

## **LABCAR-AUTOMATION 4.2.3**

### Release Notes



## **Copyright**

---

The data in this document may not be altered or amended without special notification from ETAS GmbH. ETAS GmbH undertakes no further obligation in relation to this document. The software described in it can only be used if the customer is in possession of a general license agreement or single license. Using and copying is only allowed in concurrence with the specifications stipulated in the contract.

Under no circumstances may any part of this document be copied, reproduced, transmitted, stored in a retrieval system or translated into another language without the express written permission of ETAS GmbH.

© Copyright 2017 ETAS GmbH, Stuttgart

The names and designations used in this document are trademarks or brands belonging to the respective owners.

---

## Table of Content

1	Introduction.....	5
1.1	About This Manual .....	5
1.2	Product Overview .....	6
1.3	Product Packages .....	7
1.4	Electronic Licensing .....	9
2	Product Compatibility.....	10
2.1	System Requirements.....	10
2.2	Version Compatibility .....	10
2.3	Product Compatibility .....	10
2.3.1	Supported ETAS Products .....	11
2.3.2	Supported 3 <sup>rd</sup> Party Products .....	12
2.3.3	Support of ASAM XIL.....	12
3	Product Installation .....	13
3.1	Test Handler Options.....	13
3.2	SuT Mapping File Editor (SMFE) .....	14
3.3	Installation of Further Components .....	14
3.3.1	Registry Changes .....	15
3.3.2	Additional Components.....	15
3.4	Service Pack Installation .....	16
4	Changes in LABCAR-AUTOMATION 4.2.3 .....	17
4.1	New Functionality in LABCAR-AUTOMATION .....	17
4.1.1	New Functionality in LABCAR-AUTOMATION 4.2.3.....	17
4.1.2	New Functionality in LABCAR-AUTOMATION 4.2.1.....	18
4.1.3	New Functionality in LABCAR-AUTOMATION 4.2.0.....	20
4.2	Migration from LABCAR-AUTOMATION 3.1 to LABCAR-AUTOMATION 4.2.3 .....	22
4.3	Solved Customer Issues.....	23
4.3.1	Solved Customer Issues in LABCAR-AUTOMATION 4.2.2 .....	23
4.3.2	Solved Customer Issues in LABCAR-AUTOMATION 4.2.1 .....	23
4.3.3	Solved Customer Issues in LABCAR-AUTOMATION 4.2.0 .....	24
4.4	Known Issues .....	25
4.4.1	Measurement of INCA Indexed Values.....	25
4.4.2	No Calibration of TAB_VERB Array Parameters Possible .....	25
4.4.3	Maximal Path Length and Special Characters .....	25
4.4.4	Maximal Nesting Depth in Automation Sequence Builder (ASB) .....	26
4.4.5	Changed Behavior of Copy & Paste of Hierarchies in SuTMapping Editor.....	26
4.4.6	ASB Stencil Fault Simulation .....	26
4.4.7	Debug Break in Test Handler .....	26
4.4.8	PDF Report Sink.....	26
4.4.9	Support of ODX-Link with INCA.....	26
4.4.10	Debugging in the Automation Sequence Builder with Nested Sequences .....	26
4.4.11	Generate or Debug an Unsaved Sequence .....	27
4.4.12	GetLoggedSignals Exception: Channel Times Could not be found in file .....	27
4.4.13	Problems with debug execution if sequence contains blank and minus.....	27

- 5 Important Notes.....28
  - 5.1 Installation Hints for LABCAR Test Benches Operating With LABCAR-AUTOMATION .....28
  - 5.2 Issues due to 3<sup>rd</sup> Party Products.....28
  - 5.3 Additional Tool Adapters.....29
  - 5.4 General Hints.....29
  - 5.5 Windows 64 bit restrictions for test case execution.....29
  - 5.6 ATCL example test cases .....30
- 6 Error List .....31
- 7 ETAS Contact Addresses .....33

## **1 Introduction**

---

### 1.1 About This Manual

---

The aim of this document is to help new users as well as users moving from previous versions to easily get started with LABCAR-AUTOMATION 4.2.3. It gives an overview about new and changed functionalities and summarizes all important information relevant for this product release. Please read it carefully before you start installing and using LABCAR-AUTOMATION.

The following typographical conventions are used in this document:

<code>OCI_CANTxMessage msg0 =</code>	Code snippets are presented on a gray background and in the Courier font.
Choose <b>File</b> → <b>Open</b> .	Menu commands are shown in boldface.
Click <b>OK</b> .	Buttons are shown in boldface.
Press <ENTER>.	Keyboard commands are shown in angled brackets.
The "Open File" dialog box is displayed.	Names of program windows, dialog boxes, fields, etc. are shown in quotation marks.
Select the file <code>setup.exe</code>	Text in drop-down lists on the screen, program code, as well as path- and file names are shown in the Courier font.
<i>A distribution</i> is always a one-dimensional table of sample points.	General emphasis and new terms are set in italics.

All screenshots in this document relating to previous version of LABCAR-AUTOMATION are also valid for version 4.2.3.

1.2 Product Overview

LABCAR-AUTOMATION is a tool suite for the efficient automation of Hardware-in-the-Loop (HiL) tests. It provides the following key features:

✓	Role-based development, management, and execution of automated tests on Hardware-in-the-Loop systems.
✓	Open concept for integration of ETAS and 3 <sup>rd</sup> party products.
✓	Powerful .NET <sup>®</sup> -based test case programming interface supporting various programming languages.
✓	Intuitive graphical test case creation.
✓	Test case parameterization for advanced variant management.

The modular tool suite consisting of several components and add-ons providing features for certain stages of test automation. More information on specific components and add-ons can be found in the user guide.

Core Components	Runtime core components necessary for the execution of tests.
Automation Sequence Builder	Tool for intuitive graphical test case creation.
Test Manager	Creating, parameterizing and managing of tests as well as creating test sequences.
Test Handler	Execution of test sequences on a specific test bench.
Configuration Wizard	Guided setup of test bench configurations and test projects (Professional Edition allows configuration for all tool adapters, Standard Edition only for installed tool adapter).
Editors Package	Several editors allowing to create and edit configuration files.
Project Generator	Allows project generation for the Embeddable Package where Configuration Wizard and Editors are not available.
Report Viewer	Viewing and analyzing test reports that are generated during test execution.
Tool Adapters	Tool adapters allow the integration of several ETAS and 3 <sup>rd</sup> party tools in LABCAR-AUTOMATION.

### 1.3 Product Packages

---

LABCAR-AUTOMATION is available in different product packages, each providing a tailored package of components and add-ons for a given use case.

- **LABCAR-AUTOMATION Standard Package**

To immerse into the test automation for the first time or to implement test automation in a rather small or static test bench environment the LABCAR-AUTOMATION Standard Package is recommended.

- **LABCAR-AUTOMATION Professional Package**

Additional tool connections and features, in-depth managing of configurations and units under test are the benefits of the effortless extendible LABCAR-AUTOMATION Professional Package.

- **LABCAR-AUTOMATION Embeddable Package**

Integration of the LABCAR-AUTOMATION into an existing tool chain provides test case and test project management as well as automated test project creation. They can be configured and triggered from within customer's tool chain.

- **LABCAR-AUTOMATION Easy Offline Package**

For graphical or programming-based test case development without the need of online test execution on the test environment the LABCAR-AUTOMATION Easy Offline Package is recommended.

The package can be selected by the user during the product installation and requires a respective license as described in chapter 1.3.

The table below shows the content of each package. The components and add-ons with a check mark are part of the respective product package. All others can be ordered and installed separately to the package.

	Standard	Professional	Easy Offline	Embeddable
<b>Core Components</b>				
<ul style="list-style-type: none"> <li>▪ Core Engine</li> <li>▪ Automotive Test Class Library</li> <li>▪ Manuals and Examples</li> <li>▪ SuT Mapping File Editor</li> </ul>	✓	✓	✓	✓
<b>Report Viewer</b>	✓	✓	✓	✓
<b>Automation Sequence Builder</b>	✓	✓	✓	✗
<b>Configuration Wizard</b>	✓ (Standard Edition)	✓ (Prof. Edition)	✓ (Standard Edition)	✗
<b>Test Manager</b>	✓	✓	✗	✗
<b>Test Handler</b>	✓	✓	✗	✗
<b>Editors Package</b>				
<ul style="list-style-type: none"> <li>▪ Switch Definition File Editor</li> <li>▪ Test Bench Configuration File Editor</li> <li>▪ Tool Configuration File Editor</li> <li>▪ UuT List Editor</li> </ul>	✗	✓	✗	✗
<b>Project Generator</b>	✗	✗	✗	✓
<b>Tool Adapter Standard</b>				
<ul style="list-style-type: none"> <li>▪ Offline Test Bench Connector</li> <li>▪ ETAS LABCAR-OPERATOR</li> <li>▪ ETAS INCA</li> </ul>	✓	✓	✓	✓
<b>Tool Adapter Extended</b>				
<ul style="list-style-type: none"> <li>▪ ETAS INTECRIO</li> <li>▪ ETAS Real Time Testing</li> <li>▪ ETAS ODX-Link</li> <li>▪ ETAS Fault Simulation (ES4440)</li> </ul>	✗	✓	✗	✗
<b>Tool Adapter Misc</b>				
<ul style="list-style-type: none"> <li>▪ OCT J1699</li> <li>▪ Microsoft Excel</li> </ul>	✗	✗	✗	✗
<p>✓ Part of product package</p> <p>✗ Needs to be purchased separately</p>				



### 1.4 Electronic Licensing

---

LABCAR-AUTOMATION is protected by electronic licensing. Each component and add-on requires a respective license. The use of unlicensed ETAS software is prohibited. The required licenses are not included with the delivery of the product. For more information about license purchasing contact ETAS.

After purchasing LABCAR- AUTOMATION licenses, you receive a separate entitlement letter with instructions, how to activate your licenses using a self-service portal on the ETAS website (<http://www.etas.com/support/licensing>). During these steps you receive the necessary license files.

Depending on the license type you need to provide your user name or a MAC address. To retrieve both, please execute "License Info" included on the LABCAR-AUTOMATION installation medium (Data\Licensing) or from the "ETAS/License Management/ETAS License Manager" entry in the Windows start menu via Tools->Obtain License Info->Get License Info. The information can be saved as file and sent to ETAS.

If you have a valid service contract for LABCAR-AUTOMATION, your license files from previous versions can be further used with this version.

The use of unlicensed ETAS software is prohibited also in case of service pack installations. If you have a valid license for the base release, these are valid for the Service Pack as well. There is no need to require a new or separated license for a service pack. The required license for the base release is not included in this delivery.

## 2 **Product Compatibility**

---

### 2.1 **System Requirements**

---

The installation and operation of LABCAR-AUTOMATION 4.2.3 has the following system requirements:

Hardware: (Minimum)	<ul style="list-style-type: none"> <li>▪ 2 GHz Dual Core PC or higher</li> <li>▪ 4 GB RAM (8 GB RAM recommended)</li> <li>▪ 1 GB free hard disk space<sup>1</sup></li> <li>▪ DVD-ROM</li> <li>▪ Ethernet Adapter 10/100BaseT (2 x Ethernet Adapter 10/100BaseT recommended)</li> </ul>
Operating System:	<ul style="list-style-type: none"> <li>▪ Microsoft Windows 7</li> <li>▪ Microsoft Windows 10</li> </ul>

All software documentation is available in the Portable Document Format (PDF), which requires Adobe Reader. You can download the latest version from the Adobe website (<http://get.adobe.com/de/reader>).

To view the PDF Report which can be generated with PDF Report generator during test execution as well requires the Adobe Reader.

### 2.2 **Version Compatibility**

---

The interoperability of the components and add-ons within a certain version of LABCAR-AUTOMATION is ensured by a common release test. Other setups, e.g. in combination with components and add-ons from previous versions, are not supported.

LABCAR-AUTOMATION 4.2.3 is compatible with SuT Mapping File Editor version 4.1.0 which is included in the LABCAR-AUTOMATION installation.

For latest updates and information visit also the ETAS Download Center (<http://www.etas.com>).

### 2.3 **Product Compatibility**

---

The open and flexible concept of LABCAR-AUTOMATION allows the integration of different tools. Following an overview about the tools and respective versions that are currently supported is given.

---

<sup>1</sup> Hint: Application data not considered, esp. maximum size of generated test reports depend on free hard disk space

## ETAS LABCAR-AUTOMATION 4.2.3

### 2.3.1 Supported ETAS Products

LABCAR-AUTOMATION 4.2.3 is compatible to the following ETAS products:

Port	Supported Product	Compatible Version
Model Access	LABCAR-OPERATOR	5.0.0 - 5.4.2
	INTECRIO (via Common Experiment Environment 3.2 or higher)	3.1.1 3.2 4.x
ECU Access	INCA	6.2.1 7.1.10 7.2.2
	LABCAR-OPERATOR (with INCA, see LABCAR-OPERATOR User Manual for supported INCA versions)	5.0.0 - 5.4.2
Sync DL	LABCAR-OPERATOR (with INCA, see LABCAR-OPERATOR User Manual for supported INCA versions)	5.0.0 - 5.4.2
Diagnostic Access	INCA (with ODX-Link, see INCA User Manual for supported ODX-Link versions)	6.2.1 7.1.10 7.2.2
J1699	OBD/EOBD Conformance Test System ("OCT")	4.2.12
Fault Simulation	LABCAR-PINCONTROL	2.0.0 / 2.1.0 / 2.2.3
	LABCAR-OPERATOR (see LABCAR-OPERATOR User Manual for support of failure simulation)	5.0.0 - 5.4.2

## ETAS LABCAR-AUTOMATION 4.2.3

### 2.3.2 Supported 3<sup>rd</sup> Party Products

---

LABCAR-AUTOMATION 4.2.3 is compatible to the following 3<sup>rd</sup> party tools:

Supported Product	Compatible Version	Related Product Component
Microsoft Visual Studio (incl. Express Editions)	2012 2013	Test Design Connector Microsoft .NET (TDCNET)
Microsoft Excel	2010 2013 2016	Test Bench Connector Excel (TBCEX)

In addition LABCAR-AUTOMATION 4.2.3 also provides tool adapters for different 3<sup>rd</sup> party tools (e.g. dSPACE ControlDesk, Vector CANape and others). However, these tool adapters typically require customer specific integration and test efforts to ensure full compatibility. Therefore tool adapters are provided by ETAS Engineering Services on customer request.

For detailed information about available tool adapters or development of specific tool adapters, please contact ETAS.

### 2.3.3 Support of ASAM XIL

---

ASAM XIL is a standard defined by ASAM with the aim to enable reuse of test cases and to decouple test automation software from test hardware. Please refer to the ASAM website for detailed information (<http://www.asam.net>).

The standard contains two parts:

- ASAM XIL Framework: Defines interfaces to describe a test case, similar to the LABCAR-AUTOMATION Automotive Test Class Library (ATCL) concept.
- ASAM XIL Test Bench: Defines interfaces to connect test automation software and test hardware, similar to the LABCAR-AUTOMATION port and tool adapter concept.

The ASAM XIL Add-On provided with ETAS LABCAR-AUTOMATION 4.2.3 provides additional interfaces of the ASAM XIL standard within LABCAR-AUTOMATION.

This Add-On is not exhaustive and has not yet participated in an official ASAM XIL cross test to ensure compatibility with other tool vendors. Therefore, it is provided for customer evaluation purposes only.

Any customer feedback helps to improve the Add-On and can be submitted to the ETAS Hotline (<http://www.etas.com/en/hotlines.php>).

The Add-On is based on version 2.0.1 of the ASAM XIL standard. For details about the available interfaces and detailed description refer to the documentation which is part of the Add-On installation.

### 3 Product Installation

---

To install LABCAR-AUTOMATION please follow the guidelines described in chapter 2 "Installation" of the user's manual provided in the "Data/Documentation" directory of the installation CD.

In general the following issues should be considered for installation.

- ⇒ *Do not mix products and/or add-ons of different versions of LABCAR-AUTOMATION*
- ⇒ *Shutdown all running applications (especially all ETAS applications have to be closed).*
- ⇒ *Uninstall previous versions of LABCAR-AUTOMATION*
- ⇒ *Please follow Chapter 3.1 of this document if you like to take over your Test Handler options (new feature since LABCAR-AUTOMATION 3.4).*
- ⇒ *For a convenient LABCAR-AUTOMATION installation please use the guiding html pages, opened when inserting the CD into the PC drive. If the Auto Play option of your disk drive is switched off, please start the autostart.exe from the root of the CD directly.*
- ⇒ *Before installation of LABCAR-AUTOMATION the installation of Microsoft .NET Framework V4.6 is required. One may find the online installation of Microsoft .NET Framework V4.6.1 Redistributable at the Installation CD.*
- ⇒ *After installation of Microsoft .NET Framework a reboot of the PC is required.*
- ⇒ *For Visual Studio 2013 the .NET 4.6.1 Targeting Pack has to be installed. (Available on the installation CD)*
- ⇒ *The Report Viewer internally uses the Internet Explorer installed at your system to visualize the reports. To visualize plots present as SVG files an appropriate SVG viewer is necessary. At Windows 7 systems assure that Internet Explorer 9 is installed (it includes a SVG viewer by default).*

Special installation guidelines regarding other ETAS products and 3rd party products can be found in the chapter "Hints" at the end of this document (Chapter 0)

#### 3.1 Test Handler Options

---

The options of the Test Handler are managed in a configuration file. During installation these options are preset as follows:

- In case of a fresh installation these options are set to default values.
- If it is intended to use the Test Handler options from a former version (different installation folder) you can export it with the old version before uninstall the old version and then import the options into the new version after the installation.
- ⇒ *If you use the import function the Test Handler has to be restarted to reflect the changes resulting by the imported options file.*
- Starting with LABCAR-AUTOMATION 4.2.3: If you had formerly installed the same version (same installation folder by default), or another version in the same target folder, the Test Handler options were not deleted during uninstall or during repair installation. The saved options are taken over for the new or repaired installation.
- ⇒ *If you like to force an initial set of Test Handler options, please delete the corresponding ToolOptions.conf file (e.g. for Windows 7 file "%ProgramData%\ETAS\LABCAR-AUTOMATION 4.2\conf\ToolOptions.conf") manually.*

### 3.2 SuT Mapping File Editor (SMFE)

The SuT Mapping File Editor (SMFE) comes together with LABCAR-AUTOMATION 4.2.3. It will be automatically installed when one of the LABCAR-AUTOMATION packages will be installed on your computer.

- ⇒ *During uninstallation of LABCAR-AUTOMATION older LABCAR-SMFEEditor versions are not uninstalled.*
- ⇒ *It has to be manually uninstalled in the Windows control panel via Settings -> Control Panel -> Add or remove programs.*

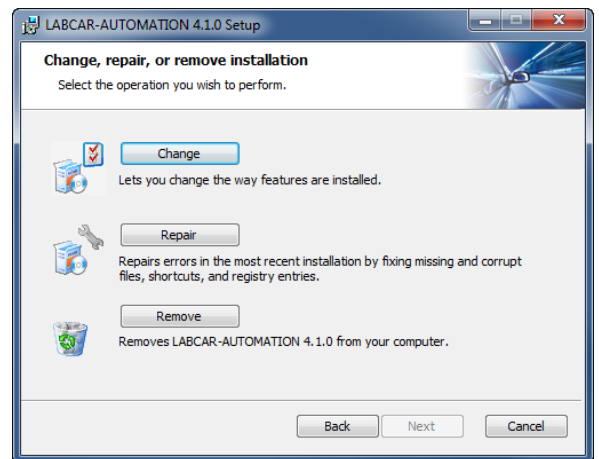
LABCAR-OPERATOR (LCO) brings the same version with its installation. If installed with LABCAR-AUTOMATION (LCA) as well as LABCAR-OPERATOR the SMFE will not be uninstalled before both (LCA and LCO) are uninstalled.

### 3.3 Installation of Further Components



In case you extend your system with further components there are two ways depending on the component you like to install.

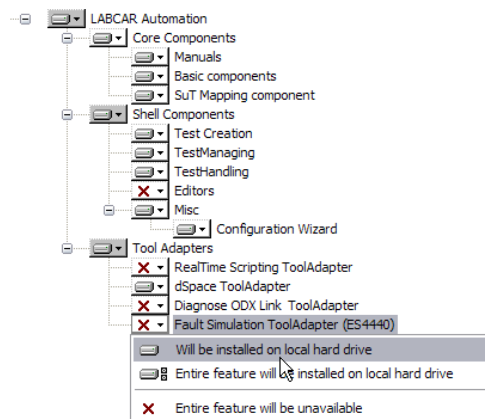
All components and Tool Adaptors which are part of one of the LABCAR-AUTOMATION packages (ref. to chapter 0) are available via the setup. You just have to insert the LABCAR-AUTOMATION product CD and start installation again.

- ⇒ *If the installation does not start after insertion of the CD, the option to 'autostart' the media is disabled in your explorer. In this case double click the autostart.exe file at the root directory of your CD.*



As soon as the LABCAR-AUTOMATION setup was started successfully you have the choice to change, repair or remove the package. Please select Change.

The next window provides you the possibility to select the components to install additionally. All former installed parts are already selected. If it's already installed it is marked as , otherwise a cross  is shown. To select a component click on this icon. In the picture below for example the FS port Tool Adaptor will be newly installed:



## ETAS LABCAR-AUTOMATION 4.2.3

*The component Configuration wizard contains both, the standard and the professional version. If you have already installed the LABCAR-AUTOMATION Standard package and like to upgrade the Configuration Wizard to the professional level you do not need to install or re-install the component. The control about the level is realized completely by the license you've got. It is also not necessary to remove the Configuration Wizard Standard License (LCS\_LCA\_CWS) from your computer, your initial license file or at the license manager. The component recognizes automatically the higher level.*

Click Next and confirm the change at the next page. The completion will be reported in the final window.

### 3.3.1 Registry Changes

---

The root path in the registry for the LCA has changed and now does not contain any more the version: "HKEY\_LOCAL\_MACHINE\SOFTWARE\ETAS\LABCAR-AUTOMATION". Below that path there is a registry folder with the current version.

Since the product version was changed so that it only has two digits the registry key look like the following: "HKEY\_LOCAL\_MACHINE\SOFTWARE\ETAS\LABCAR-AUTOMATION\4.2"

### 3.3.2 Additional Components

---

There are some additional components available which are not installed with one of the predefined packages:

- Tool Adapter for Microsoft Office Excel Tables
- Tool Adapter for Onboard control tester / J1699 Standard

All of these components you can install via the separate tools and utilities entry in the Installation CD Menu.

Select at the next window the ETAS Add-Ons at the right menu pane or select the first link ,Get a list of the related LCA utilities and our Tool adaptors here.'

Select the Add on you like to install by clicking the appropriate link.

Depending on your security level you might get one or two security information if you allow the download of the file (from your installation CD). Please confirm this dialogue with ,Run' and the installation will starts.

### 3.4 Service Pack Installation

---

To install LABCAR-AUTOMATION please follow the guidelines described in chapter 2 "Installation" of the user's manual provided in the "Data/Documentation" directory of the installation CD.

⇒ ***Please follow chapter 3 Product Installation to see all relevant information of the installation***

A LABCAR-AUTOMATION Service Pack comes as a complete delivery of the LABCAR-AUTOMATION software package.

⇒ *It is required therefore to uninstall the previous used version, if you have installed*

- a former build or
- a former service pack.

For the installation of the Service Pack please do the following:

Install the LCA package from this CD as usually and select the package which is the valid one for you. (Standard, Professional, ...). Follow the instructions for a normal installation. Important hints you find as well at chapter 0 .

#### 3.4.1 Problems with sporadic crashes of Test Handler

---

The memory configuration for Test Handler is by default 600 MB. For large projects this default value might lead to undesired problems and needs to be increased.

The memory configuration can be changed in the file ".\TestTools\Bin\TestHandler.exe.config" of the LABCAR-AUTOMATION installation folder by defining the number of allocated memory in Bytes as value for the key "MemorySize" (e.g. 1048576000 Byte):

```
<appSettings>
<!-- Timeout for the SARProcessController to startup the SARHost.exe -->
<!-- add key="SARHostStartupTime" value="10000" / -->
<!-- Maximum Memory Size of the Engine before restart. In Byte - 10MB = 10485760; 600MB = 629145600 -->
<add key="MemorySize" value="1048576000"/> == 1GB
</appSettings>
```

- Important Notes.
- In the case you had installed up to now additional tool adaptors, *these have to be installed as well newly*, to provide them for the execution chain. Access the installation again and select through the bullet 'Custom' the appropriate adapter and start the installation. See chapter 3.3 Installation of Further Components for detailed information.

⇒ *Licenses are not to be changed for a service pack.*



### 4 Changes in LABCAR-AUTOMATION 4.2.3

---

This chapter describes major changes of LABCAR-AUTOMATION 4.2.3 with respect to the previous version.

#### 4.1 New Functionality in LABCAR-AUTOMATION

---

##### 4.1.1 New Functionality in LABCAR-AUTOMATION 4.2.3

---

###### Main features at a glance:

✓	Support of Microsoft .NET 4.6.1
✓	Support of Windows 10
✓	Tool Adapter for ETAS LABCAR-OPERATOR 5.4
✓	Tool Adapter for INCA 7.2.2 standalone
✓	TCF file migration

###### **Support of Microsoft Windows 10**

LABCAR-AUTOMATION supports Windows 10 (with installed Internet Explorer 11).

###### **Support of Microsoft .NET 4.6.1**

LABCAR-AUTOMATION is now based on Microsoft **.NET framework 4.6.1**. If test cases are compiled with LABCAR-AUTOMATION 4.2.3, .NET framework 4.6.1 is required. However, test cases already compiled with previous versions can still be executed with LABCAR-AUTOMATION 4.2.3.

###### **Tool Adapter for ETAS LABCAR-OPERATOR 5.4 and INCA 7.2.2 standalone**

LABCAR-AUTOMATION 4.2.3 includes the support for LABCAR-OPERATOR 5.4.2 and as well INCA 7.2 standalone.

###### **TCF file migration**

The TCF-Editor now has a migration feature to migrate tool configuration files of an older tool version to a newer tool version.



## ETAS **LABCAR-AUTOMATION 4.2.3**

### 4.1.2 New Functionality in LABCAR-AUTOMATION 4.2.2

LABCAR-AUTOMATION 4.2.2 includes several improvements regarding performance and memory consumption for Automation Sequence Builder and SMF-Editor as well as further quality improvements.

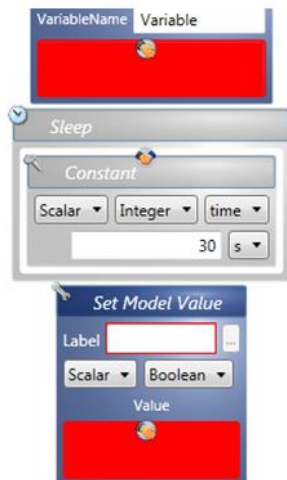
### 4.1.3 New Functionality in LABCAR-AUTOMATION 4.2.1

#### **Main features at a glance:**

	Comment out of stencils in Automation Sequence Builder
	Support of Microsoft Windows 8.1

#### **Comment out of stencils in Automation Sequence Builder**

Automation Sequence Builder now supports to comment out parts of a sequence from generation. The respective stencils can be commented out by right click on the selected stencil and are greyed out afterwards.



A detailed description of this new feature can be found in the Automation Sequence user guide.

#### **Support of Microsoft Windows 8.1**

After the Windows 8 support introduced with LABCAR-AUTOMATION 4.2.0 now also Windows 8.1 is supported.

#### **Configurable Signal Generator Input Mode Mapping**

LABCAR-AUTOMATION allows deciding between two different mapping behaviors for the Signal Generator Input Mode.

The mode can be defined by the newly introduced flag "Inport Mode" within the test bench configuration (tcf).

### ETAS LABCAR-AUTOMATION 4.2.3

- **Inport Mode = False (Default Mode):** Mapping behavior represents for compatibility reasons the behavior of previous version of LABCAR-AUTOMATION as introduced with older versions LABCAR-OPERATOR Experiment Environment. This is the default behavior of LABCAR-AUTOMATION.
  - CONST = 0
  - STIMULI = 1
  - MODEL = 2
  - STIMULI + MODEL = 3
  - STIMULI \* MODEL = 4
- **Inport Mode = True (Latest Mode):** Mapping behavior represents the latest behavior of the supported LABCAR-OPERATOR Experiment.
  - CONST = 0
  - MODEL = 1
  - MODEL\_PLUS\_CONST = 2
  - MODEL\_MULT\_CONST = 3
  - MODEL\_PLUS\_SIGNALGENERATOR = 4
  - MODEL\_MULT\_SIGNALGENERATOR = 5
  - SIGNALGENERATOR = 6
  - SIGNALGENERATOR\_PLUS\_CONST = 7
  - SIGNALGENERATOR\_MULT\_CONST = 8

**Hint:** This feature is only supported with the tool adapter for LABCAR-OPERATOR Experiment Environment 3.5 or higher!

#### **Main features at a glance:**

✓	Support of Microsoft Windows 8 and Microsoft .NET 4.5
✓	ASQ Batch Generator for Automation Sequence Builder
✓	Tool Adapter for ETAS INCA 7 and ETAS LABCAR-OPERATOR 5.3
✓	Report Viewer Standalone Installation
✓	ASAM XIL Evaluation AddOn for LABCAR-AUTOMATION
✓	Configurable Signal Generator Input Mode Mapping

#### **Support of Microsoft Windows 8**

LABCAR-AUTOMATION now officially supports Windows 8. Other versions, e.g. Windows 8.1, are not fully covered by release tests and might be used without warranty for compatibility.

#### **Support of Microsoft .NET 4.5**

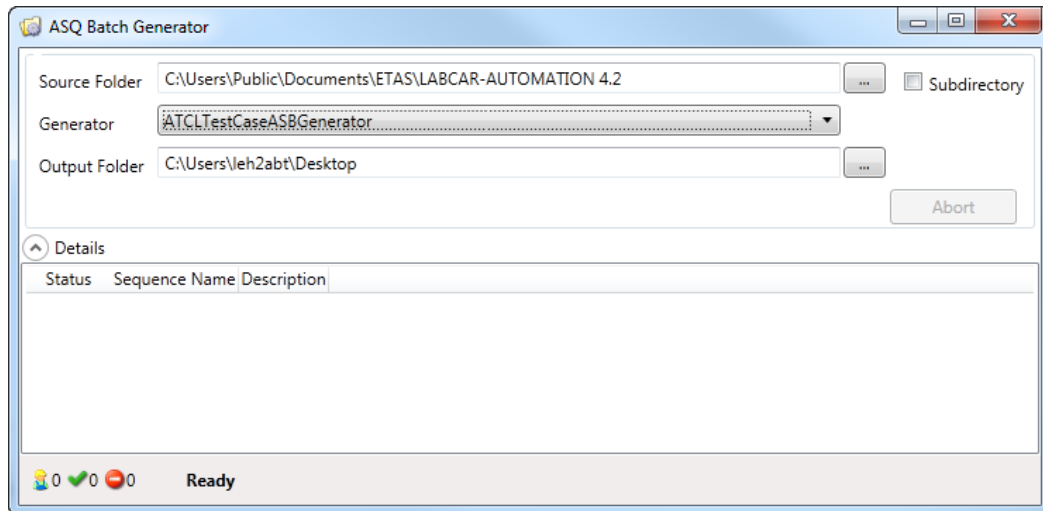
LABCAR-AUTOMATION is now based on Microsoft **.NET framework 4.5** (compared to Microsoft .NET 4.0 in LABCAR-AUTOMATION 4.1).

If test cases are compiled with LABCAR-AUTOMATION 4.2.0, .NET framework 4.5 is required. However, test cases already compiled with previous versions can still be executed with LABCAR-AUTOMATION 4.2.0.

#### **ASQ Batch Generator for Automation Sequence Builder**

Automation Sequence Builder now provides the ASQ Batch Generator to automatically generate all .asq files within a selected folder. The feature can be found in Automation Sequence Builder under Tools -> Plugins -> ASQ Batch Generator.

## ETAS LABCAR-AUTOMATION 4.2.3



The dialog allows to select an input folder (where your .asq files to be generated are located). With the checkbox behind that selection you can decide if also the child directories shall be recursively scanned for ASQs to be generated. The results of the generation will be stored in the selected output folder (existing files will be overwritten). The generation will use the selected generator (e.g. to decide between generation of test case executables or libraries). Information about successful or unsuccessful generation for each .asq file will be shown in the lower part of the dialog.

### Tool Adapter for ETAS INCA 7.1 and ETAS LABCAR-OPERATOR 5.3

With LABCAR-AUTOMATION 4.2.3 a new INCA standalone tool adapter is available. This tool adapter allows to connect LABCAR-AUTOMATION directly with INCA for accessing ECU calibration, measurement and diagnostic data. A separate LABCAR-OPERATOR license is not required.

As in previous version, also a tool adapter for accessing INCA via LABCAR-OPERATOR is provided. This tool adapter allows in comparison to the standalone tool adapter also a synchronized logging of INCA and LABCAR-OPERATOR data. However, this requires an additional LABCAR-OPERATOR license.

Both tool adapter support now the latest INCA version 7.0 and 7.1. Equal to previous versions of LABCAR-AUTOMATION, the Configuration Wizard and the Test Bench Configuration File Editor allow to select and configure the respective tool adapter.

For the different possibilities to use INCA with LABCAR-AUTOMATION, please see 'How to...'-document chapter 2.4.1.

### Report Viewer Standalone-Installation

The installation of LABCAR-AUTOMATION 4.2.3 now offers to install only the Report Viewer without other product components. The Report Viewer can be used without license. This enables to distribute test reports generated with LABCAR-AUTOMATION within the organization and conveniently view them, e.g. for review or analysis purposes.

### ASAM XIL Evaluation AddOn

The ASAM XIL Evaluation AddOn provides many of the interfaces as specified in the ASAM XIL standard, e.g. to integrate with 3<sup>rd</sup> party tools. For more information refer to chapter 2.3.3 of this document.

### Miscellaneous

Besides the described key features there are several smaller or hidden improvements of LABCAR-AUTOMATION. Chapter 4.3 gives an overview of customer issues solved with this version of LABCAR-AUTOMATION.

**Automation Sequence Builder** now comes with improved memory consumption and provides now a better performance and reactivity than ever before. The Favorite panel in Automation Sequence Builder now also allows to store so called Value-Stencils (those with a round icon on their top).

For the property panel of the **SuT Mapping File Editor**, a check of the property values is introduced.

## 4.2 Migration from LABCAR-AUTOMATION 3.1 to LABCAR-AUTOMATION 4.2.3

Data structures from LABCAR-AUTOMATION 3.1 projects must be converted to the current data structures.

Please be careful that projects that shall be opened with LABCAR-AUTOMATION 3.1 may not be opened and saved with LABCAR-AUTOMATION 4.2.3.x.

⇒ **After opening a project with LABCAR-AUTOMATION 4.2.3.x the project cannot be opened with previous versions (3.1 and earlier)**

A detailed description of migration steps and hints regarding the change of version is available in the document "LABCAR-AUTOMATION - From 3.1 to 3.2.pdf" which can be found in the LABCAR-AUTOMATION start menu group and on the installation CD.

## ETAS **LABCAR-AUTOMATION 4.2.3**

### 4.3 Solved Customer Issues

---

#### 4.3.1 Solved Customer Issues in LABCAR-AUTOMATION 4.2.3

---

The following customer issues are solved in comparison to LABCAR-AUTOMATION 4.2.2 (ID and Title referring to the ETAS Issue Tracking System):

<b>Id</b>	<b>Title</b>
501100	LCA4.2.1: Heterogeneous representation of legend in LCA plot

#### 4.3.2 Solved Customer Issues in LABCAR-AUTOMATION 4.2.2

---

The following customer issues are solved in comparison to LABCAR-AUTOMATION 4.2.1 (ID and Title referring to the ETAS Issue Tracking System):

<b>Id</b>	<b>Title</b>
471139	LCA 4.2.0: Issue Viewing the Details of LCA Test Report
474648	LCA 4.2.0: ASB Test case with ForEach Excel Stencil will run in ASB but not Test Manager
501096	LCA 4.2.1: ReportLevel Filtering for Plots in LCA Report Viewer
501098	LCA 4.2.1: Y-axis shifted in plot
476641	LCA 4.2.0: ASQ Batch generator fails for some testcases

#### 4.3.3 Solved Customer Issues in LABCAR-AUTOMATION 4.2.1

---

The following customer issues are solved in comparison to LABCAR-AUTOMATION 4.2.0 (ID and Title referring to the ETAS Issue Tracking System):

<b>Id</b>	<b>Title</b>
448025	LCA 4.1.0 SP1: Problems with usage of data logger within generated DLL
455710	LCA 4.1.0 SP1: Unit in stencil substring saved wrongly (e.g. [A] instead of [mA])
466129	LCA 4.1.0 SP1: ASB stencil fault simulation update fails (change of pin name)

## ETAS LABCAR-AUTOMATION 4.2.3

### 4.3.4 Solved Customer Issues in LABCAR-AUTOMATION 4.2.0

---

The following customer issues are solved in comparison to LABCAR-AUTOMATION 4.1 (ID and Title referring to the ETAS Issue Tracking System):

<b>Id</b>	<b>Title</b>
453096	LCA 4.2: LCO 5.3.0 EE 3.5.0 Signalgenerator signalflow mappings not matching
449349	LCA 4.2: TestRuns folder will be locked after generating the batch project.
449377	LCA 4.2: ReportViewer does not display SVG Plots
373311	Test Manager: Positioning toolbars
413719	Test Handler: Plot Display Settings Plot Height and Width
385397	ASB: New sequence is hidden behind Welcome... tab
407984	ASB: Verify DTC - 'Bus doesn't exist' error with no TLA
437669	ASB: Calculation using Units: ERROR: Cannot convert from no unit to '%'
420132	ASB: Stencil Configure Signal Generator must be named like Signal Generator Name
420139	ASB: Help, documentation and example improvements (Configure SG, Fault Simulation)
410150	ASB: Crashes by opening if Global Switch Definition File format is incorrect



4.4 Known Issues

This section describes known problems of the released version 4.2.3.

4.4.1 Measurement of INCA Indexed Values

Starting from INCA 6.2.1 HF17 for indexed values in INCA a new feature is available. It can be decided by the customer, where the index will be oriented in the naming:

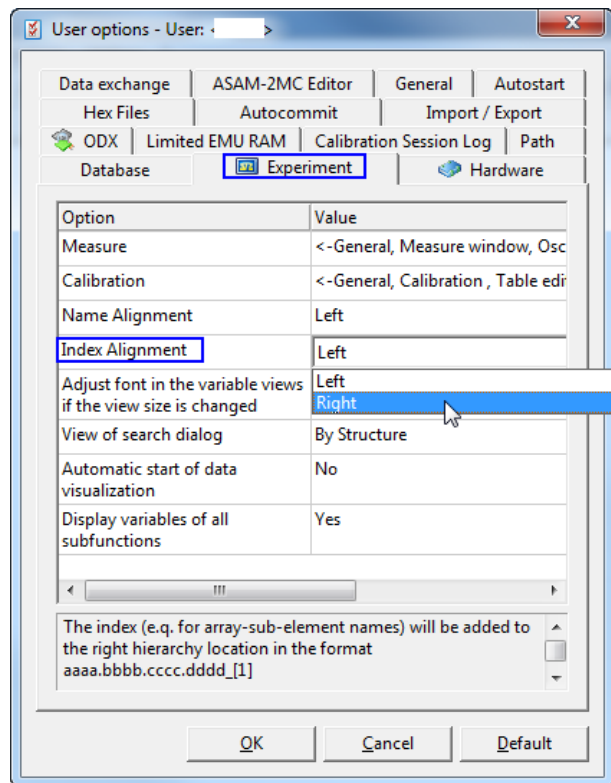
```
Option Index Alignment = 'Left' :      aaaa[1].bbbb.cccc.dddd
Option Index Alignment = 'Right' :    aaaa.bbbb.cccc.dddd[1]
```

The default selection with this feature is ,Left', while the orientation in the past was ,Right', therefore LABCAR-AUTOMATION translates all indexed values like ,right-oriented'.

To ensure correct operation with the datalogging of indexed values it is necessary to set the user option in INCA correctly.

Select from Menu Bar -> Options -> User options and activate the tab ,Experiment'. Look at this tab for the entry ,Index Alignment' and set it to ,Right'.

This option setting is only necessary once after the installation of the INCA Hotfix.



4.4.2 No Calibration of TAB\_VERB Array Parameters Possible

It is not possible to set array parameters defined in INCA (.a2I) as TAB\_VERB. However reads are possible.

4.4.3 Maximal Path Length and Special Characters

Windows restricts paths to a maximal length of 248 characters. This should be kept in mind when setting up LCA projects. E.g. when creating project structures with the Configuration Wizard or the Automation Sequence Builder the root directory should not be placed too deep downwards the directory tree. The resulting path lengths result from that root directory as well as the length of the project/test name given.

Further the usage of special characters should be prevented. Means no special characters should be used within path (directory and file names) used with LCA.

## ETAS LABCAR-AUTOMATION 4.2.3

### 4.4.4 Maximal Nesting Depth in Automation Sequence Builder (ASB)

Due to a restriction of WPF (the .NET base technology that is used as a base of ASB) there is a restriction in the maximal nesting depth of stencils in ASB. With the currently used framework version (.NET 4.5) this threshold is at 35 stencils nested into each other.

### 4.4.5 Changed Behavior of Copy & Paste of Hierarchies in SuTMapping Editor

With the introduction of the new SuT Mapping Editor 4.x when copying hierarchies the related test label are no more copied. This was done as hierarchies are purely seen as structural elements. It was not seen as sensible to duplicate all related labels.

### 4.4.6 ASB Stencil Fault Simulation

In case of selection of multiple errors in the ASB stencil Fault Simulation only the LoadFlag of the last error entry is been used. That means in case the load flag is set for the last error in the multiple error set, all errors of the multiple error set are connected with load.

### 4.4.7 Debug Break in Test Handler

With LABCAR-AUTOMATION 4 the behavior of *DebuggerBreak* functionality available in the Test handler application has changed (available at the *Test Case Executor* page of the options dialog **Tools** → **Options...**).

When having the *DebuggerBreak* flag set to *True*, at the beginning of each test execution the "VS Just-In-Time Debugger" window appears that allows you to select a Visual Studio instance to be used for debugging. If aborting this dialog (by pressing the *No* button) the test execution will abort at all. Means the resp. test will no more be executed, but the next test case of the sequence will be started.

### 4.4.8 PDF Report Sink

With LABCAR-AUTOMATION 4 a new Report Sink is available. When using this report sink the memory consumption of the LABCAR-AUTOMATION Core is higher than before and sufficient memory needs to be ensured, esp. for endurance tests.

### 4.4.9 Support of ODX-Link with INCA

When changing to a new version of INCA with ODX-Link, the compatibility to an existing INCA database created with a previous version could get lost. This is due to the changed configuration of ODX in INCA. There is no possibility to migrate the INCA database to directly support the new version of ODX. This has to be set up from scratch.

The INCA 7.1 and ODX Link tool configurations have both gotten a new property "Initialize Hardware" to switch off or on the call of initialize hardware in the configure call of the tool adapters. For the usage of ODX Link this has to be switched off (set to "false").

### 4.4.10 Debugging in the Automation Sequence Builder with Nested Sequences

In case of debugging of nested sequences there are some changes/improvements. When a nested sequence contains a breakpoint and the debugger stops, the nested sequence now is opened. Formerly the sequence was not opened but nevertheless the debugger stopped and the user did not see it.

The debug messages now are no more written to the currently active sequence, but to the sequence to which they belong. Additionally when a nested sequence is debugged, all messages written to the debug output from the time beginning when the nested sequence is started to be debugged, are written to the output of the main and the nested sequence.

## ETAS LABCAR-AUTOMATION 4.2.3

### 4.4.11 Generate or Debug an Unsaved Sequence

It is no more possible, to generate or debug a sequence that never has been saved. The reason for this behavior is, that it is not obvious to the user, where the generated files are saved. If a user starts the generation or debugger a save as dialog is shown. After saving the generation or debugging is continued. In case of the abortion of the saving, generation or debugging is cancelled and the following message is written to the message log: "Sequence has to be saved before test case generation can be started! Generation and debugging is cancelled."

This behavior applies only if a new sequence was created and was not yet saved. This means a sequence is not saved if it just contains unsaved changes.

### 4.4.12 GetLoggedSignals Exception: Channel Times Could not be found in file

With the method "GetLoggedSignals" a file is loaded into the memory. If the file size is large (app. with more than 250 MB), this can exceed the available memory and an exception is thrown. This memory limit is given by Microsoft Windows for 32 Bit applications. As workaround the selection of a recording task that reduces the number of logged signals or to use a single signal read methods instead.

### 4.4.13 Problems with debug execution if sequence contains blank and minus

If an .asq file name for Automation Sequence Builder contains a space follow by a minus (e.g. "File -.asq") an execution of the sequence in debug mode is not possible. As temporary workaround, a different file name should be chosen.

### 4.4.14 Problems with sporadic crashes of Test Handler

The memory configuration for Test Handler is by default 600 MB. For large projects this default value might lead to undesired problems and needs to be increased.

The memory configuration can be changed in the file ".\TestTools\Bin\TestHandler.exe.config" of the LABCAR-AUTOMATION installation folder by defining the number of allocated memory in Bytes as value for the key "MemorySize" (e.g. 1048576000 Byte):

```
<appSettings>
<!-- Timeout for the SARProcessController to startup the SARHost.exe -->
<!-- add key="SARHostStartupTime" value="10000" / -->
<!-- Maximum Memory Size of the Engine before restart. In Byte - 10MB = 10485760; 600MB = 629145600 -->
<add key="MemorySize" value="1048576000" /> == 1GB
</appSettings>
```

## 5 Important Notes

---

This chapter lists information and latest issues which are important to know by the user.

### 5.1 Installation Hints for LABCAR Test Benches Operating With LABCAR-AUTOMATION

---

The following information is addressed to users working with different ETAS and non-ETAS tools on a test bench.

When installing LABCAR-AUTOMATION it is recommended to keep the following sequence for the ETAS Software products:

1. INCA
2. ODX Link
3. LABCAR-OPERATOR
4. LABCAR-AUTOMATION

### 5.2 Issues due to 3<sup>rd</sup> Party Products

---

- While installing LABCAR-AUTOMATION or one of its add-ons: In case you detect an error like "*Error 1335: The cabinet file ... is corrupt and cannot be used*" and if you ignore the error message, it repeats with a different cabinet file name, this is a Microsoft Installer issue. Please re-install the Microsoft Installer software. You find it at the installation CD under Tools and Utilities -> 3<sup>rd</sup> party products.
- In case you get an error like: "*invalid page fault in module MSVCRT.DLL*" or "*<any program> causes an exceptional fault in the module MSVCRT.DLL*" or similar, you see Microsoft error reports, which are caused by several run time libraries like for C, C++ and WCF. As ETAS software bases on Microsoft library functions this might occur as soon as you've installed e.g. the LABCAR-CCI standalone package. These libraries need a minimum version number or even the latest updates of the concerned dlls.

To prevent these errors you have to manual copy some Microsoft DLLs into your installation directory of the LABCAR-CCI standalone component or into the Windows\system32 folder. You find these libraries at the installation CD under Tools and Utilities -> 3<sup>rd</sup> party products at the chapter 'Runtime Libraries of Microsoft '.

### 5.3 Additional Tool Adapters

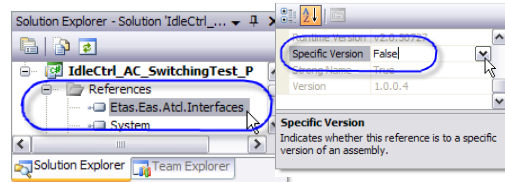
---

If you perform a

- repair installation or
- the installation a service pack or
- an installation into the same folder like a former installation,

all additional tool adapters (e.g. Excel) have to be re-installed after the LABCAR-AUTOMATION installation.

Another practicable method is to set inside the Visual Studio Project for the reference to the ATCL the option 'Specific Version' to 'False'. This enables VS as soon as the project is built to adapt the ATCL version to the actual one, registered in the global assembly cache.



### 5.4 General Hints

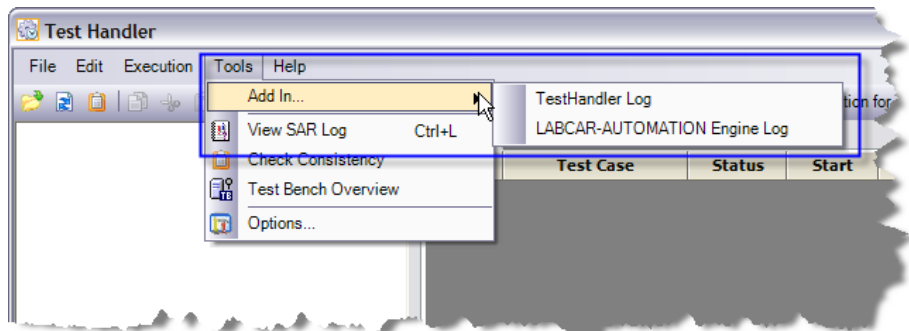
---

Since LABCAR-AUTOMATION V3.2.x a LABCAR-AUTOMATION engine log file will be created (instead of an SAR log file).

You can find the actual logfile(s) directly via the Test Handler Menu at

- Tools -> View SAR Log
- Tools -> Add In... -> Test Handler Log
- Tools -> Add In... -> LABCAR-AUTOMATION Engine Log

Selecting one of the log files opens the latest file which is been filled by the last Test Handler run.



Additionally you can find all logfiles in your folder structure at following location:  
C:\Users\Public\Documents\ETAS\LABCAR-AUTOMATION 4.2\logging

Any file with the extension .log.# (#=1...n) covers the history of the appropriate log file to avoid too big log files. Typically the actual log file is sufficient for problem analysis.

### 5.5 Windows 64 bit restrictions for test case execution

---

All test cases which are compiled at a 64 bit operating system have to use the compile option 'Compile for x86'.

5.6 ATCL example test cases

---

The ATCL Example test cases project contain different tests. There are test bench configuration files available for this project for different Experiment Environment versions. The diagnostic test contained in the project has a separate test bench configuration file (ODXAccess).

For the realtime scripting example there is only an example configuration available to be used with Experiment Environment in version 3.3.

Additionally there is an example available for the excel tool adapter. This example runs in fail.

## 6 Error List

In this chapter you find information and hints when LABCAR-AUTOMATION throws exceptions. This list is not exhaustive. It is an assortment of exceptions caused by test cases' design or test bench configuration issues.

Exception	Possible causes	Remedy
AtclConnect Exception	Thrown if there was a problem connecting the test case and the SARHost (execution host), e.g the SUT-Mapping file mentioned in the test bench configuration file is missing. Check the 'ErrorCode' for more information.	Read exception message and log-file and fix the problem mentioned there, e.g. give the right SUT-Mapping file as named in used the .tbc file or adapt the .tbc file
Atclfactory Exception	Indicates a problem in the AtclFactory, e.g. the library Etas.EAS.Atcl.Interfaces in version 1.0.0.2 is referenced, but the Sar-Host still requires version 1.0.0.1	An error within the Factory class cannot easily be provoked from within a test case. If ATCL in wrong version is referenced in test case compared to version expected by the factory. Reference the right ATCL version in your solution before re-build.
IllegalVerdict Exception	The IllegalVerdictException indicates an illegal state transition within the Verdict class. The state transition of the Verdict is limited to the verdict transitions of TTCN-3. Cannot be provoked from within a test case	Trial to set a verdict from error or failed to pass is invalid and therefore ignored (that means no exception), if done in the test case.  Only if for some reason (e.g. manipulated verdict class) a transition within the verdict class itself goes wrong, an exception is thrown.
Parameter Manager Exception	This exception is thrown if there was any error in the IParameterManager, e.g. when test case tries to load a parameter that has not been registered.	Register the parameter in the test case before loading.
ToolAdapter PortStatus Exception	Used to indicate an abnormal tool adaptor status to the ATCL API user/program. It contains the TypePortStatusRecord to enable the user to react on the invalid state of the tool adaptor. It may occur on every call to a tool adaptor port. It is thrown e.g. when a test case tries to configure a port, that is not in the state ,ToolConfigured'.	Set the tool into the right state before starting the test or include a tool configuration into your test case. Information can be found inside ATCL referential and the examples, came with the installation of LABCAR-AUTOMATION.

Exception	Possible causes	Remedy
TypeMissMatch Exception	Indicates a problem on the type conversion inside the TypeSutBase classes. The conversion problem can either occur during the transformation to the SAR internal types or on the way back from the SAR internal data type to the TypeSutBase types.	This is an internal error and can therefore not be provoked from within a test case. Call LABCAR hotline to get support on this.
ETAS.LCA.SAR.Core.Interfaces.Exceptions.PortMissing Exception	Arises if you try to create a port which instance name is not declared in the test bench configuration file.	Correct the name inside test case or add the port into the test bench configuration file or correct its name therein.



## **7 ETAS Contact Addresses**

---

### *ETAS HQ*

---

ETAS GmbH	Phone:	+49 711 3423 0
Borsigstraße 14	Fax:	+49 711 3423 2106
70469 Stuttgart	WWW:	<a href="http://www.etas.com">www.etas.com</a>
Germany		

### *ETAS Subsidiaries and Technical Support*

---

For details of your local sales office as well as your local technical support team and product hotlines, take a look at the ETAS website:

ETAS subsidiaries	WWW:	<a href="http://www.etas.com/en/contact.php">www.etas.com/en/contact.php</a>
ETAS technical support	WWW:	<a href="http://www.etas.com/en/hotlines.php">www.etas.com/en/hotlines.php</a>