

# Kvaser Database Editor User's Guide

Version 2.0

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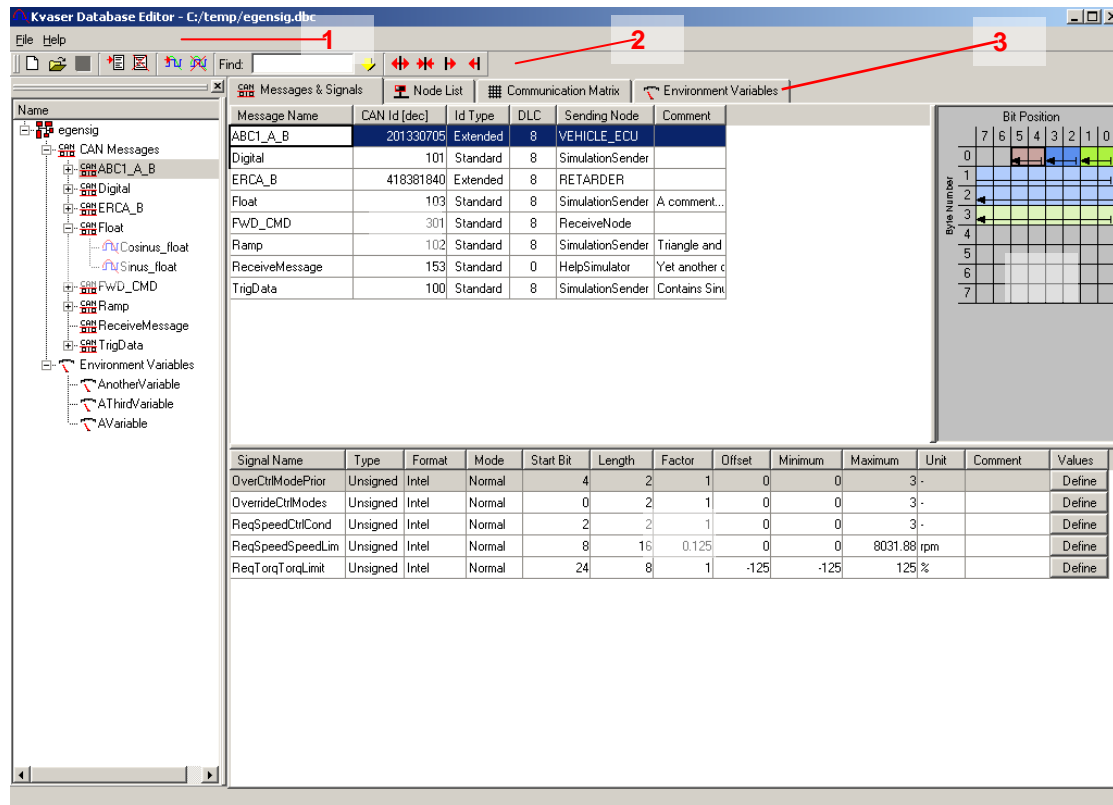
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## 2 Databases

### 2.1 Overview

To edit or create a database, use the **Database Editor**. You can start the editor from the Kvaser program group in the start menu.

### 2.2 Database Editor



**Figure 1 The Database Editor**

The Database Editor main window consists of the following parts:

1. The main menu
2. The toolbar
3. Tabs for switching between
  - The Message/Signal View
  - The Node List
  - The Communication Matrix.
  - The Environment Variables View
4. The Tree View.
5. The Message View.
6. The Layout View.
7. The Signal View.

## 2.2.1 The main menu

The main menu consists of two pull-down menus: File and Help.

### 2.2.1.1 The File menu

The File menu consists of following functions:

- **New** - With this function you create a new clean database. This function is also available by pressing **Ctrl+N** on the keyboard or pressing the **New** button in the toolbar.
- **Open** - With this function you open an existing database. This function is also available by pressing **Ctrl+O** on the keyboard or pressing the Open button in the toolbar.
- **Append** – With this function you append one database to another.
- **Save** - With this function you save your database in the current working directory. This function is also available by pressing **Ctrl+S** on the keyboard or pressing the Save button in the toolbar.
- **Save As** - With this function you save your database in the current working directory with a new name.
- **Exit** - With this function you exit the Database Editor.

### 2.2.1.2 The Help menu

The Help menu consists of the following functions:

- **Kvaser Database Editor Help** - Click here to access the database editor help pages.
- **About** - Click here to access the About Box. Useful for determining which version of the Database Editor you are running.

## 2.2.2 The toolbar



Figure 2: The toolbar

The toolbar consists of the following items:

1. **Toolbar detach** button - Click here if you want to detach the toolbar from the window.
2. **New** - With this function you create a new clean database. This function is also available by pressing **Ctrl+N** on the keyboard or clicking **File | New** in the main menu.
3. **Open** - With this function you open an existing database. This function is also available by pressing **Ctrl+O** on the keyboard or clicking **File | Open** in the main menu.
4. **Save** - With this function you save your database in the current working directory. This function is also available by pressing **Ctrl+S** on the keyboard or clicking **File | Save** in the main menu.

5. **Delete Messages** button - Click here to delete the selected messages from the database.
6. **Insert Message** button – Click here to insert a new message into the database.
7. **Delete Signals** button - Click here to delete the selected signals from the database.
8. **Insert Signal** button – Click here to insert a new signal into the currently selected message.
9. **Find** field – Type a text string to search for among message names and signal names in the database. The search function is not case sensitive. Click the Search Down button to perform the search.
10. **Search Down** button – Click here to search the database. The text to search for must be typed into the Find field positioned to the left in the toolbar.
11. **Expand Signal** button – Click here to expand the length of the currently selected signal by one bit.
12. **Shrink Signal** button - Click here to shorten the length of the currently selected signal by one bit.
13. **Move Signal Up** button – Click here to move the signal inside the message one bit position up.
14. **Move Signal Down** button - Click here to move the signal inside the message one bit position down.

### 2.2.3 The Tree View

In the Tree View you can see the current database in a tree structure. The database expands to CAN messages, environment variables and nodes. The CAN messages expand in turn to signals.

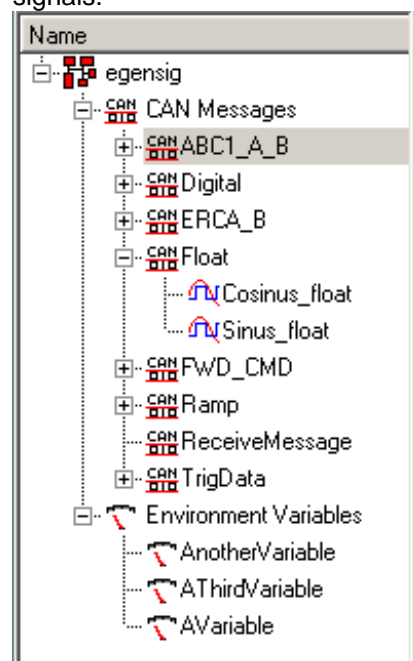


Figure 3 The Tree View

Clicking the right mouse button will open a submenu with insert and/or delete items. The contents of this submenu vary based on the tree structure level you have highlighted.

At the database level (root), you will only have Database Overview and Line Up in the submenu. The Database Overview submenu item will hide the tree view and you will see the message/signal view over the whole window. To view the tree view again, right click on the menu bar area (beside File, Tools and Help).

In the tree view it is possible to insert new messages, signals and environment variables to your database. To insert a new message into the database right click on CAN messages in the tree view and click on the submenu item insert Message. This function is also available by pressing the Insert Message button on the toolbar. To insert environment variable or node do the same as for insert message.

At the message level you will have the following two items in the submenu:

- **Delete Message** - Click here to delete the currently selected message. This function is also available by pressing the Delete Message button on the toolbar.
- **Insert Signal** - Click here to insert a new signal into the currently selected message. This function is also available by pressing the Insert Signal button on the toolbar.

At the signal level, you will only have the **Delete Signal** item in the submenu. This item deletes the currently selected signal. This function is also available by pressing the Delete Signal button on the toolbar.

## 2.2.4 The Message View

| Message Name   | CAN Id [dec] | Id Type  | DLC | Sending Node     | Comment               |
|----------------|--------------|----------|-----|------------------|-----------------------|
| ABC1_A_B       | 201330705    | Extended | 8   | VEHICLE_ECU      |                       |
| Digital        | 101          | Standard | 8   | SimulationSender |                       |
| ERCA_B         | 418381840    | Extended | 8   | RETARDER         |                       |
| Float          | 103          | Standard | 8   | SimulationSender | A comment...          |
| FWD_CMD        | 301          | Standard | 8   | ReceiveNode      |                       |
| Ramp           | 102          | Standard | 8   | SimulationSender | Triangle and so on    |
| ReceiveMessage | 153          | Standard | 0   | HelpSimulator    | Yet another comment   |
| TrigData       | 100          | Standard | 8   | SimulationSender | Contains Sinus and... |

**Figure 4 The Message View**

In this view each message is presented. If you have created a new message you can set its parameters here. The information in the following columns defines the message:

- **Message Name** - Type the desired name. A new message will be named 'NewMessage' by default.
- **CAN Identifier** - Set up a CAN Identifier for the message. Default Id is 0.
- **Identifier Type** - Select Standard or Extended from a dropdown list. Default type is Standard.
- **DLC** - Select the data length code from a dropdown list. Default DLC is 0.
- **Sending Node** - Select a node from dropdown list. Nodes are defined in Node View.
- **Comment** - Enter a message description.

## 2.2.5 The Layout View

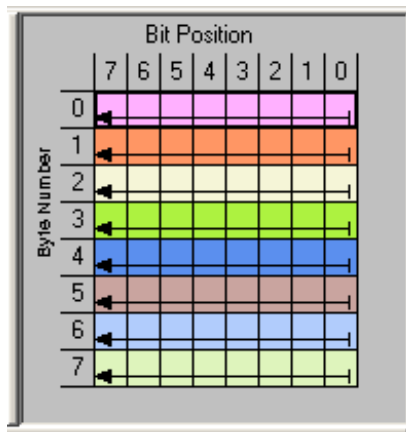


Figure 5: The Layout View

In this view you can see how the bits for each byte in the message are occupied by signals.

As you insert signals, the bits used by the signals will be marked in this view with different colors for each signal.

## 2.2.6 The Signal View

| Signal Name       | Type     | Format | Mode   | Start Bit | Length | Factor | Offset | Minimum | Maximum | Unit | Comment | Values |
|-------------------|----------|--------|--------|-----------|--------|--------|--------|---------|---------|------|---------|--------|
| OverCtrlModePrior | Unsigned | Intel  | Normal | 4         | 2      | 1      | 0      | 0       | 3       | -    |         | Define |
| OverrideCtrlModes | Unsigned | Intel  | Normal | 0         | 2      | 1      | 0      | 0       | 3       | -    |         | Define |
| ReqSpeedCtrlCond  | Unsigned | Intel  | Normal | 2         | 2      | 1      | 0      | 0       | 3       | -    |         | Define |
| ReqSpeedSpeedLim  | Unsigned | Intel  | Normal | 8         | 16     | 0.125  | 0      | 0       | 8031.88 | rpm  |         | Define |
| ReqTorqTorqLimit  | Unsigned | Intel  | Normal | 24        | 8      | 1      | -125   | -125    | 125     | %    |         | Define |

Figure 6 The Signal View

In this view, each signal in the selected message is displayed. If you have created a new signal, you can set its parameters here. The information in the following columns defines the signal:

- **Signal Name** - Type the desired name. A new signal will be named 'NewSignal' by default.
- **Type** - Set up the data type of the signal. Alternatives are Signed, Unsigned, Float or Double.
- **Format** - Select a format from the dropdown list. Alternatives are Intel or Motorola. Default is Intel.
- **Mode** - Select a mode from the dropdown list. Alternatives are Normal or Mode Signal. Default is Normal.
- **Startbit** - Select the start position of the signal in the message. Default is 0.
- **Length** - Select the length of the signal in bits. Default is 0.
- **Factor** - Enter a scaling factor if one is used. Default is 1.
- **Offset** - Enter an offset if used. Default is 0.
- **Minimum** - Enter the minimum possible signal value. Default is 0.
- **Maximum** - Enter the maximum possible signal value. Default is 0.
- **Unit** - Enter the unit the signal is represented in. No default.
- **Comment** - Enter a description of the signal.
- **Values** - Enter an alias for a signal value.



## 2.2.7 The Node List View

| Node Name        | Comment                |
|------------------|------------------------|
| HelpSimulator    | Another Sample Node    |
| ReceiveNode      | A Sample...            |
| RETARDER         |                        |
| SimulationSender | Signal generating node |
| TestNode         | Another Test Node      |
| VEHICLE_ECU      |                        |

**Figure 7 The Node List View**

In this view, the defined nodes in the database are displayed. This is where you insert and delete nodes. Clicking the right mouse button Opens a submenu with the following items:

- **Delete Node** - Click here to delete the currently selected node.
- **Insert Node** - Click here to insert a node into the database.

The view consists of following columns:

- **Node Name** - Type the desired name. A new Node will be named 'NewNode' by default.
- **Comment** - Enter a description of the node.

When a node is created, the node will appear as a selectable item in the dropdown list in the Sending Node column of the Message view.

## 2.2.8 The Communication Matrix View

|                | TestNode | SimulationSender | ReceiveNode | HelpSimulator | VEHICLE_ECU |
|----------------|----------|------------------|-------------|---------------|-------------|
| ReceiveMessage |          |                  |             |               |             |
| Float          |          |                  |             |               |             |
| Cosinus_float  |          |                  |             |               |             |
| Sinus_float    |          |                  |             |               |             |
| Ramp           |          |                  |             |               |             |
| Triangle       |          |                  |             |               |             |
| SawTooth       |          |                  |             |               |             |

**Figure 8 The Communication Matrix View**

The Communication Matrix can be used to associate Network Nodes with Signals. To do this, double-click in the Signal's row and Node's column.

## 2.2.9 The Environment Variables View

| <span>Messages &amp; Signals</span> <span>Node List</span> <span>Communication Matrix</span> <span>Environment Variables</span> |         |       |      |     |             |                       |            |        |
|---|---------|-------|------|-----|-------------|-----------------------|------------|--------|
| Environment Variable  | Type    | Unit  | Min  | Max | Start Value | Comment               | Access     | Values |
| AnotherVariable   | Integer | Meter | -100 | 100 | 50          | The use of this varia | Read/Write | [...]  |
| AThirdVariable  | Integer | Volt  | -100 | 100 | 100         | Number 3. ...         | Read/Write | Define |
| AVariable   | Integer |       | 0    | 4   | 0           | Comment...            | Read/Write | Define |

**Figure 9** The Environment Variables View

- **Environment Variable** - The name of the Environment Variable.
- **Type** - The data type of the Environment variable.
- **Unit** - The Unit of the Environment Variable.
- **Min** - The minimum value the Environment Variable can have.
- **Max** - The maximum value the Environment Variable can have.
- **Start Value** - The start value of the Environment Variable.
- **Comment** - An optional comment.
- **Access** - The type of access of the Environment Variable (read/write/unrestricted).
- **Values** - An Environment Variables can tie a number of symbolic values to it. These are specified here.

## 2.3 Glossary

**Bit time** The time one single bit occupies when sent on the CAN bus. A bit time is composed of three parts: *tsync* (1 time quantum), *tseg1* (2 – 16 time quanta) and *tseg2* (1 – 8 time quanta). A bit time occupies 4 – 25 time quanta.

**Extended CAN** The same as CAN 2.0B. Message identifiers are 29 bits long.

**Prescaler** Factor used to scale time quanta from oscillator (usually 16 MHz).

**Sampling point** Position where a bit is sampled expressed from the start of a bit as a percentage of the total bit time. Sample point occurs between *tseg1* and *tseg2*.  $\text{Sample point} = (\text{tsync} + \text{tseg1}) / (\text{tsync} + \text{tseg1} + \text{tseg2})$ .

**SJW** Synchronization Jump Width. Defines the maximum synch compensation allowed in one step. Allowed values are 1 – 4 time quanta. High SJW allows a wide oscillator tolerance range. This parameter must be the same for all nodes in the system.

**Standard CAN** The same as CAN 2.0A. Message identifiers are 11 bits long.

**Time quantum** A bit time is conceptually divided into a number of time quanta (typically 8 – 25).

**Tseg1** Length (in time quanta) of the time segment between *tsync* and the sample point. Part of a bit time. 2..16 time quanta.

**Tseg2** Length (in time quanta) of the time segment following the sample point. Part of a bit time. 1..8 time quanta.

**Tsync** Length (in time quanta) of the time segment preceding *tseg1*. Bit time starts with *tsync*. It is used to synchronize nodes on the CAN bus. An edge is expected within *tsync*. *Tsync* is always one time quantum long.

**Working area** The working area of the main window shows the actual workspace. The working area is always visible and is the place where you work with your windows.

**Workspace** A workspace is used to group windows that you think have something in common. The active workspace is viewed in the working area. To change the active workspace, click the tabs positioned between the toolbar and the working area of the main window.

## 2.4 Support

You can obtain support on a time-available basis by sending an email to [support@kvaser.com](mailto:support@kvaser.com). Please contact us for information on our other support options.

Software updates, bug fixes, and so on will be made available on our web site, <http://www.kvaser.com>.

Your opinions are appreciated. Suggestions and bug reports may be sent by e-mail to [support@kvaser.com](mailto:support@kvaser.com) - if you require a reply, please contact us for more information about our support packages.

### 3 Document revision history

| Revision | Date       | Changes                     |
|----------|------------|-----------------------------|
| 1        | 2005-03    | Original revision           |
| 2        | 2006-11-02 | Reviewed – no major changes |