

Dear customer

LAPIS Semiconductor Co., Ltd. ("LAPIS Semiconductor"), on the 1<sup>st</sup> day of October, 2020, implemented the incorporation-type company split (shinsetsu-bunkatsu) in which LAPIS established a new company, LAPIS Technology Co., Ltd. ("LAPIS Technology") and LAPIS Technology succeeded LAPIS Semiconductor's LSI business.

Therefore, all references to "LAPIS Semiconductor Co., Ltd.", "LAPIS Semiconductor" and/or "LAPIS" in this document shall be replaced with "LAPIS Technology Co., Ltd."

Furthermore, there are no changes to the documents relating to our products other than the company name, the company trademark, logo, etc.

Thank you for your understanding.

LAPIS Technology Co., Ltd.  
October 1, 2020

**Starter Kit for Ultra Low Power Microcontroller  
ML62Q1267A Capacitive Switch Starter Kit Start Guide**

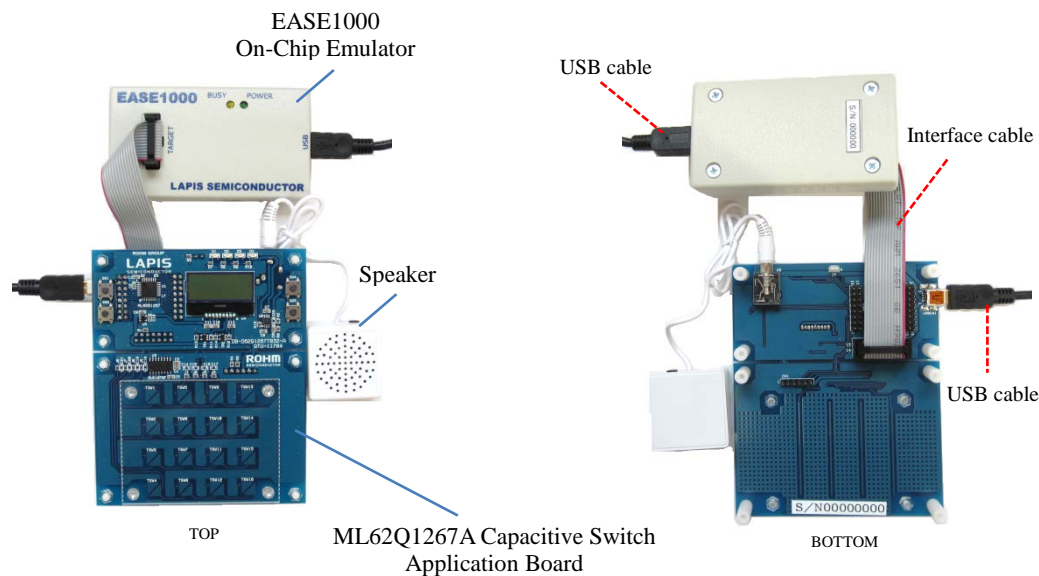


Figure 1 ML62Q1267A Capacitive Switch Starter Kit hardware configuration

**1. Installation**

Operating environment: Windows 7\*, Windows 8/8.1\*, Windows 10\* \* 32-bit (x86) and 64-bit (x64) version.

- Please log on with an administrator account.
- When U8/U16 Development Tools are existed in your PC, at the beginning, uninstall these programs.  
For uninstallation, refer to step #14.

1-1. Installing the U8/U16 Development Tools software, the Device Information Files and the EASE1000 USB drivers.  
Insert the U8/U16 Development Tools Setup CD into the CD-ROM drive of your PC.  
Run EN\_Setup\_DevTools.BAT located in root directory of the Setup CD.  
When this batch file is executed, the U8/U16 Development Tools software's installer, the Device Information File's installer and the EASE1000 USB driver's installer will be invoked in sequence.

- (1) Installing the U8/U16 Development Tools software
  - Agree to "SOFTWARE LICENSE AGREEMENT for SOFTWARE DEVELOPMENT TOOLS".
  - Do not change option settings.
  - Click the "Finish" button when you can see the message "The InstallShield Wizard has successfully installed LAPIS semiconductor U8/U16 Development Tools."
- (2) Installing the Device Information Files
  - Agree to "SOFTWARE LICENSE AGREEMENT for SOFTWARE DEVELOPMENT TOOLS".
  - Do not change option settings.
  - Click the "Finish" button when you can see the message "The InstallShield Wizard has successfully installed LAPIS semiconductor U8/U16 Device Information Files."
- (3) Installing the EASE1000 USB drivers
  - Agree to "SOFTWARE LICENSE AGREEMENT for SOFTWARE DEVELOPMENT TOOLS".
  - Do not change option settings.
  - Click the "OK" button when you can see the message "Please attach your device to this computer any time after the installation has finished"
  - Click the "Finish" button when you can see the message "The InstallShield Wizard has successfully installed LAPIS semiconductor U8/U16 Development Tools Driver."

- Please be sure to read the U8/U16 Development Tools Release Note.
- After that, close this Release Note next.

After that, installation has finished.

Eject the U8/U16 Development Tools Setup CD from the CD-ROM drive of your PC.

**2. Connection**

- 2-1. As shown in figure 1, connect the ML62Q1267A Capacitive Switch Application Board to the EASE1000 On-Chip Emulator (hereinafter "EASE1000").
- 2-2. Connect the EASE1000 to PC using the USB cable.  
If you have first connected EASE1000 to PC, the messages of the following Figure 2 and Figure 3 are displayed in sequence.

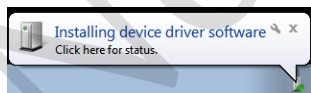


Figure 2 The USB driver installation message 1

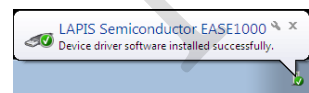


Figure 3 The USB driver installation message 2

- 2-3. Connect the ML62Q1267A Capacitive Switch Application Board to PC using the USB cable.
- 2-4. Connect the speaker to the ML62Q1267A Capacitive Switch Application Board.

**3. Launch of the DTU8 debugger**

- 3-1. Launch the DTU8 Debugger from the Start Menu (Start Menu > All Programs > U8 Tools > nX-U8 > DTU8 Debugger).

- 3-2. In the "Target Settings" dialog box: Select "ML621267A" from LSI list of the "ML62Q1000" Category / "ML62Q1200" Group of "Target chip", and select "On Chip Emulator" from the "Target ICE" list. And Click the <OK> button.

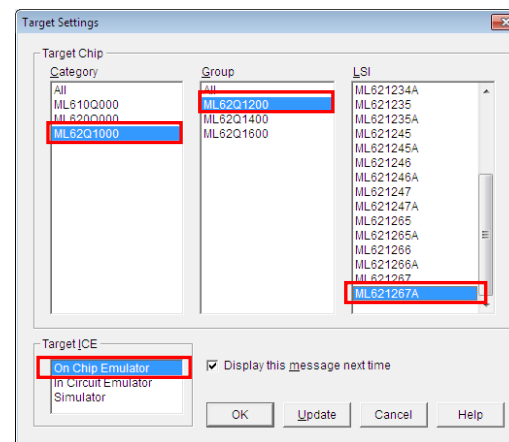


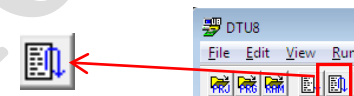
Figure 4 Select the target chip and the target ICE

- 3-3. Click the <OK> button when a confirmation dialog box will be displayed that asks the user whether to start debugging. The DTU8 debugger will start.

**4. Running the program written in the flash memory**

The ML62Q1267A DTMF Tone Generator Sample Software (hereinafter "DTMF Sample Software") is being written in the flash memory at the time of shipment.

- 4-1. Click the <Reset and Restart> button of the DTU8 debugger



The DTMF Sample Software will run, display "LAPIS" on the LCD and sound a beep.

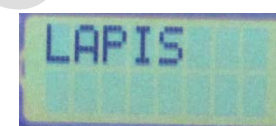


Figure 5 Display of the LCD after clicking the <Reset and Restart> button of the DTU8 debugger

- 4-2. Touch a capacitive switch key of the ML62Q1267A Capacitive Switch Application Board.  
The DTMF Sample Software sounds a DTMF tone corresponding to a touched capacitive switch key and displays a character on the LCD.



Figure 6 Display example of the LCD after touching a capacitive switch key of the ML62Q1267A Capacitive Switch Application Board.

**5. Stop the DTMF Sample Software**

- 5-1. Click the <Stop > button of the DTU8 debugger.  
The DTMF Sample Software will stop.



**6. Shut down**

- 6-1. Choose the File menu Exit menu command of the DTU8 debugger.
- 6-2. Click the <OK> button when a confirmation dialog box will be displayed that asks the user whether to terminate DTU8 debugger.
- 6-3. Click the <No> button when a confirmation dialog box will be displayed that asks the user whether to save current settings to project file.

**7. Setting the DTU8 Debugger**

Set up a privilege level to the DTU8 Debugger.

- 7-1. Display "C:\Program Files (x86)\U8dev\Bin" folder (on 64bit windows) or "C:\Program Files\U8dev\Bin" folder (on 32bit windows). Then select [Property] on the context menu on DTU8 ( or DTU8.exe).

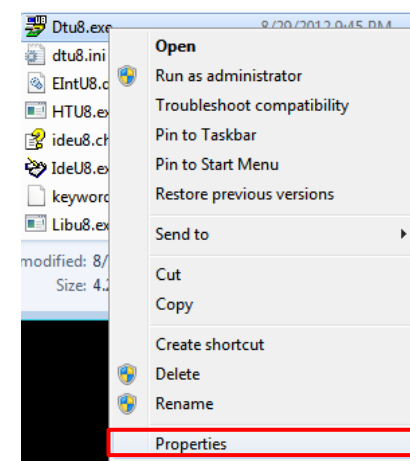


Figure 7 Select [Property] on the context menu on DTU8.exe..

- 7-2. Check [Run this program as an administrator] of [Privilege Level] and click <OK >.

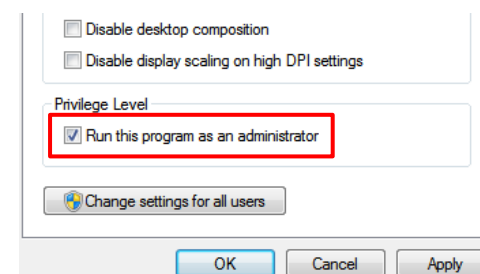


Figure 8 Check [Run this program as an administrator].

## 8. Installing the DTMF Sample Software

- 8-1. Insert the ML62Q1267A Capacitive Switch Starter Kit CD into the CD-ROM drive of your PC.
- 8-2. Copy the ML62Q1267A\_CAP\_Switch\_StarterKit.zip from CD to desktop of your PC.

• Please copy the ML62Q1267A\_CAP\_Switch\_StarterKit.zip on the folder which contains using half-width characters except space.

Eject ML62Q1267A Capacitive Switch Starter Kit CD from the CD-ROM drive of your PC.

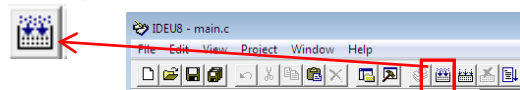
## 9. Open of the DTMF Sample Software project and build

- 9-1. Launch the Integrated Development Environment "IDEU8" (hereinafter "IDEU8") from the Start Menu (Start Menu > All Programs > U8 Tools > nX-U8 > IDEU8 GUI Environment).
- 9-2. Choose the File menu Open... menu command of the IDEU8.
- 9-3. In the "Open File" dialog box: Select the DtmfSample\_ML62Q1267A.PID in the "ML62Q1267A\_CAP\_Switch\_StarterKit \ Software \ 01\_ML62Q1267A\_Dtmf\_SampleSoftware\_vXXX\* \ Software \ examples \ DtmfSample" folder and click <Open>.

\*"XXX" depends on the version of the DTMF Sample Software.

The project file of the DTMF Sample Software will be opened.

- 9-4. Click the <Build> button to compile, assemble and link the DTMF Sample Software.



You will be able to see the message "Finished building."

## 10. Launch of the DTU8 debugger and loading the DTMF Sample Software

- 10-1. Click the <Debug> button to launch the DTU8 debugger



- 10-2. In the "Target Settings" dialog box: Select "ML621267A" from LSI list of the "ML62Q1000" Category / "ML62Q1200" Group of "Target chip", and select "On Chip Emulator" from the "Target ICE" list. And Click the <OK> button.

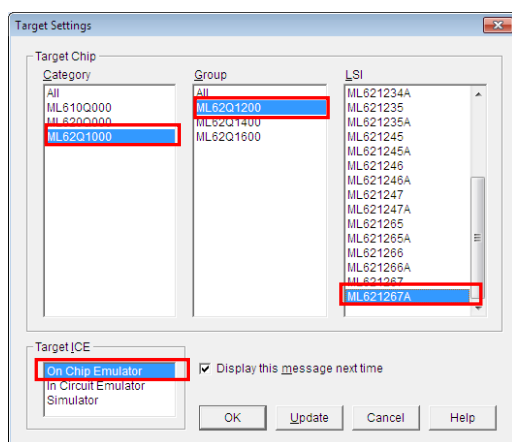


Figure 9 Select the target chip and the target ICE

- 10-3. Click the <OK> button when a confirmation dialog box will be displayed that asks the user whether to start debugging. The DTU8 debugger will start and load the DTMF Sample Software.

## 11. Run of the DTMF Sample Software

- 11-1. Click the <Reset and Restart> button of the DTU8 debugger



The DTMF Sample Software will run, display "LAPIS" on the LCD and sound a beep.

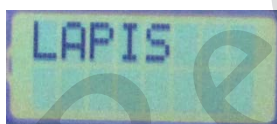


Figure 10 Display of the LCD after clicking the <Reset and Restart> button of the DTU8 debugger

- 11-2. Touch a capacitive switch key of the ML62Q1267A Capacitive Switch Application Board. The DTMF Sample Software sounds a DTMF tone corresponding to a touched capacitive switch key and displays a character on the LCD.

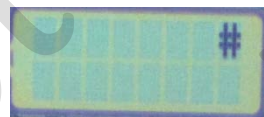


Figure 11 Display example of the LCD after touching a capacitive switch key of the ML62Q1267A Capacitive Switch Application Board.

## 12. Stop of the DTMF Sample Software

- 12-1. Click the <Stop> button of the DTU8 debugger.

The DTMF Sample Software will stop.



## 13. Shut down

- 13-1. Choose the File menu Exit menu command of the DTU8 debugger.
- 13-2. Click the <OK> button when a confirmation dialog box will be displayed that asks the user whether to terminate DTU8 debugger.
- 13-3. Click the <No> button when a confirmation dialog box will be displayed that asks the user whether to save current settings to project file.
- 13-4. Choose the File menu Exit IDEU8 menu command of the IDEU8
- 13-5. Click the <OK> button when a confirmation dialog box will be displayed that asks the user whether to stop IDEU8.
- 13-6. Disconnect the USB cable which is connected to the ML62Q1267A Capacitive Switch Application Board from your PC.
- 13-7. Disconnect the USB cable which is connected to the EASE1000 from your PC.

## 14. Uninstallation

- Uninstalling U8/U16 Development Tools Release 1.15.5 or later

In order to uninstall, you should select the following programs from "Add or Remove Programs" of Control Panel.

- U8/U16 Development Tools software : LAPIS Semiconductor U8/U16 Development Tools
- U8/U16 Device Information Files : LAPIS Semiconductor U8/U16 Device Information Files
- USB drivers : U8/U16 Development Tools Driver

- Uninstalling U8/U16 Development Tools Release 1.15.4 or earlier

In order to uninstall, you should select the following programs from "Add or Remove Programs" of Control Panel.

- U8/U16 Development Tools software : LAPIS Semiconductor U8/U16 Development Tools
- U8/U16 Device Information Files : LAPIS Semiconductor U8/U16 Device Information Files

## 15. The Software Development Support System

When you need the latest version of the U8/U16 Development Tools software and ML62Q1000 and the ML62Q1000 Series Reference Software, you can download the latest version from "LAPIS Semiconductor support site" (hereinafter "Support Site") is a special website that gives registered users.

Registration is required to access the site using an ID and Password.

Navigate to the support page by clicking on a link on LAPIS Semiconductor's home page or by entering the URL in the browser's address bar. Then click on the 'Register' link.

LAPIS Semiconductor support site URL

<https://www.lapis-semi.com/cgi-bin/MyLAPIS/regi/login.cgi>

\* In order to download the software such as the software development support system, you need to register the serial number of the EASE1000 at the time of registration.

At the time of registration, select "Microcontroller / speech Synthesis LSI", "EASE1000" and type "The serial number of EASE1000" as follows.

Category: Microcontroller / speech Synthesis LSI

Development/evaluation tool name: EASE1000

The serial number of development tool: The serial number of EASE1000