ES5100.1 Desktop Housing

User's Guide

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Contents

1 Introduction

This chapter contains information on the following topics:

1.1 Basic Safety Instructions

Please adhere to the safety instructions in this manual to avoid injury to yourself and others as well as damage to the device.

1.1.1 Labeling of Safety Instructions

The safety instructions contained in this manual are shown with the standard danger symbol shown below:

The following safety instructions are used. They provide extremely important information. Please read this information carefully.

CAUTION!

indicates a low-risk danger which could result in minor or less serious injury or damage if not avoided.

WARNING!

indicates a possible medium-risk danger which could lead to serious or even fatal injuries if not avoided.

DANGER!

indicates a high-risk, immediate danger which could lead to serious or even fatal injuries if not avoided.

1.1.2 General Safety Information

Please read the product safety advice ("ETAS Safety Advice Housing") and the following safety instructions to avoid injury to yourself and others as well as damage to the device.

Note

Please read all documentation pertaining to this product ("ETAS Safety Advice Housing" and this User's Guide) carefully before using the product.

ETAS GmbH cannot be made liable for damage which is caused by incorrect use and handling and not adhering to the safety instructions.

1.1.3 Connecting/Removing Devices

Please take the following precautionary measures to avoid any injuries and damage to hardware:

- Do not apply any voltages to the ports of the ES5100.1 Desktop Housing which do not correspond to the specifications of the relevant port. The exact specifications of the I/O hardware can be found in the manuals on the relevant boards.
- Do not connect or disconnect any devices while the ES5100.1 Desktop Housing or external devices are powered on.
  First, power off the ES5100.1 Desktop Housing by shutting down the Real-Time PC and using the on/off switch on the back of the device, and detach all power plugs.
- When inserting any connectors, please make sure they are absolutely straight and that none of the pins are bent.

1.1.4 Opening the Housing

The ES5100.1 Desktop Housing must only be opened by qualified technical personnel!

DANGER!

As long as the ES5100.1 Desktop Housing is not completely disconnected, there is a danger of electrocution!
Disconnect the device from the mains by removing the mains cable – then wait a few minutes until all components (e.g. power pack, capacitors) are discharged.

1.1.5 Requirements made of the User and Obligations of the Operator

Make sure you only assemble, operate and maintain the product if you have the relevant qualification for and experience with this product. Incorrect usage or operation by users without an appropriate qualification can lead to serious or even fatal injuries as well as damage to property.

Note

The safety and reliable operation of the system in which the ES5100.1 Desktop Housing is installed are the responsibility of those who assembled the system!

General Occupational Health and Safety

The existing regulations on occupational health and safety as well as accident prevention must be adhered to.

1.1.6 Correct Use

The ES5100.1 Desktop Housing is an example of system housing used to create a hardware-in-the-loop test system. The ES5100-based system consists of:

- A Real-Time PC which is part of the ES5100.1 Desktop Housing.
- Digital and analog interfaces to the ECU which can be integrated into the ES5100.1 Desktop Housing as PCI-Express-based boards.

The simulation of the vehicle battery itself is not a component part of the ES5100.1 Desktop Housing and cannot be integrated here.

The ES5100 Desktop Housing is intended to be used as follows:

- In industrial lab facilities or at industrial workplaces,
- As an I/O hardware interface for ECUs in an open-loop test system,
- In conjunction with ETAS software which supports the ES5100.1 Desktop Housing,
- As an interface together with software programs that serve the standardized, documented and open APIs of ETAS software products.

The ES5100.1 Desktop Housing is not intended to be used

- In a vehicle on the road,
- As part of a life support system,
- As part of a medical application,
- In applications in which misuse can lead to injury or damage,
- In environments with conditions outside the specified ranges (see "Environmental Conditions" on page 35).

Demands made of Operation

The following requirements are made to ensure safe operation:

- Only use the product in accordance with the specifications in the relevant User's Guide. Product safety is not guaranteed if the device is used other than intended.
- Observe all applicable regulations on site concerning electrical safety as well as the rules and regulations on occupational health and safety!
- Never use the product in a wet or damp environment.
- Never use the product in areas subject to explosions.
- Make sure you keep the surface of the product clean and dry.
- Make sure there is plenty of ventilation to the device.

Demands made re the Technical State of the Product

This state-of-the-art product adheres to all recognized safety-related regulations. The product must only be used if it is in full working order, with the relevant personnel only using the device as it was intended, taking all security issues and risks into account as well as taking into consideration the relevant documentation at all times. If the product is not used correctly, the protection of the product may be impaired.

To ensure safe operation of the ES5100.1 Desktop Housing, make sure you read and heed the instructions in the section "Safety Instructions" on page 23.

Maintenance and Cleaning

Use a clean, dry cloth to clean the outside of the device.

1.2 Identifications on the Product

The following symbols are used for identifying the product:

Symbol	Description
	Before using the product, carefully read the User's Guide!
	Identification for CE conformity (see "CE Marking" on page 8)
	Identification for China RoHS (see "RoHS Conformity" on page 8)
	Identification for WEEE directive (see "Taking the Product Back and Recycling" on page 9)

Observe the information in the chapter "Technical Data" on page 33.

1.3 CE Marking

ETAS confirms that the product meets the product-specific applicable European Directives with the CE marking affixed to the product or its packaging. The CE Declaration of Conformity for the product is available upon request.

1.4 RoHS Conformity

1.4.1 European Union

The EU Directive 2011/65/EU limits the use of certain dangerous materials for electrical and electronic devices (RoHS conformity).

ETAS confirms that the product corresponds to this directive which is applicable in the European Union.

1.4.2 China

ETAS confirms that the product meets the product-specific applicable guidelines of the China RoHS (Management Methods for Controlling Pollution Caused by Electronic Information Products Regulation) applicable in China with the China RoHS marking affixed to the product or its packaging.

1.5 Taking the Product Back and Recycling

The European Union (EU) has passed a directive called Waste Electrical and Electronic Equipment, or WEEE for short, to ensure that systems are set up throughout the EU for the collection, treatment and recycling of electronic waste.

This ensures that the devices are recycled in a resource-saving way representing no danger to health or the environment.

Fig. 1-1 WEEE Symbol

The WEEE symbol on the product or its packaging shows that the product must not be disposed of as residual garbage.

The user is obliged to collect the old devices separately and return them to the WEEE take-back system for recycling.

The WEEE Directive concerns all ETAS devices but not external cables or batteries.

For more information on the ETAS GmbH Recycling Program, contact the ETAS sales and service locations (see "ETAS Contact Addresses" on page 37).

1.6 About This Manual

This manual consists of the following chapters:

- "Introduction" on page 5

  This chapter
- "Features and Functions" on page 13

  This chapter contains an overview of the features and functions of the components of the ES5100.1 Desktop Housing.
- "Configuration and Operation" on page 23

  This chapter contains information on connecting, configuring and operating the ES5100.1 Desktop Housing.
- "Pin Assignment and Connections" on page 31

  This chapter describes the various ports of the ES5100.1 Desktop Housing.
- "Technical Data" on page 33

  This chapter contains the technical data on the ES5100.1 Desktop Housing.

1.6.1 Using this Manual

Representation of Information

All activities to be carried out by the user are shown in what we call a "Use-Case" format, i.e. the target to be achieved is defined briefly in the title and the individual steps necessary to achieve this target are then listed. The information is displayed as follows:

Target definition

Any introductory information...

- Step 1

  Possibly an explanation of step 1...
- Step 2

  Possibly an explanation of step 2...

Any concluding remarks...

Concrete example:

To create a new file

If you want to create a new file, no other file may be open.

- Select **File** → **New**.

  The "Create file" dialog box appears.
- Enter a name for the file in the "File name" field.

  The file name must not exceed 8 characters.
- Click **OK**.

The new file is created and saved under the name specified. You can now work with the file.

Typographic Conventions

The following typographic conventions are used:

Select **File** → **Open**.	Menu commands are shown in boldface/ blue.
Click **OK**.	Buttons are shown in boldface/blue.
Press <ENTER>.	Keyboard commands are shown in angled brackets in block capitals.
The "Open File" dialog box appears.	Names of program windows, dialog boxes, fields etc. are shown in quotation marks.
Select the file `setup.exe`.	Text in drop-down lists, program code, as well as path and file names are shown in the `Courier` font.
A conversion between the file types logical and arithmetic is *not* possible.	Content markings and newly introduced terms are shown in *italics*.

Important notes for the user are shown as follows:

Note

Important note for the user.

2 Features and Functions

This chapter contains an overview of the features and functions of the components of the ES5100.1 Desktop Housing.

In particular these are:

2.1 Overview

The ES5100.1 Desktop Housing is based on the ETAS RTPC (Real-Time PC) and the ETAS Multi-I/O Simulation Board ES5340.2.

ETAS RTPC offers multicore simulation functions in real time as the core of all LABCAR test systems. Alongside the ES5340.2, the housing of the ES5100.1 Desktop Housing can accommodate two further PCI Express boards.

The ETAS Multi-I/O Simulation Board ES5340.2 can be adapted to suit all kinds of test scenarios. Alongside 4 analog and 20 digital input channels, it also offers 8 analog and 8 digital output channels.

The following figures show different views of the ES5100.1 Desktop Housing.

Fig. 2-1 Front (Top) and Rear View (Bottom) of the ES5100.1 Desktop Housing

2.2 Front Panel

The front panel features an on/off switch and the breakout-box.

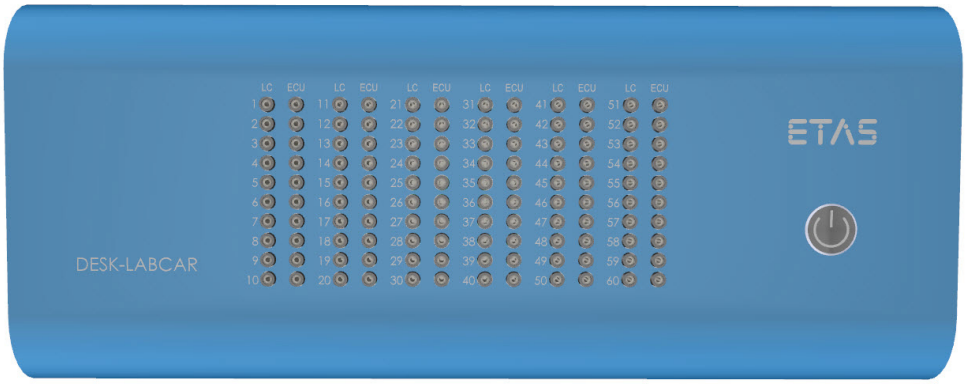


Fig. 2-2 The Front Panel of the ES5100.1 Desktop Housing

2.2.1 Breakout-Box

The breakout-box (BoB) of the ES5100.1 enables access to 60 signal lines between the ECU ("ECU") and the ports of the boards in the Real-Time PC ("LC"). The position of the breakout-box in the signal path is shown in Fig. 2-3.

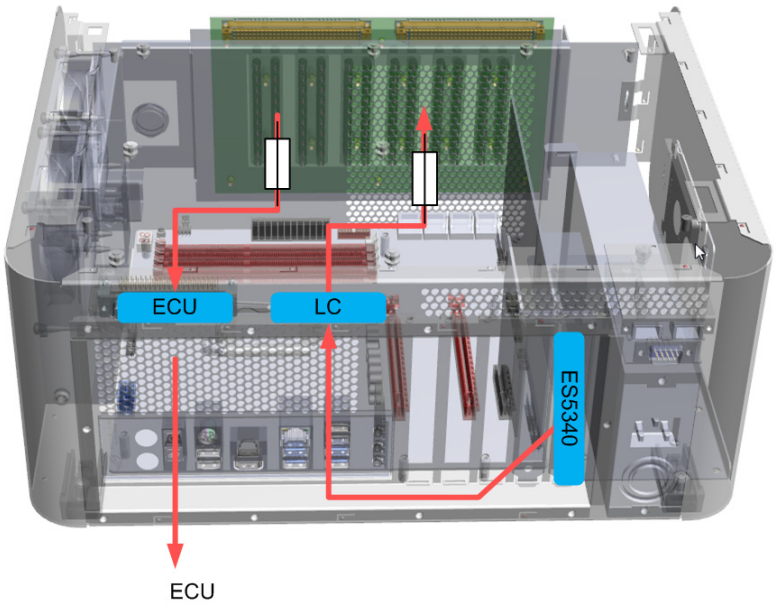


Fig. 2-3 Signal Path: ES5340.2 → BoB → ECU

Note

The user has to provide the cables between the ES5340.2 *(ports: D-Sub25 female, inputs: D-Sub62 male) and the "LC" port (D-Sub62 female) as well as between the "ECU" port (D-Sub62 male) and the ECU!*

Note

The cable connections must not be longer than 3 m!

Short-Circuit Plugs

The ES5100.1 Desktop Housing comes with 60 short-circuit plugs - the order number of the plugs, made by Schützinger, is: KURZ 10-2 IG Ni / SW.

Note

Please take good care of the short-circuit plugs! These can break if they are subjected to impact, shearing force or too great a pressure.

Fuses in the Signal Path

The signal paths at the breakout-box are protected with one fuse (0.5 A/±60 V) per jack. The fuses are on the inside of the housing lid.

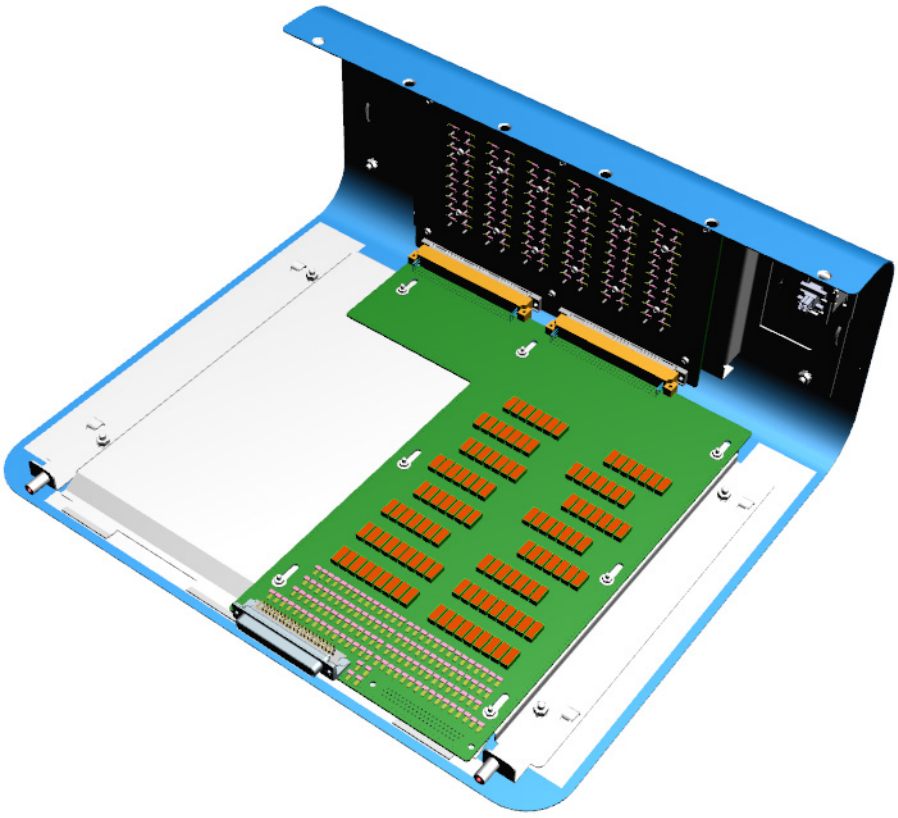


Fig. 2-4 Positions of the Fuses (Red)

If one of the fuses is faulty, the device has to be sent in to ETAS to have it replaced (see "ETAS Contact Addresses" on page 37).

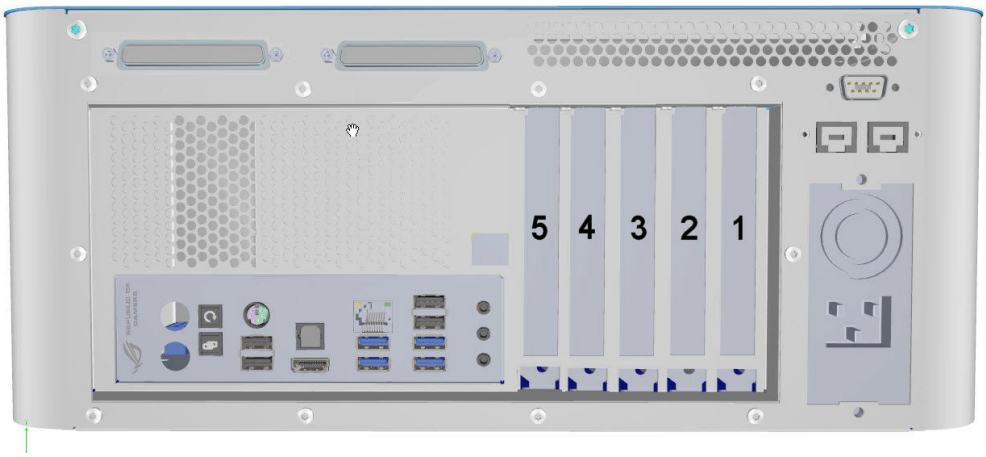
Note

The ports on the breakout-box are rated to supply pure signal and activation lines with max. 0.3 A current.
*The ports are **not** rated to supply voltages and power for sensors, drivers, engines and the like! The ports are **not** rated to be connected with battery voltages!*

2.3 Slots for I/O Boards

On the motherboard of the Real-Time PC, there are three slots of which one accommodates the ES5340.2. The slots can be accessed from the back of the ES5100.1.

How to install and remove boards is described in the section "Installing Boards" on page 25.



The specification of the slots is described in the section "Expansion Slots" on page 20.

Seen from the back, the ES5340.2 is situated in PCIe slot 4 (numbering depends on the board manufacturer - see Fig. 2-6 on page 20 and Tab. 2-2 on page 20) and occupies slots 1 and 2.

Slot 3 is designed to hold a single-width PCIe board in PCIe slot 5 and slots 4 (and 5) can accommodate a further PCIe board of single (or double) width in PCIe slot 7.

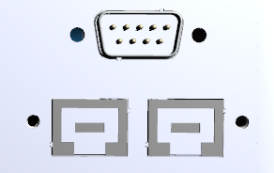
2.3.1 Supported PCI Express Boards

Up to two ES5340.2 from ETAS can be used. If the ES5100.1 Desktop Housing is operated with LABCAR-OPERATOR, the following cards can also be used:

- Elektrobit EB5100/EB5200 PCIe FlexRay
- IXXAT CAN-IB200/PCIe (CAN and LIN)
- IXXAT iPC-I XC16/PCIe (CAN)

2.3.2 Mechanical Preparations for Expansions

There are mechanical preparations for expansions on the back of the ES5100.1 Desktop Housing (top right).



Note

The dummy plates labeled CAN2/LIN and CAN1/LS have no function. These interfaces are not a component part of the product.
The mechanical construction can be changed without notification. ETAS GmbH reserves the right to retrofit for activation.

2.4 Real-Time PC

This section contains information on the Real-Time PC.

2.4.1 Motherboard

The motherboard of the Real-Time PC is a Micro-ATX board of type "Supermicro® X10SLQ" – the printed manual is part of the delivery scope.

2.4.2 LAN Ports

The connector panel for all peripheral devices is on the back of the Real-Time PC. The board features two Gigabit Ethernet LAN adapters with the following ports:

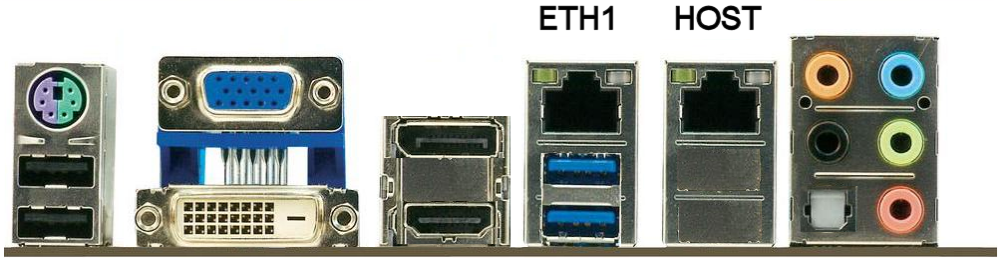


Fig. 2-5 The LAN Ports "ETH1" and "HOST"

- **HOST**

  For connecting the user PC with the LABCAR software

- **ETH1**

  For connecting other hardware (ES4100 via ES1130, ES4440, etc.).

Note

A 2 m long patch cord RJ45 CAT 7 (for connecting the user PC) is part of the delivery scope. If you connect a different Ethernet cable, please observe the maximum permissible length of 30 m!

The LEDs at the LAN ports indicate the following operating states:

Link LED			Activity LED	
Status	**Description**	Link Activity 	**Status**	**Description**
Off	No connection/ 10 Mbps		Flashing yellow	Active
Orange	1 Gbps			
Green	Data active			

Tab. 2-1 LED Display of LAN Ports

2.4.3 Ports of the Real-Time PC without Function

Note

The following ports on the Real-Time PC board are not supported: Mouse/Keyboard, USB 0/1, VGA/DVI, DP/HDMI, USB 2/3, HD Audio.

2.4.4 Hard Disk

The mass storage device used is a 2.5" SATA hard disk with 500 GB capacity.

2.4.5 Expansion Slots

There are three expansion slots on the motherboard of which one (Slot 4) holds an ES5340.2.

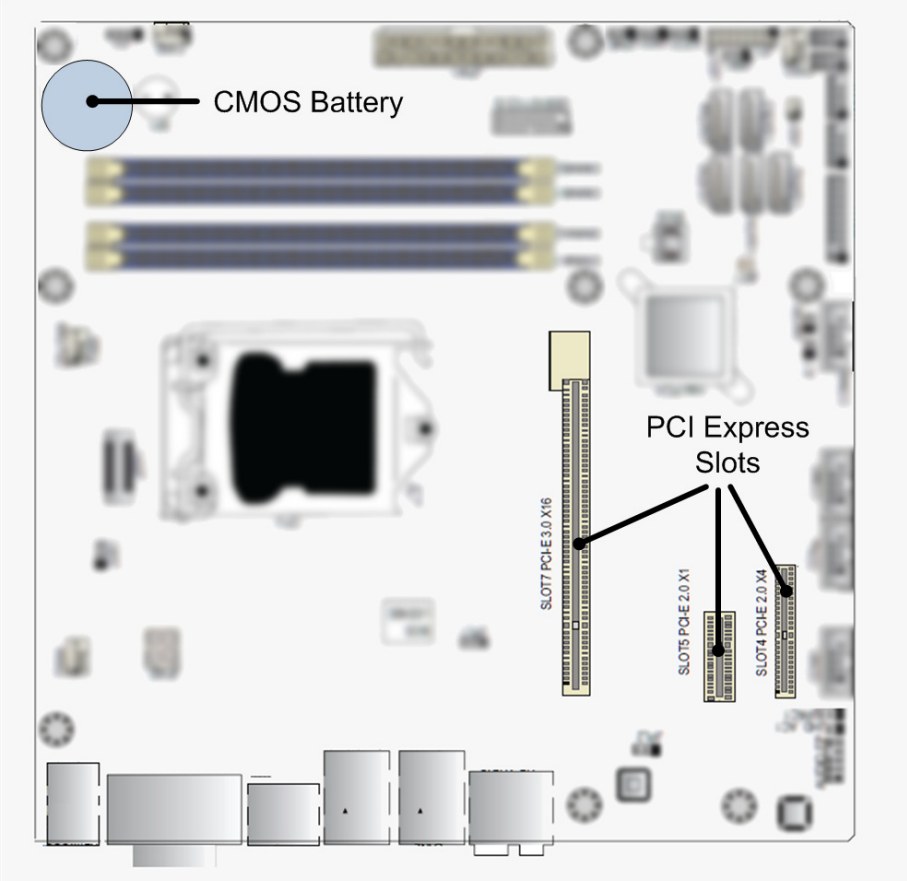


Fig. 2-6 Expansion Slots on the Motherboard

The specification of the PCI Express slots is as follows:

Slot	Description	Equipped with
7	PCIe 3.0 x16	–
5	PCIe 2.0 x1	–
4	PCIe 2.0 x4	ES5340.2

Tab. 2-2 The Real-Time PC Slots

2.4.6 CMOS Battery

The motherboard of the Real-Time PC has a CMOS battery of type CR2032 (top left in Fig. 2-6). Please observe the following when the battery has to be replaced:

Note

In accordance with EU Directive 2006/66/EC, batteries and battery packs which are no longer required must be collected separately and recycled.
Batteries and battery packs which are no longer required must not be disposed of as normal household waste, but must be returned to the special collection points and made available for recycling.

2.5 Fan

On the right-hand side of the ES5100.1 Desktop Housing, there is a fan which, together with the perforated rear panel, ensures sufficient cooling of the interior of the housing.

2.6 Power Supply

Power is supplied to the Real-Time PC by the Real-Time PC power supply unit. The specifications of the power supply unit can be found in the section on technical data (see "Power Supply Unit/Power Supply" on page 34).

2.6.1 Power Cord Cables

Due to regional differences in the power supply, ETAS does not supply power cord cables with the ES5100.1 Desktop Housing. The following table contains details of the relevant requirements and the ETAS order numbers.

Region	Description	Order Number
General	Power cord cable with IEC 60320 C13 plug on one end and a non-locking plug approved by the national safety standards (with earth contacts) on the other end. Plugs and cable must be rated for min. 250 VAC/10 A or 125 VAC/15 A.	-
China	Power cord cable China for various ETAS devices with PRC/3 and IEC 60320 C13 plug. Rated for 250 VAC/10 A, 2.50 m length	F-04A-109-512
Europe	Power cord cable Europe for various ETAS devices with CEE7/7 and IEC 60320 C13 plug. Rated for 250 VAC/10 A, 2.50 m length	F-04A-109-513
India	Power cord cable India for various ETAS devices with IS 1293 (D) and IEC 60320 C13 plug. Rated for 250 VAC/10 A, 2.50 m length	F-04A-109-514

Region	Description	Order Number
Japan	Power cord cable Japan for various ETAS devices with JIS C 8303 and IEC 60320 (C)13V plug. Rated for 125 VAC/15 A, 2.50 m length	F-04A-109-515
North America	Power cord cable North America for various ETAS devices with NEMA 5/15 - IEC 60320 C13M plug. Rated for 125 VAC/15 A, 2.50 m length	F-04A- 109-445
Great Britain	Power cord cable UK for various ETAS devices with BS 1363/A and IEC 60320 C13 plug. Rated for 250 VAC/10 A, 2.5 0m length	F-04A-109-516

3 Configuration and Operation

This chapter contains information on connecting, configuring and operating the ES5100.1 Desktop Housing.

The topics focused on are:

3.1 Before You Start

Before you start the setup process, read the following sections carefully and in particular observe all tips and warnings.

3.1.1 Safety Instructions

This section describes the safety instructions you must observe when setting up and operating the ES5100.1 Desktop Housing.

Grounding/Protective Contact

The entire system is grounded using the protective ground conductor of the power cord cable. Avoid the risk of electrocution when touching the housing by ensuring that the power supply used has correctly connected protective contacts.

DANGER!

If there is no appropriate and correct grounding provided by the protective ground conductor, exposed parts of the housing can be current-carrying. This can lead to serious injury or even death!
Be sure to verify that the power cord cable has correctly connected protective contacts!

Supply Circuit Disconnect

The switch next to the mains socket is used as the way to disconnect the housing from the supply circuit.

Note

Disconnect the ES5100.1 Desktop Housing during a thunder storm or install corresponding protection devices!

3.1.2 Set-up Requirements

The following important requirements must always be adhered to when setting up and operating the ES5100.1 Desktop Housing to ensure efficient heat exchange with the environment and avoid heat accumulating:

- Place the ES5100.1 on a smooth, flat surface.
- Do not stand the ES5100.1 on its long sides.
- Do not stand the ES5100.1 on the top of the housing.
- Do not place any objects on the top of the housing.
- Keep the ES5100.1 away from heat sources and make sure the module is not standing in direct sunlight.
- Make sure you always adhere to the minimum free space around the housing of 15 cm to the top, back and sides (see Fig. 3-1).
- Do not operate the ES5100.1 in any containers that are completely closed.

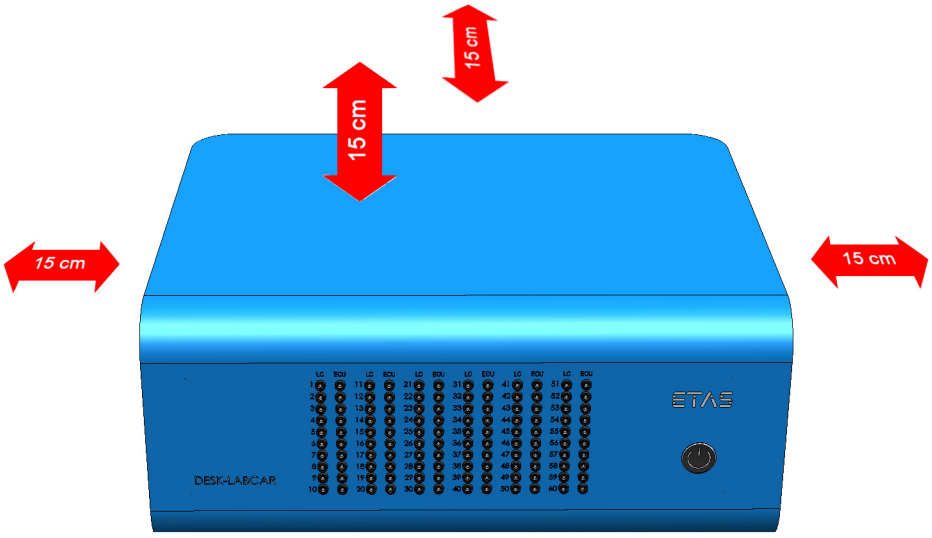


Fig. 3-1 Space around the ES5100.1 Desktop Housing

CAUTION!

Heat accumulation possible in the housing!
The electronics can be damaged due to overheating.
Do not cover ventilation slits when setting up, assembling or connecting the ES5100.1 Desktop Housing.
Adhere to the required free space above the housing and to the sides.

Connection Cables

Only use permitted cables when creating wiring harnesses (e.g. for connecting the ECU and the ES5340.2).

Note

The cables used must in particular be suitable for arising currents, voltages and temperatures and must also be flame-retardant in accordance with one of the following standards IEC60332-1-2, IEC60332-2-2, UL2556/UL1581VW-1!

Cleaning

Before cleaning parts of the housing, remove the power cord. Only clean the device with a dry cloth. Do not use any cleaning agents or solvents!

Connecting/Removing Devices

See "Connecting/Removing Devices" on page 6.

Opening the Housing

The ES5100.1 Desktop Housing must only be opened by qualified, technical personnel!

DANGER!

As long as the ES5100.1 Desktop Housing is not completely disconnected from the mains, there is a danger of electrocution!
Disconnect from the mains by powering off (see "Supply Circuit Disconnect" on page 23) and by removing the power cord – then wait a few minutes until all components (e.g. power supply unit, capacitors) have discharged.

3.2 Installing Boards

This section describes how to install PCI Express boards in the ES5100.1 Desktop Housing.

3.2.1 Preparations

Before you start, ensure you have ESD-compliant conditions at your workplace.

CAUTION!

The boards of the ES5100.1 Desktop Housing may be damaged or even destroyed by static discharge. Boards should only be taken from their package, configured and installed at a working place that is protected against static discharge. Avoid touching the connections of the board or conductors on it.

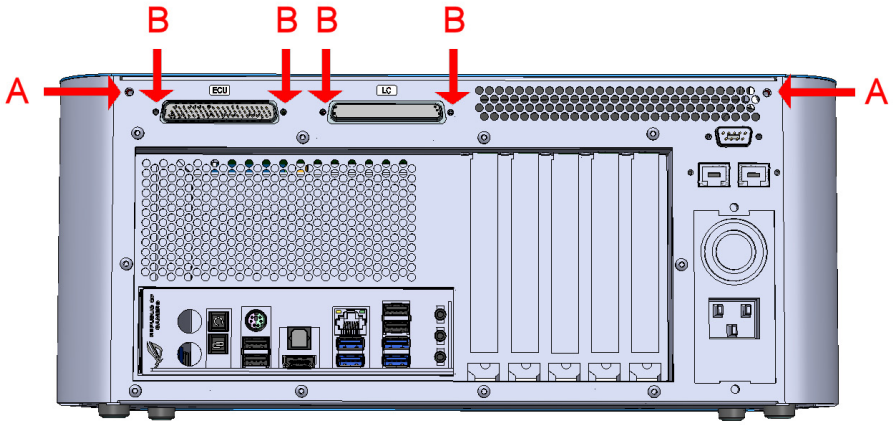
CAUTION!

Do not install an adapter while the ES5100.1 Desktop Housing is powered on.
First power off the ES5100.1 Desktop Housing by shutting down the Real-Time PC and by pressing the on/off switch on the back of the device.

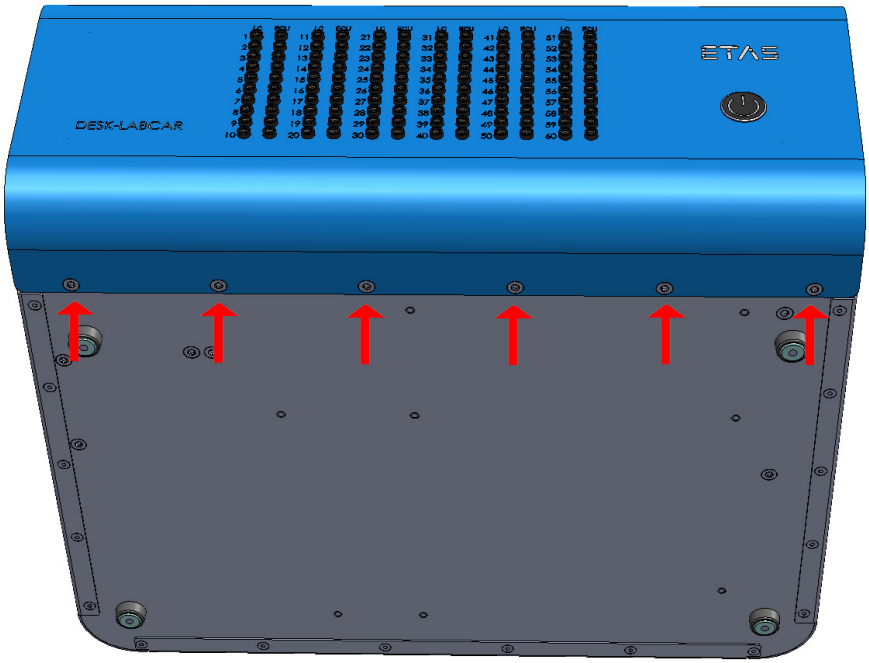
- Shut down the Real-Time PC and disconnect the power supply to the ES5100.1 Desktop Housing by switching it off on the back of the device.
- Wait a few minutes until the components (capacitors etc.) have discharged.

To open the housing

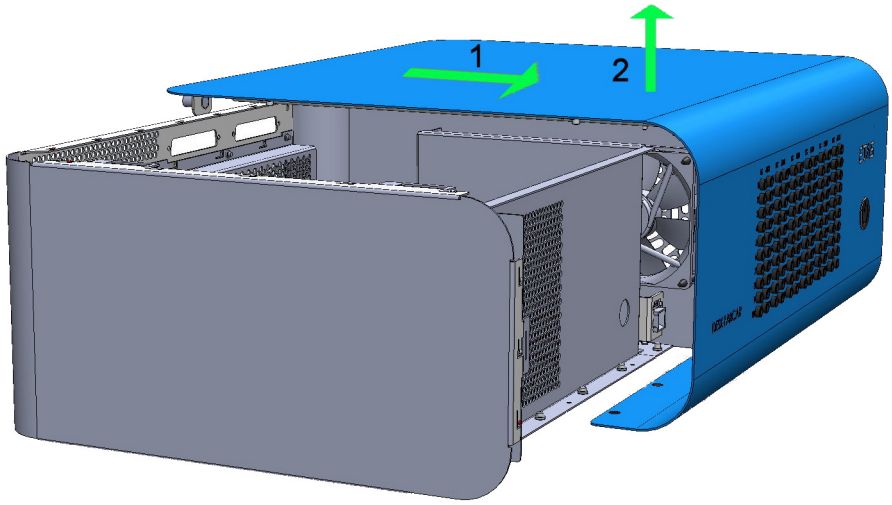
- On the rear of the housing, remove the two screws (**A**) at the top left and right (Torx T20) as well as the securing nuts (**B**) (hexagonal SW5) to the left and right of each D-Sub port.



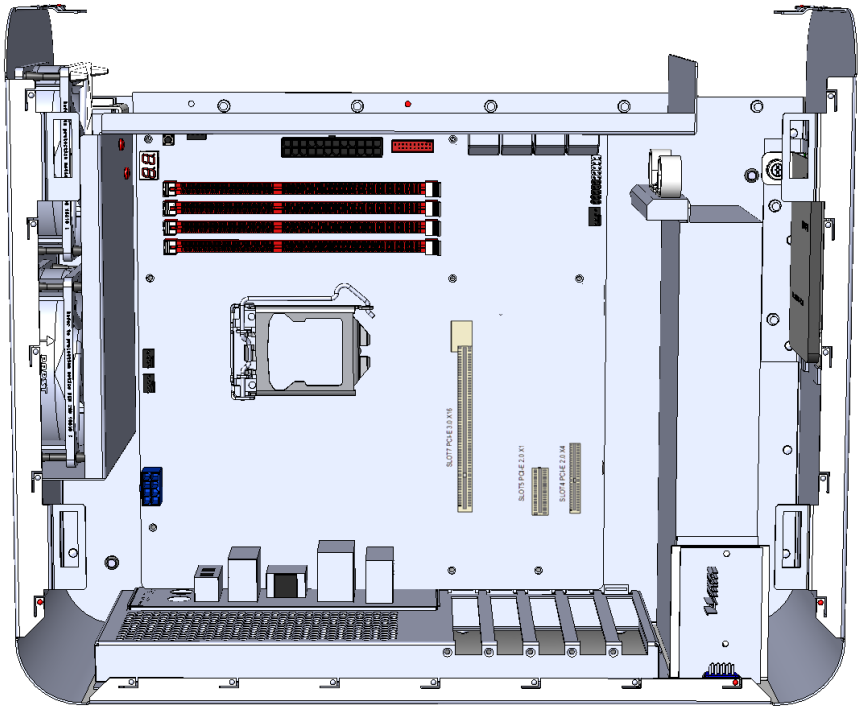
- Untighten and remove the six screws (Torx T20) on the bottom of the housing.



- Pull the lid (relative to the base of the housing) around 2.5 cm forward (**1**) and then lift it off (**2**).



The PCI-Express slots are now freely accessible.

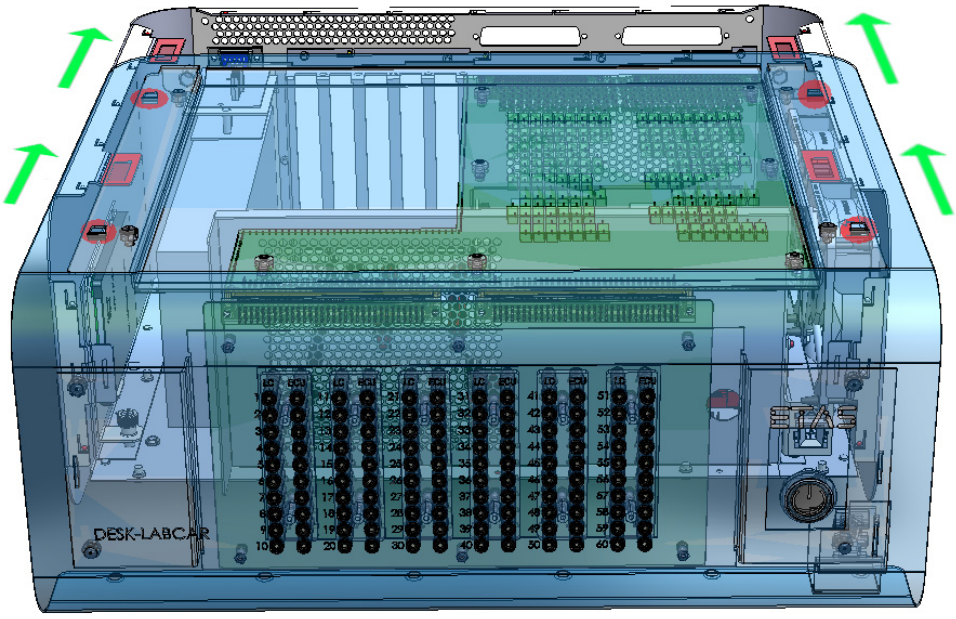


To insert a board

- Remove the appropriate slot brackets.
- Insert the board into the PCIe slot.
- Secure the board with the screw with which the slot bracket was attached.

To close the housing

- Place the housing lid onto the base so that the hooks on the lid fit into the eyes of the base.
- Slide the lid around 2.5 cm back.



CAUTION!

Check that the D-Sub ports fit exactly into the gaps on the rear of the housing!

- Reattach the screws:
  - The two screws on the back of the housing, top left and right,
  - the four nuts to secure the D-Sub ports

and

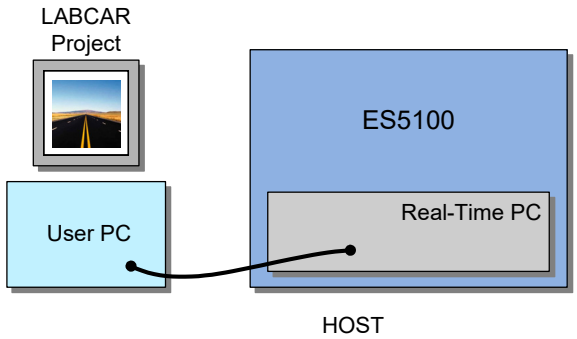
  - the six Torx screws on the housing base.

3.3 User PC

The user PC (not part of the delivery scope of the ES5100.1 Desktop Housing) contains the LABCAR software with which the projects are run – furthermore, the Real-Time PC can be configured and controlled on the user PC via a web interface.

3.3.1 Connecting the User PC

- Connect the user PC to the Real-Time PC of the ES5100.1 Desktop Housing at the Ethernet port "HOST".



Once the Real-Time PC has been booted, its availability can be tested using a `ping` (see "To test the availability of the Real-Time PC" on page 30).

3.3.2 Configuring RTIO

The ES5100.1 Desktop Housing is supplied with a complete ES5340.2 Hardware Tree that can be appropriately parameterized.

Note

Please contact ETAS Engineering for changes/adaptations of the RTIO configuration!

3.4 Powering on the ES5100.1 Desktop Housing

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.

  The Real-Time PC starts up.

To test the availability of the Real-Time PC

- Toggle to the host.
- Select **Run** from the Start menu.
- Enter "cmd".

  The prompt opens.
- Enter the following:
  `ping 192.168.40.14`

```
U:\>ping 192.168.40.14

Pinging 192.168.40.14 with 32 bytes of data:

Reply from 192.168.40.14: bytes=32 time=3ms TTL=128
Reply from 192.168.40.14: bytes=32 time<10ms TTL=12
Reply from 192.168.40.14: bytes=32 time<10ms TTL=12
Reply from 192.168.40.14: bytes=32 time<10ms TTL=12

Ping statistics for 192.168.40.14:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum =  3ms, Average =  0ms
```

- Alternatively, you can open the web interface in your browser (http://192.168.40.14).

3.5 Maintenance

Note

The ES5100.1 Desktop Housing does not contain any parts which can be maintained or repaired by the customer. If it malfunctions or there is a fault, please contact ETAS (see "ETAS Contact Addresses" on page 37).

3.5.1 Cleaning

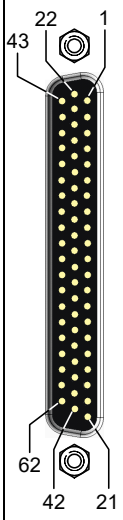
Use a dry cloth to clean the housing.

4 Pin Assignment and Connections

This chapter describes the various ports of the ES5100.1 Desktop Housing.

4.1 "ECU" and "LC" Ports

"ECU" (D-Sub62, male) and "LC" (D-Sub62, female) are used to connect signals which are to be routed via the breakout-box (BoB).



"ECU"	BoB	"LC"
1	1	1
2	2	2
3	3	3
4	4	4
.	.	.
.	.	.
.	.	.
58	58	58
59	59	59
60	60	60
61 (n.c.)	-	61 (n.c.)
62 (n.c.)	-	62 (n.c.)

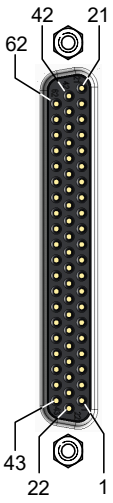


Fig. 4-1 Signal Paths via the Breakout-Box

4.2 Real-Time PC Ports

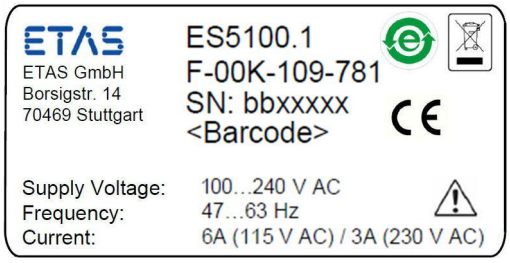
The two LAN ports "ETH1" and "HOST" (see "LAN Ports" on page 18) are on the rear of the housing. All other ports of the Real-Time PC are not supported.

5 Technical Data

This chapter contains the technical data on the ES5100.1 Desktop Housing.

Labeling of the Product

The nameplate is on the rear of the device.



It contains the following information:

- ETAS logo
- Product name
- Type part number
- Serial number
- Barcode for serial number
- Permissible input voltage range
- Permissible input voltage frequency
- Max. current consumption (with the corresponding input voltage)
- China RoHS
- WEEE symbol
- CE marking
- A warning symbol that indicates that the User's Guide must be read before operating and opening the ES5100.1 Desktop Housing!

Mechanical Data

Mechanical structure	Desktop housing
Slots	3 PCI Express slots
Width	396 mm
Height	165 mm
Depth	332 mm
Weight (slots empty)	Approx. 10 kg/22 lbs
Max. load on housing lid	10 kg

Real-Time PC

Processor	Intel Core i7-4770S @ 3.1 GHz
Memory	2 x 4096 MB, PC3-12800
Hard disk	500 GB SATA, 2.5“
Network	2 x Gigabit Network Connection
Slots	- 1 x PCIe 3.0 x16 - 1 x PCIe 2.0 x1 - 1 x PCIe 2.0 x4
Ports	2 x LAN

Power Supply Unit/Power Supply

Input voltage	100...240 V AC
Input frequency	50/60 Hz
Maximum current consumption	6 A (115 V AC) / 3 A (230 V AC)
Switch-on current	40 A (115 V AC) / 60 A (230 V AC)
Maximum performance	500 W DC
Efficiency	82…87%, 230 V AC
Connector	3-pin rubber connector, Type IEC 60320 C14 Recommended connecting cables see page 21!
Output voltages and currents (power supply unit)	+3.3 V DC, min. 0,5 A, max. 25 A +5 V DC, min. 0,5 A, max. 25 A +12 V DC, min. 2 A, max. 40 A +12 V , min. 1 A, max. 50 A -12 V DC, min. 0 A, max. 0.8 A +5 V_{sb} DC, min. 0,1 A, max. 3.5 A

Breakout-Box

No. of jacks	2 x 60
Max. current	0.3 A
Overvoltage protection	±60 V DC
Fuses	Littelfuse 438 Series, 0.5 A fast-acting (Part No. 0438 0.500 W R)
Short-circuit plugs	Schützinger KURZ 10-2 IG Ni / SW

Environmental Conditions

Environment	Only use inside closed and dry rooms
Protection rating	IP20
Max. rate of pollution	2
Maximum altitude	2000 m/6500 ft
Permissible ambient temperature during operation	5 °C to 40 °C (41 °F to 104 °F)
Permissible storage temperature	-20 °C to +65 °C (-4 °F to 149 °F)
Relative humidity	0 to 95% (non-condensing)

5.1 Fulfilled Standards and Norms

The ES5100.1 Desktop Housing complies with the following standards and norms:

Standard	**Testing**
IEC 61326-1	Electrical equipment for measurement, control and laboratory use EMC requirements (industrial environment)
IEC 61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use - Part 1: General requirements

The housing is only designed for use in industrial environments compliant with IEC 61326-1. Avoid any possible radio interference when using the housing outside industrial environments with additional shielding measures!

WARNING!

This is a Class A device. This device can cause radio interference in residential environments. In this case, the operator can be required to take appropriate measures.

6 ETAS Contact Addresses

ETAS HQ

ETAS GmbH

Borsigstraße 24 Phone: +49 711 3423-0

70469 Stuttgart Fax: +49 711 3423-2106

Germany WWW: www.etas.com

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:	www.etas.com/en/contact.php
ETAS technical support	WWW:	www.etas.com/en/hotlines.php

Index