Gowin RiscV_AE350_SOC RDS Software

Installation Guide

MUG1026-1.3.1E, 07/18/2025

Copyright © 2025 Guangdong Gowin Semiconductor Corporation. All Rights Reserved.

GOWIN is a trademark of Guangdong Gowin Semiconductor Corporation and is registered in China, the U.S. Patent and Trademark Office, and other countries. All other words and logos identified as trademarks or service marks are the property of their respective holders. No part of this document may be reproduced or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written consent of GOWINSEMI.

Disclaimer

GOWINSEMI assumes no liability and provides no warranty (either expressed or implied) and is not responsible for any damage incurred to your hardware, software, data, or property resulting from usage of the materials or intellectual property except as outlined in the GOWINSEMI Terms and Conditions of Sale. GOWINSEMI may make changes to this document at any time without prior notice. Anyone relying on this documentation should contact GOWINSEMI for the current documentation and errata.

Revision History

Date	Version	Description
11/16/2023	1.0E	Initial version published.
01/26/2024	1.1E	● Gowin Cable (dual-channel and single-channel FTDI), Olimex Cable and their driver software Zadig-2.7 supported for software single-step debugging. ● Flash Burner supports Gowin Programmer.
05/20/2024	1.2E	Gowin GoBridgeDriver supported.
02/07/2025	1.3E	The descriptions of debugger driver installation updated.
07/18/2025	1.3.1E	The link of software installation package in “2 Software Download” updated.

Contents

Contents i

List of Figures ii

1 Minimum System Requirements 1

1.1 Hardware Running Requirements 1

1.2 Tested Software Operating Environment 1

2 Software Download 2

3 Software Installation 3

4 Software Uninstallation 10

5 License Activation 13

6 Driver Installation 17

6.1 Gowin FTDI USB Programmer 17

6.2 AICE Debugger 19

6.3 Olimex Debugger 19

List of Figures

Figure 3-1 Installing 4
Figure 3-2 Installation Wizard 4
Figure 3-3 License Agreement 5
Figure 3-4 Installation Directory 5
Figure 3-5 Select Installation Set 6
Figure 3-6 Pre-Installation Summary 6
Figure 3-7 Installing 7
Figure 3-8 Install Andes FTDI USB Device 7
Figure 3-9 Install FTDI USB Device 8
Figure 3-10 Select Language 8
Figure 3-11 Installation Done 9
Figure 4-1 Uninstall 10
Figure 4-2 List of Uninstallation Folders 11
Figure 4-3 Uninstalling 11
Figure 4-4 Uninstall Successfully 12
Figure 5-1 License Dialog Box 13
Figure 5-2 Select Windows > Preferences 14
Figure 5-3 Select License > Deploy 14
Figure 5-4 Deploy Activation File 15
Figure 5-5 Deployment Succeeded 16
Figure 6-1 Select List All Device 18
Figure 6-2 Select WinUSB Driver 18
Figure 6-3 Select WinUSB Driver 18
Figure 6-4 Select List All Device 20
Figure 6-5 Select libusbK Driver 20

1 Minimum System Requirements

1.1 Hardware Running Requirements

- 2 GB RAM
- 7 GB Disk Storage

1.2 Tested Software Operating Environment

- Microsoft Windows 7 (64-bit)
- Microsoft Windows 10 (64-bit)
- Microsoft Windows 11 (64-bit)

2 Software Download

RiscV_AE350_SOC RDS software installation package:

RiscV_AE350_SOC_RDS_Vx.x_win.zip, and you can click on the link to download RiscV_AE350_SOC_RDS_win.zip.

Note!

- Before downloading the software, you need to register on the official website and log in.
- "x" in "Vx.x" means the software version.

3 Software Installation

RiscV_AE350_SOC RDS software installation program is used to install RDS software components, including the integrated development environment, Cygwin, target systems, software compilation toolchain, ICE software and Andes AICE debugger driver, Flash Burner (Gowin Programmer), RTOS source code, and user manuals (help documents), etc. The graphical interface installation is used as an example to illustrate the RDS software installation.

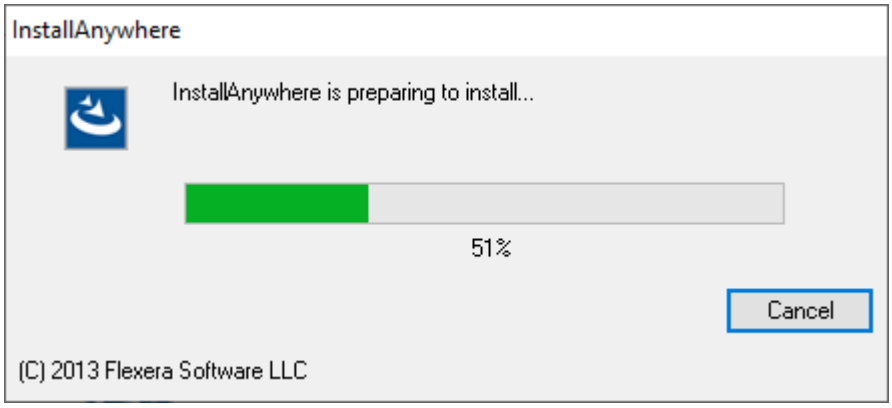
1. Unzip the RDS software installation package RiscV_AE350_SOC_RDS_Vx.x_win.zip.

Note!

- The FPGA and RiscV_AE350_SOC now support using the same Gowin FTDI USB programmer and WinUSB driver. The Gowin FTDI USB programmer is recommended.
- You can also choose to use Andes Technology's AICE debuggers, such as AICE-MINI+ or AICE-MICRO, or other common FTDI-based debuggers like Olimex.
- During the installation of the RDS software, the AICE debugger driver is installed by default. Please select whether to install it as needed. If you choose to install the default driver, ensure the AICE debugger is connected to the PC host before installation.
- It is recommended to install the software with PC administrator privileges.

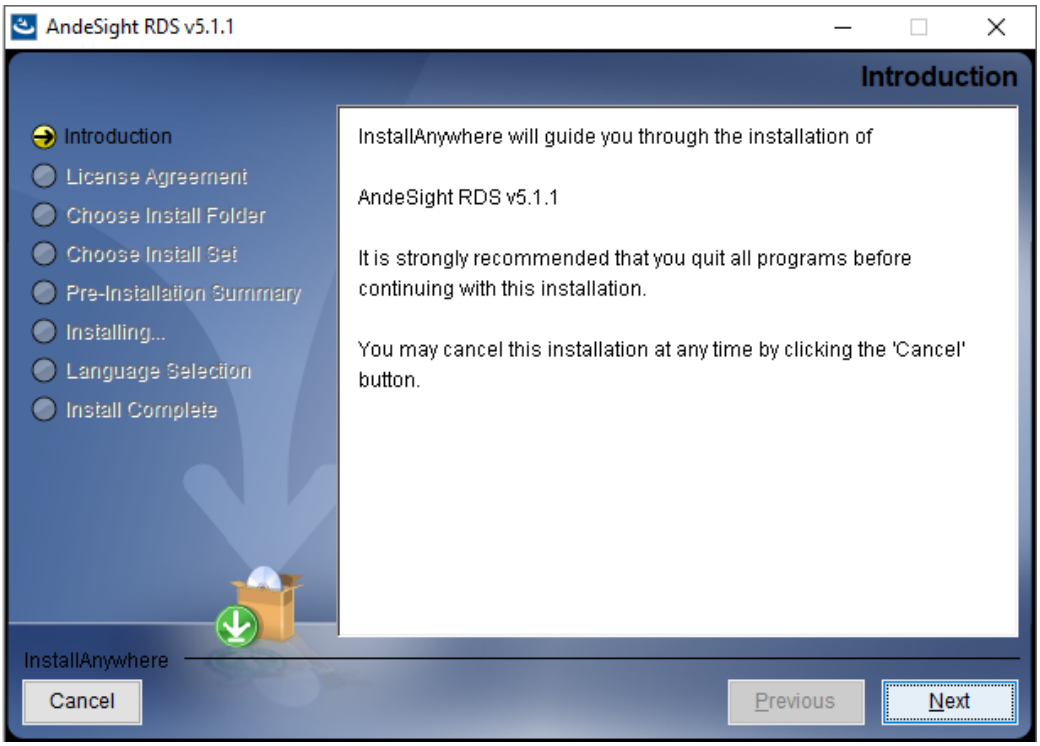
2. Open the unzipped RDS software installation package: " RiscV_AE350_SOC_RDS_Vx.x_win\Windows\Disk1", and double-click "Setup.bat ", as shown in Figure 3-1.

Figure 3-1 Installing



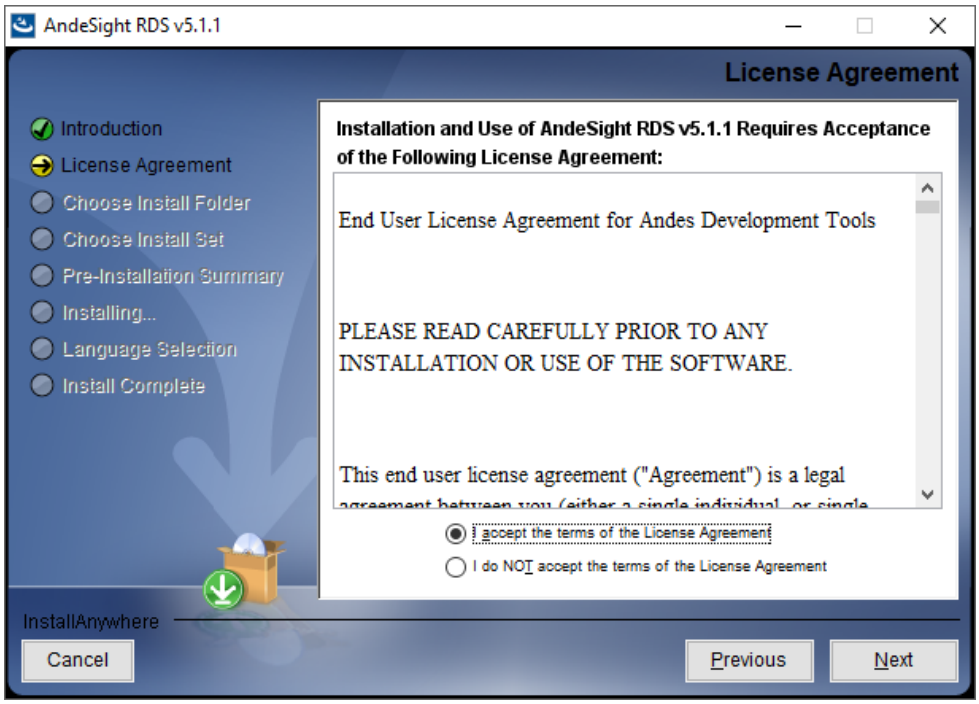
3. Launch the software installation wizard. The software installation wizard automatically selects the language for the installation process based on the PC host system language (English or Simplified Chinese). Click "Next" to initiate the software installation wizard process, as shown in Figure 3-2.

Figure 3-2 Installation Wizard



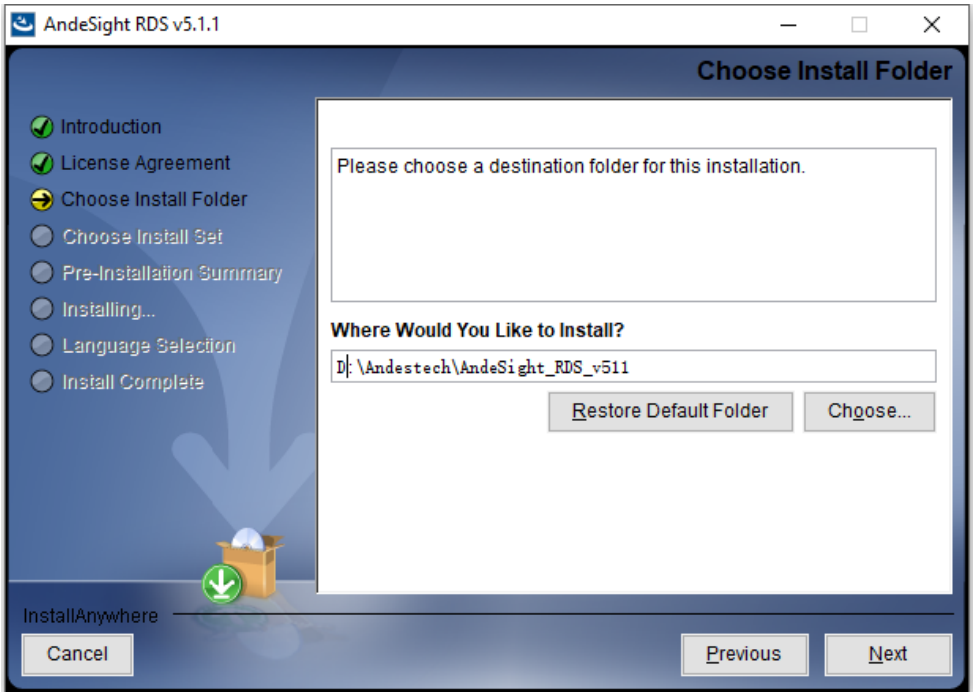
4. Read the license agreement and select "I accept the terms of the License Agreement". Click "Next", as shown in Figure 3-3.

Figure 3-3 License Agreement



5. Select the software installation directory, the default directory or another directory. Click "Next", as shown in Figure 3-4.

Figure 3-4 Installation Directory

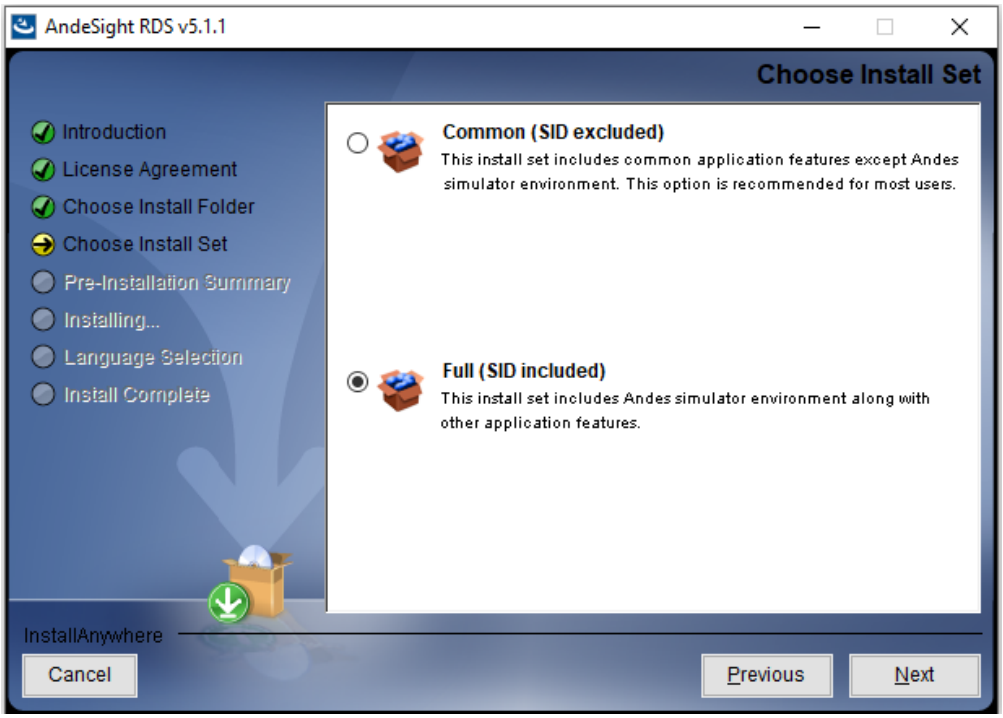


Note!

The software installation path name must include only letters (A-Z, a-z), numbers (0-9), underscore (_), and hyphen (-).

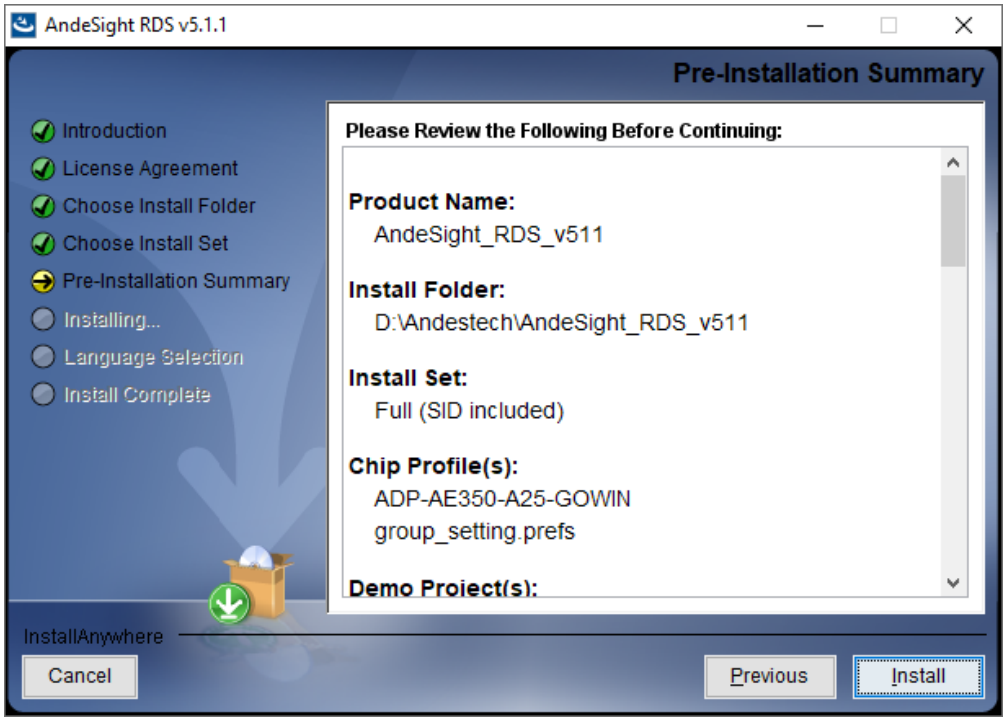
6. Select the installation set; if you select "Common", the simulator is not included; if you select "Full", the simulator is included. Click "Next", as shown in Figure 3-5.

Figure 3-5 Select Installation Set



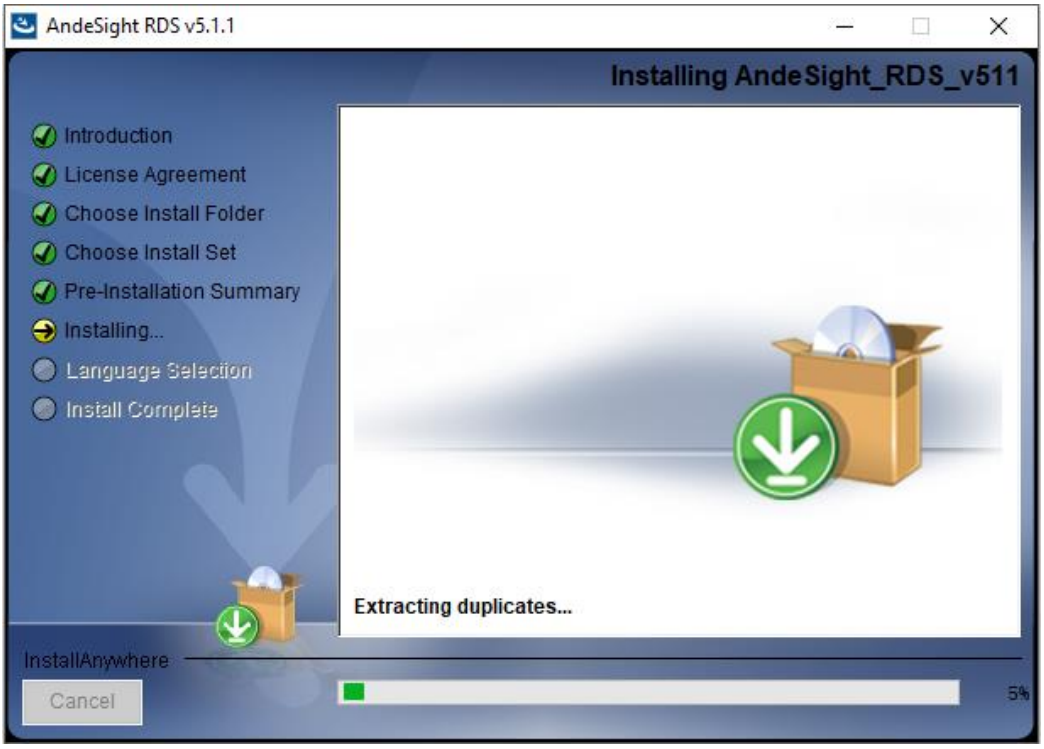
7. Complete the above steps. Click "Install" to start the installation, as shown in Figure 3-6.

Figure 3-6 Pre-Installation Summary



8. Installing, as shown in Figure 3-7.

Figure 3-7 Installing



9. If you choose to use Andes Technology's AICE debugger and it is already connected to the PC host, two dialog boxes will appear sequentially after completing the steps above, prompting you to install the AICE debugger drivers (this applies to the first-time installation of the driver). If the driver is already installed, these dialog boxes will not appear. In some PC hosts or systems, the driver may be installed automatically in the background without displaying these dialog boxes. Click "Install" to install the AICE debugger drivers (Andes FTDI USB device libusbK USB Device… and FTDI USB device libusbK USB Devices), as shown in Figure 3-8 and Figure 3-9. If these two dialog boxes do not appear or if you click "Don't Install" in the dialog boxes, you can ignore this step.

Figure 3-8 Install Andes FTDI USB Device

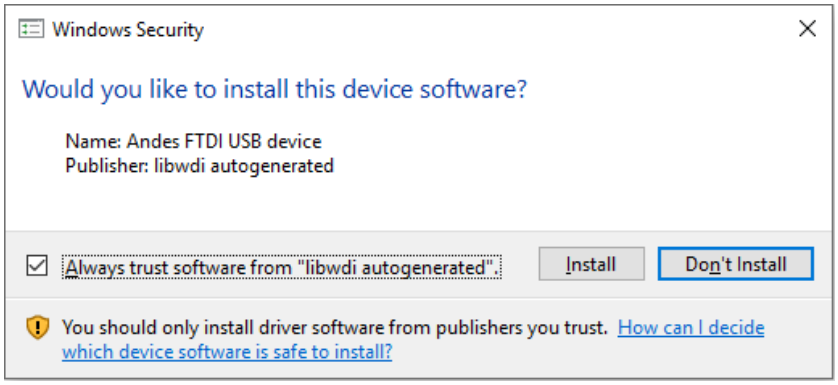
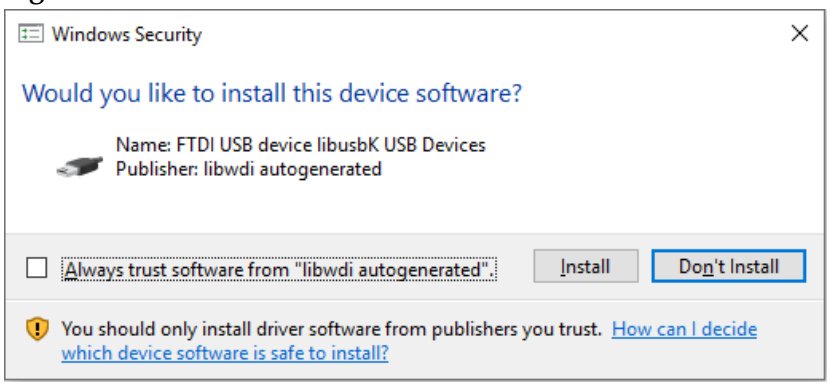
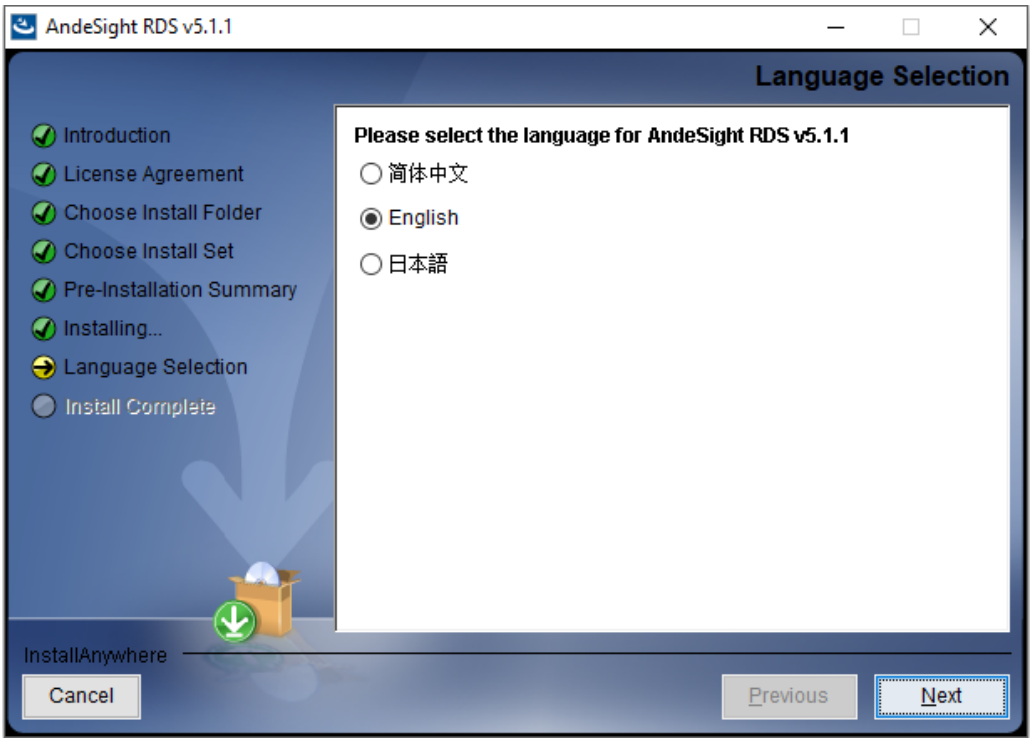


Figure 3-9 Install FTDI USB Device



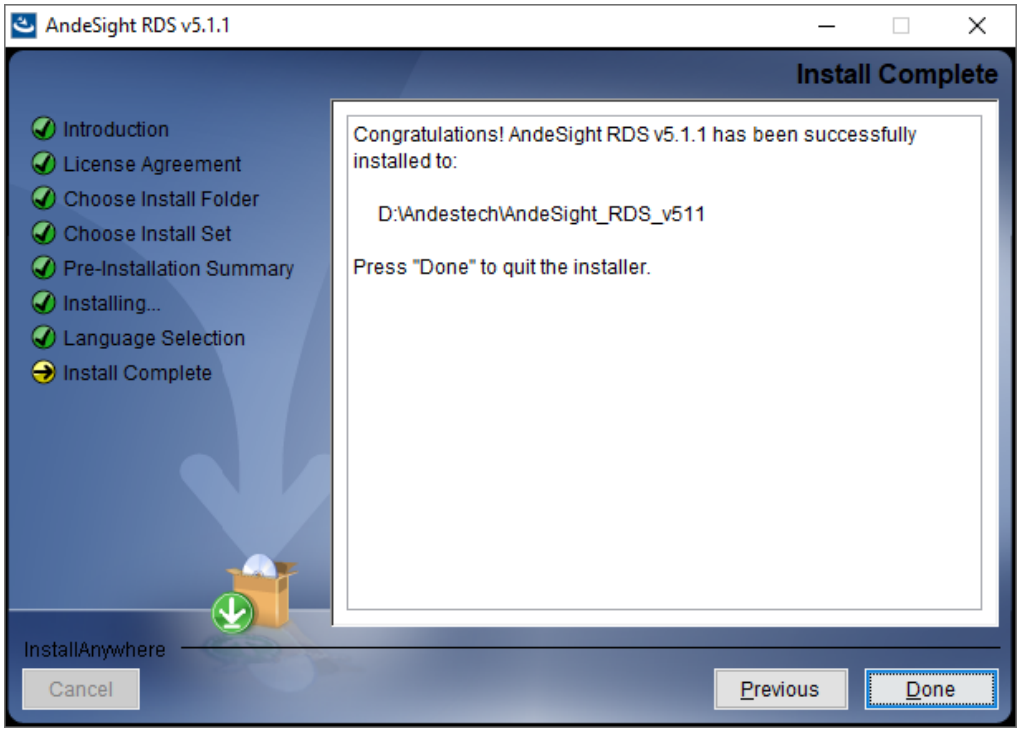
10. Please select the language, click "Next" to continue, as shown in Figure 3-10. RDS software supports three languages: Simplified Chinese, English and Japanese. If your PC host operating system is in a language other than these three, the RDS software will use English as the language by default.

Figure 3-10 Select Language



11. The installation wizard indicates a successful software installation. Click "Done" to complete the installation, as shown in Figure 3-11.

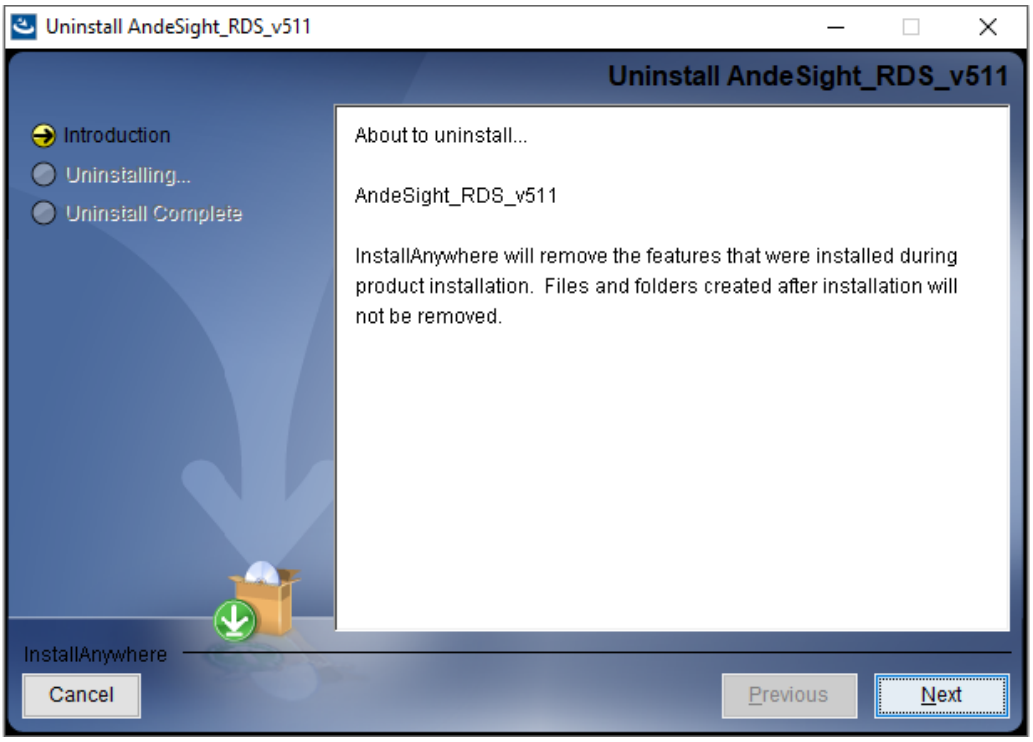
Figure 3-11 Installation Done



4 Software Uninstallation

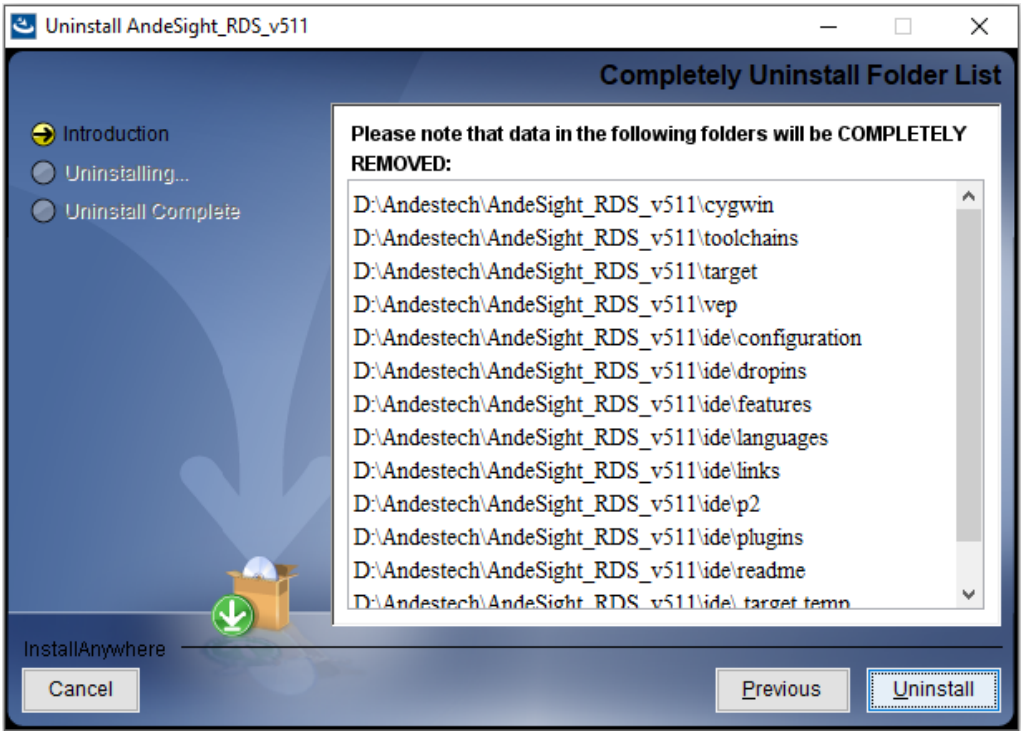
1. Open the RDS software installation directory, double click " Uninstall_AndeSight_RDS_v511\Uninstall_AndeSight_RDS_v511.exe" to open the RDS software uninstall wizard. Click "Next", as shown in Figure 4-1.

Figure 4-1 Uninstall



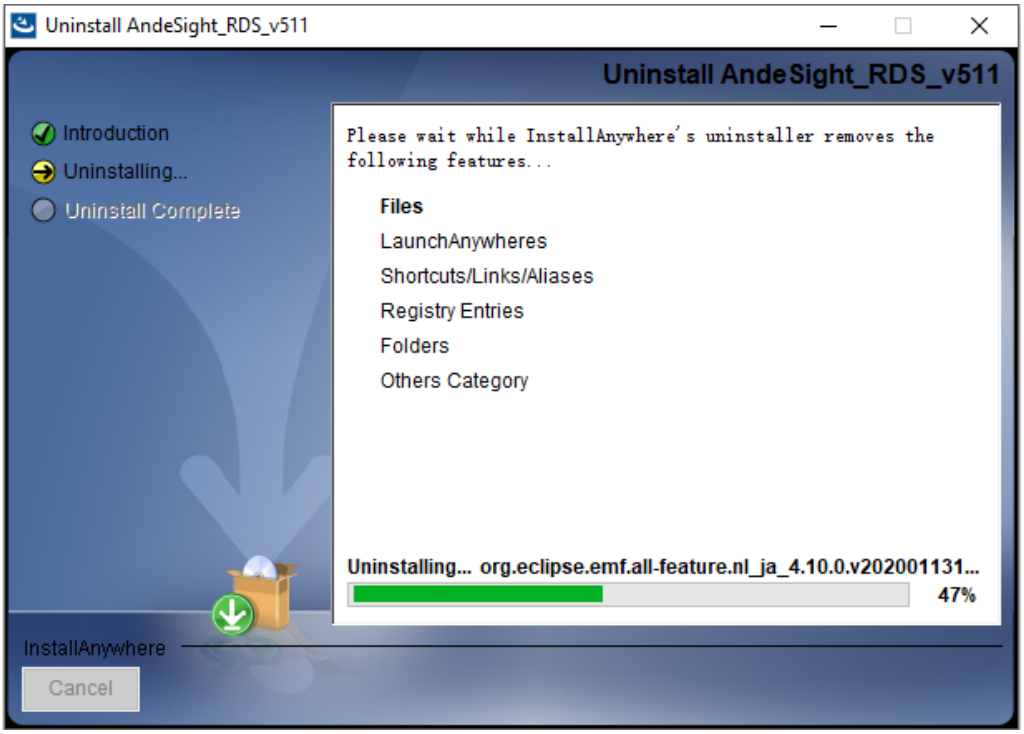
2. The Uninstall Wizard displays a list of folders to be removed; click "Uninstall" to start the uninstall, as shown in Figure 4-2.

Figure 4-2 List of Uninstallation Folders



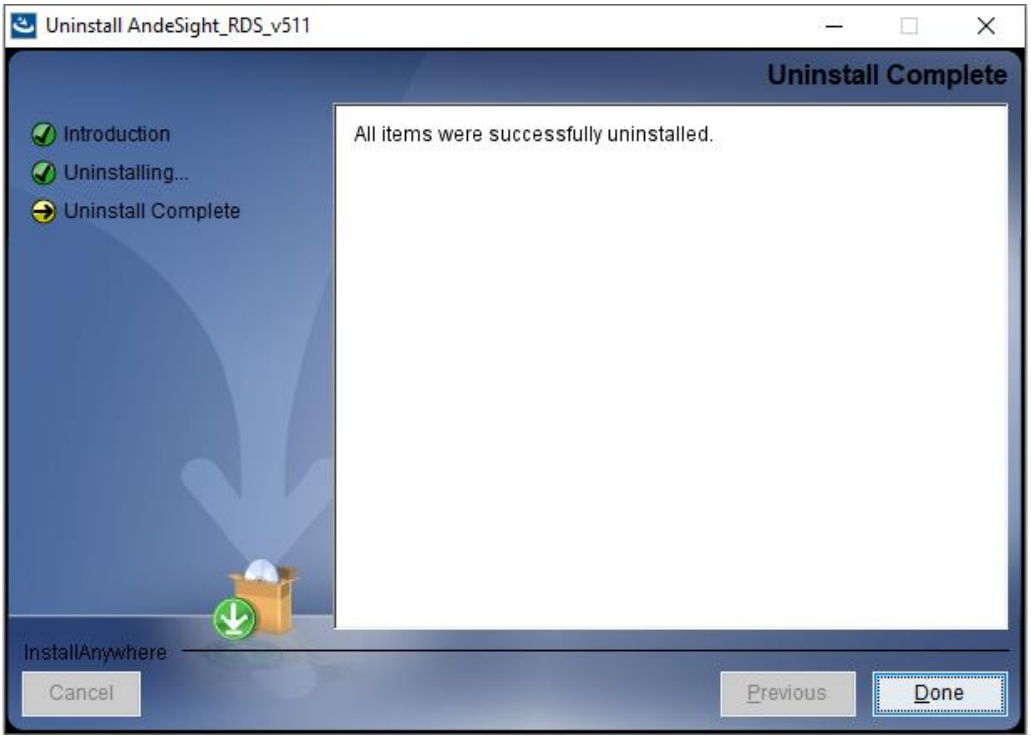
3. Uninstalling, as shown in Figure 4-3.

Figure 4-3 Uninstalling



4. When the uninstallation is complete, the Uninstallation Wizard prompts that the uninstallation is successful. If the wizard prompts that some files cannot be deleted, you need to manually remove these files after exiting the Uninstall Wizard, as shown in Figure 4-4.

Figure 4-4 Uninstall Successfully

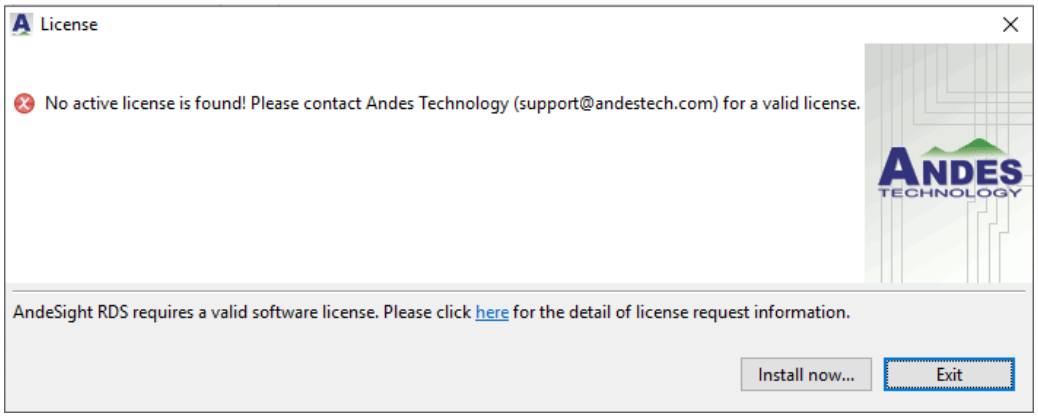


5 License Activation

To obtain a license for the RDS software, you need to apply for a serial number and a license activation file. You can follow the steps below to activate the license.

1. Run the RDS software and a license dialog box pops up reminding you that the license has not yet been installed. Click "Install now..." to execute the license activation program, as shown in Figure 5-1.

Figure 5-1 License Dialog Box



You can also click "Windows > Preferences" on the menu bar to open the "Preferences" dialog box, as shown in Figure 5-2. Select "License > Deploy" to execute the license activation program, as shown in Figure 5-3.

Figure 5-2 Select Windows > Preferences

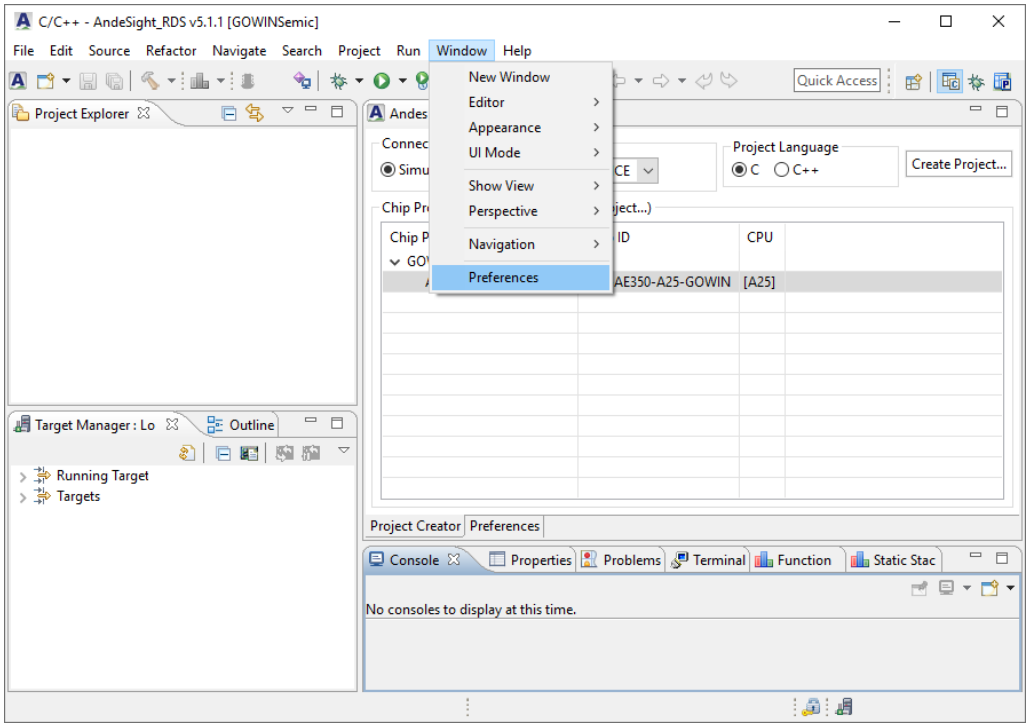
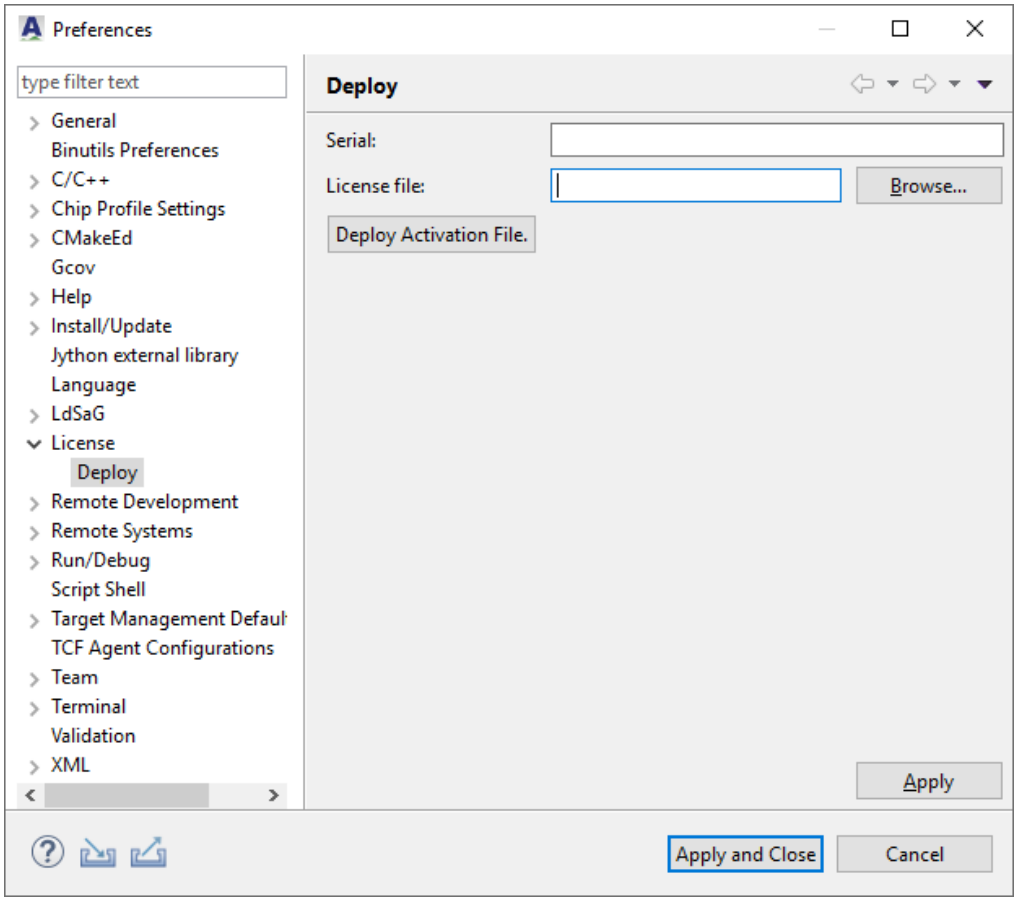
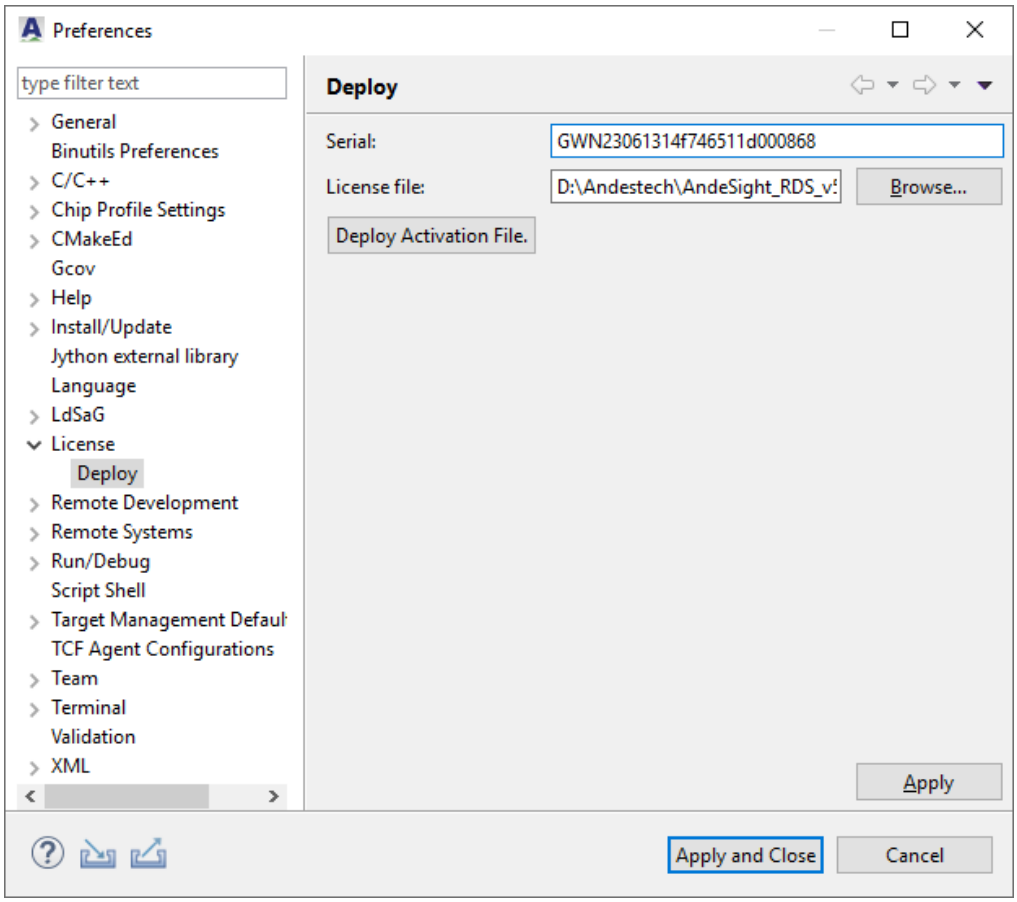


Figure 5-3 Select License > Deploy



2. Enter the serial number in the "Serial" field, and select the license activation file in the "License file" field, then click "Deploy Activation File" or "Apply", as shown in Figure 5-4.

Figure 5-4 Deploy Activation File

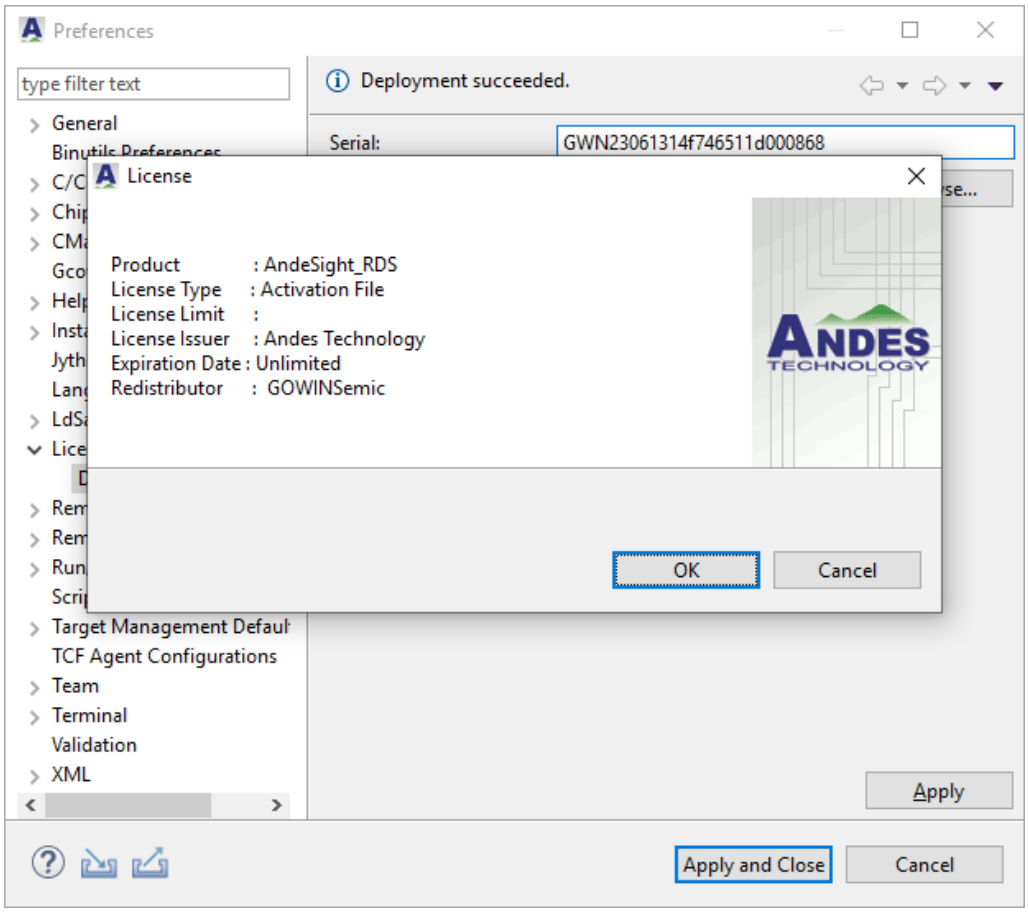


Note!

For serial number and license activation file, please contact Gowin. The serial number is the name of the license activation file used.

3. After completing the license activation, the "Preferences" wizard will pop up a dialog box containing license information, indicating that you have successfully deployed the license. Click "OK" to complete the license activation, as shown in Figure 5-5.

Figure 5-5 Deployment Succeeded



6 Driver Installation

It supports the FPGA and RiscV_AE350_SOC in sharing Gowin FTDI USB programmer and WinUSB driver. Gowin FTDI USB programmer is recommended.

Andes Technology's AICE debuggers, such as AICE-MINI+, AICE-MICRO, etc., can also be used, or other common FTDI debuggers, such as Olimex, can be selected.

The following sections introduce the driver installation for Gowin, Andes, and Olimex debuggers.

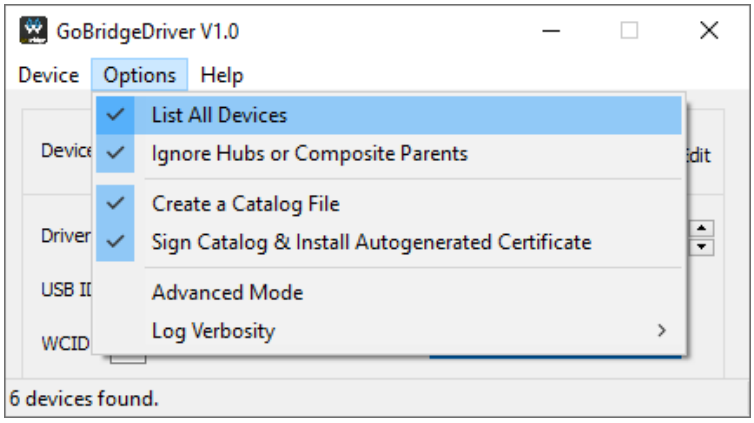
6.1 Gowin FTDI USB Programmer

Gowin FTDI USB programmer includes two types, an embedded FTDI 2232H dual-channel chip or FTDI 232H single-channel chip.

Please follow the steps below to install WinUSB driver for Gowin FTDI USB programmer:

1. Locate Gowin GoBridgeDriver driver in the RDS software installation directory: AndeSight_RDS_v511\ice\libusb-GW-driver\GoBridgeDriver_V1.0.exe.
2. Insert Gowin FTDI USB programmer into the PC host, double-click to open GoBridgeDriver (PC administrator permission required); click "Options", select the "List All Devices" option. This will list all USB devices inserted into the PC host, as shown in Figure 6-1.

Figure 6-1 Select List All Device



3. Choose a device for which you want to install the driver. For embedded FTDI USB programmer (Dual Channel), select Dual RS232-HS (Interface 0) and Dual RS232-HS (Interface 1). For embedded FTDI USB programmer (Single Channel), select Single RS232-HS.
4. Select WinUSB driver, as shown in Figure 6-2 and Figure 6-3.

Figure 6-2 Select WinUSB Driver

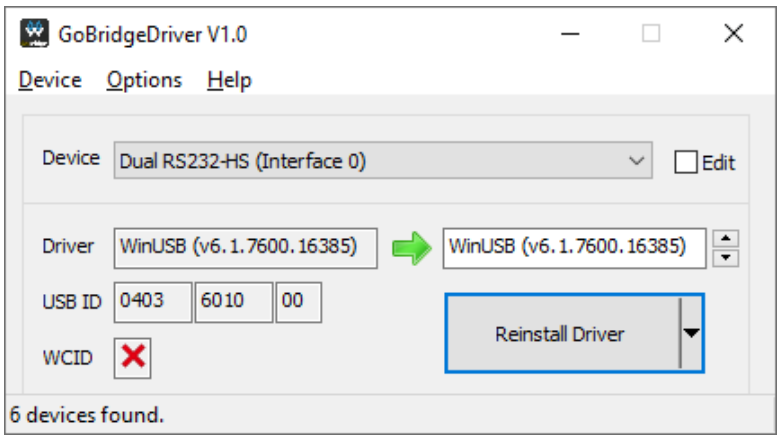
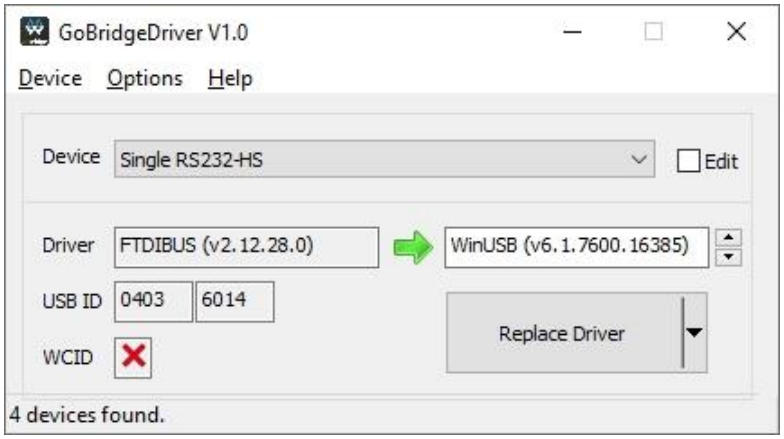


Figure 6-3 Select WinUSB Driver



5. Click "Install Driver" to proceed with the driver installation. Wait for a moment to complete the driver installation

Note!

If the driver is not currently installed, this option will display as "Install Driver". If the driver is already installed, it will show as "Reinstall Driver". If another type of driver is currently installed, it will display as "Replace Driver".

6. After Gowin FTDI USB programmer driver is installed, open the PC's Device Manager to check if the device driver has been successfully installed. If it is embedded FTDI USB programmer (Dual Channel), the Device Manager will display "Universal Serial Bus devices > Dual RS232-HS" and "Universal Serial Bus devices > Dual RS232-HS". If it is embedded FTDI USB programmer (Single Channel), the Device Manager will display "Universal Serial Bus devices > Single RS232-HS"

6.2 AICE Debugger

During the installation of the RDS software, the AICE debugger driver is installed by default. You can refer to the Step 9 in Chapter 3 Software Installation.

You can also manually install the AICE debugger driver. Locate the driver program in the directory where the RDS software is installed:

AndeSight_RDS_v511\ice\libusb-AICE-driver\Install_driver.exe.

After completing the installation of the AICE debugger driver, open the PC's Device Manager to verify if the device driver has been successfully installed. If the device driver is successfully installed, the Device Manager will display "libusbK USB Devices > Andes FTDI USB device".

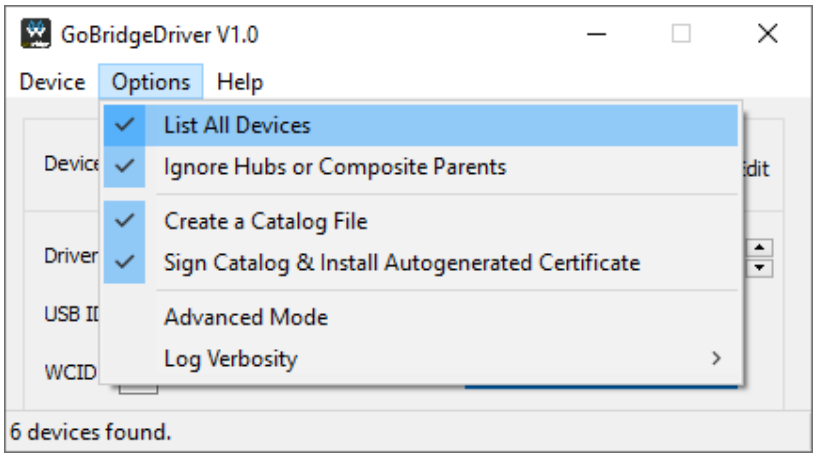
6.3 Olimex Debugger

Olimex debugger uses ARM-USB-TINY-H version with an embedded FTDI FT2232H chip.

Please follow the steps below to install the libusbK driver for Olimex ARM-USB-TINY-H:

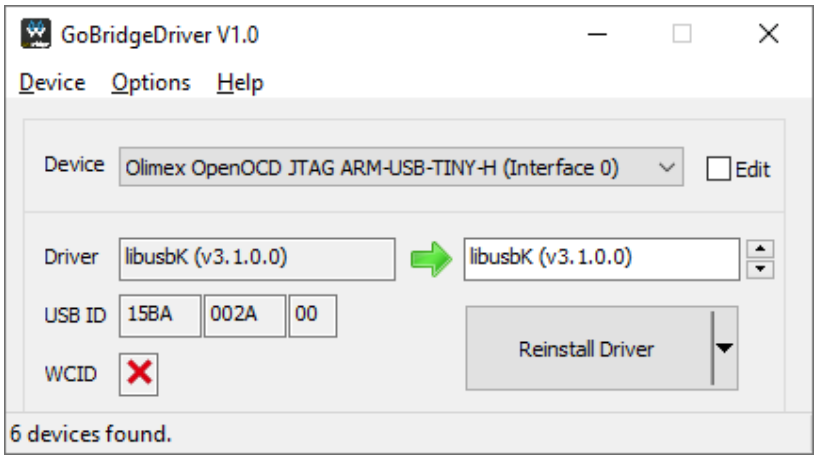
1. Locate Gowin GoBridgeDriver driver in the RDS software installation directory: AndeSight_RDS_v511\ice\libusb-GW-driver\GoBridgeDriver_V1.0.exe.
2. Insert Olimex ARM-USB-TINY-H into the PC host, double-click to open GoBridgeDriver (PC administrator permission required); click "Options", select "List All Devices" option. This will list all USB devices inserted to the PC host, as shown in Figure 6-4.

Figure 6-4 Select List All Device



3. Choose a device for which you want to install the drivers: Olimex OpenOCD JTAG ARM-USB-TINY-H (Interface 0) and Olimex OpenOCD JTAG ARM-USB-TINY-H (Interface 1).
4. Select libusbK driver, as shown in Figure 6-5.

Figure 6-5 Select libusbK Driver



5. Click "Install Driver" to proceed with the driver installation. Wait for a moment to complete the driver installation.

Note!

- If the driver is not currently installed, this option will display as "Install Driver". If the driver is already installed, it will show as "Reinstall Driver". If another type of driver is currently installed, it will display as "Replace Driver".

6. After completing the installation of the Olimex debugger driver, open the PC's Device Manager to check if the device driver has been successfully installed. If the driver is installed successfully, the Device Manager will display "libusbK USB Devices > Olimex OpenOCD JTAG ARM-USB-TINY-H (Interface 0)" and "Olimex OpenOCD JTAG ARM-USB-TINY-H (Interface 1)".

GOWIN

PROGRAMMING FOR THE FUTURE