

TLx49901 2Go evaluation kit user guide

XENSIV™ linear sensors

About this document

Scope and purpose

This document describes the hardware and software functionality of the XENSIV™ TLx49901 2Go evaluation kit.

Intended audience

This document is intended for hardware and software engineers involved in the evaluation of magnetic linear sensors from the XENSIV™ TLx49901 series.

About this product group

Target applications

- Small-field linear position and angle sensing
- Gaming applications, e.g., joysticks
- [PC accessories](#)
- Multisensor encoder setup

Product family

Infineon's portfolio of [XENSIV™ linear sensors](#) provides a broad range of solutions for different applications, including high-sensitivity linear tunneling magnetoresistance (TMR) sensors and Hall-effect sensors with integrated signal processing, designed for contactless position sensing.

Evaluation Board

This board is to be used for evaluating the magnetic sensing capabilities of the XENSIV™ TLx49901 linear sensors.

Note: PCB and auxiliary circuits are NOT optimized for final customer design.

Safety precautions

Safety precautions

Note: Please note the following warnings regarding the hazards associated with development systems.

Table 1 **Safety precautions**

	Caution: The heat sink and device surfaces of the evaluation or reference board may become hot during testing. Hence, necessary precautions are required while handling the board. Failure to comply may cause injury.
	Caution: The evaluation or reference board contains parts and assemblies sensitive to electrostatic discharge (ESD). Electrostatic control precautions are required when installing, testing, servicing, or repairing the assembly. Component damage may result if ESD control procedures are not followed. If you are not familiar with electrostatic control procedures, refer to the applicable ESD protection handbooks and guidelines.

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1 The board at a glance

1 The board at a glance

The XENSIV™ TLx49901 2Go evaluation kit capitalizes on the magnetic sensing capabilities of the TLx49901 Hall effect magnetic sensor and allows you to perform linear position measurements. The compatible software provided is designed to visualize and to log data acquired from the TLx49901 sensor, providing flexible visualization and editing features.

The TLx49901 2Go evaluation kit (V1) is shown in [Figure 1](#).

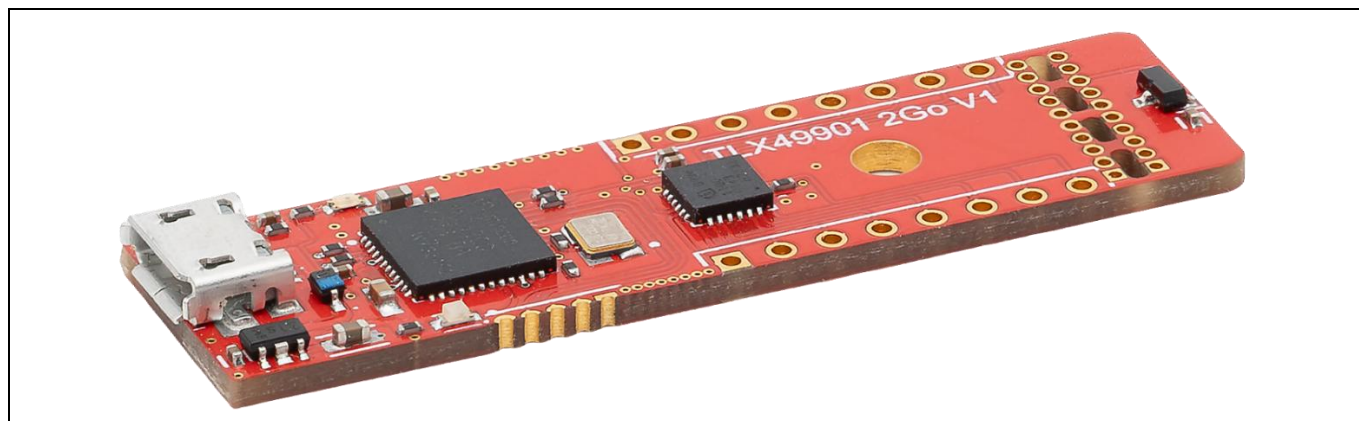


Figure 1 TLx49901 2Go evaluation kit

Note: [Figure 1](#) is generic; the latest variant may include modifications.

The evaluation hardware is compatible with the XENSIV™ 3D magnetic sensor add-ons:

- [ROTATE KNOB 3D 2GO KIT](#)
- [LINEAR-SLIDER 2GO](#)

The evaluation hardware can be ordered online from the [Infineon](#) website or via Infineon sales channels. The ordering part numbers are listed in [Table 2](#).

Table 2 TLx49901 2Go evaluation kit list with ordering numbers

Name	Description	Infineon Sample Request (ISaR) SP number
TLX49901-1M_EVALKIT	TLE49901-1M 2Go evaluation kit	SP006192643
TLX49901-2M_EVALKIT	TLE49901-2M 2Go evaluation kit	SP006192653
TLX49901-3M_EVALKIT	TLE49901-3M 2Go evaluation kit	SP006192657
TLX49901-4M_EVALKIT	TLE49901-4M 2Go evaluation kit	SP006192661

2 System and functional description

2 System and functional description

2.1 Description of functional units

The hardware of the TLx49901 2Go evaluation kit V1 contains the following main functional units.

Indices in parentheses match the schematic designators for each component.

- **On-board debugger (U3):** The evaluation kit features an on-board debugger implemented via an XMC4200 microcontroller. This auxiliary microcontroller features a debug probe firmware delivered by SEGGER J-Link, used for flashing the target microcontroller and for establishing serial communication via USB
- **Target microcontroller (U1):** The main microcontroller is an XMC1100, VQFN24 package, 64 KB of flash. This device handles the digital conversion of the analog sensor output and the forwarding of data to USB via the debugger
- **Power supply (U2):** The IFX54211MBV33 low-dropout voltage regulator (LDO) steps down the 5 V from the USB connector to 3.3 V, supplying the debugger, the target microcontroller, and the sensor
- **Sensor under evaluation (U5):** TLx49901 magnetic sensor
- **USB connector (J1):** Micro-USB, supplies the board with 5 V and ensures communication with the PC
- **Auxiliary connectors:** PCB side connectors (P1, P2; 2.54 mm headers, default not assembled) that expose GPIO, UART, SPI, and PWM pins of the XMC1100 microcontroller, allowing the TLx49901 2Go board to be connected to other components

Figure 2 shows the TLx49901 2Go evaluation kit, with associated auxiliary connector pinout and highlighted functional units.

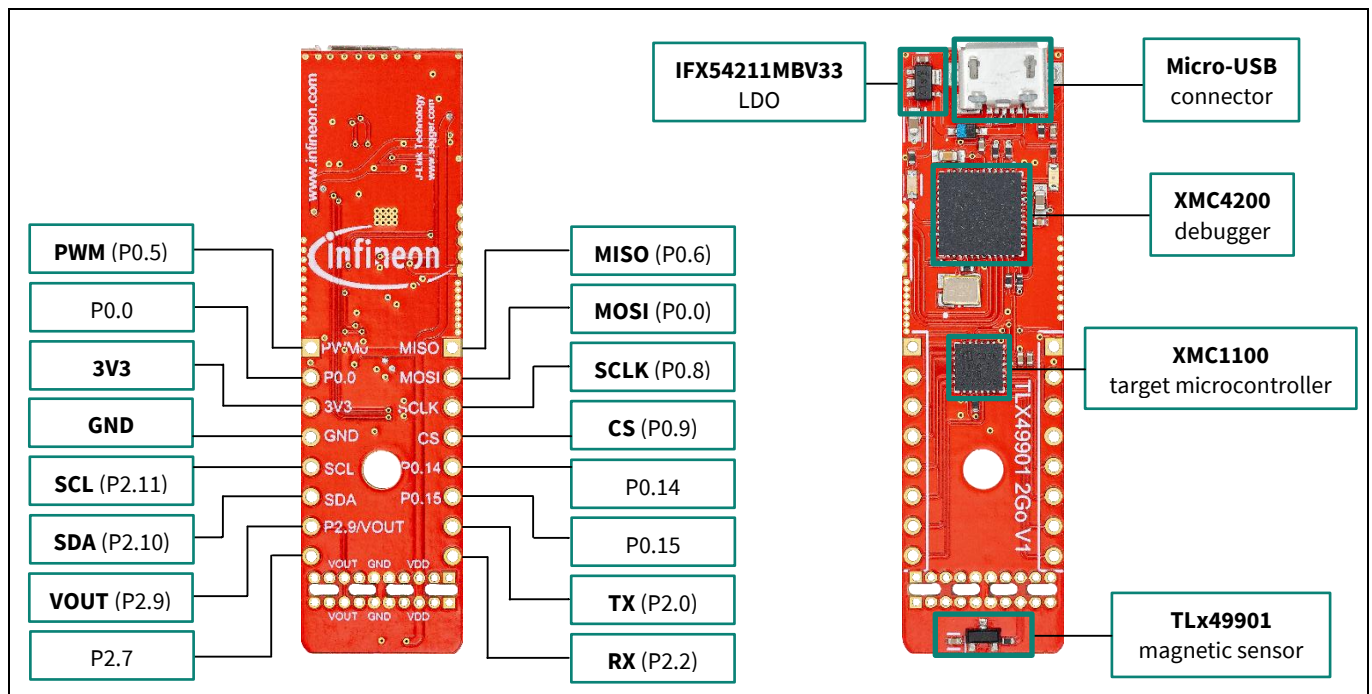


Figure 2 TLx49901 2Go evaluation kit auxiliary connector pinout and functional components

2 System and functional description

2.2 Breakaway PCB

The perforated tabs allow you to separate the TLx49901 evaluation kit into two distinct parts, the main processing board and the TLx49901 sensor, with two main use cases:

- The significant reduction of the sensing element footprint facilitates the integration of the TLx49901 magnetic linear sensor in existent assemblies where space might be limited
- The TLx49901 magnetic linear sensor can be integrated into your custom hardware setup, provided that the sensor has the appropriate connections:
 - **VDD:** 3.3 V DC voltage supply
 - **GND:** System ground
 - **VOUT:** Dedicated analog-to-digital conversion (ADC) channel

Connection requires the secure attachment of three conductors between the labeled VOUT, GND, and VDD plated holes on each of the two separated PCBs. For the GND conductor, either of the two plated holes near the GND label are valid connections.

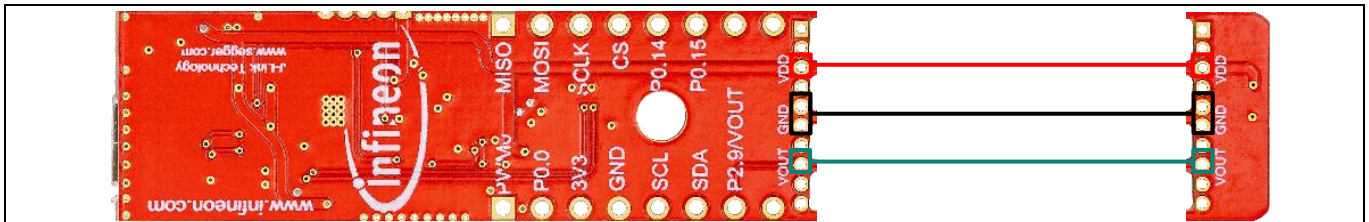


Figure 3 TLx49901 2Go evaluation kit breakaway connections

3 System design

3 System design

3.1 Schematics

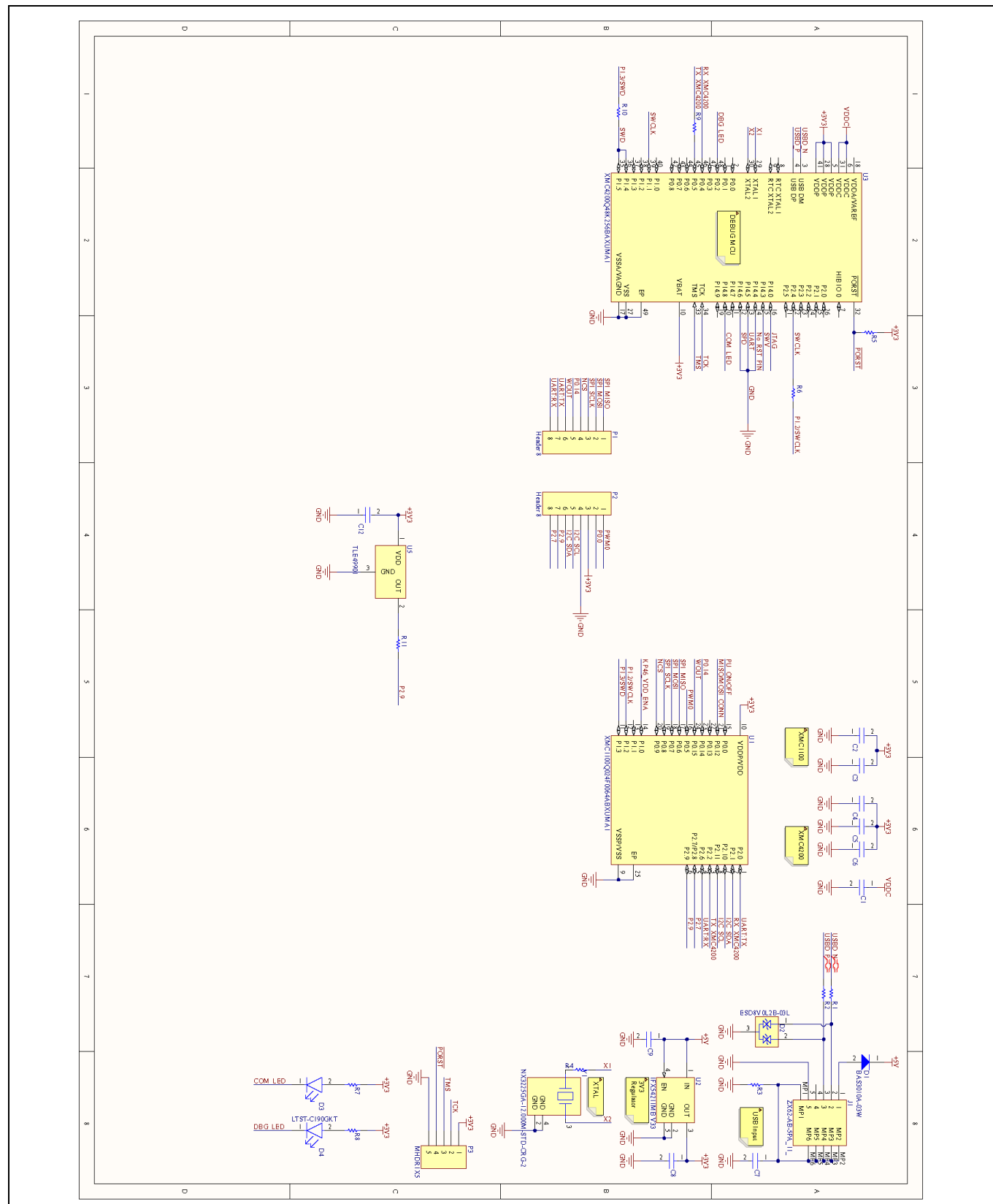


Figure 4 TLx49901 2Go evaluation kit schematic

3 System design

3.2 Layout

The design described in [Section 2.1](#) is physically implemented in PCB technology using a standard process with the following characteristics:

- PCB material: FR4
- Copper: 2 layers top/bottom, 140 µm thickness each
- 45-degree chamfer on sensor side

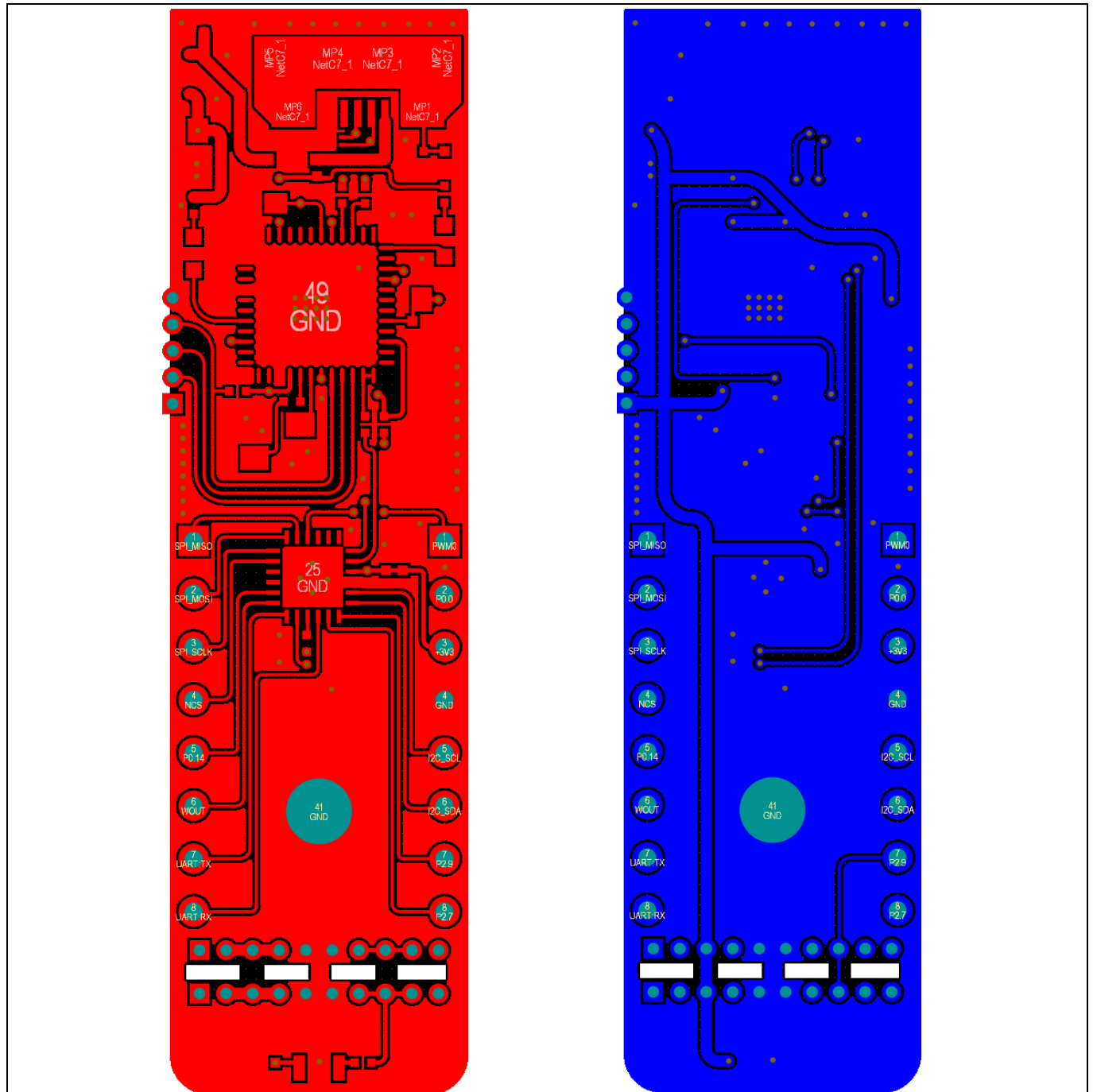


Figure 5 TLx49901 2Go evaluation kit PCB layout – Top (left), bottom (right)

3 System design

3.3 Bill of materials

Table 3 TLx49901 2Go evaluation kit bill of materials

Designator	Description	Quantity	Assembled on PCB	Infineon part
C1	CL10B474KO8NNNC	1	Yes	No
C2, C3, C4, C6, C7, C9, C12	C0402C104K4RACTU	7	Yes	No
C5, C8	GRM188R60J106ME47D	2	Yes	No
D1	BAS3010A-03W	1	Yes	Yes
D2	ESD8V0L2B-03L	1	Yes	Yes
D3	150060RS75000	1	Yes	No
D4	LTST-C190GKT	1	Yes	No
J1	ZX62-AB-5PA_11_	1	Yes	No
P1, P2	Header, 8-pin	2	Yes	No
P3	Header, 5-pin	1	Yes	No
R1, R2	ERJ-2RKF33R0X	2	Yes	No
R3	ERJ-2RKF1004X	1	Yes	No
R4	ERJ-2GEJ511X	1	Yes	No
R5	ERJ2RKF1002X	1	Yes	No
R6, R9, R10	ERJ-2RKF1000X	3	Yes	No
R7, R8	ERJ2RKF6800X	2	Yes	No
R11	0R 0402	1	Yes	No
U1	XMC1100Q024F0064ABXUMA1	1	Yes	Yes
U2	IFX54211MB V33	1	Yes	No
U3	XMC4200Q48K256BAXUMA1	1	Yes	No
U5	TLE49901	1	Yes	Yes
Y1	NX3225GA-12.000M-STD-CRG-2	1	Yes	No

4 Evaluation software

4 Evaluation software

Download the evaluation software via the [Infineon Development Center](#) online platform or [Infineon Development Center Launcher](#) application. It is recommended installing the Infineon Developer Center Launcher application before installing the evaluation software.

The software package contains:

- A graphical user interface (GUI) software for sensor evaluation
- SEGGER J-Link debugger software with USB driver

4.1 Requirements

The TLx49901 2Go hardware and software bundle is developed and tested with the following PC configurations:

- **Operating system:** Windows 10/Windows 11 (also compatible with Windows 7)
- **RAM:** 8 GB (maximum RAM usage estimated at 250 MB, when data logging is ON)
- **Storage:** 512 GB (minimum required for installation: 250 MB, including dependencies)
- **CPU:** 3 GHz, 4 cores (lower performance CPUs might impact the performance of the GUI)

4.2 Software download

To access the evaluation software, go to the **Assets** section of your preferred platform and search with the text “TLx49901” and it displays as [TLx49901 2Go Evaluation App](#).

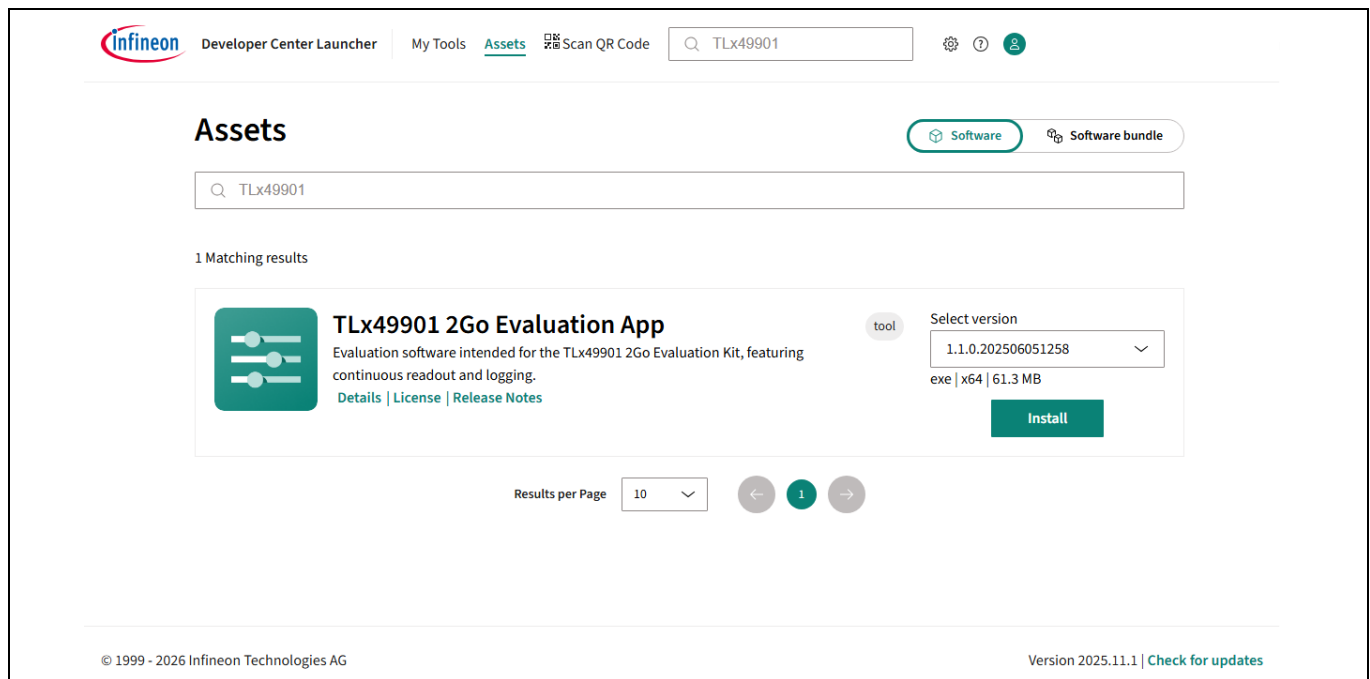


Figure 6 Infineon Development Center – online tools

Note: **TLx49901 2Go Evaluation App** is open only for users registered with a myInfineon account.

4 Evaluation software

4.3 Software installation

1. Download the TLx49901 2Go Evaluation App installer as mentioned in the earlier section and click the **Install** button

Note: Ensure that administrator rights are enabled before installation.

The installer file contains the following:

- Binaries/compiled objects needed for running the GUI
- SEGGER J-Link debugger software with USB driver
- .NET 4.8 online installer (needed only for older versions of Windows, if you do not have this already installed). Requires a stable Internet connection

2. Accept the License Agreement and click **Next**

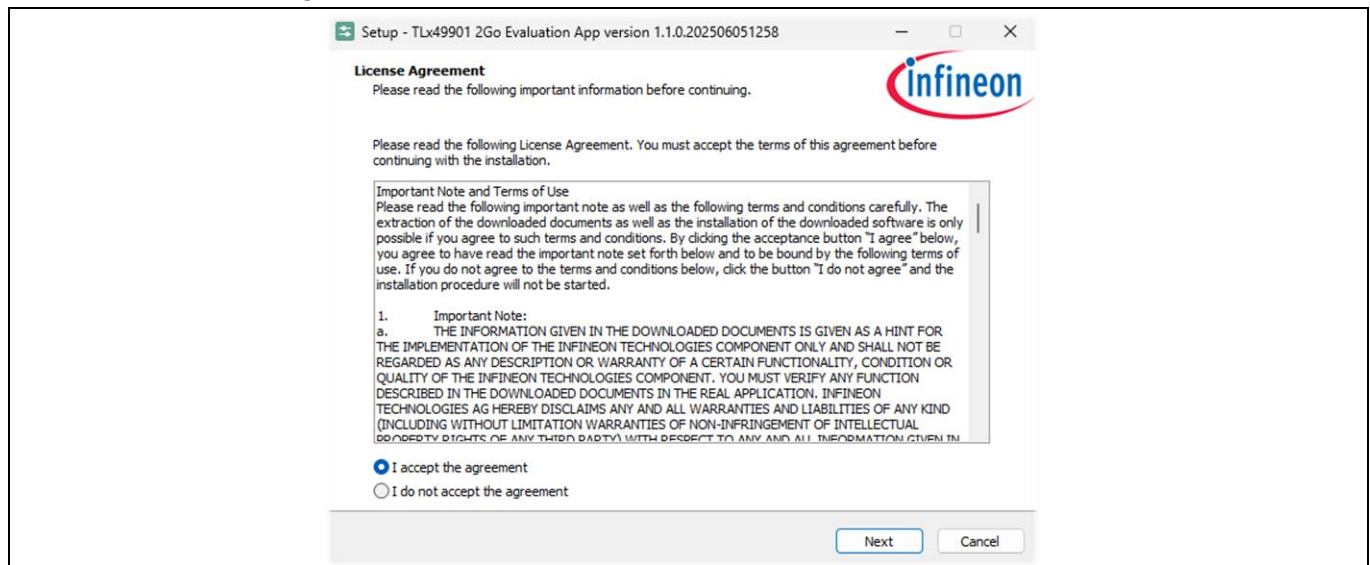


Figure 7 Software installation – license agreement

3. Select **Quick Installation** (recommended) and click **Install** to begin the installation process

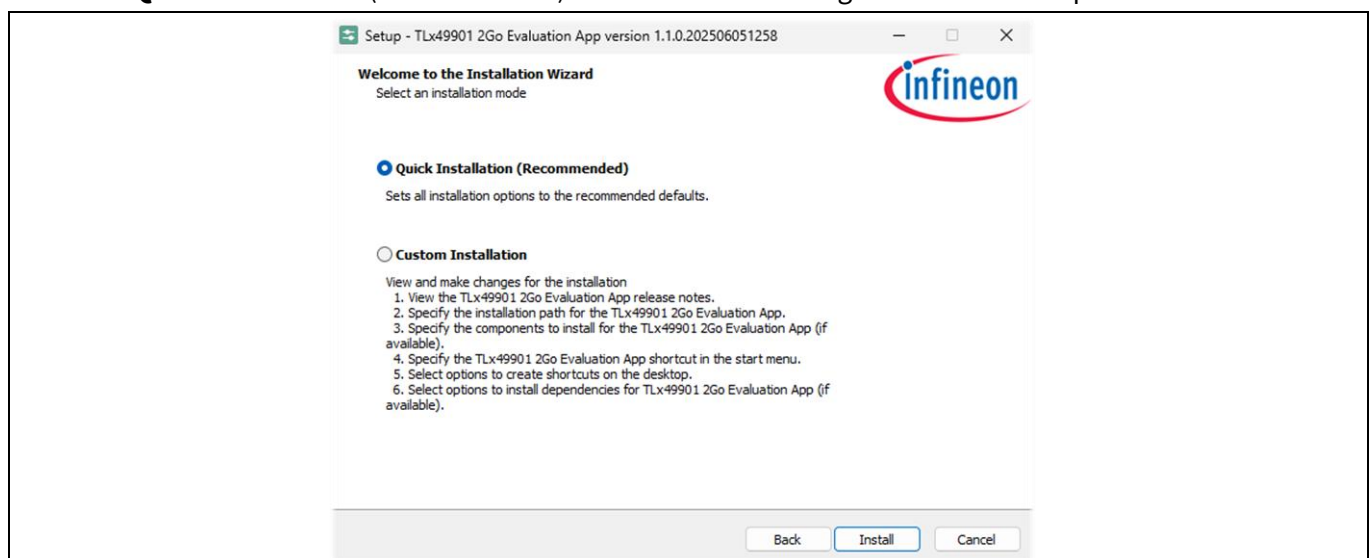


Figure 8 Software installation – quick installation

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4 Evaluation software

- After the binaries are copied to the installation folder, install the **SEGGER J-Link driver**.
If this driver is already installed on your PC, skip this operation. If this driver is not installed, the USB connection between the PC and the TLx49901 2Go evaluation kit will not function

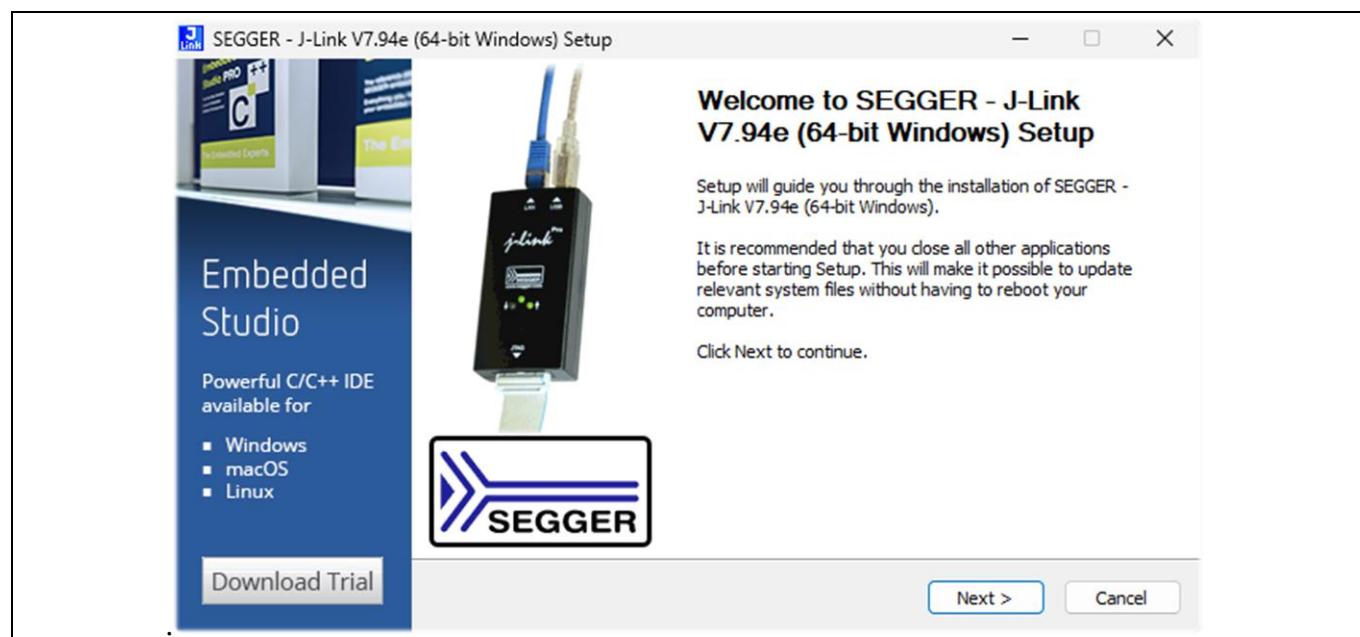


Figure 9 Software installation – SEGGER J-Link driver installation

- Install **.NET Framework 4.8**. For operating systems starting from **Windows 10 build 1903** and later, this comes pre-installed. If the framework is not already installed, an active Internet connection is required to complete the installation process

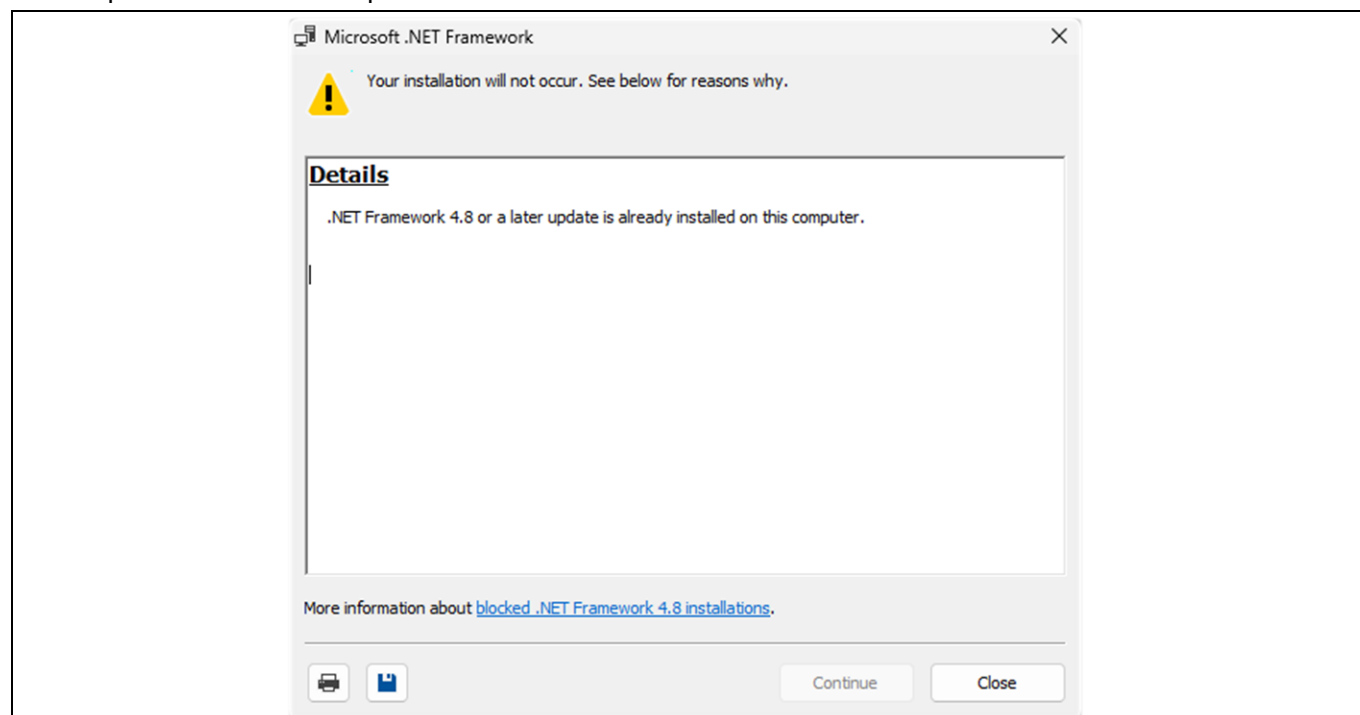


Figure 10 Software installation – .NET 4.8 installation

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4 Evaluation software

6. You will be notified upon completion of all installer processes and a shortcut is created on the desktop by default. You can choose to run the installed **TLx49901 2Go Evaluation App** and click **Finish** to exit the setup

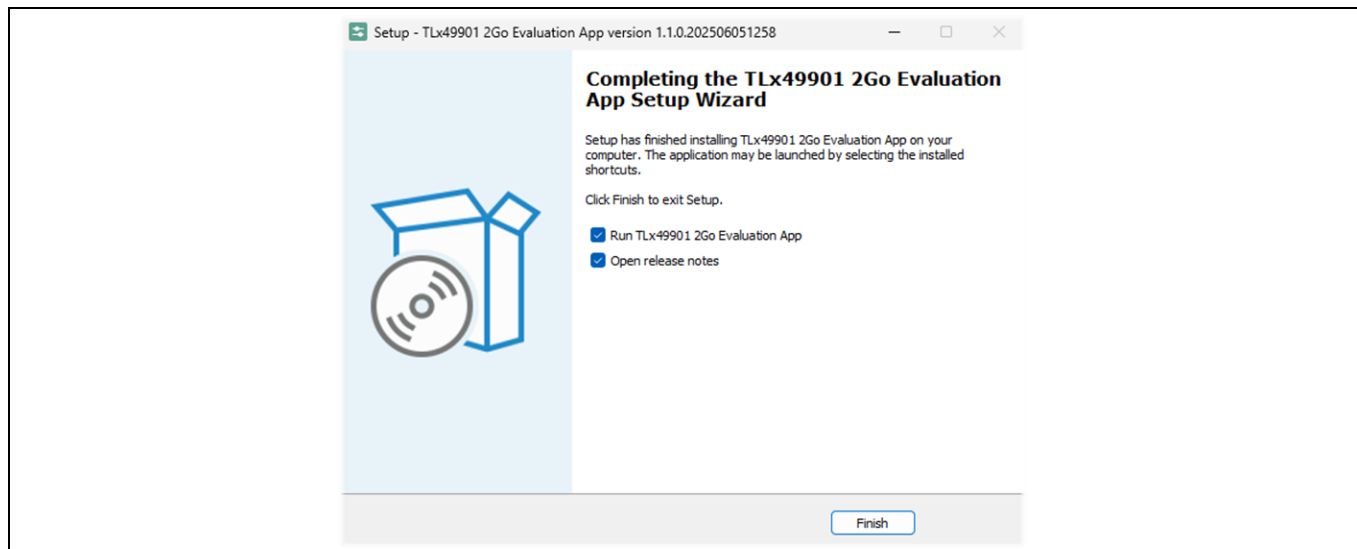


Figure 11 Software installation – completion

4.4 Uninstalling the software

To uninstall the software package, go to **Start > Add or remove programs** and search for the **TLx49901 2Go Evaluation App** (or just **TLx49901**). Select **Uninstall** to delete the software from your PC.

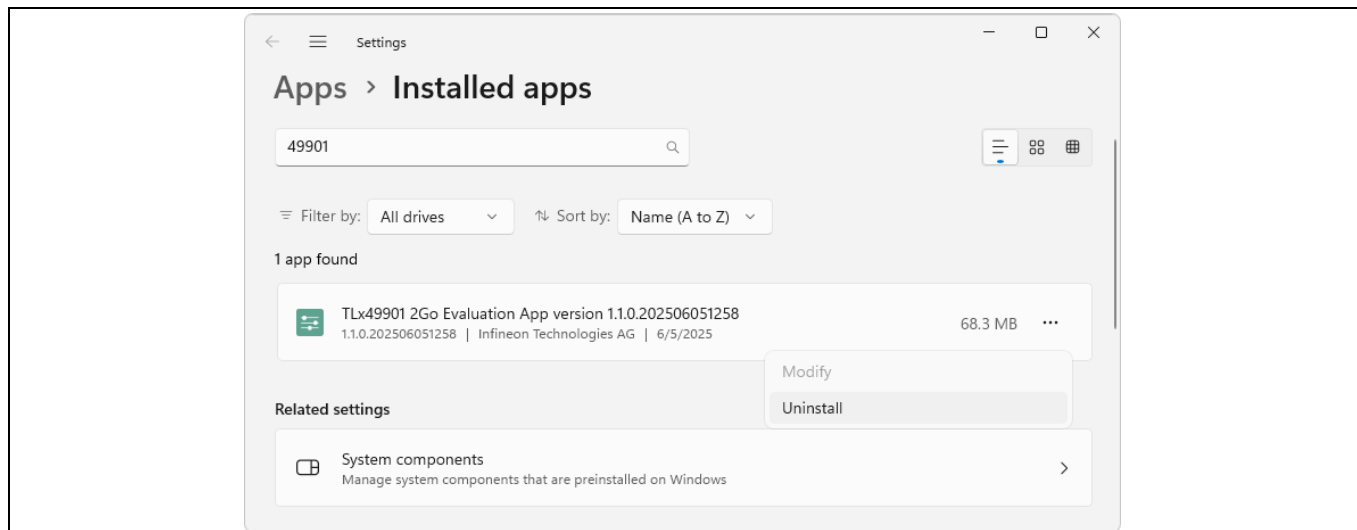


Figure 12 Software uninstall

All installation files are deleted from the system except:

- The SEGGER J-Link driver, which can be uninstalled separately if needed
- .NET 4.8 dependencies, which in most cases are part of the operating system

5 Using the evaluation software

5 Using the evaluation software

This section describes all the functions of the evaluation software provided:

- Continuous readout, in both V and least significant bit (LSB) raw ADC output
- Data logging and visualization

5.1 Startup screen

Start the application by double-clicking the created shortcut, or run the executable file from the installation folder. Connect the TLx49901 2Go evaluation kit to the PC with a **Micro-USB** cable (not provided in the kit package).

If the evaluation kit is successfully connected, a COM port should be available to connect to. Click on the COM port and wait while the software flashes the firmware into the XMC1100 microcontroller. For subsequent launches of the software, the firmware will be flashed again only if communication errors occur.

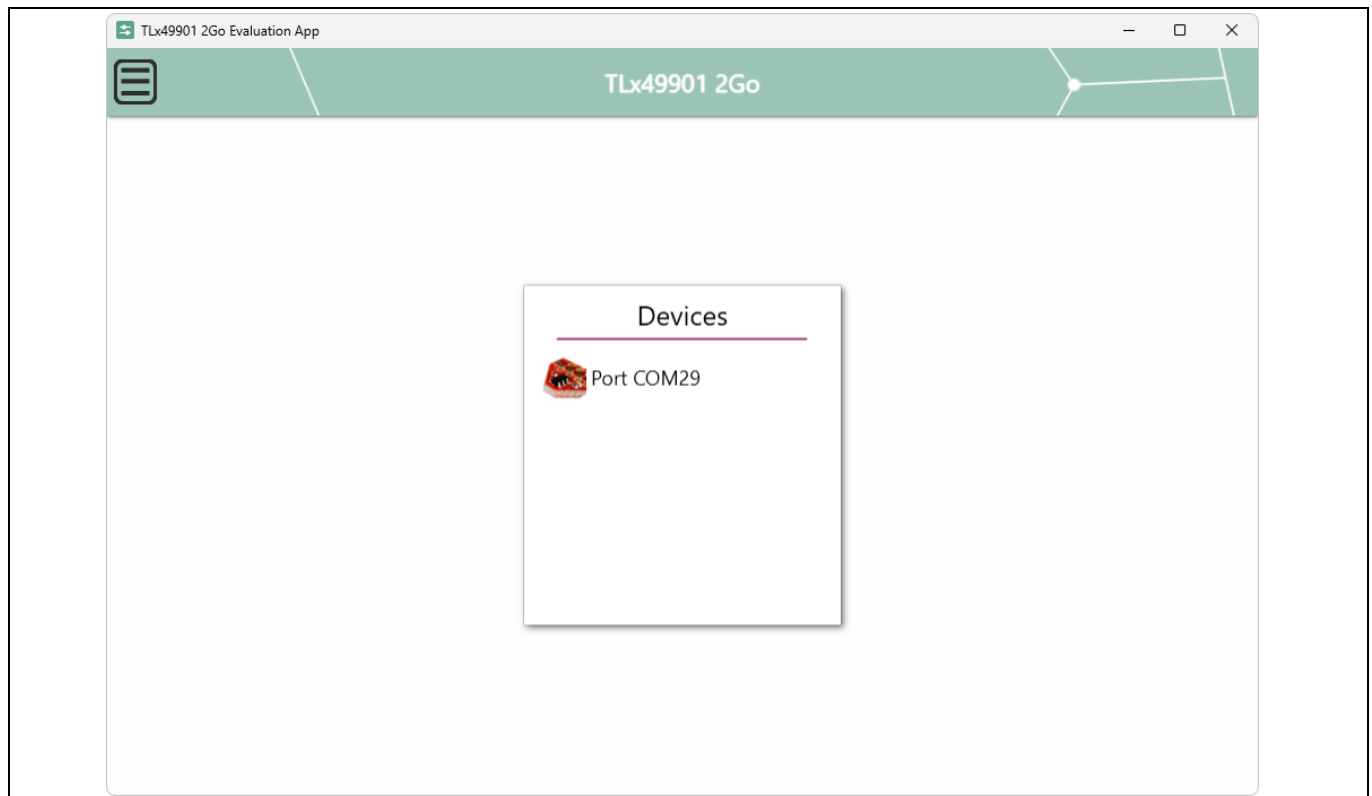


Figure 13 Startup screen with valid COM port connection

5 Using the evaluation software

5.2 Primary GUI window

After successfully connecting to the TLx49901 2Go evaluation kit, the evaluation software enters the continuous readout scenario. The chart is updated at a rate of **500 samples/second** and represents the direct sensor output. Entering the scenario starts the continuous readout automatically, in **LSB mode**.

Graphical elements on the left side of the screen:

- **Back:** Go back to the startup screen
- **Information:** Displays the COM port used and the evaluation kit name
- **Start/Stop:** Start/stop the continuous readout

The graphical elements on the right side of the screen:

- **Show V/Show LSB:** Switch between readout modes
- **Output [LSB/V]:** Updates periodically with the latest received data point
- **?:** Provides additional details about how the two readout modes differ

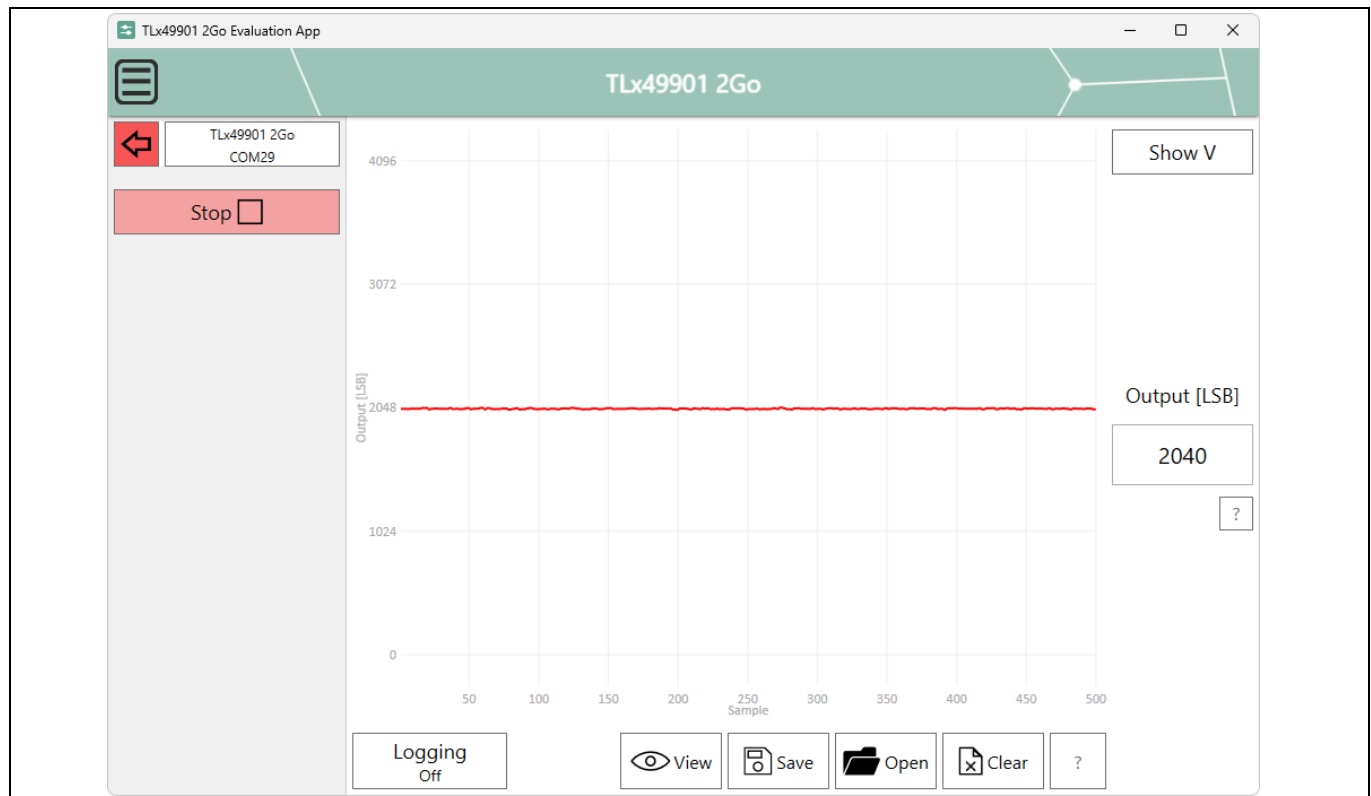


Figure 14 Continuous readout

5 Using the evaluation software

5.3 Data logging

The evaluation software offers the option to log data points. The TLx49901 2Go evaluation kit outputs data to the evaluation software at a rate of **5000 samples/second**, while the continuous readout is down sampled to **500 samples/second**. Data logging allows you to record all the data points transmitted by the TLx49901 2Go evaluation kit, with flexible editing and visualization options.

At the bottom of the screen, a ribbon of buttons is dedicated to the logging function of the software:

- **Logging On/Off:** Activates the logging function, which will record all incoming data points from the TLx49901 2Go evaluation kit
- **Logged points:** Displays the current number of logged points. This is visible only if there are any points that were logged, but were not yet saved to a .CSV file or cleared
- **View:** Displays the currently logged points in a new window
- **Save:** Saves the currently logged points in .CSV format with the option to add a comment and to choose the file name and save path
 - **Default name:** Evaluation kit name + timestamp (e.g., TLx49901_2Go_2026-06-05_11-46-49.csv)
 - **Default save location:** Desktop
- **Open:** Displays previously logged and saved points in a new window
- **Clear:** Deletes all the currently logged points
- **?:** Displays the same information provided in this section, accessible from the software main window

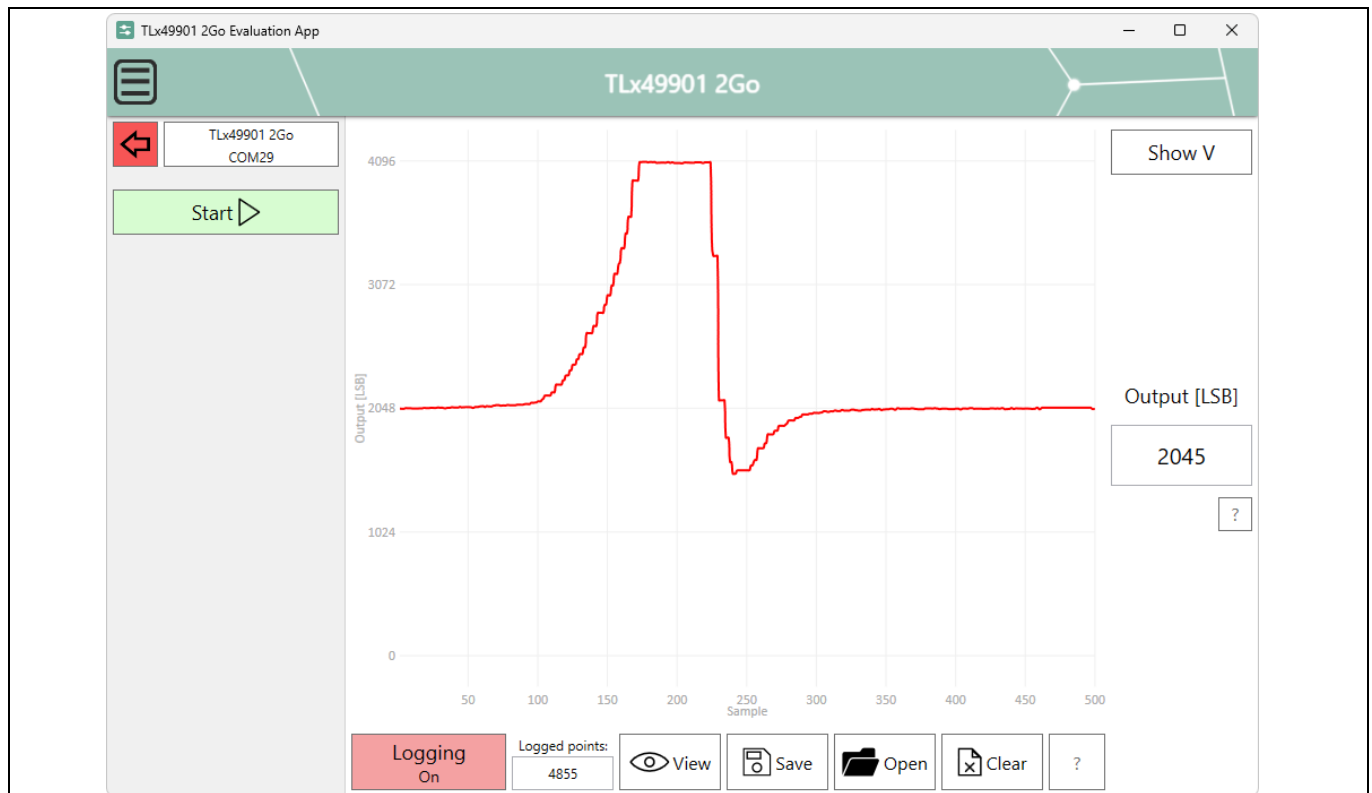


Figure 15 Using the data logging feature

5 Using the evaluation software

5.4 Logging Data Visualization Window

After logging data and pressing the **View** button, or after opening a .CSV file by pressing the **Open** button, a new window will display over the main window. As an example, [Figure 16](#) shows the logged data corresponding to the continuous readout data from [Figure 15](#).

The following controls are available in the Logging Data Visualization Window:

- **Series:** Regardless of the continuous readout mode (V/LSB), the logging view captures all the data points from the sensor. You can view the following series on the chart:
 - **Voltage:** Represents the analog sensor output
 - **LSB:** Represents the A/D converted sensor output
- **Cursor:** Toggles the vertical gray bar and data-point bubble at mouse position
- **Zoom:** Selects the zoom mode (X axis, Y axis, both, or no zoom) or resets any zoom to default. Zooming and panning are done using the mouse

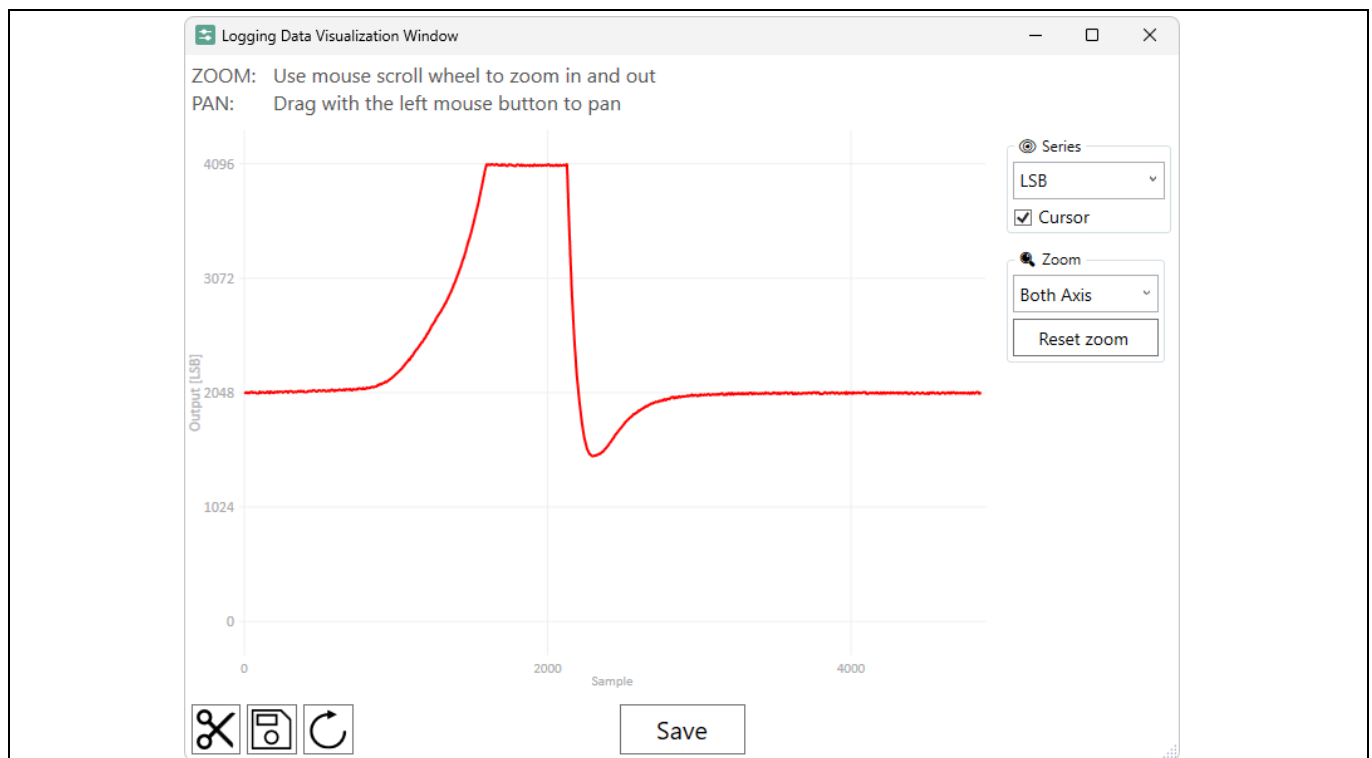


Figure 16 Logging Data Visualization Window

The bottom-left section of the screen offers additional data selection tools:

- **Cut:** When you select the Cut button, you can select a collection of points on the chart by holding the left mouse button and dragging the mouse over the area of interest. Upon releasing the left mouse button, the chart zooms in on the selected area
- **Save cut:** Saves the last Cut section of the chart. The other points are temporarily discarded. Closing and opening the data logging visualization window reloads all logged points
- **Reload:** Reloads the last saved section of the chart
- **Save:** Copies the last saved cut of the chart and saves it to .CSV format

6 Related resources

6 Related resources

- Webpage: [XENSIV™ linear sensors](#)
- Infineon Developer Community: [XENSIV™ linear sensors](#) forum
- [TLx49901 2Go Evaluation App](#)

References

References

- [1] Infineon Technologies AG: *XENSIV™ TLE49901 linear sensors datasheet*; [Available online](#)
- [2] Infineon Technologies AG: *XENSIV™ TLI49901 linear sensors datasheet*; [Available online](#)

Glossary

Glossary

ADC

analog-to-digital converter

COM

communication port

CPU

central processing unit

CSV

comma-separated values

ESD

electrostatic discharge

GPIO

general purpose input/output

GUI

graphical user interface

LDO

low-dropout regulator

LSB

least significant bit

PCB

printed circuit board

PWM

pulse width modulation

RAM

random access memory

SPI

serial peripheral interface

UART

universal asynchronous receiver/transmitter

USB

universal serial bus

VDD

supply voltage

VOUT

voltage output

Revision history

Revision history

Document revision	Date	Description of changes
1.00	2026-07-20	Initial release

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UG114512

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Safety & Operating Instructions:

Customer shall check the Evaluation Board for any physical damage which may have occurred during transport. If customer detects any damages or defects in the Evaluation Board, customer shall not connect the Evaluation Board to a power source. Customer shall contact Infineon for further support. If customer observes unusual operating behavior during the evaluation process, customer shall immediately shut off the power supply to the Evaluation Board and consult Infineon for support.

Customer shall not touch the Evaluation Board during operation and keep a safe distance.

Customer shall not touch the Evaluation Board after disconnecting the power supply, several components may still store electrical voltage and can discharge through physical contact. Several parts, like heat sinks and transformers, may still be very hot. Allow the components to cool before touching or servicing.

The electrical installation must be completed in accordance with the appropriate safety requirements.