elan digital systems ltd

programming development & production aids

E11 Operators Manual

elan

C,10,83

E11 SIMULATE ADAPTOR

E11 Simulate Adaptor

1.1 General

The E11 Simulator is designed to speed up programme/hardware development by simulating the target system EPROM. Small programme changes can be quickly made and instantly checked. A single E11 will simulate the current range of JDEC standard 24 pin and 28 pin devices i.e. 2716, 2732, 2764, 27128, 27256. Two E11's in a slave/master configuration provide twin EPROM simulation or 16 bit simulation.

Data is edited in the main programmer (E2 or E9) and transferred to the E11 via the 26 way ribbon cable. Data from the E11 can be read back or verified with data in the main programmer.

Battery backup in the E11 supports the memory for approximately 10 minutes so that if required the E11 can be disconnected from the programmer and used separately.

A 30 way ribbon cable connects the E11 to the target system terminating in a 28 pin DIL Plug or 24 pin DIL plug. An additional 5 way connector at the rear of the E11 has an optional Ov connection and RESET/RESET connections. Normally RESET connection will be used to disable the target system when out of simulation and to syncronize the target system with the E11. Failure to use this control will almost certainly result in misoperation of the target system. Alternatively a power up reset syncronization can be used without the reset connection see 'Operation without Reset control'.

1.2 Power

The E11 draws power from the main programmer or target system. Consumption is less than the EPROM replaced - typically 10mA standby, 45 mA active. The RAM support Nickel Cadmium Battery is automatically trickle charged when the E11 is connected to the main programmer or target system. Approximately 10 minutes after the E11 has been disconnected from the target system and the main programmer the battery support to RAM is automatically switched off.

1.3 Connections

26 WAY Connector at Rear of E11

Connect to the 26 way connector at the rear of the main programmer using the ribbon cable supplied. This connection can be made with or without the programmer powered up.

30 WAY Connector at left hand side of E11

Connect to the target system EPROM socket using the 24 way or 28 way DIL plug cable supplied. Observe orientation and do not plug into a 'live' system.

5 WAY Connector at rear of E11

	Pin No.	Signal	Comments
Left Hand Pin	1	Ov	Not normally used
	2		No Connection
	3		No Connection
	4	$\overline{\text{RESET}}$	) Always use one of) these signals to
Right Hand Pin	5	RESET	) control micro-) processor in) target system.

1.4 System syncronization using Reset/$\overline{\text{Reset}}$ control

The target system micro-processor must be halted or reset under control of the E11 for two reasons.

1. With the EPROM removed and the E11 in circuit but not simulating the target system would try to run accessing a disabled tri-state buffer on the E11. The target system would therefore run in an indeterminate uncontrolled manner which may be potentially dangerous.

2. The RESET signal generated by the E11 is rather like a power on reset which normally initializes the micro-processor. Internally tri-state address and data buffers are enabled and syncronized to the target system CE and OE signals.

   Both RESET and $\overline{\text{RESET}}$ are open collector transistors pulled up to +5v with 4K7 resistors. When connecting to the target system there may be conflict between the E11 reset signal and the target system reset signal if this is an active circuit. In this case it may be possible to connect to the effective point of reset remote from the actual micro-processor reset pin. Always consult circuit diagram before making reset connection.

1.5 Operation without Reset/$\overline{\text{Reset}}$ Connection

Although the most useful and convenient method of operation involves the use of either Reset or Reset connection it is possible to obtain syncronization and connect running without this connection. This is achieved by putting the E11 into SIMULATE mode before the target system is powered up. When the target system powers up it's internal reset circuitry effects a power on reset which syncronizes it to the E11. However the disadvantage of this method is that if amendments to the programme are required and the E11 is taken out of SIMULATE mode the whole procedure of turning off the target system, re-entering simulate mode and turning back on the target system must be carried out to effect resyncronization. It is therefore much more convenient to use the automatic reset/re-syncronization provided by the Reset or Reset connection.

1.6 E11 Controls and indicators

Simulate switch - Puts the E11 into simulate mode. The reset signals are inactive i.e. RESET is high; RESET is low. In this mode data cannot be transferred between the E11 and the main programmer.

Reset Mode - Takes the E11 out of simulate mode. The reset signals are active i.e. RESET is low; RESET is high. In this mode data cannot be simulated but data transfers between the E11 and the main programmer may take place.

SIMULATE INDICATOR When lit indicates that the E11 is in simulate mode.

DEVICE TYPE INDICATOR - When lit indicates the selected simulate device type.

To conserve battery back up power the LED indicators are only illuminated when the E11 is connected to a powered up programmer or target system. If the E11 has lost data and device selection (i.e. if it has been disconnected from a source of power for periods greater than 10 minutes) then none of the indicators will be illuminated until this information is restored.

1.7 Operating Procedure

1. Using 26 way ribbon cable connector connect the E11 rear socket to the 26 way socket at the rear of the programmer. (the programmer may be powered or non-powered).

2. With the target system switched off remove Eprom to be simulated and insert either 24 Pin or 28 Pin DIL plug into empty socket. Observe orientation. Connect the other end of the DIL plug lead into the side socket on the E11.

3. Connect Reset or $\overline{\text{Reset}}$ to the micro-processor reset control (see section 1.4 and 1.5 for guidance).

4. Write programmer data into E11 (see section 1.9 for guidance). Device type indicator should now be illuminated on E11.

5. Switch on target system.

6. Press simulate button on E11.

To escape from simulate and restore the target system use the above steps in reverse order.

1.8 Control of the E11 from the Main Programmer

The E Series programmers can carry out three functions with the E11 Simulator.

1. Write Data into E11.
2. Read Data from E11.
3. Verify E11 data with E Series RAM.

To simplify the operation data is always written to or read from start address ZERO in the ELAN.

To enable E11 functions Press Hex Key 0 [-:- -:-]
The display will flash to indicate E11 Mode [device type]

This gives the three RAM CONTROL keys Verify, Input and Output the following double functions:

VERIFY = VERIFY E Series RAM with E11 RAM.

INPUT = READ E11 RAM into E SERIES.

OUTPUT = WRITE E SERIES RAM into E11 RAM.

While a function is being carried out the display indicates:- : -- :

Press Reset to exit from E11 mode. Device type

1.9 Writing Data to the E11

1. Press key Zero to enable E11 functions
   Device type [-:- -:-] Device type

2. Press key Output. The E Series programmer will write the correct amount of data for the selected device type from start address Zero to the E11 Simulator. : -- :

   At the end of data transfer the checksum is displayed. CCCC

3. Press RST [-:- -:-] Device type

1.10 Reading data from the E11

1. Press key Zero to enable E11 function. Device type [-:- -:-]

2. Press key Input. The E Series programmer will read the correct amount of data for the selected device type from the E11 and place it in RAM starting at address Zero. : -- :

   At the end of data transfer the checksum is displayed. CCCC

1.11 Verifying Data

VERIFY E Series RAM with E11 RAM

1. Press key Zero to enable E11 functions	Device type [-:- -:-] Device type
2. Press key Verify. The system verified the two sets of data. The display indicates the function is being carried out.	: -- :
3a. If the data verifies correctly the display indicates Ed for End.	Ed
3b. If the system has different data the display indicates the address AAAA,E Series data MM and the E11 data dd.	AAAAMMdd
i) Press STEP > to continue Verify check	
OR	
ii) Press STEP < to display the data at the previous address	
OR	
iii) Press RST to terminate operation	[-:- -:-] [device type]

1.12 Example - simulating a 27128 device

2) Select device type 27128	
3) Load the data from Hex Keypad via RS232 or load Master EPROM into E Series RAM start address ZERO.	
4) Press Key ZERO	[-:- -:-] [27128]
5) Press Key Output to WRITE data to E11 When the transfer is complete the display indicates the checksum.	: -- : CCCC
6) Press Reset	[-:- -:-] [27128]

7) Press E11 Simulate button

The target system will now run. Monitor the required functions.

The E2/E9 is now free to carry out other functions.

8) Press E11 Reset Button to terminate Simulation.

9) Press Reset on E2/E9.

10) Amend the Memory address of the function.
Repeat steps 3 to 9 as required.

1.13 Two E11's in Master/Slave configuration

General

An additional E11 may be used as a slave unit (if internally linked) to extend the single EPROM socket simulate facility to two sockets.

When used in a Master/Slave configuration the slave push buttons are not used - control of reset or simulate being under control of the master E11. Accordingly one single Reset or Reset connection is required from the Master E11 to the target system.

A dedicated slave E11 can still be used independently in exactly the same way as a standard master E11 provided that slave data transfers have been selected on the main programmer.

Data transfers to Master or Slave

The operating system of the main programmer assumes, unless commanded, that data transfers are to a Master E11. To select the slave unit for data transfers carry out the following procedure:

1. Enter Simulate operating mode in usual way by pressing Key '0' on hex-keypad.

   [-:- -:-] flashing [device type]

2. Press 'ENTER' Key once on lower Keypad
   The 1 on the right hand side of the display indicates SLAVE selection.

   [-:- -:-1] flashing [device type]

3. Carry out Write/Read/Verify in usual way.

   To revert to Master E11 data transfers press 'ENTER' Key once; the '1' on the right hand side of the display will disappear indicating MASTER selection.

   [-:- -:-] flashing [device type]

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