Getting started with the VM-1

This is the Getting Started Guide for the VM-1 QVGA Starter Kit.

Kit Contents

As well as this guide, you should have the following in your kit:
- VM-1 Application Board 3 (5811)
- VM-1 Control Computer (5801, fitted to Application Board 3)
- QVGA driver module – (5809, fitted to the Application Board 3)
- Venom-SC Flash Chip (5803, fitted to VM-1)
- Clock Chip (5505, fitted to VM-1)
- VM-1 Breakout Board (5805) – free extra – not used for QVGA.
- QVGA Graphic LCD with integral touchscreen – not fitted to the Application board yet
- RS232 Serial Lead
- USB to Serial Adaptor – in case your PC has no COM port.
- Power Supply
- Chip Extraction Tool
- *Venom-SC - A Tutorial Guide* (paperback book)

Connecting it all up

The flash chip and real time clock chip are supplied fitted to the VM-1, and the VM-1 and QVGA driver module are already fitted to the Application Board. The QVGA display is not fitted to the application board because a) the touchscreen cable is fragile, and b) we want you to familiarise yourself with the system before trying to do anything with the LCD.

If the parts are not fitted as described take care to insert them the right way round:
- A corner is cut off the flash, and the socket, to aid alignment. Also there is usually a dot on the flash chip and an arrow in the socket to indicate pin 1.
- The clock chip has a notch at one end that should be aligned with the printed outline on the PCB.
- The VM-1 controller and the QVGA driver module have more pins at one end than the other.

Power to the board comes in via the four-way screw terminal connector. The kit includes a power supply with pre-wired plug. Plug this into the application board power connector – it will only fit in one connector. Don't turn the power on just yet.

Connect the board's serial port 1 (JP5) to your PC's COM port.
If you don't have a COM port on your PC then you can use the USB to Serial Adaptor supplied (see the instructions in the USB adaptor package). We recommend you use an onboard COM port if you have the choice.

Installing VenomIDE on your PC

VenomIDE is the VM-1's Windows-based development toolset. You can download it from our website or request it on a CD from us. VenomIDE is intended for Windows 98 and XP. It may work on other operating systems, but this has not been tested. If you can't use VenomIDE for any reason you can still program the VM-1 – see the next section.

1. Download VenomIDE from our website: www.microrobotics.co.uk on to your PC.
2. Install the VenomIDE Integrated Development Environment on your PC by opening up the downloaded zip file and then double clicking on the file Setup.exe. Follow the instructions on the screen.
3. Start VenomIDE by double clicking on the VenomIDE icon on your desktop.
4. Select the COM port you are using in the menu `Terminal>Settings`.
5. Set both the switches on the VM-1 controller to ON (for Program Mode and 38,400 baud communications).

6. Turn on the power to the VM-1. You should see the Venom-SC startup message on your terminal screen:

```
VM-1 Control Computer running Venom-SC
Version 2008 01 10
Copyright 2000-2008 Micro-Robotics Ltd.
Clear memory: Y/N/S ?
```

While the controller is waiting at the prompt, its LED will turn on as an indication that it is powered but in program mode, and so not running an application. [If you have left the VM-1 in RUN mode, the LED will flash once a second, and you may see the `"-->"` prompt in the terminal window]

If you don't get any message at all, then switch the power off and check the power connection, serial connection, VM-1 switches, and that the VM-1 and its flash chip are plugged in correctly.
Check the IDE terminal configuration in the menu `Terminal>Settings`: it should be set to
- 38,400 baud
- Hardware handshaking
- The COM port that the VM-1 is physically connected to.

Tutorial

You should now open VenomIDE help (in the menu `Help>Contents`) and go to *New user tutorial*. This tutorial replaces the first chapter of the *Tutorial Guide* book.

You don't need to read any further than this until you want to use the LCD display and touchscreen

Can't use VenomIDE?

If you can't use VenomIDE for any reason you can still program the VM-1 using any terminal emulator and text editor – for example HyperTerminal and Notepad.

Set up the terminal emulator communications protocol as follows:

Baud Rate	38400
Data Bits	8
Stop Bits	1
Parity	None
Handshaking	Hardware

Set both the switches on the VM-1 controller to ON (for program mode and 38,400 baud).
Turn the power supply on. You should see the VM-1 startup message on your terminal screen:

```
VM-1 Control Computer running Venom-SC
Version 2008 01 10
Copyright 2000-2008 Micro-Robotics Ltd.
Clear memory: Y/N/S ?
```

While the controller is waiting at the prompt, its LED will turn on as an indication that it is powered but in program mode, and so not running an application. [If you have left the VM-1 in RUN mode, the LED will flash once a second, and you may see the `"-->"` prompt in the terminal window]

If you don't get any message at all, then switch the power off and check the power connection, serial connection, VM-1 switches, and your terminal configuration. Check that the VM-1 and its flash chip are plugged in correctly.

Now you are ready to start reading the *Tutorial Guide* book.

You don't need to read any further than this until you want to use the LCD display and touchscreen.

GraphicsLCD and Touchscreen

The starter kit is supplied with a QVGA graphics LCD and integral touchscreen overlay that is ideal for creating man-machine interfaces.

Before you start using this you should go to the starter kit page on our website and download the file
VM-1_QVGA_starterkit_code.vnm

You should program the VM-1 with this file using VenomIDE, or by other means.

- Next, turn the power off

- NOTE: the QVGA graphics LCD is fitted to the **back** of the Application Board – i.e. the boards are mounted **back to back**. This gives easy access to the Application board switches, connectors, etc.

- Use the four M3 screws and washers to fix the display to pillars on the back of Application board, taking care to get the orientation right: the end with the red and white wires coming out of it should be near the Application board backlight connector.

- Plug the wide flat cable into the correct connector (JP10). Note the metallization on the cable end faces towards the PCB. You will need to operate the cable clamp on the connector.

- Plug the narrow flat cable into the correct connector (JP14). This is a push fit. Take care, as this is a little fragile. Don't put any twist into the cable and it will then be the right way round.

- Plug backlight cable (red and white pair of wires) into the Backlight connector (JP18).

You can now power up the Application board/VM-1, answer N to the Clear Memory prompt, and type RUN (or hit F10) to run the code. Follow any instructions on the LCD screen.

Trouble shooting
- **No backlight** (the LCD should glow around the edge of the display and elsewhere): make sure the backlight connector is correctly fitted.
- **No display**: check the larger flat cable is correctly seated and the right way around, and the cable clamp is correctly used. Check the contrast pot (R7) – you can adjust this to get better contrast. The settings of R8 and LK1 were set at the factory. If you think these may have been altered then see the 5811 datasheet to see how to correct them.
- **No touchscreen** operation: check the narrow touchscreen cable is plugged in and the right way around, and that the cable is not cracked.