

Description

CambridgeIC's Axial sensor technology measures the linear position of a contactless target. Targets are free to rotate about an axis that points along the measuring direction.

This arrangement suits applications such as float level sensing, where the height of an object is detected and the measurement is immune to its rotation.

The Axial Sensor Development Kit is a set of parts that work together for demonstration, evaluation and development. An Axial Sensor connects to a development board including a CambridgeIC CAM312 processor IC. This connects to a PC, using a CTU Adapter for SPI to USB conversion.

CambridgeIC CTU Software is available for Windows 10 PCs. It takes measurements, and allows customers to view and analyse results.

Product identification	
Part no.	Description
013-7005	Axial Sensor Development Kit

Kit Features

- CAM312 Development Board
- 78mm Axial Type 3.2 Sensor Assembly
- L20mm Target samples
- CTU Adapter for SPI to USB conversion
- PC software for Windows 10

Axial Sensor Technology Benefits

- Works with contactless, free rotating target
- Truly non-contacting, big gaps possible
- Tolerant of gap change and misalignment
- Robust against mechanical shock
- Stable across temperature
- Customers can build sensors and targets themselves for cost effective embedded solution

Applications

- Demonstration
- Evaluation
- Development

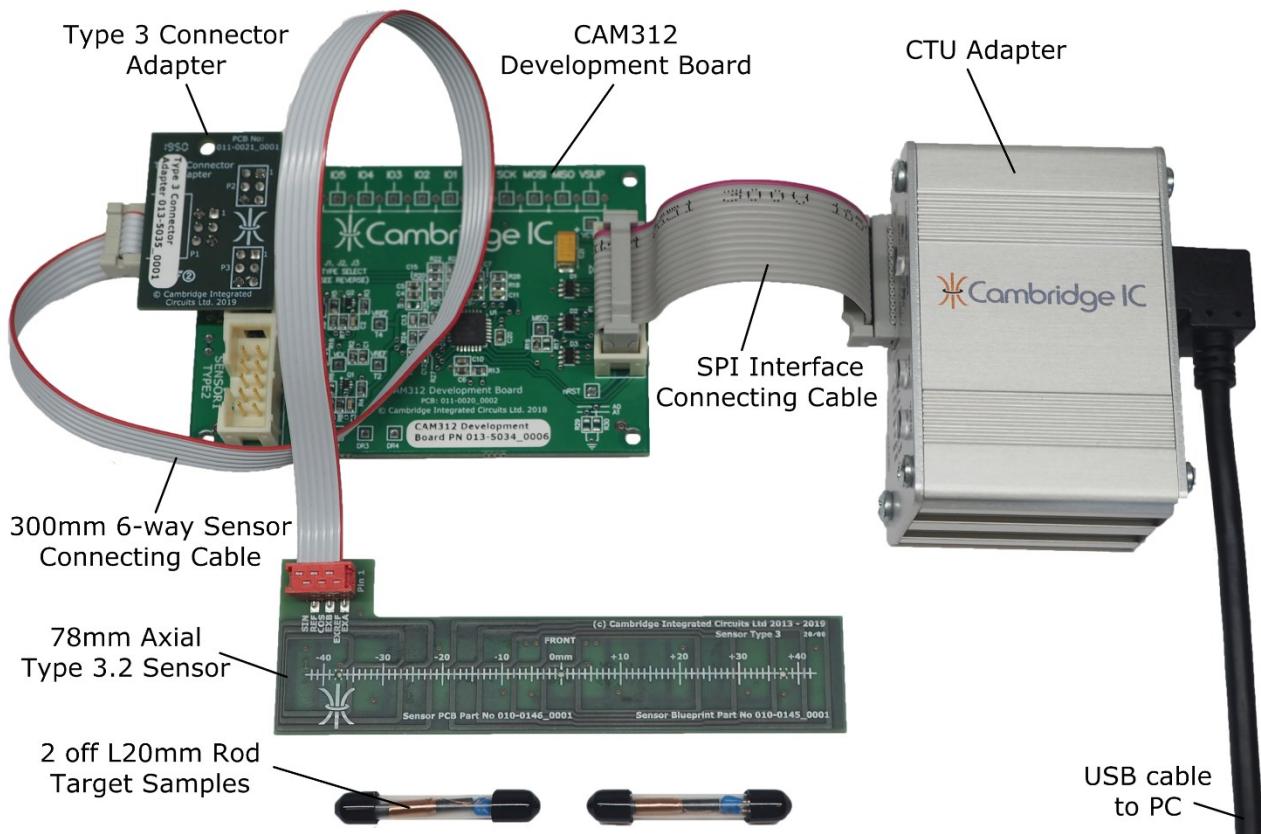


Figure 1 Axial Development Kit Parts

1 Quick Start Guide

1.1 Assembly

Remove parts from the box and ensure they are connected as in Figure 1. Take care that the Type 3 Connection Adapter's plugs are centered on the corresponding CAM312 Development Board header pins.

1.2 Plug the USB Cable into a PC

The software provided is for Windows 10. Turn the PC on and plug the USB cable into a convenient port.

CambridgeIC's CTU Adapter is supported by Microsoft Update. It should install automatically when a CTU Adapter is plugged into a Windows 10 PC that is connected to the internet. Installation may take a few minutes the first time. The Windows task bar advises when installation is complete.

Please refer to the CambridgeIC CTU Software User Guide for detailed instructions, including installation and troubleshooting. This is available for download from a link towards the bottom of the www.cambridgeic.com/products/dev-tools/cam312-development-board page.

1.3 Install the CambridgeIC CTU Software

CambridgeIC CTU Software may be downloaded from www.cambridgeic.com. Under **Login**, click **Don't have an account?** Once user details have been entered, a confirmation email is sent. If this is not delivered within a few seconds please email info@cambridgeic.com requesting manual activation.

Log in and navigate to www.cambridgeic.com/products/dev-tools/cam312-development-board. CambridgeIC CTU Software should appear as a link towards the bottom of the page for download. Save the zip file to an appropriate directory on the target PC and extract its contents

Locate and launch the **setup.exe** program from the directory containing the installer. Follow the on-screen prompts to complete the installation. Once completed, the applications may require a restart of the PC for correct operation.

For customers with CambridgeIC CTU Software already installed, launch CTU Demo then click on **Help**, then **About**. Check the CambridgeIC CTU Software version number is 2.12 or later. If not, download the latest version as above.

1.4 Launch and Configure CTU Demo

From the PC's **start** menu, select **All Programs** → **CambridgeIC CTU Software** → **CtuDemo**. Change **Sensor Type** to **3** as illustrated in Figure 3.

Then click on the **run** button. This will start measurements, and launch the **Display Type 3 Results** window illustrated in Figure 4.

For full details of using CTU Demo and the other applications provided please refer to the CTU Development Applications User Guide. This also includes a troubleshooting guide in case of difficulties.

1.5 Move Target and View Results

The **Display Type 3 Results** slider should follow the linear position of the target when aligned as in Figure 2. The Amplitude reading is an indication of signal health which will decrease with gap and towards the ends of travel. Relative Frequency indicates the difference between the resonator's frequency and the CAM312's centre frequency (nominally 187.5kHz). When the target is out of range, the **Valid** indicator changes to **Invalid**.

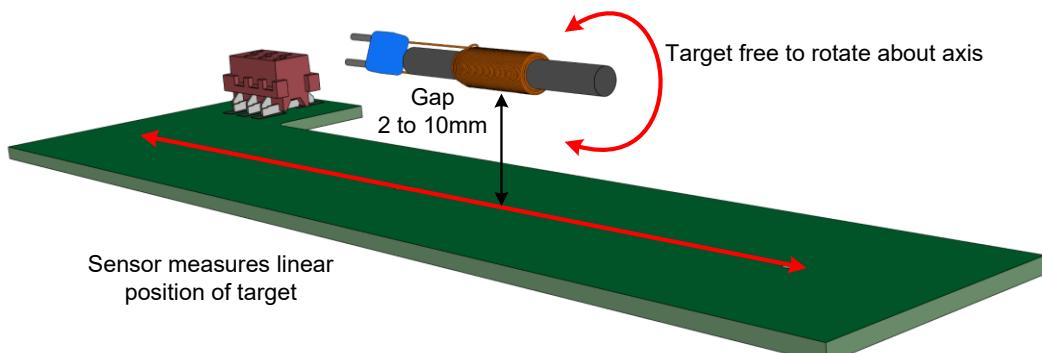
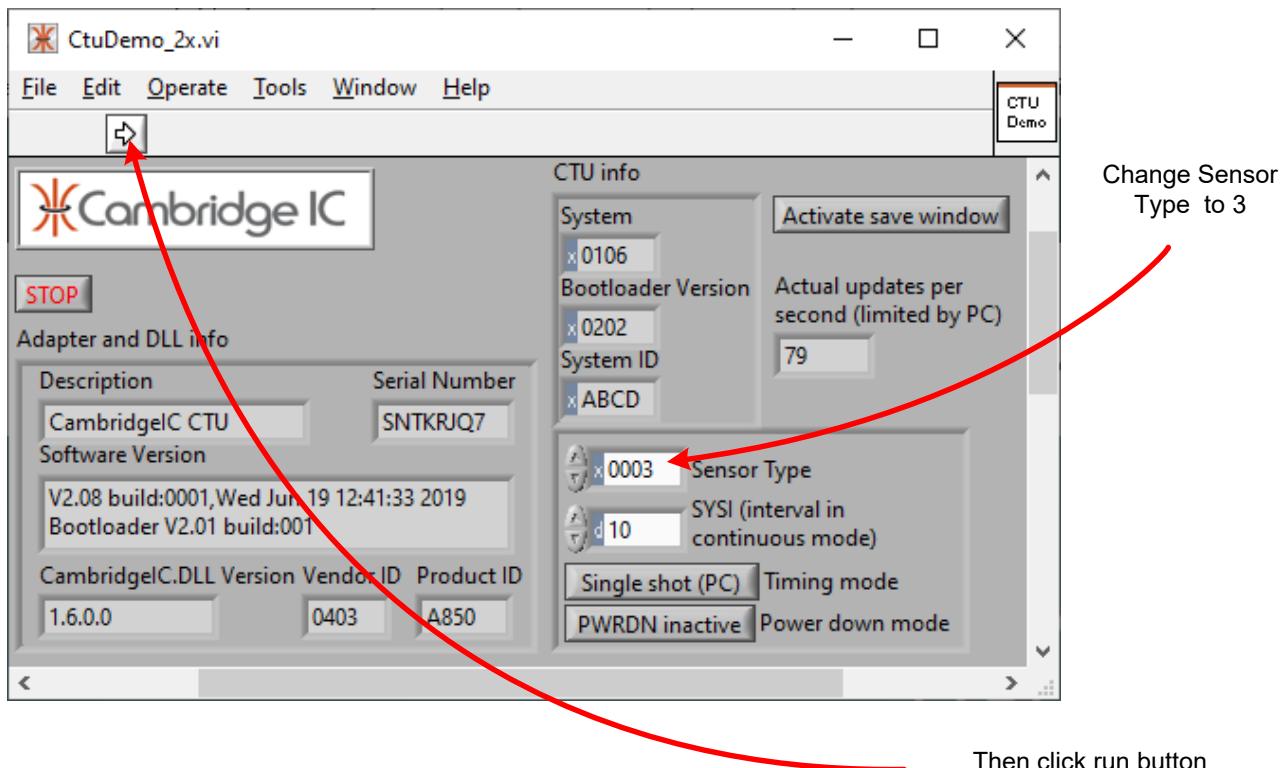
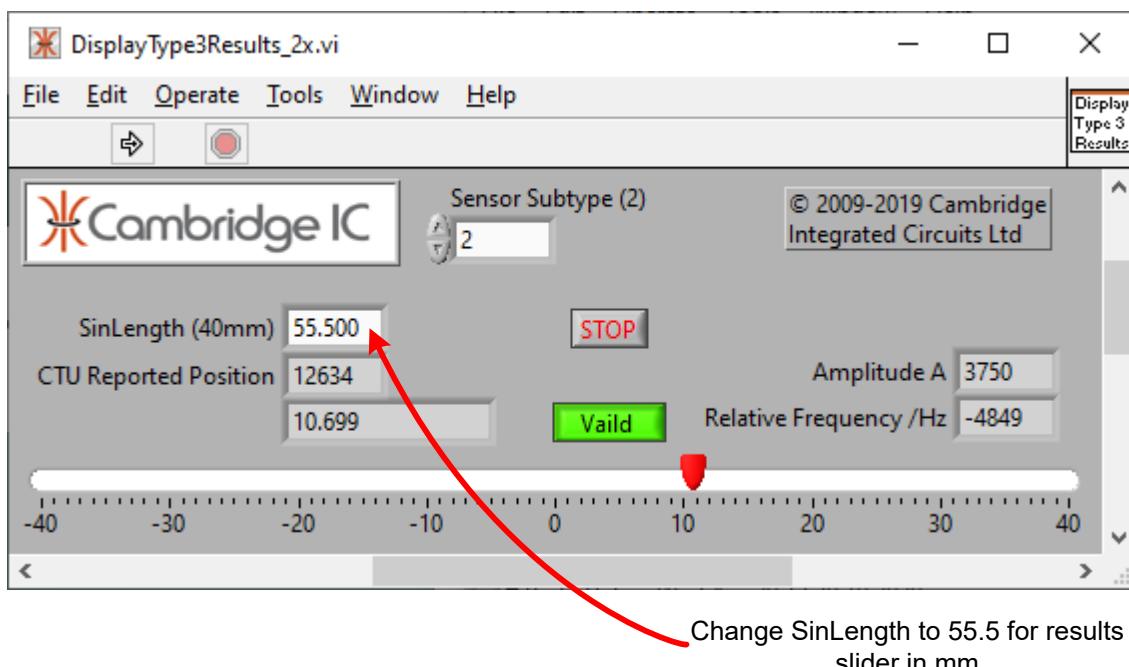


Figure 2 Alignment of sensor and L20mm Rod Target

**Figure 3 Configure CTU Demo and Run****Figure 4 Enter SinLength value in Display Type 3 Results and view results**

2 Document History

Revision	Date	Reason
0001	2 June 2020	First draft

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4 Legal

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The design of the sensor, comprising each of the patterned copper layers, drill locations, silk screens, assembly layers and board outline are protected by copyright.