

DESK-LABCAR Default Project

DESK-LABCAR Default Project V3.7.1 - Getting Started

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ETAS DESK-LABCAR Default Project V3.7.1 - Getting Started

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1 Introduction

This manual contains information on the configuration and launch of DESK-LABCAR. For an overview of DESK-LABCAR Getting Started please refer to chapter 2 "DESK-LABCAR System Overview".

1.1 About this Manual

This section contains a short overview of the contents and provides information on the user profile and on how to use this manual.

1.1.1 Content

This manual, "ETAS DESK-LABCAR Default Project – Getting started", consists of the following chapters:

- Chapter 1: "Introduction" This chapter contains general information, such as user profile, intended use and conventions used in this document. Furthermore, it contains an overview of LABCAR documents.
- Chapter 2: "DESK-LABCAR System Overview" This chapter contains an overview of the LABCAR system.
- Chapter 3: "Program Installation" This chapter provides installation instructions.
- Chapter 4: "Configuring the User PC " This chapter describes how to connect the User PC to the LABCAR.
- Chapter 5: "Licensing for DESK-LABCAR Machine-Named " This chapter contains general information about ETAS licensing.
- Chapter 6: "DESK-LABCAR Default Project Content" This chapter gives a description of the Default Project Content.
- Chapter 7: "ETAS Contact Addresses" In this chapter you can find information how to contact ETAS.
- Chapter 8: "List of abbreviations" In this chapter the abbreviations are defined.

1.1.2 User Profile

This manual is intended for specialists who develop or test Electronic Control Units (ECU). Dedicated knowledge of measuring and ECU technology is assumed.

1.1.3 Intended Use

The DESK-LABCAR is designed for the use in industrial laboratories.

It is used for the following tasks:

- For software system tests (manual and automatic)
- For testing the initial control unit setup

If the DESK-LABCAR is used for any other application as mentioned above, ETAS is not responsible for any injury or damage that may occur.

2 DESK-LABCAR System Overview

DESK-LABCAR is designed to simulate interfaces for testing ECUs.

The advantages of FiL systems are:

- Root causes of complex failure types can be found early in development.
- Any test profile can be run repeatedly with the same level of precision and without danger to persons or vehicles.

The system can be used to run tests for the validation of control and diagnostic functions in early phases of ECU development as well as for the release of software variants.

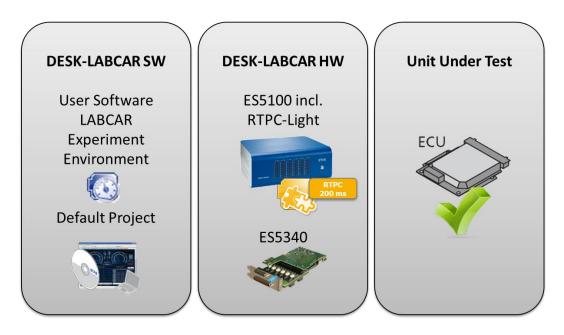


Fig. 2-1 DESK-LABCAR system setup example and its environment.

2.1 DESK-LABCAR Default Project

The DESK-LABCAR Default Project provides a basic Hardware Configuration for the RTPC inside the ES5100.1 and for the ES5340.2 Internal Combustion Engine Board a maximum set of preconfigured HW Channels and IO model signals.

2.2 DESK-LABCAR User Software

The DESK-LABCAR User Software is the environment for configuring (instrumentation, parameterization, etc.) and executing experiments.

The experiment environment offers the following possibilities:

- clear access to all parameters and measure variables due to the combination of the "Element List" and "Signal Center" in the "Workspace Elements" window
- creation of instrumentations for displaying measure variables and for modifying parameters of the running experiment
- signal conversion and sensor/actuator modeling
- tracing signal paths
- data recording with the Datalogger
- stimulating inputs with the Signal Generator.

3 Program Installation

3.1 DESK-LABCAR Default Project Installation

This section describes how to install DESK-LABCAR Default Project.

To install DESK-LABCAR Default Project

Before installing the DESK-LABCAR Default Project, please make sure that the DESK-LABCAR User Software is installed in advance properly (see chapter 3.2 DESK-LABCAR User Software Installation).

- Insert the product DVD in your DVD-ROM drive. The DVD-Browser is launched.
- Select
 - Tools and Utilities \rightarrow DESK-LABCAR Default Project.

	ETV2
DESK-LABCAR User Software	
Tools and Utilities	1
Examples	
Directory containing DESK-LABCAR Default Project	
DESK-LABCAR Default Project	
Licensing	Installation
Use the following tools and links in order to obtain your license file. See the Release Notes for details.	Version Info
Obtain License Info	Documentation Tools and Utilities
ETAS Licensing Portal	Support
	Charles Street 2

• The following window appears, providing a *.zip file.

ETAS Product Installation		-					
C C C C C C C C C C C C C C C C C C C							
Name	Änderungsdatum	Тур					
DESK_LABCAR Default Project.zip	20.03.2015 16:25	ZIP-Datei					

- Extract the DESK-LABCAR_Default_Project.zip file on your PC.
- Afterwards a set of structured files are provided on your PC.

V V V V V V V V V V V V V V V V V V V	LAB	CAR_Default_Project > DESK-LABCAR_Defaul	t_Project > v	Search DESK-LAB	CAR_Default_	Project 🖌
Organize ▼ Include in library ▼ Share	e wit				•	
DESK-LABCAR_Default_Project	^	Name	Date modified	Туре	Size	
DESK-LABCAR_Default_Project		DESK-LABCAR_Default_Project	02.04.2015 10:35	File folder		
DESK-LABCAR-48H		Docs	02.04.2015 10:35	File folder		
EA113_migrated		Experiments	02.04.2015 10:35	File folder		
ES4440 RTPC		Target_DESK_LABCAR	02.04.2015 10:35	File folder		Select a f
es5340 dl		DESK-LABCAR_Default_Project.lco5	01.04.2015 14:01	LCAS Document	1 K	to previe
ES5340 ICE		DESK-LABCAR_Default_Project.pro	01.04.2015 14:01	PRO File	2 K	
ES5340_x2		DESK-LABCAR_Default_Project.tc	01.04.2015 14:01	TrueCrypt Volume	1 K	
ES5340-M_FPGA						

 These structured files contain all necessary target files, as well as a suitable Experiment Environment workspace.

Note for LABCAR-OPERATOR User:

If LABCAR-OPERATOR(-IP) is running on your PC, the DESK-LABCAR_Default_Project.lco5 project in folder (installation_folder)/ DESK-LABCAR_Default_Project can be opened directly. With LABCAR-OPERATOR the project can be edit, modified and stored.

 Open the file "(extraction_folder)\DESK-LABCAR_Default_Project\DESK-LABCAR_Default_Project\DESK-LABCAR_Default_Project\DESK-LABCAR_Default_Project.eew" with the program Experiment Environment of ETAS.



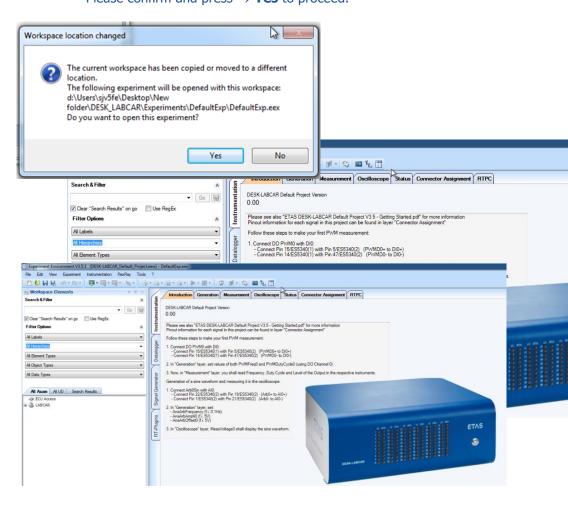
- 0 **X** ✓ 4 Search DESK-LABCAR_Default_Project CO V C SK-LABCAR_Default_Project

DESK-LABCAR_Default_Project Organize 🔻 Include in library 👻 Share with 👻 Burn New folder 🌐 🐨 🔲 🔞 System Volume Information
Temp
Options_Files
Constants Date modified 02.04.2015 10:35 Type Size
File folder
File folder SignalSourceManager_Files 퉬 Ackermann 02.04.2015 10:35 DESK-LABCAR_Default_Project.eew Ackermann 530 01.04.2015 14:02 ETAS Experiment ... 2 K Select a file to preview. BESK LABCAR DESK-LABCAR_Default_Project DESK-LABCAR_Default_Project DESK-LABCAR_Default_Project Docs

If the Experiment Environment is opened the first time by a windows user, the ETAS Safety Advice is displayed.
 Please read it carefully and press → Acknowledge.

ſ	Experiment Environment V3.5.0 Safety Advice	
	Δ ΕΤΛ5	
	SAFETY ADVICE	^
	Warning! It is critical that you read and follow this safety advice, the product description including technical data and the associated technical documentation, which are facilitated on and to be downloaded from ETAS website, < www.etas.com (via Direct Product Access/select Product). Do not use the product if you cannot read and/or understand the Information for safe operation. If information areas on the ETAS websites are password protected or you do have questions for safe operation, please contact the ETAS hotline in your region <<	

 While opening the file DESK-LABCAR_Default_Project.eew Experiment Environment workspace the first time, a warning might inform that the workspace location has changed. This is an expected behavior in this case. Please confirm and press \rightarrow **Yes** to proceed.



3.2 DESK-LABCAR User Software Installation

This section describes how to install DESK-LABCAR User Software.

To install DESK-LABCAR User Software

- Insert the product DVD in your DVD-ROM drive. The DVD-Browser is launched.
- Select

Installation \rightarrow Install DESK-LABCAR User Software. You can install the HSP (Hardware Service Pack) later.

The welcome window opens.



- Click **Next** and follow the instructions of the installation wizard.
- The duration of the installation depends on the components which might be alteady installed on your user PC.
- Make sure, that all available components are selected, which are Ready to install.

Setup Experiment Environment 3.5 Standalone 3.5.0	ZSUZZU S ISZZ PRETowner	
Ready to install You may now start the installation.	DRIVING EMBEDDED EXCELLENC	α ΕΤΛ5
These components will be processed during installation:		Setup Experiment Environment 3.5 Standalone 3.5.0
		Ready to install You may now start the installation.
		These components will be processed during installation: Image: The sequence of the sequ
	Previous Instal Proceed to Inst	tal Cancel

- To complete the installation click **Finish**.
- IMPORTANT: To ensure adequate Licensing see chapter 5.

4 Configuring the User PC

To operate your DESK-LABCAR, you require a user PC with various software and a connection to the ES5100 Real-Time PC simulation target. This section describes how to configure the PC.

This consists of:

- Establishing the Ethernet connection to the simulation target Real-Time PC
- 4.1 Establishing the Ethernet Connection to ES5100 Simulation Target Real-Time PC
 - Make sure that your user PC has an Ethernet interface and a network connection has been configured correctly (default IP address: 192.168.40.240, subnet mask: 255.255.225.0).
 - Connect the Ethernet cable (2x RJ45 socket) supplied to your user PC and to the back of the Real-Time PC (Ethernet connector "Eth0 (Host)").

Testing the connection to the Real-Time PC (RTPC)

To test the connection, please proceed as follows:

To switch on and boot the Real-Time PC

- Switch on the power supply (on the back at the bottom right).
- Power on the Real-Time PC using the switch on the front of the housing.

To stop the simulation controller

- Open a web browser on the user PC.
- Invoke the URL http://192.168.40.14.
- To stop the simulation controller (Fig. 4-1/1), refer to the RTPC help file.

ETAS LABCAR-RTPC (V5.1.1+) Run your models in real time on a PC
Main Page >> Simulation Controller
Running Simulation Controller
The simulation controller is currently running. Stop Simulation Controller Stops the Simulation Controller and sets the system back to the kille mode. Restart Simulation Controller Restarts the Simulation Controller. This may take up to 19 seconds. Easic Interface
System Info
Show system information and log files. View Log File with automatic update.
Runtime Trace
Download the collected trace data files
CAN Trace
Control and handling of runtime trace data files
Model Step
Step by step execution of the real time simulation
Power Control
Reboot or power down LABCAR-RTPC

Fig. 4-1 Stop Simulation Controller (example)

To shut down the Real-Time PC

- Press the on/off switch on the Real-Time PC.
 - or
- To shut down the RTPC (Fig. 6-2/1), refer to the RTPC help file.
- If the on/off switch on the Real-Time PC is not accessible or does not exist, the Real-Time PC can be shut down or rebooted using this web interface link.

ETAS LABCAR-RTPC (V5.1.1+) Run your models in real time on a PC
Main page >> Power Control
Reboot LABCAR-RTPC
A reboot of LABCAR-RTPC will be performed.
Reboot
Power down LABCAR-RTPC LABCAR-RTPC will be powered down. In order to power up the system, press the main switch on the PC.
Wake On LAN Settings
To start ETAS LABCAR-RTPC by Wake On LAN (WoL), install a suitable tool on your Windows PC that sends the magic WoL Ethernet packets to ETAS LABCAR-RTPC. One good choice is the free WOL - Magic Packet Sender.
Please use the following settings to configure the Wake On LAN tool:
 Host Name: 192.168.40.14 Subnet Mask: 255.255.255.0 MAC Address: 00-25-90-3A.71.7E

Fig. 4-2 Shutting down RTPC (example)

For more detailed information on LABCAR-RTPC – particularly on the web interface mentioned above – refer to the "LABCAR-RTPC – User's Guide".

5 Licensing for DESK-LABCAR Machine-Named

To be able to work with an ETAS software product, you require a license. This section contains basic details on this subject. Details concerning the scope of the licenses and other legal aspects can be found in "Terms and Conditions".

5.1 ETAS License Model for DESK-LABCAR User Software

Machine-Named License, Local

- A license of this type is managed by the user him/herself.
- As it is linked to a particular PC (better: to the MAC address of the Ethernet adapter)it is valid wherever the PC is used.
- When you change your PC, you require a new license.

5.2 How to Get a License

For machine-named license you obtain your license from the ETAS license portal (the URL is shown on your Entitlement Certificate).

There are three ways of logging in on the welcome page:

Activation ID

Once you have logged in, a specific activation (1) is visible and can be managed – the activation ID is shown on your Entitlement Certificate.

Entitlement ID

All activations of the entitlement (2) are visible and can be managed (e.g. for a company with just one entitlement).

E-mail and password

All activations of the entitlements assigned to the user account are visible and can be managed (e.g. for a tool coordinator responsible for several entitlements).

If you need help in the portal, click the **Help** link.

(1) The activations refer to a specific product, its license conditions, the available number of licenses and other details required for generating a license. Activations are identified uniquely with activation IDs.

(2) An entitlement shows the authorizations you have as a user; it stands for the right to own one or more licenses for a product. It is a kind of account of rights of use for software from which you can take licenses as you need to.

What Information is Required?

Information on the hosts must be entered to activate licenses:

Machine-named license

The MAC address of the Ethernet adapter to which the license is to be bound is required.

License File

The result of your activities is the provision of a file <name>.lic with which you can license your software in the ETAS License Manager.

The ETAS License Manager is installed automatically during the previously described installation process.

5.3 The License File

To check license status

• In the Windows Start menu, select $\textbf{Programs} \rightarrow \text{ETAS} \rightarrow$ License Management \rightarrow ETAS License Manager

The ETAS License Manager is opened.

The ETAS License Manager contains one entry for each installed product. The symbol at the beginning of the entry and the "Status" column entry indicate whether a valid license has already been obtained or not.

👆 eta	S License Manager						×
File 1	Tools Help						
Licer	nse Listing						
	Product	License	Status	Version	Source	Expiration Date	
	Experiment Environment	EE	GraceMode	3.0	LOCAL	11-mar-2015	
	Experiment Environment	INT_RP_EE	GraceMode	3.0	LOCAL	11-mar-2015	
	Experiment Environment	INT_UCC_LCO_FIL	GraceMode	3.0	LOCAL	11-mar-2015	
1	Experiment Environment	INT_VP_EE	GraceMode	3.0	LOCAL	11-mar-2015	
	Experiment Environment	LCS_LCO_CCI	GraceMode	5.0	LOCAL	11-mar-2015	
	Experiment Environment	LCS_LCO_LCE	GraceMode	5.0	LOCAL	11-mar-2015	
	Experiment Environment	LCS_LCO_LCX	GraceMode	5.0	LOCAL	11-mar-2015	
Licer	nse Information						*
•							Close

To add a license file

- Open the ETAS License Manager and select File → Add Licensing File.
- The "Install License" dialog window opens.

∿ I	nstall License			
	Select License File	:		
	License File contai		 1	
	License	Product	Version	
'	ок	1	ancel	
	OK		ancel	

- Click ... next to the "Select License File" field.
- In the file selection window, browse to the folder containing the license file, select the license file and click **Open**.

The "Install License" dialog window shows information on the selected license. The "Install License" dialog window opens.

4 , I	Install License		•						
	Select License File:								
	C:\ProgramData\ETAS\FlexNet\ETASServer_FE62								
	License File contains:								
	License	Product	Version						
	LCS_LCO_LCE (LABCAR In	LCS_LCO_LCE	5.0						
	ок	Cancel	1						
			_						

Note

The "Version" column shows the version number of the license, not the version number of the software.

• Confirm with **OK**.

The license just added is now listed in the ETAS License Manager. A green symbol before the entry shows that the license

_	se Listing	(,			(
	Product	License	Status	Version	Source	Expiration Date	
	Experiment Environment	EE	INSTALLED	3.0	SERVER	Permanent	
	Experiment Environment	INT_RP_EE	INSTALLED	3.0	SERVER	Permanent	
	Experiment Environment	INT_UCC_LCO_FIL	INSTALLED	3.0	SERVER	Permanent	
	Experiment Environment	INT_VP_EE	INSTALLED	3.0	SERVER	Permanent	
	Experiment Environment	LCS_LCO_CCI	INSTALLED	5.0	SERVER	Permanent	
	Experiment Environment	LCS_LCO_LCE	INSTALLED	5.0	SERVER	Permanent	
0	Experiment Environment	LCS_LCO_LCX	INSTALLED	5.0	SERVER	Permanent	
							-

Note

If the green symbol is not displayed, there might be a problem with the license file or the license relates to another product. Additional information on the ETAS License Manager can be found in the online help of the ETAS License Manager.

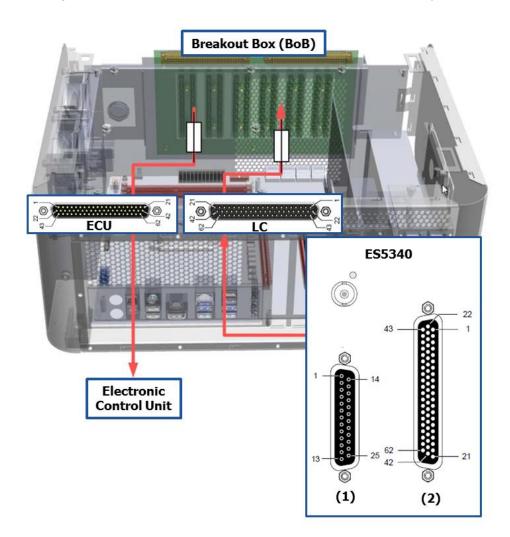
• Close the ETAS License Manager.

6 DESK-LABCAR Default Project Content

The DESK-LABCAR Default Project provides a basic Hardware Configuration for the RTPC inside the ES5100.1 and for the ES5340.2-ICE Board a maximum set of preconfigured Hardware channels and IO model signals in the Experiment Environment.

6.1 DESK-LABCAR System Overview

The figure shows a view of the DESK-LABCAR with its hardware components.



This hardware setup represents the DESK-LABCAR default configuration. Please refer to user manual for more detailed information.

Fig. 6-1 ES5100 – ES5340.2-ICE System overview

Following table summarizes all pin names of the ES5100 BOB and the ES5340.2-ICE which are relevant for the DESK-LABCAR Default Project Workspace.

The cabling harness can be done individually connecting the Device Under Test, the BOB and ES5340.2-ICE connectors. In the DESK-LABCAR Default Project a maximum of ES5340.2-ICE Hardware channels and the related IO signals are provided and preconfigured in the Experiment Environment. All ES5340.2-ICE IO signals from connector (1) and (2) can be connected on the BOB connector.

ECU	BoB	LC		ES 5340 (1)		ES5340 (2)
1	1	1	1	Analog Output Channel 0	1	Analog Output Channel 6 –
2	2	2	2	External Ref. Channel 0	2	Digital Output Channel 6
3	3	3	3	Analog Output Channel 1	3	Analog Output Channel 7 –
4	4	4	4	External Ref. Channel 1	4	Digital Output Channel 7
5	5	5	5	Analog Output Channel 2	5	Digital Input Channel 0
6	6	6	6	External Ref. Channel 2	6	Digital Input Channel 1
7	7	7	7	Analog Output Channel 3	7	Digital Input Channel 2
8	8	8	8	External Ref. Channel 3	8	Digital Input Channel 3
9	9	9	9	Analog Output Channel 4	9	Digital Input Channel 4
10	10	10	10	External Ref. Channel 4	10	Digital Input Channel 4
10	10	10	10	Analog Output Channel 5	10	Digital Input Channel 6
11	12	11			12	Digital Input Channel 7
			12	External Ref. Channel 5		
13	13	13	13	n.c.	13	Digital Input Channel 8
14	14	14	14	Ground Channel 0	14	Digital Input Channel 9
15	15	15	15	Digital Output Channel 0	15	Digital Input Channel 10
16	16	16	16	Ground Channel 1	16	Digital Input Channel 11
17	17	17	17	Digital Output Channel 1	17	Digital Input Channel 12
18	18	18	18	Ground Channel 2	18	Digital Input Ground
19	19	19	19	Digital Output Channel 2	19	Analog Input Channel 0
20	20	20	20	Ground Channel 3	20	Analog Input Channel 1
21	21	21	21	Digital Output Channel 3	21	Analog Input Ground
22	22	22	22	Ground Channel 4	22	Analog Output Channel 6 +
23	23	23	23	Digital Output Channel 4	23	Excitation +
24	24	24	24	Ground Channel 5	24	Analog Output Channel 7 +
25	25	25	25	Digital Output Channel 5	25	Excitation -
26	26	26			26	Digital Input Channel 13
27	27	27			27	Digital Input Channel 14
28	28	28			28	Digital Input Channel 15
29	29	29			29	Digital Input Channel 16
30	30	30			30	Digital Input Channel 17
31	31	31			31	Digital Input Channel 18
32	32	32			32	Digital Input Channel 19
33	33	33			33	Digital Input Ground
34	34	33			34	Digital Input Ground
34	35	35			35	
35	36	36				Digital Input Ground
					36	Digital Input Ground
37	37	37 38			37	Digital Input Ground
38	38				38	Digital Input Ground
39	39	39			39	Analog Input Ground
40	40	40			40	Analog Input Channel 2
41	41	41			41	Analog Input Channel 3
42	42	42			42	Analog Input Ground
43	43	43			43	Analog Output Channel 6 AGND
44	44	44			44	Digital Output Channel 6 AGND
45	45	45			45	Analog Output Channel 7 AGND
46	46	46			46	Digital Output Channel 7 AGND
47	47	47			47	Digital Input Ground
48	48	48			48	Digital Input Ground
49	49	49			49	Digital Input Ground
50	50	50			50	Digital Input Ground
51	51	51			51	Digital Input Ground
52	52	52			52	Digital Input Ground
53	53	53			53	Digital Input Ground
54	54	54			54	Digital Input Ground
55	55	55			55	Digital Input Ground
56	56	56			56	Digital Input Ground
57	57	57			57	Digital Input Ground
58	58	58			58	Digital Input Ground
59	59	59			59	Digital Input Ground
60	60	60			60	Analog Input Ground
61 (n.c.)	61 (n.c.)	61 (n.c.)			61	Analog Input Ground
62 (n.c.)	62 (n.c.)	62 (n.c.)			62	Analog Input Ground

Fig. 6-2 ES5100 BOB, ES5340.2-ICE Pinning Overview

6.2 DESK-LABCAR Default Project Experiment Environment

The Experiment DESK-LABCAR Default Experiment Environment provides a basic hardware configuration.

ES5340.2-ICE Hardware Channel Configuration

The workspace includes preconfigured ES5340.2-ICE Hardware Channel Configuration.

- Digital Output Channels are preconfigured as Pull-up to a internal voltage of +5 V.
- Analog Output Channels are single ended, with an internal U_{ref} of 10 V.
- Analog Arbitrary Output Channels are single ended, with an internal U_{ref} of 10 V.
- Digital Input Channel Threshold
 - $\circ \quad \text{Lower Threshold: 1/3 } U_{\text{ref A}}$
 - \circ Upper Threshold: 2/3 U_{ref A}
 - \circ U_{ref A}=5V
- Analog Input Channel Range
 - Signal 0 and 2: [0 V, 5 V]
 - Signal 1 and 3: [0 V, 40 V]

ES5340.2-ICE Output Signals

The workspace includes preconfigured ES5340.2-ICE Output Signals:

- 4 Stroke combustion engine type
- 4 Served cylinders
- 4 x Direct Digital Output Signals
- 4 x PWM Digital Output Signals
- 6 x Direct Analog Outputs Signals
- 2 x Analog Arbitrary Waveform Signals : 1 x Sine, 1 x Square

Access to Generators in Experiment Environment

A module "DeskLabcarHwProxy" is provided to access the generators in the EE workspace. All relevant signals can be found under "CalibrationVariables" folder. A "Generation" Layer can be found where these signals can be configured.

All Asam All UD Search Results	
ECU Access	
🖃 🍓 LABCAR	
Image:	
E DESK_LABCAR	
🖃 🖸 DeskLabcarHwProxy	
🖃 🧔 CalibrationVariables	
→→ AnaArbAmpli0	
AnaArbAmpli1	
→ AnaArbFrequency	
AnaArbOffset0	
→ AnaArbOffset1	
AnaArbPhase0	
→ AnaArbPhase1	
→□→ AOVoltage0	
Anvaltage1	

The ES5340.2-ICE Output Signals are visualized in the Generation Layer of the Experiement Environment.

Introduction Generation	Measurement Oscilloscope Status C	onnector Assignment RTPC	
Direct Analog Out 05	Digital Out 07 PWM Generation (Digital Out Channels 03)	×	Digital Out Channels 47
0.000	PWMFreq0 (0100000Hz) DO Channel 0	PWMDutyCycle0 (0100%)	Direct DO Channel 4
AOVoltage1 (-1010V)	PWMFreq1 (0100000Hz) DO Channel 1	PWMDutyCycle1 (0100%)	Direct DO Channel 5 Off
AOVoltage2 (-1010V)	PWMFreq2 (0100000Hz) DO Channel 2 0	PWMDutyCycle2 (0100%)	Direct DO Channel 6 Off
0.000 AOVoltage3 (-1010V)	PWMFreq3 (0100000Hz) DO Channel 3	PWMDutyCycle3 (0100%)	Direct DO Channel 7 Off
0.000	Arbitrary generation (Analog Out Channels (Frequency X Sine	57) : (Analog Out 6) X	X Square (Analog Out 7)
AOVoltage4 (-1010V)		aArbAmpli0 (010V) 0.000	AnaArbAmpli1 (010V)
AOVoltage5 (-1010V)		aArbOffset0 (-1010V) 0.000	AnaArbOffset1 (-1010V) 0.000
0.000		aArbPhase0 (-180180') 0.000	AnaArbPhase1 (-180180*) 0.000

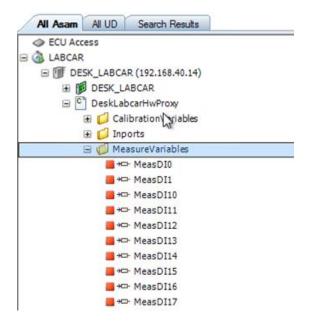
ES5340.2-ICE Input Signals

The workspace includes preconfigured ES5340.2-ICE Input Signals:

- 16 x Digital Input Level (active high) State
- Digital PWM Waveform
 - 4 x Digital Input Level (active high) State
 - 4 x Digital Input Signal PWM Frequency and,
 - 4 x Digital Input Signal Duty Cycle
- 4 x Analog Input Signal MeasVoltage. Analog voltage inputs show an average value over 64 samples.

Access to Measurements in Experiment Environment

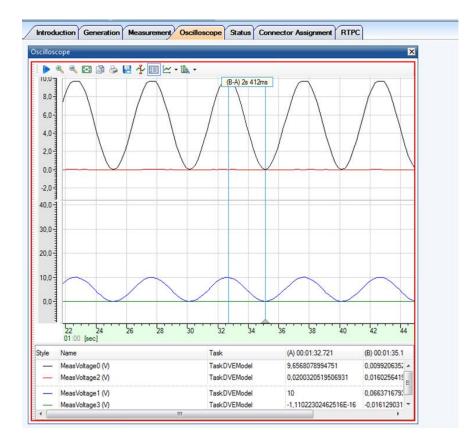
A module "DeskLabcarHwProxy" is provided to access the measurement signals in the EE workspace. All relevant signals can be found under "MeasureVariables" folder. A "Measurement" Layer can be found where these signals can be read.



The ES5340.2-ICE Input Signals are visualized in the Measurement Layer of the Experiement Environment.



The ES5340.2-ICE Input Signals of voltage measurements are visualized in the Oscilloscope Layer of the Experiement Environment.



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6.3 DESK-LABCAR Experiment Environment - ES5340.2-ICE Pin Usage

The Experiment DESK-LABCAR Default Experiment Environment provides a basic Hardware Configuration.

Signal	Connector	Pin
Direct DO 4+	ES5340(1)	23
Direct DO 4-	ES5340(1)	22
Direct DO 5+	ES5340(1)	25
Direct DO 5-	ES5340(1)	24
Direct DO 6+	ES5340(2)	2
Direct DO 6-	ES5340(2)	44
Direct DO 7+	ES5340(2)	4
Direct DO 7-	ES5340(2)	46

6.3.1 DESK-LABCAR Experiment Environment – Direct Digital Output Signals

6.3.2 DESK-LABCAR Experiment Environment – PWM Digital Output Signals

Signal	Connector	Pin
PWM DO 0+	ES5340(1)	15
PWM DO 0-	ES5340(1)	14
PWM DO 1+	ES5340(1)	17
PWM DO 1-	ES5340(1)	16
PWM DO 2+	ES5340(1)	19
PWM DO 2-	ES5340(1)	18
PWM DO 3+	ES5340(1)	21
PWM DO 3-	ES5340(1)	20

6.3.3 DESK-LABCAR Experiment Environment – Direct Analog Output Signals

Signal	Connector	Pin
DIRECT AO 0+	ES5340(1)	1
DIRECT AO 0-	ES5340(1)	14
DIRECT AO 1+	ES5340(1)	3
DIRECT AO 1-	ES5340(1)	16
DIRECT AO 2+	ES5340(1)	5
DIRECT AO 2-	ES5340(1)	18
DIRECT AO 3+	ES5340(1)	7
DIRECT AO 3-	ES5340(1)	20
DIRECT AO 4+	ES5340(1)	9
DIRECT AO 4-	ES5340(1)	22
DIRECT AO 5+	ES5340(1)	11
DIRECT AO 5-	ES5340(1)	24

6.3.4 DESK-LABCAR Experiment Environment – Arbitrary Analog Waveform Output Signals

Signal	Connector	Pin
Arb 0(sine)+	ES5340(2)	22
Arb 0(sine)-	ES5340(2)	1
Arb 1(square)+	ES5340(2)	24
Arb 1(square)-	ES5340(2)	3

6.3.5 DESK-LABCAR Experiment Environment – Measurement Signals

Digital	Relevant Signals	Connector	Pin
Channel			
DI0+	Level0, Freq0, DutyCycle0	ES5340(2)	5
DI1+	Level1, Freq1, DutyCycle1	ES5340(2)	6
DI2+	Level2, Freq2, DutyCycle2	ES5340(2)	7
DI3+	Level3, Freq3, DutyCycle3	ES5340(2)	8
DI4+	Level4	ES5340(2)	9
DI5+	Level5	ES5340(2)	10
DI6+	Level6	ES5340(2)	11
DI7+	Level7	ES5340(2)	12
DI8+	Level8	ES5340(2)	13
DI9+	Level9	ES5340(2)	14
DI10+	Level10	ES5340(2)	15
DI11+	Level11	ES5340(2)	16
DI12+	Level12	ES5340(2)	17
DI13+	Level13	ES5340(2)	26
DI14+	Level14	ES5340(2)	27
DI15+	Level15	ES5340(2)	28
DI16+	Level16	ES5340(2)	29
DI17+	Level17	ES5340(2)	30
DI18+	Level18	ES5340(2)	31
DI19+	Level19	ES5340(2)	32
DI-	Digital input ground	ES5340(2)	47, 48, 49, 50,

Analog	Relevant Signals	Connector	Pin
Channel			
AI0+	Voltage0	ES5340(2)	19
AI1+	Voltage1	ES5340(2)	20
AI2+	Voltage2	ES5340(2)	40
AI3+	Voltage3	ES5340(2)	41
AI-	Analog input ground	ES5340(2)	21, 42,

7 ETAS Contact Addresses

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AD	Analog - Digital
BoB	Break-out Box
DA	Digital - Analog
ECU	Electronic Control Unit
I/O	Input/Output
LC	LABCAR
LC-EE	LABCAR-Experiment Environment
LC-IP	LABCAR-Integration Platform
n. c.	not connected
PC	Personal Computer
PCI	Peripheral Component Interconnect
PWM	Pulse Width Modulation
RTPC	Real-Time PC
RTIO	Real-Time IO

Tab. 8-1List of abbreviation