UniPak 2B™

Operator's Manual

DATA I/O

Data I/O has made every attempt to ensure that the information in this document is accurate and complete. However, Data I/O assumes no liability for errors, or for any damages that result from use of this document or the equipment which it accompanies.

Data I/O reserves the right to make changes to this document without notice at any time.

ORDERING INFORMATION

When ordering this manual use Part Number 981-0179-001.
Applies to: Engineering Part Number 950-0086-001 and up.

Text Reference Number 090-0247-001

General safety information for operating personnel is contained in this summary. In addition, specific WARNINGS and CAUTIONS appear throughout this manual where they apply and are not included in this summary.

Definitions

WARNING statements identify conditions or practices that could result in personal injury or loss of life.

CAUTION statements identify conditions or practices that could result in damage to equipment or other property.

Symbols

⚠ : This symbol appears on the equipment and it indicates that the user should consult the manual for further detail.

V ∿ : This symbol stands for Vac. For example, 120V∿= 120 Vac

Power Source

Check the voltage selector indicator (located on the rear panel) to verify that the product is configured for the appropriate line voltage.

Grounding the Product

The product is grounded through the grounding conductor of the power cord. To avoid electric shock, plug the power cord into a properly wired and grounded receptacle only. Grounding this equipment is essential for its safe operation.

Power Cord

Use only the power cord specified for your equipment.

Servicing

To reduce risk of electric shock, do not perform any servicing other than that described in this manual.

Operation

Always wear a grounded wrist strap when operating the equipment to prevent the possibility of damage from electrostatic discharge.

Introduction

This manual contains the operational procedures specific to the UniPak 2B Programming Module; see your programmer's operation manual for programmer-specific procedures, such as program/verify operations. Included in this manual are instructions on:

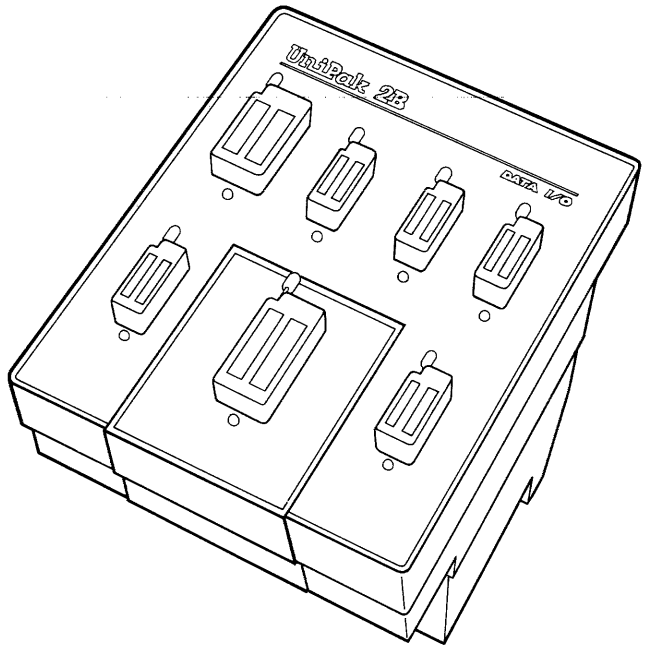
- ☐ GETTING STARTED—includes a sample programming session as well as instructions on device and pinout cartridge insertion and removal.
- ☐ SELECT FUNCTIONS—contains details on select codes, which are two-digit hexadecimal codes that enable special programmer functions that can only be performed with the UniPak 2B installed.
- ☐ ERROR CODES—describes the UniPak 2B's error code displays and corrective action to alleviate the problem.
- ☐ INDEX—provides an alphabetical guide to all major topics covered in the manual.

NOTE

The error codes provided in this manual are not accompanied by any service information. If you would like to receive maintenance data (circuit descriptions and schematics, calibration information, or waveform photographs), please contact your nearest Data I/O sales representative. A list of representatives is included with the warranty information at the back of this manual.

Data I/O's UniPak 2B programs over 800 popular MOS and bipolar devices. Values for programming variables, including pinouts, voltage levels and timing, are stored in firmware tables. When you choose the family and pinout codes for a particular device, the programmer uses information in these tables to assemble a specialized programming routine in scratch RAM. This method allows high-speed operation with minimum firmware overhead.

The UniPak 2B is designed to adapt to the programming requirements of many different devices; specially designed electronic switches allow programming of both bipolar and MOS devices. Pinout variations are handled by permanent device sockets on the UniPak 2B: two 16- pin, one 18-pin, two 20-pin and one 24-pin socket (see figure). One 28-pin socket resides on a pinout cartridge assembly that slides into a receptacle on the main housing of the UniPak 2B front panel.



Optional Features

The UniPak 2B includes one 28-pin cartridge as a standard item. Several optional pinout cartridges are also available, which allow programming of additional devices.

CAUTION

Always hold the UniPak 2B by the chassis when carrying it. Never transport the UniPak 2B by holding onto the pinout cartridge; if it slips out while you are carrying it and the unit drops, serious damage could result.

Data I/O will continue to release pinout cartridges as new devices become available. Check the latest price list or the device list included with this manual for details on which cartridge to use for a particular device. If you wish to purchase any of these cartridges, contact your nearest Data I/O sales representative. A list of representatives is included with the warranty information at the back of this manual.

Orders made with Data I/O must contain the following information:

- ☐ Description of the equipment
- ☐ Quantity of each item ordered
- ☐ Shipping and billing address of firm, including ZIP code
- ☐ Name of person ordering equipment
- ☐ Purchase order number
- ☐ Desired method of shipment

Programmer Compatibility

To be compatible with the UniPak 2B, your programmer may require a hardware and/or firmware update, depending on the model, configuration, and age.

The information that follows will help you determine whether your programmer requires updating. If you find that your programmer does require updating, contact your nearest Data I/O Customer Support Center.

- ☐ System 17—The System 17 must be converted into a System 19 with the latest firmware installed and latest hardware modifications.
- ☐ System 19—Check to determine whether your System 19 contains a 702-1520 or 702-1980 controller board by performing the following steps:
  1. Remove the programming module.
  2. Remove the metal or plastic shield (if any).
  3. Count the number of EPROM firmware sockets located just behind the pak interface connector. If there are four sockets, it is a 702-1520 board. If there are eight sockets, it is a 702-1980 board.

If your System 19 contains a 702-1520 controller board, check the modification status sticker on the bottom of the programmer. If the sticker is not there or if only "1" is marked off, your System 19 requires hardware and firmware updating; contact the nearest Data I/O customer support Center. If "2" is marked, your System 19 is compatible with the UniPak 2B. If your System 19 contains a 702-1980 controller board, it may require a firmware update. To display the configuration number of the firmware in your programmer, key in "SELECT-B2-START". If the configuration number displayed matches one of the numbers listed below, your firmware needs updating.

System 19s Requiring a Firmware Update

System	Rev A	B	C	D	E	F	G	H
1900	F9CF	00AC	07CD	0B11	FC6A	B16C	9D29	—
1901	89CC	CC89	6BCD	0G26	—	—	—	—
1902	C56C	8B82	9141	9002	2068	29CE	3868	3599
1902	2C23	6A9B	3A33	C61D	CC8B	—	—	—

- ☐ 29A Universal Programmer—To be compatible with the UniPak 2B, the 29A programmers must have Rev C or later firmware. To determine the configuration of the firmware in your 29A, key in "SELECT-B2-START" and observe the display. If the hex number matches one listed in the following table, your firmware needs to be updated.
- ☐ 29B Universal Programmer—The UniPak 2B is compatible with Rev A or later software (all 29Bs).
- ☐ 100A Production Programmer—To be compatible with the UniPak 2B, the 100A programmers must have Rev E or later firmware. To determine the configuration of the firmware in your 100A, key in "SELECT-10 START" and observe the display. If the hex number displayed matches one listed in the following table, your firmware needs to be updated.

Model 29A and 100A Programmers Requiring a Firmware Update

Model	Rev	Configuration Number
29A	A	1ECA
	B	20A4
29A (with computer remote control)	A	BB41
	B	C00B
100A	A	917F
	B	9405
	C	9DEE
	D	9BED

Specifications

The physical and environmental specifications are:

- ☐ Altitude: Sea level to 3000 m (10,000 ft)
- ☐ Dimensions: 25.11 x 20.0 x 12.4 cm (9.6 x 7.2 x 4.9 in.)
- ☐ Humidity (operating): 95% maximum (noncondensing)
- ☐ Temperature (operating): 5 to 45° C (41 to 113° F)
- ☐ Temperature (storage): - 40 to 70° C (- 40 to 158° F)
- ☐ Weight: 1.62 kg (3 lb 9 oz)

Warranty and Customer Support

Data I/O equipment is warranted against defects in materials and workmanship. The warranty period of one year, unless specified otherwise, begins when you receive the equipment. 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.

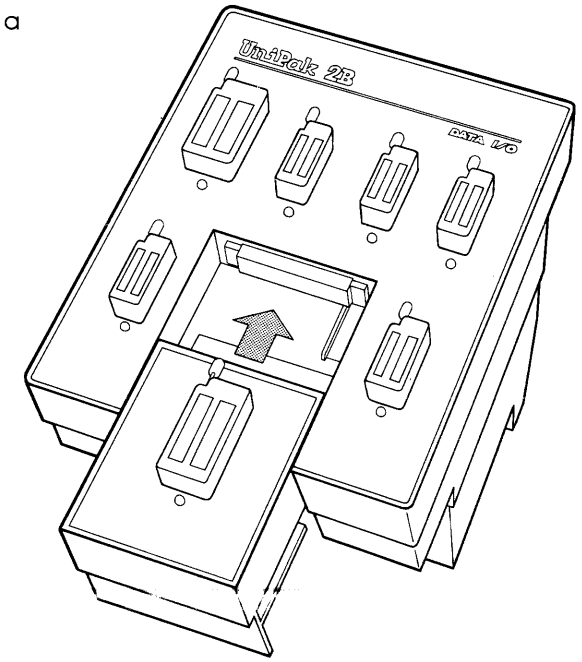
Data I/O maintains customer support centers throughout the world, each staffed with factory-trained technicians to provide prompt, quality service. This includes not only repairs, but also calibration of all Data I/O products. A list of all Data I/O customer support centers is located in the back of this manual.

Getting Started

This section of the manual describes a sample programming session with your UniPak 2B Programming Module. The procedure described is for operation with a Model 29A/B programmer; refer to your programmer manual for specific key sequences using a System 19 or 100A programmer.

Installation

Before actual programming begins, you need to install a pinout cartridge and then install the UniPak 2B into the programmer. Programming Module installation is discussed in your programmer's manual. To install an optional pinout cartridge, do the following.



CAUTION

Always wear a grounded wrist strap when operating the equipment to prevent the possibility of damage from electrostatic discharge.

1. Slide the cartridge along the guides and into the UniPak 2B's receptacle (see figure).
2. Press the cartridge into the connector until it locks in place.

CAUTION

Always hold the UniPak 2B by the chassis when carrying it. Never transport the UniPak 2B by holding onto the pinout cartridge; if it slips out while you are carrying it and the unit drops, serious damage could result.

Programming

The following steps describe how to program a 2764 part using a master device (a part that has been previously programmed and is used as a "master" to program other parts). This procedure assumes that the UniPak 2B is installed in the programmer. For more details on device programming, see your programmer's manual.

CAUTION

Do not operate the UniPak 2B without a pinout cartridge installed. Accidentally touching the exposed connector pins with a metal object, such as a screwdriver, could short out the unit.

1. Make sure all the device sockets are empty.
2. Power-up the programmer.
3. Press [COPY] [DEVICE] [RAM] [START]

   to prepare the programmer to transfer the master device data to the programmer's data RAM. The programmer will display

   FAM ^ 00 PIN 00

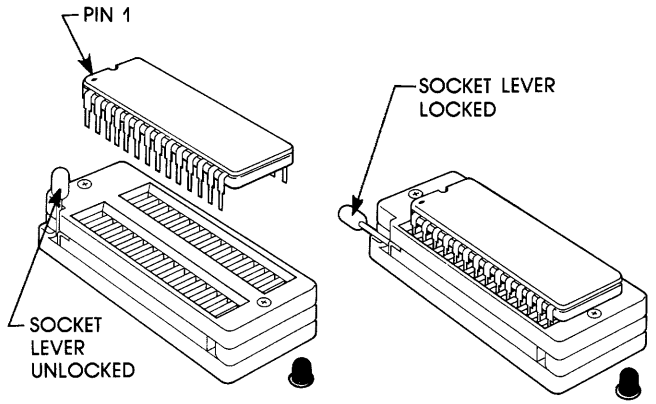
4. Press [7] [9] [3] [3]

   the family/pinout code for the 2764 part. The programmer will then display

   FAM ^ 79 PIN ^ 33

5. Lift up the lever on the socket that has an illuminated LED below it (see figure). Line up pin 1 of the device so that it is nearest the lever and set the device into the socket. Press down on the lever to lock the device in place.

   Note: Orient LCC devices according to the drawing to the left of the LCC socket.



6. Press [START]. The programmer will display

   LOADING DEVICE ☐
   LOAD DONE XXXX

7. Lift up the socket lever and remove the master device from the socket. The master device data is now transferred to RAM. The next part of the procedure transfers that data to the blank device.
8. Press [COPY] [RAM] [DEVICE] [START]

   to prepare the programmer to transfer the data to the blank device. The programmer will display

   FAM ∧ 79 PIN ∧ 33

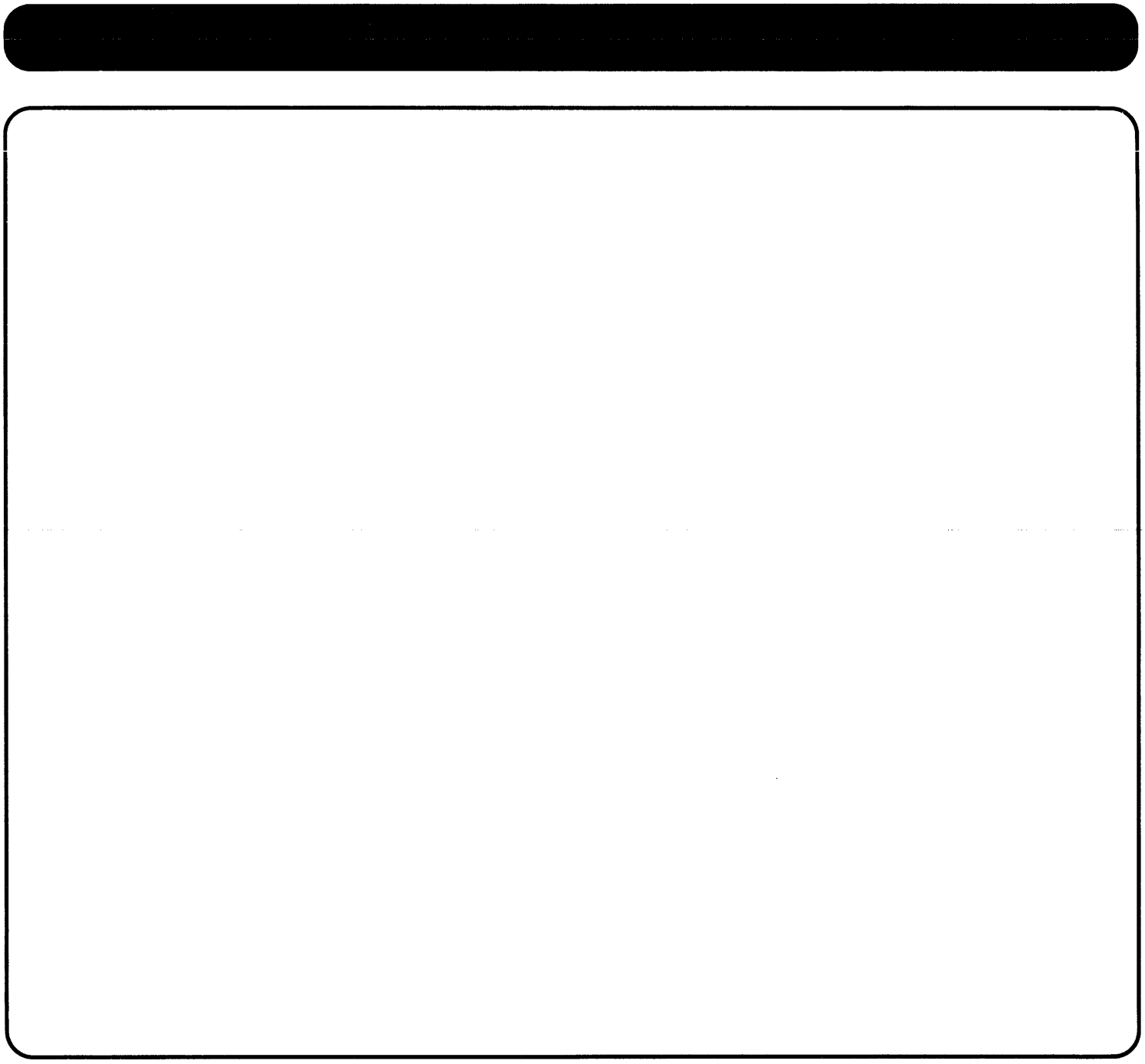
9. Lift up the lever on the socket that has an illuminated LED below it (see figure). Line up pin 1 of the blank device so that it is nearest the lever and set the device into the socket. Press down on the lever to lock the device in place.
10. Press [START]. The programmer will display

    TEST DEVICE ☐
    PROGRAM DEVICE ☐
    VERIFY DEVICE ☐
    PRG DONE 01 XXXX

    NOTE

    "XXXX" is the device's sumcheck, the hexadecimal sum of all the bytes in the device. The number displayed should match the sumcheck displayed during step 6 of this procedure.

11. Lift up the socket lever and remove the device from the socket. The device is now programmed.



Select Functions

The UniPak 2B offers special functions that are accessed by keying in two digit hexadecimal codes. These functions are not required for normal operation of the UniPak 2B. After you have keyed in a code and pressed START, the programmer signals that the operation is complete by displaying two asterisks (**) in the last two display positions.

Eight select functions are specific to the UniPak 2B (BC, BD, C3, CC, CD, CE, CF and EF). The table below gives a brief description of each of these codes. The following pages contain the procedures to access each of these special functions.

UniPak 2B Select Codes

Code	Description
BC	Disables the electronic identifier function.
BD	Enables the electronic identifier function, which allows programming without having to key in the family/pinout code each time.
C3	Displays additional programming capabilities available with some devices the UniPak 2B programs.
CC	Displays the family and pinout code of the last device data moved to the programmer's RAM.
CD	Displays the device's electronic identifier, a binary code that contains information on manufacturing code and device code.
CE	Sets the number of programming pulses applied to each byte at the manufacturer's specified number.
CF	Sets to one the number of programming pulses applied to each byte of the device to be programmed.
EF	Displays the revision level and version number of the UniPak 2B's firmware. These numbers are used when identifying equipment over the phone to Data I/O technical support personnel.

NOTE: The key sequences shown here are for operation using a Model 29 A/B programmer; see your programmer manual for procedures specific to your programmer.

Codes BC and BD—Disable/Enable Electronic Identifier

Functions BC and BD are used to disable and enable the electronic identifier function. You may use the electronic identifier feature in two ways. The first use of the identifier is to prevent accidentally damaging a device by keying in the wrong family and pinout code. When a family and pinout code is first keyed in, the programmer reads the electronic identifier. If the device has an electronic identifier corresponding to a family pinout code other than the one keyed in, the programmer will signal an error. The electronic identifier is also used to allow programming without having to key in the family pinout code each time. When the programmer prompts you for the family and pinout code, key in FFFF. The programmer will then automatically read the identifier and use the correct algorithm to program the device.

NOTE

Not all devices have the electronic identifier feature; check the device data sheet for details.

To disable the electronic identifier (BC), follow the procedure below.

1. Press [SELECT] ; Model 29 displays *SELECT CODE* ^

2. Press [B] [C] [START] ; Model 29 displays *SELECT CODE* **

To enable the electronic identifier (BD), follow the procedure below.

1. Press [SELECT] ; Model 29 displays *SELECT CODE* ^

2. Press [B] [D] [START] ; Model 29 displays *SELECT CODE* **

Code C3—Access Special Programming Options

Some devices have additional programming capabilities, such as security fuse programming. Select code C3 gives access to these options. See the device data sheet for details on what programming options are available with the device(s) you are using. The device list included with this manual contains option flowcharts for use in accessing complex device options.

NOTE

If the UniPak 2B is being used in a Model 19, this select code will work only from terminal remote.

To display the programming options, follow the procedure below.

1. Press [SELECT] ; Model 29 displays ***SELECT CODE*** ^
2. Press [C] [3] [START] ; Model 29 displays ***FXX PYY OPTIONS***
3. Press [START] ; Model 29 will display the first option.

NOTE

For the 8751H and 9761 devices, the option "PROG SECTY ONLY" will program the security fuse as soon as the option is selected and executed.

4. To scroll through the available options, press the REVIEW key. When the option you want (such as program security fuse) appears in the display, press START. In terminal remote, the RETURN key is used for the START key, and the space bar is used for the REVIEW key.
5. If the option has subheadings under it, press the START key and then use the REVIEW key to scroll through the subheadings. Again, press the START key when the option you want appears in the programmer's display. Once an option has been selected, an asterisk will be displayed after the option name. Complete execution may require doing a number of subheadings. Pressing the START key a second time after an option is selected will exit the options file, and the Model 29 will display OPTIONS DONE * *.

Code CC—Display Last Family and Pinout Code Used

Select code CC displays the last family and pinout code used, generally the last device programmed or read. This function helps determine the family and pinout codes used by the programmer when in the automatic electronic identifier mode.

To display the family and pinout codes of the last algorithm moved to RAM, follow the procedure below.

1. Press [SELECT] ; Model 29 displays *SELECT CODE* ^

2. Press [C] [C] [START] ; Model 29 displays *XXYY* **

NOTE

XX represents the family code; YY represents the pinout code.

Code CD—Display Electronic Identifier

Function CD displays in hexadecimal 16 bytes of the device's electronic identifier. Byte 0 identifies the manufacturer; byte 1 identifies the device. For information on the purpose of the remaining bytes, consult the device data sheets.

To display the electronic identifier, proceed as follows:

1. Press [SELECT] ; Model 29 displays *SELECT CODE* ^

2. Press [C] [D] [START] ; Model 29 displays *000X YY*

3. To display additional bytes of the electronic identifier, press [START]
   Model 29 displays *000X YY*

   To back up through previously displayed identifiers, press [REVIEW]
   Model 29 displays *000X YY*

NOTE

000X represents the byte number of the identifier displayed (i.e., 0001 represents byte 1 of the electronic identifier, which is the device code). YY represents the identifier byte in hexadecimal.

Codes CE and CF—Set Reject Count

Functions CE and CF are used to set the reject count (the number of programming pulses applied to a fuse or cell before it is rejected). Select code CE sets the reject count back to the commercial specification (this is the default value) and CF sets a single-pulse reject count.

To select the commercial (default) reject count (CE), follow the procedure below.

1. Press [SELECT] ; Model 29 displays *SELECT CODE* ^

2. Press [C] [E] [START] ; Model 29 displays *COM REJECT LIM***

To select the single-pulse reject count (CF), take the following steps:

1. Press [SELECT] ; Model 29 displays *SELECT CODE* ^

2. Press [C] [F] [START] ; Model 29 displays *ONE PULSE RJCT***

Code EF—Display Configuration Information

Function EF calls up a four-digit hexadecimal configuration number and a two-digit decimal version number that correspond to the revision level and version number of the UniPak 2B firmware. These numbers are used when identifying equipment over the phone to Data I/O technical support personnel.

To display the UniPak 2B firmware configuration and version number, do the following:

1. Press [SELECT] ; Model 29 displays *SELECT CODE* ^

2. Press [E] [F] [START] ; Model 29 displays *XXXX YY CFG VR* **

NOTE

XXXX represents the UniPak 2B firmware configuration number, and YY represents the version number.

Error Codes

NOTE

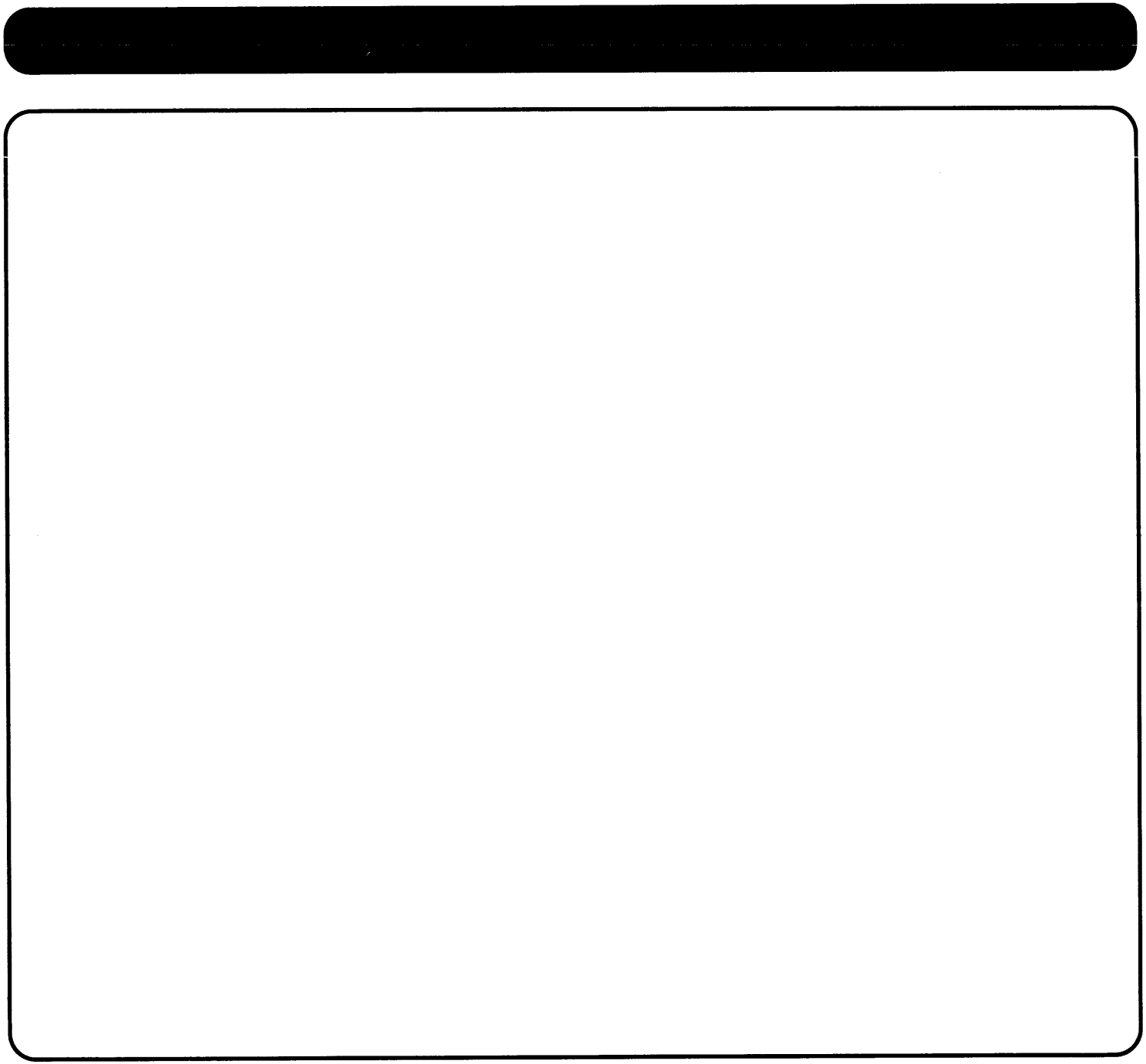
In the case of an error condition, be sure that the family and pinout codes are correct for the device installed; refer to the device list to cross-check family and pinout codes. If you get a recurring error, call your local customer support center listed at the back of this manual

Code	Name	Description
20	Non Blank	The device you are attempting to program contains already-programmed locations. You can program over these locations by pressing START.
21	Illegal-Bit Error	The device cannot be programmed due to already programmed locations of incorrect polarity.
23	First-Pass Verify Error	The device data was incorrect on the first pass of the automatic verify sequence during device programming.
24	Second-Pass Verify Error	The device data was incorrect on the second pass of the automatic verify sequence during device programming.
27	Insufficient RAM	Due to the value of the Begin RAM Address, there is insufficient RAM to program the device, or the total allotment of RAM resident is less than the word limit of the device.
30	No Programming Algorithm	Valid family and pinout codes are not selected, or family code selection not followed by pinout code selection.
31	Excessive Current Drain	The operation aborted due to excessive current drain by a device.

Error Codes

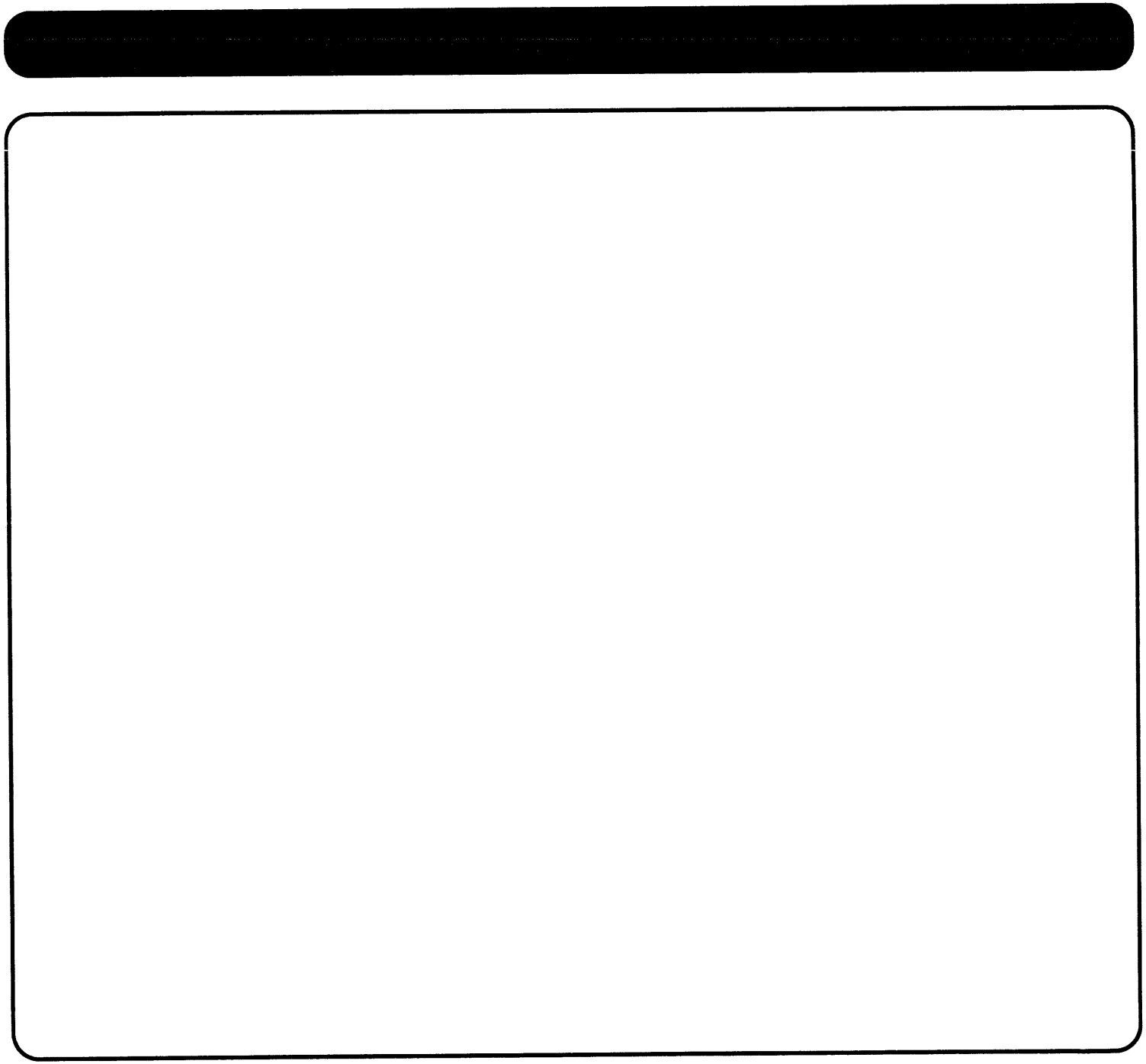
Code	Name	Description
32	Backward Device	The operation aborted due to V_{CC} level test indicating a backward device.
35	Faulty Chip Select	The operation aborted due to data being present while a device is disabled.
37	Socketing Error	Operation aborted due to a low V_{CC} level indication on sockets presumed to be empty. A device may be in the wrong socket, or two or more devices may be socketed simultaneously.
38	Illegal Operation During Calibration	An illegal or invalid operation was attempted during calibration.
39	Failure to Lock Security Fuse	The security bit did not program and the device is not locked.
70	Faulty Bit Supply	The operation aborted due to a faulty bit supply. Do not use UniPak 2B until repaired.
71	Faulty CS Supply	The operation aborted due to a faulty CS supply. Do not use UniPak 2B until repaired.
72	Faulty V_{CC} Supply	The operation aborted due to a faulty V_{CC}. Do not use UniPak 2B until repaired.
A1	No Identifier Found	The device does not have an electronic identifier. The electronic identifier mode cannot be used.
A2	Invalid Identifier	The electronic identifier of the device has been read and it indicates that the device cannot be programmed using the selected family and pinout codes. Consult the device table for the correct family and pinout codes. Try the operation again using these codes.

Code	Name	Description
B0	Byte Erase Error	The device does not have a byte erase mode. Block limits must be removed and a chip erase performed. The entire chip may then be reprogrammed.
B1	Chip Erase Error	The device does not have a chip erase mode.
B3	Wrng Pin Cart	The wrong pinout cartridge is inserted in the UniPak 2B. Check the device list to make sure you are using the correct cartridge.
B4	Odd Ram Limit	Applicable only to word-wide devices, this error means that an odd RAM address was set for device operations. Check the address and try the operation again.
B5	No Block Size	Applicable only to word-wide devices, this error display indicates no block size was set for the device operation. Check the set block size and attempt the operation again.
B7	No Pnout Cart	There is no pinout cartridge installed in the UniPak 2B. Install the cartridge.



Index

*Check the device list included with this manual



UNIPAK 2B ™

Acceptance Test Procedure

Data I/O Corporation warrants to the original purchaser of the product described by the UniPak 2B Operator's Manual that the product was fully functional to the extent of its specification at the time of shipment from the factory. Data I/O further certifies that the test equipment used to test the product was calibrated to standards that are traceable to the National Bureau of Standards as appropriate.

This procedure is provided for customers whose company policy requires that an inspection test be performed before the unit may be accepted.

INTRODUCTION

WARNING

This procedure is for qualified engineering personnel only; do not attempt the operation if you are not qualified to do so.

Your UniPak 2B 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 instrument for any damage that may have occurred in transit. If you note any damage, file a claim with the carrier and notify Data I/O.

The UniPak 2B performance check consists of a brief procedure to check supply current/voltages to the socket pins, followed by a keyboard verification of proper operation. The supply current/voltage check is documented on a measurement chart and includes a photograph to compare with the oscilloscope waveforms.

Performance Check

CAUTION

Do not operate the UniPak 2B without a pinout cartridge installed. Accidentally touching the exposed connector pins with a metal object, such as a screwdriver, could damage the unit.

The following equipment is necessary to do the first part of the performance check:

- Three and a half-digit digital multimeter (DMM). The dcV accuracy of the DMM must be ±0.25% or better.
- Dual-trace oscilloscope (Tektronix 465 or equivalent)
- 100-ohm, 5W, 5% carbon-composition resistor
- Pinout cartridge 351B-086

Refer to the UniPak 2B Manual for a listing of compatible units.

Current/Voltage Verification

CAUTION

Remove all devices from the sockets before entering the calibration mode (see the Getting Started section of the UniPak 2B operator's manual for details). Waveform generation may damage any device in the UniPak 2B sockets.

To complete the first part of the performance check, do the following.

NOTE

If readings for any test do not fall within the specification given in the measurement chart, contact your nearest Data I/O Customer Support Center.

1. Install the UniPak 2B into the programmer.
2. Turn the programmer power on (see the programmer manual).
3. Put the programmer into the calibration mode by following the key sequences in the following table.

NOTE

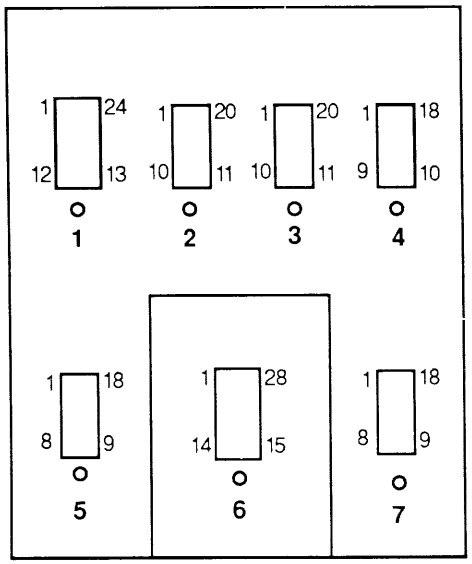
*Because the current/voltage verification test checks only supplies that can be accessed externally, some steps of the standard calibration procedure are omitted on the measurement chart. Press the **ENTER** or **START** key to increment the programmer to each step listed on the chart.*

Key Sequence to Access the Calibration Model

Programmer System	Enter Calibration Mode	Key Sequence To: Increment Step No.	Decrement Step No.
19	Press **SELECT** Press **C 2** Press **ENTER** Enter Step Number Press **START**	Press **ENTER**	Press **REVIEW**
29A/29B	Press **SELECT** Press **C 1** Press **START** Enter Step Number Press **START**	Press **START**	Press **REVIEW**
100A	Press **SELECT** Press 12 Enter Step Number Press **START**	Press **START**	Press **BACKSPACE**

4. Perform the steps on the measurement chart. For each general calibration step on the measurement chart do the following:

   - Take measurement readings at the device sockets described on the measurement chart; the figure shows the pin numbers for the sockets.



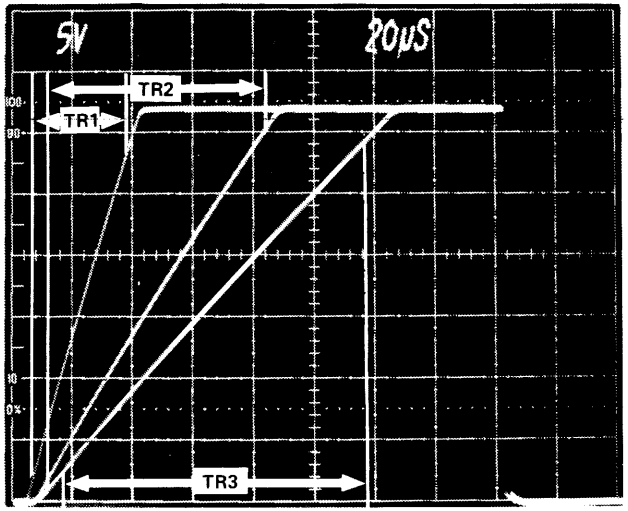
   - Ground the digital multimeter to socket 7, pin 8 on the front panel of UniPak 2B.
   - Access each new step by pressing the **START** (or **ENTER**) key. The new step number will appear in the display when the UniPak 2B is ready for the next step. To go back to a previous test, press the **REVIEW** (or **BACKSPACE**) key.

The voltage measurement chart on the following page includes the following headings:

- **Step No.** — tells which step to use for each test. Step numbers are keyed in at the programmer keyboard and are reflected in the display.
- **Test No**. — identifies individual tests for each step.
- **Test Description** — identifies the functions being tested.
- **Measurement Test Location** — tells which socket pins to probe for measurement.
- **Measurement** — specifies allowable measurement ranges. If a reading falls outside the range, contact your nearest Data I/O customer support center.
- **Comments** — gives special instructions for particular tests.

UniPak 2B Performance Check Measurement Chart

Step No.	Test No.	Test Description	Measurement Location Socket Pin	Measurement Min	Nom	Max	Comments
1		V reference supply					
	1	Vcc supply	1/24	11.9V	12.00V	12.10V	
	2	CE supply	1/24	11.90V	12.00V	12.10V	
	3	Bit supply	1/9	25.70V	26.00V	26.20V	
	4	Address supply	1/8	14.80V	15.00V	15.20V	
4	5	Current source supply	1/9	118mA	120mA	122.0mA	Use a 100-ohm, ±5% 2W resistor in series with the multimeter.
5	6	Bit switch rise waveform	1/14				See photograph



	Variable	Min	Nom	Max	Unit
PROGRAM	TR1	26	33	37	µs
	TR2	62	66	70	µs
	TR3	81	100	119	µs

NOTE: All TR's are measured from 10% to 90%.

UniPak 2B Performance Check Measurement Chart (Continued)

Step No.	Test No.	Test Description	Measurement Location Socket Pin	Measurement Min	Nom	Max	Comments
17	7	Pinout cartridge #1 LED					Ensure that pinout cartridge LED is illuminated.
	8	Odd address and data high	6/2,3,5,7,9,11,13,16,18,22, 24,26.	3.5V		6.00V	
	9	Even address and data high	6/1,4,6,8,10,12,15,17,19,21, 23,25,27.	–0.10V		0.40V	
18	10	Odd address and data low	6/2,3,5,7,9,11,13,16,18,22, 24,26.	–0.10V		0.40V	
	11	Even address and data high	6/1,4,6,8,10,12,15,17,19,21, 23,25,27.	3.50V		6.00V	
19	12	Odd data lines high	6/11,13,16,18.	25.50V		26.50V	
	13	Even data lines pullups	6/12,15,17,19.	4.50V		5.50V	
20	14	Odd data lines pullups	6/11,13,16,18.	4.50V		5.50V	
	15	Even data lines high	6/12,15,17,19.	25.50V		26.50V	

Verification of Operation

Once the current/voltage verification is finished, you may proceed to the operational verification part of the test. This procedure consists of programming a blank PROM with data from a master PROM.

NOTE

See your programmer's manual for specific details on doing load operations; the procedure here gives only general instructions. The sumcheck of the master device must be known and written down before beginning this operation. Do the following to complete the verification of operation.

1. Install the UniPak 2B into the programmer.

2. Turn the programmer power on (see the programmer manual).

3. Transfer the device data from the master PROM to the programmer's RAM (see the programmer manual).

4. Transfer the RAM data to the blank device (see the programmer manual). The sumcheck displayed when the operation is completed must match the known sumcheck of the master PROM; if not, contact your nearest Data I/O Customer Support Center.

UNIPAK 2B™

Device List

DEVICE LIST

Following is a complete listing of the devices currently programmable with the UniPak 2B. The devices are organized by manufacturer and are listed in numerical order. References in the footnote column are explained in the pages following the list.

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.

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 Device List Headings

An explanation of each of the column headings is given below.

Device Part Number:	The number assigned by the device manufacturer
Pins:	The number of pins on the device package.
Package Type:	The type of package that the integrated circuit is packaged in; e.g., DIP (dual in-line package) or PLCC (plastic leadless chip carrier).
Part Type:	The type of part, such as EPROM, EEPROM, or PAL.
Footnote:	Numbers which correspond to footnotes described at the end of the device list. The footnotes provide additional information about a device. Each footnote number corresponds to a numbered description at the end of the device list.
Product Version:	A number that specifies the earliest version of UniPak 2B 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 (family).
Pinout Code:	A 2- or 3-digit hexadecimal number used to differentiate device types based on pin assignment and array size (pinout).
Adapter:	The slide-in cartridge required to configure the programming pak to a specific device.

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
Advanced Micro Devices/MMI								
100P44	20	DIP	PROM		V11	61	0A	351BAMD
10P4	18	DIP	PLE		V09	18	05	
10P44	20	DIP	PROM		V11	61	0A	351BAMD
10P8	24	DIP	PLE		V09	18	16	
10R8	24	DIP	PLE	k	V09	18	86	
11P4	18	DIP	PLE		V09	18	06	
11P8	24	DIP	PLE		V09	18	21	
11RA8	24	DIP	PLE	l	V09	18	A3	
11RS8	24	DIP	PLE	l	V09	18	A3	
12P4	20	DIP	PLE		V09	18	53	
12P8	24	DIP	PLE		V09	18	63	
2708	24	DIP	EPROM		V07	21	27	
27128	28	DIP	EPROM		V07	AF	51	351B086
27128A	28	DIP	EPROM		V07	C1	51	351B086
27128AP	28	DIP	EPROM		V13	D6	51	351B086
2716	24	DIP	EPROM		V07	19	23	
2716B	24	DIP	EPROM		V11	C2	23	
27256	28	DIP	EPROM		V07	C1	32	351B086
27256P	28	DIP	EPROM		V13	D6	32	351B086
2732	24	DIP	EPROM		V07	19	24	
2732A	24	DIP	EPROM		V07	27	24	
2732B	24	DIP	EPROM		V11	C2	24	
27512	28	DIP	EPROM	a	V07	DD	A4	351B086
2764	28	DIP	EPROM		V07	AF	33	351B086
2764	32	LCC	EPROM	w	V15	AF	C1	351B099
2764A	28	DIP	EPROM		V07	C1	33	351B086
2764AP	28	DIP	EPROM		V13	D6	33	351B086
27C010	32	DIP	EPROM	v	V15	109	0CB	351B104
27C1024	40	DIP	EPROM	b,o	V11	6E	A8	351B095
27C1024	44	LCC	EPROM	b,q,w	V15	6E	88	351B095P
27C128	28	DIP	EPROM	v	V17	11D	051	351B086
27C191	24	DIP	EPROM		V15	EA	21	

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
27C256	28	DIP	EPROM	v	V17	11D	032	351B086
27C256P	28	DIP	EPROM		V13	D6	32	351B086
27C291	24	DIP	EPROM		V15	EA	21	
27C49	24	DIP	EPROM		V15	EA	67	
27C512	28	DIP	EPROM	v	V17	11E	0A4	351B086
27C512P	28	DIP	EPROM	a	V13	DA	A4	351B086
27C64	28	DIP	EPROM	v	V17	11D	033	351B086
27LS18	16	DIP	PROM		V07	16	02	
27LS184	18	DIP	PROM		V07	16	06	
27LS185	18	DIP	PROM		V07	16	06	
27LS19	16	DIP	PROM		V07	16	02	
27PS181	24	DIP	PROM		V07	16	37	
27PS184	18	DIP	PROM		V07	16	06	
27PS185	18	DIP	PROM		V07	16	06	
27PS191	24	DIP	PROM		V07	16	68	
27PS281	24	DIP	PROM		V07	16	37	
27PS291	24	DIP	PROM		V07	16	68	
27PS41	20	DIP	PROM		V07	16	53	
27PS43	24	DIP	PROM		V07	16	63	
27S08	16	DIP	PROM		V07	15	02	
27S09	16	DIP	PROM		V07	15	02	
27S10	16	DIP	PROM		V07	15	01	
27S11	16	DIP	PROM		V07	15	01	
27S12	16	DIP	PROM		V07	16	03	
27S13	16	DIP	PROM		V07	16	03	
27S13	20	PLCC	PROM		V14	16	6D	351B088
27S15	24	DIP	PROM		V07	16	79	351B068
27S18	16	DIP	PROM		V07	16	02	
27S180	24	DIP	PROM		V07	16	37	
27S181	24	DIP	PROM		V07	16	37	
27S184	18	DIP	PROM		V07	16	06	
27S185	18	DIP	PROM		V07	16	06	
27S19	16	DIP	PROM		V07	16	02	
27S19	20	PLCC	PROM		V14	16	6C	351B087
27S190	24	DIP	PROM		V07	16	68	
27S191	24	DIP	PROM		V07	16	68	

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
27S191	28	PLCC	PROM		V13	16	BF	351B093
27S20	16	DIP	PROM		V07	16	01	
27S21	16	DIP	PROM		V07	16	01	
27S21	20	PLCC	PROM		V14	16	6B	351B088
27S25	24	DIP	PROM		V07	16	65	
27S25	28	PLCC	PROM		V14	16	8F	351B093
27S26	22	DIP	PROM		V07	16	85	351B067
27S27	22	DIP	PROM		V07	16	85	351B067
27S28	20	DIP	PROM		V07	16	09	
27S280	24	DIP	PROM		V07	16	37	
27S281	24	DIP	PROM		V07	16	37	
27S29	20	DIP	PROM		V07	16	09	
27S290	24	DIP	PROM		V07	16	68	
27S291	24	DIP	PROM		V07	16	68	
27S30	24	DIP	PROM		V07	16	36	
27S31	24	DIP	PROM		V07	16	36	
27S32	18	DIP	PROM		V07	16	38	
27S33	18	DIP	PROM		V07	16	38	
27S33	28	PLCC	PROM		V15	16	F4	351B088
27S35	24	DIP	PROM		V07	16	66	
27S35	28	PLCC	PROM		V14	16	90	351B093
27S37	24	DIP	PROM		V07	16	66	
27S40	20	DIP	PROM		V07	16	53	
27S41	20	DIP	PROM		V07	16	53	
27S43	24	DIP	PROM		V07	16	63	
27S45	24	DIP	PROM	c	V07	16	77	351B066
27S45SA	24	DIP	PROM	c	V15	16	77	351B066
27S47	24	DIP	PROM	c	V07	16	77	351B066
27S49	24	DIP	PROM		V12	16	67	
27S49SA	24	DIP	PROM		V17	16	67	
27S51	28	DIP	PROM		V11	16	78	351B101
27S65	24	DIP	PROM	d	V07	16	93	351B073
27S65	28	PLCC	PROM	d	V15	16	F0	351B092
27S75	24	DIP	PROM	e	V07	16	94	351B073
27S85	24	DIP	PROM	f	V07	16	95	351B073
27S85	28	PLCC	PROM	f	V15	16	F2	351B092

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
2817A	28	DIP	EEPROM		V11	BF	A2	351B086
2864A	28	DIP	EEPROM		V13	CA	A6	351B086
2864AE	28	DIP	EEPROM	v	V15	114	0A6	351B086
2864B	28	DIP	EEPROM		V11	CA	A6	351B086
2864BE	28	DIP	EEPROM	v	V15	114	0A6	351B086
29750A	16	DIP	PROM		V07	16	02	
29751A	16	DIP	PROM		V07	16	02	
29760A	16	DIP	PROM		V07	16	01	
29761A	16	DIP	PROM		V07	16	01	
29770	16	DIP	PROM		V07	16	03	
29771	16	DIP	PROM		V07	16	03	
29774	22	DIP	PROM		V07	16	85	351B067
29775	22	DIP	PROM		V07	16	85	351B067
53/6300	16	DIP	PROM		V07	E5	01	
53/6301	16	DIP	PROM		V07	E5	01	
53/6305	16	DIP	PROM		V07	E5	03	
53/6306	16	DIP	PROM		V07	E5	03	
53/6308	20	DIP	PROM		V07	D1	08	
53/6309	20	DIP	PROM		V07	D1	08	
53/6330	16	DIP	PROM		V07	E7	02	
53/6331	16	DIP	PROM		V07	E7	02	
53/6335	24	DIP	PROM		V07	D1	14	
53/6336	24	DIP	PROM		V07	D1	14	
53/6340	24	DIP	PROM		V07	D1	15	
53/6341	24	DIP	PROM		V07	D1	15	
53/6348	20	DIP	PROM		V07	D1	09	
53/6349	20	DIP	PROM		V07	D1	09	
53/6352	18	DIP	PROM		V07	D1	05	
53/6353	18	DIP	PROM		V07	D1	05	
53/6380	24	DIP	PROM		V07	D1	16	
53/6381	24	DIP	PROM		V07	D1	16	
53/6388	18	DIP	PROM		V07	D1	06	
53/6389	18	DIP	PROM		V07	D1	06	
53/63D1641	24	DIP	PROM		V07	B2	80	351B073
53/63DA1643	24	DIP	PROM	m	V07	AA	87	351B073
53/63DA441	24	DIP	PROM	h	V07	AA	AC	351B073

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
53/63DA442	24	DIP	PROM	h	V07	AA	AC	351B073
53/63DA841	24	DIP	PROM	n	V07	AA	AD	351B073
53/63LS140	16	DIP	PROM		V07	18	01	
53/63LS141	16	DIP	PROM		V07	18	01	
53/63LS1681	24	DIP	PROM		V11	18	21	
53/63LS240	16	DIP	PROM		V07	18	03	
53/63LS241	16	DIP	PROM		V07	18	03	
53/63LS441	18	DIP	PROM		V07	18	05	
53/63PL1681	24	DIP	PROM		V07	18	21	
53/63PS1681	24	DIP	PROM		V07	18	21	
53/63RA1681	24	DIP	PROM	l	V07	18	A3	
53/63RA441	18	DIP	PROM		V07	18	07	
53/63RA481	24	DIP	PROM		V07	EC	65	
53/63RS1681	24	DIP	PROM	l	V07	18	A3	
53/63RS881	24	DIP	PROM	k	V07	18	86	
53/63S080	16	DIP	PROM		V07	18	02	
53/63S081	16	DIP	PROM		V07	18	02	
53/63S140	16	DIP	PROM		V07	18	01	
53/63S141	16	DIP	PROM		V07	18	01	
53/63S1641	20	DIP	PROM		V07	18	53	
53/63S1681	24	DIP	PROM		V07	18	21	
53/63S1681J	24	DIP	PROM		V15	18	21	
53/63S240	16	DIP	PROM		V07	18	03	
53/63S241	16	DIP	PROM		V07	18	03	
53/63S280	20	DIP	PROM		V07	18	08	
53/63S281	20	DIP	PROM		V07	18	08	
53/63S285	24	DIP	PROM		V09	18	14	
53/63S3281	24	DIP	PROM		V07	18	63	
53/63S440	18	DIP	PROM		V07	18	05	
53/63S441	18	DIP	PROM		V07	18	05	
53/63S480	20	DIP	PROM		V07	18	09	
53/63S481	20	DIP	PROM		V07	18	09	
53/63S485	24	DIP	PROM		V09	18	15	
53/63S6481	24	DIP	PROM		V07	18	67	
53/63S840	18	DIP	PROM		V07	18	06	
53/63S841	18	DIP	PROM		V07	18	06	

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
53/63S880	24	DIP	PROM		V11	18	16	
53/63S881	24	DIP	PROM		V07	18	16	
5P16	24	DIP	PLE		V11	17	CD	351B110
5P8/A	16	DIP	PLE		V09	18	02	
63D1641	28	PLCC	PROM		V07	B2	9B	351B092
63DA1643	28	PLCC	PROM	m	V07	AA	9D	351B092
63DA441	28	PLCC	PROM	h	V07	AA	9F	351B092
63DA442	28	PLCC	PROM	h	V07	AA	9F	351B092
63DA841	28	PLCC	PROM	n	V07	AA	A0	351B092
63RA1681	28	PLCC	PROM	l	V07	18	9E	351B093
63RA481	28	PLCC	PROM		V07	EC	8F	351B093
63RS1681	28	PLCC	PROM	l	V07	18	9E	351B093
63RS881	28	PLCC	PROM	k	V07	18	9C	351B093
63S080	20	PLCC	PROM		V07	18	6C	351B087
63S081	20	PLCC	PROM		V07	18	6C	351B087
63S140	20	PLCC	PROM		V07	18	6B	351B088
63S141	20	PLCC	PROM		V07	18	6B	351B088
63S1641	20	PLCC	PROM		V13	18	8C	351B090
63S1680	28	PLCC	PROM		V07	18	8B	351B093
63S1681	28	PLCC	PROM		V07	18	8B	351B093
63S240	20	PLCC	PROM		V07	18	6D	351B088
63S241	20	PLCC	PROM		V07	18	6D	351B088
63S280	20	PLCC	PROM		V07	18	7B	351B089
63S281	20	PLCC	PROM		V07	18	7B	351B089
63S3281	28	PLCC	PROM		V07	18	8E	351B093
63S440	20	PLCC	PROM		V07	18	6E	351B088
63S441	20	PLCC	PROM		V07	18	6E	351B088
63S480	20	PLCC	PROM		V07	18	7C	351B089
63S481	20	PLCC	PROM		V07	18	7C	351B089
63S6481	28	PLCC	PROM		V07	18	9A	351B093
63S841	20	PLCC	PROM		V07	18	6F	351B088
63S881	28	PLCC	PROM		V07	18	8A	351B093
6P16	24	DIP	PLE		V11	17	CE	351B110
8751H	40	DIP	MICRO	g	V09	54	58	351B071
8751H	44	LCC	MICRO	g,w	V15	54	D4	351B103P
8753H	40	DIP	MICRO	g	V07	54	6A	351B071

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
8753H	44	LCC	MICRO	w,g	V15	54	5B	351B103P
8P4	16	DIP	PLE		V09	18	01	
8P8	20	DIP	PLE		V09	18	08	
9708	24	DIP	EPROM		V07	21	27	
9716	24	DIP	EPROM		V07	19	23	
9732	24	DIP	EPROM		V07	19	24	
9764	28	DIP	EPROM		V07	AF	33	351B086
9864	28	DIP	EEPROM		V07	C9	A6	351B086
9P4	16	DIP	PLE		V09	18	03	
9P8	20	DIP	PLE		V09	18	09	
9R8	24	DIP	PLE		V09	EC	65	
9R8	28	PLCC	PLE		V15	EC	8F	351B093
ATMEL								
27256	28	DIP	EPROM		V11	93	32	351B086
27C1024	40	DIP	EPROM	b,o	V16	5F	A8	351B095
27C1024	44	LCC	EPROM	b,q,w	V16	5F	88	351B095P
27C128	28	DIP	EPROM		V11	93	51	351B086
27C256	28	DIP	EPROM		V11	93	32	351B086
27C256	32	LCC	EPROM	w	V16	93	C3	351B099
27C256	32	PLCC	EPROM		V14	93	C3	351B099
27C512	28	DIP	EPROM	a	V11	4B	A4	351B086
27C512	32	LCC	EPROM	a,w	V16	4B	C4	351B099
27C512	32	PLCC	EPROM	a	V15	4B	C4	351B099
27C513	28	DIP	EPROM	a	V11	5B	5E	351B086
27C515	28	DIP	EPROM	a	V11	5B	CA	351B086
27C64	28	DIP	EPROM		V11	93	33	351B086
27HC256	28	DIP	EPROM		V11	93	32	351B086
27HC256	32	LCC	EPROM	w	V16	93	C3	351B099
27HC256	32	PLCC	EPROM		V15	93	C3	351B099
27HC64	28	DIP	EPROM		V11	93	33	351B086
27HC64	32	LCC	EPROM	w	V16	93	C1	351B099
27HC641	24	DIP	EPROM		V11	90	67	
27HC642	24	DIP	EPROM		V11	90	67	

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
28C04	24	DIP	EEPROM		V11	C4	82	
28C16	28	DIP	EEPROM		V11	C4	96	
28C16	32	PLCC	EEPROM	v	V15	0C4	10D	351B099
28C17	28	DIP	EEPROM		V11	C4	A2	351B086
28C256	28	DIP	EEPROM	s	V16	BA	99	351B086
28C64	28	DIP	EEPROM		V11	C4	98	351B086
28C64	32	PLCC	EEPROM		V15	C4	5D	351B099
28HC16	24	DIP	EEPROM		V11	C4	96	
28HC17	28	DIP	EEPROM		V11	C4	A2	351B086
28HC191	24	DIP	EEPROM		V13	D2	1C	
28HC256	28	DIP	EEPROM	s	V16	BA	99	351B086
28HC291	24	DIP	EEPROM		V13	D2	1C	
28HC64	28	DIP	EEPROM		V16	C4	98	351B086
28HC64	32	LCC	EEPROM	w	V16	C4	5D	351B099
28PC64	28	DIP	EEPROM		V16	C4	98	351B086
28PC64	32	LCC	EEPROM	w	V16	C4	5D	351B099
CATALYST Semiconductor, Inc.								
27128A	28	DIP	EPROM		V16	5C	51	351B086
27256	28	DIP	EPROM		V16	5C	32	351B086
27512	28	DIP	EPROM	a	V16	5E	A4	351B086
2764A	28	DIP	EPROM		V16	5C	33	351B086
28C16A	24	DIP	EEPROM		V16	C3	96	
28C17A	28	DIP	EEPROM		V16	C3	A2	351B086
59C11	8	DIP	EEPROM	v	V17	123	11D	351B120D
93C46	8	DIP	EEPROM	v	V16	118	10E	351B120D
Cypress								
7C225	24	DIP	PROM		V12	F0	B6	
7C235	24	DIP	PROM	h	V12	F0	B5	
7C245	24	DIP	PROM	c	V14	F4	B0	
7C245A	24	DIP	PROM	c,v	V15	10B	0B0	
7C251	28	DIP	PROM		V14	EB	E6	351B086
7C253	28	DIP	PROM		V17	EB	E6	351B086
7C254	28	DIP	PROM		V14	EB	E6	351B086
7C261	24	DIP	PROM		V15	EF	31	

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
7C263	24	DIP	PROM		V15	EF	31	
7C264	24	DIP	PROM		V15	EF	31	
7C269	28	DIP	PROM	t	V14	ED	E5	351B086
7C281	24	DIP	PROM		V12	EE	B4	
7C282	24	DIP	PROM		V12	EE	B4	
7C291	24	DIP	PROM		V13	F2	AF	
7C291	28	PLCC	PROM		V13	F2	B7	351B093
7C291A	24	DIP	PROM	v	V15	10C	0AF	
7C292	24	DIP	PROM		V13	F2	AF	
7C292A	24	DIP	PROM	v	V15	10C	0AF	
7C293A	24	DIP	PROM	v	V15	10C	0AF	
Electronic Arrays								
2708	24	DIP	EPROM		V07	21	27	
2716	24	DIP	EPROM		V07	19	23	
EXEL Microelectronics								
2804	24	DIP	EEPROM		V14	B7	82	
2816A	24	DIP	EEPROM		V07	B7	23	
2864A	28	DIP	EEPROM		V07	C3	98	351B086
2865A	28	DIP	EEPROM		V11	C3	98	351B086
46C15	24	DIP	EEPROM		V11	CD	21	
46C16	24	DIP	EEPROM		V07	CD	21	
Fairchild Semiconductor								
2708	24	DIP	EPROM		V07	21	27	
93417	16	DIP	PROM		V07	01	01	
93427	16	DIP	PROM		V07	01	01	
93436	16	DIP	PROM		V07	01	03	
93438	24	DIP	PROM		V07	01	15	
93446	16	DIP	PROM		V07	01	03	
93448	24	DIP	PROM		V07	01	15	
93450	24	DIP	PROM		V07	01	16	

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
93451	24	DIP	PROM		V07	01	16	
93452	18	DIP	PROM		V07	01	05	
93453	18	DIP	PROM		V07	01	05	
93510	24	DIP	PROM		V07	01	21	
93511	24	DIP	PROM		V07	01	21	
93L450	24	DIP	PROM		V07	01	16	
93L451	24	DIP	PROM		V07	01	16	
93Z451	24	DIP	PROM		V07	A4	16	
93Z511	24	DIP	PROM		V07	A4	21	
93Z665	24	DIP	PROM		V12	A0	3E	351B096
93Z667	24	DIP	PROM		V12	A0	3E	351B096
Fujitsu								
27128	28	DIP	EPROM		V08	45	51	351B086
27128A	28	DIP	EPROM		V11	93	51	351B086
2716	24	DIP	EPROM		V13	19	23	
27256	28	DIP	EPROM		V11	93	32	351B086
2732	24	DIP	EPROM		V07	19	24	
2732A	24	DIP	EPROM		V08	27	24	
2764	28	DIP	EPROM		V08	45	33	351B086
27C1000	32	DIP	EPROM	b	V13	6C	CC	351B104
27C1001	32	DIP	EPROM	b	V13	6C	CB	351B104
27C1024	40	DIP	EPROM	b,o	V11	6D	A8	351B095
27C1028	28	DIP	EPROM	b	V11	69	0D	351B107
27C128	28	DIP	EPROM		V08	45	51	351B086
27C256	28	DIP	EPROM		V11	45	32	351B086
27C256A	28	DIP	EPROM		V11	93	32	351B086
27C256H	28	DIP	EPROM		V11	93	32	351B086
27C32A	24	DIP	EPROM		V08	27	24	
27C512	28	DIP	EPROM	a	V11	4B	A4	351B086
27C512	32	LCC	EPROM	a,w	V15	4B	C4	351B099
27C64	28	DIP	EPROM		V08	45	33	351B086
28C64	28	DIP	EEPROM		V11	C3	98	351B086

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
28C65	28	DIP	EEPROM		V11	C3	98	351B086
7051	16	DIP	PROM		V07	78	02	
7052	16	DIP	PROM		V07	78	01	
7053	16	DIP	PROM		V07	78	03	
7054	18	DIP	PROM		V07	78	05	
7055	24	DIP	PROM		V07	78	69	
7056	16	DIP	PROM		V07	78	02	
7057	16	DIP	PROM		V07	78	01	
7058	16	DIP	PROM		V07	78	03	
7059	18	DIP	PROM		V07	78	05	
7060	24	DIP	PROM		V07	78	69	
7111	16	DIP	PROM		V07	68	02	
7112	16	DIP	PROM		V07	68	02	
7113/L	16	DIP	PROM		V11	68	01	
7114/L	16	DIP	PROM		V11	68	01	
7115	16	DIP	PROM		V07	68	03	
7116	16	DIP	PROM		V07	68	03	
7117	20	DIP	PROM		V07	68	08	
7118	20	DIP	PROM		V07	68	08	
7119	24	DIP	PROM		V07	68	14	
7120	24	DIP	PROM		V07	68	14	
7121	18	DIP	PROM		V11	68	05	
7122	18	DIP	PROM		V11	68	05	
7123	20	DIP	PROM		V11	68	09	
7124	20	DIP	PROM		V11	68	09	
7127	18	DIP	PROM		V11	68	06	
7128	18	DIP	PROM		V11	68	06	
7129	22	DIP	PROM		V11	68	A9	351B094
7130	22	DIP	PROM		V11	68	A9	351B094
7131	24	DIP	PROM		V11	68	16	
7132	24	DIP	PROM		V11	68	16	
7135	22	DIP	PROM		V11	68	AA	351B094
7136	22	DIP	PROM		V11	68	AA	351B094
7137	24	DIP	PROM		V11	68	21	
7138	24	DIP	PROM		V11	68	21	
7141	24	DIP	PROM		V11	68	63	

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
7142	24	DIP	PROM		V11	68	63	
7143	24	DIP	PROM		V11	68	67	
7144	24	DIP	PROM		V11	68	67	
7151	20	DIP	PROM		V07	68	53	
7152	20	DIP	PROM		V07	68	53	
7225LA	24	DIP	PROM		V07	68	15	
7226LA	24	DIP	PROM		V07	68	15	
7226RA/RS	24	DIP	PROM	p	V17	68	B1	351B066
7231LA	24	DIP	PROM		V07	68	16	
7232LA	24	DIP	PROM		V07	68	16	
7232RA/RS	24	DIP	PROM	h	V17	68	B2	351B066
7237LA	24	DIP	PROM		V07	68	21	
7238LA	24	DIP	PROM		V07	68	21	
7238RA/RS	24	DIP	PROM	c	V17	68	77	351B066
7241LA	24	DIP	PROM		V07	68	63	
7242LA	24	DIP	PROM		V07	68	63	
8516	24	DIP	EPROM		V08	19	23	
8518	24	DIP	EPROM		V08	21	27	
8532	24	DIP	EPROM		V08	19	24	
8742	40	DIP	MICRO		V07	50	57	351B070
8742H/N	40	DIP	MICRO		V15	50	57	351B070
8749H	40	DIP	MICRO		V07	50	57	351B070
GoldStar								
57HC64	24	DIP	EPROM		V14	2B	67	
Harris								
6616	24	DIP	PROM		V11	88	75	
6617	24	DIP	PROM		V11	89	75	
6641	24	DIP	PROM		V11	40	47	
6642	24	DIP	PROM		V11	3F	47	
7602	16	DIP	PROM		V07	06	02	
7603	16	DIP	PROM		V07	06	02	
7608	24	DIP	PROM		V07	05	16	
7610	16	DIP	PROM		V07	06	01	

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
7611	16	DIP	PROM		V07	06	01	
7616	24	DIP	PROM		V07	05	42	
76160	24	DIP	PROM		V07	05	21	
76161	24	DIP	PROM		V07	06	21	
76165	20	DIP	PROM		V07	06	53	
7620	16	DIP	PROM		V07	06	03	
7621	16	DIP	PROM		V07	06	03	
7629	24	DIP	PROM		V07	05	43	
76320	24	DIP	PROM		V07	05	63	
76321	24	DIP	PROM		V07	06	63	
7640	24	DIP	PROM		V07	06	15	
7641	24	DIP	PROM		V07	06	15	
7642	18	DIP	PROM		V07	06	05	
7642P	18	DIP	PROM		V07	05	38	
7643	18	DIP	PROM		V07	06	05	
7643P	18	DIP	PROM		V07	05	38	
7644	16	DIP	PROM		V07	05	04	
7647R	24	DIP	PROM		V07	05	79	351B068
7648	20	DIP	PROM		V07	05	09	
7649	20	DIP	PROM		V07	06	09	
76641	24	DIP	PROM		V07	06	67	
7680/RP	24	DIP	PROM		V07	05	16	
7681	24	DIP	PROM		V07	06	16	
7681RP	24	DIP	PROM		V07	05	16	
7684	18	DIP	PROM		V07	05	06	
7684P	18	DIP	PROM		V07	05	06	
7685	18	DIP	PROM		V07	06	06	
7685P	18	DIP	PROM		V07	05	06	
Hitachi								
25044	18	DIP	PROM		V07	74	05	
25045	18	DIP	PROM		V07	74	05	
25084	18	DIP	PROM		V07	74	06	
25084S	18	DIP	PROM		V07	66	06	

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
25085	18	DIP	PROM		V07	74	06	
25085S	18	DIP	PROM		V07	66	06	
25088	24	DIP	PROM		V07	74	16	
25088S	24	DIP	PROM		V07	66	16	
25089	24	DIP	PROM		V07	74	16	
25089S	24	DIP	PROM		V07	66	16	
25168	24	DIP	PROM		V07	74	21	
25168S	24	DIP	PROM		V07	66	21	
25169	24	DIP	PROM		V07	74	21	
25169S	24	DIP	PROM		V07	66	21	
27128A	28	DIP	EPROM		V08	93	51	351B086
27256	28	DIP	EPROM		V08	93	32	351B086
27512	28	DIP	EPROM	a	V08	4B	A4	351B086
27C101	32	DIP	EPROM	b	V11	8F	CB	351B104
27C1024	40	DIP	EPROM	b,o	V13	8E	A8	351B095
27C256	28	DIP	EPROM		V08	93	32	351B086
27C256H	28	DIP	EPROM	v	V15	111	032	351B086
27C301	32	DIP	EPROM	b	V11	8F	CC	351B104
27C64	28	DIP	EPROM		V08	79	33	351B086
462532	24	DIP	EPROM		V07	19	25	
462716	24	DIP	EPROM		V07	19	23	
462732	24	DIP	EPROM		V07	19	24	
48016	24	DIP	EEPROM		V07	33	23	
4827128	28	DIP	EPROM		V07	79	51	351B086
482732A	24	DIP	EPROM		V07	27	24	
482764	28	DIP	EPROM		V07	79	33	351B086
58064	28	DIP	EEPROM		V08	D7	98	351B086
58C65	28	DIP	EEPROM		V13	C3	98	351B086
63701V0	40	DIP	MICRO		V11	93	CF	351B108
63705V0	40	DIP	MICRO		V11	93	D0	351B109
637B01V0	40	DIP	MICRO		V13	93	CF	351B108
Hughes								
3004-1	24	DIP	EEPROM		V07	58	62	
3004-2	24	DIP	EEPROM		V07	58	61	
3008	24	DIP	EEPROM		V07	58	60	
3104-1	24	DIP	EEPROM		V07	58	62	

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
3104-2	24	DIP	EEPROM		V07	58	61	
3108	24	DIP	EEPROM		V07	58	60	
Hyundai								
27C64	28	DIP	EPROM		V13	F8	33	351B086
93C46	8	DIP	EEPROM	v	V16	118	10E	351B120D
International CMOS Technology								
27CX321	24	DIP	EPROM	v,x	V17	82	63	
27CX322	24	DIP	EPROM	v,x	V17	82	63	
27CX641	24	DIP	EPROM		V14	82	67	
27CX642	24	DIP	EPROM		V14	82	67	
Integrated Device Technology								
78C16A	24	DIP	EEPROM		V15	C3	96	
Intel								
27010	32	DIP	EPROM	b	V11	5C	CB	351B104
27011	28	DIP	EPROM	b	V11	5C	C9	351B086
2704	24	DIP	EPROM		V07	21	26	
2708	24	DIP	EPROM		V07	21	27	
27128	28	DIP	EPROM		V07	79	51	351B086
27128A	28	DIP	EPROM		V07	93	51	351B086
27128A	32	PLCC	EPROM		V09	5C	C2	351B099
27128B	28	DIP	EPROM		V13	93	51	351B086
2716	24	DIP	EPROM		V07	19	23	
27210	40	DIP	EPROM	b,o	V11	5F	A8	351B095
27210	44	JLCC	EPROM	b,q	V15	5F	88	351B095P
27210	44	PLCC	EPROM	b,q	V15	5F	88	351B095P
27256	28	DIP	EPROM		V07	93	32	351B086
2732	24	DIP	EPROM		V07	19	24	
2732A	24	DIP	EPROM		V07	27	24	
27512	28	DIP	EPROM	a	V07	4B	A4	351B086

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
27512	32	PLCC	EPROM	a	V13	5E	C4	351B099
27513	28	DIP	EPROM	a	V07	5B	5E	351B086
2758	24	DIP	EPROM		V07	19	22	
2764	28	DIP	EPROM		V07	79	33	351B086
2764A	28	DIP	EPROM		V07	93	33	351B086
27C010	32	DIP	EPROM	b	V15	5C	CB	351B104
27C010	32	PLCC	EPROM	b	V17	5C	DE	351B104P
27C128	28	DIP	EPROM		V13	5C	51	351B086
27C202	40	DIP	EPROM	b,o	V16	7E	DD	351B095
27C202	40	DIP	EPROM	b	V16	7E	DD	351B106D
27C202	44	PLCC	EPROM	b	V17	7E	AB	351B106P
27C203	40	DIP	EPROM	b,z	V16	A7	4C	351B106D
27C203	44	PLCC	EPROM	b,z	V17	A7	4D	351B106P
27C210	40	DIP	EPROM	b,o	V17	5F	A8	351B095
27C256	28	DIP	EPROM		V09	5C	32	351B086
27C256	32	PLCC	EPROM		V09	5C	C3	351B099
27C64	28	DIP	EPROM		V07	93	33	351B086
27C64	32	PLCC	EPROM		V09	5C	C1	351B099
27F256	28	DIP	EPROM	v	V15	0A8	109	351B086
27F64	28	DIP	EPROM		V15	84	33	351B086
2815	24	DIP	EEPROM		V07	85	23	
2816	24	DIP	EEPROM		V07	37	23	
2816A	24	DIP	EEPROM		V07	A5	96	
2817A	28	DIP	EEPROM		V07	BF	A2	351B086
2864A	28	DIP	EEPROM		V11	CC	98	351B086
28F256-P1	32	DIP	EEPROM	v	V15	113	10A	351B104
28F256-P1	32	PLCC	EEPROM	v	V17	113	112	351B104P
28F256-P2	32	DIP	EEPROM	v	V15	0A8	10A	351B104
28F256-P2	32	PLCC	EEPROM	v	V17	0A8	112	351B104P
68C257	28	DIP	EPROM		V13	5C	E2	351B086
68C257	32	PLCC	EPROM		V15	5C	E3	351B099
68C257M	28	DIP	EPROM		V13	5C	E2	351B086
68C257M	32	PLCC	EPROM		V15	5C	E3	351B099
8704	24	DIP	EPROM		V07	21	26	
8708	24	DIP	EPROM		V07	21	27	
8741	40	DIP	MICRO		V07	56	59	351B070

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
8741A	40	DIP	MICRO		V07	56	59	351B070
8741AH/H	40	DIP	MICRO	r	V13	51	1B	351B070B
8742	40	DIP	MICRO		V07	50	57	351B070
8742AH/H	40	DIP	MICRO	r	V13	51	3F	351B070B
8744	40	DIP	MICRO		V07	53	58	351B071
8744H	40	DIP	MICRO		V13	D5	58	351B071
8748	40	DIP	MICRO		V07	52	56	351B070
8748H	40	DIP	MICRO		V07	50	56	351B070
8749H	40	DIP	MICRO		V07	50	57	351B070
8751	40	DIP	MICRO		V07	53	58	351B071
8751BH	40	DIP	MICRO	v,j	V17	05A	11C	351B103
8751H	40	DIP	MICRO	g	V07	D5	58	351B071
8751H	44	LCC	MICRO	g,w	V15	D5	D4	351B103P
8752BH	40	DIP	MICRO	j	V12	5A	0C	351B103
8752BH	44	PLCC	MICRO	g	V15	5A	0E	351B103P
8755A	40	DIP	MICRO		V07	47	55	351B072
87C252BH/87C51FA	40	DIP	MICRO	j	V13	5A	4F	351B103
87C256	28	DIP	EPROM		V11	5C	C8	351B086
87C257	28	DIP	EPROM		V13	5C	E2	351B086
87C257	32	PLCC	EPROM		V15	5C	E3	351B099
87C257I	28	DIP	EPROM		V13	5C	E2	351B086
87C257I	32	PLCC	EPROM		V15	5C	E3	351B099
87C51	40	DIP	MICRO	j	V12	5A	0B	351B103
87C51	44	PLCC	MICRO	j	V14	5A	74	351B103P
87C51FB	40	DIP	MICRO	j	V17	5A	73	351B103
87C64	28	DIP	EPROM		V07	93	3A	351B086
87C64	32	PLCC	EPROM		V09	5C	C7	351B099
87C75PF	40	DIP	MICRO	v,y	V17	112	107	351B111D
87C75PF	44	PLCC	MICRO	v,y	V17	112	108	351B111P
P27128A	28	DIP	EPROM		V09	5C	51	351B086
P27256	28	DIP	EPROM		V09	5C	32	351B086
P2732A	24	DIP	EPROM		V07	4D	24	
P27512	28	DIP	EPROM	a	V11	5E	A4	351B086
P2764	28	DIP	EPROM		V13	79	33	351B086
P2764A	28	DIP	EPROM		V09	5C	33	351B086
P27C256	28	DIP	EPROM		V09	5C	32	351B086

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
P8748H	40	DIP	MICRO		V15	50	56	351B070
Intersil								
5600	16	DIP	PROM		V07	D4	02	
5603A	16	DIP	PROM		V07	70	01	
5604	16	DIP	PROM		V07	70	03	
5610	16	DIP	PROM		V07	D4	02	
5623	16	DIP	PROM		V07	70	01	
5624	16	DIP	PROM		V07	70	03	
6716	24	DIP	EPROM		V07	59	64	
Lattice Semiconductor								
EE64K8	28	DIP	EEPROM		V13	C3	98	351B086
Microchip Technology, Inc./GI								
24C02	8	DIP	EEPROM	v	V17	120	119	351B120D
24C04	8	DIP	EEPROM	v	V17	120	11A	351B120D
27256	28	DIP	EPROM		V14	5C	32	351B086
27C128	28	DIP	EPROM		V14	5C	51	351B086
27C128	32	PLCC	EPROM		V14	5C	C2	351B099
27C256	28	DIP	EPROM		V14	5C	32	351B086
27C256	32	PLCC	EPROM		V16	5C	C3	351B099
27C512	28	DIP	EPROM	a	V14	5E	A4	351B086
27C512	32	PLCC	EPROM	a	V16	5E	C4	351B099
27C513	28	DIP	EPROM	a	V14	5E	5E	351B086
27C515	28	DIP	EPROM	a	V14	5E	CA	351B086
27C64	28	DIP	EPROM		V14	5C	33	351B086
27C64	32	PLCC	EPROM		V16	5C	C1	351B099
27HC191	24	DIP	EPROM	v	V16	110	021	
27HC256	28	DIP	EPROM		V16	5C	32	351B086
27HC291	24	DIP	EPROM	v	V16	110	021	
27HC64	28	DIP	EPROM		V14	5C	33	351B086
27HC641	24	DIP	EPROM		V11	90	67	
28C04	24	DIP	EEPROM		V11	C4	82	
28C16/A	24	DIP	EEPROM		V11	C4	96	

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
28C17/A	28	DIP	EEPROM		V11	C4	A2	351B086
28C64/A	28	DIP	EEPROM		V11	C4	98	351B086
28CP64	28	DIP	EEPROM		V11	C4	98	351B086
28HC16	24	DIP	EEPROM		V11	C4	96	
28HC17	28	DIP	EEPROM		V11	C4	A2	351B086
5716	24	DIP	EPROM		V07	83	23	
5816	24	DIP	EPROM		V07	37	23	
Mitsubishi								
2708	24	DIP	EPROM		V07	21	27	
27128	28	DIP	EPROM		V07	79	51	351B086
2716	24	DIP	EPROM		V07	19	23	
27256	28	DIP	EPROM		V11	93	32	351B086
2732	24	DIP	EPROM		V07	19	24	
27512	28	DIP	EPROM	a	V11	4B	A4	351B086
2764	28	DIP	EPROM		V07	79	33	351B086
27C100	32	DIP	EPROM	b	V15	91	CC	351B104
27C101	32	DIP	EPROM	b	V15	91	CB	351B104
27C102	40	DIP	EPROM	b,o	V14	8E	A8	351B095
27C128	28	DIP	EPROM		V13	77	51	351B086
27C256	28	DIP	EPROM		V13	8C	32	351B086
27C512A	28	DIP	EPROM	a	V17	4B	A4	351B086
54700A	16	DIP	PROM		V07	B5	01	
54701A	16	DIP	PROM		V07	B5	01	
54730A	16	DIP	PROM		V07	B5	02	
54731A	16	DIP	PROM		V07	B5	02	
54740A	18	DIP	PROM		V07	B5	05	
54741A	18	DIP	PROM		V07	B5	05	
8748	40	DIP	MICRO		V07	52	56	351B070
Mostek								
2716	24	DIP	EPROM		V07	19	23	
Motorola								
2532	24	DIP	EPROM		V07	19	25	
2708	24	DIP	EPROM		V07	21	27	

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
2716	24	DIP	EPROM		V07	19	23	
2808	28	DIP	EEPROM		V07	81	72	351B086
2816	24	DIP	EEPROM		V07	43	23	
2817	28	DIP	EEPROM		V07	81	71	351B086
2832	28	DIP	EEPROM		V07	81	70	351B086
67256	28	DIP	EPROM		V11	49	32	351B086
67259	28	DIP	EPROM		V11	49	32	351B086
6836E16	28	DIP	EEPROM		V07	2D	5A	351B086
68708	24	DIP	EPROM		V07	21	27	
68732-0	24	DIP	EPROM		V14	25	44	
68732-1	24	DIP	EPROM		V14	25	45	
68764	24	DIP	EPROM		V14	25	29	
68766	24	DIP	EPROM		V14	25	29	
68769	24	DIP	EPROM		V14	25	29	
76161	24	DIP	PROM		V07	05	21	
76165	20	DIP	PROM		V07	05	53	
7620	16	DIP	PROM		V07	05	03	
7621	16	DIP	PROM		V07	05	03	
7640	24	DIP	PROM		V07	05	15	
7641	24	DIP	PROM		V07	05	15	
7642	18	DIP	PROM		V07	05	05	
7643	18	DIP	PROM		V07	05	05	
7649	20	DIP	PROM		V07	05	09	
7680	24	DIP	PROM		V07	05	16	
7681	24	DIP	PROM		V07	05	16	
7684	18	DIP	PROM		V07	05	06	
7685	18	DIP	PROM		V07	05	06	
TMS2716	24	DIP	EPROM		V07	23	28	
National Semiconductor								
2532	24	DIP	EPROM		V07	19	25	
2708	24	DIP	EPROM		V07	21	27	
2716	24	DIP	EPROM		V07	19	23	
2732	24	DIP	EPROM		V07	19	24	

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
2758A	24	DIP	EPROM		V07	19	22	
2758B	24	DIP	EPROM		V07	19	35	
27C1023/27C010	32	DIP	EPROM	b	V15	5C	CB	351B104
27C1024	40	DIP	EPROM	b,o	V16	5F	A8	351B095
27C128	28	DIP	EPROM		V07	5D	51	351B086
27C128B	28	DIP	EPROM		V17	E8	51	351B086
27C16	24	DIP	EPROM		V07	19	23	
27C16B	24	DIP	EPROM		V16	5C	23	
27C16H	24	DIP	EPROM		V07	BD	23	
27C256	28	DIP	EPROM		V07	5D	32	351B086
27C256B	28	DIP	EPROM		V16	5C	32	351B086
27C32	24	DIP	EPROM		V07	19	24	
27C32B	24	DIP	EPROM		V16	5C	24	
27C32H	24	DIP	EPROM		V07	BD	24	
27C512	28	DIP	EPROM	a	V07	4C	A4	351B086
27C512A	28	DIP	EPROM	a	V16	5E	A4	351B086
27C58A	24	DIP	EPROM		V07	19	22	
27C58B	24	DIP	EPROM		V07	19	35	
27C64	28	DIP	EPROM		V07	5D	33	351B086
27CP128	28	DIP	EPROM		V07	5D	BB	351B086
27CP256	28	DIP	EPROM		V11	4C	1E	351B086
27CP64	28	DIP	EPROM		V11	5D	1D	351B086
2816	24	DIP	EEPROM		V07	37	23	
2864	28	DIP	EEPROM		V07	C7	A5	351B086
48F010	32	DIP	EEPROM	v	V17	10F	10C	351B104
48F512	32	DIP	EEPROM	v	V17	10F	10B	351B104
54LS471	20	DIP	PROM		V07	08	08	
54S188	16	DIP	PROM		V07	08	02	
54S287	16	DIP	PROM		V07	08	01	
54S288	16	DIP	PROM		V07	08	02	
54S387	16	DIP	PROM		V07	08	01	
54S472	20	DIP	PROM		V07	08	09	
54S473	20	DIP	PROM		V07	08	09	
54S474	24	DIP	PROM		V07	08	15	
54S475	24	DIP	PROM		V07	08	15	
54S570	16	DIP	PROM		V07	08	03	

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
54S571	16	DIP	PROM		V07	08	03	
54S572	18	DIP	PROM		V07	08	05	
54S573	18	DIP	PROM		V07	08	05	
74LS471	20	DIP	PROM		V07	08	08	
74S188	16	DIP	PROM		V07	08	02	
74S287	16	DIP	PROM		V07	08	01	
74S288	16	DIP	PROM		V07	08	02	
74S387	16	DIP	PROM		V07	08	01	
74S472	20	DIP	PROM		V07	08	09	
74S473	20	DIP	PROM		V07	08	09	
74S474	24	DIP	PROM		V07	08	15	
74S475	24	DIP	PROM		V07	08	15	
74S570	16	DIP	PROM		V07	08	03	
74S571	16	DIP	PROM		V07	08	03	
74S572	18	DIP	PROM		V07	08	05	
74S573	18	DIP	PROM		V07	08	05	
77S180	24	DIP	PROM		V07	08	16	
77S181	24	DIP	PROM		V07	08	16	
77S184	18	DIP	PROM		V07	08	06	
77S185	18	DIP	PROM		V07	08	06	
77S190	24	DIP	PROM		V07	08	21	
77S191	24	DIP	PROM		V07	08	21	
77S195	20	DIP	PROM		V07	08	53	
77S280	24	DIP	PROM		V07	08	16	
77S281	24	DIP	PROM		V07	08	16	
77S290	24	DIP	PROM		V07	08	21	
77S291	24	DIP	PROM		V07	08	21	
77S295	24	DIP	PROM		V07	08	15	
77S296	24	DIP	PROM		V07	08	15	
77S321	24	DIP	PROM		V07	08	63	
77S421	24	DIP	PROM		V11	08	63	
77SR181	24	DIP	PROM	h	V07	08	66	
77SR183	24	DIP	PROM	h	V13	08	66	
77SR191	24	DIP	PROM	c	V13	08	77	351B066
77SR193	24	DIP	PROM	c	V13	08	77	351B066
77SR25	24	DIP	PROM		V07	08	65	

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
77SR27	22	DIP	PROM		V07	08	85	351B067
77SR474	24	DIP	PROM	p	V07	08	81	
77SR476	24	DIP	PROM	p	V07	08	81	
77X288	16	DIP	PROM		V07	08	02	
87C512A	28	DIP	EPROM	v	V17	0E9	115	351B086
87S180	24	DIP	PROM		V07	08	16	
87S181	24	DIP	PROM		V07	08	16	
87S184	18	DIP	PROM		V07	08	06	
87S185	18	DIP	PROM		V07	08	06	
87S190	24	DIP	PROM		V07	08	21	
87S191	24	DIP	PROM		V07	08	21	
87S195	20	DIP	PROM		V07	08	53	
87S280	24	DIP	PROM		V07	08	16	
87S281	24	DIP	PROM		V07	08	16	
87S290	24	DIP	PROM		V07	08	21	
87S291	24	DIP	PROM		V07	08	21	
87S295	24	DIP	PROM		V07	08	15	
87S296	24	DIP	PROM		V07	08	15	
87S321	24	DIP	PROM		V07	08	63	
87S421	24	DIP	PROM		V11	08	63	
87SR181	24	DIP	PROM	h	V07	08	66	
87SR183	24	DIP	PROM	h	V13	08	66	
87SR191	24	DIP	PROM	c	V13	08	77	351B066
87SR193	24	DIP	PROM	c	V13	08	77	351B066
87SR25	24	DIP	PROM		V07	08	65	
87SR27	22	DIP	PROM		V07	08	85	351B067
87SR474	24	DIP	PROM	p	V07	08	81	
87SR476	24	DIP	PROM	p	V07	08	81	
87X288	16	DIP	PROM		V07	08	02	
9346	8	DIP	EEPROM	v	V16	118	10E	351B120D
9716	24	DIP	EEPROM		V07	B3	23	
9816A	24	DIP	EEPROM		V07	C3	96	
9817	28	DIP	EEPROM		V07	BF	A2	351B086
9817A	28	DIP	EEPROM		V07	BF	A2	351B086
98C64	28	DIP	EEPROM		V07	9F	A7	351B086

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
NEC								
27128	28	DIP	EPROM		V07	79	51	351B086
2716	24	DIP	EPROM		V07	19	23	
27256	28	DIP	EPROM		V08	45	32	351B086
27256A	28	DIP	EPROM		V11	48	32	351B086
2732	24	DIP	EPROM		V07	19	24	
2732A	24	DIP	EPROM		V07	27	24	
27512	28	DIP	EPROM	a	V15	8A	A4	351B086
2764	28	DIP	EPROM		V07	79	33	351B086
27C1000	32	DIP	EPROM	b	V13	71	CC	351B104
27C1001	32	DIP	EPROM	b	V13	71	CB	351B104
27C1001A	32	DIP	EPROM	b	V17	71	CB	351B104
27C1024	40	DIP	EPROM	b,o	V11	6F	A8	351B095
27C2001	32	DIP	EPROM	b	V15	71	F5	351B104
27C256	28	DIP	EPROM		V08	45	32	351B086
27C256A	28	DIP	EPROM		V15	71	32	351B086
27C4001	32	DIP	EPROM	b	V17	71	F6	351B104
27C512	28	DIP	EPROM	a	V16	4E	A4	351B086
27C64	28	DIP	EPROM		V08	79	33	351B086
28C64	28	DIP	EEPROM		V13	C3	98	351B086
8741A	40	DIP	MICRO		V11	56	59	351B070B
8748	40	DIP	MICRO		V07	52	56	351B070
8748H	40	DIP	MICRO		V11	50	56	351B070B
8749H	40	DIP	MICRO		V07	50	57	351B070
8755A	40	DIP	MICRO		V07	47	55	351B072
B400	16	DIP	PROM		V11	72	02	
B401	20	DIP	PROM		V11	72	08	
B402	16	DIP	PROM		V11	72	03	
B403	16	DIP	PROM		V11	72	01	
B404	20	DIP	PROM		V11	72	09	
B405	24	DIP	PROM		V07	72	15	
B406	18	DIP	PROM		V11	72	05	
B407	18	DIP	PROM		V11	72	06	

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
B408	24	DIP	PROM		V07	72	16	
B409	24	DIP	PROM		V07	72	21	
B410	16	DIP	PROM		V11	72	02	
B412	16	DIP	PROM		V11	72	03	
B417	24	DIP	PROM		V07	72	16	
B419	24	DIP	PROM		V07	72	42	
B421	20	DIP	PROM		V11	72	08	
B423	16	DIP	PROM		V11	72	01	
B424	20	DIP	PROM		V11	72	09	
B425	24	DIP	PROM		V11	72	15	
B426	18	DIP	PROM		V11	72	05	
B427	18	DIP	PROM		V11	72	06	
B428	24	DIP	PROM		V11	72	16	
B429	24	DIP	PROM		V11	72	21	
B431A	20	DIP	PROM		V12	68	53	
OKI								
2708	24	DIP	EPROM		V07	21	27	
27128	28	DIP	EPROM		V07	79	51	351B086
27128A	28	DIP	EPROM		V15	5C	51	351B086
2716	24	DIP	EPROM		V07	19	23	
27256	28	DIP	EPROM		V11	5C	32	351B086
27512	28	DIP	EPROM	a	V11	5E	A4	351B086
2758	24	DIP	EPROM		V07	19	22	
2764	28	DIP	EPROM		V11	79	33	351B086
2764A	28	DIP	EPROM		V15	5C	33	351B086
27C256	28	DIP	EPROM		V11	93	32	351B086
2816A	24	DIP	EEPROM		V13	B7	23	
28C16A	24	DIP	EEPROM		V16	B7	23	
8755A	40	DIP	MICRO		V07	47	55	351B072
Raytheon								
29/39VP816	24	DIP	PROM		V13	7A	68	
29600	20	DIP	PROM		V07	11	08	
29601	20	DIP	PROM		V07	11	08	
29602	20	DIP	PROM		V07	11	08	

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
29603	20	DIP	PROM		V07	11	08	
29610	16	DIP	PROM		V07	11	03	
29611	16	DIP	PROM		V07	11	03	
29612	16	DIP	PROM		V07	11	03	
29613/A	16	DIP	PROM		V07	11	03	
29620	20	DIP	PROM		V07	11	09	
29621/A	20	DIP	PROM		V07	11	09	
29622	20	DIP	PROM		V07	11	09	
29623/A	20	DIP	PROM		V07	11	09	
29624	24	DIP	PROM		V07	11	15	
29625	24	DIP	PROM		V07	11	15	
29626	24	DIP	PROM		V07	11	15	
29627	24	DIP	PROM		V07	11	15	
29630	24	DIP	PROM		V07	11	16	
29630SM	24	DIP	PROM		V07	11	16	
29631/A	24	DIP	PROM		V07	11	16	
29631SM	24	DIP	PROM		V07	11	16	
29632	24	DIP	PROM		V07	11	16	
29632SM	24	DIP	PROM		V07	11	16	
29633/A	24	DIP	PROM		V07	11	16	
29633SM	24	DIP	PROM		V07	11	16	
29634	24	DIP	PROM		V07	11	16	
29635	24	DIP	PROM		V07	11	16	
29636	24	DIP	PROM		V07	11	16	
29637	24	DIP	PROM		V07	11	16	
29640	20	DIP	PROM		V07	11	53	
29641	20	DIP	PROM		V07	11	53	
29642	20	DIP	PROM		V07	11	53	
29643	20	DIP	PROM		V07	11	53	
29650	18	DIP	PROM		V07	11	06	
29651/A	18	DIP	PROM		V07	11	06	
29652	18	DIP	PROM		V07	11	06	
29653/A	18	DIP	PROM		V07	11	06	
29660	16	DIP	PROM		V07	11	01	
29661	16	DIP	PROM		V07	11	01	
29662	16	DIP	PROM		V07	11	01	

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
29663	16	DIP	PROM		V07	11	01	
29671/A	24	DIP	PROM		V07	11	63	
29671SM	24	DIP	PROM		V15	11	63	
29673	24	DIP	PROM		V07	11	63	
29673SM	24	DIP	PROM		V15	11	63	
29680	24	DIP	PROM		V07	11	21	
29680SM	24	DIP	PROM		V07	11	21	
29681/A	24	DIP	PROM		V07	11	21	
29681SM	24	DIP	PROM		V07	11	21	
29682	24	DIP	PROM		V07	11	21	
29682SM	24	DIP	PROM		V07	11	21	
29683/A	24	DIP	PROM		V07	11	21	
29683SM	24	DIP	PROM		V07	11	21	
29VP832	24	DIP	PROM		V13	7A	63	
29VP864	24	DIP	PROM		V13	7A	67	
29VS816	24	DIP	PROM		V13	7A	68	
29VS832	24	DIP	PROM		V13	7A	63	
29VS864	24	DIP	PROM		V13	7A	67	
39VP832	24	DIP	PROM		V13	7A	63	
39VP864	24	DIP	PROM		V13	7A	67	
39VS816	24	DIP	PROM		V13	7A	68	
39VS832	24	DIP	PROM		V13	7A	63	
39VS864	24	DIP	PROM		V13	7A	67	
Ricoh								
27C256	28	DIP	EPROM		V11	93	32	351B086
27C32	24	DIP	EPROM		V11	27	24	
27C64	28	DIP	EPROM		V11	79	33	351B086
5H32	24	DIP	EPROM		V07	27	24	
687C64	24	DIP	EPROM		V11	D9	29	
Rockwell International								
87C64	28	DIP	EPROM		V07	79	33	351B086

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
Samsung Semiconductor								
2816A	24	DIP	EEPROM		V11	B7	23	
2817A	28	DIP	EEPROM		V13	BF	A2	351B086
2864A	28	DIP	EEPROM		V11	C3	98	351B086
2865A	28	DIP	EEPROM		V13	C9	A6	351B086
2865AH	28	DIP	EEPROM		V13	C8	A6	351B086
SEEQ Technology								
27128	28	DIP	EPROM		V07	79	51	351B086
2764	28	DIP	EPROM		V07	79	33	351B086
27C256	28	DIP	EPROM		V07	93	32	351B086
2804	24	DIP	EEPROM		V13	B7	82	
2816A	24	DIP	EEPROM		V07	B7	23	
2816AH	24	DIP	EEPROM		V07	DF	23	
2817A	28	DIP	EEPROM		V07	BF	A2	351B086
2817AH	28	DIP	EEPROM		V07	BF	A2	351B086
2864	28	DIP	EEPROM		V13	C9	A6	351B086
2864	32	PLCC	EEPROM		V13	C9	5F	351B099
2864H	28	DIP	EEPROM		V11	C9	A6	351B086
2864H	32	PLCC	EEPROM		V13	C9	5F	351B099
28C010	32	DIP	EEPROM	v	V17	0B8	110	351B104
28C256	28	DIP	EEPROM		V13	B8	99	351B086
28C256	32	PLCC	EEPROM		V13	B8	ED	351B099
28C64	28	DIP	EEPROM		V13	B8	98	351B086
28C64	32	PLCC	EEPROM		V13	B8	5D	351B099
28C65	28	DIP	EEPROM		V13	B8	98	351B086
28C65	32	PLCC	EEPROM		V13	B8	5D	351B099
36C16	24	DIP	EEPROM		V14	9C	21	
36C32	24	DIP	EEPROM		V14	9C	63	
48F010	32	DIP	EEPROM	v	V17	10F	10C	351B104
48F512	32	DIP	EEPROM	v	V17	10F	10B	351B104
5133	28	DIP	EPROM		V07	79	33	351B086
5143	28	DIP	EPROM		V07	79	51	351B086
5213	24	DIP	EEPROM		V07	A5	96	
5213H	24	DIP	EEPROM		V07	B9	96	
52B13	24	DIP	EEPROM		V07	A5	96	

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
52B13H	24	DIP	EEPROM		V07	B9	96	
52B23	28	DIP	EEPROM		V07	AB	97	351B086
52B23H	28	DIP	EEPROM		V07	F1	97	351B086
52B33	28	DIP	EEPROM		V07	AB	98	351B086
52B33H	28	DIP	EEPROM		V07	F1	98	351B086
52B33H	32	LCC	EEPROM	w	V15	F1	5D	351B099
5516A	24	DIP	EEPROM		V07	B7	23	
5516AH	24	DIP	EEPROM		V07	DF	23	
5517A	28	DIP	EEPROM		V07	BF	A2	351B086
5517AH	28	DIP	EEPROM		V07	BF	A2	351B086
72720	40	DIP	MICRO		V13	FA	B8	351B097
Sharp								
57126	28	DIP	EPROM		V13	93	51	351B086
57127	28	DIP	EPROM		V13	93	51	351B086
57128	28	DIP	EPROM		V13	5C	51	351B086
57191	24	DIP	EPROM		V14	DC	21	
5749	24	DIP	EPROM		V13	7C	67	
5762	28	DIP	EPROM		V13	93	33	351B086
5763	28	DIP	EPROM		V13	93	33	351B086
5764	28	DIP	EPROM		V13	5C	33	351B086
Signetics								
27C256	28	DIP	EPROM		V16	5C	32	351B086
27C64A	28	DIP	EPROM		V16	5C	33	351B086
27HC641	24	DIP	EPROM		V15	87	67	
27HC641	28	PLCC	EPROM		V15	87	9A	351B093
82123	16	DIP	PROM		V07	10	02	
82HS187	24	DIP	PROM	h	V12	CE	5C	
82HS189	24	DIP	PROM	h	V12	CE	5C	
82HS191	24	DIP	PROM		V12	CE	21	
82HS195	20	DIP	PROM		V12	CF	53	
82HS195	20	PLCC	PROM		V14	CE	8C	351B090
82HS321	24	DIP	PROM		V12	CF	63	
82HS321	28	PLCC	PROM		V17	CF	8E	351B093

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
82HS641	24	DIP	PROM		V12	CE	67	
82HS641	28	PLCC	PROM		V14	CE	9A	351B093
82LS135	20	DIP	PROM		V07	10	08	
82LS137	18	DIP	PROM		V07	10	05	
82LS180	24	DIP	PROM		V07	10	16	
82LS181	24	DIP	PROM		V07	10	16	
82PS180	24	DIP	PROM		V07	10	16	
82PS181	24	DIP	PROM		V07	10	16	
82S114	24	DIP	PROM		V07	AE	84	351B068
82S115	24	DIP	PROM		V07	AE	83	351B068
82S123	16	DIP	PROM		V07	10	02	
82S123	20	PLCC	PROM		V15	10	6C	351B087
82S126	16	DIP	PROM		V07	10	01	
82S129	16	DIP	PROM		V07	10	01	
82S130	16	DIP	PROM		V07	10	03	
82S131	16	DIP	PROM		V07	10	03	
82S135	20	DIP	PROM		V07	10	08	
82S136	18	DIP	PROM		V07	10	05	
82S137	18	DIP	PROM		V07	10	05	
82S140	24	DIP	PROM		V07	10	15	
82S141	24	DIP	PROM		V07	10	15	
82S146	20	DIP	PROM		V07	10	09	
82S147	20	DIP	PROM		V07	10	09	
82S180	24	DIP	PROM		V07	10	16	
82S181	24	DIP	PROM		V07	10	16	
82S182	24	DIP	PROM		V07	10	16	
82S183	24	DIP	PROM		V07	10	16	
82S184	18	DIP	PROM		V07	10	06	
82S185	18	DIP	PROM		V07	10	06	
82S190	24	DIP	PROM		V07	10	21	
82S191	24	DIP	PROM		V07	10	21	
82S195	20	DIP	PROM		V07	10	53	
82S23	16	DIP	PROM		V07	10	02	
82S2708	24	DIP	PROM		V07	10	16	
82S321	24	DIP	PROM		V07	10	63	
82US123	16	DIP	PROM		V15	0E	02	

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
87C51	40	DIP	MICRO	j	V16	5A	0B	351B103
87C51	44	PLCC	MICRO	j	V16	5A	74	351B103P
S-MOS Systems								
27128H	28	DIP	EPROM		V11	79	51	351B086
27C256H	28	DIP	EPROM		V11	93	32	351B086
27C64H	28	DIP	EPROM		V11	79	33	351B086
SGS-Thomson Microelectronics								
2532	24	DIP	EPROM		V07	19	25	
27128A	28	DIP	EPROM		V11	93	51	351B086
2716	24	DIP	EPROM		V07	19	23	
2716	24	DIP	EPROM		V07	19	23	
27256	28	DIP	EPROM		V11	93	32	351B086
2732	24	DIP	EPROM		V07	19	24	
2732A	24	DIP	EPROM		V13	27	24	
27512	28	DIP	EPROM	a	V13	7F	A4	351B086
2764	28	DIP	EPROM		V07	35	33	351B086
2764	28	DIP	EPROM		V11	79	33	351B086
2764A	28	DIP	EPROM		V11	93	33	351B086
27C1024	40	DIP	EPROM	b,o	V16	5F	A8	351B095
27C16	24	DIP	EPROM		V07	19	23	
27C256	28	DIP	EPROM		V13	93	32	351B086
27C32	24	DIP	EPROM		V11	19	24	
27C64	28	DIP	EPROM		V11	93	33	351B086
27C64	32	PLCC	EPROM		V15	93	C1	351B099
71180	24	DIP	PROM		V14	92	16	
71181	24	DIP	PROM		V14	92	16	
71190	24	DIP	PROM		V07	92	21	
71191	24	DIP	PROM		V07	92	21	
71280	24	DIP	PROM		V14	92	16	
71281	24	DIP	PROM		V14	92	16	
71290	24	DIP	PROM		V14	92	21	

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
71291	24	DIP	PROM		V14	92	21	
71320	24	DIP	PROM		V14	92	63	
71321	24	DIP	PROM		V14	92	63	
71640	24	DIP	PROM		V14	0A	67	
71641	24	DIP	PROM		V14	0A	67	
Z86E11	40	DIP	MICRO	u	V14	0F	F9	351BZ8
Z86E21	40	DIP	MICRO	u	V14	0F	FA	351BZ8
Texas Instruments								
24S10	16	DIP	PROM		V07	13	01	
24S166	20	DIP	PROM		V07	13	53	
24S41	18	DIP	PROM		V07	13	38	
24S81	18	DIP	PROM		V07	13	06	
24SA10	16	DIP	PROM		V07	13	01	
24SA166	20	DIP	PROM		V07	13	53	
24SA41	18	DIP	PROM		V07	13	38	
24SA81	18	DIP	PROM		V07	13	06	
2508	24	DIP	EPROM		V07	19	22	
2516	24	DIP	EPROM		V07	BD	23	
2532	24	DIP	EPROM		V07	BD	25	
2532A	24	DIP	EPROM		V12	63	25	
2564	28	DIP	EPROM		V07	BD	30	351B086
2708	24	DIP	EPROM		V07	21	27	
27128	28	DIP	EPROM		V07	79	51	351B086
27128A	28	DIP	EPROM		V11	93	51	351B086
27256	28	DIP	EPROM		V11	93	32	351B086
2732	24	DIP	EPROM		V07	BD	24	
2732A-HS	24	DIP	EPROM		V07	63	24	
2764	28	DIP	EPROM		V07	79	33	351B086
27C128	28	DIP	EPROM		V09	93	51	351B086
27C128	28	DIP	EPROM	v	V15	115	051	351B086
27C256	28	DIP	EPROM		V09	93	32	351B086
27C256	28	DIP	EPROM	v	V15	115	032	351B086

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
27C291	24	DIP	EPROM		V13	E6	AF	
27C291	28	PLCC	EPROM		V13	E6	B7	351B093
27C292	24	DIP	EPROM		V13	E6	AF	
27C32	24	DIP	EPROM	v	V17	116	024	
27C49	24	DIP	EPROM	v	V17	11A	031	
27C512	28	DIP	EPROM	a	V13	4B	A4	351B086
27C512	28	DIP	EPROM	v	V15	116	0A4	351B086
27C64	28	DIP	EPROM		V13	93	33	351B086
27C64	28	DIP	EPROM	v	V15	115	033	351B086
27L08	24	DIP	EPROM		V07	21	27	
27P32A	24	DIP	EPROM		V13	63	24	
27PC128	28	DIP	EPROM		V14	93	51	351B086
27PC128	28	DIP	EPROM	v	V15	115	051	351B086
27PC128	32	PLCC	EPROM	v	V15	115	0C2	351B099
27PC256	28	DIP	PROM		V14	93	32	351B086
27PC256	28	DIP	PROM	v	V15	115	032	351B086
27PC256	32	PLCC	PROM	v	V15	115	0C3	351B099
27PC512	28	DIP	PROM	a	V14	4B	A4	351B086
27PC512	28	DIP	PROM	v	V15	116	0A4	351B086
27PC512	32	PLCC	PROM	v	V15	116	0C4	351B099
27PC64	28	DIP	EPROM	v	V15	115	033	351B086
28L166	24	DIP	PROM		V07	13	21	
28L22	20	DIP	PROM		V07	13	46	
28L42	20	DIP	PROM		V07	13	09	
28L45	24	DIP	PROM		V07	13	15	
28L85	24	DIP	PROM		V07	13	16	
28L86	24	DIP	PROM		V07	13	16	
28LA22	20	DIP	PROM		V07	13	46	
28P166	24	DIP	PROM		V07	13	21	
28P42	20	DIP	PROM		V07	13	09	
28P45	24	DIP	PROM		V07	13	15	
28P85	24	DIP	PROM		V07	13	16	
28S166	24	DIP	PROM		V07	13	21	
28S2708	24	DIP	PROM		V07	13	16	
28S42	20	DIP	PROM		V07	13	09	
28S45	24	DIP	PROM		V07	13	15	

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
28S46	24	DIP	PROM		V07	13	15	
28S85	24	DIP	PROM		V07	13	16	
28S86	24	DIP	PROM		V07	13	16	
28SA166	24	DIP	PROM		V07	13	21	
28SA42	20	DIP	PROM		V07	13	09	
28SA46	24	DIP	PROM		V07	13	15	
28SA86	24	DIP	PROM		V07	13	16	
34L10	16	DIP	PROM		V09	A1	01	
34L12	20	PLCC	PROM		V09	A1	6B	351B088
34L162	20	DIP	PROM		V09	A1	53	
34L162	20	PLCC	PROM		V09	A1	8C	351B090
34L41	18	DIP	PROM		V09	A1	05	
34L42	20	PLCC	PROM		V09	A1	6E	351B088
34R162	20	DIP	PROM		V09	A2	3B	
34R162	20	PLCC	PROM		V09	A2	C6	351B090
34S10	16	DIP	PROM		V09	A1	01	
34S12	20	PLCC	PROM		V09	A1	6B	351B088
34S162	20	DIP	PROM		V09	A1	53	
34S162	20	PLCC	PROM		V09	A1	8C	351B090
34S41	18	DIP	PROM		V09	A1	05	
34S42	20	PLCC	PROM		V09	A1	6E	351B088
34SA10	16	DIP	PROM		V09	A1	01	
34SA12	20	PLCC	PROM		V09	A1	6B	351B088
34SA162	20	DIP	PROM		V09	A1	53	
34SA162	20	PLCC	PROM		V09	A1	8C	351B090
34SA41	18	DIP	PROM		V09	A1	05	
34SA42	20	PLCC	PROM		V09	A1	6E	351B088
34SR165	24	DIP	PROM		V09	A2	4E	351B073
34SR167	28	PLCC	PROM		V09	A2	C5	351B092
38L030	16	DIP	PROM		V09	A1	02	
38L032	20	PLCC	PROM		V09	A1	6C	351B087
38L165	24	DIP	PROM		V09	A1	21	
38L166	24	DIP	PROM		V09	A1	21	
38L167	28	PLCC	PROM		V09	A1	8B	351B093
38L22	20	DIP	PROM		V09	A1	08	
38L22	20	PLCC	PROM		V09	A1	7B	351B089

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
38L42	20	DIP	PROM		V09	A1	09	
38L42	20	PLCC	PROM		V09	A1	7C	351B089
38L85	24	DIP	PROM		V09	A1	16	
38L87	28	PLCC	PROM		V09	A1	8A	351B093
38R165	24	DIP	PROM	l	V09	A2	A3	
38R167	28	PLCC	PROM	l	V09	A2	9E	351B093
38R85	24	DIP	PROM	k	V09	A2	86	
38R87	28	PLCC	PROM	k	V09	A2	9C	351B093
38S030	16	DIP	PROM		V09	A1	02	
38S032	20	PLCC	PROM		V09	A1	6C	351B087
38S165	24	DIP	PROM		V09	A1	21	
38S166	24	DIP	PROM		V09	A1	21	
38S167	28	PLCC	PROM		V09	A1	8B	351B093
38S22	20	DIP	PROM		V09	A1	08	
38S22	20	PLCC	PROM		V09	A1	7B	351B089
38S42	20	DIP	PROM		V09	A1	09	
38S42	20	PLCC	PROM		V09	A1	7C	351B089
38S85	24	DIP	PROM		V09	A1	16	
38S87	28	PLCC	PROM		V09	A1	8A	351B093
38SA030	16	DIP	PROM		V09	A1	02	
38SA032	20	PLCC	PROM		V09	A1	6C	351B087
38SA165	24	DIP	PROM		V09	A1	21	
38SA166	24	DIP	PROM		V09	A1	21	
38SA167	28	PLCC	PROM		V09	A1	8B	351B093
38SA22	20	DIP	PROM		V09	A1	08	
38SA22	20	PLCC	PROM		V09	A1	7B	351B089
38SA42	20	DIP	PROM		V09	A1	09	
38SA42	20	PLCC	PROM		V09	A1	7C	351B089
38SA85	24	DIP	PROM		V09	A1	16	
38SA87	28	PLCC	PROM		V09	A1	8A	351B093
54/74LS478	24	DIP	PROM		V07	13	16	
54/74S2708	24	DIP	PROM		V07	13	16	
54/74S454	18	DIP	PROM		V07	13	06	
54/74S455	18	DIP	PROM		V07	13	06	
54/74S476	18	DIP	PROM		V07	13	38	
54/74S477	18	DIP	PROM		V07	13	38	

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
54/74S478	24	DIP	PROM		V07	13	16	
54/74S479	24	DIP	PROM		V07	13	16	
7742	40	DIP	MICRO		V11	57	1F	351B102
82S191B	24	DIP	PROM		V09	A1	21	
TMS2716	24	DIP	EPROM		V07	23	28	
Toshiba								
24128	28	DIP	EPROM		V11	79	51	351B086
24128A	28	DIP	EPROM		V11	5C	51	351B086
24256	28	DIP	EPROM		V11	45	32	351B086
24256A	28	DIP	EPROM		V11	5C	32	351B086
24512	28	DIP	EPROM	a	V13	5E	A4	351B086
2464	28	DIP	EPROM		V11	79	33	351B086
2464A	28	DIP	EPROM		V11	5C	33	351B086
27128	28	DIP	EPROM		V11	79	51	351B086
27128A	28	DIP	EPROM		V11	5C	51	351B086
27256	28	DIP	EPROM		V07	45	32	351B086
27256A	28	DIP	EPROM		V11	5C	32	351B086
27256B	28	DIP	EPROM		V15	5C	32	351B086
2732	24	DIP	EPROM		V07	19	24	
27512	28	DIP	EPROM	a	V11	5E	A4	351B086
27512A	28	DIP	EPROM	a	V15	5E	A4	351B086
2764	28	DIP	EPROM		V11	79	33	351B086
2764A	28	DIP	EPROM		V11	5C	33	351B086
28257	28	DIP	EEPROM	v	V15	10E	032	351B086
321	24	DIP	EPROM		V07	21	26	
322	24	DIP	EPROM		V07	21	27	
323	24	DIP	EPROM		V07	19	23	
54256A	28	DIP	EPROM		V13	5C	32	351B086
571000	32	DIP	EPROM	b	V11	5C	CB	351B104
571001	32	DIP	EPROM	b	V11	5C	CC	351B104
571024	40	DIP	EPROM	b,o	V14	5F	A8	351B095
57256	28	DIP	EPROM		V07	45	32	351B086
57256A	28	DIP	EPROM		V13	5C	32	351B086
57512A	28	DIP	EPROM	a	V16	5E	A4	351B086

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
58257	28	DIP	EEPROM	v	V17	117	032	351B086
8755A	40	DIP	MICRO		V07	47	55	351B072
VLSI								
27C128	28	DIP	EPROM		V11	5D	51	351B086
27C256	28	DIP	EPROM		V11	5D	32	351B086
27C512	28	DIP	EPROM	a	V11	4C	A4	351B086
27C64	28	DIP	EPROM		V11	5D	33	351B086
28H64	28	DIP	EPROM		V07	C9	A6	351B086
Waferscale Integration								
27C010L	32	DIP	EPROM	v	V17	11B	0CB	351B104
27C010L	32	LCC	EPROM	v,w	V17	11B	0DE	351B104P
27C128F	28	DIP	EPROM		V12	3C	51	351B086
27C128F	32	LCC	EPROM	w	V17	3C	C2	351B099
27C256F	28	DIP	EPROM	v	V17	124	032	351B086
27C256F	32	LCC	EPROM	v,w	V17	124	C3	351B099
27C256L	28	DIP	EPROM	v	V17	11B	032	351B086
27C256L	32	LCC	EPROM	v,w	V17	11B	0C3	351B099
27C512F	28	DIP	EPROM	v	V17	125	0A4	351B086
27C512L	28	DIP	EPROM	v	V17	11C	0A4	351B086
27C64F	28	DIP	EPROM		V12	3C	33	351B086
57C128F	28	DIP	EPROM		V12	3C	51	351B086
57C128F	32	LCC	EPROM	w	V17	3C	C2	351B099
57C191	24	DIP	PROM		V12	7B	21	
57C191B	24	DIP	PROM		V17	7B	21	
57C256F	28	DIP	EPROM	v	V17	124	032	351B086
57C256F	32	LCC	EPROM	v,w	V17	124	0C3	351B099
57C257	44	LCC	EPROM	b,q,w	V17	01F	113	351B095P
57C257F	40	DIP	EPROM	b,o	V14	1F	E1	351B095
57C291	24	DIP	PROM		V12	7B	21	
57C291B	24	DIP	PROM		V17	7B	21	
57C43	24	DIP	PROM		V12	7B	63	
57C43B	24	DIP	PROM		V17	7B	63	
57C45	24	DIP	PROM	v,c	V17	122	0B0	

Device Part Number	Pins	Pkg. Type	Part Type	Foot-note	Version	Family Code	Pinout Code	Adapter
57C49	24	DIP	PROM		V12	3C	67	
57C49B	24	DIP	PROM		V17	3C	67	
57C51	28	DIP	PROM		V13	7B	78	351B101
57C51B	28	DIP	PROM		V17	7B	78	351B101
57C64F	28	DIP	EPROM		V12	3C	33	351B086
57C64F	32	LCC	EPROM	w	V17	3C	C1	351B099
57C65	40	DIP	EPROM	b,o	V12	2C	E7	351B095
XICOR								
2404	8	DIP	EEPROM	v	V17	120	11A	351B120D
24C04	8	DIP	EEPROM	v	V17	120	11A	351B120D
24C16	8	DIP	EEPROM	v	V17	120	11B	351B120D
2804A	24	DIP	EEPROM		V11	B7	82	
2816A	24	DIP	EEPROM		V11	B7	23	
2816B	24	DIP	EEPROM		V13	C3	96	
28256	28	DIP	EEPROM	s	V13	BA	99	351B086
2864A	28	DIP	EEPROM		V11	C3	98	351B086
2864A	32	PLCC	EEPROM		V13	C3	5D	351B099
2864B	28	DIP	EEPROM		V15	CA	98	351B086
28C256	28	DIP	EEPROM	s	V15	BA	99	351B086
XILINX								
1736	8	DIP	PROM		V16	D3	EE	351B120D

FOOTNOTES

a) This device cannot be programmed in either a System 19 or a 100a programmer.

b) This device requires that you use a Model 29B programmer that has version V04 or later firmware. To display your 29B's firmware version, press SELECT B 2 START.

c) The initialize word is located at device address 800H. The architecture fuse is located at device address 801H. To program the initialize word, enter the data at the first location following the main array data in RAM. To program the device to synchronous mode enter 01 at the second location following the main array data. To leave asynchronous, enter 00.

d) The initialize word is located at device address 401H. The architecture word is located at device address 400H - consult the manufacturer's spec sheet for the correct pattern for setting the device to either asynchronous or synchronous mode. To program enter architecture word at first location following main array data in RAM, initialize word at second location.

e) The initialize word is located at device address 801H. The architecture word is located at device address 800H - consult the manufacturer's spec sheet for the correct pattern for setting the device to either asynchronous or synchronous mode. to program enter architecture word at first location following main array data in RAM, initialize word at second location.

f) The inialize word is located at device address 1001H. The device architecture word is located at device address 1000H - consult the manu-facturer's spec sheet for the correct pattern for setting the device to either asynchronous or synchronous mode. To program enter architecture word at first location following main array data in RAM, initialize word at second location.

g) This device is a microcontroller with a security bit programming capability. Refer to setup information on the following pages concerning the use of select code C3.

h) The initialize word is located at device address 400H. To program enter initialize word at first location following main array data in RAM>

i) This device is a KEPROM. Refer to setup information on the following pages concerning the use of select code C3.

j) This device is a microcontroller with XNOR array and security bit programming capability. Refer to setup information on the following pages concerning the use of select code C3.

k) This device has initialize words at device address 400H to 40FH. Enter 16 initialize words after main array data RAM.

l) This device has initialize words at device address 800H to 80FH. Enter 16 initialize words after main array data in RAM.

Using Select Code C3 To Access Special Programming Options

The following devices have special programming capabilities that may be accessed via select code C3:

AMD 8751H (g)
AMD 8753 (g)
AMD 9761H (g)
ATMEL 28C256 (s)
ATMEL 28HC256 (s)
ICT 27Cx321/2 (x)
Intel 27916 (i)
Intel 8741AH (r)
Intel 8742AH (r)
Intel 8751H (g)
Intel 8751BH (j)
Intel 87C51/FA/FB (j)
Intel 8752BH (j)
SGS Z86E11 (u)
SGS Z86E21 (u)
Xicor 28256 (s)
Xicor 28C256 (s)

Before using this select code, you must key in the device's family and pinout codes, which identify the device to UniPak 2B. For example, to select the AMD 8751H, press **COPY DEVICE RAM START**, and then press **5 4 5 8**.

Programming the "(g)" devices:

The key sequence to access options for the AMD 8751H, 8753, 9761H and the Intel 8751H is as follows: (Refer to figure 1.)

1. Press **SELECT**; the Model 29B displays `SELECT CODE ^`
2. Press **C 3 START**; the Model 29B displays `FXX PYY OPTIONS` or `FXXX PYYY OPTIONS` if it is a 29B, V06 or later.

NOTE

"XX/XXX" and "YY/YYY" in the display represent the family and pinout codes of the device you are programming.

3. Press **START** to enter the top-level menu for this feature.
4. There are three possibilities to select from: programming only the security fuse, programming the array, or doing both. Press the **REVIEW** key to scroll between these three options.

5. When the desired programming feature is displayed, press the **START** key to select that option. An asterisk will appear in the right-most display position. For example, if you select array programming and press **START**, the Model 29B will display `PROG ARRAY ONLY *`.
6. Press **START** a second time to lock in the option. The Model 29B will display `OPTIONS DONE **`.

Programming the "(j)" devices:

The key sequence to access options for the Intel 87C51 and 8752BH is as follows: (Refer to figure 2.)

1. Press **SELECT**; the Model 29B displays `SELECT CODE ^`
2. Press **C 3 START**; the Model 29B displays `FXX PYY OPTIONS`or `FXXX PYYY OPTIONS` if it is a 29B, V06 or later.

NOTES

"XX/XXX" and "YY/YYY" in the display represent the family and pinout codes of the device you are programming.

3. Press **START** to enter the top-level menu for this feature.
4. There are four possibilities to select from:
   - the array
   - the XNOR array (32 byte array above main array data in RAM)
   - the first security fuse bit
   - the second security fuse bit

   There are eight available combinations of the above four options. Use the REVIEW key to scroll between the available options.
5. When the desired programming feature is displayed, press the **START** key to select that option. An asterisk will appear in the right-most display position. For example, if you select programming of the array, the XNOR array and one security bit, and you press **START**, the Model 29B will display

   `ARRAY,XNOR,BIT1*`.

6. Press **START** a second time to lock in the option. The Model 29B will display

   `OPTIONS DONE  **.`

Programming the "(i)" devices:

The flowchart in figure 3 is a guide to programming Intel's keyed-access 27916 EPROM (KEPROM™). This device allows you to "lock up" the data so that only users knowing the authentication process can gain access to its software. See your Intel data book for detailed information on this device.

Programming the "(r)" devices:

The key sequence to access options for the Intel 8741AH and 8742AH is as follows: (Refer to figure 4.)

1. Press **SELECT**; the Model 29B displays `SELECT CODE ^`
2. Press **C 3 START**; the Model 29B displays `FXX PYY OPTIONS` or `FXXX PYYY OPTIONS` if it is a 29B, V06 or later.

   NOTE

   "XX/XXX" and "YY/YYY" in the display represent the family and pinout codes of the device you are programming.

3. Press **START** to enter the top-level menu for this feature.
4. There are three possibilities
   - the array
   - the user signature
   - the security fuse bit

   There are four combinations of the above three options. Use the **REVIEW** key to scroll between the available options.

5. When the desired programming feature is displayed, press the **START** key to select that option. An asterisk will appear in the right-most display position. For example, if you select programming of the array, the user signature and the security bit, and you press **START**, the Model 29B will display

   `PROG ARRAY,SEC *.`

KEPROM™ is a trademark of the Intel Corporation.

Programming the "(s)" Devices:

The key sequence to access options for the Xicor 28256, ATMEL 28CH256, and ATMEL 28C256 is as follows: (Refer to figure 5.)

1. Press **SELECT**; the Model 29B displays `SELECT CODE ^`
2. Press **C 3 START**; the Model 29B displays `FXX PYY OPTIONS` or `FXXX PYYY OPTIONS` if it is a 29B, V06 or later.

   NOTE

   "XX/XXX" and "YY/YYY" in the display represent the family and pinout codes of the device you are programming.

3. Press **START** to enter the top-level menu for this feature.
4. There are two possibilities
   - protect data
   - unprotect data

   There are two combinations of the above two options. Use the **REVIEW** key to scroll between the available options.
5. When the desired programming feature is displayed, press the **START** key to select that option. An asterisk will appear in the right-most display position. For example, if you select programming of the protect data, and you press **START**, the Model 29B will display

   `PROTECT DATA*.`

Programming the "(u)" devices:

The key sequence to access options for the SGS Z86E11 or SGS Z86E21 is as follows: (Refer to figure 6.)

1. Press **SELECT**; the Model 29B displays `SELECT CODE ^`
2. Press **C 3 START**; the Model 29B displays `FXX PYY OPTIONS` or `FXXX PYYY OPTIONS` if it is a 29B, V06 or later.

   NOTE

   "XX/XXX" and "YY/YYY" in the display represent the family and pinout codes of the device you are programming.

3. Press **START** to enter the top-level menu for this feature.
4. There are three possibilities to select from:
   - the array
   - the first security fuse bit
   - the second security fuse bit

   There are seven available combinations of the above three options. Use the **REVIEW** key to scroll between the available options.
5. When the desired programming feature is displayed, press the **START** key to select that option. An asterisk will appear in the right-most display position. For example, if you select programming of the array, protection A and protection B, and you press **START**, the Model 29B will display

   `ARRAY,PRTA,PRTB *`
6. Press **START** a second time to lock in the option. The Model 29B will display

   `OPTIONS DONE **.`

Programming the "(X)" Devices:

The key sequence to access options for the ICT 27CX321/22 is as follows: (Refer to figure 7.)

1. Press **SELECT**; the Model 29B displays `SELECT CODE ^`
2. Press **C 3 START**; the Model 29B displays `FXX PYY OPTIONS` or `FXXX PYYY OPTIONS` if it is a 29B, V06 or later.

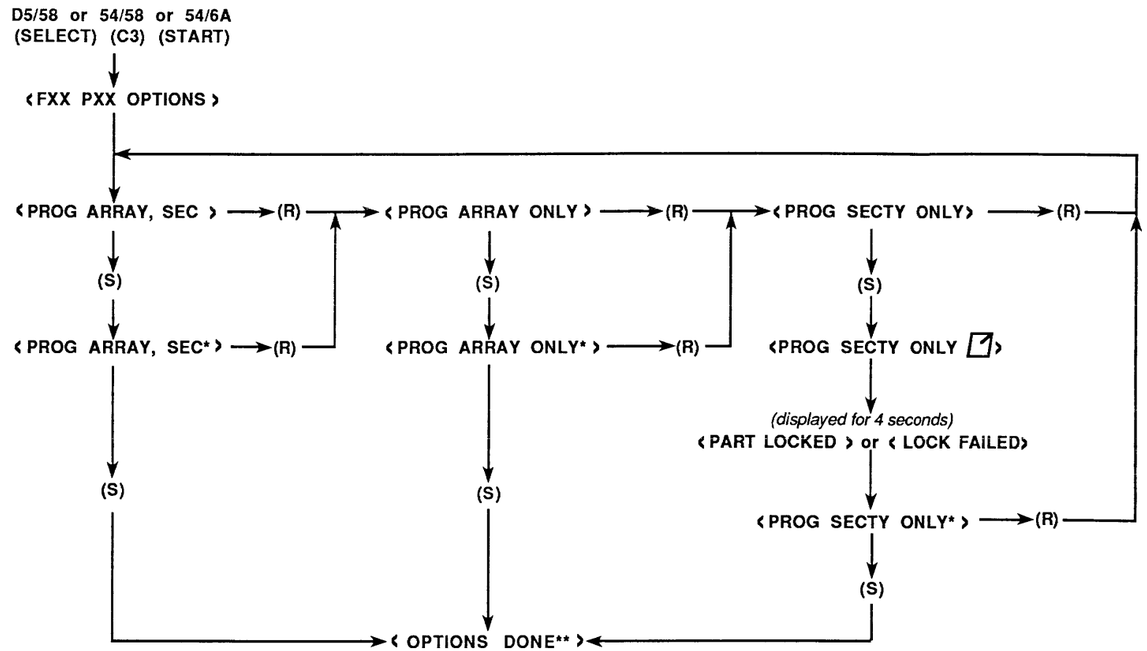
   NOTE

   "XX/XXX" and "YY/YYY" in the display represent the family and pinout codes of the device you are programming.

3. Press **START** to enter the top-level menu for this feature.
4. There are two possibilities
   - the array
   - the powerdown option

   There are three combinations of the above two options. Use the **REVIEW** key to scroll between the available options.
5. When the desired programming feature is displayed, press the **START** key to select that option. An asterisk will appear in the right-most display position. For example, if you select programming of the powerdown only, and you press **START**, the Model 29B will display

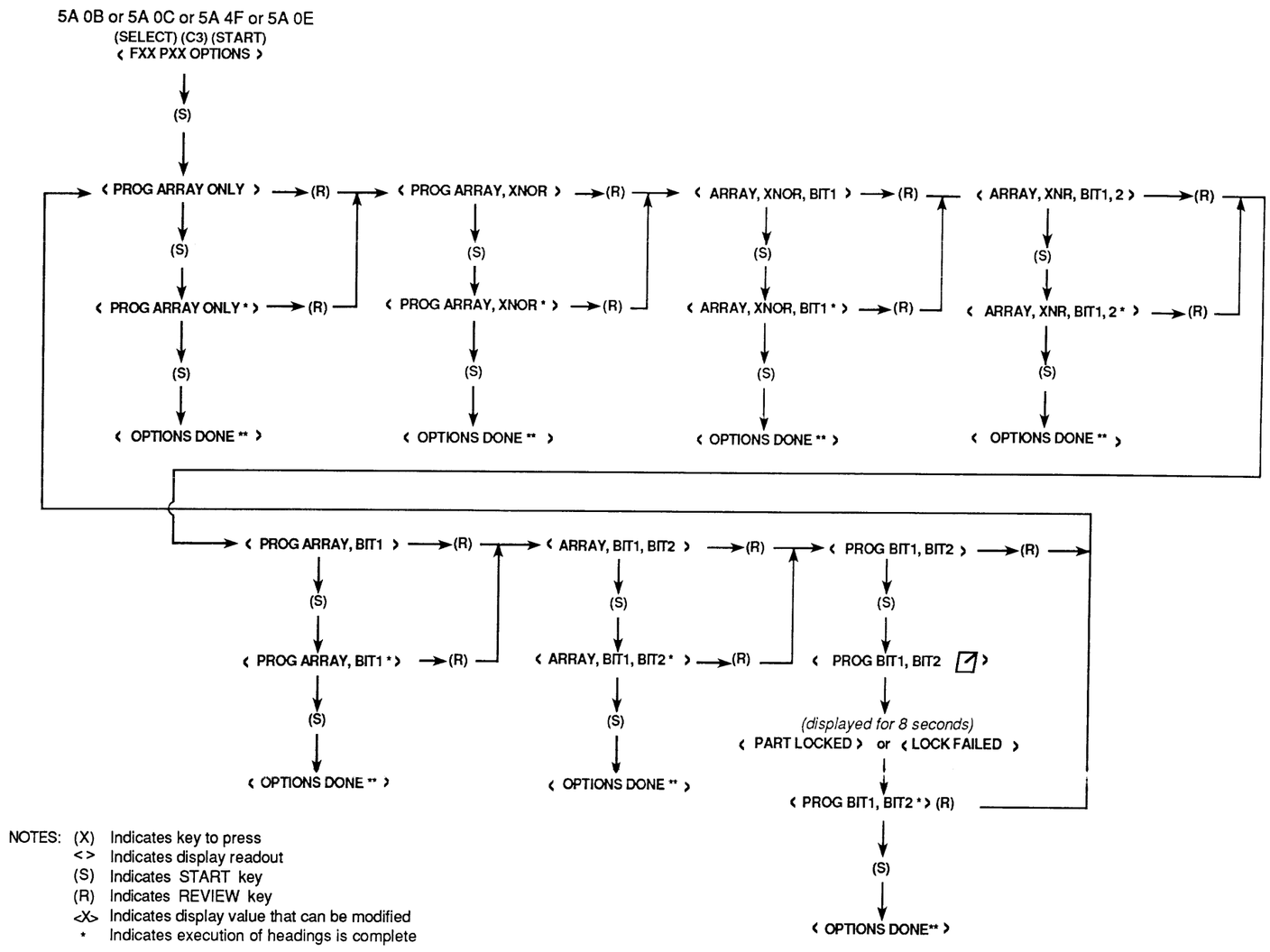
   `POWERDOWN ONLY*.`



NOTES: (X) Indicates key to press
<> Indicates display readout
(S) Indicates START key
(R) Indicates REVIEW key
<X> Indicates display value that can be modified
* Indicates execution of headings is complete

A_2 value is the same as that displayed in A_1 . Press REVIEW to increment A_1 value

Figure 1. Security Bit Programming



NOTES: (X) Indicates key to press
< > Indicates display readout
(S) Indicates START key
(R) Indicates REVIEW key
<X> Indicates display value that can be modified
* Indicates execution of headings is complete

A_2 value is the same as that displayed in A_1. Press REVIEW to increment A_1 value.

Figure 2. Intel 87C51 and 8752BH Security Programming

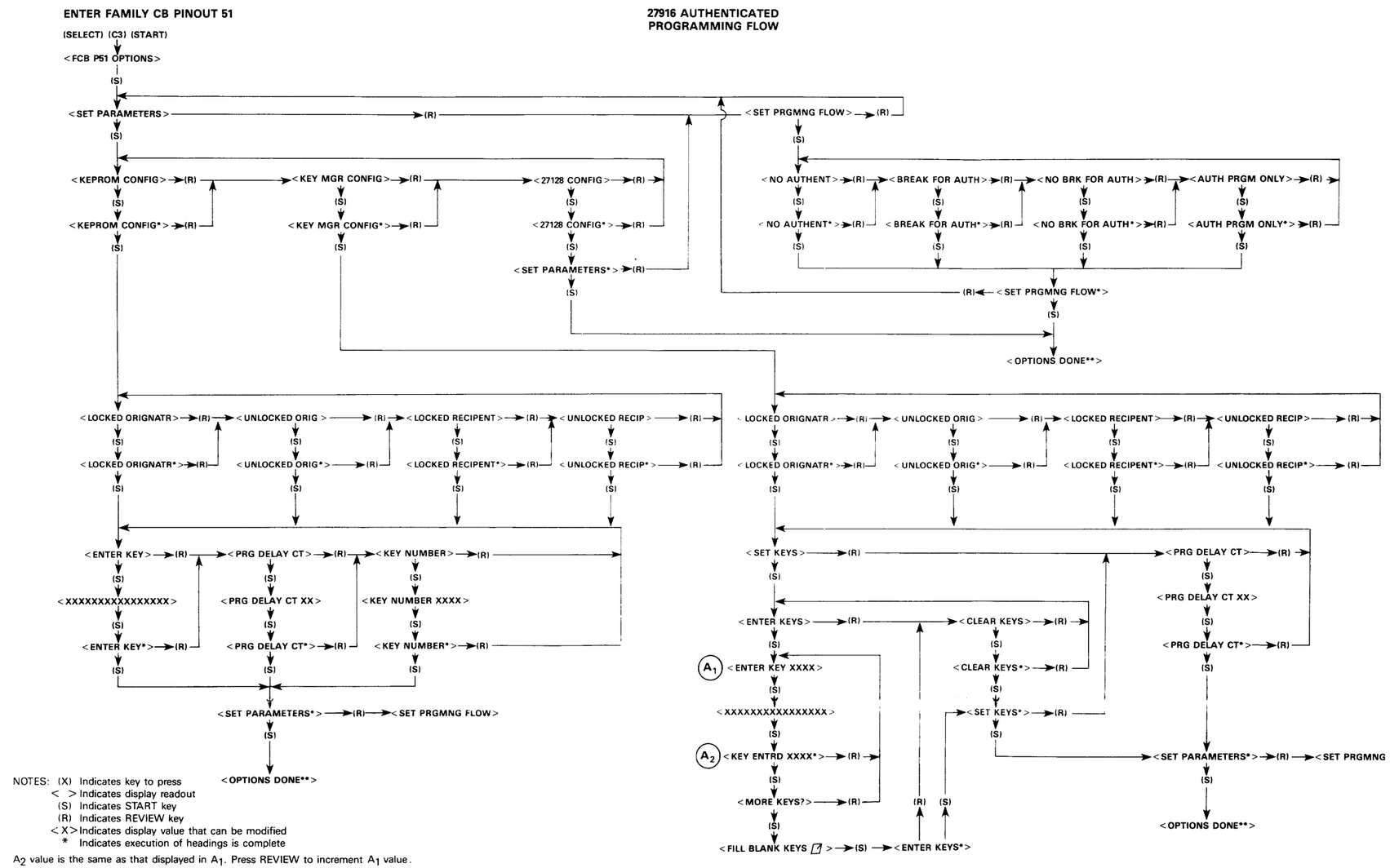
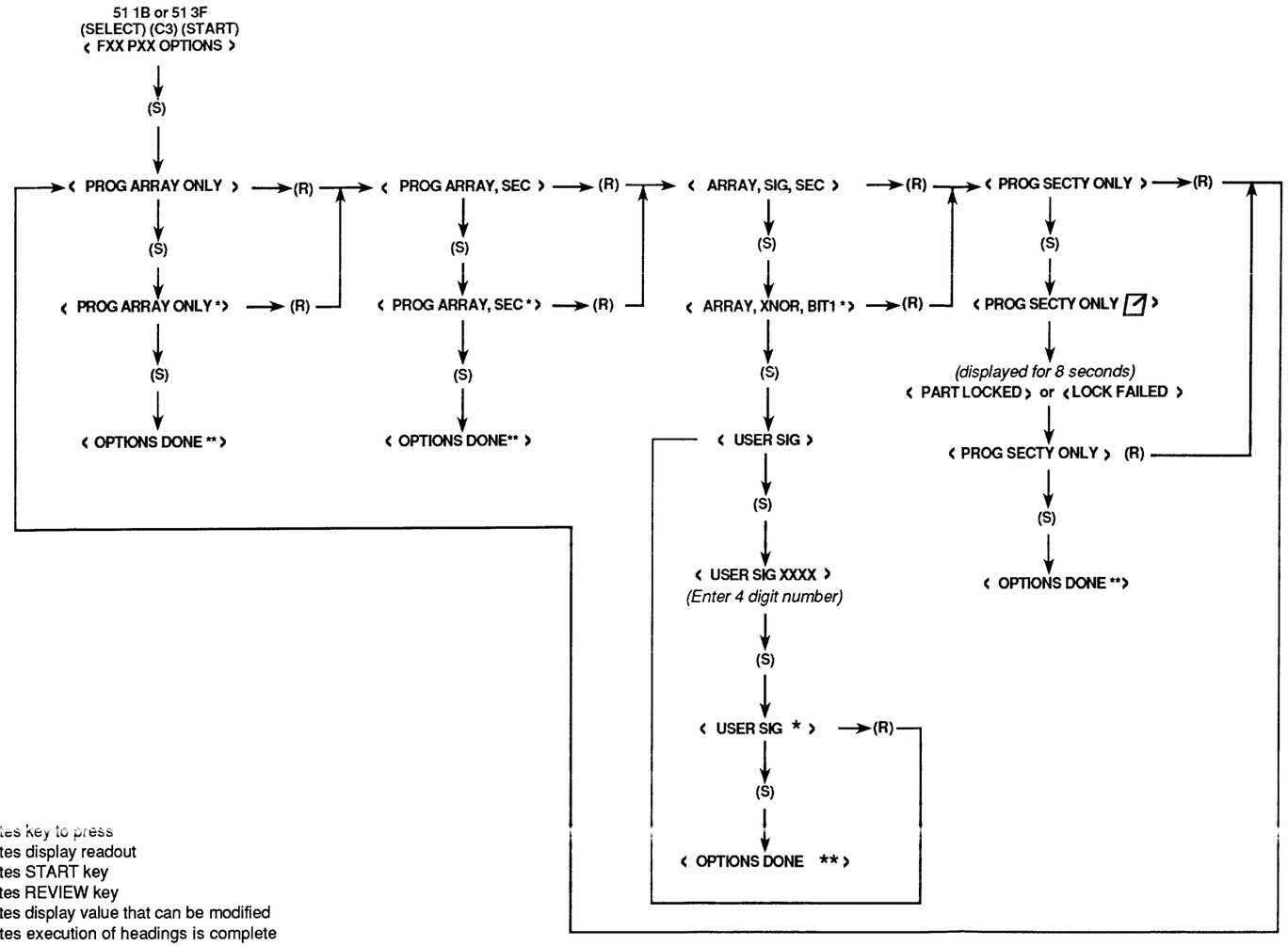


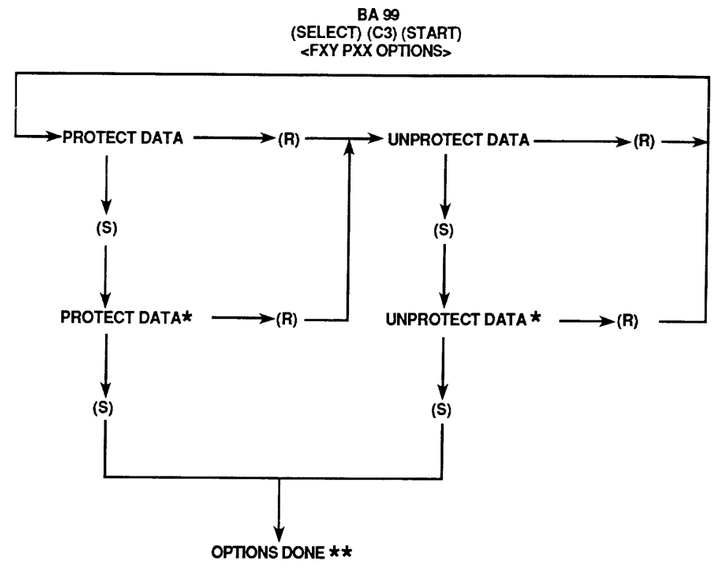
Figure 3. KEPROM Flow Chart



NOTES: (X) Indicates key to press
<> Indicates display readout
(S) Indicates START key
(R) Indicates REVIEW key
<X> Indicates display value that can be modified
* Indicates execution of headings is complete

A_2 value is the same as that displayed in A_1. Press REVIEW to increment A_1 value

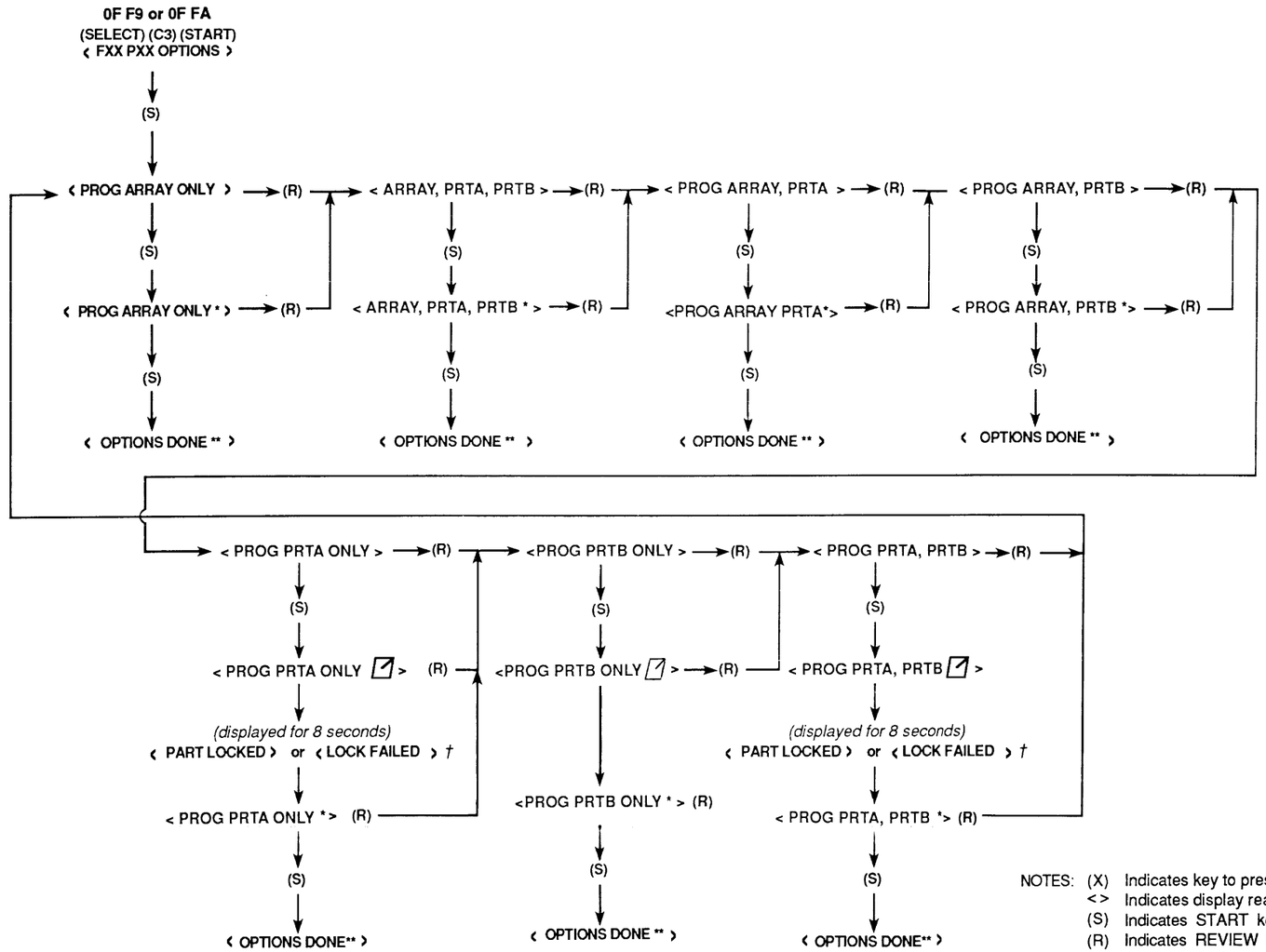
Figure 4. Intel 8741AH and 8742AH Security Programming



NOTES: (X) Indicates key to press
<> Indicates display readout
(S) Indicates START key
(R) Indicates REVIEW key
<X> Indicates display value that can be modified
* Indicates execution of headings is complete

A_2 value is the same as that displayed in A_1. Press REVIEW to increment A_1 value

Figure 5. Xicor 28256 Software Data Protection

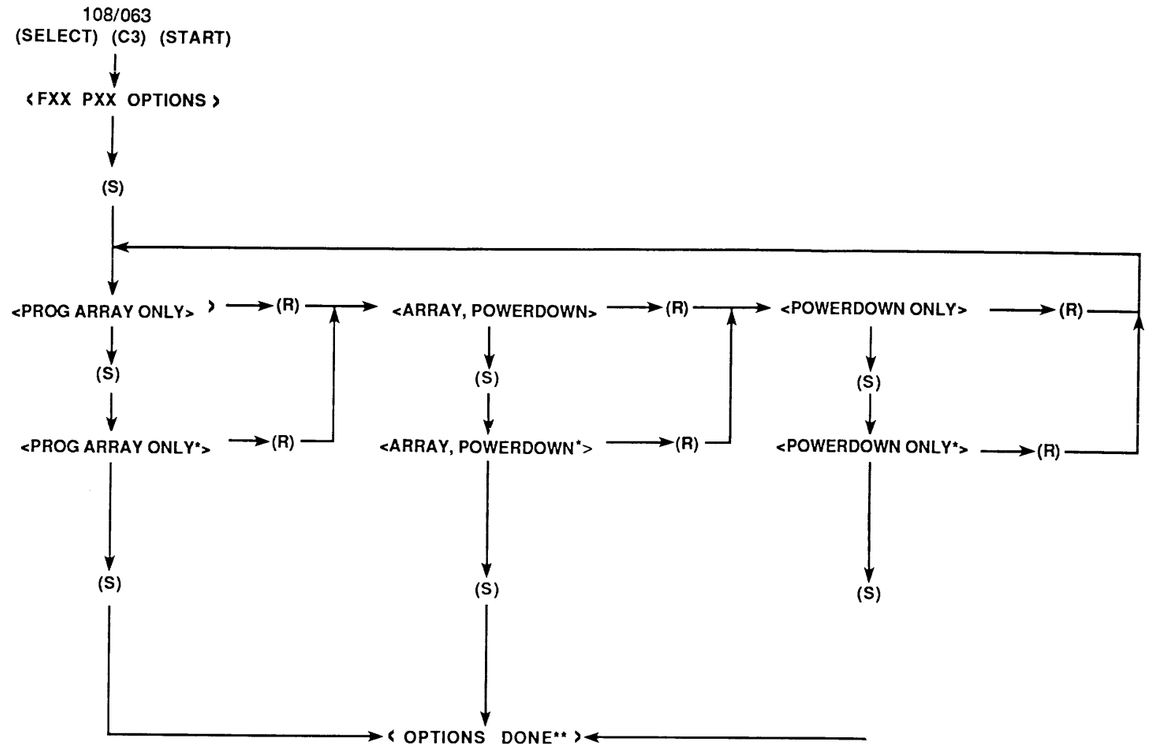


† *NOTE: The "PART LOCKED" display applies only to Protection A (PRTA). It shows that the protection was programmed and verified. Protection B (PRTB) cannot be functionally verified by the programmer so it will be up to the user to test it.*

Figure 6. SGS Z86E11 or SGS Z86E21 Security Programming

NOTES: (X) Indicates key to press
< > Indicates display readout
(S) Indicates START key
(R) Indicates REVIEW key
<X> Indicates display value that can be modified
* Indicates execution of headings is complete

A_2 value is the same as that displayed in A_1. Press REVIEW to increment A_1 value.



NOTES:
- (X) Indicates key to press
- < > Indicates display readout
- (S) Indicates START key
- (R) Indicates REVIEW key
- <X> Indicates display value that can be modified
- * Indicates execution of headings is complete

A_2 value is the same as that displayed in A_1. Press REVIEW to increment A_1 value

Figure 7. ICT 27CX321/22 Powerdown Option Programming

UNIPAK 2B ™

User Note

984-0179-010 *November 1988*

This document is provided as a supplement to the UniPak 2B™ Operators Manual and helps ensure that Data I/O's customers receive the most accurate documentation possible. This document provides information regarding the latest configuration of UniPak 2B (Version 17.0)

CONTENTS OF USER NOTE

Configuration Cross Reference Table

This user note applies to:

Model Number	Version Number	Manual Part Number
UniPak 2B	V15.0	981-0179-002 and up
UniPak 2B	V16.0	981-0179-002 and up
UniPak 2B	V17.0	981-0179-002 and up

New Error Code (B2)

Code	Name	Description
B2	No Block Limits	The device you are attempting to program cannot be programmed using block limits. The DEV ADDR/SIZE must be set to default values.

New Error Code (B9)

Code	Name	Description
B9	Illegal RAM Address	The RAM address selected is an illegal RAM boundary for this device. Try the operation again using a starting RAM address that is a multiple of 2000 Hex (*i.e.*, 4000, 6000, 8000, A000, etc).

Customer Support Center Telephone Numbers

Because the phone numbers and addresses of our representatives are continually changing, we are no longer including the address list with our documentation. Please discard all address lists.

For the number of your local representative, please call one of the following numbers:

United States	1-800-247-5700 (except for Washington State, call 206-881-6444)
Data I/O Canada:	416-678-0761
Data I/O Europe:	+31 (0)20 622866
Data I/O Japan:	03 432 6991
All other locations:	206-881-6444

Data I/O
10525 Willows Road N.E.
P.O. Box 97046
Redmond, WA 98073-9746
(206) 881-6444
Telex Dom. 15-2167,
Int'l 4740166 DIO UI
Fax (206) 882-1043

NORTHERN CALIFORNIA

Data I/O
1700 Wyatt Drive
Suite 1
Santa Clara, CA 95054
(408) 727-0641 *(Sales)*
(408) 727-0659 *(Service)*
Telex 556440

SOUTHERN CALIFORNIA

Data I/O
3505 Cadillac Avenue
Suite L-1
Costa Mesa, CA 92626
(714) 662-1182 *(Sales)*
(714) 662-2498 *(Service)*
Telex 755870

EASTERN REGION

Data I/O
Birch Pond Business Center
22 Cotton Road
Nashua, NH 03063
(603) 889-8511 *(Sales)*
(603) 889-8513 *(Service)*
Telex 943431

CENTRAL REGION

Data I/O
1810 N. Glenville Drive
Suite 108
Richardson, TX 75081
(214) 235-0044
Telex 792474
TWX 910-997-1767

ALABAMA
Pen Tech Associates
Huntsville, AL
(205) 881-9298

ALASKA
Northwest T & M
Redmond, WA
(206) 881-8857

ARIZONA
Zeus Electronics, Inc.
Phoenix, AZ
(602) 263-6022
1-800-528-4512
Telex 910-951-1362

ARKANSAS
Testech, Inc.
Richardson, TX
(214) 644-5010

CALIFORNIA, NORTHERN
Data I/O
Santa Clara, CA
(408) 727-0641

CALIFORNIA, SOUTHERN
Data I/O
Costa Mesa, CA
(714) 662-1182
Telex 755870

COLORADO
Zeus Electronics, Inc.
Denver, CO
(303) 321-4246
1-800-521-4512

CONNECTICUT
Data I/O
Nashua, NH
(603) 889-8511
Telex 943431

DELAWARE
Sci-Rep, Inc.
Baltimore Office
(301) 321-1411

FLORIDA
Pen Tech Associates
Deerfield Beach, FL
(305) 421-4989

Casselberry, FL
(305) 678-6809

FLORIDA, NORTHERN
Pen Tech Associates
Huntsville, AL
(205) 881-9298

GEORGIA
Pen Tech Associates
Marietta, GA
(404) 424-1931

HAWAII
Northwest Test and Measurement
Redmond, WA
(206) 881-8857

IDAHO
Zeus Electronics, Inc.
Salt Lake City, UT
(801) 534-0500
1-801-534-0503

ILLINOIS, NORTHERN
Torkelson Associates
Deerfield, IL
(312) 945-8700
Twx 910-992-1438

ILLINOIS, SOUTHERN
Palatine Eng. & Sales
Hazelwood, MO
(314) 839-0800

INDIANA
Torkelson Associates
Indianapolis, IN
(317) 244-7867
Telex 810-341-3141

IOWA
Torkelson Associates
Deerfield, IL
(312) 945-8700
Twx 910-992-1438

KANSAS
Palatine Eng. & Sales
Mission, KS
(913) 831-0555

KENTUCKY, WESTERN
Torkelson Associates
Indianapolis, IN
(317) 244-7867
Telex 810-341-3141

KENTUCKY, EASTERN
Electro Sales Associates
Allison Park, PA
(412) 487-3801

LOUISIANA
Testech, Inc.
Houston, TX
(713) 956-0837

MAINE
Data I/O
Nashua, NH
(603) 889-8511
Telex 943431

MARYLAND
Sci-Rep, Inc.
Baltimore Office
(301) 321-1411

MASSACHUSETTS
Data I/O
Nashua, NH
(603) 889-8511
Telex 943431

MICHIGAN
Electro Sales Associates
Livonia, MI
(313) 474-7320

Portage, MI
(616) 323-2416

MINNESOTA
Torkelson Associates
Minneapolis, MN
(612) 835-2414
Telex 910-576-2740

MISSISSIPPI
Pen Tech Associates
Huntsville, AL
(205) 881-9298

MISSOURI
Palatine Eng. & Sales
Hazelwood, MO
(314) 839-0800

MONTANA
Zeus Electronics, Inc.
Salt Lake City, UT
(801) 534-0500
1-800-534-0503

NEBRASKA
Palatine Eng. & Sales
Hazelwood, MO
(314) 839-0800

NEVADA
Zeus Electronics, Inc.
Phoenix, AZ
(602) 263-6022
1-800-528-4512
Telex 910-951-1362

NEW HAMPSHIRE
Data I/O
Nashua, NH
(603) 889-8511
Telex 943431

NEW JERSEY, NORTHERN
Data I/O
1-800-858-5803

NEW JERSEY, SOUTH
Sci-Rep, Inc.
Pennsauken, NJ
(609) 662-5222
Telex 710-892-1297 SCI-REP PESN

NEW MEXICO
Zeus Electronics, Inc.
Albuquerque, NM
(505) 842-6633
1-800-528-4512

NEW YORK, METRO
Data I/O
1-800-858-5803

NEW YORK, UPSTATE
DB Associates, Inc.
Fayetteville, NY
(315) 446-0220

NORTH CAROLINA
Pen Tech Associates
Greensboro, NC
(919) 852-6000

NORTH DAKOTA
Torkelson Associates
Minneapolis, MN
(612) 835-2414
Telex 910-576-2740

OHIO
Electro Sales Associates
Dayton, OH
(513) 426-5551

Cleveland, OH
(216) 261-5440

OKLAHOMA
Testech, Inc.
Richardson, TX
(214) 644-5010

Tulsa, OK
(918) 665-7788

OREGON
Northwest T & M
Beaverton, OR
(503) 646-9966
1-800-247-5700
Telex 910-467-8775

PENNSYLVANIA, WESTERN
Electro Sales Associates
Allison Park, PA
(412) 487-3801

PENNSYLVANIA, EASTERN
Sci-Rep, Inc.
Pennsauken, NJ
(609) 662-5222
Telex 710-892-1297 SCI-REP PESN

PUERTO RICO
Data I/O
Nashua, NH
(603) 889-8511
Telex 943431

RHODE ISLAND
Data I/O
Nashua, NH
(603) 889-8511
Telex 943431

SOUTH CAROLINA
Pen Tech Associates
Greensboro, NC
(919) 852-6000

SOUTH DAKOTA
Torkelson Associates
Minneapolis, MN
(612) 835-2414
Telex 910-576-2740

TENNESSEE
Pen Tech Associates
Marietta, GA
(404) 424-1931

Huntsville, AL
(205) 881-9298

TEXAS
Testech, Inc.
Richardson, TX
(214) 644-5010

Houston, TX
(713) 956-0837

Austin, TX
(512) 327-7033

TEXAS, EL PASO CO.
Zeus Electronics, Inc.
Albuquerque, NM
(505) 842-6633
1-800-528-4512

UTAH
Zeus Electronics, Inc.
Salt Lake City, UT
(801) 534-0500
1-800-534-0503

VERMONT
Data I/O
Nashua, NH
(603) 889-8511
Telex 943431

VIRGINIA
Sci-Rep, Inc.
Fairfax, VA
(703) 385-0600
Telex 710-833-0361

WASHINGTON
Northwest T & M
Redmond, WA
(206) 881-8857

WASHINGTON,
TRI-CITIES, VANCOUVER,
SPOKANE
Northwest T & M
Beaverton, OR
(503) 646-9966
1-800-247-5700
Telex 910-467-8775

WASHINGTON D.C.
Sci-Rep, Inc.
Fairfax, VA
(703) 385-0600
Telex 710-833-0361

WEST VIRGINIA
Electro Sales Associates
Allison Park, PA
(412) 487-3801

WISCONSIN
Torkelson Associates
Waukesha, WI
(414) 784-7736

WYOMING
Zeus Electronics, Inc.
Denver, CO
(303) 321-4246
1-800-521-4512

U.S. SERVICE CENTERS

Redmond, WA	(206) 881-6444
Santa Clara, CA	(408) 727-0659
Costa Mesa, CA	(714) 662-2498
Nashua, NH	(603) 889-8513
Richardson, TX	(214) 235-0044

U.S. CORPORATE OFFICE

Data I/O Corporation
10525 Willows Road N.E.
P.O. Box 97046
Redmond, WA 98073-9746
(206) 881-6444
Telex Dom. 15-2167,
Int'l 4740166 DIO UI
FAX (206) 882-1043

EUROPE

Data I/O Europe
World Trade Center
Strawinskylaan 633
1077 XX Amsterdam
The Netherlands
(20) 622866
Telex 16616 DATIO NL

FEDERAL REPUBLIC OF GERMANY

Data I/O Germany GmbH
Bahnhofstrasse 3
D-6453 Seligenstadt
Federal Republic of Germany
(6182) 3088/89
Telex 4184962 DATA D

JAPAN

Data I/O Japan Company, Ltd.
Ginza Orient Bldg. 6F
8-9-13, Ginza, Chuo-ku
Tokyo 104 Japan
(03) 574-0211
Telex 2522685 DATAIO J

AUSTRALIA

Warburton Franki
Adelaide
3567333
Telex Warfran AA82579

Warburton Franki
Brisbane
(07) 277-0222
Telex Warfran 41052

Warburton Franki
Melbourne
(03) 795 9011
Telex Warfran AA31370

Warburton Franki
Newcastle
049 528722

Warburton Franki
Sydney
(02) 648-1711
Telex AA 22265

Warburton Franki
Perth
(09) 277-7000
Telex Warfran 92908

Warburton Franki
Corporate Office
Lidcombe, N.S.W. 2141
(02) 647-2266
Telex AA21299

AUSTRIA

Ing. Ernst Steiner
A-1130 Wien
(222) 827474
Telex 135026 ES A

BELGIUM

Simac Electronics
B-1000 Brussels
(2) 2192451
Telex 23662 SIMEIP B

BRAZIL

Cosele
Instrumentos Eletronicos Ltda.
01301-Sao Paulo-SP
(11) 255-1733 or 256-7421 or 231-5548
Telex (011) 30869 CSEL-BR

Cosele
Rua Sacadura Cabral, 120
Rio De Janeiro - RJ
(21) 283-2036
Telex (021) 33019

CANADA

Allan Crawford Associates
Mississauga, Ontario
(416) 890-2010
Telex 06 968769

Allan Crawford Associates
Ottawa, Ontario K1Z5L3
(613) 722-7682
Telex 053 3600

Allan Crawford Associates
St. Laurent, P.Q. H4T 1E7 (Montreal)
(514) 731-8564
Telex 05-824944

Allan Crawford Associates
Calgary, Alberta T2E 6Z5
(403) 230-1341
Telex 03 821186

Allan Crawford Associates
Burnaby, B.C. V5C6A7
(604) 294-1326
Telex 04 54247

CHINA

Dorado Company
Seattle, WA 98104
(206) 583-0000
Telex 329473 (Burgess Sea)
880212 (DORADO CO UD)

Dorado Company
Tsuen Wan, N.T. Hong Kong
0-4986401/2
Telex 51086 (FEDER HX)

Dorado Company
Beijing,
89-0621, ext. 1324

Dorado Company
c/o China Great Wall Industry Corp.
15 Zhong Shan Road (E1)
Shanghai,
219103 or 210464
Telex 33175 (CGWSH CN)

DENMARK

ITT Multikomponent A/S
DK-2600 Glostrup
(2) 451822
Telex 33355 ITT DK

FINLAND

Instrumentarium Elektroniikka
SF-02631 Espoo 63
(0) 5281
Telex 124426 HAVUL SF

FRANCE

M.B. Electronique
F-78530, Buc
(3) 9568131
Telex MB 695414 F

GERMANY, FEDERAL REPUBLIC OF

Instrumatic Electronic GmbH
D-8032 Graefelfing
(89) 852063
Telex 524298 INSTR D

GREECE

Eltronics Ltd.
GR-106 75 Athens 139
(1) 7249511 thru 15 or 7210669
Telex 216589 DARX GR

HONG KONG

Eurotherm (Far East) Ltd.
Aberdeen
5-546391
Telex 72449 EFELD HX

INDIA

Transmarketing Private Ltd.
Bombay 40018
022 4921874, 4920320 or 4926044
Telex 011 73724 TMPL IN

Bangalore
560-046

ISRAEL

Telsys Ltd.
Tel-Aviv 69010
(3) 494891 thru 5 or
(3) 494881 and 2
Telex 32392 TSEE IL

ITALY

Sistrel SPA
I-00143 Roma
(6) 5915551
Telex 680356 SISTREL I

Sistrel SPA
I-20092 Cinisello Balsamo (Mi)
(2) 6120129/6181893
Telex 334643 SISTREL I

KOREA

Elcom Systems Inc.
Seoul ZIP135
(2) 555-5222 or 557-3836
Telex K25227

MALAYSIA

GEA Technology PTE., Ltd.
Singapore 0511
65 2729412
Telex RS 37162

MEXICO

Christensen, S.A.
06470-Mexico, D.F.
546-25-95, 546-29-55
Telex 017-75612 Mycome

NETHERLANDS

Simac Electronics
5503HR Veldhoven
(40) 533725
Telex 51037 SIMAC NL

NEW ZEALAND

Warburton Franki, Ltd.
Auckland
(9) 504-458
Telex Warfran NZ 3824

NORWAY

Teleinstrument A/S
N-1371 Asker
(2) 789460
Telex 72919 TEL IN N

PORTUGAL

Decada Espectral
P-1495 Lisboa
(1) 2103420
Telex 15515 ESPEC P

SINGAPORE

GEA Technology PTE., Ltd.
(65) 2729412
Telex RS 37162

SOUTH AFRICA

Electronic Building Elements (PTY), Ltd. (EBE)
Pretoria 0001
(12) 46-9221/7
Telex 3 22786B

SPAIN

Instrumatic Espanola S.A.
Madrid-16
(1) 4558112
Telex 46277 ITIC E

Instrumatic Espanola
Malaga 5
52 213898
Telex 77131 HAFN E

SWEDEN

Macrotek AB
S-162 11 Valingby
(8) 870190
Telex 12543 MATEK S

SWITZERLAND

Instrumatic SA
CH-1207 Geneve
(22) 360830
Telex 28667 INSR CH

Instrumatic AG
CH-8800 Thalwil/ZH
(1) 7231410
Telex 826801 INBC CH

TAIWAN

Sertek International, Inc.
Taipei, 104, R.O.C.
(2) 713-5435
Telex 19162 MULTI IC or
23756 MULTI IC

THAILAND

Dynamic Supply Engineering R.O.P.
Bangkok 11
(2) 3914434, 39228532
Telex 82455 DYNASUP TH

TURKEY

Data I/O Europe
(20) 622866

UNITED KINGDOM

Microsystem Services
High Wycombe
(494) 41661
Telex 837187 MICSYS G

Addresses on this list subject
to change without notice.