MICRO LINK
CORPORATION

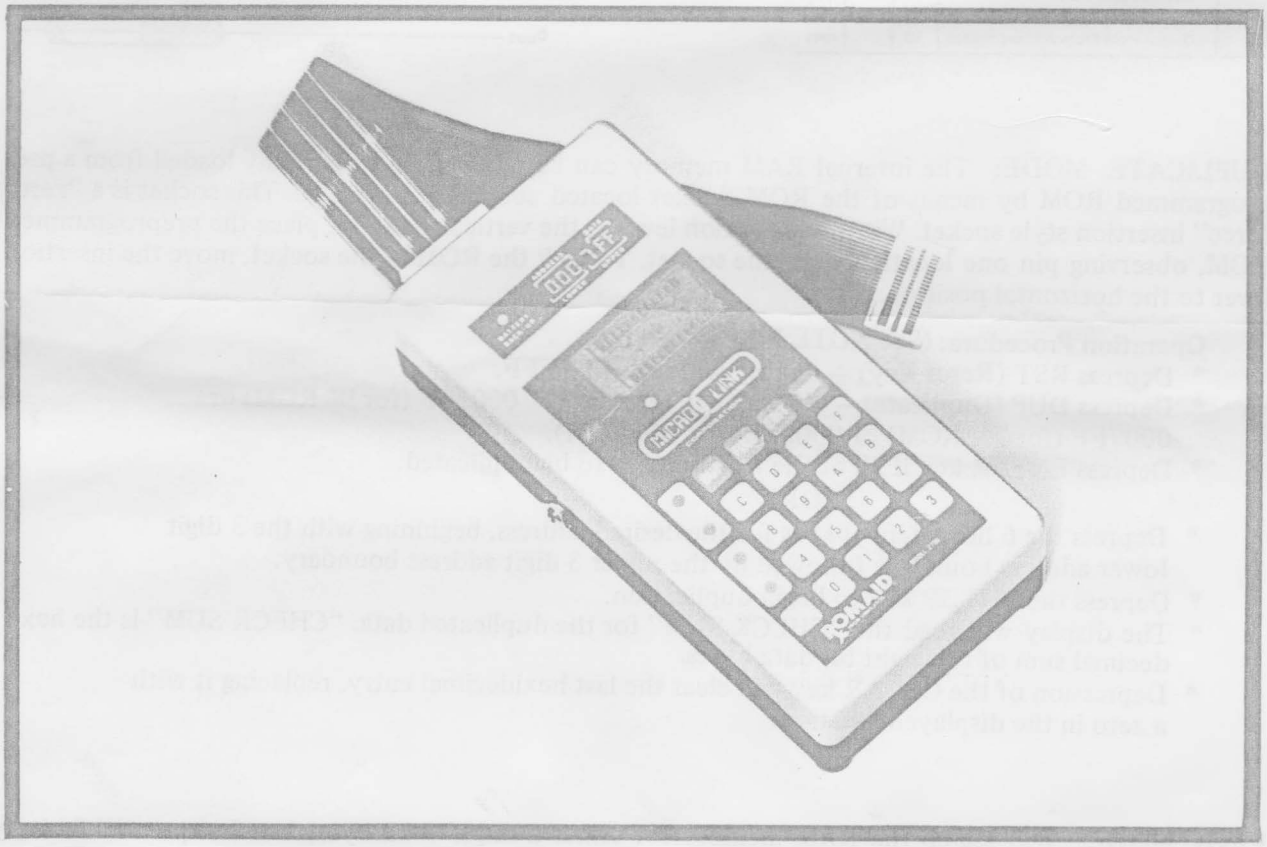
Model 2700
ROMAID
ROM-Simulator

FEATURES:

* Program changes made effortlessly using the Edit mode.
* In-circuit emulation of up to 2K x 8 ROMS.
* 16K (2K x 8) high-speed, low-power RAM memory.
* Battery back-up RAM memory with "Battery on" lamp.
* 6-digit hexidecimal display of address and data.
* Keyboard entry of hexidecimal data and mode selection.
* Operation modes: Duplicate, Find, Verify, Edit, or Run.
* Light weight and compact size (7.5" x 3.5" x 1.6").
* "Check Sum" on Duplicated field displayed.
* Single, 2, or 3 sequential 8-bit byte memory search.
* External "Host CPU" reset output available.

FUNCTIONS:

* Duplication from a preprogrammed ROM into RAM memory.
* Automatic display of the "Check Sum" on duplicated data.
* ROM/RAM data verification and edit capability.
* Edit capability of stored program in RAM memory.
* Selectable address boundary for Duplicate, Verify, and Edit.
* Automatic address incrementation in the Edit mode.
* Individual data entry over the entire addressing boundary.
* Find (search program memory) 1, 2, or 3 8-bit byte data.
* Find mode, displays address and allows editing of data.
* Battery back-up of stored data in RAM memory.
* Personality module selectable ROM usage.



The *ROMAID* Rom-Simulator Model 2700 is a compact, hand-held unit, capable of in-circuit ROM-Emulation, while maintaining maximum reprogramming flexibility. The *ROMAID* ROM-Simulator functions in one of five, user selectable, modes of operation: Duplicate (with "CHECK SUM"), Find, Verify, Edit or Run. The battery backed-up, high-speed RAM memory allows the *ROMAID* ROM-Simulator to serve as the "Master" ROM for blank PROM programming. Inexpensive, plug-in ROM personality modules allow the operator to change from one ROM type to another in seconds. The portability, combined with the ease in program manipulation, makes the *ROMAID* ROM-Simulator the answer to your software debugging problems.

ABSOLUTE MAXIMUM RATINGS

Temperature Under Bias	-10°C to 80°C
Storage Temperature	-65°C to 150°C
Voltage on Any Pin with Respect to Ground (Unless otherwise specified)	-0.5V to +5.25V

D.C. CHARACTERISTICS T_A = 0° C to +70° C, V_{CC} = 5V ±5% (Unless Otherwise Specified)

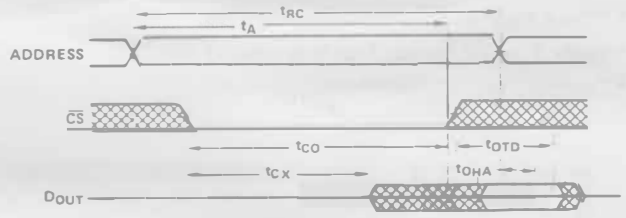
Symbol	Parameter	Min.	Max.	Unit	Conditions
I_{CC}	Power Supply Current		290	mA	V_{CC} = 5.25V
V_{IL}	Input Low Voltage	-0.5	0.8	V	
V_{IH}	Input High Voltage	2.0	V_{CC}	V	
V_{OL}	Output Low Voltage	2.4	0.4	V	I_{OL} = 24 mA Max.
V_{OH}	Output High Voltage		V_{CC}	V	I_{OH} = -15 mA Max.

A.C. CHARACTERISTICS T_A = 0° C to 70° C, V_{CC} = 5V ±5% (Unless Otherwise Specified)

Symbol	Parameter	Min.	Max.	Unit
Read Cycle				
t_{RC}	Read Cycle Time	320		nsec
t_A	Access Time		320	nsec
t_{CO}	Chip Select to Output Valid		120	nsec
t_{CX}	Chip Select to Output Enabled	40		nsec
t_{OTD}	Chip Deselect to Output Off	0	80	nsec
t_{OHA}	Output Hold From Address Change	50		nsec

TIMING DIAGRAMS

Read Cycle



DUPLICATE MODE: The internal RAM memory can be completely or partially loaded from a pre-programmed ROM by means of the ROM Socket located above the keyboard. This socket is a "zero-force" insertion style socket. With the insertion lever in the vertical position, place the preprogrammed ROM, observing pin one location, into the socket. To lock the ROM in the socket, move the insertion lever to the horizontal position.

Operation Procedure: (See NOTE No. 1)

* Depress RST (Reset Key) – display will read FFFFFF.
* Depress DUP (Duplicate) – display will read either 0003FF (for 1K ROM) or 0007FF (for 2K ROM) or 0000FF (for ¼K ROM).
* Depress ENTER key if all of the ROM data is to be duplicated.

- OR -

* Depress the 6 hexidecimal keys for the desired address, beginning with the 3 digit lower address boundary followed by the upper 3 digit address boundary.
* Depress the ENTER key to begin duplication.
* The display will read the "CHECK SUM" for the duplicated data. "CHECK SUM" is the hexidecimal sum of the eight bit data bytes.
* Depression of the CLEAR key will clear the last hexidecimal entry, replacing it with a zero in the displayed location.

FIND MODE: Will search the RAM memory for either a single 8 bit byte, 2 or 3 sequential 8 bit bytes and display the address.

Operation Procedure: (See NOTE No. 1)

* Depress the FIND key – display will read CODE 01.
* Depress the desired two hexidecimal keys followed by the ENTER key.
* Display will read CODE 02.
* Depress the ENTER key for a single 8 bit byte search.

- OR -

* Depress the desired two hexidecimal keys followed by the ENTER key for the second 8 bit byte, in a 2 byte search mode. Repeat if 3rd byte search is desired.
* The display will read the address location and the data. Stored data can be altered by depressing the 2 desired hexidecimal keys followed by the ENTER key.
* Continuation of the FIND mode will occur each time the ENTER key is depressed.

EDIT MODE: The internal RAM memory can be completely or partially loaded or altered by means of keyboard entered data.

Operation Procedure: (See NOTE No. 1)

* Depress RST (Reset Key) – display will read FFFFFF.
* Depress EDIT key – display will read either 0003FF (for 1K ROM) or 0007FF (for 2K ROM) or 0000FF (for ¼K ROM).
* Depress ENTER key if all of the RAM memory is to be entered manually.

- OR -

* Depress the 6 hexidecimal keys for the desired address, beginning with the 3 digit lower address boundary followed by the upper 3 digit address boundary.
* Depress the ENTER key to begin editing of the RAM memory.
* Display will show the address and the data located in memory at that location. If no change in data at that location is desired, depress the ENTER key.
* To alter RAM memory at the displayed address, depress the 2 desired hexidecimal keys followed by the ENTER key.
* The next address/data will automatically be displayed.
* The display will read FFFFFF when the upper address boundary is completed.
* Depression of the CLEAR key will clear the last hexidecimal entry, replacing it with a zero in the displayed location.

VERIFY MODE: Will compare the contents of the preprogrammed ROM with that of the RAM memory. Any mismatch will be displayed along with the address and data and can be altered if desired.

Operation Procedure: (See NOTE No. 1)

* Depress RST (Reset Key) – display will read FFFFFF.
* Depress FIND key – display will read CODE01.
* Depress ENTER key – display will read either 0003FF (for 1K ROM) or 0007FF (for 2K ROM) or 0000FF (for ¼K ROM).
* Depress ENTER key if all addresses are to be verified.

- OR -

* Depress the 6 hexidecimal keys for the desired address, beginning with the 3-digit lower address boundary followed by the upper 3-digit address boundary.
* Depress the ENTER key to begin the ROM/RAM verification.
* The display will stop on the first mismatch and show the address and data stored in the pre-programmed ROM.
* To display the data stored in the RAM memory, depress the FIND key. If this data is to be altered, depress the desired two hexidecimal keys followed by the ENTER key.
* Continuation of the VERIFY mode will occur each time the ENTER key is depressed. The display will read FFFFFF when the verify is completed.

RUN MODE: Allows the external HOST CPU to access the RAM memory as if it were the ROM memory.

* Depress the RUN key – display will read F.F.F.F.F.F.

EXTERNAL RESET OUTPUT:

The external reset output is a TTL compatible active low signal, capable of keeping the HOST CPU reset while the *ROMAID* is in any mode of operation other than the RUN mode.

BATTERY ON INDICATOR LAMP: (See NOTE No. 2)

The "BATTERY ON" indicator lamp will light whenever the BATTERY Switch (located on the rear of the case) is in the "on" position. The batteries are intended to supply power only to the RAM memory in the event of power loss in the host system.

NOTE No. 1 – The RAM memory cannot be altered as long as the BATTERY Switch is in the "on" position. To Duplicate or Edit memory contents, the BATTERY Switch must be in the "off" position.

NOTE No. 2 – The batteries, for memory back-up, are disconnected from the circuit whenever the battery charger is in use. The *ROMAID* will not maintain memory when the host system power source is disconnected if the battery charger is connected.

Specifications

Model 2700 *ROMAID* ROM-Simulator

DIMENSIONS

* 7.5 inches long
* 3.5 inches wide
* 1.6 inches deep

INCLUDES

* *ROMAID* Model 2700 ROM-Simulator
* ROM Socket connector cable (24pin)
* One plug-in ROM personality module (See below)
* Non rechargeable battery pack

LOGIC LEVELS OF EXTERNAL CONNECTIONS

* Inputs TTL compatible during RUN mode
* Data outputs TTL compatible during: RUN mode and active low CHIP ENABLE Signal
* Outputs tri-state level during: internal modes and "Not" CHIP ENABLE
* External Reset output active low TTL signal

POWER REQUIREMENTS

* Host system supplied +5 @ 250ma
* Host system supplied ±12V, -10V or -5V for duplicate ROM as necessary

24 PIN "ROM" CABLE SOCKET		
PIN NUMBER †		
SIGNAL FLOW		
SIGNAL		
Address "7"	in	1
Address "6"	in	2
Address "5"	in	3
Address "4"	in	4
Address "3"	in	5
Address "2"	in	6
Address "1"	in	7
Address "0"	in	8
Data "0"	out	9
Data "1"	out	10
Data "2"	out	11
Signal ground	in	12
Data "3"	out	13
Data "4"	out	14
Data "5"	out	15
Data "6"	out	16
Data "7"	out	17
Special	***	18
Special	***	19
Special	***	20
Special	***	21
Address "9"	in	22
Address "8"	in	23
Vcc 5v ± 5%	in	24

† Except for 2700 - 772

ACCESSORIES

* *ROMAID* plug-in ROM personality modules:

ROM TYPE	Part Number
Intel 2716/2616 or equivalent	No. 2700-716
Intel 2708/8708/2608 or equivalent	No. 2700-708
Intel 2758 or equivalent	No. 2700-758
Texas Inst. TMS 2516 or equivalent	No. 2700-516
Texas Inst. TMS 2716 or equivalent	No. 2700-016
Texas Inst. TME 2708 or equivalent	No. 2700-008
Intel 1702/4702 or equivalent	No. 2700-702†
(One module free with each *ROMAID* Model 2700 ordered)	
ROM Adapter modules 1702/4702	No. 2700-772
† Must be ordered for use with 2700-702	

* *ROMAID* Carrying case — No. 2700-742
* *ROMAID* ROM Socket connector cable (Std. Pkg. of 2 cables) — No. 2700-246
* *ROMAID* rechargeable battery pack and recharger — No. 2700-236

EFF. 03-16-79

REPRESENTED BY:

MICRO LINK

MICRO LINK CORPORATION

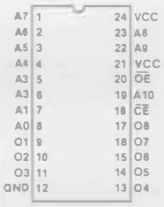
ROMAID
Personality Modules
Model 2700

In today's rapidly expanding Micro Processor Memory market, continuous advances in semi-conductor technology have presented the design engineer with an ever increasing choice of programmable devices. Selection of a memory device for your system will usually fall into one of two technology groups. Programmable Bipolar devices are limited to the non-erasable type, whereas most programmable MOS devices are erasable and reprogrammable. The advantage in using the Romaid Model 2700 ROM Simulator is in its ability to in-circuit emulate either Bipolar or MOS memory devices. Below are listed pin-out configurators which allows the Romaid Model 2700 ROM Simulator to function as if it were the memory device in your system.

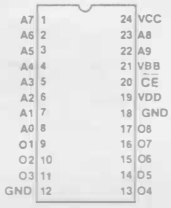
MOS PROM Pinouts

VCC: 5v ± 5%

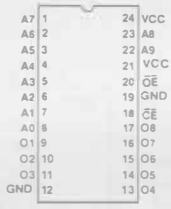
2700-716



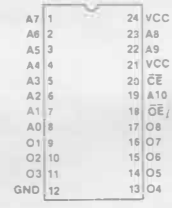
2700-708



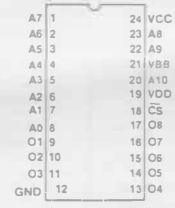
2700-758



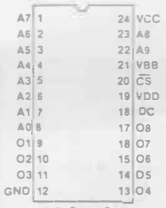
2700-516



2700-016



2700-008

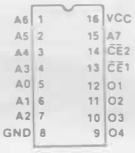


DC: Don't Care

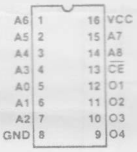
Bipolar Pinouts

All inputs and outputs TTL compatible.

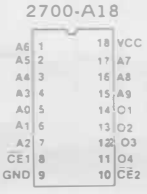
2700-A16



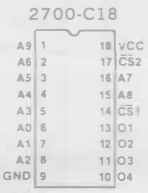
2700-B16



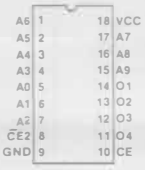
2700-A18



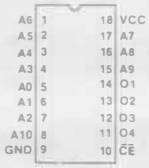
2700-C18



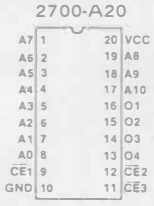
2700-D18



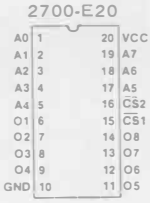
2700-E18



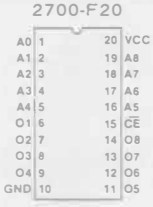
2700-A20



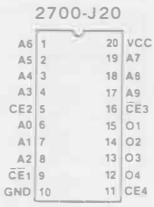
2700-E20



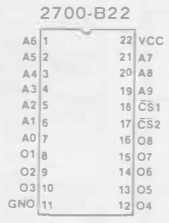
2700-F20



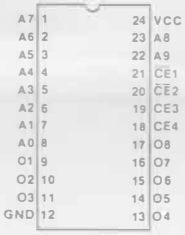
2700-J20



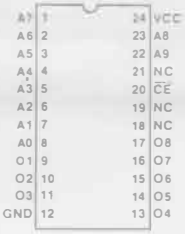
2700-B22



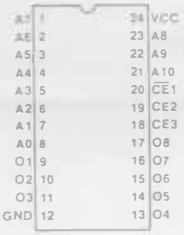
2700-H24



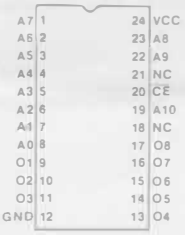
2700-L24



2700-M24



2700-N24



PINOUT	PACKAGE WIDTH
16 PIN	300 MIL
18 PIN	300 MIL
20 PIN	300 MIL
22 PIN	400 MIL
24 PIN	600 MIL

Micro Link Corporation reserves the right to make changes at any time in order to improve design and to supply the best product possible.

Specifications

Model 2700 *ROMAID* Personality Modules

The ROMAID Model 2700 ROM Simulator has a standard 24 pin IC output connector cable which connects to your system's ROM socket. The data bus, address lines, chip enable and power are transmitted thru this cable. To facilitate the in-circuit emulation of any 16 to 22 pin Bipolar memories, it is necessary to use one of the ROMAID ROM pin-out configurators. Any ROM type to be used with the ROMAID Model 2700 ROM Simulator must be TTL compatible and with a Vcc of +5v ±5%.

MOS PROM Selection Aid

Intel 2716/2616 or equivalent	2700-716	Texas Inst. TMS 2516 or equivalent	2700-516
Intel 2708/8708/2608 or equivalent	2700-708	Texas Insts TMS 2716 or equivalent	2700-016
Intel 2758 or equivalent	2700-758	Texas Inst. TMS 2708 or equivalent	2700-008

Bipolar Selection Aid

*OBSOLETE ROMS

2700-A16
AMD- 27S20C 27S21C
FAR- 93417DC 93427DC
FUJ- M87052 M87057
HAR- 7610-5 7610A-5 7611-5 7611A-5
INT- 3601* 3621* 3601-1* 3621-1*
INS- 5603AC 5623C
MMI- 6300-1 6301-1 63S140 63S141 63LS140 63PS140 63LS141 63PS141
NAT- 74S387 74S287
NEC- uPB403D uPB423D
RAY- 29660DC 29661DC 29662DC 29663DC
SIG- N82S126 N92S129
TI- 74S387 74S287

2700-816
AMD- 27S12C 27S13C
FAR- 93436DC 93446DC
FUJ- MB7058 MB7053
HAR- 7620-5 7620A-5 7621-5 7621A-5
INT- 3602A 3602A-2 3622A 3622A-2
INS- 5604C 5624C
MMI- 6305-1 6306-1 63S240 63S241 63LS240 63LS241 63PS240 63PS241
MOT- 7620DC 7621DC
NAT- 74S570 74S571
RAY- 29610DC 29611DC 29612DC 29613DC
SIG- N82S130 N82S131

2700-A18
AMD- 27S32C 27S33C
FAR- 93452DC 93453DC
FUJ- MB7059 MB7054
HAR- 7642-5 7642A-5 7643-5 7643A-5
INT- 3605 3605-2 3605A 3605A-1 3625 3625-2 3625A 3625A-1
MMI- 6353-1 63S440 63S441 63LS440 63LS441 63PS440 63PS441
MOT- 7642C 7643C
NAT- 74S572 74S573
NEC- uPB406-E uPB406 uPB426-E uPB426
SIG- N82S136 N82S137
TI- 74S477 74S476

2700-C18
MMI- 6350-1 6351-1

2700-D18
NAT- 74S574

2700-E18
HAR- 7684-5 7685-5 7684P-5 7685P-5
MMI- 63S840 63S841 63LS840 63LS841 63PS840 63PS841
MOT- 7684DC 7685DC
NAT- 87S184 87S185
SIG- N82S184 N82S185

2700-A20
HAR- 7686-5 7687-5

2700-J20
HAR- 7645-5 7645P-5

2700-E20
MMI- 6308-1 6309-1 63S280 63LS280 63S281 63LS281 63PS280 63PS281
NAT- 74S470* 74S471*
RAY- 29600DC 29601DC 29602DC 29603DC
TI- 74S470 74S471

2700-F20
AMD- 27S28C 27S29C
HAR- 7648-5 7649-5
MMI- 6348-1 6349-1 63S480 63LS480 63PS480 63S481 63LS481 63PS481
NAT- 74S473 74S472
RAY- 29620DC 29621DC 29622DC 29623DC
SIG- N82S146 N82S147
TI- 74S473 74S472

2700-822
MMI- 6386-1 6387-1

2700-H24
FAR- 93450C 93451C
HAR- 7680-5 7681-5
INT- 3608 3608-4 3628 3628-4
FUJ- MB7055
MMI- 6380-1 6381-1 63S880 63LS880 63PS880 63S881 63LS881 63PS881
MOT- 7680DC 7681DC
NAT- 87S180 87S181
NEC- uPD408D uPD428D
RAY- 29630DC 29631DC 29632DC 29633DC
SIG- N82S180 N82S181 N82S182 N82S183 N82LS2708 N82LS180
TI- 74S479 74S478

2700-L24
FAR- 93460C 93461C
MMI- 6384-1 6385-1
MOT- 82707DC 82708DC
NEC- uPB427D
RAY- 29634DC 29635DC 29636DC 29637DC
SIG- N82S2708 N82LS181
TI- 74S3708 74S2708

2700-M24
FAR- 93510C 93511C
HAR- 76160-5 76161-5 7616-5
INT- 3616 3616-1 3636 3636-1
MMI- 63S1680 63LS1680 63PS1680 63S1681 63LS1681 63PS1681
SIG- N82S190 N82S191

Designer information was obtained from the manufacturer's data sheets and like all such tabulations is subject to some incorrections. The user should confirm the pin out of the memory to be used and its TTL compatability.

Eff. 05-04-79

REPRESENTED BY:

MICRO LINK