MCUScribe™

# XL36 Programming Adapter Board User's Manual

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# Contents

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# 1 Getting Started

### Who needs to read the XL36 Programming Adapter Board User's Manual?

Refer to the XL36 Programming Adapter Board User's Manual if you have purchased an XL36 programming adapter board (PAB), and want information about:

- Installing software and setting up the XL36 PAB for use
- XL36-specific operation instructions
- Getting additional support

This chapter explains how to install the software that comes with your XL36 PAB, and how to plug in the XL36 PAB and the MCUs it supports.

# Installing the MCUscribe application and personality files

The XL36 PAB comes with the latest version of the MCUscribe application (for Windows® NT and Windows 95). First, install the software:

Insert the first MCUscribe diskette in your floppy drive, and enter **`a:\setup.exe`** in the Windows **Run** dialog box. The installation setup program opens.

Follow the instructions to install the software in a folder of your choice. The installation program places all the MCUscribe files in one folder. Using a single folder expedites selection of the MCU and S-record files, so that you can start programming more quickly.

## Installed files

These files are installed on your host system:

- **MCUscribe.exe** — Windows executable file for the MCUscribe application—the interface you use to communicate with the SPGMR08, and to program MCU memory.
- **.mmp** files — The personality files that supply the SPGMR08 with MCU configuration and memory map information. ***908XL36.mmp*** and ***708XL36.mmp*** are the personality files for XL36-supported MCUs.
- **MCUscribe.hlp** and **MCUscribe.cnt** — Online help for using the MCUscribe application.
- **MCUscribe.pdf** — *Serial Programmer for HC08 User's Manual*. Instructions for using the MCUscribe application (help information in an Acrobat-format user's manual).
- **QStart08.pdf** — *SPGMR08 QuickStart Guide*. A streamlined guide (in Acrobat format) to setting up SPGMR08 hardware and software.
- **PABXL36.pdf** — *XL36 Programming Adapter Board User's Manual*. A short manual (in Acrobat format) that contains specfic instructions for setting up and using the XL36 PAB. The software may also include user manuals for other PABs.
- **readme.txt** — Release notes in ASCII format (text from ***QStart08.pdf***)

For tips about opening online support documents, see page 18.

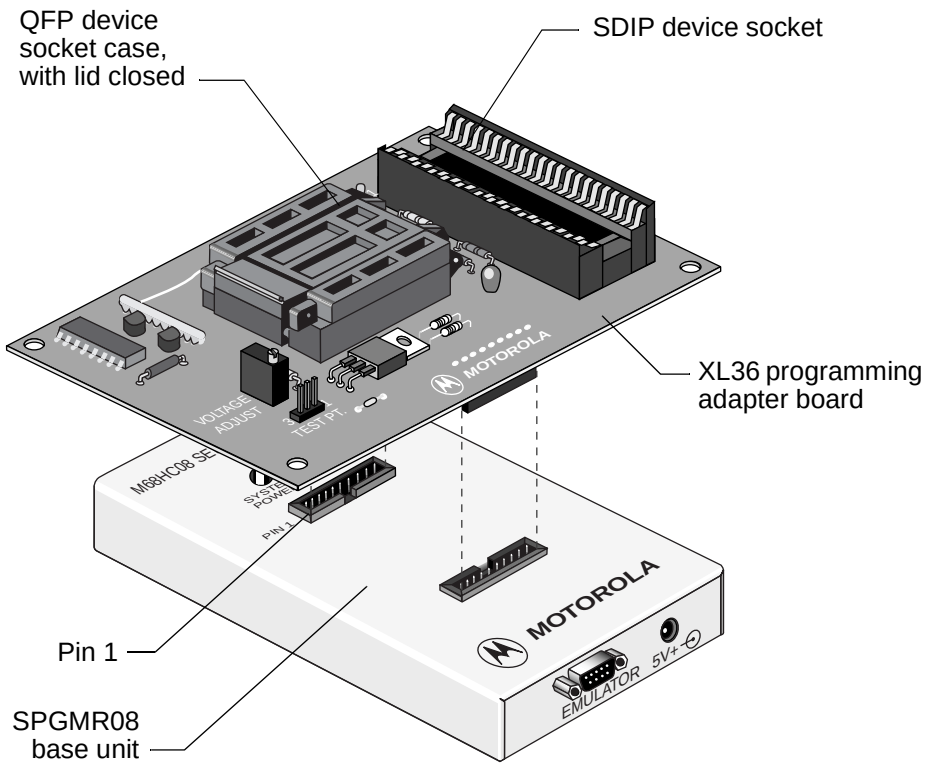
### Installing Acrobat Reader

You must have Acrobat Reader™ installed on your host system in order to view and print the *Serial Programmer for HC08 User's Manual* and other Acrobat-format support documents. The Reader is supplied on a separate set of diskettes. To install the Reader:

Insert the first Reader diskette in your floppy drive, and enter **`a:\setup.exe`** in the Windows **Run** dialog box. The installation setup program opens. Follow the instructions to install the software in a folder of your choice.

## Inserting XL36 programming adapter boards

To use the XL36 programming adapter board, plug the PAB onto the SPGMR08 base unit (as shown in the illustration below). The PAB works when installed in either direction on the SPGMR08 base unit. That is, the connector on the base unit labeled **Pin 1** can accept either connector of the adapter board.



# Inserting XL36 MCUs

## Disconnecting power before inserting an MCU

If power is disconnected, you can insert or remove MCUs freely. However, if you are in an MCUscribe session, make sure the yellow Socket Power light is off before you handle the MCU. MCUs can be damaged by power surges during installation.

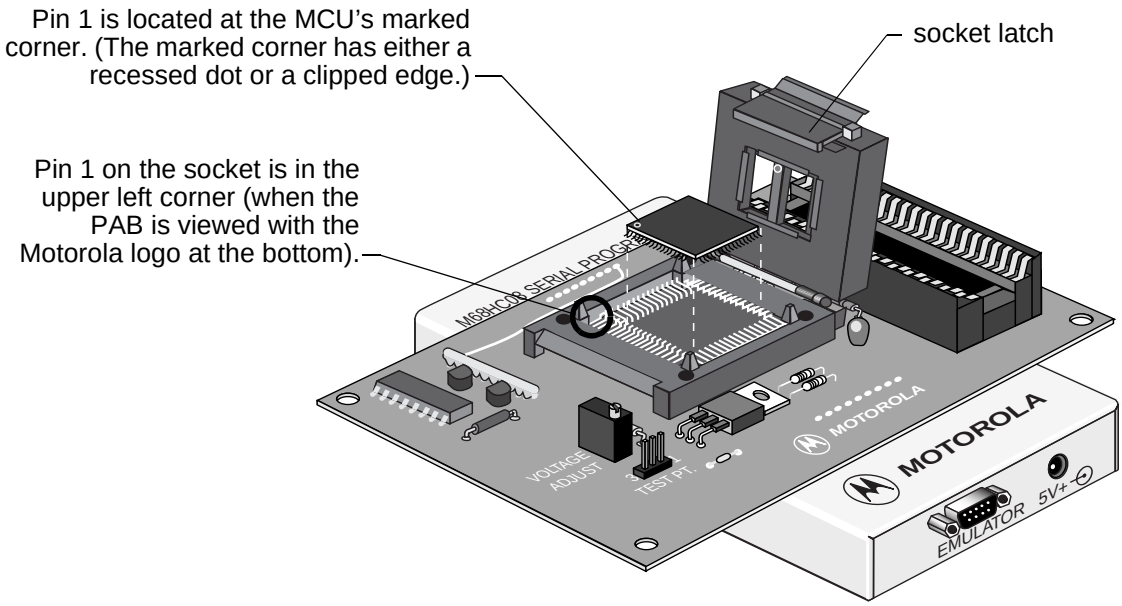
If the Socket Power light is on, click the **Power Off** button in the MCUscribe Control Panel. Socket power is disconnected, and the yellow Socket Power light goes off.

## Inserting a QFP MCU

The illustration below shows a QFP MCU ready to be inserted in the PAB:

1. Open the socket case by lifting the latch on the left.
2. Insert the MCU, matching the MCU's pin 1 with the socket's pin 1. The marked corner of the MCU identifies the location of pin 1. If you turn the PAB so that the Motorola logo is at the bottom, pin 1 is in the socket's upper left corner. (The printed number **1** on the back side of the programming adapter board corresponds to the location of the socket's pin 1.)

   **Note:** Motorola recommends that you use a vacuum pen or other appropriate tool to handle MCUs. Be careful to avoid bending the pins.
3. Push the socket lid down gently until it snaps shut.

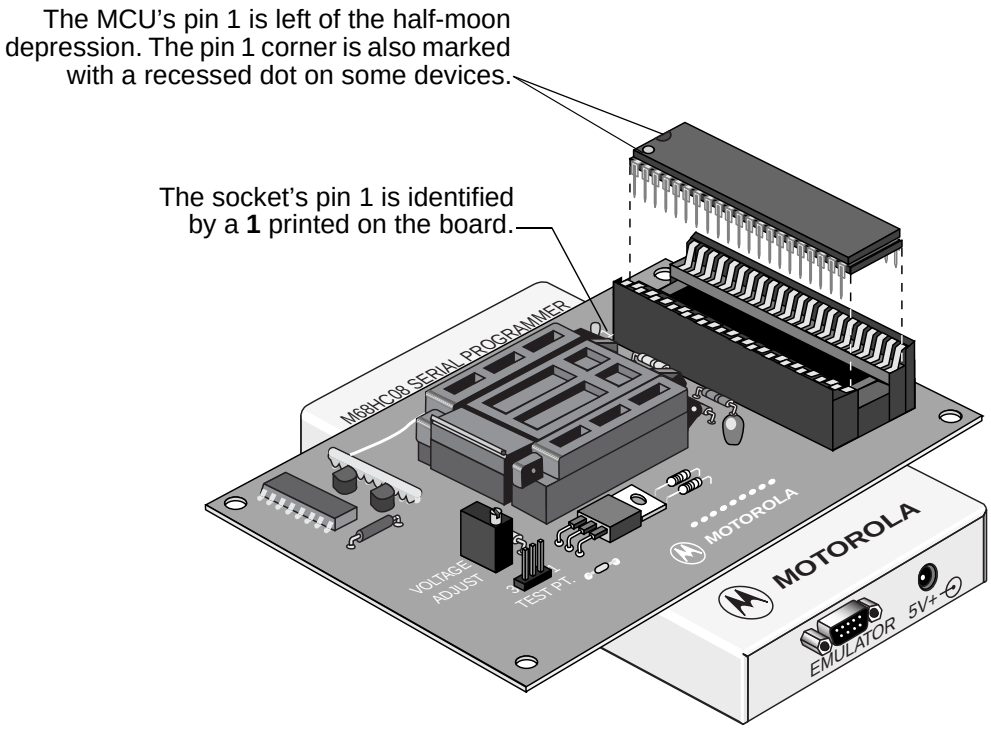


## Inserting an SDIP MCU

The illustration below shows an SDIP MCU ready to be inserted in the PAB:

Insert the MCU, matching the MCU's pin 1 with the socket's pin 1. The marked corner of the MCU identifies the location of pin 1. The printed number **1** shows the location of the socket's pin 1.

**Note:** Motorola recommends that you use a vacuum pen or other appropriate tool to handle MCUs. Be careful to avoid bending the pins.



# 2 Using the XL36 Programming Adapter Board

This chapter has specific information about using the M68PAL908XL36 (XL36) programming adapter board. The XL36 PAB enables the SPGMR08 to program:

- Flash EEPROM memory ranges of MC68HC908XL36 (908XL36) microcontroller units (MCUs) in 64-pin Quad Flat Pack (QFP) or 56-pin Shrink DIP (SDIP) package configurations.
- EPROM memory ranges of MC68HC708XL36 (708XL36) MCUs in 64-pin Quad Flat Pack (QFP) or 56-pin Shrink DIP (SDIP) package configurations.

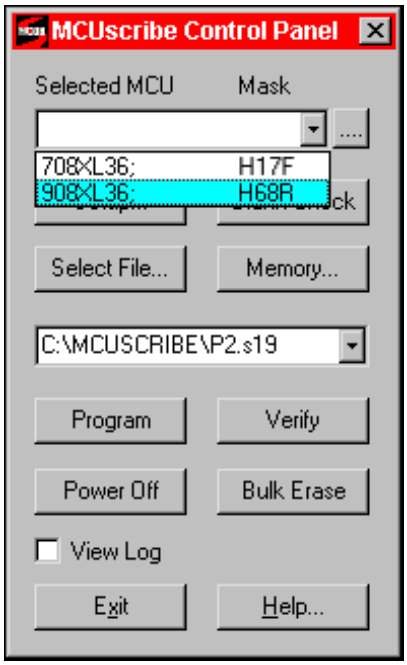
**Note:** If you need information about support for other XL36 MCU masks, contact Motorola customer support (see "Contacting customer support" on page 18).

## XL36 Devices and Mask Sets

| Device | Mask set | Device supply voltage (VDD) | Personality file | *Selected MCU / Mask* choice |
|---|---|---|---|---|
| MC68HC908XL36 | 2H68R | 5V (±10%) | 908XL36.mmp | 908XL36 H68R |
| MC68HC708XL36 | 2H17F | 3V (±10%) | 708XL36.mmp | 708XL36 H17F |
| | 3H17F | 5V (±10%) | | |

The table above lists XL36-supported devices and mask sets, with these types of corresponding information:

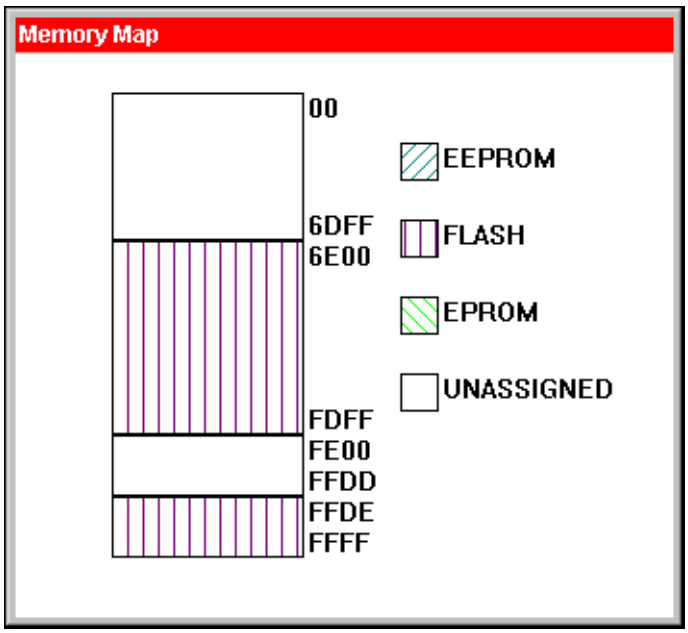
- **Device supply voltage (VDD)** — The voltage you can use for a particular device and mask set. For information about testing or changing this voltage, see "Adjusting the device supply voltage" on page 14.
- **Personality file** — The files that supply configuration and memory map data for programming the various XL36-supported MCUs and mask sets. To program a particular mask set, the corresponding personality file for that mask set must be installed on the host system.
- ***Selected MCU/Mask* choice** — The entry you select during an MCUscribe session, from the Control Panel's *Selected MCU* list (shown in the illustration below).



# MCU memory configuration

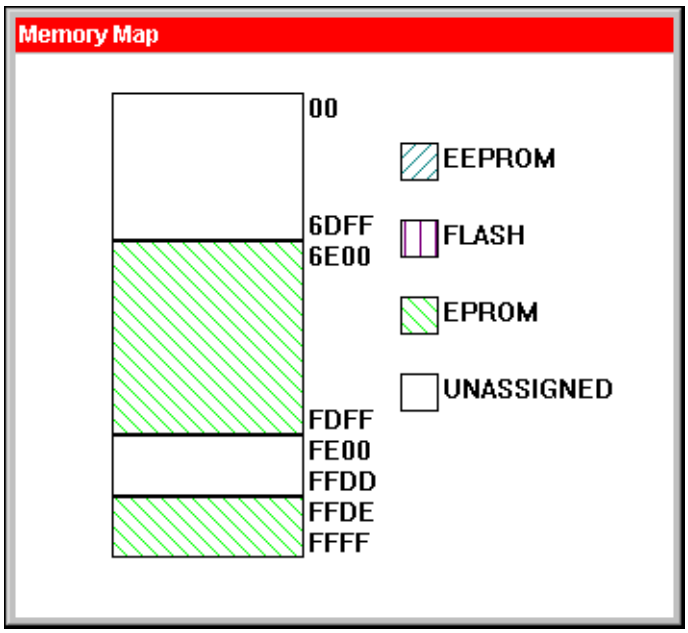
## 908XL36 MCU memory

The 908XL36 MCU has 36 KB of programmable Flash EEPROM memory and 34 bytes of vector memory. MCUscribe's Memory Map status box (shown below) displays the location of the Flash EEPROM memory arrays.



### 708XL36-secured MCU memory

The 708XL36 MCU has 36 KB of programmable EPROM memory and 34 bytes of vector memory. MCUscribe's Memory Map status box (shown below) displays the location of the EPROM memory array.




## Adjusting the device supply voltage

You can adjust the device supply voltage (VDD) of the XL36 programming adapter board to match the voltage in your target application. The XL36 programming adapter board can program MCUs at a range of voltages.

**To measure the current device supply voltage,** use the test point (labelled **E1**):

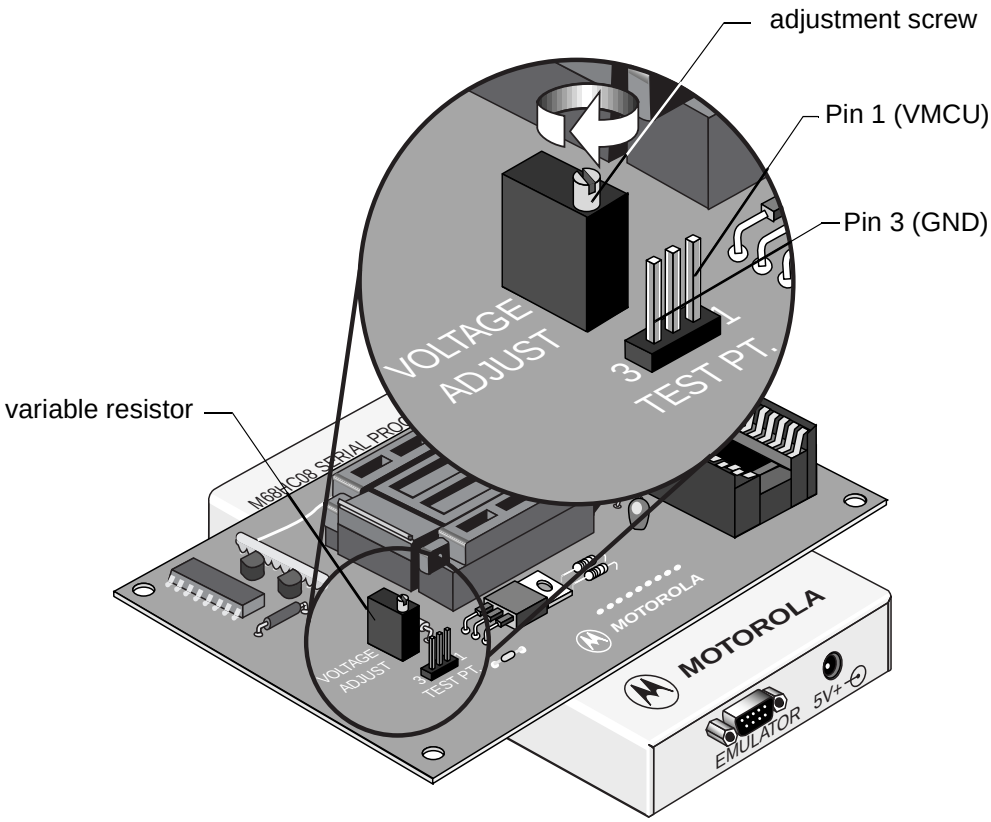
1. Begin an MCUscribe session, and select the MCU.

   **Note:** To measure device supply voltage, you must first establish communcations between the software and the MCU. When the base unit's yellow Socket Power light is on, communications are established.

2. Connect a voltmeter to pin **1** (VMCU) and pin **3** (GND—ground). Read the device supply voltage on the meter.

**To change the device supply voltage,** turn the screw on top of the voltmeter with a screwdriver.

The variable resistor is in a blue case, with the words VOLTAGE ADJUST printed next to it. The test point is marked TEST PT, and printed numbers identify pin 1 and pin 3.




**Note:** For more information about voltage ranges appropriate for your device, see its *General Release Specification*.

## Restrictions and limitations

This restriction applies to the XL36 programming adapter board:

**908XL36 PAB programming voltage:** The 908XL36 PAB supports 3 to 5 volt programming; however, the currently available 908XL36 device functions only at 5 volts.

# 3 Support

This chapter explains how to open information resources online, and how to contact customer support.

## Opening additional online documentation

### Acrobat-format documents

The MCUscribe application comes with a user's manual in Acrobat PDF format, along with the latest version of the Acrobat Reader. There are a number of online resources (described on page 6) that you can open from Windows Explorer by double-clicking the file name:

- *Serial Programmer for HC08 User's Manual* — **MCUscribe.pdf** (You can also double-click the manual icon in the MCUscribe program group.)
- *XL36 Programming Adapter Board User's Manual* (online version) — **PABXL36.pdf**
- *SPGMR08 QuickStart Guide* — **QStart08.pdf**

### Online help

Open MCUscribe help directly from the desktop, or from within the application. (Make sure you have installed the **MCUscribe.hlp** file and the **MCUscribe.cnt** files in the same folder.) You can use any of these methods to open MCUscribe help:

- Double-click the help icon in the MCUscribe program group.
- Double-click the **MCUscribe.hlp** file in Windows Explorer, if *.hlp* files are associated with *Winhlp32.exe*.
- Click the **Help** button in the MCUscribe application, or press **F1**.

## Contacting customer support

Contact the Motorola software support team by telephone, FAX, regular postal mail, or through the Worldwide Web.

**Telephone: 1-800-521-6274** (Customer Focus Center)

Telephone support hours are Monday through Friday, 9:00 a.m. to 5:00 p.m. (CST).

**FAX: (602) 302-8157** (Customer Focus Center)

**Website: http://www.design-net.com/csic**
(*68HC05 and 68HC08 8-bit Microcontroller Home Page*)

For software upgrades, choose **Development Tools**, then **Free Software Upgrades/Assemblers**.

For more MCU products, see: **http://www.mcu.motsps.com**
(*Embedded Microcontroller Products* page)

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