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Enabling the Security Feature on the MC68HC711E9 Devices with PCbug11 on the M68HC711E9PGMR

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Introduction

The PCbug1 software, needed along with the M68HC711E9PGMR to program MC68HC711E9 devices, is available from the download section of the Microcontroller Worldwide Web site www.mcu.motsps.com.

Retrieve the file `pcbug342.exe` (a self-extracting archive) from the MCU11 directory.

Some Motorola evaluation board products also are shipped with PCbug11.

NOTE: *For specific information about any of the PCbug11 commands, see the appropriate sections in the PCbug11 User's Manual (part number M68PCBUG11/D2), which is available from the Motorola Literature Distribution Center, as well as the Worldwide Web at www.mcu.motsps.com. The file is also on the software download system and is called `pcbug11.pdf`.*



To Execute the Program

Use this step-by-step procedure to program the MC68HC711E9 device.

Step 1

- Before applying power to the programming board, connect the M68HC711E9PGMR serial port P2 to one of your PC COM ports with a standard 25-pin RS-232 cable. Do not use a null modem cable or adapter which swaps the transmit and receive signals between the connectors at each end of the cable.
- Place the MC68HC711E9 part in the PLCC socket on your board.
- Insert the part upside down with the notched corner pointing toward the red power LED.
- Make sure both S1 and S2 switches are turned off.
- Apply +5 volts to +5-V, +12 volts (at most +12.5 volts) to V_{PP} , and ground to GND on your programmer board's power connector, P1. The remaining TXD/PD1 and RXD/PD0 connections are not used in this procedure. They are for gang programming MC68HC711E9 devices, which is discussed in the M68HC711E9PGMR Manual. You cannot gang program with PCbug11.
- Ensure that the "remove for multi-programming" jumper, J1, below the +5-V power switch has a fabricated jumper installed.

Step 2

Apply power to the programmer board by moving the +5-V switch to the ON position. From a DOS command line prompt, start PCbug11 this way:

```
C:\PCBUG11\ > PCBUG11 -E PORT = 1  
with the E9PGMR connected to COM1
```

or

```
C:\PCBUG11\ > PCBUG11 -E PORT = 2  
with the E9PGMR connected to COM2
```

PCbug11 only supports COM ports 1 and 2. If the proper connections are made and you have a high-quality cable, you should quickly get a

PCbug11 command prompt. If you do receive a Comms fault error, check the cable and board connections. Most PCbug11 communications problems can be traced to poorly made cables or bad board connections.

Step 3

PCbug11 defaults to base 10 for its input parameters.

Change this to hexadecimal by typing: CONTROL BASE HEX.

Step 4

Clear the block protect register (BPROT) to allow programming of the MC68HC711E9 EEPROM.

At the PCbug11 command prompt, type: MS 1035 00.

Step 5

The CONFIG register defaults to hexadecimal 103F on the MC68HC711E9. PCBUG11 needs addressing parameters to allow programming of a specific block of memory so the following parameter must be given.

At the PCbug11 command prompt, type: EEPROM 0.

Then type: EEPROM 103F 103F.

Step 6

Erase the CONFIG to allow byte programming.

At the PCbug11 command prompt, type: EEPROM ERASE BULK 103F.

Step 7

You are now ready to download the program into the EEPROM and EPROM.

At the PCbug11 command prompt, type:
LOADSC:\MYPROG\MYPROG.S19.

For more details on programming the EPROM, read the engineering bulletin *Programming MC68HC711E9 Devices with PCbug11 and the M68HC11EVB*, Motorola document number EB187.


Step 8 You are now ready to enable the security feature on the MCHC711E9.
At the PCbug11 command prompt type: MS 103F 05.

Step 9 After the programming operation is complete, verifying the CONFIG on the MCHC711E9 is not possible because in bootstrap mode the default value is always forced.

Step 10 The part is now in secure mode and whatever code you loaded into EEPROM will be erased if you tried to bring the microcontroller up in either expanded mode or bootstrap mode.

NOTE: *It is important to note that the microcontroller will work properly in secure mode only in single chip mode.*

NOTE: *If the part is placed in bootstrap or expanded, the code in EEPROM and RAM will be erased and the microcontroller cannot be reused. The security software will constantly read the NOSEC bit and lock the part.*

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