MODEL 6516 EPROM PROGRAMER

# USER MANUAL

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# INTRODUCTION

*6516*

The model 5616 programmer is a simple to use 2716 EPROM programmer for use with the Rockwell AIM-65 computer. This small card provides all hardware necessary to program 5 volt 2716's, including a zero insertion force programming socket. Additional sockets allow execution of 8K bytes of user programmed EPROM. Easy interface to the AIM-65 is provided by both a 44 conductor female connector which allows direct connection to the AIM-65 expansion connector, and a 44 pin male edge connector which allows the programmer to plug into expansion motherboards. An interactive monitor ROM contains all routines necessary to not only program EPROMs, but also provide many other useful user functions.

# INSTALLATION

**POWER CONNECTION--** The model 6516 programmer requires three power connections, +5 volts, +25 volts, and ground. The +5 volts and ground are provided via the AIM-65 expansion connector. The +25 volts may be connected in one of several ways. First, the +25 volts may be connected directly to the pad marked 25V. Another method would be to install a jumper at J2, and then connect the +25 volts to the AIM-65's unused +12 volt power buss.

**THE 25V SUPPLY--** If you have a voltage adjust control on your +24 volt AIM-65 power supply, simply increase this supply from 24 volts to 25 volts. If your 24 volt supply cannot be increased to 25 volts, try programming your EPROMs with 24 volts applied instead of 25 volts, as many EPROMs will program with a lower programming voltage.

**EPROM INSTALLATION--** EPROMs are inserted into the programming and expansion sockets with pin 1 oriented the same as pin 1 on all other integrated circuits on the programmer card.

# OPERATION

**3.1 PGM/EXEC SWITCH--** The PGM/EXEC switch selects either the EPROM programming or 8K ROM expansion mode of operation. When this switch is in the PGM position, the EPROM programming function is enabled. Note that in order to execute the programmer monitor, this switch must be in the PGM position.

When switched to the EXEC position, this switch enables the ROM expansion sockets, Z1, Z2, Z3, and Z4. The memory map for these expansion sockets is shown below.

```
9FFF ┌─────┐
     │  Z4 │
9800 ├─────┤
97FF │     │
     │  Z3 │
9000 ├─────┤
8FFF │     │
     │  Z2 │
8800 ├─────┤
87FF │     │
     │  Z1 │
8000 └─────┘
```

Note that 2716's plugged into the expansion sockets cannot be enabled unless the PGM/EXEC switch is in the EXEC position.

**3.2 RESET SWITCH--** The reset switch causes a hardware reset of the AIM-65's 6502 microprocessor. This switch should be in the reset position whenever an EPROM is being inserted into the zero insersion force programming socket. Once an EPROM is secured in the programming socket, the switch may be returned to the normal position. Reset should also be employed whenever removing an EPROM from the programming socket. Once again, the switch may be returned to the normal position after the EPROM is removed. Note that as long as this switch is in the reset position, AIM-65 operation is inhibited and your computer will appear to be dead.

**3.3 ENTERING THE PROGRAMMER MONITOR--** In order to use any of the programmer monitor commands, program control must first be passed from the AIM-65 monitor to the programmer monitor. To accomplish this, the following procedure may be used.

Use the * command to change the value of the program counter to 112.

    Type: SHIFT and * simultaneously.

The AIM-65 will respond with:

        *   =   ∧

    Type: 112 followed by a RETURN.

Now use the I command to enter a JMP 9027 instruction into memory.

    Type: I

The AIM-65 will respond with the current program counter value:

0112

Type: JMP9027 followed by a RETURN and then ESC.

Depress the F3 key.

Control is now passed from the AIM-65 monitor to the programmer monitor. The AIM-65 will respond with:

* ∧

which indicates that the programmer is ready to accept a command.

Control returns to the AIM-65 monitor at the completion of a programmer monitor command or upon depression of the ESC key or the reset switch. As long as AIM-65 power is applied, you may reenter the programmer monitor by simply pressing the F3 key.

**3.4.1 ERASED**-- This command verifies that an EPROM, inserted into the programming socket, has been completely erased. A list of non-erased EPROM locations is output to the AIM-65 display and/or printer. The ERASED command is initiated by pressing the E key. EPROM locations with any value other than FF will be output to the display and/or printer in the following format:

XXXX     P = dd     M = FF

Where:     XXXX is the EPROM's address (0 to 07FF)
           dd is the data at the address specified by XXXX.

To insure seeing all locations outputed, the AIM-65 printer should be enabled before using the ERASED command. If no EPROM locations are output, the EPROM is completely erased.

**3.4.2 PROGRAM**-- This command programs a 2716 which has been inserted into the programming socket. The user specifies the starting and ending address of the data source, the location of the data source (memory or cassette tape), and the starting EPROM address. The PROGRAM command is initiated by pressing the P key. The AIM-65 display will respond with:

F =

Type the first address of the source data to be programmed into the EPROM, followed by a RETURN. If the data is on cassette tape, you may default the first address to equal the cassette tape file's starting address, by pressing the SPACE BAR instead of typing a first address.

After you have entered the first address value, the AIM-65 display will respond with:

L =

Type the last address of the source data to be programmed into the EPROM, followed by a RETURN. If the data is on cassette tape, you may default the last address to equal the cassette tape object file's ending address, by pressing the SPACE BAR instead of typing a last address.

After you have entered the last address value, the AIM-65 display will respond with:

S =

Type the starting EPROM address to be programmed, (any number from 0 to 7FF) followed by a RETURN.

After you have entered the starting EPROM address to be programmed, the AIM-65 display will respond with:

IN =

Type M to specify that the data source is in AIM-65 memory, or T to specify that the data is on cassette tape.

If M is typed, EPROM programming begins immediately. The programming process is indicated by a total blanking of the AIM-65 display. All source data from the first address to the last address is now being programmed into the EPROM. Any EPROM location that fails to program properly will be output to the AIM-65 display and/or printer in the following format:

    XXXX      P = dd    M = ss

Where:          XXXX is the EPROM's address (0 to 7FF).
                dd is the EPROM's data at the address specified by XXXX.
                ss is the source data which should have been programmed
                into the EPROM.

To insure seeing all locations outputed, the AIM-65 printer should be enabled while programming EPROMs. If any other error occurs while programming, a numeric error code will be output to the display and/or printer. (See appendix A for error code definitions.) A return to the AIM-65 monitor indicates that the programming process is completed.

If T is typed in response to IN = , the AIM-65 display will respond with :

FILE =

Type the name of the desired cassette tape object file. In response, the AIM-65 will display:

T =

Specify the tape motor control desired by typing either 1 or 2, followed by a RETURN. The AIM-65 will now read the specified object file from cassette tape. The object file is scanned until it's load address matches the address previously specified by F = . Once an address match is made, EPROM programming begins. Except for the location of the data source, other aspects of cassette tape programming are the same as described above for memory programming. Note that for EPROM programming from cassette tape, the cassette tape motor control must be functional as it toggles to the off state while each tape data block is being programmed.

**3.4.3 TRANSFER--** This command transfers a block of data from an EPROM, inserted into the programming socket, to some user specified block of AIM-65 memory. The user specifies the starting and ending address of data in the EPROM, and the starting address in AIM-65 memory. The TRANSFER command is initiated by pressing the T key. The AIM-65 display will respond with:

F =

Type the first address of the EPROM data (0 to 7FF) which is to be transferred from the EPROM to AIM-65 memory, followed by a RETURN.

After you have typed the first EPROM address value, the AIM-65 display will respond with:

L =

Type the last address of the EPROM data (0 to 7FF), which is to be transferred from the EPROM to the AIM-65 memory, followed by a RETURN.

After you have entered the last EPROM address value, the AIM-65 display will respond with:

S =

Type the starting address of AIM-65 memory to which the EPROM data will be transferred, followed by a RETURN. After you have entered the starting address of AIM-65 memory, the EPROM data block, from the first to the last address, will be transferred to AIM-65 memory, followed by a return to the AIM-65 monitor.


**3.4.4 COMPARE--** This command outputs to the AIM-65 display and/or printer, differences between a block of data and an EPROM, inserted into the programming socket. The user specifies the starting and ending address of the data source, the location of the data source (memory or cassette tape), and the starting EPROM address. The COMPARE command is initiated by pressing the C key. The AIM-65 display will respond with:

F =

Type the first address of the data to be compared to the EPROM, followed by a RETURN. If the data is on cassette tape, you may default the first address to equal the cassette tape object file's starting address, by pressing the SPACE BAR instead of typing a first address.

After you have entered the first address value, the AIM-65 display will respond with:

L =

Type the last address of the data to be compared to the EPROM, followed by a RETURN. If the data is on cassette tape, you may default the last address to equal the tape object file's ending address, by pressing the SPACE BAR instead of typing a last address.

After you have entered the last address value, the AIM-65 display will respond with:

S =

Type the starting address of EPROM data which is to be compared, (any number from 0 to 7FF) followed by a RETURN.

After you have entered the starting EPROM address, the AIM-65 display will respond with:

IN =

Type M to specify that the data source is in memory, or T to specify that the data source is on cassette tape.

If M is typed, the compare command is immediately executed. All data from the first address to the last address will be compared to EPROM data, beginning at the EPROM starting address. Any EPROM location that does not match the source data will be output to the AIM-65 display and/or printer in the following format:

         XXXX     P = dd     M = ss

Where:        XXXX is the EPROM's address (0 to 7FF).
              dd is the EPROM's data at the address specified by XXXX.
              ss is the source data which should have equaled the
              EPROM's data.

If T is typed in response to IN = , the AIM-65 display will respond with:

FILE =

Type the name of the desired cassette tape object file.

In response, the AIM-65 will display:

T =

Specify the desired tape motor control by typing either 1 or 2, followed by a RETURN. The AIM-65 will now read the specified object file from cassette tape. The object file is scanned until it's load address matches the address previously specified by F = . Once an address match is made, data from the cassette tape is compared to the EPROM data. Any EPROM location which does not match the tape data will be output as described above for the memory comare.

**3.4.5 FILL--** This command changes all memory locations within a user specified block to a user specified value. The user specifies the starting and ending address of the AIM-65 memory to be filled and the value to be written into memory. The FILL command is initiated by pressing the F key. The AIM-65 display will respond with:

F =

Type the first address of AIM-65 memory to be filled, followed by a RETURN.

After you have entered the first address value, the AIM-65 display will respond with:

L =

Type the last address of AIM-65 memory to be filled, followed by a RETURN.

After you have entered the last address value, the AIM-65 display will respond with:

D =

Type the value of data to be written into AIM-65 memory, followed by a RETURN. The data value you have entered will now be written into the AIM-65 memory, from the first address to the last address, followed by a return to the AIM-65 monitor.

**3.4.6 MOVE--** This command reads data from a user specified block of AIM-65 source memory, and writes the data into a second user specified block of AIM-65 destination memory. The user specifies the starting and ending address of the source memory, and the starting address of the destination memory. The MOVE command is initiated by pressing the M key. The AIM-65 display will respond with:

F =

Type the first address of AIM-65 source memory to be moved, followed by a RETURN.

After you have entered the first address value, the AIM-65 display will respond with:

L =

Type the last address of AIM-65 source memory to be moved, followed by a RETURN.

After you have entered the last address value, the AIM-65 display will respond with:

S =

Type the starting address of AIM-65 destination memory to which the data block will be moved, followed by a RETURN.

After you have entered the starting address, the source data block, from the first to the last address, will be moved to the destination data block, followed by a return to the AIM-65 monitor.

**3.4.7 LOAD--** This command reads all or any part of a cassette tape object file into a user specified block of AIM-65 destination memory. The user specifies the desired portion of a file to be loaded and the address of the destination memory. The LOAD command is initiated by pressing the L key. The AIM-65 display will respond with:

F =

Type the first address of the cassette tape object file to be loaded into AIM-65 memory, followed by a RETURN. Typing SPACE BAR instead of the first address will default the first address to equal the cassette tape object file's starting address.

After you have entered the first address value, the AIM-65 display will respond with:

L =

Type the last address of the cassette tape object file to be loaded into AIM-65 memory, followed by a RETURN. Typing SPACE BAR instead of the last address will default the last address to equal the cassette tape object file's ending address.

After you have entered the last address value, the AIM-65 display will respond with:

S =

Type the starting address of AIM-65 memory to which the cassette tape object file will be loaded, followed by a RETURN.

After you have entered the starting address, the AIM-65 display will respond with:

IN =

Type T

The AIM-65 display will respond with:

FILE =

Type the name of the desired cassette tape object file. In response, the AIM-65 will display:

T =

Specify the desired cassette tape motor control by typing either 1 or 2, followed by a RETURN. The AIM-65 will now read the specified object file from cassette tape. The object file is scanned until it's load address matches the address previously specified by F = . Once an address match is made, data from the cassette tape is loaded into the specified AIM-65 memory.

# A TYPICAL PROGRAMMING SESSION

A typical application of the model 6516 programmer would be to execute user written code in the expansion sockets. In this example, we will assume that the user has installed the AIM-65 assembler ROM option, and that the cassette tape motor controls are functional.

The user would start by editing an assembly language program and setting the orgin at 8000H. Once edited, the program is assembled and the object code output is directed to the cassette tape. Now we are ready to begin EPROM programming.

First, we move the PGM/EXEC switch to the PGM position. Next, to enter the programmer monitor, we follow the procedure described in section 3.3 of this manual. Now we are ready to insert an EPROM into the programming socket. Move the RESET switch to the reset position and then insert an EPROM into the zero insertion force programming socket. Now return the RESET switch to its normal position. We are now ready to type the PROGRAM command.

Press the F3 key. The AIM-65 display will respond with:

*

Press the P key. The AIM-65 display will respond with:

F =

Now we will type the starting address of the object file. In this case we could type:

8000

which we know to be the starting address of our file, or we could type:

SPACE BAR

which will automatically program from the first byte of our cassette tape object file.

Now the AIM-65 responds with:

L =

Let us assume that our object file is 1K bytes long. Therefore, the address of the last byte of our file is 83FF.

In response to L = , we could type:

83FF

which we know to be the ending address of our file, or we could type:

SPACE BAR

which will automatically program to the last byte of our cassett tape object file.

Now the AIM-65 display will respond with:

S =

Since we have set our orgin at 8000H, we can see from the expansion memory map of section 3.1, that we will want to program our code into the first 1K bytes of an EPROM to be installed

in expansion socket Z1. Therefore, in response to S =, we will type:

0

which specifies that we want to start programming at the first location of the EPROM.

Now the AIM-65 display responds with:

IN =

Our File is on cassette tape so we type:

T

The AIM-65 display responds with:
FILE =

We now type the name of our cassette tape object file.

The AIM-65 will respond with:

T =

We type either 1 or 2 to specify the tape motor control.

At this point the cassette tape is read and EPROM programming begins. Programming completion is indicated by a return to the AIM-65 monitor. The EPROM is now ready for installation in expansion socket Z1. Do not forget to move the RESET switch to the reset position before removing the EPROM from the programming socket!

# APPENDIX A

| ERROR CODE | CAUSE |
|---|---|
| 9 | An address specified by either F = or L = was not found on the specified cassette tape object file. |

# MODEL 6517 OPERATION

THE MODEL 6517 PROGRAMS 2716, 2516, 2758, 2732 AND 2532 EPROM's. A TEN POSITION
DIP SWITCH SELECTS THE EPROM TYPE TO BE PROGRAMMED. DIP SWITCH SELECTION SHOULD
BE MADE, WITH NO POWER APPLIED TO THE CARD, AS PER THE SELECTON TABLE BELOW.
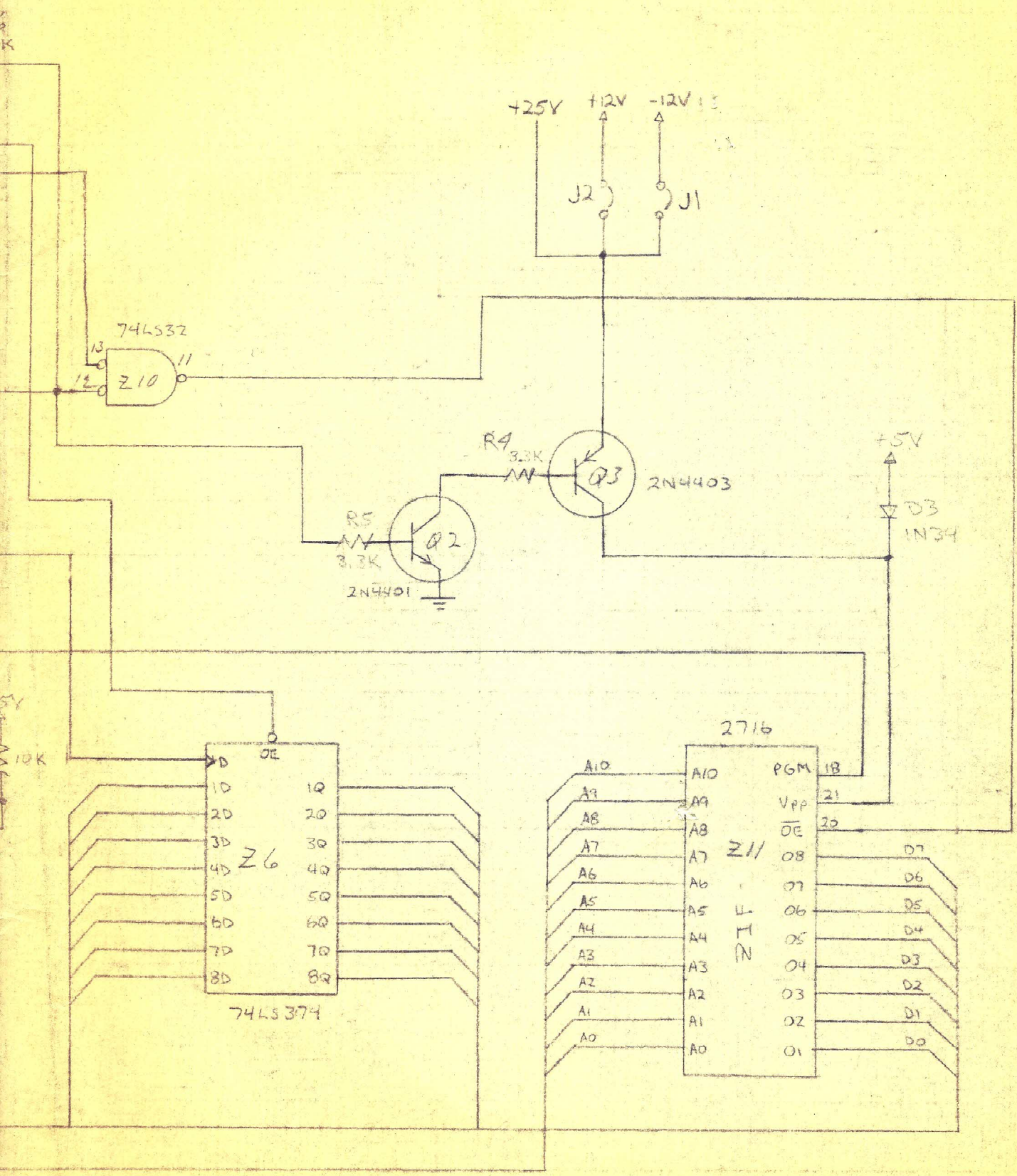
OPERATION OF THE MODEL 6517 IS THE SAME AS THE MODEL 6516, WITH THE EXCEPTION
THAT THE RESET AND THE PGM/EXEC SWITCHS HAVE BEEN ELIMINATED ON THE 6517.
THEREFORE, PLEASE REFER TO THE MODEL 6516 USER MANUAL FOR FURTHER DETAILS
ON PROGRAMMER OPERATION.

## EPROM SELECTION TABLE
### 0=OPEN   1=CLOSED

|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 2716,2516 2758,2508 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| 2532 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 2732 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| 2732A | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |

DIP SWITCH NUMBER

# MODEL 6533 OPERATION

THE MODEL 6533 PROGRAMS 2716, 2516, 2758, 2732 AND 2532 EPROM's. A TEN POSITION DIP SWITCH, NEXT TO THE PROGRAMMING SOCKET, SELECTS THE EPROM TYPE TO BE PRO- GRAMMED. DIP SWITCH SELECTION SHOULD BE MADE, WITH NO POWER APPLIED TO THE CARD, AS PER THE SELECTON TABLE BELOW.

THE MODEL 6533 ALSO INCLUDES 4K OF STATIC RAM.  A TEN POSITION DIP SWITCH SELECTS THE RAM ADDRESS BOUNDRY AS PER THE SELECTION TABLE BELOW.

OPERATION OF THE MODEL 6533  IS THE SAME AS THE MODEL  6516, WITH THE EXCEPTION THAT THE RESET AND THE PGM/EXEC SWITCHES HAVE BEEN ELIMINATED ON THE 6533 AND THE 6533 REQUIRES NO EXTERNAL 25V POWER CONNECTION.  THEREFORE, PLEASE REFER TO THE MODEL 6516 USER MANUAL FOR FURTHER DETAILS ON PROGRAMMER OPERATION.

## EPROM SELECTION TABLE
### 0=OPEN    1=CLOSED

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 2716,2516 2758,2508 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| 2532 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 2732 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| 2732A | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |

## RAM SELECTION TABLE
### 0=OPEN    1=CLOSED

DIP SWITCH NUMBER

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| H E X | 1000 TO 1FFF | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2000 TO 2FFF | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 3000 TO 3FFF | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| A | 4000 TO 4FFF | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| D | 5000 TO 5FFF | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| D | 6000 TO 6FFF | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| R | 7000 TO 7FFF | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| E | B000 TO BFFF | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| S | C000 TO CFFF | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| S | D000 TO DFFF | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |

+25V  +12V  -12V

J2  J1

74LS32
13
12  Z10  11

R4 3.3K  Q3  2N4403

+5V

R5  Q2
3.3K
2N4401

D3
1N34

2716

OE
Z6
1D    1Q
2D    2Q
3D    3Q
4D    4Q
5D    5Q
6D    6Q
7D    7Q
8D    8Q
74LS374

10K

A10   A10    PGM   18
A9    A9     VPP   21
A8    A8     OE    20
A7    A7  Z11 08
A6    A6     07    D7
A5    A5     06    D6
A4    A4  2 05    D5
A3    A3  7 04    D4
A2    A2  1 03    D3
A1    A1  6 02    D2
A0    A0     01    D1
                   D0

**CUBIT**
2267 OLD MIDDLEFIELD WAY
MOUNTAIN VIEW, CA 94043

AIM 65 EPROM PROGRAMMER
VER. 5
4/10/79
Sheet 2 of 2
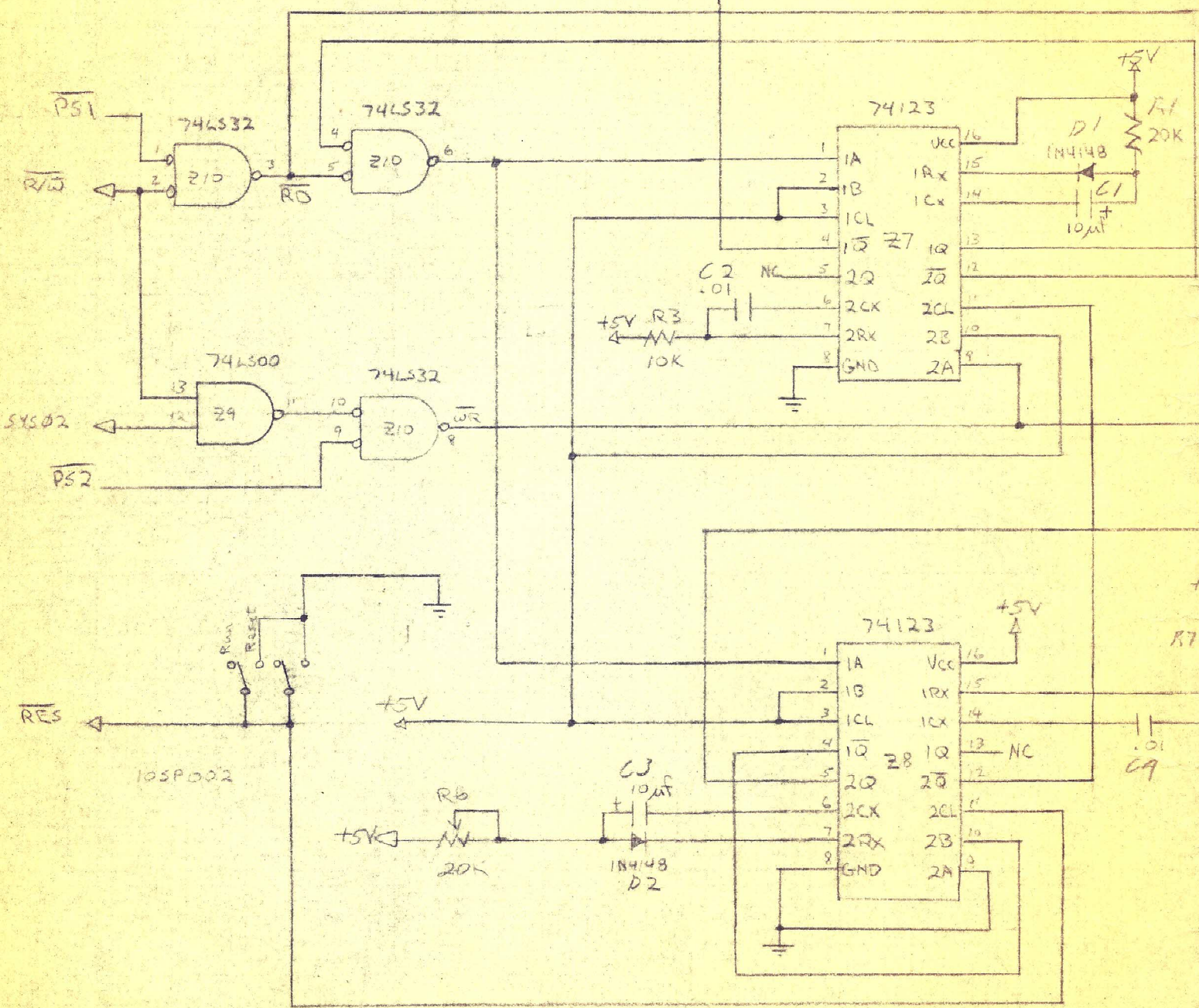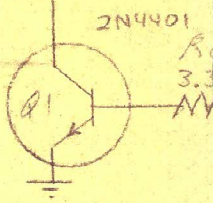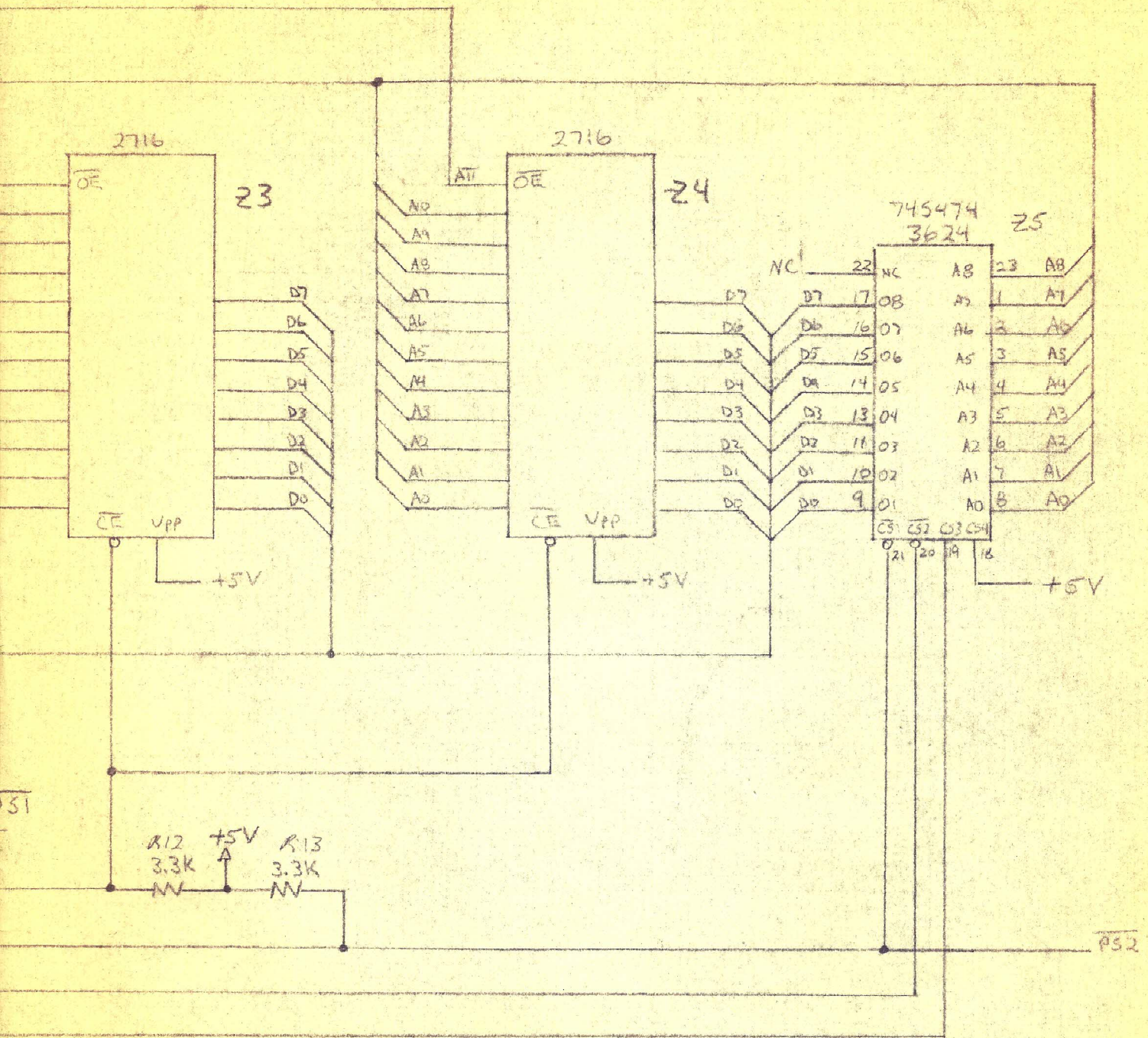
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AIM 65 EPROM PROGRAMMER
VER. 5
3-1-79
Sheet 1 of 2
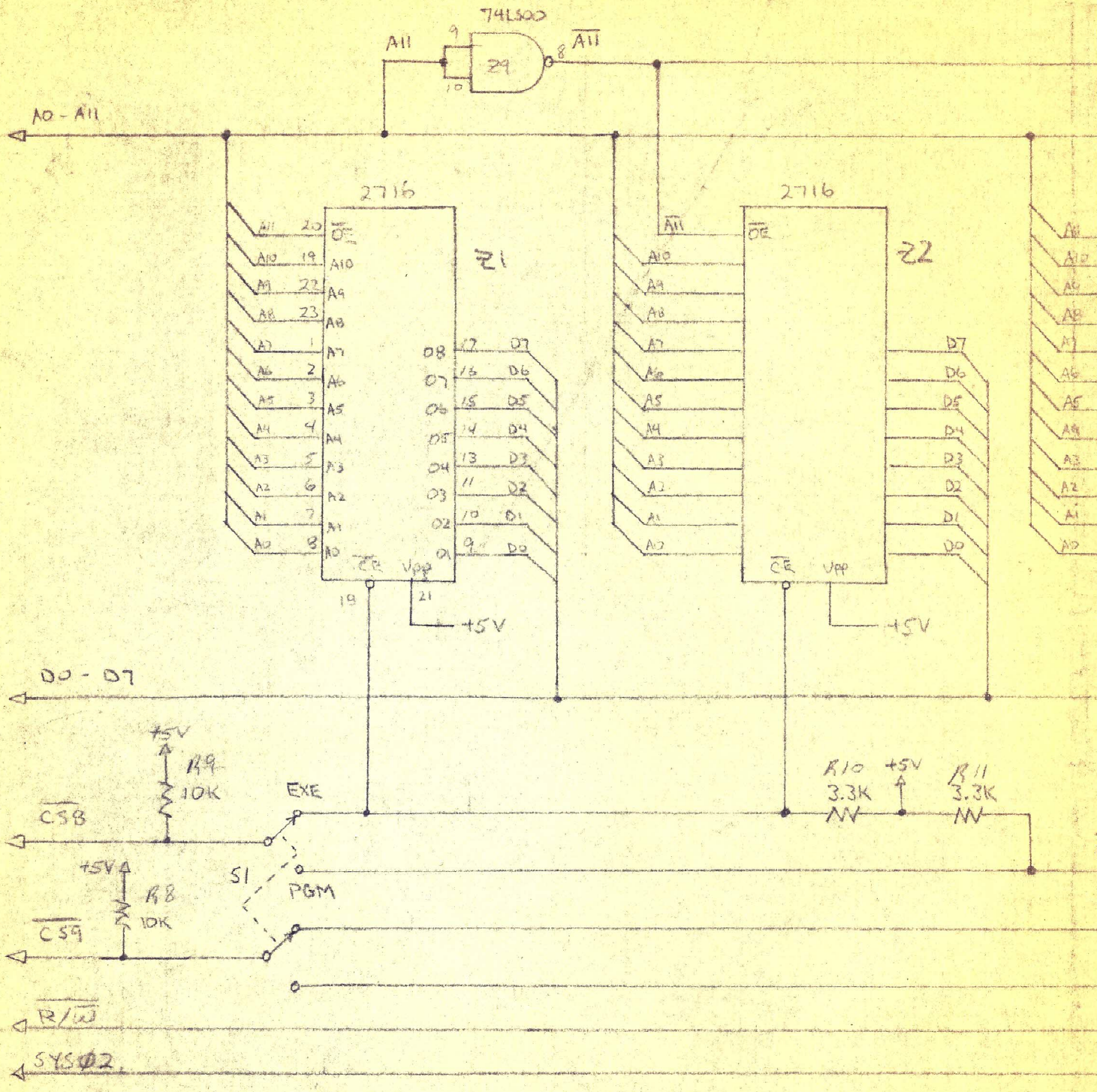
# CUBIT

The Cubit Model 6516 programmer is a convenient and simple to use 2716 EPROM programmer for use with the Rockwell AIM-65 computer. This small card plugs directly onto the AIM-65 expansion connector and provides the capability to program 5 volt type 2716 erasable programmable read-only memories.

## How It Works

The heart of the model 6516 is it's special ROM based monitor. This versitile monitor takes full advantage of the AIM-65 keyboard, display, printer, and cassette tape interface, making the model 6516 one of the most powerful PROM programmers available for any system.

## Simple Commands

Like the AIM-65, monitor functions are called via a simple single letter command. Once called, each command prompts the user for any additional information which may be required.

## EPROM Programming

Programming can start and stop at any EPROM location. Thus the user can program any number of bytes at a time. Automatic verification of each byte programmed provides confidence in the EPROM's data. Source data for the programmer may be located anywhere in AIM-65 memory or on a cassette tape object file.

## Extra Capabilities

In addition to the EPROM programming routine, the 6516 monitor includes many other useful routines such as EPROM erasure verification and fill memory with constant. Other monitor commands include compare, transfer, move, and load.

## Quality Construction

The Model 6516 hardware is designed for convenient operation. A zero insertion force socket is provided for programming 2716 EPROMS. Four 2716 EPROM expansion sockets allow execution of 8K bytes of user programmed EPROM. Interface to the AIM-65 expansion bus can be via either of the two 44 pin connectors. The female connector plugs directly onto the AIM-65 expansion connector without any additional hardware. The male edge connector allows the 6516 to plug into an expansion bus motherboard.

# CUBIT EPROM PROGRAMMER

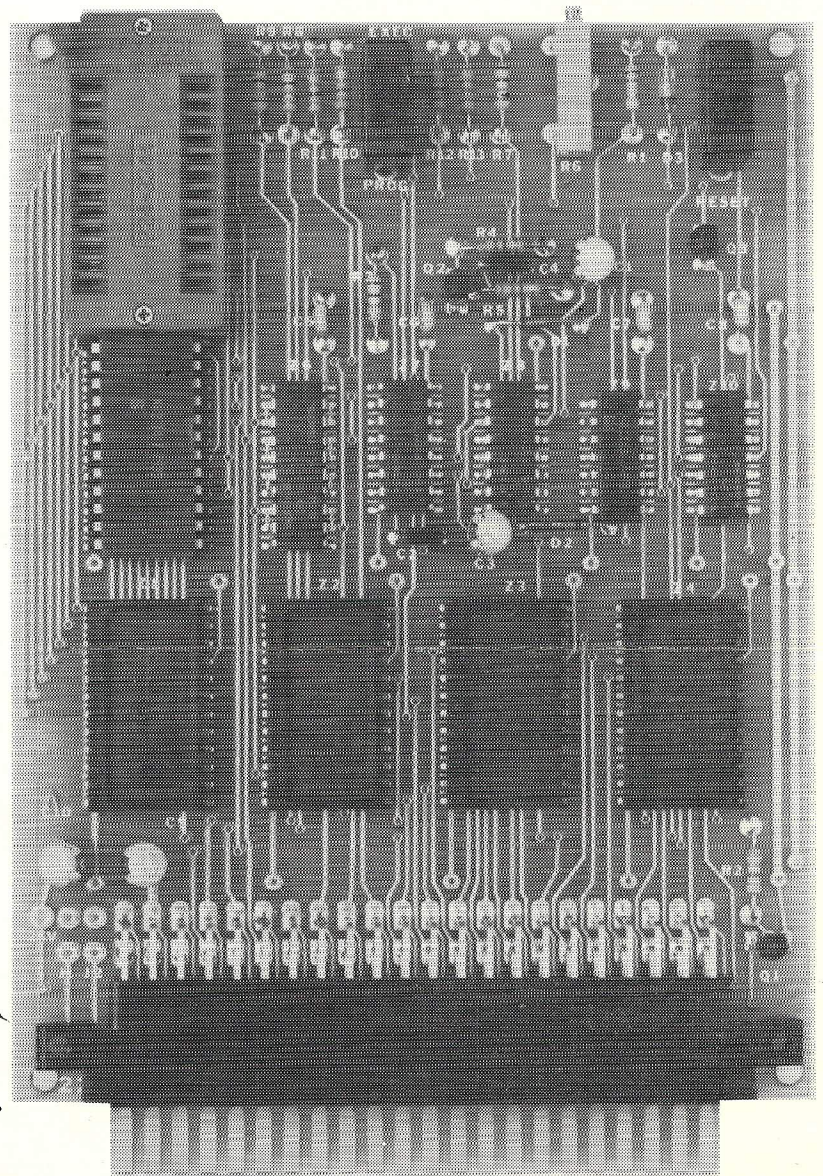**ZERO INSERTION FORCE SOCKET** for EPROM programming.

**POWERFUL MONITOR** contains all programming routines.

**EPROM EXPANSION** for 8K of user programmed EPROM.

**FEMALE CONNECTOR** plugs directly onto the AIM-65 expansion bus. Male connector plugs into expansion motherboards.

*which bus configuration*

AIM-65 is a trademark of Rockwell International corporation.

# MONITOR COMMAND SUMMARY

**PROGRAM-** This command programs a 2716 which has been inserted into the programming socket. The user specifies the starting and ending address of the data source, the location of the data source (memory or cassette tape), and the starting EPROM address.

**COMPARE-** This command outputs to the AIM-65 display and/or printer, differences between a block of data and an EPROM, inserted into the programming socket. The user specifies the starting and ending address of the data source, the location of the data source (memory or cassette tape), and the starting EPROM address.

**TRANSFER-** This command transfers a block of data from an EPROM, inserted into the programming socket, to some user specified block of AIM-65 memory. The user specifies the starting and ending address of data in the EPROM, and the starting address in AIM-65 memory.

**ERASED-** This command verifies that an EPROM, inserted into the programming socket, has been completely erased. A list of non-erased EPROM locations is output to the AIM-65 display and/or printer.

**FILL-** This command changes all memory locations within a user specified block, to a user specified value. The user specifies the starting and ending address of the AIM-65 memory to be filled and the value to be written into memory.

**MOVE-** This command reads data from a user specified block of AIM-65 source memory, and writes the data into a second user specified block of AIM-65 destination memory. The user specifies the starting and ending address of the source memory, and the starting address of the destination memory.

**LOAD-** This command reads all or any part of a cassette tape object file into a user specified block of AIM-65 destination memory. The user specifies the desired portion of a file to be loaded, and the address of the destination memory.

# SPECIFICATIONS/ ORDERING INFORMATION

## Specifications

**Electrical Requirements:**
+5 Volts @ 230 milliamperes
+24 Volts @ 30 milliamperes.

**Memory Usage:**
8000 HEX thru 9FFF HEX.

*all 8K used for 2716*
*AIM65 compatible*

**Size:**
Length - 6.5 inches.
Width - 4.5 inches.
height - 0.8 inches.

**Shipping Weight:**
One pound

## Ordering Information

**Order:**
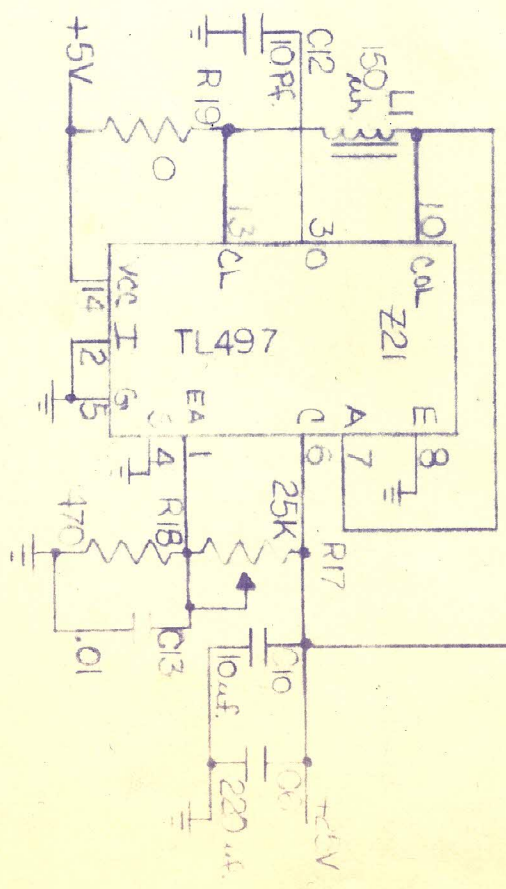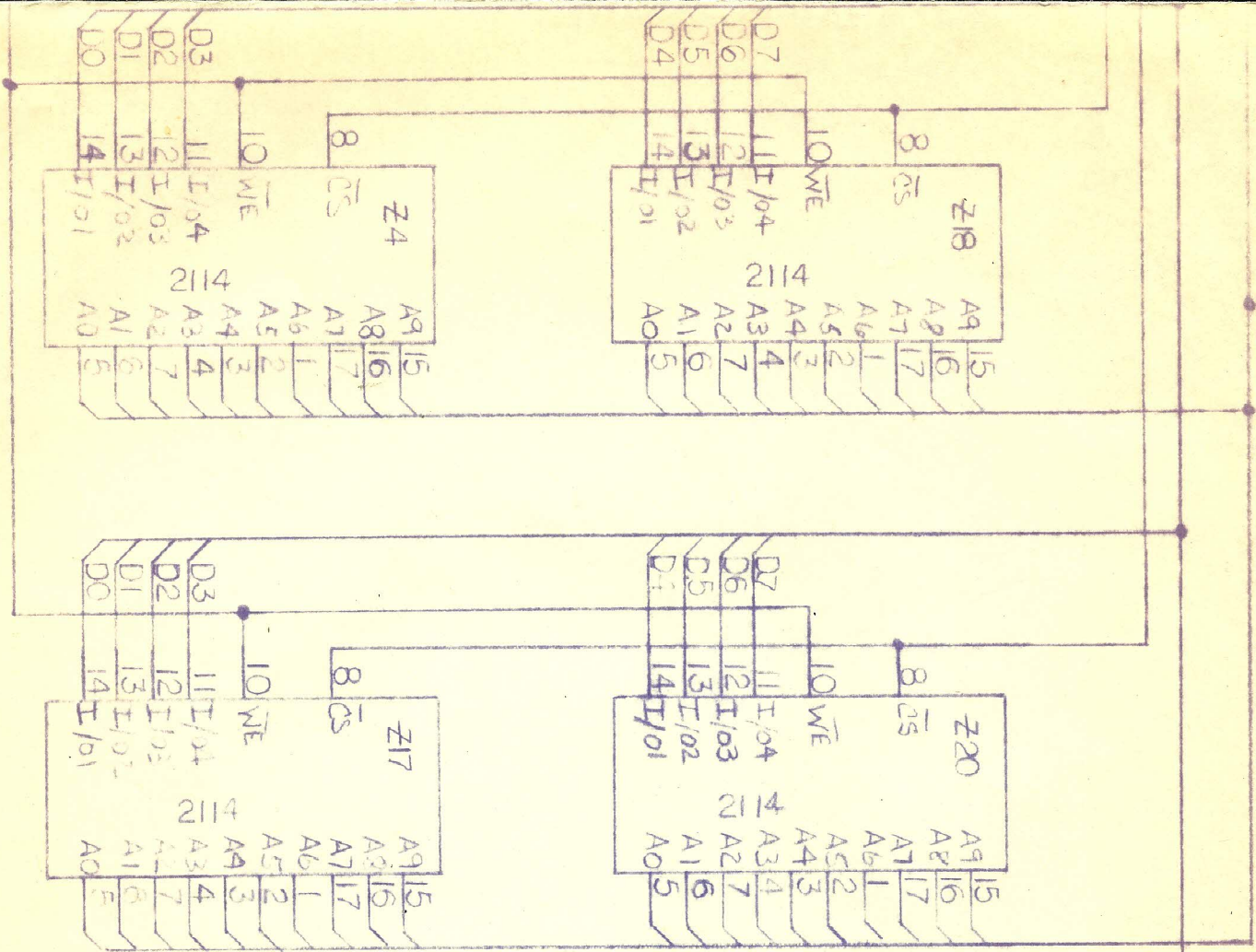Model 6516 EPROM Programmer

**Price:**
See Price Sheet

**Terms:**
FOB Mountain View, CA
Freight charges will be prepaid and billed
Payment terms: Net 30 days.

# CUBIT

2267 Old Middlefield Way • Mountain View, CA 94043 • (415) 962-8237

CUBIT INC.

TITLE: EPROM PROGRAMMER

| REF NO. PWB181331 | DATE 5 — 81 |
| --- | --- |
| SCALE | SHT 1 OF 1 |

6533

# CUBIT Inc.

The Cubit Model 6517 and 6533 EPROM Programmers are convenient and simple additions to the Rockwell AIM-65 or Cubit Model 6500 single board computers. These small cards plug directly onto the AIM-65 expansion connector or Cubit motherboard and provide the capability to program 5 volt type Erasable Programmable Read-Only Memories. Both models program 2532, 2732, 2732A, 2716, 2758, 2516 and 2508 type EPROM's. The model 6533 also provides 4K of RAM and a DC to DC converter which eliminates the need for an external 25 volt programming power supply.

## Monitor Program

Both the 6517 and 6533 programmers include an on-board programming monitor. This versatile monitor contains all routines necessary for EPROM programming. Like the AIM-65, monitor functions are called via a simple single letter command. Once called, each command prompts the user for any additional information which may be needed.

# CUBIT EPROM Programmers

## EPROM Programming

Programming can start and stop at any EPROM location. Thus, the user can program any number of bytes at a time. Automatic verification of each byte programmed provides confidence in the EPROM's data. Source data for the programmer may be located anywhere in the host computer memory or on a cassette tape object file.

## Extra Capabilities

In addition to the EPROM programming routine, the monitor includes many other useful routines such as EPROM erasure verification, fill memory with a constant, compare memory to EPROM, transfer data from EPROM to memory, move memory, and a relocating tape loader.

## Hardware

The Model 6517 and 6533 hardware is designed for dependable operation. A zero insertion force socket is provided for programming EPROM's. Interface to an AIM-65 expansion bus may be via either of the two 44-pin connectors. The female connector plugs directly onto the AIM-65 expansion connector without any additional hardware. The male edge connector allows the programmer to plug into an expansion motherboard for AIM-65 or Cubit computers. The 4K of RAM on the 6533 may be mapped to any 4K address boundary in the host computer.

## Specifications

**Electrical Requirements —**
Model 6517:  +5 volts @ 250 ma.
+25 volts @ 30 ma.
Model 6533: +5 volts @ 500 ma.
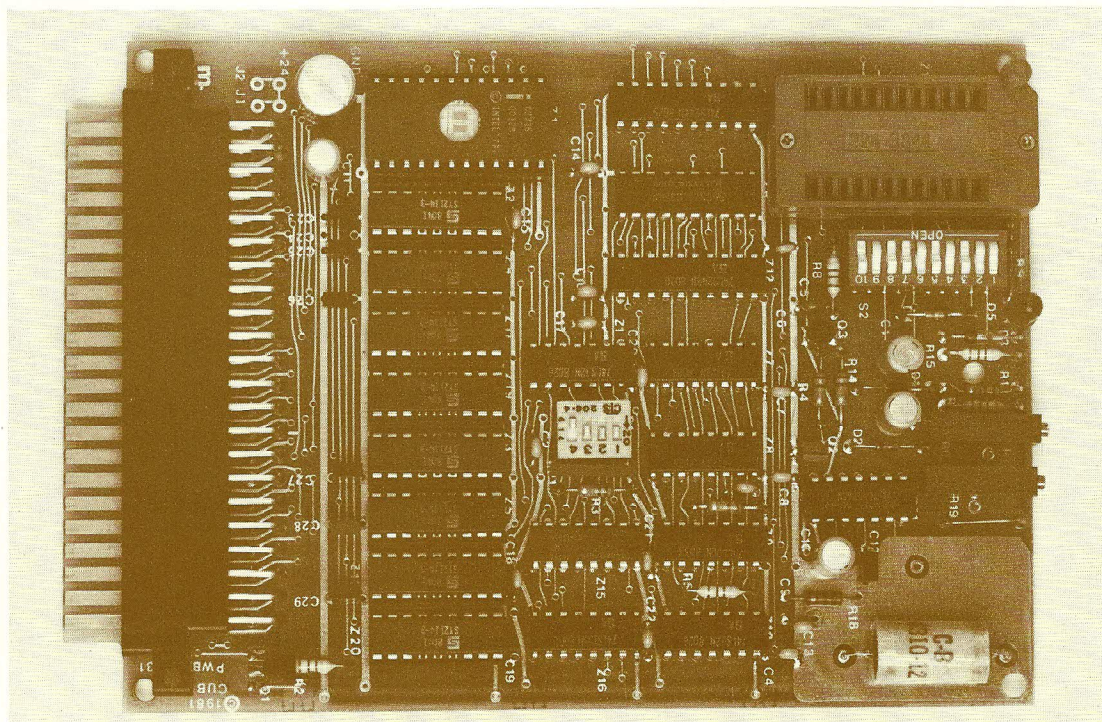
**Memory Usage —**
8000 Hex thru 9FFF Hex
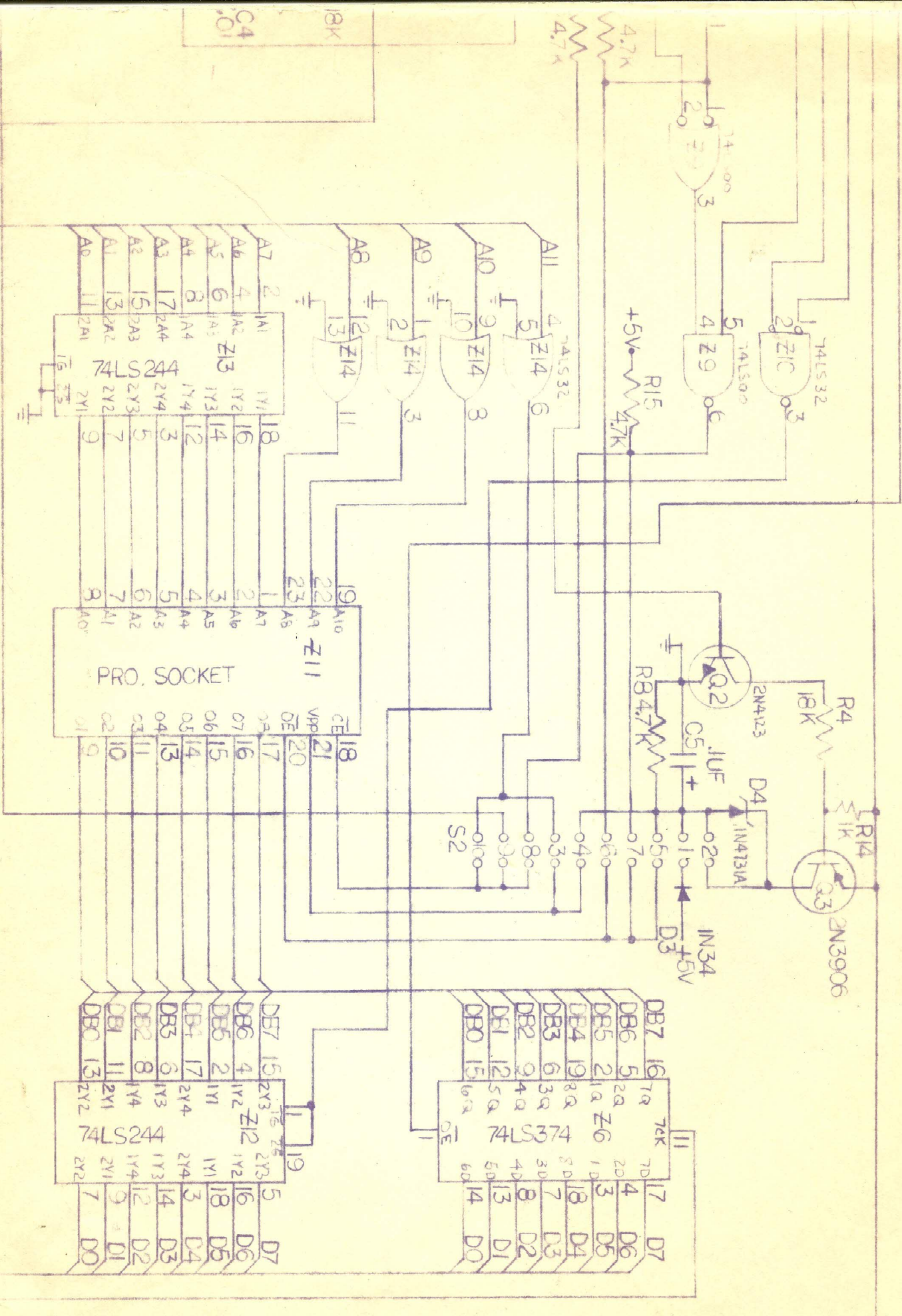
**Size —**
Length — 6.5″
Width — 4.5″
Height — 0.8″

**Shipping Weight —**
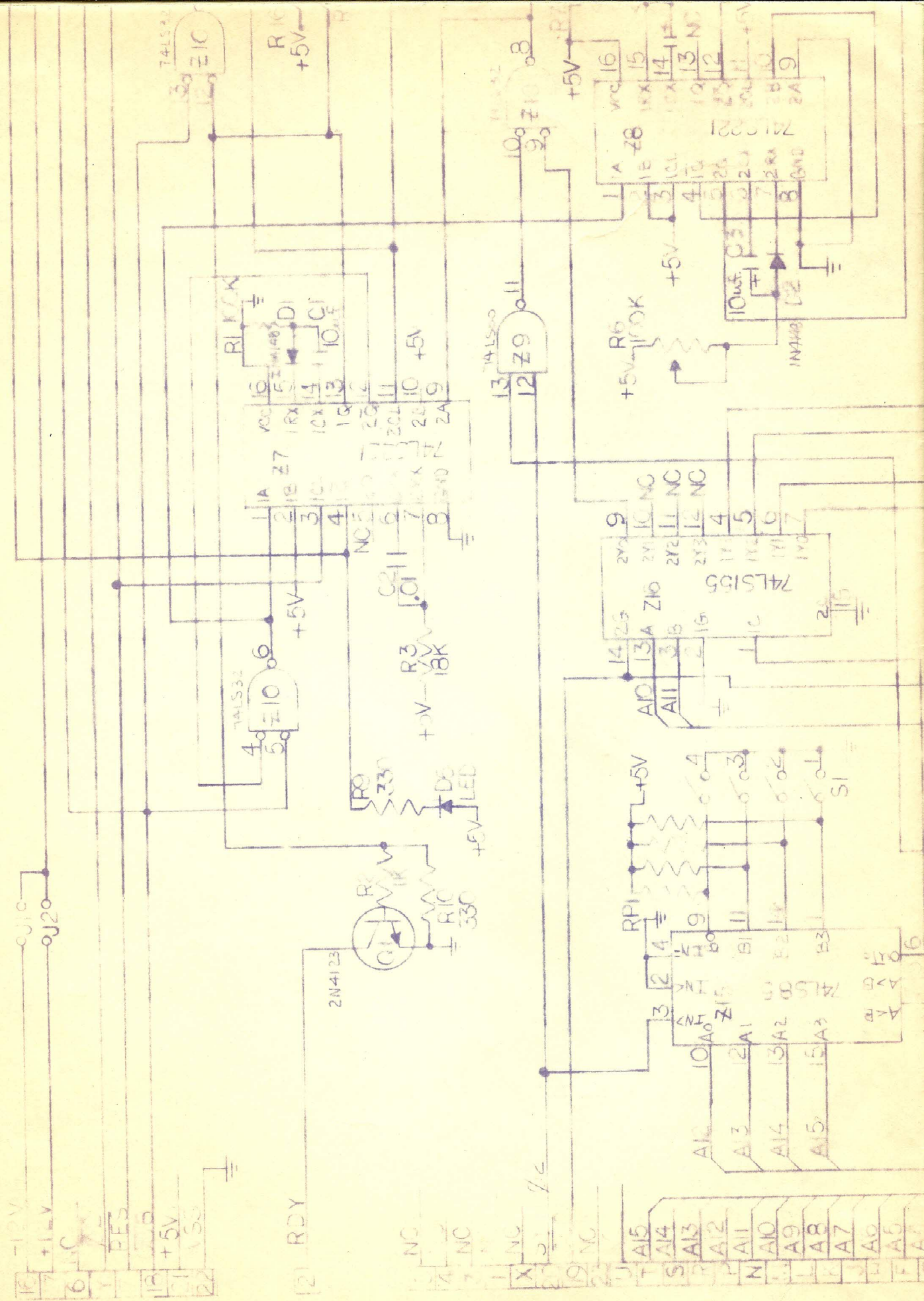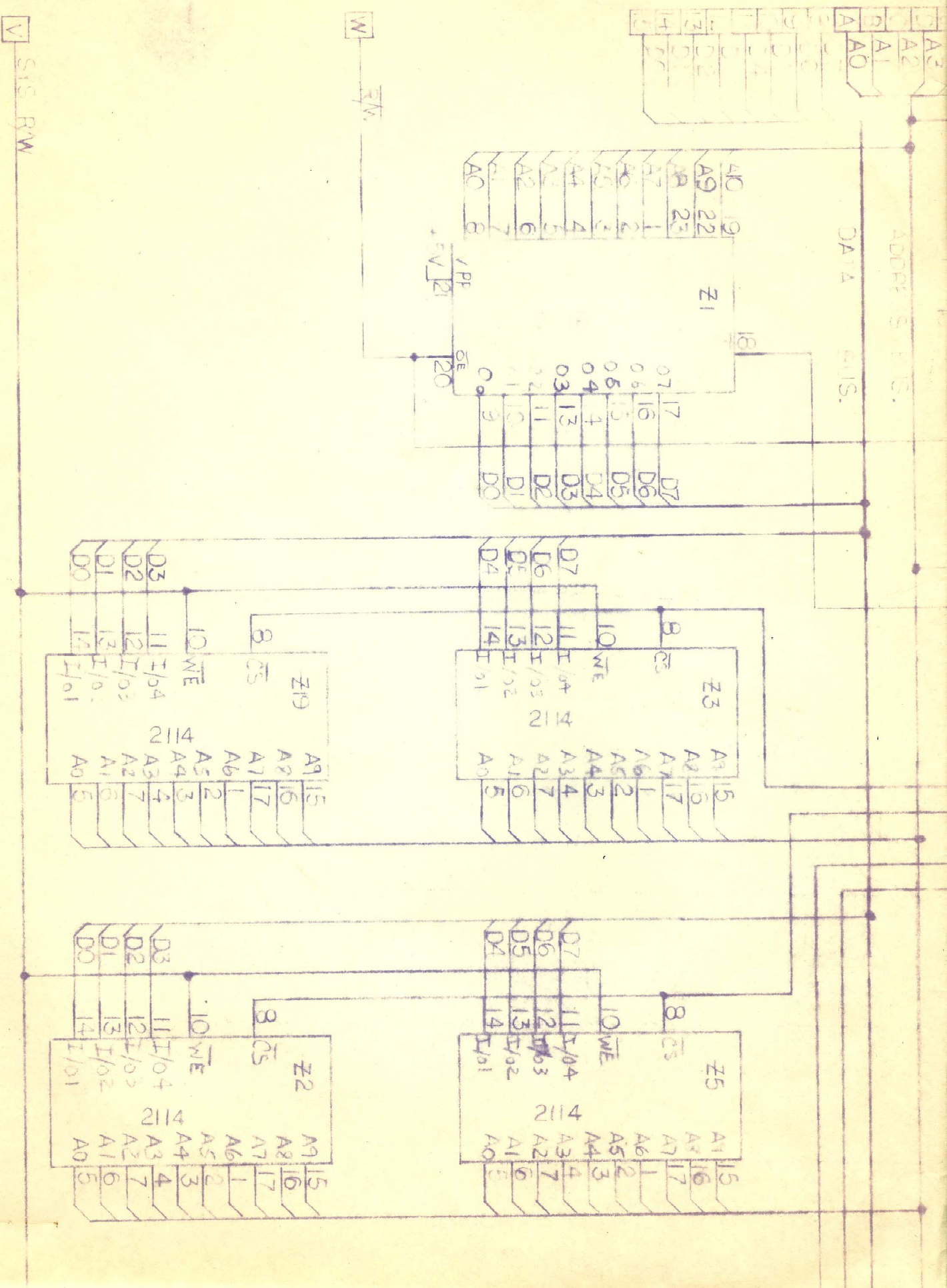1 lb.



Model 6533 EPROM Programmer

## For Cubit Model 6500 and Rockwell AIM-65 Computers

Cubit manufactures expansion boards which are compatible with both the Cubit Model 6500 Single Board Computer and Rockwell AIM-65 computers. These extend the capability of either computer with compact 4-1/2″ by 6-1/2″ modules. These modules are the same size as the Cubit 6500 CPU, making for a particularly convenient package for the OEM who must fit the computer into his product.

### 6514 RAM Card

The 6514 adds 8K of static RAM to the computer, using low power 2114L memory chips. All addresses and data are buffered. The memory is divided into two 4K blocks, each of which can be mapped to any 4K address boundary in the host computer.

Each memory block has a write-protect switch to convert the RAM to functional ROM for program debugging.

The 6514 plugs directly onto the AIM-65 expansion connector without any additional hardware, or into the Cubit 6513 Motherboard.

### 6508 ROM Card

The 6508 adds 8K of ROM to a Cubit 6500 or AIM-65 computer at an exceptionally low cost. The board supports four 2716's or two 2532's.

The memory is located from 8000 Hex to 9FFF Hex, and is unbuffered.

The 6508 plugs directly onto the AIM-65 expansion connector without any additional hardware, or into the Cubit 6513 Motherboard.

### 6513 Motherboard

The 6513 Motherboard either connects up to three Cubit expansion cards to an AIM-65, or connects two Cubit expansion cards to a Cubit 6500 single board computer. The EPROM programmers are compatible with this motherboard as well as the memory expansion cards. The motherboard is 4-1/2″ x 5″.

### AV-65 Auto-Vector Card

The Auto-Vector Card is used only with the AIM-65, its function being built into the Cubit computer. It connects between the keyboard and CPU, and automatically brings up a program in user ROM when the computer is powered-up. It comes jumpered to bring up a program in the assembler ROM socket, but may be jumpered for the BASIC ROM socket if this is specified when ordering. The jumper may be changed by the user.

# CUBIT Expansion Boards
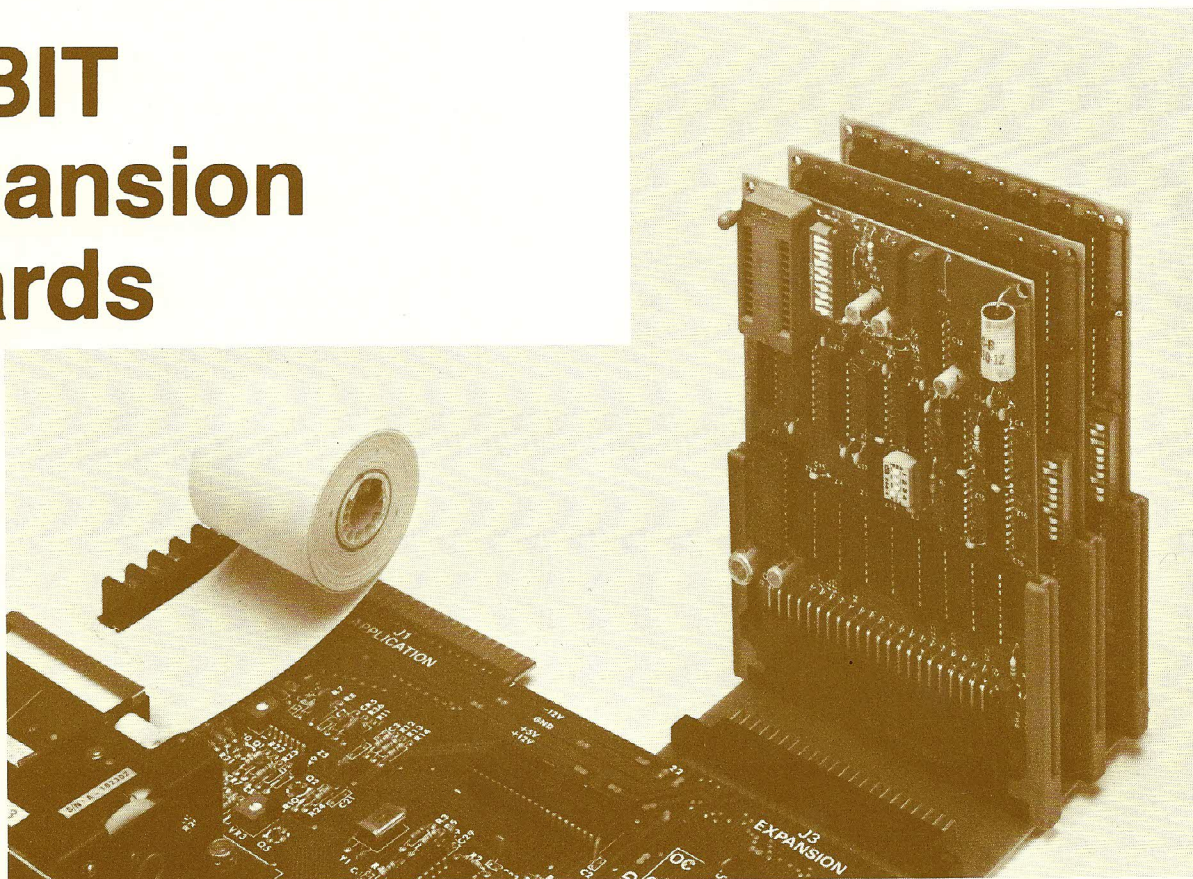


CUBIT Expansion Board Attached to AIM-65 Computer