ZS SigSim

User Manual

1.3, 30 Jan 2026

ZILOGIC

Table of Contents

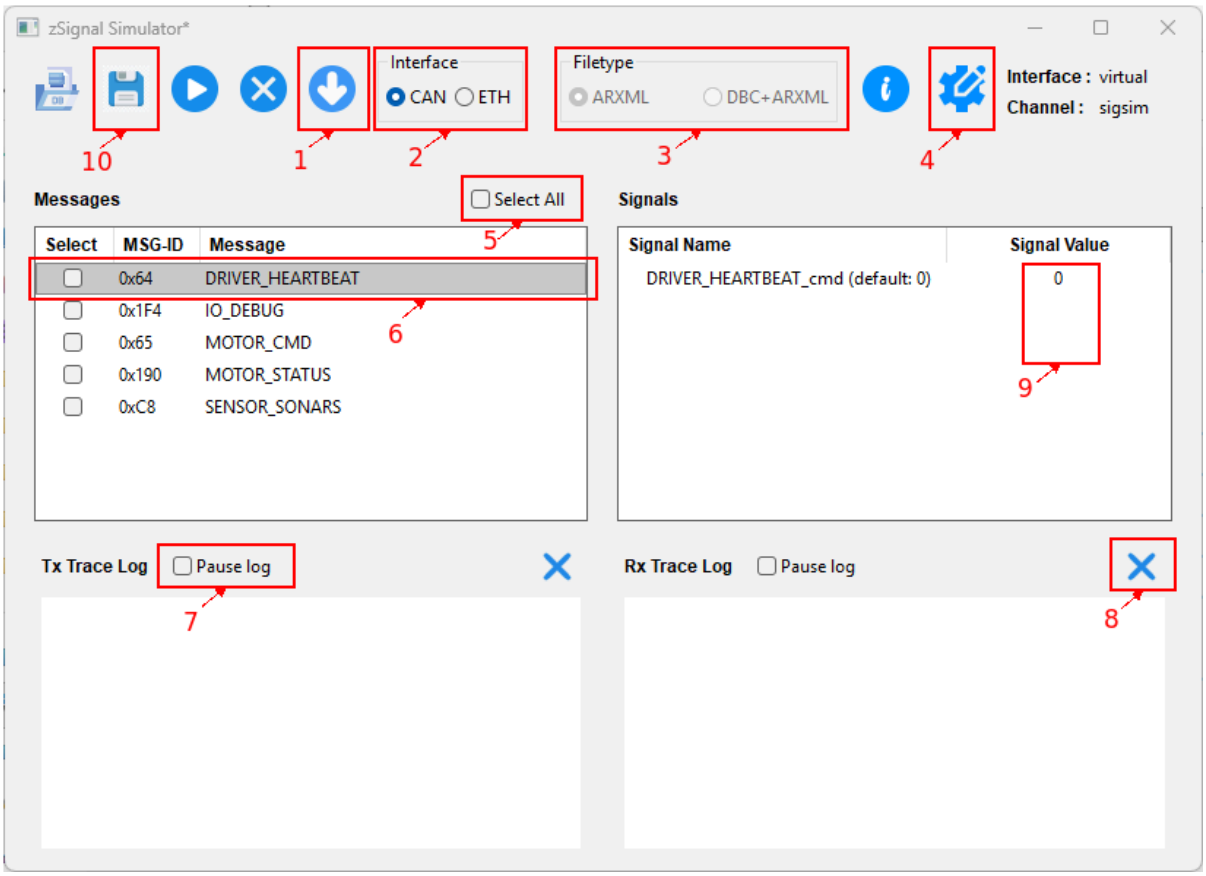
Chapter 1. Document Information

1.1. Revision History

Date	Rev.	Comment
30 Jul 2025	1.0	Initial user manual document.
19 Sep 2025	1.1	Updated features for messages.
30 Oct 2025	1.2	Added screenshots and updated documentation content.
30 Jan 2026	1.3	Add screenshot with annotation and Update linux steps.

Chapter 2. Introduction

SigSim is desktop application which can primarily be used in Automotive system to test the CAN and Ethernet packet transmission and reception.



2.1. Supported hardware adapters

- ZS1310 USB CAN Adapter
- ZS1311 USB to CAN FD adapter
- ZS1320 Automotive Ethernet Converter
- ZS1330 Automotive Ethernet Converter.

2.2. Key Features

This section provides the core functionalities of the SigSim Application such as multi-protocol support for CAN and Ethernet, compatibility with DBC and ARXML files, and real-time signal transmission and reception.

- **Multi-protocol support**: Handles both CAN and Ethernet communications.
- **Supported file formats**: DBC and ARXML.
- **Real-time communication**: Sends and receives messages in real-time.
- **Configuration Flexibility**: Provides detailed configuration options for CAN (e.g., bitrate, channel, CAN FD) and Ethernet (e.g., IP addresses, ports).
- **Export Functionality**: Allows exporting transmitted and received messages to PCAP log files for analysis.

Chapter 3. System Requirements

This section provides details about the minimum system specifications needed to run SigSim includes its operating system, version.

Requirement	Specification
Operating System	Windows (Windows 10 and later) and Linux (Ubuntu 18.04 or later)
Disk Space	Minimum 1GB

Chapter 4. Installation

This section provides information about the process for installing SigSim on Windows/Linux by downloading the SigSim exe/bin file.

4.1. Windows Installation

1. Download the SigSim application (`SigSim.exe`) from the provided distribution link. Ensure the file is from a trusted source to avoid security risks.
2. Save the executable file to a preferred location on your computer, such as the Desktop or a dedicated software folder.
3. No further installation steps are required, as SigSim is a standalone executable that runs directly without needing to install additional dependencies or drivers (assuming hardware drivers are pre-installed).

4.2. Linux Installation

1. Download the `SigSim source code` package from the provided distribution link. Ensure the source is obtained from a trusted location to avoid security risks.
2. Extract the source code to a preferred location on your computer, such as the Desktop or a dedicated software folder.
3. Open a terminal and navigate to the extracted SigSim source code directory.
4. Install required Python dependencies:
   - pip3 install -r requirements.txt
   - pip3 install -r wx-requirements.txt
5. Run the application using the following command: `python3 main.py`
6. Ensure Python 3 is installed on your system before running the application.

Chapter 5. Getting Started

This section provides details about launching SigSim on a Windows/Linux system, including any initial setup tips to ensure a smooth first-time experience. Once launched, users can immediately begin configuring interfaces and loading databases.

5.1. Launch SigSim

- **Windows**:
  - Double-click the SigSim.exe file to start the application.
  - If prompted by Windows Defender or antivirus software, confirm that the file is safe to run.
  - The application window will open, displaying the main interface with toolbar icons and panels ready for use.
- **Linux**:
  - Open a terminal and navigate to the SigSim source code directory.
  - Run the application using the command `python3 main.py`.
  - Once launched, the application window will open, displaying the main interface with toolbar icons and panels ready for use.

Chapter 6. Understanding the Interface

- This section provides comprehensive information about the SigSim user interface, including the toolbar icons (e.g., Load Database, Start/Stop Simulation) and the interface selection panel for CAN or Ethernet modes.
- The interface is designed to support configuration, monitoring, and logging, and allowing users to navigate efficiently during testing sessions.

6.1. Toolbar Icons

This table describes the icons available in the SigSim toolbar, their functions, and their purposes.

Icon	Function	Description
	Load Database	Loads DBC or ARXML files
	Save Database	Saves the properties and signal values.
	Start Simulation	Starts Signal transmission
	Stop Simulation	Stops the signal transmission.
	Edit Config	Configure CAN/Ethernet interface settings
	About	View application information and version details
	Export to PCAP	Export the messages into log file
	Clear Tx Log	Reset the Tx log
	Clear Rx Log	Reset the Rx log

6.2. Viewing Application Information (About Icon)

To view the application details such as the app name, version, and author information, follow these steps:

- Click on the **About icon** located at the top-right corner of the application toolbar.
- An **"About"** dialog box will appear, displaying the following details:
- **App Name:** ZSIG-SIM
- **Version:** 1.4.0
- **Author:** Zilogic

This dialog helps users verify the current version.

6.3. Interface Selection Panel

In Figure Chapter 2, *Introduction*, (2) represents the Interface Selection Panel(CAN/ETH).

This section describes the interface selection options available in the SigSim application for configuring communication modes.

6.3.1. CAN Interface

- This interface is to choose CAN bus communication.
- Select this option to configure and initiate CAN or CAN FD communication using compatible hardware like the ZS1310 USB CAN Adapter or ZS1311 USB to CAN FD Adapter.
- This mode supports loading DBC files for defining CAN messages and signals.

6.3.2. ETH Interface

- This interface is to choose Ethernet bus communication.
- Select this option to configure and initiate Ethernet-based communication using hardware like the ZS1320 Automotive Ethernet Converter.
- This mode supports loading ARXML files for defining Ethernet-based signals and network configurations in AUTOSAR architecture.

In Figure Chapter 2, *Introduction*, (3) represents the ETH Interface Filetype Selection Panel(ARXML / DBC+ARXML).

6.3.3. Switching Modes

- Users can toggle between CAN and ETH interfaces via the Interface Selection Panel to match the connected hardware and communication requirements.
- Ensure the appropriate hardware is connected before switching modes to avoid configuration errors.

Chapter 7. Display Area

This section provides information about the available panels such as the Message panel, Signals panel, Tx Log Panel, and Rx Log Panel. These panels form the core of the user interface, offering visual representations of data for easy monitoring and interaction during simulations.

7.1. Message Panel

- Displays loaded messages from DBC/ARXML files
- Shows signal values and status
- Provides checkboxes for message selection (single, multiple, or Select All).
- For `Select All` refer Figure Chapter 2, *Introduction*, (5) represents the Select All checkbox.

7.2. Signals Panel

- Displays Signal name and value of the selected message in the Signal panel.
- Signal value can be edited if needed.
- Allows real-time editing of signal values

7.3. Tx Log Panel

- Displays Tx Log when signals are transmitting, including timestamps, message IDs, data payloads.
- Displays all transmitted messages from the simulator.
- Each entry shows the timestamp, message ID, and data content.
- Useful for verifying outgoing CAN signals.

7.4. Rx Log Panel

- Displays Rx Log when signals are receiving, showing incoming data with timestamps, decoded signals.
- Displays all received messages by the simulator. Helps in monitoring responses or data received from connected nodes or tools.

Chapter 8. Message properties

8.1. Configuring Message Properties

When a user **right-clicks a message** in the Message Panel,refer Figure Chapter 2, *Introduction*, (6) the **Properties** window opens:

- **Message Period** – Sets the transmission interval
- **Message Duration** – Sets the total duration of transmission
- **OK** – Applies properties temporarily
- **Cancel** – Discards changes
- **Example:**
- Periodicity: 100 ms (message transmits every 100 ms)
- Duration: 10 seconds (message transmits for 10 seconds)

8.2. Saving the Database

In Figure Chapter 2, *Introduction*, (10) represents the Saving the Database.

1. Click the **Save Database** icon in the toolbar
2. The database file saves the updated properties (periodicity, duration)

8.3. Retrieving Saved Database

1. On launching SigSim, the last saved database file can be auto-loaded.
2. All saved messages, properties are restored exactly as configured
3. Users can seamlessly continue from their previous session

Chapter 9. Signal Value Update

The **Signal Value Update** feature allows users to modify signal values for selected messages in real-time. refer Figure Chapter 2, *Introduction*, (9).

9.1. Modify Signal Values

- **Select a Message** – Display signals in the Signals Panel
- **Select & Edit Signal** – Update values within the defined range
- **Apply Changes** – Effective immediately in the simulation
- **Save Changes** – Persist updated signal values using **Save Database**

9.2. Signal Value Update

- **Before starting the simulation** – Configure all required signal values before transmission
- **During simulation** – Modify signal values in real-time and observe the changes
- Updated signal values are reflected in the **Tx Trace Log**

9.3. Saving Updated Signal Values

1. Click the **Save Database** icon in the toolbar
2. All modified signal values for the selected messages are saved in the database

9.4. Retrieving Saved Signal Values

1. On launching SigSim, the last saved database can be auto-loaded.
2. All signal values are restored exactly as previously configured
3. Users can continue transmission or simulation seamlessly from the previous session

Chapter 10. Supported Database Formats

This section outlines the database formats supported by SigSim, explaining their purposes and usage scenarios to guide users in selecting the appropriate file type for their protocol.

10.1. DBC Files (Database CAN)

- **Purpose**: Define CAN messages, signals, and network nodes
- **When to Use**: When signals can be transmitted/received via CAN
- **File Extension**: `.dbc`

10.2. ARXML Files (AUTOSAR XML)

- **Purpose**: Define Ethernet-based communication in AUTOSAR architecture
- **When to Use**: When signals can be transmitted/received via ethernet
- **File Extension**: `.arxml`

10.3. Loading Files

This section provides step-by-step details about loading DBC files for CAN or ARXML files for Ethernet interfaces, including connecting hardware and selecting files via the **Load Database** icon, to prepare the application for simulation.

10.3.1. For CAN Interface

1. Connect the CAN-tact Board (e.g., ZS1310 or ZS1311) to your computer via USB and ensure drivers are installed.
2. Select the **CAN** interface from the Interface Selection Panel.
3. Click the **Load Database** icon in the toolbar.
4. Browse your file system and select a **.dbc** file containing the CAN database definitions.
5. Click Open to load the file the Message and Signals panels will populate with the imported data.

10.3.2. For Ethernet Interface

1. Connect SPE-Convertor to the System.
2. Select **ETH** interface.
3. Click the **Load Database** icon.
4. Load **.arxml** file or **.arxml & .dbc** file.
5. Click **Open**

Chapter 11. Configuration Settings

This section provides details about configuring CAN (e.g., bitrate, channel) and Ethernet (e.g., IP addresses, ports) settings using the “Edit Config” icon, with options to save or discard changes.

In Figure Chapter 2, *Introduction*, (4) represents the Edit Configuration Settings.

11.1. Access Configuration

Click the **Edit Config** icon to open the configuration panel, which presents a dialog with tabs or sections for CAN and Ethernet settings.

11.2. CAN Configuration Options

This table details the configuration parameters for the CAN interface in the SigSim application.

Parameter	Description	Example Values
interface	Specifies the CAN interface name for the connected hardware.	`cantact`
channel	Defines the CAN channel number to use (for multi-channel adapters).	`0`, `1`
receive_own_messages	Echo back transmitted messages `0` means disabled `1` means enabled	`1`
datarate	Sets the bitrate for the data phase in CAN FD mode.	`2000000`
bitrate	Sets the bitrate for the arbitration phase in standard CAN.	`500000`
fd	Enables CAN FD support; 1 activates FD mode.	`1`

11.3. Ethernet Configuration Options

This table details the configuration parameters for the Etherent interface in the SigSim application.

Parameter	Description	Example Values
Src_IP	Specifies the source IP address for outgoing Ethernet packets.	`127.0.0.1`
Src_Port	Defines the source port number for UDP/TCP communications.	`30491`
Destination_IP	Sets the destination IP address for targeted transmissions.	`127.0.0.1`
Destination_Port	Specifies the destination port for receiving devices.	`30491`

11.4. Save Configuration

- Click **Save** to apply the settings immediately, updating the active simulation parameters.
- Click **Cancel** to discard any changes and revert to the previous configuration, preventing unintended modifications.

Chapter 12. Send and Receive Signal

This section provides information about preparing, starting, and stopping signal transmission and reception, including configuring hardware, editing signal values, monitoring logs, and exporting to PCAP files.

12.1. Prepare to Start Simulation

1. Select the interface (CAN or Ethernet) that matches your hardware setup.
2. Configure hardware adapters via the **Edit Config** icon, setting parameters like bitrates or IP addresses.
3. Load the required DBC/ARXML files using the Load Database function.
4. Select messages to transmit from the Message panel by checking the relevant entries.

12.2. Start Simulation

1. Select a message from the loaded list in the Message panel.
2. (Optional) Edit signal values: Double-click on a signal in the Signals panel, enter new values within the defined range, and confirm.
3. Click the Start Simulation icon to begin transmitting the selected messages.
4. While the simulation is running, the Start Simulation icon turns grey, indicating the active state.
5. Monitor transmission status in the Message panel, where indicators show active transmission and any errors.

Chapter 13. Pausing Message Logs

- Both Tx and Rx Trace Logs include a “Pause log” checkbox. Refer Figure Chapter 2, *Introduction*, (7)
- When selected, the log view will freeze and stop auto-scrolling, allowing the user to manually inspect or review previous log entries.
- When unchecked, the log will auto-scroll to continuously display the latest messages in real time.

Tip: Use the pause option when analyzing specific messages or debugging message flow, especially when message traffic is high.

13.1. Receive Messages

1. Start monitoring in the Rx Trace Log panel by ensuring the simulation is running.
2. View incoming messages in the panel, which decodes and displays data based on the loaded database.
3. Observe real-time signal value updates in the Signals panel for immediate feedback on received data.

13.2. Stop Transmission

- Click the Stop Simulation icon to halt transmission. This stops the signal transmission from the application to the connected device, while preserving logs for review.

13.3. Export to PCAP

In Figure Chapter 2, *Introduction*, (1) represents the Export to PCAP

1. Click the Export to PCAP button in the toolbar.
2. Edit the name of the file to be saved in the dialog box that appears.
3. Select Save to export the Tx and Rx logs as a PCAP file, which can be opened in packet analysis software.

Chapter 14. Clear Log

In Figure Chapter 2, *Introduction*, (8) represents the Clear Log. The `Clear Log` removes all current log messages from the log viewer, allowing users to start monitoring new logs from a clean state; this action affects only the current view and does not delete any saved log files.