threshold level (V_t). Table 5.2.1-1 lists several threshold values as a function of reference voltage. An equation for the threshold voltage is given if the value you require is not listed. Figure 5.2.1-4 describes the possible jumper configurations.

Table 5.2.1-1. Threshold Voltages

$V_t = 0.46\ V_r + 0.67$

V_r	V_t
0 V	0.67 V
1.25 V	1.25 V
5 V	3.0 V
12 V	6.2 V
24 V	11.7 V
28 V	13.6 V
48 V	22.8 V
66 V	31.0 V

M1129/T5.2.1-1

Table 5.2.1-2. Header Assignments

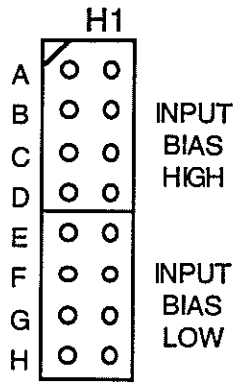
Header Ref. Des.	Associated Channels	Location of VEXT
E1	CH07 - CH00	P2-C32
E2	CH15 - CH08	P2-C30
E3	CH23 - CH16	P2-C28
E4	CH31 - CH24	P2-C26
E5	CH64 - CH71	P2-C16
E6	CH72 - CH79	P2-C14
E7	CH80 - CH87	P2-C12
E8	CH88 - CH95	P2-C10
E9	CH32 - CH39	P2-C24
E10	CH40 - CH47	P2-C22
E11	CH48 - CH55	P2-C20
E12	CH56 - CH63	P2-C18
E13	CH103 - CH96	P2-C8
E14	CH111 - CH104	P2-C6
E15	CH119 - CH112	P2-C4
E16	CH127 - CH120	P2-C2

M1129/T5.2.1-2

INPUT BIAS HIGH JUMPER LOCATION

INPUT BIAS LOW JUMPER LOCATION

	A	B	C	D
E	T = CS $V_P = V_{EXT}$ V_{OC} = Eq 2 V_T = Eq 1	T = CS V_P = +5 V V_{OC} = +3.35 V V_T = Eq 1	T = CS V_P = +1.25 V V_{OC} = +1.25 V V_T = Eq 1	T = VS V_T = Eq 1
F	T = CS $V_P = V_{EXT}$ V_{OC} = Eq 2 V_T = +3.2 V	T = CS V_P = +5 V V_{OC} = +3.35 V V_T = +3.2 V	NOT USED	T = VS V_T = +3.2 V
G	T = CS $V_P = V_{EXT}$ V_{OC} = Eq 2 V_T = +1.25 V	T = CS V_P = +5 V V_{OC} = +3.35 V V_T = +1.25 V	NOT USED	FACTORY CONFIGURATION T = VS V_T = +1.25 V
H	T = CS $V_P = V_{EXT}$ V_{OC} = Eq 2 V_T = +0.61 V	T = CS V_P = +5 V V_{OC} = +3.35 V V_T = +0.61 V	NOT USED	T = VS V_T = +0.61 V



M1129/F5.2.1-4

T = Input Circuit Topology
VS = Voltage Sourcing Input
CS = Current Sinking Input
V_T = Threshold Voltage
V_P = Pull-Up Voltage (applied to 24 kΩ pull-up resistor)
V_{OC} = Open Circuit Input Voltage
Eq 1 = 0.46 V_{EXT} + 0.67
Eq 2 = 0.56 V_{EXT} + 0.55

Figure 5.2.1-4. Input Circuitry Jumper Configurations

5.3 ADDRESS MODIFIERS

The VMIVME-1129 is configured at the factory, as shown in Figure 5.3-1, to respond to short supervisory I/O access. This configuration can be changed by installing jumpers at the appropriate locations in header E17 as shown in the corresponding figures.

I/O ACCESS	CORRESPONDING FIGURE
Short Supervisory	Figure 5.3-1 (factory configuration)
Standard Supervisory	Figure 5.3-2
Short Nonprivileged	Figure 5.3-3
Standard Nonprivileged	Figure 5.3-4
Short (responds to either supervisory or nonprivileged)	Figure 5.3-5
Standard (responds to either supervisory or nonprivileged)	Figure 5.3-6

5.4 ADDRESS SELECTION JUMPERS

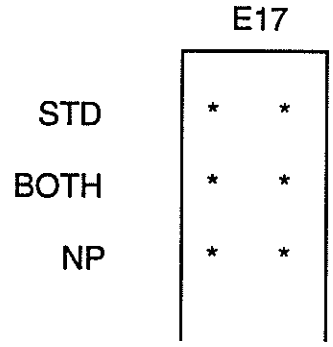
The VMIVME-1129 is designed with a bank of address select jumpers that specify the beginning board address for data transfers. The address selection jumpers are shown in Figure 5.4-1. The VMIVME-1129 is factory configured to respond to FF00 HEX.

5.5 BEFORE APPLYING POWER: CHECKLIST

Before installing the board in a VMEbus system, perform the following checklist to verify that the board is ready for the intended operation:

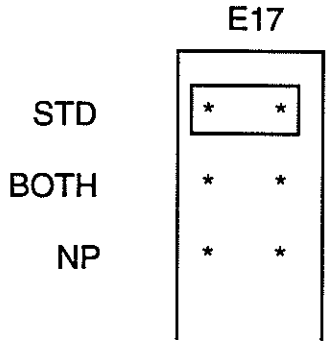
a. Have Sections 3 and 4 on Theory and Programming of the VMIVME-1129 been read and applied to system requirements?

b. Review this chapter to verify factory installation of the jumpers. See Figure 5.2.1-1 for factory configuration.
   1. To change the address jumpers, refer to Section 5.4.
   2. To change the address modifier response, refer to Section 5.3.



M1129/F5.3-1

Figure 5.3-1. Jumper Configuration for Short Supervisory Access



M1129/F5.3-2

Figure 5.3-2. Jumper Configuration for Standard Supervisory Access

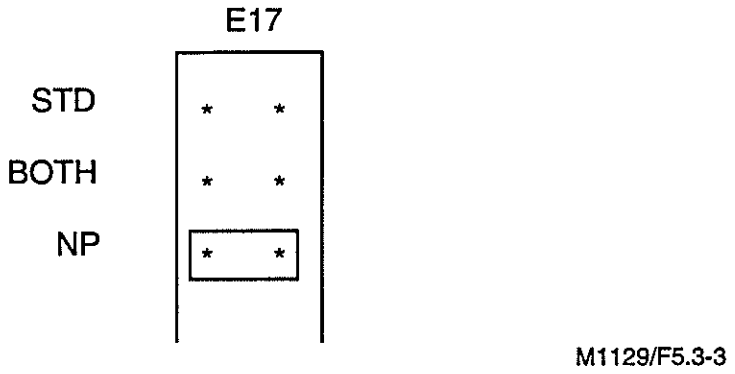


Figure 5.3-3. Jumper Configuration for Short Nonprivileged Access

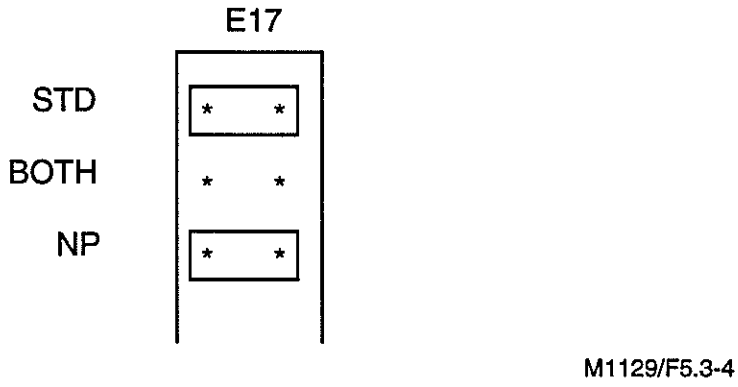
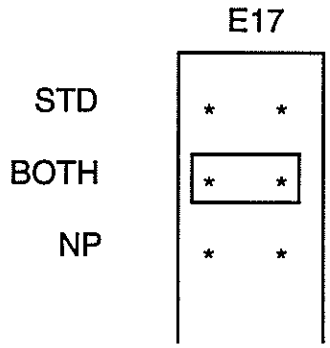
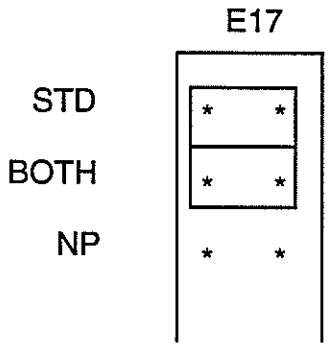


Figure 5.3-4. Jumper Configuration for Standard Nonprivileged Access



M1129/F5.3-5

Figure 5.3-5. Jumper Configuration for Short Addressing and Supervisory or Nonprivileged Access



M1129/F5.3-6

Figure 5.3-6. Jumper Configuration for Standard Addressing and Supervisory or Nonprivileged Access

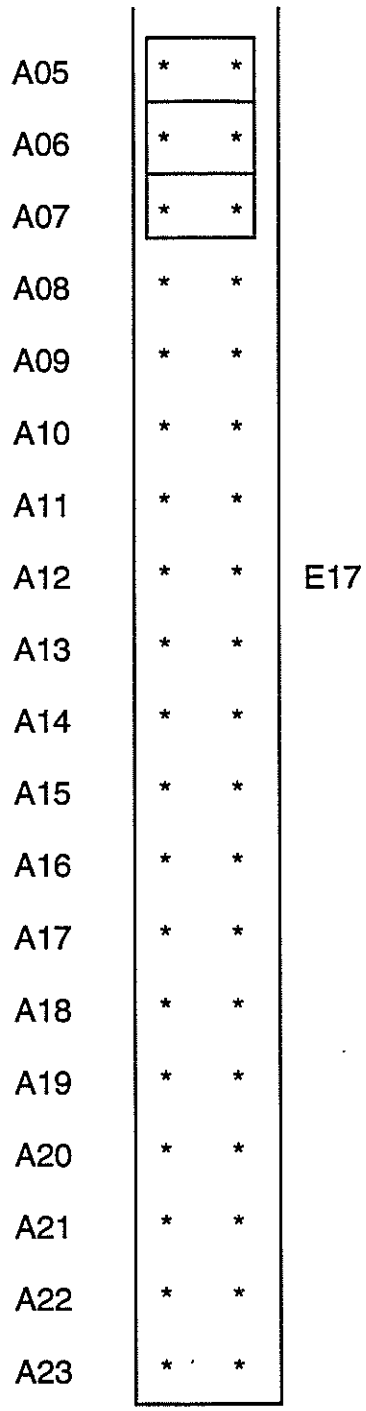


Figure 5.4-1. Base Address Select Jumpers

The example shown is for a short I/O base address of FF00 Hexadecimal (FFFFFF00 for Standard I/O Access)

c. The VMIVME-1129 is designed to accommodate either current sink or voltage source inputs. See Figures 5.2.1-1 and 5.2.1-2, respectively, for the correct configuration of the desired input.

d. Have the cables, with proper mating connectors, been connected to the input connectors? Refer to Section 5.6.

After completing the checklist, the VMIVME-1129 Board may be installed. Generally the VMIVME-1129 may be installed in any slot position except slot one, which is usually reserved for the system controller processing unit.

5.6 I/O CABLE AND FRONT PANEL CONNECTOR CONFIGURATION

The input connectors (P3 and P4) on the VMIVME-1129 are 96-pin DIN standard and were selected by VMIC because of their high quality. Although these connectors are generally used with flat-ribbon cables, a variety of cables and mating connectors are available for most user requirements.

Figure 5.6-1 shows the pin layout of the P3 and P4 connectors. Tables 5.6-1 and 5.6-2 detail the connector pin assignments. The P2 connector pin layout is shown in Figure 5.6-2, while the pin assignments are listed in Table 5.6-3.

Refer to specification number 800-001129-000 for the type of connector to use.

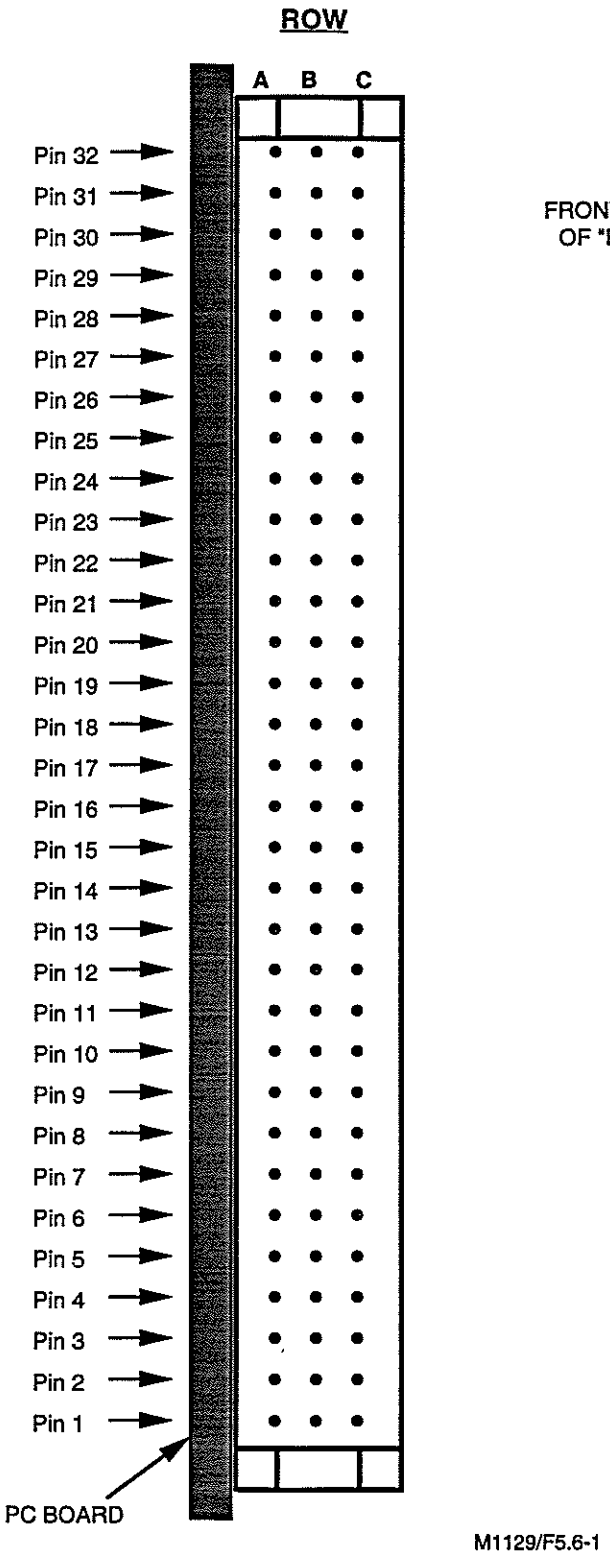


Figure 5.6-1. P3/P4 Connector Pin Layout

Table 5.6-1. P3 Pin - Channel Assignments

P3		P3	
ROW C Pin	CHANNEL No.	ROW C Pin	CHANNEL No.
32	127	16	111
31	126	15	110
30	125	14	109
29	124	13	108
28	123	12	107
27	122	11	106
26	121	10	105
25	120	09	104
24	119	08	103
23	118	07	102
22	117	06	101
21	116	05	100
20	115	04	99
19	114	03	98
18	113	02	97
17	112	01	96

ALL PINS IN ROW B ARE GROUNDED

P3		P3	
ROW A Pin	CHANNEL No.	ROW A Pin	CHANNEL No.
32	95	16	79
31	94	15	78
30	93	14	77
29	92	13	76
28	91	12	75
27	90	11	74
26	89	10	73
25	88	09	72
24	87	08	71
23	86	07	70
22	85	06	69
21	84	05	68
20	83	04	67
19	82	03	66
18	81	02	65
17	80	01	64

ALL PINS IN ROW B ARE GROUNDED

M1129/T5.6-1

Table 5.6-2. P4 Pin - Channel Assignments

P4		P4	
ROW C Pin	CHANNEL No.	ROW C Pin	CHANNEL No.
32	63	16	47
31	62	15	46
30	61	14	45
29	60	13	44
28	59	12	43
27	58	11	42
26	57	10	41
25	56	09	40
24	55	08	39
23	54	07	38
22	53	06	37
21	52	05	36
20	51	04	35
19	50	03	34
18	49	02	33
17	48	01	32

ALL PINS IN ROW B ARE GROUNDED

P4		P4	
ROW A Pin	CHANNEL No.	ROW A Pin	CHANNEL No.
32	31	16	15
31	30	15	14
30	29	14	13
29	28	13	12
28	27	12	11
27	26	11	10
26	25	10	09
25	24	09	08
24	23	08	07
23	22	07	06
22	21	06	05
21	20	05	04
20	19	04	03
19	18	03	02
18	17	02	01
17	16	01	00

ALL PINS IN ROW B ARE GROUNDED

M1129/T5.6-2

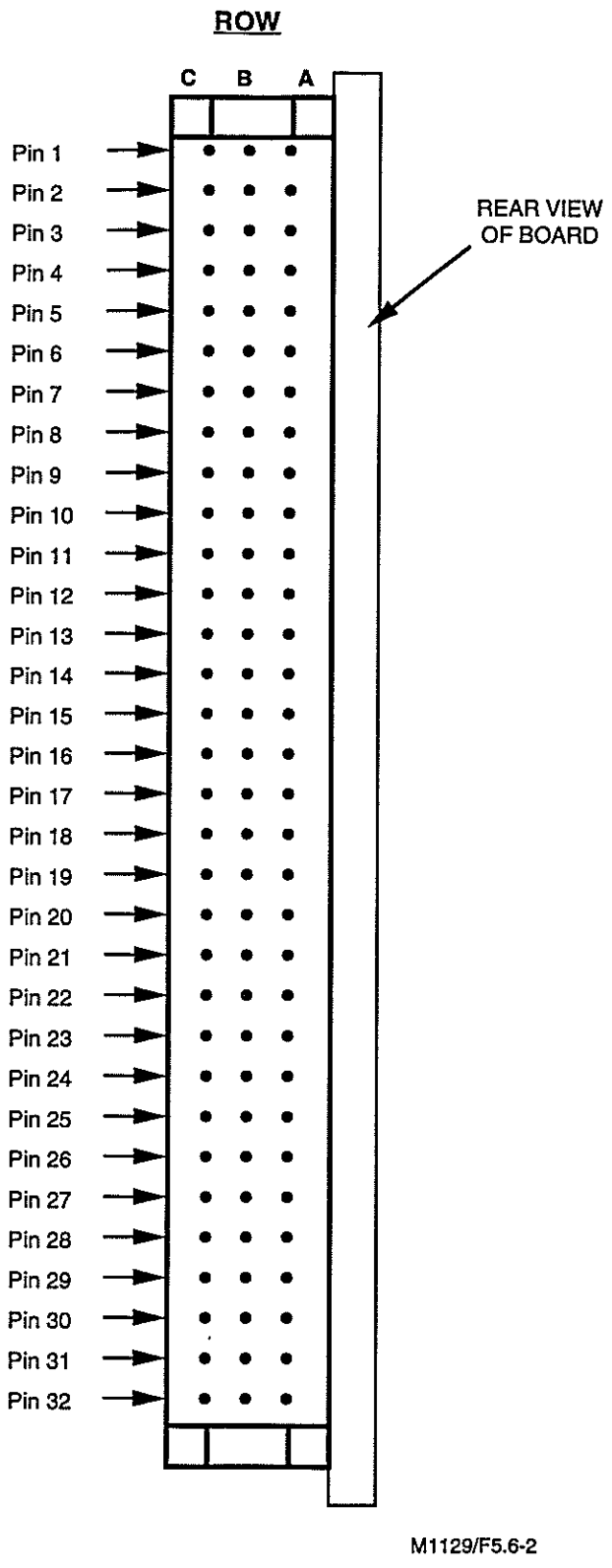


Figure 5.6-2. P2 Connector Pin Layout

Table 5.6-3. P2 Connector Pin Assignments

Pin NO.	ROW A	ROW B	ROW C
1	NC	+5 V	GND
2	NC	GND	VEXT CH 120_127
3	NC	N/C	GND
4	NC	N/C	VEXT CH 112_119
5	NC	N/C	GND
6	NC	N/C	VEXT CH 104_111
7	NC	N/C	GND
8	NC	N/C	VEXT CH 96_103
9	NC	N/C	GND
10	NC	N/C	VEXT CH 88_95
11	NC	N/C	GND
12	NC	GND	VEXT CH 80_87
13	NC	+5 V	GND
14	NC	D16	VEXT CH 72_79
15	NC	D17	GND
16	NC	D18	VEXT CH 64_71
17	NC	D19	GND
18	NC	D20	VEXT CH 56_63
19	NC	D21	GND
20	NC	D22	VEXT CH 48_55
21	NC	D23	GND
22	NC	GND	VEXT CH 40_47
23	NC	D24	GND
24	NC	D25	VEXT CH 32_39
25	NC	D26	GND
26	NC	D27	VEXT CH 24_31
27	NC	D28	GND
28	NC	D29	VEXT CH 16_23
29	NC	D30	GND
30	NC	D31	VEXT CH 8_15
31	NC	GND	GND
32	NC	+5 V	VEXT CH 0_7

M1129/T5.6-3

SECTION 6

MAINTENANCE AND WARRANTY

6.1 MAINTENANCE

This section of the technical manual provides information relative to the care and maintenance of VMIC's products. Should the products malfunction, the user should verify the following:

a. Software
b. System configuration
c. Electrical connections
d. Jumper or configuration options
e. Boards fully inserted into their proper connector location
f. Connector pins are clean and free from contamination
g. No components of adjacent boards are disturbed when inserting or removing the board from the VMEbus card cage
h. Quality of cables and I/O connections

User level repairs are not recommended. Contact VMIC for a Return Material Authorization (RMA) Number. This RMA Number must be obtained prior to any return.

6.2 MAINTENANCE PRINTS

The appendix(ices) to this manual contain(s) drawings and diagrams for reference purposes.

6.3 WARRANTY

VMIC's Standard Products are warranted to be free from defects in material and workmanship for a period of two years (24 months) from the date of shipment. In discharge of this warranty, VMIC, at its option, agrees to either repair or replace, at VMIC's facility and at VMIC's discretion, any part, component, subassembly accessory, or any hardware, software, or system product, which under proper and normal use proves defective in material and workmanship.

The customer shall provide notice to VMIC of each such defect within a reasonable time after the customer's discovery of such defect.

In order to return the defective product(s) or part(s), the customer must contact VMIC's Customer Service Department to obtain a Call Ticket Number. The

defective product(s) or part(s) must also be properly boxed and weighed. After a VMIC Call Ticket Number and RMA Number have been obtained, the defective product(s) or part(s) may be returned (transportation collect for surface UPS) to VMIC. Any replaced or repaired product(s) or part(s) will be shipped back to the customer at the expense of VMIC (also UPS surface).

The customer should be aware that the above process can sometimes take up to eight (8) days for the shipment to reach VMIC. The customer has the option to ship the defective product(s) or part(s) at the customer's own expense if the customer cannot afford this possible delay.

There shall be no warranty or liability on any VMIC product(s) or part(s) that is (are) damaged or subjected to accident(s), perils of nature, negligence, overtemperature, overvoltage, misapplication of electrical power, insertion or removal of boards from backplanes and/or I/O connectors with power applied by the customer(s), appointee(s), or any other person(s) without the expressed approval of VMIC.

Final determination of warranty eligibility shall be made by VMIC, and if a warranty claim is considered invalid for any reason, the customer will be charged for services performed and expenses incurred by VMIC in repair, handling and shipping the returned product or part. Determination as to whether the item is within warranty coverage shall not be unreasonably withheld.

The warranty period of the replacement or repaired product(s) or part(s) shall terminate with the termination of the warranty period with respect to the original product(s) or part(s) for all replacement parts supplied or repairs made during the original warranty period.

THE FOREGOING WARRANTY AND REMEDY ARE EXCLUSIVE AND VMIC SHALL HAVE NO OTHER OR ADDITIONAL LIABILITY TO BUYER OR TO ANYONE CLAIMING UNDER BUYER (THIRD PARTY) UNDER ANY OTHER AGREEMENT OR WARRANTY, EXPRESS OR IMPLIED EITHER IN FACT OR BY OPERATION OF THE LAW, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS, STATUTORY, OR OTHERWISE. VMIC SHALL HAVE NO LIABILITY FOR SPECIAL OR CONSEQUENTIAL DAMAGES OF ANY KIND OR FROM ANY CAUSE ARISING OUT OF THE INSTALLATION OR USE OF ANY PRODUCT FURNISHED HEREUNDER.

6.4 OUT-OF-WARRANTY REPAIR POLICY

The following sections describe VMIC's policy on repairs and warranties on repaired products.

6.4.1 Repair Category

VMIC's repair policy of standard products is divided into two categories, depending on the item to be repaired. These categories are:

a. Product Exchange
b. Fixed Price Repair

Category 1 (product exchange) represents the fastest turn around of the two categories. In this case, the customer sends the malfunctioning product to VMIC. VMIC will return an operational product to the customer within 72 hours of receipt provided VMIC has the product in stock.

Provided that the returned product is repairable customers should contact VMIC prior to returning products for repair to determine stocking status.

Category 2 (Fixed Price Repair) applies to products returned to VMIC for repair and subsequent return to the customer.

Return authorizations are required on all product repairs, and all purchase orders should refer to VMIC's RMA Number which is assigned by VMIC's Customer Service Department.

6.4.2 Repair Pricing

Contact your factory representative for repair pricing. Current pricing can be found in the Repair and Replacement Policy in the most current Standard Conditions of Sales Document (F0109-91). Refer to exclusions (Section 6.4.7).

6.4.3 Payment

Payment is due upon delivery or at VMIC's option, net thirty (30) days from the date of delivery. Payment should be made to:

VME Microsystems International Corporation
12090 South Memorial Parkway
Huntsville, Alabama 35803-3308
Attention: Accounts Receivable

VMIC allows a one (1) percent discount for payment made within ten (10) days of invoice date or a two (2) percent discount on payment made prior to shipment of order. This payment discount, however, does not apply to freight.

6.4.4 Shipping Charges

Shipping charges are the customer's responsibility, with the exception of warranty repairs, whereby VMIC will pay the return to customer shipping charges.

6.4.5 Shipping Instructions

The type of packaging used to ship the product depends on whether the product is shipped singly, in a chassis, or packaged with other boards. The shipper should carefully pack the product(s), using the same precautions listed in the "unpacking procedures". The user should utilize the same (or equivalent) protective packaging container for re-shipment as provided by VMIC. Approved ESD procedures are recommended when handling VMIC's products.

6.4.6 Warranty on Repairs

Products repaired by VMIC are warranted against defects in workmanship and material for a period of ninety (90) days from date of shipment to the customer for all products that were repaired out of warranty. See Standard Conditions of Sale for products repaired within the warranty.

6.4.7 Exclusions

Repair rates may not apply to products which have received unusual physical or electrical damage. In such cases, VMIC will provide an estimated price for product repair or replacement. The customer may then choose to have the product repaired at the estimated price, returned unrepaired at no charge, or replaced at VMIC's current list price.

APPENDIX A

ASSEMBLY DRAWING, PARTS LIST, AND SCHEMATIC

REVISIONS			
REV	DESCRIPTION	DATE	APPROVAL
A	RELEASE PER ECO 92-0528	4/19/93	J.L.C.
B	CHANGE PER ECO 93-0620	9/17/93	GZ

NOTES:

1. ALL RESISTOR VALUES ARE IN OHMS.
2. UNLESS OTHERWISE SPECIFIED:
   A. ALL RESISTORS ARE 1/4 WATT, 5%.
   B. ALL CAPACITOR VALUES ARE SHOWN IN MICROFARADS

	SIGNATURES	DATE
DRAWN	E.M. GREEN	7/16/92
PROJ. ENGR	D.L. SUTHERLAND	8/27/92
ENG. MGR	G. MEARES	8/27/92
PROJ.	S.CROWSON	4/22/93
QA	S.EAGLE	4/23/93

VMIC 12090 Huntsville, Alabama 35803-3308
VME Microsystems International Corporation

TITLE: VMIVME - 1129 SCHEMATIC

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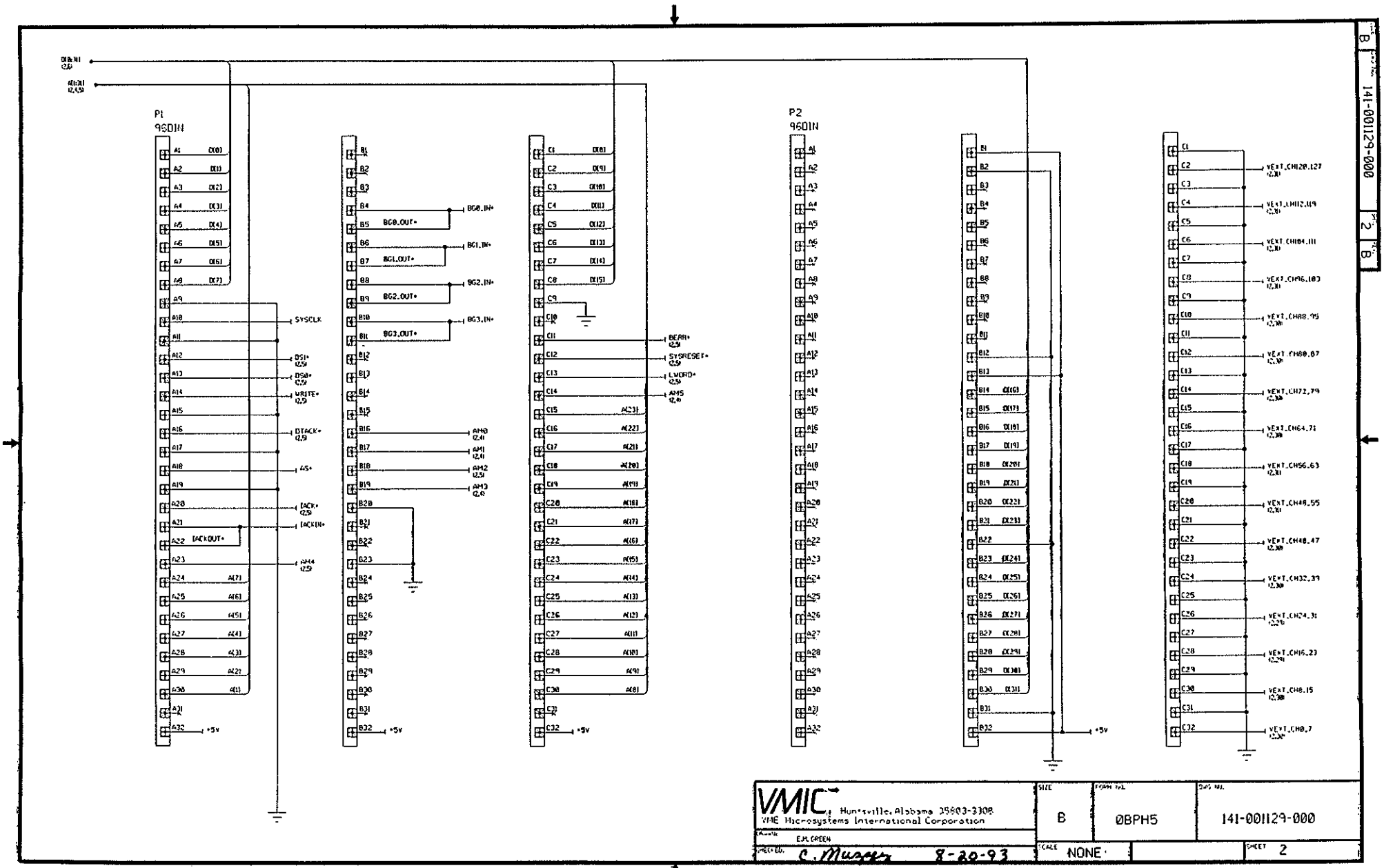
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DS0*
WRITE*
DTACK*
AS*
IACK*
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BG0.OUT*
BG1.IN*
BG1.OUT*
BG2.IN*
BG2.OUT*
BG3.IN*
BG3.OUT*
BERR*
SYSRESET*
LWORD*
AM5
AM0
AM1
AM2
AM3
AM4
+5V
VMIC
Huntsville, Alabama 35803-3308
VME Microsystems International Corporation
E.M.GREEN
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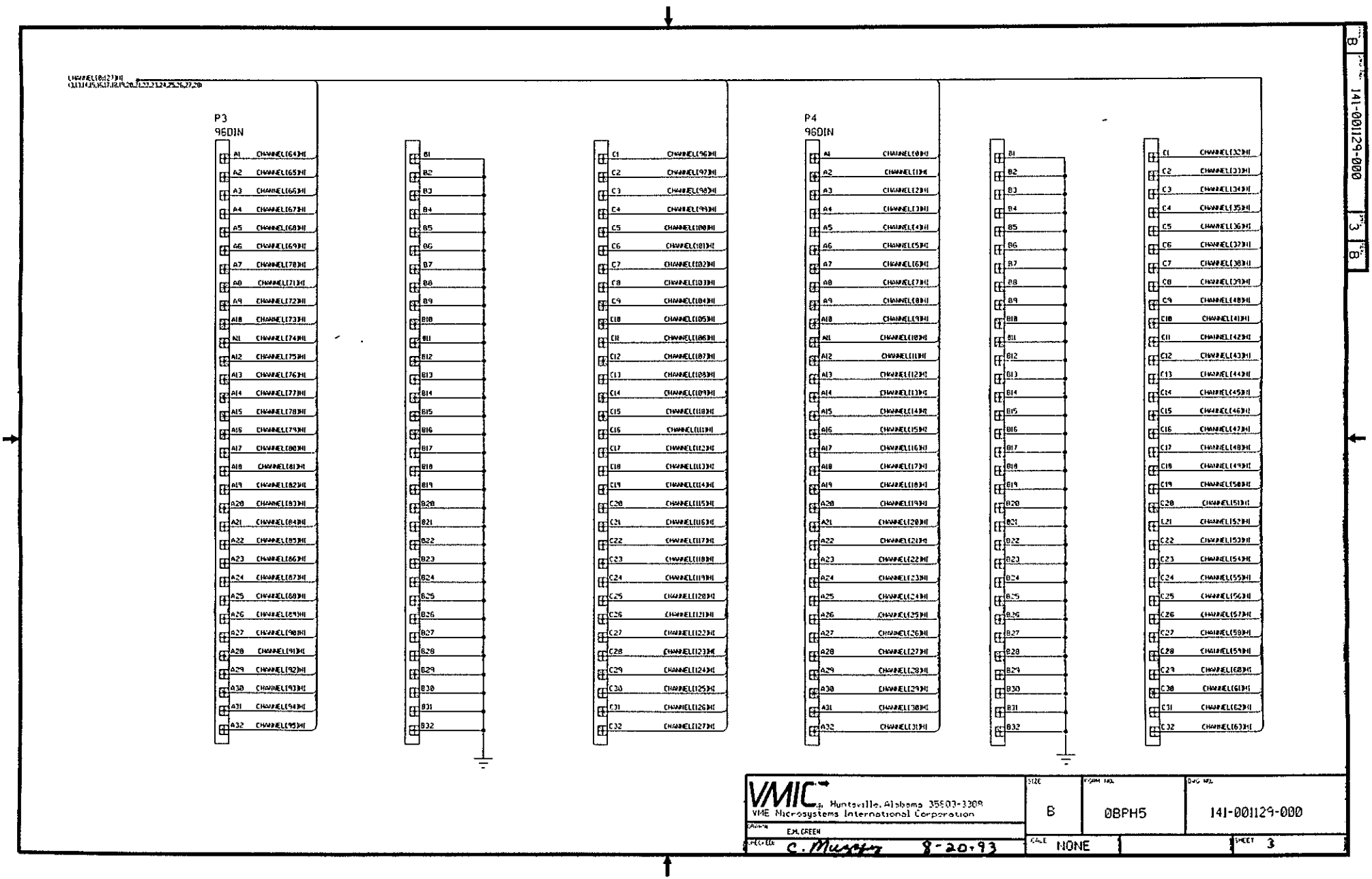

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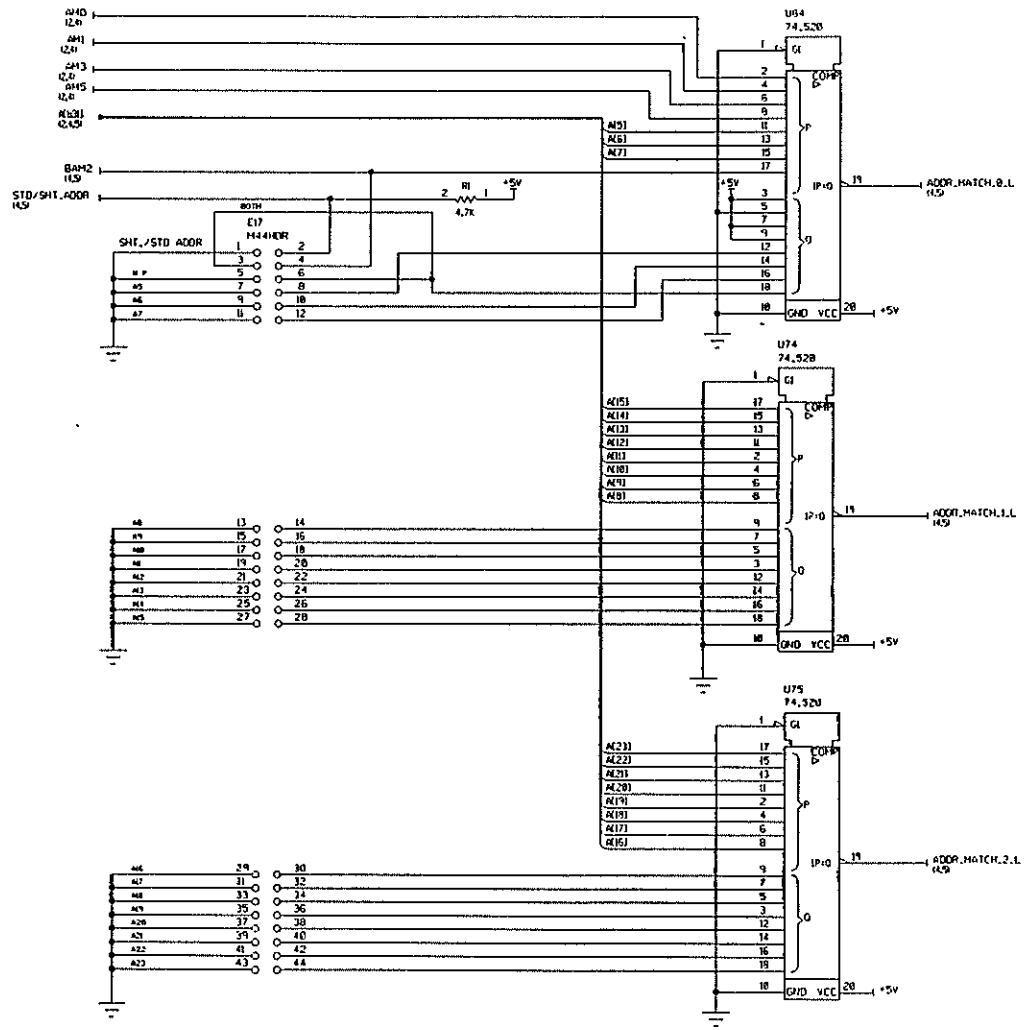
CHECKED C. Murphy 8-20-93	SCALE NONE		SHEET 3	



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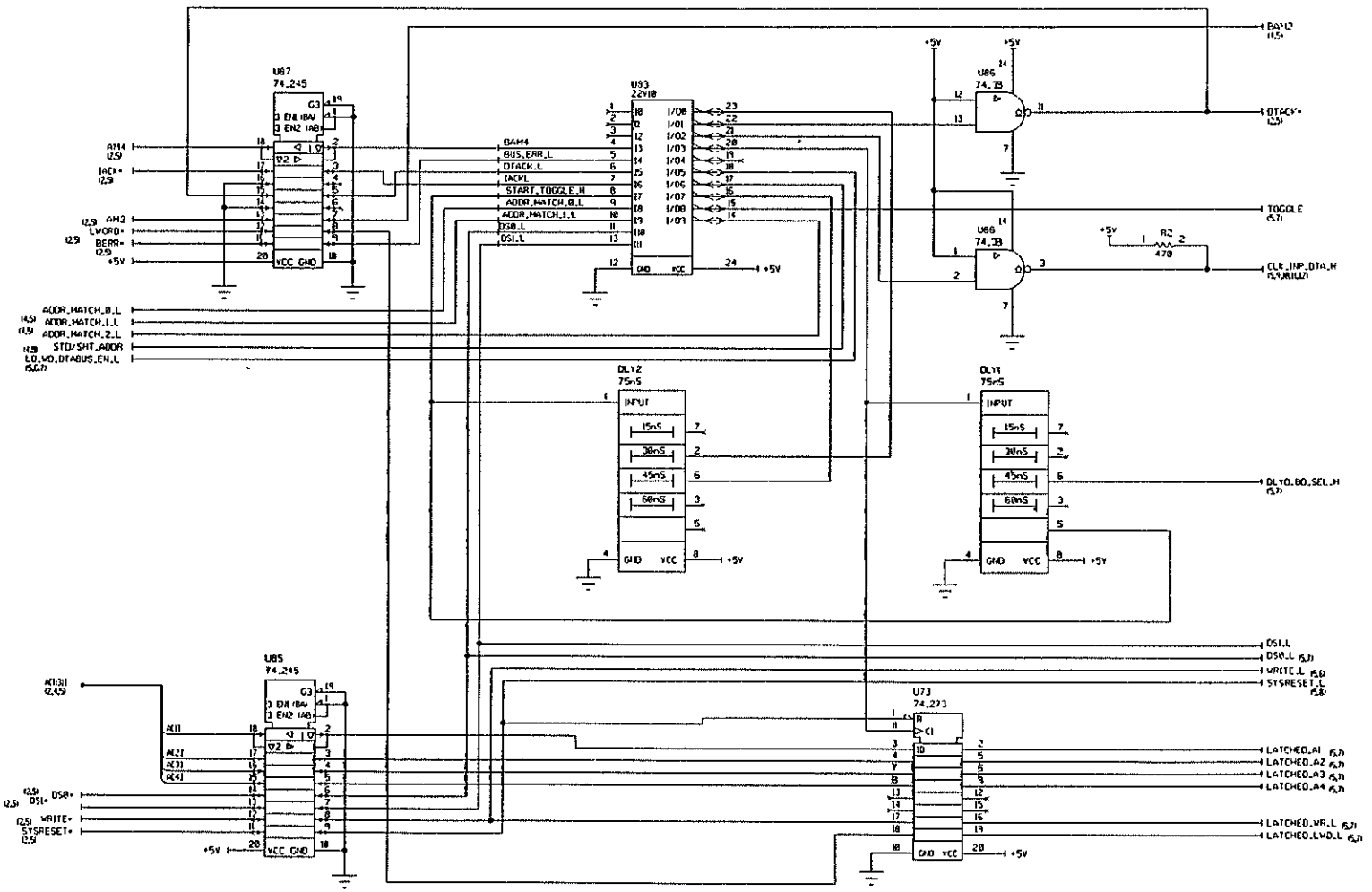
CHECKED: C. Musgrave 8-20-93	SCALE: NONE		SHEET 4

B | 141-001129-000 | 4 | B



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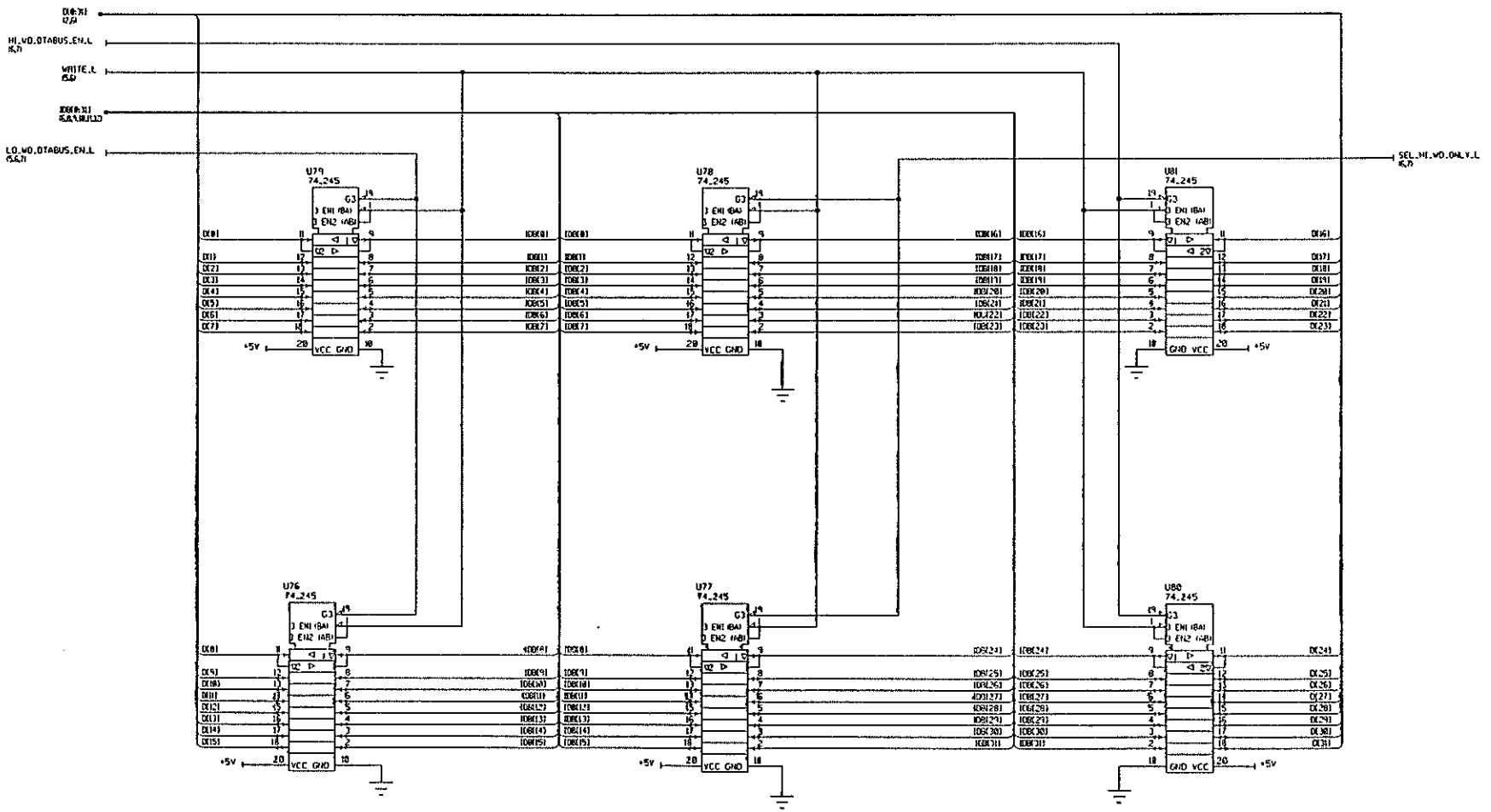

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ENGINEER: C. Murphy 8-20-93	SCALE: NONE		SHEET 6

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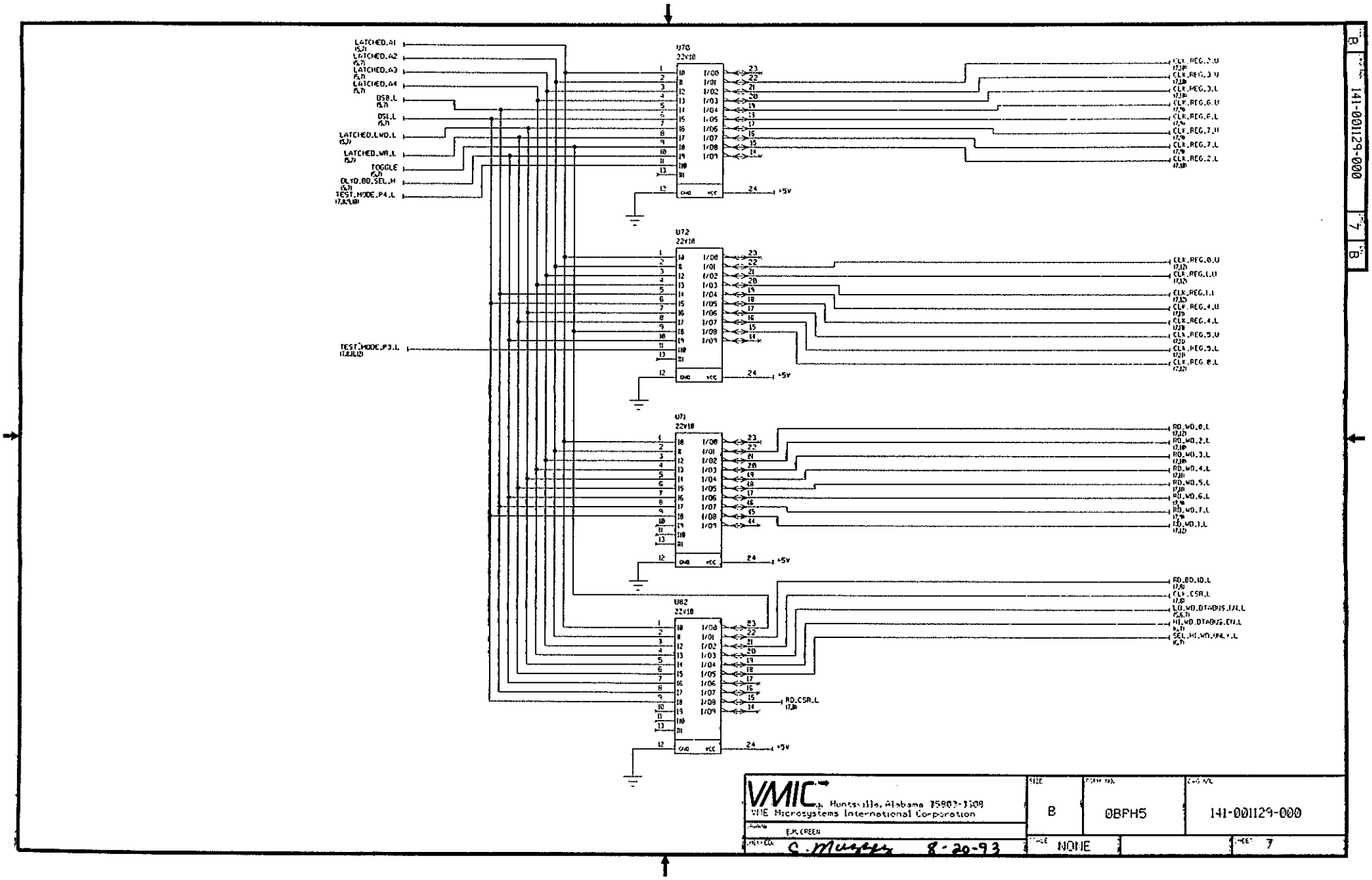
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DSB.L
DSL.L
LATCHED.LWD.L
LATCHED.WR.L
TOGGLE
DLYD.BD.SEL.H
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TEST_MODE.P3.L
RD.CSR.L
+5V
VMIC
VME Microsystems International Corporation
Huntsville, Alabama 35803-3308
EXPLORER
S. Murphy 8-20-93
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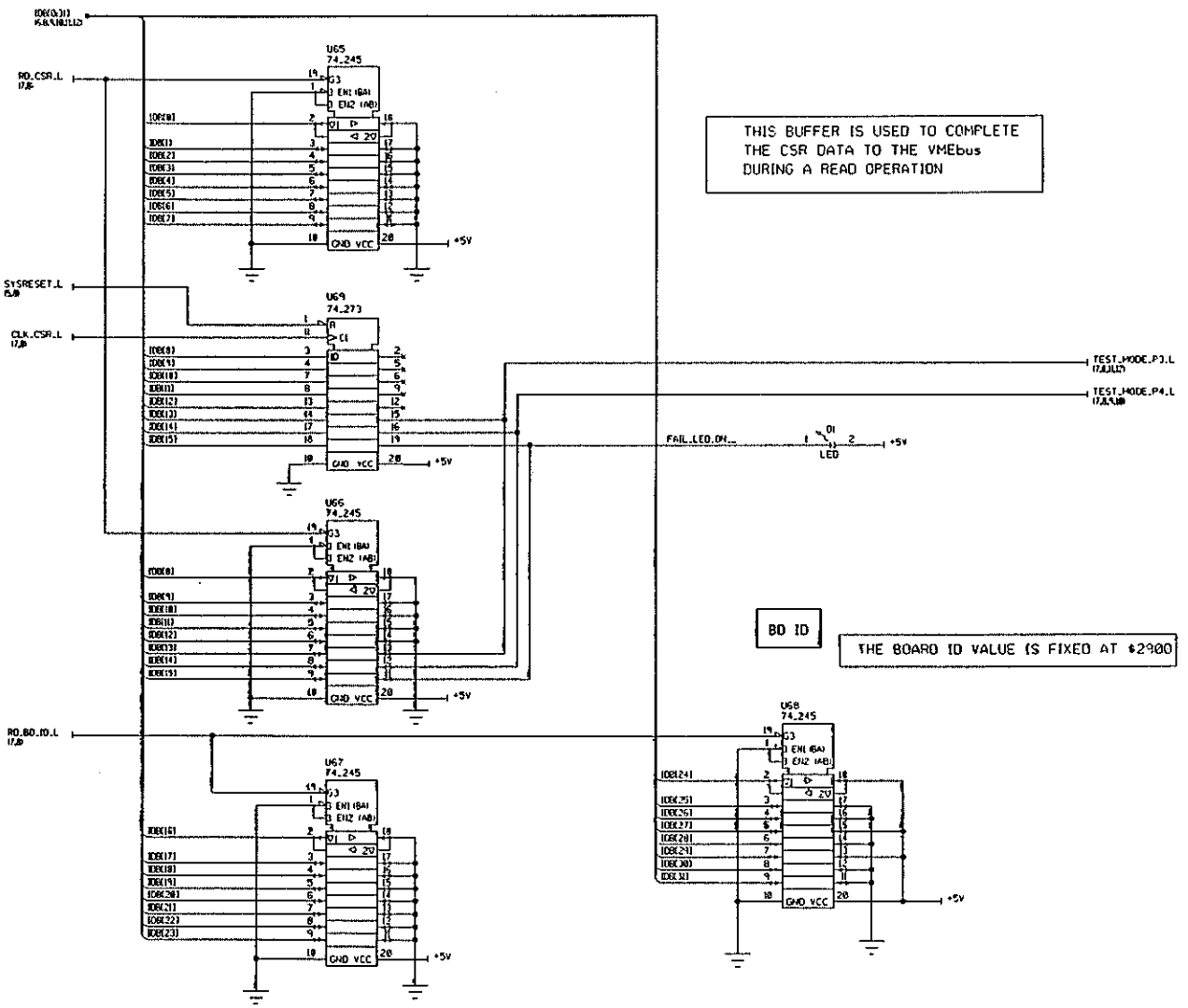

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141-001129-000 B

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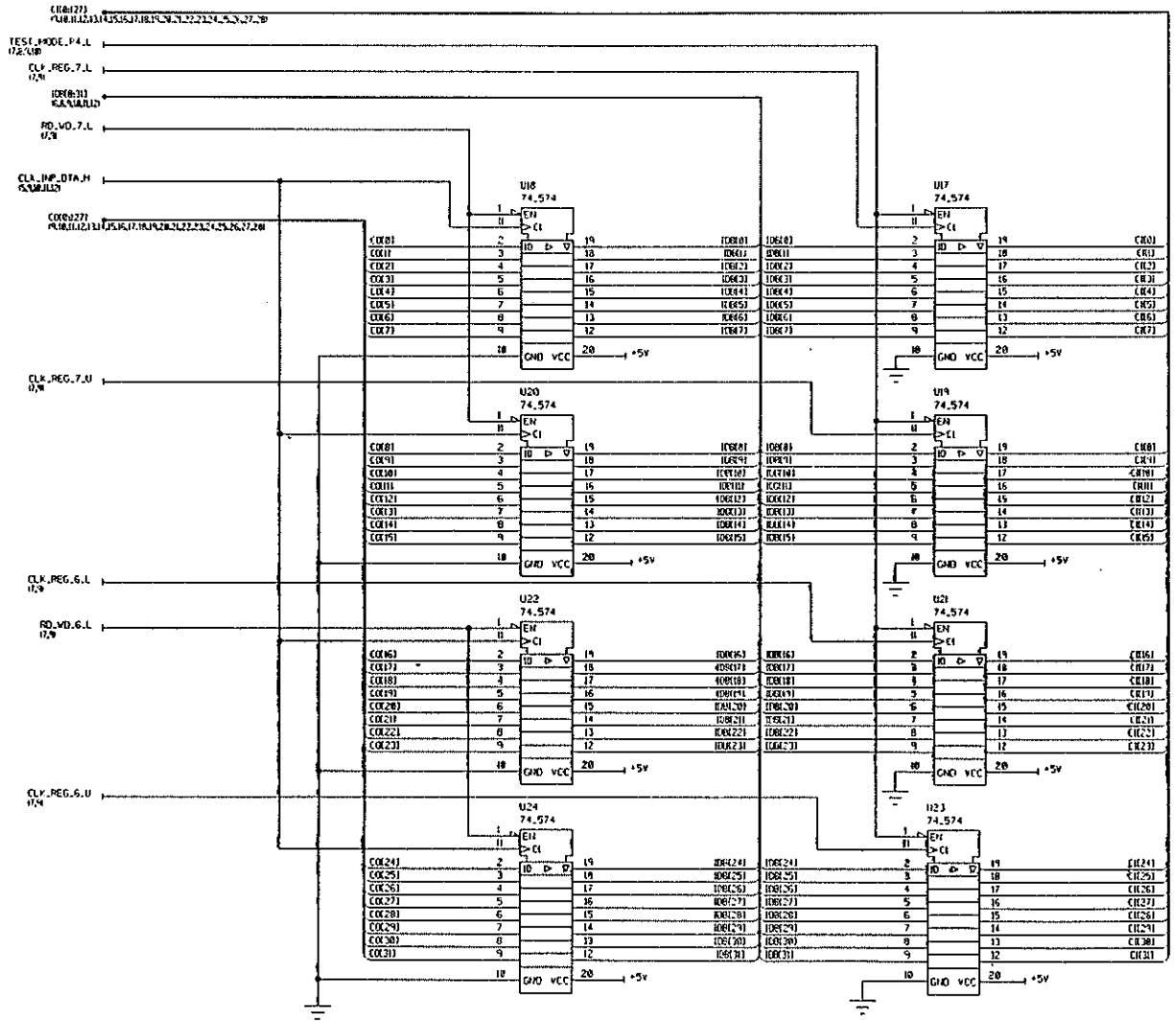

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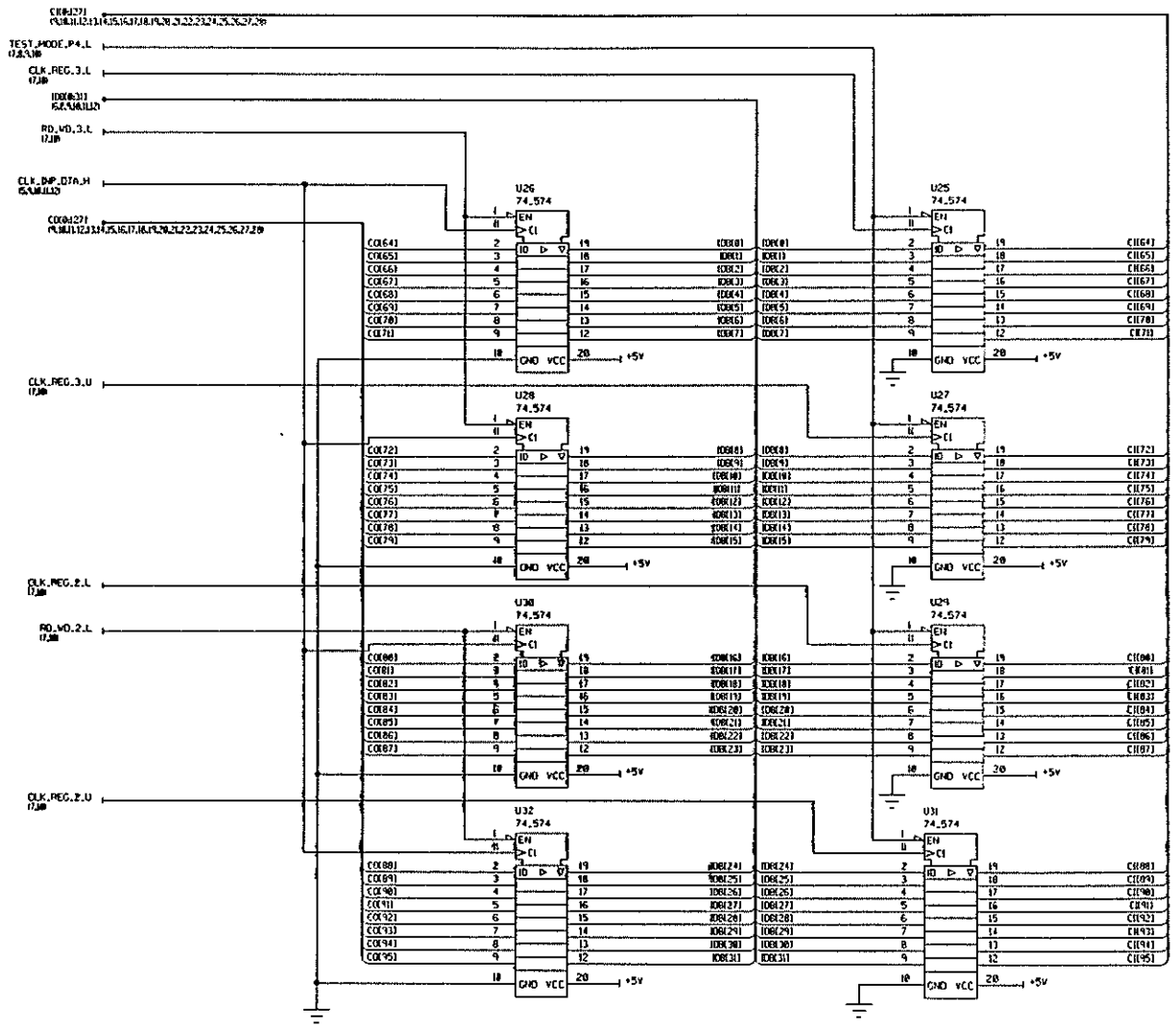
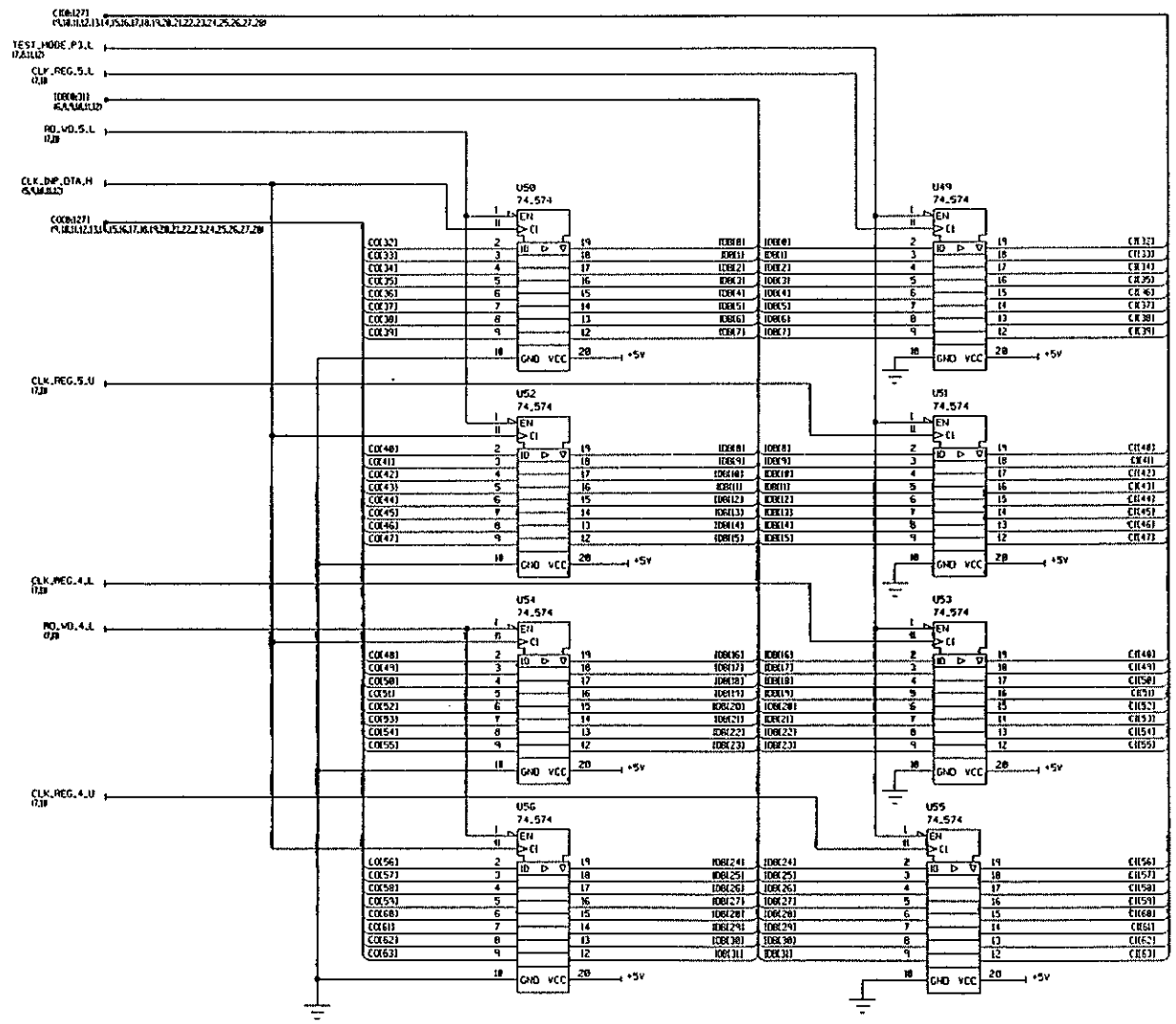
CHECKED: C. Muzzey 8-20-93	APPROVED: NONE		SHEET: 9

141-001129-000 9 B



VMIC 2, Huntsville, Alabama 35803-3308 VME Microsystems International Corporation	SIZE B	FORM NO. 0BPH5	DWG NO. 141-001129-000
DRAWN E.M.GREEN			
APPROVED C. Murphy 8-20-93	SCALE NONE		SHEET 10

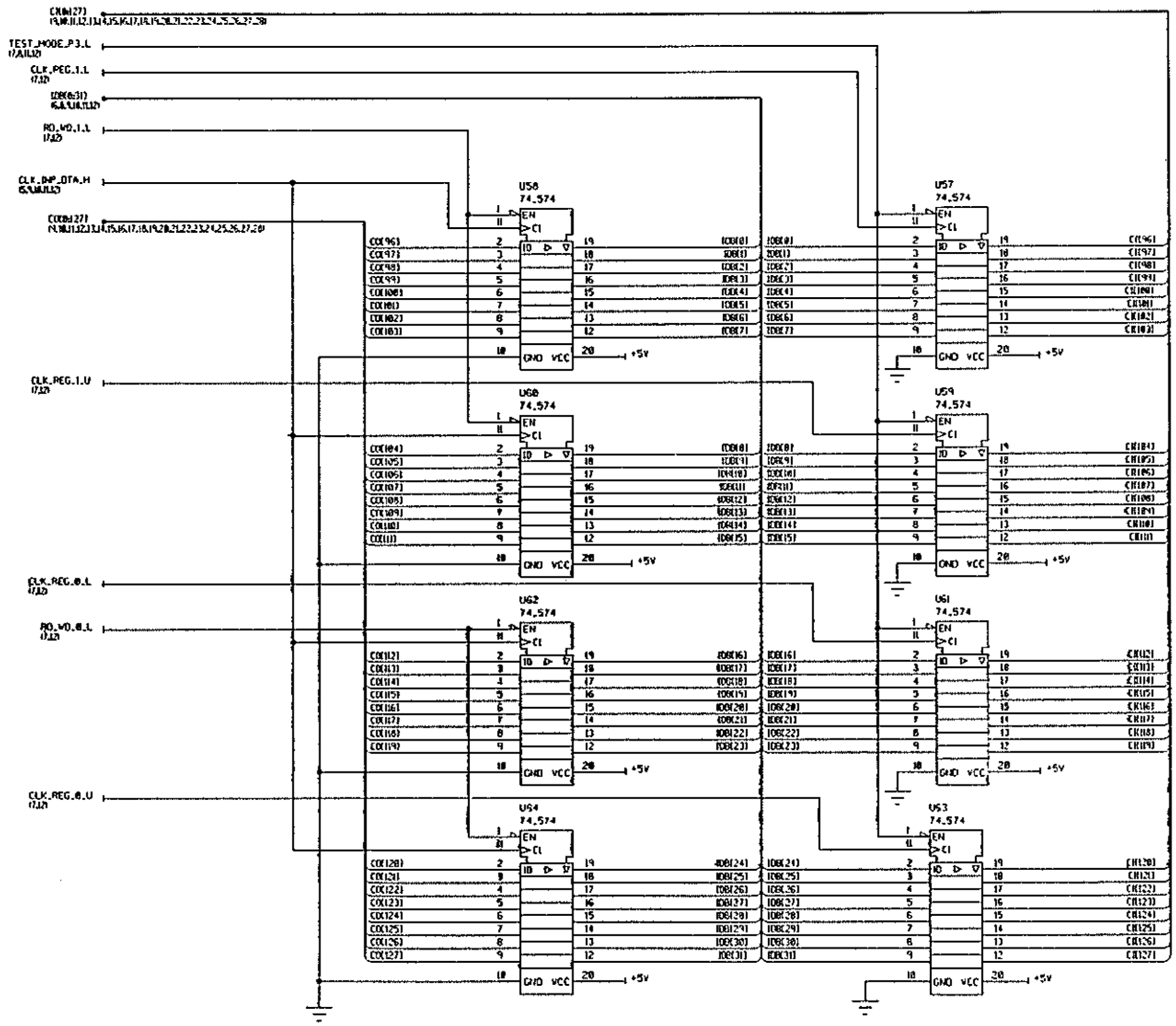
SCHEMATIC NAME: [illegible] SHEET [illegible] OF [illegible] DATE: [illegible], 1993



VMIC — Huntsville, Alabama 35803-3308 — VME Microsystems International Corporation	SIZE: B	FORM NO.: 0BPH5	DWG NO.: 141-001129-000
DRAWN: E.H. GREEN			
CHECKED: C. Musgrave 8-20-93	SCALE: NONE		SHEET: 11

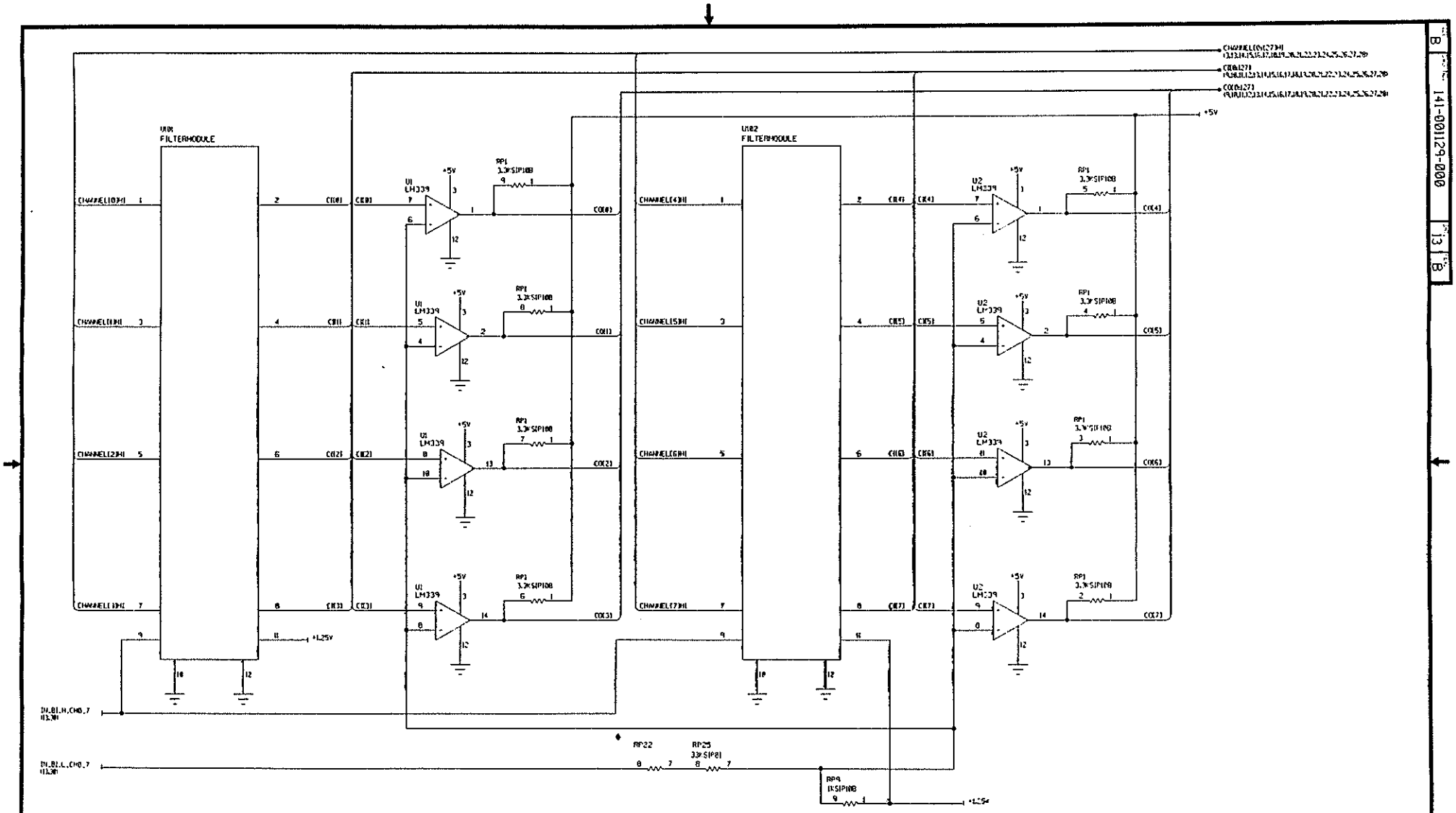
141-001129-000 11 B

SCHEMATIC NAME=xxxx SHEET NUMBER=11 DATE=Aug 19,1993



VMIC — VME Microsystems International Corporation, Huntsville, Alabama 35803-3308	SIZE: B	FORM NO.: 0BPH5	DWG NO.: 141-001129-000
DRAWN: EARL GREEN			
CHECKED: C. Murphy 8-20-93	SCALE: NONE		SHEET: 12

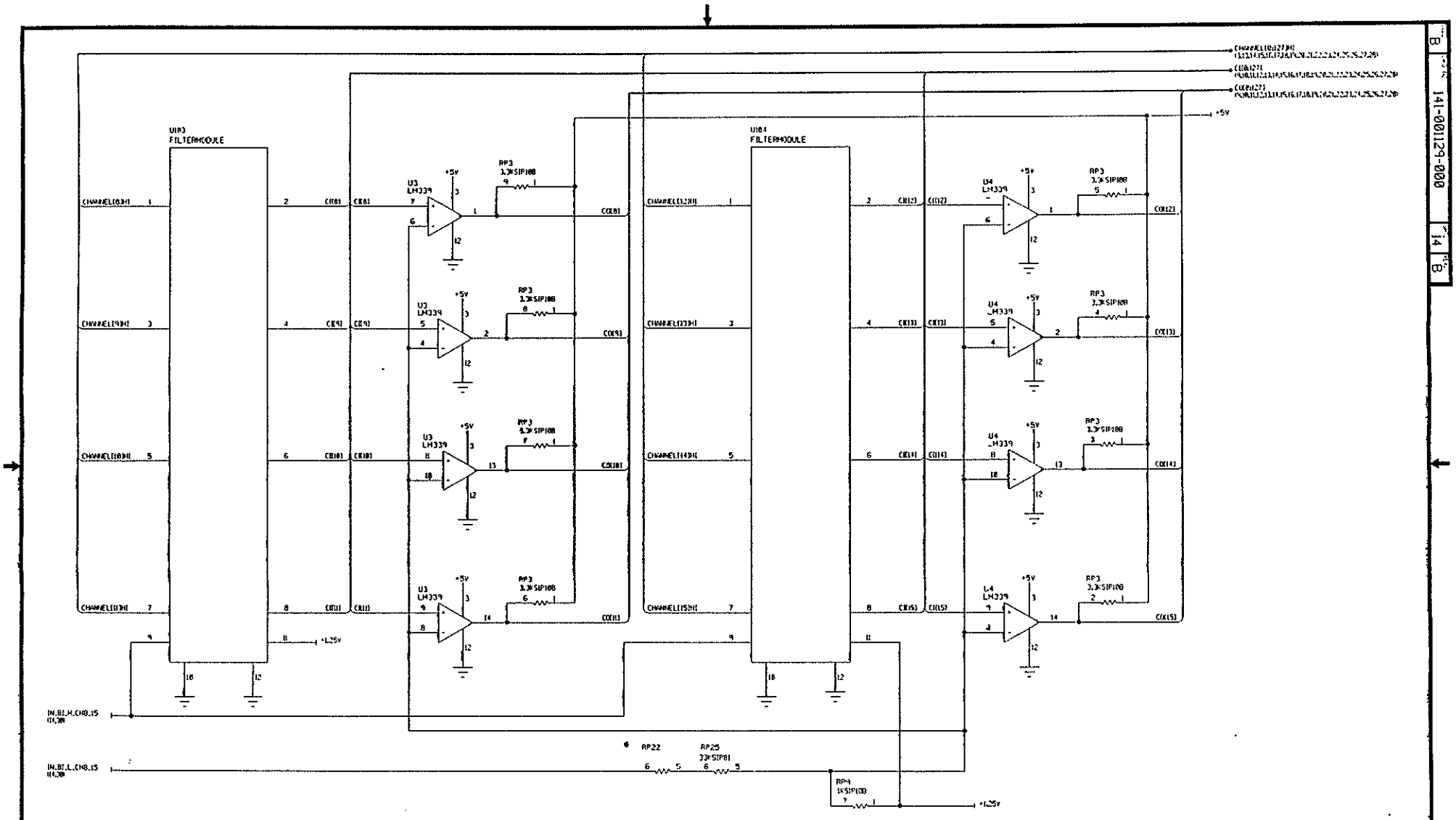
SCHEMATIC NAME: page SHEET NUMBER: 12 DATE: Aug 18, 1993



*THESE PARTS ARE OPTIONAL.
SEE PARTS LIST FOR APPLICATION AND VALUE.

VMIC — VME Microsystems International Corporation, Huntsville, Alabama 35803-3308	SIZE: B	FORM NO.: 0BPH5	DWG NO.: 141-001129-000
DRAWN: E.H. GREEN			
APPROVED: C. Murray 8-20-93	SCALE: NONE		SHEET: 13

B | 141-001129-000 | 13 | B

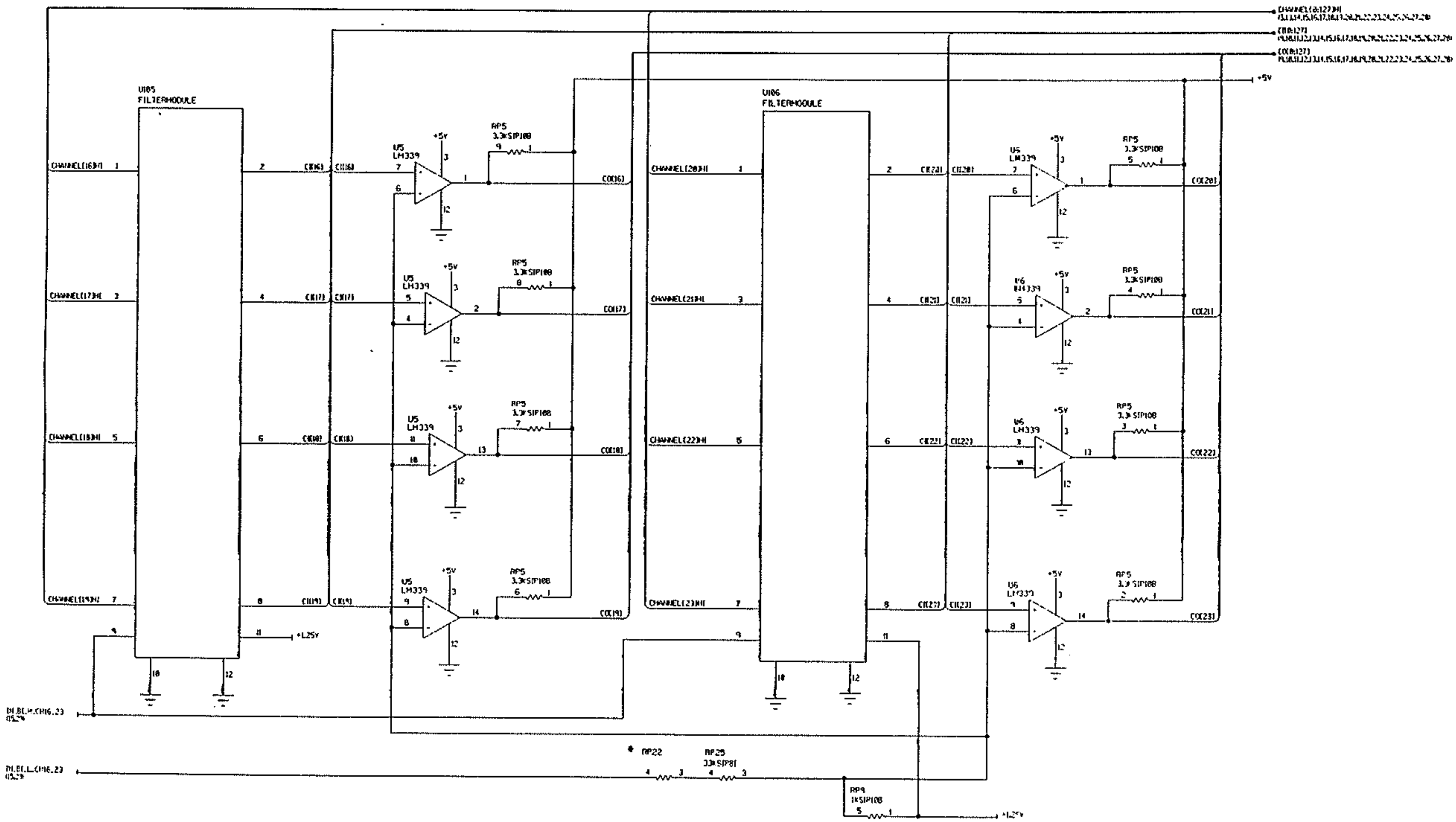


*THESE PARTS ARE OPTIONAL.
SEE PARTS LIST FOR APPLICATION AND VALUE.

VMIC
VME Microsystems International Corporation
12090 Huntsville, Alabama 35803-3308

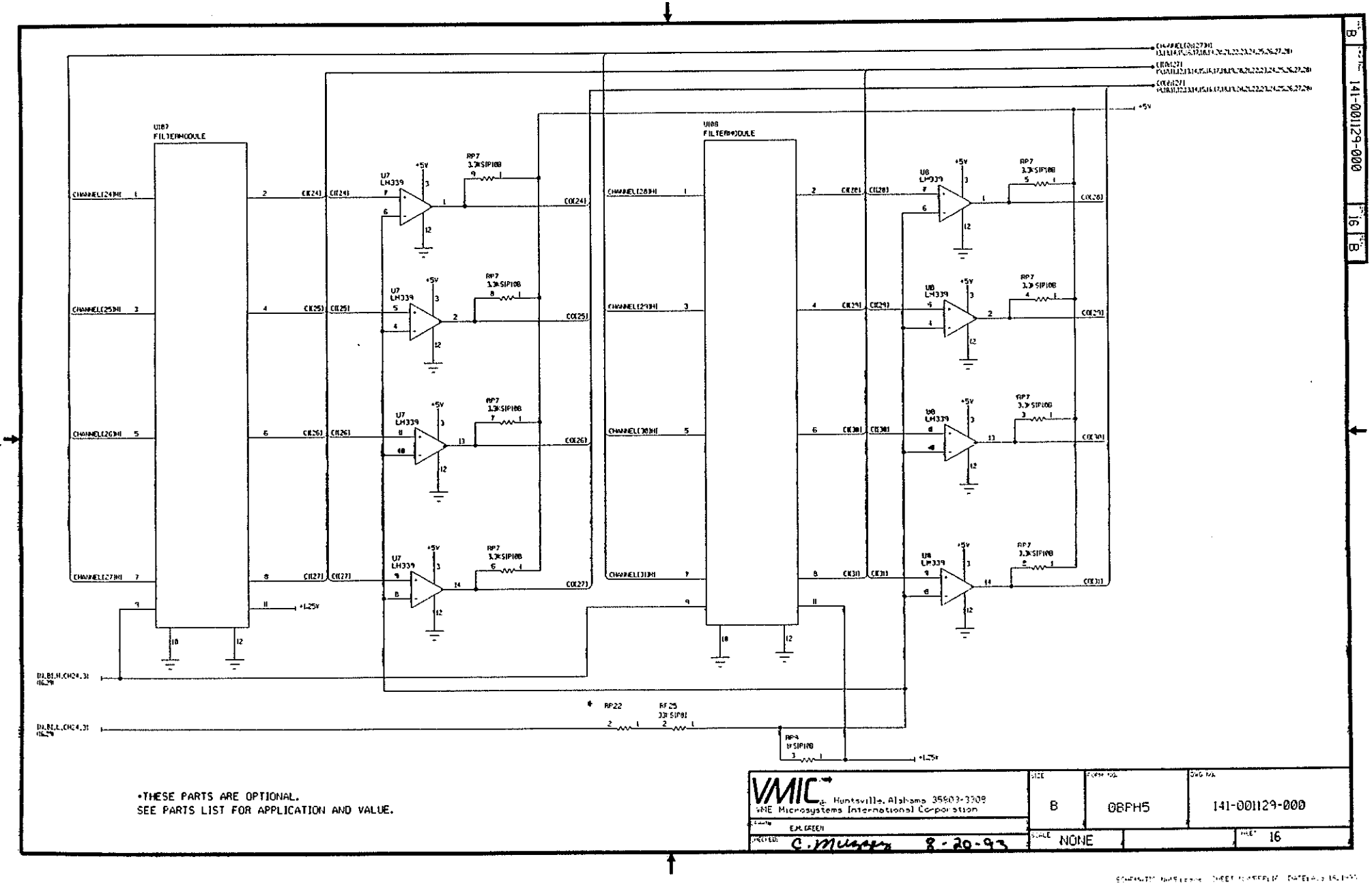
SIZE	FORM NO.	DWG NO.	
B	0BPH5	141-001129-000	
DRAWN	E.M.GREEN		
SCALE	NONE	SHEET	14

E. Mugan 8-20-93



*THESE PARTS ARE OPTIONAL.
SEE PARTS LIST FOR APPLICATION AND VALUE.

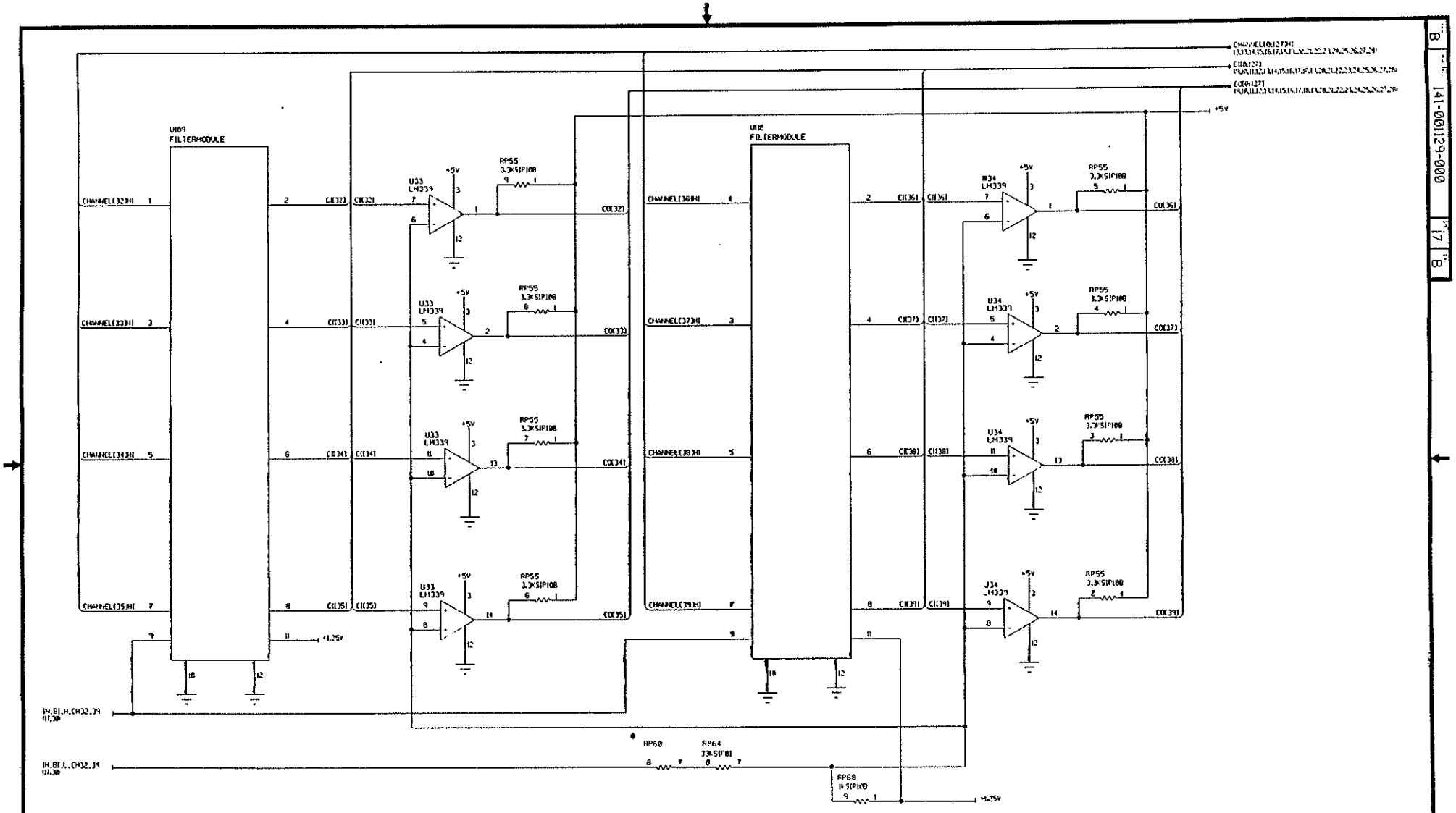
VMIC Huntsville, Alabama 35803-3308 VME Microsystems International Corporation	SIZE	FORM NO.	DWG NO.
E.M. GREEN	B	0BPH5	141-001129-000
CHECKED C. Mussey 8-20-93	SCALE NONE		SHEET 15



*THESE PARTS ARE OPTIONAL.
SEE PARTS LIST FOR APPLICATION AND VALUE.

VMIC @ Huntsville, Alabama 35803-3309 VME Microsystems International Corporation	SIZE B	FSCM NO. 0BPH5	DWG NO. 141-001129-000
DRAWN: EM GREEN			
APPROVED: C. Musser 8-20-93	SCALE NONE		SHEET 16

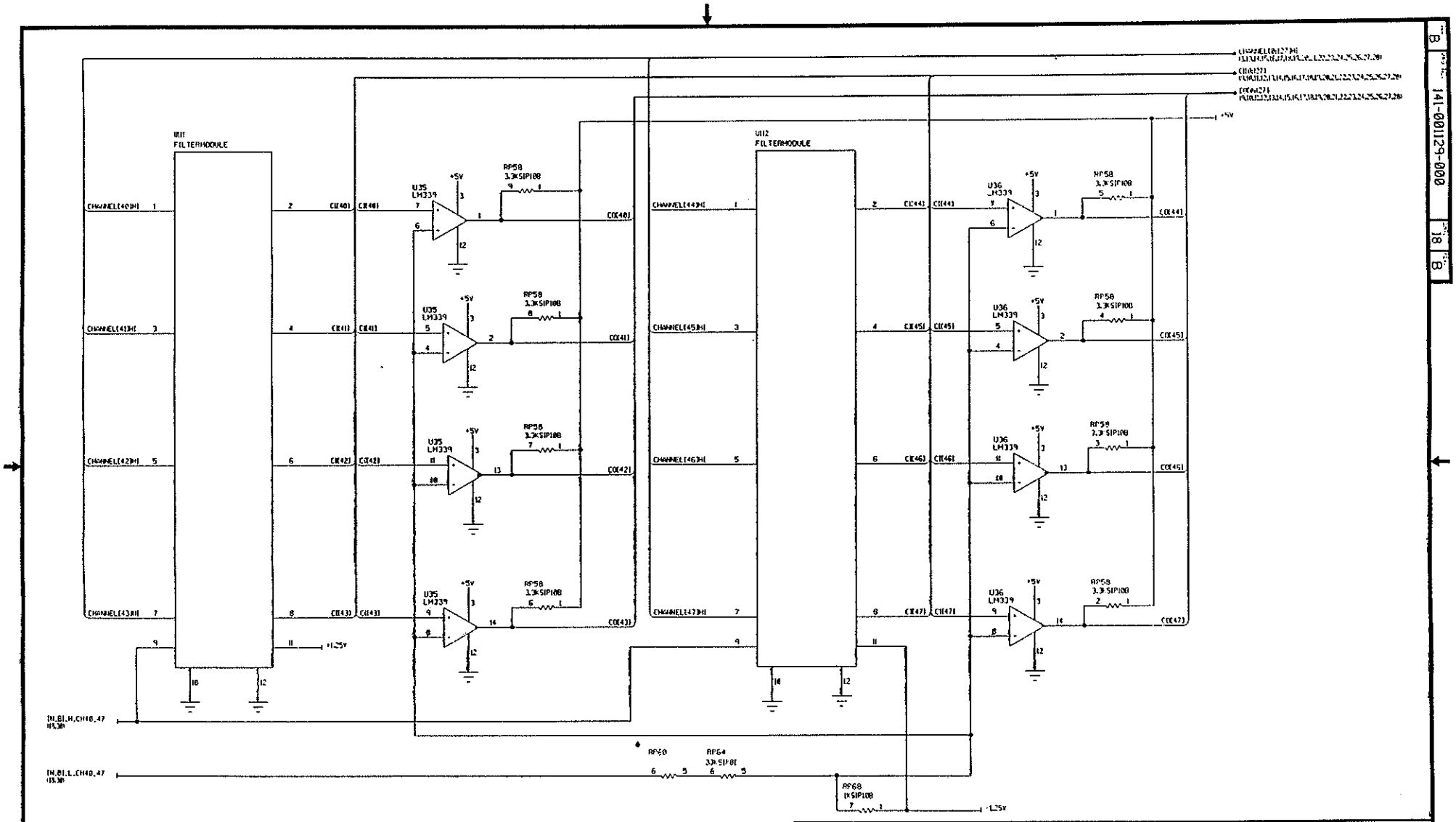
B | 141-001129-000 | 16 | B



*THESE PARTS ARE OPTIONAL.
SEE PARTS LIST FOR APPLICATION AND VALUE.

VMIC
VME Microsystems International Corporation
Huntsville, Alabama 35803-3308

SIZE B	FSCM NO. 0BPH5	DWG NO. 141-001129-000	
DRAWN E.N. GREEN			
CHECKED C. Mussey 8-20-93	SCALE NONE		SHEET 17

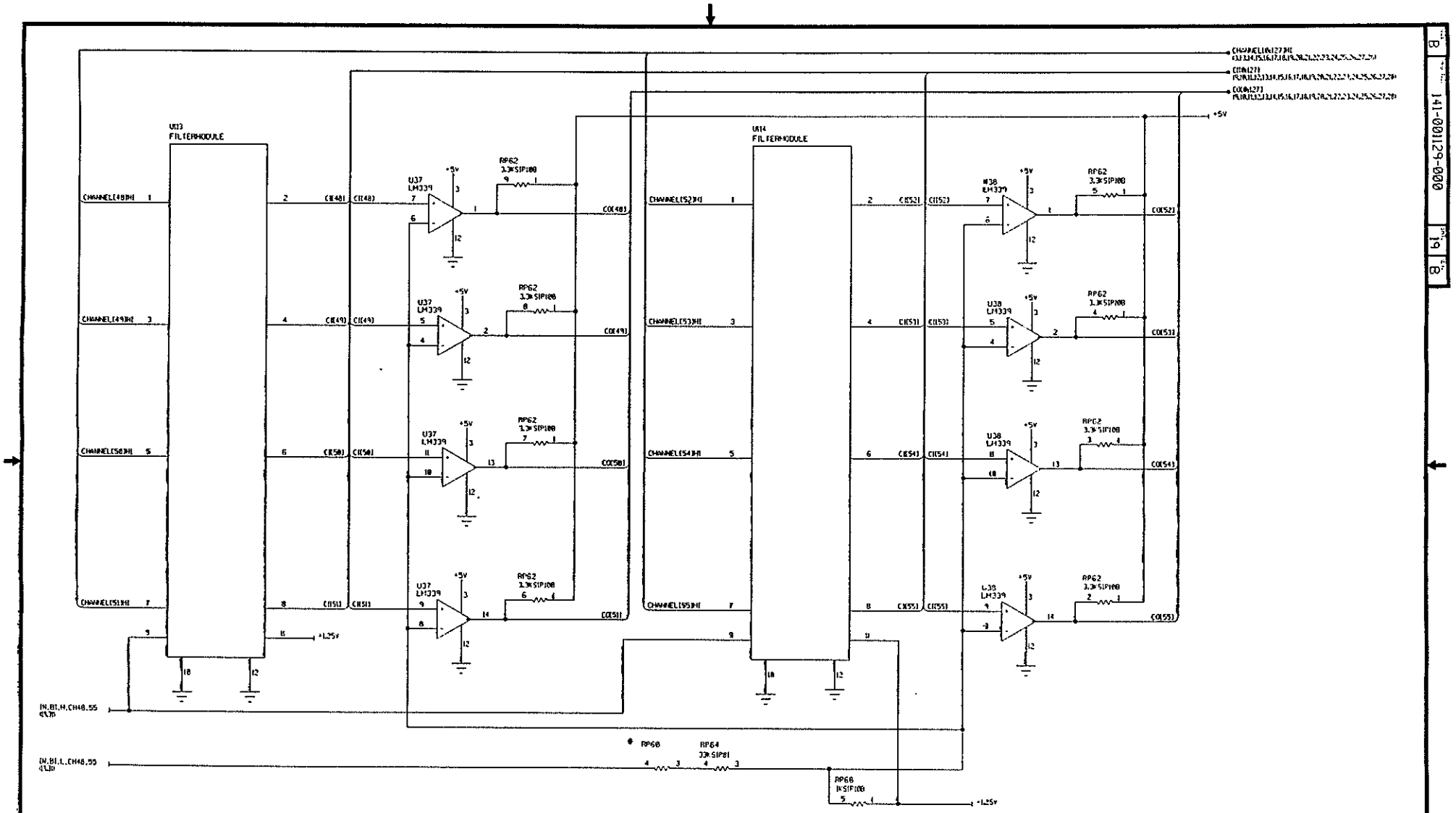


*THESE PARTS ARE OPTIONAL.
SEE PARTS LIST FOR APPLICATION AND VALUE.

VMIC
VME Microsystems International Corporation
Huntsville, Alabama 35803-3308

DRAWN: E.M.GREEN	SIZE: B	FSCM NO: 0BPH5	DWG NO: 141-001129-000
CHECKED: C. Musgrove 8-20-93	SCALE: NONE		SHEET 18

141-001129-000 B 18 B



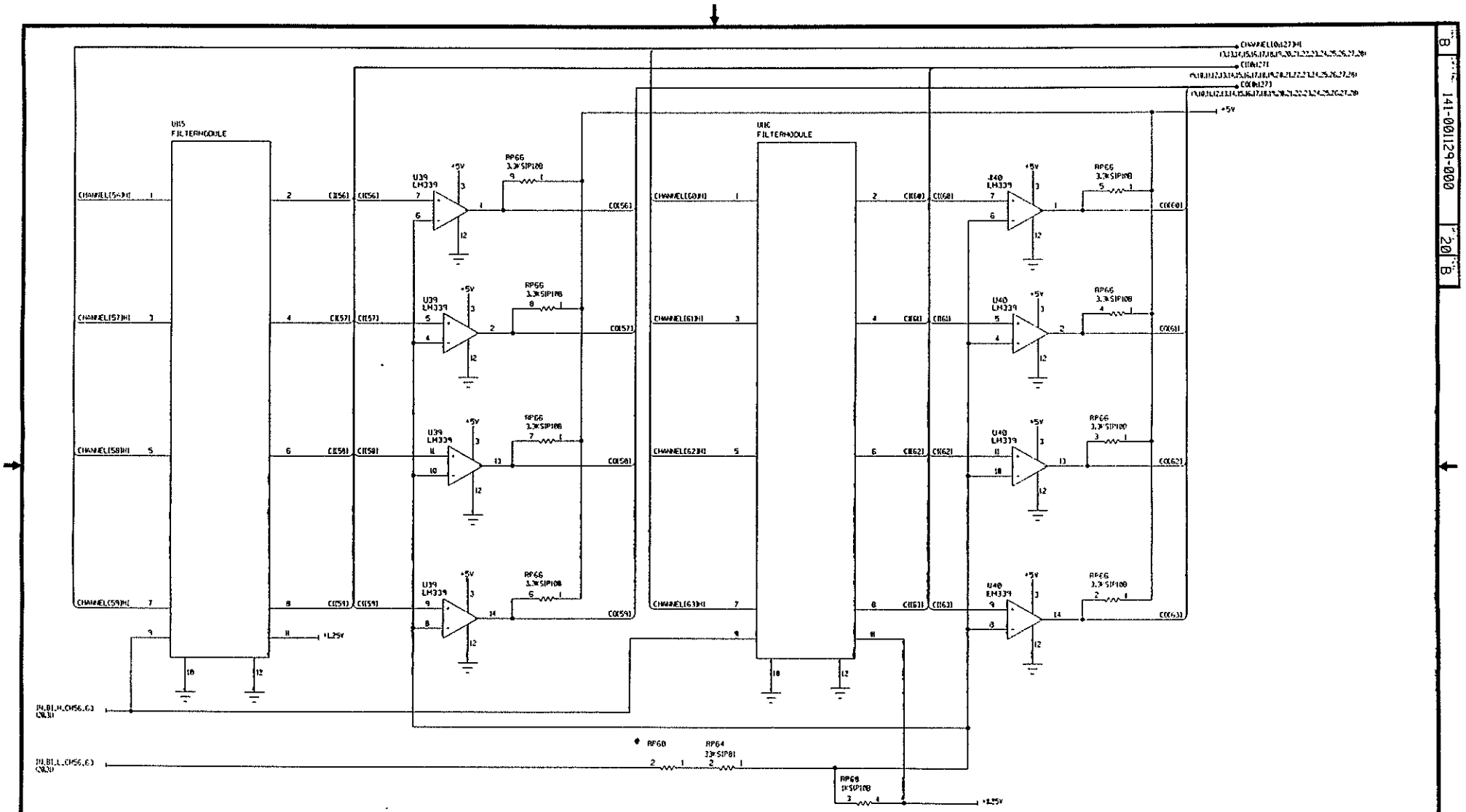
VMIC
VME Microsystems International Corporation
12090 S. Memorial Parkway, Huntsville, Alabama 35803-3308

SIZE	CAGE NO.	DWG NO.
B	0BPH5	141-001129-000

DRAWN: EXPLOREEN
ENGINEER: C. Muggy 8-20-93
SCALE: NONE
SHEET 19

B | 141-001129-000 | 19

SCHEMATIC NAME: [illegible] SHEET NUMBER: 19 DATE: Aug 18, 1993

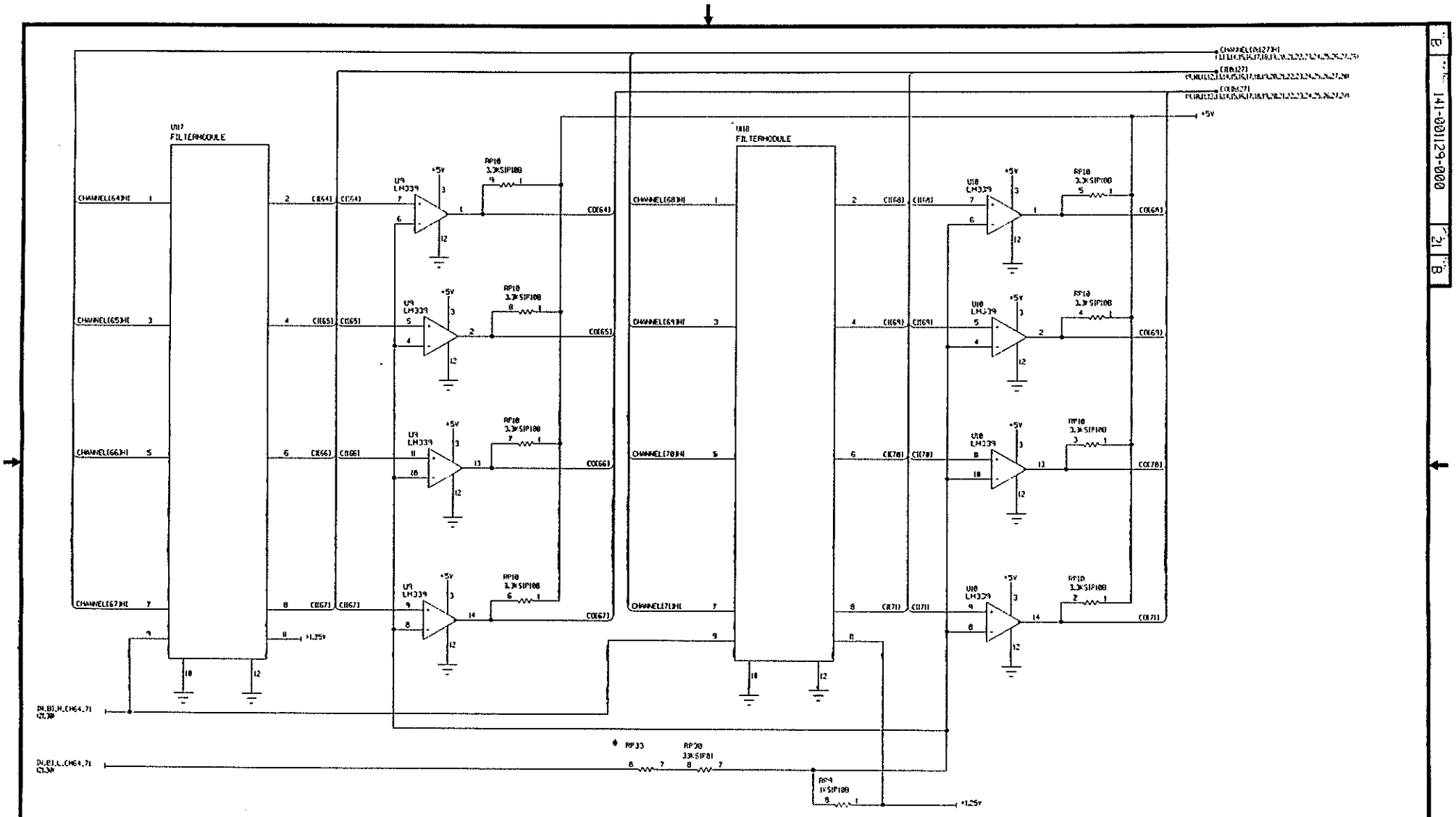


*THESE PARTS ARE OPTIONAL.
SEE PARTS LIST FOR APPLICATION AND VALUE.

VMIC
VME Microsystems International Corporation
Huntsville, Alabama 35803-3308

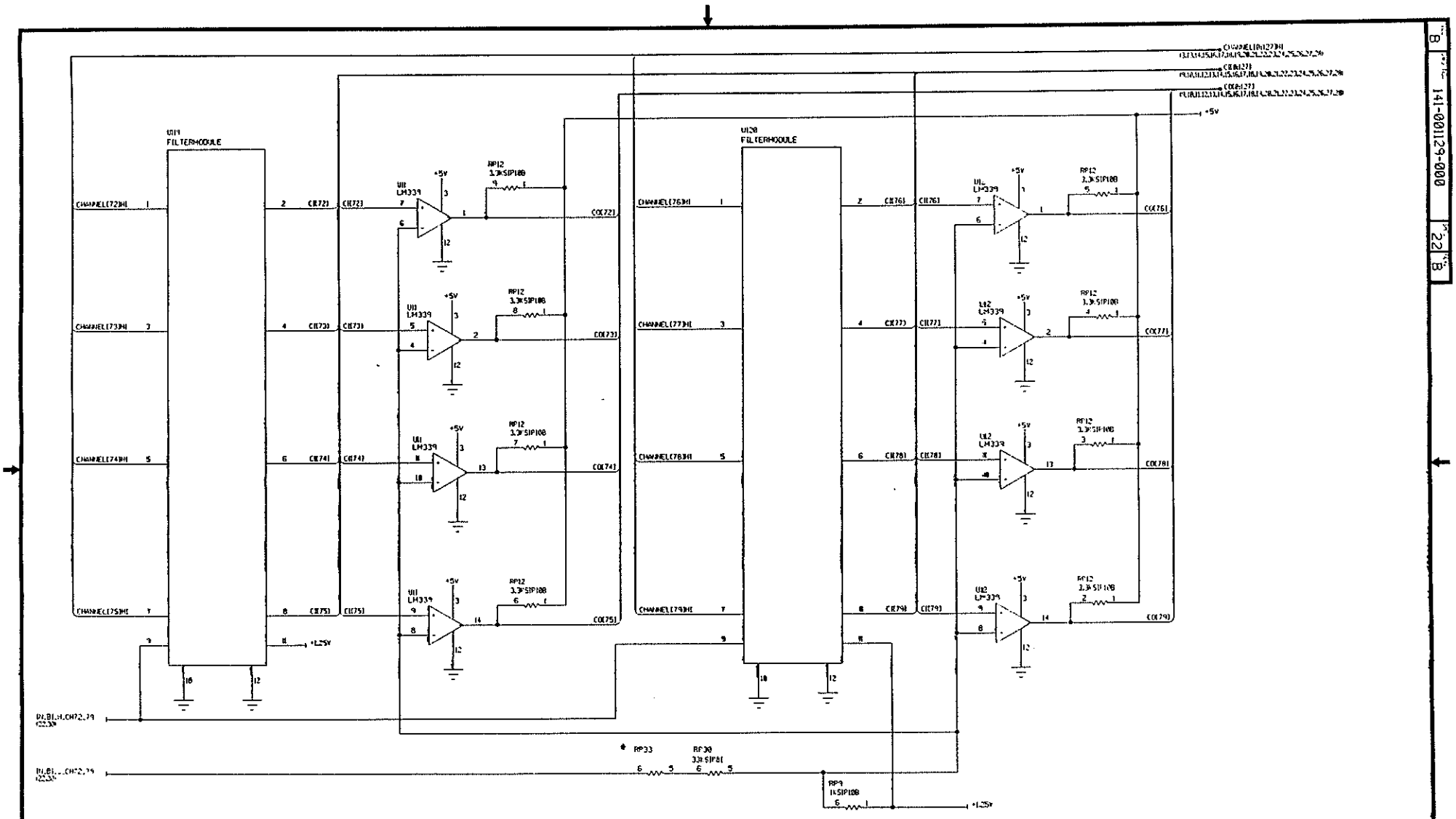
SIZE: B	FSCM NO.: 0BPH5	DWG NO.: 141-001129-000	
DRAWN: EXPLOREEN			
CHECKED: C. Muegge 8-20-93	SCALE: NONE		SHEET: 20

B | 141-001129-000 | 20 | B



*THESE PARTS ARE OPTIONAL.
SEE PARTS LIST FOR APPLICATION AND VALUE.

VMIC 12090 Huntsville, Alabama 35803-3308 VME Microsystems International Corporation	SIZE B	FSCM NO. 0BPH5	DWG NO. 141-001129-000
DRAWN EJLGREEN			
CHECKED C. Murphy 8-20-93	SCALE NONE		SHEET 21

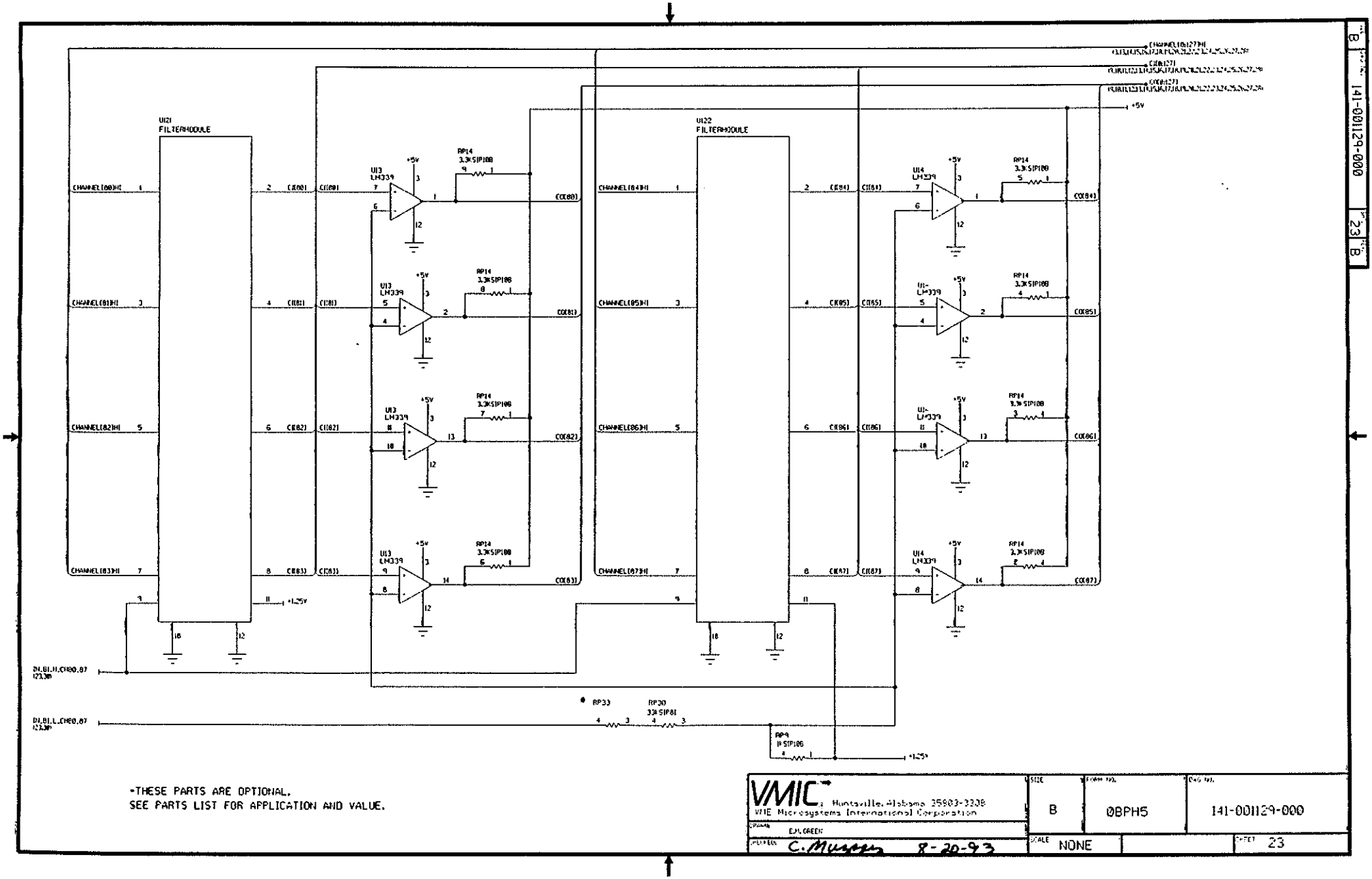


*THESE PARTS ARE OPTIONAL.
SEE PARTS LIST FOR APPLICATION AND VALUE.

VMIC
VME Microsystems International Corporation
Huntsville, Alabama 35803-3308

SIZE B	FSCM NO. 0BPH5	DWG NO. 141-001129-000	REV. B
DRAWN E.M. GREEN			
CHECKED C. Musser 8-20-93	SCALE NONE		SHEET 22

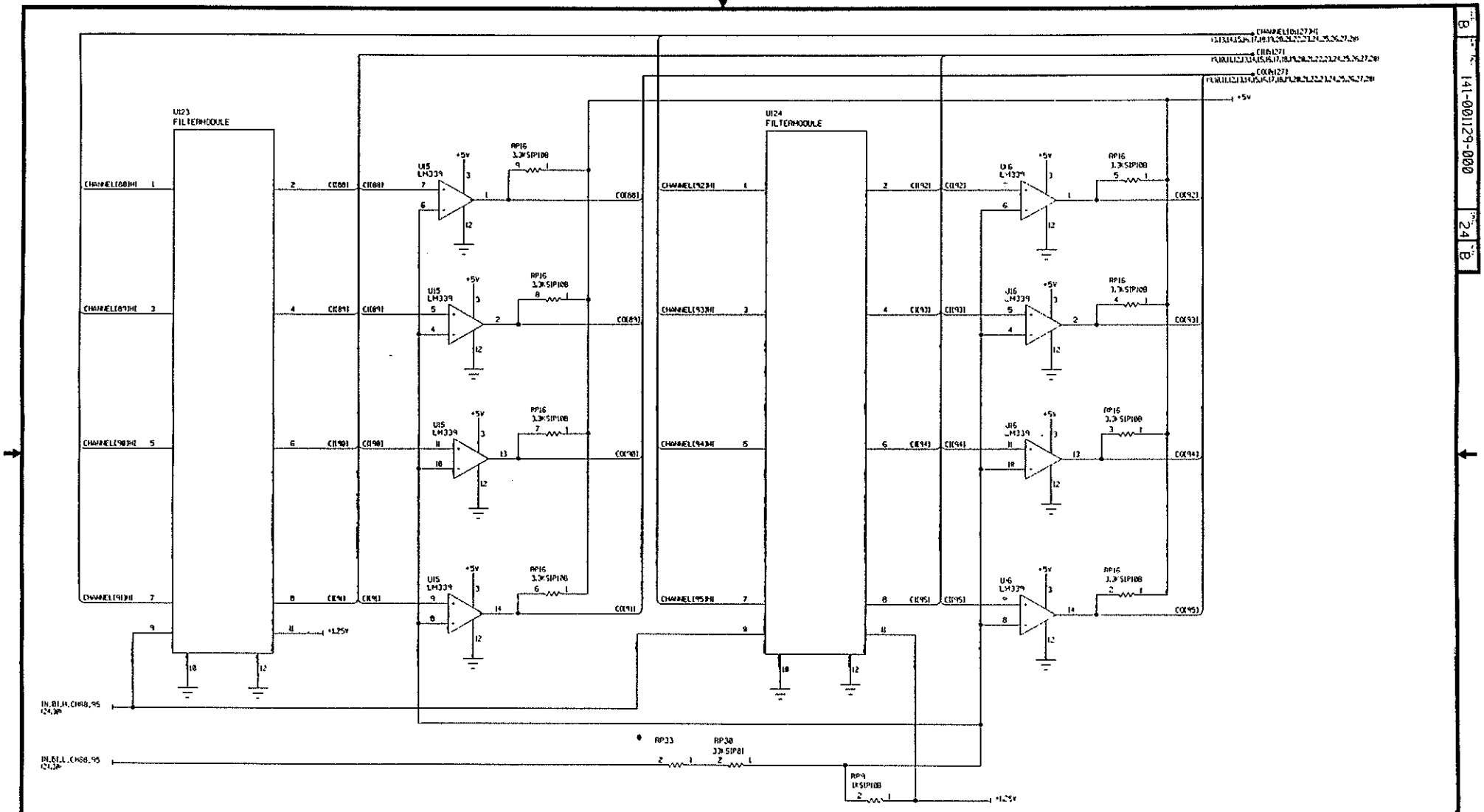
141-001129-000 B SHEET 22 OF 22



*THESE PARTS ARE OPTIONAL.
SEE PARTS LIST FOR APPLICATION AND VALUE.

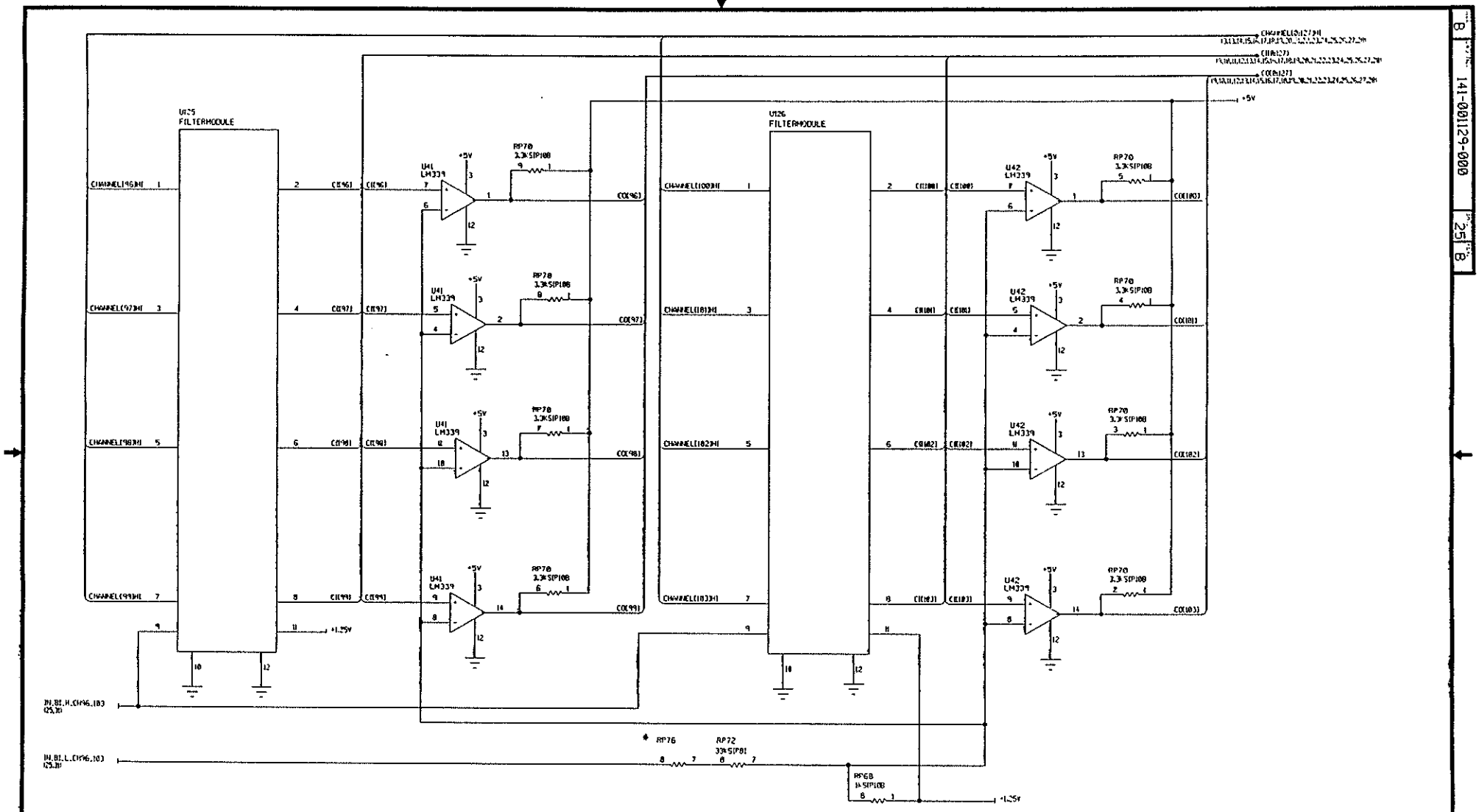
VMIC — VME Microsystems International Corporation, Huntsville, Alabama 35803-3308	SIZE: B	FSCM NO.: 0BPH5	DWG NO.: 141-001129-000
DRAWN: E.P. GREEN			
CHECKED: C. Musser 8-20-93	SCALE: NONE		SHEET 23

141-001129-000 B 23 B



*THESE PARTS ARE OPTIONAL.
SEE PARTS LIST FOR APPLICATION AND VALUE.

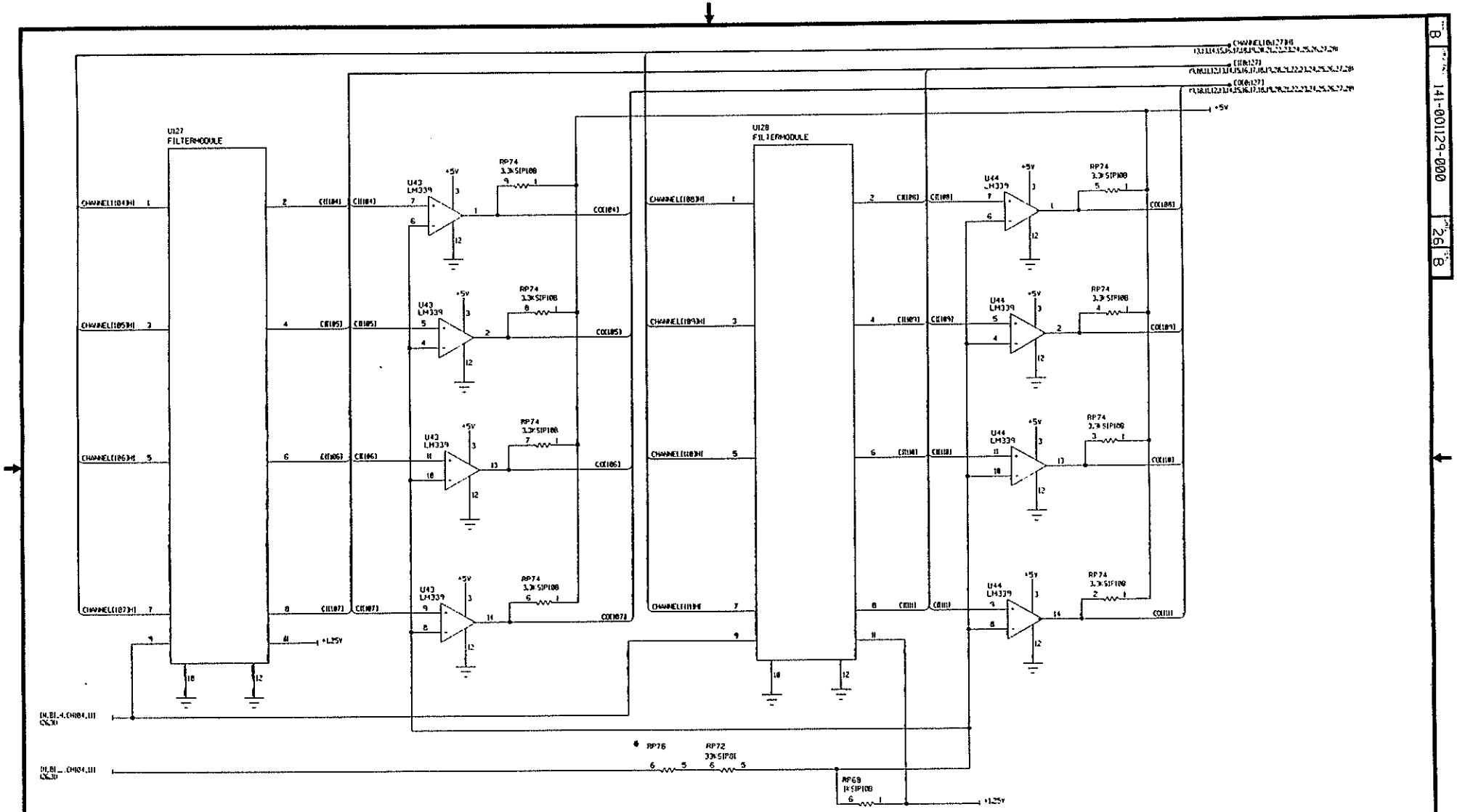
VMIC 12090 Huntsville, Alabama 35803-2308 VME Microsystems International Corporation	SIZE B	FSCM NO. 0BPH5	DWG NO. 141-001129-000
DRAWN E.M.GREEN			
APPROVED C. Murphy 8-20-93	SCALE NONE		SHEET 24



•THESE PARTS ARE OPTIONAL.
SEE PARTS LIST FOR APPLICATION AND VALUE.

VMIC
4, Huntsville, Alabama 35803-3308
VME Microsystems International Corporation

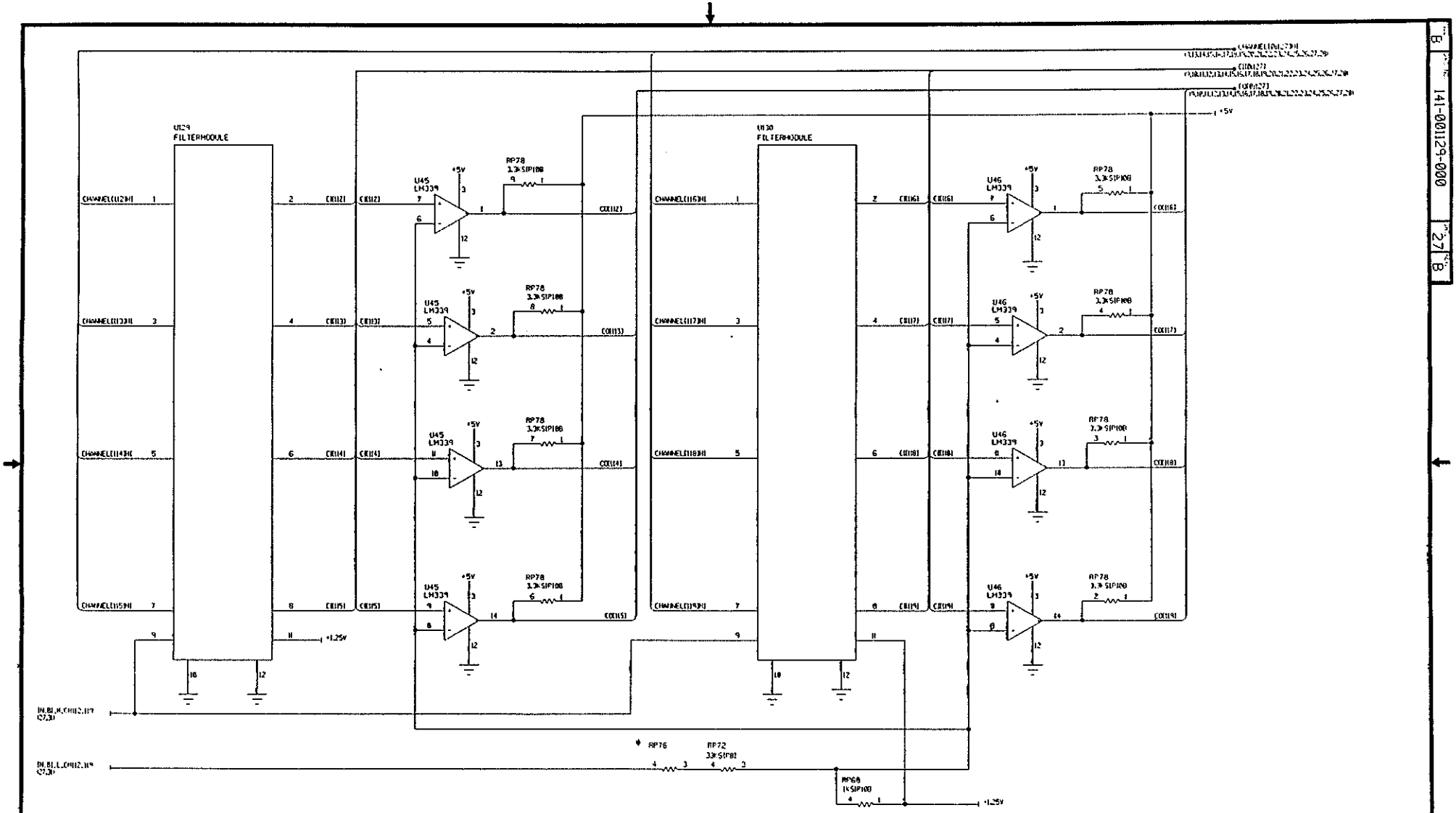
DRAWN: E.M.GREEN	SIZE: B	FSCM NO.: 08PH5	DWG NO.: 141-001129-000
REVIEW: C. Mussey 8-20-93	SCALE: NONE		SHEET 25



*THESE PARTS ARE OPTIONAL,
SEE PARTS LIST FOR APPLICATION AND VALUE.

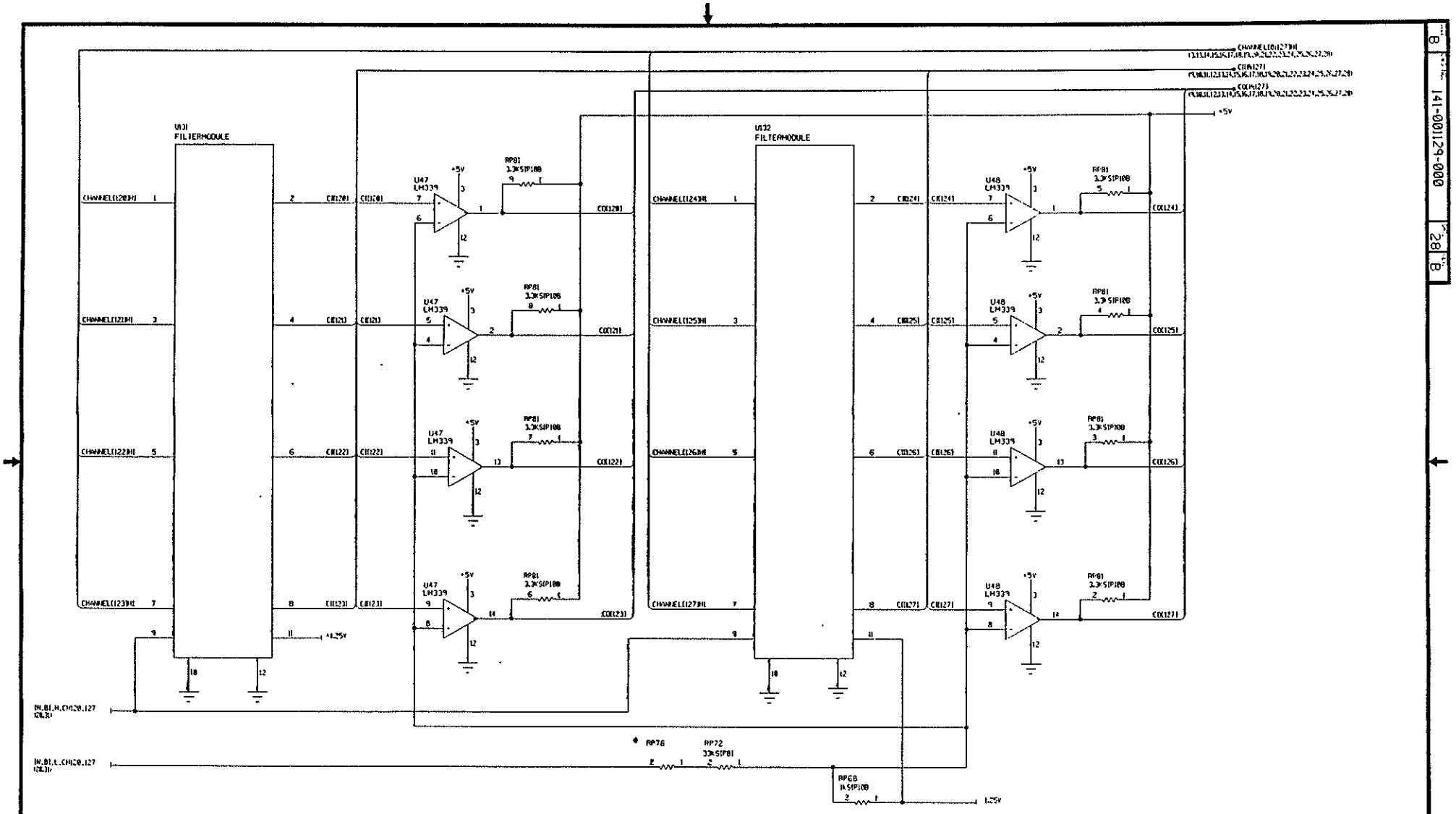
VMIC — VME Microsystems International Corporation, Huntsville, Alabama 35803-3308	SIZE B	FORM NO. 0BPH5	DWG NO. 141-001129-000
DRAWN E.M. GREEN			
ENGINEER C. Musgrove 8-20-93	SCALE NONE		SHEET 26

B | 141-001129-000 | 26 | B



*THESE PARTS ARE OPTIONAL.
SEE PARTS LIST FOR APPLICATION AND VALUE.

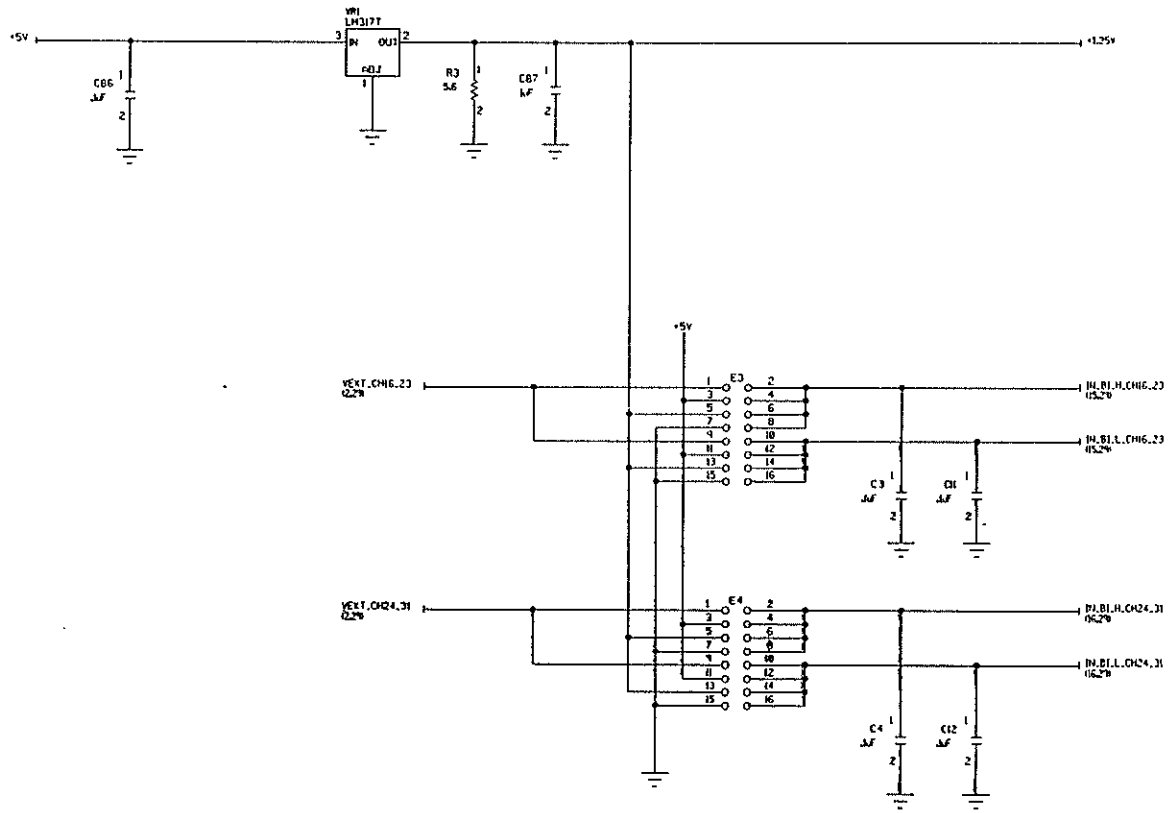
VMIC 12090 Huntsville, Alabama 35803-3308 VME Microsystems International Corporation	SIZE B	FSCM NO. 08PH5	DWG NO. 141-001129-000
DRAWN EMS GREEN			
CHECKED C. Murphy 8-20-93	SCALE NONE		SHEET 27



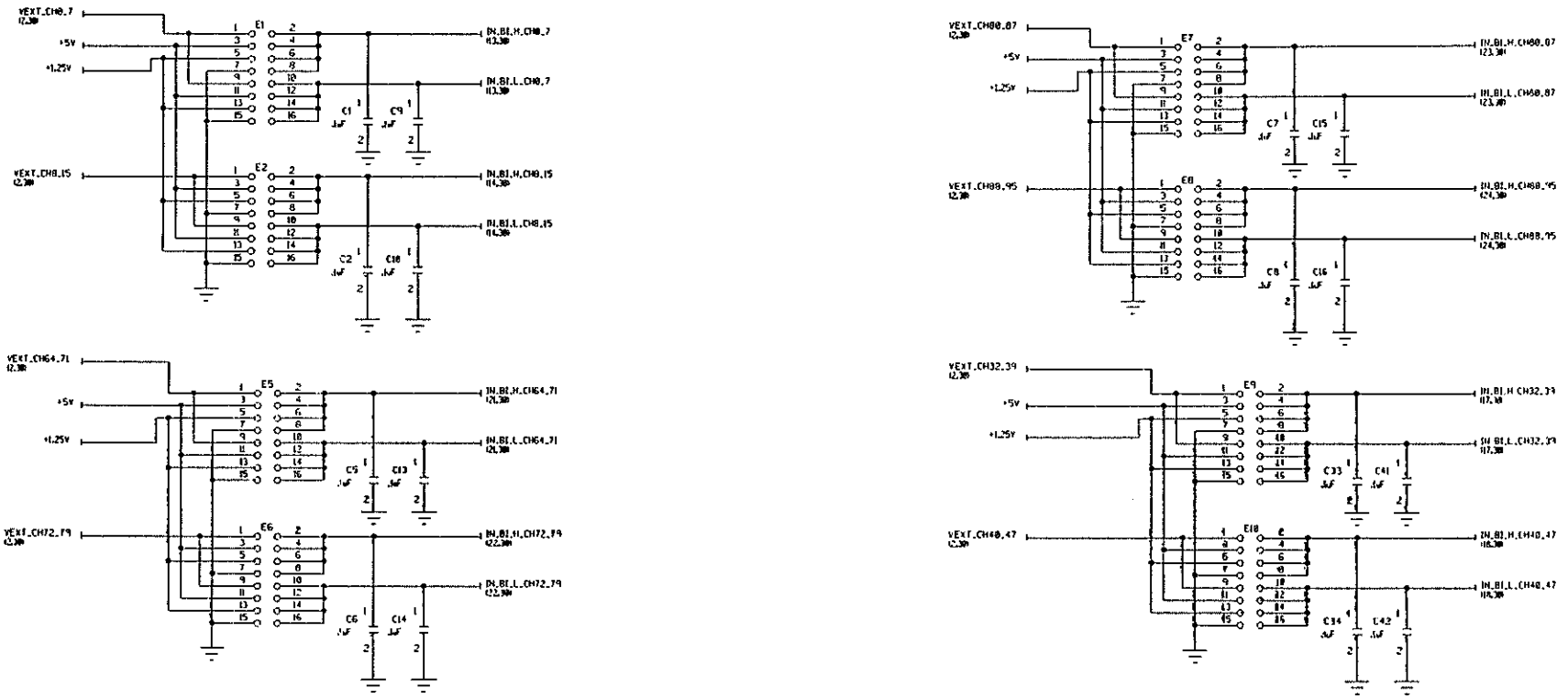
VMIC
VME Microsystems International Corporation
Huntsville, Alabama 35803-3308

SIZE	FSCM NO.	DWG NO.
B	0BFH5	141-001129-000

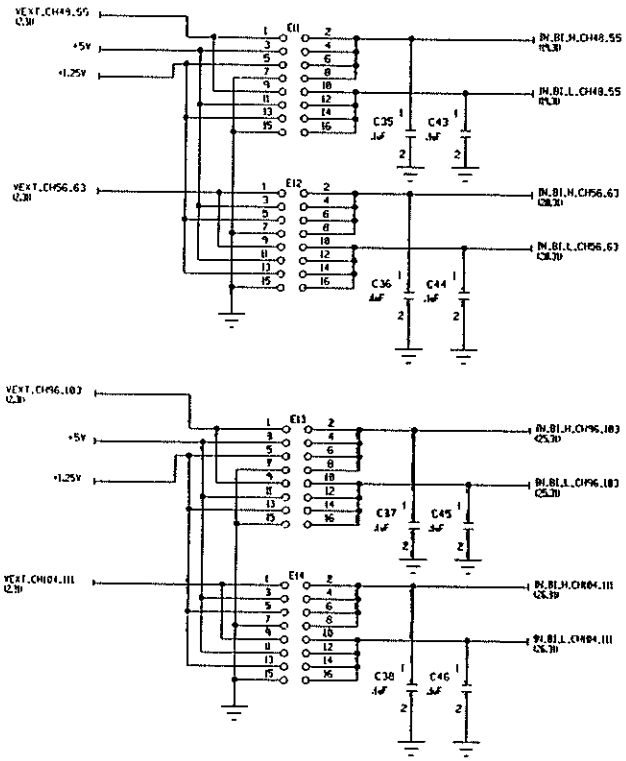
DRAWN	CHECKED	SCALE	SHEET
E.M. GREEN	S. Musser 8-20-93	NONE	28

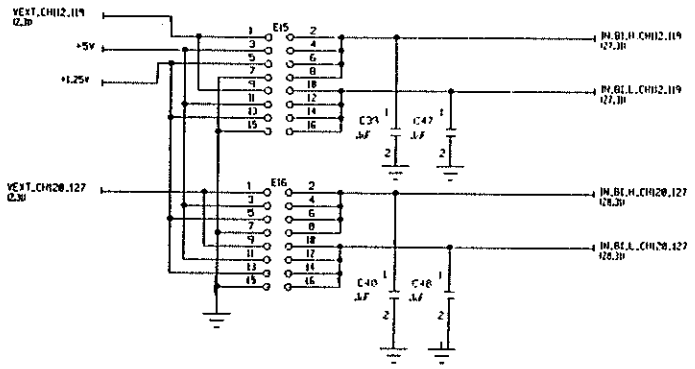


VMIC — VME Microsystems International Corporation, 12090 Huntsville, Alabama 35803-3308	SIZE: B	0BFH5	141-001129-000
DRAWN: E.M. GREEN			
CHECKED: C. Musgrave 8-20-93	SCALE: NONE		SHEET 29



VMIC 4, Huntsville, Alabama 35803-3308 VME Microsystems International Corporation	SIZE B	FSCM NO. 0BPH5	DWG NO. 141-001129-000
DRAWN EMPFAEEN			
NOTED C. Munger 8-20-93	SCALE NONE		SHEET 30

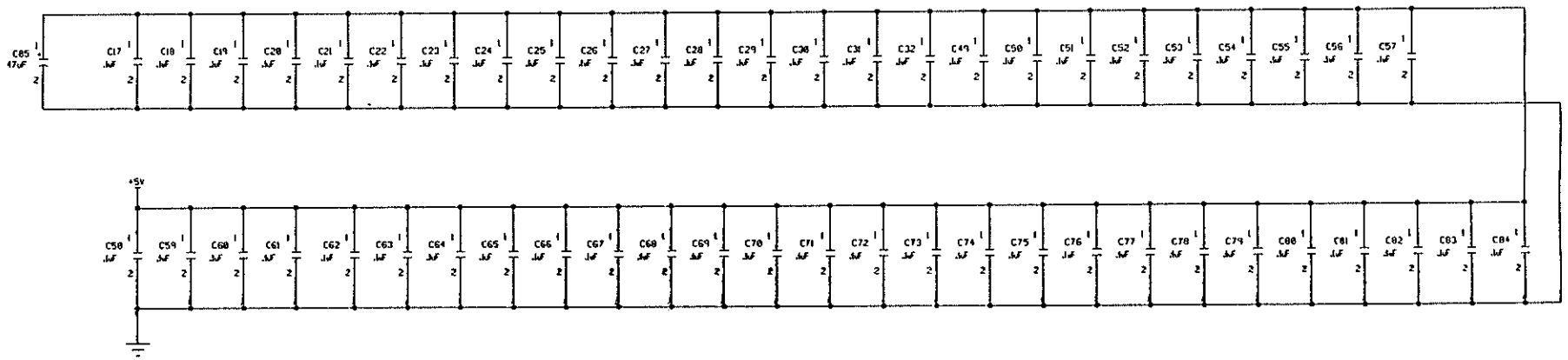




VMIC — VME Microsystems International Corporation, Huntsville, Alabama 35803-3308	SIZE B	FORM NO. 0BPH5	DWG NO. 141-001129-000
DRAWN E.M. GREEN			
REVIEW C. Murphy 9-20-93	SCALE NONE		SHEET 31

8 | 141-001129-000 | 31 | 8

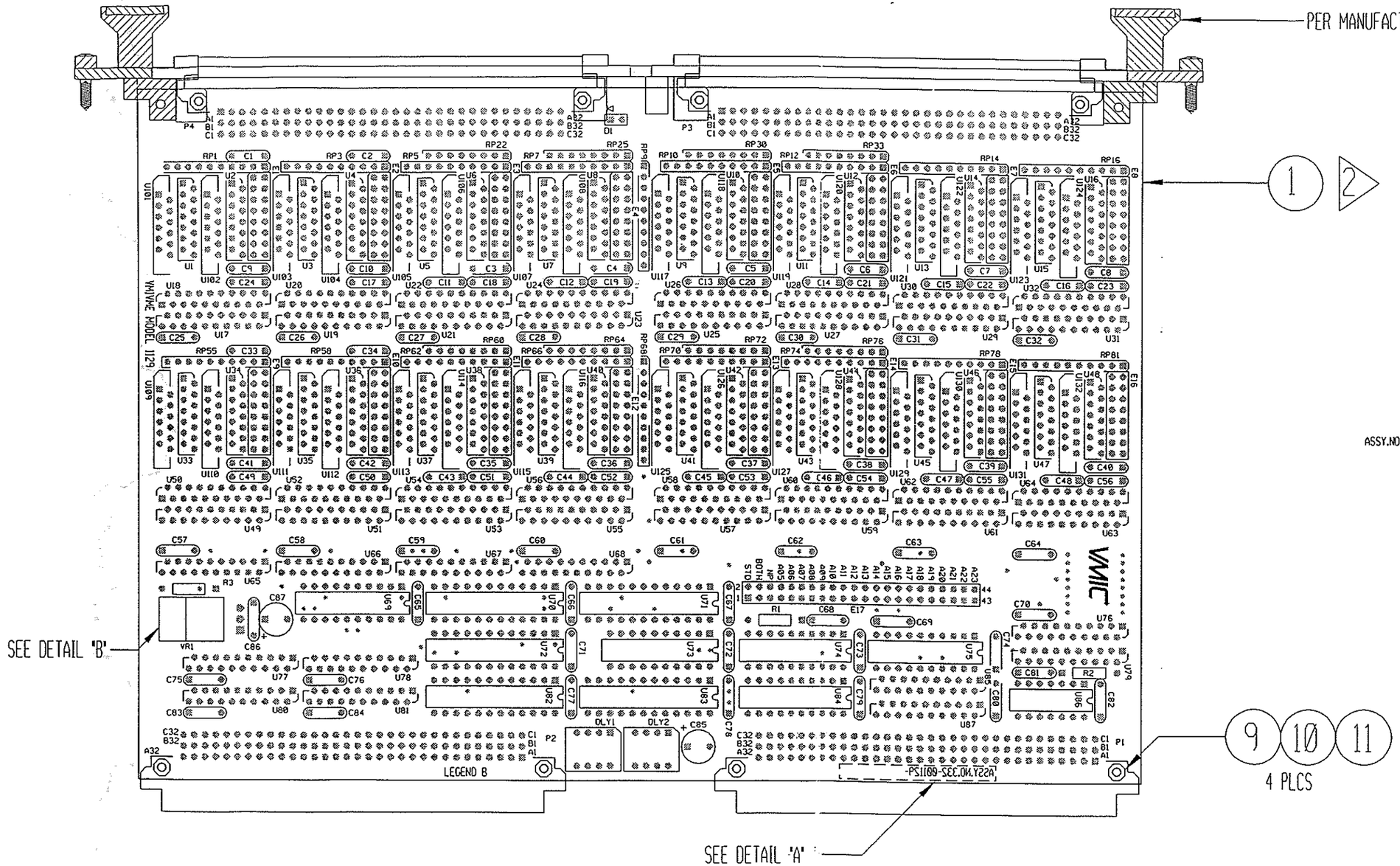
BYPASS CAPACITORS



VMIC, Huntsville, Alabama 35803-3308 VME Microsystems International Corporation	SIZE: B	FORM NO.: 0BPH5	DWG NO.: 141-001129-000
DRAWN: EXLGREEN DESIGN: C. Murphy 8-20-93	SCALE: NONE		SHEET 32 OF 32

B | 141-001129-000 | 32 | B

SCHEMATIC NAME: comm SHEET NUMBER: 32 DATE: Aug 18, 1993



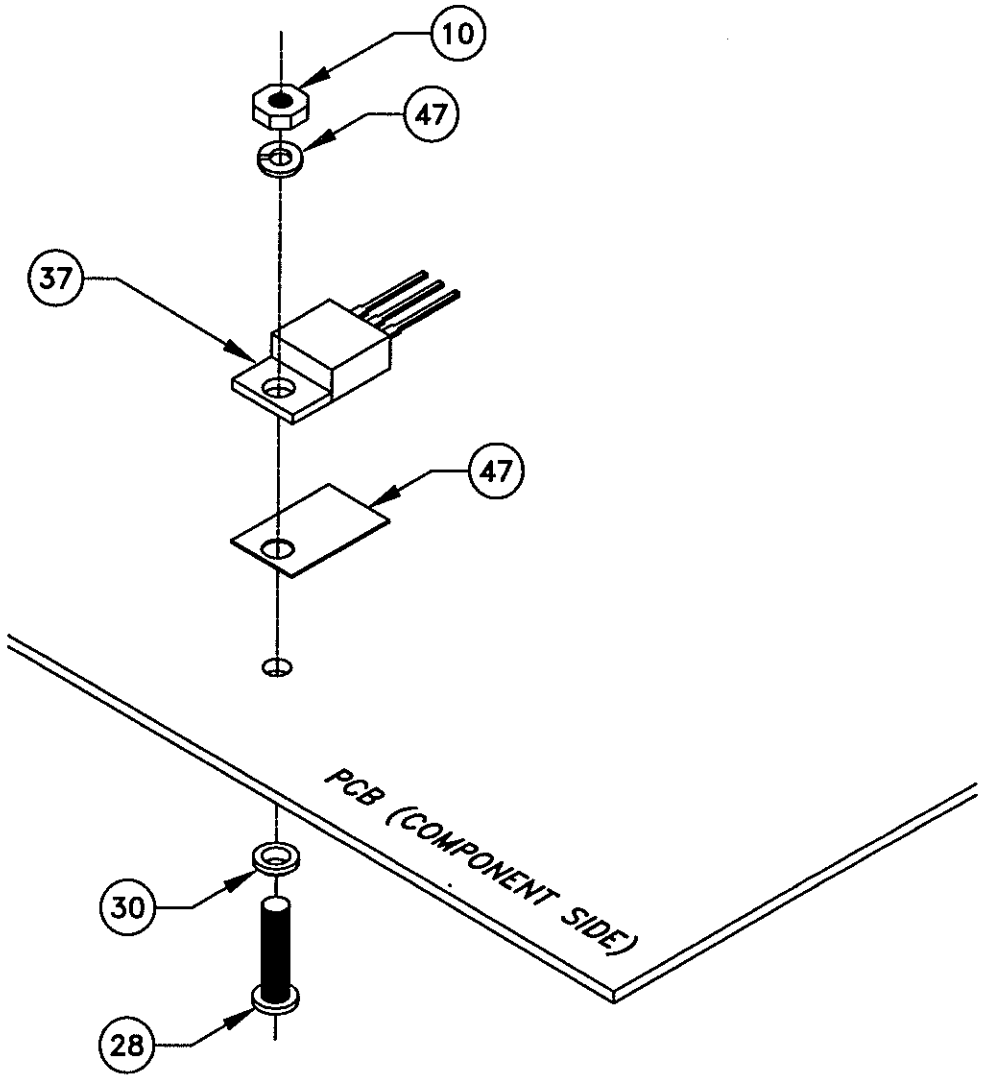
VMIC

SIGNATURES	DATE
DRAWN D. CAMPBELL	05/20/91
CHECKED C. Muzzey	12-11-98

VME MICROSYSTEMS INTERNATIONAL CORPORATION
12090 SOUTH MEMORIAL PARKWAY
HUNTSVILLE, ALABAMA 35803-3308

SIZE		DWG. NO.	REV
B	0BPH5	132-001129-000	H
SCALE NONE		SHEET 2	

SIZE	DWG NO	SH	REV
A	132-001129-000	2A	H



DETAIL "B"

VMIC. HUNTSVILLE, AL 35803-3308 VME MICROSYSTEMS INTERNATIONAL CORP.	SIZE: A	FSCM NO.: 0BPH5	DWG NO.: 132-001129-000
DRAWN: E. JORY			
CHECKED: C. Murphy 12-10-98	SCALE:		SHEET: 2A

REWORK LEGEND:

A. REWORK INSTRUCTIONS SHALL BE ACCOMPLISHED ON THE COPPER REVISION(S) INDICATED AND WILL BECOME A PART OF THE ASSEMBLED BOARD.

B. REWORK INSTRUCTION SYMBOLS:

1. PIN ONE DOT ■
2. DRILL HOLE ●
3. DISCONNECT TRACE ×
4. TRACE ON INTERNAL LAYER ------
5. TRACE ON EXTERNAL LAYER ———

INSTRUCTIONS:

NOTES:

1> A. ALL ASSEMBLED BOARDS SHALL BE IDENTIFIED WITH THE ASSEMBLED BOARD PART NUMBER. THIS NUMBER INCLUDES THE CURRENT REVISION LETTER LISTED IN THE "REVISION STATUS OF 332" BLOCK (SEE SHEET 1). THE RESULTING PART SHALL BECOME A 332-001129-ABC (REV).

B. THE PART NUMBER FIELDS "ABC" WILL COINCIDE WITH THE OPTIONAL PARTS INSTALLED IN THE COMPLETED ASSEMBLY. IF NO OPTIONAL PARTS ARE USED IN A FIELD, THAT FIELD WILL DEFAULT TO "0".

C. IF NECESSARY, REMOVE AND REPLACE 332 REVISION LETTER WITH CURRENT REVISION LETTER USING A REMOVABLE NON-SMEARING BLACK INK.

2> SOLDER COMPOSITION COMPLIES WITH MIL-STD-2000.

3> SEE DRAWING 150-000022-000 FOR THE ASSEMBLY AND INSTALLATION OF THE FRONT PANEL.

EFFECTIVITY: ECO's 96-0159 & 96-0544 (333-001129-000 REV A & EARLIER)

INSTRUCTIONS: REWORK

STEP 1 (SOLDER SIDE)

CUT TRACE AT U72 PIN 22 DISCONNECTING U72 PIN 22 FROM U63 PIN 11.

STEP 2 (COMPONENT SIDE)

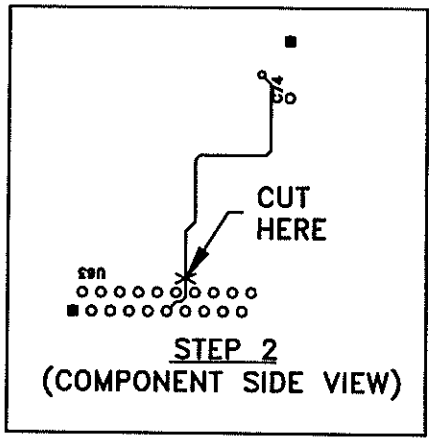
CUT TRACE THAT GOES BETWEEN U63 PIN 12 AND U63 PIN 14 AS SHOWN. THIS DISCONNECTS U63 PIN 11 FROM THE VIA HOLE THAT IS LOCATED JUST ABOVE C74.

STEP 3 (SOLDER SIDE)

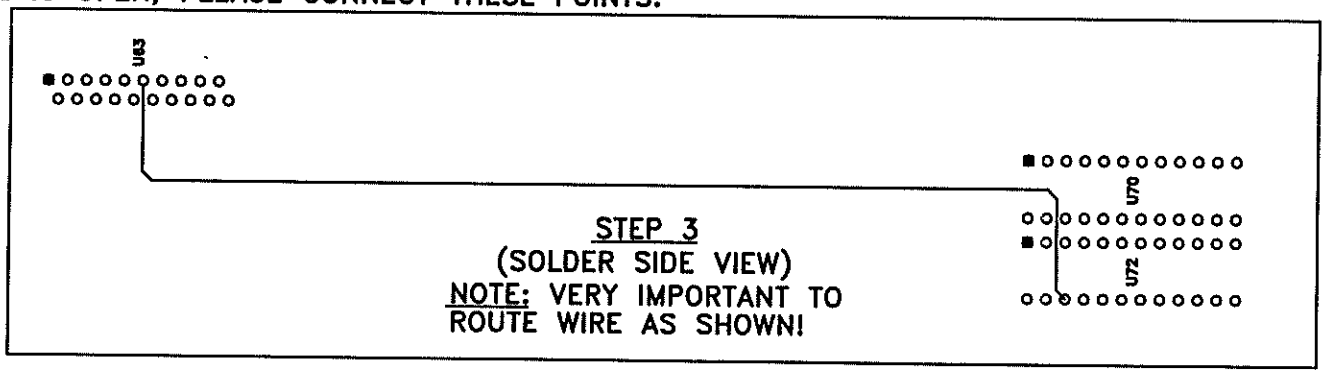
CONNECT U72 PIN 22 TO U63 PIN 11. ROUTE THE WIRE AS SHOWN.

STEP 4 (SOLDER SIDE)

VERIFY THAT U78 PIN 1 IS CONNECTED TO U73 PIN 17. IF THIS TRACE IS OPEN, PLEASE CONNECT THESE POINTS.



STEP 2
(COMPONENT SIDE VIEW)



STEP 3
(SOLDER SIDE VIEW)
NOTE: VERY IMPORTANT TO ROUTE WIRE AS SHOWN!

END OF REWORK INSTRUCTIONS

VMIC. HUNTSVILLE, AL 35803-3308
VME MICROSYSTEMS INTERNATIONAL CORP.

SIZE	FSCM NO.	DWG NO.
A	OBPH5	132-001129-000

DRAWN: E. JORY
CHECKED: C. Mingo 12-10-98
SCALE
SHEET 3A

PARTS LIST

VME Microsystems In'tl Corporation

CODE OBPH5 | DRAWING NUMBER 132-001129-000 | REV: H | CHECKER/DATE C. Muggeo 12-10-98

ITEM	ABC	REF. DES.	QTY.	PART NO.	DESCRIPTION	MANUFACTURER
1			1	333-001129-000	BOARD: PC, RAW, 8 LAYERS	
2				DELETED		
3				DELETED		
4				DELETED		
5				DELETED		
6				DELETED		
7				DELETED		
8				DELETED		
9		P1,2	4	328-250000-010	SCREW: M2.5, PAN HEAD, PHILLIPS, CROSS RECESSED SS, 10MM LENGTH	OPEN SOURCE
10		P1-4, VR1	9	328-250001-025	NUT: METRIC, 2.5MM, HEX, SS	OPEN SOURCE
11		REF. P1-4	A/R	316-000002-000	LOCTITE: SMALL SCREW THREADLOCKER 222	
12				DELETED		
13		U101-132	32	302-000020-000	MODULE: RESISTOR-CAPACITOR NETWORK	AK4C16RZ12 (ACCUTEK)

ITEM	ABC	REF. DES.	QTY.	PART NO.	DESCRIPTION	MANUFACTURER
14		U83	1	303-000889-000	PROGRAMMED PAL: FILE: 1129-83A.JED, A PROGRAMMED 22V10A (331-300122-100)	
15		U70	1	303-000890-000	PROGRAMMED PAL: FILE: 1129-70A.JED, A PROGRAMMED 22V10A (331-300122-100)	
16		U72	1	303-000891-000	PROGRAMMED PAL: FILE: 1129-72A.JED, A PROGRAMMED 22V10A (331-300122-100)	
17		U71	1	303-000892-000	PROGRAMMED PAL: FILE: 1129-71A.JED, A PROGRAMMED 22V10A (331-300122-100)	
18		U82	1	303-000893-000	PROGRAMMED PAL: FILE: 1129-82A.JED, A PROGRAMMED 22V10A (331-300122-100)	
19		C87	1	315-102000-105	CAP: 1uF, .200 LEAD SPACE, 20%, 25V, TANTALUM	T35(2,3)A105M025AS (KEMET)
20		C1-84,86	85	315-205002-104	CAP: .1uF, .300 LEAD SPACE, 20%, 50V, Z5U CERAMIC MONOLYTHIC	P104M26Z5UFVPWN (PHILLIPS)
21		C85	1	315-902001-476	CAP: 47uF, 20%, 35V, RADIAL, ALUMINUM ELECTROLYTIC	ECEA1VU470 (PANASONIC)
22		E1-16	16	321-000017-081	TERMINAL: PC BOARD, DUAL ROW, .025 THICK, GOLD PLATED, EIGHT POST	PEG16DS-(T,F)BR (CRANE)
23		P3,4	2	321-000048-003	BRACKET: MULTIPLE FIXING, MALE CONNECTOR FOR 19", LEFT	09 02 000 9919 (HARTING)
24		P3,4	2	321-000048-004	BRACKET: MULTIPLE FIXING, MALE CONNECTOR FOR 19", RIGHT	09 02 000 9920 (HARTING)
25		P1	1	321-000054-001	CONNECTOR: DIN, 96 PIN, WAVE SOLDER, ANGLED TYPE C, MALE	100-096-033 (PANDUIT)
26		P2	1	321-000054-002	CONNECTOR: DIN, 96 PIN, WAVE SOLDER, ANGLED TYPE C, MALE	100-096-033 (PANDUIT)

ITEM	ABC	REF. DES.	QTY.	PART NO.	DESCRIPTION	MANUFACTURER
27		U70-72,82,83	5	321-001324-001	SOCKET: DIP, 24 PIN, .300 ROW, STAMPED & FORMED	2-641932-(3,1,5) (AMP)
28		VR1	1	328-250000-008	SCREW: M2.5, PAN HEAD, PHILLIPS, CROSS RECESSED SS, 8MM LENGTH	OPEN SOURCE
29		P3,4	4	328-250000-012	SCREW: M2.5, PAN HEAD, PHILLIPS, CROSS RECESSED SS, 12MM LENGTH	OPEN SOURCE
30		VR1	1	328-250504-004	WASHER: #4, NYLON, FLAT	OPEN SOURCE
31					DELETED	
32		U86	1	331-300438-700	IC: DIGITAL, QUAD 2-INPUT NAND BUFFER, PLASTIC DIP	SN74S38N (TI)
33		U65-68,76-81,85,87	12	331-304245-703	IC: DIGITAL, OCTAL BIDIRECTIONAL TRANSEIVER, TRI-STATE, ZIP PACKAGE	QS74FCT245TZ (QUALITY SEMI)
34		U69,73	2	331-304273-600	IC: DIGITAL, OCTAL D FLIP FLOP, PLASTIC DIP	SN74LS273N (TI)
35		U74,75,84	3	331-304520-100	IC: DIGITAL, 8-BIT IDENTITY COMPARATOR, PLASTIC DIP	SN74ALS520N (TI)
36		U17-32,49-64	32	331-304574-703	IC: DIGITAL, OCTAL D-TYPE FLIP-FLOP, THREE STATE, PLASTIC ZIP	QS74FCT574(A)TZ (QUALITY SEMI)
37		VR1	1	331-309007-000	IC: SILICON MONOLYTHIC, ADJUSTABLE VOLTAGE REGULATOR, TO-220 PLASTIC	LM317T (NATIONAL)
38		DLY1,2	2	331-309069-075	MODULE: LOGIC DELAY, 4.75 TO 5.25VDC, 75ns, MULTIPLE OUTPUT, MINI DIP	MDLDM-TTL-75 (EC CO.)
39		U1-16,33-48	32	331-309082-000	IC: LINEAR, SPECIAL MADE, PLASTIC ZIP	LM339ZIP (CONCORD)

ITEM	ABC	REF. DES.	QTY.	PART NO.	DESCRIPTION	MANUFACTURER
40		D1	1	337-000001-110	DIODE: LED, RED, 5V, 15mA, INTEGRAL RESISTOR WIRE LEADS	558-0102-003 (DIALIGHT)
41		R2	1	347-000000-471	RESISTOR: 470 OHM, 1/4W, 5%, CARBON FILM	OPEN SOURCE
42		R1	1	347-000000-472	RESISTOR: 4.7K OHM, 1/4W, 5%, CARBON FILM	OPEN SOURCE
43		R3	1	347-000000-569	RESISTOR: 5.6 OHM, 1/4W, 5%, CARBON FILM	OPEN SOURCE
44		RP9,68	2	347-001002-102	SIP: 1K OHM, BUSSED, 10 PIN, LOW PROFILE	4610X-101-102 (BOURNS)
45		RP1,3,5,7,10,12,14, RP16,55,58,62,66,70, RP74,78,81	16	347-001002-332	SIP: 3.3K OHM, BUSSED, 10 PIN, LOW PROFILE	4610X-101-332 (BOURNS)
46		RP25,30,64,72	4	347-001004-333	SIP: 33K OHM, ISOLATED, 8 PIN, LOW PROFILE	4608X-102-333 (BOURNS)
47		VR1	1	331-000001-001	INSULATION: TO-220 MOUNTING KIT, THERMALFILM (SEE DETAIL "B")	4880 (THERMALLOY)
48			1	317-000106-000	F/P ASSY: EXTRUDED EJECTOR, TWO 96 PIN CUTOUTS PANEL MOUNT LED	
49			1	324-001129-100	LABEL: ID, 1129, FRONT PANEL	
50	000	RP22,33,60,76	4	347-001004-333	SIP: 33K OHM, ISOLATED, 8 PIN, LOW PROFILE	4608X-102-333 (BOURNS)
51	100	RP22,33,60,76	4	347-001004-104	SIP: 100K OHM, ISOLATED, 8 PIN, LOW PROFILE	4608X-102-104 (BOURNS)
52		P3, P4	2	321-000054-003	CONNECTOR: DIN, 96 PIN, WAVE SOLDER, ANGLED TYPE C, MALE	100-096-033 (PANDUIT)

ITEM	ABC	REF. DES.	QTY.	PART NO.	DESCRIPTION	MANUFACTURER
53		E17	1	321-000017-221	TERMINAL: PC BOARD, DUAL ROW, .025 THICK, GOLD PLATED, TWENTY-TWO POSTS	PEG44DS-(T,F)BR (CRANE)

SIZE	DWG NO	SH	REV
A	132-001129-000	1	H

NOTES:

1. FOR SCHEMATIC DIAGRAM SEE 141-001129-000.
2. FOR TEST PROCEDURE SEE 510-001129-000.
3. FOR DOCUMENT SET SEE 110-001129-000.

REVISION STATUS OF 332
A
B
C
D
E
E
E
E

REVISIONS

REV	DESCRIPTION	DATE	APPROVED
A	RELEASE PER ECO 92-0528	4/19/93	J.L.C.
B	ADD INSULATOR PER ECO 93-0014	4/19/93	J.L.C.
C	CHANGE PER ECO 93-0163	4/19/93	D.F.
D	CHANGE PER ECO 93-0620	9/17/93	J.L.C.
E	CHANGE PER ECO 96-0159	5/16/96	A.J.
F	CHANGE PER ECO 96-0544	9/26/96	A.J.
G	CHANGE PER ECO 97-0066	2/13/97	A.J.
H	DELETE ITEM 31 PER ECO 98-0729	1/7/99	

UNLESS OTHERWISE SPECIFIED	SIGNATURES	DATE
DIMENSIONS ARE IN INCHES TOLERANCES ON: 2 PL. DECIMALS ± 3 PL. DECIMALS ± ANGLES ± FRACTIONS ±	DRAWN: C. MUZZEY	8/24/92
	PROJ.ENG.: G.SUTHERLAND	8/27/92
	ENG.MGR.: G. MEARES	8/27/92
	PROD.: S. CROWSON	4/22/93
	Q.A.: S. KEAGLE	4/23/93
	MAGNETIC MEDIA FILENAME FOR PACKAGE: A001129H.EXE	

VMIC. HUNTSVILLE, ALABAMA 35803-3308
VME MICROSYSTEMS INTERNATIONAL CORPORATION

ASSEMBLY DRAWING
VMIVME-1129

SIZE	FSCM NO.	DWG NO.
A	0BPH5	132-001129-000

SCALE		SHEET
NONE		1 OF 8