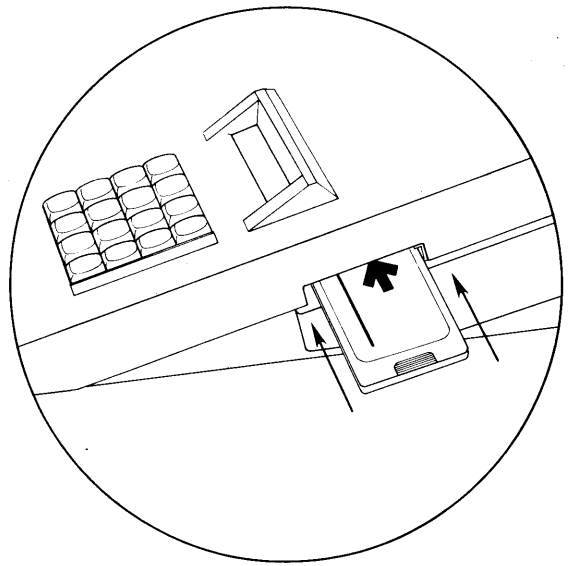
SYSTEM SOFTWARE

This memory card contains the system software for your 212 Multi Programmer. Please insert the memory card in the slot on the right-hand side of the programmer before applying power to the unit.



212 MULTI PROGRAMMER

User Notes

984-0036-005 JANUARY 1990

THIS USER NOTE APPLIES TO:

Model No.	Version No.	Manual Part No.
212	V2.1	981-0054-001 and up

After completing all of the voltage tests, turn the programmer power off and then turn it on again. The programmer will perform its complete self test. Upon completion of the self test, the programmer will display:

```
SELF TEST OK
DATA I/O 212 N
```

where "N" is the version number of the 212 software. The programmer will then display:

```
LOAD FROM MASTER
```

Once the self test is complete and the programmer displays `LOAD FROM MASTER`, the acceptance test procedure is completed. See the 212 Multi Programmer Operator's Manual for further instructions on operating the 212 Multi Programmer.

CAUTION

If you do not turn the programmer off to reset it before programming a part, the programmer will remain in the special self-test mode. Attempting a device operation, such as programming, in the special self-test mode will be unsuccessful and could potentially damage the device.

If the self test did not complete successfully, or one or more of the pins probed during the ten voltage tests did not indicate a voltage within the ranges specified in the table, contact your nearest Data I/O Service Center. A list of Data I/O phone numbers is located in the Getting Started section of the 212 Multi Programmer Operator's Manual.

Introduction

This document is provided as a supplement to the 212 Multi Programmer Operator's Manual. The configuration numbers of the updated equipment and documentation that you have received are provided on the back of the User Notes cover sheet for your reference. Refer to these configuration numbers when calling a Data I/O Service Center ragarding service or updates to your equipment or documentation.

The 212 Multi Programmer Operator's Manual is printed and bound in a softbound cover. Because of this, the supplemental information for Version 2.0 and 2.1 is not included in the usual fashion (replacement pages to be placed in the existing manual). Instead, the supplemental information is included separately (in loose-leaf fashion) along with the Device List. The supplemental information will be included in your next update of the 212 Operator's Manual.

Included with this User Notes document is the 212 Multi Programmer Device List and Acceptance Test Procedures (ATPs) for the EPROM module and micro module. Since the Device List is updated periodically, it has been shipped to you separately. To obtain information on 212 Device List updates, contact your local Data I/O Service Center (see Supplemental Information in this User Notes document). The acceptance tests are provided with this document for those companies requiring acceptance tests prior to acceptance of equipment.

What's New for Version 2

The latest firmware, Version 2.1, corrects a problem in V2.0 and now allows you to use the Model 212 with PROMlink.

Version 2.0 firmware added increased device support for the Model 212. For a complete list of all devices supported by the Model 212, see the attached device list. Specifically, Version 2.0 added (or deleted) the following devices:

NOTE

The family/pinout codes for these devices can be found in the Version 2.0 device list.

ADDED

AMD
27C191
27C49
27C128
27256P
27C512
27C010

ATMEL
28C04
28C16
28HC16
28C17
28HC17
28HC64
28C256
28HC256

CSI
2764A
27128A
27256
27512
28C16A
28C17A

CYPRESS
7C225
7C291
7C291A
7C292

HITACHI
27C256H

INTEL
27F256
27C202
28F256P1
28F256P2
28F010
P87C64

MCT
27HC191
27HC291
28CP64

MITSUBISHI
27C512
27C512A

MOT
67256
67259

NATIONAL
27CP64
27C256B
27CP256
27C1024
87C512A

NEC
27C256
27C1001A
27C4001

OKI
28C16A

SAMSUNG
KM2865AH

SEEQ
28C010
36C16
36C32
48F512
48F010

TEXAS INSTURMENTS
27C32
27PC32
27PC64
27C010

TOSHIBA
24256B
24512A
541000
541001
57256A
57512A
57H1024
574000D
58257A

WAFER SCALE
27C010L
27C64
27C128F
27C256F
57C43

XICOR
28C256

DELETED

FUJITSU
27128A
27512

NATIONAL
27C010

NEC
27C128

OKI
2532

SEEQ
52B23

SUPPLEMENTAL INFORMATION
212 OPERATOR'S MANUAL

CUSTOMER SERVICE

Contacting Customer Support

If you require technical assistance with your 200 Series Programmer, there are two different ways to contact Customer Support: one for users inside the United States, and one for users outside the United States.

In the United States, contact the Data I/O Customer Resource Center (CRC). The CRC is staffed with Support Engineers between 6:00 AM and 5:00 PM Pacific Time. Outside the United States, contact your local Data I/O Representative. Refer to the list on the following page for these customer support telephone numbers.

Regardless of whether you call the CRC or your local Data I/O representative, you can ensure quick and accurate phone assistance by following the steps below:

1. Have your programmer and / or computer in front of you.
2. Have the 212 Operator Manual available.
3. Be ready to provide the following information:
   - Manufacturer and part number of the device you are using.
   - Error codes exactly as they appeared.
   - Detailed explanation of the problem you are experiencing.
   - Version number of your Data I/O product; to find this number, powerup the programmer. See the Operator's Manual Section, *Getting Started.*

Warranty and Service

Data I/O maintains Service Centers throughout the world, each staffed with factory-trained technicians to provide prompt, quality service. This includes not only repairs, but also calibration of all Data I/O products.

Data I/O Corporation warrants its products against defects in materials and workmanship for a period of ninety (90) days for software and one (1) year for hardware unless specified otherwise, which begins when the equipment is shipped. Refer to the warranty card inside the back cover of this manual for information on the length and conditions of the warranty. For warranty service, contact your nearest Data I/O Customer Support Center. If you return the unit for service, please return the disks with the unit. The following is a list of Data I/O offices:

United States
Data I/O Corporation
10525 Willows Road N.E.
P.O. Box 97046
Redmond, WA 98073-9746
Telephone: (206) 881-6444
(800) 426-1045
Fax: (206) 882-1043
Telex: 152167 (Domestic)
4740166 (International)

Data I/O Europe
World Trade Center
Strawinskylaan 633
1077 XX Amsterdam
Telephone: +31 (0)20-6622866
Fax: +31 (0)20-6624427
Telex: 16616 DATIO NL

U.S. Customer Resource Center
(800) 247-5700

Data I/O Japan
Sumitomoseimei Higashishinbashi Bldg. 8F
2-1-7, Higashi-Shinbashi
Minato-Ku, Tokyo 105, Japan
Telephone: (03) 432-6991
Fax: (03) 432-6094 (Sales)
(03) 432-6093 (Other)
Telex: 2522685 DATAIO J

Data I/O Canada
6725 Airport Road, Suite 302
Mississauga, Ontario
L4V 1V2 Canada
Telephone: (416) 678-0761
Fax: (416) 678-7306

Socket Warranty

Sockets are warranted for 25,000 cycles. Socket replacements are available through your Data I/O Service Center or local Data I/O Representative.

Extended Tektronix Hexadecimal Format, Code 94

The Extended Tektronix Hexadecimal format has three types of records: data, symbol and termination records. The data record contains the object code. Information about a program section is contained in the symbol record (UniSite ignores symbol records) and the termination record signifies the end of a module. The data record (see sample below) contains a header field, a load address and the object code. The header field contains the information listed below.

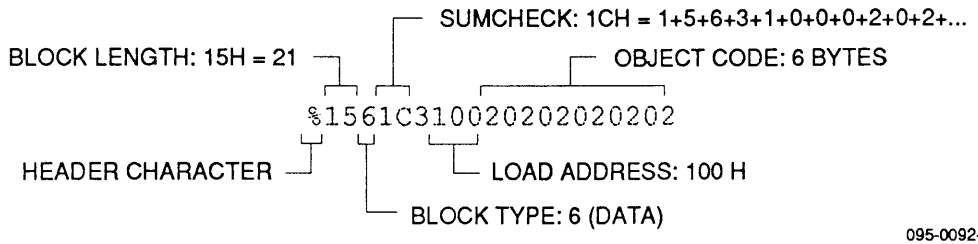
Item	Number of ASCII Characters	Description
%	1	Signifies that the record is the Extended Tek Hex format.
Block length	2	Number of characters in the record, minus the %.
Block type	1	6 = data record 3 = symbol record (ignored by UniSite) 8 = termination record
Checksum	2	A 2-digit hex sum, modulo 256, of all the values in the record except the % and the checksum.

Character Values for Checksum Computation

Characters	Values (decimal)
0 . . 9	0 . . 9
A . . Z	10 . . 35
$	36
%	37
.(period)	38
_ (underline)	39
a . . z	40 . . 65

The number of fields in the file will vary, depending on whether a data or a termination block is sent. Both data and termination blocks have a 6- character header and a 2-to-17 character address.

The load address determines where the object code will be located. This is a variable length number that may contain up to 17 characters. The first number determines the address length, with a zero signifying a length of 16. The remaining characters of the data record contain the object code, 2 characters per byte.



When you are copying data to the port or to RAM, make sure to set the high- order address if the low-order is not at the default value.

Intel Hex-32, Code 99

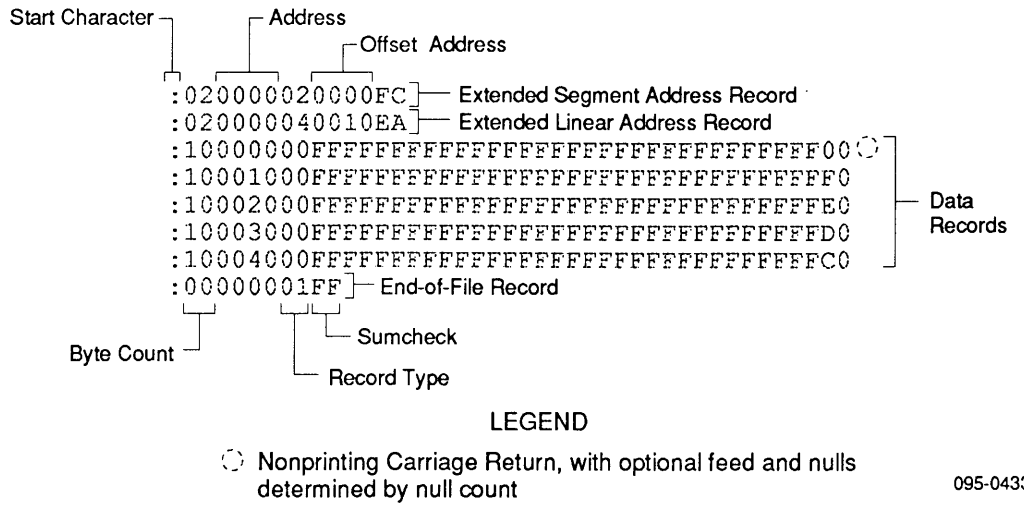
The Intel 32-bit Hexadecimal Object file record format has a 9-character (4- field) prefix that defines the start of record, byte count, load address, and record type and a 2-character checksum suffix. The figure illustrates the sample records of this format.

The six record types are:

00	=	data record
01	=	end record (signals end of file)
02	=	extended segment address record (added to the offset to determine the absolute destination address)
03	=	start segment address record (not sent during output by UniSite)
04	=	extended linear address record (added to the offset to determine the absolute destination address)
05	=	start linear address record (not sent during output by UniSite)

Record type 00, the data record, begins with the colon start character. This is followed by the byte count (in hex notation), the address of the first data byte, and the record type (equal to "00"). Following these are the data bytes. The checksum follows the data bytes and is the two's complement (in binary) of the preceding bytes in the record, including the byte count, address, record type and data bytes.

Record type 01, the end-of-file record, also begins with the colon start character. This is followed by the byte count (equal to "00"), the address (equal to "0000"), the record type (equal to "01") and the checksum, "FF".



Record type 02, the extended segment address record, defines bits 4 to 19 of the segment base address. It can appear randomly anywhere within the object file and affects the absolute memory address of subsequent data records in the file. The address field for this record must contain ASCII zeros (Hex 30's). The following example illustrates how the extended segment address is used to determine a byte address.

Record type 03, the start segment address record, specifies bits 4-19 of the execution start address for the object file. This record is not used by UniSite.

Record type 04, the extended linear address record, specifies bits 16-31 of the destination address for the data records that follow. It can appear randomly anywhere within the object file. The address field for this record must contain ASCII zeros (Hex 30's).

Record type 05, the start linear address record, specifies bits 16-31 of the execution start address for the object file. This record is not used by UniSite.

EXAMPLE
PROBLEM: Find the address for the first data byte for the following file.

```
:02 0000 04 0010 EA
:02 0000 02 1230 BA
:10 0045 00 55AA FF ..... BC
```

SOLUTION: Step 1: Find the extended linear address offset for the data record (0010 in the example).

Step 2: Find the extended segment address offset for the data record (1230 in the example).

Step 3: Find the address offset for the data from the data record (0045 in the example).

Step 4: Calculate the absolute address for the first byte of the data record as follows:

	00100000	linear address offset, shifted left 16 bits
+	12300	segment address offset, shifted left 4 bits
+	0045	address offset from data record
=	00112345	32 bit address for first data byte

The address for the first data byte is therefore 112345.

NOTE

Always specify the address offset when using this format, even when the offset is zero.

During output translation, the firmware will force the record size to 16 (decimal) if the record size is specified greater than 16. There is no such limitation for record sizes specified less than 16.

212 Multi Programmer V2.0 Device List

The attached Device List provides a list of the devices that are programmable by the Model 212. The list is arranged in alphabetical order by device manufacturer. Device family and pinout codes are included in this list. Device family and pinout codes are unique numbers assigned to individual manufacturer's devices by Data I/O. The proper family and pinout codes can be entered be selecting the correct manufacturer and device part number from the programmer menus or by typing in the family and pinout code (from the Device List) when prompted.

CAUTION

Be sure you enter the proper family and pinout codes for the device you want to program. If you enter an incorrect family and pinout code, you may damage your device. Be aware that although you may enter an independently valid family code and an independently valid pinout code, when combined, these may produce an invalid (illegal) combination. The correct combination for your device is published in this table. All family/pinout combinations not contained in this table are considered "illegal". Data I/O assumes no responsibility or liability for results produced by entry of "illegal" family/pinout combinations.

Data I/O Device Support Policy/Liability

1. Data I/O strives to achieve more device support approvals from semiconductor manufacturers than any other programmer manufacturer or software developer.

2. Every effort is made to program an adequate number of samples according to the manufacturer supplied specification, and verify waveforms as per that specification prior to release of support. Manufacturers' approvals are to be sought in parallel with this process.

3. Data I/O's objective is to seek and obtain approvals on all devices.

4. Data I/O has made every attempt to ensure that the device information (as provided by the device manufacturer) contained in our programmers, software and documentation is accurate and complete. However, Data I/O assumes no liability for errors, or for any damages, whether direct, indirect, consequential or incidental, that result from use of documents provided with equipment or from the equipment or software which it accompanies, regardless of whether or not Data I/O has been advised of the possibility of such loss or damage.

Key to Headings and Footnotes

Device Part Number The number assigned by the device manufacturer.

Software Version A number that specifies the earliest version of the 289 Multi Programmer software that will program the device to the manufacturer's latest specifications.

Family Code A 2- or 3-digit hexadecimal number that designates the programming algorithm.

Pinout Code A 2- or 3-digit number used to differentiate device types based on pin assignment and array size.

Module Type Indicates the type of socket module that must be installed in order to perform operations on the device.

Device Part Number	Number of Pins	Software Version	Family Code	Pinout Code	Module Type
Advanced Micro Devices/MMI					
27128	28	V1.1	AF	51	MOD-EPROM
27128A	28	V1.1	C1	51	MOD-EPROM
27128AP	28	V1.1	D6	51	MOD-EPROM
2716	24	V1.1	19	23	MOD-EPROM
2716B	24	V1.1	C2	23	MOD-EPROM
27256	28*	V1.1	C1	32	MOD-EPROM
27256P	28	V2.0	D6	32	MOD-EPROM
2732	24	V1.1	19	24	MOD-EPROM
2732A	24	V1.1	27	24	MOD-EPROM
2732B	24*	V1.1	C2	24	MOD-EPROM
27512	28	V1.1	DD	A4	MOD-EPROM
27512P	28	V1.1	DA	A4	MOD-EPROM
2764	28*	V1.1	AF	33	MOD-EPROM
2764A	28	V1.1	C1	33	MOD-EPROM
2764AP	28	V1.1	D6	33	MOD-EPROM
27C010	32	V2.0	109	0CB	MOD-EPROM
27C1024	40*	V1.1	6E	A8	MOD-EPROM
27C128	28	V2.0	11D	051	MOD-EPROM
27C191	24	V2.0	EA	21	MOD-EPROM
27C256	28*	V1.1	C1	32	MOD-EPROM
27C291	24	V2.0	EA	21	MOD-EPROM
27C49	24	V2.0	EA	67	MOD-EPROM
27C512	28	V2.0	DD	A4	MOD-EPROM
27C512P	28	V1.1	DA	A4	MOD-EPROM
2817A	28	V1.1	BF	A2	MOD-EPROM
2864A	28*	V1.1	CA	A6	MOD-EPROM
2864B	28*	V1.1	CA	A6	MOD-EPROM
8751H	40*	V1.1	54	58	MOD-MICRO
8753H	40	V1.1	54	6A	MOD-MICRO
9716	24	V1.1	19	23	MOD-EPROM
9732	24	V1.1	19	24	MOD-EPROM
9732A	24	V1.1	27	24	MOD-EPROM
9764	28	V1.1	AF	33	MOD-EPROM
9864	28	V1.1	C9	A6	MOD-EPROM

Device Part Number	Number of Pins	Software Version	Family Code	Pinout Code	Module Type
ATMEL					
27256	28*	V1.1	5C	32	MOD-EPROM
27256R	28*	V1.1	5C	32	MOD-EPROM
27C128	28*	V1.1	93	51	MOD-EPROM
27C256	28*	V1.1	93	32	MOD-EPROM
27C256R	28*	V1.1	5C	32	MOD-EPROM
27C512	28	V1.1	4B	A4	MOD-EPROM
27C512R	28	V1.1	5E	A4	MOD-EPROM
27C513	28*	V1.1	5B	5E	MOD-EPROM
27C515	28*	V1.1	5B	CA	MOD-EPROM
27C64	28*	V1.1	93	33	MOD-EPROM
27HC256	28*	V1.1	5C	32	MOD-EPROM
27HC64	28*	V1.1	93	33	MOD-EPROM
27HC641	24*	V1.1	90	67	MOD-EPROM
27HC642	24*	V1.1	90	67	MOD-EPROM
28C04	24	V2.0	C4	82	MOD-EPROM
28C16	28	V2.0	C4	96	MOD-EPROM
28C17	28	V2.0	C4	A2	MOD-EPROM
28C256	28	V2.0	BA	99	MOD-EPROM
28C64	28	V1.1	C4	98	MOD-EPROM
28HC16	24	V2.0	C4	96	MOD-EPROM
28HC17	28	V2.0	C4	A2	MOD-EPROM
28HC191	24	V1.1	D2	1C	MOD-EPROM
28HC256	28	V2.0	BA	99	MOD-EPROM
28HC291	24	V1.1	D2	1C	MOD-EPROM
28HC64	28	V2.0	C4	98	MOD-EPROM
CATALYST Semiconductor, Inc.					
27128A	28	V2.0	5C	51	MOD-EPROM
27256	28	V2.0	5C	32	MOD-EPROM
27512	28	V2.0	5E	A4	MOD-EPROM
2764A	28	V2.0	5C	33	MOD-EPROM
28C16A	24	V2.0	C3	96	MOD-EPROM
28C17A	28	V2.0	C3	A2	MOD-EPROM

Device Part Number	Number of Pins	Software Version	Family Code	Pinout Code	Module Type
Cypress Semiconductor					
7C225	24	V2.0	F0	B6	MOD-EPROM
7C235	24	V1.1	F0	B5	MOD-EPROM
7C245	24	V1.1	F0	B0	MOD-EPROM
7C251	28	V1.1	EB	E6	MOD-EPROM
7C253	28	V1.1	EB	E6	MOD-EPROM
7C254	28	V1.1	EB	E6	MOD-EPROM
7C261	24	V1.1	EF	31	MOD-EPROM
7C263	24	V1.1	EF	31	MOD-EPROM
7C264	24	V1.1	EF	31	MOD-EPROM
7C281	24	V1.1	EE	B4	MOD-EPROM
7C282	24	V1.1	EE	B4	MOD-EPROM
7C291	24	V2.0	F2	AF	MOD-EPROM
7C291A	24	V2.0	10C	0AF	MOD-EPROM
7C292	24	V2.0	F2	AF	MOD-EPROM
EXEL Microelectronics					
2804	24	V1.1	B7	82	MOD-EPROM
2816A	24	V1.1	B7	23	MOD-EPROM
2817A	28	V1.1	BF	A2	MOD-EPROM
2864A	28	V1.1	C3	98	MOD-EPROM
2865A	28	V1.1	C3	98	MOD-EPROM
46C15	24	V1.1	CD	21	MOD-EPROM
46C16	24	V1.1	CD	21	MOD-EPROM
Fujitsu					
27128	28*	V1.1	45	51	MOD-EPROM
2716	24	V1.1	19	23	MOD-EPROM
27256	28*	V1.1	93	32	MOD-EPROM
2732	24	V1.1	19	24	MOD-EPROM
2732A	24	V1.1	27	24	MOD-EPROM
2764	28	V1.1	45	33	MOD-EPROM
27C1000	32*	V1.1	6C	CC	MOD-EPROM
27C1001	32*	V1.1	6C	CB	MOD-EPROM

Device Part Number	Number of Pins	Software Version	Family Code	Pinout Code	Module Type
Fujitsu (continued)					
27C1024	40*	V1.1	6D	A8	MOD-EPROM
27C128	28*	V1.1	45	51	MOD-EPROM
27C256	28*	V1.1	45	32	MOD-EPROM
27C256A	28*	V1.1	93	32	MOD-EPROM
27C256H	28*	V1.1	93	32	MOD-EPROM
27C32A	24	V1.1	27	24	MOD-EPROM
27C512	28*	V1.1	4B	A4	MOD-EPROM
27C64	28	V1.1	45	33	MOD-EPROM
28C64	28*	V1.1	C3	98	MOD-EPROM
28C65	28	V1.1	C3	98	MOD-EPROM
8516	24	V1.1	19	23	MOD-EPROM
8532	24	V1.1	19	24	MOD-EPROM
8742	40	V1.1	50	57	MOD-MICRO
8742H/N	40	V1.1	50	57	MOD-MICRO
8749H	40	V1.1	50	57	MOD-MICRO
Hitachi					
27128A	28*	V1.1	93	51	MOD-EPROM
27256	28*	V1.1	93	32	MOD-EPROM
27512	28*	V1.1	4B	A4	MOD-EPROM
27C101	32*	V1.1	8F	CB	MOD-EPROM
27C1024	40*	V1.1	8E	A8	MOD-EPROM
27C256	28*	V1.1	93	32	MOD-EPROM
27C256H	28	V2.0	111	032	MOD-EPROM
27C301	32*	V1.1	8F	CC	MOD-EPROM
27C64	28	V1.1	79	33	MOD-EPROM
462532	24	V1.1	19	25	MOD-EPROM
462716	24	V1.1	19	23	MOD-EPROM
462732	24	V1.1	19	24	MOD-EPROM
4827128	28	V1.1	79	51	MOD-EPROM
482732A	24	V1.1	27	24	MOD-EPROM
482764	28	V1.1	79	33	MOD-EPROM
58064	28	V1.1	D7	98	MOD-EPROM
58C65	28	V1.1	C3	98	MOD-EPROM

Device Part Number	Number of Pins	Software Version	Family Code	Pinout Code	Module Type
Hyundai					
27C64	28*	V1.1	F8	33	MOD-EPROM
Intel					
27010	32*	V1.1	5C	CB	MOD-EPROM
27011	28*	V1.1	5C	C9	MOD-EPROM
27128	28*	V1.1	79	51	MOD-EPROM
27128A	28*	V1.1	93	51	MOD-EPROM
27128B	28*	V1.1	93	51	MOD-EPROM
2716	24	V1.1	19	23	MOD-EPROM
27210	40*	V1.1	5F	A8	MOD-EPROM
27256	28*	V1.1	93	32	MOD-EPROM
2732	24	V1.1	19	24	MOD-EPROM
2732A	24*	V1.1	4D	24	MOD-EPROM
27512	28	V1.1	4B	A4	MOD-EPROM
27513	28	V1.1	5B	5E	MOD-EPROM
2764	28*	V1.1	79	33	MOD-EPROM
2764A	28*	V1.1	93	33	MOD-EPROM
27C010	32	V1.1	5C	CB	MOD-EPROM
27C011	28	V1.1	5C	C9	MOD-EPROM
27C128	28*	V1.1	5C	51	MOD-EPROM
27C202	40	V2.0	7E	DD	MOD-EPROM
27C210	40	V1.1	5F	A8	MOD-EPROM
27C256	28*	V1.1	5C	32	MOD-EPROM
27C512	28*	V1.1	5E	A4	MOD-EPROM
27C64	28*	V1.1	93	33	MOD-EPROM
27F256	28	V2.0	0A8	109	MOD-EPROM
2816	24	V1.1	37	23	MOD-EPROM
2816A	24*	V1.1	A5	96	MOD-EPROM
2817A	28*	V1.1	BF	A2	MOD-EPROM
2864A	28	V1.1	CC	98	MOD-EPROM
2864B	28	V1.1	CA	A6	MOD-EPROM
28F010-P1	32	V2.0	135	118	MOD-EPROM
28F256-P1	32	V2.0	113	10A	MOD-EPROM
28F256-P2	32	V2.0	0A8	10A	MOD-EPROM
8741	40	V1.1	56	59	MOD-MICRO

Device Part Number	Number of Pins	Software Version	Family Code	Pinout Code	Module Type
Intel (continued)					
8741A	40	V1.1	56	59	MOD-MICRO
8744H	40	V1.1	D5	58	MOD-MICRO
8748	40	V1.1	52	56	MOD-MICRO
8748H	40	V1.1	50	56	MOD-MICRO
8749H	40	V1.1	50	57	MOD-MICRO
8751H	40	V1.1	D5	58	MOD-MICRO
8752BH	40	V1.1	5A	0C	MOD-MICRO
8755A	40	V1.1	47	55	MOD-MICRO
87C257	28*	V1.1	5C	E2	MOD-EPROM
87C51	40	V1.1	5A	0B	MOD-MICRO
87C51FA	40	V1.1	5A	4F	MOD-MICRO
87C64	28*	V1.1	93	3A	MOD-EPROM
P27128A	28*	V1.1	5C	51	MOD-EPROM
P27256	28*	V1.1	5C	32	MOD-EPROM
P2732A	24*	V1.1	4D	24	MOD-EPROM
P27512	28	V1.1	5E	A4	MOD-EPROM
P2764	28*	V1.1	79	33	MOD-EPROM
P2764A	28*	V1.1	5C	33	MOD-EPROM
P27C256	28	V1.1	5C	32	MOD-EPROM
P27C64	28	V1.1	5C	33	MOD-EPROM
P8748H	40	V1.1	50	56	MOD-MICRO
P8749H	40	V1.1	50	57	MOD-MICRO
P87C64	28	V2.0	5C	3A	MOD-EPROM
Matsushita					
27128	28	V1.1	79	51	MOD-EPROM
2764	28	V1.1	79	33	MOD-EPROM
Microchip Technology, Inc./GI					
27256	28*	V1.1	93	32	MOD-EPROM
27C128	28	V1.1	93	51	MOD-EPROM
27C256	28*	V1.1	93	32	MOD-EPROM
27C512	28*	V1.1	4B	A4	MOD-EPROM

Device Part Number	Number of Pins	Software Version	Family Code	Pinout Code	Module Type
Microchip Technology, Inc./GI (continued)					
27C513	28*	V1.1	5B	5E	MOD-EPROM
27C515	28*	V1.1	5B	CA	MOD-EPROM
27C64	28*	V1.1	93	33	MOD-EPROM
27HC191	24	V2.0	11	21	MOD-EPROM
27HC291	24	V2.0	11	21	MOD-EPROM
27HC64	28*	V1.1	93	33	MOD-EPROM
27HC641	24*	V1.1	90	67	MOD-EPROM
28C64/A	28*	V1.1	C3	98	MOD-EPROM
28CP64	28	V2.0	C4	98	MOD-EPROM
5816	24	V1.1	37	23	MOD-EPROM
Mitsubishi					
27128	28	V1.1	79	51	MOD-EPROM
2716	24	V1.1	19	23	MOD-EPROM
27256	28*	V1.1	93	32	MOD-EPROM
2732	24	V1.1	19	24	MOD-EPROM
27512	28*	V1.1	4B	A4	MOD-EPROM
2764	28	V1.1	79	33	MOD-EPROM
27C100	32*	V1.1	8F	CC	MOD-EPROM
27C101	32*	V1.1	8F	CB	MOD-EPROM
27C102	40*	V1.1	8E	A8	MOD-EPROM
27C128	28	V1.1	79	51	MOD-EPROM
27C256	28*	V1.1	93	32	MOD-EPROM
27C512	28	V2.0	5E	A4	MOD-EPROM
27C512A	28	V2.0	5E	A4	MOD-EPROM
8748	40	V1.1	52	56	MOD-MICRO
Mostek					
2716	24	V1.1	19	23	MOD-EPROM
Motorola					
2532	24	V1.1	19	25	MOD-EPROM
2716	24	V1.1	19	23	MOD-EPROM
67256	28	V2.0	49	32	MOD-EPROM
67259	28	V2.0	49	32	MOD-EPROM

Device Part Number	Number of Pins	Software Version	Family Code	Pinout Code	Module Type
Motorola (continued)					
68764	24	V1.1	25	29	MOD-EPROM
68766	24	V1.1	25	29	MOD-EPROM
68769	24	V1.1	25	29	MOD-EPROM
National Semiconductor					
2532	24	V1.1	19	25	MOD-EPROM
2716	24	V1.1	19	23	MOD-EPROM
2732	24	V1.1	19	24	MOD-EPROM
2758A	24	V1.1	19	22	MOD-EPROM
2758B	24	V1.1	19	35	MOD-EPROM
27C1024	40	V2.0	5F	A8	MOD-EPROM
27C128	28*	V1.1	5D	51	MOD-EPROM
27C16	24	V1.1	19	23	MOD-EPROM
27C16B	24*	V1.1	5D	23	MOD-EPROM
27C16H	24	V1.1	BD	23	MOD-EPROM
27C256	28	V1.1	5D	32	MOD-EPROM
27C256B	28	V2.0	E8	32	MOD-EPROM
27C32	24	V1.1	19	24	MOD-EPROM
27C32B	24*	V1.1	5D	24	MOD-EPROM
27C32H	24	V1.1	BD	24	MOD-EPROM
27C512	28*	V1.1	4C	A4	MOD-EPROM
27C512A	28	V1.1	E9	A4	MOD-EPROM
27C58A	24	V1.1	19	22	MOD-EPROM
27C58B	24	V1.1	19	35	MOD-EPROM
27C64	28*	V1.1	5D	33	MOD-EPROM
27CP128	28	V1.1	5D	BB	MOD-EPROM
27CP256	28	V2.0	4C	1E	MOD-EPROM
27CP64	28	V2.0	5D	1D	MOD-EPROM
2816	24	V1.1	37	23	MOD-EPROM
2864	28	V1.1	C7	A5	MOD-EPROM
87C512A	28	V2.0	0E9	115	MOD-EPROM
9816A	24	V1.1	C3	96	MOD-EPROM
9817	28	V1.1	BF	A2	MOD-EPROM
9817A	28	V1.1	BF	A2	MOD-EPROM

Device Part Number	Number of Pins	Software Version	Family Code	Pinout Code	Module Type
NEC					
27128	28	V1.1	79	51	MOD-EPROM
2716	24	V1.1	19	23	MOD-EPROM
27256	28*	V1.1	45	32	MOD-EPROM
27256A	28*	V1.1	93	32	MOD-EPROM
2732	24	V1.1	19	24	MOD-EPROM
2732A	24	V1.1	27	24	MOD-EPROM
27512	28*	V1.1	5E	A4	MOD-EPROM
2764	28	V1.1	79	33	MOD-EPROM
27C1000	32*	V1.1	71	CC	MOD-EPROM
27C1000A	32	V2.0	71	CB	MOD-EPROM
27C1001	32*	V1.1	71	CB	MOD-EPROM
27C1024	40*	V1.1	6F	A8	MOD-EPROM
27C2001	32*	V1.1	71	F5	MOD-EPROM
27C256	28	V2.0	45	32	MOD-EPROM
27C256A	28*	V1.1	48	32	MOD-EPROM
27C4001	32	V2.0	71	F6	MOD-EPROM
27C512	28*	V1.1	4E	A4	MOD-EPROM
28C64	28*	V1.1	C3	98	MOD-EPROM
8741A	40	V1.1	56	59	MOD-MICRO
8748	40	V1.1	52	56	MOD-MICRO
8748H	40	V1.1	50	56	MOD-MICRO
8749H	40	V1.1	50	57	MOD-MICRO
8755A	40	V1.1	47	55	MOD-MICRO
OKI					
27128	28	V1.1	79	51	MOD-EPROM
27128A	28	V1.1	93	51	MOD-EPROM
2716	24	V1.1	19	23	MOD-EPROM
27256	28	V1.1	93	32	MOD-EPROM
2732	24	V1.1	19	24	MOD-EPROM
2732A	24	V1.1	27	24	MOD-EPROM
27512	28	V1.1	5E	A4	MOD-EPROM
2758	24	V1.1	19	22	MOD-EPROM

Device Part Number	Number of Pins	Software Version	Family Code	Pinout Code	Module Type
OKI (continued)					
2764	28	V1.1	79	33	MOD-EPROM
2764A	28	V1.1	5C	33	MOD-EPROM
27C256	28	V1.1	93	32	MOD-EPROM
2816A	24	V1.1	B7	23	MOD-EPROM
28C16A	24	V2.0	B7	23	MOD-EPROM
8755A	40	V1.1	47	55	MOD-MICRO
Ricoh					
27C256	28*	V1.1	93	32	MOD-EPROM
27C32	24	V1.1	27	24	MOD-EPROM
27C64	28	V1.1	79	33	MOD-EPROM
5H32	24	V1.1	27	24	MOD-EPROM
Rockwell International					
87C32	24	V1.1	27	24	MOD-EPROM
87C64	28	V1.1	79	33	MOD-EPROM
Samsung Semiconductor					
2816A	24	V1.1	B7	23	MOD-EPROM
2817A	28	V1.1	BF	A2	MOD-EPROM
2864A	28	V1.1	C3	98	MOD-EPROM
2864AH	28	V1.1	C3	98	MOD-EPROM
2865A	28	V1.1	C3	98	MOD-EPROM
2865AH	28	V2.0	C8	98	MOD-EPROM
SEEQ Technology					
27128	28*	V1.1	79	51	MOD-EPROM
27256	28	V1.1	93	32	MOD-EPROM
2764	28*	V1.1	79	33	MOD-EPROM
27C256	28*	V1.1	93	32	MOD-EPROM
2804	24	V1.1	B7	82	MOD-EPROM
2816A	24*	V1.1	B7	23	MOD-EPROM
2816AH	24	V1.1	DF	23	MOD-EPROM
2817A	28	V1.1	BF	A2	MOD-EPROM

Device Part Number	Number of Pins	Software Version	Family Code	Pinout Code	Module Type
SEEQ Technology (continued)					
2817AH	28	V1.1	BF	A2	MOD-EPROM
2864	28	V1.1	C9	A6	MOD-EPROM
2864H	28	V1.1	C9	A6	MOD-EPROM
28C010	32	V2.0	B8	11	MOD-EPROM
28C256	28	V1.1	B8	99	MOD-EPROM
28C64	28	V1.1	B8	98	MOD-EPROM
36C16	24	V2.0	9C	21	MOD-EPROM
36C32	24	V2.0	9C	63	MOD-EPROM
48F010	32	V2.0	10F	10C	MOD-EPROM
48F512	32	V2.0	10F	10B	MOD-EPROM
5133	28*	V1.1	79	33	MOD-EPROM
5143	28*	V1.1	79	51	MOD-EPROM
5213	24	V1.1	A5	96	MOD-EPROM
52B13	24	V1.1	A5	96	MOD-EPROM
52B13H	24	V1.1	B9	96	MOD-EPROM
52B23H	28	V1.1	AB	97	MOD-EPROM
52B33	28	V1.1	AB	98	MOD-EPROM
5516A	24	V1.1	B7	23	MOD-EPROM
5517A	28	V1.1	BF	A2	MOD-EPROM
5517AH	28	V1.1	BF	A2	MOD-EPROM
Sharp					
57127	28	V1.1	93	51	MOD-EPROM
57128	28*	V1.1	5C	51	MOD-EPROM
5749	24	V1.1	7C	67	MOD-EPROM
5762	28	V1.1	93	33	MOD-EPROM
5763	28	V1.1	93	33	MOD-EPROM
5764	28*	V1.1	5C	33	MOD-EPROM
Signetics					
27C256	28*	V1.1	93	32	MOD-EPROM
27C64A	28*	V1.1	93	33	MOD-EPROM

Device Part Number	Number of Pins	Software Version	Family Code	Pinout Code	Module Type
S-MOS Systems					
27128H	28	V1.1	79	51	MOD-EPROM
27C256H	28	V1.1	93	32	MOD-EPROM
27C64H	28	V1.1	79	33	MOD-EPROM
SGS-Thomson Microelectronics					
2532	24	V1.1	19	25	MOD-EPROM
27128A	28*	V1.1	93	51	MOD-EPROM
2716	24	V1.1	19	23	MOD-EPROM
27256	28*	V1.1	93	32	MOD-EPROM
2732	24	V1.1	19	24	MOD-EPROM
2732A	24	V1.1	27	24	MOD-EPROM
27512	28*	V1.1	7F	A4	MOD-EPROM
2764	28	V1.1	79	33	MOD-EPROM
2764A	28*	V1.1	93	33	MOD-EPROM
27C1024	40*	V1.1	5F	A8	MOD-EPROM
27C16	24	V1.1	19	23	MOD-EPROM
27C256	28*	V1.1	93	32	MOD-EPROM
27C32	24	V1.1	19	24	MOD-EPROM
27C64	28*	V1.1	93	33	MOD-EPROM
Texas Instruments					
2516	24	V1.1	BD	23	MOD-EPROM
2532	24	V1.1	BD	25	MOD-EPROM
2532A	24	V1.1	63	25	MOD-EPROM
2564	28	V1.1	BD	30	MOD-EPROM
25L32	24	V1.1	19	25	MOD-EPROM
27128	28	V1.1	79	51	MOD-EPROM
27128A	28*	V1.1	93	51	MOD-EPROM
27256	28*	V1.1	93	32	MOD-EPROM
2732	24	V1.1	BD	24	MOD-EPROM
2732A-HS	24	V1.1	63	24	MOD-EPROM
27512	28*	V1.1	4B	A4	MOD-EPROM
2758	24	V1.1	19	22	MOD-EPROM

Device Part Number	Number of Pins	Software Version	Family Code	Pinout Code	Module Type
Texas Instruments (continued)					
2764	28	V1.1	79	33	MOD-EPROM
27C010	32	V2.0	12B	0CB	MOD-EPROM
27C128	28*	V1.1	93	51	MOD-EPROM
27C210	40*	V1.1	73	A8	MOD-EPROM
27C256	28*	V1.1	93	32	MOD-EPROM
27C32	24	V2.0	116	024	MOD-EPROM
27C512	28*	V1.1	4B	A4	MOD-EPROM
27C64	28*	V1.1	93	33	MOD-EPROM
27P32A	24	V1.1	63	24	MOD-EPROM
27P64	28	V1.1	79	33	MOD-EPROM
27PC128	28	V1.1	93	51	MOD-EPROM
27PC256	28	V1.1	93	32	MOD-EPROM
27PC32	24	V2.0	116	024	MOD-EPROM
27PC512	28	V1.1	4B	A4	MOD-EPROM
27PC64	28	V2.0	115	033	MOD-EPROM
Toshiba					
24128	28*	V1.1	45	51	MOD-EPROM
24128A	28*	V1.1	5C	51	MOD-EPROM
24256	28*	V1.1	45	32	MOD-EPROM
24256A	28*	V1.1	5C	32	MOD-EPROM
24256B	28	V2.0	5C	32	MOD-EPROM
24512	28*	V1.1	5E	A4	MOD-EPROM
24512A	28	V2.0	5E	A4	MOD-EPROM
2464	28*	V1.1	45	33	MOD-EPROM
2464A	28*	V1.1	5C	33	MOD-EPROM
27128	28*	V1.1	45	51	MOD-EPROM
27128A	28*	V1.1	5C	51	MOD-EPROM
27256	28*	V1.1	45	32	MOD-EPROM
27256A	28*	V1.1	5C	32	MOD-EPROM
27256B	28*	V1.1	5C	32	MOD-EPROM
2732	24	V1.1	19	24	MOD-EPROM
2732A	24	V1.1	27	24	MOD-EPROM

Device Part Number	Number of Pins	Software Version	Family Code	Pinout Code	Module Type
Toshiba (continued)					
27512	28*	V1.1	5E	A4	MOD-EPROM
27512A	28	V1.1	5E	A4	MOD-EPROM
2764	28*	V1.1	45	33	MOD-EPROM
2764A	28*	V1.1	5C	33	MOD-EPROM
323	24	V1.1	19	23	MOD-EPROM
541000	32	V2.0	5C	CB	MOD-EPROM
541001	32	V2.0	5C	CC	MOD-EPROM
54256	28*	V1.1	45	32	MOD-EPROM
54256A	28*	V1.1	5C	32	MOD-EPROM
54512	28	V1.1	5E	A4	MOD-EPROM
571000	32*	V1.1	5C	CB	MOD-EPROM
571024	40*	V1.1	5F	A8	MOD-EPROM
57256A	28*	V1.1	5C	32	MOD-EPROM
574000	32	V2.0	12E	0F6	MOD-EPROM
57512A	28	V2.0	5E	A4	MOD-EPROM
57H1024	40	V2.0	5F	A8	MOD-EPROM
58257A	28	V2.0	117	032	MOD-EPROM
VLSI Technology					
27C128	28*	V1.1	5D	51	MOD-EPROM
27C256	28*	V1.1	5D	32	MOD-EPROM
27C512	28*	V1.1	4C	A4	MOD-EPROM
27C64	28*	V1.1	5D	33	MOD-EPROM
28H64	28	V1.1	C9	A6	MOD-EPROM
WaferScale Integration					
27C010L	32	V2.0	109	0CB	MOD-EPROM
27C128F	28*	V1.1	3C	51	MOD-EPROM
27C191	28*	V1.1	7B	21	MOD-EPROM
27C256F	28	V2.0	3C	32	MOD-EPROM
27C64	28	V2.0	3C	33	MOD-EPROM
27C64F	28*	V1.1	3C	33	MOD-EPROM
57C128	28*	V1.1	3C	51	MOD-EPROM
57C128F	28	V1.1	3C	51	MOD-EPROM

Device Part Number	Number of Pins	Software Version	Family Code	Pinout Code	Module Type
WaferScale Integration (continued)					
57C191	24	V1.1	7B	21	MOD-EPROM
57C291	24	V1.1	7B	21	MOD-EPROM
57C43	24	V2.0	7B	63	MOD-EPROM
57C49	24	V1.1	7B	67	MOD-EPROM
57C51	28	V1.1	7B	78	MOD-EPROM
57C64F	28	V1.1	3C	33	MOD-EPROM
57C65	40	V1.1	2C	E7	MOD-EPROM
XICOR					
2804A	24	V1.1	B7	82	MOD-EPROM
2816A	24	V1.1	B7	23	MOD-EPROM
2816B	24	V1.1	C3	96	MOD-EPROM
28256	28*	V1.1	BA	99	MOD-EPROM
2864A	28	V1.1	C3	98	MOD-EPROM
28C256	28	V2.0	8A	99	MOD-EPROM

212 MULTI PROGRAMMER

Acceptance Test Procedure for EPROM Module

Introduction

Your 212 Multi Programmer system was tested both electrically and mechanically before it was shipped and was carefully packaged to prevent shipping damage. It should arrive free of any defect, without marks or scratches, and in perfect operating condition. However, carefully inspect the base unit and module for any damage that may have occurred in transit. If you note any damage, file a claim with the carrier and notify your nearest Data I/O Service Center. A Data I/O phone list is located in the Getting Started section of your 212 Multi Programmer Operator's Manual.

The 212 Multi Programmer and EPROM module acceptance test consists of ten voltage tests for the 32-pin (left) socket and five voltage tests for the 40-pin (right) socket. These voltage tests verify that the module's socket pins are operating at the correct voltages. This acceptance test procedure checks both the EPROM module and the 212 Multi Programmer base unit.

WARNING

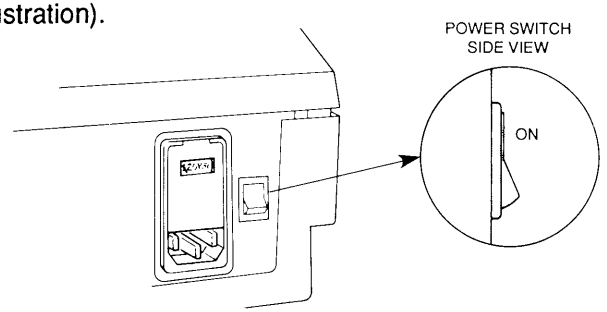
The procedures described in this document are intended to be used only by personnel qualified to service electronic equipment. Do not attempt to perform these procedures unless you are qualified to do so.

In order to perform the acceptance test procedure, you will need a 3.5 digit digital multimeter (DMM). The DC Volt accuracy of the DMM must be +/- (0.3% + 1 digit) or better.

Acceptance Test Procedure

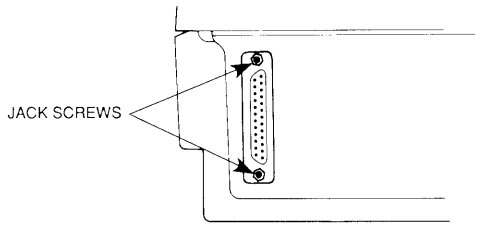
The acceptance test procedure consists of powering up the programmer in a special voltage test mode, performing ten voltage tests (32-pin socket) and five voltage tests (40-pin socket) while in the voltage test mode and then allowing the programmer to complete its self test. To perform the acceptance test, complete the following steps in the order presented.

1. Install the voltage selector, check the line fuse and install the EPROM module and memory card as instructed in the Getting Started section of the 212 Operator's Manual.
2. Plug the AC power cord into the rear of the programmer (see illustration) and into a power outlet.
3. While holding down the "A" and "7" keys, press the power switch on the back of the programmer to the ON position (see illustration).



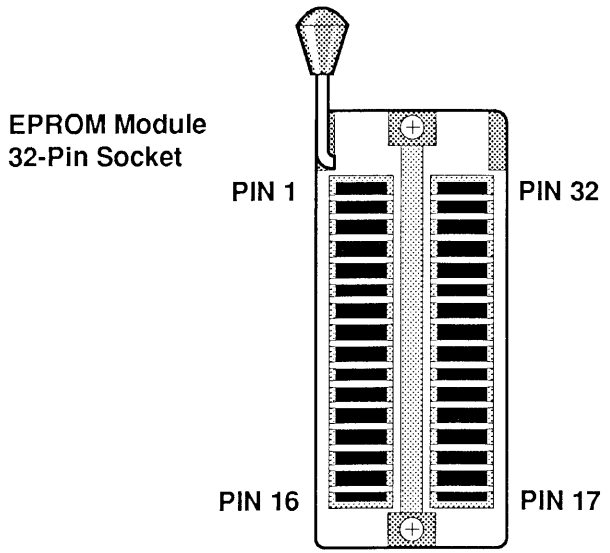
Hold the "A" and "7" keys down until the programmer displays `SELF TESTING` and decimal points are advancing across the second line of the display. The programmer will then display `VOLTAGE TEST 01` and decimal points will continue to advance across the second line of the display. The advancing decimal points indicate that the programmer is operating in the mode shown on the top line of the display.

4. **Connect the DMM to ground at one of the connector jackscrews on the back of the programmer (see illustration).**



5. Press the ENTER key or scroll key repeatedly until VOLTAGE TEST 5 is displayed on the top line of the display and advancing decimal points appear on the second line of the display.

6. For the **EPROM module 32-pin (left) socket**, probe each of the socket pins (locations listed in illustration below) 1, 3, 25, 28, and 30 as listed on Table 1 of the following page and check to make sure that the voltage for each pin falls within the range specified for Test #5 (first row of Table 1). Make a note of any voltages that do not fall within the range specified for a pin during Test #5.



7. Press the ENTER key or scroll key repeatedly until VOLTAGE TEST 6is displayed on the top line of the display and advancing decimal points appear on the second line of the display.

8. Probe the socket pins as in Test #5, check to make sure that the voltage of each pin falls within the range specified for Test #6, and make a note of any voltages that fall outside of the specified range.

9. Continue this procedure, using Table 1, to complete Voltage Tests #7, 8, 9, 10, 11, 13, 15, and 16.

TABLE 1 - EPROM 32-Pin Socket

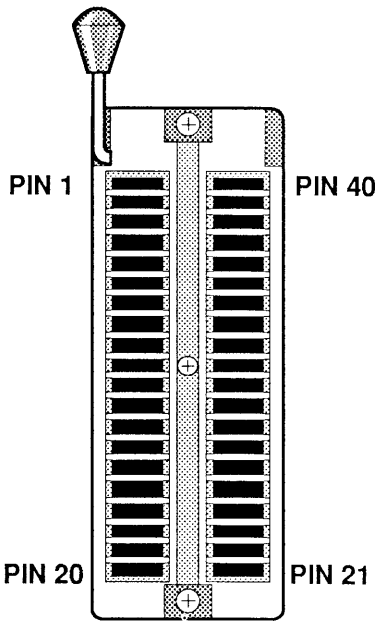
	Pin 1	Pin 3	Pin 25	Pin 28	Pin 30
Test #5	12.0V (Vpp +/-0.5V)	3.2 - 5.0V	25.0V (Vpp +/-0.5V)	3.2 - 5.0V	0.0 - 0.6V
Test #6	0.0 - 0.6V	21.0V (Vpp +/-0.5V)	5.0V (Vpp +/-0.3V)	0.0 - 0.6V	3.2 - 5.0V
Test #7	0.0 - 0.6V	5.0V (Vpp +/-0.3V)	0.0 - 0.6V	3.2 - 5.0V	3.2 - 5.0V
Test #8	3.2 - 5.0V	3.2 - 5.0V	3.2 - 5.0V	0.0 - 0.6V	5.0V (Vcc +/-0.15V)
Test #9	21.0V (Vpp +/-0.5V)	5.0V (Vpp +/-0.3V)	0.0 - 0.6V	0.0 - 0.6V	6.0V (Vcc +/-0.15V)
Test #10	0.0 - 0.6V	12.0V (Vpp +/-0.5V)	3.2 - 5.0V	5.0 (Vcc +/-0.15V)	3.2 - 5.0V
Test #11	3.2 - 5.0V	3.2 - 5.0V	3.2 - 5.0V	6.0V (Vcc +/-0.15V)	3.2 - 5.0V
Test #13	3.2 - 5.0V	3.2 - 5.0V	18.0V	3.2 - 5.0V	3.2 - 5.0V
Test #15	0.0 - 0.6V	0.0 - .6V	3.2 - 5.0V	3.2 - 5.0V	6.0V (Vcc +/-0.15V)
Test #16	3.2 - 5.0V	3.2 - 5.0V	5.0V (Vpp +/-0.3V)	3.2 - 5.0V	3.2 - 5.0V

NOTE

Using the scroll keys to scroll between voltage test sequences (between test #16 of the 32-pin (left) socket test and test #1 of the 40-pin (right) socket test) will allow you to stay in the test mode and test both left and right sockets in order without quitting the test sequence. Pressing the ENTER key through the test sequence allows you to test only one socket per sequence; pressing ENTER will move you out of the test mode after test #16, so that you have to power down, then power up to continue testing.

10. After completing all of the voltage tests for the EPROM module 32-pin socket, perform the voltage tests for the **EPROM module 40-pin (right) socket**. Probe each of the socket pins (locations listed in the following socket illustration) 1, 3, 24, 25, 31, and 40 as listed on Table 2 and check to make sure that the voltage for each pin falls within the range specified for Test #1 (first row of table). Make a note of any voltages that do not fall within the range specified for a pin during Test #1.

EPROM Module
40-Pin Socket



11. Press the ENTER key or scroll key repeatedly until `VOLTAGE TEST 1` is displayed on the top line of the display and advancing decimal points appear on the second line of the display.

12. Probe the socket pins as in step 10, check to make sure that the voltage of each pin falls within the range specified for Test #1, and make a note of any voltages that fall outside of the specified range.

13. Continue this procedure, using Table 2, to complete Voltage Tests #5, 6, 9, and 14.

TABLE 2 - EPROM 40-Pin Socket

	Pin 1	Pin 3	Pin 24	Pin 25	Pin 31	Pin 40
Test #1	0.0 - 0.6V	3.2 - 5.0V	0.0 - 0.6V	3.2 - 5.0V	0.0 - 0.6V	5.0V (Vcc +/-0.15V)
Test #5	12.0V (Vpp +/-0.5V)	3.2 - 5.0V	3.2 - 5.0V	0.0V - 0.6V	5.0V (Vpp +/-0.3V)	6.0V (Vcc +/-0.15V)
Test #6	0.0 - 0.6V	1.4 - 1.9V	0.0 - 0.6V	3.2 - 5.0V	12.0V (Vpp +/-0.5V)	6.0V (Vcc +/-0.15V)
Test #9	21.0V (Vpp +/-0.5V)	0.0 - 0.6V	3.2 - 5.0V	3.2 - 5.0V	0.0 - 0.6V	3.2 - 5.0V
Test #14	5.0 (Vpp +/-0.3V)	3.2 - 5.0V	3.2 - 5.0V	3.2 - 5.0V	18.0V (Vpp +/-0.5V)	6.0V (Vcc +/-0.15V)

After completing all of the voltage tests, turn the programmer power off and then turn it on again. The programmer will perform its complete self test. Upon completion of the self test, the programmer will display:

```
SELF TEST OK
DATA I/O 212 N
```

where "N" is the version number of the 212 software. The programmer will then display:

```
LOAD FROM MASTER
```

Once the self test is complete and the programmer displays `LOAD FROM MASTER`, the acceptance test procedure is completed. See the 212 Multi Programmer Operator's Manual for further instructions on operating the 212 Multi Programmer.

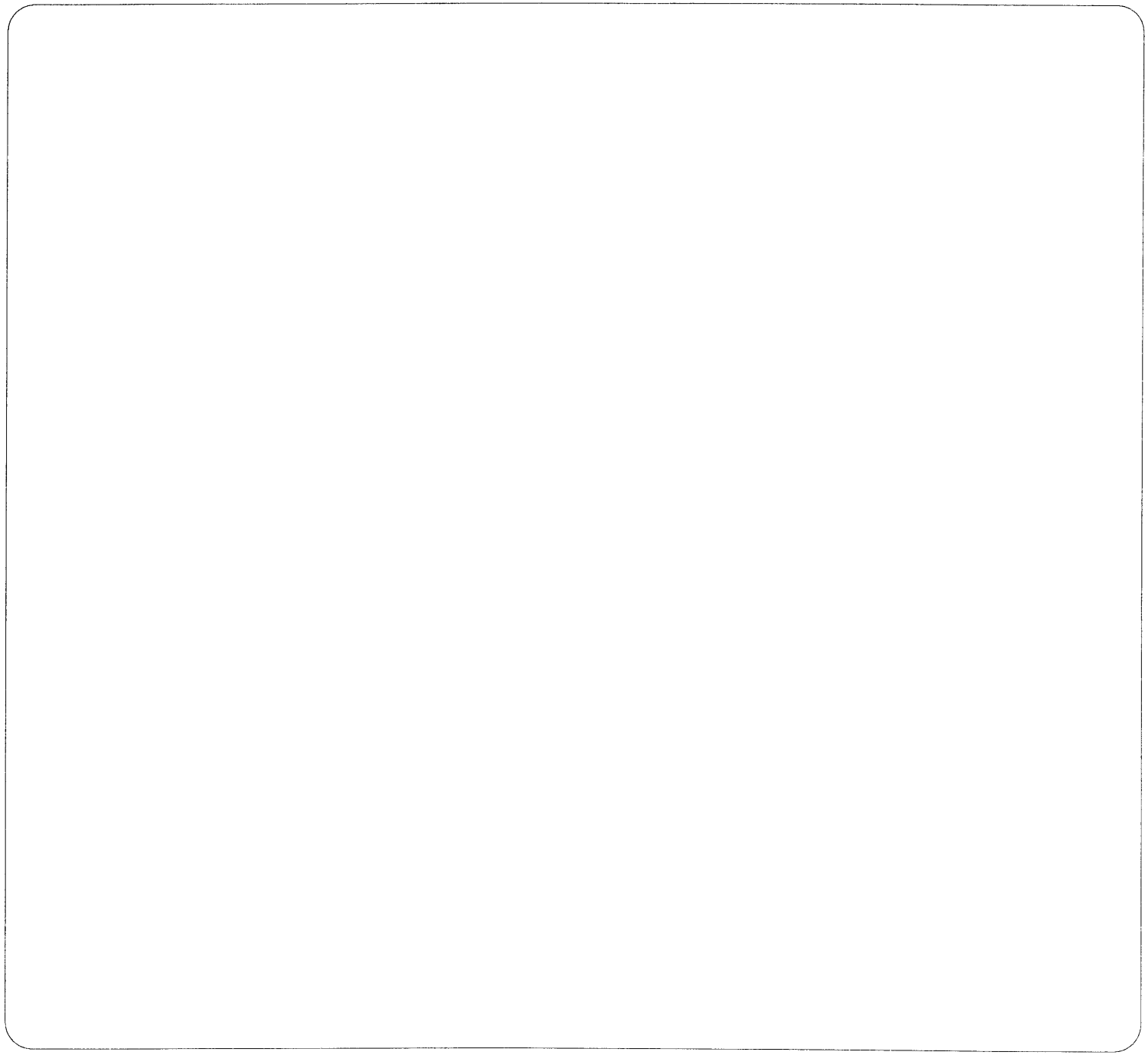
CAUTION

If you do not turn the programmer off to reset it before programming a part, the programmer will remain in the special self-test mode. Attempting a device operation, such as programming, in the special self-test mode will be unsuccessful and could potentially damage the device.

If the self test did not complete successfully, or one or more of the pins probed during the fifteen voltage tests did not indicate a voltage within the ranges specified in the table, contact your nearest Data I/O Service Center. A list of Data I/O phone numbers is located in the Getting Started section of the 212 Multi Programmer Operator's Manual.

212 MULTI PROGRAMMER

Acceptance Test Procedure for Micro Module



Introduction

Your 212 Multi Programmer system was tested both electrically and mechanically before it was shipped and was carefully packaged to prevent shipping damage. It should arrive free of any defect, without marks or scratches, and in perfect operating condition. However, carefully inspect the base unit and module for any damage that may have occurred in transit. If you note any damage, file a claim with the carrier and notify your nearest Data I/O Service Center. A Data I/O phone list is located in the Getting Started section of your 212 Multi Programmer Operator's Manual.

The 212 Multi Programmer and micro module acceptance test consists of six voltage tests for the (left) socket and four voltage tests for the (right) socket. These voltage tests verify that the module's socket pins are operating at the correct voltages. This acceptance test procedure checks both the Micro Module and the 212 Multi Programmer base unit.

WARNING

The procedures described in this document are intended to be used only by personnel qualified to service electronic equipment. Do not attempt to perform these procedures unless you are qualified to do so.

In order to perform the acceptance test procedure, you will need a 3.5 digit digital multimeter (DMM). The DC Volt accuracy of the DMM must be +/- (0.3% + 1 digit) or better.

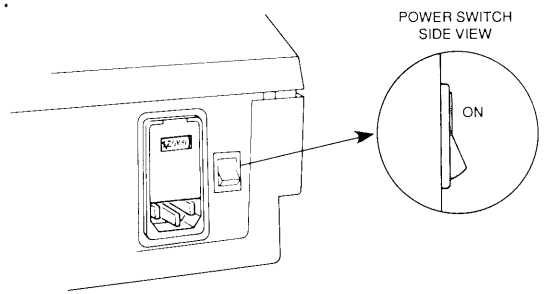
Acceptance Test Procedure

The acceptance test procedure consists of powering up the programmer in a special voltage test mode, performing six voltage tests (left socket) and four voltage tests (right socket) while in the voltage test mode and then allowing the programmer to complete its self test. To perform the acceptance test, complete the following steps in the order presented.

1. Install the voltage selector, check the line fuse and install the micro module and memory card as instructed in the Getting Started section of the 212 Operator's Manual.

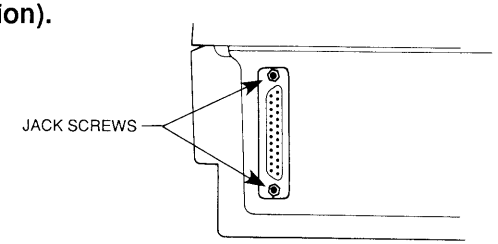
2. Plug the AC power cord into the rear of the programmer (see illustration) and into a power outlet.

3. While holding down the "A" and "7" keys, press the power switch on the back of the programmer to the ON position (see illustration).

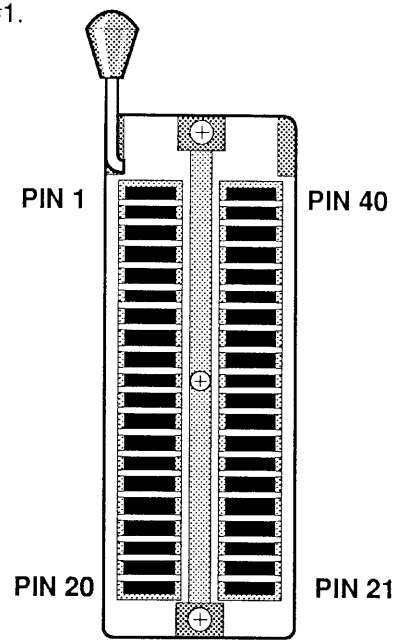


Hold the "A" and "7" keys down until the programmer displays `SELF TESTING` and decimal points are advancing across the second line of the display. The programmer will then display `VOLTAGE TEST 01` and decimal points will continue to advance across the second line of the display. The advancing decimal points indicate that the programmer is operating in the mode shown on the top line of the display.

4. **Connect the DMM to ground at one of the connector jackscrews on the back of the programmer (see illustration).**



5. For the **Micro Module LEFT socket**, probe each of the socket pins listed (locations listed in illustration below) in Table 1 and check to make sure that the voltage for each pin falls within the range specified for Test #1 (first row of table). Make a note of any voltages that do not fall within the range specified for a pin during Test #1.



6. Press the ENTER key or scroll key repeatedly until VOLTAGE TEST 2 is displayed on the top line of the display and advancing decimal points appear on the second line of the display.

7. Probe the socket pins as in Test # 1, check to make sure that the voltage of each pin falls within the range specified for Test # 2. Make a note of any voltages that do not fall within the specified range.

8. Continue this procedure, using Table1, to complete Voltage Tests #3, 7, 9, and 10.

TABLE 1
Micro Module LEFT Socket

	Pin 1	Pin 5	Pin 25	Pin 26	Pin 40
Test #1	0.0 - 0.6V	0.0 - 0.6V	3.2 - 5.0V	21.0V (Vpp +/-0.5V)	5.0V (Vcc +/-0.15V)
Test #2	-1.1 to -1.8V	25.0V (Vpp +/-0.5V)	18.0V (Vpp +/-0.5V)	5.0V (Vpp+/-.3V)	6.0V (Vcc +/-0.15V)
Test #3	3.2 - 5.0V	5.0V (Vpp +/-0.3V)	23.0V (Vpp +/-0.5V)	12.0V (Vpp +/-0.5V)	3.2 - 5.0V
Test #7	0.0 - 0.6V	18.0V (Vpp +/-0.5V)	3.2 - 5.0V	0.0 - 0.6V	5.0V (Vcc +/-0.15V)
Test #9	3.2 - 5.0V	5.0V (Vpp +/-0.3V)	3.2 - 5.0V	0.0 - 0.6V	0.0 - 0.6V
Test #10	0.0 - 0.6V	0.0 - 0.6V	0.0 - 0.6V	0.0 - 0.6V	3.2 - 5.0V

NOTE

Using the scroll keys to scroll between voltage test sequences (between test #10 of the micro module left socket test sequence and test #2 of the Micro Module right socket test sequence) will allow you to stay in the test mode and test both left and right sockets in order without quitting the test sequence. Pressing the ENTER key allows you to test only one socket per sequence; pressing ENTER will move you out of the test mode after test #10, so that you have to power down, then power up to continue testing.

9. After completing all of the voltage tests for the Micro Module LEFT socket, peform the voltage tests for the **Micro Module RIGHT socket**. Probe each of the socket pins listed (locations listed in the previous socket illustration) in Table 2 and check to make sure that the voltage for each pin falls within the range specified for Test #2 (first row of table). Make a note of any voltages that do not fall within the range specified for a pin during Test #2.

10. Press the ENTER key or scroll key repeatedly until `VOLTAGE TEST 3` is displayed on the top line of the display and advancing decimal points appear on the second line of the display.

11. Probe the socket pins as in Test # 2, check to make sure that the voltage of each pin falls within the range specified for Test # 3, and make a note of any voltages that do not fall within the specified range.

12. Continue this procedure, using Table 2, to complete Voltage Tests #7 and 9.

TABLE 2
Micro Module RIGHT Socket

	Pin 1	Pin 31	Pin 40
Test #2	-1.1 to -1.8V	25.0V (Vpp +/-0.5V)	6.0V (Vcc +/-0.15V)
Test #3	3.2 - 5.0V	5.0V (Vpp +/- 0.3V)	3.2 - 5.0V
Test #7	0.0 - 0.6V	18.0V (Vpp +/-0.5V)	5.0V (Vcc +/-0.3V)
Test #9	3.2 - 5.0V	5.0V (Vpp +/-0.3V)	0.0 - 0.6V