



# mDolphin User Manual

Version 2.0

For mDolphin Version 2.0

Beijing Feynman Software Technology Co. Ltd.

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# 1 Introduction to mDolphin V2.0 Release

## 1.1 A Brief Introduction

mDolphin is an embedded browser based on WebKit which is the core of open-source browser. MiniGUI is used as the basically graphic platform of mDolphin. It is a modular, scalable, full-featured browser that supports powerful Internet browsing experience. At present, mDolphin can be used in mobile phone (3G phone, WiFi phone), IPTV, information terminal and IP-based device. It can run on Linux/uClinux, eCos. Now, mDolphin has been successfully used in mobile communication device.

Feynman Software provides mDolphin V2.0 Release product for commercial users. mDolphin V2.0 is divided into different products according to the operating systems, please see Table 1.1.

Table 1.1 mDolphin products

Products	OS
mDolphin V2.0 for Linux/uClinux	Linux/uClinux
mDolphin V2.0 for eCos	eCos

For the detailed description about mDolphin features, please refer to *mDolphin Technology Whitepaper* and *mDolphin Datasheet*.

## 1.2 Documents for mDolphin V2.0

In the directory **docs/** of mDolphin V2.0 CD-ROM, you can find this manual in PDF format. Besides these files, there are the following documents (in PDF format) in the above directory:

- *mDolphin Programming Guide*. This guide describes in detail the foundation knowledge of mDolphin in developing embedded application software, the APIs of mDolphin V2.0 and a simple example.
- *mDolphin Technology Whitepaper*. This document describes the definition of mDolphin, the features of mDolphin and the system requirements.

- 
- *mDolphin Datasheet*. This paper describes in detail all features of mDolphin.

**README** file in the product CD-ROM root directory describes the file name of above documents.

### 1.3 mDolphin SDK Package and Samples

In the mDolphin V2.0 product CD\_ROM, there is a SDK package of mDolphin, which is specific to the version and operating system. The SDK package is in the directory of the product CD-ROM, and the decompressed package of mdolphin-sdk.tar.gz is listed as follows:

- **include**: mDolphin header files and MiniGUI header files.
- **lib**: cross-compiler libraries, including **libmdolphin**, **libcurl**, **libxml2**, **libssl**, **libcrypto** and **libxslt** etc. The components of target will different for different platforms. **libmdolphin** is the core library of mDolphin, the others are mDolphin dependent libraries.
- **examples**: TV/Phone/PC samples.

### 1.4 About this Manual

This manual mainly describes the product CD-ROM, the installing of mDolphin, the compiling of sample program and the functions of sample program.



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## 2 Installing of mDolphin

In this chapter we will take Linux i386 platform as an example to describe the installing of mDolphin in detail. At first, we will introduce the configuring of MiniGUI.

### 2.1 Configuring of MiniGUI

Besides the dependent libraries included in SDK package, you need install libminigui by yourself. About how to install MiniGUI, you can refer to documents of MiniGUI. This chapter mainly introduces how to configure MiniGUI for mDolphin. At first, mDolphin must run on MiniGUI 2.0.4 version or above. Secondly, UTF-16 character encoding is used by mDolphin, so MiniGUI should support the translating character map from other character set to UNICODE character set and UTF-16 character encoding. At present, UTF-16 character encoding is only supported by qpf (Qt Prerendered Font) and ttf (True Type Font). So, when you configure MiniGUI, you can only select qpf font or ttf font. For more information about MiniGUI compiling configuration options, please refer to MiniGUI User Manual.

The Unicode configuring option is **-enable-unicodesupport**, and the qpf configuring option is **-enable-qpfsupport** in MiniGUI compiling configuration options. If you want to use qpf font, you can execute command as follows:

```
user$ ./configure --enable-qpfsupport --enable-unicodesupport
```

If you select ttf font, you can execute command as follows:

```
user$ ./configure --enable-ttfsupport --enable-unicodesupport
```

Besides setting compiling configuration options, you also need to modify the configuration file (**MiniGUI.cfg**) to support Unicode character encoding. If qpf font is used, you should modify the section qpf in order to add support for UTF-8, UTF-16LE and UTF-16BE character encoding. Otherwise, you need to modify the section ttf. Following is an example:

```
...
[qpf]
font_number=1
name0=qpf-unifont-rrncnn-16-16-IS08859-1,IS08859-15,GB2312-0,GBK,BIG5,UTF-8,UTF-16LE,UTF-16BE
fontfile0=/usr/local/lib/minigui/res/font/unifont_160_50.qpf

[truetypefonts]
font_number=3
name0=ttf-arial-rrncnn-0-0-IS08859-1,UTF-8,UTF-16LE,UTF-16BE
fontfile0=/usr/local/lib/minigui/res/font/arial.ttf
name1=ttf-times-rrncnn-0-0-IS08859-1,UTF-8,UTF-16LE,UTF-16BE
fontfile1=/usr/local/lib/minigui/res/font/times.ttf
name2=ttf-pinball-rrncnn-0-0-IS08859-1,UTF-8,UTF-16LE,UTF-16BE
fontfile2=/usr/local/lib/minigui/res/font/pinball.ttf
...
```

If you want to browse Chinese Web pages with ttf font, you should add support for GB2312-0, GBK and BIG5 character encoding. And the corresponding font files also need to support Chinese.

Besides modifying the section qpf or the section ttf in MiniGUI.cfg, you also need to modify the section systemfont. Because character strings gotten by some callback functions of mDolphin (such as **CB\_SET\_TITLE**) are UTF-8 character encoding. If you want to set window caption with these strings, the section systemfont in **MiniGUI.cfg** needs to be modified. Make caption supports UTF-8 character encoding.

```
...
# The system fonts must be raw bitmap fonts
[systemfont]
font_number=6
...
font2=-Arial-rrncnn-*-16-UTF-8
...

caption=2
...
```

For more information about MiniGUI configuration file, please refer to *MiniGUI User Manual*.

## 2.2 Installing of mDolphin

After finish installing MiniGUI, you can install mDolphin. If you execute the command as the following:

```
user$ sudo tar xzvf mdolphin-sdk.tar.gz -C /
```

---

You can install mDolphin header files, mDolphin library and other dependent libraries to the directory `/usr/local/include/` and the directory `/usr/local/lib/`.

## 2.3 Compiling of Samples

After finishing the installing of mDolphin, you can compile three sample programs in CD-ROM. At first, you should extract `mdolphin-(pc \ mobile or tv).tar.gz` and change to the corresponding directory. You can execute command as follows:

```
user$ cd examples
```

Then you can execute command to compile the program.

```
user/examples$ make
```

Then, an executing file `mdolphin` has been created. At last, you can startup the executing file.

```
user/examples$ ./mdolphin
```

If you see the interface the same as the figure 2.1 that verifies your mDolphin can run properly.

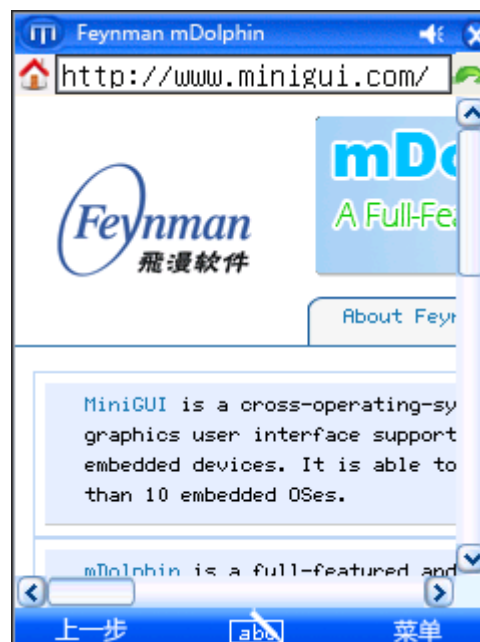


Figure 2.1 (a) mDolphin for mobile



Figure 2.1 (b) mDolphin for IPTV



Figure 2.1 (c) mDolphin for PC

Figure 2.1 mDolphin samples

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## 3 Sample Use

### 3.1 Introduction to Samples

In order to verify that mDolphin can be customized, and benefit users to do second development, samples for different fields are provided for users by mDolphin V2.0. Referring to these samples, users can develop applications with their distinguishing characteristic quickly.

- Sample for PC

The interface of this sample is the same as the interfaces of most PC browsers. The interface consists of caption bar, menu, tool bar, location bar and display area. Caption bar is used to display the title of the visiting Web page. Location bar is used to display the current visiting URL or receive the manual inputting URL. Tool bar is used to quick navigate, including five navigation buttons: Back, Forward, Reload, Stop and Home. Figure 2.1 (c) illustrates the interface.

- Sample for Mobile

This sample is mainly developed for mobile applications. There is a compact interface and convenience operations in this sample. The interface consists of tool bar, location bar, menu and display area. Tool bar can be used for quick navigation, including Back, Reload and Home three normal navigation buttons. Display area holds main screen for browsing convenience. And menu consists of HomePage, Back, Reload, View, TextSize and Character Encoding six menu items. Figure 2.1 (a) illustrates the interface.

- Sample for IPTV

This sample is mainly developed for IPTV applications. Because IPTV equipments can only be operated by control, the interface just consists of display area. The corresponding functions are implemented by key-press. Figure 2.1 (b) illustrates the interface. Table 3.1 lists all key-press functions.

Table 3.1 mDolphin IPTV key-press functions

Key	Function
F1	Reloading
F2	Going backward
F3	Going forward
F5	Opening home page
Right cursor	Link going forward
Left cursor	Link going backward
Ctrl ++	Increasing text size
Ctrl +-	Decreasing text size

---

Ctrl +0	Setting default text size
Esc	Stopping

According to different requirements, users can implement different functions by setting different keys.

## 3.2 Introduction to Functions

Following is the introduction to the functions of samples.

### 3.2.1 URL Manual Inputting

Sample for PC and sample for mobile can support URL command inputting and URL manual inputting. Users can input expected URL in location bar, and press **Enter** or **OK** to visit the corresponding Web pages.

### 3.2.2 Navigation

All samples support navigation. For example, when you click menu item **Go** in sample for PC, there are five options you can select.

- **Back**: Going to the previous page in history.
- **Forward**: Going to the next page in history.
- **Reload**: Reloading the current page.
- **Stop**: Stopping the loading.
- **Home**: Going to the home page.

### 3.2.3 Display Setting

Different display modes are mainly designed for small screen device. Take sample for mobile as an example. When you click **menu->view item**, there are three display modes you can select: Small View, Normal View and Virtual View.

- **Virtual View**: namely Page OverView. Enable users to browse Web pages in their original format quickly and easily on the small screen of a mobile device. A red frame encloses the portion of the page to which the user has navigated. When the user presses the **OK/Enter** key, mDolphin zooms in on that portion of the page. Figure 3.1 (c) illustrates Virtual View.
- **Normal View**: namely True Web Layout. Display Web pages in their original layout, as the content developer designed them for viewing on a PC screen. Figure 3.1 (b) illustrates Normal View.
- **Small View**: namely Smart-Fit Rendering. Intelligently render Web pages to fit the

screen width of handsets, eliminating the need for horizontal scrolling. Figure 3.1 (a) illustrates Small View.

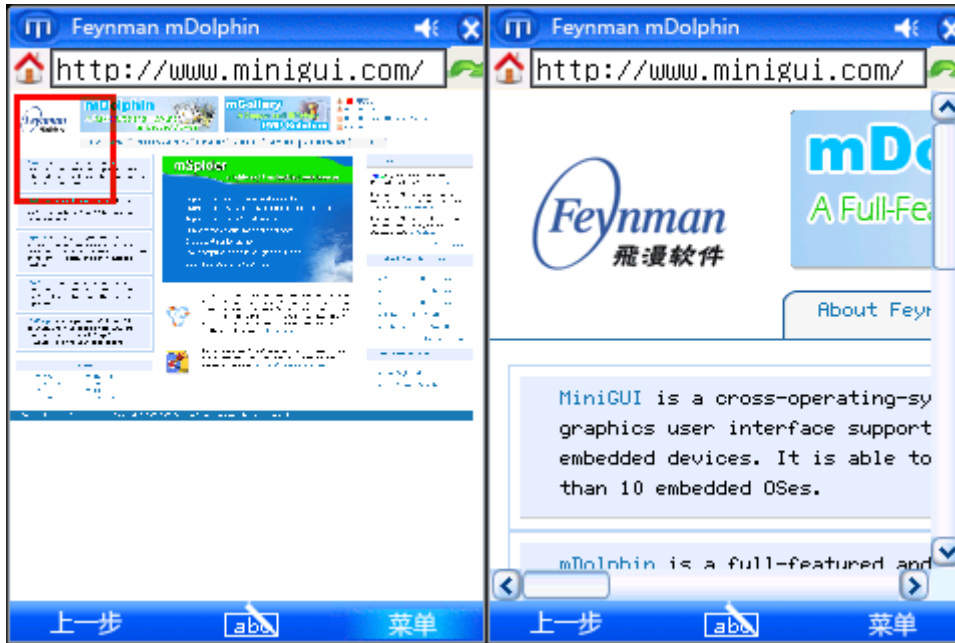


Figure 3.1 (a) Virtual View

Figure 3.1 (b) Normal View



Figure 3.1 (c) Small View

Figure 3.1 Different display modes

### 3.2.4 Text Zooming Setting

All samples support text zooming. Take sample for mobile as an example. When you click **view->TextSize** menu, there are Increase, Decrease and Normal three menu items you can select.

- **Increase**: increasing text size.
- **Decrease**: decreasing text size.
- **Normal**: setting text size with default value.

You can modify the text size by clicking the menu item or pressing hot key. Figure 3.2 illustrates text zooming setting.

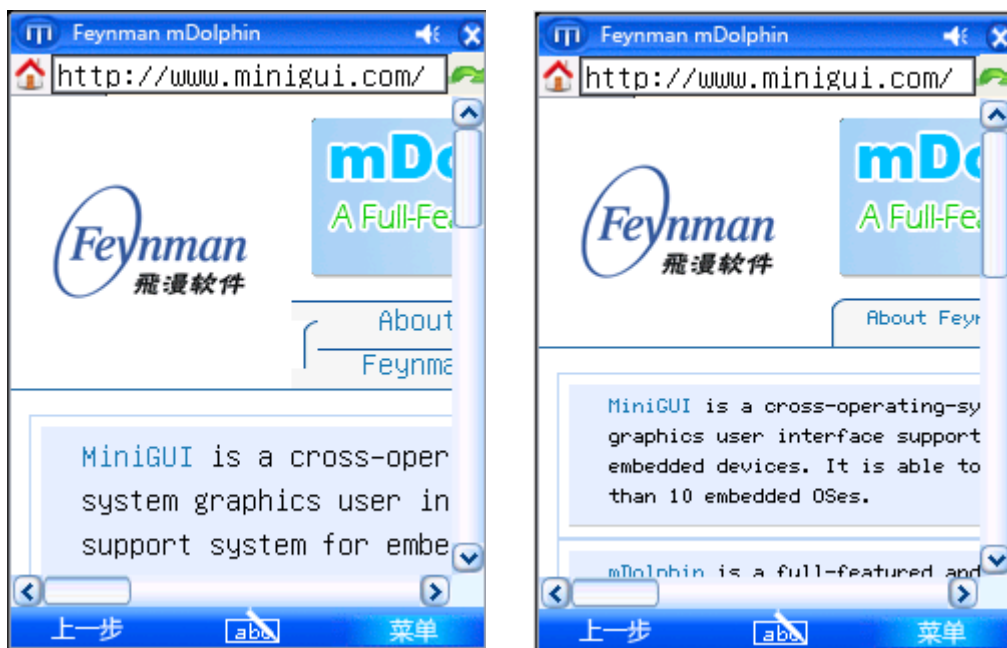


Figure 3.2 (a) Increase

Figure 3.2 (b) Normal

Figure 3.2 Text zooming setting

### 3.2.5 Character Encoding Setting

When you click **menu->Character Encoding** menu item of the sample for mobile, there are five items you can select:

- **Auto-Detect**: auto-detect character encoding setting.
- **Western (ISO-8859-1)**: ISO-8859-1 character encoding setting.
- **Unicode (UTF-8)**: UTF-8 character encoding setting.
- **Chinese Simplified (GB2312)**: GB2312 character encoding setting.
- **Chinese Traditional (BIG5)**: BIG5 character encoding setting.



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### 3.2.6 Local File Opening

When you click **File->open File** item of the sample for PC, the opening file dialog box will appear. Figure 3.3 illustrates the dialog box. At first, you should specify the directory where your file is located, and select the specified file, then press **OK** to open the local file. If you press **cancel** button, this operation will be aborted.

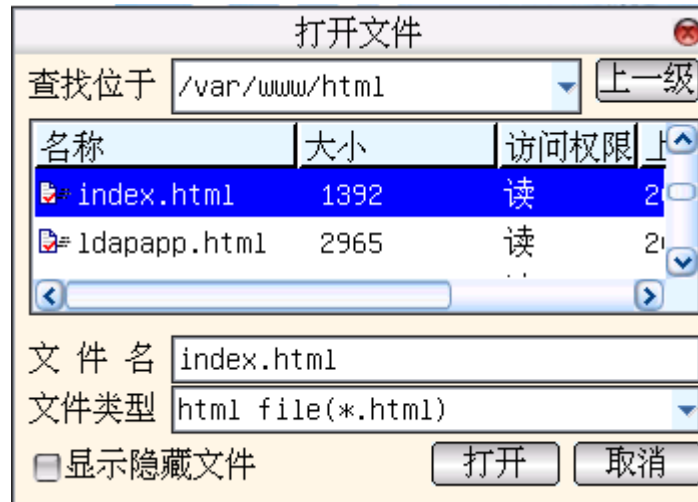


Figure 3.3 The opening file dialog

### 3.2.7 Proxy Setting

When you click **Edit->Proxy Setting** menu item of the sample for PC, the setting dialog box will appear. Figure 3.4 illustrates the Http Proxy setting dialog box. The Http Proxy inputting box holds the dotted IP address. The Port inputting box holds the proxy port number. The User Name inputting box holds user name. The Password inputting box holds the password. After finish inputting these information, you can press **OK** button to set proxy. You also can click **Cancel** button to abort proxy setting.

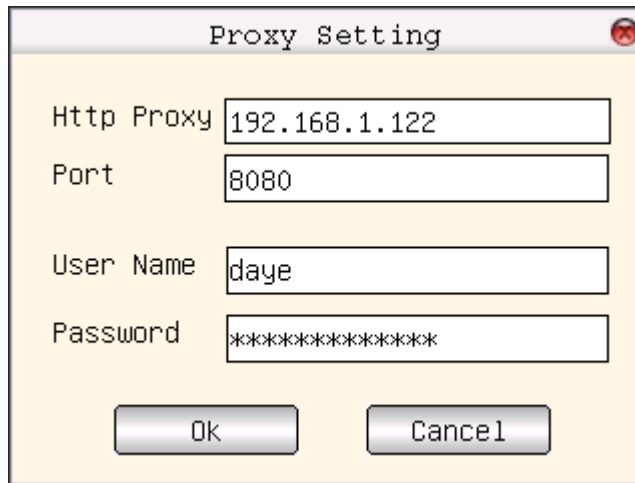


Figure 3.4 The Http Proxy setting dialog box

### 3.2.8 Information of mDolphin Version

When you Click **Help->About** menu item of the sample for PC, the mDolphin version information box will appear. Figure 3.5 illustrates the version information box.



Figure 3.5 The version information box

---

# Appendix A Frequent Ask Questions (FAQs)

## **A.1 Questions Relevant to mDolphin Application Fields**

Q1. What kinds of products that use mDolphin are successfully launched in market?

A1. At present, mDolphin can be used in mobile phone (3G phone, WiFi phone), IPTV, information terminal and IP-based device. Now, mDolphin has been successfully used in mobile communication device.

## **A.2 Questions Relevant to Portability**

Q2. What operating systems does MiniGUI support?

A2. By now, mDolphin can run on Linux/uClinux and eCos.

Q3. What are the requirements for mDolphin?

A3. With Linux as an example, the CPU and memory size typical used by mDolphin are as follows:

- 1) 200 MIPS CPU or higher.
- 2) 16MB RAM (Recommended: 32MB RAM or greater).
- 3) 8MB Static Memory (Recommended: 16MB).

For example, when visit <http://www.sina.com.cn>, <http://www.yahoo.com.cn>, <http://www.sohu.com>, memory consumptions which depending on complexity of content viewed are respectively 24MB, 12MB and 24MB.

Q4. Which resolution of screen can mDolphin run properly?

A4. In theory, the running of mDolphin is not influenced by the resolution of screen.

---

### A.3 Runtime Questions

Q5. Which version of MiniGUI is mDolphin required?

A5. At present, mDolphin can run on MiniGUI version 2.0.4 or above.

Q6. Why does the font shown in window caption display in wrong format, when you run mDolphin samples?

A6. Because character strings gotten by **CB\_SET\_TITLE** callback function are UTF-8 character encoding. You should modify the section `systemfont` in configuration file (**MiniGUI.cfg**). Make caption support UTF-8 character encoding.

Q7. Why does the font of Web pages display in wrong format, when you browse Web pages?

A7. Some reasons may cause this error. One reason is that qpf font or ttf font doesn't support UTF-8, UTF-16LE and UTF-16BE character encoding. You can modify section `qpf` or section `ttf` in MiniGUI configuration file. Another reason is that character encoding setting is wrong. You can set auto-detect character encoding.