



# Quick Start Guide

## Velox Development Kit

Revision 1.2

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## Revision History

Document: STO-DEV7220-JB		
Previous revision: 1.0		
Section	Changes since last revision	Signature
11&12	Debug and terminal message outputs	JB
3	Updated VDK Figure	JB
10	Revision of VDK that can be powered by TA	JB
Previous revision: 1.1		
Section	Changes since last revision	Signature
4	Revised the link and text for downloading documents.	JEB
9	Driver installation instructions for Windows 8.1 added	JEB
10	Simplification of language regarding VDK revision	JEB
12	Correction of menu command for Debug Output window. Added a note about a write-protection issue that may occur on Windows 8.1 (and 8) for a sample directory and giving a work-a-round for it.	JEB

## Table of Contents

1. Introduction .....	4
2. Kit contents .....	4
3. VDK Mainboard .....	4
4. Kit documentation .....	5
5. Before you begin.....	5
6. Installing Imsys Developer IDE .....	5
7. Installing the Velox Firmware profile.....	5
8. Installing the Java compiler .....	6
9. Connecting the VDK.....	6
10. Powering the VDK.....	8
11. Configure Imsys Developer .....	8
12. Building a sample project.....	9
13. FAQ's .....	10
14. Updating Firmware on Velox Module .....	11
15. Having Problems? .....	11

## 1. Introduction

Thank you for purchasing the Velox Development Kit. This Quick start guide will lead you through:

- Software Installation
- Hardware Installation and configuration
- Running Sample programs on VDK.

## 2. Kit contents

Your kit should contain the following items:

- VDK Mainboard
- USB Trace Adapter
- CD with Imsys Developer and USB Trace Adapter Drivers
- USB cable.

## 3. VDK Mainboard

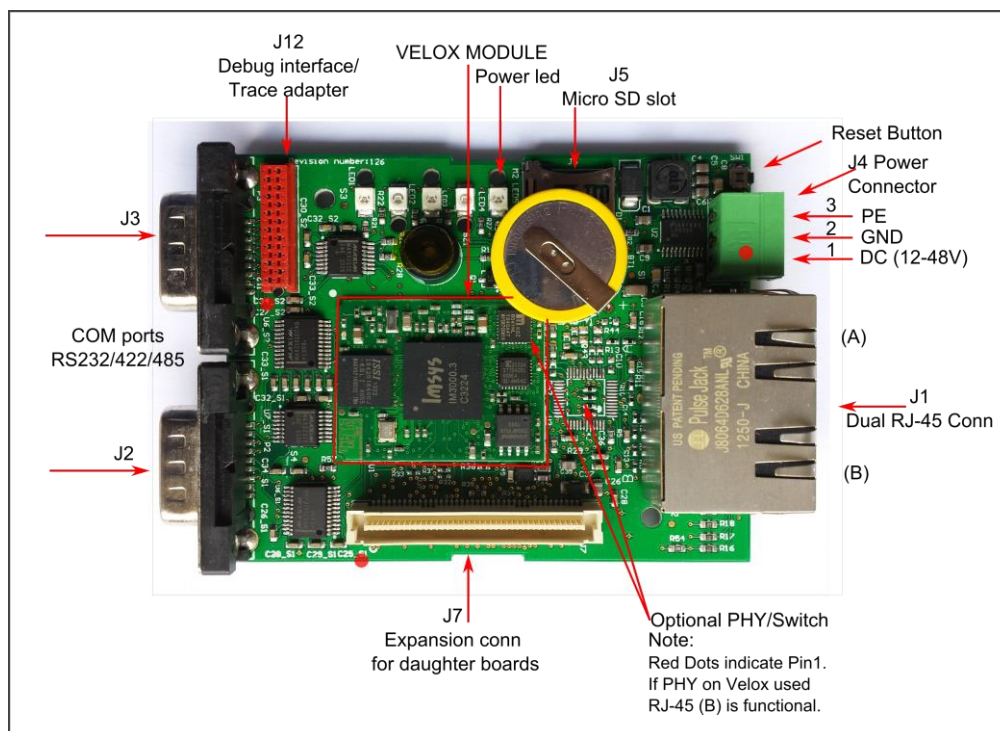


Figure 3-1: Velox Development Kit Main Board

## 4. Kit documentation

The following documents come with your kit in printed form:

- Velox Development Kit Quick Start Guide (this document)

Additional Documentation:

- Velox Product Brief
- IM3000 Microcontroller Datasheet
- IM3000 Family Microcontrollers Data Book
- Velox Hardware Reference
- VDK Hardware Reference
- Velox based designs

Additional documentation is available in the firmware installation directory and is also available in electronic form on the website

You can download them from the Documents menu at

<http://www.imsystech.com/> .

**Note:** Complete documentation for Imsys Developer and for Velox Firmware profile, including Java API, C API Reference and Assembler Instructions, can be found inside the Imsys Developer Help system.

## 5. Before you begin

**Software Requirements:** PC equipped with Windows 2000 or later version of windows operating system with at least one free USB port.

**Hardware Requirements:** DC power supply source (12-48V).

**Note:** Use of power supply is optional for Revision 126 and above; see section 10.

## 6. Installing Imsys Developer IDE

Imsys Developer is a powerful integrated development environment (IDE) for the IM3000 microcontroller family platform. A unique serial number is required for installing Imsys Developer. You will find this number on a sticker attached to the Imsys Developer CD pocket.

- Insert the Imsys Developer CD supplied with the kit into the PC and run the enclosed file "setup\_imdev72.exe".
- Follow the on-screen instructions during the installation procedure.
- After the installation has completed, you will be asked to reboot your computer.

## 7. Installing the Velox Firmware profile

Imsys Developer can be used with any IM3000-based hardware. The customization of the hardware is handled via "firmware profiles". These packages contain files and settings specific to each application class.

In order to develop software for the IM3000 based system, you first need to install its profile. The latest profile can be downloaded from our website.

- Download the latest velox\_rmii profile.
- Unzip and run the downloaded file.
- Follow the on-screen instructions during the installation.
- If Imsys Developer was running during the installation, it must be restarted before you can use the new profile.

## 8. Installing the Java compiler

If you are planning to develop Java applications for IM3000 you will need to install the Java Development Kit. You can find it on the Oracle's website.

## 9. Connecting the VDK

Before you can develop, run and debug any program on the VDK, you have to connect it to the PC. To do that, follow the steps below:

- Make sure you're allowed to install drivers on your PC. You may need to have administrative privileges to install drivers for Imsys Trace Adapter.
- Attach the Trace Adapter's flat cable to the VDK's red "Debug" connector J12. This connection is used by Imsys Developer to communicate with the IM3000 Microcontroller. Make sure that the red wire in the flat cable which signifies pin1 matches with pin 1 of VDK (pin 1 on VDK represented with a red dot in figure 1).
- Optionally connect the VDK to the network via a hub or a switch. You can also connect it directly to the PC, using a crossover Ethernet cable.
- Connect the Trace Adapter to the PC through the USB cable supplied with the kit. After connecting this, the procedure differs a bit depending on what windows version your PC is running.

### Windows 2000/XP

- "Found New Hardware Wizard" will appear on the PC.
- Using this Wizard, Locate the drivers for the USB Trace Adapter on the Imsys Developer CD. You will have to repeat this up to three times, after which the wizard will no longer appear. Now that the drivers are installed, a USB Trace Adapter Serial Port device should appear on you PC.

### Windows Vista/7

- After connecting, windows will try to install drivers but fail. You will see a balloon notification "**Device driver software was not successfully installed**".
- Open **Device Manager** from the system applet (Control Panel/System). You shall see two "**USB Trace Adapter Channel**" devices with exclamation marks on them under the "**Other Devices**" node.
- Right-click one of the devices and select "**Update Driver Software**", then "Browse for the drivers for USB Trace Adapter on the Developer CD. When windows find the driver, you may get a security alert that windows can't verify the publisher of the driver, choose to install anyway. It may take considerable time for windows to install the driver.
- Repeat the above steps for the second device.

- Now there should have appeared a new device, “**USB Serial Port**”, also with exclamation mark. Repeat the above steps for that too. Again it may take some time and the security alert has to be dismissed. Now that the drivers are installed, a USB Trace Adapter Serial Port device should appear on your PC.

### Windows 8/8.1

Installation for Windows 8/8.1 is similar to Windows Vista/7 described above, with the exception that windows 8/8.1 will not allow you to install unsigned drivers. To disable that check and allow you to install the driver anyway, follow the steps below.

- Move the mouse pointer to the bottom right corner of the screen to reveal the Charms bar, select the gear icon (Settings). (Alternatively use the short-cut Win+I.)
- Click “Change PC Settings”, then for **Windows 8** click “General”, and for **Windows 8.1** click “Update & recovery” and then “Recovery”, respectively.
- Scroll down to “Advanced startup” and click “Restart Now”.
- Click “Troubleshoot”, then “Advanced Options” then “Startup Settings”, then click “Restart”.
- When your computer restarts, select “Disable driver signature enforcement” from the list - on Windows 8.1 by pressing the “F7” button. (This setting applies for the current Windows session only.)
- Next follow the instructions for Windows Vista/7 and then restart Windows to re-enable driver signature enforcement again (which will apply for any new driver installations done after the reboot).

After successfully installing the drivers, you may want to open the Device Manager, locate the **USB Trace Adapter Serial Port** device under the **Ports (COM & LPT)** node and take a note of this name (e.g. COM3). You will have to use this port to interact with the on-board software, such as the command shell, either through Developer’s terminal window or through any other terminal emulation software.

You may connect several USB Trace Adapters to your PC and debug several VDK’s simultaneously. Each USB Trace Adapter is labeled with its own serial number that uniquely identifies this particular Trace Adapter within Imsys Developer.

The above instructions to install the driver’s only need to be followed once, if additional USB Trace Adapters are connected to the computer their drivers will be installed automatically.



Figure 9-1: VDK Connected

## 10. Powering the VDK

VDK can be powered in 3 different ways.

- By supplying it with 12-48V D.C input at connector J4. Please refer *figure 3-1* for pin numbering. Pin 1 is 12-48V D.C input, Pin 2 is GND, and PIN 3 is PE. VDK is equipped with a high voltage switching regulator with an output voltage of 3.3V and current capability of 2.5A.
- VDK can be powered by supplying 3.3 V on the expansion connector J7.
- VDK can be powered via the Trace adapter for VDK revision 126 and above. Note: Limited current available for any daughter board plugged into the expansion connector.

## 11. Configure Imsys Developer

Now, you are ready to start using the Imsys Developer together with the Velox Development Kit. Refer to *figure 9-1* and make sure that you have a similar setup, with the LED indicators turned on as shown. Choice of powering the module is left to the user. RJ-45 connection is optional.



- Start Imsys Developer.
- If you are planning to use Java, select **Edit/Options** from the Imsys Developer's menu, go to the **Java** tab and specify the path to the Java compiler.
- Then go to the **Debug** tab and specify "USB" as the Target Interface.
- The list of available USB Trace Adapters identified by their serial numbers will appear in the drop-down box. Select the Trace Adapter you are going to use with this instance of Imsys Developer and press OK.
- Open the Terminal window by selecting **View/Debug Windows/Terminal** from the Imsys Developer's menu. Press the **Select Serial Port** button in the Terminal Window toolbar and specify the serial port you want to use (e.g. COM3 (TAXXXXXX)). Serial ports that belong to USB Trace Adapter will be marked with the corresponding Trace Adapter serial number. Then press the **Connect** button.
- Press the red "Reset" button on the USB Trace Adapter or reset switch on VDK (only revised VDK).
- Velox on the development kit is delivered with the firmware flashed, so you should be able to see an output from the VDK in the Terminal window:

```

velox_rmii restarting @ Sun Nov  2 17:38:45 1969
Reading a:/system/ish.ini:      [OK]
Reading a:/system/system.ini:  [OK]
Serial server:                 [OK]
JVM startup:                   [OK]
Setting host name:             [OK]
TCP/IP startup:                [OK]
Registering hostname in DNS:   [FAILED]
FTP server:                    [OK]
Telnet server:                 [OK]
Setting timezone to:          GMT
Reading a:/system/startup.ini: [OK]

```

```

localhost.localdomain (velox_rmii, v1.0.1)
Login:

```

- To logon to the system type "root" as the username and "root" as the password.

Velox is configured to use a DHCP server for obtaining an IP configuration for its network interface. If there is no DHCP server on the network, the system will get link-local address through auto negotiation. If the VDK is not connected to the network, or if you do not have access to a DHCP server, it may take a longer time to start-up.

You can also configure the network interface manually, by using the "ipconfig" command. Type the "help ipconfig" from the command shell to see the detailed command description. Type "help" from the command shell to see the complete list of commands supported.

## 12. Building a sample project

If you have configured Imsys Developer and your VDK boots successfully, you can now start the application development. Below is a short description of how to build and run a sample project within a profile:

- Start Imsys Developer.
- Select **File/Open Sample Project/<profile name>** from the Imsys Developer's menu. The Open project dialog containing available sample folders. Open the sample you are interested in and select ".prj" file to open the sample project.

Note:

For **Windows 8.1 (and 8) if you in the next Build step encounter a write-protection issue** - regarding in the chosen sample directory to create missing subdirectories, e.g. classes or Output, or creating files in them - you may **copy the sample directory** e.g. "C:\Program Files (x86)\Imsys Technologies\Profiles\VELOX\_RMII v1.0.2\samples\HelloWorld" to the users own area, i.e. place the sample directory in the subdirectory "Imsys Developer Projects" in the "Documents" directory (where new projects will be created). Then use the **File/Open Project/<profile name>** from the Imsys Developer's menu instead of the menu command given above.

- Press "Build" button in the Imsys Developer toolbox (or press SHIFT+F6 key). You will then see the build process output in the Build Output window (Menu/View/Other Windows/Build Output). If the project builds without errors, you can boot the VDK with the output file.
- Press the "Boot" button in Imsys Developer toolbox (or press F6 key). You will then see the boot process output in the Debug Output window (Menu/View/Other Windows/ Debug Output):

```

--- Configuration: Standard, Profile: VELOX_RMII v1.0.1 ---
Booting target
Trace Adapter: TA7B4D86
Reset done
Detected processor model: IM3000.2
Loading testmicroprogram: Tmpgm.mp (v0.0.16.0)
Detected memory type 81, size 8MB, mode 102.
Loading microprogram: velox_rmii.8.mp (v0.1.45.0)
Loading application: HelloWorld.gpx (address 00000000-000D815B)
Program arguments: "HelloWorld.gpx -1"
Creating EFFS RAM disk...
RAM disk created, 512KB
c0start version: 2.0.3.0
Target successfully booted!
-----
[ClassLoader] Background loaded

```

To start the java program type "java HelloWorld" from the terminal.

## 13. FAQ's

No output on Terminal !!!!

If you encounter any Timeout errors during the booting process of the VDK, please:

- Cross check your VDK setup with *figure 9-1* to make sure that your connections are right. Check the LED indications on trace adapter and VDK.

- Make sure you are using the USB Trace Adapter Serial Port (COM XX) to communication with the module.
- Press the red reset button on the USB Trace Adapter or VDK and try to boot target again.
- Re-connect the USB Trace Adapter and try to boot target again.

Modules information can be accessed by reading the QR label over it.

For more FAQ's refer to document Imsys FAQ's on the website.

## 14. Updating Firmware on Velox Module

When a new version of firmware for VDK is released you can flash it on to your VDK using Imsys Developer and the "Flashit" project.

- Open the Flashit Project. It is located under <velox\_Profile\_Path>\Tools\Flashit.
- Boot the velox module with the Flashit Project and the flashing process will start automatically.

The Flashit project, its functionality and parameters are described in detail in the "IM3000 based firmware installation and upgrade" document that can be found under <velox\_Profile\_Path>\doc\manuals directory. Study it carefully before starting to flash Velox.

## 15. Having Problems?

Email us describing the problem in detail.

Email: [support@imsystech.com](mailto:support@imsystech.com)