

uControl Linux Board Demo Documentation

Demo Documentation

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Change Summary:

Revision	Topic	Description	Date
Rev. 1.0	Document	Initial Release	07/25/2012

1. PURPOSE

The purpose of this document is to specify the details of uControl Demo for Linux Boards.

2. GENERAL DESCRIPTION

uControl Demo was developed to show uControl's capabilities in full strength and uControl is ideal product for developing and implementing different types of industrial applications and controls. It includes demonstration on following capabilities -

- Processing speed
- Graphics acceleration
- Building Embedded application
- Using some basic but important features as well, for e.g - Text Edit, connection to network.
- Display manipulation and scaling

The uControl Demo includes following -

- Four applications embedded
 - Vector deformation : This demo shows how to use advanced vector techniques to draw text
 - Wiggly example : This demo shows how to animate the widget
 - Process Control : This demo shows example of an embedded application to control industrial or medical devices.
 - Text Edit : This demo shows rich text editing capabilities in action, there is an example documentation for you to play with
 - Exit Embedded Demo : This demo will simply end uControl demo.
- Slideshow
 - If you keep uControl idle for few seconds, the slideshow will play giving some information about uControl

This Demo used Linux 2.6.x and Qtopia as development platform.

3. DEMO APPLICATIONS

uControl Demo includes four embedded applications, each explaining uControl's special feature.



Figure 1 uControl Demo

uControl has following embedded applications -

3.1 Vector Deformation Application

This demo shows how to use advanced vector techniques to draw text. We define a vector deformation field in the shape of a lens and apply this to all points in a path. This means that what is rendered on screen is not pixel manipulation, but modified vector representations. This is visible from the high quality of the antialiased edges for the deformed glyphs.

When you click on Vector Deformation application you will see text - 'uC' being deformed by the lens which moves across the screen. If you click anywhere on the application you will be taken to 'Controls' panel where user can change -

- Lens Radius
- Deformation
- Font Size
- OK the changes
- QUIT the application



Figure 2 Vector Deformation Application

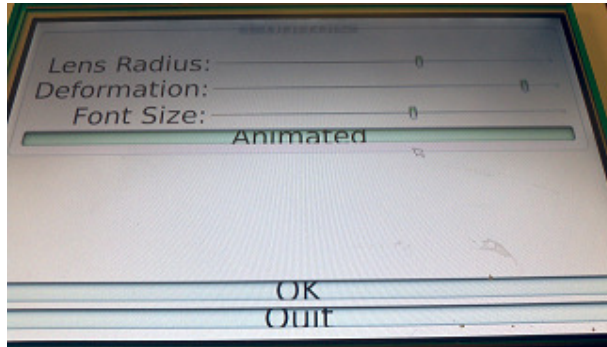


Figure 3 Vector Deformation Controls

3.2 Wiggly Text Application

The Wiggly example shows how to animate a widget. This gives an example that animation can be added to variety of applications.

Left click on 'Qt' icon of the application and you will get following options -

- Restore
- Move
- Size
- Minimize
- Maximize
- Close



Figure 4 Wiggly Text Controls

Select Maximize and you will be able to see animated 'Welcome to uControl!'.

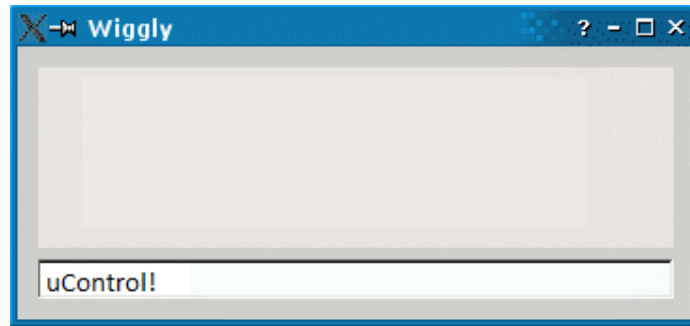


Figure 5 Wiggly Text

3.3 Process Control Application

Process Control is an inclusive demo to show how applications can be built and run on uControl for electronics and medical devices.

NOTE: Please open this application LAST of all, because it does not have QUIT button and restart of the board will be required to come back to Linux Demo.

This application includes following accessories -

- Toggle switch
- Sliders
- Dials and gauges
- Graphs
- Five way buttons

This application shows five sections, which individually help to control a process -

3.3.1 General Section

General section contains -

- Temperature switch
- Power save mode switch

Temperature switch - When user toggles this switch it drops temperature and which makes Temperature status LOW and SPEED HIGH. Real Time monitor shows 'Danger' by becoming 'RED'.

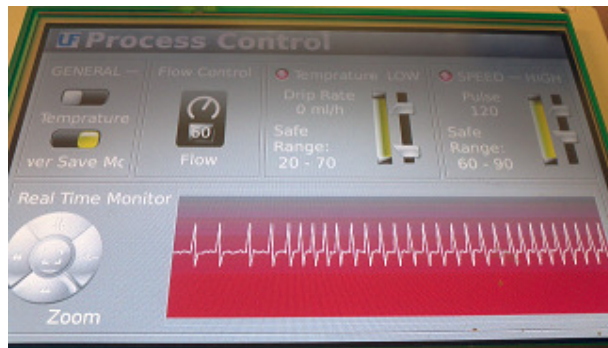


Figure 6 Toggle Temperature switch in General Section

Power save mode switch - When user toggles this switch, the application switches from power save mode to utilizing all the power to brighten then display, which is also called 'Night Mode'.

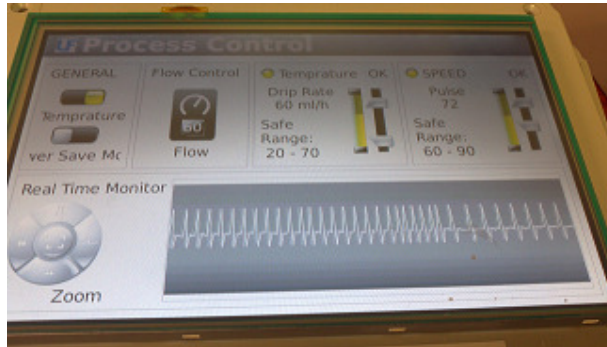


Figure 7 Toggle Power Save Mode switch in General section

3.3.2 Flow Control Section

User can control flow rate using special wheel rotating button. Click on display showing current flow rate, a wheel rotating button will pop up which you can rotate to increase or decrease the value. To set the value click on check sign above the button.

Once you set the flow rate you will observe both 'Temperature' and 'Speed' will be calculated according to it, also graph will adjust to the value.



Figure 8 Flow Control Section

3.3.3 Temperature Section

In this section user can increase or decrease temperature range by the slider next to it. Temperature has three values -

- OK
- HIGH
- LOW

All the parameters in the application will be set based on the value you set.

3.3.4 Speed Section

In this section user can increase or decrease speed range by the slider next to it. speed has three values -

- OK
- HIGH
- LOW

All the parameters in the application will be set based on the value you set.

3.3.5 Real Time Monitor Section

In this section user observes the graph between temperature and speed. Using five way zoom

button, user can increase frequency, spread out pulse or come back to original graph for better study. The graph changes color to 'RED' when any reading is not set as required.

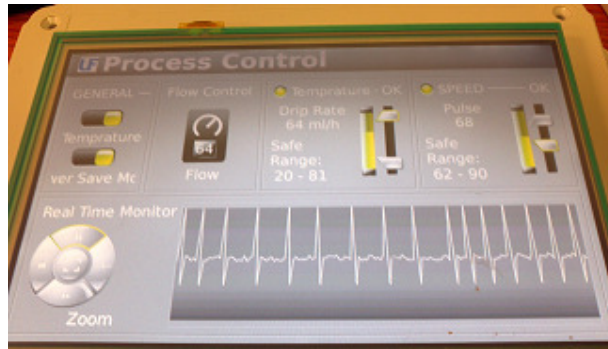
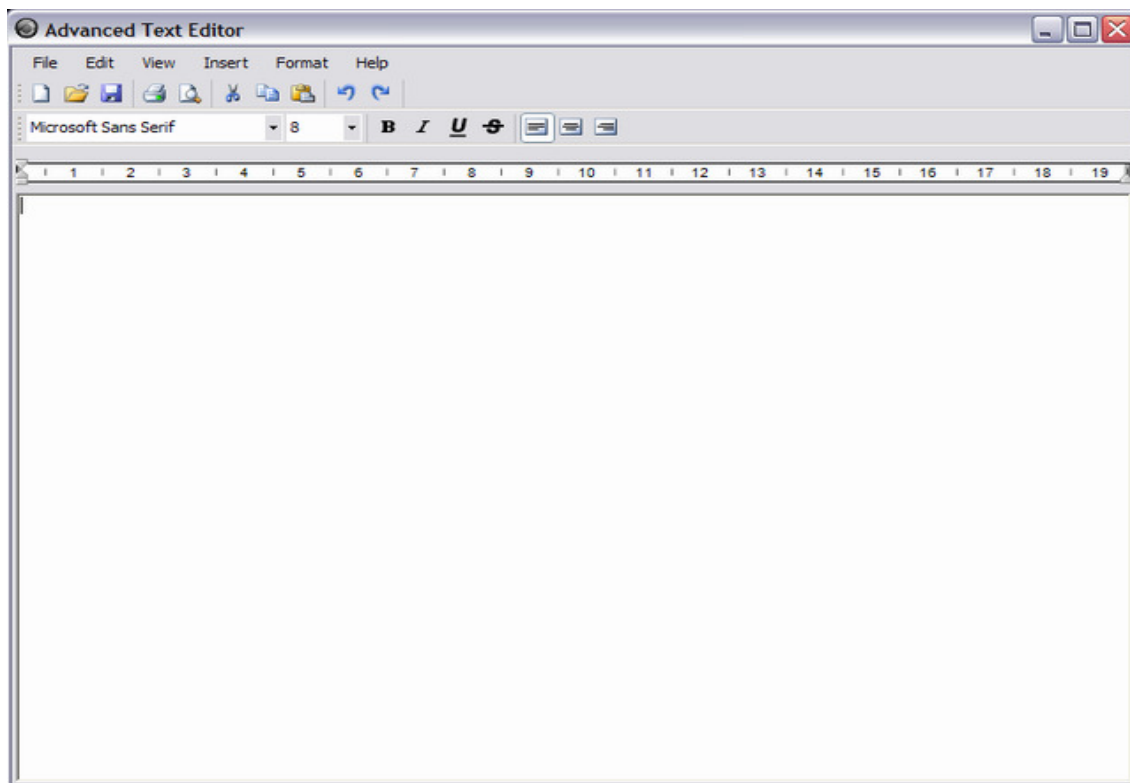


Figure 9 Real Time Monitor

3.4 Text Edit Application

The Text Edit demonstration shows rich text editing facilities in action, providing an example document for you to experiment with.



3.5 Exit Embedded Demo Application

This application is the last application of the demo and when selecting it, it will exit uControl Demo .

4. SLIDESHOW

Slideshow comprises of six slides with information about uControl. Slideshow begins before launching of demo when uControl is idle for few seconds. Slideshow is included as an example to show customer that information material about their own product can be displayed to educate users, when their application is not running.

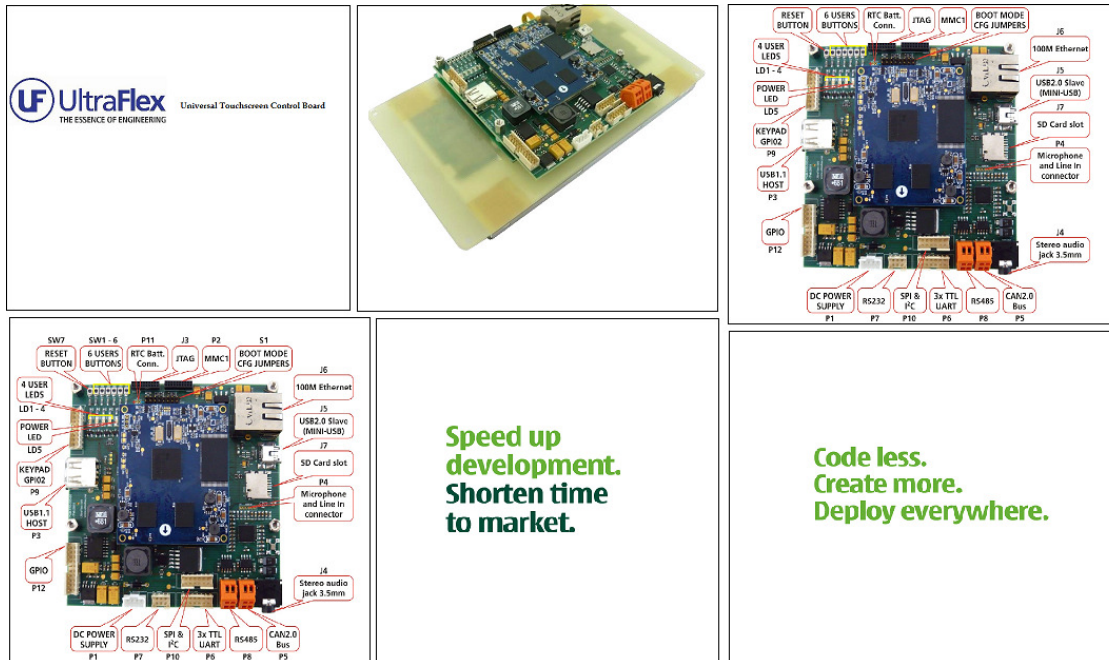


Figure 10 Slides included in uControl Demo

5. QTOPIA DEVELOPMENT

This section provides brief information on how to set up Qtopia development environment for building and running Linux embedded applications.

5.1 QT SDK

The Qt SDK is a tool designed to make the development of Qt apps for mobile and embedded devices easy. User can download it for Microsoft Windows, Ubuntu Linux, and Apple Mac. The SDK builds on Qt Creator with tools that eliminate the need for platform or device specific SDKs. In addition, with versions for Microsoft Windows, Linux, and a beta for Apple Mac computers, it frees developers to use the desktop environment they prefer. Qt SDK can be downloaded from [here](#).

5.2 QT Creator

Qt Creator is an integrated development environment (IDE) that provides you with tools to design and develop applications with the Qt application framework. Qt is designed for developing applications and user interfaces once and deploying them across several desktop and mobile operating systems. Qt Creator provides you with tools for accomplishing your tasks throughout the whole application development life-cycle, from creating a project to deploying the application on the target platforms. To learn more about Qt Creator, click [here](#).

User can find example Qtopia applications in uControl File system - \uControl\opt\Qtopia

Name	Date modified	Type	Size
bin	7/17/2012 1:01 PM	File folder	
demos	7/17/2012 1:02 PM	File folder	
examples	7/17/2012 1:05 PM	File folder	
imports	7/17/2012 1:05 PM	File folder	
include	7/17/2012 1:06 PM	File folder	
lib	7/17/2012 1:06 PM	File folder	
mkspecs	7/17/2012 1:06 PM	File folder	
plugins	7/17/2012 1:06 PM	File folder	
tools	7/17/2012 1:06 PM	File folder	
translations	7/17/2012 1:06 PM	File folder	

Figure 11 Qtopia structure in Linux File system

You will find executables for some applications in 'demos' and 'examples' folder. Which user can modify or rebuild using Qt Creator or run for embedded linux with **-qws** option :

example:

```
cd $QTDIR/examples/widgets
./widgets -qws
```

Example of how to run a qtopia application can be found in /bin folder in Linux filesystem, file being executed is named - 'qtopia4'.