

Welcome to

Kvaser TRX

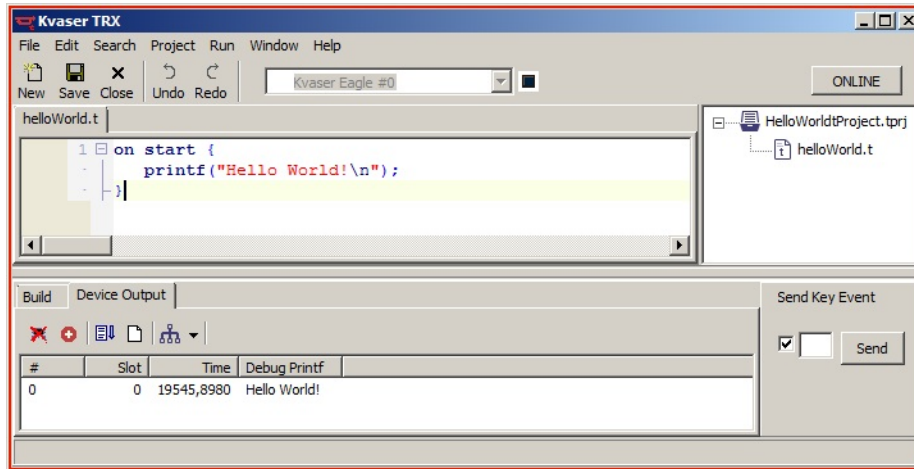
a light weight IDE for developing *t* programs for Kvaser devices

This help file describes the Kvaser TRX light weight IDE, which you can use to develop *t* programs for supported Kvaser devices.

For information about writing *t* programs, please see the Kvaser *t* programming language manual, which can be found under the Help menu in Kvaser TRX or on Kvaser.com!



Getting started with *t* program development in TRX



When you start TRX the first time, your [editor](#) will have a single tab labeled `<New>`. As a first program, try entering:

```
on start {  
    printf("Hello World!\n");  
}
```

This is a very basic program that reacts on an *on start* event and prints Hello world! in the [Device Output](#). It is the actual device that sends the "Hello World!" to the computer where TRX reads.

Now compile the *t* program by going to *Run->Compile* in the [menu bar](#), or by pressing *F9*. To be able to compile you first have to save the *t* program. TRX will prompt you for this, it will also prompt you to save a project file. Pick suitable names and save. Note that the [project overview](#) panel to the right of the editor is automatically updated when you compile.

Next, connect a *t* program capable Kvaser device. You can see that TRX can use your device if the combobox just under the menu bar has the name of your Kvaser device listed.

To test the *t* program, just go to *Run->Download*, this will download the *t* program to the device. Next step will be to actually run the program. *Run->Run* will start the application, and hopefully you will see the `printf` printout in the Device Output window [Device Output](#) panel below the editor. (NB: If you don't see such a panel it may have been hidden by accident. If so, then go to *Window->Toggle Lower Pane* or press *F7* to toggle its visibility!)

If everything worked, you are now ready to develop more advanced *t* programs! Good luck!

Related topics

[The menu bar](#)

[The toolbar](#)

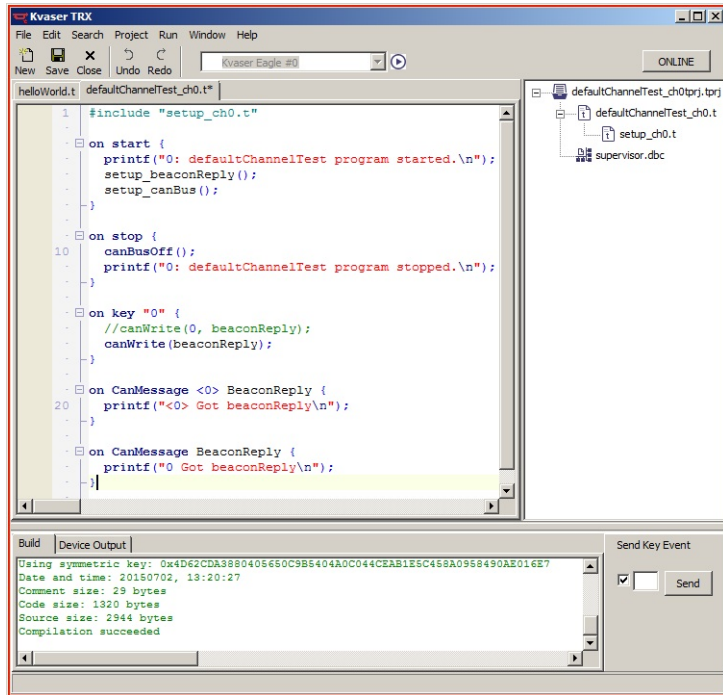
[The toolbar](#)

[The project overview](#)

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Program overview



In this chapter you will find an overview of the TRX user interface and features.

Contents:

- The menu bar
 - Program preferences
 - Project options
 - .txe file viewer
 - Envvar viewer
- The toolbar
- The code editor
- The project overview
- The output panel

The menu bar

File Edit Search Project Run Window Help

The menu bar at the top of the program lets you access the following features:

- **File:** In addition to basic file operations (create new, open, save, and close *t* program files), the [TRX Preferences](#) are accessed through this menu.
 - **Search:** Use this menu for *Find* and *Find Next*, or use the [short-cuts](#) *Ctrl+F* and *F3* respectively.
 - **Project:** This menu lets you create, open and save projects, as well as [inspecting the compiled .txe file](#), and manage [Project Options](#).
 - **Run:** In addition to running and stopping the program, this menu is used to *Compile* the *t* program, to *Download* it to the device, and for telling the device to *Go Online* and *Go Offline*.
 - **Window:** Use this menu to toggle the visibility of the [output pane](#) below the editor and of the [Environment Variables window](#), or use the [short-cuts](#) *F8* and *F9* respectively.
 - **Help:** In addition to this help, this menu gives you easy access to the *Kvaser t Language Manual*, the *Kvaser CANlib Help*, and to the *About* window where you will find the TRX version number and a link to [the Kvaser website](#), should you need to contact support.
-

Related topics

[The toolbar](#)

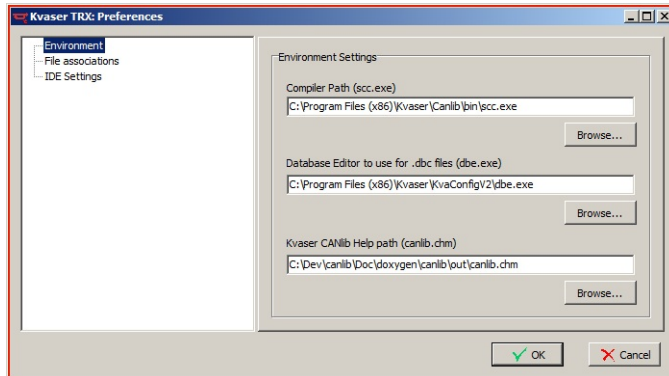
[Program preferences](#)

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Program preferences



This window is used to set the following program preferences:

- **Environment settings** - set up the paths to:
 - Compiler (*scc.exe*)
 - Database Editor (*dbe.exe*)
 - Kvaser CANlib SDK Help (*canlib.chm*)
 - **File associations** - decide whether these files should be associated with TRX:
 - Kvaser *t* Projects (*.tprj*)
 - Kvaser *t* Programs (*.t*)
 - Compiled *t* Programs (*.txe*)
 - **IDE settings** - decide if the IDE should:
 - use autocompletion of commands in the [editor](#)
 - display error messages from running *t*programs in [Device output](#)
 - display debug messages from connected device in [Device output](#) (requires firmware with debugging enabled)
-

Related topics

[Getting started](#)

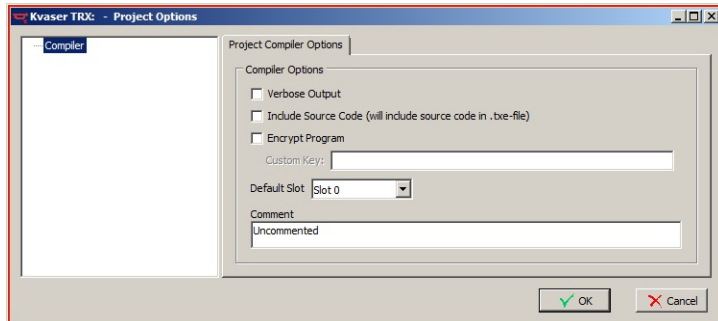
[Program overview](#)

[Project options](#)

[Environment variables/Envvars](#)

Keyboard short-cuts

Project options



This window is used to set different options for the project compiler.

The following options are available:

- **Verbose Output:** When set, the compiler will print more information to the [build log](#).
- **Include Source Code:** When set, the compiler will include the source code of the *t* program in the compiled .txe-file. The included source can then be inspected from the [View .txe](#) window, accessible from the *Project menu*.
- **Encrypt program:** When set, compiler will encrypt the program using an asymmetric key. If no *Custom Key* is provided, the compiler will generate one at compile time.
- **Default Slot:** This list lets you select which of the four available slots to use as default when downloading the *t* program to a device.
- **Comment:** This text field lets you enter an optional description of the project.

Related topics

[Getting started](#)

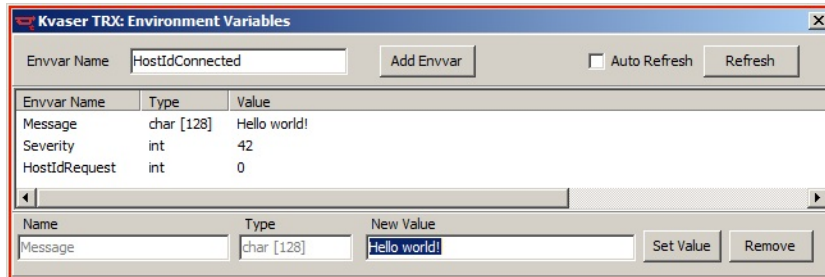
[Program overview](#)

[Inspecting the .txe-file](#)

[Preferences](#)

Keyboard short-cuts

Envvar viewer



This window is used for inspecting "environment variables" or *Envvars*, which in the context of *t* programs are special variables that are shared between the programs running on a device. By using the CANlib script API, the envvars can also be accessed from a computer connected to a device running a *t* program.

To start tracking an envvar in the Envvar viewer, add it to the watch list by typing its name in the box at the top and press "Add Envvar". Press "Refresh" to update the values and states of the tracked envvars. If you check the "Auto Refresh" box TRX will keep the tracked envvars up to date automatically refreshing at regular intervals. If you select an envvar from the list, a field will appear at the bottom of the window where you can edit the value of that envvar, or remove it from the watch list. For more information about how to use envvars, please refer to the Kvaser *t* Language Manual, available in the [Help menu](#).

Related topics

[Getting started](#)

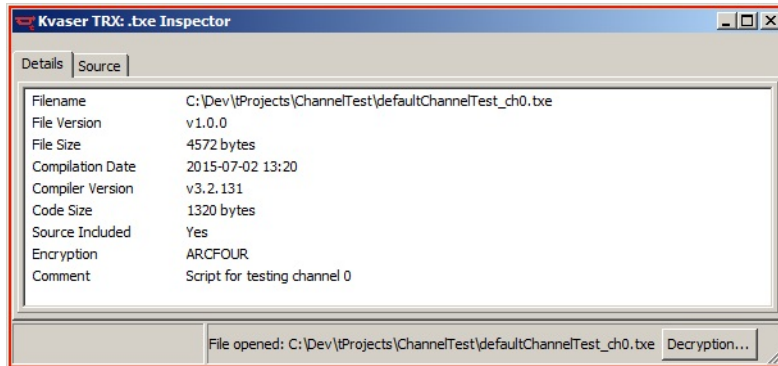
[Program overview](#)

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[Keyboard short-cuts](#)

.txe file viewer



This window is used to view information read from the compiled .txe file. Under the *Details* tab information such as *File Size* in bytes, the *Compilation Date*, the *Compiler Version* used, and the descriptive *Comment* added under [Project Options](#). If the project was compiled with source code included, the code can be viewed under the *Source* tab. If the program was compiled with encryption enabled, the view will be filled with giberish until the user has pressed the button labeled *Decryption...* and entered the correct key. See [Project Options](#) for further details.

Related topics

[Getting started](#)

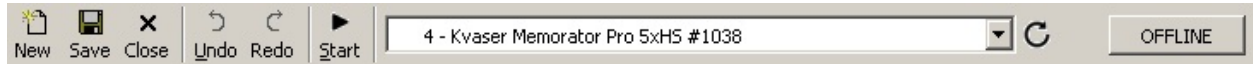
[Program overview](#)

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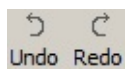
The toolbar



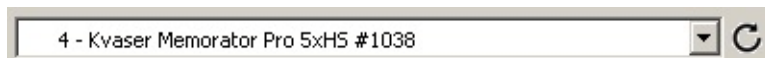
The toolbar allows quick access to some of the most commonly used features:



These buttons are used to create a new *t* program file, and to save the or close the *t* program file in the active tab. Alternatively you can use the [short-cuts](#) *Ctrl + N* and *Ctrl + S* to create a new *t* program file and to save the file in the active tab.



These buttons are used to undo and redo actions in the [editor](#). Alternatively you can use the [short-cuts](#) *Ctrl + Z* and *Shift + Ctrl + Z*.



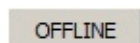
This list shows the connected devices and associated channels. Use it to select a *device* and a *default channel* for the *t* program. Press the rescan button to reinitialize Canlib and scan for new/removed devices.



Press this button to *Compile, Go Online, Download and Run* the *t* program on the selected Kvaser device with a single click.



Press again to *Stop* execution.



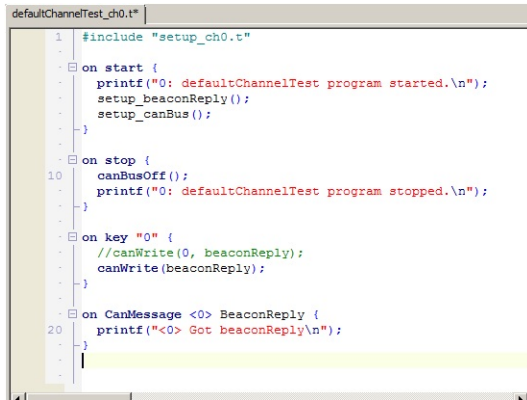
This button shows the *on-/offline status* of the selected device, and can be clicked to switch between *online* and *offline*.

Related topics

[The menu bar](#)

[Keyboard short-cuts](#)

The code editor



```
defaultChannelTest_ch0.t*
1  #include "setup_ch0.t"
-
-  on start {
-    printf("0: defaultChannelTest program started.\n");
-    setup_beaconReply();
-    setup_canBus();
-  }
-
-  on stop {
10  canBusOff();
-    printf("0: defaultChannelTest program stopped.\n");
-  }
-
-  on key "0" {
-    //canWrite(0, beaconReply);
-    canWrite(beaconReply);
-  }
-
-  on CanMessage <0> BeaconReply {
20  printf("<0> Got beaconReply\n");
-  }
-
-  |
```

If you have many *t* programs open at once, each is given its own tab. Select which *t* program to work on by clicking the corresponding tab. For convenience, the editor offers syntax highlighting and displays row-numbers in the left hand margin. To make navigating long programs easier, code blocks can be folded by pressing the small '-' in the margin. Folded block instead have a '+' in the margin; pressing this unfolds the block. If the editor still feels cramped after you have folded away the code blocks you don't want to focus on right now, try hiding the [Device Output](#) by going to *Window->Toggle Lower Pane* or pressing *F7* to toggle its visibility!

Related topics

[The menu bar](#)

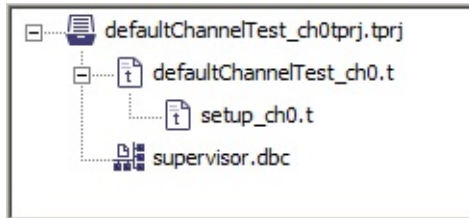
[The toolbar](#)

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The project overview



The project overview panel is situated to the right of the [editor](#). This panel provides a schematic overview of the project file tree. Everytime you the project, the .t files are parsed, and any included files are added to file tree.

Right clicking in the panel brings up a menu which lets you *Add* or *Remove Databases* and access the [Project Options](#). If you right click on a file in the tree, you are also given the option to *Open* the file for editing. Program files (*.t) are opened in the TRX editor, whereas databases *.dbc are opened in the external *Kvaser Database Editor*, provided that the path to *dbe.exe* has been set up in the [Preferences](#).

Related topics

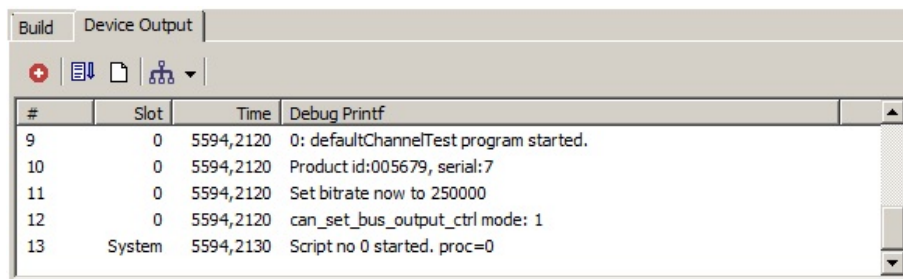
[Project options](#)

[The code editor](#)

Lower panel

The lower panel is used to display device output, build messages, and for communicating with a running *t* program by sending key events. If the [editor](#) feels cramped, try hiding the lower panel by going to *Window->Toggle Lower Pane* or by pressing *F7* to toggle its visibility!

Device Output



This tab is used for listening to the output from the running *t* programs. Each output is printed on a single line, and has an associated *Number* (#), *Slot* and *Time*. The slot is either *System* or the number of the slot occupied by the *t* program that issued the `printf` command.

The buttons above the output view have the following functionality:



Use this button to *Subscribe* and *Unsubscribe* to *Error Messages*, execution errors reported by the running *t* program. Subscription can also be toggled under [Preferences](#).



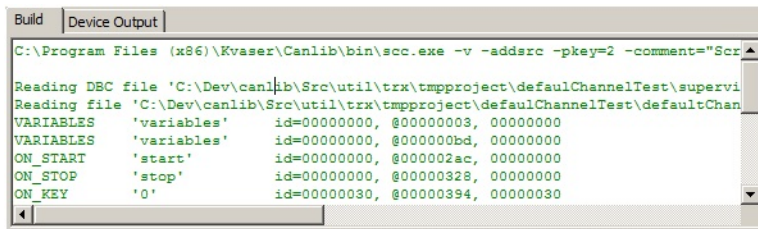
Use these buttons to toggle *Autoscroll* and *Clear Device Output*. When *Autoscroll* is on, TRX will always scroll down to the latest message.



The devices can run up to four programs concurrently, each in a different *slot*. This drop-down menu lets you *Select* which of the *active slots* to

listen to, making the *Device Output* less cluttered. Please note that each TRX session can only run and control one *t* program at a time. To run more than one *t* program, each has to be started separately, either from their own TRX session, from the command line, or auto-started on the device.

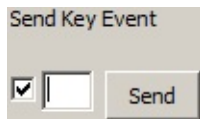
Build Log



```
Build | Device Output
C:\Program Files (x86)\Kvaser\Canlib\bin\scc.exe -v -addsrc -pkey=2 -comment="Scr
Reading DBC file 'C:\Dev\canlib\Src\util\trx\tmpproject\defaultChannelTest\supervi
Reading file 'C:\Dev\canlib\Src\util\trx\tmpproject\defaultChannelTest\defaultChan
VARIABLES   'variables'      id=00000000, @00000003, 00000000
VARIABLES   'variables'      id=00000000, @000000bd, 00000000
ON_START    'start'          id=00000000, @000002ac, 00000000
ON_STOP     'stop'           id=00000000, @00000328, 00000000
ON_KEY      '0'              id=00000030, @00000394, 00000030
```

This tab shows the output from the compiler, including the full compiler command. Compile time errors are highlighted in red. On clicking an error message the [editor](#) will jump to the line of code where the problem was detected. For detailed output, activate *Verbose Output* in the [Project Compiler Options](#).

Sending events



The *t* programs can be made to react to *Key Events*. *Send* button can be used to send single characters entered in the input box to the running *t* program, that will be interpreted as *Key Events*. Ticking the checkbox to the left of the input box tells TRX to forward all key presses to the *t* program, without the need for pressing *Send*. This is useful for interactively controlling the flow of the *t* programs.

Related topics

[Project Compiler Options](#)

[The menu bar](#)

[The toolbar](#)

[The editor](#)

List of keyboard short-cuts

- **File operations:**
 - **Ctrl + N:** New *t* program
 - **Ctrl + O:** Open *t* program
 - **Ctrl + S:** Save *t* program
- **Editing:**
 - **Ctrl + Z:** Undo edit
 - **Shift + Ctrl + Z:** Redo edit
 - **Ctrl + X:** Cut text
 - **Ctrl + C:** Copy text
 - **Ctrl + V:** Paste text
 - **Ctrl + A:** Select all text in editor
 - **Ctrl + F:** Find string in editor
 - **F3:** Find next instance of search string
 - **F9:** Compile project
- **Other:**
 - **Ctrl + P:** Open Program Preferences
 - **F1:** Open this help
 - **F7:** Toggle visibility of [lower pane](#)
 - **F8:** Toggle visibility of [Envvar viewer](#)
 - **Ctrl + Q:** Quit TRX

Related topics

[The menu bar](#)

[The toolbar](#)

Further resources

The following documents are accessible from the *Help menu* in TRX:

- **The Kvaser *t* Language Manual:** This manual contains detailed information about the *t* programming language.
- **The Kvaser CANlib SDK Help:** This help contains details about the Kvaser CANlib functionality and API.

For further information and support, see the Kvaser website:

www.kvaser.com

There you will find the latest versions of our drivers and SDK, as well as information about Kvaser products, developer blogs, support and documentation.

Related topics

[Getting started](#)

[Program overview](#)

[Keyboard short-cuts](#)