USER'S GUIDE

ApolloICD

In-Circuit Debugger/Programmer

A-ICDAPG-UGGA01EN v1.1

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Revision History

Revision	Date	Description
1.0	August 6, 2025	Initial Release.
1.1	December 1, 2025	Added note under section 6.1 J-Link Software Support.

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Introduction

This document provides an overview of the ApolloICD In-Circuit Debugger, package contents, target connection interfaces, and getting started resources.

SECTION

2

Package Contents

The below items are provided in the ApolloICD package:

- ApolloICD In-Circuit Debugger
- 20-pin ribbon cable assembly (304.8mm/1 inches)
- USB-C to USB-A cable (1m/3.28 inches)
- Adhesive rubber mounting feet

SECTION

3

Overview of the ApolloICD

The ApolloICD has the following high-level features:

- Onboard J-Link Debug Out host Apollo4 SoC
- USB Host Interface
  - USB 2.0 full speed with USB-C connector
- Target Serial Wire Debug (SWD) Interfaces
  - Standard 20-pin male IDC keyed box header
  - Standard 10-pin male IDC keyed box header
- Target Virtual COM Port (VCOM) Interface
  - 4-pin header VCOM serial communication interface
- Target Voltage Tracking
- On-board LED Indicator

The following figures show the board layout and the location of major components.

Figure 3-1: ApolloICD

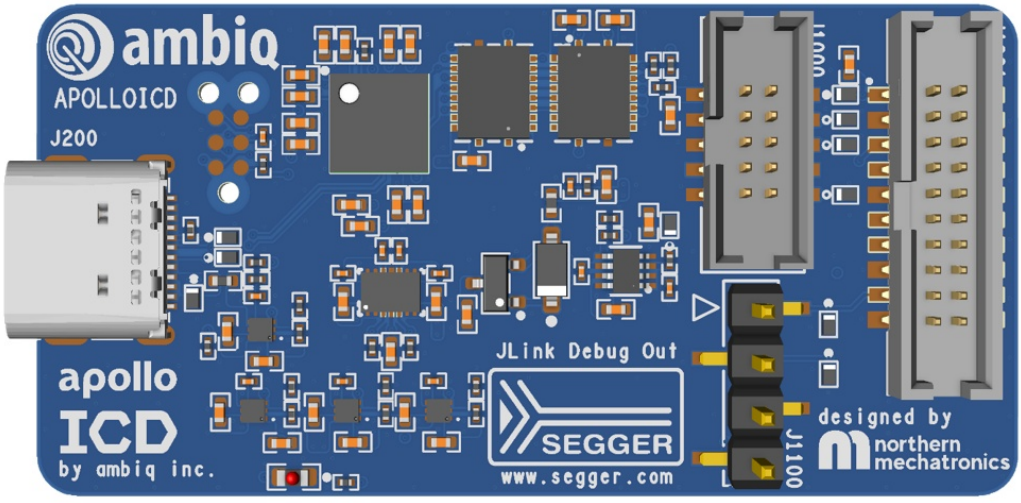
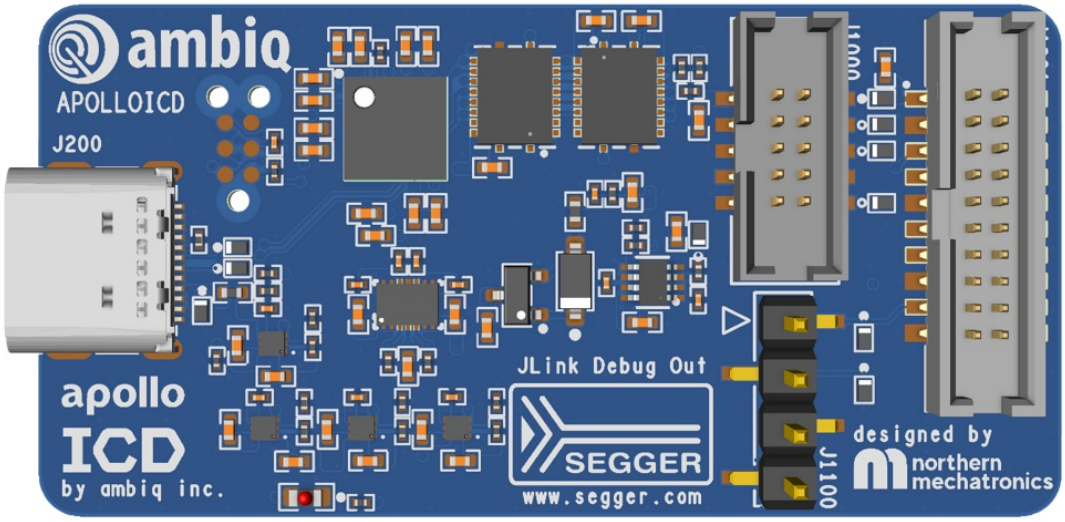


Figure 3-2: ApolloICD - Major Components



The ApolloICD has the following features:

- Compatible with entire line of Apollo SoCs
- SEGGER J-Link Debug Out license included
- Supports SEGGER J-Link debugger compatible toolchains
- USB 2.0 full speed host interface
- Powered over USB-C host interface (target powered separately)
- Ultra-fast programming and debugging interface with support up to 48 MHz
- Flash program and verify up to 100 KB/s
- VCOM interface with support up to 1 Mbps
- Supports wide range of target operating voltage from 1.5 V – 5.0 V
- Hardware auto-detect and voltage tracking of target operating voltage
- On-board LED indicator
- RoHS compliant

SECTION

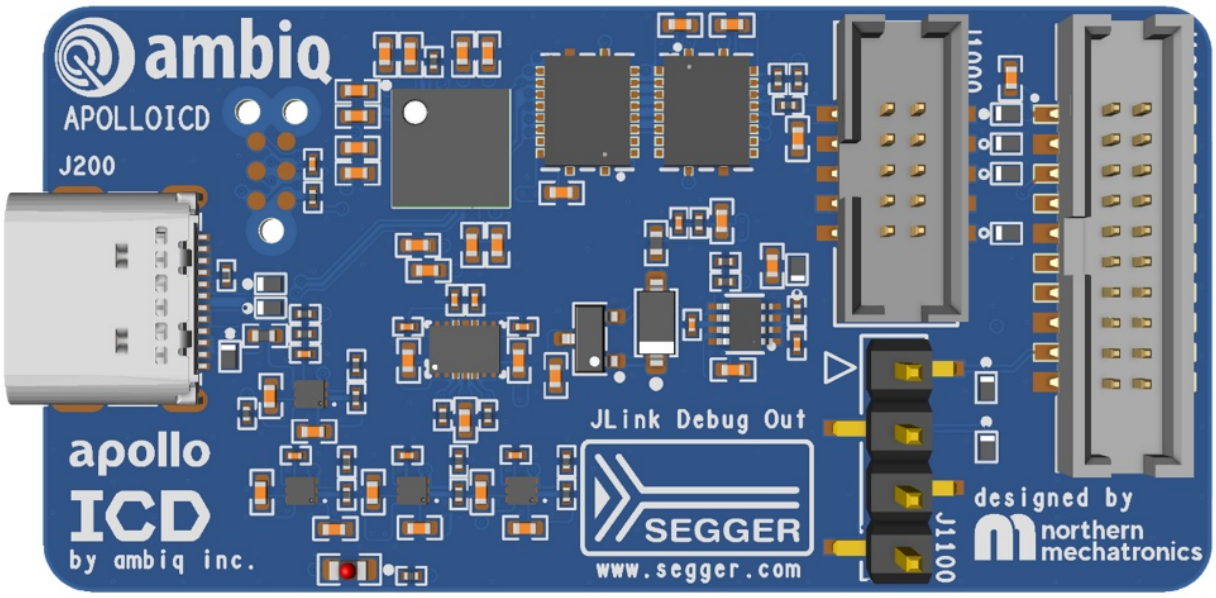
4

Host Interface

The ApolloICD has a USB 2.0 full speed host interface, exposed via the USB-C connector as shown in Figure 4-1. A standard USB-A to USB-C cable is included for the user to connect the ApolloICD to a host PC.

Important Power Sequencing Requirement: Please be sure to connect the ApolloICD to the target system first before powering the ApolloICD by connecting to the host PC via the included USB-C cable.

Figure 4-1: ApolloICD - USB Host Interface



SECTION

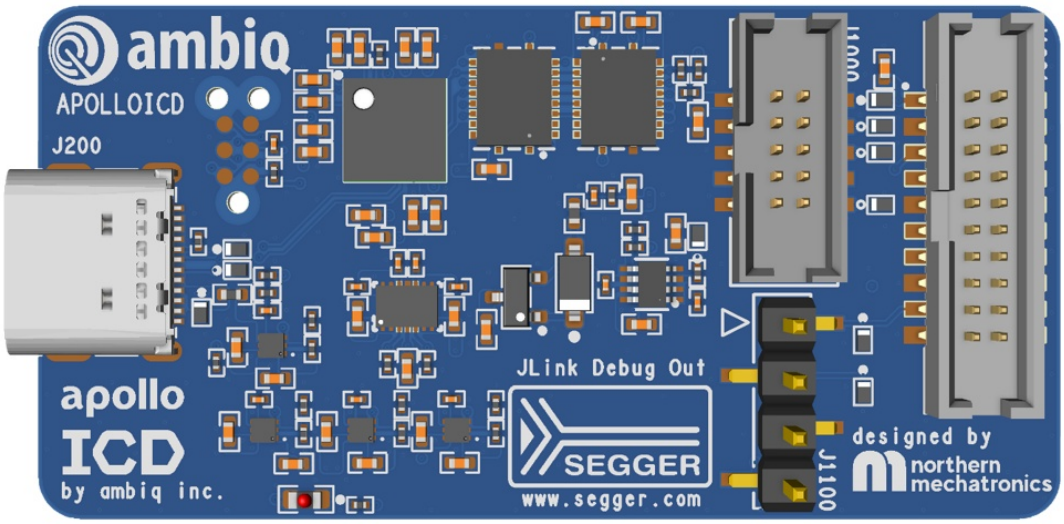
5

Target Interfaces

5.1 J-Link SWD Interfaces

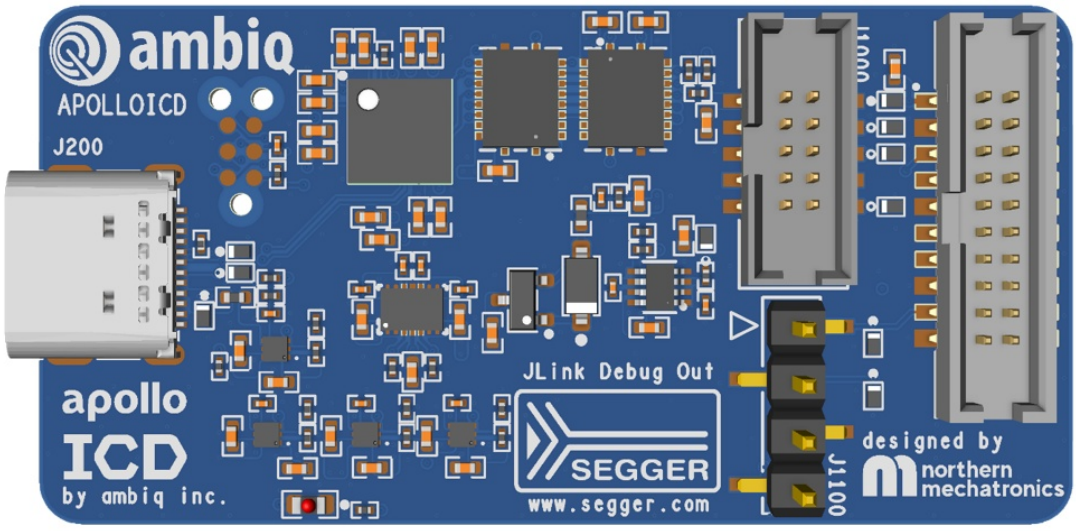
The ApolloICD supports 20-pin and 10-pin standard J-Link SWD debug interface connections to the target, as shown below in Figure 5-1.

Figure 5-1: ApolloICD - Debug Out Connectors



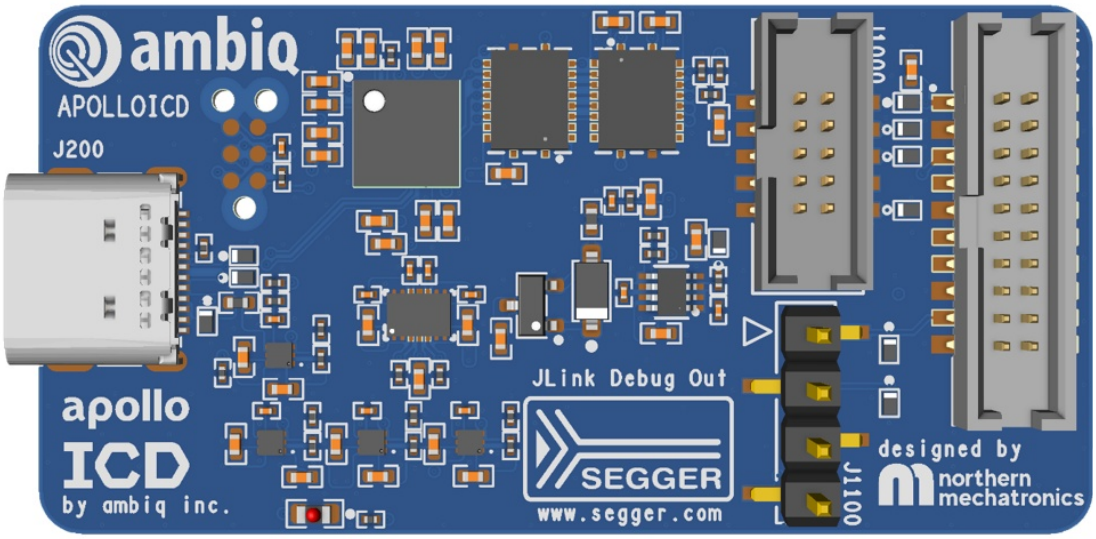
The ApolloICD kit includes a 20-pin ribbon cable that connects to J1001, with the pinout shown in Figure 5-2 on page 13.

Figure 5-2: ApolloICD - J-Link SWD 20-Pin Interface Pinout



Users can optionally use 10-pin connector J1000 (ribbon cable not provided) to connect to a target device, with the pinout shown in Figure 5-3.

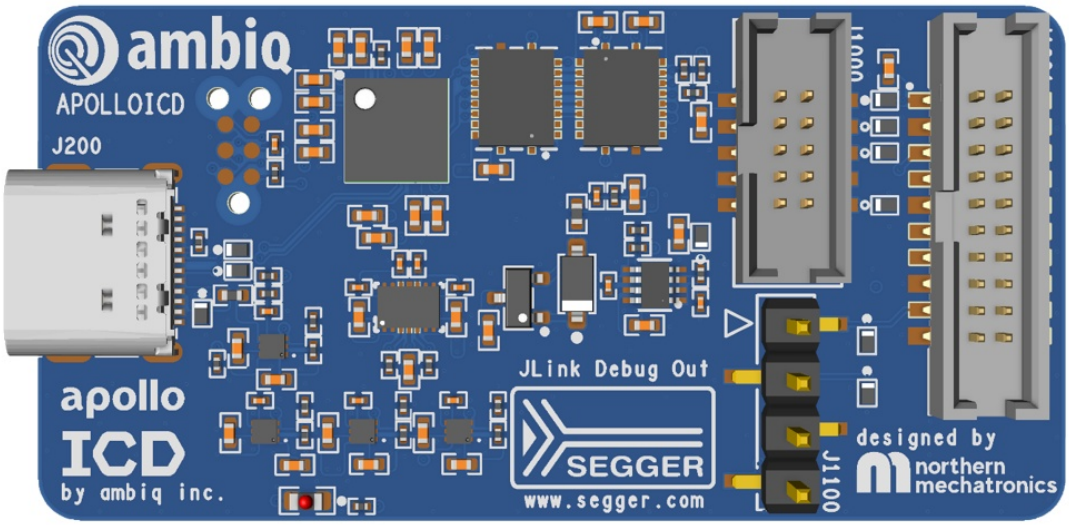
Figure 5-3: ApolloICD - J-Link SWD 10-Pin Interface Pinout



5.2 Virtual COM Port (VCOM) Interface

The ApolloICD also provides a VCOM interface to the target for debugging. The VCOM connection is exposed through a 4-pin header, as shown below in figure 5-4.

Figure 5-4: ApolloICD - VCOM Header Pinout



SECTION

6

Software Resources

6.1 J-Link Software Support

The ApolloICD supports SEGGER J-Link debugger compatible toolchains such as Microsoft Visual Studio Code, IAR Embedded Workbench, Keil µVision, Eclipse IDE, GDB-based IDEs, and SEGGER Embedded Studio. Refer to toolchain setup instructions for detailed J-Link usage guides.

For additional software resources, see the following J-Link documentation:

- J-Link Software Downloads
- J-Link Resources for Ambiq Targets
- SEGGER Knowledge Base

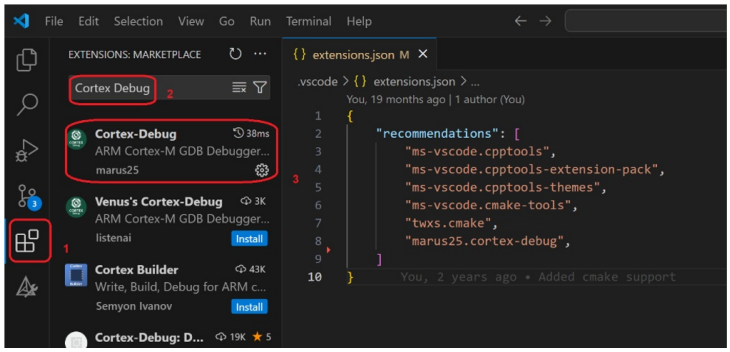
IMPORTANT NOTICE: When installing the Segger J-Link software mentioned above, it may be necessary to select the **Install Legacy USB Driver** option in order to properly enable the USB connection. This option is not selected by default in the Segger installation setup dialog box, so the checkbox has to be checked to install the legacy USB driver. This is the only default installation option that needs to be changed when installing the software.

6.2 Microsoft Visual Studio Code Example

The following example shows target configuration in Visual Studio Code (VSCode).

1. Install the Cortex-Debug extension:
   In the Extensions panel, select Cortex-Debug and install as shown in Figure 6-1.

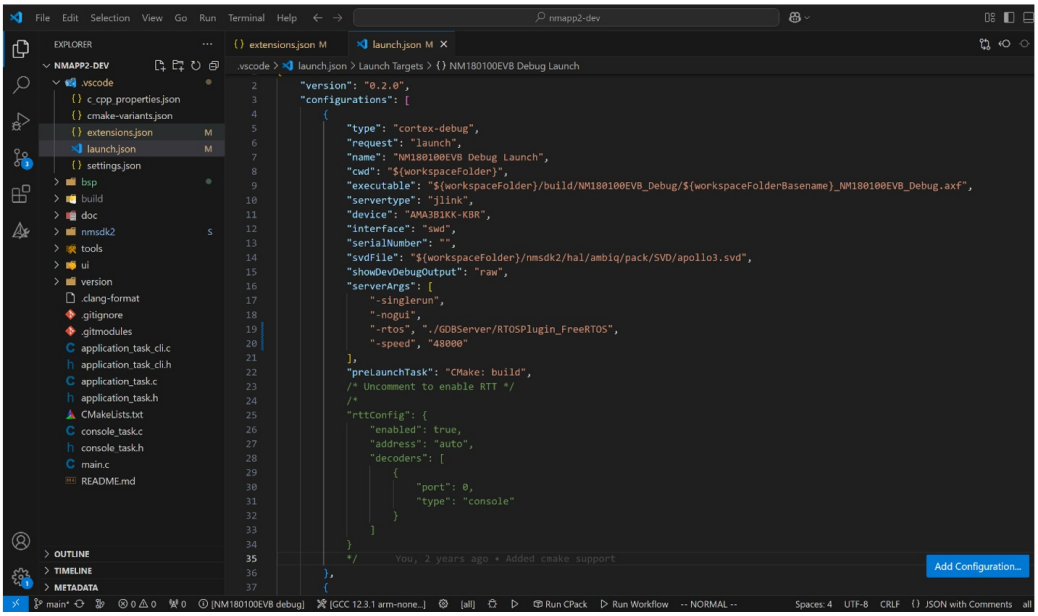
Figure 6-1: Visual Studio Code - Install Cortex Debug Extension



2. Target Configuration:

   Create or edit the **launch.json** file. Add the corresponding target device information to the configurations section, as shown below in Figure 6-2.

   Figure 6-2: Visual Studio Code - Target Configuration



SECTION

7

Known Issues

Table 7-1 shows the known issues.

Table 7-1: Known Issues

Issue #	Name	Explanation	Workaround

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