USER'S GUIDE

ApolloICD

In-Circuit Debugger/Programmer

A-ICDAPG-UGGA01EN v1.0

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Revision History

Revision	Date	Description
1.0	August 6, 2025	Initial Release.

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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

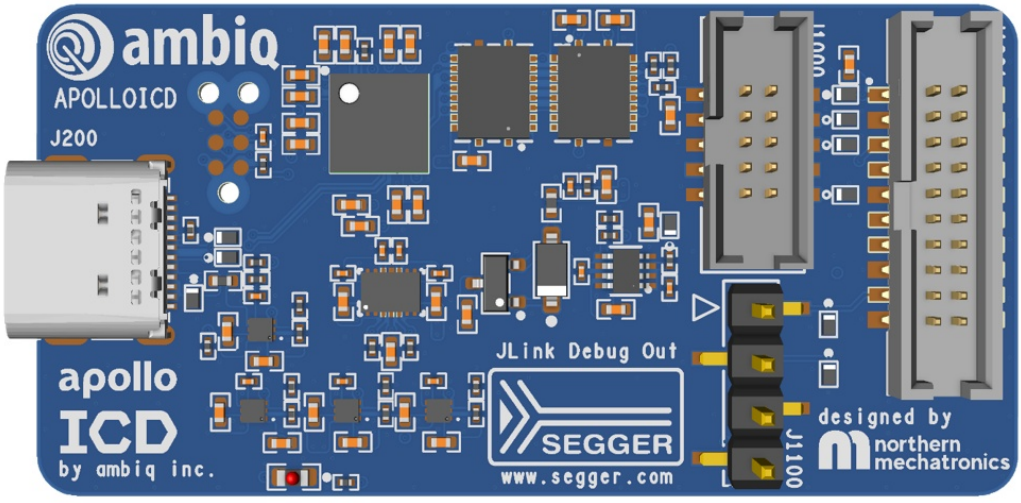
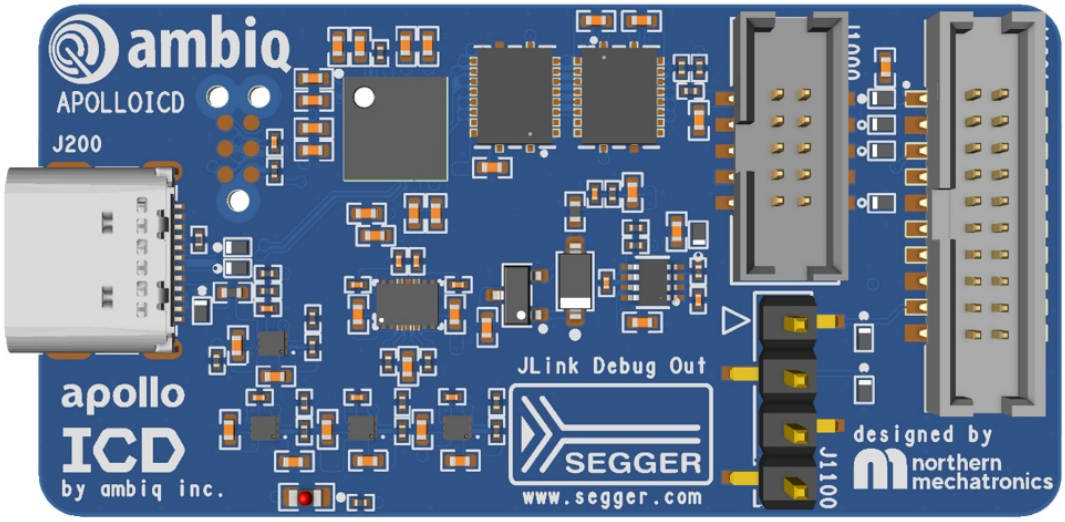


Figure 3-2: ApolloICD - Major Components



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

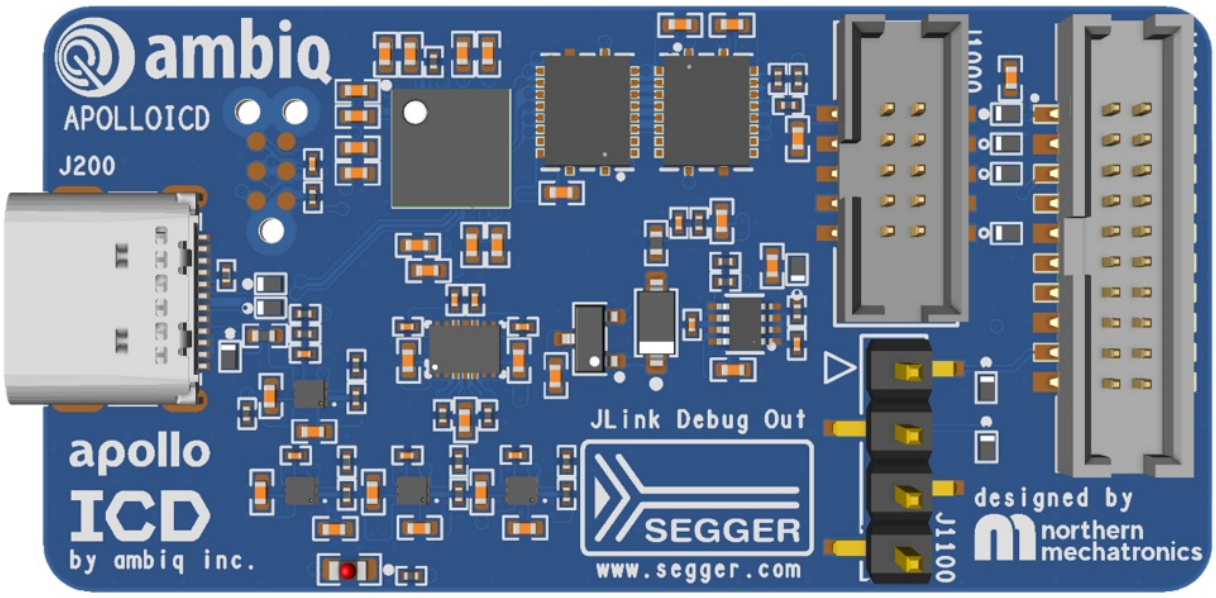
4

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

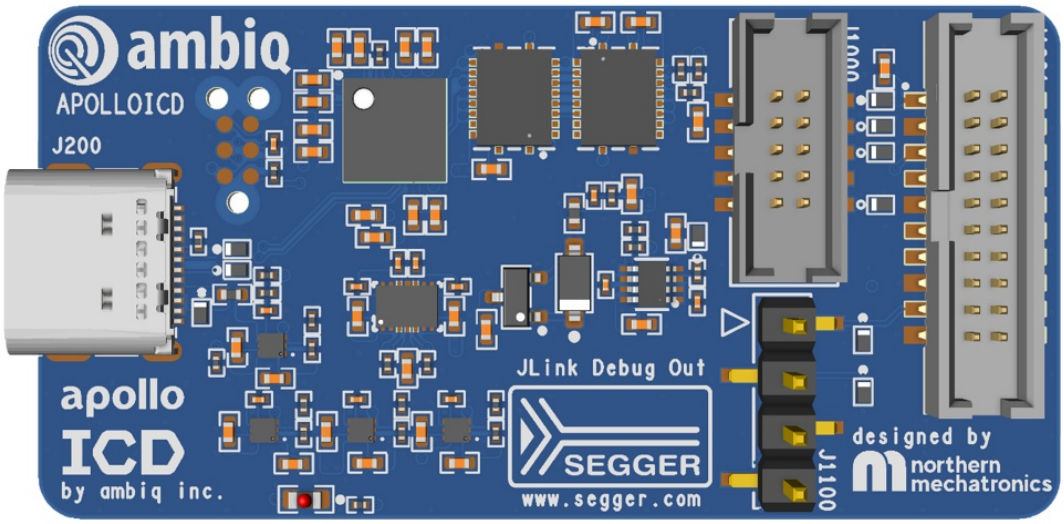
5

Target Interfaces

5.1 J-Link SWD Interfaces

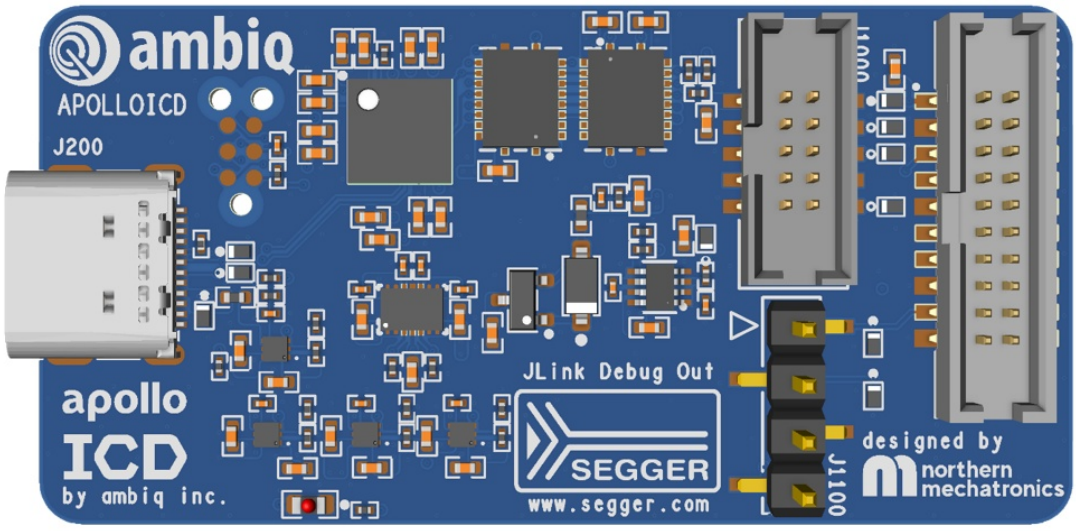
The ApolloICD supports 20-pin and 10-pin standard J-Link SWD debug interface connections to the target, as shown below in Figure 5-1.

Figure 5-1: ApolloICD - Debug Out Connectors



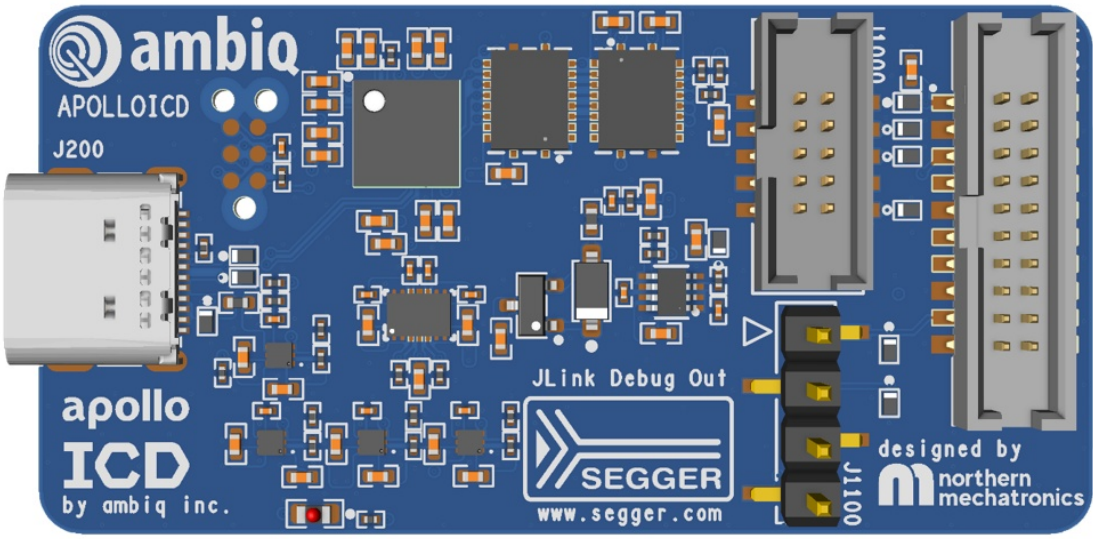
The ApolloICD kit includes a 20-pin ribbon cable that connects to J1001, with the pinout shown in Figure 5-2 on page 13.

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.

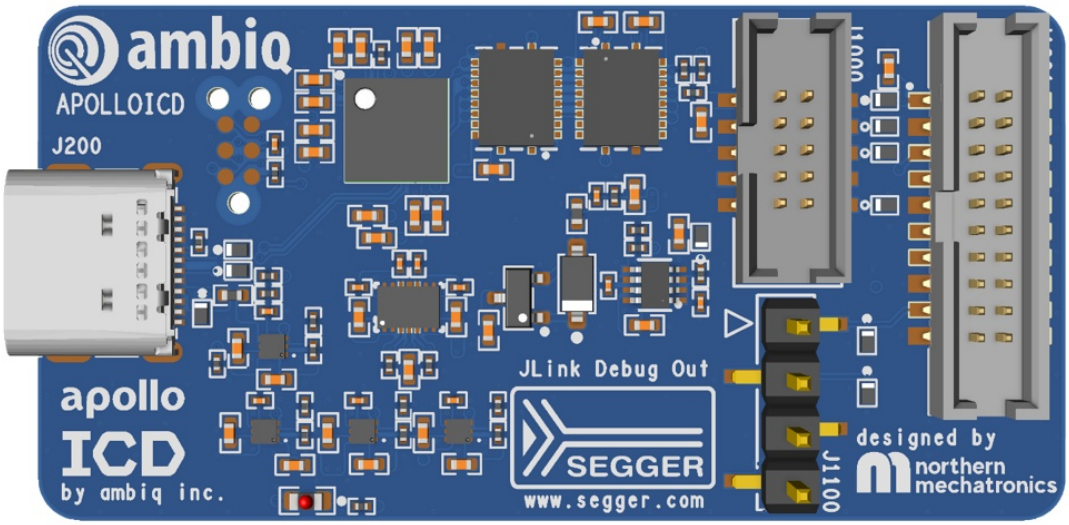
Figure 5-3: ApolloICD - J-Link SWD 10-Pin Interface Pinout



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:

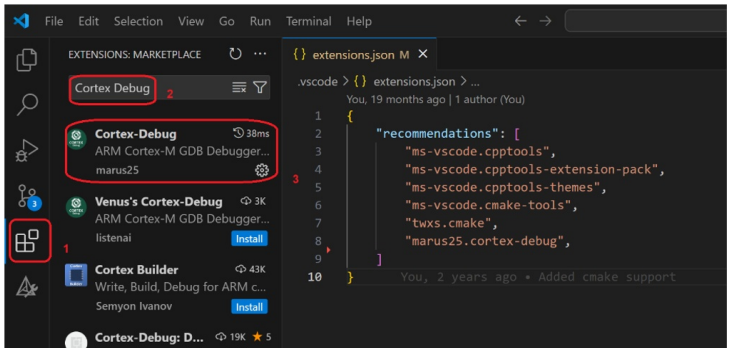
- J-Link Software Downloads
- J-Link Resources for Ambiq Targets
- SEGGER Knowledge Base

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.

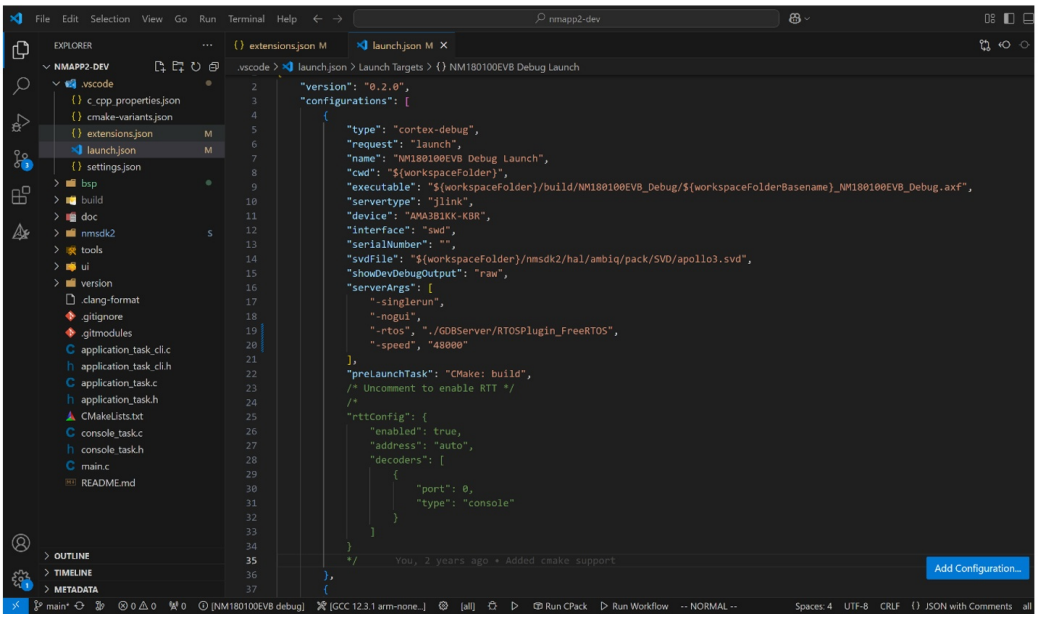
Figure 6-1: Visual Studio Code - Install Cortex Debug Extension



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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