
ZL70251 Application Development Kit (ADK) Source Code Overview



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1 – Introduction

This document is for customers who purchase the ZL70251 Application Development Kit and request the source code. It provides an overview of the source code for the ZL70251 Application Development Kit and is intended to help software developers get started using the source code.

This document applies to ZL70251 ADK version 1.1.X.

2 – ZL70251 ADK Source Code Installation

The ZL70251 ADK source code is available upon request to anyone who purchases the ZL70251 ADK and signs a separate source code license agreement. The source code can be downloaded via the Internet as a ZIP file, which contains this document and the ADK source tree. Be sure to keep the download and the source tree in a secure location.

To install the source code, unzip the ZIP file into a secure location. The top folder of the source tree is named **ZL70251AdkSource** by default, but you can rename it if desired, and it can be located anywhere (provided it is secure). For more information, refer to “[4 – Source Tree](#)” on page 7.

3 – Software Components

This chapter is intended to familiarize developers with the various software components in the ZL70251 ADK so the developers can relate the components to the source code. The software includes three main categories: Graphical User Interfaces (GUIs), Application Programming Interfaces (APIs), and firmware (the software that runs on the base station and remote device). The base station consists of a BASE251 board mated to an ADP100A board, and the remote device consists of a REMOTE251 board mated to an ADP100A board. Each board runs its own separate firmware. Figure 1 illustrates where the various software components reside in the system and the communication links.

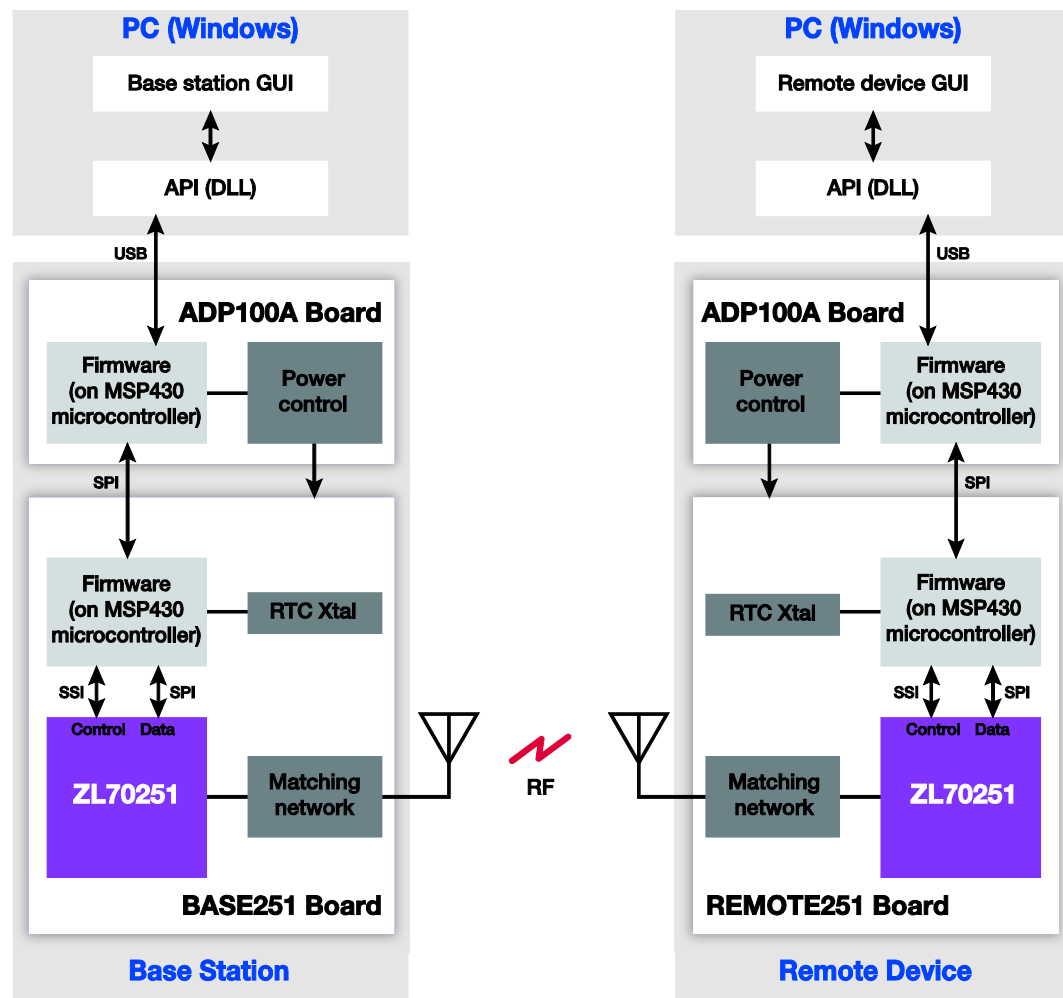


Figure 1 • ZL70251 ADK Software Components

As shown in [Figure 1](#) above, the GUIs and APIs run on the PC. The GUIs call the APIs to perform all operations, and the APIs send commands to the ADP boards via USB. If a command is addressed to an ADP board, the ADP board processes the command; otherwise, it forwards the command to its BASE251 or REMOTE251 board via SPI.

Note that all of the API functions are included in a single DLL on the PC (for example, **ZL7025XAdkDII_1_1_X.dll**).

4 – Source Tree

The top folder of the ZL70251 ADK source tree is named **ZL70251AdkSource** by default, but you can rename it if desired. Do not rename anything under the source tree because that could cause build errors. Note that the top folder of the source tree is also referred to as **[SourceTree]** in this document. The source tree has two subfolders — **AppDevPlat** and **ZL7025XAdk** — which are described below.

4.1 AppDevPlat Subfolder

The **AppDevPlat** subfolder contains source for the Application Development Platform. This is a multipurpose platform used by the ZL70251 ADK. The **AppDevPlat** subfolder has the following sub-trees of interest:

- **AppDevPlat\Sw\Includes:** Contains public include files for the Application Development Platform. Note that when compiling, this folder must be specified as one of the include directories.
- **AppDevPlat\Sw\AnyBoard\Libs:** Source for libraries that can be used by the firmware on any MSP430 board.
- **AppDevPlat\Sw\AdpBoard\Libs:** Source for libraries that can be used only by the firmware on an ADP board (ADP100A).
- **AppDevPlat\Sw\AdpBoard\Apps\Standard:** Source for the standard application firmware on an ADP board (ADP100A).
- **AppDevPlat\Sw\Pc\Libs:** Source for the Application Development Platform PC libraries. Note that these libraries are included in the API DLL (for example, **ZL7025XAdkDII_1_1_X.dll**).

4.2 ZL7025XAdk Subfolder

The **ZL7025XAdk** subfolder contains source specific to the ZL70251 ADK, and has the following sub-trees of interest:

- **ZL7025XAdk\Sw\Includes:** Contains public include files for the ADK. Note that when compiling, this folder must be specified as one of the include directories.
- **ZL7025XAdk\Sw\SmBoard\Apps\Standard:** Source for the standard application firmware on the BASE251 and REMOTE251 boards. Note that this source is shared by these boards, but the firmware created for each board is different.
- **ZL7025XAdk\Sw\CcsV5Workspace:** This contains the CCS v5 workspace used to build the firmware for each board. For more information, refer to [“5 – Code Composer Studio for Firmware”](#) on page 8.
- **ZL7025XAdk\Sw\Pc\Libs:** Source for the ADK PC libraries. Note that these libraries are included in the API DLL (for example, **ZL7025XAdkDII_1_1_X.dll**).
- **ZL7025XAdk\Sw\Pc\Guis:** Source for the ADK GUI.
- **ZL7025XAdk\Sw\Pc\VisualStudio:** This contains the Visual Studio solution used to build the ADK GUI and API (DLL). For more information, refer to [“6 – Visual Studio for GUI and API”](#) on page 10.

5 – Code Composer Studio for Firmware

Code Composer Studio (CCS) is an IDE for the MSP430, and may be purchased separately from Texas Instruments. CCS is used to build the firmware for each board. For more information about CCS, refer to the CCS documentation.

5.1 Starting and Configuring CCS

To start CCS and configure it for the ZL70251 ADK, do the following:

- Start CCS, and if it prompts you to select a workspace, browse to **[SourceTree]\ZL7025XAdk\Sw\CcsV5Workspace**. If CCS does not prompt you, use *File > Switch Workspace* to select the workspace.

If desired, you can create a shortcut on your desktop to open the workspace automatically when you start CCS. For example, create a shortcut with the following target:

```
C:\ti\ccsv5\ eclipse\ccstudio.exe -data  
"[SourceTree]\ZL7025XAdk\Sw\CcsV5Workspace"
```

Note that the path to **ccstudio.exe** is the default CCS installation location. If you installed CCS in a different location, adjust this path accordingly.

- The first time you start CCS for a new source tree, you must update the *TOP* variable in the CCS workspace for the source tree. To do so, open *Window > Preferences > General > Workspace > Linked Resources* in CCS and change *TOP* to point to the top folder of the source tree. Afterwards, refresh all of the projects in CCS so it updates its links (right-click on each project and select *Refresh*). The projects are described in “5.2 CCS Workspace” below.

5.2 CCS Workspace

The CCS workspace is located under **[SourceTree]\ZL7025XAdk\Sw\CcsV5Workspace**. This workspace contains the following projects:

- **BuildAdp**: Use this to build the firmware for an ADP100A board.
- **BuildBase251**: Use this to build the firmware for a BASE251 board.
- **BuildRemote251**: Use this to build the firmware for a REMOTE251 board.
- **Source**: For convenience, this project contains links to all of the ADK source code. You can use this project to navigate the source tree and edit source files.

The *Source* project contains the following links to various source folders. For more information about the contents of each source folder, refer to chapter “4 – Source Tree” on page 7.

- **CcsMsp430Includes**: This refers to the standard include files for the MSP430 (installed as part of CCS). Note that this refers to the default CCS installation location by default; if you installed CCS in a different location, change this link accordingly. This link is for convenience only; the build projects do not use or depend on this link.
- **TOP-AppDevPlat-Sw-AdpBoard**: Source that is only for firmware on an ADP board (ADP100A).
- **TOP-AppDevPlat-Sw-AnyBoard**: Source for firmware on any MSP430 board.

- **TOP-AppDevPlat-Sw-Includes:** Public include files for the Application Development Platform.
- **TOP-AppDevPlat-Sw-Pc:** Source for the Application Development Platform PC software.
- **TOP-ZL7025XAdk-Sw-SmBoard:** Source that is only for firmware on BASE251 and REMOTE251 boards. Note that this source is shared by these boards, but the firmware created for each board is different.
- **TOP-ZL7025XAdk-Sw-Includes:** Public include files for the ADK.
- **TOP-ZL7025XAdk-Sw-Pc:** Source the ADK PC software.

6 – Visual Studio for GUI and API

The ZL70251 ADK uses Microsoft's Visual Studio (Professional Edition) to build the ADK GUI and API (DLL). Visual Studio may be purchased separately from Microsoft.

To start Visual Studio for the ADK, double-click on the following file:

[SourceTree]\ZL7025XAdk\Sw\Pc\VisualStudio\ZL7025XAdk.sln

For convenience, you may want to create a shortcut to this file on your desktop.

The Visual Studio solution contains the following projects:

- **ZL7025XAdkGui**: Use this to build the GUI.
- **ZL7025XAdkDll_[Major]_[Minor]_X**: Use this to build the API DLL, where **[Major]** is the release major version and **[Minor]** is the release minor version.

For more information about Visual Studio, refer to the Visual Studio documentation.

A References

Document	Document Title
146499	ZL70251 Programmer User's Guide
146670	ZL70251 Data Sheet
146916	ZL70251 ADK Release Notes
N/A	ZL70251 ADK User's Guide

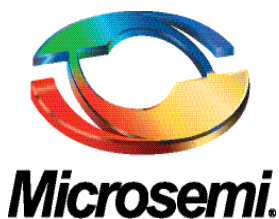
B Glossary

Term	Definition
ADK	Application development kit
API	Application programming interface
CCS	Code Composer Studio™, an integrated development environment for Texas Instruments (TI) embedded processor families (also called CCStudio)
DLL	Dynamic link library <i>or</i> the three-character file extension on such a file
GUI	Graphical user interface
IDE	Integrated development environment
PC	Personal computer
Pwr	Power
RTC	Real-time clock
SPI	Serial peripheral interface
SSI	ZL70251 serial interface (two-wire)
SW	Software
Temp	Temperature
USB	Universal serial bus
Xtal	Crystal
ZIP	Zone information protocol (a protocol that allows compression of files) <i>or</i> the three-character file extension on such a compressed file

C List of Changes

The following table lists substantive changes that were made in the ZL70251 Application Development Kit (ADK) Source Code Overview.

Revision	Change	Page
Revision 1 (August 2013)	Initial release. Note this document revision was initially created for ZL70251 ADK version 1.0.0.	–
Revision 2 (October 2013)	Updated the ZL70251 ADK version associated with this document to 1.1.X. Note this document revision was initially created for ZL70251 ADK version 1.1.0.	–



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