

Programming COBRA5329 in JAVA

JControl brings the benefits of JAVA technology to the COBRA5329 board.

JCONTROL - JAVA FOR EMBEDDED SYSTEMS

Short development cycles, high code reuse rates, reliability – these are attributes generally associated with the JAVA programming language. With JControl, you can experience these benefits on the COBRA5329, without loosing on performance or memory efficiency.

JControl can be executed either on top of an embedded operating system (e.g. μ Clinux) or directly on the hardware. In the latter case, all the modules required for peripheral control (e.g. for display, touch, network, etc.) are linked to the virtual machine code. An optional bootloader can manage software updates over various media, like network, USB memory stick or serial line.

Running JControl directly on top of the hardware will achieve very low startup latency – the JControl Virtual Machine is initialized in less than one second, making your application start almost immediately after power-on.

JCONTROL API - WITHOUT OVERHEAD

The JControl API (Application Programming Interface) has been customized to the special requirements of embedded applications. Next to basic classes for general programming tasks, it offers various functionalities for controlling local peripheral components, like graphic displays, touch panels, network devices, serial interfaces, RTC, etc. Additional software libraries are included for assisting in different application areas. This includes graphical user interfaces, gateways or control systems with field bus connectivity.

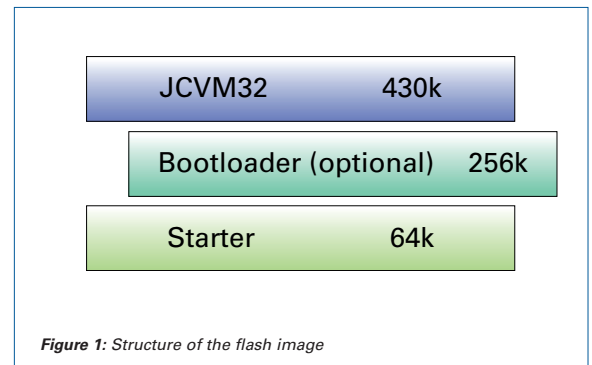


Figure 1: Structure of the flash image

GRAPHIC USER INTERFACES WITH JCONTROL/XUI

JControl/XUI is a software library for complex graphical user interfaces. While much more lightweight, it resembles the API and the functional range of AWT/Swing. Programs implemented for these toolkits can be ported to JControl/XUI with only minor changes.

JControl/XUI provides a number of features currently mainly available on GUI toolkits for desktop systems. Its automatic layout management allows resolution independent design of graphical user interfaces. Once implemented, an application can be run on different display sizes with JControl/XUI taking care of adjusting the layout for an optimal user experience. The integrated Look & Feel mechanism allows customer specific GUI designs with no changes to the actual application. The same application can be run in different colors, with different fonts, icons and input behavior by simply changing the Look & Feel – even at runtime.

JControl/XUI comes with a selection of standard GUI components including buttons, multi-level pop-up menus, scroll panels and many more. A simple – yet elegant – Look & Feel is included, which can be used as a base for customizations.

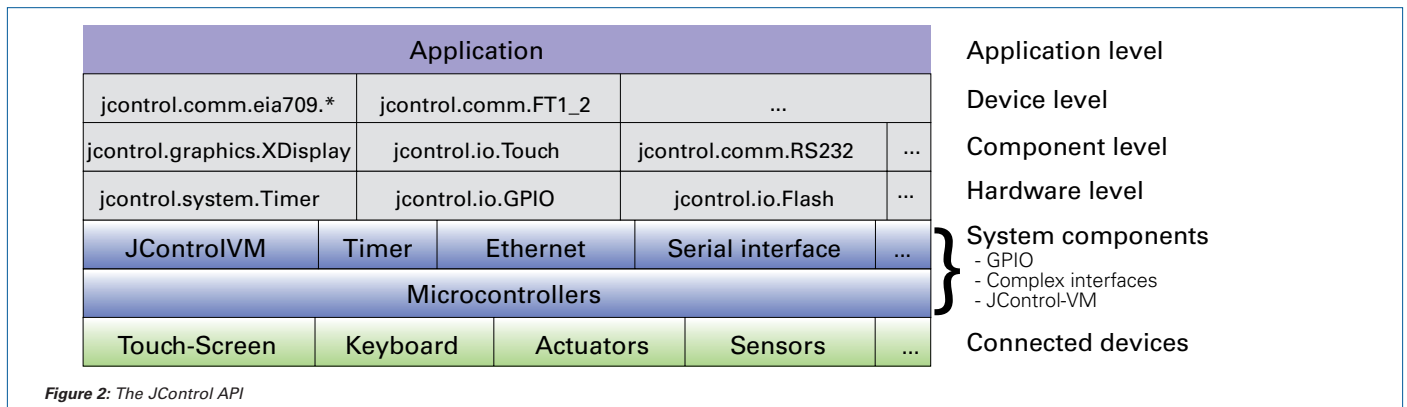


Figure 2: The JControl API

THE INTEGRATED DEVELOPMENT ENVIRONMENT JCONTROL/IDE

The JControl/IDE (Integrated Development Environment) is the common development environment for JControl. Based on Eclipse technology, it includes software tools for supporting the application development, for example, dedicated image, music, and font editors. Additionally, a compiler with optimizer and a comprehensive communication interface is integrated, enabling the upload an application directly to the device – using the network, serial interface or USB.

One of the highlights of the JControl/IDE is the integrated simulation environment. It allows the simulation of JControl applications at any development stage. The platform independence of JAVA supports maximum proximity to reality: For the simulation phase, only the class libraries of the JControl system are replaced with their simulated counterparts. Next to the plain simulation of hardware components such as displays, touch screens or IO ports, the simulation can even use PC hardware components (like RS232 interfaces) as substitutes for the hardware components of the “real” target device.

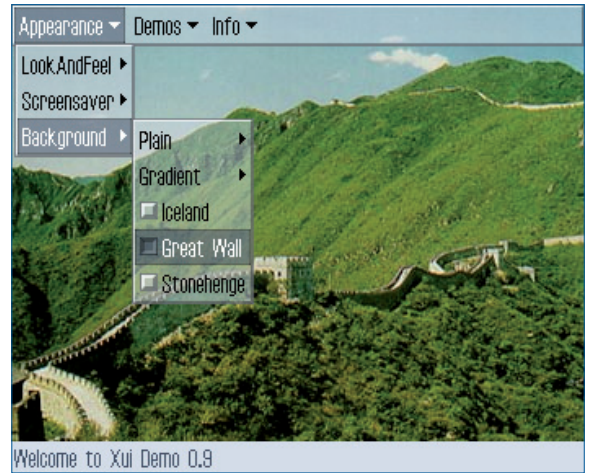


Figure 3: Graphic user interfaces with JControl/XUI

REQUIREMENTS

In order to install the JControl BSP, the following equipment is mandatory:

- Windows PC (for installing the firmware, applications can be developed and uploaded under Windows and Linux),
- COBRA5329 board,
- BDM interface.

The JControl BSP makes use of the following hardware extensions:

- 320*240 pixel color TFT display (as available from EBV under part number COBRA5329-TFT),
- touch screen.

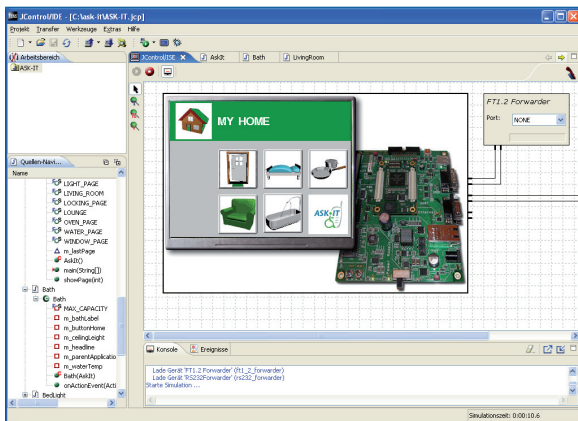


Figure 4: The integrated development environment JControl/IDE

While the JControl Virtual Machine does not depend on these features, the demos bundled with the JControl BSP require them to work in a meaningful way. However, it is possible to write and run headless applications with the JControl BSP.

DOWNLOADS AND UPDATES

The full JControl BSP for Cobra5329 is available as ISO CD image for download. The image includes a special edition of the integrated development environment JControl/IDE, the JControl firmware, all the tools required for installing the firmware as well as installing instructions and tutorials. The latest version of the JControl BSP can be downloaded from <http://www.domologic.com/cobra>.

SUPPORT

You have already tried the JControl BSP? It matches your requirements? We can customize JControl to your specific needs, with support for the hardware components you want to integrate into your system. Just contact us at info@domologic.com and we'll find a solution that fits best your needs!