OLED Development Kit

Quick Start Guide

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16301 Blue Ridge Road, Missouri City, Texas 77489 USA Telephone: 1-713-283-9970 Fax: 1-281-416-2806 E-mail: info@bipom.com Web: <u>www.bipom.com</u> © 2007 by BiPOM Electronics. All rights reserved.

OLED Development Kit Quick Start Guide. No part of this work may be reproduced in any manner without written permission of BiPOM Electronics. Pictiva and OSRAM are registered trademarks of OSRAM. All trademarked names in this manual are the property of respective owners. Thank you for your purchase of OLED Development Kit. The purpose of this kit is the quick start of your development with OLED Displays.

You can quickly download the examples that are included in this kit to the Flash memory inside the ARM microcontroller using the RS232 Serial port of your PC. These examples demonstrate how to initialize and program the OLED display using C language.

Examples are provided for the most popular ARM C Compilers such as GNU C (gcc). GNU C is adequate for many applications and it is free. Our kit includes a license for Micro-IDE, which is our graphical Integrated Development Environment (IDE) for GNU C and other tools.

Bipom OLED development kit contains :

- MINI-MAX/ARM-C board
- OLED-1 board (already mounted on MINI-MAX/ARM-C using plastic standoffs)
- Serial cable (Null Modem)
- Power Supply

The following can be downloaded from BiPOM Web site free of charge:

- OLED-1 manual
- MINI-MAX/ARM-C manual
- Graphics Library from BiPOM Electronics (sources and binaries)
- GNUARM Development System
- IAR Demo
- Micro-IDE license
- Code examples for GNUARM compiler

Setting Up:

1. Download and install the latest release (FREE) of ARM7 development system from BiPOM web <u>http://www.bipom.com/devsys/arm7dev.zip</u>

Unpack all files and run setup.exe. A welcome screen will appear. Click Next.



License Agreement window will appear. Click Yes if you agree to the terms of the license agreement.



You should enter all three fields of User Information. This development system is FREE, so you can enter any text in Serial field . For example, enter "1". Click Next.

User Information		
	Please ente number as i	er your name and company name below. Leave serial is for free using Micro-IDE.
	Name:	Igor Slepchenkov
	Company:	BiPOM Electronics
	Serial:	1
		< Back Next> Lancel

You will be asked to enter the destination location. It is recommended to use the default location although you can install the software in a different folder and/or on a different drive. Click Next.

Choose Destination L	ocation 🛛 🔀
S T T f d S	Setup will install Micro-IDE in the following folder. To install to this folder, click Next. To install to a different folder, click Browse and select another folder. You can choose not to install Micro-IDE by clicking Cancel to exit Setup.
æ 9	Destination Folder C:\bipom\devtools Browse
	< Back Next > Cancel

Select the Program Folder. Click Next.

Select Program Folder	ſ	
	Setup will add program icons to the Program Folder listed t You may type a new folder name, or select one from the e Folders list. Click Next to continue. Program Folders:	elow. kisting
	Micro-IDE	_
	Existing Folders:	
	Accessories Administrative Tools Anti Tracks Juniper Networks Micro-IDE	
	Microsoft .NET Framework SDK v2.0 Microsoft Developer Network Microsoft Visual Studio .NET 2003 Microsoft Visual Studio 2005	~
	< Back Next > Car	icel

Click Finish on the last window. You can start Micro-IDE, but you still don't have compiler.

Setup Complete	
	Setup has finished installing Micro-IDE on your computer.
	Setup can launch the Read Me file and Micro-IDE. Choose the options you want below.
	I would like to launch Micro-IDE.
	Click Finish to complete Setup.
	< Back Finish

2. Download and install GNU ARM7 GCC compiler (<u>http://www.gnuarm.org</u>). You can download GNU ARM compiler from its original site or from BiPOM site.

http://www.gnuarm.org/bu-2.17 gcc-4.1.1-c-c++ nl-1.14.0 gi-6.5.exe http://www.bipom.com/applications/gnuarm7gcc_4.1.1.exe_ - new 4.1.1 version

Run the downloaded file.

Click Next on first window.

Setup - GNUARM	
Setup - GNUARM	Welcome to the GNUARM Setup Wizard This will install GNUARM 4.1.1 on your computer. It is recommended that you close all other applications before continuing. Click Next to continue, or Cancel to exit Setup.
	Next > Cancel

License Agreement window will appear. Click "I accept the agreement" if you agree to the terms of the license agreement and click Next.

🚟 Setup - GNUARM	
License Agreement Please read the following important information before continuing.	R
Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.	
GNU GENERAL PUBLIC LICENSE Version 2, June 1991	
Copyright (C) 1989, 1991 Free Software Foundation, Inc. 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.	
Preamble	
The licenses for most software are designed to take away your	~
 I accept the agreement I do not accept the agreement 	
< Back Next >	Cancel

Next window asks you for a destination folder. Use the default value (C:\Program Files\GNUARM). ARM7 development system assumes that the GNUARM compiler will be located in this folder. If you install the GNUARM compiler in any other folder, you should change toolkit directory in Toolkit Configuration application. Click Next.

🚟 Setup - GNUARM 📃 🗆 🔯
Select Destination Location Where should GNUARM be installed?
Setup will install GNUARM into the following folder.
To continue, click Next. If you would like to select a different folder, click Browse.
C:\Program Files\GNUARM Browse
At least 105.2 MB of free disk space is required.
< Back Next > Cancel

Select Components window appears. Please select Full Installation from drop-down box and click Next.

🕮 Setup - GNUARM		
Select Components Which components should be installed?	R	
Select the components you want to install; clear the components you install. Click Next when you are ready to continue.	ou do not want to	
Full installation	×	
 Little Endian LE Libraries No Fast Multiplier ARM-THUMB Interworking THUMB THUMB Libraries ARM-THUMB Interworking 	92.7 MB 11.6 MB 11.7 MB 11.7 MB 23.3 MB 11.6 MB 11.7 MB	
Floating Point Unit	34.7 MB 11.6 MB 💌	
Current selection requires at least 294.7 MB of disk space.		
< Back N	ext > Cancel	

On the next window you can enter Start Menu Folder. Leave this field as is and click Next.

🚟 Setup - GNUARM 📃 🗆 🔀
Select Start Menu Folder Where should Setup place the program's shortcuts?
Setup will create the program's shortcuts in the following Start Menu folder.
To continue, click Next. If you would like to select a different folder, click Browse.
GNUARM Browse
Don't create a Start Menu folder
< Back Next > Cancel

If you don't have Cygwin DLLs installed, you should check Cygwin options, when Select Additional Task window appears.

🚟 Setup - GNUARM 📃 🗆 🔀
Select Additional Tasks Which additional tasks should be performed?
Select the additional tasks you would like Setup to perform while installing GNUARM, then click Next.
Additional icons:
Create a desktop icon
Cygwin options:
Install Cygwin DLLs (ONLY in case you don't have or don't use Cygwin)
< Back Next > Cancel

Click Install on "Ready to Install" window. The installation process will be started.

🚟 Setup - GNUARM	_ 🗆 🛛
Ready to Install Setup is now ready to begin installing GNUARM on your computer.	R
Click Install to continue with the installation, or click Back if you want to review or change any settings.	
Destination location: C:\Program Files\GNUARM	^
Setup type: Full installation	
Selected components: Little Endian LE Libraries No Fast Multiplier ARM-THUMB Interworking THUMB THUMB	>
	<u>></u>
< Back Install	Cancel

Click Finish on the last window.



Now you have all the software you need to build ARM applications and download them to the kit.

You should now assemble the hardware.

3. Connect the one end of the serial cable to the serial cable connector coming out of MINI-MAX/ARM-C



4. Connect the other end of the serial cable to an available RS232 Serial Port on your PC (such as COM1)

NOTE: If your PC does not have a serial port, you can use a USB-Serial converter. We offer <u>CBL-USB-COM-1</u> which is a USB-Serial converter that is known to work with OLED Development Kit

5. Connect the power plug of the power adapter to the power jack on the MINI-MAX/ARM-C:

IMPORTANT NOTE: The inner pin of the supply connector is positive and the outer ring is negative. WARNING: Correct polarity should be observed if you want to use an adapter or power supply other than the one that is provided with the kit.; otherwise MINI-MAX/ARM will be permanently damaged.



This is the board with connected serial cable and power cable.



6. Please plug an OLED-1 peripheral board into a 20-pin expansion connector of Mini-Max/ARM-C board.



7. Connect the power adapter to the wall outlet.

8. Start Micro-IDE. You can start it from Windows Start menu: Start → All Programs → Micro-IDE → Micro-IDE

9. Click **Open Existing project** on Welcome dialog when Micro-IDE starts. Go to "c:\bipom\devtools\GCC\LPC2000\examples\GL\Oled1\OLED_DEMO_GL\\" and doubleclick **OLED_Demo.prj**. You will see all the project files on Micro-IDE windows.



10. Press "Build All" icon button to generate HELLO.HEX file

🛄 Micro-IDE - [OLED_Demo	o.c] Z
📄 File Edit View Build Pro	oject Debug Tools Window Help
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🖪 🗛 🗉 🔤 🐺 🧱	E E E E 🖑 🖓 🖓 P P 🗣 🐜 🗣 🕷 🖃
Workspace	· · · · · · · · · · · · · · · · · · ·
□ - IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	; This module is presented here only to serve as a sample ; LPC2138 program development. ; BiPOM Electronics provides this module as is and
demo_fn.c	does not guarantee its functionality or suitability for Please e-mail any questions and suggestions to tech@bip
	: Module: OledQemo.C
	Revision: 1.01 Build All button
	; Description: OLED-1
	; Target board: Mini-Max/ARM
	This program is written using GNU ARM Compiler (www.gn
	, ************************************
	/* Standard includes. */
	#include <stdio.h> #include <stdlib h=""></stdlib></stdio.h>
	<pre>#include <string.h> /* LibBipom includes */ #include <bipomtypes.h> </bipomtypes.h></string.h></pre>
Ready	Ln 1, Col 1 Disconnected

You should see the following messages in Output window. This means that the program is built and the HEX file is generated.



11. Configure MINI-MAX/ARM7 Loader (COM port, parity, baud rate and etc.) under **Tools** \rightarrow **Options** menu. Click on **Loader** tab when Options dialog window appears.

Micro-IDE - [OLED_Demo.c]			
File Edit View Build Options Image: Second Secon	- 8 ×		
☐ demo_fn.h ☐ demo_fn.c ☐ demo_fn.c ☐ C 7 6 B C C C	s and tability for to tech@bip		
K Files Command String:	×		
Compiling C:\bipom\devto Compiling C:\bipom\devto Linking OLED_Demo.out d GNU ld version 2.17 Generating 'OLED_Demo.t			
Build Debug Find in F			
Ready In 1, Col 1 Disconnected			

12. Press "Download" icon button. This downloads the generated HEX file to the board.

Micro-IDE - [OLED_Den]	_ 🗆 🗙
Tile Edit View Build P	t Debug Tools Window Help	_ 8 ×
1 D 🚅 🖬 🕼 🕺 🗛	· 그 오 · 목 · 왕 💼 🖕 😨 · 🗛 중 김 🖣	
Workspace A X	·	*****
🖃 🗐 'OLED_Demo' Proje	; This module is presented here only to serve as a s	ample
OLED_Demo.c	; LPC2138 program development.	
demo_m.c	; BIFUM Electronics provides this module as is and : does not guarantee its functionality or suitabilit	v for [∎]
	; Please e-mail any questions and suggestions to tec	h@bip
	; Module: UledDema.C	
	; Revision: 1.01	
	; ; Description: OLED-1 DEMO	
	; Towards because Minds Man (2004	
	; larget board: Mini-Max/ARM	
	; This program is written using GNU ARM Compiler (w	ww.gn
	; ************************************	****
	/* Standard includes. */	
	#include <stdio.h></stdio.h>	
	<pre>#include <stallp.n> #include <string.h></string.h></stallp.n></pre>	
<	/* LibBipom includes */	_
Terrer Files	#include <bipomtypes.h></bipomtypes.h>	×
Ready	Ln 1, Col 1 Disconnected	

Micro-IDE - [OLED_Demo.c] - O X File Edit View Build Project Debug Tools Window Help - 8 × D 🚅 🖬 🕼 🕺 🖴 📾 🕰 🕰 🛍 🛍 🔴 🖉 🛤 🖓 🐄 n 🔁 🔜 🐺 🛃 🗉 💷 🗄 🕐 🕐 🖓 🗣 🚆 🔜 🔜 🔜 🔜 Workspace -----_____× ** ^ ÷ 🖃 🛅 'OLED_Demo' Proje This module is presented here only to serve as a sample 2 OLED_Demo.c ş LPC2138 program development. demo_fn.h BiPOM Electronics provides this module as is and ÷ demo_fn.c does not guarantee its functionality or suitability for ÷ Please e-mail any questions and suggestions to tech@bip 2 < ÷ Y Madulas 01 ad Dama Files 0 < > 1111 × Unlocking... ^ Unlock OK Downloading 'OLED_Demo.hex'... Success writing 4096 bytes, 00000000-00000FFF Success writing 4096 bytes, 00001000-00001FFF Success writing 4096 bytes, 00002000-00002FFF Success writing 4096 bytes, 00003000-00003FFF Success writing 4096 bytes, 00004000-00004FFF Success writing 4096 bytes, 00005000-00005FFF Success writing 4096 bytes, 00006000-00006FFF Success writing 4096 bytes, 00007000-00007FFF Success writing 4096 bytes, 00008000-00008FFF Success writing 4096 bytes, 00009000-00009FFF Download is completed < > 1111 Build Debug Find in Files 1 Find in Files 2 Loader Ready Ln 1, Col 1 Disconnected

You should see the following output in Output window of Micro-IDE.

13. Change "Set Mode" icon button to green state.

Micro-IDE - [OLED_Dem	o.c] _ 🗆 🔀
📄 File Edit View Build Pr	oject Debug Tools Window Help 📃 🗗 🗙
🗋 D 🚅 🖬 🕼 🐇 🖬 I	a 🕰 😂 🕮 🗈 🔴 😨 🛤 🖇 🍇 🐘
j 🔂 🗉 🖾 🖗 👧	E E E E 🕙 79 77 77 54 % 😓 % 🖆 💻 🗖
Workspace 🛋 🗶	×*************************************
GLED_Demo' Proje OLED_Demo.c demo_fn.h demo_fn.c	<pre>; This module is presented here only to serve as a sample ; LPC2138 program development. ; BiPOM Electronics provides this module as is and ; does not guarantee its functionality or suitability for ; Please e-mail any questions and suggestions to tech@bip</pre>
	; Module: OledDemo.C
	Revision: 1.01 "SetMode" button
	Description: OLED-1 DEMO
	: Target board: Mini-Max/ARM
	: This program is written using GNU ARM Compiler (www.gn
	, ************************************
	<pre>/* Standard includes. */ #include <stdio.h> #include <stdlib.h> #include <string.h> /* LibBipom includes */ #include <bipomtypes.h> </bipomtypes.h></string.h></stdlib.h></stdio.h></pre>
Files	
Ready	Ln 1, Col 1 Disconnected

15. If you did everything correctly you should see running GL DEMO program on your OLED display. Then you can see several screenshots of this DEMO.

The First screen of DEMO:



The screen from Lines DEMO:



The screen from Rectangles DEMO:

